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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



On a recent return trip to my home state of Wisconsin, I was reminded of a deep, dark secret that I've been keeping – I was about seven when our family took an early season camping trip to the northern portion of the state. While kicking about in the woods, we came across all kinds of interesting items awakening to a new year. One of the most visible was a carpet of flowering trilliums beneath the expanse of hardwoods. The thought struck me that “wouldn't mom be surprised with a bunch of them?” Well, I definitely surprised her when she realized that the trillium in my thoughtful bouquet was a protected species! Now you know my deep, dark secret.

Even as a seven-year-old, I learned fast that taking something might come with consequences. However well-intentioned picking those flowers for mom might have been, it was the wrong thing to do. Not simply because it was illegal, but because doing so damaged the very thing I found so beautiful. This is true for many of the plants and animals you might come across, whether it be a wildflower, a seemingly abandoned fawn (it probably isn't!), or sunning snake. Unless expressly allowed, taking such plants and animals may well be damaging the very things you care most about.

Now, as I enjoy the return of the swallows and bats to our barn in Marlborough, I'm reminded of the wonders of spring and early summer. The accumulation of droppings and seemingly endless need to wash the car, lawn mower, and other common barn ‘stuff’ might seem an annoyance to some, but my family and I have come to embrace it as one more seasonal shift enriching our New England experience. But, the wonder certainly doesn't end with barn-squatters. Coastal rivers and streams are teeming with anadromous fish runs, urban centers are visited by black bear and the occasional moose, fawns stumble across farm fields, and lady's slippers bloom, while turtles scuttle along toward nesting sites.

This year, the late spring brings something unique and wonderful to behold – the emergence of the 17-year periodical cicada. Throughout the southern portion of the central Connecticut valley, these amazing insects are emerging to complete the brief (about six weeks), but critical period of their life cycle. Spending nearly 17 years in their underground burrows, the larval cicadas have emerged in the billions, using sheer abundance as their only defense against predators, genetic deformation, and the luck of the draw. In these next several weeks, the adults will transform into a flying stage, signal to potential mates, mate, lay their eggs, and then die. Some three weeks later, the pupae will emerge from their eggs, drop to the ground, burrow into the soil, and begin yet again another 17 years of isolation.

I hope each of you takes the time to enjoy these wonders of our Connecticut landscape, much as our family does. Just remember . . . don't pick the flowers.

Rick Jacobson, DEEP Wildlife Division Director

Cover:

Deep within a Connecticut forest, two broad-winged hawk nestmates wait for one of their parents to return with food.

Photo courtesy of Paul J. Fusco

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CT State Parks Centennial: *Albert Turner – the Visionary*

Written by Alan Levere, State Parks Division

In mid-1913, Connecticut Governor Simeon Baldwin appointed six commissioners to the new State Park Commission with the directive to hold an initial meeting by the end of September. Each of these six was extremely well-connected in business circles. Hailing from Cornwall, Hartford, Putnam, Middletown, and New Haven, they were company presidents, corporate chairmen, bankers, Yale professors, and community



Connecticut native Albert M. Turner, the first state park employee, began his work as Field Engineer on March 1, 1914, at the age of 46. He held the position for 28 years, and personally assessed the resources of the entire state before compiling a collection of locations that form the basis of today's state park system.

leaders. All were proponents of the outdoors, but they were more comfortably suited for the boardroom. As directed, these six men came together at the New Haven County Courthouse at 11:00 AM, on September 29, 1913, and called to order the very first meeting of Connecticut's State Park Commission.

While it was immediately important to the Commissioners to begin land purchases for a state park system, any thought of acquisitions was premature until there could be an investigation of potential park sites. They needed a Field Engineer. The reconnaissance they had in mind would take a special individual and, six weeks into their search, the new Park Commission had their man: Albert M. Turner, the first state park employee ever hired.

Albert Turner was a Connecticut Yankee through and through. He was born in 1868 of lengthy Connecticut heritage, something in which he took great pride. His youthful stomping grounds were in



Albert Turner's trek across Connecticut brought him firsthand to all available shoreline properties. This image of Hammonasset Beach in Madison was taken by Turner five years before the first land was ever purchased for the park.

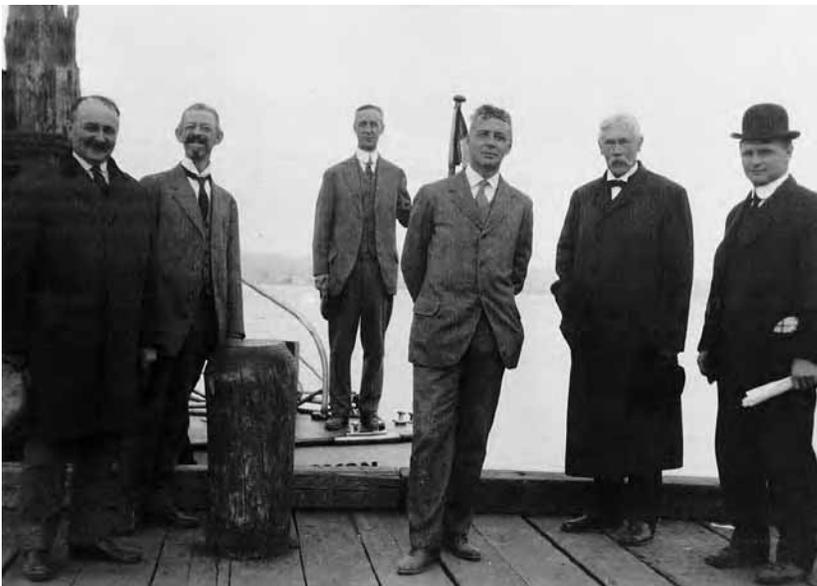
the neighborhood of Turner Brook, named for his forebears. His was one of the earliest families to settle the Northfield section of Litchfield. Turner began his college education in Massachusetts and completed it with a civil engineering degree from Yale in 1890. That degree helped Turner gain early employment at a New Haven engineering firm where for 13 years, in those pre-automobile days, he laid out public trolley lines and sections of state roads. After a foray into the quarrying business in North Canaan, Turner answered the 1913 State Park Commission call for Field Engineer and secured the job. At age 46, he had two decades of Connecticut geography under his belt and also landed a permanent career.

Officially beginning his new position on March 1, 1914, Turner immediately tasked himself with a statewide review of possible park locations, starting with what he knew was the most vulnerable environment – the coastline. Beginning at the Rhode Island border and travelling west to New York, Turner investigated every possibility. By April 6, he had advanced to Guilford and by May 11, his coastal investigation was complete.

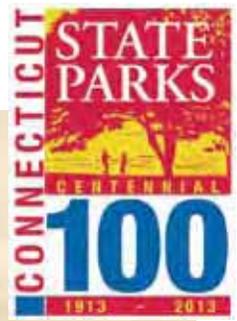
What Turner saw in his investigation appalled him. He reported that he “found the shore of Long Island Sound an almost endless row of individual . . . habitations, alternating with miles of sea walls, land walls and hedges . . .” In his travels, he heard “testimony from others, who, like myself, ‘used to’ go clam-digging, picnicking, or camping, along the shore, . . . but had been driven out from this or that familiar spot all over the State.” Conditions were no better along the rivers, in the hills, or at the lake shores. He investigated them all. “I found whole lakes and mountain tops in the possession of individuals who had bought and paid for them, and could enjoy them only by excluding everybody else.”

He climbed every hill, explored every large lake, surveyed the lower half of the major rivers and slowly, the overall picture came into focus. He began to realize he was standing on the

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The first State Park Commission, 1913 (left to right): John Calhoun, Cornwall; John Fox, Putnam; Edward H. Wilkins, Middletown; Lucius Robinson, Hartford; General Edward Bradley, New Haven; and Herman H. Chapman, New Haven.



Citizen Science Can Bring Species Back from the Brink – An American Kestrel Case Study

Article and photography by Min Huang, DEEP Wildlife Division

The American kestrel is the smallest falcon in North America. It inhabits open areas, including meadows, pastures, suburbs, city parks, and farmland. Due to a lack of information on the bird's status and the perception that its population was in decline, the American kestrel was added to Connecticut's Endangered, Threatened, and Special Concern Species list in 2004.

Similar to wood ducks and bluebirds, American kestrels are cavity nesters that lack the ability to excavate their own cavities. Thus, they rely on old woodpecker holes, natural tree hollows, rock crevices, and nooks in buildings and other human-built structures. In many areas, suitable sites can be the limiting factor. Fortunately, kestrels have adapted to using nest boxes in areas where natural cavities are scarce.

This affinity to use nest boxes, if properly placed and maintained, has made the kestrel a species for which there is hope. At least two citizen scientists in Connecticut have single-handedly been bringing the kestrel back from the brink of extirpation in the state by erecting, monitoring, and maintaining nest boxes. Both individuals were recently awarded Certificates of Recognition by The Wildlife Society for their work on kestrel restoration.

Citizen Scientist Art Gingert

Art Gingert has been putting up kestrel nest boxes in north-west Connecticut for nearly 30 years. His efforts have produced hundreds of young kestrels during that time period. The number of boxes maintained by Art, with assistance from by colleagues at Sharon Audubon, has steadily increased from an average of 24 annually in the early years of the project to 86 boxes in 22 towns in 2012. Twenty-six kestrel pairs



(Top) To better understand the habitat requirements and movements of newly-fledged kestrels, radio transmitters are being placed on young birds. A UConn student will be monitoring the birds.

(Bottom) The monitoring of color-banded adult and juvenile kestrels provides important information about nest box occupancy and site fidelity from year to year, as well as insight into the colonization of new nest boxes.



nested in boxes in 2012, with 103 young fledging. Art's work has served to inspire other kestrel enthusiasts to replicate his efforts in the northeast corner of the state.

Citizen Scientist Tom Sayers

From a humble beginning (5 boxes with 2 pairs and 7 fledged young), Tom Sayers has steadily grown the local kestrel population in Tolland and eastern Hartford Counties. He has experimented with various box designs and configurations and has, over time, developed designs that are readily used by the birds. These improved box systems increased occupancy rates from 16% to 40%. In 2011, Tom monitored 45 boxes, which had 18 pairs and produced 65 young. In 2012, he monitored 48 boxes, which had 25 pairs and 105 fledglings.

Lessons Learned

The greatest lesson learned from the efforts of both of these conservationists is that nest boxes placed in appropriate habitat, which are rigorously monitored, make a huge difference. The biggest factor in monitoring and achieving success of a kestrel nest box is preventing the non-native, invasive European starling from taking over the box. Starlings are extremely aggressive. Long established kestrel pairs might be feisty enough to exclude starlings on their own, but new boxes do not have a chance of being occupied by kestrels unless aggressive starling control is conducted.

The number of successful kestrel pairs nesting in Tom's and Art's boxes (51 pairs and over 200 young fledged), should be more than enough to downlist this species during the next review of the state Endangered and Threatened Species list in 2014. That fact, in and of itself, is remarkable. Both Art's and Tom's contributions are a shining example of how citizen science and ingenuity can lead to great conservation successes. However, more help is needed to truly secure a place for kestrels in Connecticut.

A fair amount of prime kestrel habitat exists in certain areas of the state. However, few, if any, nesting cavities are available in close proximity to good foraging habitat. "Appropriate" kestrel habitat generally consists of a minimum of 20 acres of open, grassland type habitat. Ideally, nest boxes should be placed in the open, away from shrubs and small trees. It is desirable if parcels have weedy, overgrown edges, hedgerows, and fencerows, or other areas where some



The original two members of the Northeastern Kestrel Project, John Stake (center) and Tom Sayers (right), alongside raptor enthusiast and citizen scientist Mike O'Leary.

grass remains unmowed. Dairy pastures can be good areas for kestrels, while horse pastures are typically too well manicured. Placing boxes along wooded field edges is not advisable as it typically invites squirrels to take up residence.

As demonstrated by both Art and Tom, a well-maintained nest box program can and will produce positive results.

So, what can we do? The answer is to encourage, recruit, and mentor more citizen scientists to "adopt" and monitor kestrel nest boxes in their area. Just imagine what can be accomplished if individuals took on the responsibility of dozens of nest boxes, similar to what Art and Tom have done. Even just one nest box, properly placed and monitored, multiplied by many citizen scientists throughout the state, would have a significant and positive impact on Connecticut's kestrel population.

Consider Becoming a Kestrel Box Steward

Those interested in becoming a citizen scientist and kestrel box steward should start to plan for the 2014 nesting season. Before making the commitment, there are a few things to know before taking on the task:

Wanted:

Kestrel Nest Box Stewards to regularly monitor boxes and increase the nesting success of this state threatened species.

- Boxes must be monitored faithfully one to two times a week during late March to mid-May. A fair amount of stepladder and/or short extension ladder work is involved with monitoring.
- Any European starlings that begin to use a kestrel box must be euthanized. (The starling is an invasive, exotic species that is not protected by law.)
- Art or Tom will be available for advice and mentoring as needed, especially when it is time to develop a schedule for banding the nestlings.

Before erecting kestrel nest boxes, Art, Tom, or another experienced kestrel researcher will visit the potential site and assess the quality of the habitat. If the site is suitable and the landowner is willing to have a box or boxes erected on the property, poles and boxes will be installed and you will be on your way to assisting in the recovery of this great little raptor.

If you can commit to the rigors of being a steward, or if you know of areas that could be potential kestrel habitat, please contact Art Gingert (for locations west of the Connecticut River; artgingert@optonline.net), or Tom Sayers (for locations east of the Connecticut River; sayers.tom@gmail.com).

CT and the Regional New England Cottontail Initiative

Written by Robin Adamcewicz, DEEP Wildlife Division

The New England cottontail (NEC), historically common in the Northeast and Connecticut's only native rabbit, is currently being considered for protection under the federal Endangered Species Act. The range of this species has been reduced by more than 80%, in large part due to dwindling habitat and competition from the similar-looking Eastern cottontail, a non-native introduced from the Midwest in the late 1800s and early 1900s by game clubs.

Biologists began investigating NEC population declines several decades ago, and, in 2006, the U.S. Fish and Wildlife Service (USFWS) designated the NEC as a candidate species for threatened or endangered status. This designation began a process to organize a regional conservation effort and, in 2011, the Regional New England Cottontail Initiative was formally established. The organizations involved, including state and federal agencies, universities, and non-profits, worked to develop a Conservation Strategy that described habitat and population goals, funding sources, and planned actions. Next year, the USFWS will render a decision regarding NEC listing based

on the Conservation Strategy and its likelihood of success.

Connecticut is fortunate to be home to the most significant remaining populations of NEC, and, as such, plays a primary role in restoration efforts. The Connecticut DEEP Wildlife Division is partnering with the Natural Resources Conservation Service, USFWS, Wildlife Management Institute, and National Fish and Wildlife Foundation to conduct research, implement habitat management work, and provide education and outreach so as to cultivate and foster public participation in these efforts.

Research

The Wildlife Division initiated research regarding the NEC in 2000, beginning with a strategy of locating towns where NECs are present by using methods such as live trapping and collecting specimens from road kills and hunter harvest. Because NECs and eastern cottontails look similar and are difficult to distinguish in the field, DNA analysis of tissue samples and skull examination are used for species identification. With more than 1,675 specimens collected to date,

New England cottontails have been found in 41 of Connecticut's 169 towns (24%). Sampling continues, with the added technique of fecal pellet DNA analysis, a more cost-effective method that is equally accurate, to determine species and examine genetic barriers and connectivity between populations.

In some locations, NEC were fitted with radio collars to collect movement and distribution data. These data have revealed that NECs have a winter home range of about seven acres and winter core area (most-used portion of home range) of about two acres.

Research work has expanded to include investigations into how often NEC and eastern cottontails use the same cover patch, assessing habitat restoration sites, effects of manipulating eastern cottontail populations, and metapopulation dynamics. After trapping rabbits in 154 patches of suitable habitat, it was determined that 97% of these patches were occupied by eastern cottontails, 18% were occupied by New England cottontails, and 15% were occupied by both species.

Vegetative structure and use by cottontails are being quantified at newly-created habitat restoration sites. In areas where both eastern cottontails and NECs are found together, eastern cottontails will be reduced to determine if their removal will result in an increase of NECs. All of this information will result in better management to benefit population expansion of New England cottontails.

Habitat, Habitat, Habitat

Providing habitat is the key to the successful restoration of this species. New England cottontails require large patches (25 acres or more) of shrubland and/or young forest to maintain viable local populations. They prefer dense thickets of tangled shrubs, vines, and thorny vegetation. Typically, an area with 20,000 stems per acre can support, on average, one rabbit per two acres. In Connecticut's mostly forested landscape, this type of habitat is limited. Young forest/shrubland habitats can be created through natural processes, such as fire and flooding, which clear an area of its mature trees, allowing thick seedling/sapling and shrubby vegetation to revegetate. Man-made processes, including abandonment of farmland and



A 35-acre harvest was recently completed at the Wildlife Division's 777-acre Sessions Woods Wildlife Management Area in Burlington to create habitat for New England cottontails. This harvest was made possible due to State Wildlife Grant funding.

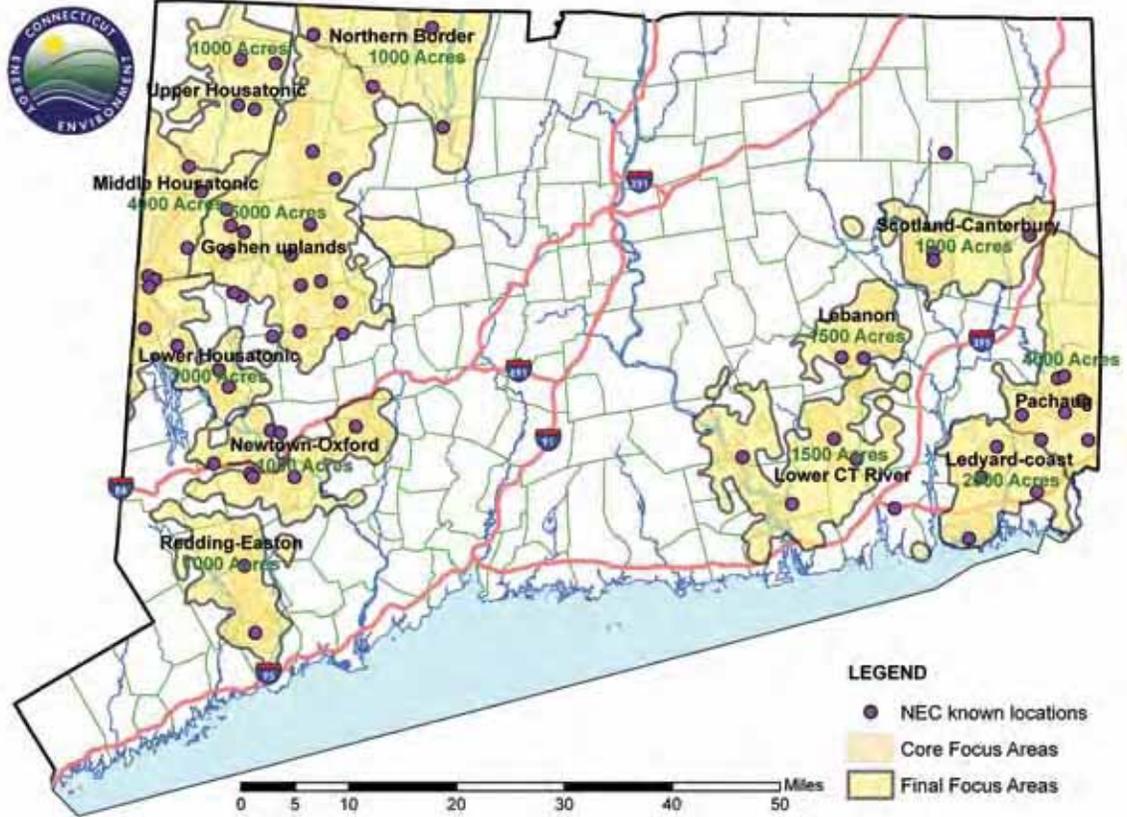
K. FRANKLIN, HABITAT MANAGEMENT PROGRAM

timber harvesting in forests, also have resulted in suitable New England cottontail habitat. Today, wild fires are controlled, abandoned farmland has been replaced with development, and timber harvesting has declined significantly. This situation has led to a precipitous drop in the amount of preferred habitat for NECs, and is the major factor contributing to the decline in population numbers.

Recognizing this, the Conservation Strategy for New England cottontails has set a habitat goal for Connecticut of 24,000 acres and a population goal of 12,000 rabbits. A model was developed to identify those areas of the state that have the best potential for both habitat and population restoration. Twelve focus areas have been delineated as locations where habitat work will be targeted.

The most effective way to create preferred habitat for NECs is to conduct a harvest in a forested area, allowing the area to regenerate to a dense, shrubby seedling/sapling stage. When choosing project locations, careful consideration of several factors is required. The site should be close to a known New England cottontail population to facilitate dispersal to the site. It should also contain landscape level features, such as proximity to protected lands and connectivity to other preferred habitat. It is important to assess the overall quality of the timber and if the project could be accomplished as a commercial cut. Habitat patches created in this manner generally are useful for about 10-15 years before regeneration to an older forest makes it unsuitable for New England cottontails.

Interested in learning more about the Regional New England Cottontail Initiative? Visit the DEEP website at www.ct.gov/deep/youngforest.



In 2009, the Wildlife Division was awarded an \$185,000 State Wildlife Grant with a goal of creating 150 acres of NEC habitat on state lands. Work conducted at five sites resulted in the creation of 183.2 acres of habitat, exceeding the grant goal. A second State Wildlife Grant for \$165,000 was awarded in 2011, with a goal of creating an additional 150 acres of NEC habitat on state lands. Eight more project sites were chosen, and ongoing habitat work at these locations will create an additional 457.6 acres of NEC habitat.

Private Landowners Are Critical

Despite surpassing the grant goals for state land, the overarching goals in the Conservation Strategy will not be met without the assistance of private landowners. The Wildlife Division, in partnership with the Natural Resources Conservation Service under their Working Lands for Wildlife program, is soliciting private landowners to initiate projects on their land. To date, eight private land projects, totaling 258 acres, are in various stages of development. The Division continues to seek private landowner involvement through workshops, surveys, telephone contact, and newsletters. If

you or someone you know is interested in participating in this important initiative, please contact the Wildlife Division's Habitat Management Program at 860-295-9523 or email paul.rothbart@ct.gov.

NEC Habitat Projects on State Land Funded by State Wildlife Grants

Grant 1

Location	Town	Acres
Roraback WMA	Harwinton	51.2
Camp Columbia SF	Morris	4.0
Goshen WMA #1	Goshen	13.0
Goshen WMA #2	Goshen	57.0
Housatonic River WMA	Kent	58.0
Total:		183.2

Grant 2

Location	Town	Acres
Roraback WMA	Harwinton	26.0
Camp Columbia SF	Morris	20.8
Sessions Woods WMA	Burlington	35.0
Spignesi WMA	Scotland	41.0
Bartlett Brook WMA	Colchester	21.8
Bear Hill WMA	Bozrah	41.0
Pease Brook WMA	Lebanon	22.0
Pachaug SF	Voluntown	250.0
Total:		457.6

American Brook Lamprey: A Reclusive Coldwater Fish

Written by Neal Hagstrom, DEEP Inland Fisheries Division

Two species of lamprey are found in Connecticut, the more commonly known parasitic sea lamprey (*Petromyzon marinus*) and the reclusive, little known non-parasitic American brook lamprey (*Lampetra appendix*). Lamprey belong to an ancient line of fish. They are jawless, have a cartilaginous skeleton, lack paired fins, and are missing gill arches to support the gills. Together with their closest relative the marine hagfish, lamprey are the last living examples of a group of fish that was common 350 million years ago. Although lampreys are considered to be fish, they are not closely related to any of the modern day bony fishes that are more familiar to people.

All species of lamprey have an immature or larval form called an ammocoete that transforms into the adult form.

Lamprey ammocoetes live in the soft, silty bottom of a stream or river, feeding on diatoms, protozoans, filamentous algae, pollen, and detritus. In general, an ammocoete resembles a large night crawler. Its mouth is shaped like a hood and it lacks teeth, fins, and visible eyes. After a few years (American brook lamprey) or around seven years (sea lamprey), the ammocoete undergoes a transformation where it will take on the more familiar lamprey structures, including prominent eyes, a rounded mouth, development of teeth and simple dorsal fins, as well as an overall change in body shape and color. The American brook lamprey does not feed as an adult. However, the sea lamprey, following transformation, migrates

to the sea to feed on other fishes by boring a hole into the side of fish and ingesting blood and fluids. After several years, sea lamprey migrate back into streams and rivers to spawn.

The American brook lamprey is a fish you may never see, but if you do, you may not recognize it as a fish. In Connecticut, the American brook lamprey is small, only three to 10 inches, with a narrow, elongated body similar to that of a snake. Unlike many other common fish that swim throughout the water column, these fish spend most of their lifetime within silt and sand burrows in the stream bottom, making them difficult to observe. An opportunity to see American brook lamprey is during spawning season, which is between May and early June, peaking when



Brook lamprey (left) and sea lamprey (right) ammocoetes live in the soft substrate of streams and rivers. They are similar in appearance and both resemble large night crawlers.



The adult forms of the brook lamprey (left) and sea lamprey (right) have eyes and fins, and they look more like an eel. The mouth also changes from a funnel-like shape to one with teeth. The brook lamprey does not feed as an adult and, as such, the teeth are weak and soft. The sea lamprey feeds as an adult. Its rasping tongue is used to bore a hole into the side of the host fish.



Comparing Connecticut's Two Species of Lamprey

The ammocoetes of the American brook lamprey are very similar to those of the sea lamprey, both in size, structure, and color. American brook lamprey can be distinguished by a wide, lighter-colored, triangular spot behind the single nostril (2-3 times as wide as the nostril) and the presence of pigment on the leading edge of the funnel (leading into the mouth opening).

Unlike the ammocoetes, the two species of lamprey look different as adults. The most obvious difference is the total length. Sea lamprey are much larger (typically 2-3 feet) than the American brook lamprey (less than 1 foot). Secondly, the large sharp-pointed teeth of the sea lamprey appear to "mean business" while the small, weak, and barely noticeable teeth of the American brook lamprey are far less menacing.



water temperatures reach 62 degrees F. The female starts the spawning process by building a small six to eight inch wide and few inch tall gravel nest, usually located between several larger rocks. She has no problem attracting a mate as the ratio of males to females is typically 10:1. Similar to the life history of some species of Pacific salmon, the adults die shortly after spawning. Unfortunately, due to the reclusive nature of this rare fish, most people only see post-spawn dead lampreys.

The American brook lamprey is a herald of good water quality as it depends on cold, clear, sandy-bottom freshwater streams. The original record for this fish in Connecticut was in Kettle Brook in Windsor Locks and, for many years, it was thought to be the only population in the state. Then, due to an unfortunate accidental release of pesticides and resultant fish and invertebrate kill, it was thought that the American brook lamprey may have been extirpated from the state.

Over the last 10 years, American brook lamprey populations have been found in several other tributaries of the

Connecticut River during routine fish community sampling and some focused efforts. An attempt to re-establish the historical population in Kettle Brook by DEEP's Inland Fisheries Division (IFD) has proven to be successful. The IFD moved larger three- to five-year-old ammocoetes for five consecutive years into three separate sections of Kettle Brook. IFD staff returned to Kettle Brook at three, five, and seven years after the initial stocking to verify the number of American brook lamprey present and to see if the population was taking hold. Monitoring efforts have shown that the population is recovering.

Because there are only a handful of populations known in Connecticut, the American brook lamprey is one of the few fish species listed as a Connecticut en-

dangered species. The designation offers some protection for this unique fish and its special habitat requirements. American brook lamprey are an important component of our state's fish diversity and, as such, residents deserve an opportunity to catch a glimpse.

Connecticut's Threatened and Endangered Fish

This article is one in a series that focuses on rare fish species that inhabit Connecticut. As a valuable part of our state's biodiversity, these fish warrant special attention. The Connecticut Endangered Species Act, passed in 1989, recognizes the importance of our state's plant and animal populations and the need to protect them from threats that could lead to their extinction. The overall goal of the legislation is to conserve, protect, restore, and enhance any endangered or threatened species and their essential habitat. The three levels of state classification are "endangered" (in danger of extirpation), "threatened" (likely to become endangered), and "special concern" (a natural restricted range or habitat and at low populations levels). Species are listed according to their level of risk, and their status is reviewed every five years. Additional information about DEEP's Endangered Species Program can be found at www.ct.gov/deep/endangeredspecies.

DEEP fisheries biologists collect data on many of the state's fish populations, updating it with the help of independent biologists, academic educators, students, citizen volunteers, conservation groups, and landowners.

Help Protect Egret Nesting Areas on Offshore Islands

The DEEP is asking for the public's help in protecting heron and egret nesting areas on Charles Island in Milford and Duck Island in Westbrook. These islands were closed to public access starting on May 26 and extending through September 9, 2013. The closed area includes the entire island – both the upland vegetated portions as well as the sandy, cobbled beach sections. Both islands are DEEP Natural Area Preserves because they provide critical nesting habitats for several state-listed birds, including snowy egrets and great egrets (state threatened species), glossy ibis, and little blue herons (state special concern).

Nesting areas are protected with fencing and signs that read "Do Not Enter – Bird Nesting Area." Several locations also feature large, educational signs that alert visitors to the birds' presence and the need for protection of nesting areas. Unfortunately, people continue to visit the islands in large numbers and ignore the closure orders. This situation is causing tremendous stress and disturbance to the nesting birds, and there is serious concern that they will abandon the nest site and not be able to successfully raise their young this year. To make matters worse, the birds are already stressed due to damage caused by Superstorm Sandy in October 2012. Herons and egrets build their nests in trees. Many of the trees on the islands were damaged by Sandy, and the birds are now concentrated in the few remaining trees. The storm also reduced the amount of cover provided by vegetation and the tree canopy. This lack of cover increases the visibility of the birds and also increases their sensitivity to any disturbance caused by humans. Examples of disturbances to these nesting colonies have included gatherings of large groups



Great egret chicks almost ready to fledge their nest in a CT island rookery.

of people, illegal camp-outs, bonfires, unleashed dogs (which are perceived as predators), and people venturing close to the nests.

Protecting herons and egrets from human disturbance during the nesting season (mid-May-September) is the key element in restoring their populations. The public can help by following the closure order and reporting any observed violations to the DEEP at 1-800-424-3333. DEEP Environmental Conservation Police Officers will be stepping up patrols at these islands, particularly on weekends and after dark. Landing of watercraft on the beaches is prohibited, and anyone trespassing on the islands will be arrested.

Long Island Sound: Our Local Biological Super-Highway

Written by Penny Howell, DEEP Marine Fisheries Division

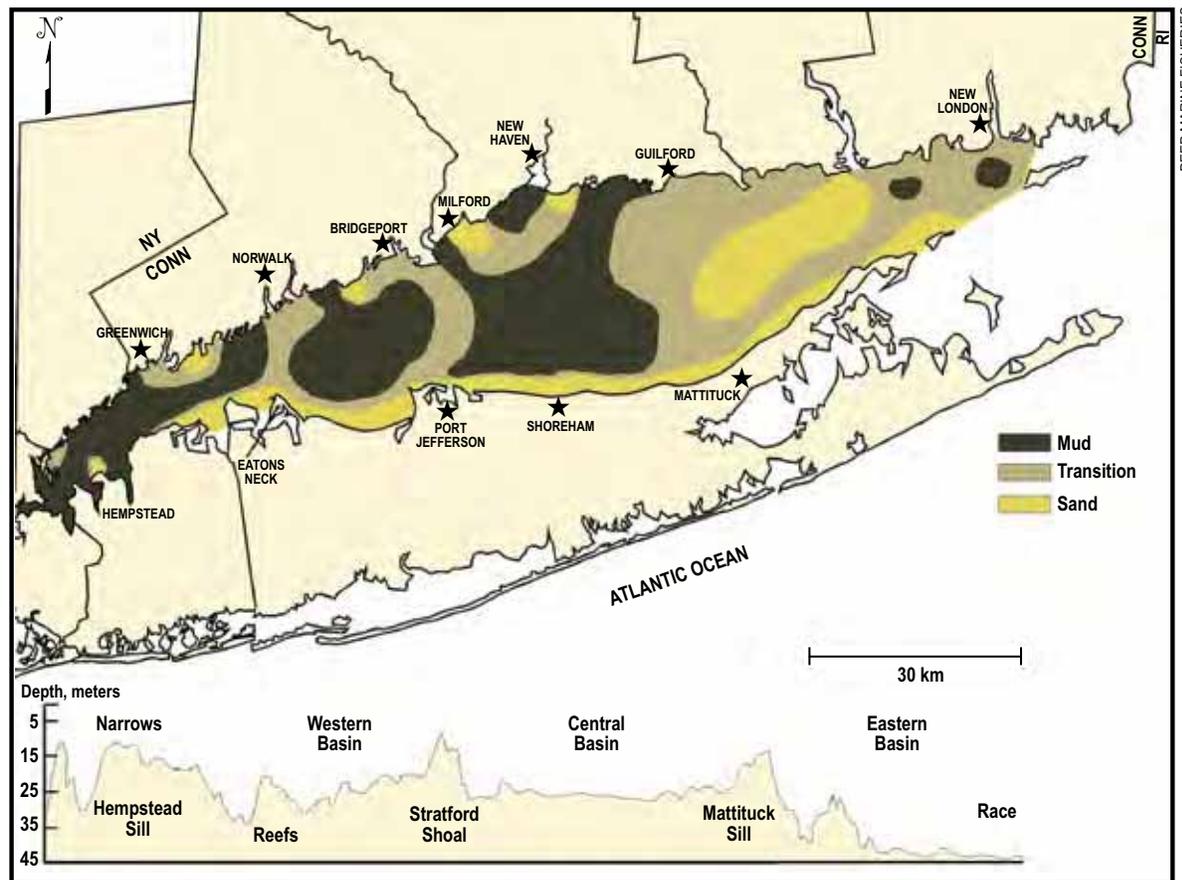
As temperatures rise to summertime highs, many of us will be heading out for our favorite activities on Long Island Sound, and we certainly won't be alone. Every year, over 100,000 recreational boaters enjoy the Sound's beauty, while an estimated 150,000 anglers make over one million fishing trips on the Sound, catching on average over 10 million fish. All together, an estimated 13 million people use the Sound in some way over the course of each year. The annual economic value generated by Sound-related activities is measured in the billions of dollars.

The Sound supports so many different activities, primarily because of its geography and geology. Scoured out by receding glaciers, water depths in the Sound vary from shallow flats to trenches over 90 meters (290 feet) deep. If all of the water were drained out of the Sound, its bottom landscape, or bathymetry, would show a wide central deposition basin flanked by steep canyons on one end and narrow passages at the other. The Sound's northeast opening is aptly named 'The Race' for its strong currents, which can at times exceed five knots. The southwest opening was also poetically named 'Hell's Gate' by early sailors wishing to reach the East River and New York Harbor through the treacherous navigational hazards of the western Sound.

Between these two gateways, the Sound forms a 1,500-

plus square mile estuary – a mixing zone where the ocean's saltwater meets freshwater river flows from the Thames, Connecticut, and Housatonic, among others. Acre for acre, estuaries are 10 times more productive than the open ocean, and twice as productive as rivers and lakes because tides and currents supply a tremendous energy subsidy. Twice-a-day marine tides – rising less than a meter (3 feet) in the east but over two meters (7 feet) in the west, and aided by long-shore currents and eddies – make estuaries biological super-highways which are second only to tropical rain forests in biological activity. Sediment and nutrients fan out from river mouths and extensive tidal marshes where they quickly become food for the smallest

plankton, which in turn become food for herbivorous fish and invertebrates. This abundance of forage attracts migratory game fish and the anglers who seek them out. Amid this swirling production, the Sound provides feeding grounds for over 120 species of finfish, with spawning and nursery grounds for over 50. Clams, oysters, and numerous other invertebrates thrive in the Sound's rich sediments, providing food for several species of seals, shorebirds, and of course many human harvesters. Although two-thirds of the Earth's surface is covered by water, estuaries comprise less than one percent of the Earth's waters, making Long Island Sound a rare ecological gem that embellishes the Connecticut coastline.



From east to west, the sediments of Long Island Sound change from sand to mud. The vertical profile shows the averaged depths of sills and trenches that make up the mosaic of habitats in the Sound.

Every year, over 100,000 recreational boaters enjoy Long Island Sound's beauty, while an estimated 150,000 anglers make over one million fishing trips on the Sound, catching on average over 10 million fish.

White Pines Damaged by Superstorm Sandy

Written by Jerry Milne, DEEP Division of Forestry

On October 29, 2012, winds from Superstorm Sandy toppled thousands of white pines on about 130 acres of Centennial Watershed State Forest in southwestern Connecticut. Most of the trees were about 80 years old, having been planted by the Aquarion Water Company (formerly called the Bridgeport Hydraulic Company) to protect the watershed's drinking water reservoirs. Many roads in the area were impassable, including Route 58 in Easton, a heavily used thoroughfare connecting the greater Danbury area with the Merritt Parkway and Interstate 95.

Centennial Watershed State Forest is owned in



G. HAINES, AQUARION WATER COMPANY

A forwarder is used to load pine logs salvaged after damage caused by Storm Sandy.



J. MILNE, CT DEEP

Many pine trees at Centennial Watershed State Forest were sheared in half by the force of Superstorm Sandy's winds.

partnership by Aquarion Water Company, Connecticut DEEP, and The Nature Conservancy, and is jointly managed by all three organizations through the Conservation Land Committee (CLC). After reviewing several options, the CLC decided to sell the damaged timber to restore forest health, reduce the potential for forest fires, and allow the forest to regrow naturally. In addition, trees that were likely to blow over in the future were also proposed to be sold.

A bid package was sent to prospective buyers. The highest bidder, Clavette

Logging of Burlington, Connecticut, was awarded the contract. The work began on January 2, 2013, and by the time of publication, most, if not all, of the trees have been cut and removed.

Revenues from the sale of the salvaged pines will be shared among the three members of the CLC and be used to offset the costs of preparing stone-lined driveways for

the logging machinery, protecting streams and sensitive areas during the salvage operation, controlling invasive species, and installing fenced enclosures to gauge the impact of deer on natural regeneration.

Some lessons learned from Superstorm Sandy are that the monoculture stands of mature pines were more heavily damaged than adjacent stands of deciduous trees. As a result, the salvaged areas will not be replanted but will be allowed to regrow with a diverse mix of native hardwoods, such as tulip poplar, black



J. PARDA, CT DEEP

The coarse woody material left after the salvage will return nutrients to the soil.

cherry, red and sugar maple, beech, oak, and black and yellow birch.

Although the salvaged areas may look unsightly to people, as there is a lot of woody material left on the ground, many species of wildlife, such as woodcock and box turtles (a state species of special concern), will be attracted to the early successional habitat that has been created. In addition, the wood left behind will decompose and return nutrients to the soil.

The Calico Shorebird – Ruddy Turnstone

Article and photography by Paul Fusco, DEEP Wildlife Division

Few members of the sandpiper family are as gaudy as the ruddy turnstone (*Arenaria interpres*). Its boldly marked plumage is unlike that of any other sandpiper. The black-and-white head and breast pattern are striking and conspicuous, and when combined with the rusty back and white belly, identification is unmistakable.

Ruddy turnstones are stocky, robin-sized shorebirds that have short bright orange legs and a short stout bill that tapers to a narrow pointed tip. The bill is slightly upturned and dark in color. In flight, their spangled dark and white markings show well in all plumages. Winter adults and young birds are patterned similarly to breeding adults but with fainter markings and duller, more brownish color.

Turnstones can be seen methodically walking along the shoreline investigating shells, rocks, and washed up seaweed while looking for food. Rather than wade into shallow water as many other sandpipers do, turnstones typically walk the intertidal zone. They will interact with other shorebirds, sometimes aggressively chasing them away from food sources. While the bill may be used to ward off other shorebirds, it is mainly used to flip over pebbles, shells, and seaweed to uncover small invertebrates. The birds will also dig small holes in wet beach sand as they hunt for food. The diet is diverse and includes insects, horseshoe crab eggs, grubs, worms, mollusks (including barnacles and small crabs), and berries. Turnstones will also eat carrion and bird eggs if the opportunity presents itself.

The ruddy turnstone is a global species, being found on every continent except Antarctica. It is a strong, long distance migrant that is capable of transoceanic flights. A coastal bird, it is rarely found inland. Beaches, mudflats, rocky coasts, jetties, and sandbars are normal



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In breeding plumage, the adult male ruddy turnstone is one of our more spectacular shorebirds.

haunts. In Connecticut, turnstones may be found along the entire coastline during spring and fall migration and at scattered locations during winter. They may also be present in early summer when northbound late spring migrants and non-breeders overlap with southbound summer migrants. Ruddy turnstones are frequently found in the company of other shorebirds, including black-bellied plovers, dunlin, and sanderlings.

During the nesting season, turnstones are found in remote areas of rocky coastlines and tundra in the Arctic regions of North America and Eurasia. Here, males will perform flight displays and nesting will commence. Females lay four heavily spotted greenish eggs in a shallow depression on the ground. The eggs hatch in about 22 days. Both adults tend to the nest. Incubation is mostly done by the female, while chick rearing is mostly done by the male. Chicks can fly about 25 days after hatching.

In winter, North American breeders can be found on the east coast from New England south to Argentina, and from Washington to Chile on the west coast.

Conservation

With such a wide-ranging distribution, one would think that the ruddy turnstone population is doing quite well. However, it seems that the opposite may be true. Despite being common and widespread, the world population of ruddy turnstones is declining, although not as precipitously as some other sandpipers, such as the red knot.

In North America, ruddy turnstone populations are comprised of three separate breeding populations – subspecies *A. i. interpres* (Alaska), *A. i. interpres* (northeastern Canadian Arctic), and *A. i. morinella* (low and mid-Arctic Canada). The *morinella* subspecies is the most common, with an estimated population of 180,000 – the most prevalent in our region.

Atlantic coast migration counts indicate a significant long-term decline for ruddy turnstones that has been quantified at 1.7% per year between 1974 and 2009, as reported by the Western Hemisphere Shorebird Reserve Network. Delaware Bay peak migration counts of *A. i. morinella* specifically show a steady long-term decline.

Reasons for the declines likely include loss and degradation of critical migration

habitat (stopover sites) by encroachment, development and pollution; the outright destruction of wetlands; and overuse and disturbance by humans and pets that make habitat unusable.

Migrant shorebird populations on the east coast, including ruddy turnstones, have been affected by the controversy surrounding the take of horseshoe crabs in the mid-Atlantic states. The overharvest of adult female crabs has drastically reduced the number and density of crab eggs deposited on beaches which are used as stopover sites by spring migrants. This seriously threatens the birds' ability to reach their Arctic breeding grounds in good condition to breed and raise their young successfully.

A common migrant in Connecticut, the ruddy turnstone's dazzling plumage is matched by its active behavior as it feeds and interacts with other sandpipers on the beach. This sometimes tame bird will allow entertaining views, making it one of Connecticut's most interesting shorebirds.

What Are Stopover Sites? Why Are they Important?

Migration stopover sites, also known as staging areas, are critical to shorebirds and many other birds, which depend on a series of these locations along their migration route for food and rest. When not resting or preening their flight feathers, the birds feed constantly, packing on the fat reserves they need to complete their journey. Shorebird stopover sites can be as small as a sandbar and as large as an estuary.

The migration route is made up of a series of wetland stopover areas that form a chain. The links in the chain make a connection between the birds' breeding areas and their wintering areas. Loss of a wetland along the migration path can be likened to losing or breaking a link in the chain, putting added stress on the migrants by forcing them to fly longer distances between stopover areas. Birds that cannot find enough food to build up their energy reserves have low survival and breeding rates. As more quality habitat is lost or degraded, more birds become susceptible to the high energy demands of long distance migration and will succumb along their journey or not be able to breed. It is truly a monumental challenge for wildlife managers and conservationists to reverse the decline of such a long-range migrant that depends on stopover habitat in many places on an international level.

Connecticut has a number of regionally significant staging areas for shorebirds. The Charles E. Wheeler Wildlife Management Area at the mouth of the Housatonic River in Milford and the Roger Tory Peterson Wildlife Area on the Connecticut River in Old Lyme are among the state's most important stopover sites for shorebirds. Other critical areas in Connecticut for migrant shorebirds include Stewart B. McKinney National Wildlife Refuge properties in Stratford, Norwalk, and Westbrook; the greater New Haven Harbor area; and all of the shoreline state parks.



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Wintering ruddy turnstones can be found in small numbers at scattered locations along the Connecticut shoreline.

Released Balloons Deadly to Wildlife – Don't Let Them Go!

Balloon releases have become popular with charitable events, memorials for loved ones, celebrations (birthdays, graduations, etc.), or to bring awareness to causes. With the return of warmer weather, these releases are becoming more commonplace. However, no matter how noble the cause, the DEEP Wildlife Division would like to remind residents, businesses, towns, and organizations that according to Connecticut General Statutes Section 26-25c it is illegal for anyone or any group to intentionally release 10 or more helium balloons per day. This law was passed for a very important reason – to protect wildlife.

Released helium balloons can ride air currents for hundreds of miles. In Connecticut, a summer breeze can transport balloons released in inland areas all the way to Long Island Sound and even the Atlantic Ocean. Once in the ocean, the deflated balloons – just like plastic bags and other floating plastic garbage – look like food (mainly jellyfish) to some sea creatures. When marine animals, particularly sea turtles, eat the floating plastic, their digestive systems become blocked and the animals die. Plastic garbage and specifically balloons have been documented as the cause of death of countless sea turtles, whales, porpoises, sea birds, and other animals. Many of these animals are on the federal Endangered Species List. Four species of sea turtles that are found in Long Island Sound are on Connecticut's Threatened and Endangered Species List as well.

There are other reasons for not releasing helium balloons. When balloons are let go for a celebration or memorial, it may not seem like littering. But, the fact is, it is littering! What goes up must come down somewhere. The balloons, with their long ribbons attached, eventually pop or lose their helium and come back to the ground. Even if they do not land in Long Island Sound, the balloons and their ribbons end up somewhere in our landscape as litter. Balloons take a long time to break down. So-called “biodegradable” latex balloons still take years to break down entirely, offering plenty of time for wildlife to encounter this deadly litter. Popular mylar balloons last even longer.

Take a walk along some of our local beaches and see how much balloon “trash” you can find. DEEP Wildlife Division staff that monitor shorebird nesting beaches fill up numerous trash bags with deflated balloons and balloon ribbon every nesting season.

The ribbons cause problems of their own when they are picked up by birds, such as osprey, as nesting material. The ribbons in nests often get wound around the birds or nestlings, causing death by strangulation or starvation. Wildlife Division biologists who have visited osprey nests during banding efforts have collected balloon

ribbons and plastic garbage from practically every nest visited.

You can make a difference for wildlife by spreading the word about the dangers of releasing helium balloons. And, the next time you are celebrating with a helium balloon, don't let it go! Even better, learn about alternatives to honor a cause or a celebration that will not harm the environment. Some suggestions include planting native flowers, shrubs, or trees; establishing a butterfly garden; lighting candles; blowing bubbles; or organizing hikes, races, or walks. The “Balloons Blow . . . Don't Let Them Go” website (www.balloonsblow.org) is a great resource for learning more about the dangers of helium balloons, environmentally friendly alternatives, and ways to spread the word about balloons.

Releasing Helium Balloons Is Illegal

According to the Connecticut General Statutes Section 26-25c: “No person, nonprofit organization, firm or corporation, including the state and its political subdivisions, shall knowingly release, organize the release of or intentionally cause to be released into the atmosphere within a twenty-four hour period ten or more helium or other lighter-than-air balloons in the state. Any violation . . . of this section shall be an infraction.”

Take a walk along some of our local beaches and see how much balloon “trash” you can find and pick up.

Visit www.balloonsblow.org for more information.

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This immature laughing gull is struggling to free itself from a balloon ribbon that it picked up in Long Island Sound waters. The ribbon is wrapped around the bird's head and mouth. If it is unable to get the ribbon off, the bird will not be able to eat and will die a slow death.

Living with Snakes

2013 has been proclaimed the Year of the Snake by Partners in Amphibian and Reptile Conservation to raise awareness for snake conservation. DEEP's Wildlife Division is participating in this effort by shining a spotlight on Connecticut's native snake species throughout the year.

When warmer weather arrives in Connecticut, people start to venture outdoors to work in the yard or participate in various activities like picnicking and hiking. These outdoor pursuits present the opportunity for people to come across some of the 14 different species of snakes that call Connecticut home. Snake encounters can be alarming for some people, especially if they do not understand how harmless, yet important these creatures are to the natural world. There is no need to fear or hate these legless reptiles. Snakes are probably some of the most misunderstood animals. Yet, they are fascinating and play such a vital role in the balance of nature. Small snakes feed on many harmful insects, while larger snakes consume mice, rats, and other small animals that can cause damage to agricultural crops or personal property. Snakes are prey themselves for owls, hawks, herons, other larger predators, and even other snakes.

Venomous Snakes

Although some people recognize the ecological value of snakes, they still may fear venomous snakes. Most Connecticut residents are unlikely to encounter a venomous snake around their home. The two venomous species found in the state (timber rattlesnake and northern copperhead) do not have wide distributions. These snakes, along with the 12 other native species, are not aggressive and will only bite if threatened or handled. If left alone, snakes will leave you alone.

Indiscriminate killing, illegal collection, and loss of habitat due to human development have resulted in the severe decline of timber rattlesnake populations. The species has been eliminated from many parts of its historic range. In the past, some Connecticut towns had bounties on rattlesnakes, and many of the dens were repeatedly decimated. Once documented in over 20 towns in Connecticut, this snake is now limited to isolated populations in 10 towns. Timber rattlesnakes are protected by Connecticut's threatened and endangered species legislation and cannot be killed

As a venomous snake, the copperhead has an unfavorable reputation and individuals are often killed on sight. This snake has escaped wide-scale eradication programs, however, because of its cryptic coloration and secretive behavior. Many Connecticut residents have probably passed within feet of copperheads without detecting their presence. When danger approaches, this non-aggressive snake remains motionless, concealed in the forest litter. Populations are spread out in Connecticut, but the greatest abundance of copperheads is found in the Central Connecticut Lowland (trap rock) ridges (see page 19 to learn more).

Snakes and People

Snakes have evolved to occupy an important role in their food webs. They feed on "pest" species and, in turn, are fed upon by birds and mammals; they also are important to the normal functioning of a healthy environment. All of Connecticut's snake species do not carry diseases and are not a threat to humans. Snakes bite only to capture food or in defense. Defensive biting in snakes, venomous or not, is a last resort, and no snake will attack humans unprovoked. Any snake that vibrates its tail against the ground to make a rattle-like sound (some snakes imitate rattlesnake sounds) is agitated and should be avoided. If you unexpectedly come across a snake when gardening or doing other yard work, the snake is likely as startled as you are. Never deliberately kill a snake, venomous or nonvenomous. Instead, observe, understand, and respect it from a distance and allow it to go on its way. All snakes will retreat from humans if given a chance.

Snake Control

In the Yard: Unlike some other wildlife species, snakes do not cause damage to homes or yards. It is likely that the snake has lived there unnoticed for a long time and may never be seen again. With few exceptions, most snakes are secretive and rarely seen, preferring to spend their time hidden under stones, logs, and boards. Homeowners who wish to discourage snakes from living close to their homes should remove



hiding places for snakes and their prey: rock and wood piles, tall grass, and brush; cracks in concrete walkways, driveways, steps, and patios; and sheds or porches with space under the floor. Spilled bird seed, pet food, household garbage, and similar items attract mice and rats which in turn attract snakes. If you suspect a snake in your yard is venomous, observe it from a safe distance and contact the Wildlife Division for advice at 860-675-8130.

In the Home: Snakes may enter homes through pencil-sized cracks or holes along a foundation, along unsealed wire or pipe conduits, or through basement doors and windows that do not fit securely. These openings should be sealed to keep snakes and other wildlife out of your home. If you discover a snake in your home, try not to scare it into hiding. If possible, open a nearby door and use a broom to push it outside. An empty pail or wastebasket can be slowly placed over a small or coiled snake. Place something heavy on top of the container. Carefully slide a piece of heavy cardboard under the container and then carry the trapped snake out of the house.

Identification and Removal Assistance: Learn to identify Connecticut snakes and how to differentiate between similar-looking species. Identification help can be found on the DEEP website (www.ct.gov/deep/wildlife) or by calling the Wildlife Division's Sessions Woods office at 860-675-8130. For the name of a private snake removal specialist (fees usually involved), contact the Wildlife Division's Hartford office at 860-424-3011.



Eastern hog-nosed snake.

PHOTO BY: P. J. FUSCO

Snake Art Contest for Kids

The DEEP Wildlife Division has been participating in the 2013 Year of the Snake celebration (spearheaded by the Partners in Amphibian and Reptile Conservation) by informing Connecticut residents about the state's native snakes through a variety of activities. One of these activities was a Snake Art Contest for Kids, in which children from kindergarten through fifth grade were invited to submit original artwork of a snake species native to Connecticut. We received 235 entries, mostly from Connecticut residents but also from Pennsylvania and California. The entries were judged in three categories: K-1st grade, 2nd-3rd grade, and 4th-5th grade. The judges (all with art or snake expertise) did a fantastic job of selecting first, second, third, honorable mention, and most creative winners in each category. The winners received ribbons and various prizes, which were graciously donated by the Paul Peterson Memorial Fund of the Friends of Sessions Woods and the Connecticut Science Center.

The artwork submitted for the contest is on display at the Wildlife Division's Sessions Woods Conservation Education Center in Burlington throughout the summer. The winning artwork in all three categories can be viewed as a slideshow on the Year of the Snake webpage (www.ct.gov/deep/YearoftheSnake). Congratulations to all of the winners of the contest. But, most importantly, the Division is pleased that so many kids made the effort to learn about Connecticut's snakes and also create such beautiful artwork. Year of the Snake has been well received and has also generated a lot of interest in snakes.

Year of the Snake Events and Activities

The DEEP Wildlife and State Parks Divisions, local nature centers, and conservation organizations will be holding Year of the Snake events throughout the year. Regularly check the DEEP's Year of the Snake webpage (www.ct.gov/deep/YearoftheSnake) to find out about exciting opportunities to learn about snakes and even see some snakes up-close.

Ssssssnakes! (July 23, 2013): Meet retired DEEP Wildlife Division biologist Julie Victoria (and Andover resident) and learn about the 14 species of snakes that call Connecticut home, along with their natural history, habitat needs, interesting facts, and conservation challenges. Participants will also have the opportunity to meet a live snake.

Date and Time: Tuesday, July 23, 2013, from 11:00 AM-12:00 PM.

Location: Andover Public Library, 355 Route 6, Andover.

This program is FREE and open to the public. It is appropriate for all ages.

Snakes of Connecticut (Sept. 11, 2013): Connecticut is home to 14 species of snakes, including two that are venomous. These fascinating and often misunderstood reptiles present unique conservation challenges in an increasingly developed landscape. Hank Gruner, herpetologist and Vice-president of Programs at the Connecticut Science Center, will introduce Connecticut's snakes and their habitats, address common misconceptions about them, and provide an overview of snake conservation. An "ambassador" from the world of snakes will also provide a first encounter opportunity.

Date and Time: Wednesday, September 11, 2013, starting at 7:30 PM.

Location: Blackstone Library, 758 Main Street, Branford.

This program, sponsored by the Menunkatuck Audubon Society, is FREE and open to the public. For more information, contact Cindi at program@menunkatuck.org.

Summer Snake Programs at CT State Parks

Connecticut's Beardsley Zoo will be visiting some of our state parks to shine a spotlight on snakes. Native and exotic snakes will be showcased and compared through a hands-on program, complete with a snake-themed craft. Zoo staff will be on hand from **11:00 AM – 2:00 PM** to answer all of your questions. All ages are welcome. Attendance provided with park admission.

July 17, 2013 -- Kellogg Environmental Center, Derby

July 24, 2013 -- Stratton Brook State Park, Simsbury

August 7, 2013 -- Squantz Pond, New Fairfield

Russ Miller, from Meigs Point Nature Center of Hammonasset Beach State Park, will be visiting some of our state parks to share his knowledge of Connecticut snakes. Native snakes will be showcased and their importance to the ecosystem explained through a hands-on program, complete with a snake-themed craft. The program runs from **1:00 PM – 2:00 PM**, and is suitable for all ages. Attendance provided with park admission.

July 20, 2013 -- James L. Goodwin State Forest, Hampton

August 3, 2013 -- Chatfield Hollow State Park, Killingworth



First Place, K-1st grade: Leah Choi



First Place, 2nd-3rd grade: Lea Sung



First Place, 4th-5th grade: Kacey Kim

Eastern Milksnake

Lampropeltis t. triangulum

Background

The eastern milksnake is one of the more common snakes found in Connecticut. Its frequent occurrence in rodent-infested barns led to the erroneous belief that they suck milk from cows by night; hence the name milksnake. Milksnakes also are commonly found around houses and outbuildings. When discovered by people, this harmless snake is often mistaken for the venomous copperhead and killed. The majority of “venomous” snake reports come from anxious homeowners who believe they have a copperhead in the basement. With further investigation and a more accurate identification, these “copperheads” almost always turn out to be milksnakes. Either way, there is no reason to kill these snake species, venomous or not.

Neither snake is aggressive unless handled.

Range

Eastern milksnakes range from southeastern Maine to central Minnesota, south to Tennessee and western North Carolina. They are common throughout Connecticut, except in New London County.

Description

Eastern milksnakes are small and slender. The head is narrow and only slightly wider at the base than the neck. The nape usually has a distinct light “V” or “Y-shaped” patch. Adults have 3 to 5 rows of brown or reddish-brown blotches down the back, while young milksnakes have bright red blotches. The body is grey to tan, while the belly exhibits a black-and-white checkerboard pattern. Adults measure from 19 to 40 inches long.

Eastern milksnakes and northern copperheads can be distinguished by a few basic characteristics. The head of a copperhead is copper-colored and never marked, while the milksnake’s head has the light “V” or “Y-shaped” mark. The copperhead has a wide triangle-shaped head joined to a narrow neck; the milksnake’s head is narrow. The copperhead has only one row of crossbands down its heavy body in contrast to the milksnake’s 3 to 5 rows of blotches down a slender body. The milksnake has smooth scales while the copperhead has keeled scales (raised ridge along the center of each scale).

Habitat and Diet

Milksnakes occupy a variety of habitats, including farmland, disturbed areas, meadows, river bottoms, bogs, rocky hillsides,



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and coniferous and deciduous forests. To support milksnakes, these habitat types must have plenty of cover and a healthy rodent population. Milk snakes spend the colder months in subterranean dens in drier sites.

This active, usually nocturnal hunter feeds mainly on mice, but will also take other small mammals, other snakes, birds and their eggs, and slugs. Milksnakes are constrictors. After striking and seizing prey, they quickly wrap their bodies around the prey animal. Constrictors do not actually squeeze prey to death but instead suffocate it. When the prey animal exhales, the snake constricts, preventing the prey from inhaling. Snakes must swallow their prey whole; therefore, killing the prey prior to ingestion reduces the risk of injury to the snake from bites and scratches.

Life History

Adults breed in June with females laying clutches of 6 to 24 (13 is average) eggs in loose soil or rotting logs from mid-June to July. The eggs incubate for a period of 42 to 56 days with hatchlings emerging in late August to October. The young that emerge are brightly colored, but the color dulls as the snakes age.

Interesting Facts

Milksnakes are secretive and often go unnoticed as they spend most of their time hidden under logs, boards, rocks, or other debris. They seldom bask in the open and are active mainly at night.

When first encountered, a milksnake either remains motionless or attempts to crawl away. If thoroughly disturbed, it may vibrate the tip of its tail rapidly and strike repeatedly. However, the teeth can barely puncture the skin.

Northern Watersnake

Natrix s. sipedon

Background and Range

The northern watersnake is a common resident of nearly all of Connecticut's freshwater wetlands and waterways.

This species ranges from southeastern Maine and extreme south Quebec to North Carolina, west to Colorado.

Description

The northern watersnake is heavy-bodied with variable coloration and markings. The body is usually tan to grey with brown or reddish crossbands alternating with dark blotches on the sides. Markings are more prevalent on younger snakes, while adults tend to darken, resulting in plain, dark coloration. The scales are keeled (raised ridge along the center of each scale). This snake can reach an adult length of 24 to 42 inches

Northern watersnakes are often mistaken for the venomous water moccasin (*Agkistodon picadors*, also known as the cottonmouth) and killed. Although these two species may be similar in appearance, water moccasins do not occur in Connecticut. Southern Virginia is the northern extent of the water moccasin's range. Northern watersnakes are also confused with another Connecticut snake, the venomous northern copperhead. Copperheads, however, are rarely found in water. Watersnakes are always found in or near water. The copperhead has a broad triangular head joined to a narrow neck, while the watersnake's head is only slightly wider than its neck. Consult a field guide or the DEEP website (www.ct.gov/deep/wildlife) for further identification characteristics.

Habitat and Diet

Northern watersnakes will inhabit any freshwater wetland with suitable cover and food, such as lakes, ponds, streams, rivers, reservoirs, swamps, and marshes. Rarely are they found in brackish water. A sedentary species, the watersnake's home range is the size of the wetland it inhabits, or less than a 400-foot stretch of a river or stream.

Watersnakes feed during all hours, but may be restricted to daylight if nighttime water temperatures are cool. They feed primarily on fish, but also frogs, toads, salamanders, insects, crayfish, and rarely mice and shrews.

Life History

Northern watersnakes breed from April to May. Beginning in August through early October, they give birth to live young (viviparous) after a 58-day gestation period. Litter sizes range from 20 to 50 young, with 20 being typical. This snake is mature at 2 to 3 years of age.



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Interesting Facts

The northern watersnake is well adapted for an aquatic existence. Excellent swimmers, watersnakes patrol the water with only their head above the surface, though they can easily submerge to seek out prey by probing the bottom with their snout. Prey is located by a combination of sight and smell; the snakes detect motion with their vision and also have an acute sense of smell.

Northern watersnakes, especially the young, fall prey to many animals. Mammalian predators include minks, skunks, and otters. Avian predators include hawks (northern harrier, red-tailed, red-shouldered, broad-winged), herons, egrets, bitterns, and rails. Other snakes, such as the eastern ratsnake and northern black racer, will prey on watersnakes. Large predacious fish, such as pike and bass, will also take watersnakes. This snake will emit a powerful musk from cloacal glands if attacked and can be quite fierce, biting and often chewing would-be attackers.

A watersnake will often conceal itself in vegetative cover. When temperatures are cool, however, it will bask to warm its body by sitting on rocks, floating logs, or branches overhanging water. The slightest disturbance will send basking watersnakes quickly into the water. When threatened, they can stay submerged for periods of 60 minutes or more.

As autumn approaches and temperatures drop, usually around October, northern watersnakes will begin to group together to brumate for the season. Unlike hibernation when animals are asleep, brumating animals are awake but inactive. The grouping of snakes during winter is referred to as an aggregation. Winter den sites include earthen dams, muskrat burrows, beaver lodges, and vole tunnels. Occasionally, watersnakes will establish winter dens in upland areas. The snakes usually come out of their winter dens around April.

Northern Copperhead

Agkistrodon contortrix mokasen

Background

The copperhead is one of two venomous snake species found in Connecticut; the other is the state-endangered timber rattlesnake. Cryptic coloration, a secretive nature, and nocturnal habits help copperheads avoid detection, enabling them to survive in close proximity to humans. This is in contrast to the timber rattlesnake which has experienced a tremendous population decline due to historical bounty hunting, unnecessary killing, and loss of habitat. Connecticut's copperhead population is more stable than the timber rattlesnake's, but it still has been declining due to habitat loss, disturbance, and human persecution. Countless copperheads and other snakes are killed as they cross roads during the breeding season or while travelling to and from den sites. Intentional killing due to fear and misunderstanding also reduces population densities and abundance.

Range

Copperheads are widely distributed over the eastern United States except Florida. Populations are spread out in Connecticut, but the greatest abundance of copperheads is found in the Central Connecticut Lowland (trap rock) ridges. These ridges are located on the west side of the Connecticut River in Hartford, Middlesex, and New Haven Counties. Copperheads are mostly absent from the northeast and northwest portions of the state and less common east of the Connecticut River.

Description

This beautiful, two-toned, copper-colored snake has distinctive hourglass patterns running down its dorsum. Its stocky body has brown or reddish bands that are wide on the sides and narrow on the back. The belly is pink with darker marks, and the scales are keeled (raised ridge in each scale). The coppery eyes have vertical pupils. A triangular, or spade-shaped head, which is wider than the neck, is a distinctive characteristic of venomous snakes. Another distinctive characteristic is a "pit" on each side of the head between the eyes and nostril. Copperheads generally measure about 24-37 inches in length. Young copperheads can be identified by a bright yellow tail tip.

Habitat and Diet

In Connecticut, copperheads favor hilly, relatively low-lying areas. They are predominantly found along wooded basalt ridges, talus slopes, and rocky hillsides, or at the edges of meadows. The meadows are usually bordered by marshes, streams, or swamps. Dens are typically located near edges of these wetlands in dense, damp forested habitat.

Copperheads will lie motionless in leaf litter or under debris while waiting for their prey. They consume mainly mice and small rodents, but will also eat other reptiles, amphibians, small birds, and insects.

Life History

Copperheads are active from April through October, spending



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the rest of the year in dens. These dens are often shared with other snakes. Shortly after emerging from dens, copperheads will seek mates. This snake reaches sexual maturity at about 4 years of age. It is ovoviparous, which means eggs remain internally in the female until they hatch; the young are then born live. Clutches can range anywhere from 3-10 young, but typically average 4-6. After birth, the young are not cared for by the adults and must fend for themselves.

Interesting Facts

Copperheads and rattlesnakes are pit vipers. They have a cavity on each side of the head located between the nostril and the eye that contains a pit organ. The pit organs enable the snakes to seek out and strike accurately at objects warmer than their surroundings; this adaptation helps pit vipers prey on nocturnal mammals. Pit vipers also have large, hollow fangs at the front of their mouth that are connected to the bones of the upper jaw and palate so that they are folded against the roof of the mouth when the mouth is closed and are automatically brought forward when the mouth is opened. These fangs inject venom into prey. Copperhead venom is hemolytic, meaning it causes the breakdown of red blood cells in the bitten animal and this eventually subdues the animal, allowing the snake to easily swallow it.

Even though the copperhead has the potential to inflict harm, it is docile and nonaggressive, choosing to remain still and hidden rather than give away its position. The snake will take a defensive posture only when directly threatened. It may rapidly vibrate its tail like a rattlesnake, even though it has no rattles. If provoked or handled, a copperhead may strike and bite. The bite, while painful and capable of producing severe illness, rarely results in the death of a human.

The eastern milksnake, northern watersnake, and eastern hog-nosed snake are often confused with the copperhead and needlessly killed. All of these snake species should never be killed; they should be observed from a distance and left alone.



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Hunting Is Lowering Deer Numbers in Fairfield County

Overabundant deer herds are correlated to high rates of deer-vehicle accidents and human cases of Lyme disease, as well as reduced biodiversity of native ecosystems. The Fairfield County area supports the highest deer densities in Connecticut and has been ranked number one for the highest number of deer-vehicle accidents per square mile. Since 1998, in an effort to reduce deer numbers, the DEEP Wildlife Division has been liberalizing the deer hunting season to increase hunter effort and opportunities. Some of the changes include: replacement antlerless tags, earn-a-buck program, extended seasons, increased bag limit, and use of crossbows. These changes, along with the opening of land to deer hunting by municipalities, land trusts, water companies, The Nature Conservancy, Audubon Connecticut, and others appear to be having a positive effect.

In 2009, the Wildlife Division initiated an intense aerial deer survey to monitor changes in deer densities over time. The survey involves counting deer along six 10-mile long transects multiple times during the same winter. Estimated deer densities are derived by taking the number of deer observed and multiplying it by two to correct for deer concealed in vegetation. The survey was conducted four times in 2009 and the estimated deer densities for Fairfield County averaged 62.0 deer per square mile. This survey was repeated two times in 2013. Estimated deer densities in 2013 dropped to 43.2 deer per square mile. The drop in deer densities was statistically significant and it appears that a combination of state and local efforts to reduce the deer population in Fairfield County is paying off.

Howard Kilpatrick, DEEP Wildlife Division

Estimated Deer Densities

Transects	2009	2013
1	63.6	59.0
2	67.6	44.0
3	59.6	25.0
4	69.6	47.0
5	63.6	55.0
6	48	29.0
Mean	62.0	43.2

Trap Rock Ridges of Connecticut: Natural History and Land Use

Naturalist and Environmental Consultant Penni Sharp is the lead author of a comprehensive overview of one of our state's most significant land forms – trap rock ridges. Published in April 2013, this 57-page, full color publication was a joint production by the Connecticut DEEP and Connecticut College Arboretum. DEEP initiated it as an expansion and update of Cara Lee's long out-of-print *West Rock to the Barn Door Hills*. DEEP handed over the manuscript and some illustrations to the Arboretum, which then carried through with the editing, designing, and printing. The book includes sections on how the ridges were formed geologically (by former State Geologist Ralph Lewis), plant communities, insects (especially butterflies by Dr. David Wagner), reptiles and amphibians, mammals, and human use.



Trap Rock Ridges of Connecticut includes a glossary of technical terms, a bibliography, and an index. It has numerous high-quality, original illustrations of plants and geological processes, and a unique, two-page cross section of a typical ridge showing the zonation of plant communities. The book also has many color images of animals and landscapes, and a full page plate of butterflies of the ridges.

Single copies of *Trap Rock Ridges of Connecticut* are available from the Connecticut College Arboretum for \$10 plus \$1 for shipping and handling (\$11 total). A discount of 40% is available to bookstores on orders of five or more copies. The Connecticut College Arboretum is located at 270 Mohegan Avenue (P.O. Box 5201), New London, CT 06320; phone 860-439-5020; and website <http://arboretum.conncoll.edu>.

New Deer Lottery Procedures in Place

DEEP recently launched a new "Instant Award" method for issuing permits to hunt deer on certain state properties and controlled hunt areas, replacing the paper application lottery system used historically. Hunters can now apply for limited access permits on-line or at select DEEP locations. The Instant Award process streamlines the distribution of deer permits and allows hunters to know immediately whether they were selected for the limited access area of choice. Available areas and seasons are listed in the 2013 Connecticut Hunting and Trapping Guide and on the DEEP website (www.ct.gov/deep/hunting).

The likelihood of being selected is different for each area and is based on the number of permits available and the number of applicants. There is less of a chance of obtaining a lottery permit for popular hunting areas. Successful applicants will be able to purchase their permit immediately or at a later date. However, all permits must be purchased by August 31, 2013. As in the past, hunters may apply as an individual or as a member of a group. Up to four hunters will be allowed on group applications. Applicants will be able to specify up to six areas and also indicate their preference for the "A" or "B" season.

Starting on September 15, 2013, unissued permits will be made available for sale on a first-come, first-served basis. Individuals who have NOT already purchased an Instant Award limited access permit or other state land deer permit will be able to purchase these permits on-line or at any of the DEEP locations.

Starting in 2014, hunters will be able to apply for lottery permits earlier in the year. More detailed information about the new lottery system and instructions for applying are on the DEEP website at www.ct.gov/deep/DeerLottery.

Be Watchful of Invasive Didymo in West Branch of Farmington River

In March 2011, the highly invasive freshwater alga, *Didymosphenia geminata*, known as didymo, was discovered in the West Branch of the Farmington River, a popular trout stream in northwestern Connecticut.



Also known as “rock snot” because of its appearance, didymo is most frequently found in cold, relatively shallow streams and rivers having a rocky bottom, characteristics that are also typical of good trout habitat. During blooms, didymo can form thick mats of material that feel like wet wool and are typically gray, white, and/or brown, but never green in color. These mats form on the bottoms of rivers and streams and can potentially smother aquatic plants, aquatic insects, and mollusks, as well as impact fish habitat and alter aquatic food chains.

Humans are the primary vector responsible for the recent spread of didymo. Anglers, kayakers, canoeists, boaters, and jet skiers can all unknowingly spread the alga. The microscopic cells can cling to fishing gear, waders (felt soles are especially problematic), boots, and boats, and remain viable for months under even slightly moist conditions. To prevent the spread of didymo, DEEP asks that anglers and other users practice CHECK, CLEAN, DRY procedures.

CHECK: Before leaving a river, stream, or lake, remove and leave behind all obvious clumps of algae and plant material from fishing gear, waders, clothing, footwear, canoes, kayaks, and anything else that has been in the water. Also look for hidden clumps. If you find any material later, clean your gear and dispose of all material in the trash.

CLEAN: Soak/spray and scrub boats and all other “hard” items for at least one minute in very hot (140°F) water, with a 2% bleach solution, 5% dishwashing detergent solution, or 20% salt solution. Absorbent materials, such as clothes and felt soles on waders, should be soaked for at least 40 minutes in hot water (140°F), or 30 minutes in hot water (115°F) with 5% dishwashing detergent.

DRY: If cleaning is not practical, after the item is completely dry to the touch, wait an additional 48 hours before contact or use in any other waterway. Freezing thoroughly will also kill didymo.

Individuals wishing to report possible sightings of didymo and other aquatic nuisance species can contact the DEEP Inland Fisheries Division at 860-424-3474. To participate in a citizen monitoring effort, please go to www.threerivers.edu/didymo.

Don't Move Firewood When Camping

With the arrival of summer, the DEEP and Connecticut Agricultural Experiment Station (CAES) are asking campers, vacationers, and Connecticut citizens not to transport firewood to prevent the spread of the emerald ash borer and other wood pests. The emerald ash borer was first detected in ash trees in New Haven County in July 2012. This discovery prompted the establishment of state regulations that limit the movement of infested, or potentially infested, ash wood into and within Connecticut. Firewood also should not be transported to other states. Those who move firewood may be transporting harmful forest pests to other states unknowingly. Furthermore, other states have prohibited moving untreated firewood across their borders. In addition to these regulations, a quarantine has been placed on New Haven County that regulates the movement of various wood products, including firewood, from inside New Haven County to outside the county. The goal of these regulatory efforts is to provide clear guidance for all to help protect our state's ash trees.

The DEEP and CAES recommend the following steps to prevent wood movement:

- *Never bring firewood with you to your campsite or destination. Purchase all firewood near your camp or seasonal homesite.*
- *Burn all wood purchased at your camp or seasonal home destination and do not carry it back home with you.*
- *Tell others not to move firewood.*
- *Campers are not permitted to bring firewood to any Connecticut state park campgrounds. Local firewood should be available at most campgrounds. Contact the campground office for more details.*

“Don't Move Firewood” is a message for all New Englanders who love and care for our forests. Harmful forest insects often spend a portion of their life cycle as larvae inside the trunk and branches of trees. People moving infested firewood from one location to another may unknowingly move insect pests. Purchasing firewood locally rather than transporting it from home is a best management practice that reduces the risk of spreading destructive pests.



State Parks Centennial

continued from page 3

very cusp of an entire cultural change. Though few could appreciate it at the time, a transportation revolution was underway. 1913 was the peak of achievement for the trolley lines, which boasted 1,118 miles of track. 1913 also was the year Henry Ford's moving assembly line began to bring automobile prices down to

the level of affordability for nearly every family.

The way Americans lived their lives would be changing rapidly and radically. Turner understood what was happening. “I tried to imagine the changes of the next thirty years, and still future thirties, and very gradually I began to perceive that natural scenic beauty and the unrestricted private ownership of land are . . . quite incompatible.” Specifically, there would

be no open space held in common for public enjoyment. The question was, how possibly could any one man, or Commission of men, steer a course for the future of state parks? By the autumn of 1914, Albert Turner, who had been across the entire state and seen it all first hand, was ready to present his vision for the future.

All quotes in this article were written by Albert Turner in the 2nd Biennial Report of the State Park Commission.



Trail Cameras: Keeping an Eye on the Woods!

The DEEP Wildlife Division is currently conducting a fawn survival project in northwest Connecticut (see the September/October 2012 issue of *Connecticut Wildlife*). Over the past winter, Division staff used trail cameras to keep track of what animals were using the deer capture sites. From early January until late March 2013, cameras captured over 20,000 images from 16 sites. Deer were the most frequent visitors, and wild turkeys also accounted for a significant amount of visits. Northern cardinals were the most observed songbirds, along with blue jays, dark-eyed juncos, mourning doves, red-breasted nuthatches, tufted titmice, white-throated sparrows, and crows. Gray and red squirrels were also quite common. Larger mammals, such as raccoons, red and gray foxes, domestic dogs, people, coyotes, and bobcats, were all captured on camera at multiple locations. Black bear and moose tracks were observed at a few locations, but the animals were not captured on camera.

The use of trail cameras greatly increased our success in capturing deer for this project and we expect to acquire additional cameras for future project use.

Bill Embacher, DEEP Wildlife Division



ALL PHOTOS DEEP WILDLIFE DIVISION TRAIL CAMERA

Conservation Calendar

May-August..... Respect fenced and posted shorebird and waterbird nesting areas when visiting the Connecticut coastline and also when viewing fireworks displays near these areas. Keep dogs and cats off beaches to avoid disturbing nesting birds. Herons and egrets are nesting on offshore islands in Long Island Sound. Refrain from visiting these areas during the nesting season.

June 23-29..... **National Mosquito Awareness Week** — go to www.mosquito.org for more information. Visit Connecticut's mosquito webpage at www.ct.gov/mosquito to learn more about mosquitoes and West Nile virus.

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.

July 17 **Butterfly Walk**, starting at 10:00 AM. Visit the flowers and fields at Sessions Woods to identify the local butterfly fauna with Wildlife Division Natural Resources Educator Laura Rogers-Castro. Participants will learn the basics to butterfly identification, including tips on distinguishing the various butterfly families. This program will begin in the classroom area located in the exhibit room of the Sessions Woods Conservation Education Center.

Chimney Swift Conservation Night On July 1!

Willibrew is for the birds! It's Chimney Swift Conservation Night at the Willimantic Brewery (Main St. Café) on Monday, July 1, 2013. Join swift researchers from CT DEEP and UConn for a wonderful meal, specialty brews, and the spectacle of hundreds of chimney swifts "tornadoing" into one of the largest summer chimney swift roosts in Connecticut! Come see the Windham Town Hall roost and the Nathan Hale roost spectacle and learn why Willimantic is so important to chimney swifts. In addition to learning all about swifts and enjoying a great dining experience, we'll be tapping a specially brewed beer, Flying Cigar Ale. A portion of the proceeds from each one sold will be donated to the chimney swift conservation effort. So, come enjoy a lovely night at the Willimantic Brewery and help raise money for a great cause!

DEEP and UConn researchers will be at the brewery starting at 6:00 PM. "Showtime" for the swifts is typically 20 minutes before sunset to about 30 minutes after sundown (approximately 8:30 PM). Make sure you leave enough time to enjoy a truly fabulous menu and specialty brews before the spectacle. Dinner reservations are recommended for this special event -- call 860-423-6777. The Willimantic Brewery is located at 967 Main Street in Willimantic.

Sept. 28: Connecticut Hunting & Fishing Appreciation Day

September 28, 2013, is Connecticut Hunting & Fishing Appreciation Day at Sessions Woods Wildlife Management Area in Burlington. This FREE event, which is sponsored by the Friends of Sessions Woods and DEEP, celebrates the contributions of hunters and anglers to the conservation of Connecticut's natural resources. Fun activities for all ages are planned, along with educational programs and workshops about hunting and fishing. Anyone interested in fish and wildlife, not just hunting and fishing, is encouraged to attend this fun and informative event. Best of all, it is free to attend!

So, mark your calendar. Come practice your shooting and casting skills. Talk to DEEP biologists about wildlife and fisheries. Be sure to bring the kids and grandkids. Older children will be able to test their skills on the rifle and archery ranges. Younger children will be able to play games, learn about wildlife, and make a variety of crafts. Food will be available for sale. But, if you want, bring your own lunch to enjoy. Activities will begin at 10:00 AM and continue throughout the day until 4:00 PM.

A list of specific activities and presentations, as well as a schedule for the day, will be posted on the DEEP Web site at www.ct.gov/deep/HuntFishDay as the date approaches. You may also contact the Sessions Woods office at 860-675-8130 (Mon.-Fri., 8:30 AM-4:30 PM) for more information. The Sessions Woods Wildlife Management Area is located at 341 Milford Street (Route 69), in Burlington.



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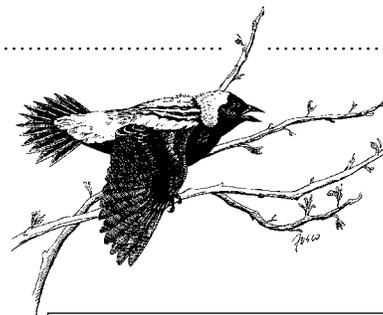
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On-the-ground work being done as part of the Regional New England Cottontail Initiative is benefitting, not only the New England cottontail, but also a number of declining songbirds that also depend on young forest habitat, including the prairie warbler.