November/December 2015

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

Soon after the release of the September/October 2015 issue of Connecticut Wildlife, *I received a call from one of our long-time readers, Mr. Norman Coulter of Suffield, Connecticut. Mr. Coulter called to chat about the cover story on New England cottontails. It was a wonderful conversation, one I hope we will build on.*

Although we grew up a generation and half a country apart (he, a born and bred Yankee, me a son of the Midwest), we had more in common than not. Turns out, we both grew up on dairy farms, driving tractors, baling hay, running combines, and raising registered Holsteins. To keep those memories fresh, I still proudly display various plaques won with prized heifers shown at county and state "black and white shows," named for the distinctive coloration depicted on the sides of every Ben and Jerry's ice cream truck. Through these experiences, Mr. Coulter and I developed, however independently, a love for both the land and the wildlife with whom we shared space.

We also shared a deep affection for hunting dogs. Mr. Coulter described a rich history of working with beagles and building and nurturing friendships through a local beagle field trail club. For me, my first family dog was a beagle named "Flip." Where that name came from, I do not recall. What I do remember is being 10 years old and following Flip as he made excited clover-leafed patterns in front of dad, my brother, and me through the overgrown pasture on the next farm over. Mr. Coulter lamented that his days running beagles are past, while the memories remain fresh. My beagle days are past too and are now consumed with a young German shorthaired pointer puppy.

Mr. Coulter and I also shared stories of building box traps baited with apples. The traps and apples were great for live-trapping rabbits; Mr. Coulter's for propagation, while our's were simply to rid the beasts from the family garden. The greatest difference, besides the outcome for the rabbits, was Mr. Coulter's live-traps were sided with wood while my dad's and mine were made of chicken wire salvaged from a coop destroyed by the tornado that blew through the valley the previous summer.

There is really not a lot of point to this story beyond an acknowledgement that although our experiences may be personal, they are of a kind that bring us not only closer to the wildlife we love but closer to one another in ways we would otherwise never imagine. So, thank you Mr. Coulter for calling. You are the friend I did not know I had.

Rick Jacobson, DEEP Wildlife Division Director

Cover:

The northern cardinal is a colorful and favorite backyard bird at feeding stations during winter.

Photo courtesy of Paul J. Fusco

Connecticut Wildlife

Published bimonthly by

Connecticut Department of Energy and Environmental Protection
Bureau of Natural Resources
Wildlife Division
www.ct.gov/deep

Commissioner
Robert Klee

Deputy Commissioner
Susan Whalen

Chief, Bureau of Natural Resources
William Hyatt

Director, Wildlife Division
Rick Jacobson

Magazine Staff

Managing Editor Kathy Herz
Production Editor Paul Fusco
Contributing Editors: Mike Beauchene (Inland Fisheries)
Penny Howell (Marine Fisheries)
Christopher Martin (Forestry)
Circulation Trish Cernik

Wildlife Division

79 Elm Street, Hartford, CT 06106-5127 (860-424-3011)
Office of the Director, Recreation Management, Technical Assistance, Natural History Survey

Sessions Woods Wildlife Management Area
P.O. Box 1550, Burlington, CT 06013 (860-424-3011)
Wildlife Diversity, Birds, Furbearers, Outreach and Education, Habitat Management, Conservation Education/Firearms Safety, *Connecticut Wildlife* magazine

Franklin Wildlife Management Area
391 Route 32, N. Franklin, CT 06254 (860-424-3011)
Migratory Birds, Deer/Moose, Wild Turkey, Small Game, Wetlands Habitat and Mosquito Management, Conservation Education/Firearms Safety

Eastern District Area Headquarters
209 Hebron Road, Marlborough, CT 06447 (860-295-9523)
State Land and Private Land Habitat Management

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

www.ct.gov/deep/wildlife www.facebook.com/CTFishandWildlife
E-mail: deep.ctwildlife@ct.gov Phone: 860-424-3011

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

The Connecticut Department of Energy and Environmental Protection is an Affirmative Action/Equal Opportunity Employer that is committed to complying with the requirements of the Americans with Disabilities Act. Please contact us at 860-418-5910 or deep.accommodations@ct.gov if you: have a disability and need a communication aid or service; have limited proficiency in English and may need information in another language; or if you wish to file an ADA or Title VI discrimination complaint.

Mapping Changes in Coastal Fisheries Abundance

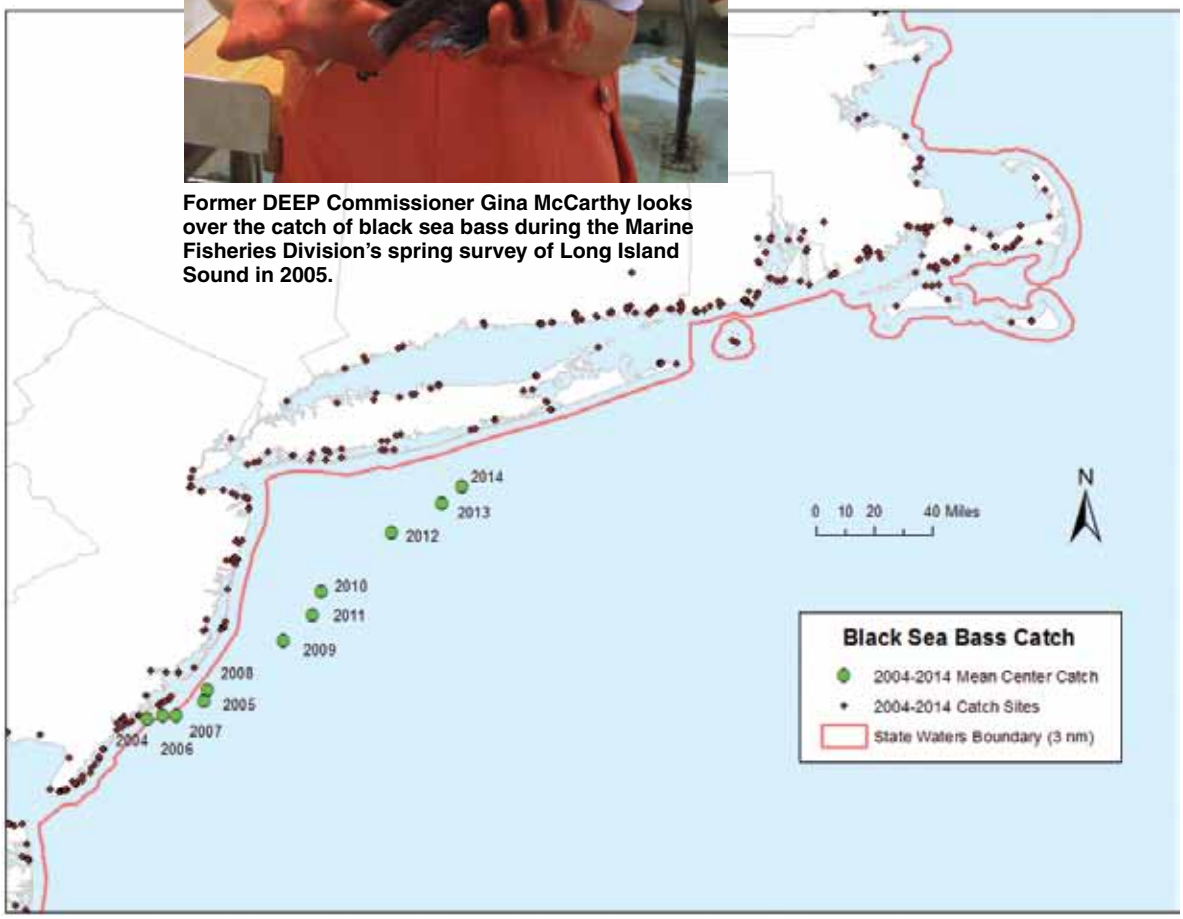
Written by Penny Howell, DEEP Marine Fisheries Division; photo provided by DEEP Marine Fisheries Division

Over the last few years, DEEP Marine Fisheries Division staff have found that showing a picture rather than a page of numbers is often a better way to explain data describing marine resources that many people never get to see in the depths of Long Island Sound or the Atlantic Ocean. To meet this need, Deb Pacileo and her part-time assistants have used the Geographic Information System (GIS) ArcMap software to analyze and map marine environmental and fisheries related information. These maps, some of which are interactive and display multiple layers of data, have been generated to meet the needs of fisheries stock assessments, habitat quantification, and environmental sensitivity analyses.

One recent job answered questions posed by biologists from Virginia to Massachusetts who needed to assess the status of black sea bass, a long-time favorite of mid-Atlantic commercial and recreational interests, and a growing fishery in the New England states. Biologists from the southern states had recreational catch data that showed black sea bass declining in abundance, while biologists from more northern states were seeing great increases in their angler catch data. To make sense of this discrepancy, standardized recreational catch rates from all sites were averaged by their latitude and longitude for each year from 2004 to 2014 using zonal statistics in GIS. DEEP biologists determined that the annual center of the coastwide catch has moved northward each year from New Jersey toward the southern coast of Long Island Sound. The center of the catch distribution moved northward about 115 miles over the time series. This analysis quantified the shift, or possible expansion, in the range of black sea bass along the coast which the biologists had only suspected occurred. The coastwide stock can now be assessed more accurately by comparing abundance with harvest through time, as well as geographically.

Long Island Sound is one of the lucky areas where the abundance of black sea bass has increased dramatically in the last decade. Abundance of this species in 2014 was 10 times greater than the long-term mean in the Marine Fisheries Division's spring research trawl survey. Newly hatched juveniles also are now commonly captured in the Division's beach seine survey, indicating that the list of species using Long Island Sound as prime nursery and feeding grounds is increasing.

Former DEEP Commissioner Gina McCarthy looks over the catch of black sea bass during the Marine Fisheries Division's spring survey of Long Island Sound in 2005.



This map illustrates the movement of the center of the annual recreational catch of black sea bass along the northeastern coast of the United States, denoted by bright green circles. The northward change in latitude is most significant. Averaging latitude and longitude places the symbols offshore even though all the data reflect nearshore catches (black dots).

Listening to Bats – a Glimpse into the Night

Written by Kate Moran, DEEP Wildlife Division

Ever since the arrival of white-nose syndrome (WNS), bats have been making headlines. WNS, an infectious disease of cave-roosting bats, was first discovered in 2006 in upstate New York. It made its debut in Connecticut in 2008 and, by 2012, the U.S. Fish and Wildlife Service estimated that nearly six million bats had perished in the Northeast due to the deadly fungus called *Pseudogymonascus destructans*.

Not all bat species are affected by WNS, however. For example, the three migratory, tree-roosting bat species in Connecticut (eastern red bat, hoary bat, and silver-haired bat) remain unaffected by WNS. However, all three species are of conservation concern due to regional declines (not due to WNS).

P. J. FUSCO

DEEP Wildlife Division biologist Kate Moran shows off the truck and special equipment she uses to conduct acoustic surveys for bats. Since 2011, the Division has been monitoring bats along nine 20-mile transects located throughout Connecticut.

For cave-roosting bats, however, WNS is deadly. The fungal infection, which is evident as a white growth on the snouts, ears, and wing membranes of hibernating bats, causes them to awaken too frequently, which depletes their fat reserves. With depleted fat reserves, bats do not have enough energy to survive the winter and they starve to death long before their otherwise normal springtime emergence when insect foods are abundant.

The severity of this threat was underscored this year by the April 2015 listing of the northern long-eared bat as threatened under the U.S. Endangered Species Act. At the state level, all but one of our native bats (big brown bat) are now listed under Connecticut's Endangered Species Act, while all of our bat species are considered of greatest conservation need according to the newly-revised Connecticut Wildlife Action Plan. In response to the crisis precipitated by WNS, the DEEP Wildlife Division has stepped up its monitoring efforts and adopted a hands-off approach of listening to bats though the use of high-frequency bat detectors. This rather intriguing approach exploits bats' remarkable adaptation called echolocation.

Echolocation is a form of sonar that allows bats to navigate in darkness while foraging for night-flying insects. By producing rapid pulses of sound and listening to the returning echoes, bats create a mental picture of their surroundings that enables them to capture insects on-the-fly. Biologists are able to record these high-frequency vocalizations (above the human auditory range) by using special bat detecting equipment. The recordings are then analyzed with sophisticated software that sorts out the noise, classifies the bat calls, and generates an estimated likelihood of presence for each species. Biologists also are able to visualize the sounds in a graphical representation and evaluate the various call characteristics. Besides being incredibly interesting, the advantage of acoustic techniques is that it is a non-invasive way of gathering information about all of Connecticut's bats over a broad geographic area.

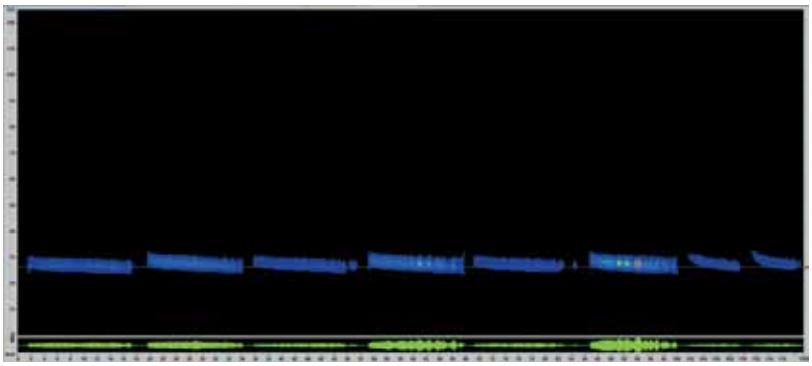
Since 2011, the Wildlife Division has been monitoring nine 20-mile

Conservation Status of Connecticut's Bat Species

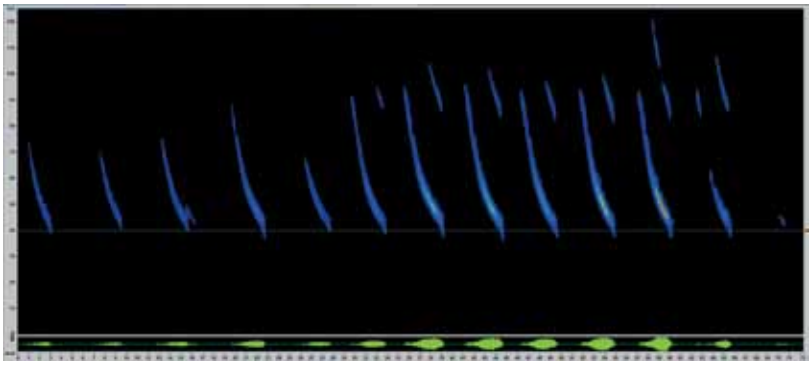
Common Name	Scientific Name	CT Endangered Species Act Status	U.S. Endangered Species Act Status
Big brown bat	*Eptesicus fuscus*	Not listed	-
Silver-haired bat	*Lasonycteris noctivagans*	Special Concern	-
Red bat	*Lasiurus borealis*	Special Concern	-
Hoary bat	*Lasiurus cinereus*	Special Concern	-
Eastern small-footed bat	*Myotis leibii*	Endangered	-
Little brown bat	*Myotis lucifugus*	Endangered	-
Northern long-eared bat	*Myotis septentrionalis*	Endangered	Threatened
Indiana bat	*Myotis sodalis*	Endangered	Endangered
Tri-colored bat	*Perimyotis subflavus*	Endangered	-

P. J. FUSCO

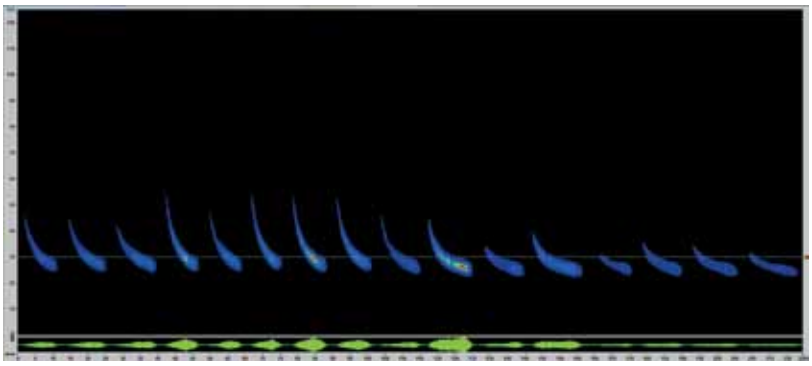
Silver-haired bat, a tree-roosting species.



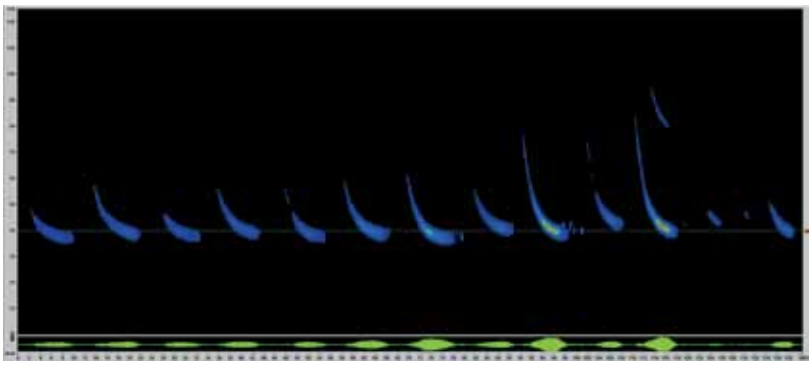
Silver-haired bat – Long flat pulses at approximately 26 kilohertz (kHz) are distinctive for this species.



Little brown bat – Notice the downward "toe" at the bottom of each pulse. This is generally characteristic of the genus *Myotis*.



Big brown bat – Characteristic frequency (i.e., the frequency of the call at its lowest slope) generally ranges between 27 and 30 kHz.



Red bat – This species is distinguished by a bouncing pattern of pulses centered around 40 kHz.

transects located throughout Connecticut. Researchers conduct the surveys after sunset while slowly driving a predetermined route in a vehicle equipped with a bat detector mounted to the rooftop. This year, the Division procured additional equipment designed for days-long stationary deployments that will help in conducting site-specific bat inventories.

Acoustic monitoring methods have greatly expanded our knowledge of bats in Connecticut. Never before have we had the volumes of data on such a broad geographic scale. Using acoustic technology to monitor bats has provided important insights into which species may be present, their relative activity level, and habitat use, as well as distribution and temporal patterns. All of this information is critical in making the best conservation and management decisions, especially in light of the threats posed by WNS, not to mention the already-present challenges bats face, such as persecution, habitat loss, and disturbance to roosting sites.

So far, there is no strong evidence of a comeback. But, if there is a bright side to the WNS story, it is that people have increasingly come to appreciate the importance of bats in maintaining healthy ecosystems. Bats also provide the valuable service of controlling insect populations, including many forest and agricultural pests. The more people learn about bats, the more bats will be appreciated for the amazing mammals they are. There are many ways you can help bats: 1) protect stream and wetland habitats in your community; 2) report bat observations, especially summer colonies, to deepbatprogram@ct.gov; and 3) spread the word that bats are good for the environment. More information about how you can help bats can be found at www.whitenosesyndrome.org.

This research has been funded by State Wildlife Grants and the Income Tax Check-off Fund, and is fueled by the many volunteers who have donated their valuable time toward bat conservation.

State Wildlife Grants

Burlington State Fish Hatchery: 95 Generations of Trout and Counting

Written by Mike Beauchene, DEEP Inland Fisheries Division; photos provided by DEEP Inland Fisheries Division

This article is the second of three that focuses on Connecticut's state fish hatcheries. The Quinebaug Valley State Trout Hatchery, our newest (est. 1972), will be featured in the near future.

Efforts within Connecticut to hatch fish eggs and stock fry (a juvenile fish that has absorbed its egg sac) date back to the mid-1800s. This early fish culture and stocking supported the restoration of Atlantic salmon (extirpated) and augmented the rapidly decreasing stocks of American shad within the Connecticut River. By the late 1800s, fry stocking of bass, trout, landlocked salmon, and a variety of panfish was established.

Experimental Beginnings

One of the most popular fry stocking programs of the time involved brook trout. Beginning in 1880, the Connecticut Fish Commission annually purchased hundreds of thousands of brook trout fry and supplied 4,000 fry to all applicants who agreed to liberate them into a river or stream. Over subsequent years, public demand for these fry outpaced supply. To increase production, the Fish Commissioners established remote "field stations" at different locations around the state and lobbied the State Legislature to acquire a fish hatchery (the first was established in Windsor Locks in 1899).

The first fish reared at the experimental Burlington field station were 400,000 brook trout fry in 1921. Within six months, the Burlington fry were double the weight of trout from other field stations, and the few retained to grow to adult size (6 inches) did so within a year of being hatched. The Commissioners were impressed with these initial results, stating, "*This clearly demonstrated that this water from the underground stratum is of unusually good quality for hatching and growing trout.*" So, in 1923, the state facility in Burlington was hatched. With such promising results, the Commission purchased 222 acres of land, including most of the upstream watershed. The property was described in the Commission report as "*…it embraces pasture and woodland with some tillage land and a number of dilapidated buildings. Several wells were driven to depths of 10-16 feet and combined produced over 500 gallons per minute.*" Soon after, the Commission contracted the construction of a closed water supply system. The system was

built using banded wooden pipes and was designed to keep the spring water free of contamination. Water was piped to the 150' X 50' hatchery building and associated rearing ponds. At the nearby satellite property, the "Punch Brook" ponds were used to rear warmwater species, including calico bass and bullheads.

By 1924, the Burlington State Fish Hatchery was fully operational and had demonstrated that the state could produce fingerlings and adult fish at substantial savings over purchases from private vendors. Furthermore, with advances in motorized transportation, the centralized location was "practical and economical" with proceeds from the sale of fishing licenses covering operation and maintenance costs. Burlington's success brought an end to the remote field station program.

Bigger Is Better

"*To raise larger trout rather than more fish is the aim of the Commission*"- John W. Titcomb, Superintendent, 1926

The angling community quickly became spoiled as Burlington's brookies appeared to be "native," and were larger than previously stocked trout (human consumption grade liver was used as feed). The popular idea at the time was that "good fishing was only accomplished by liberating fishes to be caught." Each year, trout anglers placed demands on the Commission to stock more of the larger trout. To support this, the state needed to propagate trout at hatcheries and "plant" them in streams "for the sole purposes of having them caught before they are lost to other causes." Trout planting was accomplished by the Wardens who were forbidden to provide any information on where or how many fish were stocked so that every license holder had equal opportunity to catch their limit.

Connecticut's trout liberation program had transitioned from stocking fry and fingerlings into all suitable waters, to rearing, fewer but larger, adult fish to support "put-and-take" fishing. The pressure to stock bigger fish and to make sure all state-regulated streams would receive a proper allocation of trout resulted in the addition of several ponds at the Burlington Hatchery and the recently acquired Kensington property. At its capacity in the 1920s, the Burlington Fish Hatchery was producing over a half million brook trout fingerlings (4-6 inches) and 25,000 adult fish (greater than 6 inches) annually.

Following World War II, participation in fishing and hunting increased greatly. As Connecticut's economy shifted from agrarian to manufacturing, post-war advances in industry and technology resulted in an increase in personal leisure time. Fewer people were working from sun up to sun down, and most had a job with a shift, the beginning of a 9-5 work schedule. Throughout this time, the Burlington Hatchery continued to produce many of trout resources (some were still purchased from private hatcheries) until the Quinebaug Valley State Trout Hatchery began production in 1972.

Burlington State Fish Hatchery - Then and Now: a view of the hatchery building (north side) and first rearing pond. Photo from 1949 (previous page) and 2015 (above).

Burlington Today

In addition to rearing trout used for "put and take" fisheries, Burlington raises several specialty fish to diversify Connecticut's fisheries.

Brown Trout - Survivor Strain: The concept of the Survivor program is to use fish that survive in the river (both stocked and wild) to produce the next generation of fish to be stocked. The rationale is that the environment selects the fish with the best adapted genes to survive, and this breeding program conserves and reinforces those genes. Since 1993, trout from the Farmington River have been used for Survivor strain broodstock. Eggs from these trout are raised to produce fish for stocking within the Farmington River Trout Management Area.

Sea Run Brown Trout - Iijoki Strain: During the 1950s and 1960s, the state managed a sea-run brown trout program in selected tributaries to Long Island Sound. During this timeframe, the Burlington facility was used to incubate brown trout eggs that were imported from England and the Netherlands. Recently, staff imported eggs from sea-run fish from Finland (Iijoki strain). The first set of eggs arrived in 2014 and are now in the parr stage (a 1 to 2-year-old fish) and residing in Burlington's outside raceways. These 4,000 fish will be retained until spring 2016 when they will be stocked as smolt (2 to 4-year-old fish ready to head out to sea). A total of 29,000 fry have hatched from the second set of imported eggs. The DEEP Inland Fisheries Division is currently stocking these fry and will retain 12,000 to rear to the smolt stage.

Kokanee Salmon: Kokanee are a landlocked form of the larger Pacific sockeye salmon. Each autumn, adults are trap-netted and transported to the Burlington Hatchery for spawning. The fry are reared until late May and then stocked in East Twin Lake (Salisbury), Lake Wononskopomuc (Salisbury), and West Hill Pond (Barkhamsted/New Hartford). Within three summers, salmon grow to be 12-16 inches in length. The Burlington Hatchery produces all of the 150,000 kokanee salmon fry distributed in the state. This cost-effective management effort has created a unique fishery providing an estimated 20,000 to 30,000 hours of recreational fishing each year.

Youth Pheasant Hunting Events Popular this Year

Written by Tom Donlon, DEEP Wildlife Division; photos by Paul Fusco, DEEP Wildlife Division

Each year, sportsmen's organizations from around the state host special events designed to provide opportunities for youth to experience the outdoors and share their passion for hunting. More than a dozen clubs and organizations provide facilities, funding, and volunteers to make this program possible.

"There are a lot of moving parts to make these hunts happen," said Warren Speh, a volunteer Senior Instructor for Connecticut's Conservation Education/Firearms Safety (CE/FS) Program and a driving force behind these events for many years. "The coordination effort is unbelievable…but so are the results. When young hunters participate in these events, they enjoy an experience that can't be beat."

Thanks to the efforts of many volunteers, mentors, and well-trained hunting dogs with their handlers, junior hunters who participated in the junior pheasant hunting events this past fall were able to harvest their first pheasant.

Participants are junior hunters between the ages of 12 and 15 that have successfully completed a CE/FS Firearms Safety Course. All are required to register either through the Online Sportsmen's Licensing System or with the sportsmen's organization sponsoring the event. After arriving at the junior hunting event of their choice, the young hunters participate in a pre-hunt preparation that focuses on safety and shooting skills. Topics that were covered in the hunter safety course, such as zones of fire, muzzle control, and "shoot, don't shoot" scenarios, are reviewed to ensure every participant has a safe experience.

Next, it is off to the trap field where junior hunters have the opportunity to become familiar with their shotgun and gain confidence in hitting a moving target. Dante Grasse, a long-time trap shooter and volunteer CE/FS Instructor said, "I enjoy working with the kids on the trap field. They listen intently and are so eager to learn. When they put all of the parts together and start hitting clay targets, you can see an ear-to-ear smile come across their face. That's what it is all about."

When the junior hunters finally take to the field during the event, they have an opportunity to meet their hunting partners – a trained bird dog with a handler and a safety officer. After the introductions, the handlers describe how the dog will hunt and what the hunters will do when a pheasant is found by the dog. The safety officers, who accompany each hunter, review the safety rules and explain the process of the hunt. The hunting party moves into the field and the dog goes to work. Within a few minutes, the dog is on a bird, the hunters move into position with safety officers by their side, and all wait with anticipation for the bird to flush. When the opportunity presents itself, junior hunters rely on their shooting skills to harvest the pheasant. This year, as in the past, nearly every junior hunter harvested a bird. Most junior hunters will agree that success is having the opportunity, not just being able to harvest a bird.

After the hunt, participants were taught how to properly clean the harvested game.

"It's one thing to see it. It's another thing to do it yourself," said one participant. "Honestly, it's the one thing I wasn't sure about, but when you put it in perspective, it is what we do as hunters. It's the right thing to do."

When asked how he was going to prepare his pheasant, the young hunter responded "I don't know yet, but I know it's going to be good."

This year, nearly 100 junior hunters

Keep up to date on Junior Hunter events and information at www.ct.gov/deep/JuniorHunter and www.Facebook.com/CTFishandWildlife.

took part in one of the special events held throughout the state. Recent graduates of a CE/FS Firearms Safety Course received invitations; however, any junior hunter from 12-15 years of age was able to participate.

From the event coordinators and dog handlers to the cooks and safety officers, there were almost as many volunteers as there were participants. All of the volunteers have a common desire to share their passion for hunting and pass on the hunting tradition to our youth. The events would not be possible without the dedicated and generous support provided by the volunteers.

Look for information about Junior Hunter Training Days on our new Junior Hunter webpage at www.ct.gov/deep/JuniorHunter. Be sure to check this page often to find out about past and future events.

Each dog handler explained to the junior hunters and safety officers about what to expect when hunting with a trained dog, as well as safety considerations for the dog.

Each hunt began with a safety review by certified hunter safety instructors on such topics as zones of fire, muzzle control, and "shoot, don't shoot" scenarios.

When the opportunity presented itself, junior hunters relied on their shooting skills to harvest a pheasant. The safety officer stayed nearby at all times.

2016 Junior Hunter Training Days

Regulations designate certain days for youth hunting in Connecticut. On these days, licensed junior hunters (12 to 15 years of age) may hunt when accompanied by a licensed adult hunter 18 years of age or older. The adult mentor may not carry a firearm and must remain within physical contact at all times in a position to provide direct supervision and instruction. These training days provide junior hunters with an opportunity to learn safe and effective hunting practices from experienced hunters.

Spring Turkey - Saturday, April 16 through Saturday, April 23 (excluding Sunday)

On private land, both the licensed junior hunter and adult mentor must have a valid spring season private land turkey permit and written consent from the landowner. The adult mentor may assist in calling turkeys. Hunting hours for Junior Hunter Training Days only: 1/2 hour before sunrise to 5:00 PM. Harvested turkeys must be tagged and reported.

Pheasant - Saturday, October 8

Private Lands Only: Youth participants must possess a current junior hunting license and pheasant stamp. There may be exceptions if hunting on a private shooting preserve or a hunting club property with a pheasant stamp exemption. Youth must be accompanied by an adult at least 18 years of age. Adults must possess a valid hunting license; however, they are not allowed to carry a firearm.

***Waterfowl* - Dates will be published in the 2016-2017 Migratory Bird Hunting Guide, which will be available in late August 2016. Participants must possess a valid small game junior hunting license and a HIP permit and be accompanied by an adult at least 18 years of age. Adults must possess a valid hunting license; however, they are not allowed to carry a firearm. Ducks, geese, mergansers and coots may be hunted. Bag limits and shooting hours are the same as for the regular duck and goose hunting seasons.**

Deer - Saturday, November 5 through Saturday, November 12 (excluding Sunday)

On private land, both the licensed junior hunter and adult mentor must have a valid private land shotgun/rifle deer permit and written consent from the landowner. On state land, the licensed junior hunter must have a state land shotgun deer permit (Lottery or No-Lottery), while the adult mentor must have a valid deer permit of any type. Deer hunting on Junior Hunter Training Days is permitted on any Lottery or No-Lottery Deer area, regardless of area designated on the permit (some exceptions apply - consult the current Connecticut Hunting and Trapping Guide or www.ct.gov/deep/JuniorHunter). Harvested deer must be tagged and reported.

Northwest Connecticut Fawn Mortality Project Wrap-up

Written by Bill Embacher, Wildlife Management Institute

Concerns raised by hunters over a declining number of deer during the past decade led the DEEP Wildlife Division to initiate a project studying sources of mortality and recruitment of deer in northwest Connecticut, specifically deer management zone 1. The project began in winter 2012 and concludes in winter 2016, although collared deer will continue to be monitored on weekly for the next year. Aspects of the project include using spotlight surveys to assess fawn/doe ratios, surveys to assess hunter opinions, assessing herd age structure, live-capturing adult and newborn deer, and investigating landscape use, fawn and doe interactions, seasonal movement patterns, home range sizes, and causes of mortality. With the vast amount of data that has been collected over the past four years, researchers will be dedicating the next year to complete all analyses. They have just begun to analyze these data and this article provides an overview of findings from what has already been processed.

Field Research

Each winter, researchers established capture sites immediately following the hunting season. This included scouting potential areas, gaining permission to access private land where necessary, and setting up bait sites for capture opportunities along roadsides or from tree stands or ground blinds. Trail cameras were often used to monitor bait site activity. When it was determined that deer were using a site regularly, researchers used a dart gun and tranquilizing darts to capture deer at each site, typically from late afternoon through early evening. Adult does were immobilized, fitted with ear tags for visual identification, collared with Very High Frequency (VHF) transmitters, and given Vaginal Implant Transmitters (VIT). The VIT is a temperature sensitive device, which falls out when a doe gives birth, enabling researchers to locate birthing sites and potential fawns. Although most deer give birth around late May, does were located three times weekly using radio-telemetry from early to mid-May. From mid-May onward, collared does were monitored daily, with researchers spending 18 to 20 hours daily in efforts to locate newborn fawns as soon after birth as possible. When VITs were expelled (denoted by a change in the VHF signal), efforts were made to locate fawns at the birth site. If none were found, efforts continued in the area in case does had moved fawns or a longer birthing process had occurred leading away from the initial birthing site. If fawns were found, they were fitted with an expandable radio collar, and biological measurements were taken, such as sex, weight, and lengths of a hind leg, tail, and ear. Once data were collected, the fawns were quickly placed back where they were originally found. Researchers wore surgical gloves to minimize direct transfer of human scent.

Does and fawns were remotely located via radio telemetry for 90 days after the final fawn was captured. Each collar has a mortality sensor, which if motionless after four hours, sets off a special signal similar in function to the VIT. Researchers can then locate the deceased animal and determine its cause of death. After 90 days, monitoring was reduced to three days weekly until the following spring, at which point the deer were monitored once per week.

Over four winters (2012-2015), researchers captured a total of 103 adult does in Canaan, Cornwall, North Canaan, Salisbury, and Sharon. The average age of the captured does was four years old. Of the 103 does captured, 79 are still alive. Eighty-four percent of collared does survived one year. The majority of doe mortalities was from unknown sources. Because the main objective of the study was to categorize sources of fawn mortality, does were checked less frequently (once per week if they had no fawn or after they had been collared for over one year). Often the doe had been dead and scavenged by the time researchers were able to investigate it. Hunting made up the majority of known mortalities, accounting for 32%. The remaining sources were predation (20%) and motor vehicle accidents (8%).

Of the 91 fawns captured, 79 were captured from the collared does and 12 were captured opportunistically. Field research led to an overall ratio of 1.4 fawns per doe at the time of birth. The greatest percentage of fawns was born during the week of May 28 (48%). Fifty-six percent of fawns were males, and the average weight of males did not differ from females (7.5 lbs.). Fawn survival after 90 days was 34%, while survival at one year was 31% (not including data from 2015). Fifty-seven percent of mortality in fawns was due to predation. Bobcats and bears were responsible for most of the mortalities, while coyotes (which are often blamed) only accounted for five of 31 predator kills. Twenty-five percent of mortalities were due to human interaction, which includes agricultural practices, hunting, and poaching. Ten percent of mortalities were from natural causes, and 8% were unknown. A similar study is expected to be conducted in an area without bears to further assess that in the absence of bears, bobcats and coyotes make up the difference in predation, causing similar low survival rates as areas with bears.

Home range data have not yet been calculated. However, as reported in previous updates in *Connecticut Wildlife*, four does collared in 2013 have ventured as far as 13 miles from their original spring capture site, returning back to the same site each fall. Two of these deer are still alive and continue to follow this pattern. None of the fawns dispersed any large distances while their collars were functioning (fawn collars have a one-year battery). The majority of the collared does stayed within a square mile area throughout the year, and within an even smaller area during various times of the year.

Fawn/Doe Ratio Studies

Three different methods were used for observing fawn/doe ratios in the study area. Twice per year (September and November), spotlight surveys were conducted to count fawns and does. High-

Fawn/Doe Ratios Using Various Methods

	Hunter Observations	Fawn Study*	Sept. Spotlight Surveys
2012	0.50	0.40	0.33
2013	0.43	0.40	NA
2014	0.60	0.60	NA
2015	NA	0.22	0.25

** Fawn Study refers to ratio observed with collared deer using 90 day survival.*

powered spotlights were used from the back of pickup trucks while researchers slowly searched for deer on predetermined routes through areas likely to have deer. The observed fawn/doe ratio was then compared with hunter reported ratios collected via the online harvest reporting system and with data from our research. Fawn/doe ratios have been similar between hunter observations and what was observed from collared deer after 90 days, indicating that this is a reliable means of obtaining accurate estimates. Variability in conditions makes spotlight surveys less reliable than hunter observations.

P. J. FUSCO

A total of 91 fawns were monitored by radio telemetry as part of a mulit-year project to study sources of mortality and recruitment of deer in northwest Connecticut, specifically deer management zone 1.

Tooth Collection and Herd Age Structure

In order to evaluate the age structure of the deer herd in the study area, teeth were collected from harvested and vehicle killed deer. Age was determined using the tooth wear and replacement method. In addition, incisors from each deer were removed, cleaned, and sent to Matsons Lab in Montana for cementum age analysis. This analysis is similar to counting the rings on a tree to determine age, which can be more accurate than the molar wear aging technique typically used. Teeth were collected and analyzed from all deer management zones in 2014 for comparison. In total, 489 teeth were collected and sent to Matsons Lab for cementum age analysis. Results from the Lab are still pending as of this writing. However, 189 deer were aged based on molar wear. Of those, the average age statewide was 3.5 years. Twenty-seven of those were from the study area, whose average age was also 3.5. The oldest deer aged in the study area was 8.5 years old from deer management zone 1, and 10.5 years statewide. Deer are aged by the half year due to the timing of the hunting season when most teeth are collected.

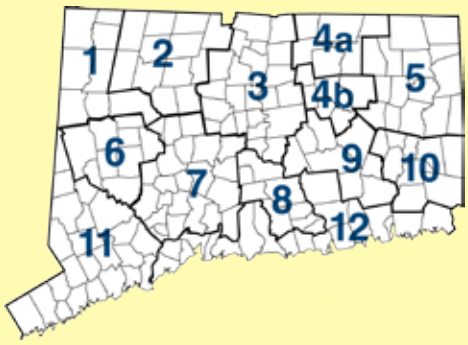
Hunter Survey

In spring 2015, deer hunters throughout the state were surveyed to assess their views concerning deer hunting in Connecticut. Hunters who responded that they had hunted in the study area of northwest Connecticut were asked an extra set of questions pertaining to their hunting experiences. A total of 516 respondents answered questions acknowledging that they hunted in deer management zone 1 or 2. Most respondents (60%) had been hunting there for five years or less, and 40% had been hunting the area for six or more years. Fifty-six percent of hunters harvest one or two deer, an additional four percent harvest three or four, while 40% harvest no deer annually. Many hunters (69%) who have hunted in zones 1 and 2 for multiple years felt that the population has decreased over time. Most hunters (85%) believed that coyotes are the cause of the decline, while fewer believed bears (48%) or bobcats (35%) were responsible. Many felt that poaching (31%) and habitat loss (26%) also has had an effect on the population. About half (51%) of hunters would pass on does to ensure future hunting opportunity, 45% would not pass, and four percent were unsure. Most (55%) felt that bag limits should remain the same, 25% would like to see bag limits decrease, and eight percent would like to see them increase. Approximately two thirds of hunters were satisfied with overall deer hunting experiences (64%), areas available to hunt (66%), and the number of hunters they encounter while hunting (61%). A third was satisfied with the number of deer in that area (34%).

Conclusions and Future Plans

In northwest Connecticut (deer management zones 1 and 2), bear densities are believed to be the highest in the state. Based on this study, high bear densities appear to be impacting deer productivity in this area, and may have an impact on the deer population over time. Additionally, like many areas in Connecticut, bobcat populations have been rising. In the absence of bears, it is unclear if additive bobcat predation will make up the difference in predator mortality. Although coyotes appeared to have little impact on deer in northwest Connecticut based on this study, they may have greater impact in other areas of the state. Researchers hope to answer this question over the next few years as the Deer Program plans to look into fawn survival in other areas of the state and the effects of predation.

CT Deer Management Zones



Connecticut's Thunder-pumper: The American Bittern

Article and photography by Paul Fusco, DEEP Wildlife Division

Connecticut's precious but few large expanses of marshlands can sometimes be home to an uncommon and reclusive relative of the herons. With cryptic plumage and a habit of standing motionless or moving imperceptibly slowly, the American bittern becomes virtually invisible as it blends into its surroundings. Usually, the bird stays concealed in tall stands of cattails or marsh grasses, making it very difficult to observe. With a little patience, the bird may move into a more visible position, giving the observer a chance to identify it as an American bittern.

At first glance, bitterns appear to be similar to most members of the heron family. However, there are several differences in physical structure and behavior that separate them from the herons. Bitterns lack the long breeding plumes of many herons. They are more solitary than herons, and do not nest communally in rookeries, nor do they migrate in flocks.

Description

American bitterns are a medium-sized, stocky wading bird. They are approximately 23 inches in length with a wingspan of 45 inches. The plumage is warm brown, darker on the back and with streaking more pronounced against the white underside, including the neck. A long black mustachial mark is on either side of the upper neck. In flight, the outer wings show dark topside primary feathers. Bitterns have a short tail and trailing legs when flying. They fly with their necks held straight out rather than folded back like the herons. The bill and legs are mostly yellow and the eyes have a yellow iris.

During the breeding season, American bitterns are found throughout most of North America, including almost all of the United States and the southern half of Canada. Being a short distance migrant, they move south to spend the winter in the southern U.S. and Mexico. Coastal marshes are important stopover habitats for bitterns during fall migration. The birds are tolerant of cold winter conditions and some will spend the winter in Connecticut's larger salt marshes.

Behavior

Bitterns are stealthy hunters, stalking mostly from the concealment of marsh grasses rather than in the open as herons do. They are most active around dawn, dusk, and at night. Bitterns often hunt with their neck and bill outstretched as their eyes look downward toward a potential target. Slowly moving into position, bitterns aim their bill before striking. Food items consist mostly of small fishes, crustaceans, insects, amphibians, snakes, rodents, and small birds.

Large freshwater marshes with tall dense vegetation, especially cattails, are the favored breeding haunts of the American bittern. In the past, this bird was known to breed in brackish wetlands

American bitterns use tidal marshes along the Connecticut shoreline during the fall migration and a few may remain over the winter.

methodically, skulking along the edge of a marsh can be a memorable experience for any outdoor enthusiast. By visiting the right habitat at the right time of year, and looking carefully and patiently, an observer may stand a fairly good chance of being rewarded with a good look at one of our hard-to-find species, the American bittern.

Left: During the breeding season, male American bitterns exhibit a display which includes a loud territorial call accompanied by the puffing up of neck feathers, including a seldom-seen white patch at the shoulder.

Below: Bitterns feed on small animals, including fish, frogs, birds, and rodents, which they catch by stalking.

near the Connecticut coast. However, all recent documentation of breeding has been from inland locations, primarily in the northwestern part of the state, although the northeastern part also has some suitable areas.

American bitterns will sometimes "freeze" motionless with their head and bill pointed straight up in the air, a behavior referred to as stargazing. Stargazing helps them blend into reedy surroundings when they feel threatened.

In spring, males will exhibit one of their most remarkable behaviors, giving a loud territorial call, "*pump-er-lunk.*" This low-pitched booming call resonates throughout the marsh. The sound quality is made possible by a specialized musculature in the neck and chest. The call gives the bird its aptly described colloquial name of "thunder-pumper."

Conservation

The American bittern is a rare breeder and local migrant in Connecticut. It is listed as a state endangered species. Historically, the American bittern was once more common in Connecticut than it is today. Wetland loss and habitat degradation are the most important factors contributing to the decline in the bittern population. Wetlands continue to face development pressures which can isolate bittern populations. Other factors that have been implicated in their decline are the effects of accumulated chemical pollutants and the draining of marsh habitat.

The secretive nature of bitterns makes them a challenge for even the most experienced observer. Seeing one of these uncommon birds as it moves slowly and

Great Turnout for Connecticut Hunting & Fishing Day 2015

Written by Brendan Zielinski, DEEP Wildlife Division

On September 26, DEEP hosted its fifth Connecticut Hunting & Fishing Day at Sessions Woods Wildlife Management Area (WMA) in Burlington. First held in 2010, this year's event proved to be another huge success. With over 800 attendees from 100 different towns in Connecticut, there were plenty of activities for hunters, anglers, kids, and the general public to participate in.

Everyone who attended had a full day of activities to choose from, which was made possible by a long list of sponsors and vendors. Families and individuals of all ages had the opportunity to sharpen their shooting skills at the .22 rifle, BB gun, archery, and trap shooting ranges. Many also enjoyed hunting dog demonstrations, wildlife telemetry and tranquilization, a marine T.I.P. trailer, casting demonstrations, and live music provided by Con Doty and Life Station Earth.

Popular scheduled events included the Congress of Rough Riders, which put on two shows demonstrating cowboy action shooting. Talons! A Bird of Prey Experience was also a huge hit. Master Class Falconer Lorrie Schumacher presented two interactive raptor shows featuring two owls, a hawk, and falcon. Those who attended the shows learned about these amazing birds and had a personal experience as the birds flew overhead. In between the presentations, visitors had a closer look at the birds and took photos.

There were a variety of activities geared towards children as well, such as crafts, face painting, live fish and reptiles, and a kid's casting area. DEEP is extremely grateful to Cabela's for donating 140 fishing poles that were distributed to some of the kids who participated in the casting activity.

Biologists and staff from DEEP were on hand to answer questions and interact with visitors. Representatives from various sportsmen and outdoor equipment companies set up booths to provide information.

With a full day of activities scheduled, attendees and staff became hungry! Boy Scout Troop #27 from Winsted volunteered their time to provide a variety of food and refreshments that were available for purchase.

Many participants and exhibitors participated in a survey to help with planning and improving this event for years to come. Participants rated the day as excellent and exhibitors and cooperators also agreed. Of those who attended, about three-quarters were first time attendees and almost everyone indicated that they would attend the event next year. If you have not yet attended Connecticut Hunting & Fishing Day, make a point to come next year on Saturday, September 24, 2016!

P. J. FUSCO (2)

DEEP Wildlife Division biologist Jason Hawley demonstrates how to use a tranquilizer gun to an eager participant. Those who stopped at the telemetry and tranquilization station learned about some of the techniques used by biologists.

DEEP would like to thank the over 60 exhibitors and cooperators who helped support this year's Hunting and Fishing Day and a special thanks to our donors: The Friends of Sessions Woods, Rocky Mountain Elk Foundation, and the U.S. Sportsmen's Alliance Foundation and Weatherby Foundation International.

Attendees to Connecticut Hunting & Fishing Day get a lesson on freshwater fish from DEEP Inland Fisheries Division biologist Mike Beauchene.

Whip-poor-will Inventory and Monitoring 2010-2015 Summary

Written by Shannon Kearney-McGee, DEEP Wildlife Division

The whip-poor-will population has declined severely in the past 50 years. In Connecticut, the whip-poor-will is listed as species of special concern. The Wildlife Division conducted a project to develop effective survey and monitoring protocols; collect abundance and distribution information on breeding whip-poor-wills; track population trends; and identify areas where the birds may still be relatively abundant.

Between 2006-2009, the Division conducted a project to improve monitoring protocols for night birds, including whip-poor-will and owls. As a result, two monitoring protocols were created, one for winter night birds and one for summer night birds, including whip-poor-will. These protocols consisted of roadside survey points in appropriate habitat with the use of callbacks to maximize detection of targeted species. Between 2010-2014, Summer Night Bird Surveys were conducted using this developed protocol to track population trends of whip-poor-will in Connecticut.

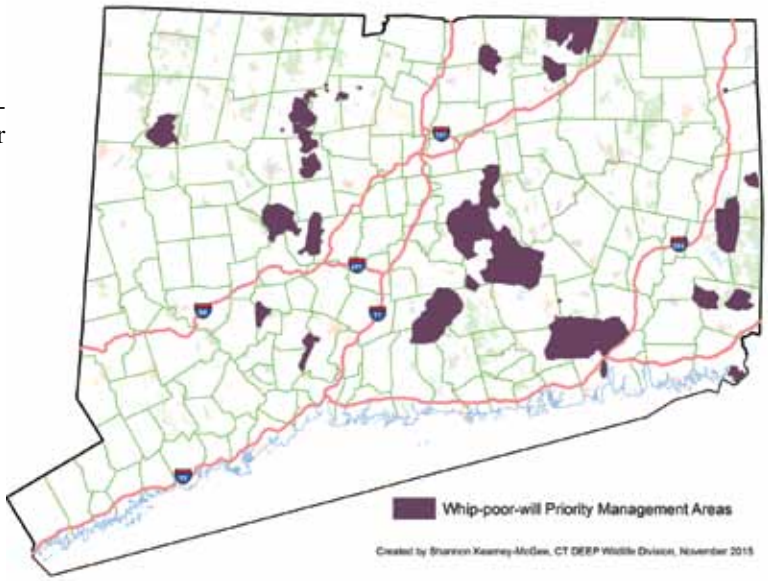
Whip-poor-will point occupancy fell from 23% (2010) to 15% (2014) of survey points estimated to be occupied by at least one whip-poor-will. Population density per survey point remained stable around 0.09 birds/point. This decline is initially disconcerting, but these survey methods do have limitations.

These roadside survey routes may not represent the state population of whip-poor-wills because they only detect individuals that are within range of a road. Additionally, survey points are static and the shrubland/edge habitat that whip-poor-wills require will grow into forest without active management. Decline of whip-poor-will survey numbers may be a result of habitat change over time (succession) at these locations and not an index of statewide decline of whip-poor-wills.

Whip-poor-wills may be concentrating in areas away from roads. Data from a telemetry project in Connecticut imply that birds may prefer acidic outcrops, most of which may not be sampled adequately from roadside surveys. Public reports also confirm there are birds in more remote locations in Connecticut; however, they are unable to be sampled from roads. Additionally, efforts to create early successional (young) forest habitat for New England cottontails may provide more available habitat for whip-poor-wills in our state.

To address some of the limitations of roadside surveys, the Wildlife Division and volunteer monitors surveyed 37 early successional points using the Connecticut Summer Night Bird Survey protocol in May-June 2015. Survey areas were chosen from managed properties – many managed for New England cottontails. These areas were surveyed to assess if any of the managed properties currently serve as habitat for whip-poor-wills and determine if management efforts at these properties are likely to be successful for whip-poor-wills in the future.

Priority Areas for Whip-poor-will Management



Whip-poor-wills were observed at 11 points. Locations were investigated to determine which environmental factors influenced the presence of the birds. The greatest determining factor of presence was lack of invasive species detected during vegetation surveys. Only one of the 11 locations (9%) that contained whip-poor-wills also contained invasive species, while 11 of the 26 locations (42%) where whip-poor-wills were not detected contained invasive species. This is significant because invasive plants have been shown to produce fewer moths and butterflies than native plants. Moths and butterflies are an important food source for whip-poor-wills.

Development also was related to the absence of whip-poor-wills. Only two of the locations (18%) where whip-poor-wills were detected border a developed edge, compared to 14 of the locations where surveys failed to detect whip-poor-wills (54%). Development itself may not be the cause of the birds' absence, but may be an indicator of other unmeasured environmental influences that coincide with development, such as predators, increased invasive species and disturbance, and relative use of the forest. Areas that are more remote from development should be the focus of whip-poor-will management.

Many locations that contained whip-poor-wills also were consistent with known locations from DEEP Natural Diversity Database and eBird records. This may indicate that birds are less likely to branch out to new locations and that most habitat management should be focused where birds already exist. As a result of these surveys, refined management focus areas have been created that center on large forested blocks with historical or current records of whip-poor-wills. It also would be beneficial to track numbers of birds in these respective habitats either through isolated point counts or through recording devices. This monitoring program could benefit from regular measurement of other variables (i.e., food availability) which may be associated with whip-poor-will population decline.

You can help the Wildlife Division by reporting any whip-poor-will you observe to 860-424-3011.

State Wildlife Grants

2015 Another Good Year for Piping Plovers in Connecticut

Written by Rebecca Foster, DEEP Wildlife Division

P. J. FUSCO

The piping plover is a small shorebird that nests on sandy beaches and islands along the Connecticut shore. It is a threatened species that is protected under the federal and state Endangered Species Acts and managed using U.S. Fish and Wildlife Service (USFWS) protocols. The DEEP Wildlife Division actively manages piping plovers and their nesting areas.

Piping plover management in Connecticut is a multi-faceted effort with varying tasks as the nesting season progresses. In April, nesting beaches are identified, and important areas of those beaches are cordoned off with string fencing to minimize human disturbance. Next, locating and protecting nesting pairs of piping plovers takes precedence. Finally, collecting nesting and breeding data and documenting disturbances to nesting pairs occurs throughout the season. Secondary tasks include public education, municipal and landowner coordination, and fencing and signage maintenance. The Wildlife Division has many partners that assist with these management responsibilities. The Division would like to thank the USFWS, Audubon Connecticut, the Audubon Alliance for Coastal Waterbirds (AAfCW), Roger Tory Peterson Institute, The Nature Conservancy (TNC), Connecticut Audubon Society, DEEP State Parks Division, the municipalities of Stratford, Bridgeport, West Haven, and Milford, and the over 150 dedicated volunteer monitors who spend countless hours on Connecticut beaches throughout the season. It is only with the continued cooperation and diligent stewardship of our partners that Connecticut's piping plovers have continued to meet and exceed population recovery goals.

2015 Piping Plover Nesting Season Results

The number of piping plover pairs returning to Connecticut to breed was higher this year than in the last couple of seasons. In 2015, 62 pairs were documented, compared to 51 pairs in 2014 and 45 pairs in 2013. Over the last few years, the number of plover pairs nesting in our state has increased slightly. This year, Connecticut piping plovers produced 112 young, down from a record high of 116 produced the season before. Because the number of breeding plover pairs in the state increased and the number of chicks produced by each pair decreased, overall productivity also was down. Productivity, measured as the number of plover chicks fledged (reared to the age in which they are able to fly) per pair, fell from a high of 2.28 chicks per pair in 2014 to 1.81 in 2015. Biologists have determined that a productivity measurement of 1.20 chicks fledged per pair is needed to maintain a stable piping plover population in this region of North America. Though productivity was lower than last season, 1.81 chicks per pair is considered quite successful, as the regional productivity goal was exceeded.

Chick losses were documented at all nesting beaches and attributed to predators. Mammalian predators were documented at all plover nesting beaches through both visual confirmation and evidence of predator disturbance: tracks, scat, digging around nest exclosures, and adult mortality are types of predator evidence found on nesting beaches. Mammalian predators identified included coyote, fox, weasel, raccoon, striped skunk, domestic dog, and house cat. In addition, avian predation from gulls, night herons, and crows was suspected. It is believed that a large number of egg and chick losses this season were due to fish crows (*Corvus ossifragus*). Neighboring states have documented issues with fish crow predation on piping plovers for a number of years, but 2015 was the first season fish crow predation seemed problematic in Connecticut, especially on beaches in Stratford, Milford, Old Saybrook, and Waterford.

Nest Protection

Piping plovers dig a shallow depression in the sand to form a nest where three or four buff colored eggs are laid. While sitting on the nest, parent birds rely on their cryptic coloration to provide some protection from predators. The eggs and chicks are vulnerable to predators and also to being stepped on unknowingly by people. To protect eggs and incubating adults against predators and human disturbance, the Wildlife Division places metal cages with netting over the top around nests. The cage,

called an exclosure, has openings wide enough to allow plover adults and chicks, once they hatch, to move freely in and out.

In recent years, the Wildlife Division and its regional partners have noted an increase in predators "keying in" on exclosures. The predators, often foxes and crows, may learn to associate the cages with a meal of eggs and/or adult birds. Predators may attempt to dig under the exclosure to reach the eggs or consistently canvass the nesting area hoping to feed on newly-hatched chicks. The persistent presence of predators can result in increases of egg, chick, and adult losses and can also lead to nest abandonment if the parent birds are stressed enough. Predator presence, history of predator-related losses, and ongoing evaluation by volunteers and staff all help determine whether exclosure use is warranted at each beach. In 2015, out of a total 71 plover nests, 36 were exclosed and 35 were not exclosed. The percentage of nest success (eggs hatching) for exclosed nests was 75% versus 57% for non-exclosed nests. While exclosures have limitations, they continue to be an effective management tool that, more often than not, minimize egg losses and increase hatching success when used judiciously.

Nesting Habitat Availability

As the number of breeding plovers in the state increases, the amount of appropriate nesting habitat decreases. Appropriate habitat for a plover pair is a site that meets the basic requirements for survival and breeding. These requirements include food, suitable substrate for nesting, and limited disturbance.

A number of factors limit the amount of habitat available in Connecticut for piping plovers to nest. Plovers are territorial and each pair requires a certain amount of space to call "home." At the start of the breeding season it is common to observe plovers aggressively chasing one another in a territorial bid for a section of beach. Once a territory is claimed by a pair of plovers, the pair will generally stay in this area until the young have fledged, which can range from two and a half months to an entire six month season. Each pair requires a distinct, non-overlapping territory (from other plover pairs), so there is a limit as to the number of nesting pairs that each beach can support.

An ideal plover nesting beach would be secluded, thus limiting human disturbance. Beaches with a high amount of recreational use are often littered with an abundance of garbage, which attracts additional predators to the area, specifically, crows, skunks, and raccoons. These predators also are responsible for numerous plover adult, nest, and chick mortalities each season on those beaches. As the number of plover pairs increases, pairs are being forced to nest on busier beaches where they are exposed to more disturbance and predator stresses.

Nesting on a busy beach also can limit food availability for both adult and young piping plovers. Plover chicks are precocial, meaning within hours of hatching they are able to walk about to feed themselves. If the chicks are on a crowded beach, however, the parent birds may be unable to lead them to the water to feed. Plovers need access to the high tide wrack and water lines which contain the marine crustaceans, worms, and invertebrates they eat.

More than 10 pairs of piping plovers commonly nest on privately-owned beaches in Connecticut. Although most homeowners become enthusiastic "plover stewards" who respect and even assist their bird guests, plovers that nest on private beaches are still subjected to a good deal of disturbance. Holiday celebrations, evening bonfires, fireworks, predation by cats and dogs, sunbathing, and all terrain vehicle (ATV) use are just a few of the disturbances that these birds may encounter on private beaches.

Overall, the majority of factors limiting availability of nesting habitat in Connecticut are human-related. Coastal development, competing recreational uses at beaches, human disturbance, and garbage that attracts predators will continue to limit the available habitat for plovers. Public education and plover stewardship are imperative going forward for the continued success of piping plovers in Connecticut.

P. J. FUSCO

Dismal Results for Least Terns

Least terns are another state threatened species of shorebird that nest on Connecticut beaches, often right alongside piping plovers. The Wildlife Division and conservation partners also manage and protect least tern colonies in Connecticut.

In 2015, the number of least terns that attempted to nest in Connecticut declined. The least tern pair count dropped from a high of 530 in 2013, to 257 in 2014 and 241 in 2015. Only 27 least tern chicks fledged in Connecticut this season. This is a drastic decline from 75 fledges in 2014 and 97 fledges in 2013.

The largest colonies formed on historical nesting beaches in Milford, West Haven, Westbrook, Old Saybrook, and Waterford. Unfortunately, in 2015, very few least tern eggs hatched. Most nest losses were attributed to high tide wash-outs, storms, and predator losses.

The Wildlife Division is monitoring the state's least tern population closely, along with our neighboring states of Massachusetts, Rhode Island, and New York (Long Island). Often, if one state's population numbers decline, a nearby state will see an increase in their numbers of breeding least terns. Despite dismal productivity in Connecticut, the adult population of least terns in our region has remained relatively stable. Annually, each state submits a census count that is used to evaluate population trends at the regional level.

Looking Ahead to 2016

The Wildlife Division would like to thank the incredibly dedicated group of conservationists that protect and monitor Connecticut's nesting shorebirds. Because of them, the 2015 nesting season was another successful one for the piping plovers in our state!

In 2016, the Wildlife Division will be ready to use all of the tools, data, and manpower available to effectively manage imperiled shorebird populations in Connecticut. Anyone who wishes to become a USFWS piping plover/least tern volunteer monitor, please contact the Audubon Alliance for Coastal Waterbirds at ctwaterbirds.blogspot.com.

Winter Is the Perfect Time to View Bald Eagles

Written by Brian Hess, DEEP Wildlife Division

If you are reading *Connecticut Wildlife* magazine, you probably spend the warmer months exploring Connecticut's cliffs, hills, forests, grasslands, wetlands, streams, rivers, lakes, ponds, beaches, and coastline. You likely take note of numerous mammals, birds, reptiles, amphibians, fish, and insects all around you. You probably enjoy watching the natural cycle as animals reproduce, forage, and grow through the bountiful New England growing season.

When fall rolls around, some animals migrate to warmer climates. Others find a protected tree cavity, quiet cave, or muddy creek bottom in which to spend the winter. Some may perish in the first few frosty evenings and their kind will not be seen again until their offspring emerge next April.

Other animals enjoy a New England winter. For the bald eagle, Connecticut represents a welcoming winter refuge. Eagles that nest at more northern latitudes move south in winter to find open water. This leads birds to congregate along the Connecticut, Housatonic, and Thames Rivers, and their tributaries. These moving waters are critical fishing grounds for eagles. Even when ice forms on the rivers, fish and waterfowl concentrated around the remaining open patches can be food for wintering eagles.

P. J. FUSCO

In Connecticut, one of the largest concentrations of wintering bald eagles congregates at FirstLight Power's Shepaug Hydroelectric Station in Southbury.

In addition to rivers, bald eagles have adapted to using hydroelectric dams as winter feeding stations. At green power hydro stations, the churning discharge of water downstream of the power generating turbines remains relatively warm and ice-free through even the coldest of winters. In Connecticut, one of the largest concentrations of wintering bald eagles congregates at FirstLight Power's Shepaug Hydroelectric Station in Southbury that creates Lake Lillinonah. On most days between December and March, bald eagles are fishing the Housatonic River and roosting in the tall trees on the banks below the dam.

Fortunately for the Connecticut wildlife aficionado, these reliable congregations provide excellent opportunities for wildlife viewing. FirstLight Power has operated its Eagle View Facility with its viewing blind, telescopes, and binoculars each winter for over 30 years. In that time, over 150,000 people of all ages have visited the facility. The Eagle View is free to visit but requires a prior reservation so that the number of guests does not create an undue amount of disturbance for the wintering eagles. FirstLight staff, DEEP Master Wildlife Conservationists, and volunteers from Connecticut Audubon Society will provide helpful bald eagle and birding information, and assist visitors in spotting and identifying bald eagles to maximize the viewing experience. The Shepaug Hydro Eagle View is open on Wednesdays, Saturdays, and Sundays from late December through mid-March from 9:00 AM-1:00 PM. To schedule a free visit, go to http://reservations.shepaugeagles.com or call 1-800-368-8954.

Volunteer for the Midwinter Eagle Survey

In addition to visiting the Shepaug Hydro Eagle View, participating in the Midwinter Eagle Survey is another great way to view wintering bald eagles and also help monitor their numbers. Coordinated, nationwide counts of bald eagles have been happening since 1979. At that time, bald eagles were rare in the continental United States and the species was federally endangered. Since that time, eagles have made a dramatic comeback, and their numbers have been monitored each January by volunteers across the country. Nationally, the count has been coordinated by the National Wildlife Federation, Bureau of Land Management, National Biological Survey, and U.S. Geological Survey, and it currently is coordinated by the Army Corps of Engineers.

B. HESS, WILDLIFE DIVERSITY PROGRAM

In January 2015, over 200 participants counted 146 eagles during the Midwinter Eagle Survey in Connecticut, the highest results ever for our state. While the year-to-year counts have varied based on local weather and conditions, the trend is clear – the eagles are coming back.

Participating in the Midwinter Eagle Survey requires only the ability to identify an eagle. Participants are assigned a lake, reservoir, section of river, or section of shoreline. On the morning of the designated Saturday (January 9 for 2016), volunteers travel around or along their route, looking for wintering eagles. The DEEP Wildlife Division coordinates Connecticut's Midwinter Eagle Survey. For more information about participating, contact Brian Hess at Brian.Hess@ct.gov.

Survey of Wildlife Agencies Sheds Light on Deer Harvest Reporting Methods

Written by Andy LaBonte, DEEP Wildlife Division

A natural follow-up to the "From the Woods to the Web" article that was published in the November/December 2014 issue of *Connecticut Wildlife* is a look at the results from the 2014 Nationwide Harvest Reporting Survey. In August 2014, the DEEP Wildlife Division's Deer Program sent emails to all United States (50) and Canadian (8) wildlife agency deer coordinators to assess a variety of harvest related questions. Surveys were completed by all Canadian Provinces and all but two state agencies for a 97% response rate.

It was found that seven states/provinces have no mandatory harvest reporting requirements whatsoever. Of the majority of states/provinces that do, 64% rely on online harvest reporting as the primary means of estimating annual harvests. Other methods used were in-person check stations (46%), telephone (41%), and mail-in kill cards (25%). One study conducted in 2000 found that no states were using online reporting and the majority of states (56%) were using mandatory in-person check stations for recording annual deer harvests. In more recent years, another study showed that 44% of agencies used online reporting.

Telephone and internet reporting became available for Connecticut hunters in 2009. During the 2014 shotgun-rifle season, 71% of successful Connecticut hunters used the online reporting system and 29% used the telephone reporting system. With advances in computer technology and the power of electronic handheld devices, based on results from our nationwide survey, 13 states/provinces that do not currently use online reporting are looking to use online reporting in the future. Four agencies are going as far as creating mobile smart phone applications for even greater ease of reporting.

Although nothing is in the works at the moment, creating a mobile smart phone application for Connecticut hunters would be one more step in simplifying the harvest reporting process. It is clear that electronic reporting is the wave of the future. Online and telephone harvest reporting are simple and easy to do, and require much less time and effort on the part of the hunters as opposed to driving to an in-person check station. Not only does online and telephone reporting make life easier for hunters, it also makes life easier for Deer Program staff because data can be viewed immediately and it eliminates a great deal of data entry work.

Due to the ease of online and telephone reporting, harvest reporting rates are expected to increase in those states that use these reporting methods. In Connecticut, we found that when switching from the archery kill-card reporting system to the online and telephone reporting system, the reported archery harvest increased between 10% and 116% in all but two deer management zones that year. The two zones where harvest remained the same (2-3% increase) had an incentive program where hunters who reported their deer could obtain free antlerless and either-sex tags. The replacement tag system has served as an incentive for hunters to report their harvest, so little change was expected to occur. Previous research has shown that harvest incentives increase hunter compliance for reporting harvest.

State/provincial biologists reported on the nationwide survey that hunters provided most of the harvest information they obtained. States/provinces were 100% confident in hunters providing reliable information on sex, age, number of antler points, and hours hunted.

Fewer states collected data on weight (6), deer observations (16), and antler beam measurements (7), and those that did were less confident in hunters reporting those weights (50%), deer observations (31%), and antler beam measurements (14%). States/provinces interested in obtaining this additional information may have to provide hunters with instructions on how to collect the data. This should improve reporting accuracy and increase confidence in the data. On a positive note, about half of states/provinces (54%) felt they could depend on hunters for more information than is currently being collected by the agency. Most states/provinces (89%) said the value of the information they obtained from hunters was important in making management decisions.

P. J. FUSCO

Deer check stations were used for many years by the Wildlife Division to collect data. Most have been replaced by online and telephone reporting.

It cannot be stressed enough how important it is that hunters take pride in knowing that they are providing critical data that play a significant role in the management of the resource. Connecticut's Deer Program objectives are to maintain deer populations at levels that are compatible with available habitat and land uses and for a sustained yield of deer for use by Connecticut hunters. Without hunters providing reliable data, these objectives cannot be met. Hunters are not only playing a critical role in Connecticut, but in other states/provinces as well, given the fact that most states/provinces are using hunter-based reporting and value the information they receive. This demonstrates the confidence wildlife agencies have in hunters. With greater and growing financial constraints faced by wildlife agencies, hunters will become more and more important in assisting with the management of deer populations.

American Witch Hazel – The Connecticut Connection

As the leaves are falling in Connecticut's woodlands during late October into November, American witch hazel (*Hamamelis virginiana*) stands out among the rest of the trees and shrubs when its bright yellow flowers come into bloom. The clusters of flowers with four slender yellow petals have a spicy fragrance. This bright blast of color in the fall, after the leaves have fallen from most trees, is not the only unique feature of witch hazel. The seedpods shed their seeds at the same time the tree is flowering. These small, tannish to gray, hard capsules, which had been dormant throughout the previous winter, developed over the growing season. In autumn, the seedpods forcibly explode, making a popping sound and shooting out two shiny black seeds that can travel a distance between 10 and 30 feet before landing in the forest understory. It may take the seeds up to a year or two before they germinate.

P. J. FUSCO

As the leaves are falling in Connecticut's woodlands during late October into November, American witch hazel stands out among the rest of the trees and shrubs when its bright yellow flowers come into bloom.

American witch hazel is typically found in the shaded understory of hardwood forests. Considered a shrub or small tree, its arching branches generally grow as a dense, multi-stemmed clump that can reach heights of 20 to 30 feet and widths of 15 to 20 feet. The shrub form typically does not grow over 12 to 15 feet tall. The bark is smooth and gray, while the oval leaves have large wavy teeth on the margins, a dark green upper surface, and a paler green lower surface. The leaves can grow up to six inches long. This native tree grows throughout the Northeast (including Connecticut) and into southeastern North America, from Nova Scotia to Florida and from the Great Lakes to eastern Texas.

What really makes American witch hazel so interesting are the stories and uses associated with this unique plant. One story describes early European settlers observing Native Americans using forked branches from American witch hazel as dowsing or divining rods to find underground sources of water. This activity is probably where the common name witch hazel came from. "Wicke" is the Middle English word for "lively" and "wych" is from the Anglo-Saxon word for "bend." American witch hazel was probably called "wicke hazel" by early American settlers because the dowsing end of the forked branch would supposedly bend when underground water was detected by the dowser. This practice was used widely by American settlers and then exported back to Europe. Dowsing became an established feature of well-digging into the twentieth century.

Probably the best known use of the witch hazel plant is as an herbal remedy to treat insect bites, colds, muscle sprains, skin irritations, and hemorrhoids (and just about everything else in between). This remedy was originally brewed by New England's Native Americans from the bark and twigs of the witch hazel plant, and its use to treat a variety of medical maladies was adopted by the American settlers. It is at this point where the "Connecticut connection" comes in – the witch hazel industry that we know today began in Essex in the mid-1800s as the Dickinson Company. The company, now known as American Distilling, eventually moved its witch hazel distillery to East Hampton, where it produces almost the entire world's supply of witch hazel every year.

Witch hazel is harvested from New England forests in accordance with state forestry regulations to ensure protection of the environment and the continuous regeneration of witch hazel plants. Most of the harvesting begins in late autumn after the leaves have fallen and continues throughout winter while the plants are dormant and the ground is mostly frozen. After being cut, witch hazel re-sprouts vigorously, and commercially harvested plants can be harvested again every five to eight years. The stems are chipped and then distilled in the distillery to produce an extract that is used as the clear liquid witch hazel, which is considered a mild but effective astringent. Witch hazel also is an ingredient in many skin and personal hygiene products, such as hair care items, eyewash preparations, eye gels, and mouthwashes. According to American Distilling, customers and medical professionals alike recognize witch hazel as a naturally soothing and cost effective botanical ingredient. Because witch hazel is harvested as a wild crop from forested areas in New England (including Connecticut), it can be considered a Connecticut Grown product and has been certified as organic by the U.S. Department of Agriculture.

Maybe witch hazel will become your new herbal remedy, or maybe it is in a product you have been using for years. Witch hazel has surely proven the test of time, dating back to New England's Native Americans. Whether you enjoy the bright flowers in fall or take advantage of its healing powers, you now know its New England roots and its "Connecticut connection."

Some of the information for this article was obtained from the U.S. Forest Service (www.fs.fed.us/wildflowers/plant-of-the-week/hamamelis_virginiana.shtml) and the website for American Distilling (www.whazel.com).

CONNECTICUT GROWN

LOCAL WOOD. LOGICAL CHOICE.

Winter Feeding of Deer Causes More Harm than Good

Written by Andy Labonte, DEEP Wildlife Division

Every year the Wildlife Division receives multiple phone calls from concerned citizens asking how they can help deer survive through a harsh winter, with last winter certainly being no exception. Because of the many phone calls we received last winter and a recent inquiry from a concerned group of citizens, the Wildlife Division is providing the following questions and answers about feeding deer. This information can also be found on our website at www.ct.gov/deep/wildlife.

How Can Deer Survive Harsh Winters?

In fall, deer grow a winter coat and begin to store fat. The winter coat has hollow guard hairs for insulation with a finer undercoat for warmth, which help deer retain body heat and reduce energy demands. Fat reserves put on by deer in fall provide energy and heat over the winter. In addition, deer decrease their metabolic rate during winter, which reduces food requirements to about half of their summer requirements. All of these factors contribute to substantially decreased winter energy demands, which can be met with limited natural browse and supplemented with fat reserves.

In locations where a severe winter is an annual event, deer may migrate to wintering areas with thicker overhead cover and more available natural winter browse or even move into urban areas where more ornamental browse is available. These adaptations help deer survive severe winters. Even when food is abundant, deer use their fat reserves and lose weight over winter. Deer in relatively good condition can fast for several weeks without harmful effects. Some deer, especially the young and old, may die during harsher winters due to insufficient fats stores going into winter. They must compete with larger deer for available food and also may be unable to find food.

What Are the Negative Impacts of Winter Feeding?

Deer are ruminants, meaning they have a four part stomach with microbes (bacteria) that help digest woody vegetation. Deer acquire specifically adapted microbes over a period of time that digest specific food material. For example, during spring as the green-up of vegetation slowly occurs, deer will slowly begin to use the new food source as the season progresses. When deer eat large quantities of food that have not been part of their diet, such as grain suddenly placed out during severe winters, the specific microbes are not present to help with digestion. Deer will eat any readily available handouts during winter, thus they may fill their stomach with indigestible material. It has been documented over several years that deer have died with stomachs full of food (hay and corn) that was placed out during harsh winters as an emergency source when limited natural foods were available. Food sources rich in carbohydrates have been known to cause acidosis (grain overload) and enterotoxemia (overeating disease), which can be fatal. In addition, feeding deer during winter can artificially congregate the animals into small areas, damaging natural vegetation and habituating deer to humans, thus increasing their use of urban areas and the destruction of ornamental landscape plantings. Although bovine tuberculosis (TB) or chronic wasting disease (CWD) have not been documented in Connecticut's deer population, winter feeding may artificially congregate deer, increasing the potential for transmission of diseases.

Why Shouldn't I Feed Deer During Winter?

Severe winters cause people to be concerned about the welfare of white-tailed deer and their ability to survive winter. Whether an individual deer can survive winter depends on its physical condition going into winter, the severity of winter, amount and quality of winter food sources, and the animal's energy expenditures. White-tailed deer have biological adaptations that help them survive through winter. Although winter-related starvation can occur during particularly harsh winters, trying to save deer by supplementally feeding them is not the solution. DEEP discourages providing supplemental food for deer during winter. Feeding deer often makes them more vulnerable to starvation, predation, disease, and vehicle collisions.

What Is the Difference Between Winter Feeding and Baiting?

Baiting deer during the hunting season is different than feeding deer during a harsh winter. Baiting is a technique used by deer hunters where food materials are put out to attract animals to a specific area to position them for better shot placement, potentially increasing hunter success. One of the goals of the DEEP Wildlife Division is to maintain deer population at levels compatible with available habitat and land uses. Baiting is a management option allowed only in Connecticut's urban deer management zones, where populations need to be reduced. This management option is typically introduced when deer have other food sources available to them, and deer are able to slowly acclimate to limited amounts of bait being placed on the landscape.

The information contained in this document was modified from educational materials produced by Michigan and Wisconsin Departments of Natural Resources.

P. J. FUSCO

What You Need to Know About Cold Water Danger

Article and photography by Paul Fusco, DEEP Wildlife Division

Many people do not realize that cold water can kill you in a matter of minutes. In many cases it may only take a few seconds, even if you are a good swimmer. How does this happen? What does a person need to know?

Any activity that brings you out on the water in cold weather can be potentially dangerous. Whether you are duck hunting, fishing, or recreating in a canoe or kayak, you should be aware of the potential risks posed by cold shock and hypothermia, especially when water temperatures decrease after summer.

Cold Shock Response, Gasp Reflex, and Hypothermia

Sudden immersion into cold water is immediately life-threatening. It can result in cold shock, which is an uncontrolled physical response that quickly leads to physical distress and incapacitation, the inhaling of water (called gasp reflex), and sudden drowning. Cold shock involves the immediate loss of a person's ability to control their breathing. With the loss of breathing control comes a series of intense involuntary gasps for air. If a person's face is underwater when this gasp reflex happens, that person will immediately breathe in water and drown.

As if this is not enough for you to be concerned about, there are other physical reactions associated with sudden immersion into cold water that will put you at risk. These would include hyperventilation, elevated blood pressure, and rapid heart rate. Water temperature does not have to be extremely cold for these things to happen, although, the colder the water, the stronger the response. Hyperventilation may lead to panic and fainting, which may then lead to drowning. Elevated blood pressure and rapid heart rate may lead to cardiac arrest.

Cold water immersion results in an approximate death rate of 20% within the first minute. Surviving this requires remaining calm, keeping your head above water, and getting breathing under control. The cold water shock response may last up to two minutes. Over the next 30 minutes, cold incapacitation takes hold, resulting in a 50% death rate. After this stage, exhaustion and unconsciousness will soon follow.

Hypothermia results when your body temperature falls below the normal 98.6° F, progressively resulting in shivering, cold fingers and toes, muscle cramps, loss of the use of your extremities, loss of mental alertness, loss of consciousness, and finally death. Progressively worsening hypothermic disability takes affect during the first 30 minutes of immersion into cold water.

The causes of hypothermia go beyond just cold air or water temperatures, and can include contributing factors, such as improper clothing, wet clothing, dehydration, poor diet, and alcohol consumption.

Treatment and Awareness

Treatments and awareness for hypothermia include:

- *Remove cold and wet clothing.*
- *Replace wet clothing with dry clothing, a blanket, sleeping bag, or whatever insulating material is on hand.*
- *Use heat packs to warm parts of the body near major blood vessels, including armpits, groin, or neck.*
- *Use person to person skin contact body heat if possible.*
- *Take in small amounts of warm liquid.*
- *Do not consume alcohol.*
- *Know CPR, and be prepared to seek medical help as soon as possible.*
- *Use a thermal wetsuit when the water temperature is above 60° F, or a dry suit if the water is less than 60° F.*
- *The head is the primary heat loss part of the body, so wear head gear.*
- *Avoid cotton clothing; remember the saying "cotton kills."*
- *Dress for the water temperature, not the air temperature.*
- *Carry a change of dry clothing.*
- *If possible, have a small blanket in your pack.*
- *Body fat is an excellent insulator, which can delay heat loss and incapacitation significantly.*
- *Dress in layers.*

  The inner clothing layer should be a breathable and moisture wicking material that will keep your skin dry.

  Mid-layers are for adding and removing, allowing you to adjust to different temperatures.

  The outer layer is a shell that protects from wind and keeps your inner layers dry.
- *While it is important to minimize heat loss in cold weather, it also is important not to become overheated, resulting in sweat on your skin.*
- *Always let someone know where you are going and when you will be back.*
- *Always wear a life jacket when on the water.*
- *Water conducts heat away from your body 25 times faster than air of the same temperature.*
- *No matter the conditions, you are always better off getting yourself out of the water as soon as possible.*

P. J. FUSCO

Conservation Calendar

Dec-March ..... Observe eagles at Shepaug Hydro Eagle View – More details are on page 18.

January-April ..... Donate to the Endangered Species/Wildlife Income Tax Check-off Fund on your 2015 Connecticut Income Tax form. Learn more at www.ct.gov/deep/EndangeredSpecies.

January 9..... Midwinter Eagle Survey – More details are on page 18.

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 emailing laura.rogers-castro@ct.gov or calling 860-424-3011 (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.

Jan. 12..... **Into East Africa**, starting at 6:00 PM. Acclaimed wildlife photographer Paul Fusco will thrill the audience with beautiful scenes of the land and wildlife of East Africa. Paul visited Sergenti National Park, Ndutu, and the Ngorongoro Crater, a UNESCO World Heritage Site, in Tanzania. He also will discuss some of the important conservation issues facing wildlife in East Africa.

Jan. 30..... **The Bear Reality with MWC Felicia Ortner**, starting at 1:30 PM. Master Wildlife Conservationist Felicia Ortner has been a bear enthusiast for over 30 years. Through her program, "The Bear Reality," Felicia will help dispel some of the myths associated with black bears and encourage the audience to become more bear aware.

Feb. 16..... **Children's Program: Wildlife Tracks and Signs**, starting at 10:00 AM. Wildlife may not be readily seen in winter but with good observational skills, evidence of their presence can be found. The program begins indoors with a lesson on identifying wildlife tracks and then the group travels outside for a short walk to look for animal signs. Attendees can even make a wildlife track to take home. All children must be accompanied by an adult during the program.

Feb. 27..... **Bald Eagles**, starting at 1:30 PM. Learn about bald eagles with Brian Hess of the DEEP Wildlife Division. Brian will talk about eagles that winter and nest in Connecticut. He also will provide insight on the history of eagles in Connecticut; how to identify juvenile and adult eagles; and additional fun facts. A pre-program potluck will be hosted by the Friends of Sessions Woods at 12:30 PM.

Hunting Season Dates

Sept. 15-Dec. 31 ..... Deer and turkey bowhunting season on private land and state land bowhunting only areas

Dec. 9-22 ..... Muzzleloader deer hunting season on state land.

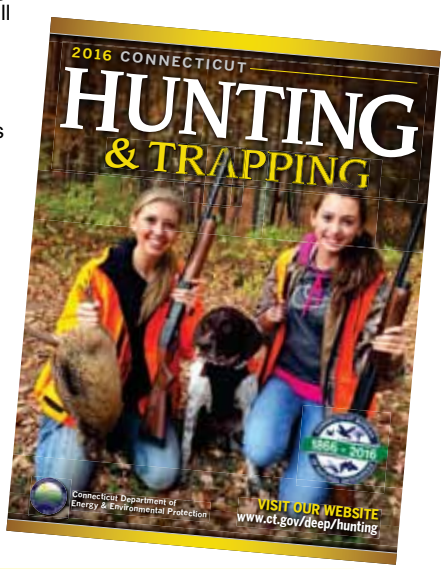
Dec. 9-31 ..... Muzzleloader deer hunting season on private land.

Dec. 23-31 ..... Second portion of the turkey bowhunting season on state land.

Jan. 1-31..... Deer bowhunting season on private land only in Deer Management Zones 11 and 12.

Jan. 25-Feb. 13 ..... Special late Canada goose season in the south zone only.

Consult the current Connecticut Hunting & Trapping Guide and the 2015-2016 Migratory Bird Hunting Guide for specific season dates and details. The 2016 Connecticut Hunting & Trapping Guide will be available by mid-December. Printed guides can be found at DEEP facilities, town halls, bait and tackle shops, and outdoor equipment stores. Guides also are available on the DEEP website (www.ct.gov/deep/hunting). Go to www.ct.gov/deep/sportsmenlicensing to purchase Connecticut hunting, trapping, and fishing licenses, as well as required deer, turkey, and migratory bird permits and stamps. The system accepts payment by VISA or MasterCard.



Find us on Facebook **www.facebook.com/CTFishandWildlife**

Connecticut Wildlife

Subscription Order

Please make checks payable to:
Connecticut Wildlife, P.O. Box 1550, Burlington, CT 06013

Check one:
☐ 1 Year ($8.00) ☐ 2 Years ($15.00) ☐ 3 Years ($20.00)

Name: _____

Address: _____

City: _____ *State:* _____

Zip: _____ *Tel.:* _____

Email: _____
*Will **only** be used for subscription purposes*

Check one:
☐ Renewal
☐ New Subscription
☐ Gift Subscription

Gift card to read:
_____
_____

Donation to the Wildlife Fund:
$ _____
Help fund projects that benefit songbirds, threatened and endangered species, reptiles, amphibians, bats, and other wildlife species.

Order on-line with a credit card through the DEEP Store at: www.ct.gov/deep/WildlifeMagazine

Connecticut Wildlife

PERIODICALS
POSTAGE PAID AT
BURLINGTON, CT,
AND ADDITIONAL
OFFICES

Connecticut Department of Energy and Environmental Protection
Bureau of Natural Resources / Wildlife Division
Sessions Woods Wildlife Management Area
P.O. Box 1550
Burlington, CT 06013-1550

P. J. FUSCO

Two young bucks square off in a test of skill and endurance.