

November/December 2018

CONNECTICUT

Wildlife



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Wild Thoughts



This issue of Connecticut Wildlife provides the perfect setting to draw 2018 to a close and embark on 2019. There were many conservation challenges faced in 2018. Tornadoes that caused tremendous habitat damage and wildlife mortality, which included the disappointing loss of bald eagle nests that were close to fledging. Flash floods that eroded stream banks and increased siltation in aquatic habitats, as well as more routine concerns of habitat loss, disease, and illegal collection. All of these events brought us together as a state to meet these challenges head on. The feature article in this issue on piping plovers is just one example of what we can accomplish when we work together.

We made great strides in learning more about the wildlife around us and how we can share habitats. Fifth-grade students in Farmington took their education to the next level by helping to teach their community how to respond to a rapidly growing black bear population.

We dealt with new issues surrounding invasive species. Connecticut continues to lead the way in research on tick-borne diseases and the role of wildlife in disease transmission. In cooperation with the Connecticut Agricultural Experiment Station, studies are now underway for both the lone star tick discovered here in 2017 and the exotic east Asian longhorned tick discovered in our state this past year.

As we wrap up 2018 and head into the next year, we should reflect on the rhythm of nature, not just how seasons change from fall to winter to spring and summer, but how wildlife adjust to those seasonal changes. Migration – whether it is anadromous fish or tiny sanderlings who travel phenomenal distances – it is important for us to understand the needs of migratory wildlife along their journey so we can be better stewards of the places that provide critical resources for them to rest, feed, and reproduce.

This is also a time to look forward as 2019 will present many new opportunities to have positive impacts on the conservation of our natural resources. The Connecticut Breeding Bird Atlas will provide us with science-based information to make better land-use decisions and also presents volunteer opportunities for birders to help in the collection of that data. Many other volunteer and citizen-science based projects will present ways for each of us to contribute to the stewardship of Connecticut's natural heritage. It is also a time to look forward to the possibilities presented by the reintroduction of Recovering America's Wildlife Act to effectively implement Connecticut's Wildlife Action Plan. This in turn would make meaningful strides in protecting clean air, clean water, and our amazing wildlife for future generations to continue to enjoy.

Please take a moment to get outside this winter and enjoy the beauty that Connecticut has to offer. You will be rewarded by gregarious flocks of chickadees and blue jays, the majesty of white-tailed deer blending into a woodland landscape, and by the physical and mental health benefits these moments provide.

Jenny Dickson, Supervising Wildlife Biologist, DEEP Wildlife Division

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PHOTOS BY R. JACOBS, DEEP FISHERIES (RET)

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White-tailed deer are playing a key role in research efforts surrounding the presence of two new tick species discovered in Connecticut. Learn more on page 20.

Photo courtesy of Paul Fusco

Looking Back at the 2018 Piping Plover Nesting Season

Written by Rebecca Foster, DEEP Wildlife Division; photography by Paul Fusco, DEEP Wildlife Division

The piping plover is a small shorebird that is listed as both a federal and state threatened species. Under the federal Endangered Species Act of 1973, the U.S. Fish and Wildlife Service (USFWS) created a plan to recover piping plover populations in the United States. In Connecticut, the DEEP Wildlife Division is responsible for implementing the management strategies included in the recovery plan. Some of these strategies include locating all piping plovers present along the shoreline during the March to August breeding season; erecting protective fencing and signage around nesting pairs of piping plovers; limiting human dis-

turbance; collecting accurate breeding data throughout the season; public education; and collaboration with numerous conservation partners.

2018 Nesting Season Results

In 2018, 64 pairs of plovers attempted to nest in Connecticut, and 40 nests were successful (hatched at least one chick). Piping plover nests can fail for a variety of reasons, including parental abandonment, tidal inundation (i.e. wash-outs), and predation. Biologists determined that 12 nests failed due to parental abandonment (32%), four nests failed due to



Piping Plover Nesting Season

64 pairs attempted to nest.

40 nests were successful.

75 chicks fledged.

Productivity index averaged 1.17 fledges per pair (1.20 fledges per pair needed to maintain a stable population).



Piping plover and least tern nesting areas are marked with large yellow signs, asking people to give the birds space and keep dogs away. These precautions are necessary to avoid disturbing the birds and protect nests, eggs, and young.

wash-outs (11%), 15 nests failed due to predation (39%), and seven nests failed due to unknown circumstances (18%). Of the 294 eggs produced, researchers observed 134 hatched chicks, equating to a hatching success rate of 46%. Of these, 75 chicks survived to flight age for a fledging success rate of 56%. The fledging success of piping plover chicks is a major goal of the recovery plan because fledging success rates can increase piping plover productivity. This season's productivity index averaged 1.17 fledges per pair, quite close to the required 1.20 chicks produced per pair rate needed to maintain a stable population.

Connecticut Piping Plover History

Since the Wildlife Division began managing Connecticut's piping plover population in 1986, the number of pairs using our beaches for nesting has increased. Piping plovers typically choose beaches adjacent to tidal wetlands that are also minimally used for human recreation. The beaches used most frequently and consistently by piping plovers over the years are referred to as "traditional" beaches. As the number piping plover pairs returning to nest in Connecticut has increased, the birds are forced to use less than ideal "new" beaches. These "new" beaches are often intensively used during summer by vacationers and residents and are, therefore, not ideal nesting habitat for piping plovers.

This past season, researchers observed piping plovers on five such "new" beaches. Protecting plovers on these beaches is challenging in a number of ways. Human crowding and activities often disturb the birds, resulting in nest abandonment, nest failure, and chick losses. Additionally, human activity on the beach and the presence of garbage left by people inadvertently attracts common plover predators such as rats, gulls, skunks, opossums, and foxes. Piping plover chicks, not yet able to fly, cannot escape these much larger predators, and chick losses due to predation are documented each season. Finally, the people using "new" beaches are usually not familiar with piping plovers or the nesting pro-

tections used by the DEEP. Management actions that impede people's use of beaches, even just the perception of limiting use or access to the beach, sometimes cause resentment and anger by people toward the birds.

Case Study of Managing Plovers on a "New" Beach

This past nesting season, tense interplay between plover management efforts and beach use occurred at one such "new" beach. A pair of piping plovers were observed exhibiting nesting behavior on a town beach in Waterford. Behaviors included aerial displays by the male plover intended to attract a female, defensive behavior towards a specific portion of the beach or territory, and finally, the male bird digging numerous depressions (nest scrapes) in the sand for the female plover to lay her eggs. After witnessing these behaviors, researchers were certain that the plover pair intended to use this busy beach for nesting.

After contacting town officials and gaining permission to assist with management, the DEEP Wildlife Division installed wooden stake and twine fencing around the area of the beach where the nest scrapes had been found. This "psychological" fencing helps prevent people from accidentally stepping on the camouflaged nest. Yellow signs asking people to avoid the nesting territory were placed along the fence and a "NO DOGS" sign was positioned at the entrance to the beach. Dogs, especially off-leash, pose a significant threat to nesting plovers because they are perceived as predators and will cause stress responses that draw birds off the nest. Dogs can, and have, accidentally or intentionally killed both piping plovers and their eggs on Connecticut beaches. With over 30 years of experience managing piping plovers in our state, Wildlife Division staff understands that these protective measures can surprise, and anger, some people who arrive at the beach in summer to face new restrictions they do not understand. Unfortunately, the plover fencing at this new site was vandalized early in the season and some

Dismal Least Tern Nesting Season

During the 2018 shorebird nesting season, 236 adult least terns were observed along the Connecticut shoreline. Shorebird monitors documented 62 nesting attempts from which 18 least tern chicks hatched. Of those, 14 chicks fledged. The steep decline in least tern nesting success in Connecticut, and throughout the Northeast region, is currently being investigated. The least tern is a state threatened species in Connecticut.



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beach patrons made their disdain towards the plovers and perceived impediments to their beach enjoyment known.

Education Is Key: The Wildlife Division worked with the Town of Waterford, the landowner ultimately responsible for protection of the birds, to implement additional actions that would ensure the best outcome for both the piping plovers and local beachgoers. The Recreation and Parks Department immediately educated all of their staff about the plovers so they could answer any questions beach visitors might have. The town created and displayed a sign at the beach admission booth, asking visitors to respect the plover

fencing. In addition, beach maintenance staff gave the plover fencing a wide berth when using grooming equipment to clean the beach. DEEP staff erected a large educational sign on the beach, providing an explanation for the fence restrictions and information about Connecticut's threatened shorebirds. DEEP also provided piping plover brochures to the Waterford Community Center, which were distributed to residents who purchased beach passes for the season. Wildlife Division staff and Audubon Alliance for Coastal Waterbirds (AAfCW) partners monitored the nesting progress of the piping plover pair at the Waterford beach daily throughout

the season and talked with people who were curious about this new situation on their beach.

During the ensuing month, researchers noted that almost all of the beach patrons were respectful of the space the piping plovers needed. People still used the beach for swimming, sunbathing, picnics, and even end-of-school field day activities, but at a safe distance. The adult plovers were able to incubate their nest with minimal disturbance and the pair successfully hatched their eggs.

A Plover Success Story: Plover chicks are precocial, meaning they are able to feed themselves within hours of hatching. The young birds need almost a month of unfettered access to the water's edge where they forage for their preferred diet of small mollusks, crustaceans, and marine worms. People walking along the beach near feeding chicks can unknowingly cause the adult plovers to "alarm call" to the hatchlings, essentially calling them away from the water and their food source. Constant human presence near a plover family can increase the potential for developmental delays in the chicks and potential mortality if disturbance is excessive. Additionally, because newly-hatched chicks are very tiny and blend in cryptically with the sand, they are incredibly hard to see and thus easy to accidentally step on. Fortunately, visitors to Waterford Town Beach gave the plover family the necessary space during this critical time, and two of the chicks were able to survive to fledging.

Once the plovers left Waterford Town Beach to begin their southward winter migration, the Wildlife Division removed the protective fencing and signage and held a two-day public outreach event to thank Waterford residents for being such great conservation partners. Without the cooperation and assistance of both the Waterford town employees and beach visitors, this plover success story from a "new" beach could not have happened.

Looking Ahead

The Wildlife Division hopes visitors to all Connecticut beaches, both traditional and new, will themselves become piping plover stewards and assist in helping one of our state's and nation's threatened species breed successfully. The continued population increase and success of piping plovers will ultimately depend on the partnership between conservationists, municipalities, and the public.

Anyone interested in helping the Wildlife Division and our conservation partners monitor threatened shorebirds during the 2019 breeding season are asked to contact the Audubon Alliance for Coastal Waterbirds at ctwaterbirds@gmail.com.



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A juvenile piping plover catches worms from the intertidal zone at one of Connecticut's plover nesting beaches.



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Least terns will brood young chicks under their wings.

Since the Wildlife Division began managing Connecticut's piping plover population in 1986, the number of pairs using our beaches for nesting has increased. However, many challenges still remain.



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Why Did the Fish Cross the Stream?

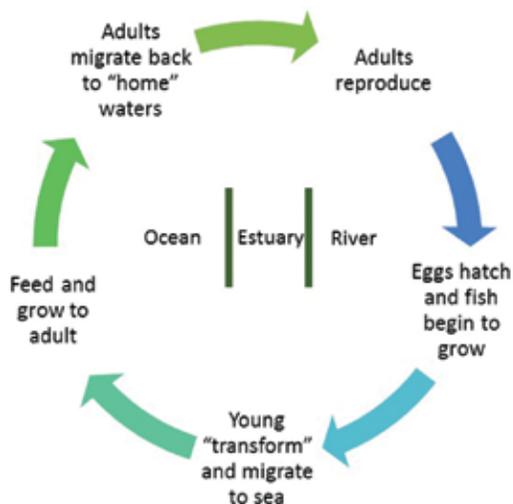
Maybe not just to get to the other side

Written by Brian Eltz, DEEP Fisheries Division

Throughout history, humans have been captivated by migratory fishes. I, like others, have an image etched in my memory bank of an Alaskan grizzly bear in a river, precariously perched on a rock, awaiting a meal of a migratory, leaping salmon. Humans, too, have relied on migrating fish as an important seasonal food source and have followed their migrations to benefit from the returning fish each year. So, why do fish take part in long or short distance migrations when predators and other perils exist? What types of migrations exist? How do the fish know where to go? And, how do they know when to start their migration? To define migration, it is simply when a large proportion of an animal population moves from one area to another with regular periodicity.

There has to be some benefit gained from that movement. In most cases, the life history needs of a fish may not be met by a single habitat; therefore, certain groups of fish have evolved and may

Anadromous Cycle



Atlantic salmon migrate from salt water to fresh water to spawn (anadromy), while American eels do the opposite and migrate from fresh (or brackish) water to salt water to spawn (catadromy).

PHOTOS BY R. JACOBS, DEEP FISHERIES (RET) (2)

migrate (only 2.5 % of all fishes do this) from tens of feet to thousands of miles. This movement is pursued to find more favorable habitat, primarily for reproduction, food, or simply to temporarily inhabit a less severe environment. In all, the three basic habitat types are recognized as being suitable for reproduction and feeding, and as refuge during periods of unfavorable biotic (living organisms) or abiotic (environmental) conditions. The ultimate benefit for moving between these three basic habitats are survival, increased growth, and higher fecundity, meaning the ability to produce an abundance of offspring.

Fish migration can be classi-

fied into two basic types—horizontal and vertical. Vertical migrations often deal with pelagic fish; those that live in the ocean or a lake and are neither close to the bottom nor near the shore. For example, during summer, kokanee salmon juveniles will stay in deeper, colder waters (hypolimnion) during the daytime and rise to the warmer surface waters (epilimnion) near dusk to feed. They will then sink back to the hypolimnion near dawn as light increases. Functions driving vertical migration are thought to be 1) fish following vertical movements of their prey, i.e. zooplankton, 2) fish moving into deeper and darker water during the daylight to avoid predators, and 3) fish maintaining a homeostatic (stable condition of an organism and its internal environment) control over their



Atlantic salmon were extirpated from the Connecticut River Watershed in the early 1800s because of industrial period dams and pollution. Decades of efforts to restore the salmon runs have largely proven unsuccessful. A handful still do return each year (some salmon fry are still stocked as a legacy program), as this one did in the Farmington River.

PHOTO BY R. JACOBS, DEEP FISHERIES (RET)

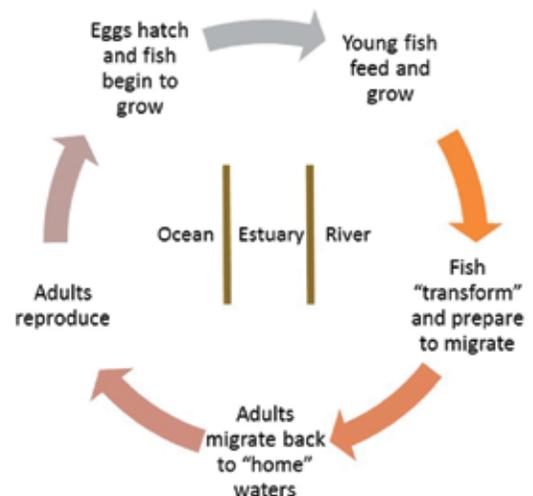
energy expenditure by moving to deeper, cooler waters after feeding where their metabolic rate is slowed.

Horizontal fish migrations are typically grouped into three categories, which are based on the relationship to seawater and freshwater. The first, oceanodromous migration, takes place entirely within seawater and is carried out by some tunas, herring, and sharks. The second, potamodromous, occurs entirely within freshwater. Potamodromous migrations can take place solely in lakes (e.g., lake trout), rivers and streams (e.g., brook lampreys), or in both lakes and riverine environments (e.g., white suckers and kokanee salmon). The last category, diadromous migration, crosses the saltwater/freshwater boundary (e.g., salmon and eels).

Diadromy can be broken down into three subcategories: anadromy, catadromy, and amphidromy. Anadromous fishes spawn in freshwater, but spend some of their life history in saltwater where feeding and the majority of growth takes place (e.g. Atlantic and Pacific salmon). Catadromous fishes are the opposite of their anadromous cousins. They spawn in saltwater, but spend the majority of their life history in freshwater (or brackish water) where they feed and grow (e.g., American eel). Amphidromous fishes migrate from fresh to saltwater and back as juveniles (e.g., sicydiine gobies). However, their migration is not related to reproduction as is the case with

anadromous and catadromous fishes; the saltwater period for these fishes is very short-lived.

Catadromous Cycle





As fish migrate, they must orient themselves, but what navigational mechanisms drive this? In open water habitats (ocean or lakes), there is evidence fish can gain directional information from the sun (azimuth and/or altitude), polarized light, geomagnetic fields, oceanic currents, and differences in water temperature and salinity. In riverine habitats, the primary orienting cue is water current where fish will orient themselves with (positive rheotaxis) or against (negative rheotaxis) the current. Olfactory (smell) orientation plays an important role in navigation of some riverine migrants. Salmon can recognize their natal (home) stream because they imprint on the stream's odor before beginning their seaward migration as juveniles and have the ability to retain that scent throughout their life at sea. For some anadromous salmonids, there is strong evidence that up to 95% of spawners return to their home stream. With anadromous sea lamprey, olfaction plays a significant role in their ability to locate spawning

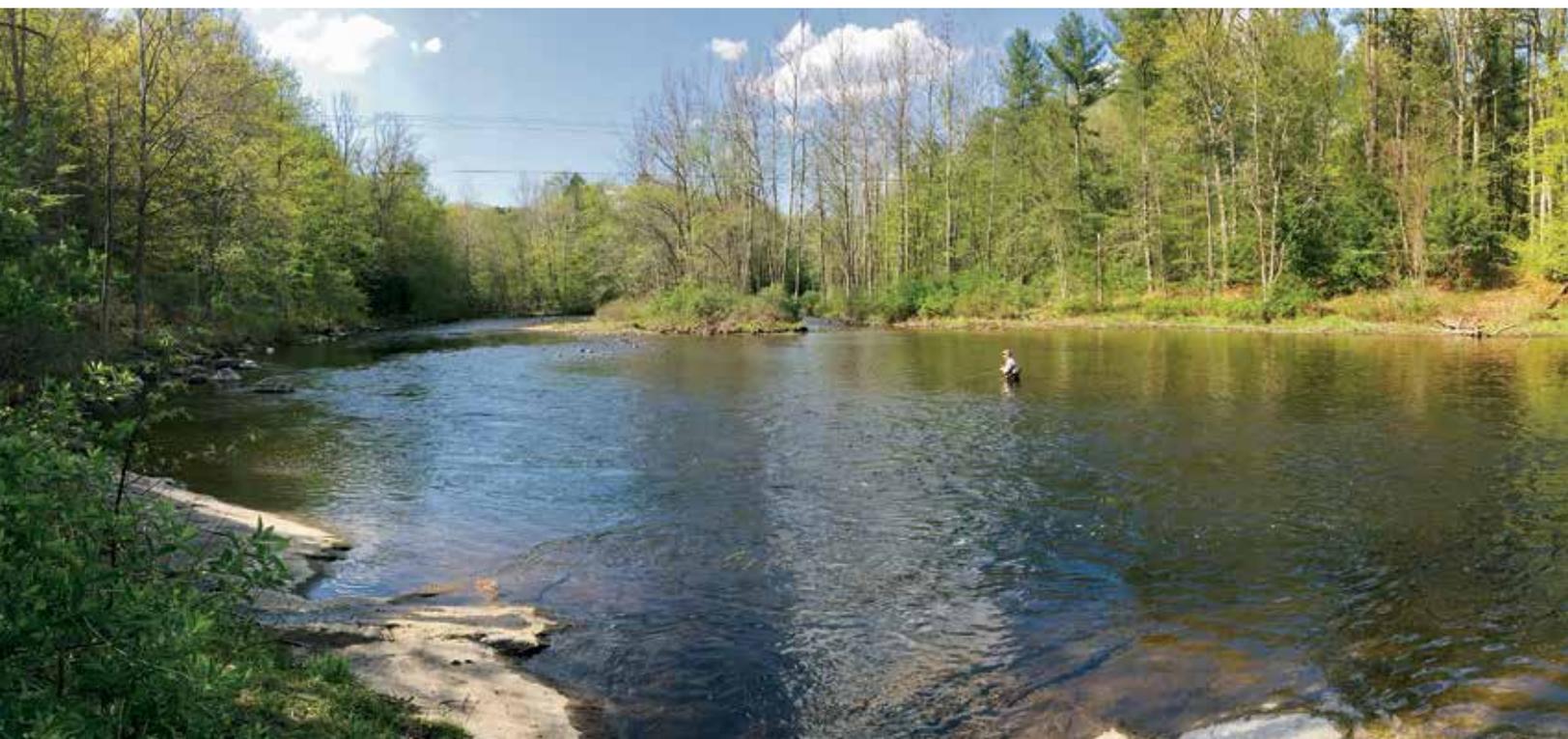


The sea lamprey (top) and kokanee salmon (middle; female and bottom; male) are semelparous and can spawn only once before dying.

PHOTOS BY R. JACOBS, DEEP FISHERIES (RET) (3)

habitat as well. Unlike salmon, which imprint before leaving freshwater, adult spawning lamprey do not home to their natal streams. Instead, lamprey find streams with suitable spawning habitat by detecting chemicals released by juvenile lamprey inhabiting a particular stream or river.

Environmental factors can influence the timing and magnitude of migration. Several factors have been shown (or are thought) to influence migration, including increases in river flow, decreases in barometric pressure, and changes in light levels, photoperiod, water temperatures, the lunar phase,



and turbidity. For example, downstream migrant adult silver-phase American eels tend to initiate their seaward migration in the fall as water temperatures decrease and flows increase during the darker phase of the moon. Juvenile Atlantic salmon smolts have also been shown to begin their spring, seaward migration as photoperiod increases along with water temperatures.

The energy demands of migration are great, especially for those migrating in riverine systems. Energy reserves must be built up during the feeding phase of life to even enable fishes to migrate, because in many cases, migratory fishes will cease feeding during the reproductive phase of the journey. In addition, their alimentary canals (the passage along which food passes through the body from mouth to anus; includes the esophagus, stomach, and intestines) and digestive organs may atrophy in an effort to conserve energy. Some migratory fishes expend so much energy that the ultimate outcome of the migration is death; semelparity is the term used for fishes that spawn only once and die (e.g., most Pacific salmon and American eels). In most cases, the benefit (increased fecundity) outweighs the loss of the migrant's life. In other migratory fishes, the energy expended is still great, but the outcome



PHOTO BY R. JACOBS, DEEP FISHERIES (RET)

Connecticut's State Fish

The American shad, Connecticut's official state fish since 2003, migrates between fresh and salt water. Specifically, adults migrate from salt to fresh water each spring to reproduce. What type of diadromy is this? Anadromy or catadromy?

The American shad is both an important commercial fish as well as a popular sport fish. The Connecticut River is the state's only occurrence of a commercial shad fishery. Shad were once one of Connecticut's top five most economically important commercial finfish species in terms of landings.

The American shad is protected under the Anadromous Fish Conservation Act and restoration efforts are underway from Maine to Virginia. The restoration of American shad in eastern Atlantic rivers is a cooperative effort between the U.S. Fish and Wildlife Service, other federal agencies, state fish and wildlife agencies located within the watershed, non-governmental organizations, and the fishing industry. Management practices facilitating this restoration process include conservation stocking and habitat restoration, as well as the removal of stream and river barriers and the building of fish passage facilities.

To learn more about Connecticut's state fish, go to <https://statesymbolsusa.org/symbol-official-item/connecticut/state-fish-aquatic-life/american-shad> and <https://www.ct.gov/kids>.

may be that they are unable to spawn in consecutive years; iteroparity is the term used for fishes that have the ability to spawn more than once before dying (Atlantic salmon and American shad).

There are several impediments to migratory fishes, especially those migrating in riverine systems. Most notable of the impediments are dams built for hydroelectric or water supply needs and culverts located at road crossings, both of which can limit or altogether stop upstream movements

of fish. Furthermore, these manmade structures can impede access to spawning habitat altogether. Fortunately, the Connecticut DEEP has staff dedicated to resolving issues such as these and providing passage via dam removals and by constructing fishways (often called fish ladders). Stay tuned for a future article that covers how impediments, such as dams and culverts, can further affect fish communities (migratory and non-migratory).

PHOTO BY M. BEAUCHENE, DEEP FISHERIES



Shoreline Sprinter

The Sanderling in Connecticut

Article and photography by Paul Fusco, DEEP Wildlife Division

The sanderling is one of the most widespread shorebirds on the globe whose worldwide population numbers in the hundreds of thousands. To many, it is known as the familiar little sandpiper that is often seen running along the beach, staying just out of reach of the incoming waves. There, tiny morsels of mollusks and other invertebrates are plucked from the churned up wash as the birds rush to feed before the next wave comes crashing in. Seldom is the sanderling found far from the ocean beach.

Description

This small, robin-sized sandpiper has a stout black bill and legs. The plumage is highly variable. In breeding birds, the head, neck, back, and breast are bright rusty red with darker mottling and an unmarked white underside. In winter, the plumage is bright white below with a pale gray back, making this bird the whitest of our small sandpipers. It also has a black shoulder bar that is not always visible. A bold white wing stripe is visible in all plumages when the bird is in flight. Its flight is swift and direct. Flocks are often seen in fairly tight formation flying low over the water.

Sanderlings are most commonly found in Connecticut during late summer and fall. They can also be seen during spring migration as they head north to breed. Some flocks may be present during winter. Wintering birds would be short-distance migrants that do not go all the way to Latin America. Sanderlings frequently associate with other shorebirds, most notably knots, dunlin, and turnstones.

Behavior

In North America, sanderlings breed on stony, dry flats of tundra islands and shorelines in the high Arctic region of Canada, Greenland, and sometimes Alaska. The female builds a camouflaged nest within a slight depression on well-drained ground close to a freshwater pond or other body of water. The nest site is often in an exposed position with little cover. It is loosely lined with willow leaves, lichens, pebbles, and very small twigs. The sanderling's normal clutch size is four eggs, rarely three, which are greenish to brownish and marked with spots and dark streaks. The eggs are incubated by both parents



The sanderling is our whitest sandpiper when in its winter plumage.

for 24 to 27 days until precocial downy chicks hatch. The young chicks leave the nest as soon as their downy feathers are dry and they gain a little bit of strength. They will be able to fly after about 17 days.

Conservation

Most casual observers are not aware that the little sandpiper in front of them on the beach is a migrant that travels to breeding grounds in the Canadian high Arctic or Greenland and wintering areas as far south as the southern tip of Patagonia. That is a maximum distance of 8,000 miles which would be flown twice a year. The question begs asking: how can such a little bird accomplish such a feat? Part of the answer lies in the sanderling's ability to pack on fat reserves, just as many other long distance migrants do. But, in order to complete its journey, the sanderling must be able to stop along its migration path to rest and feed. Some of these places provide sanderlings with a bountiful food supply, enabling the birds to quickly refuel before heading to the next stop on their journey. These places where migrants can rest and feed are called stopover sites, which are extremely important to migrant shorebird populations. The protection of stopover habitats is essential for the conservation of all migrant shorebird populations. Adequate protection of these habitats is on a scale equivalent to the birds' migration paths. In other words, these stopover sites must be looked at as if they



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Sanderlings feed on small mollusks and invertebrates, including sand fleas, flies, and, as seen above, slipper snails.

are part of a chain that brings the birds to and from their breeding and wintering grounds. Stopover sites along the chain have no political boundaries, either state or international. Any break in the links of the chain subjects the birds to added stress and may lead to consequences such as not being able to complete migration. For those birds that are younger, older, or weaker, it means they may perish before being able to reproduce. The loss of stopover habitat results in population decline.

According to BirdLife International's Red List of Threatened Species, sanderlings are considered a Species of Least Concern. They have an extremely large distribution and the population is not declining at a rapid enough rate to qualify the species for a more elevated level of conservation concern. Despite that listing, it is generally accepted by researchers that sanderlings are a species whose population is in a long, slow decline. Breeding surveys from the Arctic are difficult to conduct. Surveys from migration stopover areas in some places indicate a stable population, while other places, including Delaware Bay, indicate a long-term population decline.

That little familiar sandpiper we see running on the beach is likely in the middle of a tough migration that takes it to and from the far reaches of the globe every year. The sanderling is full of spirit as it feeds in the wave wash, packing on the

caloric energy needed for its journey.

The next time you see one, take a moment to think how that sanderling hatched and grew as a chick in one of the more cold and desolate places on the planet. The same bird may be encountered in southern Chile in December and then again on your beach in May as it heads back to the barren tundra islands of northern Canada to breed.



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The brick-red breeding plumage of a sanderling is a big change from the drab gray and white plumage of winter.

“Be Bear Aware”

Farmington Students Learn (and Teach) About Bears

Written by Laura Rogers-Castro, DEEP Wildlife Division; photography by Paul Fusco, DEEP Wildlife Division

“You shouldn’t feed your pets outdoors,” said one fifth grader. Another explained that bears “eat a lot of different things but really like the berries and acorns they find in the forest.” “Don’t

systems. Science and social studies resource teacher Tara Vazquez worked with three colleagues, Dan Martinelli, Leah Johnson, and Judy Muirhead, to develop this unique unit of study which addresses real-life issues in Farmington

unit began with a visit and presentation by three “experts” in the community: a nature center director, animal control operator, and educator with the DEEP Wildlife Division. Jay Kaplan of Roaring Brook Nature Center in Can-

ton explained the history of Connecticut’s changing landscape, from forest to agriculture, back to forest. Black bears’ dependence on forest habitat was introduced during the presentation. Farmington Animal Control Officer Brenda Bettcher told students what to do if they see a bear and provided tips on how to keep bears away from homes and schools. Wildlife Division Natural Resource Educator Laura Rogers-Castro, along with wildlife resource as-



Students at West Woods Upper Elementary School quiz participants on the food items eaten by black bears.

worry if a bear has a red ear tag. It doesn’t mean it is a problem bear.” These comments were all heard during a visit to a *Bear Aware Fair* hosted by students at West Woods Upper Elementary School in Farmington.

The *Bear Aware Fair* is the culmination of a comprehensive look at bears and habitat within a unit on eco-

while meeting the requirements of the state’s fifth grade science curriculum. The team of science teachers at the school have refined and implemented the topic into their classes, providing the necessary ingredients to make the program a resounding success in its second year.

The black bear component of the

assistant Lyndsay Stockwell, provided information on how scientists collect data on bears. When students were asked by Wildlife Division staff how many of them have actually seen a bear in Connecticut, at least half of the students raised their hands!

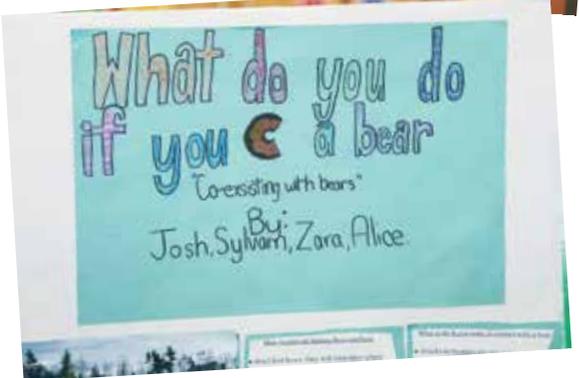
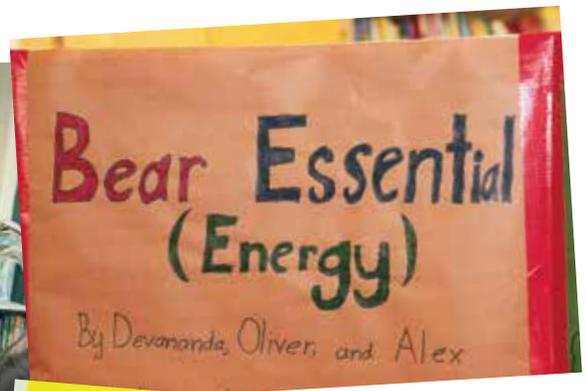
The idea behind the *Bear Aware Fair* is to invite the community into



DEEP Wildlife Division Natural Resource Educator Laura Rogers-Castro listens to students talk about black bear research in Connecticut.

the school to visit and learn about “all things bear” from the fifth grade students! The students were very innovative with their work. There were posters and talks explaining how bears are interdependent on the forest ecosystem and how energy, in the form of food, is created and transferred to an organism in its habitat. There was a quiz for par-

ticipants to decide “what do bears eat?” which Wildlife Division staff proudly passed with an A+! Another quiz featured a slice of a jelly donut as a prize because students learned that donuts are used to lure bears into culvert traps for research purposes. Students orally presented some of their data, includ-



Where do bears live? This fifth grader offers insight on the best habitat for black bears.

ing the rise in bear sightings throughout the state, the ideal habitat most suitable for bears, and how the bear population has changed in Connecticut through time. There were images on computer screens, dioramas, puppet shows, a stuffed bear with a pretend radio collar, educational handouts, and many enthusiastic students!

Congratulations to West Woods Upper Elementary School’s teachers for creating this fun, interdisciplinary, and educational unit on an important, real-world environmental topic in Connecticut. If educators would like more information on the development and implementation of this ecosystem unit or the *Bear Aware Fair*, please contact Ms. Vazquez (vazquez2@fpsct.org).

First Breeding Season of the CT Bird Atlas Completed

Written by Min Huang, DEEP Wildlife Division; photography by Paul Fusco, DEEP Wildlife Division

The DEEP Wildlife Division and the University of Connecticut are continuing their efforts to conduct the second Connecticut Bird Atlas. This multi-faceted project is focused not only on breeding birds, but also migrating and wintering birds. The objectives of the CT Bird Atlas are to:

- Provide contemporary data on bird distributions throughout the year to better inform land use decisions by federal, state, and municipal government, land trusts,

conservation organizations, and other land managers.

- Develop a better understanding of the habitat requirements of Species of Greatest Conservation Need.
- Develop metrics that can be used to monitor the health of the environment.
- Galvanize the conservation community to come together and work towards a common and shared goal.
- Develop the basis for predicting the effects of future development and climate change on individual species.

- Create more efficient and informed conservation planning.

Getting Started

The CT Bird Atlas has just completed its first of three breeding season and three migration survey periods. The first wintering survey period kicked off this past November. So far, the project has been going very well and some pertinent items can be shared from the inaugural breeding season.

The Project Team (Chris Elphick, Morgan Tingley, Craig Repasz, and Min Huang) has been very busy since February 2018. The first task was to develop a website that serves as the clearinghouse for all of the data associated with this Project. It is hoped that the website will also exist into the future and contain all bird-related data in Connecticut. The website, www.ctbirdatlas.org, is a great resource for all of the protocols, data forms, and data. Species pages will soon be published as well, which will provide information on each bird species in the state.

A steering committee was assembled that consists of representatives from the major bird conservation organizations in the state, land trusts, and The Nature Conservancy. The Team worked with the steering committee to chart out strategies for implementing the Project, and then reached out and was able to “coerce” eight extremely capable individuals to serve as the Regional Coordinators for the volunteer portion of the Project. These eight individuals and Craig Repasz, the State-wide Coordinator, were extremely busy signing up and assigning Atlas blocks to volunteer birders. This was a huge task and will continue to drive the At-





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Current broad-winged hawk nesting distribution may be used to denote habitat changes since the first breeding bird atlas was completed.

las Project during its first winter survey period and as it gears up, once again, for another breeding season.

Other major tasks involved developing data forms and protocols for the breeding, migration, and wintering surveys, as well as distributing that information to the public. Part of the mission was to spread the word about the Project to as many people as possible. Almost 20 presentations were conducted across the state outlining the Atlas, its importance, and how people could help. In partnership with the Connecticut Audubon Society and Audubon Connecticut, eight training sessions were conducted across the state in advance of the breeding season survey period.

Initial Project Results

The CT Bird Atlas Team is happy and enthused about the first breeding season.



As with any new and large project, some obstacles were encountered along the way. However, the birding community has responded well to the Atlas – 710 volunteers signed up to survey in one or more blocks across the state. A total of 449 of the available 596 survey blocks were adopted in the first year – this comprises 75% of all blocks.

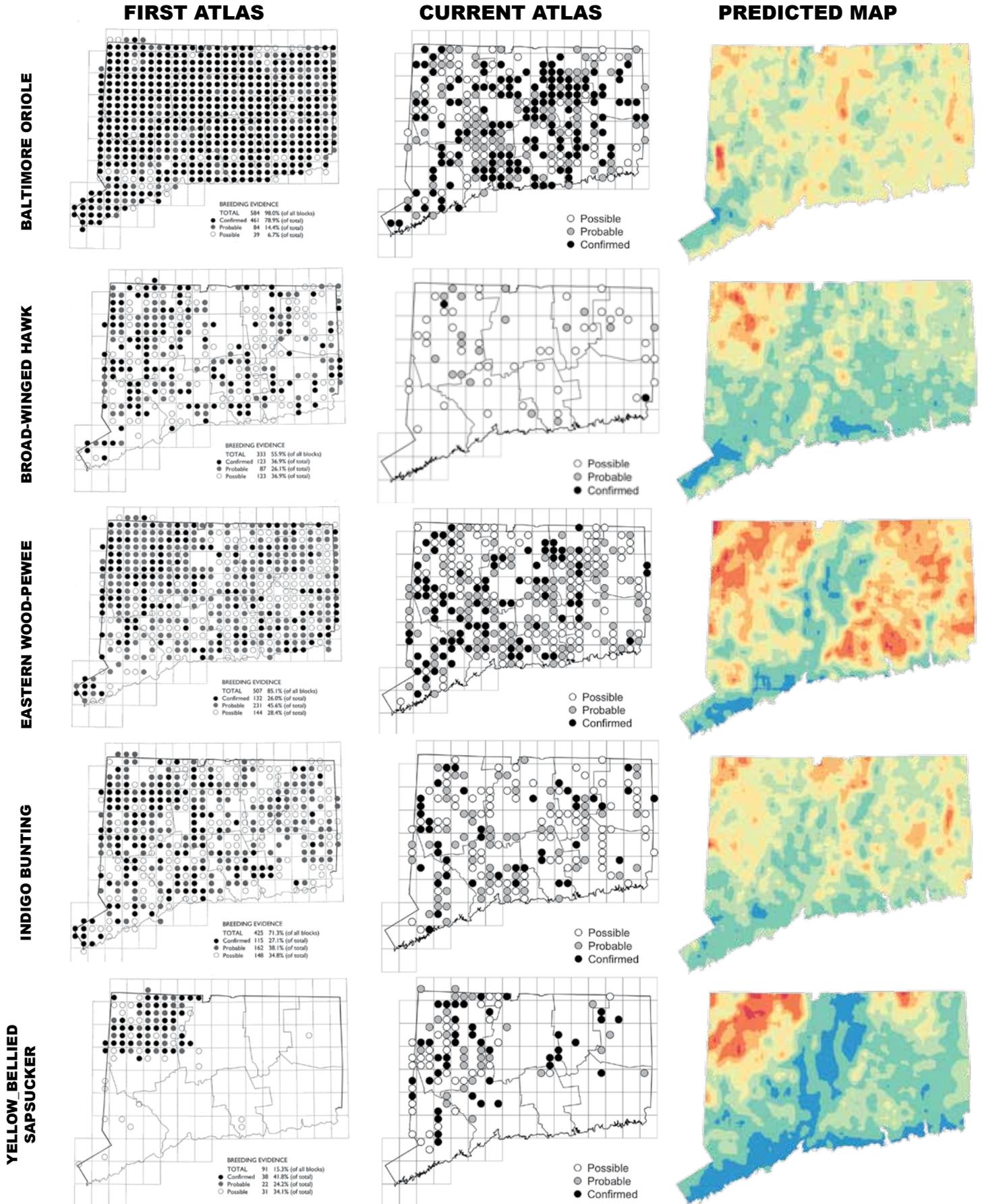
Over 4,400 volunteer hours were reported and over 7,000 checklists and data forms were submitted. These data equate to over 73,600 records. Of these, over 18,000 indicated confirmed breeding, 23,000 showed probable breeding, and over 32,000 suggested possible breeding. A total of 174 bird species

had associated breeding codes.

A Volunteer Appreciation Day was recently held at Hammonasset Beach State Park, and was attended by almost 100 people. The Team was pleased so many volunteers participated in the event and their continued efforts on behalf of the Project were much appreciated. There are plans for the Volunteer Appreciation Day to become an annual event to thank everyone for their efforts on the CT Bird Atlas.

Seasonal technicians were hired to collect data to help with deriving estimates of relative abundance for all breeding species. The technicians were able to conduct 989 protocol point count surveys across the state. These counts, once completed over the three-year data collection period, will allow for the development, for the first time, of estimates of relative abundance. These data, in conjunction with the Atlas con-

Each of these figures depicts the confirmed breeding status by block from the first Breeding Bird Atlas in 1982-1986, the preliminary first year of data from the second Breeding Bird Atlas, and the predicted current breeding distribution based on models. Red indicates high probability of breeding and blue is low probability.



firmed breeding distributions, will enable the mapping of areas in the state that are most critical for various suites of birds. This will be science and data driven information, something that is currently lacking for many species.

The other major objective of this Project—bringing together the conservation community—is certainly beginning to take form. Major donations have been received from 10 organizations that, to date, total over \$35,000. These include:

- Great Hollow Nature Preserve in New Fairfield
- Connecticut Ornithological Association
- Audubon Connecticut
- Connecticut Audubon Society
- Litchfield Hills Audubon Society
- New Haven Bird Club
- Hartford Audubon Society
- Menunkatuck Audubon Society
- Potopaug Audubon Society
- Western Connecticut Bird Club.



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Clockwise from upper left:
Eastern wood-pewee, Yellow-bellied sapsucker, and indigo bunting.

Another \$27,000 is already pledged for 2019. This influx of financial support has made it possible to collect migration data and also streamline development of the website.

Although data have only been collected for one breeding season, some interesting trends are emerging; however, the data and “contemporary” maps are preliminary. Two full years of data collection are still left and 85 (14%) blocks have no data recorded. Extensive data review and quality assessment are being conducted this winter. Once finished, final maps from the first year of breeding season work will be completed. However, it can be inferred from other surveys and anecdotal observations that the

landscape has been and continues to change for breeding birds. Each of the maps (page 18) shows results of the first Atlas, preliminary results after one breeding season, and predictive

maps. Red indicates high probability of breeding and blue is low probability.

With a great start to this important Project, it is hoped that with continued support of the conservation community, the Atlas will gain more momentum as it transitions into years two and three.

Preliminary Block Summaries

Region Name	Mean Number of Species per Block	Mean Confirmed Breeding Species per Block	Blocks with no Records	Blocks with no Confirmed Breeding Records
Lower CT River	40	15	5	6
New Haven	41	18	1	4
North Central	30	13	9	12
North East	31	11	15	19
North West	33	10	12	16
South West	21	8	18	24
South East	26	13	16	17
West Central	39	17	9	10
OVERALL SUMMARY				
Average number of records:	32	13	85	108
*Based on all blocks, not just those that had been visited				

Ticks, Deer, and Diseases: *New Concerns and Research*

Written by Jennifer Kilburn, DEEP Wildlife Division

The DEEP Wildlife Division, in cooperation with the Connecticut Agricultural Experiment Station (CAES), has been conducting research on Manresa Island and two surrounding communities following the June 2017 discovery of a breeding population of lone star ticks (*Amblyomma americanum*) in south Norwalk, where a dead deer was initially found (*Connecticut Wildlife*, September/October 2017). Tick collections conducted by researchers just after the discovery occurred indicated that nearly 50%

of adult ticks collected at that specific location tested positive for *Ehrlichia*. Lone star ticks have been known to carry at least five infectious diseases that affect people – three variations of *Ehrlichia*, Heartland virus, and Bourbon virus.

Beginning in March 2018, researchers began capturing deer, applying ear tags to identify individual animals, and collaring them with Global Positioning System (GPS) devices used to track movements and determine specific mortality causes.

In total, 25 deer were captured and marked in south Norwalk. CAES also assessed the number of ticks observed on marked deer's ears, which serves as an index to estimate total tick loads on individual animals. Additionally, ticks were collected from tick drags and carbon dioxide emitting tick collection traps throughout Manresa Island to estimate tick abundance and infection rates of the ticks. (The information had not been summarized at the time this article was printed.)

As part of an effort to reduce the

J. KILBURN



A GPS-collared deer consumes whole kernel corn while being treated with a tickicide at a four-poster station.

A New Concern

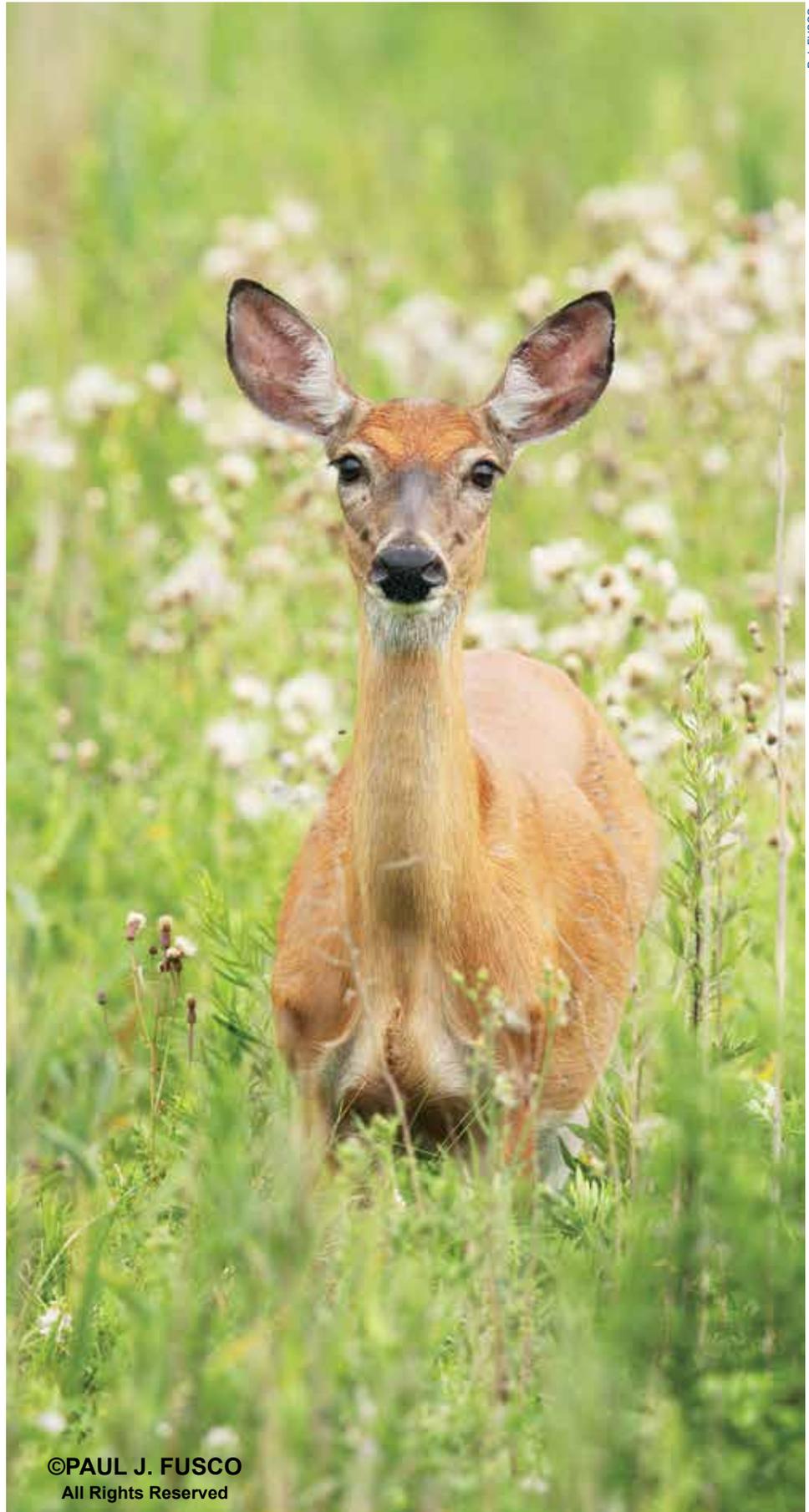
Also noteworthy, CAES reported the first case of a person being bitten by an exotic Asian longhorned tick (*Haemaphysalis longicornis*) in Fairfield County. This invasive species was originally discovered in New Jersey in 2017 and has now been found in eight other states (AR, CT, MD, NC, NY, PA, VA, and WV). This tick is a major pest on livestock and feeds on a wide variety of mammals, including humans. However, it is currently not known if this tick will transmit pathogens, such as those that cause Lyme disease, babesiosis, anaplasmosis, and/or the Powassan virus. Continued research and monitoring will occur to fully understand the risk this tick species presents.

tick population around Manresa Island, CAES, along with the Wildlife Division, placed four, four-poster devices in the study area. Four-poster devices are self-feeding stations for deer made up of a central bin containing whole kernel corn. Feeding stations are on either side of the bin, each containing two heavy nap paint rollers coated with a tickicide, similar to a product you would apply to a pet to repel ticks. As deer use the feeders, they come into contact with the rollers and are treated with the tickicide. Wildlife cameras were placed at each four-poster site to determine the proportion of marked deer treated at the devices.

As a follow up, the Wildlife Division and CAES plan to re-capture marked deer beginning in spring 2019 to reassess tick loads following the implementation of the four-poster devices, giving biologists a better understanding of the effectiveness of these devices at reducing tick populations. A survey of residents in the two adjacent communities was initiated in late October to assess deer, turkey, ticks, and tick-related concerns within the community.



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Bag Limits for Mallards and Atlantic Population Canada Geese to Decrease for 2019-2020 Hunting Season

For the past 20 years, mallards breeding in eastern North America have been in a steady decline. Since 1998, spring surveys conducted throughout eastern Canada and the northeastern United States every year have provided reliable annual estimates of the breeding population size of eastern mallards. These surveys indicate that mallard numbers in eastern Canada have not changed much, but have decreased steadily in the northeastern United States, declining by about 38% since 1998. The mallard harvest in the Atlantic Flyway has mirrored the population decline. When these two survey areas are combined, the total breeding mallard population in eastern North America is declining at a steady rate of approximately one percent per year. Based on biologists' present understanding of eastern mallard population dynamics, contemporary harvest rates from a 60-day season, with a four mallard daily bag limit may result in harvest rates that are above a sustainable level. Thus, the mallard bag limit will be reduced from four birds to two, beginning in the 2019-2020 hunting season. Hopefully, this change will stabilize the eastern mallard population. Should the population start to grow again, biologists will have a better understanding of the effects of harvest on the population.

The Atlantic Population (AP) of Canada geese has declined in the past few years also. That, coupled with a breeding failure in 2018, is prompting the Atlantic Flyway to restrict AP goose bag limits in the 2019-2020 season. The AP goose season was closed in the mid 1990s due to a severe population decline, and managers want to avoid having to close the goose season in the AP zones throughout the Flyway. In Connecticut, this will mean a 30-day AP season with a two-bird daily bag limit for 2019-2020.

Min Huang, DEEP Wildlife Division

Advanced Hunter Education

The Connecticut Conservation Education/Firearms Safety Program offers Advanced Hunter Education seminars and clinics on such topics as waterfowl hunting, hunter marksmanship, small game hunting, venison processing, and wild turkey hunting. All programs are free and open to the public, but you must register to attend. Learn more at www.ct.gov/deep/hunting.

CT DEEP Acquires Open Space through the Recreation and Natural Heritage Trust Program

DEEP recently acquired 420 acres of property located south of Route 44 in Norfolk, which abuts the Housatonic State Forest. It is a key open space link from Canaan Mountain to the Blackberry River, and features forested land with spectacular views, pristine streams, and abundant wildlife. This acquisition provides the public with new opportunities for passive recreation, hunting, and fishing. The land had previously been owned by the Vagliano family.

Funding for this acquisition was provided by a U.S. Fish and Wildlife Service Federal Aid in Wildlife Restoration grant, a U.S. Forest Service Highlands Conservation Act grant, a generous private donation through the Greenprint Partners Pledge Fund, and State bond funds through the Recreation and Natural Heritage Trust Program. The Recreation and Natural Heritage Trust Program is the DEEP's primary program for acquiring land to expand the state's system of parks, forests, wildlife, and other natural open spaces.



Update on Chronic Wasting Disease Collection

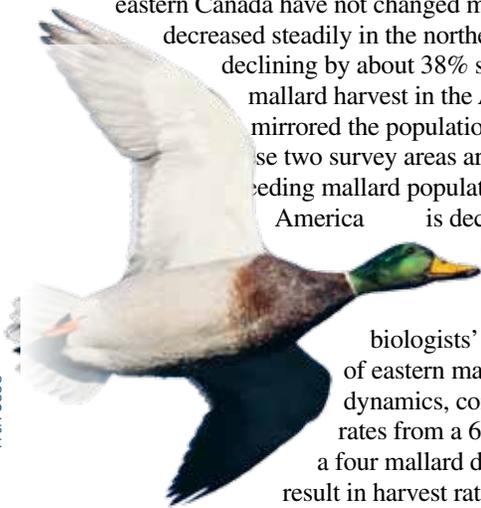
If you have brought a deer to a butcher shop or taxidermist during the past several hunting seasons, there is a good chance your deer has been tested by the DEEP Wildlife Division for chronic wasting disease (CWD). In 2018 (mainly between August and December), the Division collected over 400 deer heads and selectively sampled from 350.

Changes in testing in 2018 included more emphasis on adult males and deer from Deer Management Zones bordering New York (zones 1, 6, and 11). Older male deer are more susceptible to carrying the prion that causes CWD. Therefore, by targeting taxidermy businesses rather than butchers as in past years, the Division was able to collect more samples from these higher risk animals.

As in previous years, samples were sent to the University of Wisconsin for testing. The Wildlife Division has been testing white-tailed deer for CWD since 2003 and has not yet detected the disease in Connecticut's deer population. CWD has been documented in 22 states and three Canadian provinces. Current laws in Connecticut prohibit any transfer of bone-in carcasses or heads from a CWD-infected state. However, de-boned meat, hides, cleaned skull caps, and finished taxidermy mounts are legal. A complete list of states where CWD is present can be found at www.cwd-info.org, along with additional information pertaining to chronic wasting disease.

Bill Embacher, Wildlife Management Institute/DEEP Wildlife Division

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Conservation Calendar

Dec. - March Observe eagles at the Shepaug Eagle Observation Area in Southbury. The viewing area is open Saturdays, Sundays, and Wednesdays from 9:00 AM to 1:00 PM now through Sunday, March 10, 2019. Visitation to the observation area is by reservation only. To schedule a free visit, go to <https://www.firstlightpower.com/recreation/shepaug-hydroelectric-station/> or call 1-800-368-8954 (Tuesday-Friday, between 9:00 AM and 3:00 PM).

Jan. - April Donate to the Endangered Species/Wildlife Income Tax Check-off Fund on your 2018 Connecticut Income Tax form. Learn more at www.ct.gov/deep/EndangeredSpecies.

Programs at the Sessions Woods Conservation Education Center

Programs are a cooperative venture between the Wildlife Division and the Friends of Sessions Woods. A complete list of programs can be found at www.ct.gov/deep/SessionsWoods. Please register by sending an email to 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.

Feb. 23 **Wildlife Tracking**, starting at 1:30 PM. Wildlife Biologist and Habitat Manager Pete Picone will lead participants on a hike to identify the tracks and signs of wildlife at the Sessions Woods Wildlife Management Area. Past tracking events provided insight on bobcat, fisher, coyote, cottontail rabbits, wild turkey, and squirrels. Please be sure to dress for outdoor, winter conditions and wear appropriate footwear. The hike will be approximately two miles. Register early for this popular program!

March 17 **March Mushroom Madness**, starting at 9:30 AM. The CT Valley Mycological Society (CVMC) welcomes members and non-members to their annual meeting at Sessions Woods for an enlightening indoor presentation on mushrooms. The meeting provides an opportunity to talk with others interested in the field of mycology and view some of the resources available to learn more about mushrooms. The CVMC meeting includes a coffee and refreshment half hour beginning at 9:30 AM, followed by the program at approximately 10:00 AM.

2019 Hunting and Fishing Season Dates

Jan. 1-31 Bowhunting season for deer and turkey on private land only in Deer Management Zones 11 and 12.

Jan. 1-Feb. 28 Hunting continues for pheasant, chukar and Hungarian partridges, gray squirrels, cottontail rabbits, European hares, and red and gray foxes. (See the 2019 Connecticut Hunting and Trapping Guide for additional season dates.)

Jan. 12-Mar. 30 Crow season (Mondays through Saturdays).

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

Consult the 2019 Connecticut Hunting and Trapping Guide and 2018-2019 Migratory Bird Hunting Guide for specific season dates and details.

Guides are available at DEEP facilities, town halls, and outdoor equipment stores, and also 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 permits and stamps. The system accepts payment by VISA or MasterCard.

Sign up to receive *Wildlife Highlights*, a free, electronic newsletter for anyone interested in Connecticut's wildlife and the outdoors! www.ct.gov/deep/WildlifeHighlights



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Sanderlings are highly gregarious. They are commonly seen at stopover sites along the Connecticut shoreline during migration and in winter.