WILDLINES

New Hampshire Fish and Game's quarterly newsletter of the Nongame and Endangered Wildlife Program

WINTER 2020

Conservation License Plates Help Find

CANADA LYNX

© JIM KRUGER / ISTOCKPHOTO.COM

The federally threatened Canada lynx is so elusive that remote cameras have been the most efficient way to document their presence. Using over 140 cameras, lynx were photographed 64 times in 20 locations in New Hampshire. The New Hampshire Fish and Game Department collaborated with the Northeast Climate Adaptation Center and the U.S. Fish & Wildlife Service. The project was made possible by funding generated from the sale of Conservation License Plates, also known as Moose Plates. Additional funds were furnished by US Fish and Wildlife Service and the Wildlife Heritage Foundation of New Hampshire.

Canada lynx and its prey of choice, the snowshoe hare, are built for northern life. Excellent hearing and night vision allow lynx to maximize hunting efforts even as daylight hours shorten. Lynx paws function like furry snowshoes—with a huge surface area and fur-covered toes that spread out to distribute the cat's weight when walking over snow. Long legs enable lynx to pounce and capture the fast and agile snowshoe hare.

As a species that would be significantly affected by climate change, research to determine where they currently exist and how to best protect them has increased in recent years. Every resident who has purchased a Moose Plate has helped researchers decode the many mysteries that surround the lynx. Consider purchasing a Moose Plate this year; it's a great way to invest in the protection of threatened and endangered wildlife throughout the state. To learn more, visit *www.mooseplate.com*.

Memorial and Honorary Gifts to the Nongame Program

The NH Fish and Game Department recognizes with gratitude the following individuals, their families, and friends, for helping to leave behind a conservation legacy for future generations:

- Dr. James P. Powers operated a successful business in Hillsboro, NH, and is remembered for his love of kayaking, fishing, and organic gardening.
- Elizabeth "Bettie" Norton lived in Seabrook, NH, and loved visiting Seabrook Beach. She had a special love for the piping plovers that inhabit the sandy beach each summer.
- Danielle L. (Hebert) Snyder of Pembroke, NH, loved all animals. She is remembered as someone who adored the outdoors, traveling, and spending time at the beach.

Donate online at ***wildnh.com/nongame***

Glenn Normandeau
Executive Director

WILDLINES

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WILDLINES is funded in part through the sale of Conservation License Plates.
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SPOTLIGHT

ON SPECIES OF GREATEST CONSERVATION NEED

NORTHERN GOSHAWK

(Accipiter gentilis)

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Known as incredible hunters, these predators fly through forests at high speeds, diving feet-first onto prey, and are known to take animals more than twice their weight.

Description: A large hawk with rounded wings and a long tail. Adult birds have grayish-blue feathers on their upper body and a white underbelly with fine gray bars. The crown and cheeks are dark gray with a notable white stripe over the eye. Eyes are orange to red in adults and yellow in juveniles.

Habitat: Mixed forests throughout the state with openings and perches for hunting prey.

Threats:

- Habitat conversion and development that reduces available nesting sites and foraging habitat.
- Disturbance from recreational activity.

Conservation Actions:

- Collect data on habitat use and distribution throughout the state. It's unknown what habitat goshawks rely on in the winter.
- Any sighting of a goshawk should be promptly reported to ***ebird.org***.
- Determine important prey species of the goshawk and how those species are affected by forest management.

TO HIBERNAT OR NOT That Is the Ques

New Hampshire's habitats transform each year, requiring the wildlife that lives in the Granite State to either endure or retreat. During the winter months, leaves, berries, and flowers disappear, trails often become covered with snow, and water freezes. Daily life, from staying warm to finding food, becomes much more difficult.

For some species, such as those that rely on insects for food, retreat is the only viable option. Of eight bat species that live in New Hampshire, only three migrate to warmer climates. Those that hibernate in New Hampshire seek out areas with stable air temperatures and high humidity to prevent dehydration, usually in caves or mines. To survive, breathing slows and a bat's heart rate drops dramatically from around 250 beats per minute to just 10. A bat may lose half of its body weight over the winter, waking up hungry when warming temperatures signal the return of insects. This deep sleep can last from four to six months, and during that time the animal's body temperature may decrease to near freezing.

Some animals do freeze. The internal temperature of amphibians closely reflects the temperature of the environment, so when temperatures sink below 32°F the animal's skin freezes. Drastically low temperatures signal the internal mechanisms of wood frogs, spring peepers, and gray tree frogs to take precautions that will prevent them from freezing to death. Almost instantly, the frog's liver will convert stored sugar into glucose, which is then transported to the animal's cells to prevent shrinking and dehydration. This process continues until the heart stops pumping, all organs cease functioning, and the frog appears dead, with over half its body frozen solid. When warm weather arrives, the thawing process beings. Researchers continue to study this amazing ability, including what signal prompts the heart to start beating again, and how proteins and waste products assist in the freezing and thawing processes.

The colder it gets, the more slowly turtles function, reducing their need for oxygen. Turtles find a spot at the bottom of a stream, pond, or wetland—sometimes in groups and often in the same spot each year. Their metabolism slows, but turtles are still alert enough to detect changing light levels and warming temperatures. Reports of turtles swimming through the water underneath a layer of ice are not uncommon.

Amazingly, these air-breathing reptiles can survive for months by absorbing what little oxygen may be available in this environment through their skin and the membranes in their mouth or cloaca. To produce enough energy to stay alive, turtles break down glycogen, a carbohydrate stored in their tissues. This life-saving process would normally lead to a deadly accumulation of lactic acid, but turtles have the incredible ability to store the buildup in their skeleton. A turtle's shell contains compounds that help buffer the blood from the potentially fatal effects of lactic acid buildup.

Cold wind is detrimental to animals lacking thick coats. Birds that remain in New Hampshire for the winter find shelter under

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Chickadees endure the winter elements with extra plummage that they fluff up to help retain more body heat.

TE

stion

It's not all that unusual to find turtles swimming underneath a layer of ice like this snapper.

blankets of vines, in barns, tree cavities, thick shrubs, or coniferous trees. Even the most solitary of birds may take refuge in flocks to maintain body temperature. Songbirds such as chickadees gradually grow more plumage in preparation for cold weather and can insulate their bodies by fluffing up those feathers. They tuck in extremities to further reduce heat loss and shiver to produce heat when necessary. Birds' diets must also adjust as the seasons change. While summer forage includes a variety of insects and berries, the spruce grouse retreats to the treetops and lives almost entirely off conifer needles in northern New Hampshire during winter. The needles of spruce and pines are tough to digest, so the spruce grouse's gizzard grows to almost three times its size in preparation. It can store food in its crop, which is a pouch at the front of the throat (also called a craw), and the bird's intestines grow longer to help digest the increased intake of needles.

All Hands on Deck for Monarchs

After decades of noticeable declines, citizens asked how they could help to bring back monarch butterflies. In response, NH Fish and Game partnered with the University of New Hampshire (UNH) Cooperative Extension to provide training workshops in Newfields and Stratham this fall. Over 100 New Hampshire citizens participated in the workshops and walked away equipped with actions to support the recovery of monarchs. Raising monarchs for educational purposes can be a useful lesson in wildlife ecology, but as far as conserving the monarch population long-term, the best actions to take include promoting and supporting milkweed habitat and monitoring the population.

The workshops pointed participants in the direction of citizen science opportunities. "These initiatives require different levels of involvement, so there is something for every level of observer," said Haley Andreozzi of UNH Cooperative Extension.

Workshop participants learned about the Monarch Larva Monitoring Project's opportunities to "adopt a spot" to conduct more long-term monitoring of milkweed and monarchs. Participants described a patch of milkweed habitat and tracked activities of monarchs throughout the breeding season.

They also enjoyed a demonstration of milkweed propagation, which monarchs require for survival. Milkweed starter plugs are available for properties two acres in size or larger. The application for free plants may be found at the Monarch Watch website at ***monarchwatch.org***. This website provides detailed instructions on how to propagate new milkweed plants from existing pods, another free option that creates habitat.

Andreozzi and Nongame Program Biologist Heidi Holman taught participants how to tag monarchs with unique codes. Citizen scientists can order sticker tags and a data sheet from the Monarch Watch website, and then follow instructions to properly attach the tiny numbered tags to the wing of any monarch they may encounter. As monarchs move and

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migrate, anyone who reads the number on the monarch's tag can report it to the same website.

"The data collected help us to understand the movement of monarchs from the Northeast to their overwintering sites in Mexico, including the use of important stopover sites," said Holman. "It also helps with estimating the number of butterflies each region is contributing to next year's population."

Monarch watchers are encouraged to enter observation data and watch real-time migration and seasonal patterns on the website ***journeynorth.org***. Scientists rely on the help of citizen observations to understand the monarch's conservation needs. Citizen scientists make a valuable contribution and help tell the dramatic story of the monarch's migration.

"It's too soon to tell if increased efforts by citizens across the country have had an impact on the population," said Andreozzi, "but reports of the fall migration have been strong and potentially in step with the increasing trend we've been seeing over the last two years." These workshops, sponsored by NextEra Energy and the Monarch Joint Venture, are an excellent resource for monarch information. Visit ***naturegroupie.org*** for more opportunities to get involved.

WINTER
Wildlife Almanac

JANUARY

• Mt. Washington's record low for this month is -47°F in 1934. Incredibly, two tiny butterflies, the White Mountain arctic and the White Mountain fritillary, are able to survive these harsh conditions in the alpine zone.

FEBRUARY

• Mammals and songbirds forage the catkins, buds, bark, and twigs of yellow birch (*Betula alleghaniensis*).

MARCH

• Garter snakes have spent the winter underground, often communally. On warm days they may venture out to soak up the sun, and their emergence signals the beginning of the breeding season.

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What Is a Tiger Beetle?

Tiger beetles were named to reflect their intense predatory behavior. They are fast and creative, and they use tactics to fool their competitors and sneak up on their prey. Adults actively forage, eating smaller insects with their sharp mandibles. Larvae take two years to develop into adults, during which time they wait in burrows for unsuspecting prey to pass by.

The Granite State is home to over twelve species of tiger beetle, each with differences in appearance and habitat preferences. Four of these beetles are identified as Species of Greatest Conservation Need in New Hampshire: cobblestone, Appalachian, margined, and Puritan tiger beetles. Both the cobblestone and the Puritan tiger beetle are state endangered.

The cobblestone tiger beetle was known to exist on just five islands in New Hampshire's Connecticut River until a new population was discovered by a volunteer observer in 2017. Historically, dams in rivers were a major cause of habitat loss for this beetle, flooding out the pebbled islands that once existed throughout a stream. Past surveys for this species focused on documentation and habitat assessments. Researchers hope to learn more about the mating habits of these species and to better document the life history of this specialized insect.

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© JOY HEBERT

A very fortunate photographer captured this stunning photograph in late September. This lynx was observed climbing up and down a scraggly tree, likely in pursuit of a squirrel. Followers of the NH Fish and Game Facebook page loved viewing and sharing this incredible capture–it received almost 90,000 engagements! Thank you to Joy Hebert for sharing this wonderful and extremely rare wildlife moment with residents of New Hampshire and beyond.

COVER MASTHEAD PHOTOS: *COBBLESTONE TIGER BEETLE* © NHFG / JOSH MEGYESY PHOTO • *WINTER LAKE* / PUBLIC DOMAIN • *NORTHERN GOSHAWK* © STANISLAV DUBEN / DREAMSTIME.COM