WILDLINES

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

SUMMER 2020

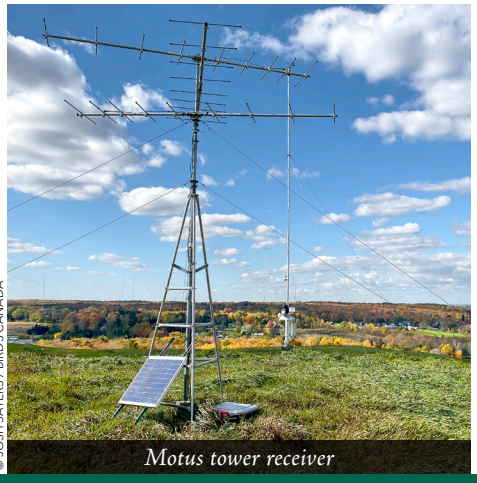
WILDLIFE DETECTION TOWERS

Funded in New England

The Nongame Program, in coordination with NH Audubon, has secured funding through the U.S. Fish and Wildlife Service's Competitive State Wildlife Grants Program to construct a network of Motus stations to track vulnerable wildlife. Motus stations are tower receivers equipped with antennas that automatically record signals from radio transmitters attached to animals. The receiving towers are powerful enough to pick up and record the tiny frequencies emitted by insect transmitters. "Motus" is Latin for movement—fitting for an incredible technology that helps summarize movement information from a variety of wildlife in need of conservation.

Animals don't recognize jurisdictional borders, especially those that are migratory, such as birds, bats, and butterflies. They range wherever their needs may take them: from areas that supply forage, to places that provide nesting sites and mates, to habitats that allow them to rest and refuel during migration. For wide-ranging species, some of these places remain unknown to the biologists working to conserve their populations. Motus serves as a way to bring conservationists around the world together to answer complex research questions. Currently, the Motus system is 900 towers strong around the globe.

Monarch butterfly fitted with a nanotag transmitter, shown actual size above.



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Motus tower receiver

"This is a regional system that connects across entire landscapes, not just across state boundaries," said Marc Nutter, NH Audubon Grants Manager. "The plan is for 50 total receiving stations throughout New England to be installed over the next three years, with 10 to 12 of those stations being placed in New Hampshire."

Researchers will work with landowners and Geographic Information System (GIS) analysis to determine the final placement of the towers, positioned with the goal of detecting north–south migrating wildlife. The detection range for a Motus antenna is approximately nine miles.

New Hampshire will have the opportunity to conduct its own in-state research, as well as collaborate with regional partners. "New Hampshire will utilize the new network to put nanotags on 50 monarch butterflies in 2021," said Nutter. "We hope to track them on their southern migration all the way to Mexico using established Motus receiving stations, helping to identify key stopover points that may later influence further plantings of butterfly forage."

"Any researchers can use the detection towers once they are in place," said Nongame Program Coordinator Mike Marchand, "which creates opportunities for our partners, students and universities, and others involved in conservation." Motus tower construction in New England will aid in many wildlife monitoring efforts and will allow for coordination between regional and national partners for efficient policy decisions, which are all recognized as critical needs outlined in New Hampshire's *Wildlife Action Plan*.

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Executive Director

WILDLINES

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SPOTLIGHT

ON SPECIES OF GREATEST CONSERVATION NEED

NORTHERN BLACK RACER

(Coluber constrictor)

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Racers are fast and agile. They can climb trees, swim, and move rapidly. These harmless snakes are locally sparse and state threatened.

Description: Adults are solid glossy black with a white patch under their chin, reaching six feet in length. Younger snakes are grayer with brown patterning.

Habitat: Shrub and grasslands, rocky ridges, and forests with openings.

Threats: Roadway mortality, sand and gravel excavation, den destruction, erosion control netting, and snake fungal disease.

Conservation Actions:

- Refrain from using welded plastic garden netting.
- In areas where racers are known to visit, maintain areas of shrubby cover located away from vehicle traffic.
- Never harm or harass a snake, and educate others about protecting black racers.
- Report all racer sightings to ***nhwildlifesightings.unh.edu***.

WORKING LA

Coexist in New Hampshire

The New Hampshire Fish and Game Department was awarded a grant from the Natural Resources Conservation Service (NRCS) and the National Fish and Wildlife Foundation to provide technical assistance to private landowners who support rare turtle populations, such as Blanding's turtles (state endangered) and spotted turtles (state threatened), as part of the Working Lands for Wildlife program. "Over a decade of monitoring has allowed the designation of high-priority conservation areas for each turtle species, which is where we are focusing our assistance to landowners," said Nongame

Megyesy explores private wetlands with a landowner interested in conserving turtles on his property. Over a decade of monitoring rare turtles in New Hampshire has enabled biologists to direct assistance and resources to the most high-priority areas.

© KELLY BOLAND NRCS

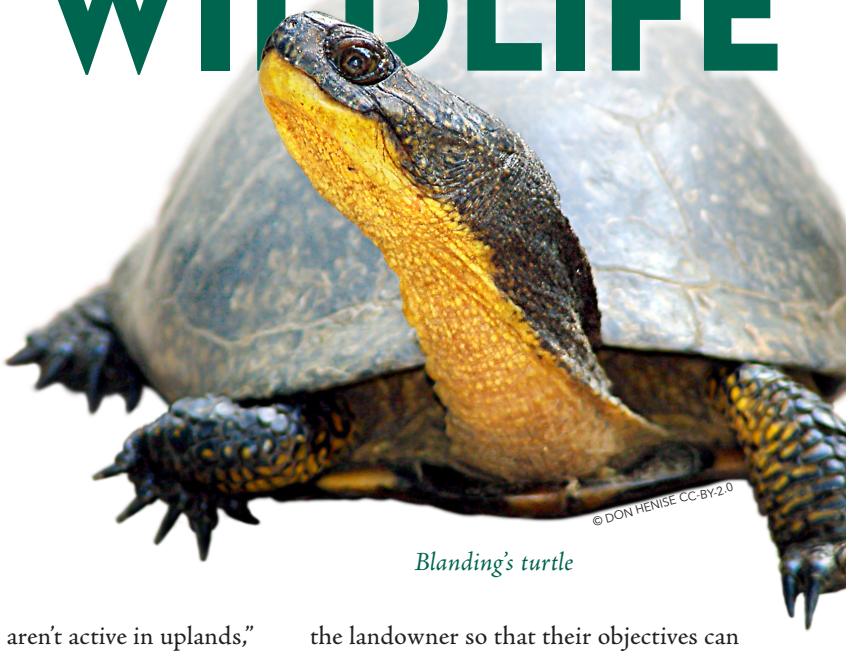
HABITAT SAFEGUARDED THROUGH AQUATIC RESOURCE MITIGATION FUNDS

In New Hampshire, continued suburban growth has made mitigation a critical piece of modern conservation. Mitigation programs help offset negative impacts to aquatic and wetland resources resulting from development and other permitted activities. Among the most successful mitigation programs is New Hampshire's Aquatic Resource Mitigation Fund (ARM). The NH Department of Environmental Services (DES) oversees the permitting process for development projects that affect wetlands, streams, and tidal resources and coordinates the ARM Fund.

When a development project is proposed, DES first works with developers to avoid as many negative impacts as possible and then to identify local mitigation opportunities such as land conservation and wetland restoration or creation. If those options aren't feasible, then payment into the ARM Fund is the alternative. Funds collected become available in the form of grants, distributed to projects that propose protecting, restoring, or enhancing wetlands and streams. NH Fish and Game Nongame Program biologists participate in the Site Selection Committee for ARM Fund recipients, providing expertise on the benefits of the proposed projects to wildlife. "Projects that protect a threatened or endangered wildlife population, enhance connectivity or the ability of an ecosystem to function properly, or conserve a valuable habitat score more points on ranking criteria," explained Nongame Program Coordinator Mike Marchand.

A creek-to-bay culvert upgrade in Newmarket was funded by ARM recently, coordinated by The Nature Conservancy and the Town of Newmarket. Lubberland Creek is a saltmarsh habitat supporting charismatic birds such as saltmarsh sparrows and marsh wrens. But for decades the migration of diadromous fish, such as American eel, had been blocked by an undersized,

NDS AND WILDLIFE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Blanding's turtle

Program Biologist Josh Megyesy.

When an interested landowner contacts NRCS or Fish and Game, biologists work closely with them to learn about the property and identify any threats to turtles, at no cost to the landowner. For the wood turtle at the edge of a stream, the use of mowing equipment to maintain a grassy field could cause direct mortality, as one example. "We've often employed a simple technique called seasonal avoidance, which limits using machinery on the property to late fall and winter when turtles aren't active in uplands," reported Megyesy. In some areas, plans include maintaining shrubby "buffers" around wetlands and streams, which aids in protecting the habitat from erosion and pollutants, and provides cover for moving turtles. "Every property is different, and depending on the turtles present, the habitat requirements vary as well," said Megyesy. At each property, the goal is to work with the landowner so that their objectives can be met while still ensuring that the turtles can continue to exist in their habitat. "For willing landowners, incentives are available for implementing turtle-friendly conservation actions," said Megyesy. "With so many resources and incentives available, this agency partnership has gone a long way toward furthering turtle conservation in New Hampshire."


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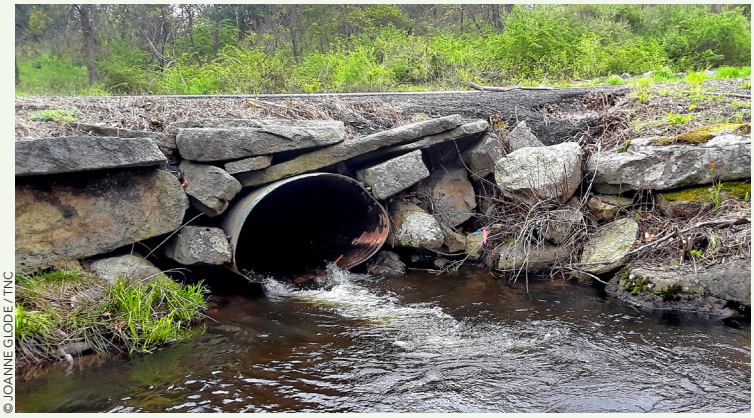
Spotted turtle

perched culvert on Bay Road. Diadromous fish are those that split their life cycle time between both fresh and saltwater, and they need safe passage between these two habitats. "A corrugated metal pipe measuring just 36 inches was upgraded to a 16-foot box culvert to restore passage of wildlife and drastically reduce flooding that historically contributed excess sediments and nutrients into Great Bay," said Lori Sommer, DES Mitigation Program Coordinator.

During ARM project selection, the *Wildlife Action Plan* habitat maps are used to prioritize areas most valuable to the state's wildlife. Southeast Land Trust received an ARM Fund grant to conserve over 300 acres of streams, wetlands, and woodlands in Fremont that fell within the *Wildlife Action Plan's* "Highest Ranking Habitat in the State," according to Sommer. The property was a perfect candidate for long-term protection, particularly because it included tributaries of the Piscassic and Exeter Rivers, streams that flow into Brown Brook, 71.5 acres of wetlands, and up to 29 vernal pools.

Since its inception in 2006, the ARM Fund has conserved over 25,000 acres of land for important functions such as groundwater protection, restored over 100 acres of wetlands, and improved over 45 miles of stream passage for aquatic wildlife. Many species of greatest conservation need have benefited from ARM grants including the common loon, New England cottontail, eastern brook trout, American eel, and Blanding's, spotted, and wood turtles. To learn more about the ARM fund, visit ***www4.des.state.nh.us/arm-fund.***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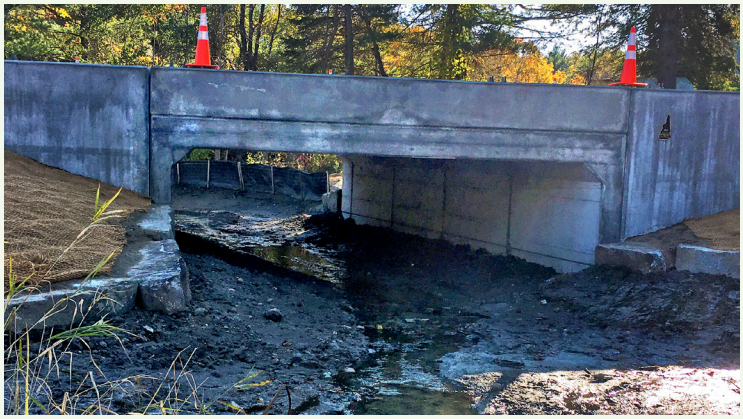
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Bay Road culvert before (left) and after (right) the upgrade.

SUMMER Wildlife Almanac

JULY

• Larval Jefferson and blue-spotted salamanders may still be found in vernal pools this month, as they eat tiny crustaceans and insects.

AUGUST

• The climbing vine Virginia creeper *(Parthenocissus quinquefolia)* is fruiting now, providing food for mockingbirds, vireos, and finches. The leaves are eaten by sphinx moth caterpillars.

SEPTEMBER

• Meadowhawks and darners are the most active dragonflies this month. Choose a sunny day with little wind to test your identification skills.

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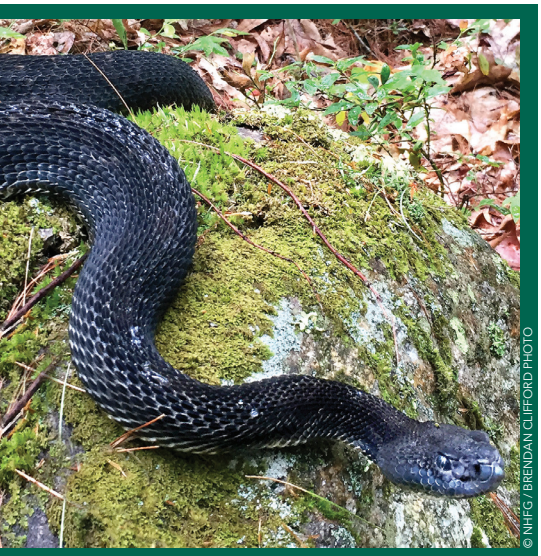

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NH Audubon's Amanda Klemm and Fish and Game Nongame Program Biologist Brendan Clifford hosted a Facebook Live question-and-answer session in April focused on state-endangered timber rattlesnakes. Can you answer these rattlesnake questions: a) What do rattlesnakes eat? b) How many rattlesnakes are in New Hampshire? c) Do rattlesnakes have ears?

Answers:
a) Small mammals like mice & chipmunks. b) Estimated at fewer than 100 individuals. c) Snakes have an "inner ear" that allows them to detect vibrations.

Freshwater Filter-Feeders in Decline

The Ashuelot River was surveyed again as part of a long-term monitoring plan for the dwarf wedgemussel, endangered at both the state and federal levels. Recent surveys indicate that this species is in decline throughout its range. In past decades, populations of dwarf wedgemussels in New Hampshire were considered to be global strongholds. Dams and insufficient stream crossings fragment riverine habitat and cause changes in water flows that can negatively affect mussels. Other identified threats include decreased habitat and water quality associated with shoreline development.

In the summer of 2019, NH Fish and Game contracted with Biodrawversity to conduct surveys downstream of the flood control dam at Surry Mountain Lake—an impoundment on the Ashuelot River. "Survey findings indicate that the South Branch Ashuelot River supports a large dwarf wedgemussel population," said Nongame Program Biologist Melissa Doperlaski. Dwarf wedgemussels were found at all survey sites, often at high densities, and of all age classes. "This is a great finding in the South Branch, as the status of dwarf wedgemussels in the surveyed section of the river was unknown." However, survey results of the main Ashuelot River indicate that the population is still in peril. "Numbers dropped dramatically from 243 dwarf wedgemussels in 2009 to only 19 specimens in 2019," continued Doperlaski. Another freshwater mussel, the previously extremely abundant eastern elliptio, declined sharply during these survey periods as well.

Dwarf wedgemussel

Freshwater mussels are important to food webs, water quality, nutrient cycling, and habitat quality. "They influence the diversity of other benthic macroinvertebrates as their movements help stir sediments and increase the exchange of oxygen and nutrients," said Doperlaski. Mussels feed by filtering water through fine gills to obtain bacteria, protozoans, and other organic particles for food, thereby filtering debris out of water, making the aquatic environment more suitable for other freshwater life. Mussels are highly sensitive to environmental changes, therefore it is important that biologists continue to monitor their populations.

MASTHEAD COVER PHOTOS: *WOOD TURTLE* - © USFWS / COLIN OSBORN PHOTO • *BLACK RACER* - © NHFG / BRENDAN CLIFFORD PHOTO • *EASTERN ELLIPTIO MUSSEL* - PUBDOMAIN