

MASSACHUSETTS DIVISION OF
FISHERIES & WILDLIFE

FIELD HEADQUARTERS

1 Rabbit Hill Road | Westborough, MA 01581



Large milkweed bug instars (*Oncopeltus fasciatus*) gather on the seed pod of a common milkweed in early October to feed on sap. While these bugs may look like an easy meal for birds, milkweed sap contains toxic alkaloids which makes the bugs taste bad. The black wing pads of fifth instars are clearly visible and will become useable wings after their final molt. Large milkweed bugs migrate south for the winter, and, like monarch butterflies, southern individuals from subsequent generations return north to lay their eggs in or among the pods of milkweed plants. Photo by Troy Gipps/MassWildlife



NONPROFIT ORG.
U.S. Postage
Paid
N. Reading, MA
Permit No. 215

MASSACHUSETTS WILDLIFE

No. 3, 2025

\$3.00



**Avian Influenza,
Habitat Restoration,
Southern Pine Beetle**

MassWildlife expands bear tooth collection efforts

MassWildlife is expanding its black bear research program with the help of an important partner: the Commonwealth's licensed hunters. This fall, all successful bear hunters statewide have been asked to submit a premolar tooth from their harvested bear. These teeth allow biologists to determine the age of individual bears—critical data that informs long-term population models, guides wildlife management decisions, and helps ensure a sustainable future for the species.

MassWildlife estimates there are over 4,500 black bears currently living in Massachusetts, and the population continues to grow and expand into new areas in the central and eastern parts of the state. Regulated hunting is an important management tool for keeping population levels steady. This research effort builds on previous smaller-scale collection efforts and will deepen MassWildlife's understanding of the growing black bear population in Massachusetts.

MassWildlife is providing hunters with detailed instructions and collection kits to make the process simple and accessible. The teeth will be processed by a lab where researchers prepare a thin slice of the tooth. Using a microscope, they count the dark bands, called annuli, on a cross section of the tooth to determine the bear's age, similar to counting tree rings. In return, hunters who submit a tooth will receive a "2025 Bear Hunter" sticker and personalized letter with the age of the bear harvested—a piece of information many hunters value as part of their hunting story.

The data collected through this ongoing effort will enhance MassWildlife's ability to monitor trends in bear survival and recruitment, refine harvest strategies, and support broader conservation goals. In addition to MassWildlife's long-term winter bear den research and collaring study, this age data helps provide even more confidence in black bear population trends. MassWildlife is grateful to the hunting community for their ongoing partnership and support of conservation. Learn more at mass.gov/bears.



MAURA T. HEALEY, Governor
KIMBERLEY DRISCOLL, Lt. Governor
COMMONWEALTH OF MASSACHUSETTS
REBECCA L. TEPPER, Secretary
EXEC. OFF. OF ENERGY & ENVIRONMENTAL AFFAIRS
THOMAS K. O'SHEA, Commissioner
DEPARTMENT OF FISH & GAME
MARK S. TISA, Director
DIVISION OF FISHERIES & WILDLIFE

FISHERIES & WILDLIFE BOARD

SASHA DYER (Barre)
EMMA ELLSWORTH (Orange)
ERNEST W. FOSTER IV (Scituate)
MALCOLM HAITH (Boxford)
KYLA HASTIE (Shutesbury)
MATTHEW SISK (Braintree)

NATURAL HERITAGE & ENDANGERED SPECIES ADVISORY COMMITTEE

MARK J. MELLO, Chair (New Bedford)
WILLIAM E. BRUMBACK (Acton)
WAYNE R. PETERSEN (Hanson)
KEVIN D. POWERS (Plymouth)
MATTHEW SISK (Braintree)
DAVID H. SMALL (Athol)

EDITORIAL STAFF:

NICOLE MCSWEENEY, Executive Editor
TROY GIPPS, Editor/Art Director
SUSAN SACCO, Copy Editor
JILL DURAND, Circulation Manager



MASSWILDLIFE

MASSACHUSETTS WILDLIFE (ISSN 0025-4924) is published quarterly by the Massachusetts Division of Fisheries & Wildlife (MassWildlife), Information & Education Section, Field Headquarters, 1 Rabbit Hill Road, Westborough, MA 01581. Tel.: (508) 389-6300. **Subscriptions:** \$6/year; \$10/2 years. Order online with a credit card at mass.gov/dfw/magazine or mail checks or money orders. Canadian subscribers add \$3.00 per year. Foreign orders other than A.P.O. will not be accepted. Notify us at once when your address changes: send the label off your magazine along with the new address. Magazines not delivered through failure to send change of address six weeks in advance cannot be replaced. Not responsible for unsolicited material. No advertising accepted. Articles may not be reprinted without prior permission, except that photocopying for educational use is permitted. All material copyright of MassWildlife or the author, artist, or photographer of the works. Printing and postage costs are paid by subscription revenue.

MassWildlife prohibits discrimination on the basis of race, color, age, gender, ethnicity, sexual orientation, gender identity or expression, religion, creed, ancestry, national origin, limited English proficiency, disability, veteran's status, or background. If you believe you have been discriminated against in a program or activity or need more information, contact Melixza Esenyie, ADA and Diversity Manager, Executive Office of EEA, 100 Cambridge Street, Boston, MA 02114, melixza.esenyie2@mass.gov, (617) 872-3270.

Publication of this document is approved by the State Purchasing Agent.

18M 10/25

MASSACHUSETTS WILDLIFE

Vol. 75

No. 3

FEATURES

HIGHLY PATHOGENIC AVIAN INFLUENZA 2

—Sarah Van de Berg

Since its arrival in 2022, wildlife biologists have tracked highly pathogenic avian influenza through mass die-offs and the logistics of clean-up, all while adapting to a disease that shows no signs of disappearing. The author covers the history of the virus, its structure, the first positive tests in Massachusetts and the fieldwork that followed and provides tips for those who encounter wild birds or tend domestic poultry.

CUT, BURN, RESTORE 12

—Troy Gipps

The story of a years-long, meticulously planned and well-executed habitat restoration effort is sometimes best told in pictures. Walk with our editor and his camera through the initial phases of forest thinning and prescribed burning that are restoring habitat and increasing biodiversity at the Quaboag Wildlife Management Area in Brookfield.

THE SOUTHERN PINE BEETLE MOVES NORTH 26

—Alex Entrup

A beetle no larger than a grain of rice has started a big problem in Northeastern forests. Fortunately, actions taken to counter its effects also improve forest health.

On the Cover: A great spangled fritillary (*Speyeria cybele*) nectars on joe-pye weed (*Eutrochium purpureum*) in late August at the Quaboag WMA. What is most remarkable about the photograph of these two native species is what you do not see here. Ninety days earlier, the grassland on which this plant now grows was burned as part of MassWildlife's habitat restoration efforts. From charred black earth to a vibrant grassland full of life, the image shows how a prescription for fire, following forest thinning, helps to restore ecosystems and, in turn, enhance biodiversity. To learn more about this restoration process, turn to page 12. Photo by Troy Gipps/MassWildlife

TO SUBSCRIBE OR BUY A GIFT SUBSCRIPTION

PLEASE VISIT mass.gov/dfw/magazine

OR CALL (800) 289-4778



Photo © New England Wildlife Center



Photo by Troy Gipps/MassWildlife



Photo by Troy Gipps/MassWildlife





CUT, BURN, RESTORE

A PHOTO ESSAY BY TROY GIPPS

Five years ago, I got a message from a colleague, Fletcher Clark, a forester and habitat biologist with MassWildlife, asking if I could document the initial forest thinning phase of habitat restoration efforts at the Quaboag Wildlife Management Area (WMA), and then return over time during follow-on phases of management, such as prescribed burning. It was a good opportunity to begin building a photographic library that would help the public see and understand the phases of our habitat restoration efforts, that may, at first, to the untrained eye, appear destructive, but are, in fact, planned and managed by a team of highly-qualified and experienced staff who collectively make science-based decisions with the assistance of our many partners to enhance biodiversity at sites across the Commonwealth.

The Quaboag WMA is a 1,900-acre property in Brookfield with a potential restoration area of 400 acres, 200 of which are under active restoration. The Quaboag River Valley has a long history of fire activity that gave rise to the unique wetland and upland habitats found there, and from the late 1600s to the mid-twentieth century, agriculture was a major influence on the landscape. Today, much of the valley's natural communities reflect that legacy of fire and agricultural practices.

Restoration efforts, which began in 2018, focus on the upland portions of the WMA which contain oak woodlands, aspen thickets, hemlock groves, and nearby grasslands and the Quaboag Marsh with the goal of restoring a mosaic of habitat types. The Quaboag Marsh is one of the largest and most ecologically important marshes in the interior of Massachusetts. It supports many species of marsh birds, including southern New England's largest population of American bittern. The marsh also supports the world's largest

population of the globally rare and Massachusetts-threatened plant, Long's bulrush. Fire is a key factor in maintaining Long's Bulrush and charcoal is abundant in the sediments of this wetland. MassWildlife is working to reintroduce fire to the marsh—to reinvigorate this specialized fire-loving plant, and to improve habitat for the uncommon wildlife that live there.

The upland areas of the WMA are also important habitat that benefit greatly from restoration, the first phase of which included the forest thinning I photographed in 2020. This forestry operation

involved the removal of white pine that became established after the agricultural fields were abandoned. The company contracted to do that work was a local, family-owned timber harvesting company. The trees were sold as firewood and milled for lumber in New Hampshire and Maine, wood chips were sent to a biomass plant in Fitchburg and to a pellet plant in New Hampshire. Oak trees were also thinned to promote oak mast production and oak tree regeneration, and

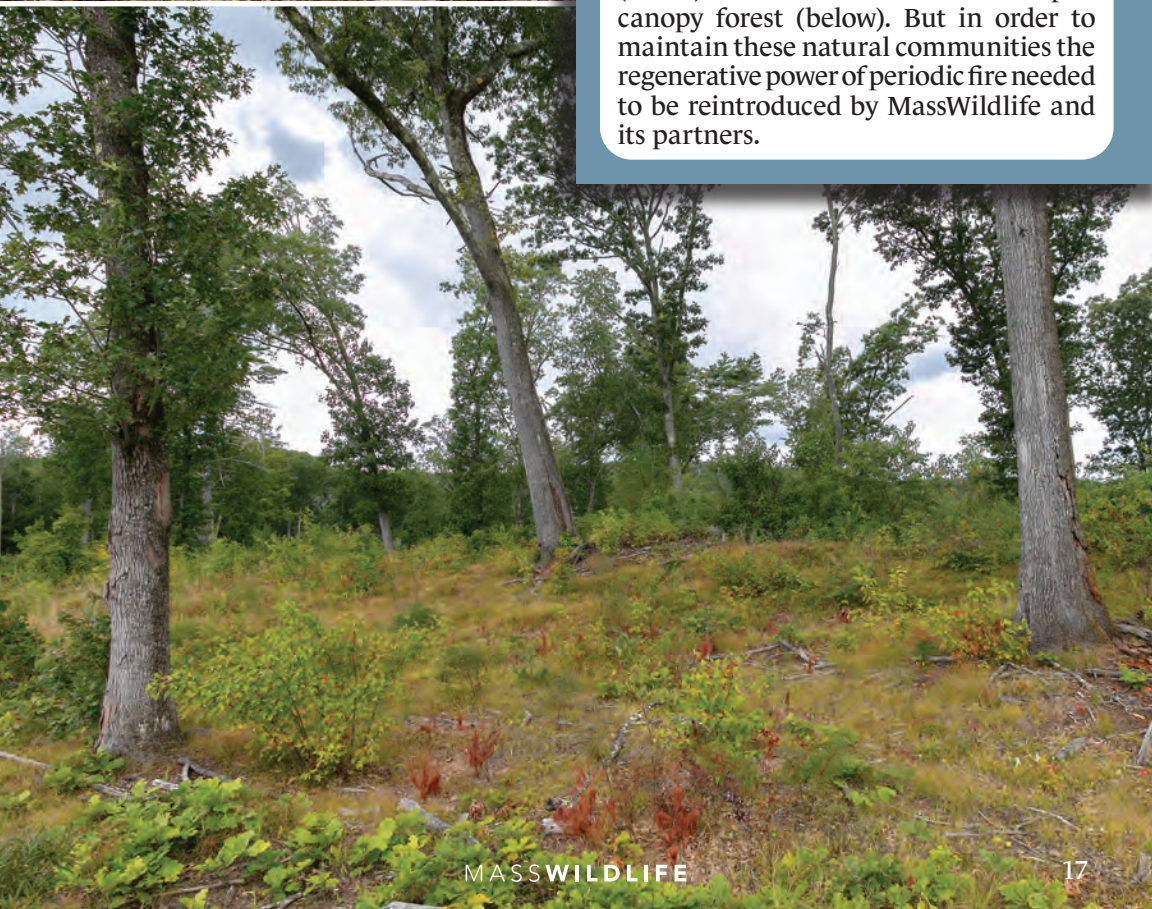
to promote the herbaceous and shrub layers. Once white pine was removed and the invasive plants were treated with herbicide, the abandoned agricultural fields were reset to a grassland community by seeding them with little blue stem, which is a deeply rooted, native, warm season grass that facilitates plant community structure and wildflower diversity.

Then, in May of this year, low intensity prescribed fire was reintroduced to the upland and grassland units of the WMA by a MassWildlife burn crew that worked in close partnership with staff from DCR's Forest Fire Control and the local fire department. I returned 90 days later and recorded with my camera the amazing resilience of this fire-influenced landscape. It's a story best told in pictures ...





The removal of white pine from the abandoned agricultural fields and the thinning of oak from the abutting uplands set the stage for grassland restoration (above) and the maintenance of an open canopy forest (below). But in order to maintain these natural communities the regenerative power of periodic fire needed to be reintroduced by MassWildlife and its partners.





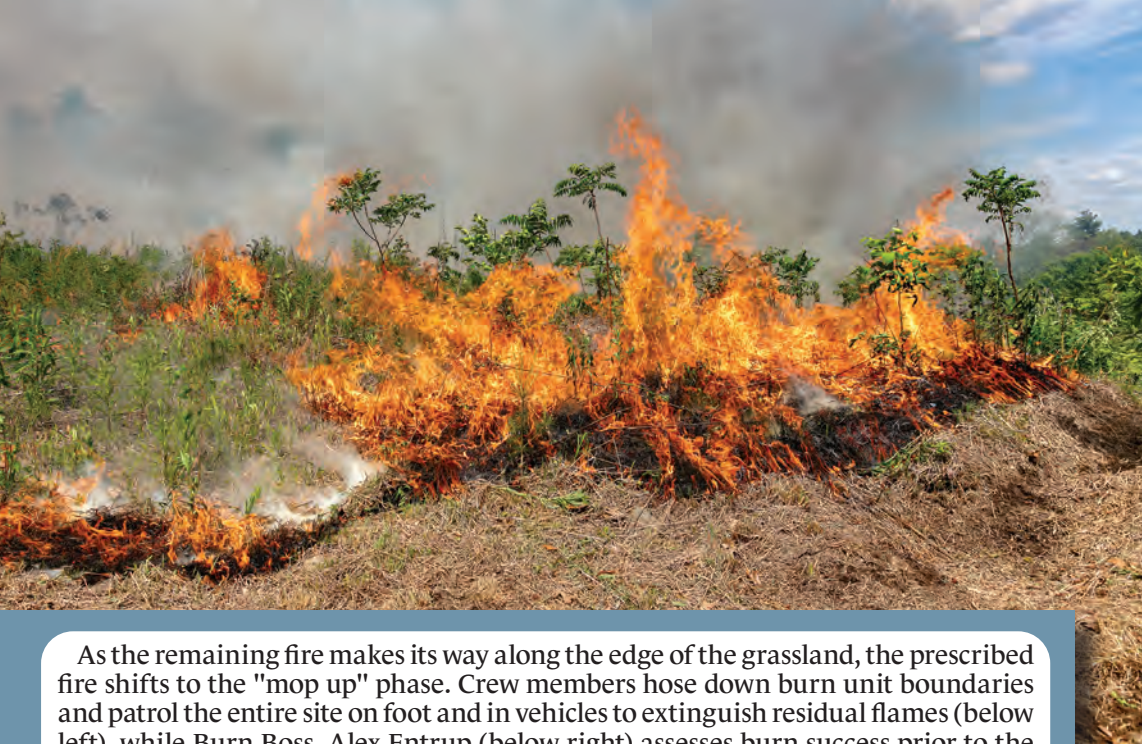
The multi-agency burn crew assembles in a staging area following an extensive planning and permitting process that played out over several years to ensure a safe and effective prescribed burn. Prior to ignition, all crew members review and discuss the targeted burn units, property boundaries, the movement and positioning of personnel and equipment, and the weather, which includes temperature, wind, and humidity, which is checked and reported to the burn boss and crew every hour, to manage fire intensity, fire severity, and smoke.





As the crew prepares to shift the burn from the oak woodland burn unit (above) to the grassland unit (below), Ignition Specialist, Fletcher Clark, coordinates with the Burn Boss, to lay down multiple fire lines that converge in the middle of the grassland, where all the smoke was pulled straight up and away from the nearby road and homes.

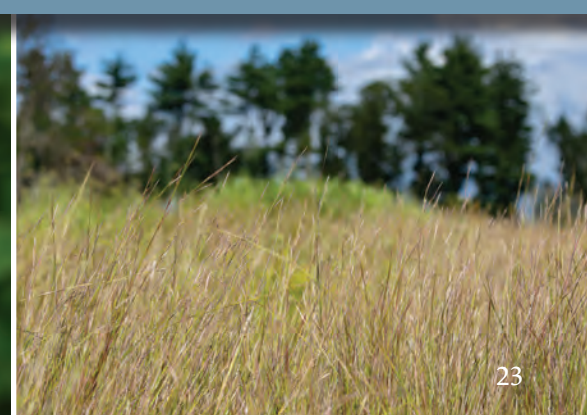




As the remaining fire makes its way along the edge of the grassland, the prescribed fire shifts to the "mop up" phase. Crew members hose down burn unit boundaries and patrol the entire site on foot and in vehicles to extinguish residual flames (below left), while Burn Boss, Alex Entrup (below right) assesses burn success prior to the entire crew gathering to conduct an after action review. The mop-up phase often lasts much longer than the ignition phase of a prescribed fire.



Prior to management, plants such as yellow wild indigo (above right, two images), with its bright yellow, pea-like flowers, were found in extremely limited numbers at Quaboag WMA, but they are now common across the landscape, and serve as a nectaring source for native bees and butterflies and as a host plant for the caterpillars of several butterfly species. Its seeds are also eaten by songbirds. Wild apples (above left) feed a variety of wildlife on the property and American hazelnut (below left) not only provides an important mast crop but its catkins (male flowers) are an important food source for ruffed grouse and other birds. But one of the most visually striking aspects of the restoration is not only the degree to which little blue stem (below right) has thrived in the grassland but how quickly it responded to this prescribed fire, as shown on the next two pages.

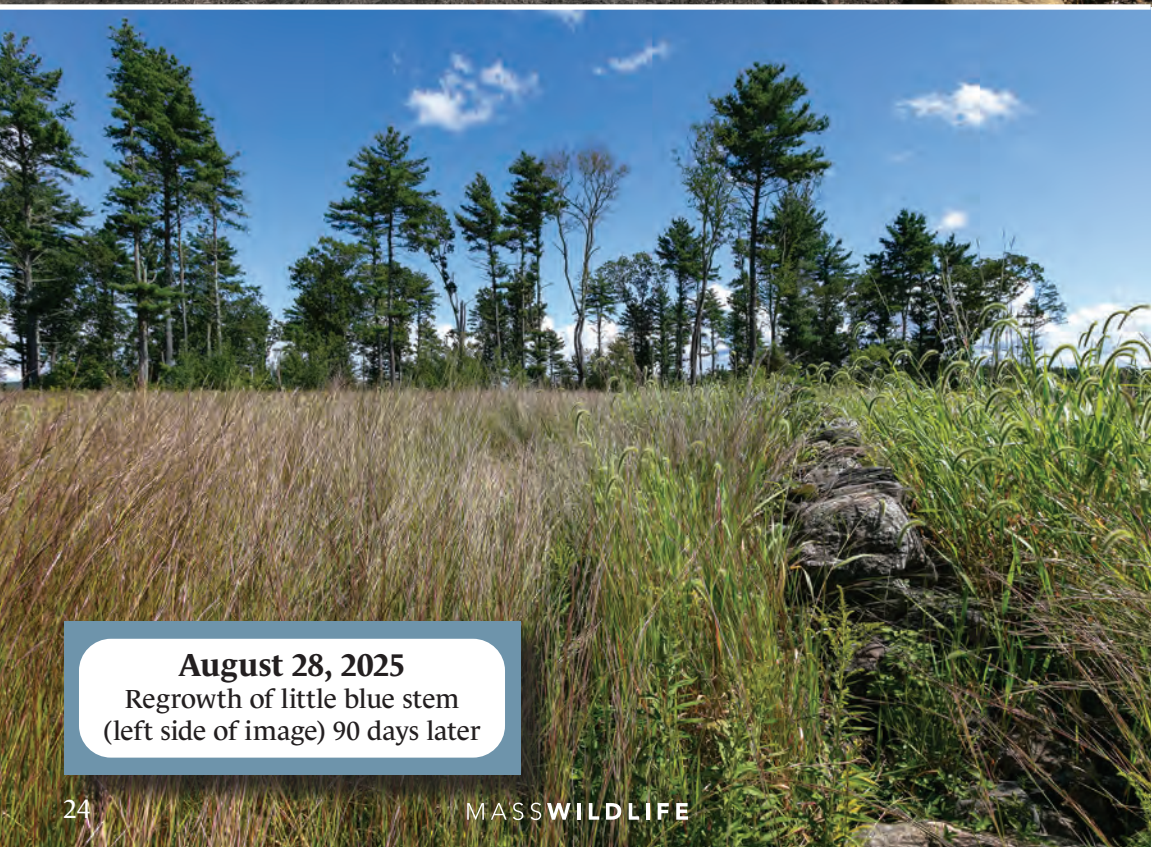




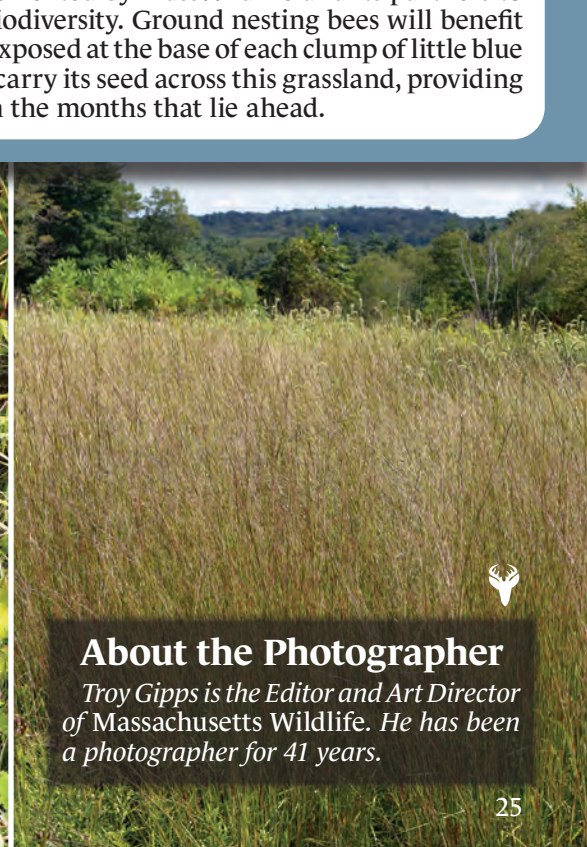
May 28, 2025
Immediately following
the prescribed burn



Only 3 months after the prescribed burn, little blue stem had bounced back to chest height and begun producing seed. It was a dramatic visual shift from the post-fire charred earth and it clearly showed how fire fits into the expertly-planned habitat management process implemented by MassWildlife and its partners to restore ecosystems and enhance biodiversity. Ground nesting bees will benefit greatly from the bare mineral soil exposed at the base of each clump of little blue stem (bottom left), and wind shall carry its seed across this grassland, providing food for birds and other wildlife in the months that lie ahead.



August 28, 2025
Regrowth of little blue stem
(left side of image) 90 days later



About the Photographer

Troy Gipps is the Editor and Art Director of Massachusetts Wildlife. He has been a photographer for 41 years.

