DIVISION OF FISHERIES & WILDLIFE

Quaboag WMA Oak Woodland Restoration
FY25 Project Summary

Location

Site: Quaboag Wildlife Management Area (WMA)
Town: Brookfield
District: Central

Project Acres

7 Acres

MassWildlife's Approach to Habitat Management

MassWildlife uses habitat restoration and management to conserve both common wildlife and vulnerable species, including rare plants and animals protected by the Massachusetts Endangered Species Act (MESA) and other declining Species of Greatest Conservation Need (SGCN) identified in the Massachusetts State Wildlife Action Plan (SWAP). As part of this effort, biologists plan and implement projects to create, restore, and maintain a variety of healthy habitats to increase biodiversity and climate resiliency across our forests, wetlands, streams, fields, and more.

Biologists plan habitat projects that may include tree cutting, mowing, and mulching to strategically increase open habitats, promote patches of vigorous young forest, restore natural processes, and remove invasive plants. This project has been designed to ensure consistency with recommendations for climate-oriented forest management provided by the Climate Forestry Committee (Climate Forestry Committee Report, 2024; see below).

Site Significance

Quaboag WMA encompasses over 1,800 acres. The greater Quaboag River Valley is one of the largest and most ecologically important marshland areas in Massachusetts. It supports many species of marsh birds, including the largest population of American bittern in southern New England. Quaboag WMA is home to the world's largest population of the endangered plant Long's bulrush, along with other types of globally-rare plants that require occasional disturbance, such as fire.

Work in FY25 will take place at the Long Hill section of the WMA. The proposed activities build upon the success of warm season grassland restoration and oak woodland restoration projects implemented in the area in 2018 and 2019. Under the larger landscape context of the Quaboag River complex, this work

will benefit a full suite of wildlife and plants species that utilize marshlands, grasslands, and woodlands.

Project Activities and Expected Outcomes

Management efforts will be primarily located within upland oak woodlands adjacent to the Quaboag River. White pine will be removed from 7 acres to promote growth of a thriving oak woodlands habitat. This open oak woodland habitat will be maintained over time with occasional prescribed fire to promote the growth of blueberry heathlands, pitch pine, and other fire-adapted shrubs such as yellow wild indigo that are currently on site. Individual hardwood trees with high habitat value will be retained to provide food and/or winter cover to wildlife, while also providing the conditions to safely conduct prescribed fires within the oak woodland. Project planning and oversight will be implemented by a team of experienced Habitat Biologists.

This project will build on past successful habitat work in the area. Planned activities will create open habitats and diversify the habitats currently available in the area.

Highlights:

- Removing white pine trees to promote oak woodlands will enhance a mix of habitat types and understory plants, like blueberry and heathlands, that provide essential cover for wildlife, including ruffed grouse, American woodcock, prairie warblers, and American bittern.

Climate Considerations

This project was designed to ensure consistency with recommendations for climate-oriented forest management provided by the Climate Forestry Committee, and includes:

- thinning to restore open woodlands conditions to promote resilience to future drought and/or harmful insects;
- restoring native species that are best adapted to the site to promote resilience to future drought and harmful insects;
- prioritizing and maintaining at-risk species and habitats that are under pressure from climate change;
- and restoring fire-influenced ecosystems that provide reliable carbon sinks in the long term compared to vulnerable fire-excluded forests.

See page 4 for more details.

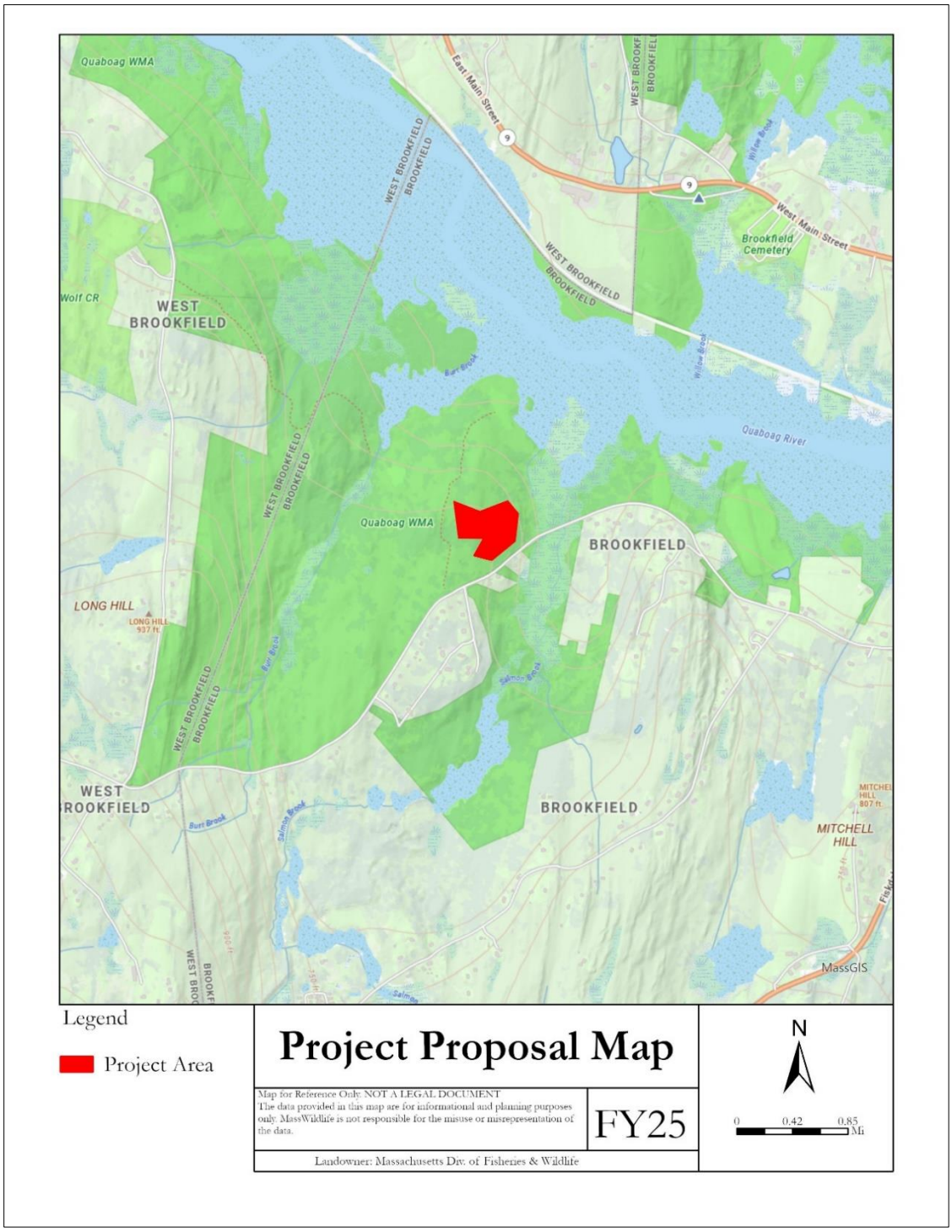

Figure 1. Map of Quabog Wildlife Management Area with highlighted project area.

Climate Considerations Details

MassWildlife has determined that the decision to implement this project is consistent with EEA climate goals and guidelines and agency land management objectives. Carbon and climate change considerations specific to the activities proposed for this project are discussed below.

Proposed Activity	Alignment of Activity with Climate Oriented Strategies and Recommendations
Access improvements (landing improvements, gravel, road grading, ditch maintenance, road widening, straightening, and alteration of intersections).	Roads, landings, and associated infrastructure are critical for access by both the public and natural resource managers. These infrastructure elements are also associated with both **vulnerabilities** and **opportunities** in terms of climate change **resiliency**. **Vulnerabilities:** • Roads occupy areas that would otherwise be carbon rich forest. • Road edges can become avenues for the spread of invasive species. • Roads have the potential for sediment transport into surface water resources. **Opportunities:** • A well-designed and well-maintained access system makes all other land management and monitoring activities possible while minimizing impacts. • Roads provide for public access including hiking, hunting fishing, etc. • Roads are critical for both Emergency Response (Injuries, Accidents, etc.) and Incident Stabilization (fire, flood, storm damage, etc.). Given the predicted **increase in storm frequency and intensity**, improving and maintaining roads, road surfaces, and stormwater infrastructure is imperative. • Proper surfacing, grading, and ditching **minimize erosion** from stormwater and snowmelt. • Periodic maintenance is required to **avoid water channelizing** within compacted tire paths. • **Adding gravel** or other material to the road surface helps support the **heavy vehicle traffic** associated with forestry work, fire operations, and post-storm recovery efforts. Alterations (**widening, straightening**) are often needed to upgrade old, narrow farm lanes to meet modern vehicle access needs. • Ditching, cross culverts, and relief cuts can be designed with **future storm intensities** in mind and should minimize, to the greatest degree possible, impacts to surface water resources. Most log landings are **temporary** in nature. Permanent landings that are properly located and well-built can serve as permanent access infrastructure, concentrating activities and minimizing the non-forested footprint required to conduct agency management. Whether temporary or permanent, the use, maintenance, and stabilization of landings will include considerations of **future climate change impacts**. Landing BMPs include: • **Post-harvest stabilization** measures such as grading and smoothing to prevent erosion and sedimentation.

	• **Seeding** to provide cover and further stabilize the soil. • **Invasive plant survey and control** to minimize further infestation risks. • Periodic mowing of permanent landings to allow herbaceous and shrubby vegetation to dominate the site between harvests, adding **diverse habitat opportunities** for local wildlife.
Invasive plant control, including pre- and/or post-harvest and follow up treatments.	Strong consensus exists among land managers and climate science experts regarding the **threat to future forest health** posed by the introduction and spread of invasive plants. **Invasive plants** can: • aggressively **outcompete native plant species**, • dominate understory communities, and even climb, kill, and topple mature trees, • threaten overall **biodiversity,** • threaten **soil health** and long-term **carbon storage**. **Monitoring and controlling** invasive and interfering plant populations prior to and following forestry operations is a critical practice for **minimizing the risk of further impacts** inadvertently (though not unexpectedly) spread by harvesting-related activities.
Habitat restoration and maintenance prescribed fires—heath, shrubland, woodland, or grassland.	Prescribed Fire is the planned use of fire in a particular place and time, under established conditions and safety requirements to accomplish resource management goals. • Prescribed fire improves habitat for a **variety of wildlife and native plants** and **restores natural communities** dependent on fire. • In fire-influenced natural communities, fragmentation of the landscape and the suppression of fires (prescribed or natural) leads to accumulation of volatile hazardous fuels in the surface, mid-story, and canopy vegetation layers. • Excessive vegetation density **negatively impacts the habitat quality** of the natural community and may eventually lead to fuel buildup and unplanned, catastrophic wildfire. • Prescribed fires that reflect natural return intervals increase below-ground **carbon storage and sequestration**. The consequences of **catastrophic wildfires** include: • The release of large amounts of **carbon** including **soil carbon**. • Tree mortality. • Severe soil, duff, and below ground vegetation impacts. • Potential alteration of soil chemistry. • Threats to firefighter safety, human communities, and property damage. • Threats to human health from severe smoke impacts both locally and potentially at long distances.

Diffuse overstory removal, partial cut, habitat modification/maintenance.	Open **woodlands, savannas, barrens, and heathlands** are low tree-density, **fire-dependent** forests with diverse understory vegetation critical for conserving many state-listed rare species. They are **imperiled** across Massachusetts due to development and negative ecological alterations resulting from a lack of management primarily decades of fire exclusion. Climate experts recommend **prioritizing and maintaining sensitive or at-risk species and habitat**, with the expectation that pressure on these will only increase with changing climate. Ecological restoration of these sites ensures continued habitat function and reduces climatic vulnerability: • Reducing tree **density reduces vulnerability** to pests like southern pine beetle and to drought stress. • Restoring **native species** that are best adapted to the site **promotes resilience** to future drought, wildfire, and harmful insects. • Reintroducing low-intensity fire **promotes resilient native vegetation**. • Removing heavy fuel loads **reduces vulnerability to wildfire**. • Restoration better positions these **sites to adapt to climate change**. • Restored sites are **more reliable carbon sinks in the long term** than highly vulnerable dense fire-excluded forests. The agency recognizes that this site may store less carbon than denser forests in the short term. But climate models predict an increase in disturbance on these sites including drought, wildfire and range expansion of harmful insects that puts a dense fire suppressed forest at greater risk of becoming a carbon source in the long term. Projects like this are undertaken on federal, state agency, and other conservation lands across the Commonwealth, under the guidance of collaborative teams consisting of biologists, restoration ecologists, foresters, and fire management professionals.

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