DIVISION OF FISHERIES & WILDLIFE

Palmer WMA Barrens and Woodland Restoration Project Summary
CV-PA-TS1

Location

Site: Palmer WMA and Roger Reed Hatchery
Town: Palmer
District: Connecticut Valley

Project Area

75 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, ecologists and biologists identify, prioritize, plan and implement natural community restoration and maintenance across MA to maximize biodiversity conservation, ecological function and climate resilience across our forests, wetlands, streams, fields, and more.

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

The project area is within the 1,260-acre Palmer Wildlife Management Area (WMA) (Fig 1). This WMA supports a continuum of fire-influenced natural communities, ranging from barrens habitats to oak hickory forests. Together, these communities offer one of the most important remaining opportunities for the conservation of highly specialized, rare, and imperiled species in the interior of Massachusetts. The focus of this proposal is on the barrens communities of the southern portion of the WMA. The current health and function of the project area is impacted by long-term fire exclusion and the presence of invasive plant species. Fortunately, this site shows excellent potential for restoration. Similar to other successful inland barrens restoration projects in Massachusetts, this habitat is expected to support a broad suite of rare and declining wildlife and insects shortly after initial restoration efforts. Specifically, the project will benefit birds, such as eastern whip-poor-will and prairie warbler, rare and highly specialized pollinators, and barrens-associated plants.

The immediate need for this project is to address the threat of extirpation (local extinction) of at least five very rare MESA-listed species at the site. Historically, these species made their homes within thousands of acres of barrens habitat once present in the region. Without intervention, generalist and invasive plant species will continue to degrade habitat for these rare species.

Project Activities and Expected Outcomes

Selective tree harvesting is often required as an initial step in restoring fire-influenced natural communities that have experienced long-term fire exclusion. These harvests are designed to remove the generalist, non-fire-tolerant tree species that would have been naturally suppressed when these landscapes were exposed to fire on an occasional basis. Fire-tolerant trees that are characteristic of barrens communities, such as pitch pine, oaks, and hickories, are retained during these harvests. Tree harvesting is meant to reset the composition and structure typical of barrens communities. This will set the stage for barrens vegetation, including lowbush blueberry, scrub oak, native sedges, and specialized forbs, to return to dominance at the site. In turn, this vegetation composition and structure is critical for supporting the highly-specialized plants, animals, and insects that make their home in these imperiled habitats. Following the harvest, long-term restoration and management activities will focus on invasives plant control and periodic prescribed fire.

The initial phase in restoration on the site will include tree harvesting on approximately 75 acres across two units of the around 667-acres of barrens communities identified at Palmer WMA that are appropriate for restoration. Beginning with relatively small units will allow for immediate action needed to stabilize local rare species populations in danger of extirpation. Restoration work at Palmer WMA is built upon successful outcomes seen with the restoration of other nearby cryptic barrens, like Muddy Brook WMA.

Highlights:

- Removal of generalist species at this site will begin the restoration of a regionally significant occurrence of the imperiled pitch pine-scrub oak natural community.
- This project will enhance the landscape mosaic of complementary fire-influenced natural communities on Palmer WMA, as well as nearby pitch pine-scrub oak communities in the greater Three Rivers outwash complex.
- This project is expected to support a wide array of otherwise rare and imperiled species, including eastern whip-poorwill and frosted elfin, as well as an extensive suite of declining and highly specialized pollinators (particularly bees and moths) and a range of fire-influenced flora typically only found in these communities.
- Tree cutting and the use of occasional prescribed fire for long-term habitat maintenance will promote the growth of understory vegetation, like scrub oak and lowbush blueberry, that will provide high-quality habitat for vulnerable and common insects and other types of wildlife.

Climate Considerations

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

- Restoring the native species that are best adapted to the site's extant fire-influenced natural communities to promote resilience to future temperature increase, drought, wildfire, and harmful insects; and
- Preparing the site for the reintroduction of low-intensity prescribed fire to restore resilient native fire-influenced natural communities that result in the increased stability of carbon storage.

See page 5 for more details.

Project Proposal Map

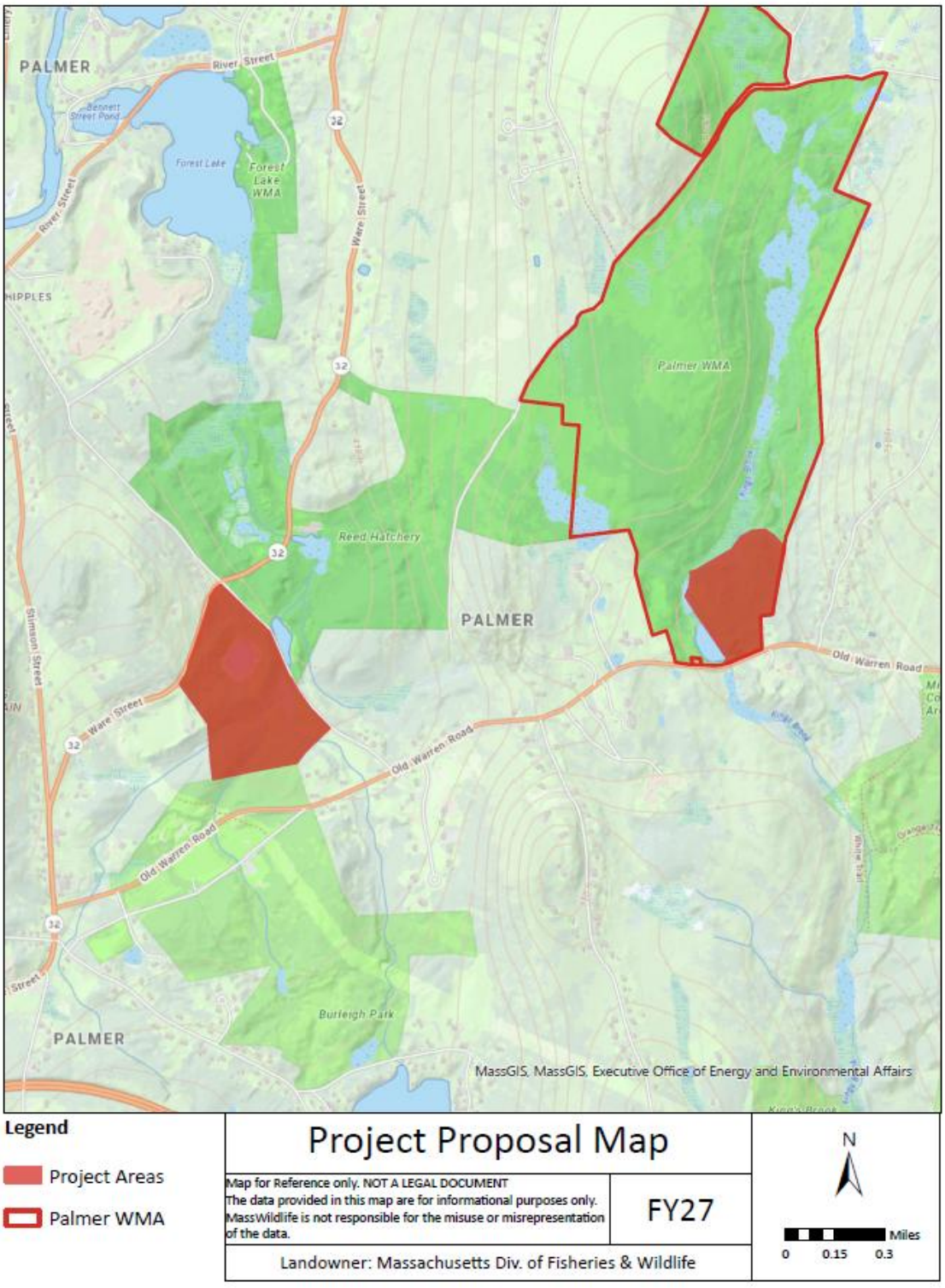

Figure 1. Map of the southern section of Palmer WMA with highlighted project area

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 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.

Establishing and/or maintaining fuel/fire breaks.	Climate models predict **drought and wildfire potential** increasing in the region due to climate change, and the agency is adopting strategies to both **reduce the risk of catastrophic fire spread** and **maintain fire-adapted habitats**. Fuel breaks and fire breaks are essential tools for both prescribed burning and wildfire control. **Fuel breaks** are: - **vegetated areas,** - maintained at lower structure and density, - designed to **slow the spread of fire**, - designed to **control prescribed fire** or wildfire, - opportunities to encourage open woodland, shrubland, or grassland natural communities. **Fire breaks** may be natural or constructed **barriers to the movement of fire**, with some examples being: - open water, - paved roads, - graveled woods roads, - trails, - and periodically mowed paths (“fire lines”). The fuel and/or fire breaks proposed in this project were designed as **part of agency planning efforts** for fire control and management for this area within a **framework of reducing climate vulnerability**.
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.