# Invasive Plant Management Plan

# Greylock Glen, Adams, MA

A Property of the
Massachusetts Department of Conservation and Recreation

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Prepared by

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## Summary

Biodrawversity, LLC and Polatin Ecological Services, LLC (PES) have developed the following management and control plan for invasive plant species within four priority areas at Greylock Glen in Adams, Massachusetts. The purpose of this Invasive Plant Management Plan (IPMP) is to provide details about our proposed methods for carrying out invasive plant management activities within selected portions of Greylock Glen. We specifically address concerns of the regulatory community, including the Adams Conservation Commission, the Massachusetts Department of Environmental Protection (DEP), and the Natural Heritage and Endangered Species Program (NHESP). Our primary objective is to control invasive plants effectively and minimize any disturbance or damage to natural resources, including wetlands and rare plants, as well as minimize impacts on visitors and pets.

We have determined the amount of area that is within the jurisdiction of the Wetlands Protection Act (WPA) and are in the process of filing a Notice of Intent (NOI) with the Town of Adams, Massachusetts. This management plan will be submitted to NHESP for their review, and upon their acceptance will be filed with the NOI.

## Introduction

Biodrawversity observed and mapped ten genera of invasive plants within Greylock Glen in 2009 and 2010 (Table 1). These species were observed throughout almost half of the Glen, generally at elevations below 1,750 ft. All of these species are targeted in the management and control plan.

Table 1. Invasive species observed in Greylock Glen.

| Common Name | Scientific Name | Estimated area and/or locations |
|---|---|---|
| garlic mustard | *Alliaria petiolata* | 42 acres |
| barberry | *Berberis thunbergii, B. vulgaris* | 258 locations |
| Asiatic bittersweet | *Celastrus orbiculata* | 6.2 acres and 340 locations |
| autumn olive | *Elaeagnus umbellata* | 198 locations |
| honeysuckle | *Lonicera morrowii* | 922 locations |
| purple loosestrife | *Lythrum salicaria* | >1 acre |
| phragmites | *Phragmites australis* | 3.82 acres |
| buckthorn | *Rhamnus cathartica, R. frangula* | 260 locations |
| black locust | *Robinia pseudoacacia* | 0.36 acres |
| multiflora rose | *Rosa multiflora* | 298 locations |

This IPMP is intended to establish the criteria whereby the DCR controls invasive plants within Greylock Glen over a six year period, in accordance with the Massachusetts Department of Agricultural Resources (MDAR) regulations. It was developed with guidance from the revised Right of Way (ROW) management plan (333 CMR 11.00). Components of the ROW

management plan have been incorporated into the planning of the activities set forth in this document. Passages that served as guidelines can be found in Appendices A-F.

DCR's goals for Greylock Glen include: 1) prevention of the introduction of new invasive species to the Glen and adjacent areas; 2) reduction of the quantity of existing invasive species that are already present on-site in the vicinity of natural areas; and 3) reduction in the amount of existing invasive species propagules prior to any construction on site.

A major objective of the IPMP, which will contribute to attaining DCR's goals, is an 85% reduction of invasive species in the four delineated control areas. Biodrawversity and PES are contracted to reach this 85% reduction in three years. Invasive plant control will continue beyond this time period, but will be the responsibility of the Town of Adams.

Once permits are secured, Polatin Ecological Services LLC will implement the control portion of the plan within wetlands and wetland buffers, including several actions designed specifically for the ten invasive plant species targets. For the duration of the control work, an NHESP approved botanist will flag any rare species and/or monitor control work done within 10 meters of rare plant populations, as required by NHESP. In addition, Biodrawversity LLC has developed guidelines to reduce the threat of invasive plant species during construction activities within the Glen, and will also develop a long-term Early Detection/Rapid Response (EDRR) monitoring program designed to detect and manage new and existing populations of invasive species within the Glen. This EDRR program is intended to be carried out in perpetuity to protect the property from myriad threats of invasive plants.

**Site Description**

Greylock Glen is a 1,063-acre site located on the east slope of Mount Greylock in Adams, Massachusetts. The 12,500-acre Mount Greylock State Reservation forms the southern, western, and northern borders of the Greylock Glen property. Together, these two properties contain a rich variety of natural features and plant communities. Elevation at Greylock Glen ranges from approximately 1,040 feet where Hoxie Brook crosses the eastern boundary to 2,300 feet at its northwestern corner. The peak of Mount Greylock, the highest elevation in Massachusetts (3,491 feet), rises a short distance above and to the west of Greylock Glen.

Greylock Glen has a long history of human habitation and disturbance. Settlers cleared forests of the property's lower elevations and maintained those areas for agriculture beginning sometime in the mid-1700s. This deforestation reached its zenith in the early to mid-1800s. After this, many farms were abandoned and some of the fields and pastures slowly reverted to early successional forest. Timber harvesting continued in many of the recovered forests, however. Forests of the property's higher elevations were also cleared, and the steep, denuded slopes were prone to severe erosion. These upper slopes have since reverted to a mix of young second-growth and mature hardwood forest.

Since the 1960s, there have been several proposals to develop the parcel, but only one project began the construction phase. A golf course, several man-made ponds, concrete foundations, and the infrastructure for a ski slope and lift were all built. This project was eventually abandoned

and the area has slowly recovered over the past 30 years, but lasting scars were left on the landscape.

The Commonwealth of Massachusetts now owns the property. At present, the landscape of Greylock Glen features a mosaic of different plant communities, including mown fields, abandoned fields with varying amounts of encroaching shrubs and trees, conifer plantations, young second-growth forests and woodlands, and mature hardwood forests. There are also numerous aquatic and wetland habitats such as ponds, streams, springs, and seeps, many of which occur due to a combination of the area's topography, underlying bedrock characteristics, and surficial geology deposits (CET 1996). At lower elevations of the property, a variety of man-made ponds and watercourses (altered by dams, channelization, armored streambanks, and culverts) are now strongly influenced by beavers. Although the site is primarily used by hikers and bicyclists, unauthorized all-terrain vehicle (ATV) use has caused some localized habitat degradation along trails and in sensitive areas.

**Project Background**

In 2008, Biodrawversity was contracted by the Massachusetts Department of Conservation and Recreation (DCR) to survey the Greylock Glen property for rare plants. This survey concentrated on the core development area, an extensive trail system throughout the property, and grassland reclamation areas. A total of 439 plant species, including 21 state-listed or Watch List species, were documented during the 2008 survey.

In 2009 and 2010, Biodrawversity was contracted by DCR to conduct an invasive plant species survey of the Greylock Glen property, map the distribution of invasive species, and develop a management and control plan. Initially, this contract focused on a 50-acre core development area where most of the construction activity for the proposed Greylock Glen Outdoor Recreation and Environmental Education Center (OREEC) would take place. Biodrawversity and Polatin Ecological Services, LLC (PES) drafted a management and control plan for the 50-acre development area. However, due to a change in the scope of work, the draft management plan was revised to create this current management plan.

The Berkshire Regional Planning Commission (BRPC) and the Natural Heritage Endangered Species Program (NHESP) expressed concerns that proposed development and increased foot traffic may have a negative effect on the rare plant species documented throughout the Glen by facilitating the spread of invasive species. Therefore, the area to be surveyed for invasive plants was expanded to include all high-use areas, along with other locations suspected to contain invasive species, particularly in areas with, or adjacent to, rare plant species.

In order to prioritize areas requiring invasive species control, Biodrawversity and NHESP developed a list of conditions in the spring of 2011. Top priority was given to the following:

- Any areas where invasive and state-listed species (i.e., *Triphora trianthophora*, *Sanicula* spp., or *Carex baileyi*) co-occur.

- "Gateway areas" that lead to rare or valuable plant communities and that have invasive species present (including the parking area below the western *Triphora* population and along the western edge of the eastern *Triphora* polygon).
- Areas expected to have an increase in traffic due to the proposed development (including the proposed campground areas).
- Areas with aggressive invasive plants, including *Alliaria petiolata*, *Berberis thunbergii*, *Celastrus orbiculatus*, and *Phragmites australis.*
- Any areas with "new" aggressive invasive populations discovered in the Glen.

Using the above guidelines, Biodrawversity defined four control areas which have been reviewed and approved by NHESP. To define these control areas, Biodrawversity created a map with the locations of invasive species, known rare plant populations (sensitive areas), trails and roads, and the proposed campgrounds, and then delineated control areas around the areas of highest priority. In addition, Jennifer Garrett of NHESP suggested that we also include the large population of garlic mustard to the west of Control Area 1; this patch of garlic mustard (Garlic Mustard Annex) has been delineated and incorporated into Control Area 1. This management plan focuses on controlling invasive species in the four Control Areas.

*Control Areas*

We are proposing invasive plant management activities in four Control Areas within the Glen (Figure 1). The largest control area (C-1) is approximately 103 hectares, or 255.6 acres. It contains a variety of habitats including beech and sugar maple forest, upland meadows (abandoned ski slopes), wet meadows, ponds, and streams. C-1 also includes the proposed core development area, campgrounds, several trailheads, and the garlic mustard "annex" to the west of the original control area. The annex comprises an approximately 14 hectare area of dense garlic mustard stands that NHESP requested be included in the control work.

Control Area C-2 is approximately 6.8 hectares, or 17 acres. This area is comprised almost entirely of beech forest, but a strip of formerly disturbed soils along an old roadway runs through it and contains many invasive species.

Control Area C-3 is approximately 1.5 hectares, or 3.75 acres, and is comprised of forested uplands, meadows, forested wetlands, and wet meadows.

Control Area C-4 is approximately 4.9 hectares, or 12 acres, and is also comprised of forested uplands, meadows, forested wetlands, and wet meadows.

All four of the control areas contain *Sensitive Areas*, defined in this case as patches and populations of rare plant species warranting special consideration and management techniques. These populations were identified and mapped in 2008 by Biodrawversity.

*Priority and Estimated Habitat*

Several areas within Greylock Glen are delineated by NHESP as Priority Habitat (Figure 2). Priority Habitat represents the known geographical extent of habitat for all state-listed rare species (plants and animals) and is subject to the Massachusetts Endangered Species Act (MESA) regulations. One small area in the northwest portion of Greylock Glen, but not within the project area, is officially mapped as *Estimated Habitat for Rare Wildlife* by the NHESP. Estimated Habitats are a sub-set of the Priority Habitats, and are based on the extent of habitat of state-listed rare wetlands wildlife. Estimated Habitat is regulated under the Wetlands Protection Act, which does not protect plants.

In addition to Priority Habitat, the project area contains several known populations of state-listed species regulated by NHESP. As mentioned earlier, these were first located in 2008 by Biodrawversity, and have not yet been incorporated in the latest Prioity Habitat map layers. Biodrawversity has been working closely with NHESP to develop management practices to simultaneously control invasive plants effectively and protect native species, particularly rare plants and wildlife.

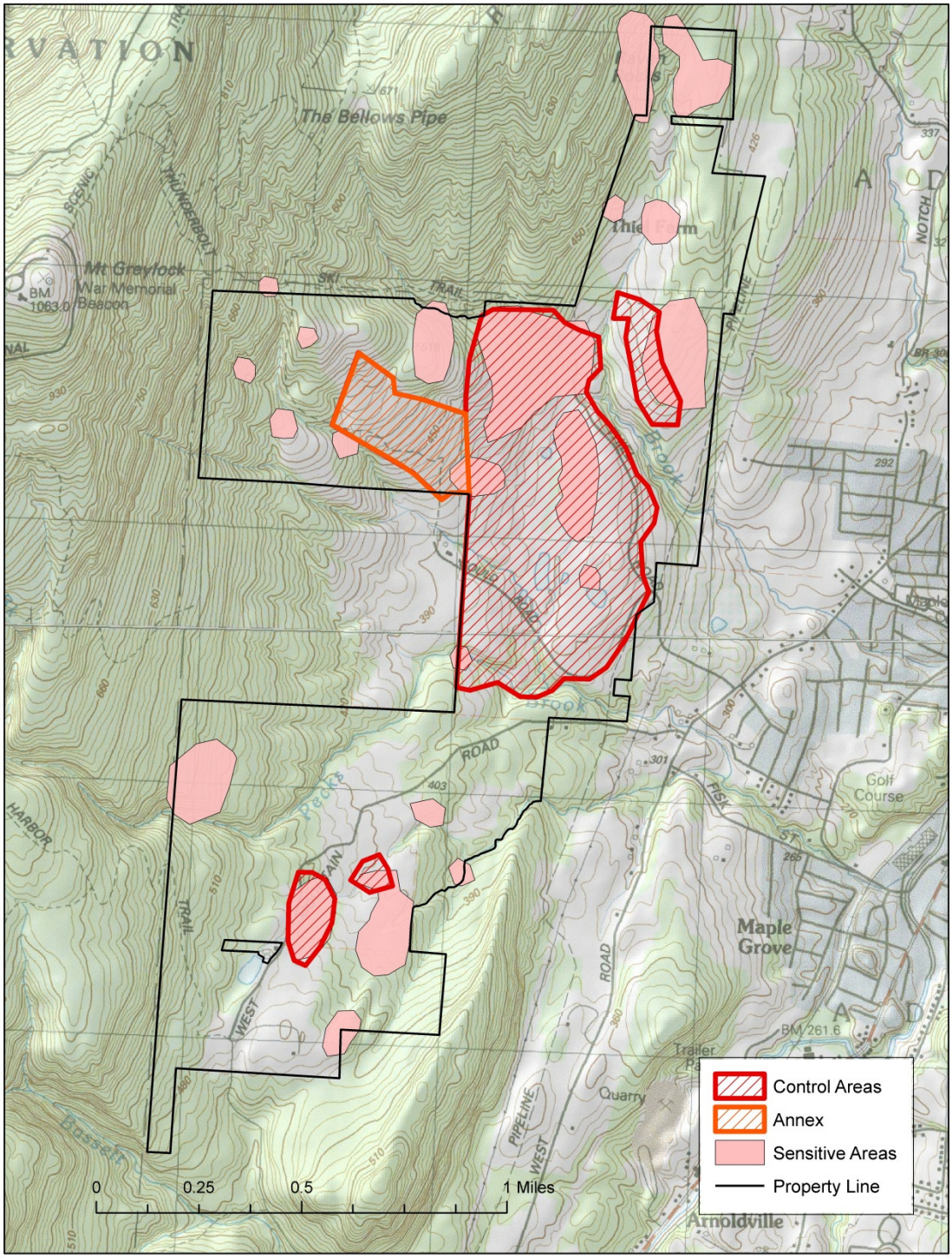


**Figure 1.** Control areas C1 - C4, the Garlic Mustard Annex, and Sensitive Areas.