

Forest Beach Conservation Area Land Management Plan



Invasive Plants Present

Sycamore Maple	(<i>Acer pseudoplatanus</i>)
Asiatic Bittersweet	(<i>Celastrus orbiculatus</i>)
Spotted Knapweed	(<i>Centaurea biebersteinei</i>)
Queen Anne's Lace*	(<i>Daucus carota</i>)
Autumn Olive	(<i>Elaeagnus umbellata</i>)
Weeping Lovegrass*	(<i>Eragrostis curvula</i>)
Cypress Spurge	(<i>Euphorbia cyparissias</i>)
Shrub Honeysuckle	(<i>Lonicera morrowii and x bella</i>)

* Not a currently-listed invasive plant in Massachusetts, but poses a management threat at this and other parcels

Non Invasive Plants Present

Trees, Shrubs & Vines

Bearberry	(<i>Arctostaphylos uva-ursi</i>)
Eastern Red Cedar	(<i>Juniperis virginiana</i>)
Bayberry	(<i>Myrica pensylvanica</i>)
Pitch Pine	(<i>Pinus rigida</i>)
Beachplum	(<i>Prunus maritima</i>)
Black Cherry	(<i>Prunus serotina</i>)
Black Oak	(<i>Quercus velutina</i>)
Pasture Rose	(<i>Rosa Carolina</i>)
Poison Ivy	(<i>Toxicodendron radicans</i>)

Herbaceous Plants

Pearly Everlasting	(<i>Anaphalis margaritacea</i>)
Wild Sasparilla	(<i>Aralia nudicaulis</i>)
Pennsylvania Sedge	(<i>Carex pensylvanica</i>)
Poverty Grass	(<i>Danthonia spicata</i>)
Narrow Leaf Goldenrod	(<i>Euthamia tenuifolia</i>)
St. Johns-Wort	(<i>Hypericum perforatum</i>)
Stiff Leaved Aster	(<i>Ioactis linariifolius</i>)
Marsh Iva	(<i>Iva frutescens</i>)
Butter and Eggs	(<i>Linaria vulgaris</i>)
Evening Primrose	(<i>Oenothera biennis</i>)
Pokeweed	(<i>Phytolacca americana</i>)
Sickle-Leaved Silk Grass	(<i>Pityopsis falcata</i>)
Dewberry	(<i>Rubus sp.</i>)
Little Bluestem	(<i>Schizachyrium scoparium</i>)

Existing Conditions

The Forest Beach Conservation Area is comprised of well established communities of native plants as well as disturbed areas which are invaded with non-native plants. The marsh to the south and east that borders Forest Beach is a NHESP 2008 Priority Habitat of Rare Species, which highlights the importance of maintaining this area as a supporting habitat and buffer area.

The meadow to the south and east of the parking lot contains a mix of *Carex pensylvanica*, *Arctostaphylos uva-ursi*, *Myrica pensylvanica*, *Prunus maritima*, *Schizachyrium scoparium*, and *Pityopsis falcata* in the lower section bordering the salt-marsh. The complex community of plants and wildlife in this area are fairly stable and serves as a great model for this maritime-grassland community which is presently threatened by the encroachment of invasive plant species which have already colonized other portions of the conservation area. This type of native community provides important habitat benefits including erosion control, food and cover for many wildlife species as well as nesting sites for birds, and provides a very interesting place for people to visit.

The upper sections of this meadow as well as the meadows to the north and east of the parking area have been disturbed by human activity and are dominated by invasive plants such as *Celastrus orbiculatus*, *Centaurea biebersteinei*, *Eragrostis curvula*, *Daucus carota* and *Euphorbia cyparissias*. These invasive plants displace native vegetation and often have little value for wildlife. A common characteristic of the invaded areas is the low native plant density and diversity. Where native plants have formed a community of densely growing plants, competition for resources is greater, which generally excludes invasive plant colonization.

Access to the site is primarily through the parking area, it appears as though most people use the conservation area for the dramatic views. There is a small paved path that extends a short distance into the meadow where information posted on a kiosk explains the history of the site.

Goal:

The goal of this management plan is to control invasive plants and allow the native plant community to thrive throughout the property, while showcasing the beauty of native plants in the setting of a small conservation area. With the increase of development, habitat for plants and wildlife becomes irrevocably lost. The wildlife habitat that exists on Cape Cod today is a fraction of what existed just fifty years ago. Preserving and carefully managing protected habitat should be a common goal for communities.

Objectives:

- Biological diversity and wildlife habitat will be enhanced through managing invasive plants as well as planting seed and plants of indigenous species and encouraging existing native plants.
- Invasive plant management will be a critical objective because state-recognized invasive species threaten both biological diversity and the wildlife habitat of this parcel.
- The utmost care should be taken throughout all aspects of the intensive management period to protect, nurture and support existing native plants during management activities.
- Any voids created from invasive species removal will be re-planted with suitable native species.

Grassland dependent species of birds such as vesper sparrow (Threatened), grasshopper sparrow (Threatened), and savannah sparrow (PIF-V) could all benefit by maintaining this grassland habitat in proximity to other source populations. Northern harriers (Threatened), short-eared owls (Endangered), long-eared owls (Special Concern), barn owls (Special Concern), American woodcocks (PIF –III) and

whip-poor-wills (PIF-III), which all require nearby open habitat for hunting, foraging or breeding could all benefit from the proposed habitat restoration. Raptor species such as the northern harrier, short-eared owl, barn owl, and great horned owl are all known to hunt in open grasslands and roost in conifers or other trees, or in the case of short-eared owls, on the ground.

Treatment Options and Important Timing Considerations for Habitat Management and Invasive Plant Treatments

Mowing:

~Spring Mow~ Minimize habitat disturbance by timing mowing treatments to be conducted late in the Month of March in order to allow winter cover of dense vegetation for small mammals as well as cover and forage habitat for bird species in winter when grass and wildflower seeds becomes an important winter food source for many overwintering species. With a mowing in late March, the habitat disturbance is minimized because the meadow begins to grow again in April.

~Summer Mow~ Minimize both habitat disturbance and development of native grasses with a mow in late July. Most ground nesting birds and mammals have fledged or vacated their nests by late July, so nesting is not disturbed with a mow in the last week of July. Native cool season grasses (grass species which do most of their growth and seed development early in the summer) have successfully developed and released viable seed by late July and the warm-season grasses (grass species which do most of their growth and seed development later in the summer) have just begun to grow and have not developed significant stalks or flower heads in the last week of July. Mowing in July also allows good vegetative development of native grasses and wildflowers in the late summer and fall growing season, which provides cover in the dormant winter months.

Mowing twice per year tends to support herbaceous species and discourage woody species, thus encouraging healthy meadow communities. Mowing in the Spring tends to set the woody plants back to sprouting from the ground, when they would otherwise develop leaf buds and continue the building on the former year's growth. Summer mowing effectively discourages woody weeds by forcing them to regenerate new growth when they would typically be generating flowers and fruit, thus reducing energy in their root reserves over time.

Hand Pulling or Mechanical Removal:

There is almost no bad time to pull an undesirable weed, however certain times are better than others. Most species will most readily uproot when the soils are moist and unfrozen. If one is attempting to pull a weed which has an extensive root system or a root which is prone to breakage, then attempt to pull the species after it has expended energy developing flowers, but before the seeds are viable so as not to spread the seed.

If a weed is too difficult to remove by hand, try using a specialized weed wrench which can accommodate up to a 2 ½ to 3 inch stem (Available from the New England Wildflower Society or New Tribe Manufacturing in California). Another method of mechanical removal is to mechanically remove the seed heads by hand, with pruners, or with a motorized string trimmer before the seed is viable.

Warning: Hand pulling is not effective on invasive species such as Asiatic Bittersweet, White Poplar, Porcelain Berry, and Japanese Knotweed. These species may spread or colonize disturbed areas when hand pulling is attempted.

Herbicide Application:

With most invasive species, the most effective time to apply herbicide is between July 1 and October 1st when the plants are fully photosynthesizing and delivering sugars created in the leaves to build up root reserves. As destroying the root material is always the goal of herbicide use; it is best to apply the herbicide during this timeframe, when the herbicide will translocate effectively to the roots and prevent future re-sprouting.

Please Note: Herbicides are regulated as Pesticides under the MA Pesticide Regulations and a Pesticide Applicators License and specialized insurance are required to apply herbicides in Massachusetts.

~Cut and Wipe Application~ One of the most effective methods of herbicide application also happens to be one of the most environmentally sensitive and selective methods of application. In this technique, a concentrated herbicide (usually a Glyphosate-based herbicide at 41% concentration) is applied directly to the cut stem within 5 minutes of cutting the stem. For larger diameter shrubs and trees, a frill cut is effective, where the applicator cuts back the bark with a knife or hatchet and exposing the cambium where the herbicide is wiped on. This technique is effective with all of the invasive species found on this site with the exception of Japanese Knotweed.

~Stem Injection~ This herbicide technique is effective with hollow stemmed species such as Japanese Knotweed. This treatment can be conducted either by injecting the stem of the plant between the nodes on the stalk with a specialized hypodermic needle designed for plants or by cutting off the tops and using a medicine dropper to deliver the herbicide. In both instances, 5 cubic centimeters is effective as the measured dose for each stem.

Management Strategies:

Meadow renovation will involve physically removing target species, re-seeding with native plants and timely mowing treatments. It is clear that a vigorous turf of native grasses and forbs resists invasion of invasive plants. With this in mind a healthy dense turf in the meadow is a goal of this management plan. Invasive plants will first be removed; voids and bare areas of turf will then be reseeded or replanted. Mowing should be timed to discourage the growth of invasive plants while also encouraging the growth and reproduction of native grasses and forbs. An early spring mowing will impact woody plants as well as cool season and biannual invasive plants while allowing warm season grasses to thrive. A second mowing in midseason, before grasses such as little bluestem and switchgrass have set seed; will again decrease unwanted woody plants. If it is not possible to remove invasive herbaceous plants before they set seed, then an effort should be made to remove the flower heads. This can be accomplished efficiently with a gas-powered string trimmer. Some plant species such as knotweed, Asiatic bittersweet and porcelain berry are very difficult to control, if not impossible to control without the use of herbicides. It is recommended that a controlled herbicide application be used to control these plants. Once management activities have begun it is important to continue until unwanted plants are under control.

The use of 2-5" plugs in conjunction with a native seed mixture could be a cost-effective method of re-colonizing voids left in the meadow areas from the removal of invasive plants. Plugs have proven to be

successful at re-colonizing impacted areas and can easily be installed by volunteers using minimal tools. Species which are suitable for this application include Pennsylvania sedge, little bluestem, switchgrass, crinkled hair grass, poverty grass, purple love grass, aster species, monarda species and non-invasive goldenrods such as sweet goldenrod (*Solidago odora*).

Specific Actions

- Removal of the **Asiatic bittersweet** which is growing around the perimeter of the property is a priority project and should not be delayed. Delaying management of the Bittersweet will allow the plants to continue spreading by seed and vegetative means making it more difficult to manage. Bittersweet is a plant that is very hard to control without the use of herbicides. Fortunately, the predominant treatment involves a relatively small amount of herbicide that is applied to the cut stem by a licensed applicator. The recommended procedure for control is based on the phenology of the plant. By commencing management with a cut stem application of herbicide, re-sprouting in the subsequent growing season will be dramatically reduced. Herbicide application should only be conducted after the invasive plants have fully developed foliage and are delivering carbohydrates back to the roots to allow for the most efficient translocation of the herbicide. All Asiatic bittersweet vines greater than 1" in basal diameter should be treated by cutting the vine 4-6" from the ground and wiping on a 41% concentration of a Glyphosate-based herbicide to the cut stem. Do not attempt to immediately pull cut vines out of trees as this will likely damage the trees. Conduct a controlled low-volume foliar spray of a 2% Triclopyr-based herbicide to all Asiatic bittersweet stems less than 1" in diameter.
- **Spotted knapweed** is the most common invasive plant in the meadow and threatens to spread to other disturbed areas. Removal of these plants would be a good project for The AmeriCorps of Cape Cod or other volunteer workers. Workers should be trained to identify these bi-annual plants in both their first and second year of growth. Spotted knapweed is tap rooted and tools such as pruning shears may be necessary to cut the plants below the crown. It will be important to have workers visit the site at least two to three times in a season for approximately three years in order to deplete the seed bank in the soil. It is also very important that existing plants not be allowed to flower and set seed. When plants are removed a native maritime seed mix should be planted to fill voids.
- **Weeping love-grass** is not currently a state listed invasive species, however at this location it seems to be spreading rapidly and warrants careful observation. This grass is native to warmer climates and may not be entirely hardy in our zone; in this case the plants may die if we experience a sufficiently cold winter. If the plants are not winter killed it is recommended that they be physically removed before they can set seed. It is important for workers to be able to identify the lovegrass while the plants are young as control at this growth stage would be much more efficient. A native seed mix or small plugs should be planted and maintained in the areas left bare from the removal of the lovegrass.

- **Sycamore maple** and autumn olive are best controlled by cutting and wiping the trunk with a systemic herbicide to stop re-sprouting. Autumn olive fixes nitrogen which enables other invasive plants to take advantage of the extra available nitrogen and colonize the area more readily. Sycamore maples produce abundant seed which readily germinates to colonize large areas where it competes with native plants. For these reasons it is important to use the resources necessary to control these plants.
- **Shrub honeysuckle** and **vine honeysuckle** can quickly colonize large areas eliminating native plants through competition. It is a relatively easy to physically remove shrub honeysuckle, especially when it is small. These plants should be removed early in the season before they have the time to produce fruit which will cause it to spread further. Vine honeysuckle is a common invader after other invasive species have been successfully managed because it can quickly colonize recently managed areas. While small invasions may be addressed by hand-pulling the vine, larger invasions require a dormant season foliar application of a 2% Glyphosate-based herbicide to successfully manage this species. As vine honeysuckle is semi-evergreen, it is possible to apply this dilute herbicide in late November or December, preventing damage to non-target deciduous species which will have dropped their leaves and will therefore be unaffected by such an application.
- **Cypress spurge** spreads vegetatively by underground runners, and is well adapted to growing in dry sandy soils such as the soil at Forest Beach Conservation Area. It has the potential to spread over a large area and should be controlled. At this point the area of infestation is small enough that physically digging and pulling may be effective in controlling the plant. The sap of this plant can be a skin irritant and care should be taken to avoid contact with the skin and eyes.
- **Poison ivy** is a native vine which has both a high wildlife value and is considered a nuisance in many conservation areas with pedestrian access. Poison Ivy should be managed away from paths and intensively used areas. This species should not be eradicated from the conservation area as its fruits are high in lipids which are an important food source for migratory songbirds as they build up fat reserves for the Fall migration. This species can most effectively be managed with a cut and wipe application of a 41% Glyphosate-based herbicide or a controlled, low-volume foliar application of a 2% Triclopyr-based herbicide. There is currently a very low-toxicity herbicide comprised of an acetic-acid formulation of lemon juice, vinegar, clove oil and soap which is effective at defoliating the species, but does not systemically kill the plant. This herbicide, commercially know as Poison Ivy Defoliant, is non-selective and particular care must be taken not to spray native plants when applied as a low-volume foliar application.