

Draft Meadow Garden Stewardship Plan

A comprehensive overview of management areas, activities, and best practices in Longwood's Meadow Garden



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III. Stewardship Tasks

A. Mowing

Mowing is best done in late March/early April, on dry, windy days when the ground is firm. Approximately one-third of the Meadow is mowed (or burned) in any given year, with all areas experiencing different mowing intervals based on the level of woody species encroachment and native plant community needs. Together with prescribed burning, mowing will remain our most important means of preserving the Meadow Garden in an early successional state. Since 2015, all mowing and prescribed burning areas have been photographed from the air by drone for documentation. By doing this, we will be able to develop more efficient mowing schedules and patterns. Some mowing of invasive species monocultures, grass paths, and access paths is also done during the growing season for different management goals.

Asclepias (milkweed) species warrant special mention with regard to mowing in the Meadow Garden and elsewhere at Longwood. As the only host plants of the monarch butterfly caterpillar, *Asclepias* species—and *Asclepias syriaca* (common milkweed) in particular—are ecologically significant plants that should be protected wherever possible. However, in some cases, it can actually be beneficial to mow stands of *Asclepias syriaca* in early June, as this will promote rapid regrowth and delay flowering until later in the season. Early instar monarch caterpillars are unable to chew the large, tough leaves of mature *Asclepias syriaca* plants, and benefit greatly from the availability of tender regrowth later in the summer. In order to make the Meadow Garden more beneficial to Monarch butterflies, we should strongly consider timed mowing of some *Asclepias syriaca* stands.

B. Vine Control

Vine control can be a good volunteer activity provided that *Toxicodendron radicans* is not involved. *Lonicera japonica*, *Celastrus orbiculatus*, and other invasive vines pose a significant threat to new tree and shrub plantings in the Meadow Garden and along the forest edge. Vines can girdle and smother saplings and can compromise the structural integrity of mature trees. Large infestations are therefore not only bad for the trees themselves, but can create a safety concerns if left unchecked. While annual non-woody vines such as *Humulus japonicus* and *Persicaria perfoliata* have not been known to damage trees in this way, their ability to smother large portions of the Meadow Garden landscape warrants their aggressive control—especially in recently disturbed areas.

While limited amounts of vine control must be done during the growing season, the vast majority of the work is done during the winter months, when it is easier to spot, reach, and remove vines. Typically, the entire forested perimeter of the Meadow Garden needs to be de-vined each winter, along with all caged trees, signs, and structures within the Meadow itself. Fresh *Vitis* vines of suitable diameter (1 to 1.5 inches) can be salvaged for use in the Lookout Loft Treehouse, Christmas displays, and other projects. Vines should be unwound—and NOT pulled—from trees wherever possible; any left hanging should have the bottom 3 feet removed in order to facilitate monitoring for regrowth. All cut stems of non-native species should be treated with herbicide to prevent regrowth, provided that they are greater than a quarter-inch diameter.

C. Woody Plant Control

Given that our geographic region experiences over 40 inches of rain annually (on average), woody plant control is vital to preventing the eventual reforestation of the Meadow Garden. March/early April mowing/prescribed burning remain our most efficient (but non-selective) means of controlling the growth of woody plants. However, there are some woody species whose rapid growth and spread warrant additional control through more selective means. *Elaeagnus umbellata*, *Robinia pseudoacacia*, and *Pyrus calleryana* will resprout vigorously after mowing, and must be treated with systemic herbicide in order to be killed.

While woody plant control can be done during the growing season, most work is best done in the fall when it is easier to spot, reach, and cut the plants. Many of our non-native woody species such as *Elaeagnus umbellata* and *Pyrus calleryana* will typically hold their leaves much longer than the natives, and will continue to draw nutrients into their root systems well into November.

Most native and non-invasive woody plants in the Meadow Garden do not require herbicide treatment, although many will also re-sprout after mowing or cutting. Since March/early April mowing and prescribed burning is sufficient to keep most woody plants in check, chemical control efforts should focus on eliminating as many noxious species as possible before spring, when the remainder will be mowed regardless. In this sense, woody plant control can be thought of an important but medium-priority task during winter and a high-priority task during the fall.

Cut branches and stems from *Euonymus alatus* and various *Ligustrum* species are able to rapidly re-root if left on the ground. As a result, all parts of these plants must be removed and composted following mechanical or chemical control.

C. Prescribed Burning

Since the mid-1980's the area encompassed by the present-day Meadow Garden has been part of a long and successful history of prescribed burning at Longwood Gardens. In the future, we hope to continue the use of prescribed fire in the Meadow Garden in support of the following prescribed fire management goals (Stefferd 2015):

- Reduce fuel loading
- Stimulate growth of warm season grasses/forbs
- Reduce cool season grasses
- Reduce woody plants (both native and exotic)
- Improve habitat for ground nesting birds
- Improve habitat for rare and endangered species
- Provide training for Longwood personnel with hands-on experience in RX fire operations
- Provide for safety of fire personnel and the public

A 3-year prescribed fire burn plan has been prepared by Erik Stefferud with input from Tom Brightman and Shannon Henry (from Silvix Forestry & Prescribed Fire Consulting). The plan divides the Meadow Garden into 10 burn units, ranging in size from 1.5 to 15 acres, using existing pathways as firebreaks (Figure 6).

Properly timed and executed, prescribed burning can have a wide variety of important physical, chemical, and biological effects on the Meadow Garden that cannot be achieved with mowing alone, including:

- Heat cracking (allowing seeds, air, water, and nutrients to penetrate the soil)
- Control of fire-intolerant species (which includes most of our invasive species)
- Increased seed germination of fire-tolerant species
- Increased plant growth through increased albedo
- Reduces pest insects and diseases
- Provides superior forage for wildlife

D. Pesticide & Integrated Pest Management

Insecticides are not currently used in the Meadow Garden, with the exception of a small number of specimen trees that are being preventatively treated for emerald ash borer. Insects play a critical role in preserving the ecological health of the Meadow Garden by pollinating flowers, consuming vegetation, and providing a source of food for birds and wildlife. Even well-intentioned efforts to control insect pest species may result in widespread and unforeseen harm to other animals in the food chain. Because of this, pest control strategies in the Meadow Garden should—as always—adhere to the principles of integrated pest management in order to provide alternative solutions to chemical control whenever possible. Consideration of the pest's life cycle, habits, and place in the food web should inform all pest control efforts in the Meadow Garden.