TOWN OF SOUTHBOROUGH

STEWARDSHIP COMMITTEE

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https://www.southboroughma.gov/675/Stewardship-Committee

September 18, 2025

Dear Ms. Hamaker,

Thank you for your interest in the Breakneck Hill Conservation Land and for submitting your questions. In this response from the Stewardship Committee, I will provide context (attachment 1) as well as the answers to your specific questions (attachment 2). We hope the background that we provide in the attachments would make our answers more meaningful and put the answers to your questions in context.

The Southborough Stewardship Committee, made up of five volunteers, supports the Conservation Commission by providing conservation-based stewardship of Breakneck Hill Conservation Land, which comprises about 100 acres (the meadow is about 1 acre). In providing our stewardship, we must balance both conservation-based values of biodiversity and habitat creation with opportunities for passive recreation. We work hard to provide habitat for at-risk species by planting native plants and reducing invasive species.

On behalf of the Stewardship Committee, sincerely,

Joyce Greenleaf
Chair, Stewardship Committee

Attachment 1: Context and Background
Attachment 2: Questions from the August 16, 2025 letter with Stewardship answers

Cc: Beth Melo at mysouthborough@gmail.com
Mark Possemato, Chair, Southborough Conservation Commission
Frederica Gillespie, Chair, Southborough Open Space Preservation Commission
Melissa Danza, Southborough Conservation Agent

Attachment 1: Background and Context

Habitat in Decline

Creating and conserving habitat is essential for biodiversity and a healthy ecology. Unfortunately, many critical habitats are in decline. In recent years, two important scientific studies have underscored this decline. One found that in the past 50 years, we have lost 29 percent of our common backyard birds (see Cornell Lab of Ornithology). The other found that in the last 20 years, we have lost 22 percent of the butterflies in the Northeast.[1] Both studies state that the decline in large part is due to habitat loss and specifically the lack of native plants these animals co-evolved with and need for food and shelter.

Most of Breakneck Hill is not comprised of native plants. Given its agricultural history, non-natives, including agricultural foraging grasses and agricultural weeds, predominate. It also is home to many invasive plants, which grow faster than the more desirable natives and can crowd them out.

History

In 2003, the Southborough Open Space Preservation Commission hosted a Biodiversity Day Walk at Breakneck Hill Conservation Land led by Peter Alden of the Massachusetts Executive Office of Environmental Affairs. At that time, over 25 acres of Breakneck Hill was a monoculture of bittersweet, which had killed the apple trees it engulfed. Visually, it appeared to be rolling sea of bittersweet atop the apple trees. During the walk, Mr. Alden declared Breakneck Hill the worst invasive oriental bittersweet infestation in Metrowest.

Shortly thereafter, the Stewardship Committee was formed to help manage the property for the Conservation Commission. The stewards applied for a grant from the

[1] See Edwards, Collin B., et al. "Rapid butterfly declines across the United States during the 21st century," Science (6 March 2025) Volume 387, Issue 6738, pp 1090-1094.

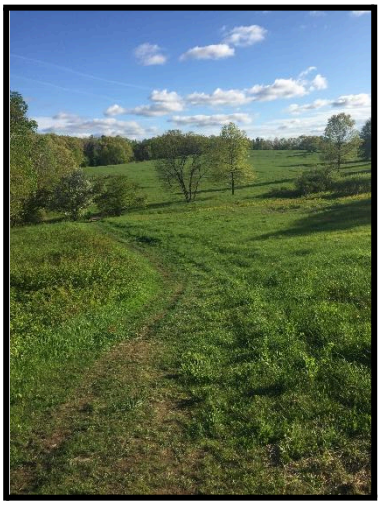
Natural Resource Conservation Services (NRCS, a federal agency) to remove the bittersweet. Subsequently Southborough received a large grant from the NRCS Grassland Reserve Fund. The stewards implemented and managed the grant.

In exchange for the funding, Southborough committed to maintaining critical habitat for grassland birds. Grassland-nesting birds are in global decline, and the habitat was targeted to bobolinks. Specifically, Southborough committed to keeping over 45 acres as open meadows and fields with a minimum of 10 acres dedicated to grasslands.

The Stewards worked with multiple experts to manage the grant and the property. The experts included professional land managers at NRCS as well as expert consultants, including Jeff Collins (the Director of Mass Audubon's Ecological Extension Services and an expert on grassland birds).

In 2006, using the NRCS grant funds, the Stewards oversaw the clearing of 25 acres of dead apple trees (saving as many as possible), followed by an herbicide treatment on the bittersweet.

The resulting landscape was devastating—until it grew back as the experts promised. The two photos below illustrate the immediate aftermath of the clearing followed by a photo after plants regrew (photos are of the same area).



Since then, the Stewards have successfully managed the required grassland area for grassland-nesting birds. In fact, the grasslands have provided habitat for bobolinks, as well as other grassland-nesting species such as Savannah sparrows, every year. Additionally, we have managed the property to become a hot bed of bird diversity: nesting indigo buntings, cedar waxwings, bluebirds, and kestrels, as well as many warblers during the spring migration. Birders come from all over to see the birds at

Breakneck Hill. The Stewards' vigilance in managing the property for habitat has paid off.

Developing Expertise in Management Practices

Knowing about invasive plants and the best management practices have been critical to the success of establishing critical habitat at Breakneck Hill. The years of experience and investment have led to a well-informed Stewardship Committee. For example, in 2005 Steward Freddie Gillespie was voted onto the Steering Committee of the Sudbury Assabet and Concord River Watershed Cooperative Invasive Species Management Area, where she served for many years and still participates as a member. The Steering Committee included members from US Fish and Wildlife Service, New England Forestry Foundation, US Department of Agriculture, Massachusetts Fish and Game, New England Wildflower Society, Walden Woods Project, Mass Audubon and other top national, state and regional environmental groups. Freddie brought back much knowledge and resources to the Stewards.

Furthermore, the Stewards have benefited from an array of accomplished advisors. Experts from Mass Wildlife, Natural Heritage, and US Fish and Wildlife, among others have joined the Stewards for site walks, offering their pro bono advice on best practices for habitat and invasive management. The Stewards have also hired experts when needed, especially for new or emerging invasives.

Among the management approaches the Stewards employ, mowing is the most widely employed at Breakneck Hill. When timed appropriately, mowing promotes certain native plants, which tend to grow more slowly, and prevents faster growing invasives from going to seed and spreading.

When needed, and with expert advice, the Stewards hire professionals specifically licensed as herbicide applicators to combat invasives. We make those decisions with care and with support from the Southborough Conservation Department. We instruct the licensed professionals to apply only the least amount required to effectively treat the invasive and apply to the targeted plants.

Expanding Habitat for At-Risk Native Pollinators Since 2015

In 2015, the Stewards started working with Dr. Robert Gegear, an Associate Professor of Biology at UMass Dartmouth. Dr. Gegear has studied native bumblebees and other pollinators, determining which species rely on which plants for nectar and pollen (disproving the common myth that bumblebees are generalists). Breakneck Hill became his first research site in the Commonwealth.

Based on the research Dr. Gegear was conducting, the Stewards planted the Beecology Research Garden (about 6,500 square feet) using the plants he recommended for at-risk pollinators. This also influenced our approach on the open meadows to better manage for these at-risk species while improving habitat overall for all species.

The Stewards are pleased to share that Dr. Gegear has documented an increase of pollinator populations of species at risk of extirpation from the state—that is species headed to local extinction.

Furthermore, Breakneck Hill has become a go-to site for the Massachusetts Butterfly Club. Many of its members came to see the Baltimore checkerspot butterfly, a species that has declined by 54 percent over the last 20 years. The Club members documented 150 Baltimore checkerspots on one visit and 125 on another. In fact, a recent visit by butterfly experts documented 17 different species across the property.

The Roadside Meadow

The Stewards aim to build on the success of the Beecology Research Garden in increasing the populations of at-risk pollinators by expanding the use of those native plants to the roadside area. We chose this area because of its visibility—and once established, it will provide a beautiful roadside meadow of native grasses and flowers. While undergoing the preparation, however, it is also highly visible.

The area targeted for the roadside meadow included many invasive plants as well as non-native plants and grasses. These include, but are not limited to:

- **Queen Anne's lace (*daucus carota*).** This plant is not native, is aggressive, and is considered a noxious weed.
- **Purple Loosestrife (*lythrum salicaria*).** This is an invasive and non-native plant. According to experts we consult with, purple loosestrife is known to crowd out valuable natives and in particular monkey flower (*mimulus ringens*), which favors the same habitat. Monkey flower is a native plant critical to at-risk bumblebees. The Stewards have observed that where we have successfully removed purple loosestrife, monkey flower emerges.
- **Creeping buttercup (*ranunculus repens*).** This is also an invasive plant. It creates a dense mat that prevents more desirable native plants from growing through.

- **Spotted knapweed (*centarea stoebe*).** Another non-native invasive plant, which can be confused with bachelor's buttons (centaurea cyanus).
- **Other invasives present include Asiatic bittersweet (*celastrus orbitculatus*), creeping thistle (*cirsium avens*), spearmint *(mentha spicata*), porcelain berry (*ampelopsis brevipedunculata*), and multiflora rose (*rosa multiflora*)**. These are all invasives, crowding out more desirable native species. The spearmint likely escaped from local gardens. Porcelain berry is a favored plant of the invasive spotted lanternfly. In the case of multiflora rose, this plant was often used by farmers as a living fence.

Establishing the Meadow

The Stewards consulted experts at the project's outset. This included hiring a local meadow expert referred to us by nationally renowned expert and author of Garden Revolution, Larry Weaner. He had previously conducted a site walk at Breakneck Hill for the Stewards and recommended Nick Novick, owner of Small Planet Landscaping. Mr. Novick is a Massachusetts meadow expert who worked on the native meadow installations at Mt. Auburn Cemetery, among other projects. He espouses an approach that favors a slow success over a fast failure.

Establishing a successful meadow is complex, requiring more than spreading seed. Preparing the soil is the most important early step, especially where extensive non-native and invasive seedbanks exist. Removing the vegetation—whether the plants emerge in the spring, summer, or fall, contributes to the success of the meadow. Several methods exist to accomplish this prep, each with its pros and cons, which the Stewards had to navigate and choose:

- **Smother the existing plants with plastic for several seasons.** This has the undesirable result of sterilizing the soil of all living matter, which is critical for healthy soil. Furthermore, plastic would be costly, unsightly, and result in a large amount of non-recyclable plastic.
- **Herbicide the entire meadow several times over two growing seasons.** This approach is cost-effective, efficient, and preferred by many meadow installers. The stewards recognize that this approach could be safe and environmentally effective (very different than the agricultural herbicide applications dispersed from airplanes); however, we decided it was too much herbicide to be used at this location.
- **Mowing and Harley raking.** This approach involves repeatedly removing the vegetation and turning the soil over to allow new weeds/invasives to grow, and then turn it over again. Mowing before seeds set and turning the soil gets repeated through multiple growing seasons. Generally, some amount of

herbicide will be needed to augment the process before sowing the meadow seeds. Although more time intensive, the Stewards chose this approach.

Once the Stewards chose the mowing and Harley raking approach to prepping the site, we had to line up contractors able to do the work. Locally, those who had the equipment were using it on their farms. Finally, the Southborough Conservation Agent was able to borrow the equipment form Chestnut Hill Farm. She worked with Southborough's Department of Public Works to do the job with its own tractor pulling the Harley rake. Unfortunately, the tractor turned out to be too small to adequately pull the rake. After the initial start to prepping soil, the Stewards had to stop the project, losing a whole season of work, while looking for others with the equipment who could do the work.

The next year we made progress. We hired J & J & Sons Lawncare (a current contractor for the Town of Southborough), and in consultation with Mr. Novick, determined that J&J's smaller equipment could do the job, albeit less efficiently than the Harley rake. We then began the process of mowing and turning the soil. Some of the weeds and invasives were more persistent than we had envisioned so it took an extra season.

With final soil prep expected to be completed this fall, the Stewards are planning to sow the meadow seeds in late fall/winter of 2025. This required herbicide to reduce the persistent invasive plants.

Once the meadow is seeded and starts to grow next spring, we are planning for several seasons of management. That will include monitoring for the emergence of invasives, mowing for management as needed, and reseeding where germination is low.

We expect visible plants emerging, with some flowering, starting in Spring of 2026, and a fully established flowering native wildflower meadow by Spring of 2027. Once established, we expect the meadow to provide not only beauty but also an ongoing functional ecological habitat.

As Mr. Novick, our expert meadow consultant, has reminded the Stewards, a slow success is better than a fast failure.

Attachment 2: Questions from the August 16 Inquiry with Stewardship answers. Please note that more detailed context and background is available in Attachment 1.

1. Chemicals
    a. **What chemicals did the town apply to this land to date?** *The chemical herbicide used is called Prosecutor (41 percent glyphosate) and was applied by licensed herbicide applicators.*
    b. **Who approved the use of those chemicals?** *The Southborough Stewardship Committee went through a permitting process with the Southborough Conservation Commission, and as the project proceeds, regularly communicates with and is subject to the oversight of the Southborough Conservation Department.*
    c. **Does the town intend to apply additional chemicals on this land?** *As needed, and with the advice of experts, the Stewardship Committee does hire licensed professions to apply herbicides to control invasives and may do so in the future.*
        i. **If yes, what are those chemicals and why will they be applied?** *The Stewards hire licensed professionals to apply the chemicals, and they determine the specific chemicals to be used, which are based on the specific targeted invasives. The Stewards instruct them to use the least amount to be effective in eliminating the targeted invasive. The purpose of using chemicals is to eliminate invasives and promote native plants.*

2. Plan for completion
    a. **What is the plan to restore this land to a wildflower meadow?** *To date, the Stewards have focused on preparing the area for seeding—critical for ensuring a successful meadow. We provide more information on the specific steps taken in Attachment 1. The Stewards are planning for final soil prep this fall and seeding in the late fall.*
    b. **Who approved this plan?** *The Southborough Stewardship Committee under the Conservation Department.*
    c. **Who is accountable for making the plan happen?** *The Southborough Stewardship Committee.*
    d. **When is the projected date for this wildflower meadow to be completed?** *The Stewards are planning for the meadow to be seeded late this fall, with meadow plants emerging in the next (2026) growing season. Some plants take longer to germinate and become established*

than others. Like any complex undertaking, subsequent seasons will require monitoring and management, including mowing.

Money:

e. How much money has the town spent to date on this project?

To date $13,990 as follows:

2023 $1,165 Consultation with meadow expert

2024 $2,125 Consultation, oversight, monitoring, and project management by meadow expert

$3,420 labor and equipment

2025 (through mid-September)

$ 880 Consultation, oversight, monitoring, and project management by meadow expert

$6,400 labor and equipment

f. How much more money will the town need to spend to reach the promised goal of having a wildflower meadow on this land again?

To achieve the habitat that will support at-risk pollinators by featuring native plants, the Stewards anticipate the following expenses, which are estimates:

Fall and winter 2025:

$4,700 Seeds

$ 900 Final Soil Prep

$4,300 Labor and equipment for seeding, bird tape for protection

$6,360 Consultation, oversight, site visits, and project management by meadow expert

Growing season 2026:

$2,600 Includes project management, oversight, monitoring, mowing (in the event of a spring drought, we could incur expenses for irrigation)

Subsequent seasons *to include monitoring and management as needed.*