

# LANDSCAPE | INTERACTIONS

designing biodiversity through pollination science

**UPDATE 3-30-22**

TECHNICAL PROPOSAL: WELLESLEY LAWN CONVERSION PROJECT

## Lawns to Diversity: Community Strategy for Pollinator Habitat Restoration in the Town of Wellesley

### Statement of Project Requirements:

Wild pollination systems are being degraded at an alarming rate worldwide as well as locally, owing primarily to the conversion of natural habitat through human development. This has raised major concerns over an impending ecological catastrophe due to the critical role that native pollinators play in terrestrial ecosystems. Yet most efforts to restore pollination systems to date have increased the numbers of a few common bee and butterfly species, rather than the range of wild pollinators needed for ecosystem health and resiliency. This is due primarily to a lack of knowledge regarding the critical role that plant selection plays in wildlife diversity.

The proposed work of **Lawns to Diversity: Community Strategy for Pollinator Habitat Restoration in the Town of Wellesley** seeks to correct this imbalance by creating *two functionally diverse* landscape design alternatives for one municipal demonstration site presently dominated by turf grass. The final design will consist of two different options for conversion of the selected site from lawn to meadow, garden, flowering lawn and/or natural habitat, and be conceived so as to be easily scalable and replicable on other similar sites in the town. Site-specific custom seed mixes, plant schedules and landscape preparation, installation and maintenance guidelines will be published and communicated widely, in the form of a digital/print format illustrated pdf guide available for Town Department of Public Works staff as well as members of the general public. Additional educational outreach activities will be arranged, including on-site trainings in how to identify, record and upload native bumblebee species observations using smartphones; live presentations and/or webinars on the subjects of designing biodiverse landscapes and supporting at-risk pollinator species; and field surveys of native pollinator species change on the final selected site over a three-year period, demonstrating the before and after impacts of the project on at-risk pollinators.

This work will serve as a model for public education, stakeholder participation as well as habitat design, restoration and maintenance on properties across the town and in communities across the region. This will serve to not only increase local biodiversity and benefit the productivity of local food systems, but the ecological health and climate resilience of the area will also be improved.

## Scope of Services:

Evan Abramson, Principal at Landscape Interactions, will meet with representatives from the Town of Wellesley in order to view and discuss the various demonstration site alternatives. Field observations will be performed on-site, including surveys of vegetation; public visibility; proximity to natural habitat; and prevalent land use conditions. A range of ecological and environmental site analyses will also be performed using GIS, including slopes and drainage; land cover; soils; proximity to priority habitat and other ecological features; solar exposure throughout the growing season; in order to prioritize and make the best possible recommendations for the final site to be selected.

Two landscape design alternatives will then be created for the chosen demonstration site. The designs will explore the various ways that the site can be transformed for the benefit of at-risk native pollinator species, while at the same time providing aesthetic pleasure and a favorable experience to visitors. The final designs will include (but not necessarily be limited to) at least two of the following design elements: upland meadow; wet meadow; bee + butterfly lawn; sun garden; shade garden; designed wetland; woodland edge.

Two sites are presently under consideration for selection as the final demonstration site:

1. Simons Park, corner of Washington Street and Wellesley Avenue
2. Corner lawn at the intersection of Walnut and Cedar Streets

Other sites may also be considered by the Town and Landscape Interactions which are not listed.

The final designs will be site-specific to the chosen demonstration site, yet scalable and replicable on other sites possessing similar landscape features. A fully illustrated, written guide will be included with the designs in pdf form suitable for both online download and print on demand. This guidance document will include the following components:

1. Two site-specific landscape design alternatives for the chosen demonstration site.
2. Plant lists and custom seed mix(es) specific to the designs, for the varied land use and ecological conditions present on the site, that are also replicable on other similar sites.
3. Design drawings, photo renderings and/or visual diagrams of the final designed habitat features.
4. Detailed, easy-to-understand site preparation, installation and maintenance guidelines, including mowing and weeding schedules, for both short and long-term.
5. Best Management Practices (BMPs).
6. A list of at-risk bee and lepidoptera species which are supported by the plant list and various habitat features of the final designs.
7. Brief background information suitable for a general audience on why pollinator species are in decline; why they're critical for ecosystem health and climate resilience; why particular at-risk pollinator species were selected as the most important species to target for the project.

This guide will uphold the NRC's goal of educating and inspiring landowners, land managers, gardeners and landscapers across Wellesley to convert and steward their properties for the benefit of native pollinator species, and make it easy to understand how to do so, what to plant, and how to maintain it over time.

Surveys of native bee and butterfly species will be conducted on the final design site by Dr. Robert Gegear of UMass-Dartmouth, Scientific Consultant at Landscape Interactions and Founder and Director of the New England Beecology Project, over a three-year period in order to demonstrate the “before and after” impact of the design, plant list and landscape management recommendations on native pollinator species diversity, richness and abundance. The baseline results of these surveys (Year One) will be included in the final guide, with subsequent surveys conducted after the design, plants/seeds and management changes have been fully implemented on the part of the Town of Wellesley (Years Two and Three). The target pollinator species and plant recommendations for the final plan will be based on the data collected in these Year One baseline surveys.

To further public engagement, two webinars and/or in-person presentations about the project and its wider implications will be offered by Evan Abramson and Dr. Robert Gegear to a chosen audience on the part of the Town of Wellesley. Additionally, local community member “citizen scientists” will be trained by Dr. Gegear on-site in how to survey, identify and upload observations of native bumblebee species using the Beecology web app he designed for mobile devices.

Landscape Interactions will source all necessary plants from area nurseries to the specs and quantities required in the final approved plan; the Town of Wellesley will pay for and arrange delivery of those plants. If any seed mixes are required, those will be designed and sourced by Landscape Interactions and purchased by the Town as well.

Regarding installation of the final design (Fall 2023 expected), Evan Abramson will be on-site on installation day in order to interpret the design by placing plants in place on the ground, working with Town staff and volunteers to ensure that the design is implemented correctly. On an earlier visit, Evan Abramson will also ensure that the site is prepared correctly for planting/seeding.

Post-plant monitoring will be conducted by Evan Abramson twice during the first growing season following installation (2024) as well as once during the second growing season (2025). If further visits are required, these may be arranged as needed on the basis of hourly compensation.

By applying the designs, plant list, and site establishment/management strategies from the demonstration site on other similar sites across the Town of Wellesley, the building blocks for a town-wide pollinator corridor will be created — with potential for adoption and expansion into neighboring communities.

***NOTE: Deliverables and services provided by Landscape Interactions do not include: the cost of seeds, plants, landscaping materials and/or infrastructure; the cost of shipping, pickup and/or delivery; manual labor and/or physical installation.***

## Schedule:

### 2022

#### early July:

Field visits at all proposed/possible demonstration sites with Landscape Interactions, Town of Wellesley NRC and Department of Public Utilities staff.

#### late July:

Follow-up meetings over Zoom to finalize selected site.

Year One baseline surveys of pollinator species on the design site begin by Dr. Robert Gegear.

#### August-September:

Botanical survey by Landscape Interactions of selected design site.

GIS analyses by LI of the design site.

Year One baseline surveys continue.

#### October:

Year One baseline surveys end.

Presentation over Zoom by LI of two rough design alternatives for the demonstration site.

Incorporation of feedback received from Town/stakeholders.

#### December:

Presentation by LI of final two design alternatives.

Town selects one final design for implementation.

### 2023

#### January:

LI begins plant sourcing from nurseries for final selected design.

Creation of custom seed mix(es) for the design by LI in coordination with seed supplier(s).

#### April:

LI meets on site with Town to discuss site preparation for implementation of final design in the fall.

Site preparation begins [lawn tarping, spraying and/or sod removal; invasive species removal (if any)].

#### August:

Site preparation is completed.

Seed mixes are purchased by the Town.

Plants sourced by Landscape Interactions begin to arrive on site.

#### September-November:

Installation of the final design, including all plants, seed mixes and other features (LI to direct Town/volunteers on site).

### 2024

#### February:

Submission of rough draft of **Lawns to Diversity: Community Strategy for Pollinator Habitat Restoration in the Town of Wellesley** pdf guide to Town/stakeholders for review.  
Incorporation of feedback received from Town/stakeholders.

March:

Publication of final **Lawns to Diversity** pdf guide (online and print on demand).  
Formal launch of the project with in person and/or Zoom presentations by Evan Abramson and Dr. Gegear.

June:

Half-day citizen scientist training in Wellesley by Dr. Gegear in native bumblebee observation, identification and data upload using smartphones (12 person max attendance).  
Post-plant monitoring by Evan Abramson on site with Town staff/stakeholders.

September:

Post-plant monitoring by Evan Abramson on site with Town staff/stakeholders.

2025

May:

Post-plant monitoring by Evan Abramson on site with Town staff/stakeholders.

May - October:

Year Two surveys of pollinator species on the design site by Dr. Gegear.

2026

May - October:

Year Three surveys of pollinator species on the design site by Dr. Gegear.

2027

January:

Publication of final report by Dr. Gegear demonstrating the before and after impact of the design on native pollinator species diversity, richness and abundance (Years One - Three).

Follow-up presentation by Dr. Gegear in person and/or Zoom to discuss the findings (Optional - per hourly compensation).

Team:

**Evan Abramson, M.Sc.** is a results-driven designer and planner on a mission to rebuild biologically diverse ecosystems through pollinator-plant interactions. As Founder and Principal of Landscape Interactions, he works closely with project partners along every step of the process, from conception through design, implementation and maintenance. Since 2019, Landscape Interactions has been responsible for nearly 200 acres of habitat installed in the Northeast United States, specifically targeting at-risk bee and butterfly species for each project location.

Drawing on his diverse experience as a regional planner, landscape designer, farmer, community organizer, documentary filmmaker and photojournalist, Evan designs landscapes and regional corridors

that build biodiversity and ecological resilience to a changing climate at the ecosystems level. A former Land Use + Natural Resources Planner at the Franklin Regional Council of Governments, Evan designed a [climate resiliency plan for the Deerfield River Watershed](#), the first of its kind in the State of Massachusetts. His [environmental documentaries](#) have garnered dozens of festival awards, and influenced policy makers across the globe. His [photographs](#) have been published in *The New York Times*, *The Washington Post*, *The Guardian* and *The Atlantic*, among other periodicals. As a community organizer for Food & Water Watch, Evan helped pass a statewide ban on fracking waste in Connecticut, and stopped a gas-fired power plant proposal in less than one month. He milked cows, grew vegetables and raised cattle, pigs and poultry on pasture at Hawthorne Valley Farm, a biodynamic farm in the Hudson Valley. He holds a Master of Science in Ecological Design from the Conway School of Landscape Design, Certificates in Permaculture Design and Biodynamic Gardening, and is author of the [Lincoln Pollinator Action Plan](#) and co-author of the [Great Barrington Pollinator Action Plan](#).

**Robert J. Gegear, Ph.D.** is a Scientific Consultant at Landscape Interactions, a Pollination Ecologist and Conservation Biologist, [Professor of Biology at the University of Massachusetts-Dartmouth](#) and Founder and Director of the [New England Beecology Project](#). He has studied the ecology, evolution, and conservation of pollination systems native to eastern North America for over 25 years. Dr. Gegear conducts ground-breaking research on the pollen and nectar preferences of native bees, butterflies and moths, by studying their memory and behavior in lab-controlled settings as well as documenting repeated floral visitations through extensive field observations. His studies demonstrate which native plant species particular native pollinator species need pollen from in order to reproduce, and which pollinator species specific native plant species need in order to produce seeds. His research approach spans many boundaries, combining concepts and experimental techniques from behavioral ecology, neurobiology, experimental psychology, molecular biology, population and community ecology, evolutionary biology, and computer science.

Dr. Gegear has organized and presented at scores of workshops and conferences, to educate citizens regarding the crucial role that native pollinators play in our ecosystems, and recruit them to help identify bee-plant interactions by uploading photos and videos through the [Beecology app](#). He and a team of faculty and students at Worcester Polytechnic Institute were the recipients of a 1.2 million dollar National Science Foundation grant, allowing them to work with high school teachers to motivate the integrative teaching of computer science and biology in high school curricula.

Dr. Gegear considers bumblebees the ideal model to address his research questions, because they have evolved the behavioral capacity to flexibly track resources (floral nectar and pollen) in complex and constantly changing multi-sensory environments; are highly amenable to experimental study of behavior under laboratory and field conditions; are the main pollinator of numerous native plant species and therefore play a critical role in maintaining the function and diversity of natural ecosystems; have tremendous social and economic value as crop pollinators; and are easily identified while visiting flowers in the wild, thereby enabling citizen scientists with different academic backgrounds, perspectives, and life experiences to actively participate in his field-based research.

**Adam Kohl** is a Field Botanist and Horticultural Consultant at Landscape Interactions, a naturalist, conservationist and owner of [Kohl Gardens](#) native plant nursery in Wendell, Massachusetts. His areas of interest include botany, entomology, native plant propagation, landscape design and the intersection

of these disciplines. Adam was educated at the Native Plant Trust (formerly New England Wild Flower Society) where he studied systematics and botany with Arthur Haines; field botany with Ted Elliman and Roland 'Boot' Boutwell; ferns with Don Lubin and Ray Abair; lichens with Elizabeth Kneiper; grasses with Dennis Magee; seed biology with Elizabeth Farnsworth; and advanced horticulture with Dan Jaffe. Adam was the Propagation and Nursery Assistant at Nasami Farm for several years, growing over 100 local ecotype native plant species from seed. He reinvented the fern lab at Nasami and wrote a step-by-step protocol for propagating ferns from spores.

Adam is employed part-time by the Town of Wendell as their Conservation Agent. He also travels throughout the region as an independent seed collector. He is one of the highest-rated presenters at NOFA/Mass conferences and has been sponsored for seed collection walks focusing on the ethics and techniques of collection, storage and propagation. As a volunteer, Adam has contributed several dozen new plant finds for *Vascular Flora of Franklin County, Massachusetts* including trees, shrubs, forbs, grasses and sedges.

**Bo Carpen** is a Senior Landscape Designer and Planner at Landscape Interactions. They believe that landscape design is in the midst of an exciting era of possibilities: while faced with increasing risks to ecosystem and human health, we are also now supported by a wider toolkit for analysis and intervention, supplied by our expanded understanding of both natural processes and technology. Bo brings experience in climate adaptation planning and design to their work across multiple scales and temporalities; forging connections on regional scales and building equity with respect to cultural histories and future consequences alike.

Bo is a candidate for a dual Master of Landscape Architecture and Master of Regional Planning at the University of Massachusetts-Amherst (2023). Bo also holds a Master of Science in Ecological Design from the Conway School of Landscape Design (2019). Prior to graduate school, Bo worked for eight years at the confluence of sustainable agriculture, environmental advocacy, and the restaurant industry. During that period, Bo worked on farms in the United States and Europe learning traditional agricultural and vernacular building techniques; co-founded a farm-centric organic bakery; and co-founded a community and educational gardening non-profit. They draw upon this experience in productive landscapes, non-profit community engagement, and the study of environmental humanities to bring a cultural lens to their work.

#### Qualifications:

Since 2019, Landscape Interactions has been responsible for designing, planning and guiding the implementation of over 200 acres of native pollinator habitat across the Northeast. A former Regional Planner for Franklin County, Principal Evan Abramson has experience working closely with project partners in public, private and non-profit sectors. He pays close attention to the varied goals/visions, possibilities and limitations surrounding each particular site, making the necessary recommendations to steward each project toward successful completion.

Between 2020-21, Landscape Interactions published a number of regional design and planning guides which are similar in scope and objectives to the Wellesley **Lawns to Diversity** proposal. These projects are included as direct links in the **Past Performance** section which follows. What's notable in particular about the [Green Corridor Pollinator Toolkit](#), [McKeon Farm Meadows and Hedgerows](#) and [Egremont](#)

[Pollinator Pathway](#) projects is that they each contain deliverables almost identical to those described in the Wellesley **Lawns to Diversity** proposal, and were completed within a similar timeframe, by the same project team (Abramson, Gegear, Kohl and Carpen).

Dr. Robert Gegear has over two decades of experience in both field and lab research studying the behavior and preferences of native pollinator species, with a particular focus on species at risk. In addition to creating the Beecology web app for use by citizen scientists, he also runs his own [lab at UMass-Dartmouth](#) and [publishes regularly](#) on the subject.

Both Evan Abramson and Dr. Gegear have offered dozens of public presentations on their work to audiences both large and small, and are highly regarded as engaging and inspiring messengers on the subjects of pollinator decline, community engagement and ecological restoration for at-risk species.

Adam Kohl is a skilled observer of the natural world in all its forms as well as an expert native plant propagator and seed collector. He has worked with Evan Abramson on botanical surveys for over fifty sites (ranging from 0.3 to 70 acres) across Massachusetts alone.

Bo Carpen is a highly sought after GIS Specialist whose expertise ranges from geospatial analysis to 3D modeling. They have worked closely with Evan Abramson as part of the Landscape Interactions team since early 2020, conducting ecological and site analyses as well as mapping outputs for every published project.

#### Past Performance:

The project described in this proposal most closely resembles the [Green Corridor Pollinator Toolkit](#), [Pollinate Northampton](#) and [McKeon Farm Meadows and Hedgerows](#) projects.

Other relevant work examples include:

[Lincoln Pollinator Action Plan: Planting for Biodiversity and Climate Resilience](#)  
[Egremont Pollinator Pathway: Toolkit for Habitat Creation and Connectivity](#)

#### Competing Commitments:

While the schedule described in this proposal may appear somewhat vigorous, it is certainly reasonable and doable for a small suburban parcel with relatively even environmental conditions. The scope of work and timeline proposed for **Lawns to Diversity** is not unlike much of Landscape Interactions' prior work to date. All assurances that the project will be completed as described on time are supported by the links to prior work in the **Past Performance** section which precedes.

Landscape Interactions is currently engaged in several projects in the Wellesley area, including implementation of the Lincoln Pollinator Action Plan; a small residential design site in Lincoln; and an early stage public park project in Newtown. Therefore, our team is already scheduled to be close at hand and can easily attend to the various in-person site visits and meetings described in the schedule, in order to fulfill the obligations of this proposal and ensure the design is installed in fall of this year.



### Key Takeaway:

The right native plant can have an amplified effect on the ecosystem as a whole. We propose to create a roadmap for biodiversity and climate resilience across the Town of Wellesley by rebuilding *functionally diverse* native ecosystems, through site-specific landscape designs, plant lists and site establishment, installation and management guidelines — all of which specifically target at-risk pollinator species; and by ensuring these designs are scalable and replicable on other similar landscapes. By collaborating closely with Town of Wellesley NRC and Department of Public Works staff throughout the site analysis, design, implementation and maintenance phases of the project, **Lawns to Diversity** will express the many possibilities that the local landscape possesses for restoring biodiversity, inspiring a vision for a corridor in the front lawns, backyards and parks of Wellesley and in neighboring communities.