ORANGE POLLINATOR ACTION PLAN

Identifying and Expanding Wild Pollinator Habitat in the Town of Orange

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The *Orange Pollinator Action Plan* was developed with input from town staff, including the Director of Planning and Community Development, and town boards and committees, including the Planning Board, Energy Committee, Agricultural Commission, and Conservation Commission. Several community residents active in pollinator gardening, farming, and ecological land stewardship in Orange contributed knowledge about local existing pollinator habitat and opportunities for its expansion and protection in town. The continued engagement of this group as well as other pollinator planning stakeholders will help to ensure that pollinator projects move forward while building on a wealth of knowledge, experience, and great ideas that already exist in Orange. Many share the enthusiasm and dedication that will be key to advancing the objectives of this plan and the ongoing beneficial work for native pollinators in town and beyond.

The *Orange Pollinator Action Plan* is part of the *Regional Pollinator Action Plan* for Franklin County, which identifies strategies to develop pollinator habitat at a municipal and landscape scale through community engagement. The *Regional Pollinator Action Plan* includes the towns of Heath, Shelburne, Conway, Greenfield, Montague, Bernardston, Wendell, and Orange. To view the *Regional Pollinator Action Plan,* the *Regional Pollinator Habitat Corridor Implementation Toolkit*, and the *Pollinator Action Plans* for each of the other participating towns, go to https://frcog.org/franklin-county-regional-pollinator-plan/.

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LANDSCAPE ANALYSIS

Natural resource inventory and parcel maps of the Town of Orange were developed with MassGIS and other available geospatial data to identify existing land cover and land use, priority habitat, water resources, development patterns and areas of habitat fragmentation, protected open space and municipal properties, paved and gravel roads in town, and other relevant resources. The method of landscape-scale analysis followed these steps:

- Identify pollinator habitat by analyzing land cover and land use, protected open space, rivers and wetlands, Natural Heritage and Endangered Species (NHESP) BioMap2 Core Habitat, utility corridors and right-of-ways (ROWs).
- Consider special geologic, hydrologic, soil, vegetation, and microclimate assets in Orange that serve as valuable resource areas for the whole lifecycle of pollinators across multiple seasons, including nesting, larval, and adult stages.
- Include locally observed habitat and known habitat resource areas.
- Identify existing conditions, habitat, and development patterns, and areas of habitat fragmentation.
- Use GIS and local knowledge to create the maps.

Landscape analysis for the Town of Orange included the following maps, which can be found at the back of the *Orange Town Action Plan*:

- *Habitat and Environmental Resources*
- *Land Cover and Land Use*
- *Permanently Protected and Municipal Properties*

The analysis shows that Orange is a predominantly rural town with a relatively large urbanized center along the Millers River, which flows east to west through the town. Residential development is concentrated in downtown Orange and dispersed along roads across the rest of town. There is a lot of agricultural activity, predominantly in the northern half of Orange and mostly as hayfields and pasture. Routes 122, 202 and 2A host a significant amount of commercial and industrial activity and just southeast of the downtown, is a large municipal airport. Large sections of town along the hilly western border and in the northern half of town are forested and permanently protected. A number of large open and vegetated waterbodies, including Lake Mattawa, Tully and Packard Ponds, and the wetlands and connecting streams that lace across the town very likely provide important habitat areas for pollinator insects. There are areas identified as BioMap 2 Core Habitat—state-designated high-quality habitat and intact ecosystem areas—throughout town. Forested areas along the western and northern border, Walnut Hill next to Lake Mattawa, the Millers and West Branch of the Millers River, Cheney Brook, Tully Mountain and Tully Pond, and the Orange Municipal Airport are all areas of

Core Habitat; open, sunny portions of these designated areas can be very conducive to pollinator habitat.

Maps of existing and potential sites for pollinator habitat areas and corridors were developed through both GIS landscape analysis and community input. A pollinator planning workshop with the Town of Orange was held on April 2, 2021 via Zoom to review the GIS maps of the town, to discuss pollinator habitat corridors and stepping stones of connectivity, and to inventory locally known existing pollinator habitats as well as potential locations for creating new pollinator habitat in town. Seventeen people attended the workshop, including many home gardeners, ecological land stewards, and farmers.

This local knowledge was used in conjunction with land use data to create the following maps, which can be found at the back of the *Orange Town Action Plan*:

- *Existing & Potential Sites of Pollinator Habitat*
- *Pollinator Corridors & Habitat Stepping Stones*

EXISTING HABITATS AND RESOURCE AREAS

According to the Natural Resources Conservation Service (NRCS), the best pollinator habitat will generally have access to food, cover, and water in close proximity, as well as connectivity to other important habitats, such as deciduous forests. Sunny and open conditions, field edges, and hedgerows are needed for ground nesting sites, as well as wood and pithy-stem nesting pollinators.

Existing pollinator habitats and resource areas can be inferred from the "Sunny Open Landscapes" and "Forested and Open Wetlands" data displayed in the *Town of Orange Pollinator Corridors & Habitat Stepping Stones* map. These two composite prime pollinator land cover data layers consist of the following MassGIS 2016 land cover types:

Sunny Open Landscapes	**Forested and Open Wetlands**
Cultivated	Forested wetland
Pasture/hay	Non-forested wetland
Developed open space	
Grassland	
Scrub/shrub	

These land cover types meet the characteristics described by the NRCS as beneficial for pollinators, and therefore provide the basis for inferring the presence of the pollinator corridors and stepping stones.

In addition to pollinator habitat that is identified through GIS landscape analysis, local knowledge contributed by the Orange workshop participants further identified existing wild locations, farms, pollinator-friendly gardens, municipal and utility areas, and connected corridors that are important for wild native pollinators in town. These locations are indicated as "existing pollinator sites" on the *Existing and Potential Sites of Pollinator Habitat* map.

Public Parcels

There are a dozen or so Town-owned parcels scattered throughout the rural parts of town, and downtown Orange contains a large number of Town-owned parcels. Workshop participants identified the following locations as areas currently maintained to provide pollinator habitat or areas that were maintained as such in the past, indicated in red on the *Existing & Potential Sites of Pollinator Habitat* map:

- Town Hall
- Quabbin Harvest Coop raised garden beds
- Orange Innovation Center rain gardens and community flower gardens
- Wheeler Memorial Library butterfly garden
- Riverfront Park rain garden

Farms

Large parcels with cultivated land cover, including farms producing commercial crops, dairy, hay and orchards, can be a major resource for pollinators depending on farmland management practices. Workshop participants identified the following farm as one that has already adapted their management practices to improve the benefit to pollinators:

- Seeds of Solidarity Education Center

The Farm School's address is in Athol, but its land is located in Orange at the site of four old family farms. The Farm School offers programs to connect people to land and farming. Though the Farm School and other organic farms in Orange were not mentioned by name in the pollinator planning workshop, it is probably safe to say that they represent locations of existing pollinator habitat in town as the result of organic farming and ecological land cultivation practices in the sunny, open farmfields that are surrounded by Orange's ecologically diverse and vital deciduous upland forests, lakes, wetlands, and streams.

Riparian Areas

Rivers, streams, lakes and ponds are important pollinator habitat because they are partially open to the sun or very sunny, host to a great diversity of flowering woody and herbaceous plant species and typically have an abundance of forage and water resources that are essential to wild native pollinators. The sand and clay substrates that make up beds, banks, and floodplains can provide nesting habitat for ground-nesting bees. Naturally, rivers and streams can be vital pollinator habitat and corridors because they are typically continuous. Waterbodies act as good habitat core areas and thus function as stepping stones. The following waterways and waterbodies are key habitat in Orange:

- Millers River
- West Branch of the Millers River
- Cheney Brook
- Tully and Packard Ponds
- Lake Mattawa
- Eagleville Pond

Other Ecologically Important Areas

Orange is home to a number of ecologically significant areas, shown as BioMap2 Core Habitat and NHESP Priority Habitat areas in the *Habitat and Environment* Map. In addition to the areas bordering rivers, streams, and wetlands, the ecology and open character of Orange Airport stands out as an important pollinator resource area. The municipally owned Orange Airport is a tree-less grassland habitat maintained by mowing and burning as part of the airport maintenance requirements. These landscape maintenance practices allow the site to serve as

breeding habitat for a number of uncommon or rare grassland birds, indicating that it likely also supports flowering species and longer bloom periods and is not heavily sprayed with pesticides.

Pollinator Corridors and Stepping Stones

Utility corridors, roads, rivers and streams, agricultural lands and other sunny open landscapes have the potential to act as pollinator corridors because of the opportunities they provide for a succession of blooming plants. In Orange, roads and wetland networks have created corridors that run north-south virtually all throughout town. In addition, Routes 2 and 2A and the Millers River serve as major east-west corridors that connect many of the north-south-running corridors to one another. The stepping stones in Orange are relatively small, mostly wetland areas, but are present throughout town and many already are located near existing corridors.

EXPANDING POLLINATOR HABITAT

The inventory of existing and potential sites for pollinator habitat shows a series of well-connected pollinator corridors as well as isolated stepping stones of connectivity between pollinator corridors in Orange. The connectivity of existing pollinator habitat may be enhanced by implementing projects at the sites labeled "Potential Sites" on Orange's *Existing & Potential Sites of Pollinator Habitat* map, and by assessing areas indicated as existing stepping stones on Orange's *Pollinator Corridors & Habitat Stepping Stones* map for expanded pollinator habitat.

Pollinator habitat can be expanded through more general approaches too. For example, Orange residents and stewards of large parcels of cultivated land can adopt pollinator-friendly land management practices and actively work to enhance local ecosystems with native plants, regardless of where they reside in relation to one of the identified corridors or stepping stones.

Expanding existing and implementing new pollinator habitat and resource areas in Orange will be accomplished by bringing together pollinator stakeholders, working together to pursue opportunities and building upon the town's many assets and strengths.

Prime Opportunity Areas

Orange's prime opportunity areas for pollinator habitat are with home gardens, community parks and other town-owned parcels, commercial development in the downtown area, and industrial areas. The Orange community is already engaged in creating and stewarding native pollinator habitat in many of these prime opportunity areas, which is one of the Town's great strengths. Workshop participants explained that Orange residents already possess the knowledge, experience, and community capacity to make these kinds of projects happen. Continuing to build upon the momentum and the collective capacity among residents to carry out this work is an important long-term strategy. Landowners of parcels of any size acreage should be encouraged to support ecosystem restoration and pollinator resilience. One very important need identified by Orange workshop participants was for funding to pay for the educational programming and project management that would help to engage the community in pollinator activities for individuals and families, to implement pollinator gardens and larger projects, and to pay for on-going care and maintenance.

Town-Owned Parcels

The Town of Orange owns and manages a number of parcels, especially in the downtown area, that present opportunities for pollinator gardens. With each of these potential sites, changing the landscape to improve the benefit to pollinators would likely have co-benefits, such as beautification, stormwater management, and education. Signage at these highly public locations can both explain the purpose of the gardens and put insect-wary visitors more at ease, and educate the public about what pollinator friendly habitat can look like (see the pollinator sign provided in the *Regional Pollinator Habitat Corridor Implementation Toolkit*).

Signage can describe what plants are present, which pollinators they benefit, and how the space is managed. Signage can also provide a url or a QR code to the Town or other websites to direct observers toward more information.

“Cues to care” are important landscape maintenance indicators in public spaces that show that the pollinator-friendly landscaping is well cared for, despite potentially looking more “messy” than conventional plantings. Combined with pollinator education, cues to care can help visitors learn to value the pollinator landscape aesthetic.

The following Town-owned properties have either planned or active renovations into which pollinator-friendly landscaping could be incorporated:

- Butterfield Park and Municipal Salt Shed parcels – a proposal is being developed to merge the parcels into a bigger public park with a flashing beacon crosswalk in between
- Proposed Orange terminus of the Orange-Athol bikeway near Riverfront Park
- North Main Street – a construction project for the parking lot on North and West Main Streets will build out the sidewalk for improved pedestrian mobility and will be ADA compliant when finished, and on-street parking spaces will be reduced, planting space increased, and new signage and way finding installed
- South Main Street – planned streetscape renovations of Main Street from River Street to Gay Street will include resurfacing, sidewalks, water and sewer work
- Armory Building – large open space in the back; there are many educational opportunities here given that it is a location for the farmers market and home to the Council on Aging
- Ralph C Mahar Elementary School – new school building and reclamation work around wetland areas are both opportunities for pollinator landscaping

The following Town-owned parcels not undergoing renovations are also opportune sites for pollinator habitat:

- Wheeler Memorial Library
- Double Rims Park
- Fisher Hill Elementary School
- Orange Municipal Airport

The Orange Selectboard and Town Director of Community Development oversee the development of parks and can incorporate pollinator designs into funding proposals. The Town may be able to secure benefit payments from Orange-based marijuana cultivation and manufacturing facilities as part of their host community agreements. This money could be used to fund pollinator projects. These payments could also be used for project implementation or as match for grant applications, but in the case of grants, the Town might need concept designs and plant lists at the ready.

Grants for park and streetscape renovations typically do not fund maintenance, however, so the Town must continue to find ways to bolster the park maintenance budget and/or rely on a partnership with volunteers to maintain new pollinator-friendly spaces. Finding, paying and training sufficient staff to ensure the proper care and maintenance of pollinator habitat on town-owned land is a challenge impacting every pollinator town in the *Regional Pollinator Action Plan*, and is a challenge for Orange, too.

Given the special nature of pollinator-friendly landscapes, including differences in how they are maintained and communicated to the public, the work of expanding pollinator habitat would ideally have a dedicated project manager; someone to hold the vision, and coordinate and oversee the implementation and on-going care of pollinator projects in Orange. The Department of Parks and Public Spaces is the same staff as the Highway Department, which does not have time, staff or expertise to take on additional pollinator landscaping. The Highway Department, which does much of the mowing and weed whacking on Town-owned properties, would need training and support to begin to adopt pollinator-friendly maintenance practices.

Still, Orange has the key ingredients for enriching public landscapes with pollinator habitat. In particular, it has support from municipal leadership, enthusiastic community support, some volunteer support, and an ideal mix of prime pollinator land cover types in its developed and open public landscapes. Any potential expansion of pollinator habitat certainly will involve skillful care and maintenance and most likely, upfront implementation costs as well. Town departments and staff should be involved from the beginning of any project to ensure their leadership and oversight. However, given that many of these officials are already over-worked and under-staffed, the Town may need to take action to create the more official roles, staffing and training necessary for projects to succeed long-term.

Private Development in the Downtown

Workshop participants identified a number of private redevelopment sites in downtown Orange where pollinator landscaping could be advocated for or has been considered. These sites are opportunities to enhance the downtown pollinator corridor, filling in gaps between Town-owned sites. These sites include:

- Wheeler Mansion – being redeveloped as a wedding venue with a full formal garden
- Honey Farms gas station –under construction on South Main Street

The plant lists and site typology designs available in the *Regional Pollinator Habitat Corridor Implementation Toolkit* can help the Town in advocating for private investors to take that extra step toward pollinator-friendly practices.

Solar Installations

Ground-mounted solar is often sited on open sites and habitats that benefit native wildlife, and are advantageous places to manage for pollinator habitat because they equate to very large

areas of contiguous sunny, dry, open space where flexible mowing needs can accommodate pollinator lifecycles. Orange is home to a number of privately owned ground-mounted solar installations and includes pollinator-friendly requirements in the solar bylaw. Refer to discussions of large scale solar arrays in the *Regional Pollinator Action Plan* for more information on the value and management of ground-mounted solar for pollinator habitat and this plan for recommended zoning bylaw language for solar installations that protects pollinator habitat.

Other Opportunity Areas

The following areas also offer great potential for expanding and enhancing Orange's pollinator habitat through general approaches and practices to enhance local ecosystems with native plants.

Farmland and Large Cultivated Parcels

At least one farm in Orange, Seeds of Solidarity Farm and Education Center, actively promotes pollinator habitat, and there may be several others. Typical and conventional agricultural operations in Orange may not already be thinking about pollinator habitat, however, and they could be encouraged to do so, among them vegetable farms, hay farms, dairy farms, orchards, and livestock operations.

Monocropping, poorly timed mowing, and pesticide application are three common agricultural practices that tend to have deleterious effects on pollinators. Planting a diversity of plants with staggered flowering times, even if only in strips planted expressly for pollinators, can mitigate the impact of the monocrops, which have a limited timespan for providing food and do not support the complete lifecycle of many pollinators. Waiting to mow areas not needed for hay until after the availability of nectar and pollen resources has been exhausted better supports pollinators. Conventional pesticides are almost universally harmful to pollinators, as are some organic options. Tailoring spraying practices to protect pollinators is one option for adapting to pollinators. However, reducing pesticide application is the preferred option.

Farmland can be supplemented with pollinator habitat along woodland edges, in hedgerows, pollinator planting strips, buffer strips (including road buffer strips), on steeper portions of field not ideal for cultivation, and around resource areas such as ponds, wetlands, and streams. Successfully establishing habitat for wild native pollinators involves planting new native plants and managing the invasive species that can overtake and undermine new plantings. Information on problematic cold season grasses can be found in the Meadow Establishment section of the *Regional Pollinator Action Plan*. The task of managing invasive species is already a major undertaking in Orange, like many other towns in Massachusetts.

Many farmers, and the agricultural community in general, may have limited experience with cultivating native pollinator plant species. In addition to gaining a strong understanding of why

pollinator habitat is valuable on farms, farmers need to know when, where, what, and how to plant pollinator habitat on their land. Resources for farmers on how to propagate, establish, and maintain native plantings are essential to this kind of transition. The United States Department of Agriculture (USDA) provides some resources on pollinator value in conservation plantings (see the Resources section of the *Regional Pollinator Action Plan*). It is likely that much more research is needed in this area.

Given the small profit margin farm businesses work within, farmers will also likely to need compensation for extra work to enhance pollinator habitat. Many of the grants and reimbursements available to farmers for environmental stewardship, especially through the USDA NRCS, have provisions for funding pollinator improvements, but farmers in Orange may need resources for applying to those grants, including a schedule of grant cycles and guidelines for design, plant selection, and management. The NRCS provides incentives for pollinators in many of their grants, including the Conservation Stewardship Program. A table of potential agricultural grants and funding sources for farmers to implement pollinator habitat on farmland can be found in the discussion of funding sources in the *Regional Pollinator Action Plan*.

There may be an emerging market for local ecotype native plant seed propagation that local farms could leverage. Pollinator gardeners have reported that they commonly have to source seeds from out of state. Propagating native pollinator plants would have the double benefit of providing abundant pollinator habitat and a source of income.

Riparian Areas

The multifold benefits of the land around rivers, streams, lakes, and ponds include sun, water, forage, and nesting habitat. While there are already many riparian corridors that function well as pollinator habitat, others are compromised by the presence of invasive species, especially Japanese knotweed. Support for ongoing prevention and eradication projects, or an escalation of invasive management, will likely benefit pollinators.

Recreational Trails

Stepping stones of connectivity between pollinator corridors are essential for wild, native pollinators to travel safely and to access food and nesting resources. Orange has a wealth of hiking trails in a variety of wild areas. Hiking and recreational trails offer the potential for stepping stones of connectivity between larger pollinator corridors across the town by offering key food, nesting, and other life cycle needs for pollinators in the relative safety and ecological suitability of trail edges. These stepping stones can be reinforced by creating patches along recreation trails that provide forage with pollinator plants as well as bee nesting sites located away from where people will be hiking.

Paved and Gravel Roads

Gravel roads in rural parts of Orange can be especially good opportunities for pollinator habitat because they offer connectivity between larger habitat areas. Wild pollinators can find food, nesting, and meet other life cycle needs along continuous roadside edges. The Orange Highway Department is in charge of much of the landscape maintenance on Town-owned transportation right-of-ways. Modifying mowing practices to serve as corridors for pollinator movement could create effective and important habitat connections for native pollinators, which may otherwise be difficult to establish. For example, limiting roadside mowing to a narrow road-edge strip can leave habitat for pollinators while meeting safety requirements. The *Handbook for Supporting Pollinators through Roadside Maintenance and Landscape Design* prepared by the U.S. Department of Transportation Federal Highway Administration could be used as a starting point for Highway Departments interested in adjusting their mowing practices.[1] Management practices presented in the handbook emphasize win-win strategies that maintain public safety standards *and* save time, trouble and costs with fewer and simpler mowing regimens and other ecological practices.

Industrial Park & Orange Municipal Airport

The Industrial Park and neighboring Orange Municipal Airport provide significant opportunities to create abundant pollinator habitat. Both sites contain a large amount of open space and low traffic volume. They are not highly public areas, so do not face the same pressures to present as highly manicured as do more public, commercial facilities. Because it is privately owned, changing landscape management practices at the industrial park will likely require an effort on the part of pollinator advocates and Town officials to provide resources and recommendations for funding support. Landscape managers at the Orange Municipal Airport could also be encouraged to adopt beneficial pollinator landscape management practices on at least some of the large areas that could offer prime pollinator land cover and habitat.

Coordination, Education & Volunteering

Increasing pollinator resources in a community will involve a variety of stakeholders, including Town staff, residents, local farms, businesses, and organizations. As discussed in the *Regional Pollinator Action Plan* and throughout this plan, even though pollinator plantings can be the most resilient and low-maintenance landscapes, creating and adapting management practices for pollinator-friendly landscapes require time and money.

[1] U.S. Department of Transportation Federal Highway Administration, "Handbook for Supporting Pollinators through Roadside Maintenance and Landscape": https://www.environment.fhwa.dot.gov/env_topics/ecosystems/Pollinators_Roadsides/BMPs_pollinators_landscapes.pdf

Orange's Community Development Department, which oversees land planning and development activities, and the Highway Department, which also stewards cemeteries and parks, are both forward thinking and willing agents of potential landscape change in Town. However, it is important that Orange residents support these departments and other Town committees by providing information, ideas, public support, leadership, and volunteer hours to Town-sponsored pollinator-friendly initiatives. Pollinator habitat can be incorporated into a variety of grant-funded projects, especially where projects have co-benefits with municipal climate vulnerability adaptations and hazard mitigation projects. Community leaders can support municipal projects with pollinator co-benefits by contributing pollinator habitat design ideas and planting plans to grant proposals and by organizing to meet the additional funding, project management, implementation and on-going maintenance needs that projects entail.

Coordinating pollinator-friendly landscape change in Orange may also need to go beyond Town projects. Creating a local network to facilitate public awareness campaigns, plant swaps, sales and giveaways, family workshops, and increased volunteering would help support existing pollinator habitat and expand upon it. Community and regional organizations who could potentially be called upon for pollinator networking and resources include:

- North Quabbin Garden Club
- Quabbin Harvest Coop
- Seeds of Solidarity Educational Center
- Mount Grace Land Conservation Trust
- Millers River Environmental Center
- Millers River Watershed Council

The Town could consider hosting on its website pollinator education materials for citizens looking for guidance on how to create and expand pollinator habitat in their own yards and properties, how to support efforts undertaken by the Town, and how to connect with groups working to implement the Orange Pollinator Action Plan and the *Regional Pollinator Action Plan.*

The *Summary of Implementation Opportunities and Strategies in Orange* table lists ideas brainstormed during the Orange pollinator planning workshop for expanding pollinator habitat in Town.

Summary of Implementation Opportunities and Strategies in Orange			
Opportunity/Location	**Strategy**	**Jurisdiction**	**Potential Partners**
Residential gardens, homesteads, and properties town-wide	Gather information and resources including pollinator plant lists and mowing regimen changes for protecting seed heads and over-wintering insects on private property. Share with Town departments and committees, neighborhood networks, schools, the senior center, and church groups to help with community outreach.	Private, Town	Director of Planning and Community Development, Residents
Residential gardens, homesteads, properties town-wide	Coordinate neighborhood groups to organize bulk purchases of native pollinator plants from reputable nurseries.	Private	Residents, landowners
Properties town-wide	Utilize local knowledge and neighborhood networks to provide site assessments to help identify pollinator opportunities, priorities and challenges on properties town-wide.	Private	Residents, landowners
Privately and publicly owned public spaces	Install pollinator habitat into public spaces throughout town. Procure and install educational signage about native pollinator habitat.	Private, Town	Director of Planning and Community Development, Highway Department
Farmland and Large Cultivated Parcels	Gather information and resources including plant lists, mowing regimen changes, grant funding, plant starts and seed sources for farmland and large cultivated parcels. Reach out to farmers and landowners to implement pollinator habitat on their farm fields, hayfields, and field edges, and to learn and apply invasive species management strategies on their land.	Private	Residents, farmers, landowners
Properties town-wide	Provide plant identification resources for recognizing young pollinator plants, and plants at different life stages, and encourage their protection from mowing. Develop and share a master document with plant ID information and photos.	Private	Residents, Seeds of Solidarity Education Center, North Quabbin Garden Club
Orange Town Properties	Assess potential for pollinator-friendly mowing practices in non-recreational areas, including cemeteries and the Orange Airport. Mitigate and manage invasive species.	Town	Director of Planning and Community Development, Highway Superintendent, Orange Municipal Airport Manager
Orange Town Properties	Include a high proportion of pollinator plant species in any park redevelopment projects, including at Butterfield Park.	Town	Director of Planning and Community Development
Athol/Orange Bike Path Terminal & Double Rims Park	Support the Town in taking steps towards implementing concept designs for pollinator habitat at the Athol/Orange Bike Path Terminal & Double Rims Park. Utilize FRCOG's pollinator concept designs at the end of this document, and the resources in the	Town	Director of Planning and Community Development, Board of Selectmen

Summary of Implementation Opportunities and Strategies in Orange			
Opportunity/Location	**Strategy**	**Jurisdiction**	**Potential Partners**
	Pollinator Toolkit, to guide site and planting design and implementation.		
Town Roads	Support the Highway Department in adopting pollinator-friendly mowing on roadside edges and public properties.	Town	Director of Planning and Community Development, Highway Department
Large ground-mounted solar arrays and development town-wide	Town is near the end of the process of adopting pollinator-friendly ground-mounted solar zoning bylaws. Support the Planning Board in adopting other recommendations for Potential Changes to Zoning Bylaws and Subdivision Regulations.	Town	Planning Board, Residents
Open water, wetlands, and river corridors	Coordinate riparian corridor stewardship, including management strategies for Japanese knotweed. Incorporate pollinator habitat into all types of projects along the Miller's River and its tributaries.	Town	Director of Planning and Community Development, Department of Public Works, Residents
Permanently Protected conservation land	Incorporate into the language of conservation restrictions that the restriction holder holds the right to plant and manage pollinator habitat within the area of the restriction.	Private	Landowners, land trusts
Residential gardens, homesteads, farms	Explore sources for grant funding pollinator education programs.	Private	Residents, Town, local partners
Open water, wetlands, and river corridors	Provide the Conservation Commission with the pollinator planting lists from the Pollinator Toolkit to reference when issuing Orders of Condition for projects subject to the Wetlands Protection Act.	Town	Conservation Commission

Recommendations for Potential Changes to Orange Zoning Bylaws and Subdivision Regulations

One way to create and protect pollinators is by updating land use regulations to address pollinator habitat. For this project, the FRCOG reviewed Orange's land use regulations and identified potential changes to the Zoning Bylaw and Subdivision Regulations. Orange's Planning Board can review potential changes and decide whether to pursue the proposed amendments. The key areas where changes can be incorporated are:

- Site Plan Review,
- Special Permits,
- Large-Scale Solar Facilities,
- Open Space Residential Development/ Conservation Development/ Major Residential Development, and
- Subdivision Regulations.

Site Plan Review

1. **Content of Site Plan** – Add existing or proposed locations of pollinator habitat to the required contents of the Site Plan. Pollinator habitat consisting of native wildflower and tree species can be an alternative to grass or other proposed landscaping.
2. **Review Criteria** – Add creation and/or conservation of pollinator habitat as a criteria.
3. **Landscape Maintenance** – Add requirement for annual monitoring and maintenance of the pollinator habitat to the Site Plan Review conditions.

Special Permits

1. **Content of Application** – Add existing or proposed locations of pollinator habitat to suggested contents of the Special Permit Application.
2. **Special Permit Criteria** – Add creation and/or conservation of pollinator habitat as a criteria.
3. **Landscape Maintenance** – Add requirement for annual monitoring and maintenance of the pollinator habitat to the Special Permit conditions.

Large Scale Solar Facilities

1. **Content of Application** – Add a paragraph requiring that a native flowering planting plan that supports pollinators be planted under the solar array instead of grass or semi pervious or impervious materials.
2. **Review Criteria** – Add creation and/or conservation of pollinator habitat as criteria.

3. **Landscape Maintenance** – Add requirement for annual monitoring and maintenance of the pollinator habitat to the Special Permit conditions.

Open Space Residential Design (OSRD)/ Conservation Development/ Major Residential Design

1. **Content of Application** – Add existing or proposed locations of pollinator habitat to suggested contents of the development plan.
2. **Review Criteria** – Add creation and/or conservation of pollinator habitat as criteria.
3. **Landscaping** – Require or encourage the planting of pollinator habitat as an alternative to grass or traditional landscaped areas in the development plan and make provisions for the maintenance of these areas.
4. **Maintenance** – Add requirement for annual monitoring and maintenance of the pollinator habitat to the Special Permit conditions.

Subdivision Regulations

1. **Purpose** – Add to the purpose statement the provision of wildlife and pollinator habitat.
2. **Content of Definitive Plan** – Add existing or proposed locations of pollinator habitat to the required contents of the Definitive Plan.
3. **Environmental Analysis** – Add to the Environmental Analysis the impact of the subdivision on native plants and pollinator habitat.
4. **Tree Belts, Grass Plots or Landscaped Areas** – Encourage the planting of pollinator habitat as an alternative to grass or traditional landscaped areas in the subdivision plan and make provisions for the maintenance of these areas.
5. **Special Permit Criteria** – Add creation and/or conservation of pollinator habitat as criteria.

A summary of the specific sections follows as a guide for Orange to amend their land use regulations to address pollinator habitat. Each of the *Town Pollinator Plans* includes model language specific to the respective Town that can be used to update land use regulations.

Recommendations for Changes to Orange's Zoning Bylaws

<u>Section 5300 Special Permits</u>

Section 5330 Criteria (add text below in italics)

g. Protection of open space and provision of wildlife and pollinator habitat.

Section 5400 Site Plan Review

Section 5440 Required Contents of a Site Plan (add text below in italics)

(c) 18. Proposed Landscape features, including the location and a description of screening, fencing and plantings *and provision of native plants and trees that provide pollinator habitat;*

Section 5700 Open Space Development

Section 5712 Purpose (add text below in italics to end of paragraph)

a) encourage the permanent preservation of common open space or open land for conservation, agriculture, open space, forestry*, pollinator* and wildlife habitat….which maintains the land in an undeveloped condition.

b) encourage a less sprawling form of development that preserves open land and preserves the natural features of the site *and conserves or provides pollinator and wildlife habitat;*

Section 5728 Narrative Statement

g) proposed location(s) and acreage of common open space or open land that provides pollinator and wildlife habitat.

Recommendations for Changes to Orange's Subdivision Regulations – Chapter 210 *(add text in italics)*

Section 210-4.3 Definitive Plan.

D. Contents

(j.) The location of all natural waterways, water bodies, wetlands, certified vernal pools, drainage courses, floodplains, public water supply recharge areas (Zone 2), NHESP Priority and Estimated Habitats of rare species, *wildlife and pollinator habitat*, significant and high hazard dam inundation areas, and prime farmland or forestland within and adjacent to the subdivision.

Section 210-5.3. Natural features.

Due regard shall be shown for all natural features, such as large trees, watercourses, scenic points, historic spots, *wildlife and pollinator habitat,* and similar community assets, which, if preserved, will add attractiveness and value to the subdivision.

Section 210-6.7. Grass strips and trees.

A. All cleared areas of a right-of-way not to be planted with ground-cover plantings, including all disturbed areas over all culverts in drainage easements, except for roadway, curb, gutter, and sidewalk, shall be learned with not less than six (6) inches' compacted depth of good quality loam and seeded with *native wildflowers* or lawn grass seed. Seeding shall be done at appropriate times of the year and in a manner to ensure growth of grass.

C. The applicant shall submit a landscape plan showing existing and proposed street trees and other plantings *including native plants and trees providing pollinator habitat*.

Athol-Orange Bikeway Terminal and Double Rims Community Park Concept Designs

The development of the Orange Pollinator Action Plan included the creation of pollinator concept designs for both the Athol-Orange Bike Terminal and the Double Rims Community Park, sites chosen by the participants in the Orange pollinator workshop. The settings of both sites consist of urban, riparian, and sunny, open, dry site conditions. If the Town chooses to move forward with creating pollinator habitat at either site, the concept designs could follow the recommendations of the Riparian Buffer, Meadow, and Urban Center Design Typologies. These concept designs could utilize the Riparian, Meadow, and Urban Center Plant Lists provided in the *Regional Pollinator Habitat Corridor Implementation Toolkit*. Areas labeled as Woodland Edge Pollinator Habitat could feature more woody trees and shrubs from the Meadow Plant List, while the Pollinator Meadow would have only grasses, sedges, and herbaceous plants indicated in the Meadow Plant List. Plants from the Residential Areas and Institutional Buildings Plant List could serve as select specimens for the proposed Pollinator Demonstration Garden at the Athol-Orange Bikeway Terminal.

The Riparian Woodland Pollinator Habitat indicated along the Millers River's existing riverbank could follow the recommendations of the Riparian Buffer Design Typology and utilize plants from the Riparian Plant List provided in the *Regional Pollinator Habitat Corridor Implementation Toolkit*. The Riparian Buffer Design Typology shows different zones for riparian plantings, provides examples of trees, shrubs, grasses, sedges, or herbaceous plants associated with each zone, and illustrates the relative physical proximity of each zone to the streambed. The Riparian Plant List provides suitable native plants for these riparian pollinator habitat areas and indicates whether they are trees, shrubs, grasses, sedges, or herbaceous plants to help guide riparian planting design.

The concept designs represent a preliminary vision for how these sites could provide pollinator habitat. The Bikeway Terminal and Double Rims Park are both labeled on the Existing & Potential Sites of Pollinator Habitat map to show their context within the Town and how they would connect to existing pollinator corridors or stepping stones.

Franklin Regional Council of Governments

Pollinator Corridor Implementation Toolkit
Regional Pollinator Plan for Franklin County

Potential Pollinator Habitat Implementation Concept Design

Athol-Orange Bikeway Terminal @ Riverfront Park

TOWN OF ORANGE

0 10 20 30 40 50 Feet

Franklin Regional Council of Governments

Pollinator Corridor Implementation Toolkit
Regional Pollinator Plan for Franklin County

Potential Pollinator Habitat Implementation Concept Design

Double Rims Community Park

TOWN OF ORANGE

0 30 60 90 120 150 Feet

MAPS

MAPS OF EXISTING & POTENTIAL POLLINATOR HABITAT SITES

Existing & Potential Sites of Pollinator Habitat

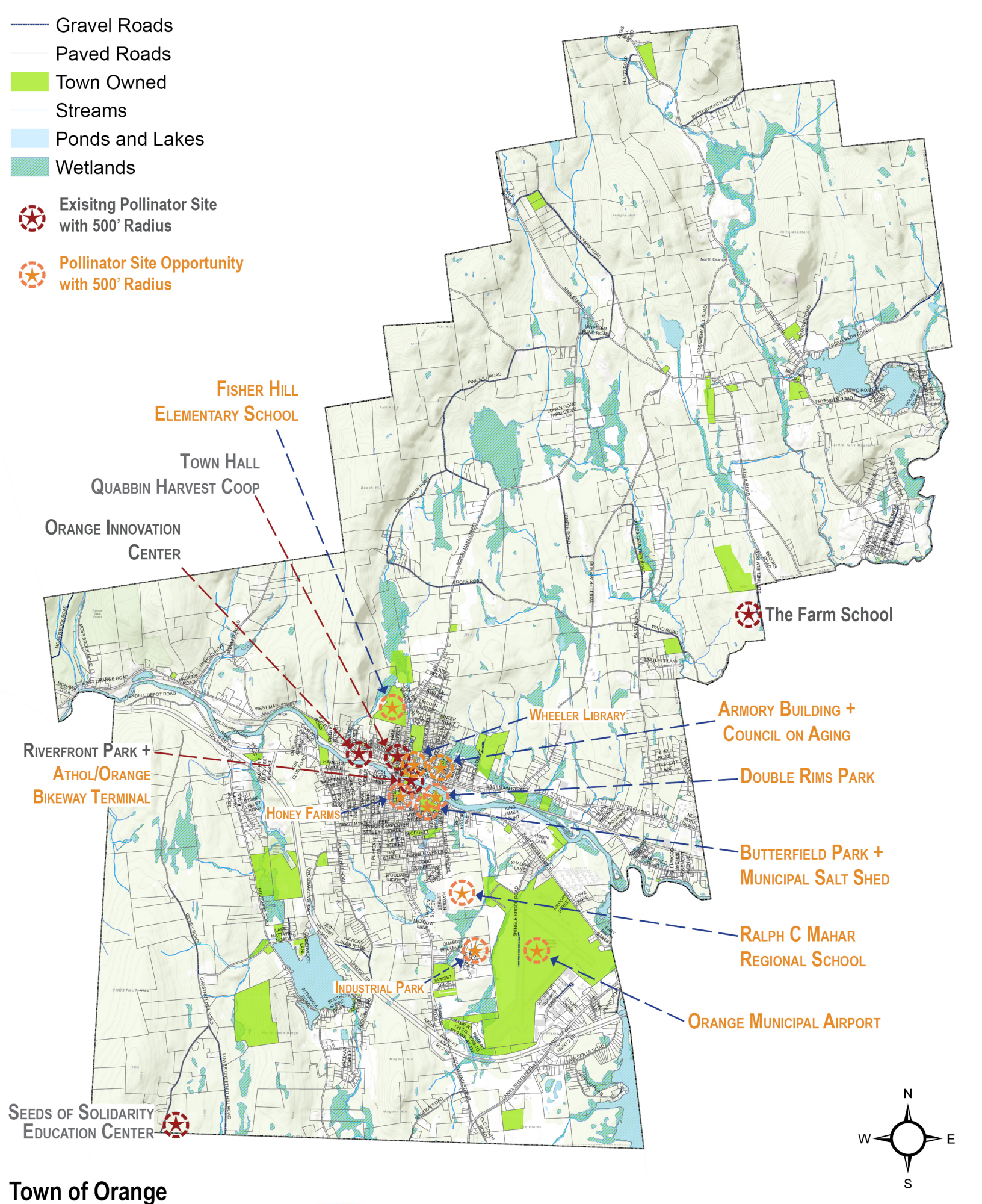
Pollinator Corridors & Stepping Stones

LANDSCAPE ANALYSIS MAPS

Habitat and Environmental Resources

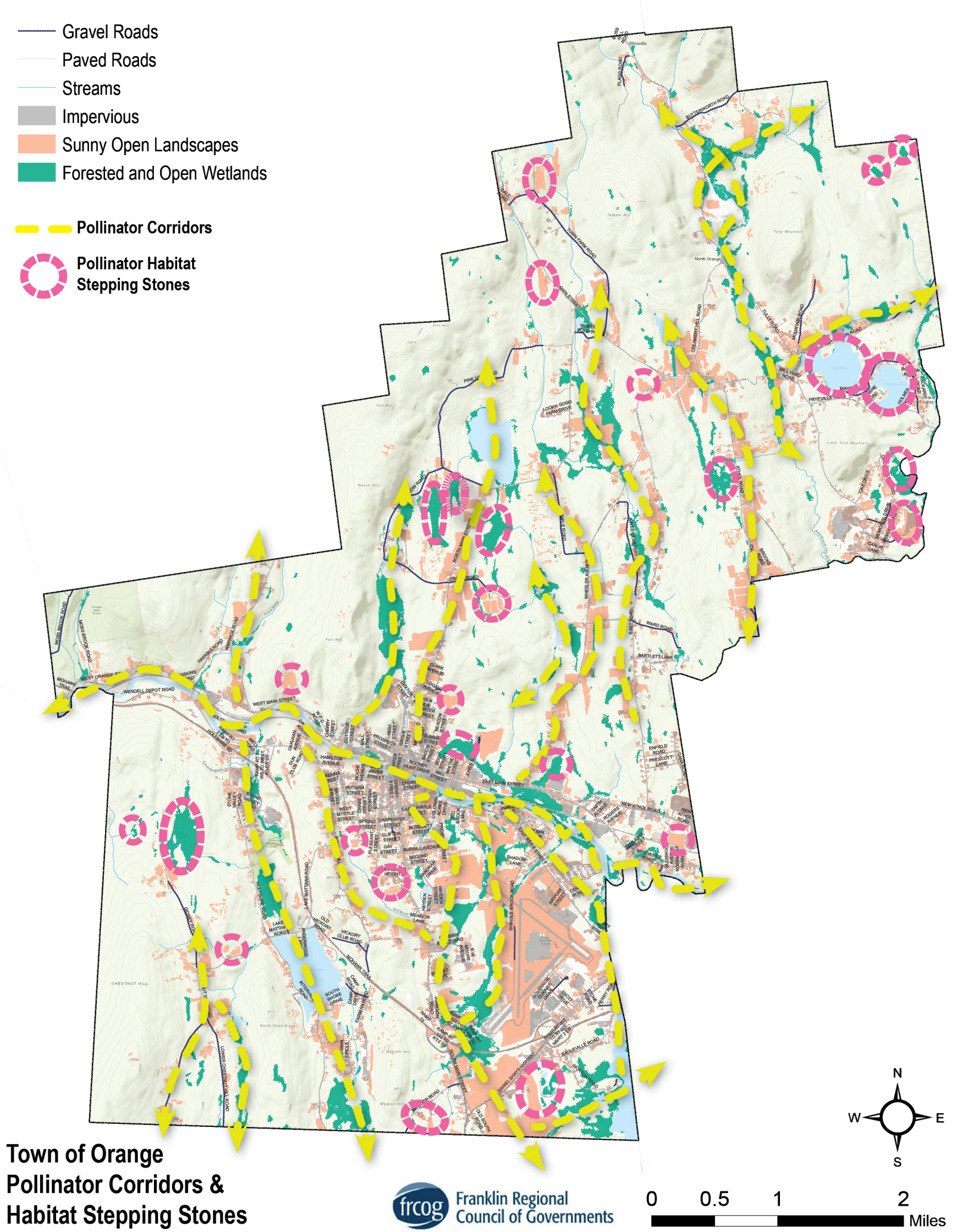
Land Cover and Land Use

Permanently Protected & Municipal Properties



Town of Orange
Existing & Potential Sites of Pollinator Habitat

Franklin Regional Council of Governments



Town of Orange Pollinator Corridors & Habitat Stepping Stones

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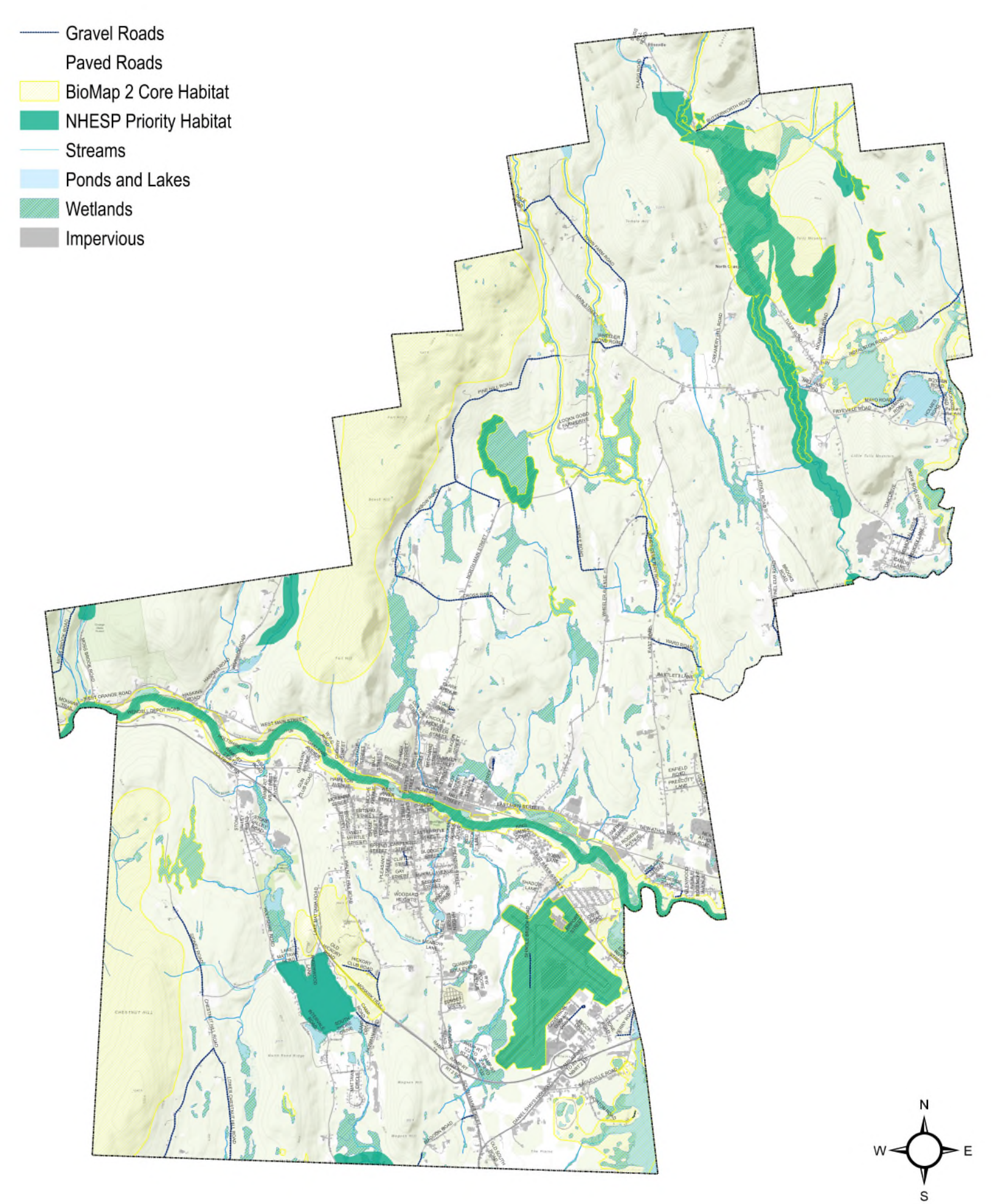
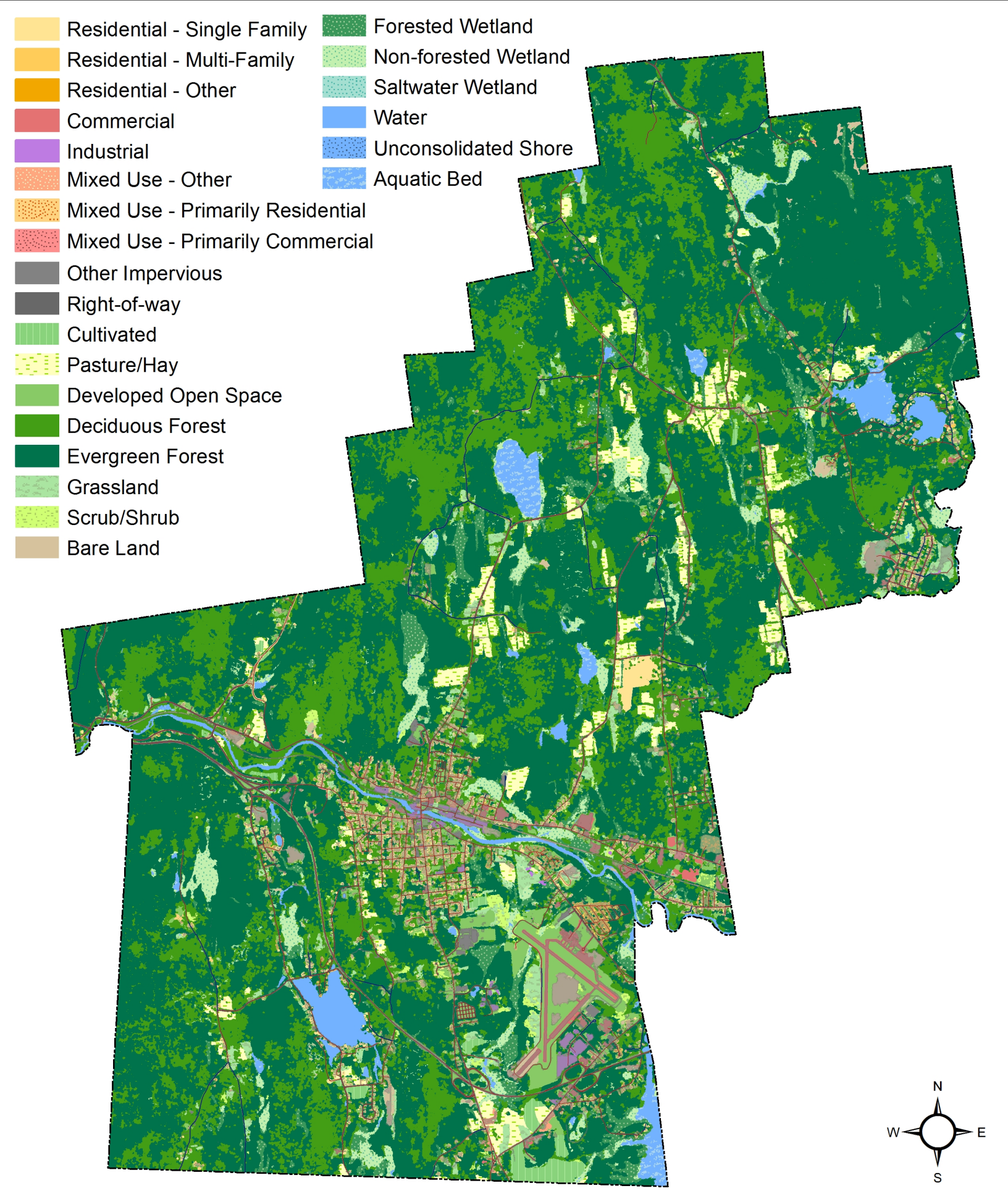
Prime Pollinator Land Cover data extracted from MassGIS Land Cover and Land Use (https://docs.digital.mass.gov/dataset/massgis-data-2016-land-coverland-use) by Future Lands Designs in collaboration with the FRCOG Planning Department



Town of Orange
Habitat and Environmental Resources

Franklin Regional Council of Governments

0 0.5 1 2 Miles

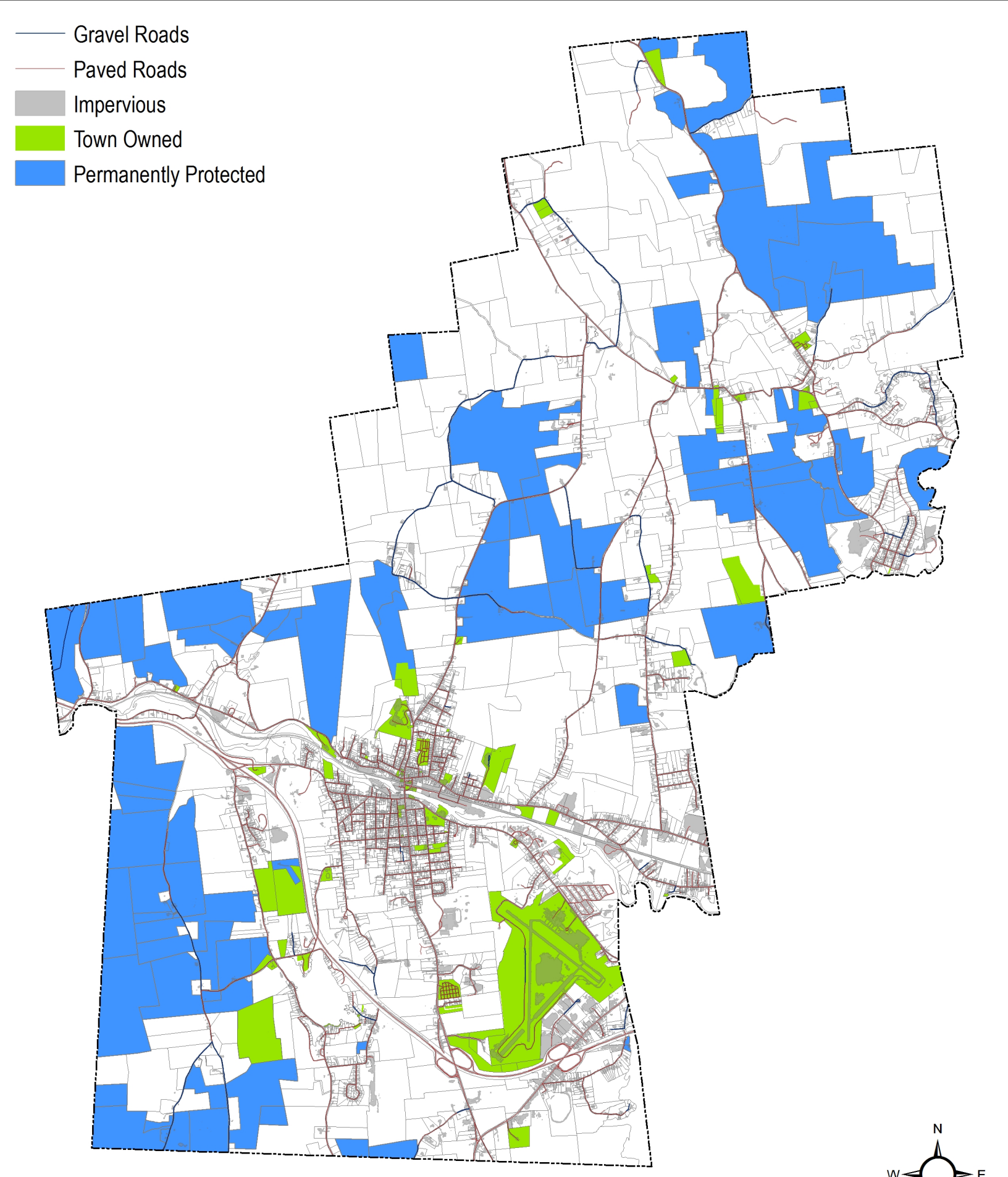


Town of Orange
Land Cover and Land Use

Franklin Regional Council of Governments

0 0.5 1 2 Miles

https://docs.digital.mass.gov/dataset/massgis-data-2016-land-coverland-use



Town of Orange
Permanently Protected and Municipal Properties

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