USDA Natural Resources Conservation Service
U.S. DEPARTMENT OF AGRICULTURE

Pollinator GARDENS
Design Guide

Gardening for Pollinators

Bees, butterflies and other pollinators need pollen, nectar and plants to live. These gardens are designed for them!

Gardens Designed for Pollinators

The gardens shown here include many different flowers that will bloom throughout the growing season. Planting flowers so that something is always blooming from spring through fall provides a continuous source of food for pollinators. The native RI plants selected for these gardens provide pollinators with high value nectar and pollen. There are also other steps you can take to support pollinators.

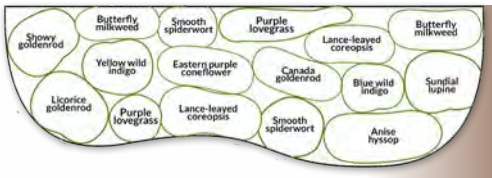
Cluster plants of the same species together for efficient foraging. When the same flowers are grown together, pollinators don't have to travel as far between blossoms. This makes collecting nectar and pollen easier.

Once the garden is established **leave some bare areas of soil,** particularly at the base of flowers and grasses. Many native bees nest in bare soil often at the base of their favorite plants.

Avoid using pesticides, they not only kill pollinators, but can also harm their foraging and nesting behaviors and suppress their immune systems. Systemic insecticides, insecticides taken up into plant tissue, are of particular concern. The toxicity of systemic insecticides can persist in pollen, nectar and plant tissue for a long time, posing a threat to pollinators. When buying plants at nurseries, ask if they have been treated with systemic insecticides.

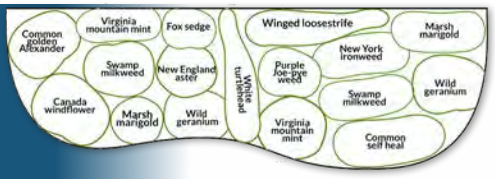
Shop for plants using their Latin name to ensure you choose the correct plant. Plants often have many different common names.

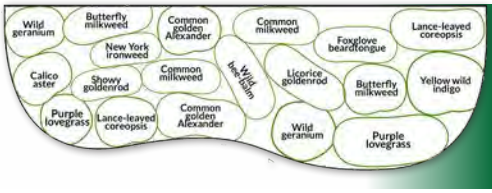
Pollinator Garden Designs *(See detailed plans inside.)*



Dry Pollinator Garden plants thrive in dry, drought-prone, well drained soils. Dry sites are usually found on hills and/or sandy soils.

Wet Pollinator Garden plants thrive in low-lying, poorly drained areas that pond water after it rains and stay wet for long periods.





Typical Moisture Pollinator Garden plants thrive in moist, moderately drained soil that are not too wet or too dry.

Have only a small yard, patio or balcony? Try growing a few (or even just one) of your favorite early middle and late season blooming flowers. The birds and the bees will thank you!

Tips for Success

Maximize your success and minimize long-term maintenance by spending time preparing your site. Remove existing plants and suppress competition from weed seeds lying dormant in the soil waiting for enough sun and moisture to germinate. Sod removal, smothering, tilling, and spot herbicide application can be used alone or in combination to properly prepare a garden bed for planting.

Once competing vegetation has been removed and the soil has been prepared, install some type of garden edging (wood, rock or pre-made plastic) to keep lawn grass and other weeds from creeping into the garden for years to come.

** photos of native Rhode Island pollinators and plants courtesy of Julia Vieira, Environmental Field Technician, Eastern Rhode Island Conservation District.*

Digging Into the Details... Site Prep

Smothering

Lawn grass can usually be killed in 2-3 months. For sites with a lot of perennial weeds, leave smothering material on the garden for a full growing season.

Smothering is a simple method that does not require chemicals or special equipment. Plants need sunlight to survive; smothering deprives weeds of that sunlight.

- Mow vegetation at the lowest setting.
- During the growing season, cover the garden area with old plywood, a thick layer of newspaper covered with grass clippings, black plastic, or similar available materials until vegetation is completely dead.
- Remove cover material and plant.
- Mulch after planting *(recommended)*.

Sod Removal

The fastest way to prepare your site is to remove the grass or sod and till the soil.

- If needed, mow grass or existing vegetation.
- Remove sod using a sod cutter. A sod cutter removes 2”-3” of soil. The bed will be lower than the adjacent soil.
- Till soil using a roto-tiller or other implement *(optional)*.
- Mulch after planting to conserve soil moisture and discourage weeds *(recommended)*.

Pollinator plants can be planted immediately. However, roots and weed seeds can persist in the soil. If weeds regrow, pull weeds or lightly till with a hoe or similar hand tool.

Tilling

Existing garden beds or areas with little vegetation, such as areas that have been in row crops, may simply require hand weeding or tilling to be ready for planting. Follow these steps:

- Mow existing plants.
- Till soil.
- Rake out remaining vegetation and roots to prevent them from re-growing.
- Mulch after planting *(recommended)*.

If you anticipate heavy weed pressure, additional tilling may be needed to eliminate weeds that may germinate from the existing seed-bank or grow from roots remaining in the soil. Lightly till the soil 2-3 times, about 1 week apart before planting, if needed.

Herbicide Application

Non-selective, non-persistent herbicides may be used to kill existing vegetation when it is actively growing.

- Apply a non-selective, non-persistent herbicide in early fall or mid-spring when vegetation is actively growing. If vegetation is tall, mow the site prior to application and apply herbicide once new growth reaches 4”-6” in height.
- Early Fall Application - After a complete kill, if dead vegetation is thin or has decomposed over winter, new plants can be planted directly into the bed. Dead thatch helps prevent weeds and holds moisture in the soil.
- Early Spring Application - After a complete kill, if dead vegetation is thick, tilling once more or removing the sod with a sod cutter may make planting easier. Remember, tilling may bring more weed seed to the surface. Plan to keep weeds in check with regular weeding or light tilling with a hoe or similar hand tool.
- Mulch after planting *(recommended)*.

Note: Always read and follow the manufacturer’s herbicide label. Plant plugs, potted plants, and bare root stock after waiting the time indicated.

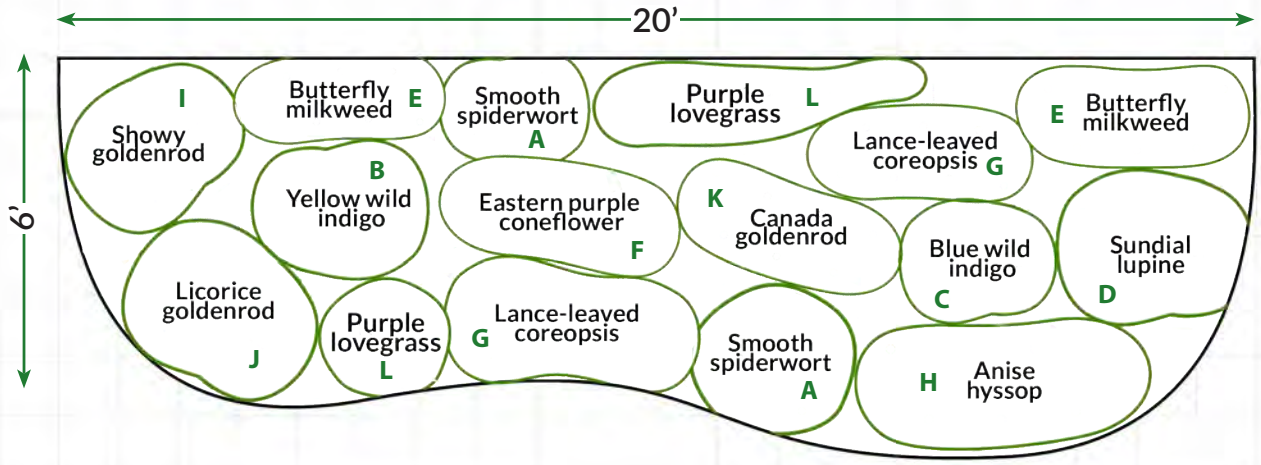
DO NOT USE pesticides that are toxic to pollinators. Contact your local Extension office for more information.

Where to Find Native Plants?

Local nurseries frequently sell a variety of popular native plants in pots during the spring and early summer. Nurseries that specialize in native plants provide a wide array of species that can be purchased as bareroot, corm, potted, or plug material. When choosing plants, overlook the flowers and focus on plants with robust vegetation, a well-developed root system, and no signs of insect or disease damage. When ordering by mail, nurseries commonly ship native plants in the spring and fall when conditions are safe for plant transport. Spring plant shipments generally occur from early April through mid-June and fall plant shipments generally occur from mid to late September until the first freeze.

Dry Pollinator Garden

Site conditions: Full sun - 6 or more hours per day
These sites have soils that tend to be very dry



Dry Pollinator Garden

	Common Name	Latin Name	No. of Plants	Height	Spacing	Flower Color
	Early Bloomers					
A	Smooth spiderwort *	*Tradescantia ohiensis*	8	2'-4'	1'	Blue
B	Yellow wild indigo	*Baptisia tinctoria*	7	2'	2'-3'	Yellow
C	Blue wild indigo	*Baptisia australis*	7	4'	2'-3'	Blue
D	Sundial lupine	*Lupinus perennis*	7	2'	1'-1.5'	Purple
	Mid Season Bloomers					
E	Butterfly milkweed	*Asclepias tuberosa*	10	2'-3'	1'-1.5'	Orange
F	Eastern purple coneflower	*Echinacea purpurea*	8	4'	1.5'-2'	Purple
G	Lance-leaved coreopsis	*Coreopsis lanceolata*	8	2'	1'-1.5'	Yellow
H	Anise hyssop	*Agastache foeniculum*	10	3'	1'-1.5'	Purple
	Late Season Bloomers					
I	Showy goldenrod*	*Solidago speciosa*	7	2'-5'	6"-1'	Yellow
J	Licorice goldenrod*	*Solidago odora*	7	3'	1'-2'	Yellow
K	Canada goldenrod*	*Solidago canadensis*	7	6'	1'-2'	Yellow
	Grasses					
L	Purple lovegrass	*Eragrostis spectabilis*	8	2'	1'-2'	—

** Reseeds readily. Remove spent flowers before the plant goes to seed.*
*** Photo courtesy of Julia Vieira, Environmental Field Technician, Eastern RI Conservation District.*
‡ Photo courtesy of Casey Johnson, Research Associate, URI Bee Lab (https://web.uri.edu/beelab/)

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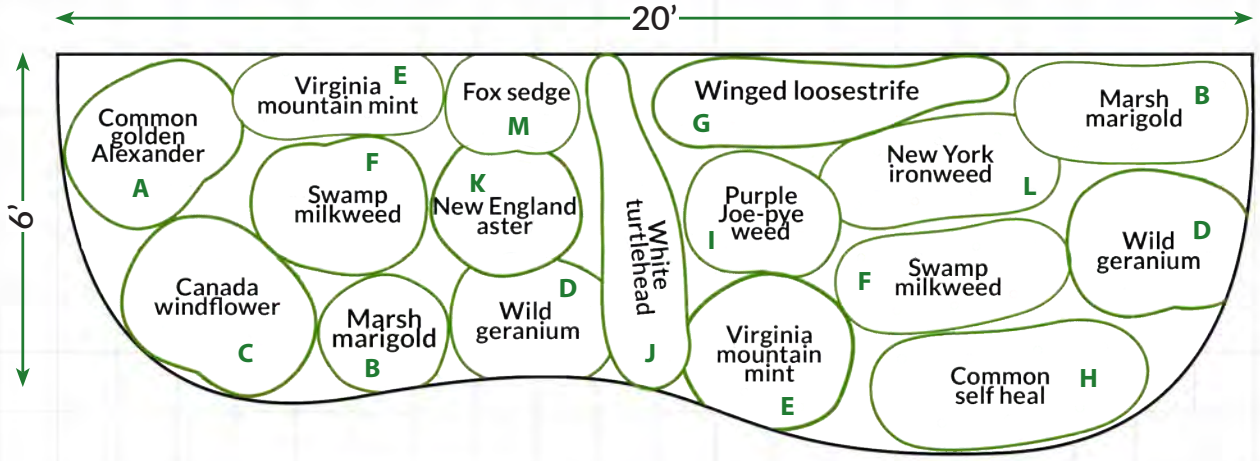
Wet Pollinator Garden

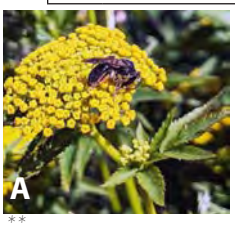
Site conditions: Full sun - 6 or more hours per day
These wet sites have soils that remain wet for prolonged periods of time



Wet Pollinator Garden

	Common Name	Latin Name	No. of Plants	Height	Spacing	Flower Color
	Early Bloomers					
A	Golden Alexander*	*Zizia aurea*	8	1'-2'	1'	Yellow
B	Marsh marigold	*Caltha palustris*	8	1'-2'	1'-2'	Yellow
C	Canada windflower *	*Anemone canadensis*	8	1'-2'	1'	White
D	Wild geranium	*Geranium maculatum*	8	1'	1'	Purple
	Mid Season Bloomers					
E	Virginia mountain mint	*Pycnanthemum virginianum*	10	3'	1'-1.5'	White
F	Swamp milkweed *	*Asclepias incarnata*	10	4'	1.5'-3'	Pink
G	Winged loosestrife	*Lythrum alatum*	4	3'	2'-3'	Purple
H	Common selfheal	*Prunella vulgaris*	7	1.5'	1'	White/Purple
	Late Season Bloomers					
I	Purple Joe-Pye weed	*Eutrochium purpureum*	4	7'	3'-4'	Pink
J	White turtlehead	*Chelone glabra*	8	2'-4'	1'	White
K	New England aster	*Symphyotrichum novae-angliea*	6	5'	2'-3'	Purple
L	New York ironweed	*Vernonia noveboracensis*	6	6'	2'-3'	Purple
	Grasses					
M	Fox Sedge	*Carex vulpinoidea*	8	1'-3'	1.5'	—

** Reseeds readily. Remove spent flowers before the plant goes to seed. ** Photo courtesy of Julia Vieira, Environmental Field Technician, Eastern RI Conservation District. ‡ Photo courtesy of Casey Johnson, Research Associate, URI Bee Lab (https://web.uri.edu/beelab/)*



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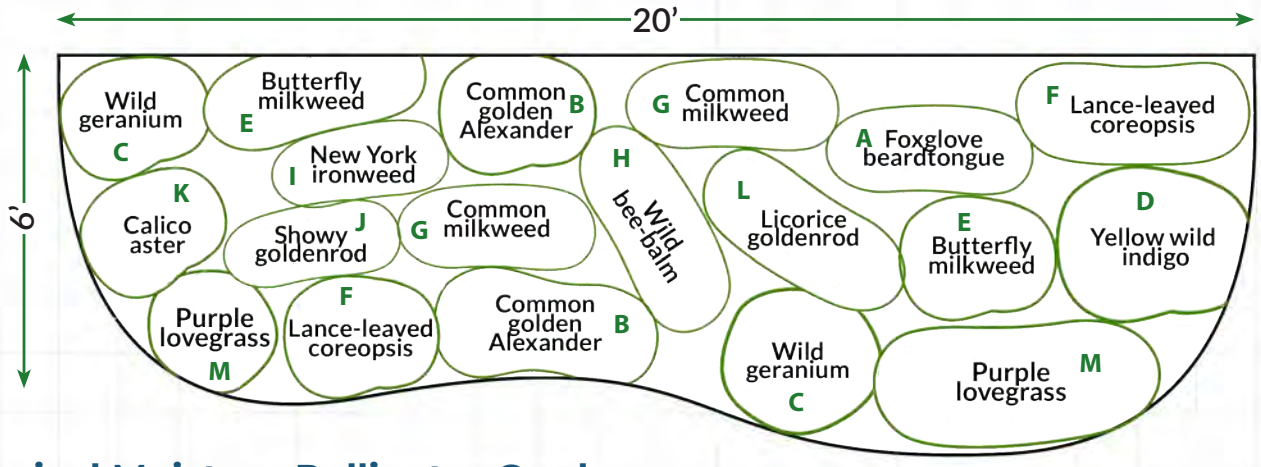
Typical Moisture Pollinator Garden

Site conditions: Full sun - 6 or more hours per day
These typical sites have soils that are moist, but not wet, soggy, or overly dry.



Typical Moisture Pollinator Garden

	Common Name	Latin Name	No. of Plants	Height	Spacing	Flower Color
	Early Bloomers					
A	Foxglove beardtongue	*Penstemon digitalis*	8	3'	1'-1.5'	Pink
B	Golden Alexander *	*Zizia aurea*	10	1'-2'	1'	Yellow
C	Wild geranium	*Geranium maculatum*	16	1'	0.5'-1'	Purple
D	Yellow wild indigo	*Baptisia tinctoria*	6	2'	2'-3'	Yellow
	Mid Season Bloomers					
E	Butterfly milkweed	*Asclepias tuberosa*	10	2'-3'	1'-1.5'	Orange
F	Lance-leaved coreopsis	*Coreopsis lanceolata*	8	2'	1'-1.5'	Yellow
G	Common milkweed	*Asclepias syriaca*	8	3'	2'-3'	Pink
H	Wild beebalm	*Monarda fistulosa*	6	4'	2'-3'	Purple
	Late Season Bloomers					
I	New York ironweed	*Vernonia noveboracensis*	7	6'	2'-3'	Purple
J	Showy goldenrod	*Solidago speciosa*	10	1'-3'	1'-1.5'	Yellow
K	Calico aster	*Symphyotrichum lateriflorum*	7	2'	1.5'-3'	White
L	Licorice goldenrod	*Solidago odora*	6	3'	1'-2'	Yellow
	Grasses					
M	Purple lovegrass	*Eragrostis spectabilis*	7	2'	1'-2'	—

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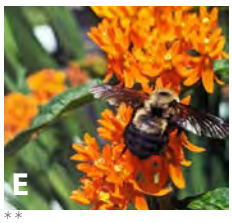

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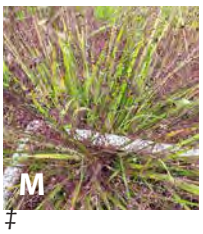

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When to Plant?

Spring planting will allow plants to grow, develop, and bloom long before the winter freeze, but may require more weeding and watering than fall planting. The benefits of **fall planting** include cooler temperatures, less weed pressure, and consistent moisture. When planting, follow the nursery's directions and plant at the correct depth. To reduce plant shock and promote root growth, plant on an overcast day, separate roots if root bound, and cut back half of the aboveground vegetation if the plant is robust and leafy. It is common for native plants to spend the first, and possibly the second, growing season developing an extensive and deep root system rather than aboveground vegetation and flowers.

Size and Availability of Native Plant Materials

These pollinator gardens were designed to be planted with bare root stock, plugs or potted plants. Using seed to establish gardens will require extra effort to eliminate weeds before planting, particularly roots and weed seeds that persist in the soil.

Maintenance

Don't forget to maintain the garden after planting. Water and weed the garden until plants are established. This may take up to two years.

The native plants included in these gardens thrive under Northeast conditions and generally need less maintenance once established. However, maintenance during establishment is key to a successful planting. Remember:

- Weed as needed.
- Water during the growing season when the soil begins to dry out or if plants begin to wilt. Watering is typically required during the first year. During drought additional watering may be necessary.
- Mulch beds with shredded bark mulch or other material. Newspaper can be placed under mulch for extra cover.
- Fertilizer use can encourage weeds and is not recommended. Native plants have evolved to handle the Northeast soil and climate.

Leaving duff, stems, and seed pods over winter will provide pollinators with a safe place to hibernate and will provide habitat and food for other wildlife, including backyard birds.

Bees and Mulch

Some bare soil is desirable for ground nesting bees. However, using mulch during the first year helps plants become established by conserving water and suppressing weeds.

When you disturb the soil during site preparation and planting, weed seeds that were lying dormant can be brought to the surface. With enough light, moisture and heat, those seeds may germinate. Weeds can also grow from roots that remain in the soil after tilling. Mulching helps to conserve moisture and prevent weeds from getting enough sunlight to germinate and grow.

Note: Use hardwood mulch without dyes. Keep mulch away from the base of plants to avoid smothering them.

Native Bees and Mulch

Rhode Island is home to approximately 250 different bee species. Native bees out-pollinate the more familiar European honey bee. Approximately seventy percent of native bees nest underground. Once plants fill in and shade the soil, allow mulch to decompose, leaving bare soil areas for native, ground-nesting bees.

Neighborhood Garden

Don't have enough space for a 20' x 6' garden? Consider a neighborhood pollinator garden. Find nearby friends and neighbors and have each person plant part of the garden or encourage a local school to install a pollinator garden for use as an outdoor classroom.

You can also grow just a few native pollinator plants on your balcony, deck or patio, or even in window boxes!

More information on pollinator plants & gardens

- University of Rhode Island Bee Lab: web.uri.edu/beelab
- Rhode Island Wild Plant Society: riwps.org
- Xerces Society: xerces.org
- Pollinator Partnership: pollinator.org