Gardening to Please the Birds and the Bees

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Maine Department of Agriculture, Conservation and Forestry

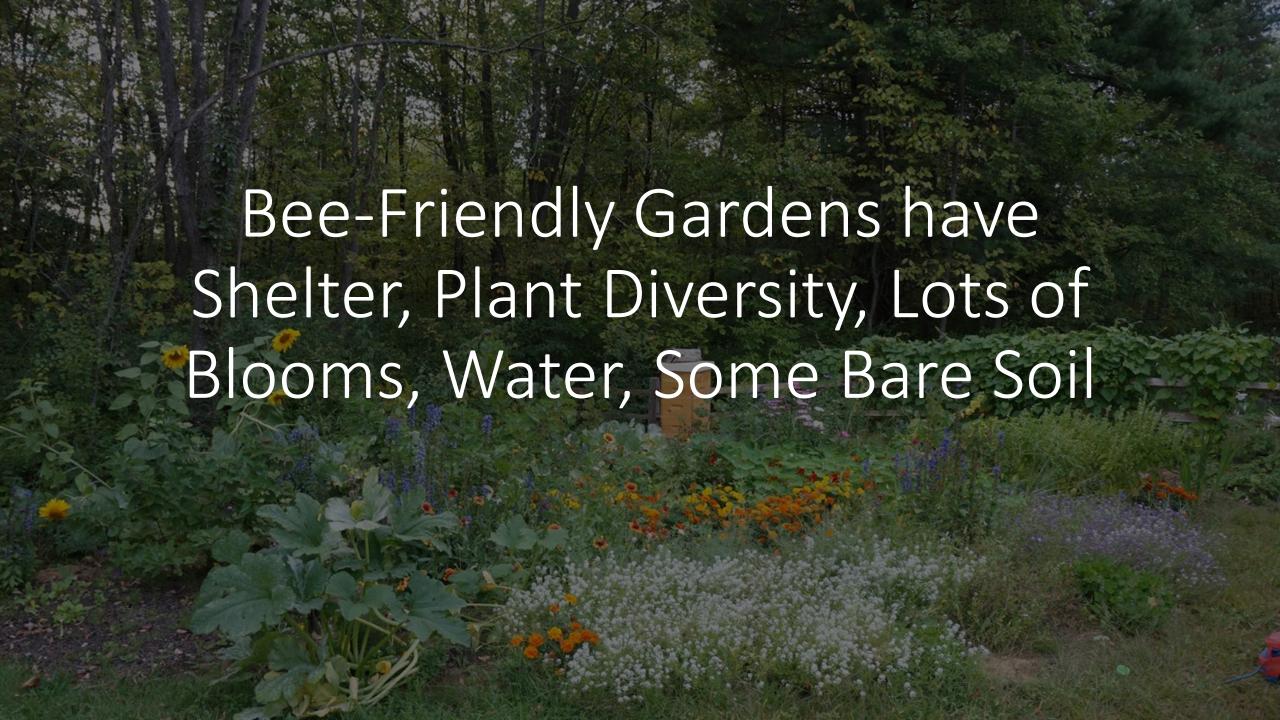
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Pollinator-Friendly Gardens

- Plant diversity of flowering plants
- With overlapping bloom periods throughout the season
- Provide water (small puddles, plants that catch water and dew)
- Provide some shelter
- Replace invasive plants









Social Behavior of Bees

Social

- 10% of bee species in the U.S.
- Several generations in a nest at the same time
- Cooperation in caring for young
- Division of labor
- Bumble and honey bees

Solitary

- 90% of bee species in the U.S.
- Each female constructs and provisions her own nest

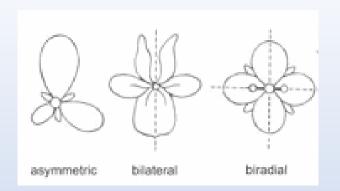
Foraging Selectivity

- Nectar sugar and amino acids
- Pollen protein
- Most gather nectar from several different flower species
 - Depends mostly on tongue length and skill
- Pollen collection is usually more selective
 - Some will use any flowering plant, many focus on one species of plant





Floral Resources



- Bee flowers
 - Bilateral symmetry
 - Tube-like or bell-shaped with a nectar reservoir
 - Some are complex to receive reward
 - Yellow, white, blue or purple with UV markers









Colors attract specific groups

Bees like blue, purple, white and yellow

Butterflies like orange, pink and red

Beetles prefer big fleshy disk shaped smelly white and green flowers

Wasps and flies like yellow, pink and white



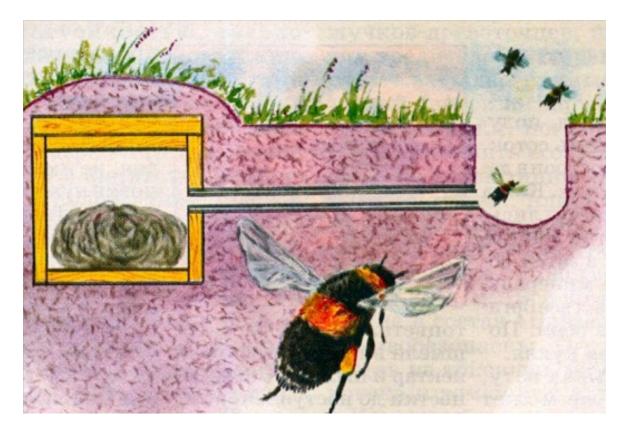
Nesting

- Ground 70%
- Stem 30%
- Cavity
 - Bumble and honey bees

Nesting Resources – Ground Nesters

- Areas of bare or sparsely vegetated soil
 - Loose
 - Well drained
 - Full sun
 - Several yards across
- Flat and/or banked areas







Nesting Resources – Cavity Nesters

- Dead trees, snags, or fallen logs
- Base of bunch grasses
 - Old rodent nests often found under grassy tussocks









Nesting Resources

- Stem Nesters
- Pithy, soft centered or hollow stems
 - Sumac
 - Box elder
 - Elderberry
 - Raspberry
 - Allium
 - Asparagus
 - Sedum
 - Sunflower

How to Create Habitat for Stem-nesting Bees

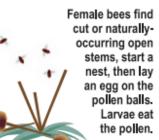


WINTER

Leave dead flower stalks in-tact over the winter.

SPRING

Cut back dead flower stalks leaving stem stubble of varying height, 8 to 24 inches, to provide nest cavities.



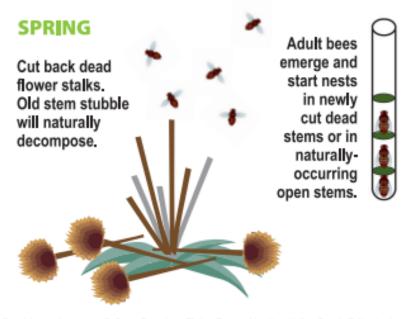


SUMMER

New growth of the perennial hides the stem stubble.



Bees hibernate in stems during the winter.



Graphics and content: Colleen Satyshur, Elaine Evans, Heather Holm, Sarah Foltz-Jordan

Nests for Native Bees

www.xerces.org



Eight things you can do to restore the ecosystem in your yard –

Doug Tallamy

- Cut your lawn in half
- Avoid senseless mowing
- Remove invasive species from your property
- Use keystone plants
- Build a landscaped layered with plants
- Put motion sensors on your security lights
- Minimize reliance on pesticide use
- Share these ideas with your neighbors



Minimize lawn areas



Mow or bush hog 1/2 or 1/3 of the meadow each year

Invasive plants

https://www.maine.gov/dacf/php/horticulture/invasiveplants.shtml



33 Invasive Plants Prohibited from Sale or Import in Maine What you need to Know



In January 2017 changes were adopted to CMR 01-001 Chapter 273: Criteria for Listing Invasive Terrestrial Plants. These changes make it illegal to sell, import, export, buy or intentionally propagate for sale the 33 plant species listed below.

Acer ginnala (amur maple)	Hesperis matronalis (dame's rocket)
Acer platanoides (Norway maple)	Impatiens glandulifera (ornamental jewelweed)
Aegopodium podagraria (bishop's weed)	Iris pseudacorus (yellow iris)
Ailanthus altissima (tree of heaven)	Ligustrum vulgare (common privet)
Alliaria petiolata (garlic mustard)	Lonicera japonica (Japanese honeysuckle)
Amorpha fruticosa (false indigo bush)	Lonicera maackii (amur or bush honeysuckle)
Ampelopsis glandulosa (porcelain berry)	Lonicera morrowii (Morrow's honeysuckle)
Artemisia vulgaris (common mugwort)	Lonicera tatarica (Tatarian honeysuckle)
Berberis thunbergii (Japanese barberry)	Lythrum salicaria (purple loosestrife)
Berberis vulgaris (common barberry)	Microstegium vimineum (Japanese stilt grass)
Celastrus orbiculatus (Asiatic bittersweet)	Paulownia tomentosa (paulownia, princess tree)
Elaeagnus umbellata (Autumn olive)	Persicaria perfoliata (mile-a-minute)
Euonymus alatus (winged euonymus)	Phellodendron amurense (amur cork tree)
Euphorbia cyparissas (cypress spurge)	Populus alba (white cottonwood)
Fallopia baldschuanica (Chinese bindweed)	Robinia pseudoacacia (black locust)
Fallopia japonica (Japanese knotweed)	Rosa multiflora (multiflora rose)
Frangula alnus (glossy buckthorn)	

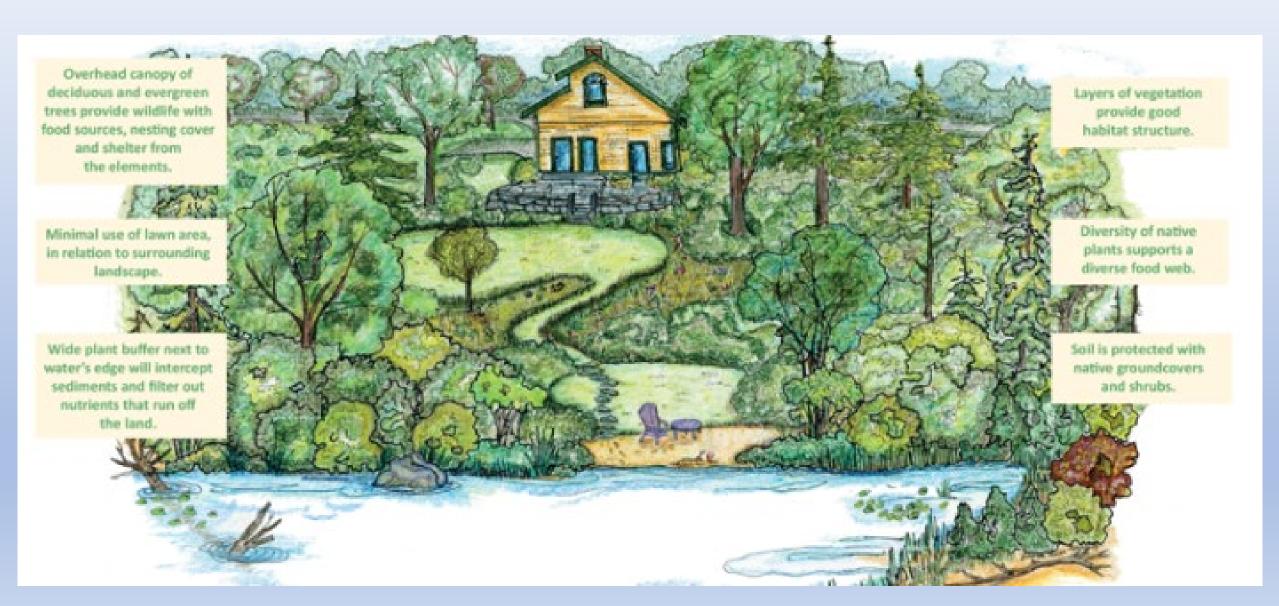
Top Keystone Plant Genera in Eastern Temperate Forests - Ecoregion 8

A genus is a taxonomic category of plants that contains one or more species of plants with similar characteristics. Species within each genus have adapted to local conditions and are the appropriate native species or varieties suited to a specific ecoregion.

Plant Type	Plant Genus	Sample of Common Species (not all encompassing)	# Caterpillar Species that Use this as a Host Plant	# of Pollen Specialist Bee species that Rely on this Plant
Trees	Quercus	White oak (Quercus alba), Black oak (Quercus velutina)	436	
	Prunus	American plum (Prunus americana), Black cherry (Prunus serotina), Chokecherry (Prunus virginiana)	340 🔪	
	Betula	River birch (Betula nigra), Sweet birch (Betula lenta)	284 😿	
	Populus	Eastern cottonwood (Populus deltoides)	249	
	Acer	Box elder (Acer negundo), Silver maple (Acer saccharinum), Sugar maple (Acer saccharum)	238	
	Malus	Southern crabapple (Malus angustifolia), Sweet crabapple (Malus coronaria)	237	
	Carya	Bitternut hickory (Carya cordiformis), Pignut hickory (Carya glabra), Mockernut hickory (Carya tomentosa)	213	
	Pinus	Pitch pine (Pinus rigida), Eastern white pine (Pinus strobus), Virginia pine (Pinus virginiana)	200	
Shrubs	Vaccinium	Northern highbush blueberry (Vaccinium corymbosum), Black highbush blueberry (Vaccinium fuscatum), Hillside blueberry (Vaccinium pallidum)	217	14 🍅
	Salix	Prairie willow (Salix humilis), Black willow (Salix nigra)	289	14 🎬
Flowering Perennials	Solidago	Stiff leaf goldenrod (Solidago rigida), Atlantic goldenrod (Solidago arguta)	104	42 🗯
	Symphyotrichum	Blue wood aster (Symphyotrichum cordifolium), Smooth aster (Symphyotrichum laeve)	100 😿	33
	Helianthus	Woodland sunflower (Helianthus divaricatus), Small woodland sunflower (Helianthus microcephalus)	66 😿	50 ₩

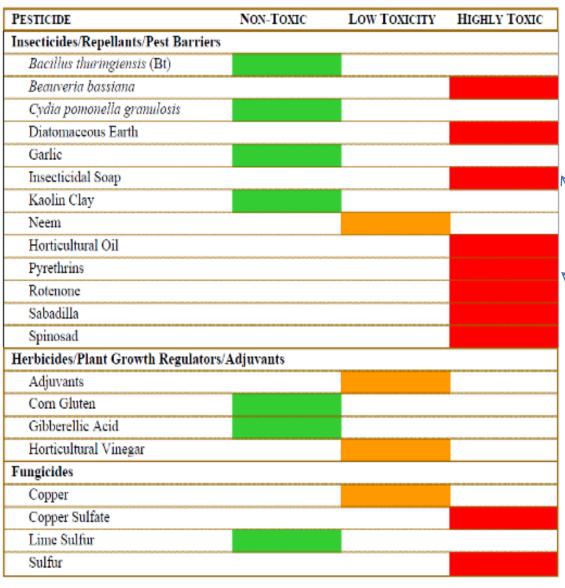
Keystone plants

Plant in layers





Spare the Sprays. Even Organic Ones



Toxicity of
Common Organic
Pesticides to
Pollinators

Soaps and Oils, only when directly sprayed upon the pollinator

Eric Mader – The Xerces Society for Invertebrate Conservation



https://www.audubon.org/native-plants

American Witch-Hazel

Hamamelis virginiana



Also known as Common Witch-Hazel, Snapping Hazelnut, Striped or Spotted Alder, and Winterbloom, this perennial, fall-blooming, deciduous shrub or small tree grows 15 to 20 feet tall. It grows in full sun and partial shade, in dry to moist soil, but prefers rich, acidic, well-drained soil. American Witch-Hazel produces fragrant, yellow flowers with petals that resemble crumpled strips from October to December and greenish seed capsules that mature to light brown.

Attributes Shrubs, Trees, Fruit, Butterflies, Caterpillars,
Nuts

Add to your plant list

Buy Now

May attract













Many great plant choice sources today

Contact





Choose the Perfect Plant

Use the "Filter By" dropdowns below to filter plants based on five different criteria (Bloom Month, Sunlight, Size/Plant Height, Caterpillars Hosted, and Wildlife Benefited). The results will automatically appear based on your choices. Check here for updates on Maine Audubon plant sales and availability.

https://mainenativeplants.org/plant-finder/

Many great plant choice sources today

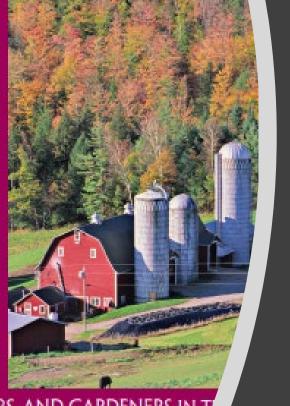


SELECTING

PLANTS

FOR

POLLINATORS



Many great plant choice sources today



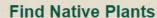


ADIRONDACK
NEW ENGLAND
MIXED FOREST
CONIFEROUS
FOREST
ALPINE MEADOW
PROVINCE

https://www.pollinator.org/pollinator.org/assets/generalFiles/AdirondackFINAL.pdf

https://www.nwf.org/NativePlantFinder/

Bring your garden to life.





Find Butterflies



My List



Many great plant choice sources today

OIN

Search

GO BOTANY

CONSERVING NATIVE PLANTS

FOR YOUR GARDEN

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ABOUT US

Welcome to Garden Plant Finder!
Here you can discover plants native to New
England that will thrive in your garden and meet
your needs.

Additional Information

 About Ecoregions, Cultivars and More

Search for plants by name using "quick search," or narrow your results based on plant type, flower color, New England Level 3 ecoregion, exposure, moisture, bloom season, and even cultivation status. Specify whether to show results that meet all or any of your search criteria by toggling the box at the bottom of the page. You can also use our search tool to access information about the full range of plants sold at Garden in the Woods and Nasami Farm.

Check out our Important Definitions page to learn more about ecoregions, cultivation status, and why certain plants are included in this database.

https://plantfinder.nativeplanttrust.org/Plant-Search

Many great plant choice sources today

https://plantfinder.nativeplanttrust.org/Plant-Search

Plant Type/Program:

ANY TYPE

Edible
Fern
Grasses, Sedges, and Rushes
Groundcover
Ornamental Grass
Perennial
Shrub
Tree
Vine/Liana

Ctrl-click (Mac users \mathcal{H} -click) to select multiple types to include in the search.

Flower Color:

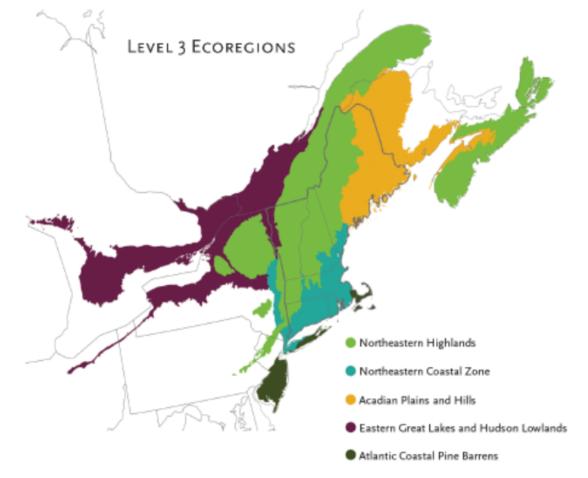
ANY TYPE
Blue
Green
Insignificant
Maroon
Non-Flowering
Orange
Pink
Purple
Red

Ctrl-click (Mac users #-click) to select multiple types to include in the search.

Height:

Inches >

Inches v



Check any box below to find only plants having the specific characteristic(s). Otherwise, leave all boxes unchecked to maximize your search results based on the criteria above.

	Cultivation Status	Exposure	Soil Moisture	Ecoregion
	☐ Cultivar ☐ Selection ☐ Species	□ Sun□ Part Shade□ Shade	□ Dry□ Average□ Wet	 (58) Northeastern Highlands (59) Northeastern Coastal Zone (82) Acadian Plains and Hills (83) Eastern Great Lakes Lowlands (84) Atlantic Coastal Pine Barrens Not Ecotypic in New England
	Ornamental Interest	Attracts Wildlife	Tolerance	Additional Attributes
	 □ Spring Bloom □ Summer Bloom □ Fall Bloom □ Summer Fruit □ Fall/Winter Fruit □ Fall Foliage □ Winter Interest and/or Evergreen 	 □ Attracts Bees □ Pollinator Powerhouse Plant □ Attracts Butterflies □ Host Plant □ Attracts Songbirds □ Attracts Hummingbirds □ Other Pollinators/Wildlife 	 □ Deer/Rabbit Resistant □ Drought Tolerant □ Salt Tolerant □ Urban Environment □ Compaction Tolerant 	 □ Edible □ Low Maintenance □ Spring Ephemeral □ Dioecious (fruits only on female plants) □ Fragrant □ Erosion Control/Soil Stabilization
https://plantfinder.nativeplanttrust.org/Plant-Search		Landscape Use Groundcover Hedge/screening Massing Specimen Rain Garden Meadow garden Naturalize Rock garden	Attractive Fall Foliage and/or Ornamental Fruit Red Fruit Red to Purple Fall Foliage Orange to Brown Fall Foliage Bright Yellow to Bronze Fall Foliage Blue Fruit Multi Color Fall Foliage Purple to Black Fruit White Fruit Orange to Yellow Fruit	

https://plantfinder.nativeplanttrust.org/Plant-Search

Growth Habit

- □ Compact/Clumping
- □ Spreading/Suckering
- Show only plants having ALL checked characteristics above
- O Show plants having ANY checked characteristics above

BEGIN SEARCH



Conserving and promoting New England's native plants to ensure healthy, biologically diverse landscapes

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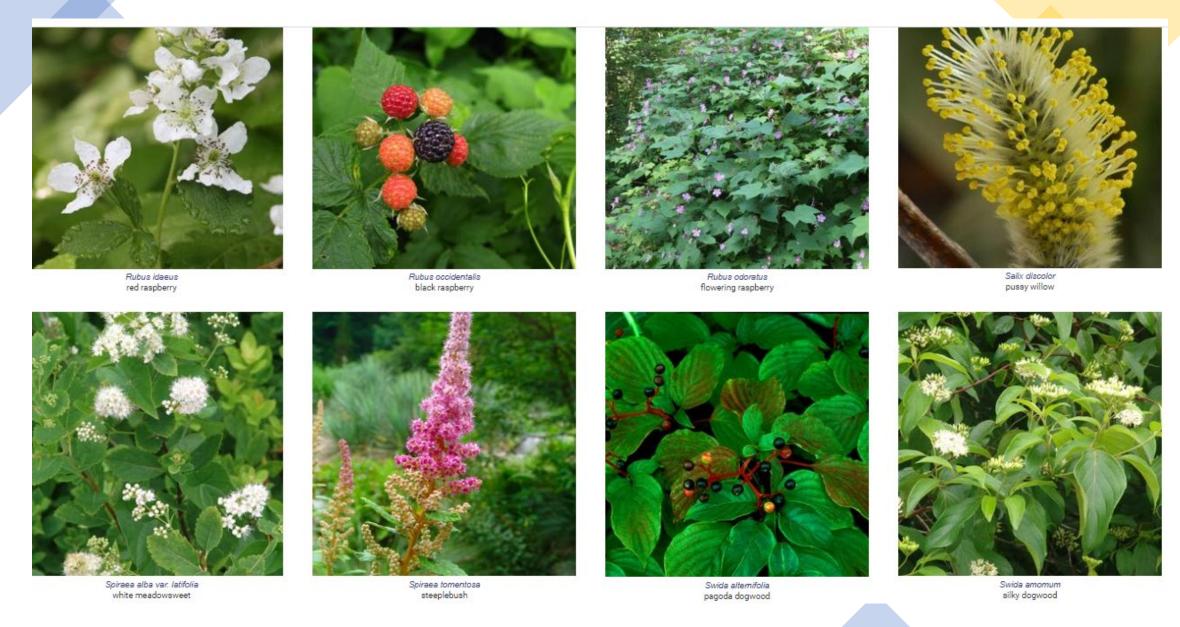




Pollinator powerhouse plants

 "Pollinator Powerhouse Plant" is a designation for native plant species that support a proportionally large number of caterpillar species: woody plants qualify as pollinator powerhouses if they support 75 or more species of lepidopterans; herbaceous plant species qualify if they support 15 or more species of lepidopterans.





https://plantfinder.nativeplanttrust.org/Plant-Search





Geranium maculatum wild geranium



Helianthus divaricatus woodland sunflower



Helianthus tuberosus sunchoke



Ionactis linariifolia stiff aster



Lupinus perennis sundial lupine



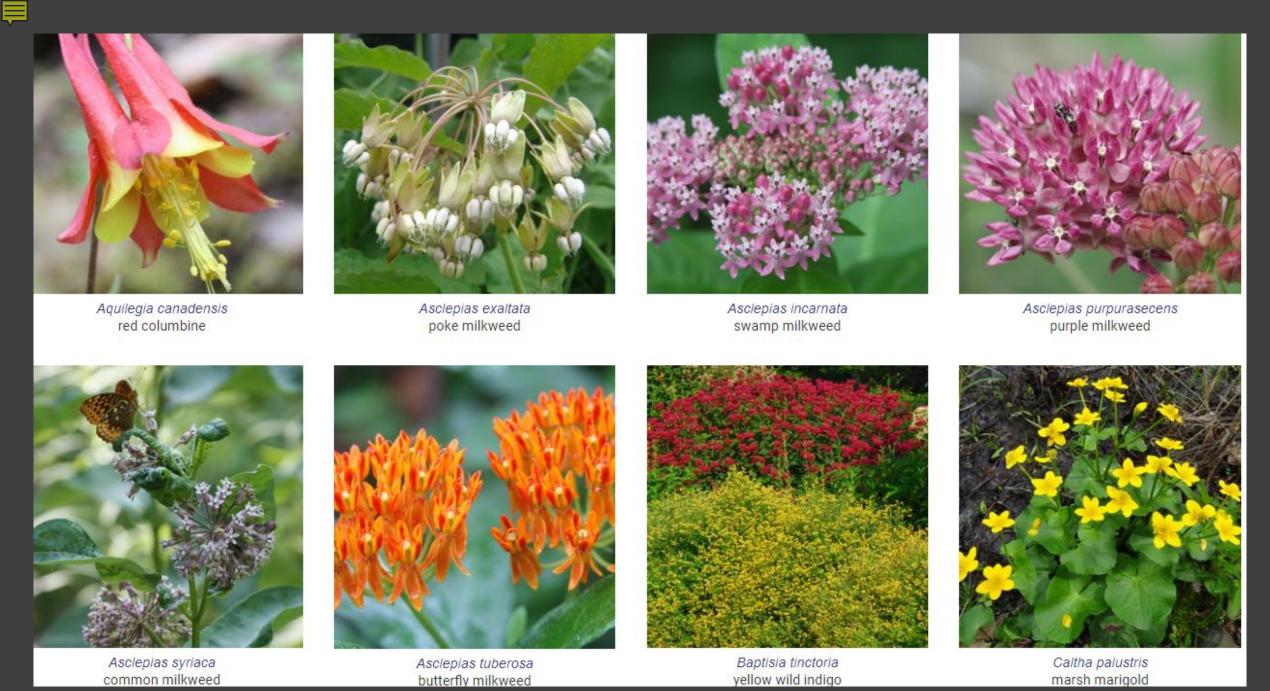
Solidago bicolor white goldenrod



Solidago caesia wreath goldenrod



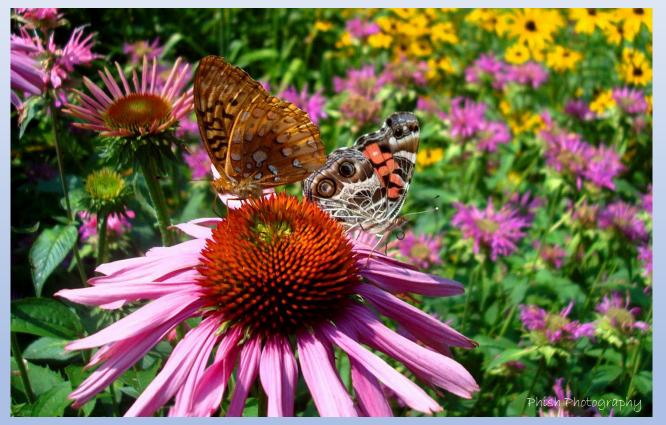
Solidago nemoralis gray goldenrod



https://plantfinder.nativeplanttrust.org/Plant-Search



Echinacea purpurea – Purple Coneflower



Speyeria cybele - Great Spangled Fritillary and Vanessa cardui - Painted Lady



Homoeosoma electellum – Sunflower Moth



Halictidae – Sweat Bee



Eupatorium maculatum – Spotted Joe Pye Weed





Arctia caja – Great Tiger Moth

Bombus insularis – Indiscriminate Cuckoo Bumble Bee



Asclepias incarnata – Swamp Milkweed





Asclepias syriaca – Common Milkweed



Phish Epistrophe grossulariae- Hover fly



Lobelia cardinalis – Cardinal Flower





Archilochus colubris – Ruby-throated Hummingbird





Symphyotrichum nova angliae – New England Aster



Bombus impatiens – Impatient Bumble Bee



Syrphus ribesii - Hoverfly



Rudbeckia hirta – Blackeyed Susan

Phidippus clarus – Jumping Spider

Chlorochlamys chloroleucaria – Blackberry Looper



Agapostemon virescens – Green Metallic Bee

Misumena vatia – Goldenrod Crab Spider



Carex pensylvanica – Pennsylvania Sedge







Euphyes vestris - Dun Skipper



Geranium maculatum – Spotted Geranium



Apis mellifera – Honey Bee



Heliothis virescens - Tobacco Budworm





Heliopsis helianthoides – False Sunflower





Chlosyne nycteis -Silvery Checkerspot





Monarda fistulosa – Wild Bergamot





Unknow Microlep



Pyrausta signatalis – Monarda caterpillar



Penstemon digitalis - Beardtongue





Osmia bucephala Bufflehead Mason Bee

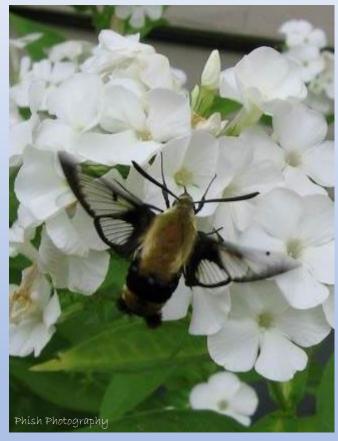


Elaphria chalcedonia Chalcedony Midget



Phlox subulata – Creeping Phlox





Hemaris diffinis – Snowberry Clearwing Moth



Schizachryium scoparium – Little Bluestem





Polites origenes – Crossline Skipper



Solidago canadensis - Canada Goldenrod





Vespula maculifrons -Eastern Yellowjacket



Cucullia convexipennis -Brown-hooded Owlet



Cucullia asteroides -Goldenrod Hooded Owlet



Veronicastrum virginicum – Culver's Root





Agapostemon splendens - Brownwinged Striped-Sweat bee



Bombus affinis – Rusty Patched Bumble Bee



Vaccinium corymbosum – Highbush Blueberry



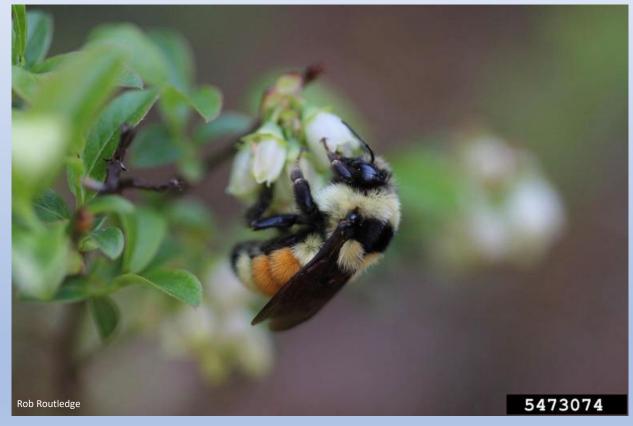
Bombus impatiens – Impatient Bumble Bee



Monoleuca semifascia – Pin-striped Slug Moth



Vaccinium angustifolium – Lowbush Blueberry



Judy Collins

Itame argillacearia – Blueberry Spanworm

Bombus ternarius
- Red-Tailed Bumble Bee



Gaylussacia baccata – Black Huckleberry



Andrenid bee



Sphinx Gordius – Apple Sphinx



Pangrapta decoralis – Decorated Owlet



Lindera benzoin - Northern Spicebush







Papilio Troilus – Spicebush Swallowtail



Celastrina ladon
- Spring Azure



Hermit Thrush



Quercus spp. - Oaks



Quercus alba – White Oak



Peridea angulosa – Angulose Prominent



Quercus rubra – Red Oak



Anisota senatoria -Orangestriped Oakworm



Acer Spp. - Maples



Acer rubrum – Red Maple



Speranza pustularia – Lesser Maple Spanworm



Acer pensylvanicum – Striped Maple



Malacosoma disstria – Forest Tent Caterpillar

https://wildseedproject.net/buy-native-plants/



Where to Buy Native Plants

The native plant movement is gaining traction in much of the U.S. — and that is fantastic! It can still be difficult, though, to source local native plants and seeds; so to help, we've carefully curated the following directory of where to buy northeastern native plants by state, including:

- Wholesale and retail nurseries that specialize in or include a wide selection of native plants
- · Native plant sales hosted by nonprofits and co-ops annually or seasonally

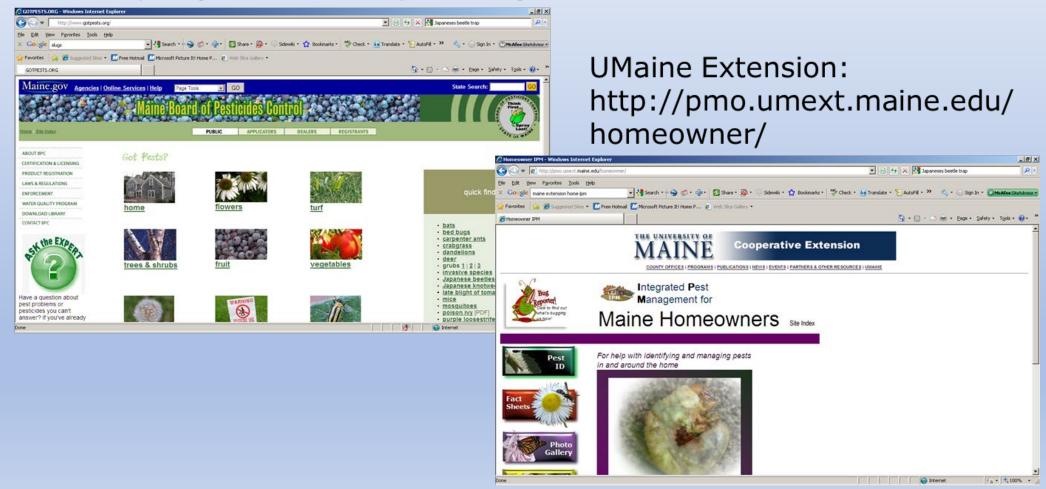
While we include the highest quality plant nurseries in this directory, it is still important that you do your own research to find out what native plants are in stock, if the plants are grown from seed, and if the nurseries use



Where to buy native plants

Pest management resources

Maine Dept Agriculture: Gotpests.org

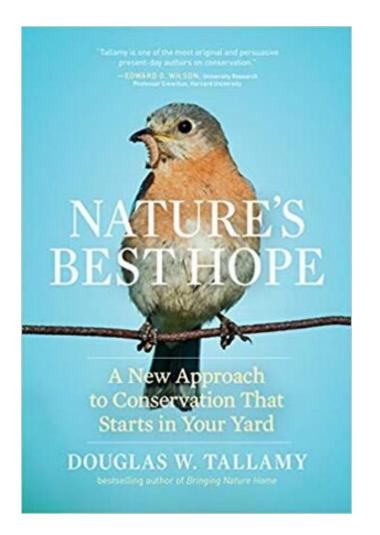


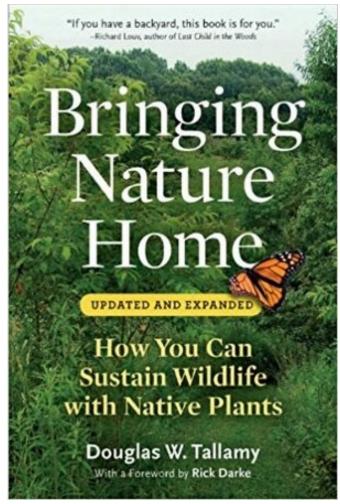
Resources



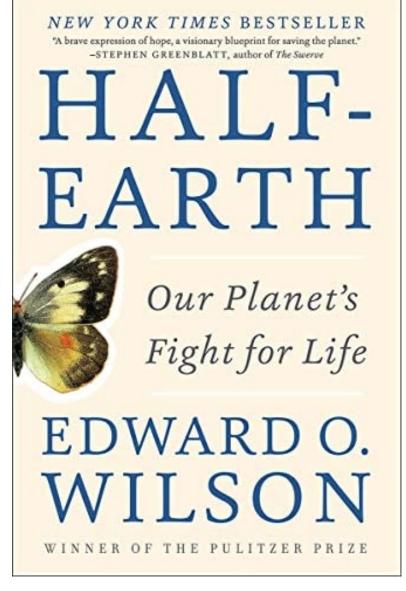
https://homegrownnationalpark.org/tallamys-hub-1

Resources



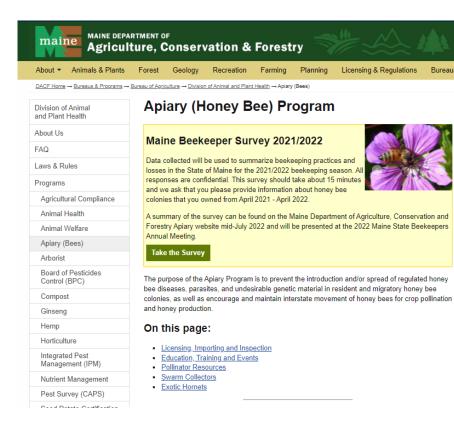


Resources



https://www.half-earthproject.org/





APIARY RESOURCES

BEEKEEPER SURVEY

2020/2021 Maine Honeybee

2019/2020 Maine Honeybee

2018/2019 Maine Honeybee Survey Results (PDF)

FORMS

Apiary License Application (PDF) (DOCX)

Import Notification of Bees

Hive Inspection Request Form

HONEY BEE MANAGEMENT

RESOURCES

Tools for Varroa Management

Honey Bee Health Coalition

Best Management Practices

USDA-ARS Beltsville Bee

Research and Diagnostic

(DOCX)

from HBHC

Survey Results (PDF)

Survey Results (PDF)

Statutes & Rules

Resources

https://www.maine.gov/dacf/php/apiary/index.shtml

Future Area Presentations

July 27 – LL Bean Summer Speaker Series – 7 PM



JULY 27 GARY FISH

Plants, Ticks, Bugs & Worms: Why Worry About Invasive Species?

Maine State Horticulturalist Gary Fish shines a light on Maine's most unique and interesting invasive species, along with resources for gardeners to help them slow their spread.



Questions?

gary.fish@maine.gov 207-287-7545