Gardening to Please the Birds and the Bees

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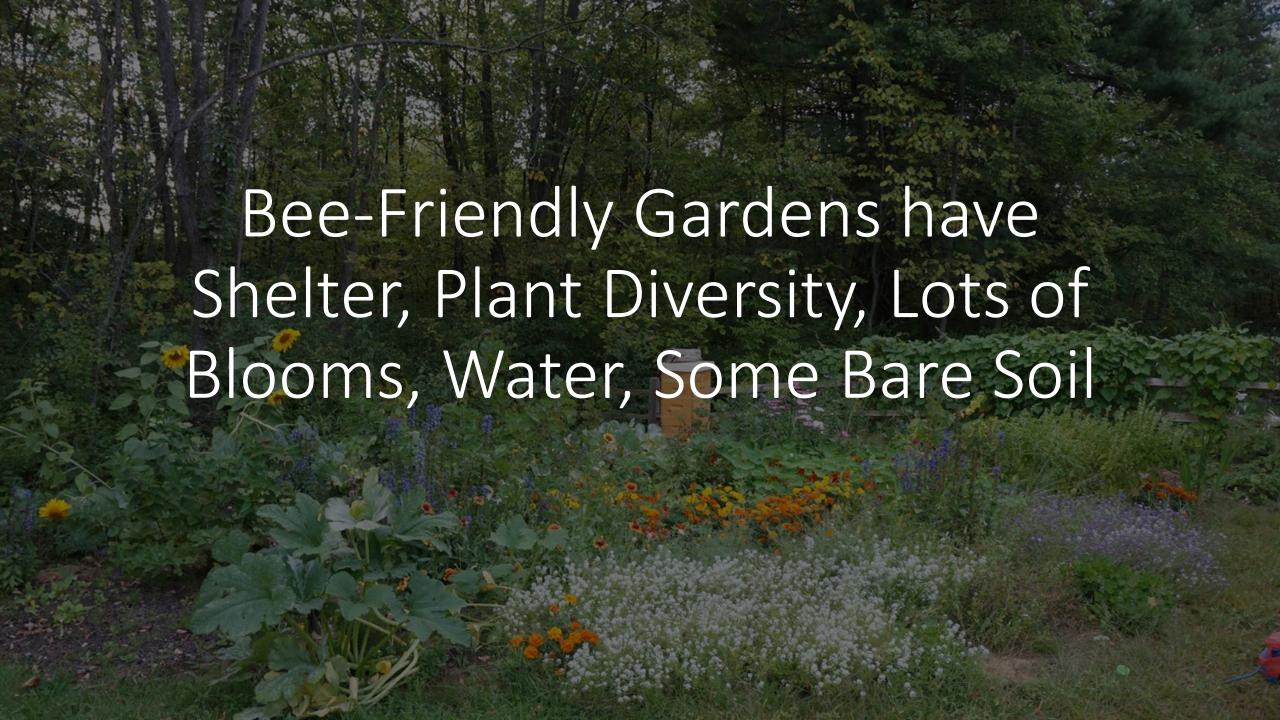
207-287-7545







Begin with bees & pollinators







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

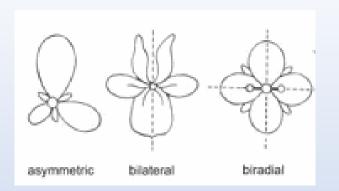
Foraging Selectivity

- 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



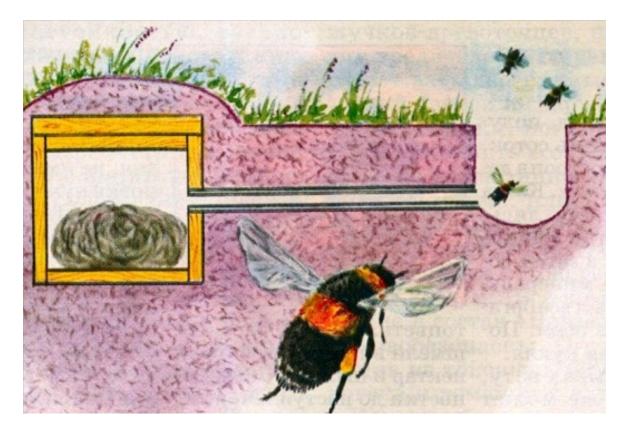
Nesting

- 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.

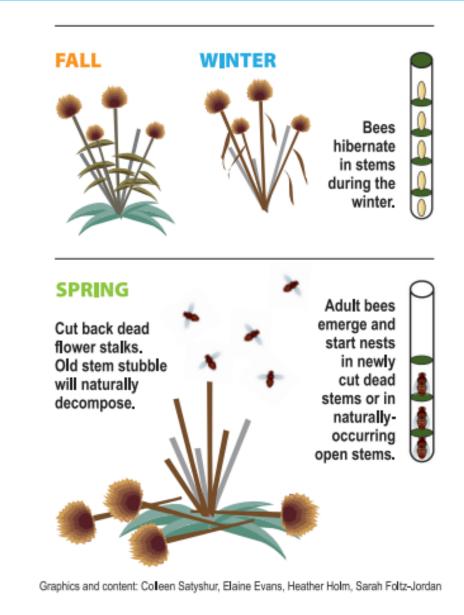




SUMMER

New growth of the perennial hides the stem stubble.





Nests for Native Bees

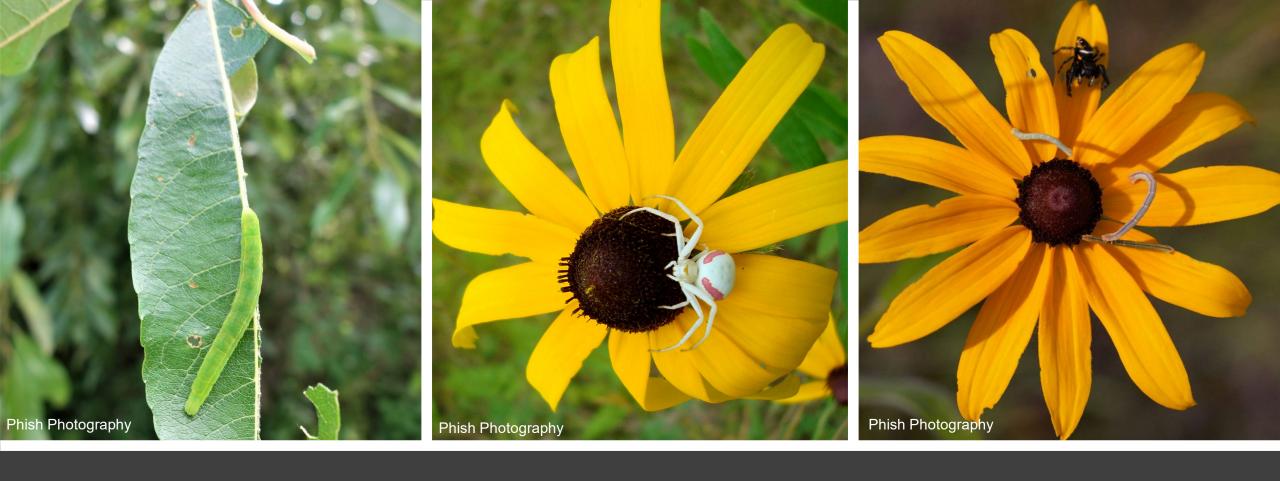
www.xerces.org



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





Soft-bodied insects are key for baby birds



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



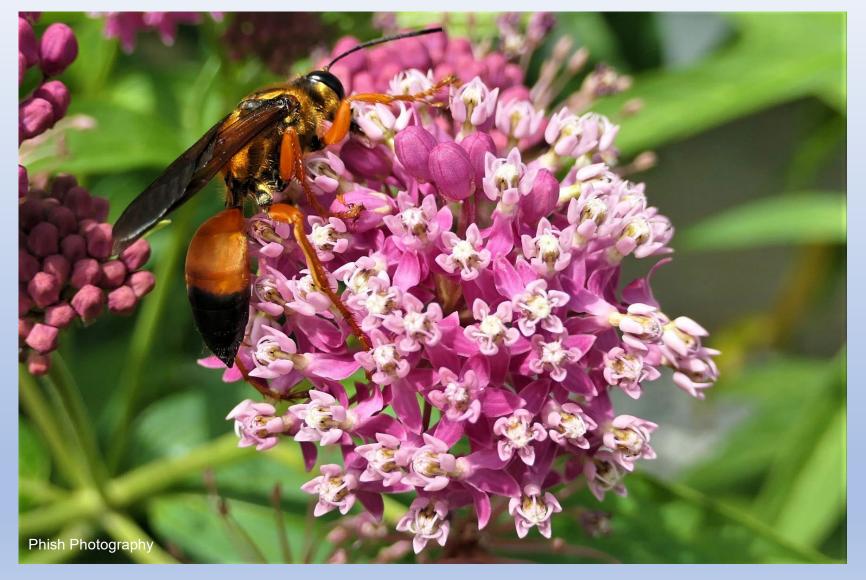


Arctia caja – Great Tiger Moth

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



J. Michael Moore - Bugwood
UGA2102048

Heliothis virescens - Tobacco Budworm



Apis mellifera – Honey Bee



Heliopsis helianthoides – False Sunflower





Chlosyne nycteis -Silvery Checkerspot





Monarda fistulosa – Wild Bergamot





Unknow Microlep



Pyrausta signatalis – Monarda caterpillar



Penstemon digitalis - Beardtongue





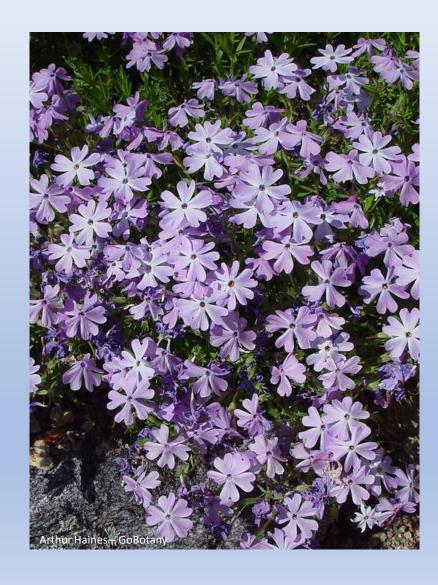
Osmia bucephala Bufflehead Mason Bee

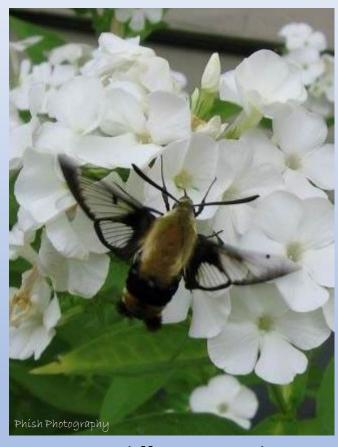


Elaphria chalcedonia Chalcedony Midget



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



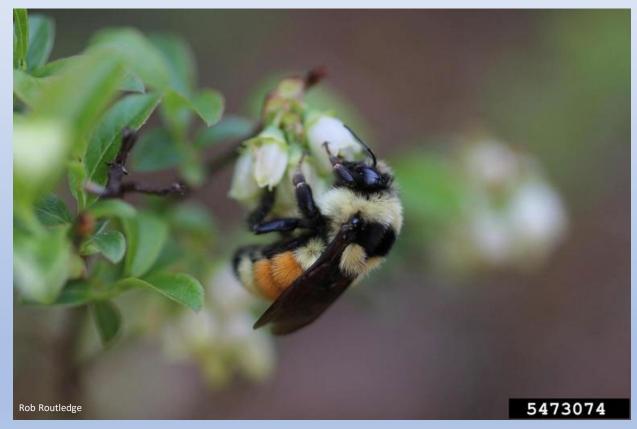
Bombus impatiens – Impatient Bumble Bee



Monoleuca semifascia – Pin-striped Slug Moth



Vaccinium angustifolium – Lowbush Blueberry





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



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

Restoring the Little Things that Run the World

Why It Matters and What We Can Do



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



Do Not Sell Plant List

The invasive plants listed below are illegal to import, export, buy, sell or intentionally propagate for sale or distribution in Maine. The ban includes all cultivars, varieties and hybrids of these plants.

Species on this list may no longer be sold after the effective date.

Scientific Name	Common Name	Effective Date
Acerginnala	Amur maple	January 1, 2018
Acer platanoides	Norway Maple	January 1, 2018
Aegopodium podagraria	Bishop's Weed	January 1, 2018
Ailanthus altissima	Tree of Heaven	January 1, 2018
Alliaria petiolata	Garlic Mustard	January 1, 2018
Amorpha fruticosa	False Indigo	January 1, 2018
Ampelopsis glandulosa	Porcelainberry	January 1, 2018
Artemisia vulgaris	Common Mugwort	January 1, 2018
Berberis thunbergii	Japanese Barberry	January 1, 2018
Berberis vulgaris	Common Barberry	January 1, 2018
Celastrus orbiculatus	Asiatic Bittersweet	January 1, 2018
Elaeagmus umbellata	Autumn Olive	January 1, 2018
Euonymus alatus	Winged Euonymus	January 1, 2018
Euphorbia cyparissias	Cypress Spurge	January 1, 2018
Fallopia baldschuanica	Chinese Bindweed	January 1, 2018
Fallopia japonica	Japanese Knotweed	January 1, 2018
Frangula alnus	Glossy Buckthorn	January 1, 2018
Hesperis matronalis	Dame's Rocket	January 1, 2018
Impatiens glandulifera	Omamental Jewelweed	January 1, 2018
Iris pseudacorus	Yellow Iris	January 1, 2018
Ligustrum vulgare	Common Privet	January 1, 2018

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



CMR 01-001 Chapter 273: Criteria for Listing Invasive Terrestrial Plants makes it illegal to sell, import, export, buy or intentionally propagate for sale the 33 plant species listed below.

Acer ginnala (amur maple)

Acer platanoides (Norway maple)

Aegopodium podagraria (bishop's weed)

Ailanthus altissima (tree of heaven)

Alliaria petiolata (garlic mustard)

Amorpha fruticosa (false indigo bush)

Ampelopsis glandulosa (porcelain berry)

Artemisia vulgaris (common mugwort)

Berberis thunbergii (Japanese barberry)

Berberis vulgaris (common barberry)

Celastrus orbiculatus (Asiatic bittersweet)

Elaeagnus umbellata (Autumn olive)

Euonymus alatus (winged euonymus)

Euphorbia cyparissas (cypress spurge)

Fallopia baldschuanica (Chinese bindweed)

Fallopia japonica (Japanese knotweed)

Frangula alnus (glossy buckthorn)

Hesperis matronalis (dame's rocket)

Impatiens glandulifera (omamental jewelweed)

Iris pseudacorus (yellow iris)

Ligustrum vulgare (common privet)

Lonicera japonica (Japanese honeysuckle)

Lonicera maackii (amur or bush honeysuckle)

Lonicera morrowii (Morrow's honeysuckle)

Lonicera tatarica (Tatarian honeysuckle)

Lythrum salicaria (purple loosestrife)

Microstegium vimineum (Japanese stilt grass)

Paulownia tomentosa (paulownia, princess tree)

Persicaria perfoliata (mile-a-minute)

Phellodendron anurense (amur cork tree)

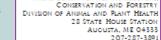
Populus alba (white cottonwood)

Robinia pseudoacacia (black locust)

Rosa multiflora (multiflora rose)

Ouick Facts

- · The sale/import ban includes the listed species and all cultivars, varieties and hybrids.
- Variances may be applied for and granted for scientific research and for varieties, cultivars or hybrids
 that have been shown to not be invasive through peer reviewed scientific research.
- The invasive plant rule and included prohibited plant list will be reviewed every 5 years.
- Recent changes to the rule will prohibit the sale of an additional 30 species starting January 1, 2024 (see back).
- Find more information at www.maine.gov/dacf/phphorticulture/invasiveplants.shtml



207-287-3891 HORTICULTURE@MAINEGOV WWW.MAINE.GOV/HORT

FOR MORE INFORMATION:

MAINE DEPARTMENT OF AGRICULTURE,

Scientific name	Common name	Effective Date
Alnus glutinosa	European alder	1/1/2024
Angelica sylvestris	Woodland angelica	1/1/2024
Anthriscus sylvestris	Wild chervil, raven's wing	1/1/2024
Aralia elata	Japanese angelica tree	1/1/2024
Butomus umbellatus	Flowering rush	1/1/2024
Elaeagnus angustifolia	Russian olive	1/1/2024
Euonymus fortunei	Wintercreeper, climbing spindle tree	1/1/2024
Festuca filiformis	Fine-leaved sheep fescue	1/1/2024
Ficaria verna	Lesser celandine	1/1/2024
Glaucium flavum	Yellow hornpoppy	1/1/2024
Glechoma hederacea	Ground ivy, creeping charlie	1/1/2024
Glyceria maxima	Great mannagrass, reed mannagrass	1/1/2024
Hippophae rhanmoides	Sea buckthom	1/1/2024
Ligustrum obtusifolium	Border privet	1/1/2024
Lonicera xylosteum	Dwarf honeysuckle	1/1/2024
Lythrum virgatum	European wand loosestrife	1/1/2024
Miscanthus sacchariflorus	Amur silvergrass	1/1/2024
Petasites japonicus	Fuki, butterbur, giant butterbur	1/1/2024
Phalaris arundinacea	Reed canary grass, variegated ribbon grass	1/1/2024
Photinia villosa	Photinia, Christmas berry	1/1/2024
Phragmites australis	Common reed	1/1/2024
Phyllostachys aurea	Golden bamboo	1/1/2024
Phyllostachys aureosulcata	Yellow groove bamboo	1/1/2024
Pyrus calleryana	Callery ("Bradford") pear	1/1/2024
Ranunculus repens	Creeping buttercup	1/1/2024
Rubus phoenicolasius	Wineberry	1/1/2024
Silphium perfoliatum	Cup plant	1/1/2024
Sorbus aucuparia	European mountain-ash	1/1/2024
Tussilago farfara	Coltsfoot	1/1/2024
Valeriana officinalis	Common valerian	1/1/2024

Invasive Terrestrial Plant Species of Special Concern

Scientific Name	Common Name
Rosa rugosa	Rugosa rose, beach rose

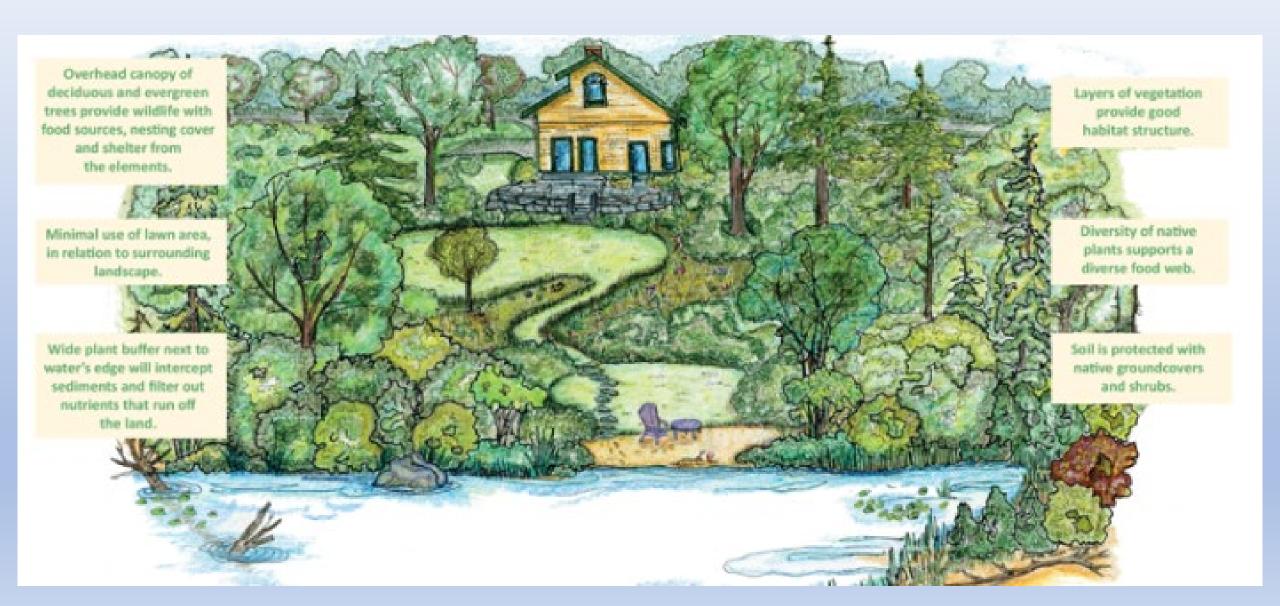
Top Keystone Plant Genera in Eastern Temperate Forests - Ecoregion 8

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	92 🎬
	Symphyotrichum	Blue wood aster (Symphyotrichum cordifolium), Smooth aster (Symphyotrichum laeve)	100 😿	33 🗯
	Helianthus	Woodland sunflower (Helianthus divaricatus), Small woodland sunflower (Helianthus microcephalus)	66 🦋	50 🎬

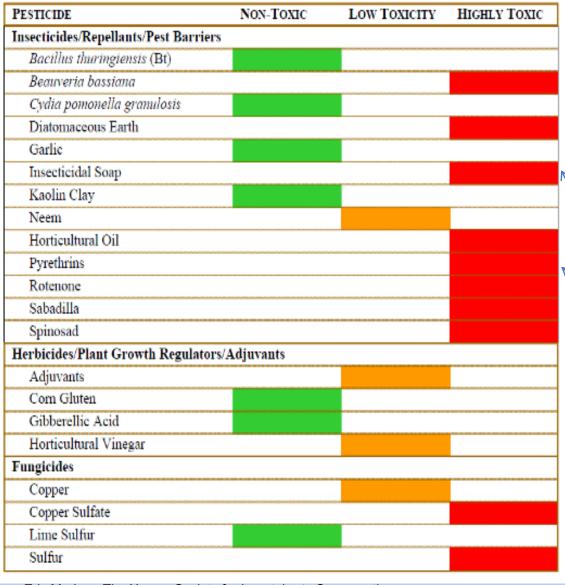
Keystone plants

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

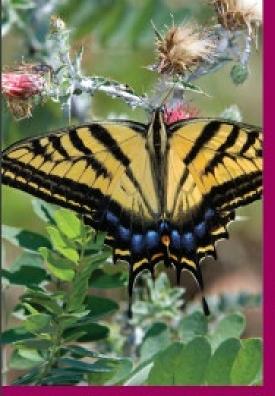


Choose the Perfect Plant

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

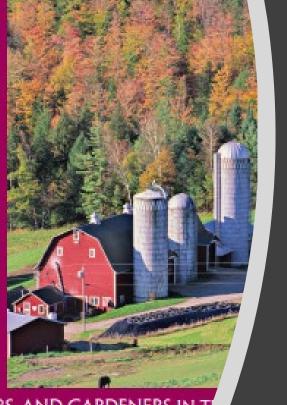


SELECTING

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

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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: H

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

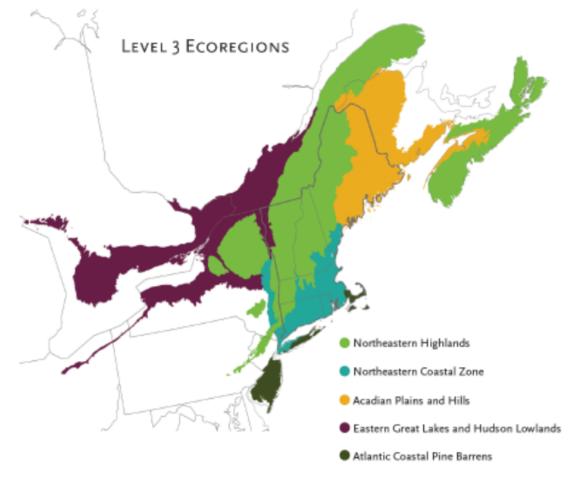
Ctrl-click (Mac users #-click) to select multiple types to include in the search.

Height:

Inches >

Spread:

Inches >



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
		Landscape Use	Attractive Fall Foliage and/or Ornamental Fruit
https://plantfinder.nativeplanttrust.org/Plant-Search		☐ Groundcover ☐ Hedge/screening ☐ Massing ☐ Specimen ☐ Rain Garden ☐ Meadow garden ☐ Naturalize ☐ Rock garden	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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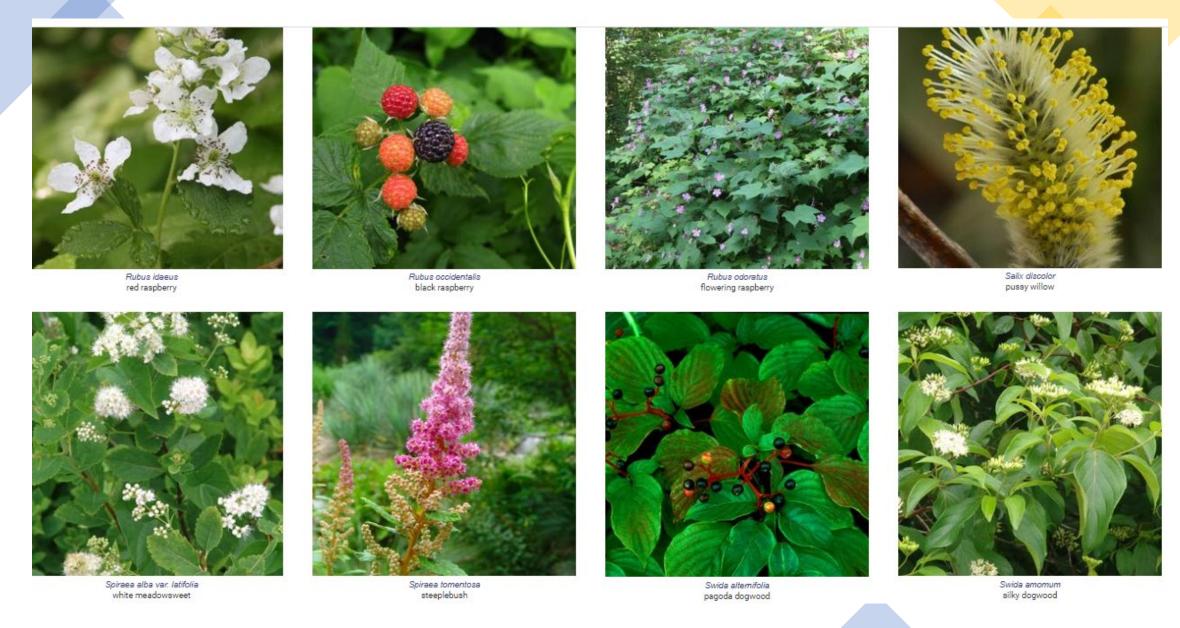






Pollinator powerhouse plants "Pollinator Powerhouse Plant" is a designation for native plant species that support a proportionally large number of caterpillar species: woody plants qualify as pollinator powerhouses if they support 75 or more species of lepidopterans; herbaceous plant species qualify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



Baptisia tinctoria

yellow wild indigo

Caltha palustris

marsh marigold

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

Asclepias syriaca common milkweed

Asclepias tuberosa

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

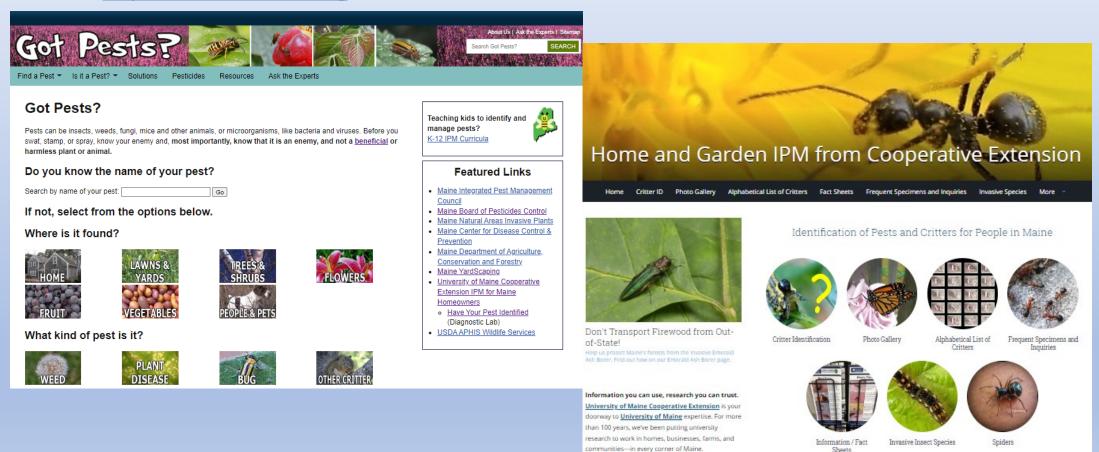
While we include the highest quality plant nurseries in this directory, it is still important that you do your own research to find out what native plants are in stock, if the plants are grown from seed, and if the nurseries use



Where to buy native plants

Pest management resources

http://www.GotPests.org - Maine DACF



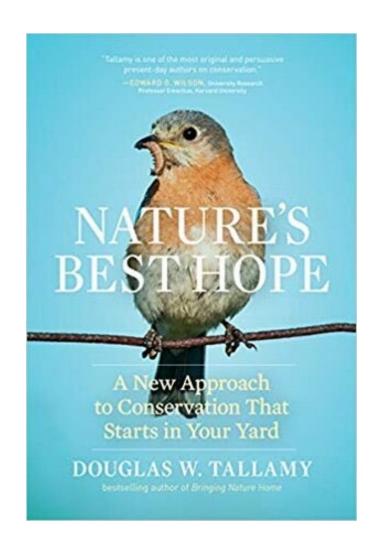
https://extension.umaine.edu/home-and-garden-ipm/

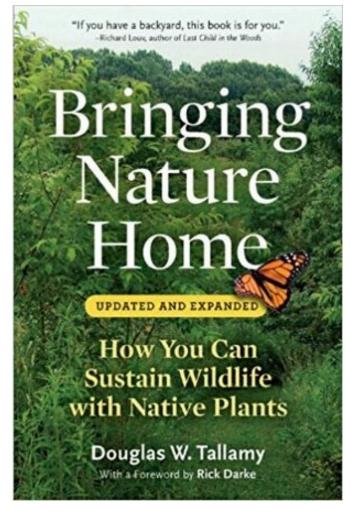
Resources



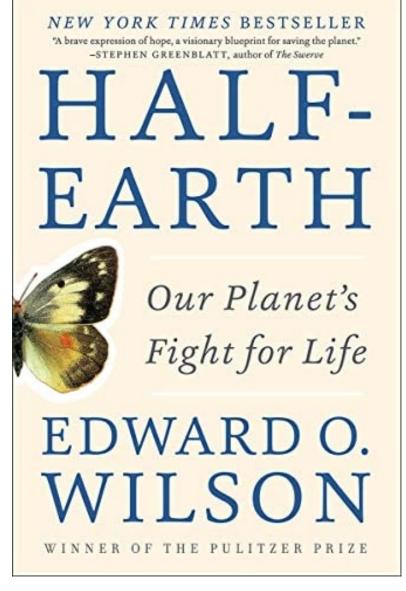
https://homegrownnationalpark.org/tallamys-hub-1

Resources



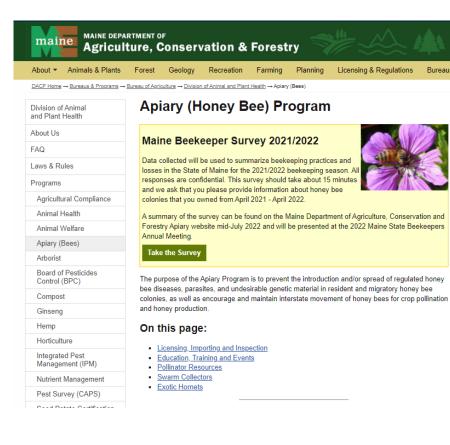


Resources



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





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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



Questions?

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