Gardening to Please the Birds and the Bees

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Phish Photography

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


Bee-Friendly Gardens have Shelter, Plant Diversity, Lots of Blooms, Water, Some Bare Soil

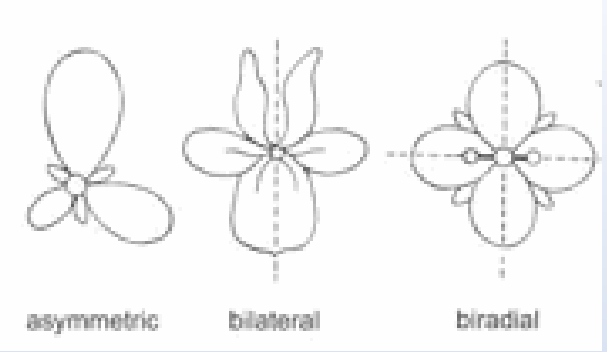
Social Behavior of Bees

- Social
  - 10% of 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 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 anything, others focus on one species of plant

Floral Resources



- Bee flowers
  - Bilateral symmetry
  - Tube-like or bell-shaped with a nectar reservoir
  - 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

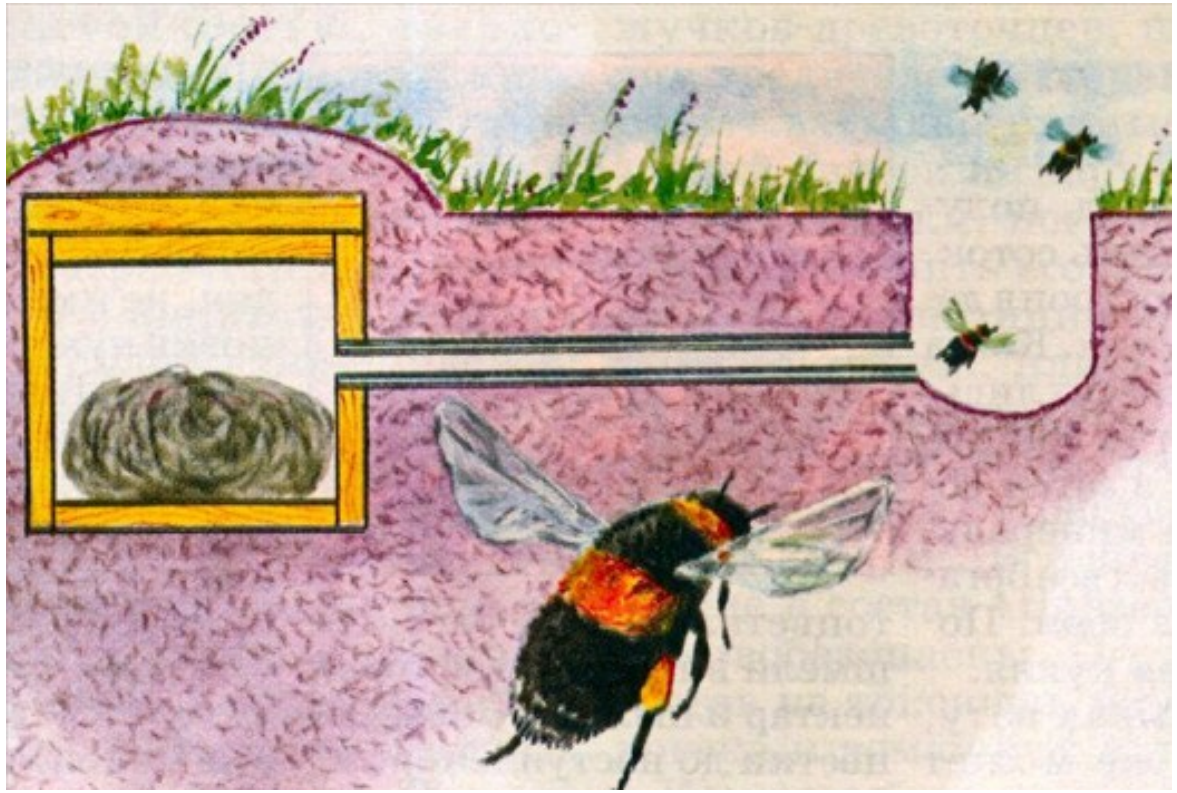
Wasps and flies like yellow, pink and white

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.

Female bees find cut or naturally-occurring open stems, start a nest, then lay an egg on the pollen balls. Larvae eat the pollen.

SUMMER

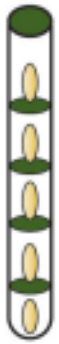
New growth of the perennial hides the stem stubble.

Bee larvae develop in cut dead stems during the growing season.

FALL

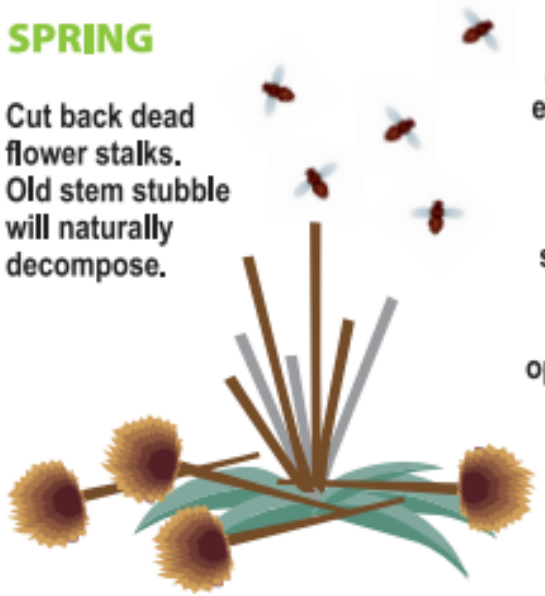
WINTER

Bees hibernate in stems during the winter.



SPRING

Cut back dead flower stalks. Old stem stubble will naturally decompose.



Adult bees emerge and start nests in newly cut dead stems or in naturally-occurring open stems.

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

- 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 ½ 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)
- *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* (ornamental 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 amurense* (amur cork tree)
- *Populus alba* (white cottonwood)
- *Robinia pseudoacacia* (black locust)
- *Rosa multiflora* (multiflora rose)

Top Keystone Plant Genera in Northern Forests – Ecoregion 5

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*)	445	
	Prunus	American plum (*Prunus americana*), Black cherry (*Prunus serotina*), Chokecherry (*Prunus virginiana*)	409	
	Betula	Yellow birch (*Betula alleghaniensis*), Paper birch (*Betula papyrifera*)	385	
	Populus	American aspen (*Populus tremuloides*), Balsam poplar (*Populus balsamifera*)	337	
	Malus	Sweet crabapple (*Malus coronaria*)	285	
	Acer	Silver maple (*Acer saccharinum*), Sugar maple (*Acer saccharum*)	276	
	Alnus	Gray alder (*Alnus incana*)	245	
	Pinus	Red pine (*Pinus resinosa*), Eastern white pine (*Pinus strobus*)	235	
Shrubs	*Vaccinium*	Lowbush blueberry (*Vaccinium angustifolium*), Cranberry (*Vaccinium macrocarpon*)	276	6
	Salix	Pussy willow (*Salix discolor*), Prairie willow (*Salix humilis*), Black willow (*Salix nigra*)	397	12
Flowering Perennials	*Solidago*	Canada goldenrod (*Solidago canadensis*), Gray goldenrod (*Solidago nemoralis*), Giant goldenrod (*Solidago gigantea*)	120	22
	Symphyotrichum	Calico aster (*Symphyotrichum lateriflorum*), Swamp aster (*Symphyotrichum puniceum*), New England aster	9	16

Keystone plants

https://www.nwf.org/Garden-for-Wildlife/About/Native-Plants/keystone-plants-by-ecoregion

Plant in layers

Turn off the lights

Spare the Sprays. Even Organic Ones

PESTICIDE	NON-TOXIC	LOW TOXICITY	HIGHLY TOXIC
Insecticides/Repellants/Pest Barriers			
Bacillus thuringiensis (Bt)			
Beauveria bassiana			
Cydia pomonella granulosis			
Diatomaceous Earth			
Garlic			
Insecticidal Soap			
Kaolin Clay			
Neem			
Horticultural Oil			
Pyrethrins			
Rotenone			
Sabadilla			
Spinosad			
Herbicides/Plant Growth Regulators/Adjuvants			
Adjuvants			
Corn Gluten			
Gibberellic Acid			
Horticultural Vinegar			
Fungicides			
Copper			
Copper Sulfate			
Lime Sulfur			
Sulfur			

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

Pass It On!

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

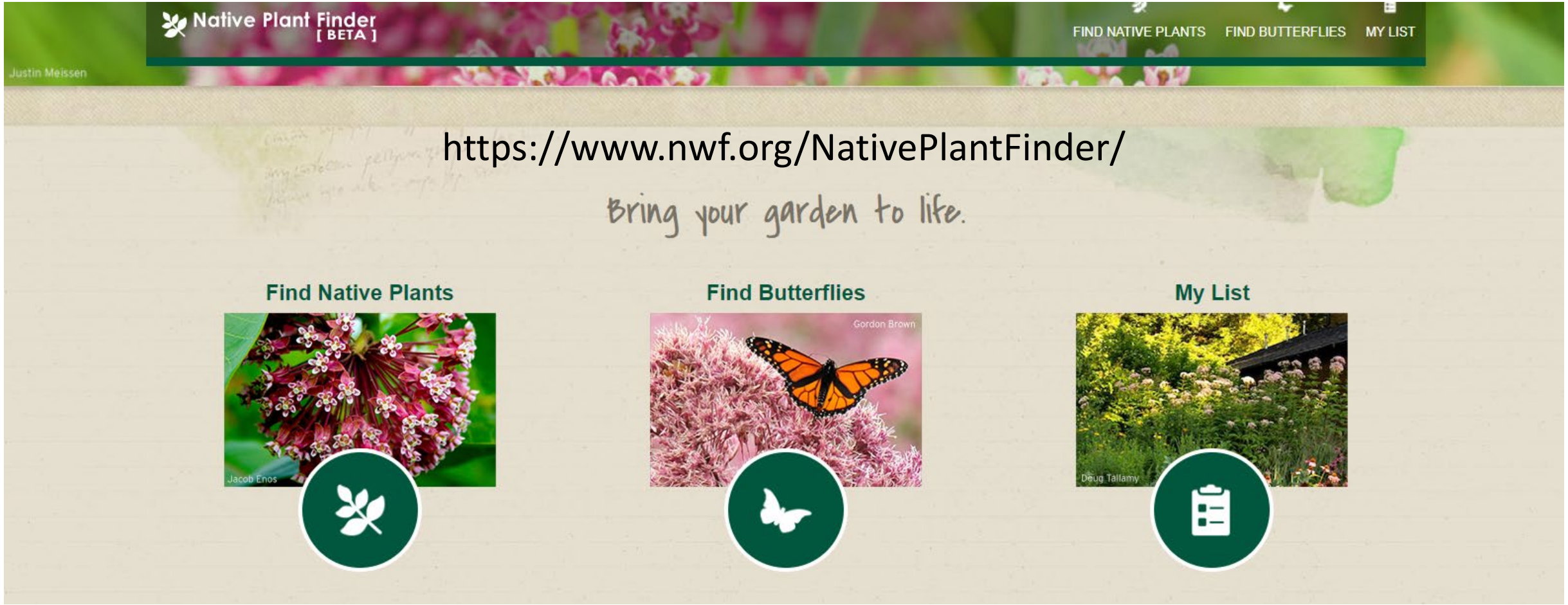
Buy Now

May attract

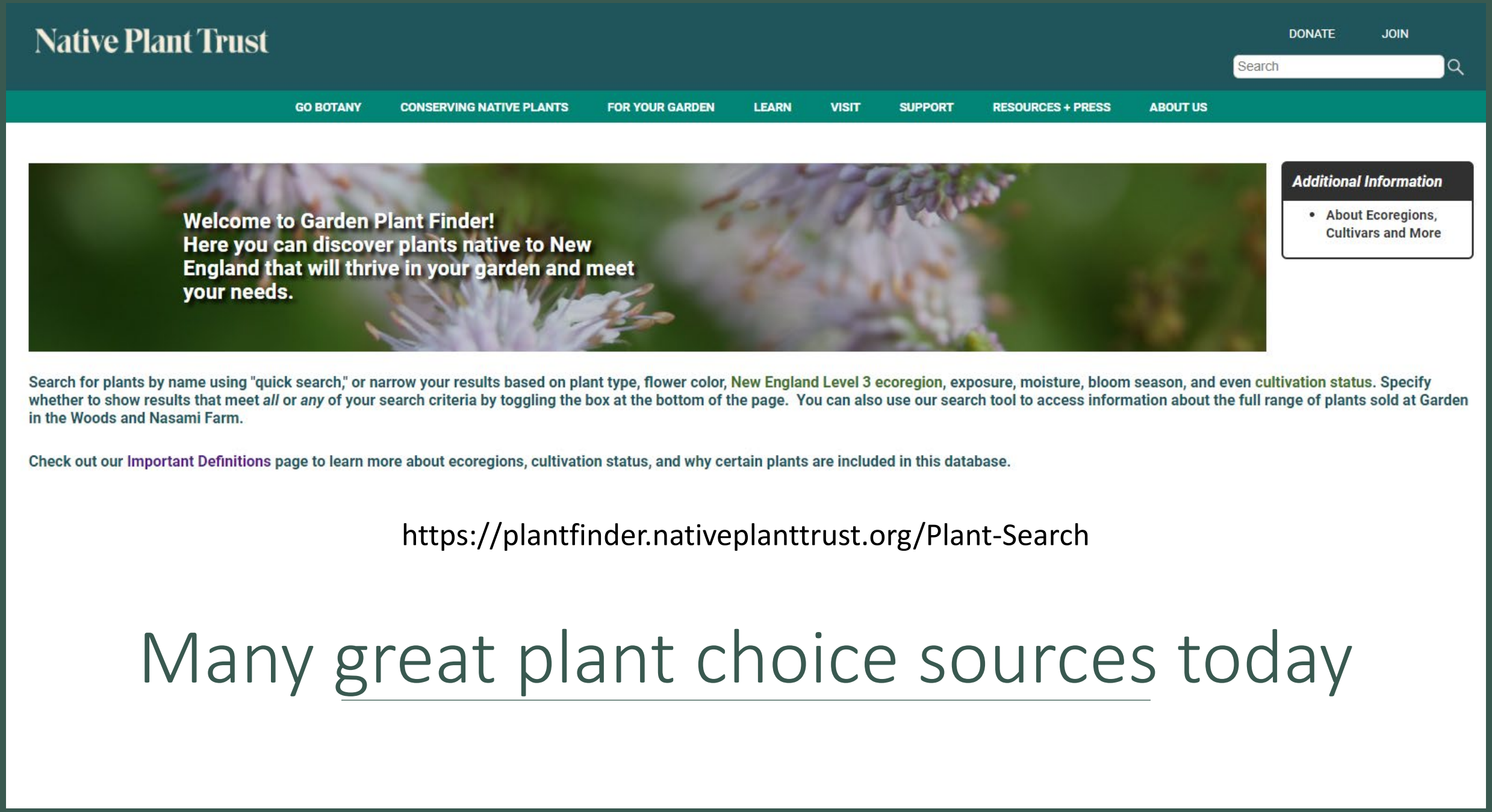
Many great plant choice sources today

Many great plant choice sources today

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



Many great plant choice sources today



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 ⌘-click) to select multiple types to include in the search.

Flower Color:

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

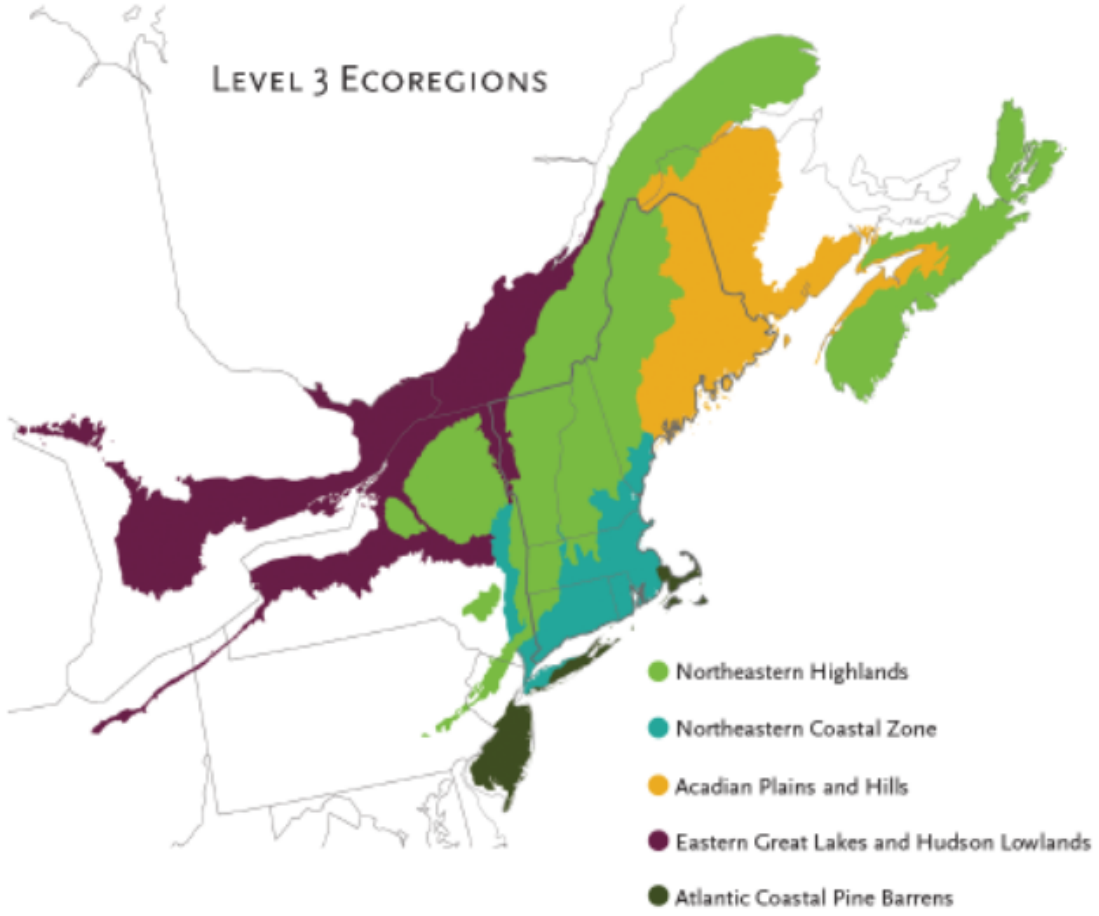
Ctrl-click (Mac users ⌘-click) to select multiple types to include in the search.

Height:

Inches

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

- ☐ Cultivar
- ☐ Selection
- ☐ Species

Exposure

- ☐ Sun
- ☐ Part Shade
- ☐ Shade

Soil Moisture

- ☐ Dry
- ☐ Average
- ☐ Wet

Ecoregion

- ☐ (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

- ☐ Spring Bloom
- ☐ Summer Bloom
- ☐ Fall Bloom
- ☐ Summer Fruit
- ☐ Fall/Winter Fruit
- ☐ Fall Foliage
- ☐ Winter Interest and/or Evergreen

Attracts Wildlife

- ☐ Attracts Bees
- ☐ Pollinator Powerhouse Plant
- ☐ Attracts Butterflies
- ☐ Host Plant
- ☐ Attracts Songbirds
- ☐ Attracts Hummingbirds
- ☐ Other Pollinators/Wildlife

Tolerance

- ☐ Deer/Rabbit Resistant
- ☐ Drought Tolerant
- ☐ Salt Tolerant
- ☐ Urban Environment
- ☐ Compaction Tolerant

Additional Attributes

- ☐ Edible
- ☐ Low Maintenance
- ☐ Spring Ephemeral
- ☐ Dioecious (fruits only on female plants)
- ☐ Fragrant
- ☐ Erosion Control/Soil Stabilization

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

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

Growth Habit

- [ ] Compact/Clumping
- [ ] Spreading/Suckering

- (●) Show only plants having **ALL** checked characteristics above
- ( ) Show plants having **ANY** checked characteristics above

BEGIN SEARCH

Native Plant Trust

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

Rubus idaeus
red raspberry

Rubus occidentalis
black raspberry

Rubus odoratus
flowering raspberry

Salix discolor
pussy willow

Spiraea alba var. latifolia
white meadowsweet

Spiraea tomentosa
steeplebush

Swida alternifolia
pagoda dogwood

Swida amomum
silky dogwood

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

Aquilegia canadensis
red columbine

Asclepias exaltata
poke milkweed

Asclepias incarnata
swamp milkweed

Asclepias purpurasecens
purple milkweed

Asclepias syriaca
common milkweed

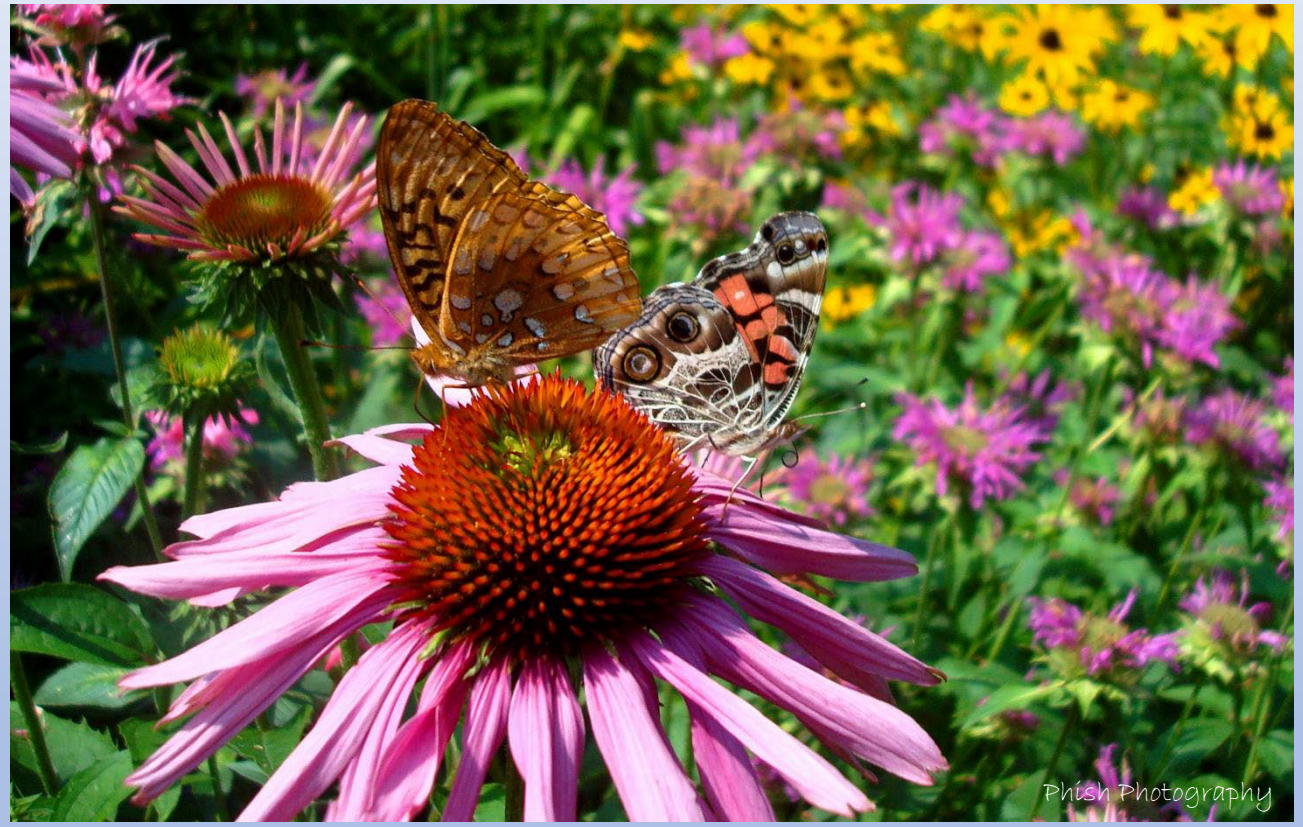
Asclepias tuberosa
butterfly milkweed

Baptisia tinctoria
yellow wild indigo

Caltha palustris
marsh marigold

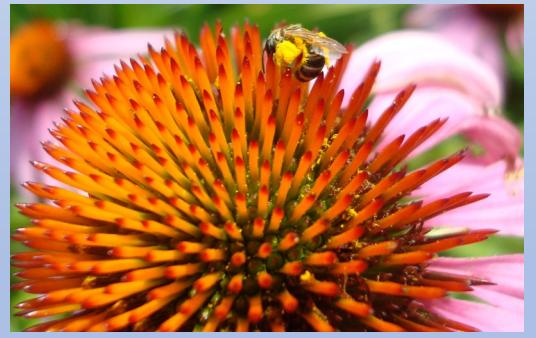
https://plantfinder.nativeplanttrust.org/Plant-Search

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

Sphex ichneumoneus – Great Golden Digger Wasp

Asclepias syriaca – Common Milkweed

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

Agapostemon virescens –
Green Metallic Bee

Misumena vatia –
Goldenrod Crab Spider

Phidippus clarus –
Jumping Spider

Chlorochlamys chloroleucaria –
Blackberry Looper

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

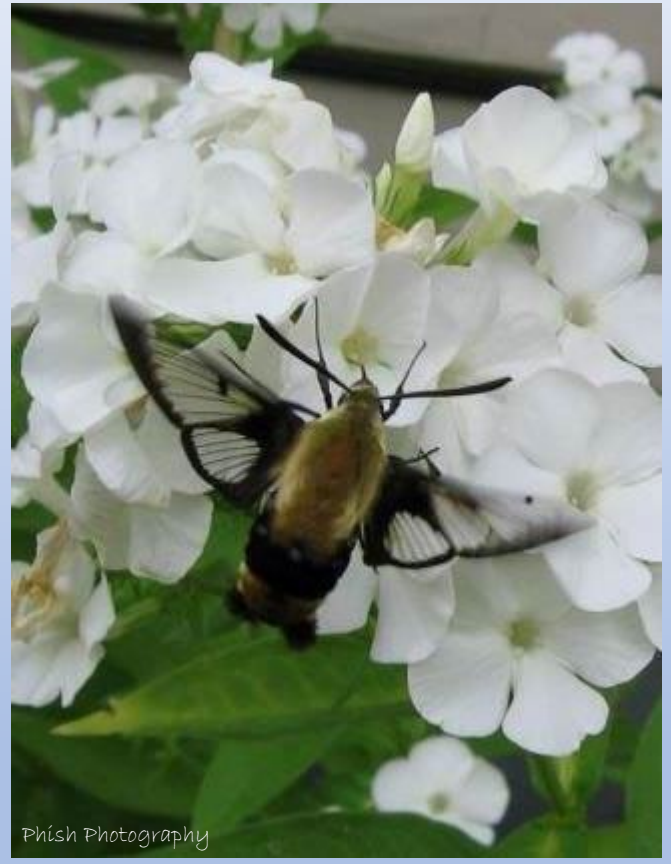
Pyrausta signatalis – Monarda caterpillar

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

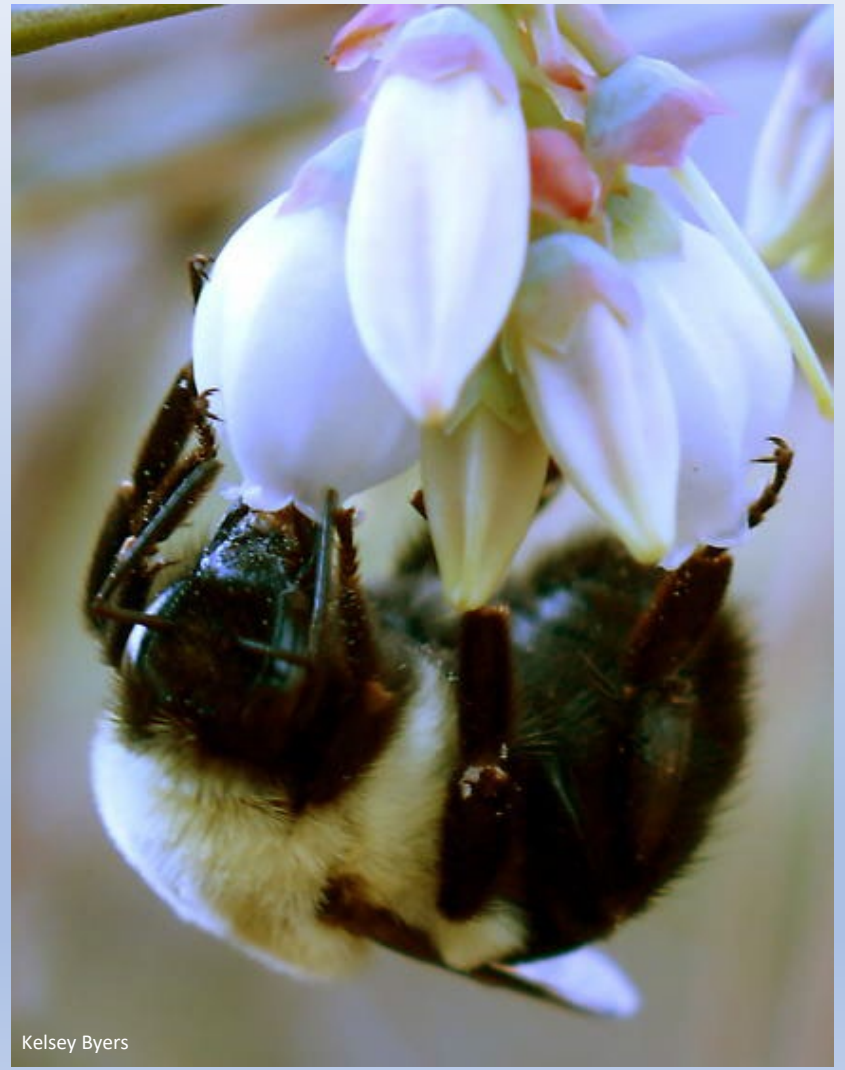
Cucullia asteroides -
Goldenrod Hooded Owlet

Veronicastrum virginicum – Culver's Root

Agapostemon splendens - Brown-winged 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

Bombus ternarius
- Red-Tailed Bumble Bee

Itame argillacearia –
Blueberry Spanworm

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/

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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

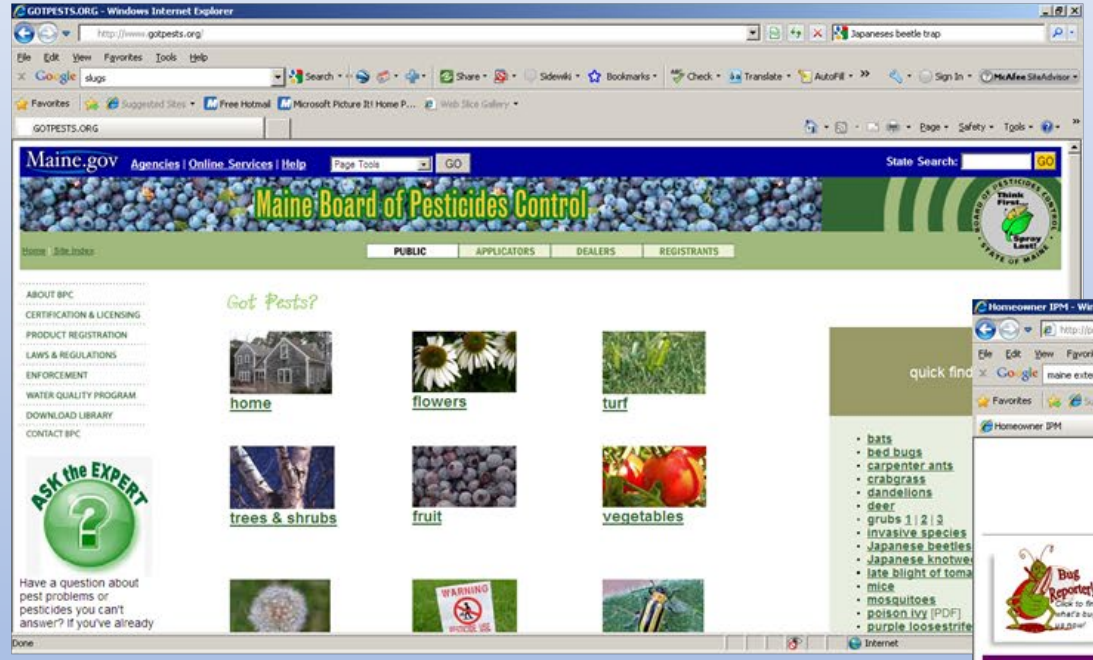
While we include the highest quality plant nurseries in this directory, it is still important that you do your own research to find out what native plants are in stock, if the plants are grown from seed, and if the nurseries use

Shop for Seeds

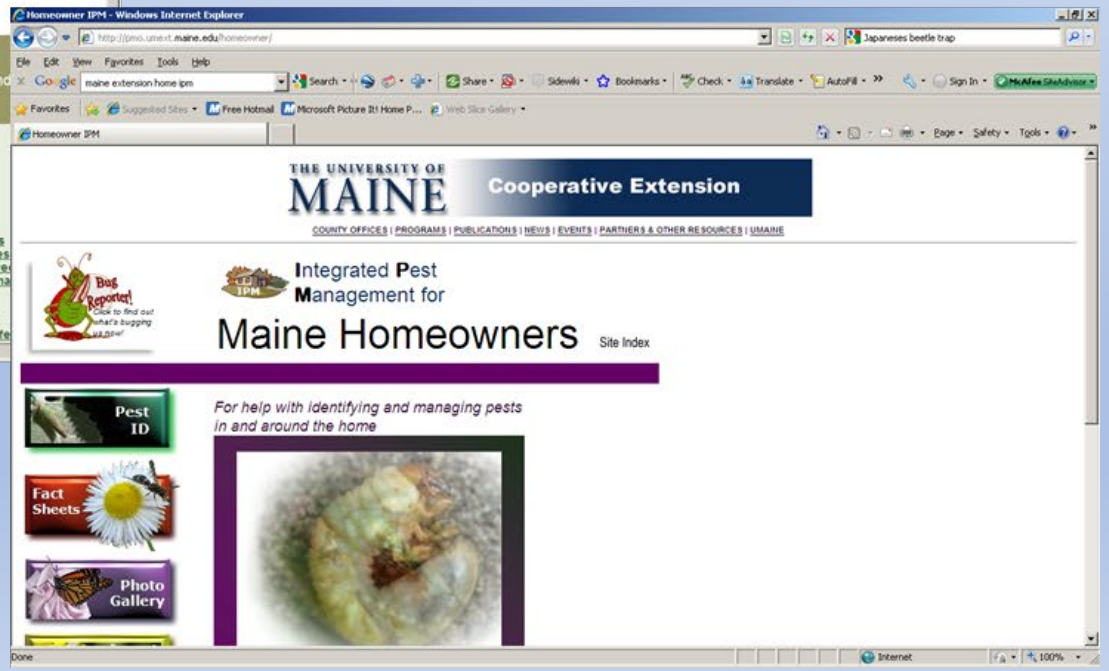
Where to buy native plants

Pest management resources

Maine Dept Agriculture: Gotpests.org



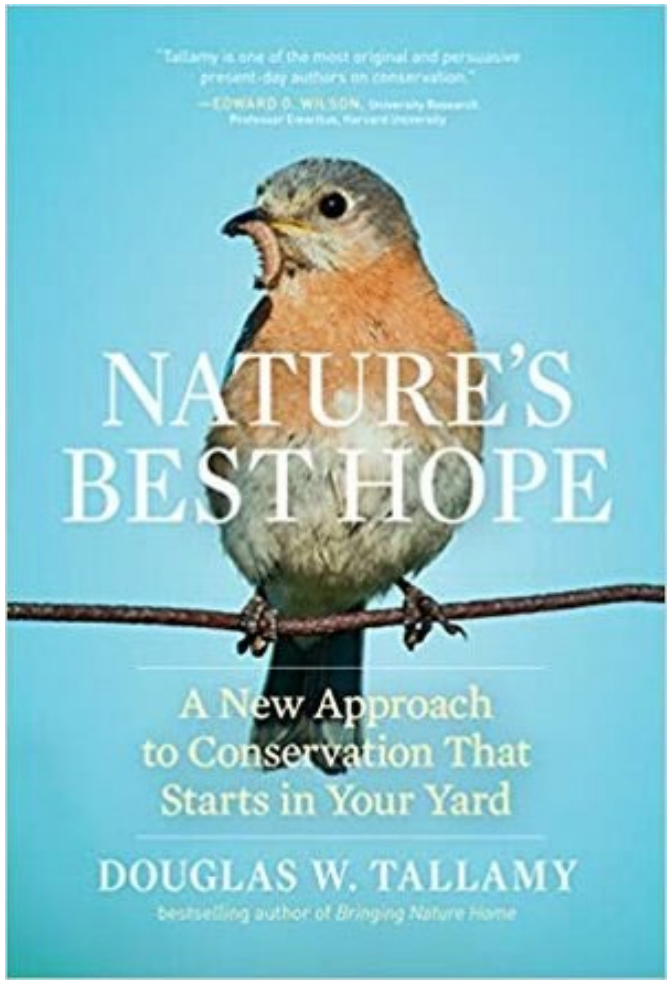
UMaine Extension: http://pmo.umext.maine.edu/homeowner/

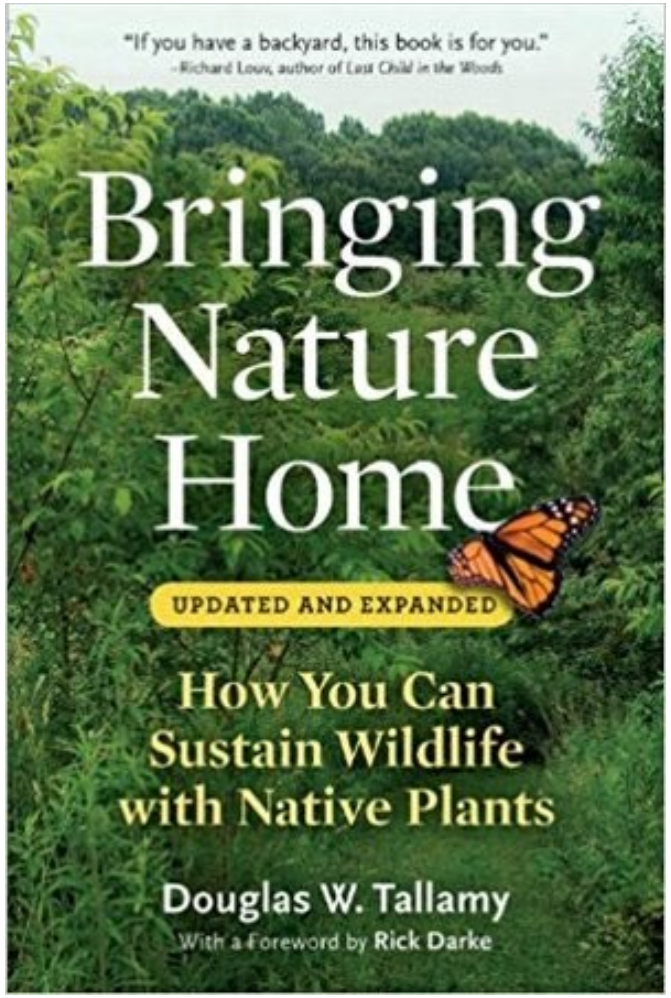


Resources

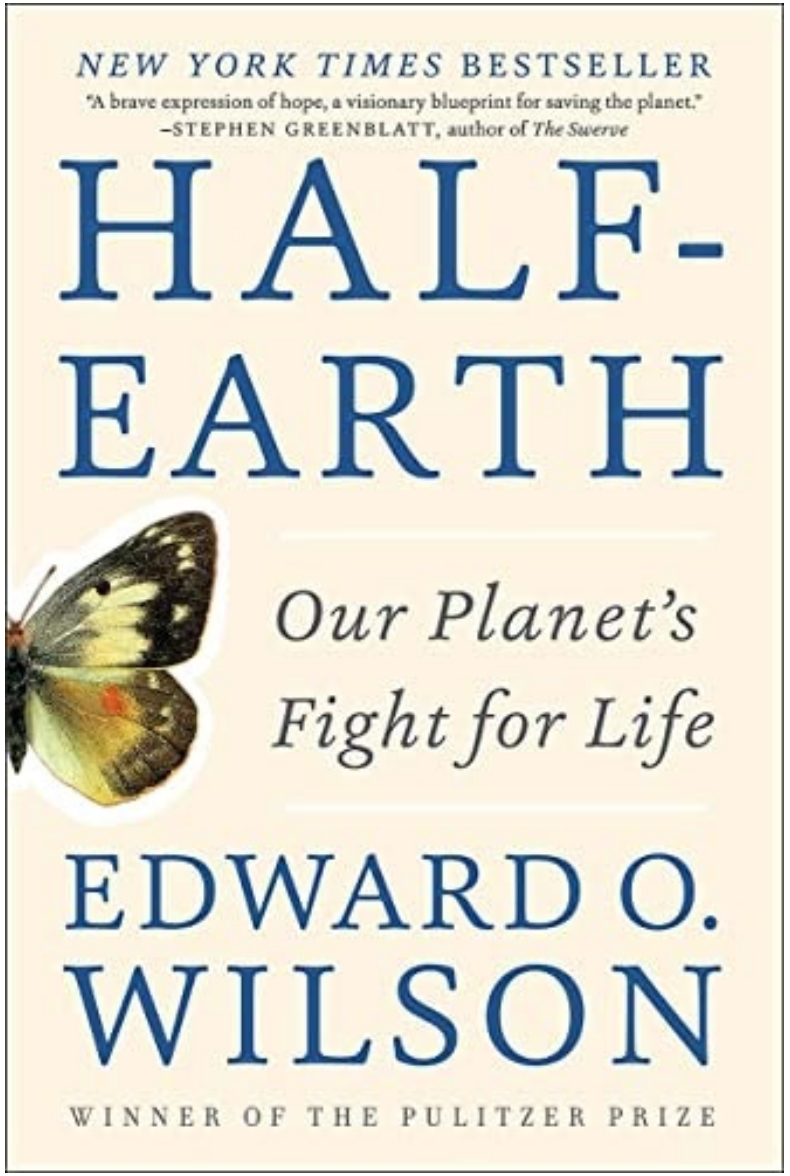
https://homegrownnationalpark.org/tallamys-hub-1

Resources


"Tallamy is one of the most original and persuasive present-day authors on conservation."
—EDWARD O. WILSON, University Research Professor Emeritus, Harvard University
NATURE'S BEST HOPE
A New Approach to Conservation That Starts in Your Yard
DOUGLAS W. TALLAMY
bestselling author of Bringing Nature Home


"If you have a backyard, this book is for you."
—Richard Louv, author of Last Child in the Woods
Bringing Nature Home
UPDATED AND EXPANDED
How You Can Sustain Wildlife with Native Plants
Douglas W. Tallamy
With a Foreword by Rick Darke

Resources



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

Resources

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

Questions?

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