Sustainable Landscaping & YardScaping

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Phish Photography

Elaina Rose 1 year old

Yards as habitat for **Biodiversity**

Susannah B. Lerman - USFS

YardScaping Mission

- To inspire Maine people to
  - create and maintain healthy landscapes
  - through ecologically based practices that
  - minimize reliance on water, fertilizer and pesticides

https://www.yardscaping.org

The Ten-ets of YardScaping

- Promote buffers to protect waterways
- Promote appropriate plants - native plants and non-invasive alien plants
- Reduce lawn area
- Reduce runoff
- Reduce reliance on pesticides, fertilizers and water
- Promote low input lawns and landscapes
- Promote YardScape diversity
- Create wildlife habitats
- Right plant, right place, right use
- Commonsense pest management (IPM)

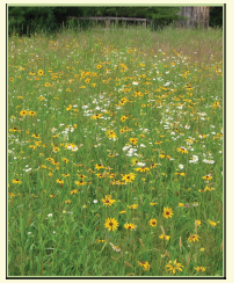
YardScaping Gardens
at Back Cove

LOW INPUT YARD CARE

When it comes to gardening, less is usually more.

Low input yards require a little more brain, a lot less brawn and leave you with more free time:

- plant drought and pest tolerant plants
- mow lawns at the highest setting and leave the clippings
- replace lawn with shrubs or wildflowers
- mulch plants to keep moisture in and weeds out



Want to get involved or learn more?
Visit www.yardscaping.org

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

Doug Tallamy

Start a new HABITAT®
HOMEGROWN NATIONAL PARK®

- 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

Protect lakes & streams with buffers

- Preserve existing landscape
- Winding paths
- Don’t mow to lake’s edge
- Leave the duff

Use site appropriate, non-invasive plants

- Native plants can be well adapted
  - Fewer problems, less work, more rewards, but not all are problem free, e.g., viburnums
- Invasive plants are easy to grow but crowd out native vegetation
  - Our local forest habitats are changing rapidly
  - Invasive plants can ruin wildlife habitat

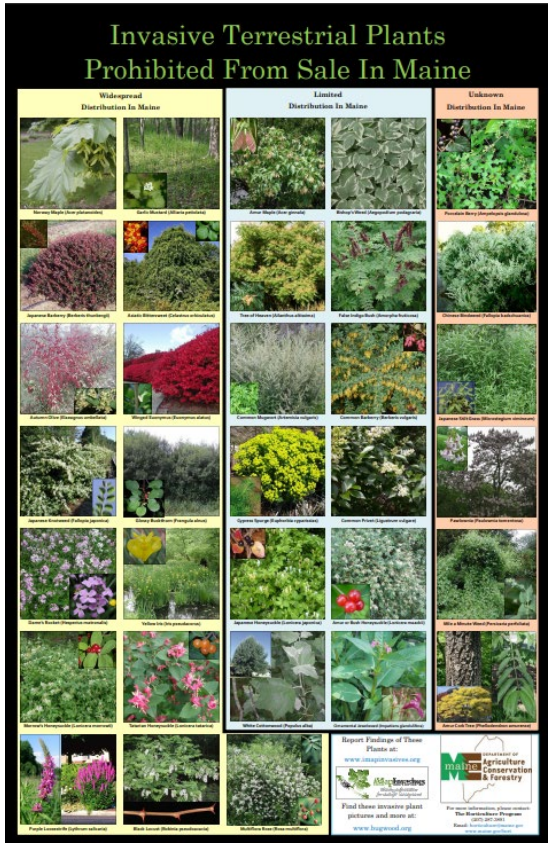
Beautiful Native Shadbush

Problematic Native Viburnum

Deadly Invasive Bittersweet

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
Acer ginnala	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
Elaeagnus 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	Ornamental 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 (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)

Quick 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/php/horticulture/invasiveplants.shtml.

For more information:
Maine Department of Agriculture, Conservation and Forestry
Division of Animal and Plant Health
28 State House Station
Augusta, ME 04333
207-287-3891
HORTICULTURE@MAINE.GOV
WWW.MAINE.GOV/HORT

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 rhamnoides	Sea buckthorn	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

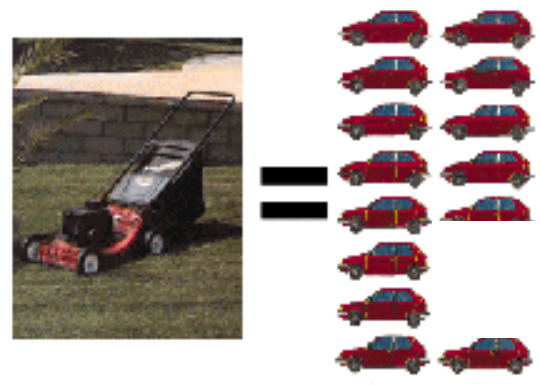
Invasive Plant Outreach Materials Available

- The Horticulture Program has assembled invasive plant outreach materials that can help educate you, and your visitors. Request copies of outreach materials

  - **Rosa rugosa factsheet:** This factsheet describes habitats where *Rosa rugosa* should not be planted and includes a list of alternative plants.
  - **Do Not Sell List Factsheet**: Full page, 2-sided factsheet that includes invasive plant quick facts and the full list of plants on the Do Not Sell List.
  - **Plant This, Not That! Bookmarks**: Now with designs featuring 8 of the plants on the Do Not Sell List.
  - **Hitchhiker Postcards**: In two different designs, one featuring mile-a-minute vine and the other invasive stiltgrass. Both plants are known to move with nursery stock, are of limited distribution in Maine, and are plants we'd like to have reported to horticulture@maine.gov.
  - **Why can't I buy… Factsheets:** Several designs featuring 5 of the in-demand invasive plants on the Do Not Sell List. These factsheets include information on why the featured plant is prohibited from sale and a list of potential alternatives. Great to have on hand for those customers that are still asking for 'Crimson King' Norway maples or burning bush!

Reduce lawn area

- Reduces
  - Water & air pollution
  - Water usage
  - Maintenance
  - Costs
- Gives
  - More free time



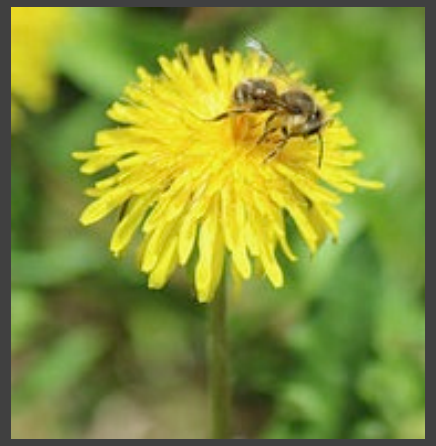
Mower exhaust = 11 small cars' exhaust

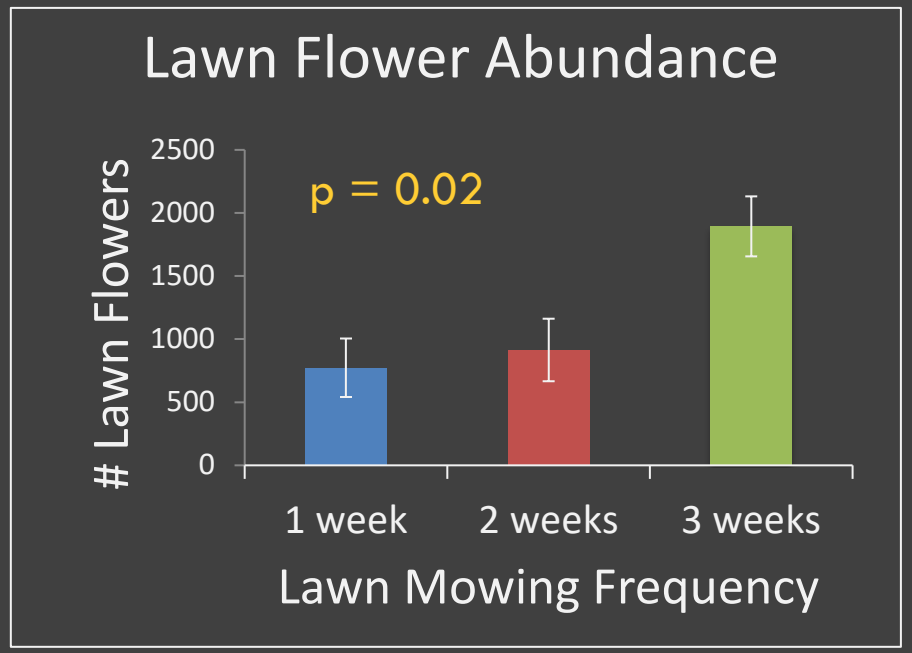
One hour on riding mower = 400 miles

Making lawns ‘less bad’

58 species in lawns

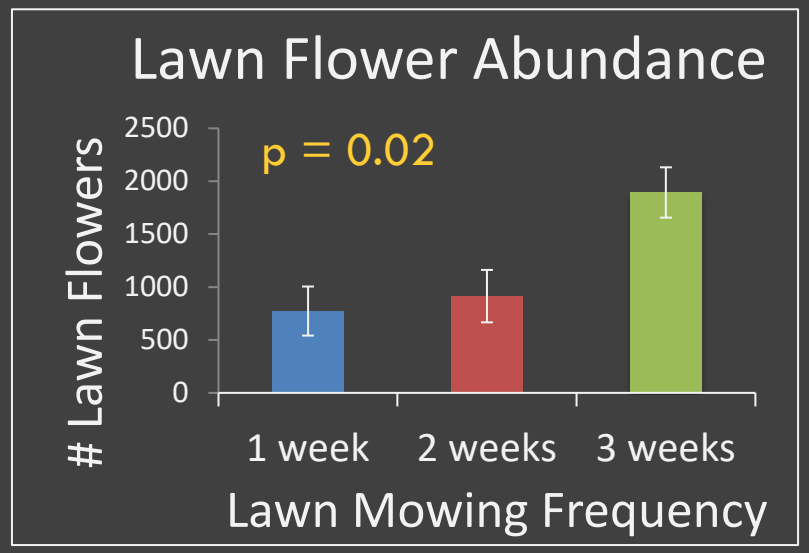
White clover
Yellow wood-sorrel
Dandelion
Purple smartweed
Birdsfoot Trefoil
Annual fleabane
Horseweed
Yellow hawkweed
Carpetweed
Field pennycress

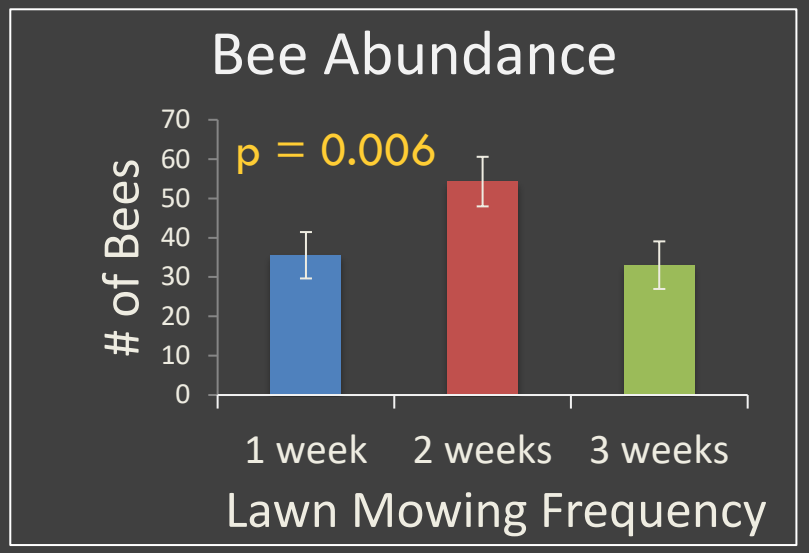




Lerman & Milam 2016 *Ann Entomol Soc Am*
Lerman et al. 2018 *Biological Conservation*

Making lawns ‘less bad’





Bee patterns

- Lawn flower abundance
- Work-horse species
- Taller grass

Lerman & Milam 2016 *Ann Entomol Soc Am*
Lerman et al. 2018 *Biological Conservation*

Making lawns ‘less bad’

Lawns for Bees & People

Two-week solution
Aesthetically pleasing
Creates bee habitat

Minimize lawn areas

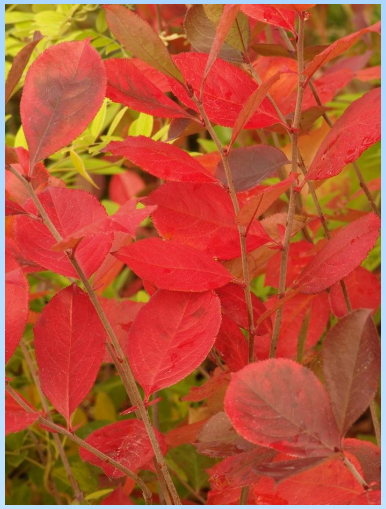
Mow or bush hog 1/2 or 1/3 of the meadow each year

Reduce runoff

- Reduce amount of pervious (hard) surfaces
- Create rain gardens or install rain barrels
- Direct water into vegetated areas

Reduce reliance on pesticides, fertilizers and water

- Grow plants that are resistant to insects & diseases
- Use plants that tolerate low fertility
- Use drought-resistant plants



Black Chokeberry

Sweet Fern

Use low input plant varieties

- Fine fescue or tall fescue instead of Kentucky bluegrass and ryegrass
- Pagoda dogwood vs flowering cherry
- River birch vs paper birch


Fine fescue


Tall fescue

Consider a native plant "lawn"

Fragaria virginiana
wild strawberry

Eragrostis spectabilis
purple lovegrass

Carex pensylvanica
Pennsylvania sedge

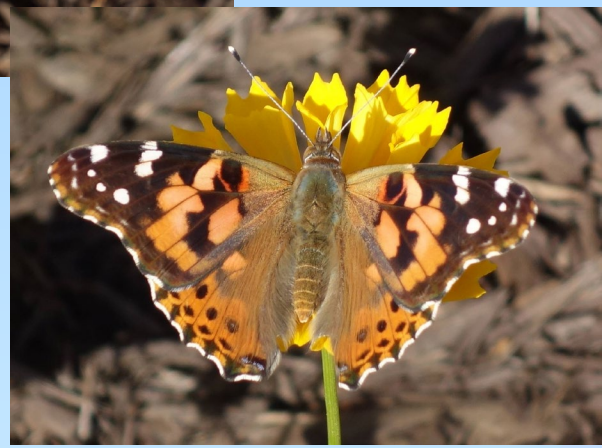
Use a diversity of plants & grasses

- Monocultures lead to disasters
- Diversity leads to less noticeable damage from pests and disease
  - Incorporate many layers of plant types
    - Trees
    - Shrubs
    - Ground covers
    - Perennials, and
    - Lawns

Plant in layers

Create wildlife habitats

- Diversity and plant layers go hand in hand with habitat creation
- Add native nectar and fruit producing plants (Goal is 70% native)
- Strive for continuous blooms
- Add native host plants
- Add water, walls, feeders, woody debris



Right plant, right place, right purpose

- Choose plants based on the area to be planted not just for their color
- Select plants that thrive under existing conditions rather than trying to alter the conditions to meet the needs of a plant
- Minimize disturbance of the existing landscape

Wild Cranberry Bog

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)*	390	
	Betula	River birch *(Betula nigra)*, Sweet birch *(Betula lenta)*	289	
	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)*	109	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

https://plantfinder.nativeplanttrust.org/index.cfm

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

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

MAINE AUDUBON

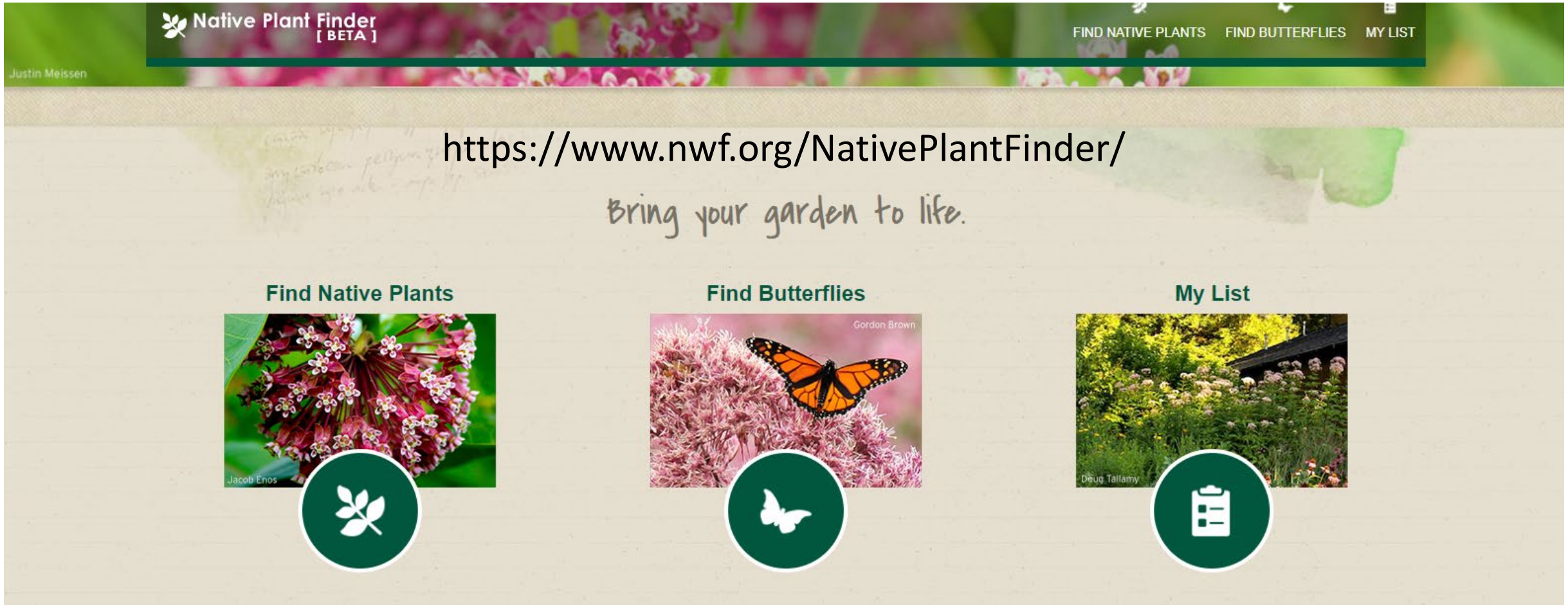
Home | Maine Audubon Native Plant Finder | About | Contact

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



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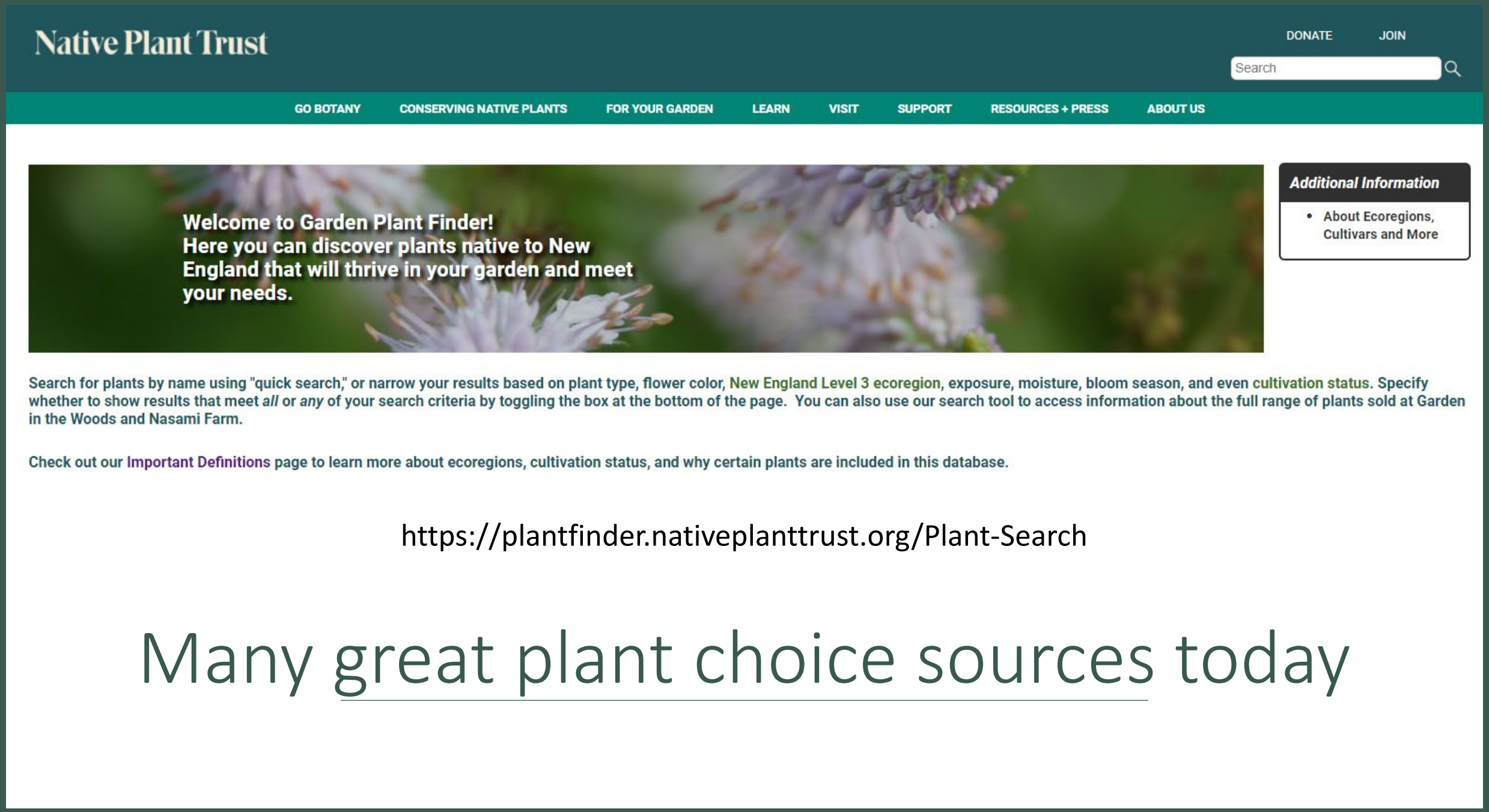


https://plantfinder.nativeplanttrust.org/Plant-Search

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

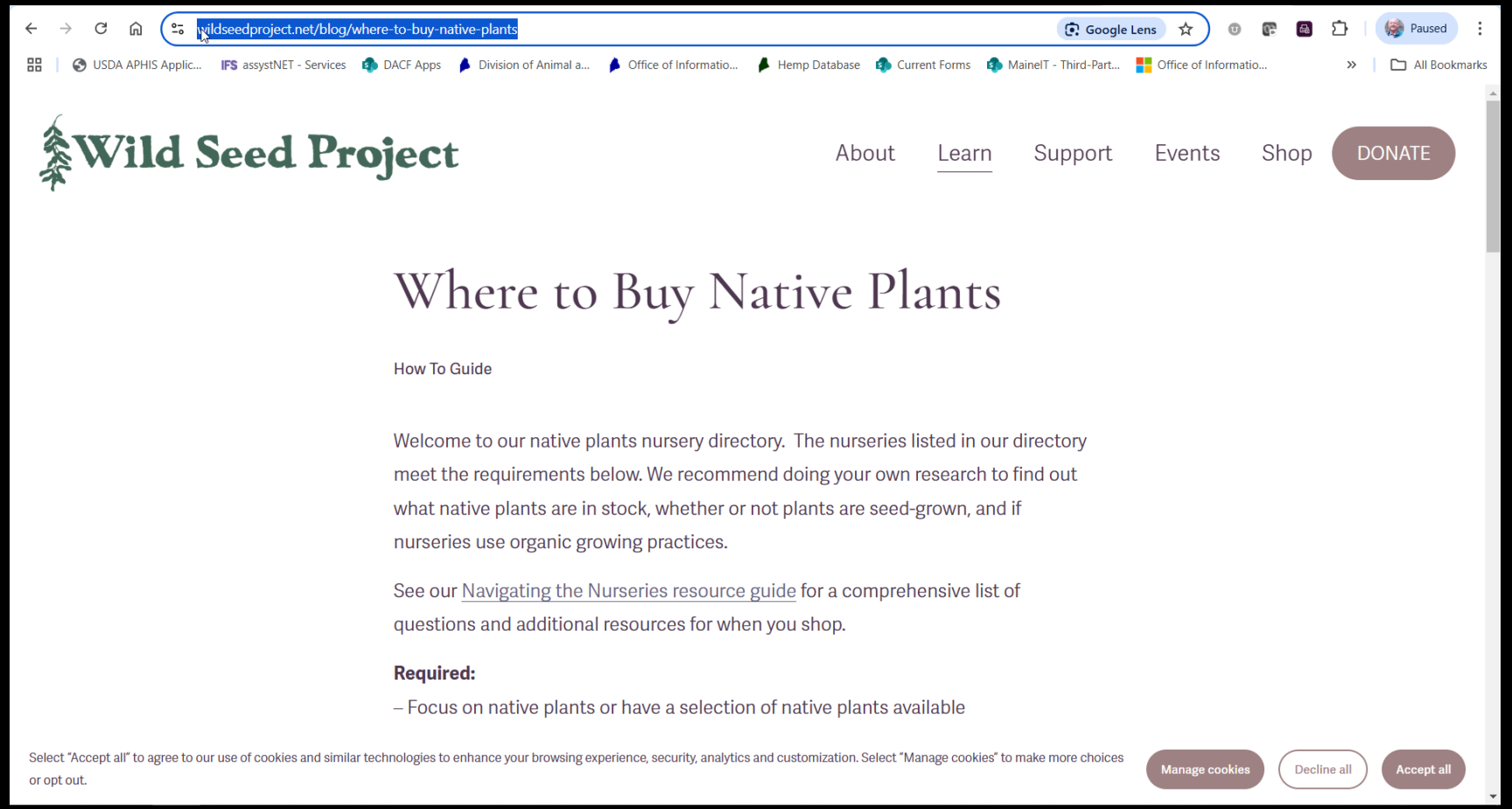
BEGIN SEARCH

Native Plant Trust

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

180 HEMENWAY ROAD
FRAMINGHAM, MASSACHUSETTS 01701
508-877-7630

https://wildseedproject.net/blog/where-to-buy-native-plants/



Where to buy native plants

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

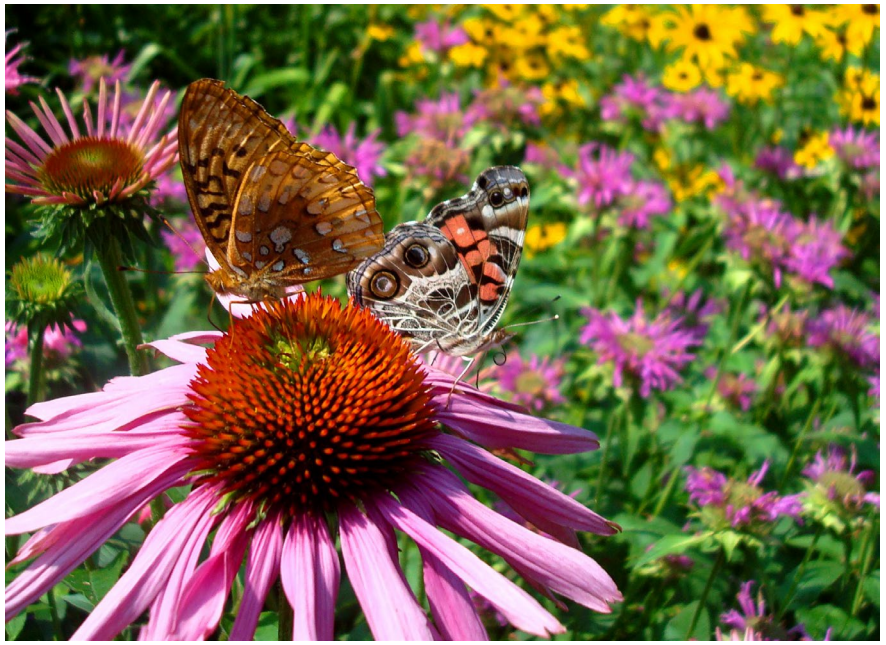
https://plantfinder.nativeplanttrust.org/Plant-Search

The Birds and the Bees

Ecosystem Services

- 7,000 – 9,000 insects per clutch
- $56 billion per year

Ollerton et al. 2011 *Oikos*



Begin with bees & pollinators


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

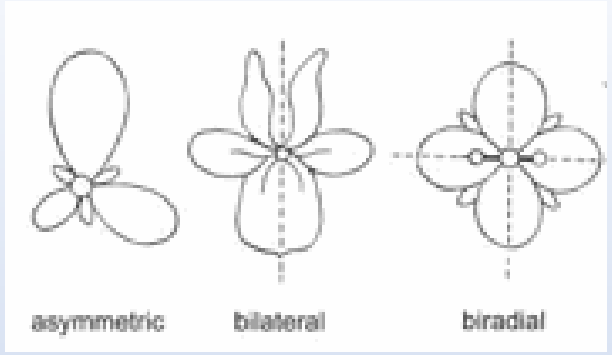
Social Behavior of Bees

- 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

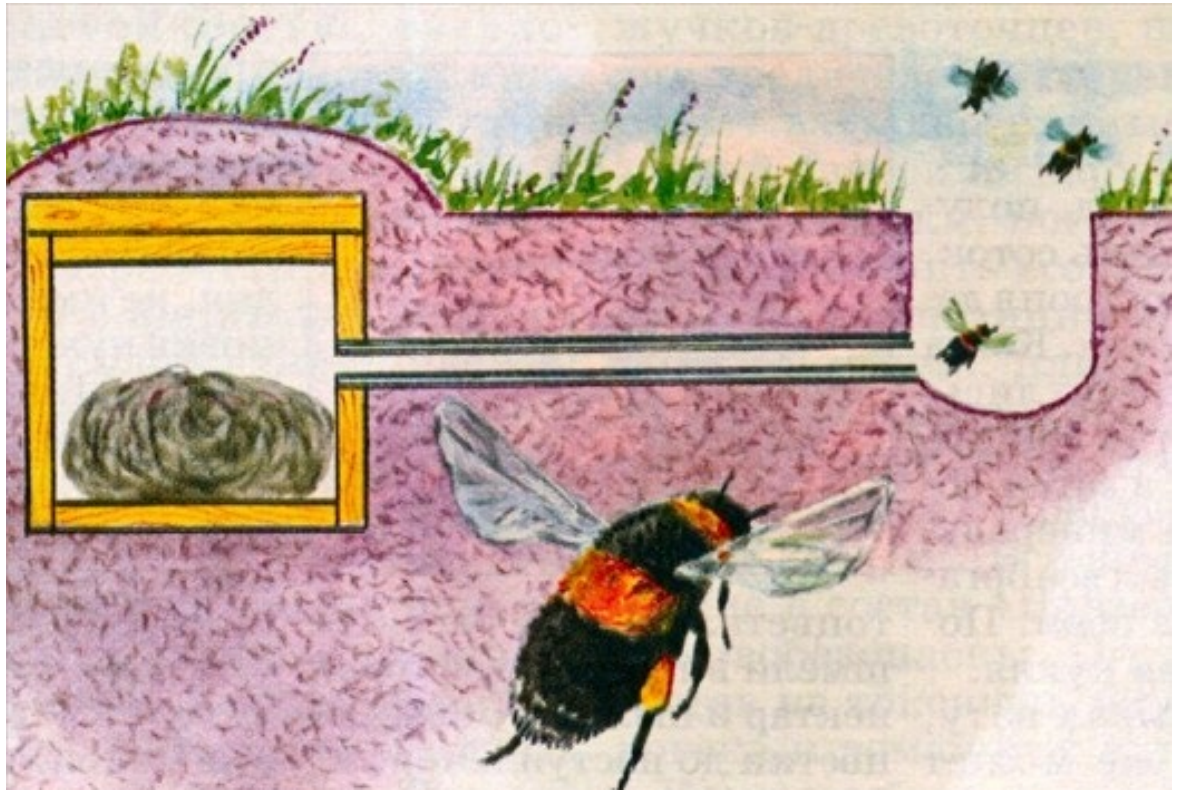
Wasps and flies like yellow, pink and white

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.

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

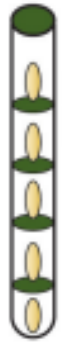
New growth of the perennial hides the stem stubble.

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

FALL

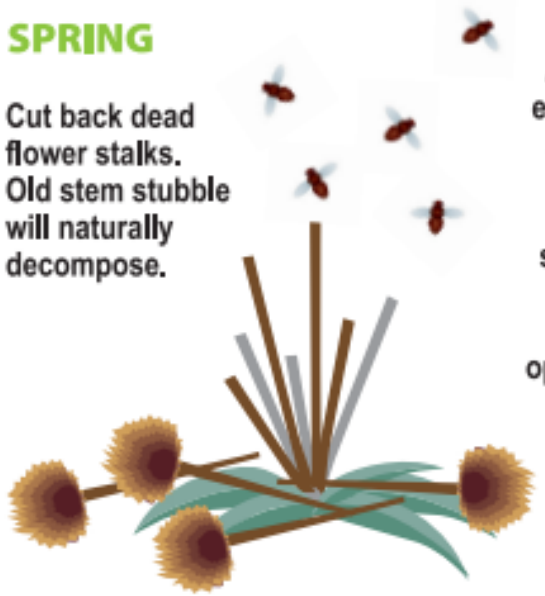
WINTER

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.

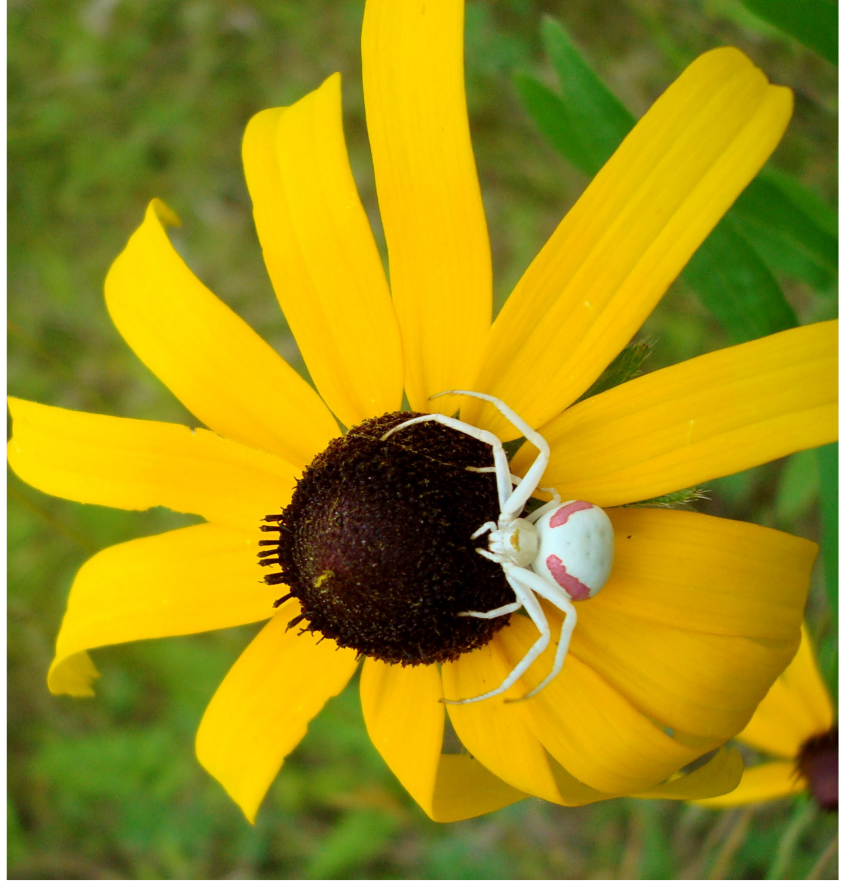
Graphics and content: Coleen Satyshur, Elaine Evans, Heather Holm, Sarah Foltz-Jordan

Nests for Native Bees

www.xerces.org

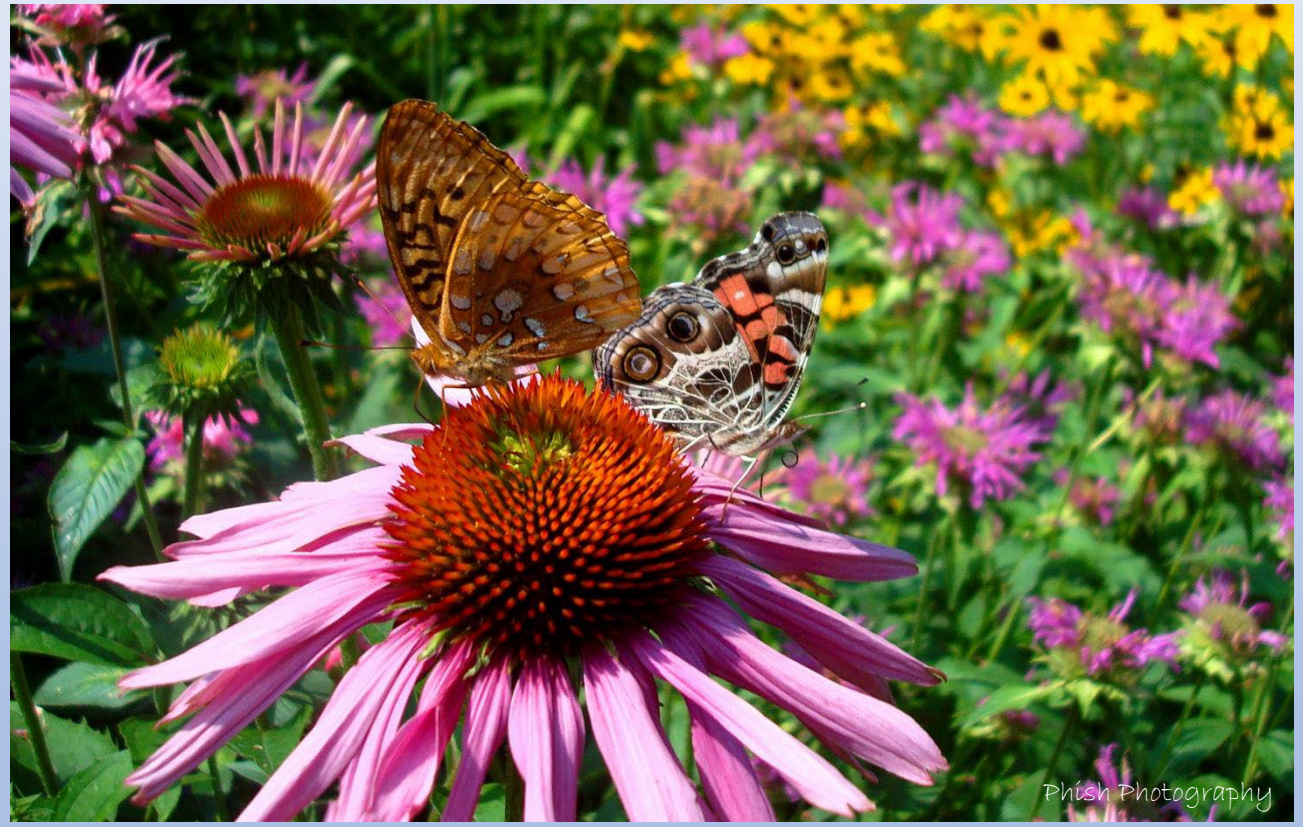
Pollinator-Friendly Gardens

- 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

Phish Photography

Sphex ichneumoneus – Great Golden Digger Wasp

Lobelia cardinalis – Cardinal Flower

Archilochus colubris –
Ruby-throated Hummingbird

Symphyotrichum nova angliae – New England Aster

Bombus impatiens – Impatient Bumble Bee

Syrphus ribesii - Hoverfly

Carex pensylvanica – Pennsylvania Sedge

Euphyes vestris - Dun Skipper

Geranium maculatum – Spotted Geranium

Apis mellifera – Honey Bee

Heliothis virescens -
Tobacco Budworm

Heliopsis helianthoides – False Sunflower

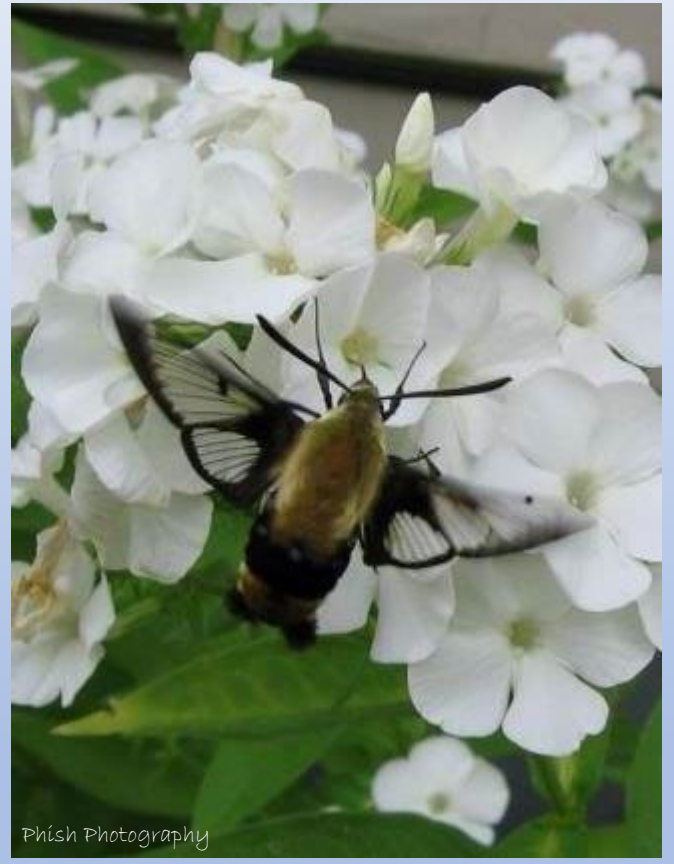
Chlosyne nycteis -
Silvery Checkerspot

Monarda fistulosa – Wild Bergamot

Unknow Microlep

Pyrausta signatalis – Monarda caterpillar

Phlox subulata – Creeping Phlox



Hemaris diffinis – Snowberry Clearwing Moth

Schizachryium scoparium – Little Bluestem

Polites origenes – Crossline Skipper

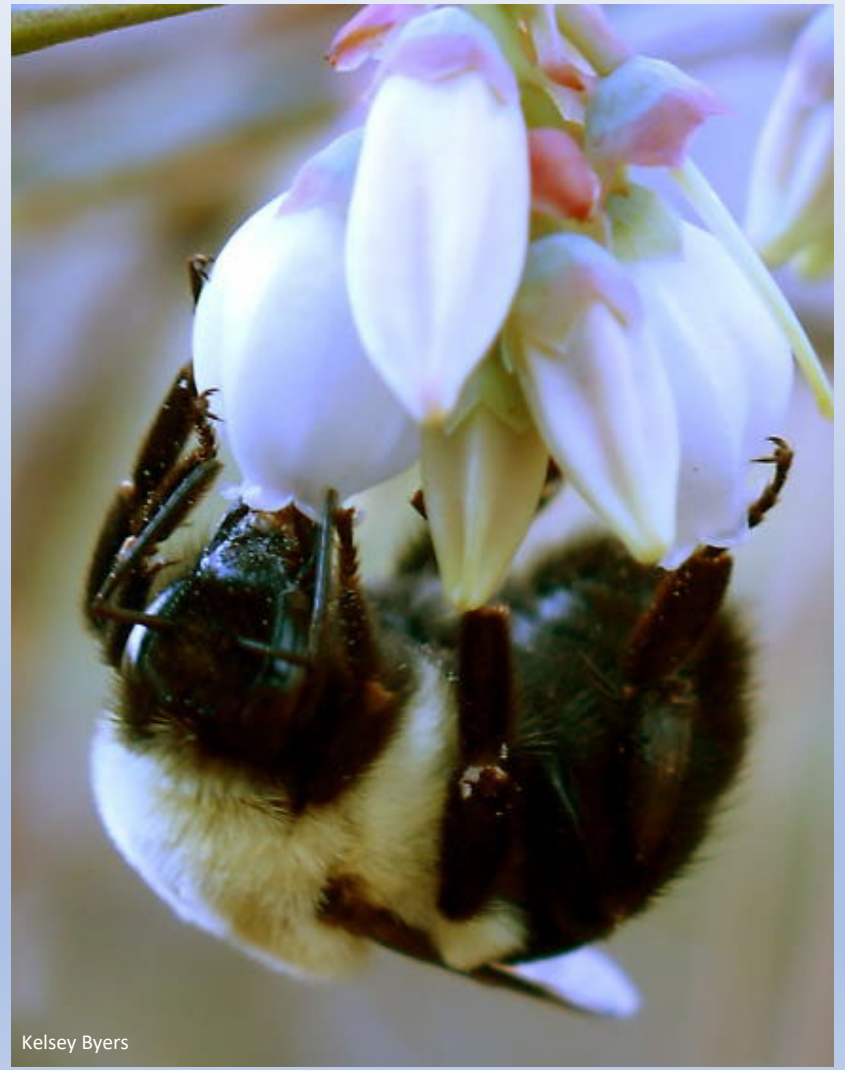
Solidago canadensis - Canada Goldenrod

Vespula maculifrons - Eastern Yellowjacket

Cucullia convexipennis - Brown-hooded Owlet

Cucullia asteroides - Goldenrod Hooded Owlet

Vaccinium corymbosum – Highbush Blueberry



Bombus impatiens –
Impatient Bumble Bee

Monoleuca semifascia –
Pin-striped Slug Moth

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

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)*	390	
	Betula	River birch *(Betula nigra)*, Sweet birch *(Betula lenta)*	289	
	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)*	109	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

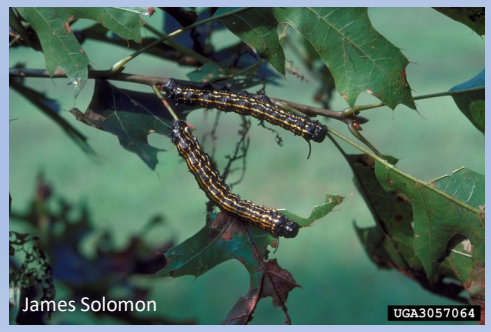
https://www.nwf.org/Garden-for-Wildlife/About/Native-Plants/keystone-plants-by-ecoregion

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

Use common sense pest management

- Integrated pest management
  - Know your pest
  - Pick it, trap it or exclude it
  - Know the good bugs
  - Mow, prune or water
  - Use pesticides as last resort

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			■

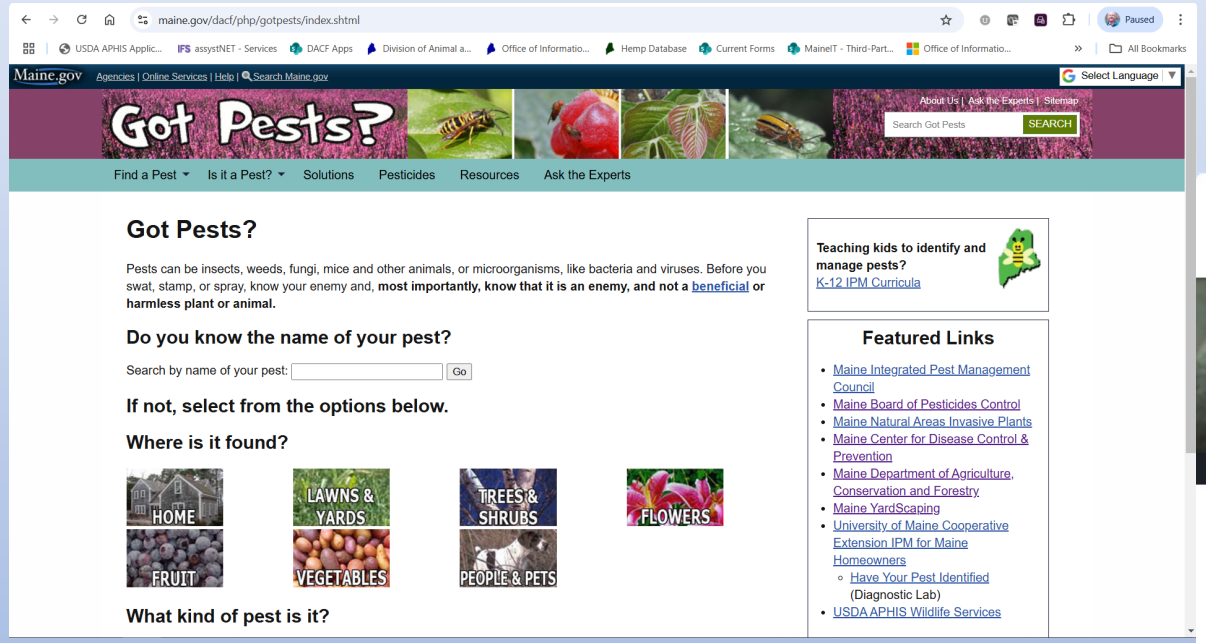
Toxicity of Common Organic Pesticides to Pollinators

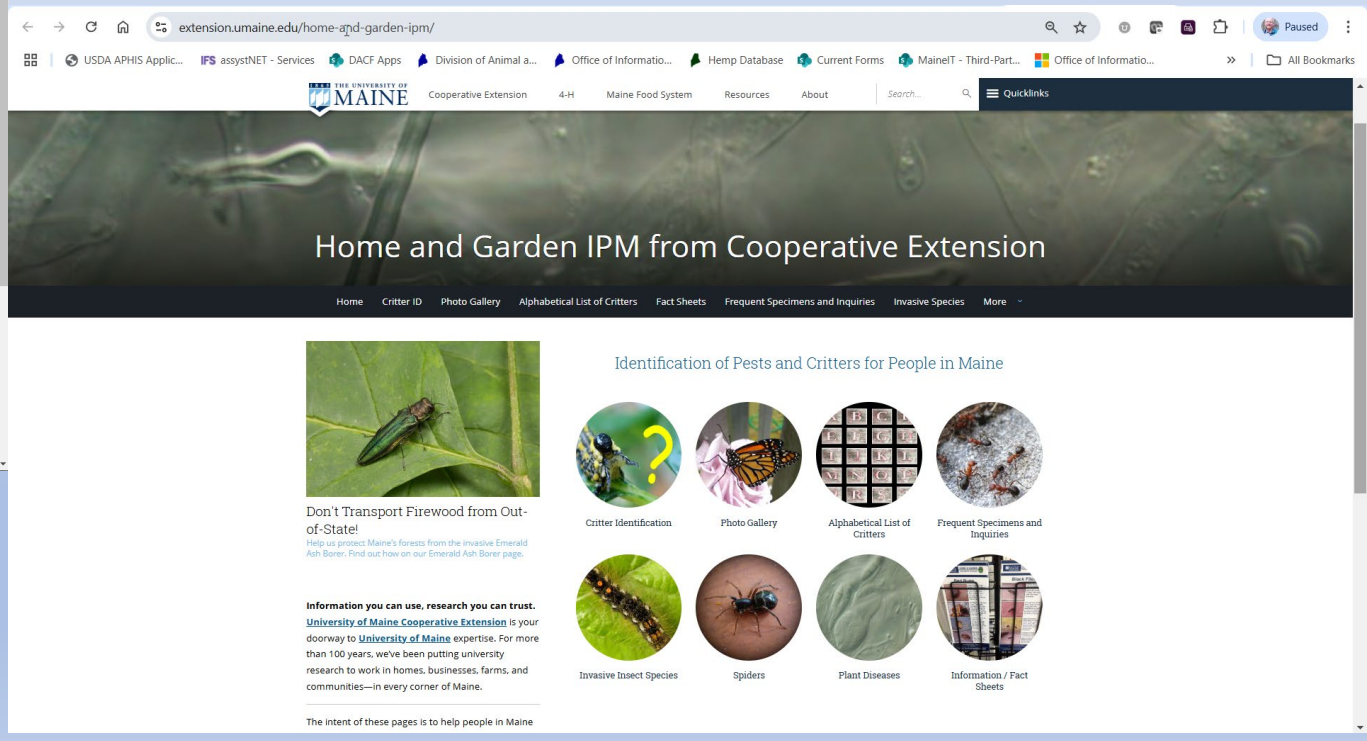
Soaps and Oils, only when directly sprayed upon the pollinator

Turn off the lights

Pest management resources

http://www.GotPests.org – Maine DACF





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

Barriers and Opportunities

Social

- Aesthetically pleasing
- Adhere to social norms

- Cues to care
- Empower local champions
- Partner with gardeners

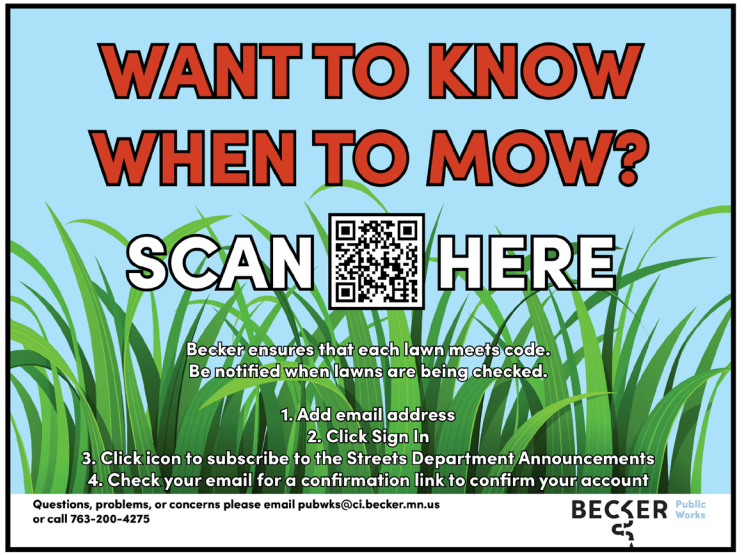
Economic

- Cost prohibitive

- Rebates
- Tax incentives to reduce management

Policy

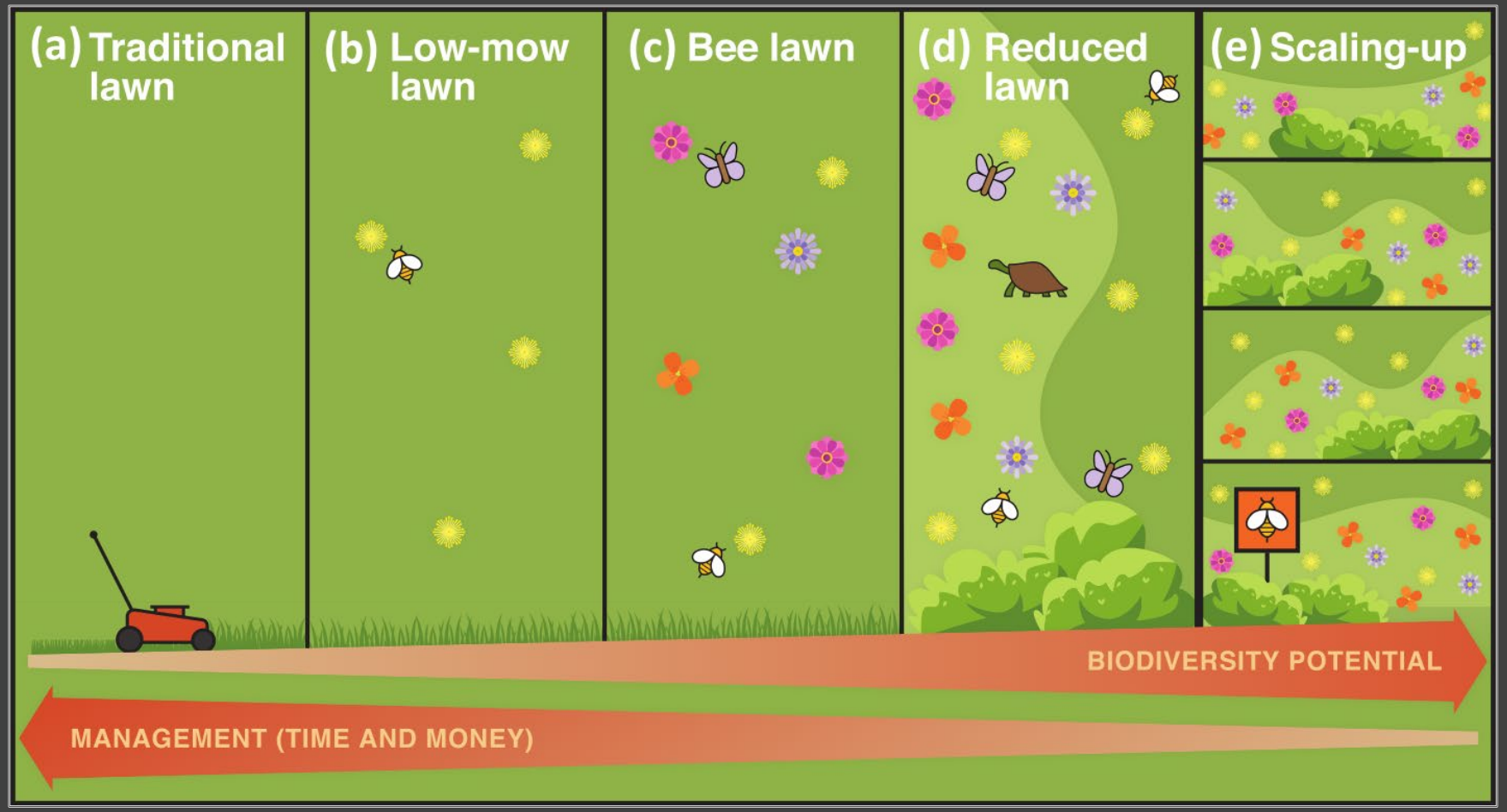
- Local weed laws
- Not part of conservation



- Revise local ordinances
- Executive Order 14008 (30x30)

Lerman et al. 2023 *BioScience;* Nassaur 1995 *Landscape Journal;* Goddard et al. 2013 *Ecol Econ;* Larson et al. 2022 *Landscape and Urban Planning*

Opportunities to Engage



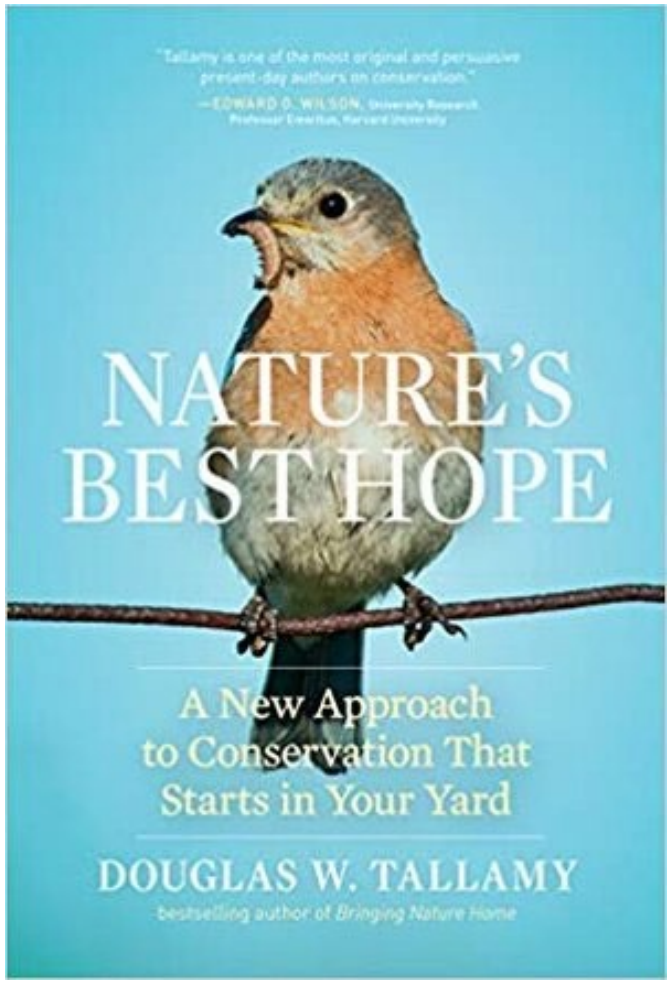
- Plant natives
- Garden for wildlife
- Mow & manage less
- Moment →Movement

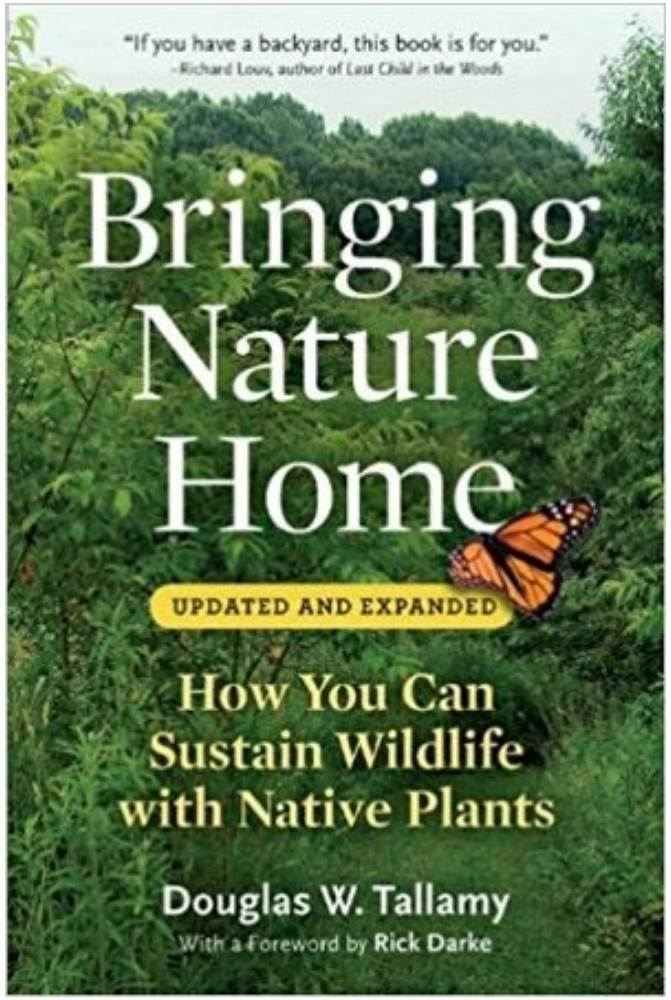
Lerman et al. 2023 *BioScience*

Resources

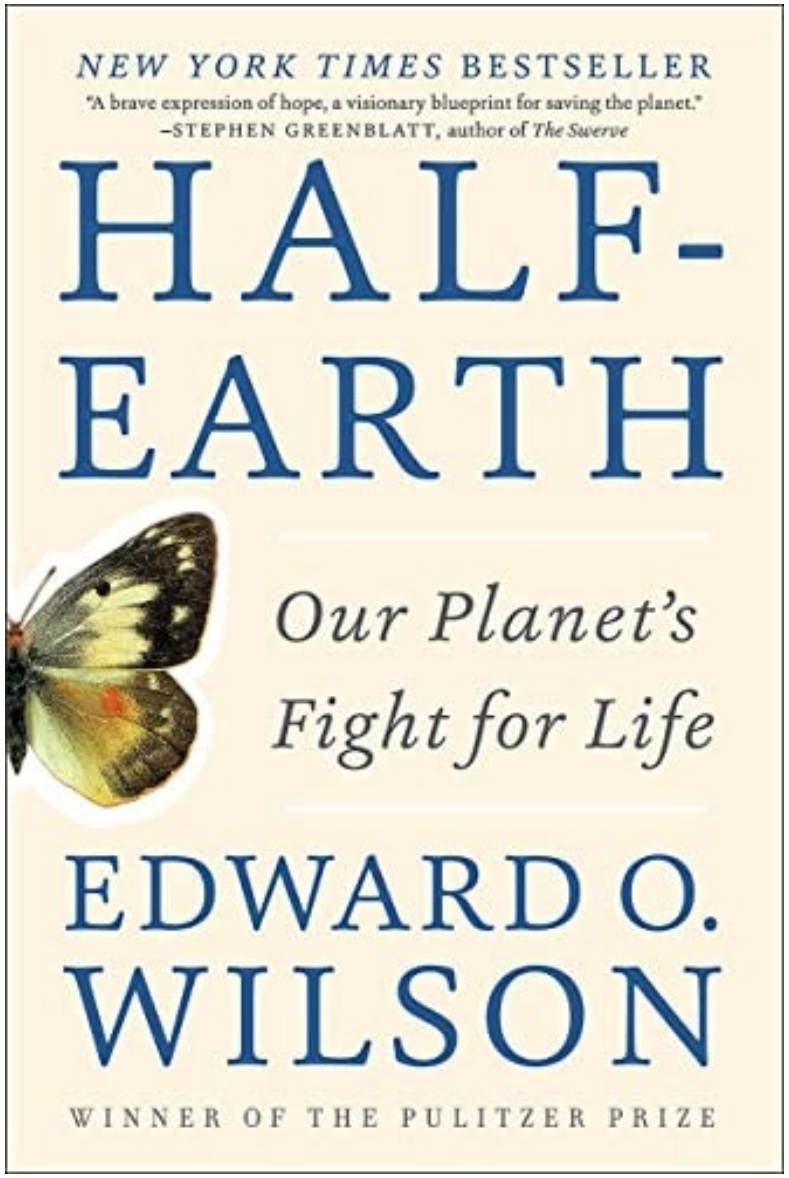
https://homegrownnationalpark.org/tallamys-hub-1

Resources


NATURE'S BEST HOPE
A New Approach to Conservation That Starts in Your Yard
DOUGLAS W. TALLAMY


"If you have a backyard, this book is for you."
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/

Pass It On!

Questions?

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207-287-7545