

# Prestigious Pollinators



*Setting the home stage for bees, butterflies, birds and more.*

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# About Today

- I. Why Pollinators?
- II. Pollinators & Predators
- III. Defining Native Plants
- IV. Color & Plant Traits
- V. Solar Arrays As Habitat
- VI. Design Exercise
- VII. Resources/Handouts



*A bumblebee visits a purple coneflower.*

NRCS





# Why Do We Care About Pollinators?

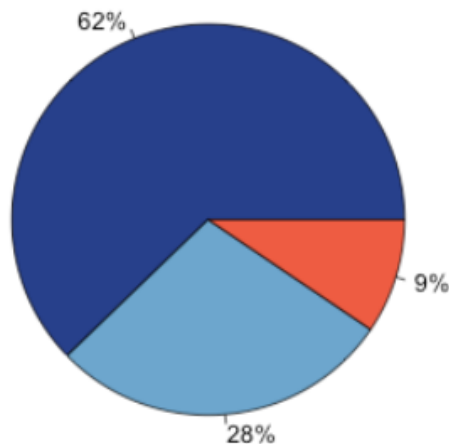
about  
**75%**  
of the world's  
crops depend on  
pollinators



- Vital to most food production
- Food and shelter for birds & wildlife
- Butterfly nesting & protection
- Enable environmental diversity
- Contribute to agricultural economy

# Significance of Native Pollinators

Who visits  
Vermont blueberries?



## Apple Pollination Research\*



Wild Bee  
Abundance

Increased seed set

Wild Bee  
Diversity

Increased seed set

Honey Bee  
Abundance

No significant effect  
on seed set

\*Russo, et al., Quantifying the Importance of wild bees in apple pollination.



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# Pollinator Habitat Benefits Agriculture \$

## Nature Conservancy Economic Analysis – New Jersey

- Tomatoes, blueberries, melons, cucumbers, squash, apples, peaches, and bell peppers
- \$35 million in production revenues attributed to pollinators (native & honey bees)



(USDA NASS 2012)



# Threats to Pollinators



- Pesticides
- Reduced/fragmented habitat
- Invasive plants reduce pollinator habitats and impact diversity
- Non-native honey bees can reduce native population
- Parasites, mites threaten honey bees
- Bumblebee boxes increase disease in native bumblebees

# Native Plants

## USDA Definition - Native Plant

- A plant that is a part of the balance of nature that has developed over hundreds or thousands of years in a particular region or ecosystem.
- The word 'native' should always be used with a geographic qualifier (native to New England for example).
- Only plants found in this country before European settlement are considered to be native to the United States.

# More Definitions

## Wikipedia

- Native **plants** are plants [indigenous](#) to a given area in [geologic time](#). This includes plants that have developed, occur naturally, or existed for many years in an area ([trees](#), [flowers](#), [grasses](#), and other plants).

## Wild Ones

- A native plant species is one that occurs naturally in a particular region, ecosystem and/or habitat and was present prior to European settlement.



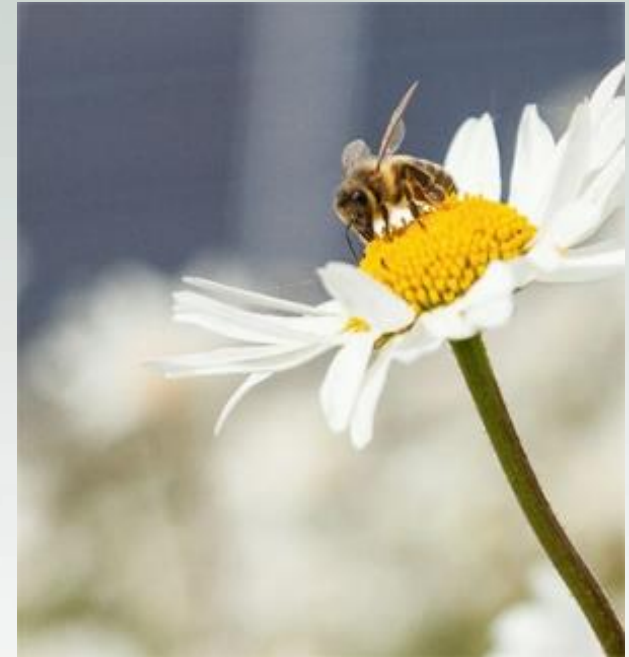
# Non-Native Plants

## USDA Definition - Non-Native Plant

- A plant introduced with human help (intentionally or accidentally) to a new place or new type of habitat where it was not previously found.
- Not all non-native plants are invasive.
- When many non-native plants are introduced to new places, they cannot reproduce or spread readily without continued human help (for example, many ornamental plants).

# Why Choose Native Plants?

- Native pollinators have evolved with the native plants in their region
- Native plants are recognizable to pollinators
- Pollinators are attracted to them
- Most natives provide more nectar and pollen
- Pollinators in larval stage cannot digest non-native species



# Open Pollinated Natives v. Native

## Cultivars Less Attractive

*Achillea millefolium* 'Strawberry Seduction'

*Aquilegia canadensis* 'Corbett'

*Baptisia australis* 'Twilite Prairie Blues'

*Echinacea purpurea* 'Sunrise Big Sky'

*Echinacea purpurea* 'Pink Double Delight'

*Echinacea purpurea* 'White Swan'

*Helenium autumnale* 'Moerheim Beauty'

*Symphotrichum novae-angliae* 'Alma

Poetschke'

*Tradescantia ohiensis* 'Red Grape'



Perry, L and White, A. (2014).

<https://projects.sare.org/project-reports/one12-169/>



# Top 10 Natives for Pollinator Success

- Blue giant hyssop
- Purple coneflower
- Trumpet honeysuckle
- Boneset
- Helen's flower
- Culver's root
- Foxglove beardtongue
- Joe-pye
- New England aster
- Wild bergamot

(A. White, J. Sorensen)



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# Pollinators & Color

**Colors are one of the main traits of flowers that attract the pollinators.**

**Bees** - Blue, Purple, Violet, White and Yellow

**Butterflies** - Red, Yellow, Orange, Pink and Purple

**Hummingbirds** - Yellow, Orange, Pink, Purple, but mainly Red



*Clumps of flowers will attract more pollinators than individual plants.*

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# Flower Shapes Matter



Buttercup

- Open Shape
- Attracts Bees



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# Open

**Helen's Flower**



**Coneflower**



# Flat Pad



- Flat Pad
- Attracts:  
Butterflies

Zinnia



# Wide, Flat Pad



Milkweed

- Flat Pad
- Attracts:  
Butterflies



Goldenrod



# Wide, Flat



- Flat Pad
- Attracts:  
Butterflies



# Tubular



**Honeysuckle**

Tubular

- Attracts Humming Birds

# Cardinal Flower & Bee Balm



Cardinal Flower



Bee Balm



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# Think Herbal Accents

- Herbs are great for pollinators when we just relax a bit and let them go to flower!
- Pick some for cooking and leave some for the pollinators.
- Think outside the box and plant some within your flower beds.

Cardinal Flower

Bee Balm

# Herbal Accents

**Cilantro**



**Oregano**



**Dill**



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## More Herbal Accents

**Fennel**



**Thyme**



**Chives**



# Perennial Plantings – More is More

## Mass Plantings

- Reduce yard maintenance
- Bees prefer to collect pollen from a single species when out foraging

## Different Bloom Times

- Early spring to late fall

## Plant A Variety of Shapes

- Different shapes attract different pollinators



# Bleeding Hearts



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# Lilacs & Azalea



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# Jacob's Ladder



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# What's the Buzz? Yard Maintenance

## Less Is More

- Need loose/bare soil areas for ground nesters
  - 70% of bees nest in the ground
- Replace lawn with native ground covers - see what comes up
  - Good for the environment
  - Food and foraging for pollinators
  - Protection
  - Creates Habitats for wildlife



# Pollinator Friendly Solar Initiative of Vermont



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# VT Pollinator Protection Committee





# Solar Site Pollinator Scorecard

## Solar Site Pollinator Habitat Planning & Assessment Form

*Use for site and seed mix planning/designing. Pollinator planting area shall always be managed to prevent and eliminate invasive and noxious plant species.*



Images courtesy  
Bee the Change and Fresh-Energy

### 1. Planned percent of site with flowering plant species (select one)

- 1-15 percent (5 points)
- 16-30 percent (10 points)
- 31-45 percent (15 points)
- 46-60 percent (20 points)

### 2. Flowering plant seed mix to be used (select all that apply)

- Includes appropriate plant species for the region or local habitat (5 points)
- Amount of seed to be planted (lbs/acre) is determined according to seed provider's recommended application rate and/or planting density for planted species in the target area (5 points)
- Includes only native\* plant species (15 points)
- \* Native species local to the site are preferred; otherwise species native to Vermont are encouraged.*

### 5. Observed pollinator nesting habitat within 0.25 miles (select all that apply)

- Bare ground with undisturbed, and/or well-drained soil (2 points)
- Forest edge habitat that includes flowering shrubs and young trees (2 points)
- Cavity nesting sites (e.g., dead trees, snags, fallen logs, shrubs, plants with pithy-stemmed twigs such as sumac, rose, raspberry) (2 points)

### 6. Planned management practices (select all that apply)

- Mowing occurs only after August 15, and before spring each year (5 points)
- Detailed establishment & management plan (10 points)
- Detailed monitoring plan (10 points)
- Creation of nesting habitat features (e.g. boxes, tunnels) (0.2 points per feature)

# features:      x      =      points



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## Design Principles

- Consider food, shelter & water needs
- Plant swaths of 6-8 native plants for more efficient for pollinator foraging
- Increase native species to 70-80%
- Vary color, shape, bloom time
- Diversify for continuous bloom – bulbs, annuals, perennials, shrubs, trees
- Remove invasives



# Design Exercise

- At least 10 species
- Select to have 3 blooming in each season
- Water feature – mud puddle, bird bath, stream, pond
- Diversify perennials, shrubs, trees
- Visualize existing space in your landscape or create one

## Plant Resource List:

Jane Sorensen, UVM & Northeast Pollinator Plants

# Resources for Vermont

- Pollinator Partnership
- Bee Smart Pollinator Gardener App
- VT Pollinator Protection Committee Report
- Pollinator Friendly Solar Initiative of VT
- Bee the Change
- Northeast Pollinator Plants
- Xeres Society
- Wild for Pollinators
- Monarch Watch – Free Milkweeds



# Additional Resources

## US Forest Service on Pollinators:

<https://www.fs.fed.us/wildflowers/pollinators/index.shtml>

## Checking Native Status:

Web-search PLANTS USDA Database. <http://plants.usda.gov/java/>

## Universities:

Penn. State, Center for Pollinator Research. <http://ento.psu.edu/pollinators>

UVM, Annie White & Leonard Perry, <http://pollinatorgardens.org/>

Cornell Pollinator Research, <http://entomology.cals.cornell.edu/extension/wild-pollinators>

## Books:

Attracting Native Pollinators, by The Xerces Society, 2011

Bringing Nature Home, by Douglas Tallamy, 2007

Native Plants of the Northeast, by Donald Leopold, 2005

Meadows, by Catherine Zimmerman, 2010

Beautiful No-Mow Yards, by Evelyn Hadden, 2012

