



# Pollinators and the Home Garden



# What is Pollination?

Pollination is the transfer of pollen from a male part of a plant to a female part of a plant, later enabling fertilization and the production of seeds, most often by an animal or by wind. Pollinating agents are animals such as insects, birds, and bats; water; wind; and even plants themselves, when self-pollination occurs within a closed flower. (Wikipedia, 7/2020)

## Two Methods of Pollination

- Self-pollination
- Cross-pollination - can be different varieties within the same species



## Monoecious – “One home”

Plant species with unisexual flowers of both types, staminate and pistillate, present on a single plant (*Young, Paul. The Botany Coloring Book*)

## Dioecious – “Two homes”

Plant species unisexual flowers of both types, staminate and pistillate, are distributed on separate plants (*Young, Paul. The Botany Coloring Book*)





# Examples

## **Self-Pollination**

Wheat

Barley

Oats

Tomato

Potato

## **Cross-Pollination**

Apples

Plums

Pears

Raspberries

Pumpkins



Black Swallowtail Caterpillar  
©2020 botanicalsbyvicky

# Best of Both Worlds

## Self-Pollination & Cross-Pollination

Include peas, orchids and sunflowers

## Top Pollinators

- Bees
- Flies - hoverflies, bee flies
- Wasps
- Butterflies and Moths
- Beetles
- Birds, bats, other (mammals and lizards)

ZME Science, retrieved July 2020,  
<https://www.zmescience.com/ecology/animals-ecology/incredible-pollinating-animals-bees/>

# Pollinator Stats

- 1/3 world crops need pollinators
- 80% of cultivated crops are dependent on honey bees
- Up to 15 billion dollars of revenue in the US economy are pollinator dependent (U of Arkansas, July 2020)



# Honey bees and bees



- 4000 native bee species
- Bee decline due to both pesticides (herbicides, insecticides, and fungicides) and habitat loss
- Reintroduce native plants to encourage native bees to your yard

# Butterflies



Clouded Sulfur  
©2020 botanicalsbyvicky



Great Spangled Fritillary  
©2020 botanicalsbyvicky



White Cabbage  
©2020 botanicalsbyvicky

- Butterfly caterpillars require specific plants, called host plants, to lay their eggs on
- Clouded Sulfur will lay eggs on alfalfa, vetch, and clover, Fritillaries on violets and White Cabbage on brassicas (cabbage, kale, etc) and nasturtiums
- Companion crops to deter White Cabbage caterpillars include thyme, marigolds, and peppermint

# Black Swallowtail Butterflies



- Fun to “raise” Black Swallowtail Caterpillars with children and grandchildren
- Plant pots of dill, parsley, and fennel
- When you find little golden globes on the plants, place in a butterfly habitat (available online) and put the enclosure in a safe part of your garden. Watch the caterpillars emerge, grow, metamorphosize, and then release them!

# Moths and Beetles



- Moths especially need leaf debris to shelter their young in. Leave leaf debris under trees and shrubs.



*“Kremen suggested an approach to a more sustainable form of agriculture, one that de-emphasizes the use of synthetic fertilizers and builds in more of a reliance on natural ecosystems.*

*Some changes may involve mere tweaks to current practices, such as allowing weeds and native plants to grow and prosper along the border of the primary crop, she said. Such non-crop plants, which are currently killed off by herbicides, can sustain a variety of wild bee species when the primary crops are not in bloom.”*

Claire Kremen, Conservation Biologist

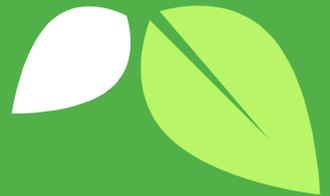
[https://www.berkeley.edu/news/media/releases/2006/10/25\\_pollinator.shtml#:~:text=Kremen%20suggested%20an%20approach%20to,a%20reliance%20on%20natural%20ecosystems](https://www.berkeley.edu/news/media/releases/2006/10/25_pollinator.shtml#:~:text=Kremen%20suggested%20an%20approach%20to,a%20reliance%20on%20natural%20ecosystems)



# Lawns vs. natural lawns



41% of US land is agricultural  
54% is developed (cities & suburbs)





- 40 million of acres of lawn in the US
- The amount of land used for turf grass is 3xs the amount used for corn or any other irrigated crop
- Water used outside makes up to  $\frac{3}{4}$  of residential water use





80,000,000 lbs\*

Amount of pesticides Americans pour on their lawns per year and now  
in our air, water, soil, and food supply



Natural lawns with violets and clovers strewn throughout require less maintenance, no herbicides or pesticides, and are beneficial for wildlife.



Violet Lawn  
©2020 botanicalsbyvicky



Clover Lawn  
©2020 botanicalsbyvicky

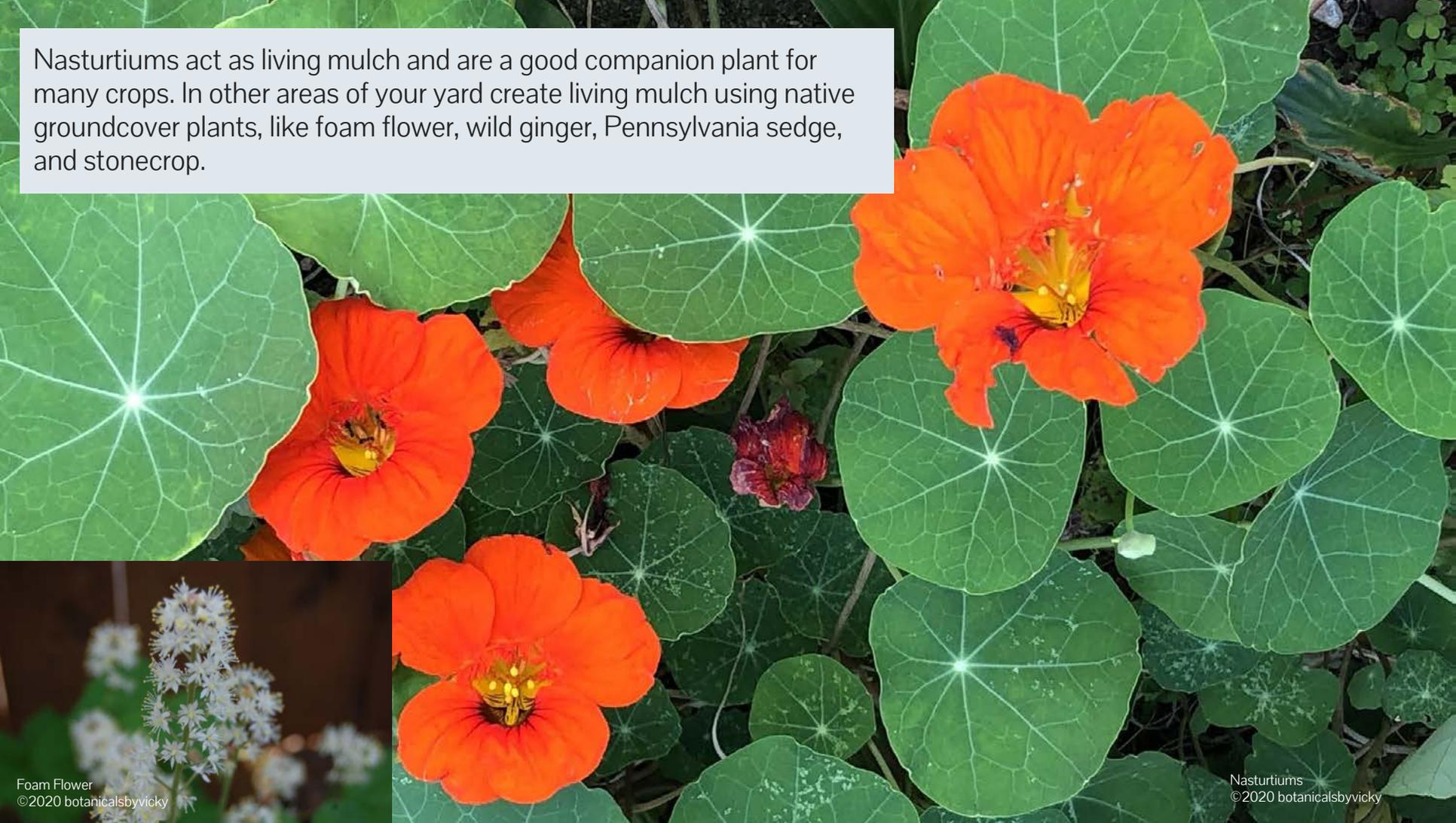


Clover  
©2020 botanicalsbyvicky



Bark mulch vs.  
living mulch

Nasturtiums act as living mulch and are a good companion plant for many crops. In other areas of your yard create living mulch using native groundcover plants, like foam flower, wild ginger, Pennsylvania sedge, and stonecrop.



Foam Flower  
©2020 botanicalsbyvicky

Nasturtiums  
©2020 botanicalsbyvicky

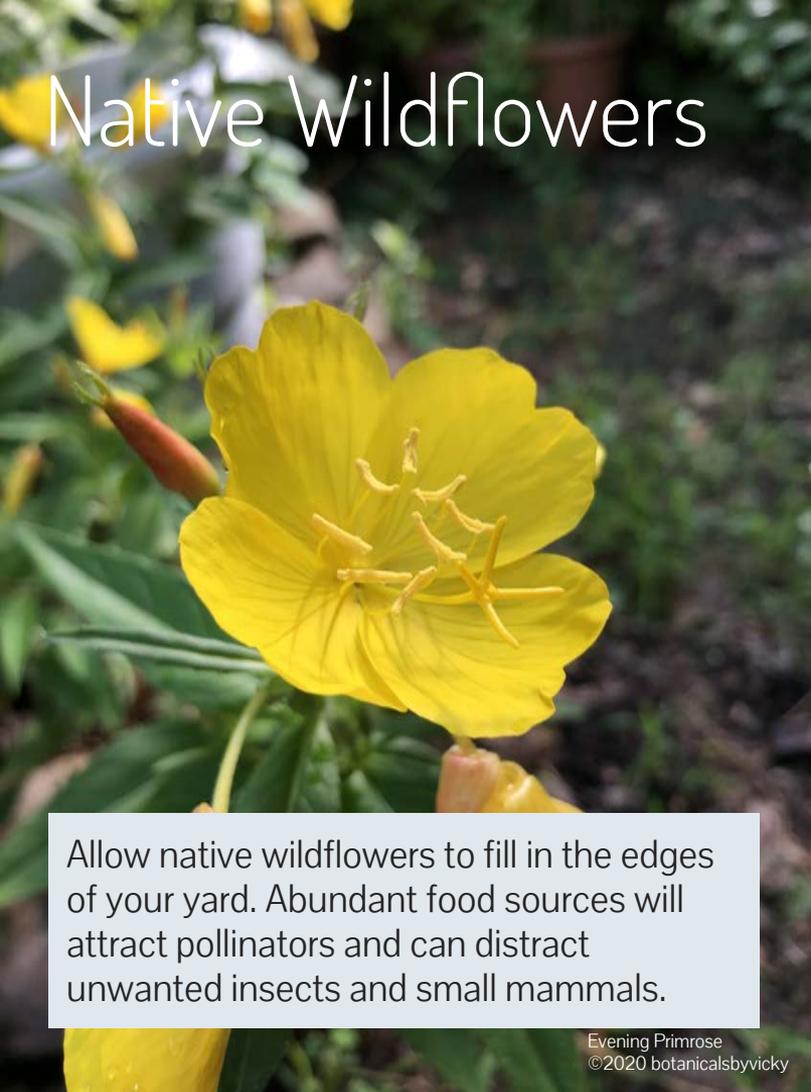


# DANDELIONS

Yummy for all!

Are an early food source for pollinators and small mammals, they aerate the soil, and pull up minerals. Consider leaving them strewn throughout your natural lawn. Crowd them out by creating hedgerow and cottage garden plantings in your more formal garden areas.

# Native Wildflowers



Allow native wildflowers to fill in the edges of your yard. Abundant food sources will attract pollinators and can distract unwanted insects and small mammals.

Evening Primrose  
©2020 botanicalsbyvicky



Blue Wood Aster  
©2020 botanicalsbyvicky



Fleabane  
©2020 botanicalsbyvicky

# Corner of garden

Consider creating a conservation buffer: an untouched corner of your yard filled with a native plant. This gives insects a place to shelter undisturbed especially through fall and winter. Monitor for poison ivy, otherwise, just let it be - no maintenance.



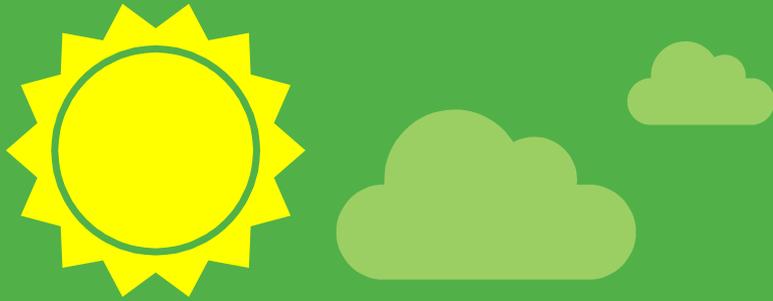


## Do not plant

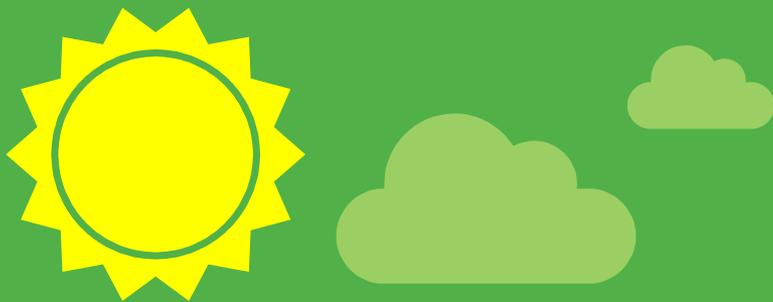
- Butterfly bush
- Japanese Knotweed
- Burning Bush
- Japanese Barberry
- And many more...See an excellent list of NJ invasives not to plant at

[http://www.npsnj.org/articles/invasive\\_plant\\_species.html](http://www.npsnj.org/articles/invasive_plant_species.html)

*Note: there is a controversy surrounding whether dandelions and clover should still be listed as invasives*



Changing the  
suburban  
aesthetic



## Current practice

- Pesticide and herbicide treated lawns
- Leaf blowers
- Brown lifeless mulch mounds
- Exotic plants
- “Cleaned” garden beds for winter
- Chopped down trees and grinded stumps

## Opportunity for more diversity & sustainability

- Natural lawns
- Leaves under shrubs
- Living mulch
- Native plants
- Companion gardening
- Wild native flowers (snakeroot, fleabane)
- Old trees and stumps

# Creating a balance between beneficial insects and “pests”

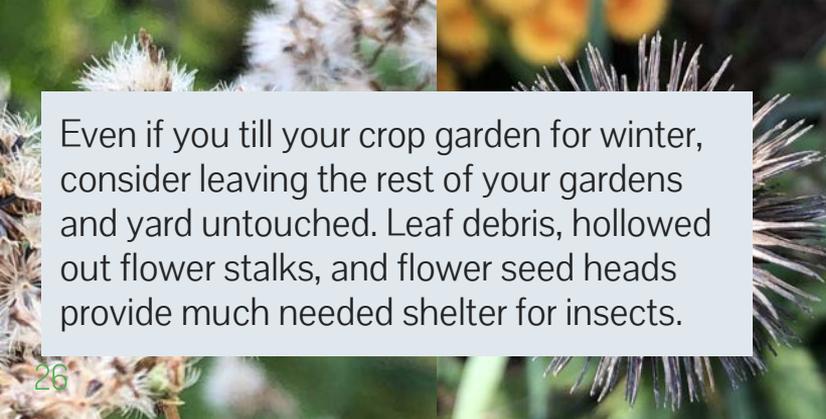
- No herbicides or pesticides
- Minimize fertilizer use - is there an organic alternative?
- Natural lawns (clover, violets, dandelions)
- No leaf blowing - minimal raking
- Leave leaf litter
- Plant a cover crop
- Create hedgerows of native flowers around crop beds
- Create a pollinator garden
- Leave dead tree trunks or “snags”
- Put up a bee hotel or create one with sticks
- Cover most susceptible crops with mesh
- Companion planting
- Plant native no-mow grasses, especially under trees
- Plant living mulch
- Do not “winterize” garden
- Conserve a portion of you yard for the wild

*Note: Use the principles of distraction and abundance to deter unwanted visitors from your crop plants*

# Winter Garden



Even if you till your crop garden for winter, consider leaving the rest of your gardens and yard untouched. Leaf debris, hollowed out flower stalks, and flower seed heads provide much needed shelter for insects.





# Organizations

- The Xerces Society  
<https://www.xerces.org/>
- North American Butterfly Association  
<https://www.naba.org/>
- NABA- North Jersey Butterfly Club  
<https://www.naba.org/chapters/nabani/>
- Jersey Friendly-Yards  
<https://www.jerseyyards.org/>
- New Jersey Native Plant Society  
<http://www.npsnj.org/>
- Watershed Institute  
<https://thewatershed.org/>
- Bowman's Hill Wildflower Preserve  
<https://bhwp.org/>





# Native Plant/Seed Resources

- Bowman's Hill Wildflower Preserve  
<https://bhwp.org/>
- Wild Ridge Plants  
<https://wildridgeplants.com/>
- Toadshade Farm  
<https://www.toadshade.com/>
- Seed Savers Exchange  
<https://www.seedsavers.org/>
- Native Seed Network  
<https://nativeseednetwork.org/>





## Online Databases

- USDA  
<https://plants.sc.egov.usda.gov/java/>
- Lady Bird Johnson Wildflower Center  
<https://www.wildflower.org/plants/>
- Insect Identification  
<https://www.insectidentification.org/insects-by-state.asp?thisState=New%20Jersey>
- NABA - North Jersey Butterfly Club  
<https://www.naba.org/chapters/nabani/butterflies.html>





## Online Articles

- The Importance of Pollinators  
<https://www.uaex.edu/farm-ranch/special-programs/beekeeping/pollinators.aspx>
- Cabbage White Butterfly Not So Bad?  
<https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=18668>
- Violets  
<https://www.nababutterfly.com/violet.html>
- Dandelions  
<https://www.mofga.org/Publications/The-Maine-Organic-Farmer-Gardener/Summer-2007/Ten-Things-You-Might-Not-Know-About-Dandelions>
- Pollinators Help One-Third of World's Crop Production  
[https://www.berkeley.edu/news/media/releases/2006/10/25\\_pollinator.shtml](https://www.berkeley.edu/news/media/releases/2006/10/25_pollinator.shtml)
- Pollinators  
<https://www.pollinator.org/pollinators>





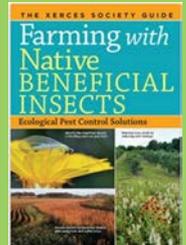
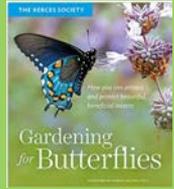
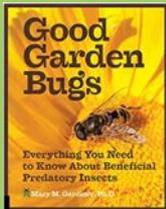
# Online Articles

- Pollinators and World Food Production  
<https://www.sciencedaily.com/releases/2006/10/061025165904.htm>
  - Lawns in the US  
<https://www.businessinsider.com/americas-biggest-crop-is-grass-2016-2>
  - American Beekeeping Federation  
<https://www.abfnet.org/page/PollinatorFacts>
  - Food and Agricultural Organization of the United Nations  
<http://www.fao.org/pollination/background/en/>
  - USDA  
<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/plantsanimals/pollinate/>
  - USDA  
<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/plantsanimals/pollinate/gardeners/>
  - How to Get Rid of Caterpillars Without Pesticides on Plants  
<https://homeguides.sfgate.com/rid-caterpillars-pesticides-plants-29475.html>
  - Cranberries and Bees (excellent blog by naturalist Mary Anne Borge)  
<https://the-natural-web.org/2019/11/25/time-for-cranberries/>
- 



# Book Resources

- Gardiner, Mary. (2015). Good Garden Bugs: Everything you need to know about beneficial predatory insects
- Kimmerer, Robin. (2015). Braiding Sweetgrass: Indigenous wisdom, scientific knowledge and the teachings of plants
- Lewis, Diane. (2014). The Great Healthy Yard Project
- Williams, Paul, et al. (2014). Bumble Bees of North America: An identification guide
- Xerces Society. (2011). Attracting Native Pollinators
- Xerces Society. (2016). Gardening for Butterflies
- Xerces Society. (2014) Farming with Native Beneficial Insects





## Podcasts

- PolliNation
- Cultivating place
- Growing Greener
- Wild Plant Culture
- The Plant Report
- The Native Plant Podcast



# Thanks!

ANY QUESTIONS?

You can find me at

- @botanicalsbyvicky
- botanicalsbyvicky@gmail.com



## Credits

- Insect and plant photographs by [botanicalsbyvicky](#)
- Presentation template by [SlidesCarnival](#)
- Icon photographs by [Unsplash](#)

*\*Please note, the information presented here is for entertainment and does not take the place of professional consultation for insect identification, plant suggestions, etc...Please consult the proper specialist for any field specific questions you have.*