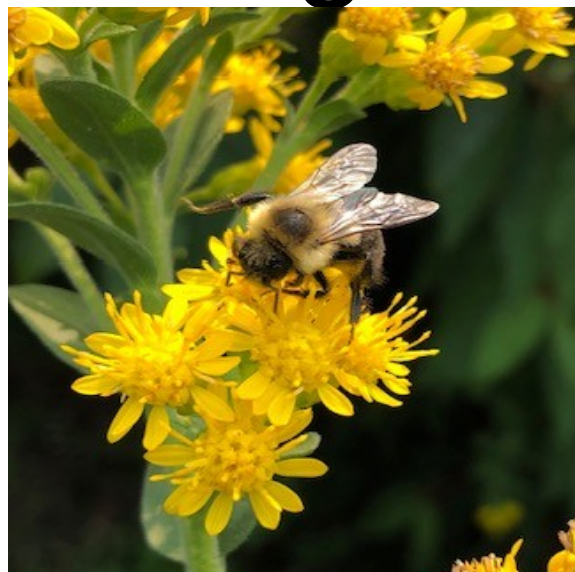


Cornell Cooperative Extension
Monroe County

Pollinators & the CCE- Monroe MG Pollinator- Friendly Garden Program



John Nelson
Master Gardener Volunteer
October 2026

Why? / Who? / How?

Why do we care about pollinators?

Who are the pollinators?

Issues in Creating a Pollinator-Friendly
Garden Program

- Requirements vs Environmental Impact

- What does “Native Plant” mean?

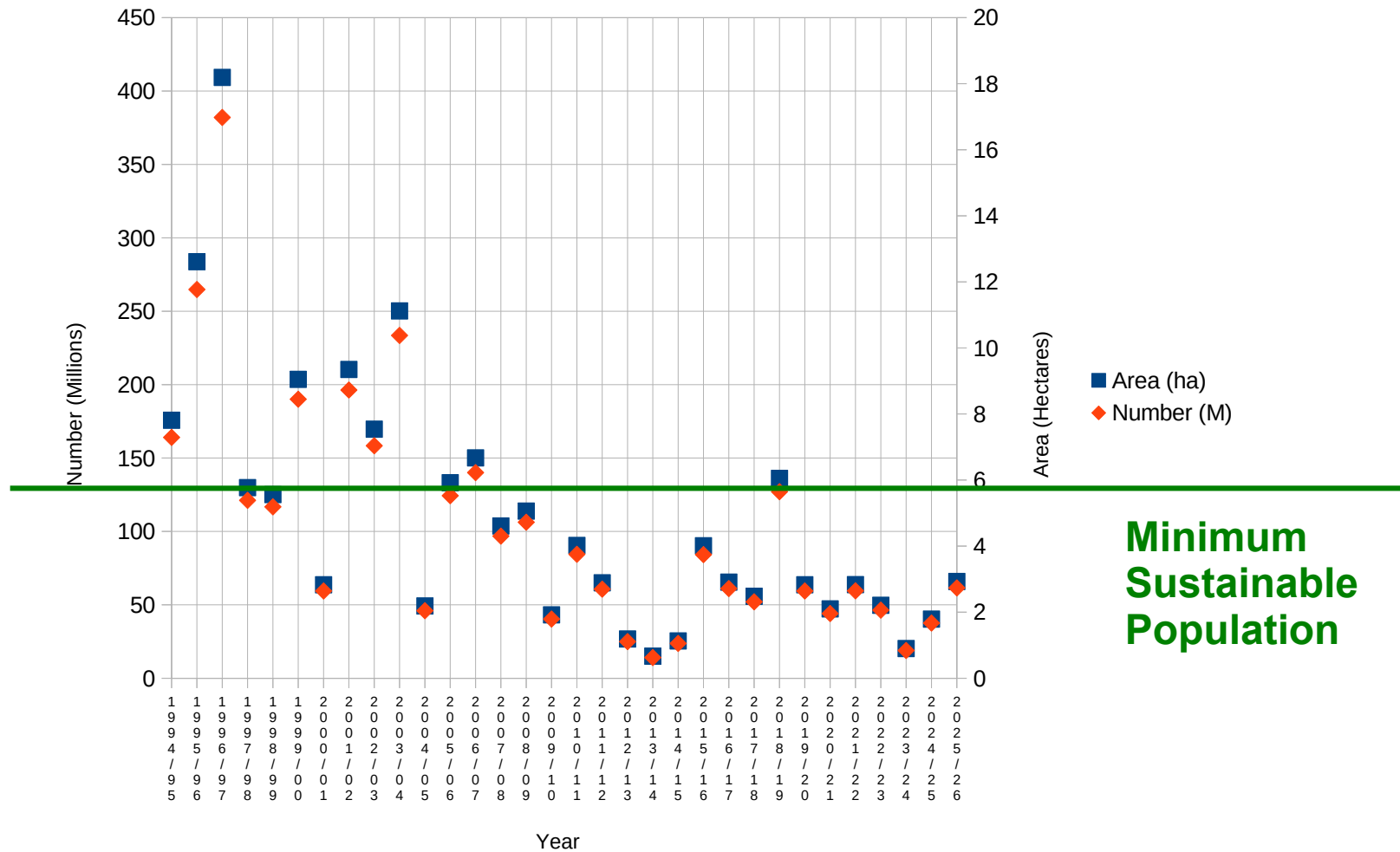
- An ongoing discussion

Pollinators in Peril

- Honey Bees
 - Colony Collapse Disorder
- Native Bees
 - Declines in at least 49 species
 - Including Bumble Bees
- Monarch Butterfly
 - Severe population declines
 - Eastern & Western Monarchs

Monarch Population Graph

Monarch Population



Importance of Pollinators

- Global Food Supply
 - 87 of 115 major global food crops depend on pollinators
 - 35% of global food supply depends on pollinators
- Native Ecosystems
 - Keystone species

Pollinator Dependent Crops

Fruit

Apple
Apricot
Blueberry
Cherry
Cranberry
Grape
Peach
Pear
Plum
Raspberry
Strawberry

Nuts

Almond
Cashew
Chestnut
Coconut
Macadamia
Walnut

Vegetable

Asparagus
Broccoli
Cabbage
Cauliflower
Celery
Cucumber
Eggplant
Lettuce
Melons
Squash
Turnips

Other

Alfalfa
Chocolate
Coffee
Tea
Sunflower
Canola
Safflower
Vanilla
Many Spices

Would you miss them if they were gone?



Pollinators & Ecosystems

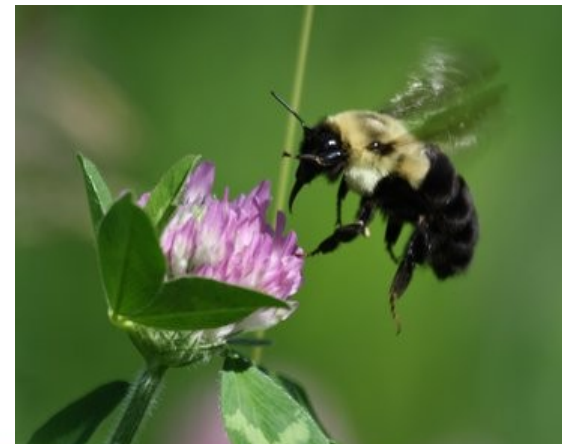
- Keystone Species
 - Flowering Plants depend on Pollinators
 - Butterfly / Moth Larvae for Birds
 - Pest Insect Control



Who are the pollinators?

Bees

- European Honey Bee (*Apis mellifera*)
- Over 400 Native Bee Species in NY
 - Solitary
 - Ground-Nesting
 - Cellophane Bees
 - Long-horned Bees
 - Mining Bees
 - Sweat Bees
 - Mason Bees
 - Leaf-Cutter Bees
 - Carpenter Bees
 - Social
 - Bumble Bees
 - Sweat Bees (some species)
 - Parasitic
 - Cleptoparasitic Bees



Bees (continued)

- Flower preferences -
 - Many are generalists
 - Some quite specialized
- Provide blooms from Spring to Fall



Wasps

- Hundreds of Native Species in NY
 - Solitary
 - Ground Nesting Wasps
 - Stem Nesting Wasps
 - Potter / Mason Wasps
 - Social
 - Paper Wasps
 - Yellowjackets
 - Hornets
 - Parasitic (Cuckoo) Wasps



Wasps (continued)

- Double Benefit
 - Adult Wasps are Pollinators
 - Wasp Larvae eat Insects
 - Hunted by Adult Wasps
 - Often Pest Species
- Flower preferences -
 - Many are generalists
 - Some quite specialized
- Provide blooms from Spring to Fall



Flies

- Many species are pollinators
 - Bee Flies
 - Syrphid Flies
 - Tachnid Flies
- Pollinator for some crops – Chocolate
- Pollination role not fully understood
- May be as efficient as bees
 - While larvae often provide pest insect control



Flies (continued)

- Flower Preferences
 - Flies visit a wide range of flowers
 - Flat or bowl shaped
 - Boneset
 - Carrots / Queen Anne's Lace
 - Musty odor (for some flies)
 - Skunk Cabbage
 - Arums (Jack-in-the-pulpit)

Butterflies

- Over 50 Species of Native Butterflies in NY
 - Monarch
 - Fritillaries / Silverspots
 - Red Admiral
 - Painted Lady
 - Pearl Crescent
 - Mourning Cloak
 - Common Sulfur
 - Tiger Swallowtail



Butterflies (continued)

- Flower Preferences
 - Flat or Spike (wide landing pad)
 - Bright Colors
- Larvae (caterpillars) need Native Host Plants
 - Every Butterfly begins life as a larvae
 - No Native Host Plants = No Butterflies



Moths

- Over 300 Native Moth species in NY
 - Imperial
 - Luna
 - Cecropia
 - Sphinx (multiple species)
 - Tiger (Woolly Bear Caterpillars)
- Many, but not all, active in evening or at night



Moths (continued)

- Flower Preferences
 - Strong evening scent
 - Color less important
- Larvae (caterpillars) need Native Host Plants
 - Every Moth begins life as a larvae
 - Many Larvae feed baby birds



Beetles

- Over 30,000 Beetle species in US
 - Not all pollinators
 - Some examples
 - Soldier Beetles
 - Long horned Beetles
 - Snout Beetles
- Less common than Bees, Wasps, Butterflies, Moths, & Flies
- Evolutionary early pollinator (before bees & butterflies)



Beetles (continued)

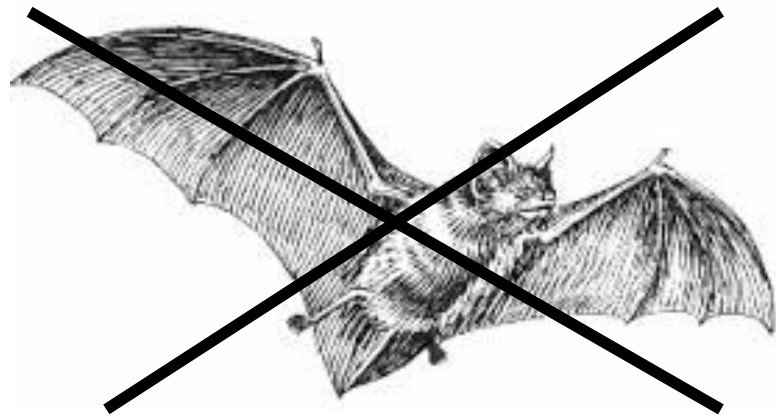
- Flower Preferences
 - Bowl-shaped
 - White / dull-White / Green
 - Fruity aroma
- Plants pollinated by Beetles
 - Magnolias
 - Water lilies
 - Paw Paw

Ruby-Throated Hummingbird

- Prefer tubular flowers, abundant nectar, orange/red color, odor not important
 - Bee Balm (*Monarda didyma*)
 - Blazing Star (*Liatris spicata*)
 - Blue Lobelia (*Lobelia siphilitica*)
 - Blue Sage (*Salvia azurea*)
 - Cardinal Flower (*Lobelia cardinalis*)
 - Columbine (*Aquilegia canadensis*)
 - Canada Lily (*Lilium canadense*)
 - Garden Phlox (*Phlox paniculata*)
 - Trumpet Honeysuckle (*Lonicera sempervirens*)
 - Wild Bergamot (*Monarda fistulosa*)
 - Woodland Phlox (*Phlox divaricata*)



Bats



Not Pollinators in New York

Bats are pollinators in the desert southwest
(Cactus & other flowers)

How to Attract Pollinators

- Safe Environment
- Shelter
- Water
- Food



Certified Pollinator Friendly Garden

Pollinators provide many ecosystem services that help support plants, people and the planet. This property is recognized for sustainably providing essential elements and habitat for pollinators.

Learn more at:

monroe.cce.cornell.edu/Master-Gardeners

Acknowledgments

- Based on the Penn State Extension Pollinator Friendly Garden Certification program developed by Penn State Master Gardeners in collaboration with the Center for Pollinator Research
- Pesticide guidelines Michigan State Extension – Pollination website. The authors of that website are David Smitley, MSU Entomology; Diane Brown, Rebecca Finneran and Erwin Elsner, MSU Extension; Joy Landis, MSU IPM; Paula Shrewsbury, Univ. of MD Entomology; Daniel Herms, The Davey Tree Expert Company, Kent, OH; and Cristi L. Palmer, IR-4 Project-Rutgers - May 1, 2019

Safe Environment

- Remove Invasive Species
 - Displace Native Plants
 - Disrupt Ecosystems
 - Fruit has Low Nutrient Value (for birds)
- Eliminate or Minimize Pesticide Use
- Recognize that some insect damage is to be expected (and even celebrated)
 - Butterfly larvae (caterpillars) eat host plants
 - Leaf-Cutter Bees cut holes in leaves

Invasive Plant Requirements

- List of common Invasive Plants on Application
- Commitment not to Acquire new Invasive Plants
- We offer to advise on Removing Existing Invasives
 - Lower Requirement than some Programs
 - PA & ME Require an Active Plan to Remove all Invasive Plants

Pesticide Requirements

- A topic of lengthy discussion
- Encourage No Pesticide Use
- Allow for Use following detailed Guidelines
 - Guidelines from Michigan State Extension
 - Recognizes need to Control Invasive and other Serious Insect Problems
- Comparison to Other Programs
 - PA – Similar Guidelines
 - ME – No Pesticide Use for any reason

Pesticide Guidelines

- Clearly identify the pest before taking action
- Never apply pesticides unless necessary to maintain plant health
- Always follow label directions
- Use low impact pesticides such as horticultural oil or insecticidal soap
- Never spray plants in bloom
- Minimize pollinator impact by spraying at recommended times and avoiding spray drift
- Avoid fogging or spraying for mosquitoes or biting flies
- If lawn grub control is needed, mow to remove weed flowers prior to application

Shelter

- Pollinators need protection from predators & severe weather
- Pollinators need nesting sites
 - Over-wintering habitat also important
- Think of a pollinator moving through your garden
 - Incorporate various canopy layers
 - Trees / Bushes / Tall & Short Plants
 - Group plantings together
 - More efficient for nectar collection

Shelter (continued)

- Be a little messy
 - Leave bare ground for bees & wasps
 - Very little (or no) mulch
 - No landscape fabric
 - Leave dead snags, rotten logs, small piles of branches, hollow twigs, & leaf litter
 - Rock piles / Walls
 - Minimize Fall Clean-up
- Designs for bee boxes and other insect houses available on the Internet
- Commercial bee and insect houses also available



Shelter (Continued)



- Fall Clean-Up – “Less is More”
 - Allow fallen leaves to remain for insulation
 - Many bees and other insects are in shallow burrows
 - Decaying leaves provide great nutrients for gardens
 - Leave dead perennials
 - Insects overwinter in stems or near base
 - Tall perennials can be cut back to about 18”
 - Seed heads are food for over-wintering birds
- Exceptions –
 - Vegetable gardens – thorough clean-up for pest control
 - Some non-native Perennials
 - Peonies
 - Hosta (tend to make a floppy mess after frost)

Water

- Pollinators need water
- Mason bees need mud
- Water sources should be shallow or have sloping side
- Simple examples:
 - Bird bath with a dripper that overflows onto adjacent bare ground
 - Bird bath with gravel or similar material above the water line
 - Bird bath with floating wood chips or sticks



Shelter & Water Requirements

- Shelter
 - Provide 3 sources of shelter from 5 options
 - Strongly encourage minimizing fall clean-up (one of the five options)
- Water
 - Provide a water source (list of 5 options)
- Comparison to other Programs
 - Identical to PA and ME

Food – Introduction

- Plant in groups for pollinator efficiency
- More perennials than annuals
- Emphasize native plants
- Grow a diversity of plants
- Plan to have blooming plants from spring through fall
- Avoid “doubles” and other hybrid flowers
 - Have less pollen & nectar
 - Often have shapes difficult for pollinators to utilize

Pollinator-Friendly Garden Requirements

- Native Trees & Shrubs (4 plants)
 - 4 Different Species (1 of each)
- Native Perennials (27 plants)
 - 9 Different Species (3 of each)
 - 3 Early Season Bloom (3 of each)
 - 3 Mid Season Bloom (3 of each)
 - 3 Late Season Bloom (3 of each)
- Host Plants
 - 3 of the Native Plant species

Comparison to Other Programs

- PA – 5 of each Native Perennial
 - Recent Change (used to be 3)
- ME – 4 Host Plants
 - Merges trees/shrubs with perennials
 - Adds list of Conservation Practices
 - Requires using 3 of 10
- Some programs request a Percentage of Native Plants
 - Some set a Minimum Requirement

What is a 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. Only plants found in this country before European settlement are considered to be native to the United States.
- Definition from USDA Natural Resource Conservation Service

“In a particular region” Where?

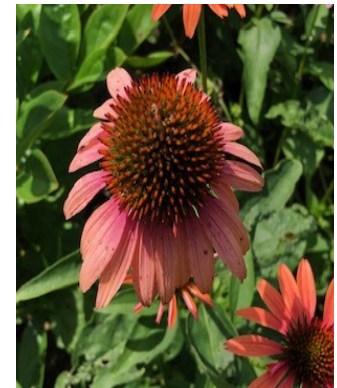
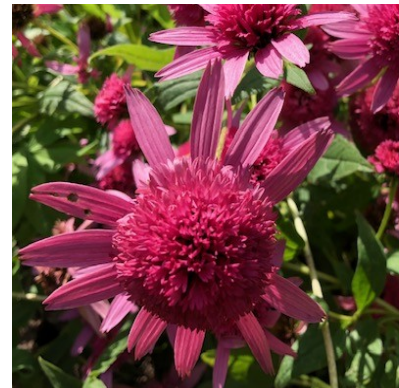
- Plants native and sourced within a 50 mile radius of Monroe County?
- Plants native to the Finger Lakes region?
- Plants native to NY?
- Plants native to the Northeast US?
- Plants native to the Great Lakes region?
- Plants native to the Eastern US?
- Plants native to the US?

Native Plant List Criteria

- Native to NY suitable for USDA Zone 6
 - Excludes some Long Island natives
 - NY Flora Atlas is the Definitive Source
- Plus, selected plants from the Northeastern US
 - Mainly Pennsylvania
 - Should be well adapted for Climate Change

Confusing Terms

- Native Plant Shopping can be hard!
 - What is a “variety”?
 - What is a “cultivar”?
 - Cultivated Variety = Hybrid or Nativar
 - What is a “hybrid”?
 - What is a “nativar”?
- What should I buy?



Varieties of Native Plants

- Variety (var.) - Natural variation
 - Found in nature
 - Breeds True from Seed
- Example
 - *Polygonatum biflorum* var. *biflorum*
 - Small Solomon's seal
 - *Polygonatum biflorum* var. *commutatum*
 - Large Solomon's seal
- Varieties native to NY are Accepted

Hybrids

- Cross between two species
 - Goal is unique appearance
 - Flower or foliage
 - Final plant propagated by cuttings/divisions
- Designed for Human Appeal (Marketing)
 - Not Designed for Pollinators
 - Often have Little or No Nectar
 - Often more expensive than Native Plants
- Rarely Pollinator-Friendly
- Not Accepted for our program

Nativars

- Cultivated variety of native plant
 - Start with Native (or Native Variety)
 - Selective Breeding for Desired Garden Trait
 - Unnatural Selection
 - Over multiple generations
 - Final plant propagated by cuttings/divisions
- Value to Pollinators?
 - Several issues of concern
 - A topic of current research
 - Plant breeders don't test for this

Nativars – What is Known?

- OK - Size / Growth Habit Changes 
 - Very common for trees & shrubs
- Not OK - Flower Color / Shape Changes 
 - Always compare to native plant
 - Small changes probably OK
- OK – Lighter or variegated Foliage 
- Not OK – Darker Foliage 
 - Diminishes host plant value

Nativars?

- We currently accept All Nativars
 - Other programs also do this
- Should we?
 - Do we need a “Naughty/Nice” List?
 - Not enough data as of October, 2026
- A topic for Future Discussion
 - As more research is published

And then there's Marketing...



Sounds promising – *Diervilla lonicera* is native to NY and other *Diervilla* species are native to the eastern US. One would assume that “Kodiak Orange” must be a nativar.

Marketing... (continued)

Notes | Notas:
Date planted | Fecha de siembra:

Light Exposure Luz	sun or part shade	sol o semisombra	
Hardiness Resistencia	USDA 4-7 (hardy to -30°F)	USDA 4-7 (resistente hasta -34°C)	
Size Tamaño	3-4' tall and wide	.9-1.2m de alto y de ancho	
Spreading Esparcido	4-5'	1.2-1.5m	
Bloom Time Tiempo de floración	summer	verano	
Pruning Poda	spring	primavera	
Soil & Water Sustrato & Agua	adaptable to most	se adapta a la mayoría	
Care Cuidados	fertilize in spring	fertilizar en primavera	
Uses Usos	naturalizing, mass plantings	naturalizar, macizos	
Deer Resistance Resistencia a los venados	high alta	medium mediana	low baja

Planting | Plantar

1. Dig hole wider than pot and as deep. | Cava un hoyo más ancho que la maceta e igual que profundo.
2. Carefully remove rootball from pot, place in hole, and backfill. | Retira con cuidado el cepellón de raíces de la maceta, trasládalo al hoyo, y vuelve a llenar el hoyo.
3. Water well and apply 2-3" of mulch. | Riega bien y aplica 5-8cm de mantillo.



For questions and complete care instructions, visit ProvenWinners.com/ShrubCare
Para ver preguntas e instrucciones de cuidado completas, visita ProvenWinners.com/ShrubCare



Diervilla 'G2X88544'
PP#27548 CBR#5596

KODIAK® Orange diervilla is a very adaptable, durable plant that will brighten your yard with brilliant orange foliage in spring and fall. Very shade tolerant.

La madreselva arbustiva KODIAK® Orange es fuerte y adaptable; embellece el jardín con un brillante follaje anaranjado en primavera y otoño. Soporta bien la sombra.

“Diervilla 'G2X88544' PP#27548 CBR#5596” The genus is Diervilla; but, what's that species name? Hint – PP# refers to a plant patent. The lack of a specific species raises a red flag!

Marketing... (conclusion)

- Kodiak Orange is a hybrid selection of *Diervilla*, a genus composed of three species, all of which are native to eastern North America. (Horticulture magazine)
- The present invention relates to a new and distinct cultivar of Diervilla plant, botanically known as *Diervilla*×*splendens*, commonly referred to as bush honeysuckle and hereinafter referred to by the cultivar name 'G2X88544'.
- The new Diervilla is a product of a planned breeding program conducted by the Inventor in Bellefonte, Pa. The objective of the breeding program was to develop new compact and freely branching Diervilla plants with attractive leaf color.
- The new Diervilla plant originated from an open-pollination in August, 2009 of a proprietary seedling selection of *Diervilla*×*splendens* identified as code number 3349-4, not patented, as the female, or seed, parent with an unknown proprietary selection of *Diervilla*×*splendens*. The new Diervilla plant was discovered and selected by the Inventor on Sep. 1, 2011 as a single flowering plant within the progeny of the stated open-pollination in a controlled environment in Bellefonte, Pa.
- A hybrid of a hybrid. Definitely not “Native”; not even a “Nativar”
- Our opportunities to educate the public are endless...

Pollinator-Friendly Program Status

- 35 Gardens Certified from 2021-2026
 - Low number of applications
 - Only 5 in past two years
- Central Resource for other programs
 - Pittsford Pollinator Pathways
 - Brighton Pollinator Pathways
 - Healthy Yards Monroe County
 - Etc.

Pollinator-Friendly Program Future

- Continue Providing Expertise
 - Updated Native Plant Lists
 - New List Sorted by Availability
 - Add Bloom Color
 - Ongoing Collection of Nativar Data
 - Future Naughty / Nice List
- Encourage Use of Native Plants
 - Presentations / Site Assessments / Etc.
 - “Conservation by Addition”
 - Mt. Cuba Center Philosophy

Questions?

- Additional Resources
 - Cornell Cooperative Extension – Monroe County
 - <http://monroe.cce.cornell.edu/Master-Gardeners>
 - <http://monroe.cce.cornell.edu/master-gardeners/pollinator-friendly-gardens>
 - CCE – Monroe County Gardening Help Line
 - (585)753-2555
 - Monday – Friday / 9AM – Noon (April – October)
 - Monday, Wednesday, Friday (November – March)
- Thank You!