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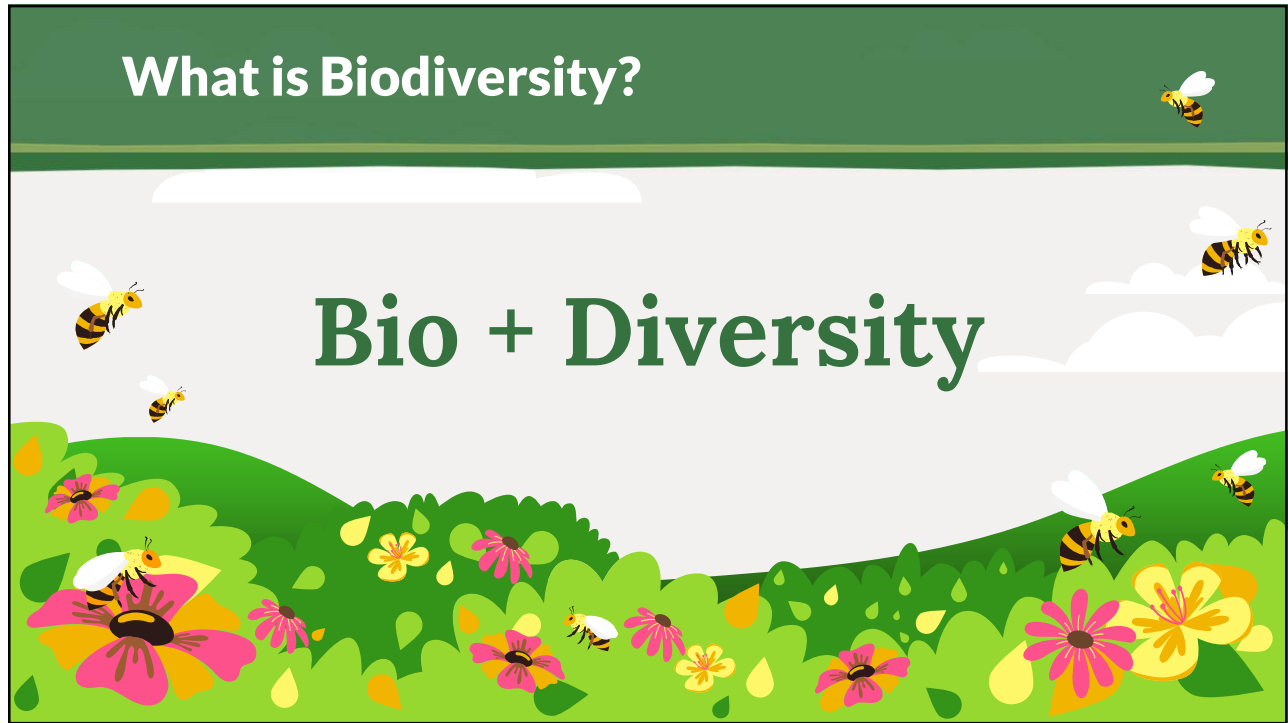


Marlene Smith
 Founder & President
 Wild Ones Chesapeake Bay

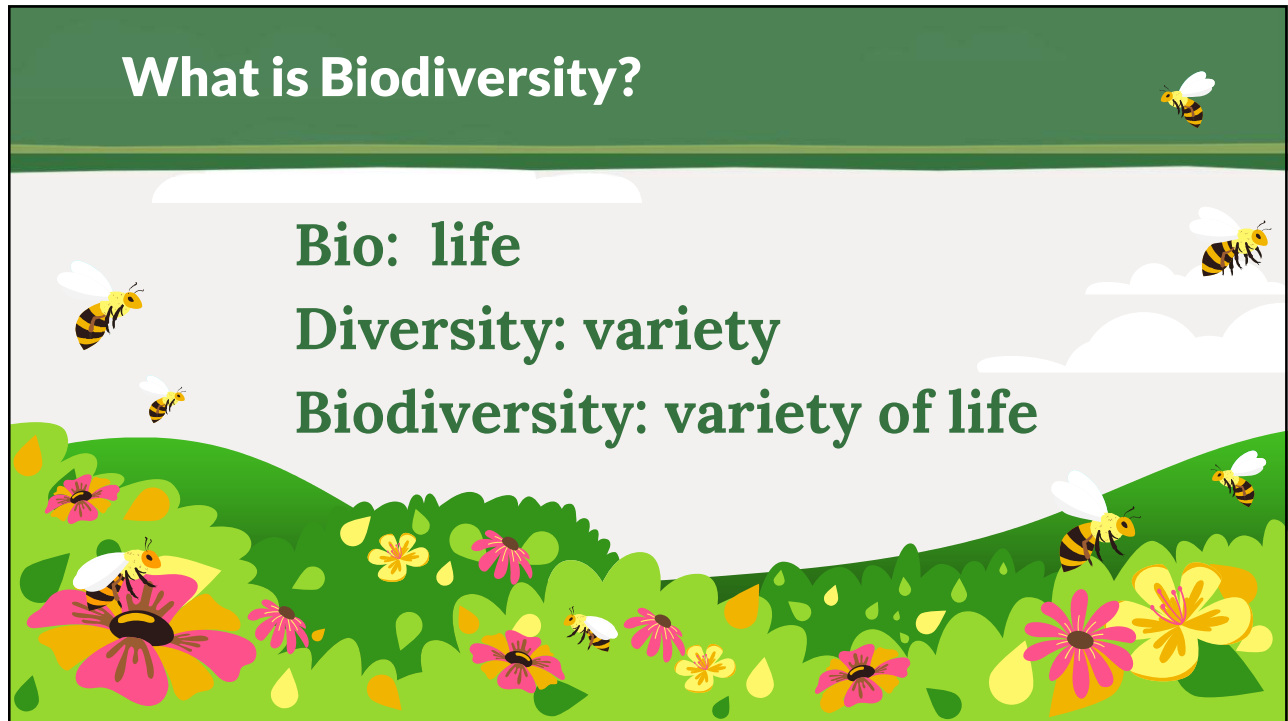
Sam Rutherford
 Founder
 Nurture Natives

Esther Bonney
 Founder and Director
 Nurture Natives

6



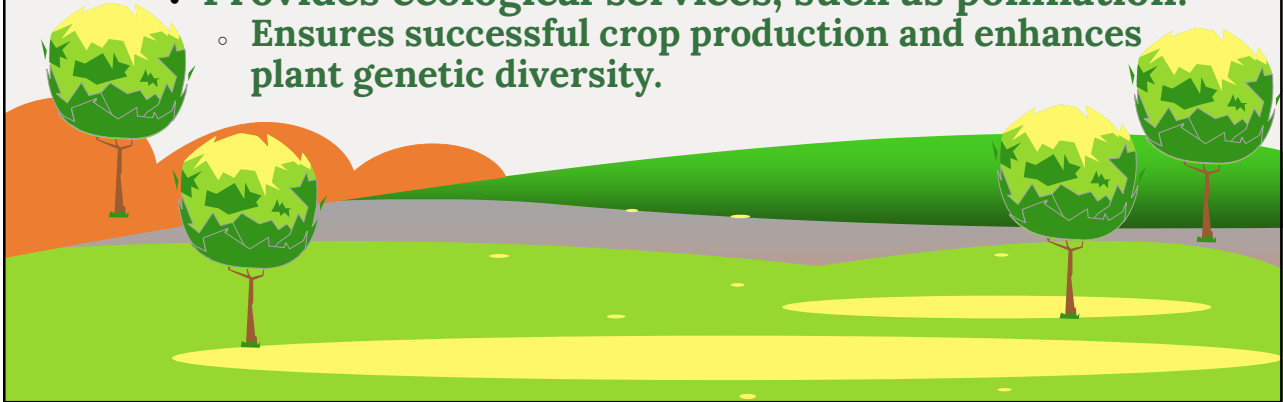
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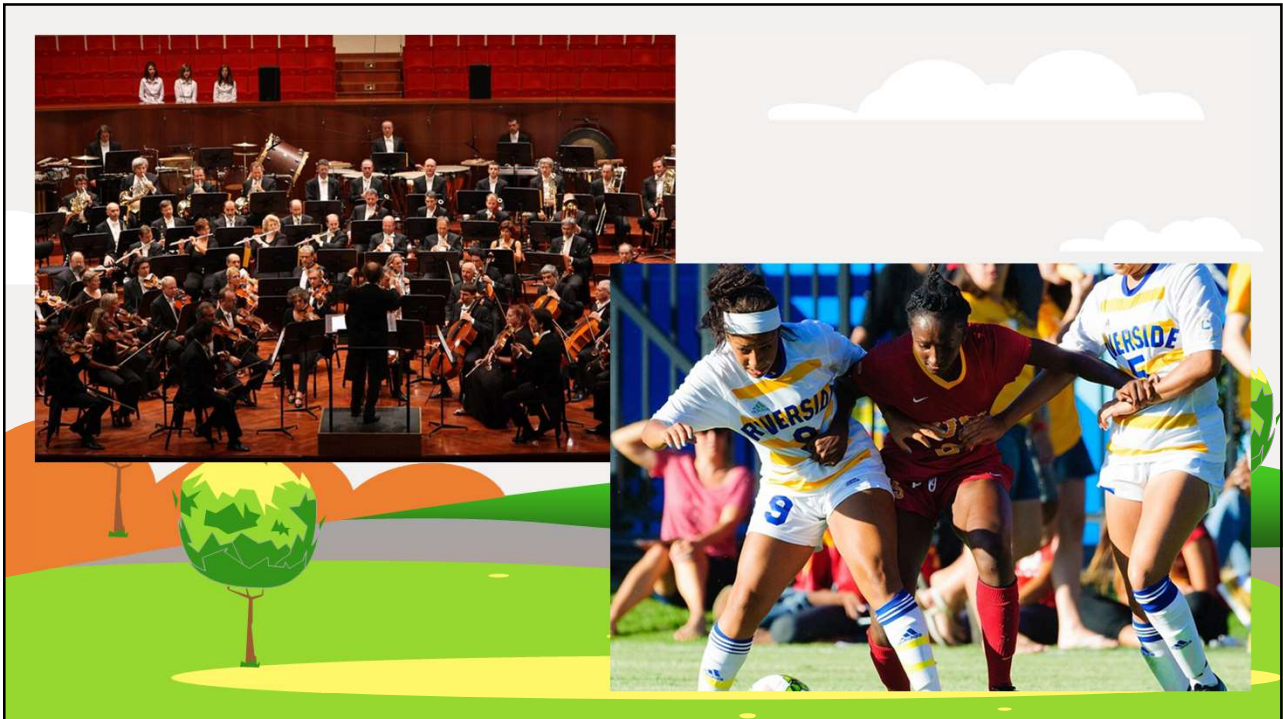
8

Why is Biodiversity Important?

- Provides a variety of foods, roles, and resources.
- Defends against diseases and pests.
- Provides ecological services, such as pollination!
 - Ensures successful crop production and enhances plant genetic diversity.

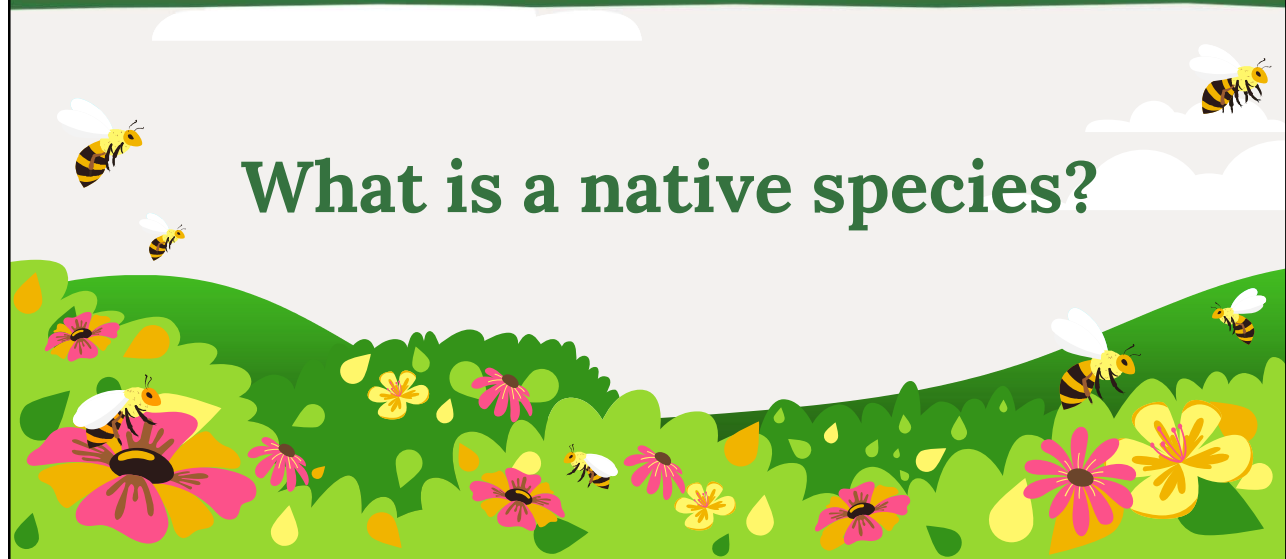


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Native vs Invasive Species



What is a native species?

11

Characteristics of Native Species

- Evolved in the ecosystem over a long time.
- Adapted to local environmental conditions.
- Play vital roles in ecosystem functions.
- Have natural predators and controls.
- Maintain ecosystem stability and balance.



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Native vs Invasive Species



What is an invasive species?

13

Characteristics of Invasive Species

- Introduced to a new ecosystem, often by human activities.
- Rapid reproduction and spread.
- Outcompete native species for resources.
- Lack natural predators or controls.
- Disrupt ecosystem balance and biodiversity.



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17



18




What is a pollinator?

A pollinator is a living organism, such as an insect, bird, bat, or other animal, that transfers pollen to plants and so allows fertilization.

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The Many Kinds of Pollinators

- Bees
- Hummingbirds
- Birds
- Wasps
- Moths
- Syrphid Flies (Hoverflies)
- Wind
- Reptiles
- Butterflies
- Bats
- Flies
- Beetles
- Ants
- Carrion Flies
- Honeybees
- Wind



The list goes on!

20




“If the bee disappeared off the face of the Earth, man would only have four years left to live.”

~Albert Einstein

21

How Does Pollination Work?



01
Invitation

Pollinators like flowers for the same reasons we like them.

02
Pickup


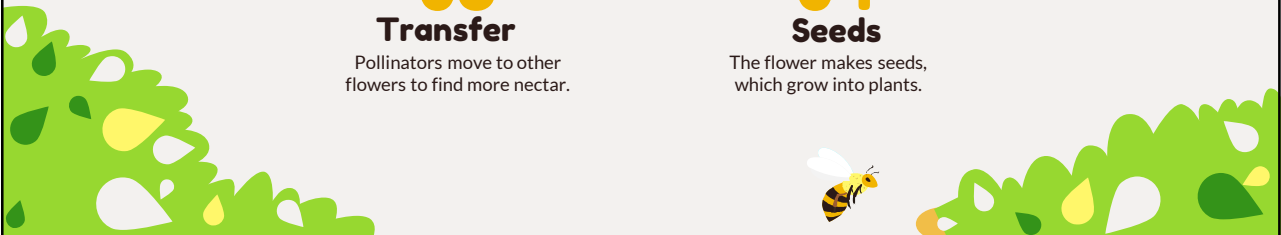
As they eat, tiny, powdery grains called pollen stick to their bodies.

03
Transfer

Pollinators move to other flowers to find more nectar.

04
Seeds

The flower makes seeds, which grow into plants.

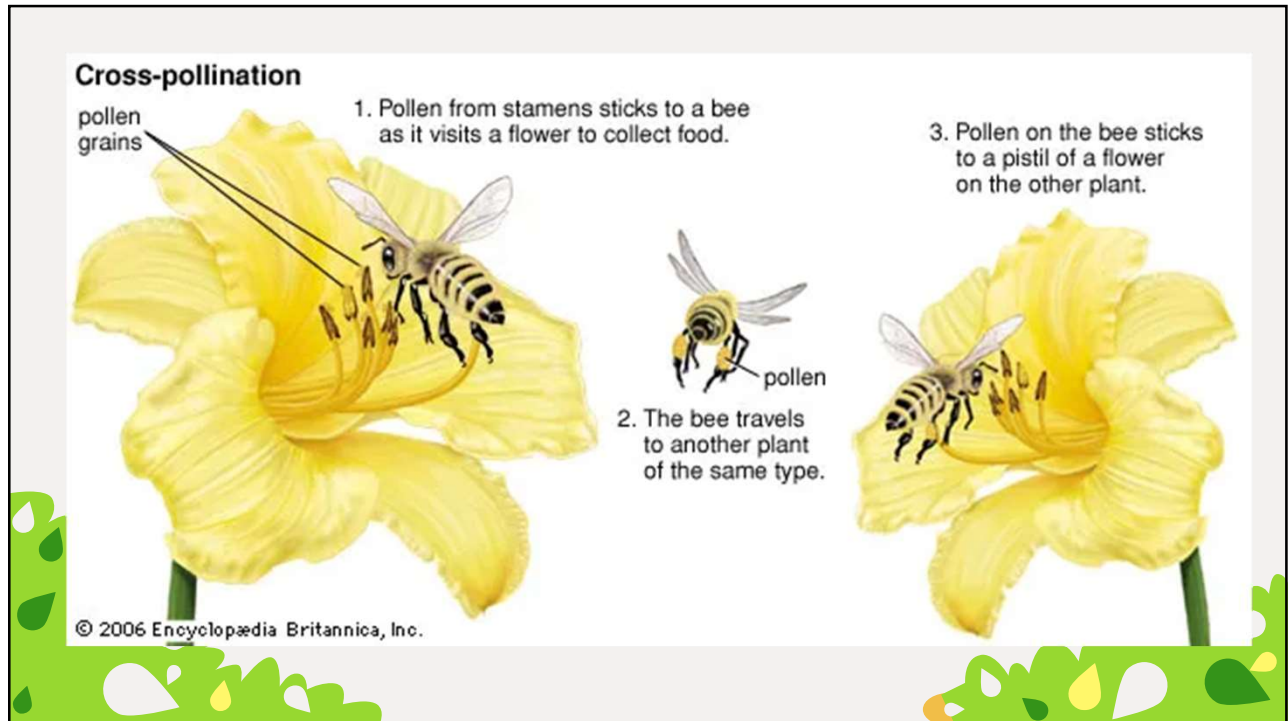
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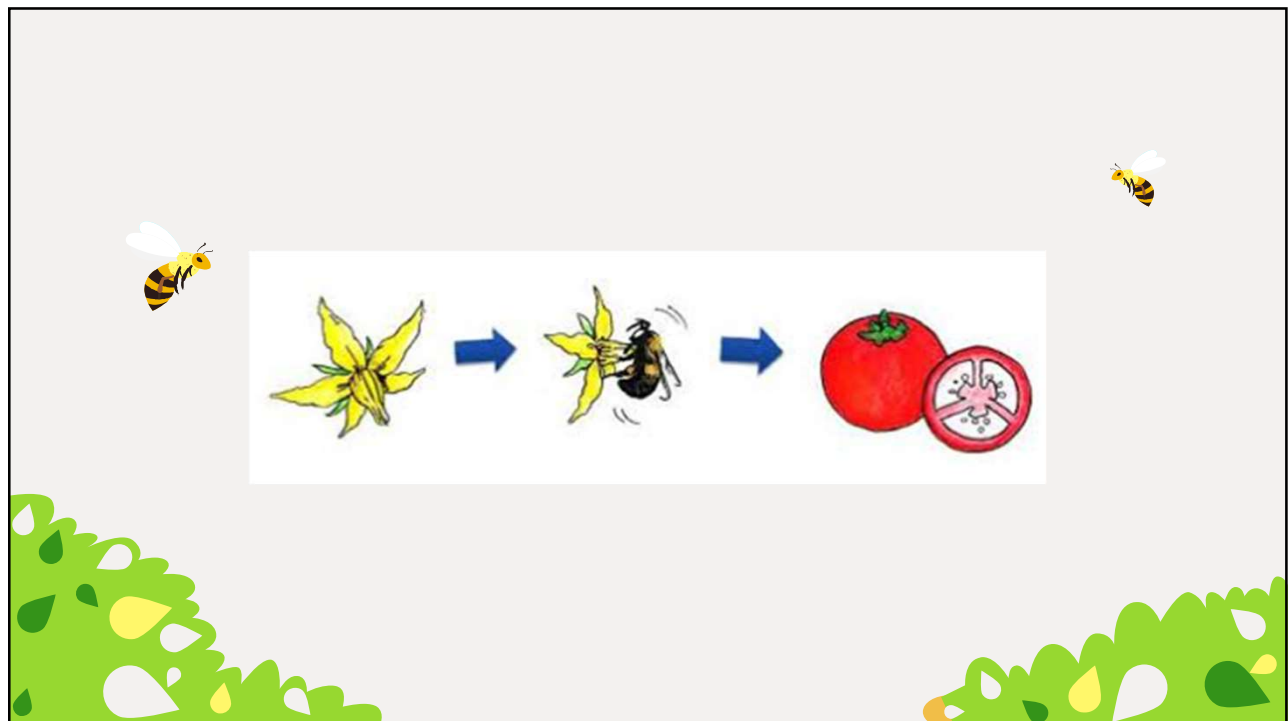
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Why Should We Care?

The Importance of Native Species

Critical Functions

- Biodiversity
- Ecosystem Services
- Cultural and Aesthetic Value
- Resilience to Climate Change
- Supporting Wildlife
- Invasive Species Control
- Economic Benefits
- Research and Science
- Preventing Extinction

An illustration featuring several bees flying around a central green tree with a yellow top. The tree is surrounded by various flowers, including a pink one and a yellow one. The background is a light grey gradient, and the bottom edge has a decorative green border with white and yellow floral patterns.


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Threats to Biodiversity

- Habitat loss
- Invasive species
- Overuse of pesticides
- Climate change
- Pollution
- Disease

Royal Farms,
Charlotte Hall

Photo: Marlene Smith

A photograph of a construction site under a blue sky with white clouds. In the foreground, there is a large blue pipe lying on the ground. In the middle ground, several yellow excavators are working on a dirt area. The background shows a line of trees and a clear horizon.

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ian.com

Photos: Marlene Smith

Habitat Loss

- Deforestation
- Urban and suburban development
- Roadways and parking lots
- Residential and commercial lawns
- Industrial agriculture/monocrops

Aldi's & ChikFilA (top)
Sheetz (bottom)
Charlotte Hall

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Photo: Marlene Smith

Consequences of Habitat Loss

- Loss of shelter that is critical for all phases of insect lifecycles
- Loss of pollen that is a primary food source for native bees
- Loss of host plants which are primary food for caterpillars
- Loss of nectar plants for adult butterflies that need nectar-rich flowers to fuel breeding and migration

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Why Native Plants?

- Landscaping with native plants restores vital ecosystems by supporting food webs and enhancing genetic diversity of species
- Healthy ecosystems provide natural predatory insects, thus reducing the need for pesticides
- Native plants support healthy economies by supporting pollinators, which are vital for crop production

Photo: Marlene Smith



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Photo: Marlene Smith

Why Native Plants?

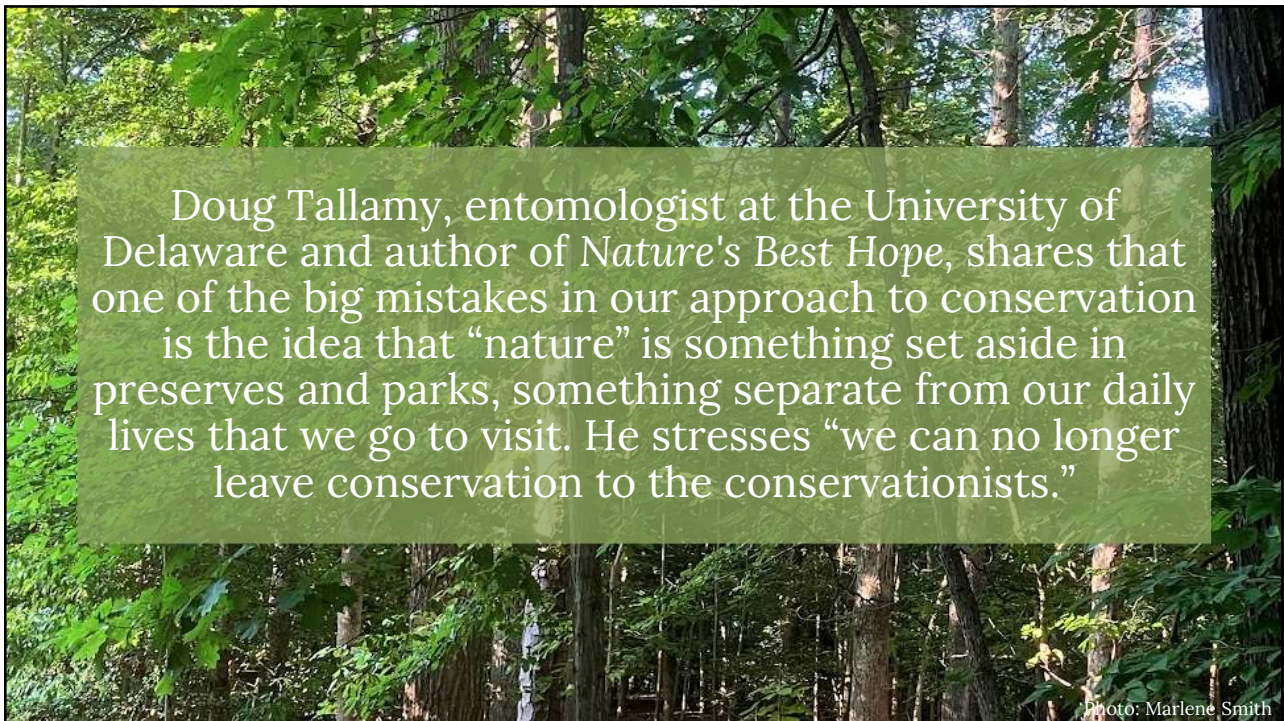
- Native plants are resilient and adapted to regional soil and weather conditions
- Native plants require minimal inputs
- Native plants mitigate stormwater runoff, reduce erosion and improve water quality
- Deep roots of native plants improve soil by feeding soil microbes and adding organic matter
- Native plants sequester carbon and are part of the solution to the climate crisis

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Photo: Marlene Smith

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Doug Tallamy, entomologist at the University of Delaware and author of *Nature's Best Hope*, shares that one of the big mistakes in our approach to conservation is the idea that “nature” is something set aside in preserves and parks, something separate from our daily lives that we go to visit. He stresses “we can no longer leave conservation to the conservationists.”

Photo: Marlene Smith

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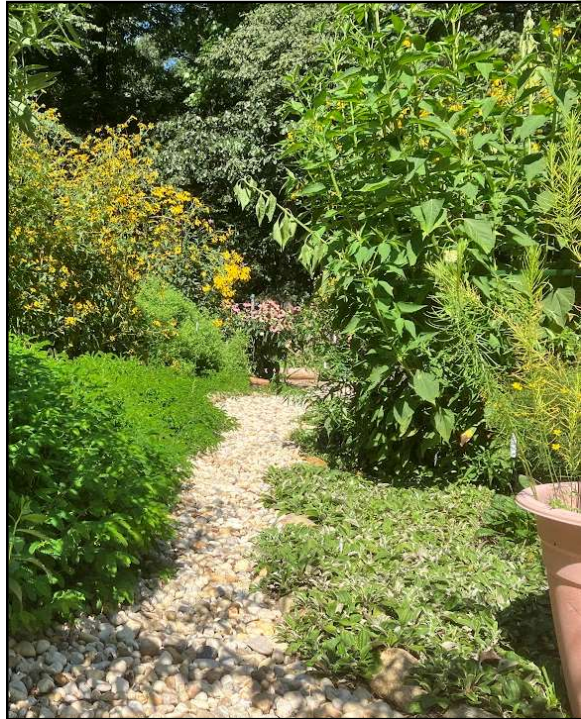


Photo: Marlene Smith

Ecological Gardening - Creating Natural Habitat at Home

- Plant native plants to support insects, birds, and other wildlife
 - ~ Nectar, pollen, and berries
- Create/enhance shelter
 - ~ Nests and nurseries
- Avoid pesticides/attract natural predators
- Spread the word/educate others

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Getting Started

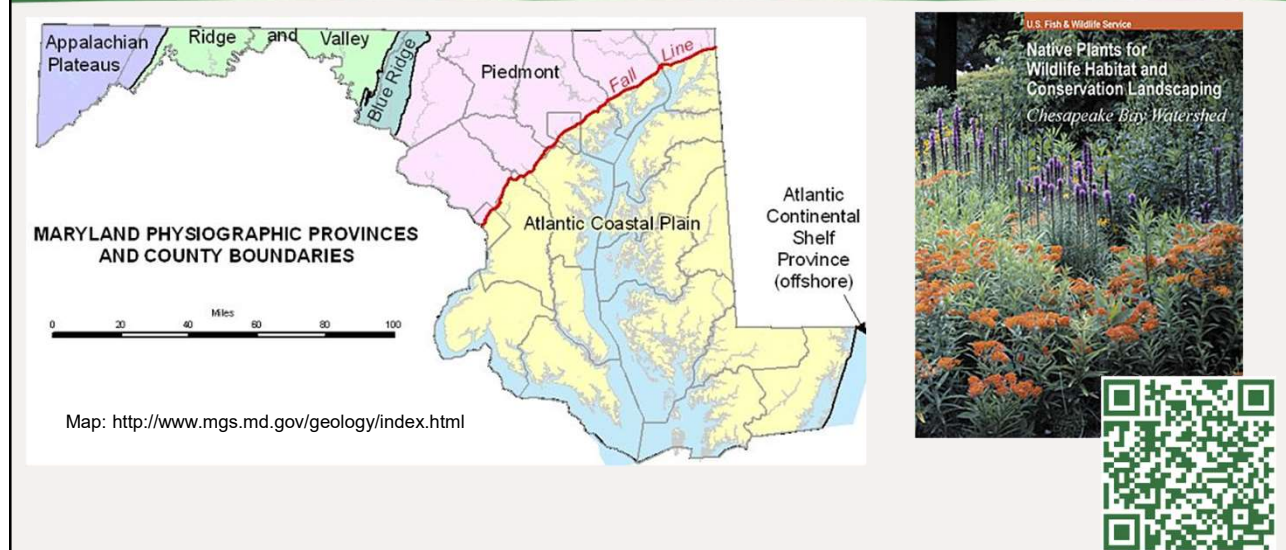
- What are your goals?
- What are your site conditions (sun, soil, moisture)?
- Right Plant, Right Place
- What is your ecoregion?

Photo: Marlene Smith



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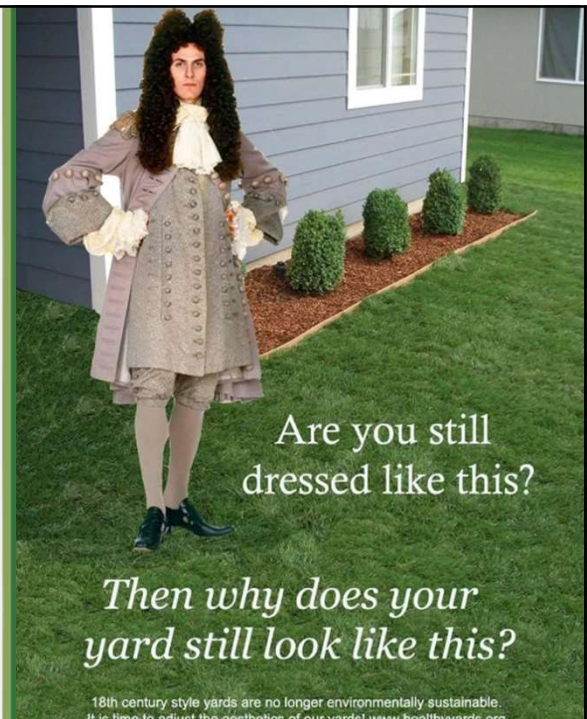
Ecoregions of Maryland



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Getting Started

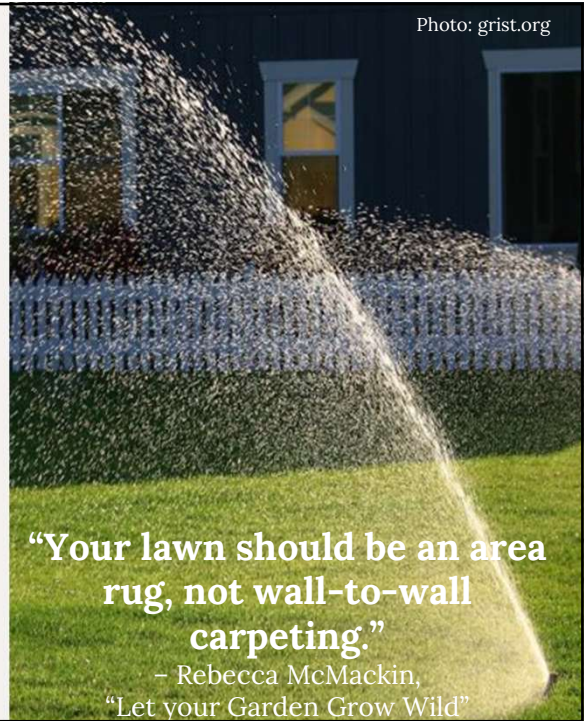
- Trim your turf
- Use layers
 - Structural
 - Seasonal interest
 - Ground cover
- Support insect life cycles
- Include plants for pest control



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Why Trim Your Turf?

- Turf grass is sterile/toxic space, covering 63,000 square miles
- It's the #1 irrigated crop in America, using up to 200 gallons of water per day per person; 50-75% of an annual water bill
- We spend 3 billion hours pushing or riding lawn & garden equipment
- A gas mower emits as much pollution per hour as 11 cars
- We use tens of millions of pounds of fertilizer & pesticides that leach into our waterways



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Turf Transformation



9/21/2023 Cut low



9/22/2023 Mulch



7/7/2024



7/26/2024

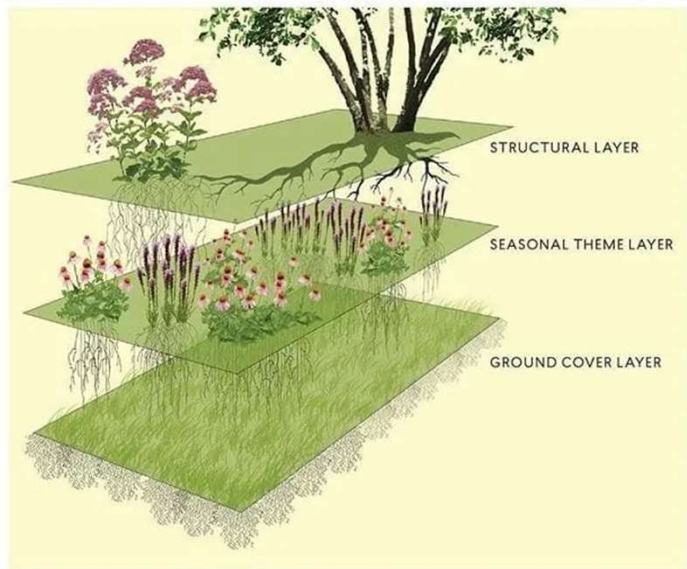
Photos: Marlene Smith

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Layers of an Ecological Garden

- Plant seasonal interest varieties in clumps, drifts, masses
- Plantings don't have to be complicated
- Plant a 3x3x3 garden
- Include keystone plants

LAYERS OF A DESIGNED PLANT COMMUNITY



Source: *Planting in a Post-Wild World* by Thomas Rainer and Claudia West

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Keystone Plants



Type	Genus	Caterpillars supported	Specialist Bees supported
Perennial	Goldenrod (<i>Solidago species</i>)	104	42
Perennial	Aster (<i>Symphotrichium spp.</i>)	100	33
Perennial	Sunflower (<i>Helianthus spp.</i>)	289	14

WANT MORE BUTTERFLIES?

A grid of illustrations showing butterflies and their host plants. The top row shows six butterflies. Below them are three columns of plants: Prunus (Cherry & Plum), Quercus (Oak), and Salix (Willow). The bottom row shows three columns of flowers: Aster, Solidago (Goldenrod), and Helianthus (Sunflower). Each plant illustration includes the text 'NATIVE TO YOUR AREA'.

Keystone plants are native plant powerhouses and support the most butterflies, moths, and native bees.

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Spring Blooming Native Plants for Butterflies

Viola sororia

Common blue violet

Geranium maculatum

Wild geranium

Zizia aurea

Golden Alexander

Antennaria plantaginifolia

Plantain pussytoes



Photos: Marlene Smith

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Summer Blooming Native Plants - Milkweed

Asclepias syriaca

Common milkweed

Asclepias incarnata

Swamp milkweed

Asclepias tuberosa

Butterfly milkweed

Asclepias verticillata

Whorled milkweed



No milkweed = No monarchs

Photos: Marlene Smith

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More Summer Blooming Native Plants

Monarda punctata

Spotted bee balm

Pycnanthemum muticum

Clustered mountain mint

Helianthus helianthoides

Oxeye sunflower

Eutrochium purpureum

Sweet-scented Joe Pye



Photos: Marlene Smith

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Fall Blooming Native Plants

Solidago casia

Bluestem goldenrod

Sympho. novae-angliae

New England aster

Chelone glabra

White turtlehead

Lobelia siphilitica





Great blue lobelia



Photos: Marlene Smith

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Three Season Blooms for Hummingbirds

Spring	Summer	Summer/Fall	3-seasons
<p><i>Aquilegia canadensis</i></p> <p>Wild columbine</p>	<p><i>Monarda didyma</i></p> <p>Scarlet bee balm</p>	<p><i>Lobelia cardinalis</i></p> <p>Cardinal flower</p>	<p><i>Lonicera sempervirens</i></p> <p>Coral honeysuckle</p>
			

Provide bloom throughout the breeding and migration seasons Photos: Marlene Smith

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The “imperfect garden”

Learn about the pollinators in your garden and accept their handiwork

Leafcutter bees and many butterflies and moths use plant leaves, stems, flowers



Photo Lisa Massie



Video: Marlene Smith

Hemaris diffinis

Snowberry clearwing moth



Photo: Marlene Smith

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Photo: Marlene Smith

Avoid Pesticides

- Pesticides are everywhere, often at levels that are harmful to wildlife
- Don't use pesticides unless you have no alternative
- Avoid broadcasting pesticides
- Avoid systemic products
- Read guidance carefully
- Even when label instructions are followed, there is limited protection for pollinators and other insects
- Organic can still be toxic
- Encourage natural pest control

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Natural Pest Control

- It doesn't contribute to pesticide pollution.
- It aids in maintaining a natural balance.
- It's easy!
- It's cheap!

Who's Managing the Oleander Aphids?

Syrphid Fly Larva

Lacewing Larva

Lady Beetle Eggs

First Instar Queen Caterpillar

Lady Beetle

Meet the predators

Photos by Kristin Sanchez, TX

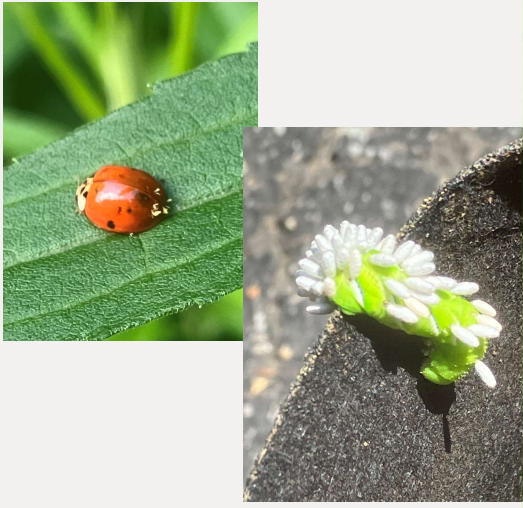
Serendipity FB Group

Serendipity FB Group
Grow Native • Grow Biodiversity

"Wasps are an extremely important component of complex and diverse ecosystems. They are responsible for a multitude of plant-insect interactions that may result in pollination, and insect-insect (predator-prey) interactions" (Wasps, Holm).

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Natural Pest Control



Perennial Plants that Attract Beneficial Insects			
Common Name	Scientific Name	Bloom Time	Notes
Golden Alexanders	<i>Zizia aurea</i>	April-June	Host plant for black swallowtail
Canada Anemone	<i>Anemone canadensis</i>	May-July	Likes moist soil
Dill	<i>Anethum graveolens</i>	May-June	Attracts green lacewings, syrphid flies, and ladybugs; host plant for black swallowtail
Lanceleaf Tickseed	<i>Coreopsis lanceolata</i>	June-October	Great bee and butterfly nectar plant
Indian Hemp	<i>Apocynum cannabinum</i>	June-August	Nectar source for monarchs
Meadowsweet	<i>Spiraea alba</i>	June-September	Grows best in western Maryland
Spotted Beebalm	<i>Monarda punctata</i>	June-October	Attracts wasps
Wild Bergamot	<i>Monarda fistulosa</i>	June-September	Attracts wasps
Canada goldenrod	<i>Solidago canadensis</i>	July-October	Great nectar source for migrating monarchs; attracts beetles and wasps
Boneset	<i>Eupatorium perfoliatum</i>	July-October	Great for bees and butterflies
Blue Lobelia	<i>Lobelia siphilitica</i>	August-October	Likes moist soil
New England Aster	<i>Aster novae-angliae</i>	August-October	Great nectar source for migrating monarchs

Photos: Marlene Smith

<https://dnr.maryland.gov/wildlife/documents/Habichat50.pdf>



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Provide Shelter

- Leave the leaves
- Save the stems
- Leave fallen logs and snags
- Build a stick pile
- Build a rock pile




Photo: Marlene Smith

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Leave the Leaves

- They are literally called leaves; we should leave them.
 - Bumblebees nest in them.
 - Birds will forage through them.
 - Butterflies, moths, and fireflies overwinter in them.
- But how?
 - Leave a thin layer on grassy layers.
 - Move to flower or vegetable beds to improve soil and prevent weeds.
 - Pile around trees, shrubs, and perennials as mulch.
 - Avoid shredding.



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How to Create Habitat for Stem-Nesting Bees

WINTER
Leave dead flower stalks intact over the winter

SPRING
Cut back dead flower stalks leaving stem stubble of varying height, 8 to 24 inches, to provide nest cavities.

SUMMER
New growth of the perennial hides the stem stubble.

FALL

WINTER

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

Save the Stems

Many hollow or pithy plant stems and branches provide excellent places for cavity-nesting insects to call home. Small carpenter bees (*Ceratina* spp.) frequently carve out their nests in last year's dead raspberry (*Rubus* spp.) canes or wildflower stems, often only a few inches away from the blossoms that provide pollen to feed their young. Still tinier yellow-faced bees (*Hylaeus* spp.) use the hollow center of smaller stems, like bee balm (*Monarda* spp.) or roses (*Rosa* spp.), and larger leaf-cutter bees (*Megachile* spp.) prefer the larger stems of plants like native thistles (*Cirsium* spp.), cup plant (*Silphium perfoliatum*), or desert willow (*Chilopsis linearis*). The biggest stem-nesting bees in North America, large carpenter bees (*Xylocopa* spp.), sometimes use the pithy stems of large plants like yucca (*Yucca* spp.) and agave (*Agave* spp.) in regions where wood is uncommon or unavailable. Other common occupants of dead stems and twigs include cavity-nesting wasps, stem-boring moths, and even some spiders. In addition, some beneficial insects insert their eggs into the stems of wildflowers and grasses for safe keeping over the winter.

Learn more about how you can help provide nesting habitat for native bees at: xerces.org/pollinator-conservation/nesting-resources

Print additional copies of this brochure at: xerces.org/publications/brochures/save-the-stems

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Acknowledgments
How to Create Habitat for Stem-Nesting Bees graphic provided by Colleen Satyshur, Elaine Evans, Heather Holm, and Sarah Foltz Jordan. Text above adapted from *Nesting & Overwintering Habitat for Pollinators & Other Beneficial Insects* by Sarah Foltz Jordan, Jennifer Hopwood, and Sara Morris of The Xerces Society for Invertebrate Conservation (available at: xerces.org/publications/fact-sheets/nesting-overwintering-habitat)

22-005_01

Save the Stems

- Keep stems from plants with pithy or hollow stems to provide natural nesting sites for bees.
 - Joe Pye
 - Sunflowers
 - New England aster
 - Wild bergamot
 - Goldenrods
- But how do you manage them?
 - Leave flower stalks intact over winter.
 - Prune to create nest sites in early spring..
 - Cut at a variety of heights 8-24 inches.
 - Watch for activity of stem nesting bees.

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Other Natural Habitat

- Leave fallen logs
- Leave snags from dead trees
- Build a stick or log pile
 - Soft, woody branches
 - Stack any size pile, leaving gaps and openings
 - Insects and other wildlife will occupy cut ends and open spaces
- Build a rock pile
 - Assemble a diversity of types and sizes in a “messy” configuration or as part of your hardscaping
 - Incorporate grasses, shrubs, or perennials to increase wildlife value

Photos: Marlene Smith



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We Can All Make Space for Wildlife

- Personal gardens
- Public libraries
- College campuses
- Office buildings



Butterfly Alley

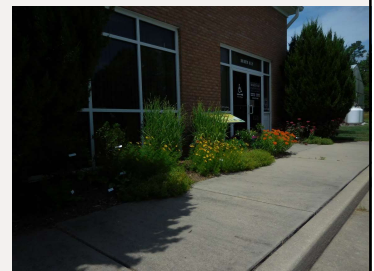


Leonardtown Library

St. Mary's Extension Office



College of Southern Maryland



Photos: Marlene Smith

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We Can All Make Space for Wildlife

- Government buildings
- Churches
- Along sidewalks
- Old ball fields

Photos: Marlene Smith



St. Mary's Animal Adoption Rescue & Resource Center



Christ Church La Plata



The Barns at New Market



Univ. Park Meadow

67



Infographic: Hungarian Entomological Society

Remember: Biodiversity is Key

- Biodiversity refers to the number of different species present in the community
- Communities with high biodiversity survive environmental change well
- Where does your garden fall in the matrix of the local community?

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Get the Word Out

The Hum of Bees is the Voice of the Garden

Bay Wise
Landscape practices for a healthy Chesapeake Bay
Plant and maintain Conservation Landscapes
www.baywise.umd.edu
University of Maryland Extension
Home and Garden Information Center
1-800-342-2507

CERTIFIED NATIVE HABITAT
Native plants and natural landscapes thriving in every community
WILD ONES

CERTIFIED FIREFLY HABITAT
firefly

Pesticide-Free Garden

PROPERTY IS ON THE POLLINATOR PATHWAY
NATIVE PLANTS PESTICIDE-FREE

ON THE MAP!
PLANT NATIVE
HOME GROWN NATIONAL PARK
HomegrownNationalPark.org

MONARCH WAYSTATION
This site provides milkweeds, nectar sources, and shelter needed to sustain monarch butterflies as they migrate through North America. Certified and registered by Monarch Watch as an official Monarch Waystation.
CREATE, CONSERVE, & PROTECT MONARCH HABITATS
WWW.MONARCHWATCH.ORG

NATIONAL WILDLIFE FEDERATION CERTIFIED WILDLIFE HABITAT
THIS PROPERTY IS REGISTERED FOR THE COMMITMENT TO SUSTAINABLY PROVIDE ESSENTIAL ELEMENTS OF WILDLIFE HABITAT: FOOD, WATER, COVER AND PLACES TO RAISE YOUNG

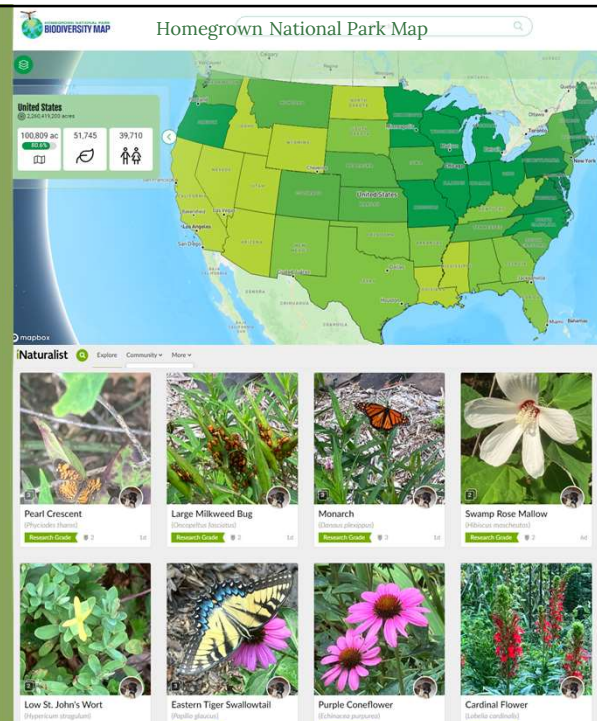
POLLINATOR HABITAT
MONARCH SOCIETY
Habitat for pollinators and protected from pesticides and herbicides

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Share and Document Your Habitat & Observations

Your observations help educate others!

- Homegrown National Park
- iNaturalist
- Journey North
- Monarch Watch
- Bumble Bee Watch
- Firefly Atlas
- Monarch Nectar Plant Observations



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Xerces Monarch Nectar Plant Observations

Monarch Nectar Plant Observations

Please share your monarch butterfly nectar plant observations with the Xerces Society!

Observations must include at least one photograph of the monarch and/or nectar plant.

Learn more about this project here: <https://xerces.org/monarch-nectar-plants/>.



If you have monarchs nectaring on native plants, scan this QR code to report.



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Resources - Books



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Resources - Books by Xerces



77

Resources - Xerces Native Plants for Pollinators & Beneficial Insects: Mid-Atlantic



<https://xerces.org/publications/plant-lists/native-plants-for-pollinators-and-beneficial-insects-mid-atlantic>



SCIENTIFIC NAME	COMMON NAME	BLOOM	LIFE	FORM	SUN	SOIL	ADDITIONAL DETAILS ①
<i>Acer rubrum</i>	Red maple	MAR-APR	P	Tree	☀️	W	🐝 🐛 🐜
<i>Amelanchier canadensis</i>	Canadian serviceberry	APR-MAY	P	Shrub	☀️	M	🐝 🐛 🐜
<i>Asclepias incarnata</i> ★	Swamp milkweed	JUN-SEP	P	Herb	☀️	W	🐝 🐛 🐜 🦋 🚫
<i>Asclepias syriaca</i>	Common milkweed	JUN-AUG	P	Herb	☀️	D-M	🐝 🐛 🐜 🦋 🚫
<i>Asclepias tuberosa</i>	Butterfly milkweed	JUN-AUG	P	Herb	☀️	D	🐝 🐛 🐜 🦋 🚫
<i>Baptisia tinctoria</i> ★	Yellow wild indigo	JUN-AUG	P	Herb	☀️	D	🐝 🐛

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Local Native Plant Sources



Goodman LLC.
NATIVE PLANTS & CONSERVATION CONSULTANCY



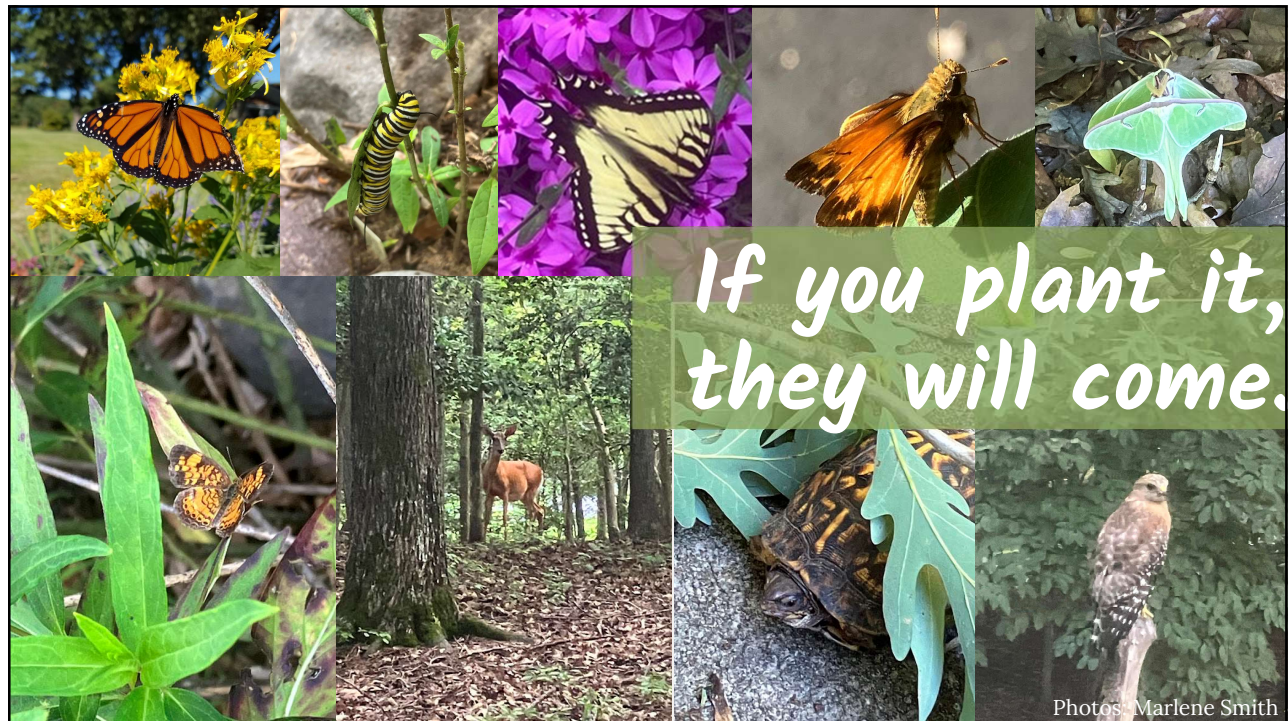
<https://mdflora.org/nurseries.html>



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