

Milkweed & Monarchs

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What are Pollinators?

- Animals that move from plant to plant while searching for **protein-rich pollen** or **high-energy nectar** to eat.
- **Fertilize plants** as they move, allowing the plant to form seeds, berries, fruits and other plant foods.
- **Over 100,000 invertebrates** (butterflies, wasps, moths, bees, flies, beetles) and **over 1,000 mammals, birds, reptiles, and amphibians act as pollinators.**



What are Pollinators?



Common Ohio Bee Species

Honey Bee



Bumble Bee



Squash Bee



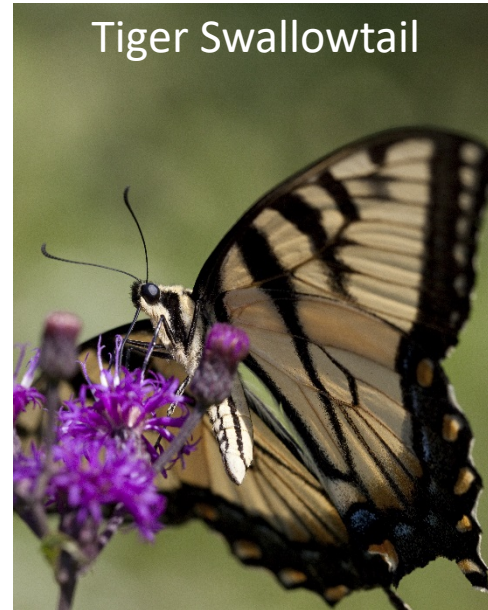
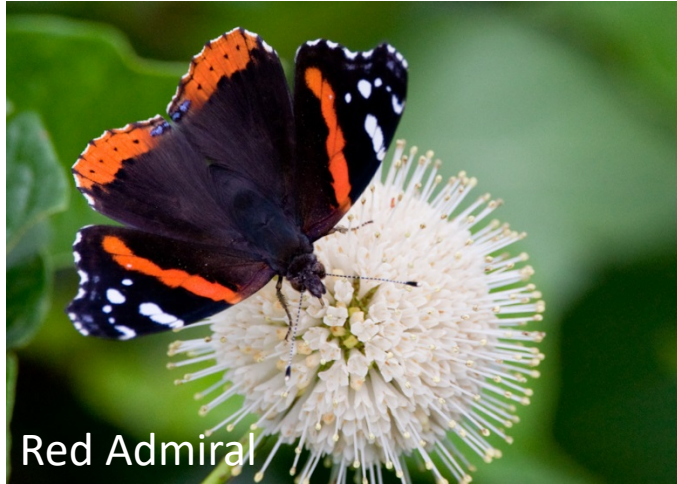
Carpenter Bee



Mason Bee

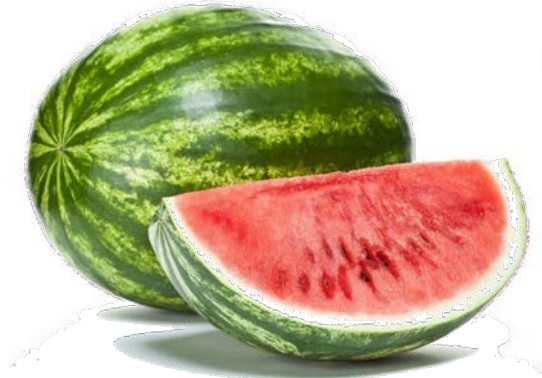


Common Ohio Butterfly Species



Why We Love Pollinators

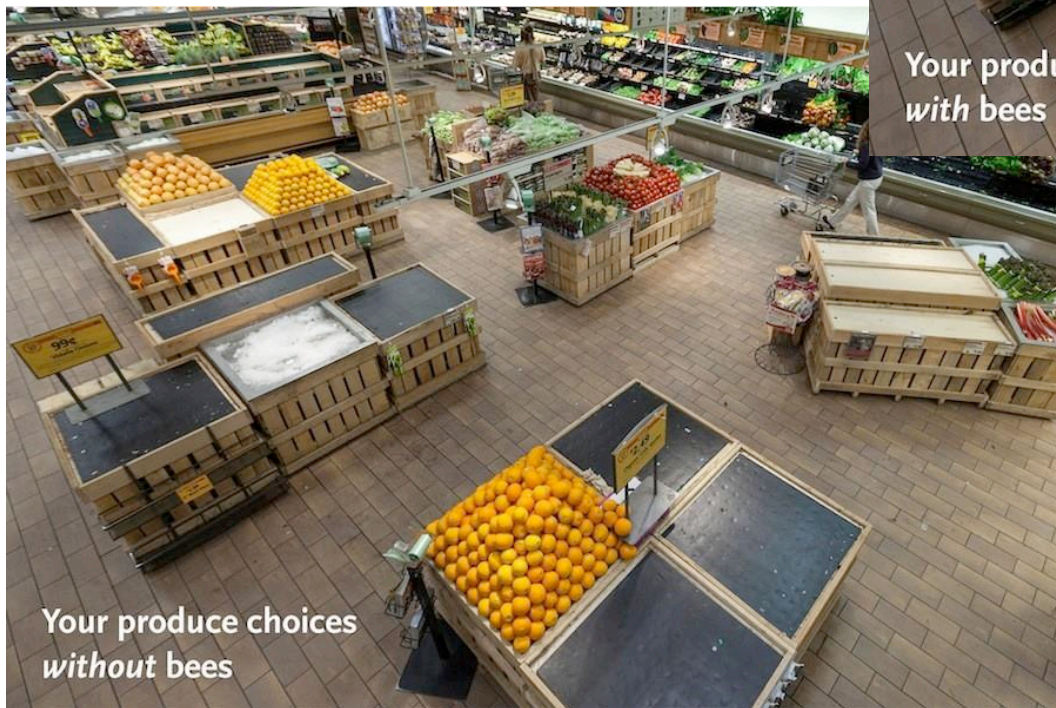
Over **75% of plants** rely on animal pollinators



Produce Choices With and Without Bees



Your produce choices
with bees



Your produce choices
without bees

More than 150 food crops
depend on pollinators,
including almost all fruit and
grain crops



Your dairy choices *with* bees

Pollinators are responsible for 1 out of 3 bites of food we take each day



Your dairy choices *without* bees

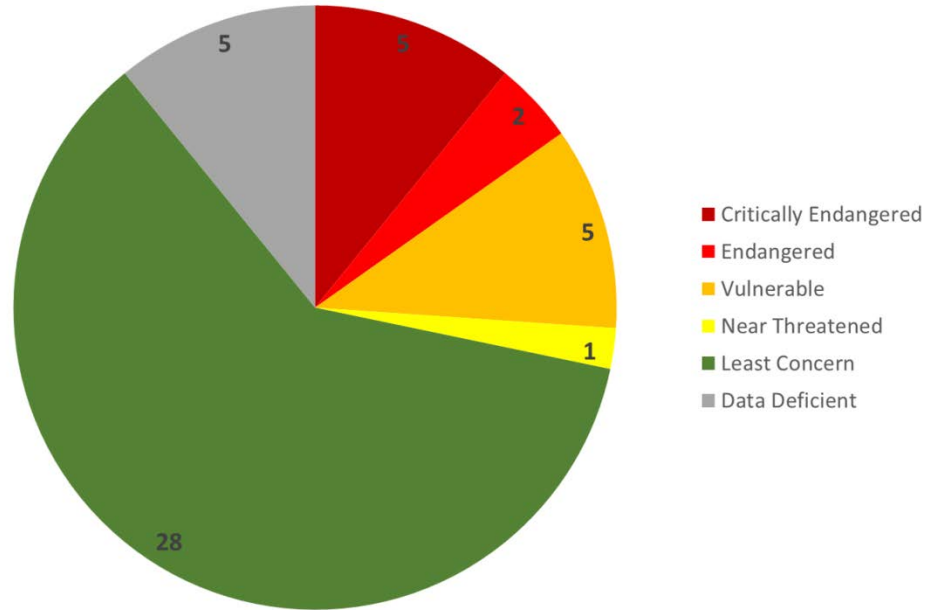
Dairy Choices With and Without Bees

The Issue

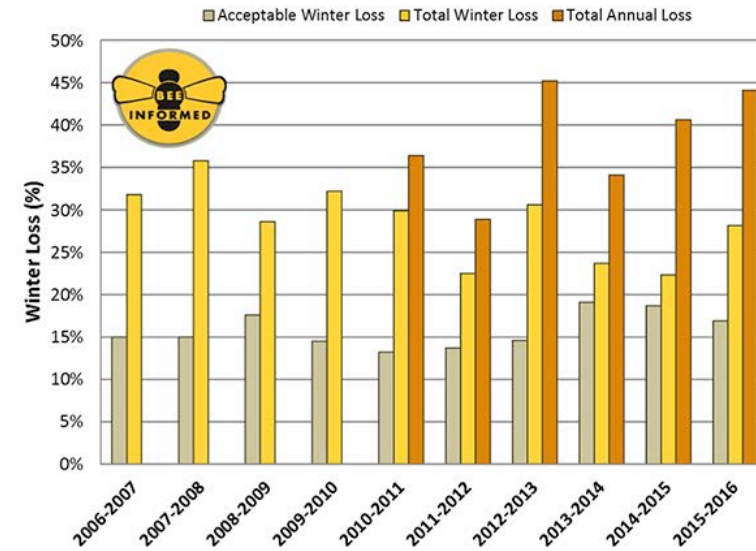
General Decline in Pollinators



Bumble Bees of North America



Total US managed honey bee colonies Loss Estimates



Bumble bees commercially reared for agriculture are **transmitting diseases** to wild populations.



One of the biggest factors affecting all pollinators is **fragmentation and loss of habitat**.



Widespread pesticide use further degrades habitat by removing flowering plants and poisoning pollinators.



Climate change is affecting bumble bees by changing bloom time and subjecting populations to fluctuating temperatures and weather extremes.

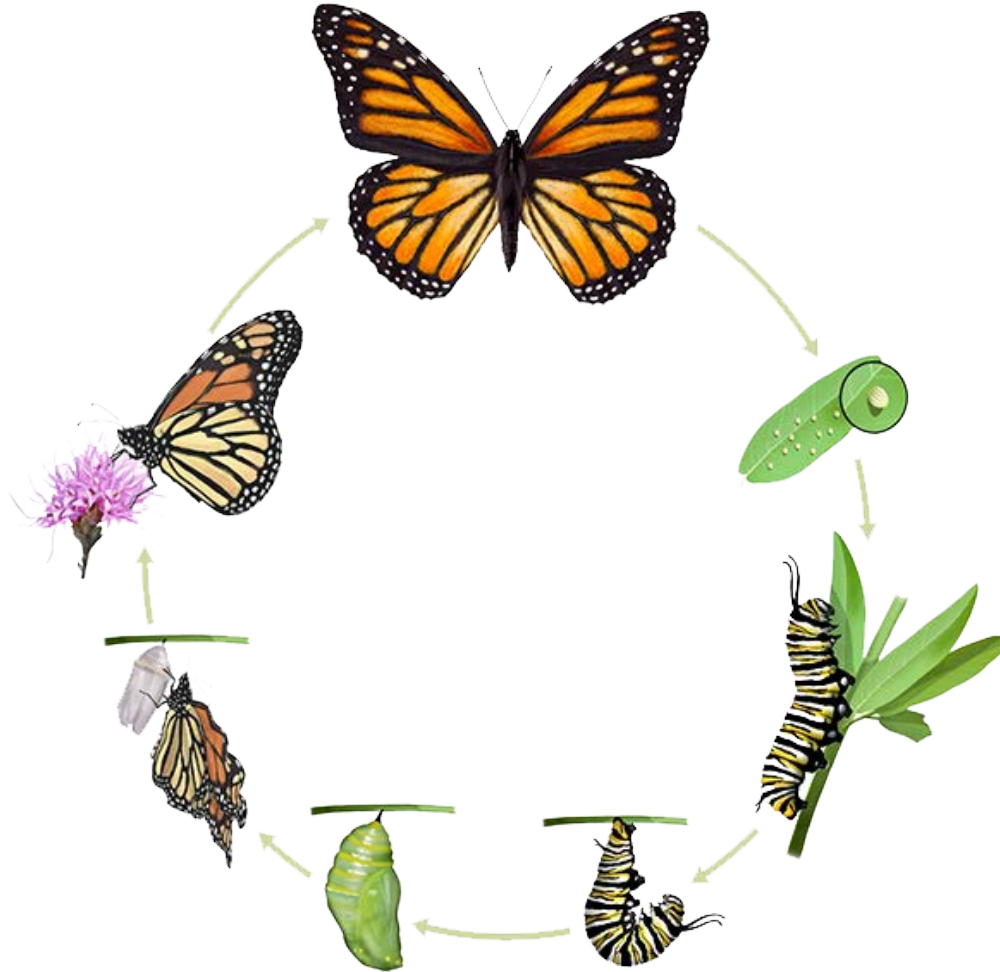
The Issue

Monarch Decline



J. Burris

Butterfly Life Cycle



Monarch Butterfly Laying Eggs



Monarch Butterfly Egg Hatching



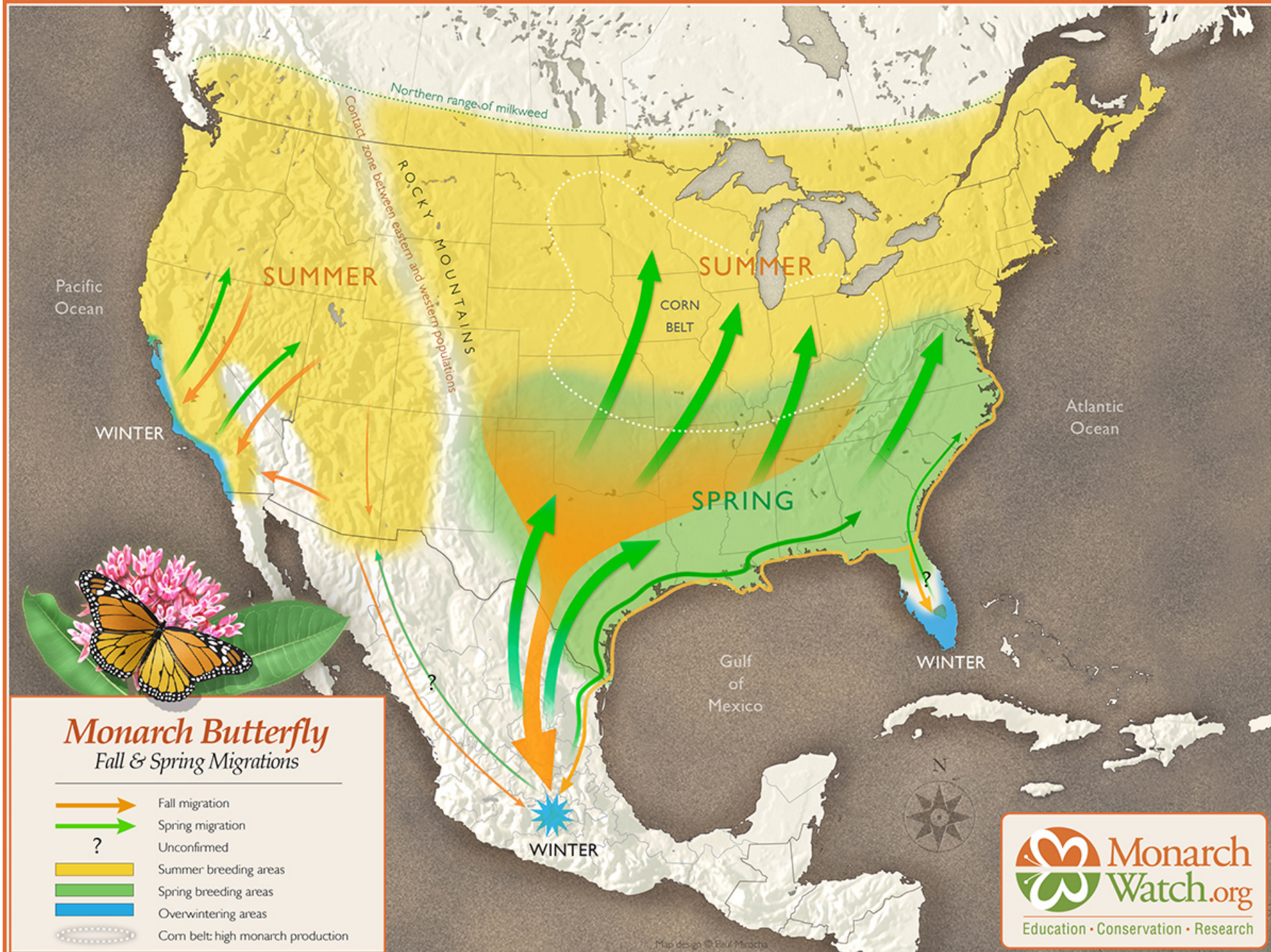
Monarch Caterpillar Instars



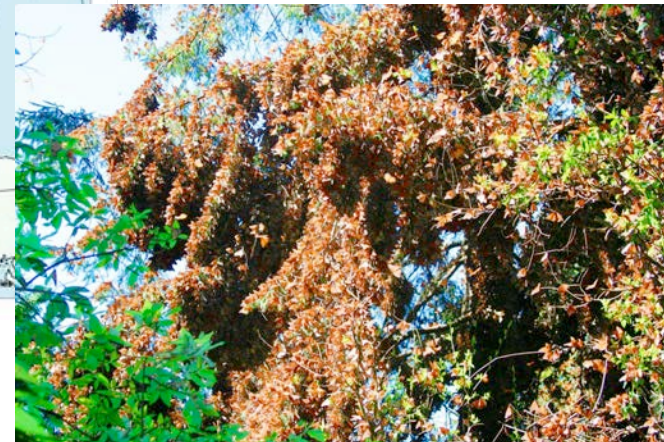
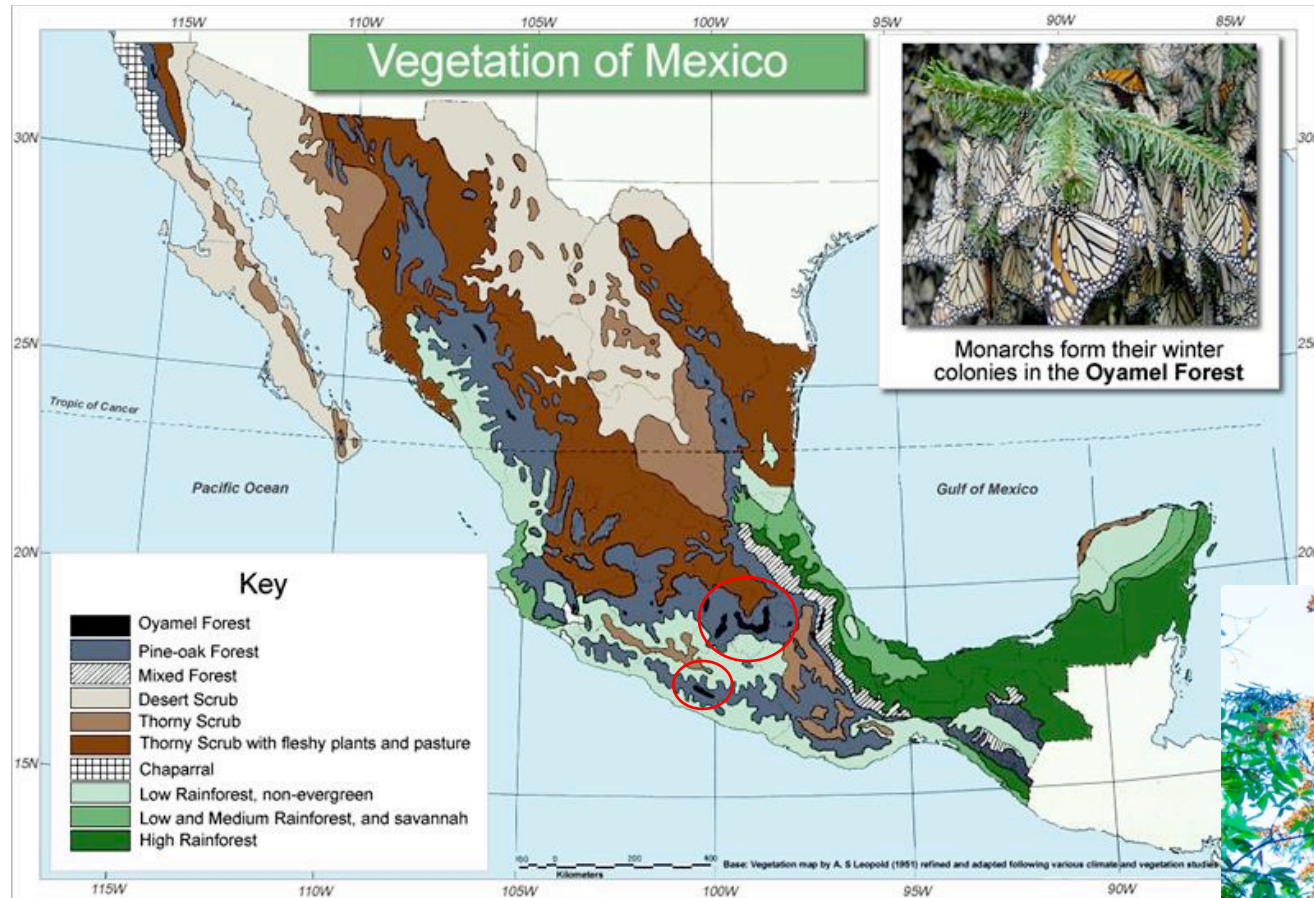
egg through 5th instar larvae

Monarch Caterpillar Transforming into Chrysalis



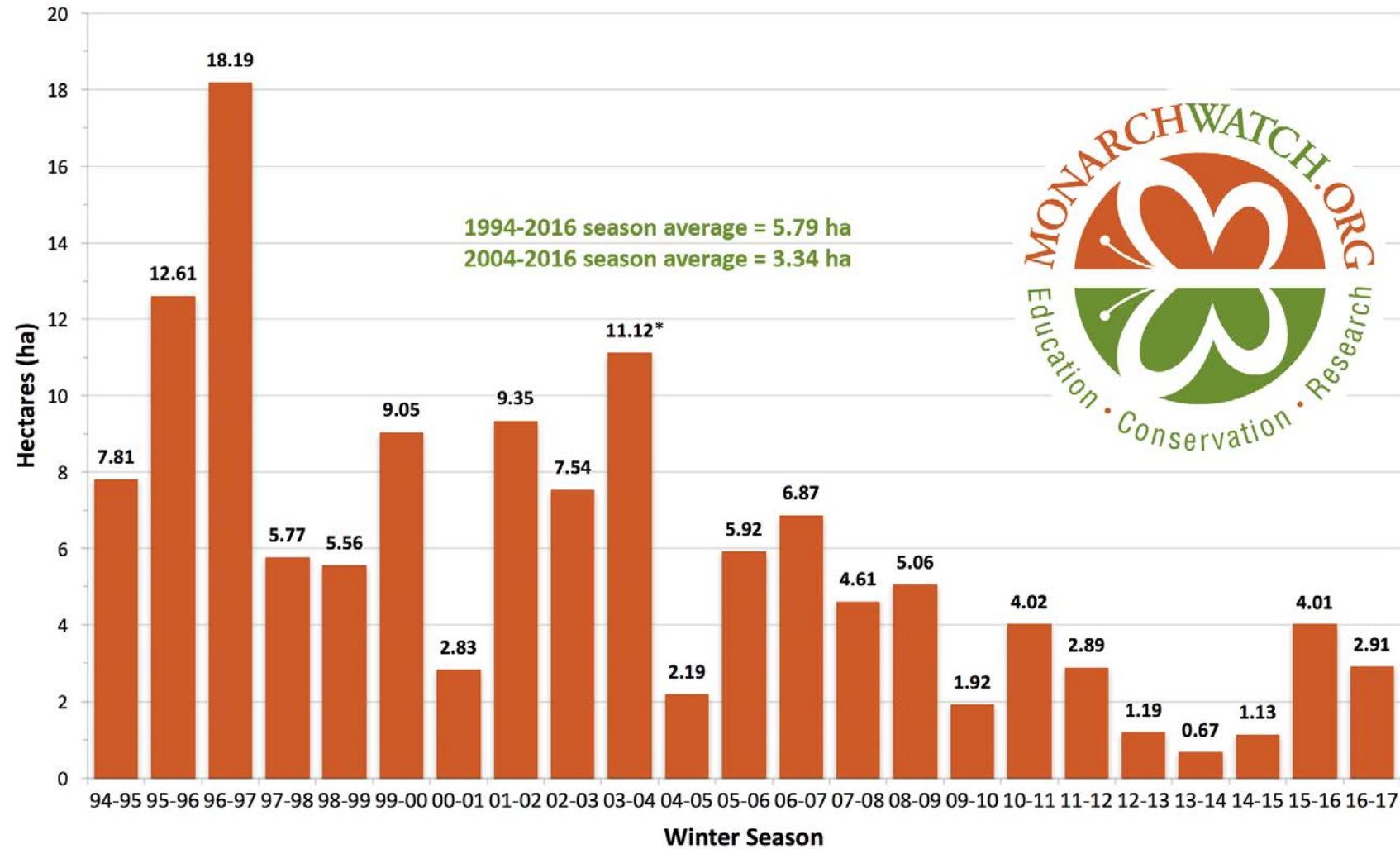


Oyamel Fir Trees



1 hectare = 2.47 acres

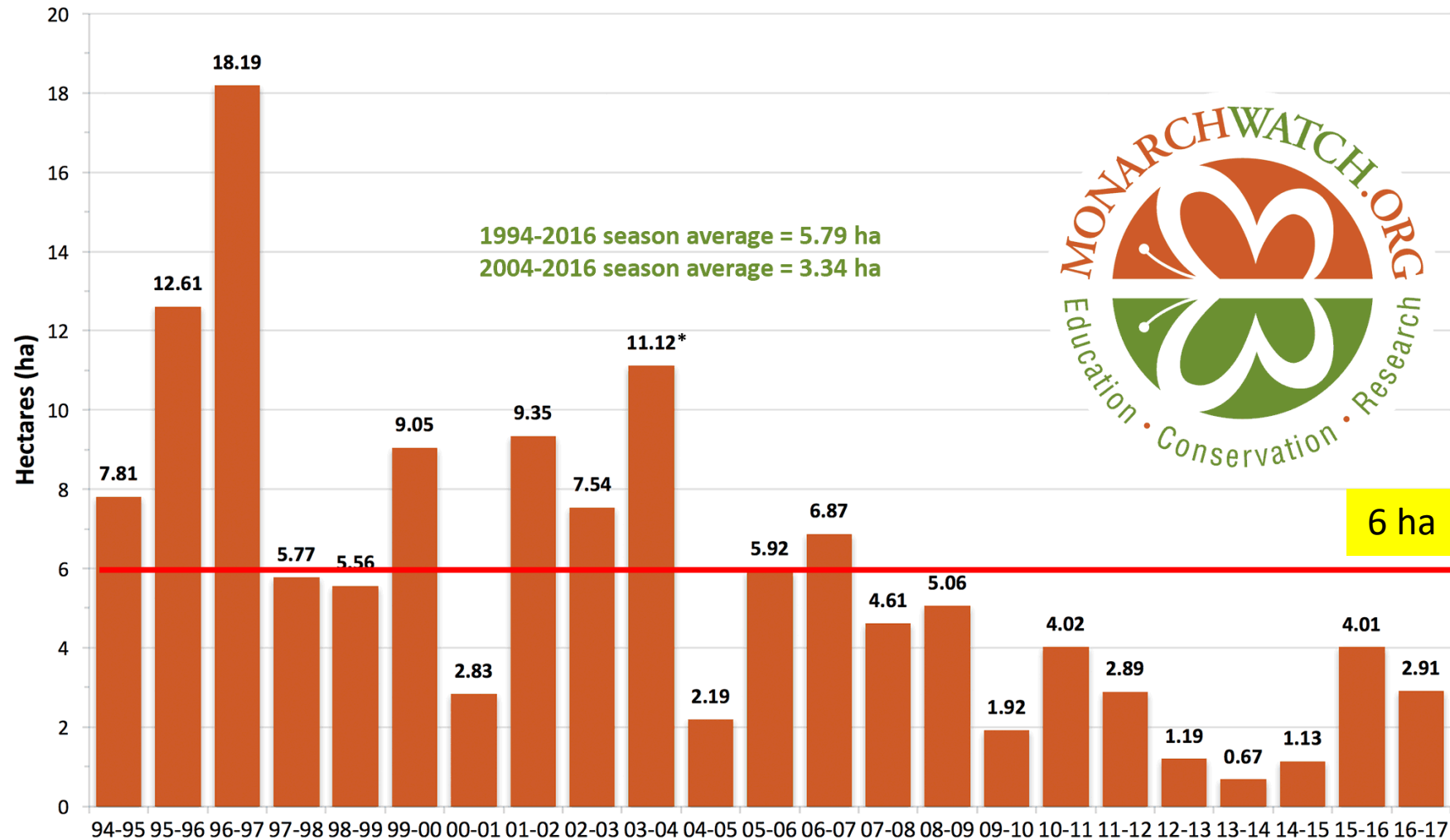
Total Area Occupied by Monarch Colonies at Overwintering Sites in Mexico



Data for 1994-2003 collected by personnel of the Monarch Butterfly Biosphere Reserve (MBBR) of the National Commission of Natural Protected Areas (CONANP) in Mexico. Data for 2003-2016 collected by World Wildlife Fund Mexico in coordination with the Directorate of the MBBR.

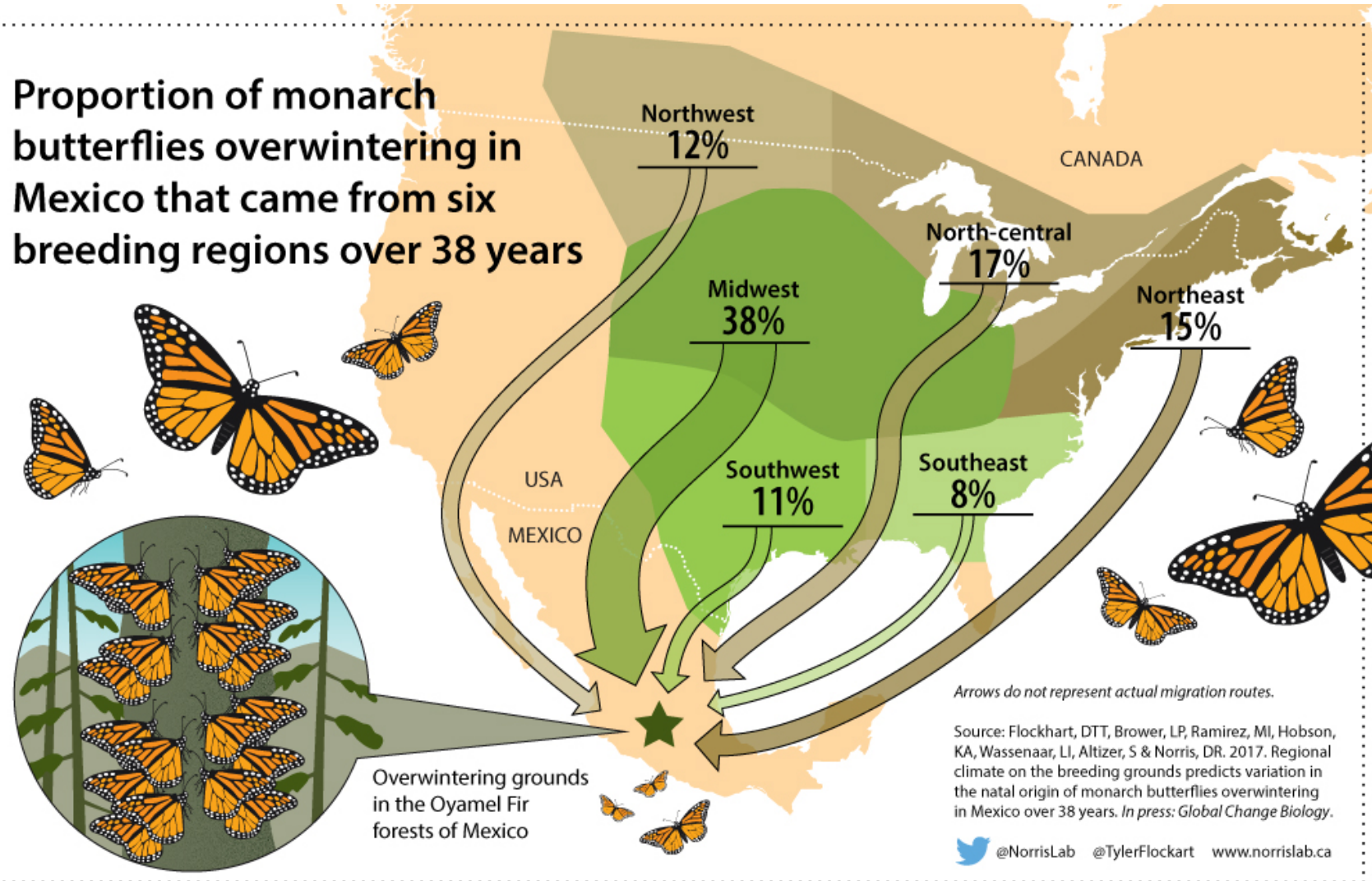
* Represents colony sizes measured in November of 2003 before the colonies consolidated. Measures obtained in January 2004 indicated the population was much smaller, possibly 8-9 hectares. CT

Total Area Occupied by Monarch Colonies at Overwintering Sites in Mexico

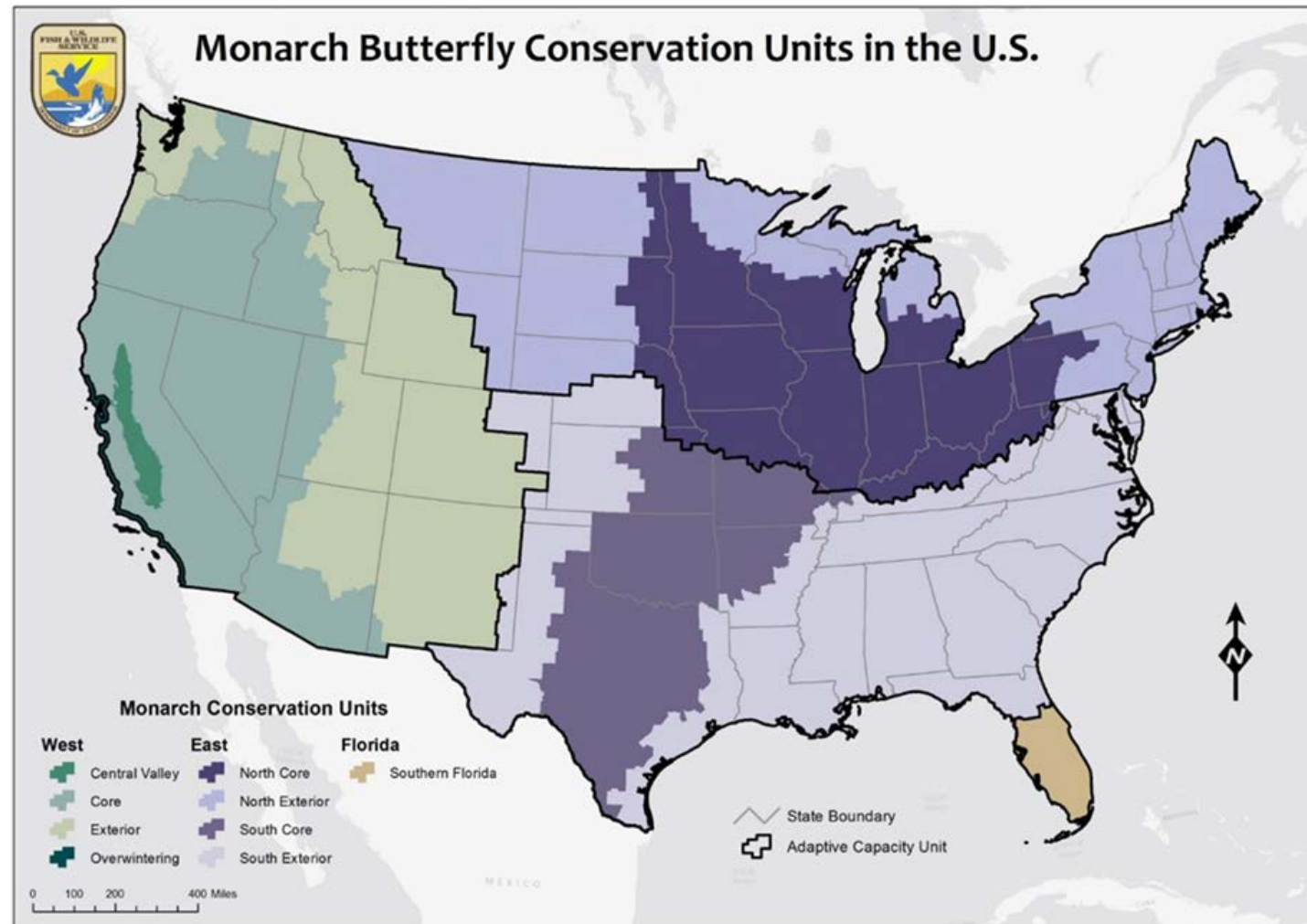


Equals 1.3 – 1.8 billion MORE stems of milkweed in the Midwest

Proportion of monarch butterflies overwintering in Mexico that came from six breeding regions over 38 years

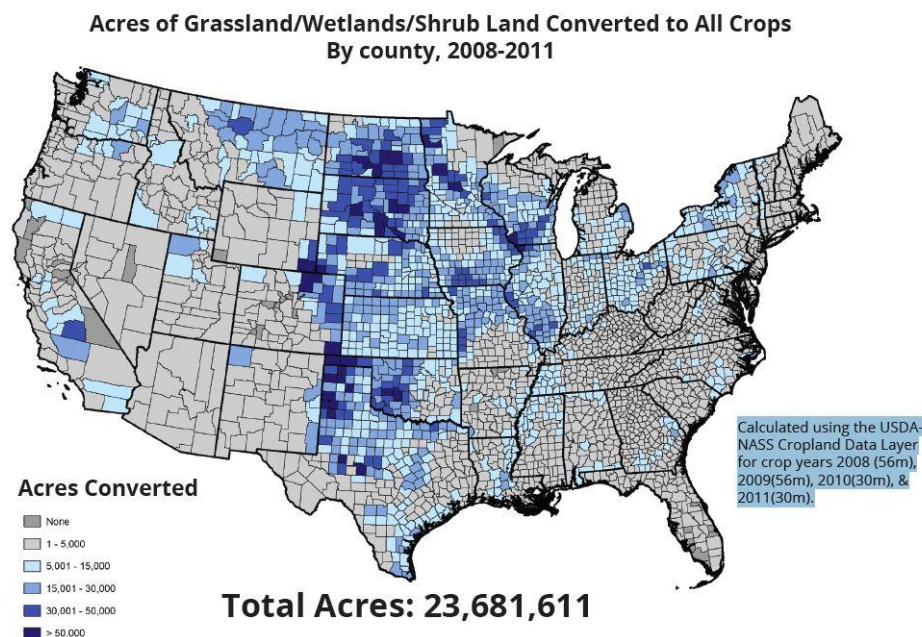


Ohio in Core Monarch Breeding Area



What's Happening to Pollinators?

- Dramatic Change to the Landscape
 - 2008 – 2011: 23,681,611 total acres of Grassland/Wetlands/Shrub Lands converted to Cropland



What's Happening to Pollinators?

- **Lawns**

- Approximately **40 million U.S. acres are planted as lawn** (residential/commercial properties, golf courses)
- More land in the U.S. are planted as lawns that irrigated crops (corn or wheat)
- Areas of lawn that include only one type of plant (turf grass) do not provide habitat for wildlife



What's Happening to Pollinators?

- Herbicides
 - Applied for weed control and for site preparation
 - Broadcast spraying destroys more plants than just the targeted weeds
- Insecticides
 - Target insects, including pollinators like bees
 - Depending on the active ingredients and how the pesticide are applied, pesticides can kill insects on contact or can be carried back to the hive/nest and harm future generations
 - Neonicotinoids: systematic insecticide – make the plant itself toxic, from seed to nectar



67 million pounds of synthetic pesticides are used on U.S. lawns annually



Why We Need to Create Pollinator Habitat



We can make a
difference in
our own
backyards!



What do Pollinators and Monarchs Need?

- Flowers
 - Preferably native, with blooms occurring throughout the 3 growing seasons
- Host Plants
 - Lepidopteran species (butterflies and moths) often require specific plant species for their caterpillars
 - Milkweeds are essential for monarchs
 - Other native species of grasses, forbs, and trees
- Nesting and roosting sites
 - Trees, downed woody debris, bare ground, and dead stems



Pollinator Habitat: Site Prep

- Research Homeowners' Association rules, community covenants or local weed ordinances that may apply.
- Talk with your neighbors
 - Natural landscaping: aesthetic and ecological benefits
- One section at a time
 - Give neighbors time to get accustomed to your yard's new look
- Remove Grass
 - Covering grass and allowing it to die back
 - 4-6 weeks
- Amend Soil
 - Organic fertilizers feed plants and soil



Pollinator Habitats: Plant Selection

- Native Plants

- Plants that pollinators evolved with and rely upon
- Native plants are adapted to the local climate and soil conditions where they naturally occur
- Ecoregional guides for native plants can be downloaded at <http://www.pollinator.org/guides>



Pollinator Habitats: Native Plants



Swamp Milkweed



Lady in Black Calico Aster



False Sunflower



Goat's Rue



Obedient Plant



Lanceleaf Coreopsis



Butterfly Weed



Wild Bergamot

Attracting Butterflies and Bees

- Plant for continuous bloom
 - Use a variety of native plants with various bloom times (early spring to late fall)



Purple Coneflower
Mid-summer



False Blue Indigo
May-June



Yellow Trout Lily
Early Spring



Downy Sunflower
Late Summer



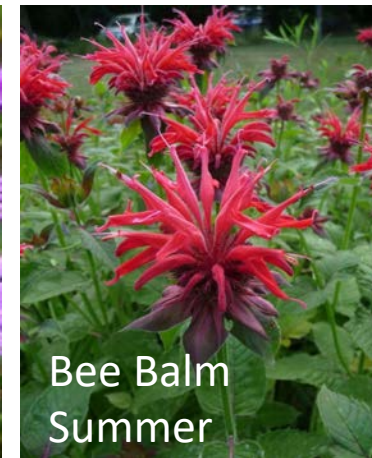
Zizia
May-June



Yarrow
Summer-Fall



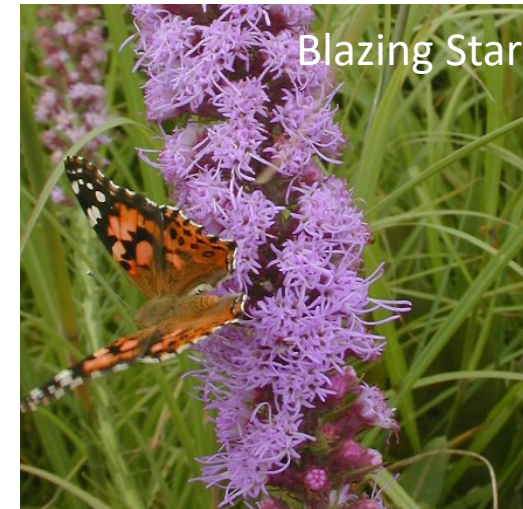
Purple Dome Aster
Late Summer-Fall



Bee Balm
Summer

Attracting Butterflies and Bees

- **Pollinator Syndromes:** Describe flower characteristics that may appeal to a particular type of pollinator
 - Blossom Color
 - Nectar Guides
 - Odor
 - Amount of Nectar
 - Amount of Pollen
 - Flower Shape



Host Plants

- Milkweed for Monarchs
- Sassafras for Spicebush Swallowtails
- Parsley, Queen Anne's Lace, Zizia for Black Swallowtails
- Tulip Poplar for Eastern Tiger Swallowtails
- Common Rue for Giant Swallowtails
- Pawpaw for Zebra Swallowtails



Eastern Tiger Swallowtail



Giant Swallowtail



Black Swallowtail



Monarch



Spicebush Swallowtail



Zebra Swallowtail

Pollinator Habitats: Other Components

- Provide a place to rest
 - Flat stones provide places for butterflies to rest and bask in the sun
- Provide a place for puddling
 - Puddling: Drinking water and extracting minerals from damp puddles
 - Coarse sand in a shallow pan – keep the sand moist
- Create insect hotels
 - Place for solitary bees and wasps to lay their eggs
 - Places for beneficial insects to find shelter



Milkweed Seed Pod Collection

- October 1 to November 5



We Are All In This Together

- Approximately 40 million U.S. acres are planted as lawns

