

Village EAC and SSC

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*Welcomes You!*



# YOU CAN HELP THE MONARCH BUTTERFLIES!

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(AND MANY OTHER SPECIES, TOO!)

# Angie Babbitt

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## Communications Coordinator

Monarch Watch

University of Kansas

Director: Orley R. “Chip” Taylor

**"IN THE END WE WILL CONSERVE ONLY  
WHAT WE LOVE, WE WILL LOVE ONLY  
WHAT WE UNDERSTAND, AND WE WILL  
UNDERSTAND ONLY WHAT WE ARE  
TAUGHT."**

- Baba Dioum, Senegalese forestry engineer

## Chip Taylor

**Founder and Director**

1992 – Dr. Orley “Chip” Taylor established Monarch Watch

Monarch Watch assumed the role of running the eastern tagging program







# Tag Recovery



# Overview:

- Why are Monarchs Declining?
- Restoration projects
- Monarchs 101
- Broader impacts
- Milkweed 101
- What else is happening?

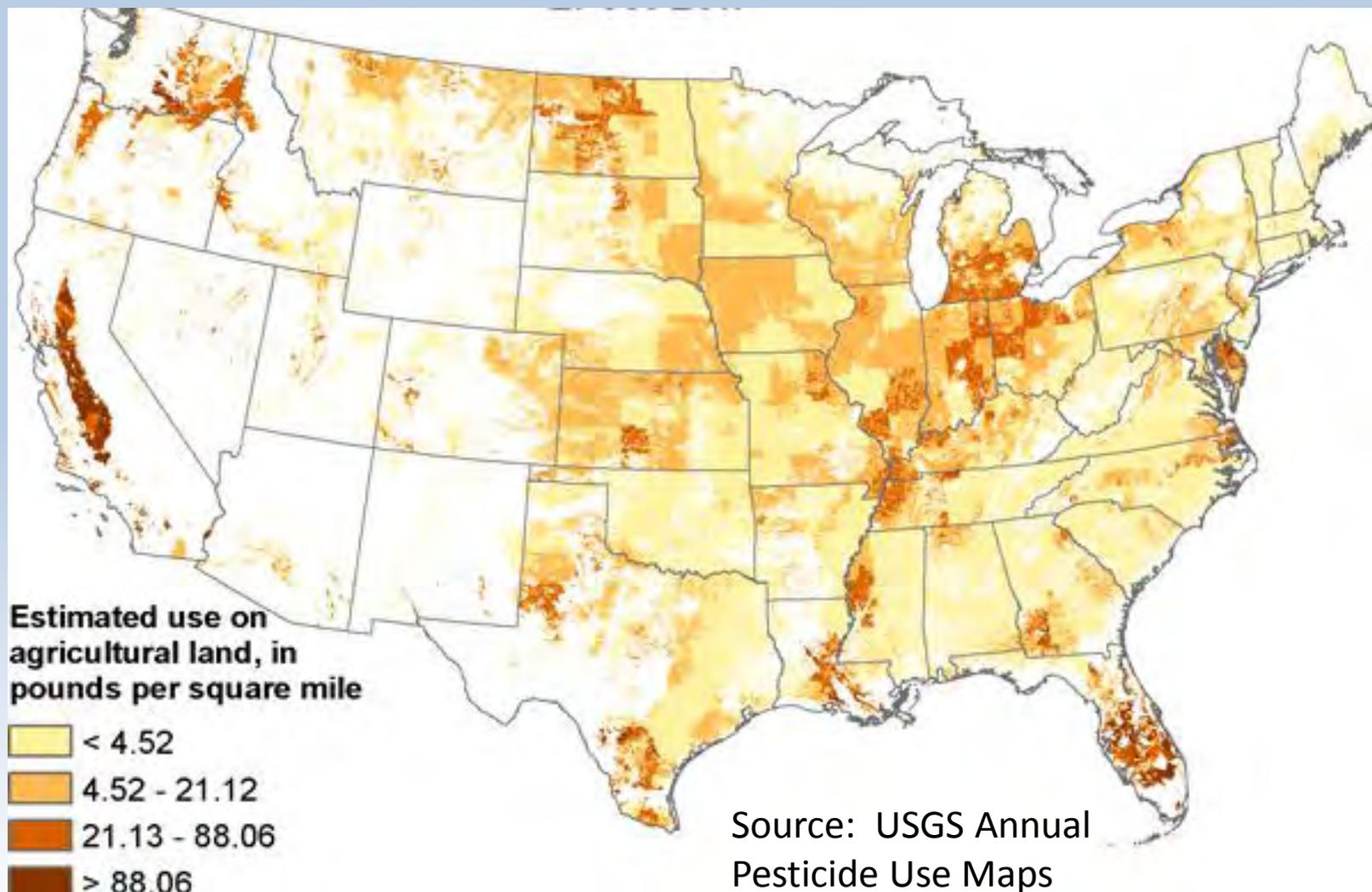


# WHY ARE MONARCHS DECLINING?

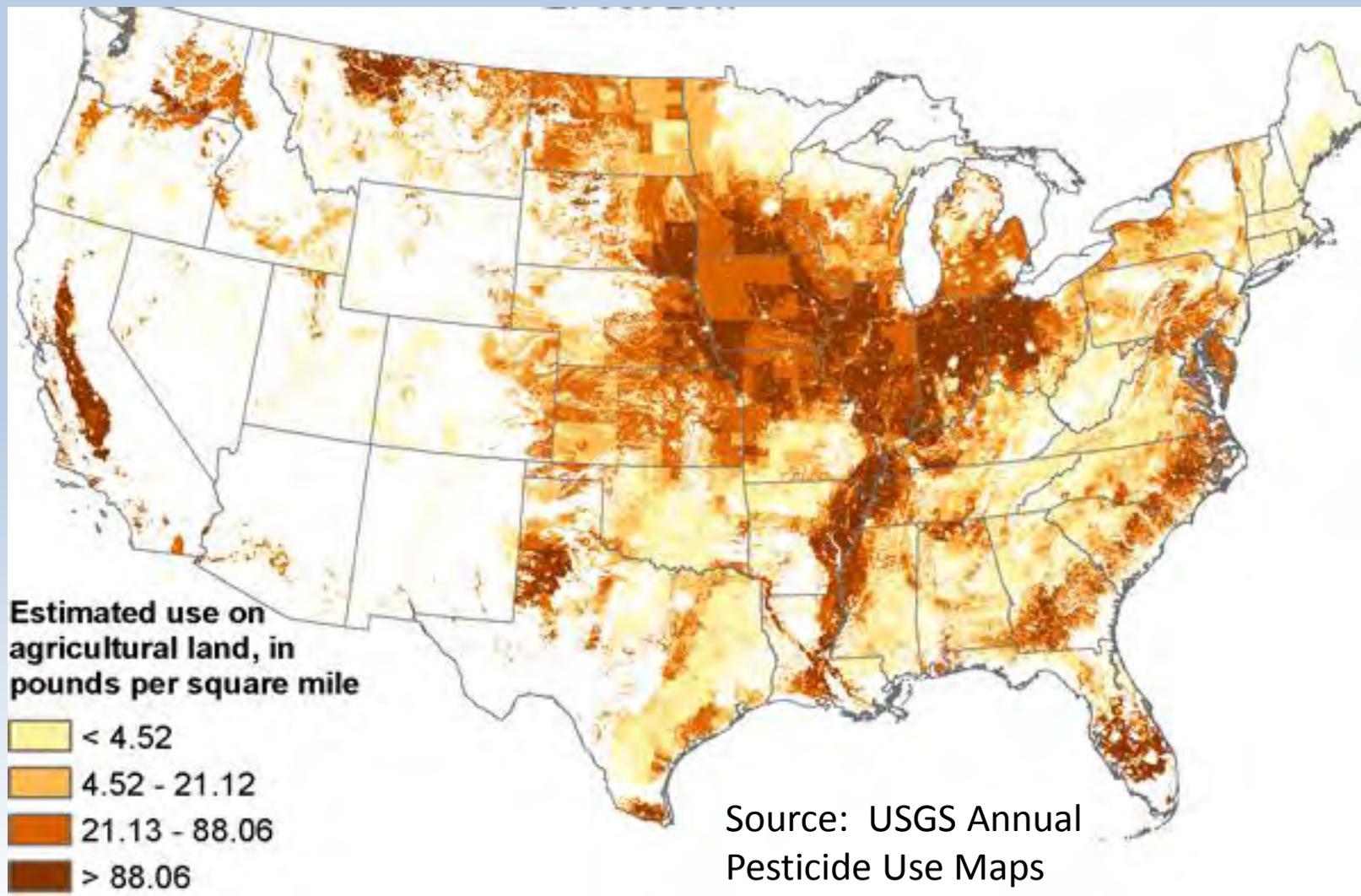
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- GMOs - glyphosate tolerant corn and soy
- Economics associated with biofuels
- Conversion of rangeland and grasslands to croplands for biofuels
- Margins and fragments getting smaller
  - Intensive agriculture – reduced field margins
  - Management of marginal lands – herbicides
  - Development – 6,000 acres/day 2.2 million/yr
- Insecticides – mosquito control
- Degradation of overwintering habitats in Mexico
- Unfavorable breeding conditions

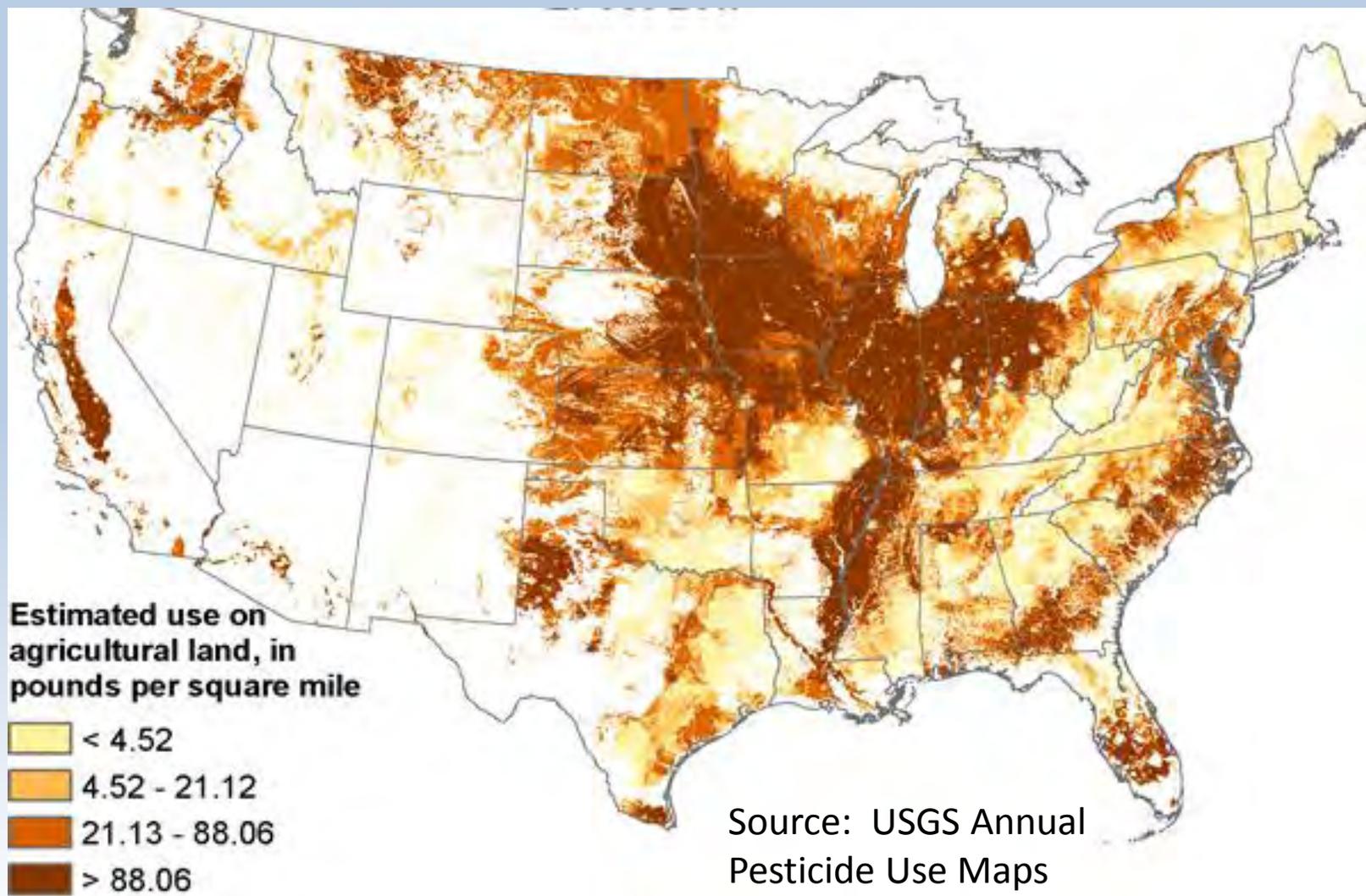
# Glyphosate use, 1992



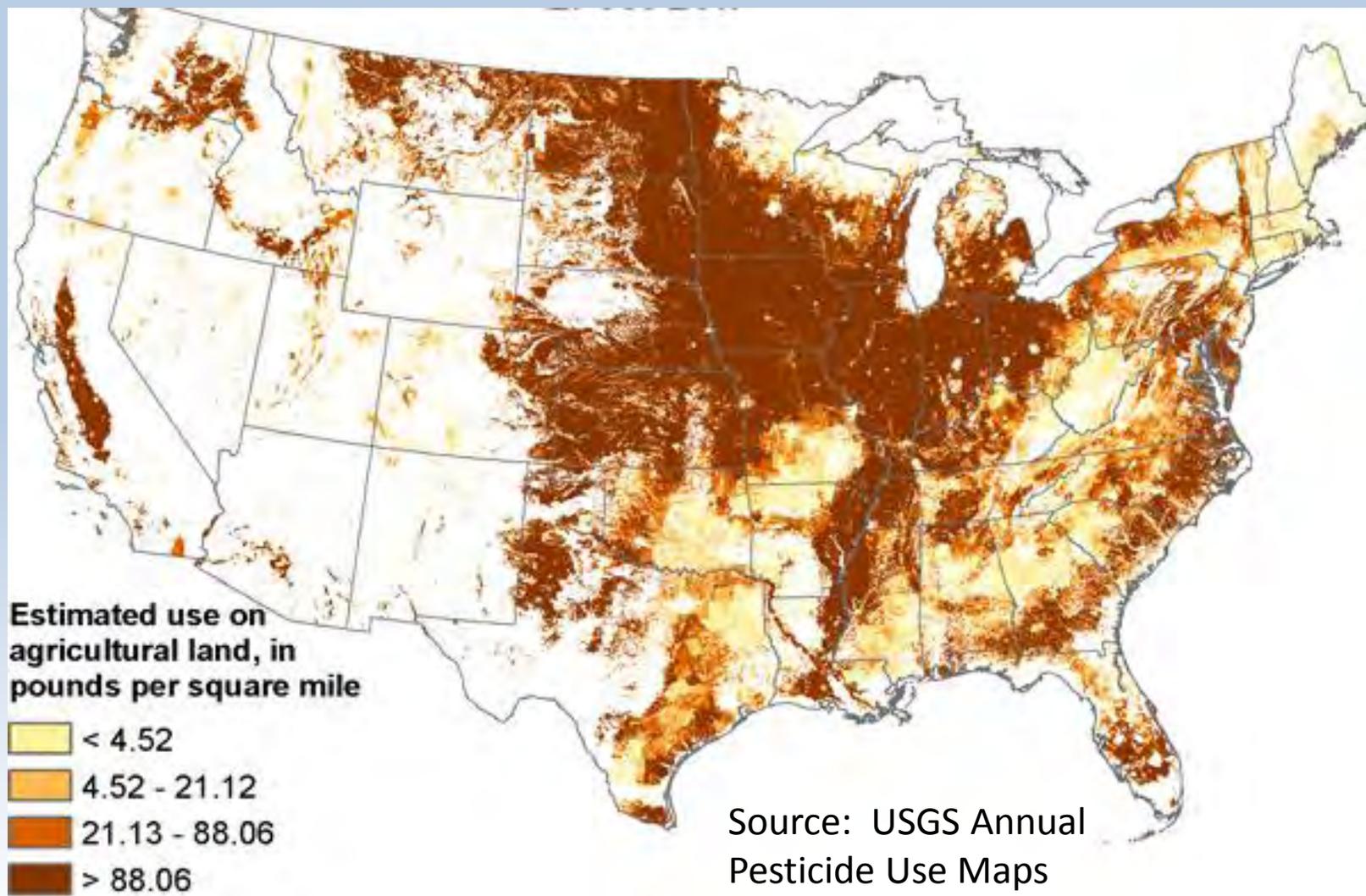
# Glyphosate use, 1998



# Glyphosate use, 2001



# Glyphosate use, 2012



# What does glyphosate do?

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- Glyphosate does not kill monarchs directly.
- It kills their larval host plant, milkweed, along with other weeds.
- It is a systemic herbicide.

# Eliminates weeds from GMO crops

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- 81% decline in monarch production in the Midwest from 1999-2010
  - J. M. Pleasants and K. S. Oberhauser. 2012



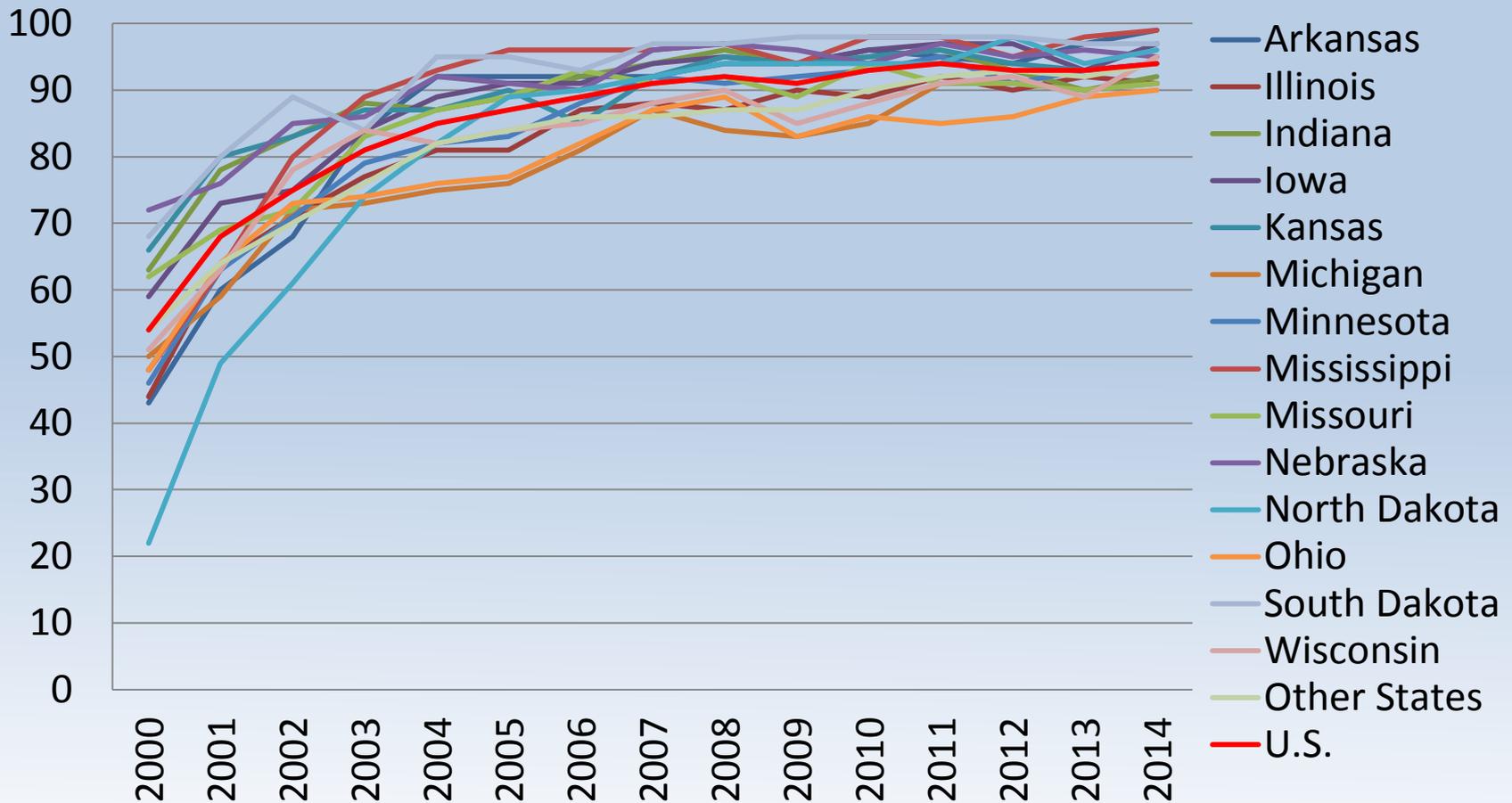
# Soybean Field, 2002

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# Percent of all soybeans planted in GMO varieties 2000-2014

Source: USDA, National Agricultural Statistics Service



2015

## Tagging event moved

- Baker Wetland had roosting trees
- Nectar sources (bidens)



# Aerial Photo of Sanctuary

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Copyright Dr. Lincoln Brower, Sweet Briar College

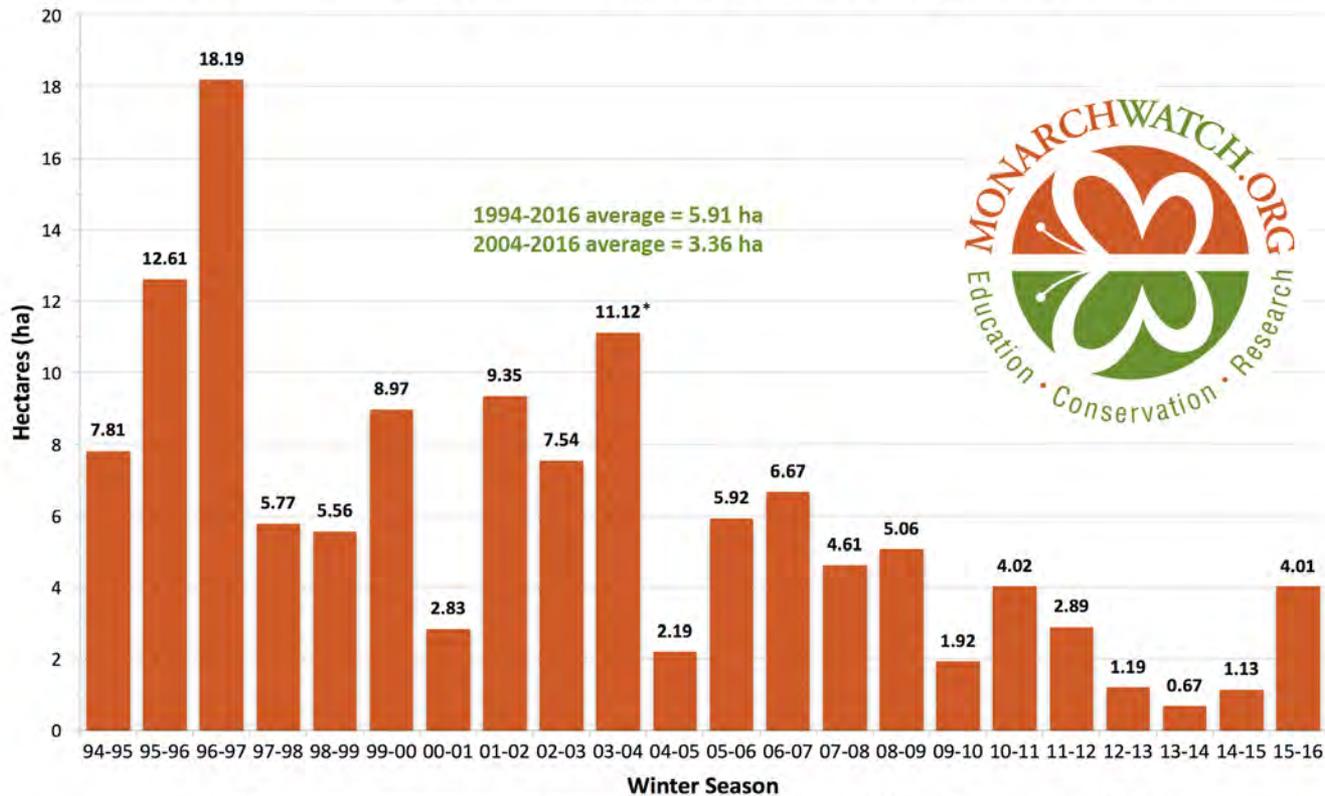
Photo copyright: Lincoln Brower



El Rosario colony by Dr. Lincoln Brower

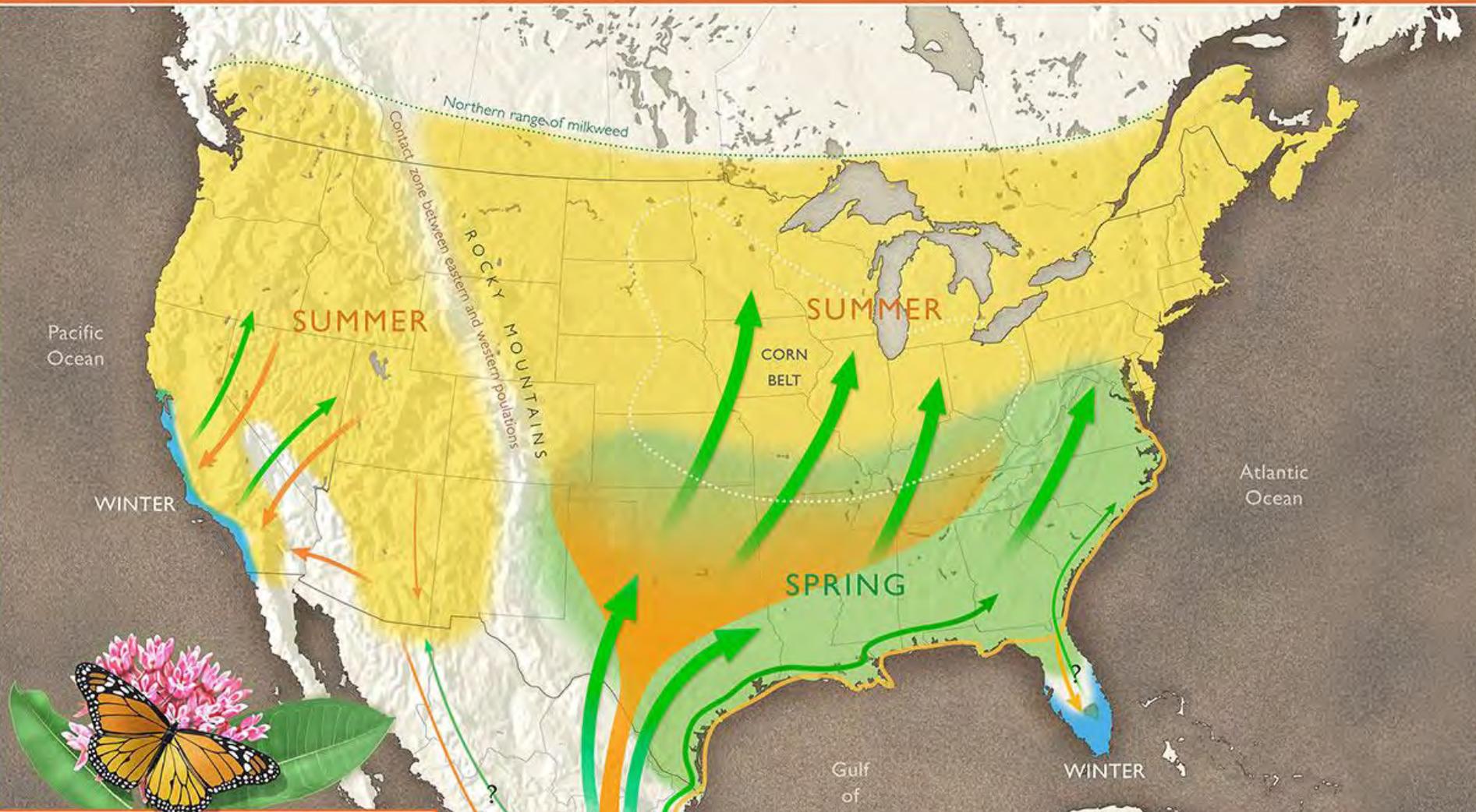
# 1994-2016 Population Status

Total Area Occupied by Monarch Colonies at Overwintering Sites in Mexico

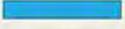


Data for 1994-2003 collected by personnel of the Monarch Butterfly Biosphere Reserve (MBBR) of the National Commission of Natural Protected Areas (CONANP) in Mexico. Data for 2003-2014 collected by World Wildlife Fund Mexico in coordination with the Directorate of the MBBR.

\* 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



## Monarch Butterfly Fall & Spring Migrations

-  Fall migration
-  Spring migration
-  Unconfirmed
-  Summer breeding areas
-  Spring breeding areas
-  Overwintering areas
-  Corn belt: high monarch production



**Monarch  
Watch.org**  
Education • Conservation • Research

Map design © Paul Miralza

# Monarch Watch Restoration Programs

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## Bring Back the Monarchs

- Milkweed Market
- Monarch Waystations
- Free Milkweed for Schools and Non-profits  
(Natural Resources Defense Council Green Gifts!)
- Free Restoration Milkweeds
  - Monsanto: 100,000 plants
  - Natural Resources Defense Council: 100,000 plants
- New Grant Coordinator and Waystation Ed. Coordinator

# Free Milkweed Program

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**"I have taken tons of photos of the garden from bare dirt to blooming abundance so we are keeping a good record of what happens. I want to contact the newspaper after school starts and get an article in the paper but would like to have a sign to make us "official". Given that California is in the middle of a horrendous drought our little garden is an oasis for tons of birds and pollinating insects. We are so grateful to be on good wells at our school. Thanks so much for choosing our school as one of your sites." -- Erin Pollen, Teacher, Sierra Waldorf School, Jamestown, CA**

## 2013-2016

- 550 Free Milkweed Grants
- Natural Resources Defense Council (NRDC) Green Gifts
- Non-profits and schools
- One flat of 32 milkweeds





**Kramer Elementary 5th grade students planting milkweed plants.**

Oxford, OH (photo by Elizabeth Rhoton)

## Project Evaluation Report: Phoenixville Area Middle School Bioswale, Spring 2015

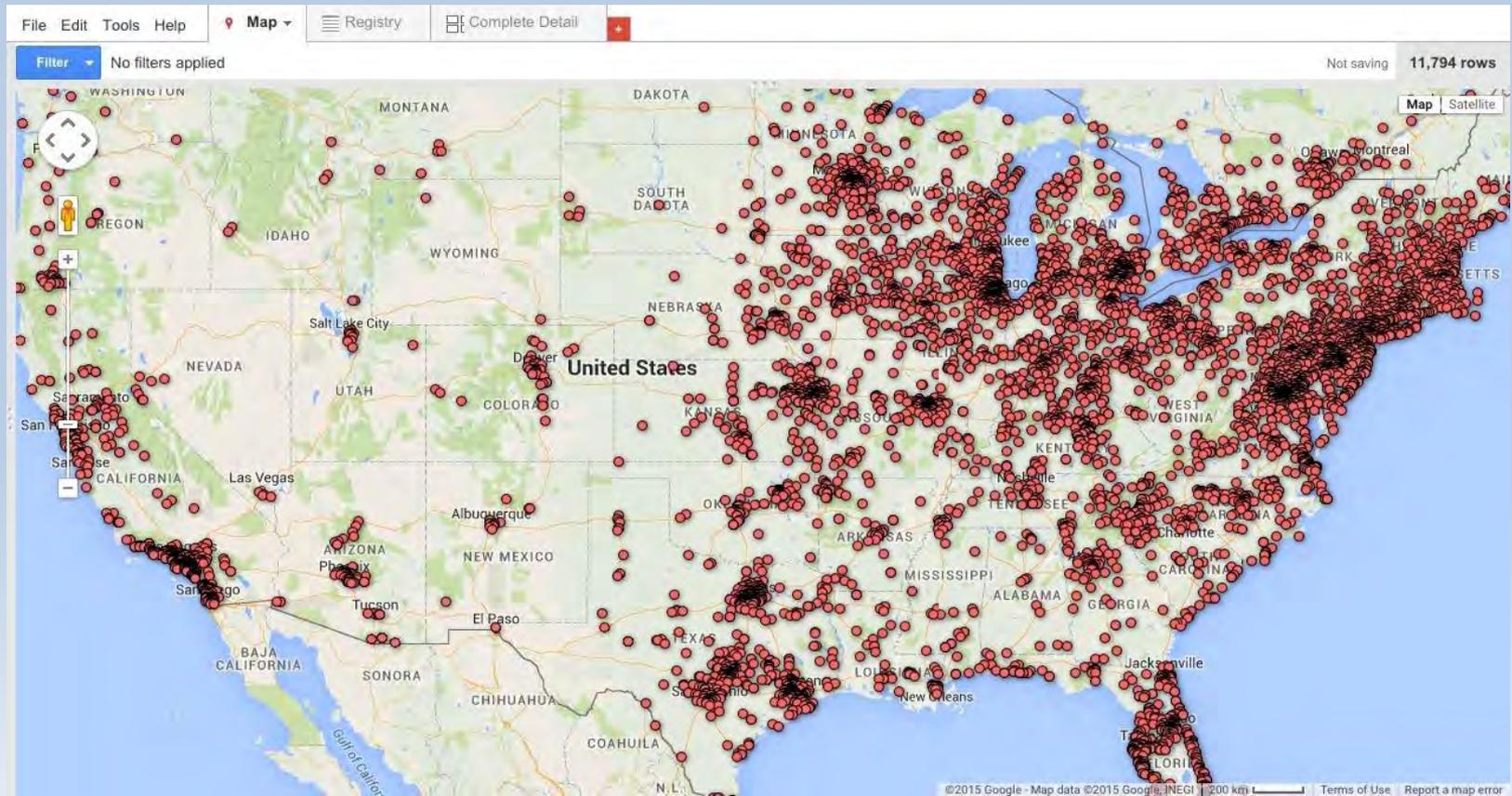
Organizations: Green Valleys Watershed Association & Phoenixville Area Middle School

The remaining 500 plugs of native grasses and perennials were planted in the bioswale in May 2015 by students from the Phoenixville Middle School's Environmental Club and Envirothon Team, led by a Green Valleys educator. The bioswale was fenced to exclude deer. As of a site visit on May 13, 2015, the bioswale remains in excellent, weed-free condition, and the plant plugs are establishing well. Because none of the planted flowers had bloomed by the time of the site visit, pollinating insects were not observed within the bioswale.



*Clockwise from upper left:* PAMS Environmental Club and Envirothon Team students finish planting the bioswale with native plant plugs; the bioswale in front of the school cafeteria windows on May 13, 2015; a second view of the completed and fenced bioswale; students plant native perennials. This planting day was also recorded by the school's student media club, Phantom TV.

# >10,000 Monarch Waystations in 10 years



# Bring Back the Monarchs Campaign

## Milkweed Distribution:

2013 > 22,000 plants

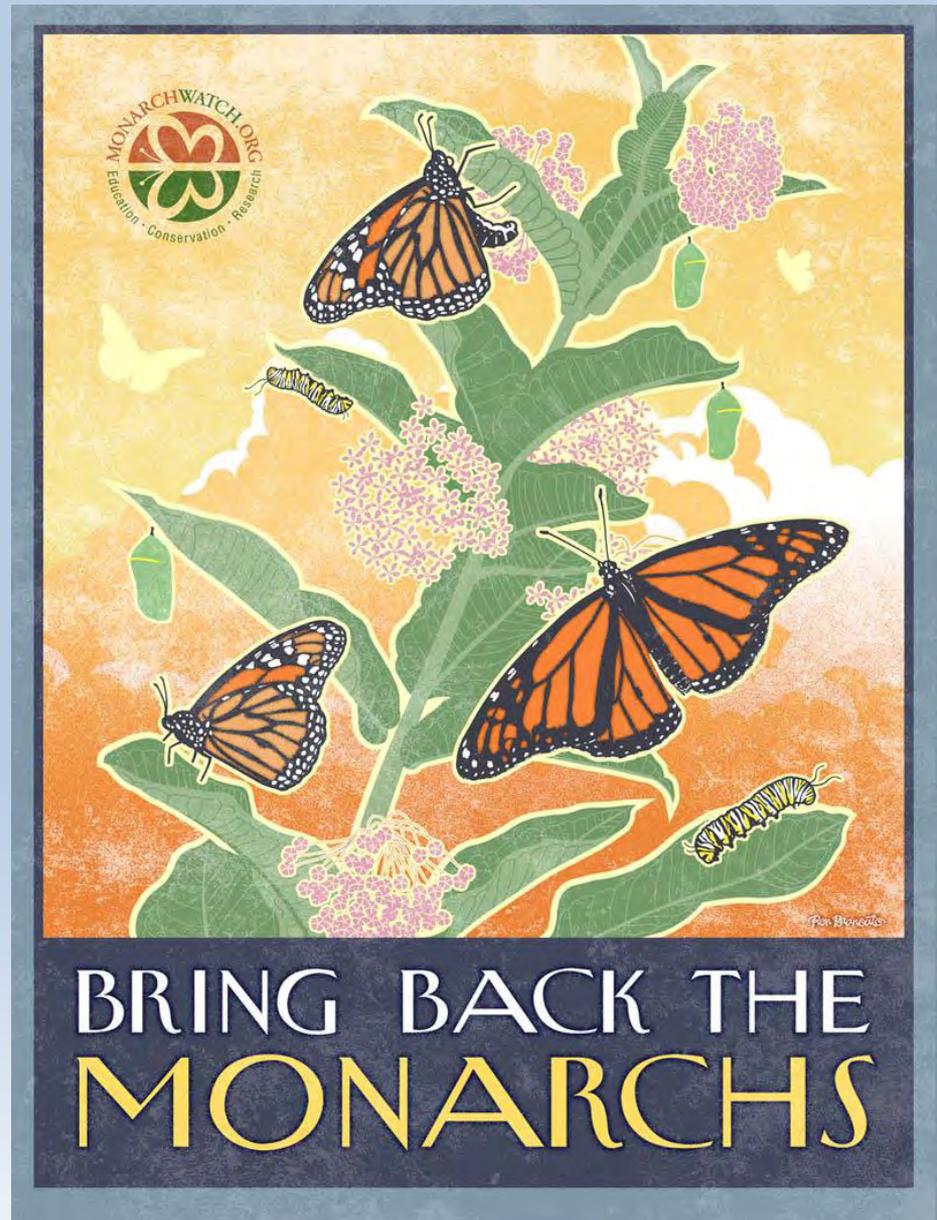
2014 > 59,000 plants

2015 > 100,000 plants

2016 > 200,000 plants

## Partner Nurseries:

1. Kansas – Midwest and Northeast
2. Oklahoma – TX and OK
3. California
4. Florida – Gulf Plains
5. Arizona



# Greenhouse Operations

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# Why Conserve Monarchs?

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**(It's not all about you and me)**

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There is more to it than that.

# Monarchs 101

- Monarchs are OBLIGATORY milkweed consumers as caterpillars
- The females “smell” with their antennae and “taste” with their feet.



Photo by Brad Guhr, Dyck Arboretum, 2015

# Monarchs 101

- Milkweed toxins help protect them throughout their life
- Most butterfly species consume specific plants as caterpillars
- Many butterfly species are adapted to toxins and accumulate them in their tissues



# Monarchs are Toxic!

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Photo copyright Lincoln Brower

# Birds Won't Eat a 2nd Monarch

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Photo copyright Lincoln Brower

# Monarchs 101

- Monarchs are either migratory OR reproductive
  - 2-6 week lifespan versus
  - 6-8 month lifespan
- Monarchs are tropical, and can not survive temperatures below freezing
- They migrate to Mexico in the fall as non-reproductive migrants



Photo by Dr. Isabel Ramirez, Sierra Chincua Sanctuary, Friday, March 11, 2016.

# Monarchs 101

- Adult butterflies need NECTAR!
- Plant a 4:1 ratio of nectar to milkweed
- Milkweed alone does not provide enough nectar
- Native nectar sources provide food for many other species



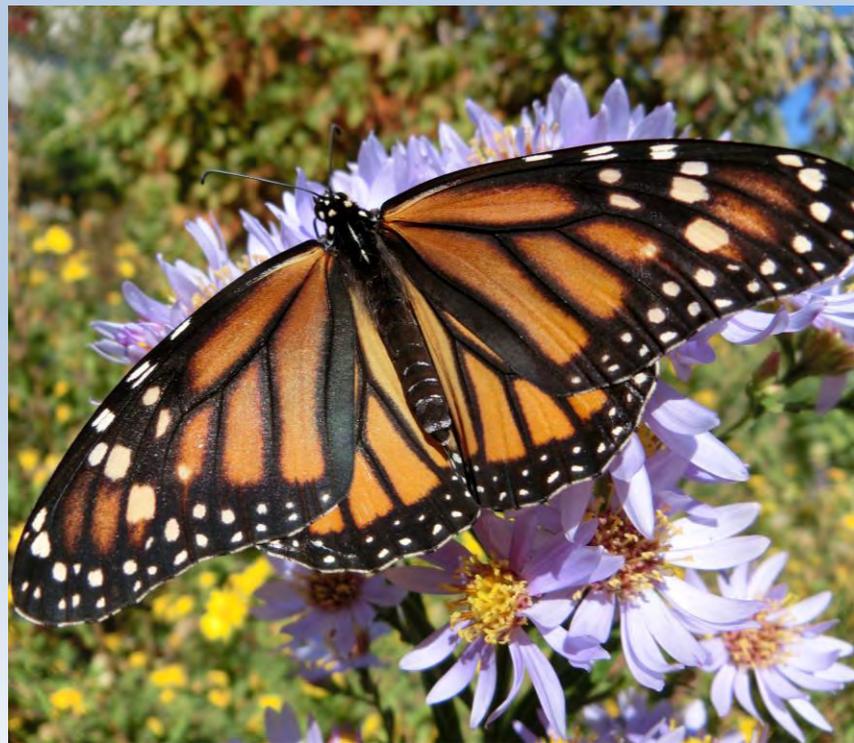
# Fuel the Migration, Feed the Nation!

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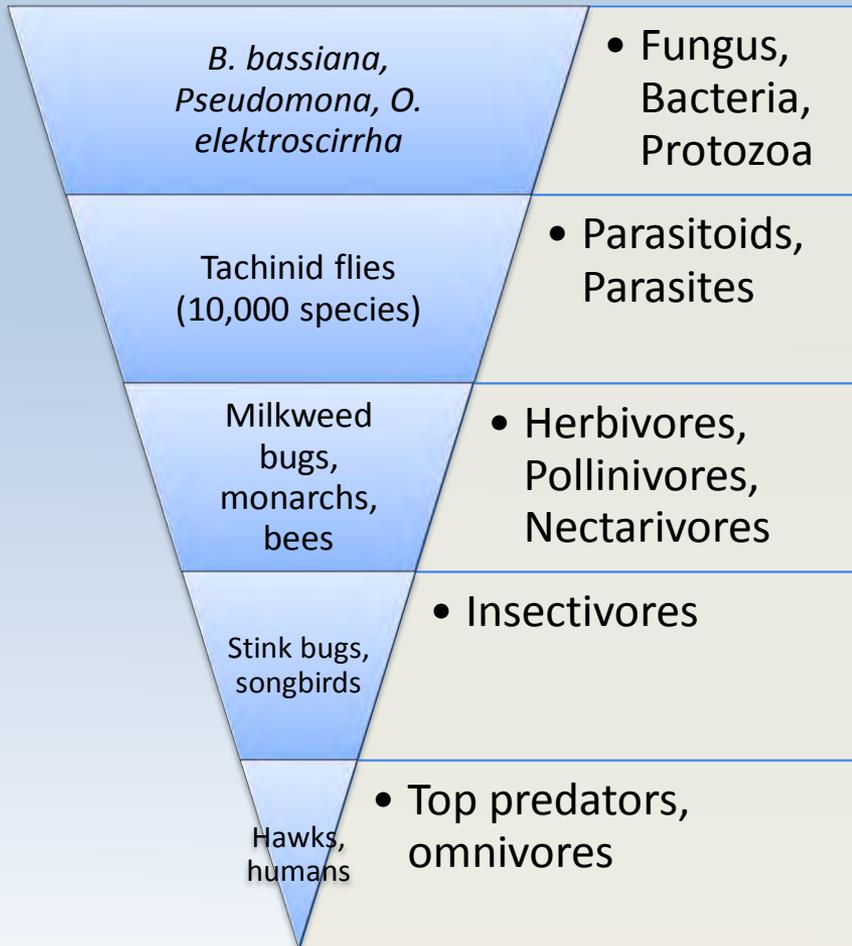
**Swamp Milkweed**



**New England Asters  
(Host plant of Pearl Crescent)**



# The Milkweed Food Chain



Cooper's Hawk  
Photographed at Monarch Waystation #1

# Microorganisms

O.E. (*O. elektroscirra*)



*Nosema*



Photo copyright Edith Smith

# Insect parasites

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**Tachinid fly**



**Infected caterpillar**



# Insect predators

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**Stink bug**



**Assassin bug**



# Milkweed tussock moth



# Longhorn milkweed beetle



# Swamp Milkweed Beetle

Larvae



Adult

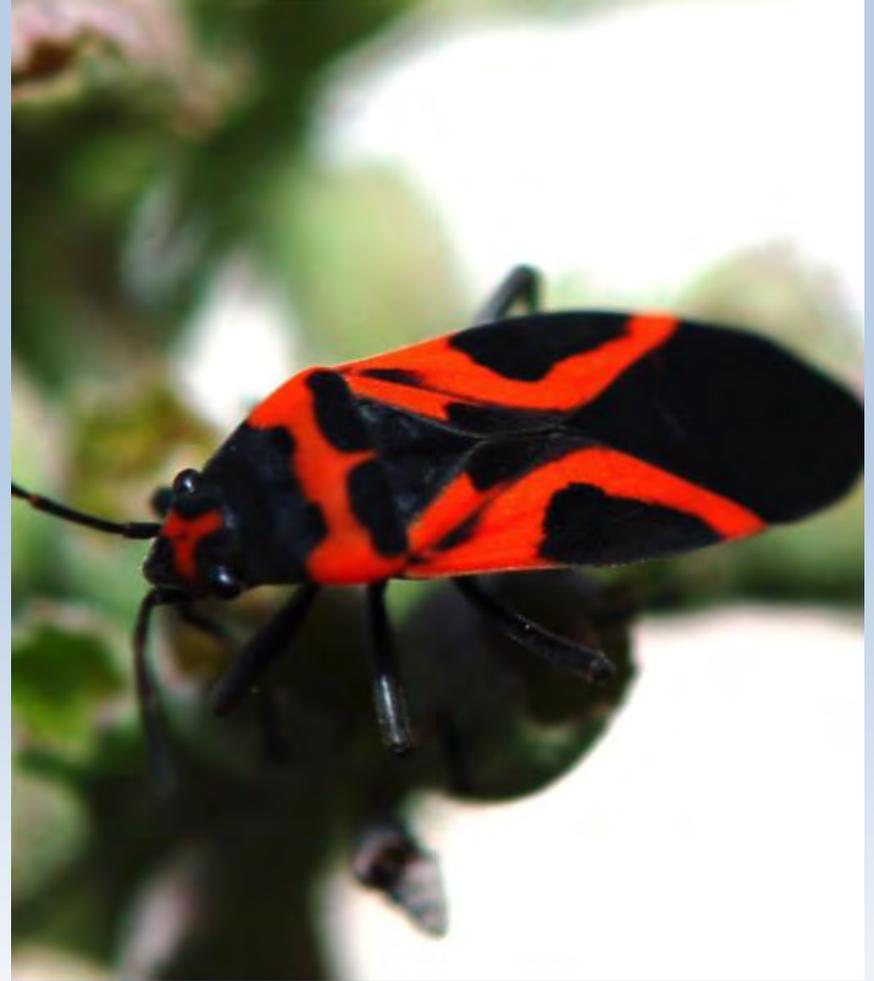


# Large milkweed bug



# Small milkweed bug

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# Visitors to the Monarch Watch Garden

- monarch
- viceroy
- silver-spotted skipper
- painted lady
- red admiral
- variegated fritillary
- Gulf fritillary
- pipevine swallowtail
- zebra swallowtail
- black swallowtail
- giant swallowtail
- tiger swallowtail
- question mark
- spring azure
- summer azure
- sleepy orange



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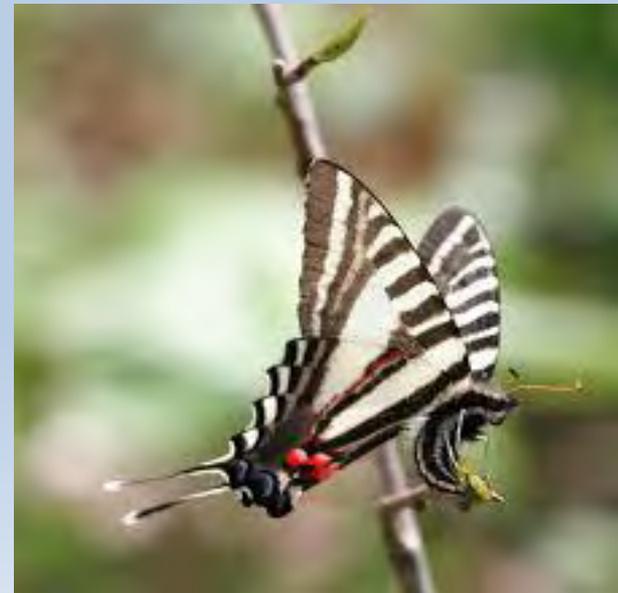
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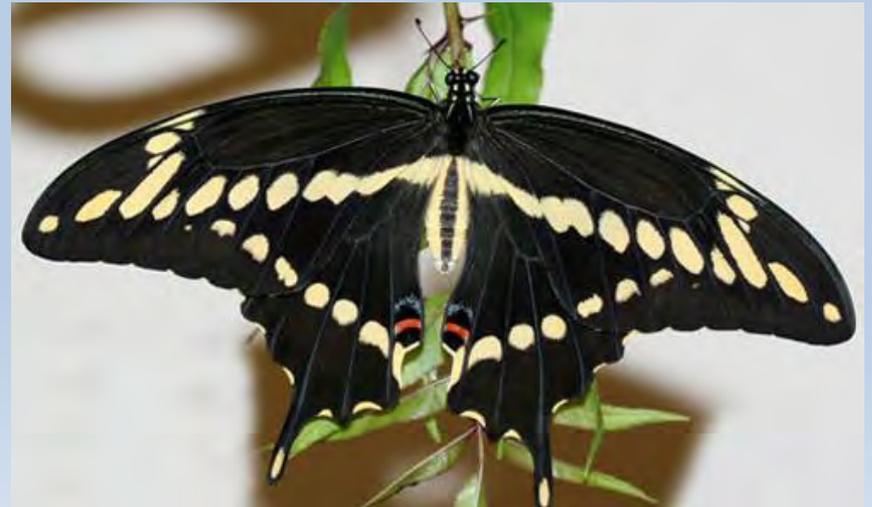
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- pearl crescent
- gray hairstreak
- hackberry butterfly
- cabbage white
- checkered white
- cloudless sulfur
- buckeye
- goatweed leafwing
- red-spotted purple
- white-lined sphynx moth
- Cecropia moth
- tussock moth
- unexpected cyncia moth



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- **unexpected cynthia moth**



# Insectivores

- Native nectar sources are often also butterfly host plants
- “96% of terrestrial birds rear their young on insects.”
  - Douglas Tallamy
- Chickadees need >5,000 caterpillars per clutch



# <http://monarchwatch.org/garden/>

## PLANTS FOR BUTTERFLY AND POLLINATOR GARDENS

### Native and Non-native Plants Suitable for Gardens in the Northeastern United States

The plants listed here are suitable for school and home gardens for most of the eastern United States-- defined here as 35N to 46N latitude from east of the 98<sup>th</sup> parallel to the Atlantic, (or roughly from central MN to southeastern KS and east to the coast). Many of the plants listed as native do not occur throughout the eastern United States. Please note that for your convenience we have subdivided the region to allow you to choose the native plants that are most effective in your area. Further information on the distributions of native plants can be found by consulting the North American Plant Atlas (<http://bonap.net/NAPA>) or by consulting the USDA Plants Database (<http://plants.usda.gov>) provided by the Natural Resources Conservation Service (NRCS). For a list of plants that are suitable for butterfly/pollinator gardens in Texas, please see the Texas Plant List at <http://monarchwatch.org/garden>. If you plan to create a *Monarch Waystation* or butterfly/pollinator habitat in a region other than the northeast and Texas, it is advisable to consult with local gardening experts and those who specialize in native plants to determine the plants that can be used to greatest effect, given the climate and soil conditions in your area. It is also suggested that you check the cultural requirements (soil, moisture, light exposure) for each species before purchasing/planting.

Diversity is the key to a successful butterfly/pollinator garden or *Monarch Waystation*. Select a location in full sun or one that receives at least eight hours of direct sunlight daily. When choosing plants, whether native or non-native, use only single-flowered varieties. To create a showy block of color and fragrance, plant each species in clusters of 7-9 plants. Grow your own plants organically or purchase plants from nurseries whose growers DO NOT use systemic insecticides or any other pesticides on their plants. Ask about this before you make your purchase.

Enhance your garden by incorporating other elements besides plants. Include places for pollinators to seek shelter from the wind and rain. Create wet, sandy or muddy spots for butterflies to imbibe salts and other nutrients. A location with dark stones or tiles for butterflies to perch on to warm up on cool mornings adds to the activity in the garden. Most importantly, discontinue use of all pesticides (insecticides, herbicides and fungicides) in the area, and ask bordering neighbors to do the same.

Milkweeds for monarchs can be obtained through **Monarch Watch** or vendors listed in the Milkweed Market (<http://monarchwatch.org/milkweed/market>). Native plant nurseries can be found in most areas, and native plants are often offered for sale at Farmers' Markets. Additional information can also be obtained by contacting local or regional Native Plant Societies.

For more information on creating a *Monarch Waystation* and instructions for certification, please see <http://monarchwatch.org/waystations>. If you have questions or need guidance, please contact us through our Bring Back The Monarch email address - [hbtm@monarchwatch.org](mailto:hbtm@monarchwatch.org).

**Key:** N=native, P=perennial, A=annual, B=attracts bees, BF=attracts butterflies, BFh=butterfly host, HB=attracts hummingbirds, M-A= Mid-Atlantic region (IN=Inland/C=Coastal Plain), MW=Midwest region, GL=Great Lakes region, NE=New England region. Common plant names that are in **bold type** are "must-haves" for beginner gardeners-- they are easy to find and grow and are all-round good pollinator plants.

**Please note:** The plants that are considered average garden plants, annuals, or non-native species are generally checked in all regions, even though they may not be native to them, since they will typically grow anywhere if planted in a garden situation.

# <http://monarchwatch.org/garden/>

Common Name	Latin Name		N	P	A	B	BF	BFh	HB	M-A IN	C	MW	GL	NE
<b>Butterfly Host Plants for small to medium sized landscapes</b>		<b>Host Plant for</b>												
<b>Asters</b>	<i>Aster spp. &amp; Symphyotrichum spp.</i>	Pearl crescent	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Bearberry (Kinnikinnick)	<i>Arctostaphylos uva-ursi</i>	Hoary elfin	✓	✓		✓			✓			✓	✓	✓
<b>Bronze fennel</b>	<i>Foeniculum vulgare</i>	Black swallowtail		✓					✓	✓	✓	✓	✓	✓
Bulbous bittercress	<i>Cardamine bulbosa</i> (Spring cress)	Falcate orange-tip	✓	✓		✓			✓	✓	✓	✓	✓	✓
<b>Butterfly weed</b>	<i>Asclepias tuberosa</i>	Monarch	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Clovers	<i>Trifolium spp.</i>	Eastern tailed blue, Gray hairstreak, sulphur spp.		✓		✓	✓	✓		✓	✓	✓	✓	✓
<b>Common milkweed</b>	<i>Asclepias syriaca</i>	Monarch	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
False nettle	<i>Boehmeria cylindrica</i>	Red admiral	✓	✓					✓	✓	✓	✓	✓	✓
Flat-topped white aster	<i>Doellingeria umbellata</i>	Harris' checkerspot	✓	✓		✓	✓	✓		✓		✓	✓	✓
Globe thistle	<i>Echinops ritro</i> (not a true thistle)	Painted lady		✓		✓	✓			✓	✓	✓	✓	✓
Golden alexanders	<i>Zizia aurea</i>	Black swallowtail	✓	✓		✓				✓	✓	✓	✓	✓
Narrow-leaved plantain	<i>Plantago lanceolata</i>	Baltimore checkerspot		✓						✓	✓	✓	✓	✓
Passion vine	<i>Passiflora incarnata</i>	Variegated fritillary	✓	✓						✓	✓	✓	✓	✓
<b>Pearly everlasting</b>	<i>Anaphalis margaritacea</i>	American painted lady	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Pipevines	<i>Aristolochia spp.</i> (incl. VA snakeroot)	Pipevine swallowtail	✓	✓						✓	✓	✓	✓	✓
Prairie milkweed	<i>Asclepias sullivantii</i>	Monarch	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Purple false foxglove	<i>Agalinis purpurea</i>	Common buckeye	✓	✓		✓				✓	✓	✓	✓	✓
Purple milkweed	<i>Asclepias purpurascens</i>	Monarch	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Pussytoes	<i>Antennaria spp.</i>	American painted lady	✓	✓		✓				✓	✓	✓	✓	✓
Saltmarsh false foxglove	<i>Agalinis maritima</i> (Seaside gerardia)	Common buckeye	✓	✓						✓				✓
Sheep sorrel	<i>Rumex acetosella</i>	American copper		✓						✓	✓	✓	✓	✓
<b>Spicebush</b>	<i>Lindera benzoin</i>	Spicebush swallowtail	✓	✓		✓				✓	✓	✓	✓	✓
Sundial lupine	<i>Lupinus perennis</i>	Frosted elfin, Karner blue	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>Swamp milkweed</b>	<i>Asclepias incarnata</i>	Monarch	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>Tropical milkweed</b>	<i>Asclepias curassavica</i>	Monarch				✓	✓	✓	✓	✓	✓	✓	✓	✓
Violets	<i>Viola spp.</i>	Great spangled fritillary	✓	✓	✓	✓				✓	✓	✓	✓	✓
White turtlehead	<i>Chelone glabra</i>	Baltimore checkerspot	✓	✓						✓	✓	✓	✓	✓
<b>Wild blue indigo</b>	<i>Baptisia australis</i>	Wild indigo duskywing	✓	✓		✓				✓	✓	✓	✓	✓
<b>Wild senna</b>	<i>Senna hebecarpa</i>	Sulphur species (several)	✓	✓		✓				✓	✓	✓	✓	✓
Wingstem	<i>Verbesina alterniflora</i>	Summer azure	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓
Woodland sunflower	<i>Helianthus divaricata</i>	Silvery checkerspot	✓	✓		✓	✓	✓		✓	✓		✓	✓
<b>Woody Butterfly Host Plants for larger areas</b>		<b>Host Plant for</b>												
American holly	<i>Ilex opaca</i>	Henry's elfin	✓	✓		✓				✓				
Atlantic white cedar	<i>Chamaecyparis thyoides</i>	Hessel's hairstreak	✓	✓						✓				✓

# <http://monarchwatch.org/garden/>

Common Name	Latin Name		N	P	A	B	BF	BFh	HB	M-A	IN	C	MW	GL	NE
Spring beauty	<i>Claytonia virginica</i>		✓	✓		✓	✓			✓	✓	✓	✓	✓	✓
Trailing arbutus	<i>Epigaea repens</i>		✓	✓		✓	✓			✓	✓	✓	✓	✓	✓
Viburnum	<i>Viburnum spp.</i>	shrub	✓	✓		✓	✓			✓	✓	✓	✓	✓	✓
Virginia bluebells	<i>Mertensia virginica</i>		✓	✓		✓	✓		✓	✓	✓		✓	✓	✓
White wild indigo	<i>Baptisia alba</i>		✓	✓		✓	✓						✓	✓	
Wild bleeding heart	<i>Dicentra eximia</i>		✓	✓		✓	✓		✓	✓	✓		✓	✓	✓
Wild blue phlox	<i>Phlox divaricata</i>		✓	✓		✓	✓		✓	✓	✓		✓	✓	✓
Wild petunia	<i>Ruellia humilis</i>		✓	✓		✓	✓		✓	✓	✓		✓	✓	✓
<b>Summer to early Autumn:</b>		<b>Comments</b>													
Ageratum	<i>Ageratum houstonium 'Blue Horizon'</i>				✓	✓	✓			✓	✓	✓	✓	✓	✓
Anise hyssop	<i>Agastache rugosa or feniculum</i>	exceptional bee plant	✓	✓		✓	✓			✓	✓	✓	✓	✓	✓
Azure blue sage	<i>Salvia azurea</i>		✓	✓		✓	✓						✓	✓	
Bigfruit Evening Primrose	<i>Oenothera macrocarpa</i>		✓	✓		✓	✓		✓				✓	✓	
Blue mistflower	<i>Conoclinium coelestinum</i>	spreads quickly	✓	✓		✓	✓			✓	✓	✓	✓	✓	✓
Blue salvia	<i>Salvia farinacea</i>				✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
Blue vervain	<i>Verbena hastata</i>	tolerates soggy soil	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓
Borage	<i>Borago officinalis</i>	exceptional bee plant			✓					✓	✓	✓	✓	✓	✓
Brazilian verbena	<i>Verbena bonariensis</i>	succumbs to powdery mildew			✓	✓	✓			✓	✓	✓	✓	✓	✓
Butterfly bush	<i>Buddleia davidii Flutterby series –only plant male sterile varieties</i>	shrub; non-sterile varieties can be invasive		✓		✓	✓		✓	✓	✓	✓	✓	✓	✓
Calico beardtongue	<i>Penstemon calycosus</i>		✓	✓		✓	✓		✓				✓	✓	✓
Cardinalflower	<i>Lobelia cardinalis</i>		✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓
Catmint	<i>Nepeta siberica</i>			✓	✓	✓	✓			✓	✓	✓	✓	✓	✓
Cobaea beardtongue	<i>Penstemon cobaea</i>		✓	✓		✓	✓		✓				✓	✓	✓
Common boneset	<i>Eupatorium perfoliatum</i>		✓	✓		✓	✓			✓	✓	✓	✓	✓	✓
Common buttonbush	<i>Cephalanthus occidentalis</i>	shrub	✓	✓		✓	✓			✓	✓	✓	✓	✓	✓
Cosmos	<i>Cosmos sulphureus 'Cosmic Red' 'Cosmic orange'</i>	use single-flowered varieties			✓	✓	✓			✓	✓	✓	✓	✓	✓
Culver's root	<i>Veronicastrum virginicum</i>		✓	✓		✓	✓			✓	✓	✓	✓	✓	✓
Egyptian starclusters	<i>Pentas lanceolata 'Ruby Glow'</i>	some cultivars lack nectar			✓		✓		✓	✓	✓	✓	✓	✓	✓
Fewleaf sunflower	<i>Helianthus occidentalis</i>		✓	✓		✓	✓			✓			✓	✓	✓
Globe amaranth	<i>Gomphrena haageana 'QIS Orange'</i>	orange and hot pink best			✓	✓	✓			✓	✓	✓	✓	✓	✓
Great blue lobelia	<i>Lobelia siphilitica</i>		✓			✓	✓		✓	✓	✓		✓	✓	✓
Hairy beardtongue	<i>Penstemon hirsutus</i>		✓		✓	✓	✓		✓	✓	✓		✓	✓	✓
Indian blanket	<i>Gaillardia aristata (Blanket flower)</i>		✓			✓	✓			✓	✓	✓	✓	✓	✓
Joe-Pye weed	<i>Eutrochium spp.</i>	short cultivars have nectar	✓	✓		✓	✓			✓	✓	✓	✓	✓	✓
Lanceleaf Tickseed	<i>Coreopsis lanceolata</i>		✓			✓	✓			✓	✓	✓	✓	✓	✓
Lantana	<i>Lantana camara</i>	any color works			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓

# Oops!

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Photo copyright Ed Walsh, 2015

# Monarch Myths

- **Monarchs are important pollinators**
  - No, monarchs are poor pollinators
- **They remember the trees**
  - No, they do not return
- **“Stragglers” are bad**
  - No, stragglers are normal
  - Climate change?
- **Extinction is looming**
  - No, but migration is at risk



# Asclepias incarnata

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- Swamp Milkweed
- Tolerates clay soil
- Full sun
- Water's edges
- Rhizomes not “pushy”
- Good host plant
- Cultivar behavior

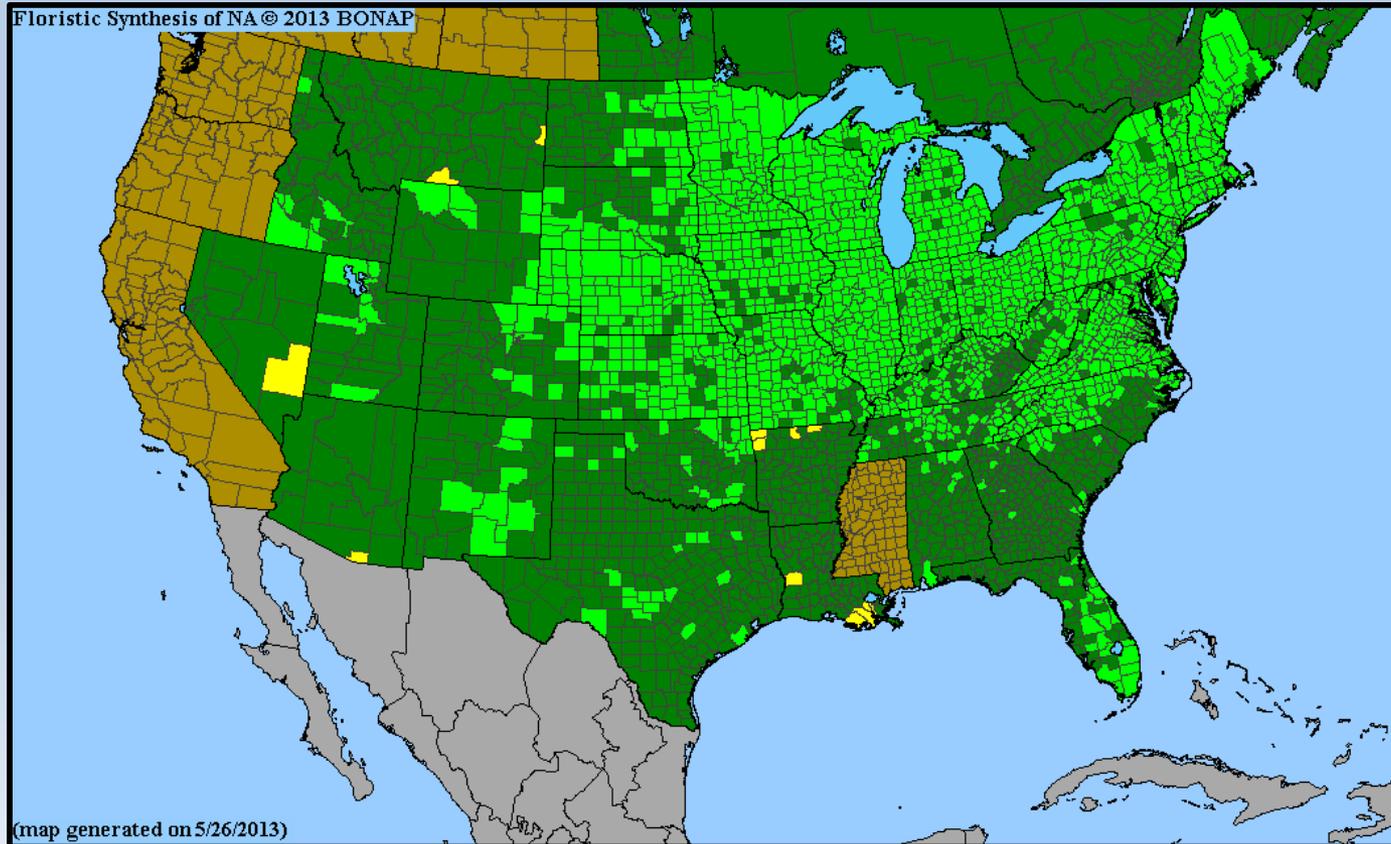


# Asclepias incarnata

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# Asclepias incarnata



Found in swamps and floodplains.

Kartesz, J.T., The Biota of North America Program (BONAP). 2013. *North American Plant Atlas*. (<http://bonap.net/napa>). Chapel Hill, N.C. [maps generated from Kartesz, J.T. 2013. Floristic Synthesis of North America, Version 1.0. Biota of North America Program (BONAP). (in press)].

# Asclepias syriaca

- Common Milkweed
- Well-drained soil
- Full sun
- “Pushy” rhizomes
- Native behavior
  - Clonal
- Favored host plant
- Fragrant
- Can be very tall





# Asclepias syriaca



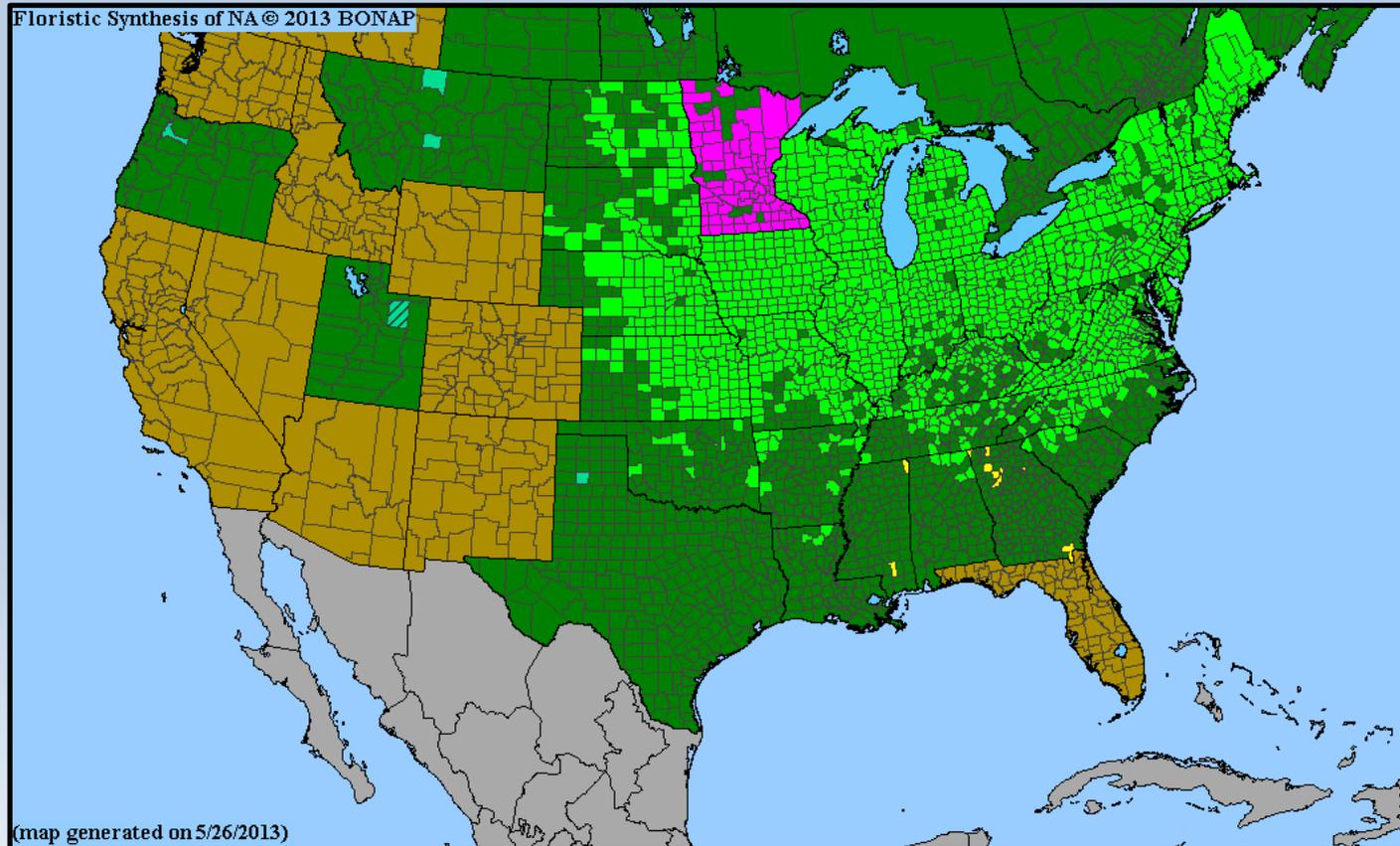
# Asclepias syriaca

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## Great Spangled Fritillary



# Asclepias syriaca



Found in prairies, pastures, roadsides, disturbed areas.

Kartesz, J.T., The Biota of North America Program (BONAP). 2013. *North American Plant Atlas*. (<http://bonap.net/napa>). Chapel Hill, N.C. [maps generated from Kartesz, J.T. 2013. Floristic Synthesis of North America, Version 1.0. Biota of North America Program (BONAP). (in press)].

# Asclepias tuberosa

- Butterfly Weed
- Very well-drained soil
- Drought tolerant
- Full sun
- Less favored host plant
- Used by monarchs in south
- Excellent nectar source
- Widely available in nurseries

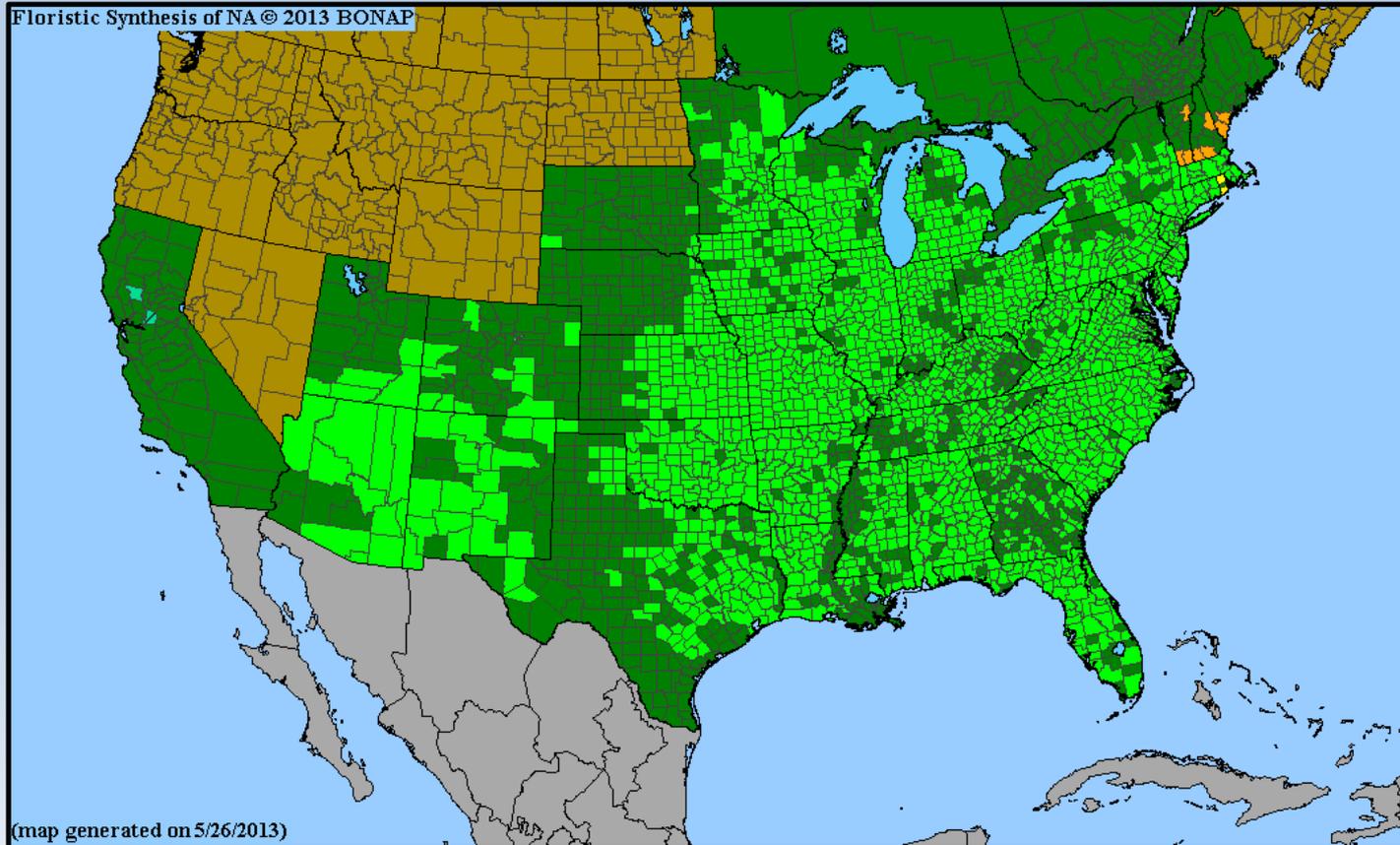


# Asclepias tuberosa

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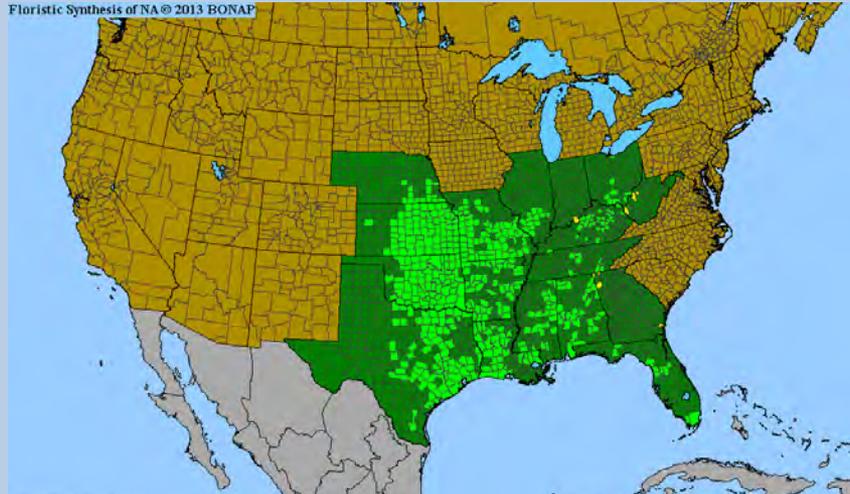
# Asclepias tuberosa



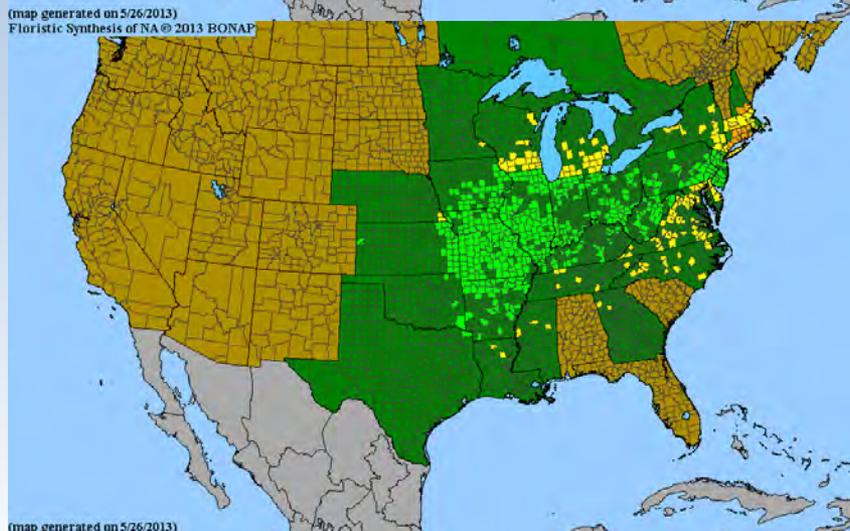
Sandy, loamy, or rocky limestone soils of prairies, open woodlands, roadsides, and disturbed areas.

Kartesz, J.T., The Biota of North America Program (BONAP). 2013. *North American Plant Atlas*. (<http://bonap.net/napa>). Chapel Hill, N.C. [maps generated from Kartesz, J.T. 2013. Floristic Synthesis of North America, Version 1.0. Biota of North America Program (BONAP). (in press)].

# Other Asclepias species



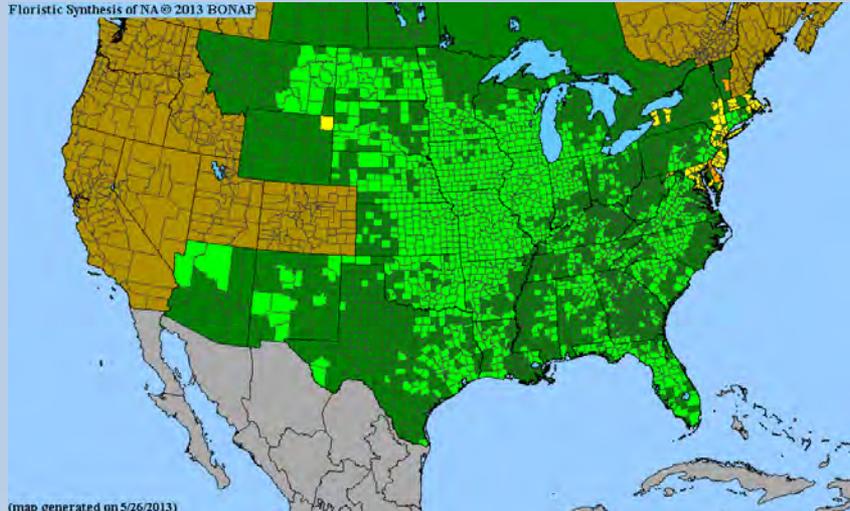
*Asclepias viridis*



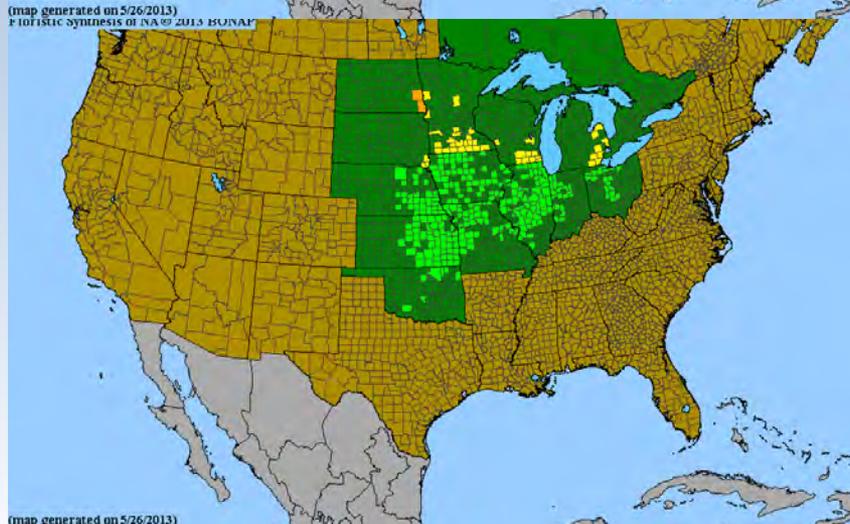
*Asclepias purpurascens*



# Other Asclepias species



*Asclepias verticillata*



*Asclepias sullivantii*



# Cynanchum laeve

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# What else is being done?

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- On the 20<sup>th</sup> of June, 2014, President Obama issued a memorandum that called for creation of a federal strategy to promote the health of honey bees and other pollinators.

# What else is being done?

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- In Fall of 2015, the National Wildlife Foundation established the Mayor's Monarch Pledge.
  - 25 Actions Pledged = Monarch Champions
    - 1 city (Austin, TX)
  - 8 Actions Pledged = Leadership Circle
    - 15 cities
  - 3 Actions Pledged
    - 46 cities

# What else is being done?

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- “EPIC Monarch Conservation Project”
  - Heartland Conservation Alliance is coordinating regional Monarch butterfly conservation
- National Fish and Wildlife Foundation
  - \$3,310,668 total awards
  - \$6,691,153 grantee matching contributions
  - \$10,001,821 total on-the-ground impact

# What else is being done?

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- Kansas City Metro Area Monarch Butterfly Conservation: A Multi-Sector Partnership
  - Burroughs Audubon, Mary Nemecek
  - Johnson County Parks
  - Highways
  - Bridging the Gap
  - Loose Park/Powell Gardens/KCMO Parks/Westport Garden Club
  - Platte Land Trust
  - Missouri Prairie Foundation



# Thanks To:

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- Ann Ryan, Dena Podrebarac and Jim Lovett
- Chip Taylor, Director
- Applied Ecological Services
- Monarch Watch Conservation Specialists
- Journey North, Monarch Joint Venture



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