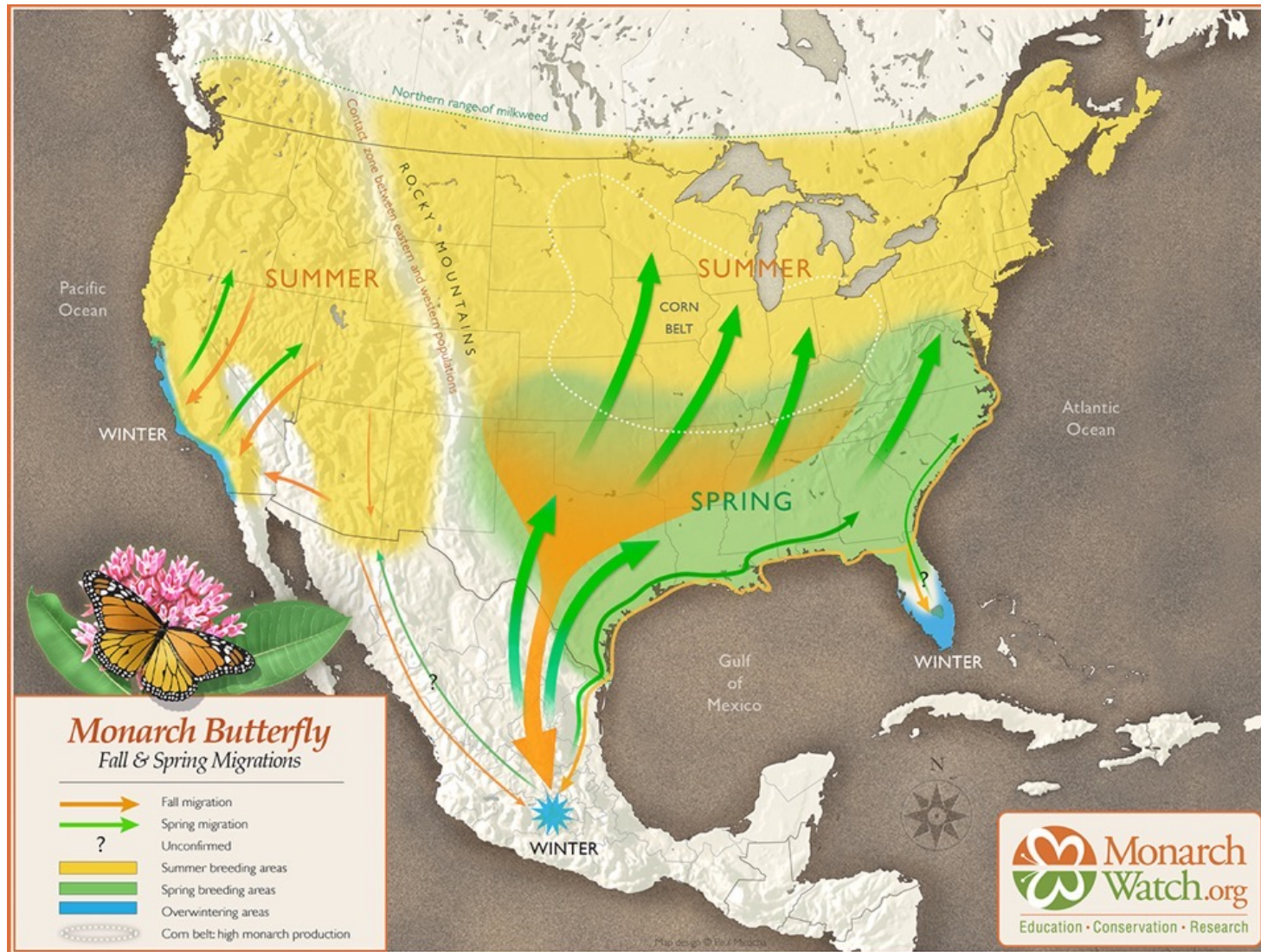


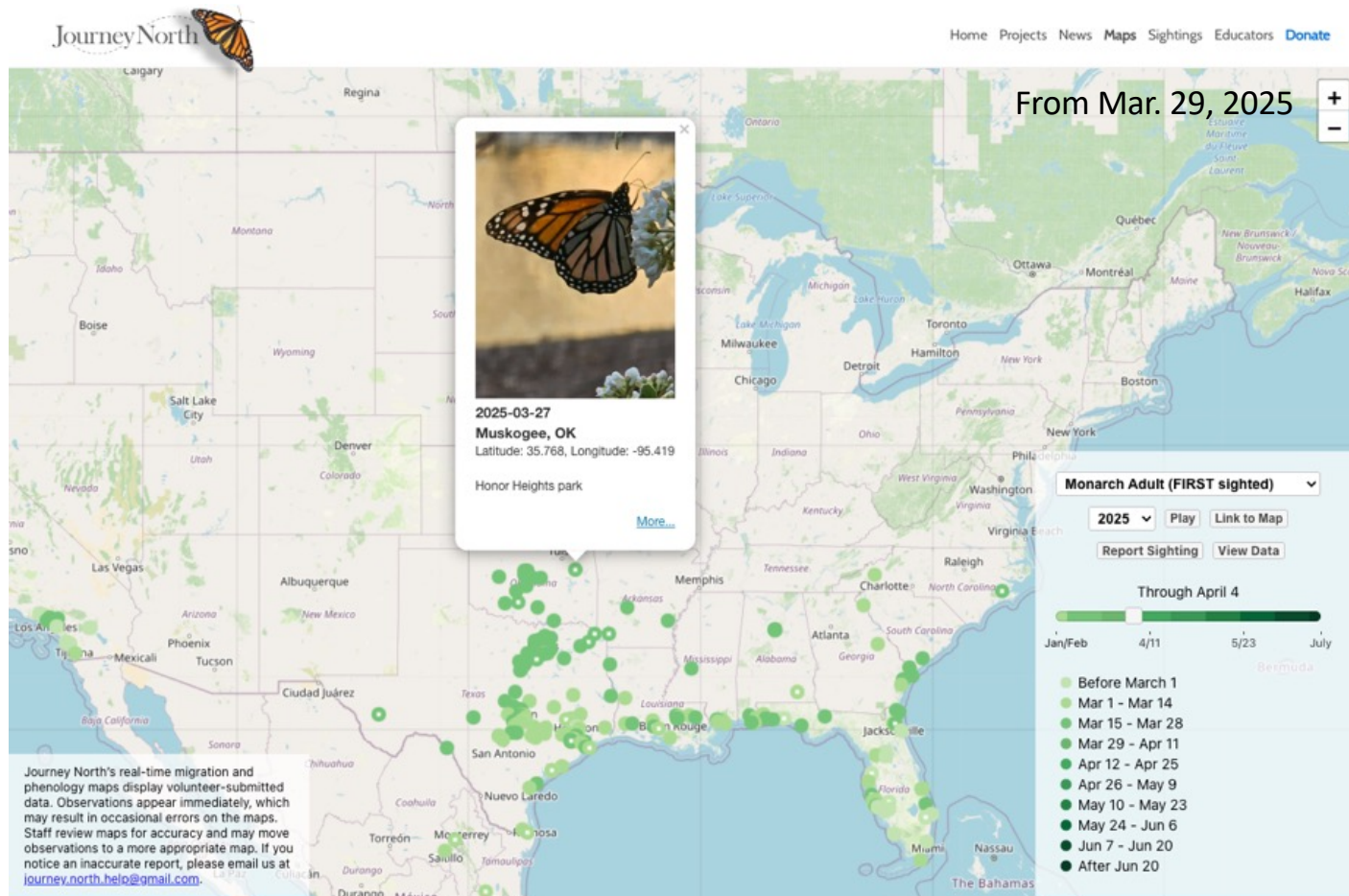


Monarchs –  
A deep dive into the  
iconic, captivating, but  
declining butterfly

Kristen Baum  
kbaum@ku.edu





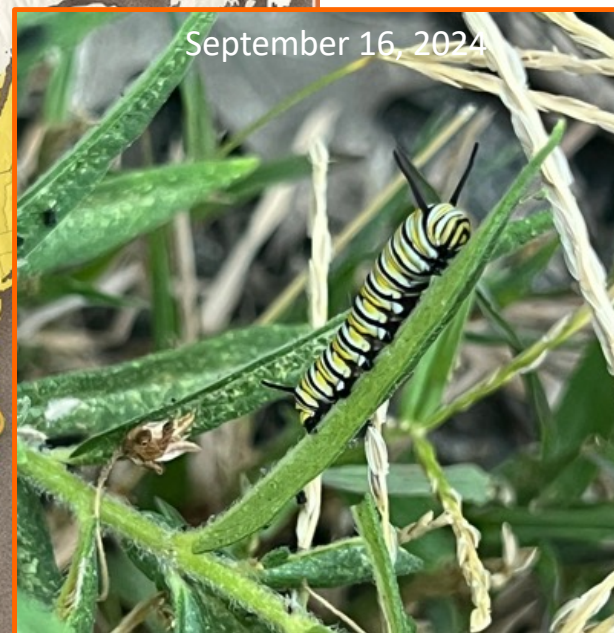
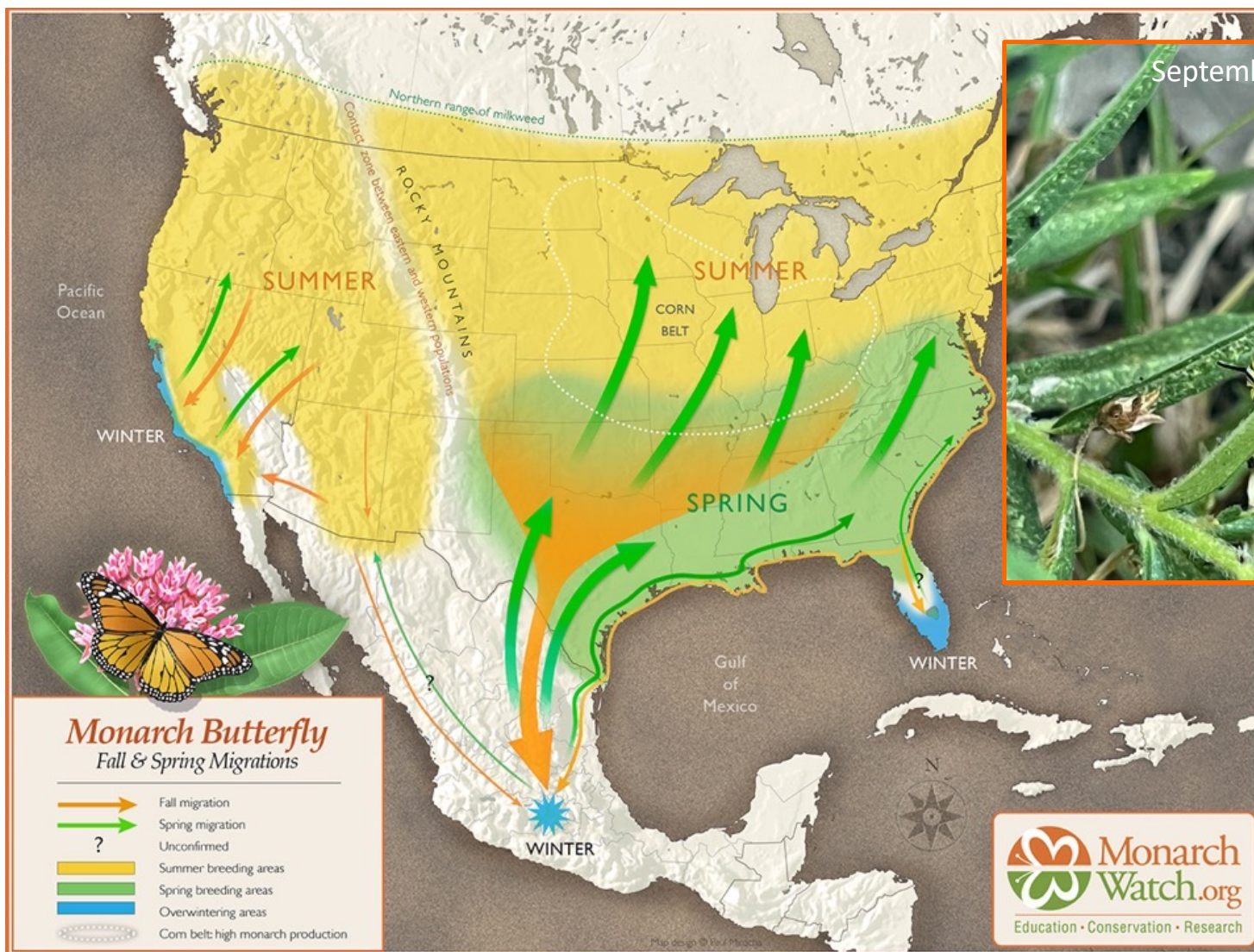


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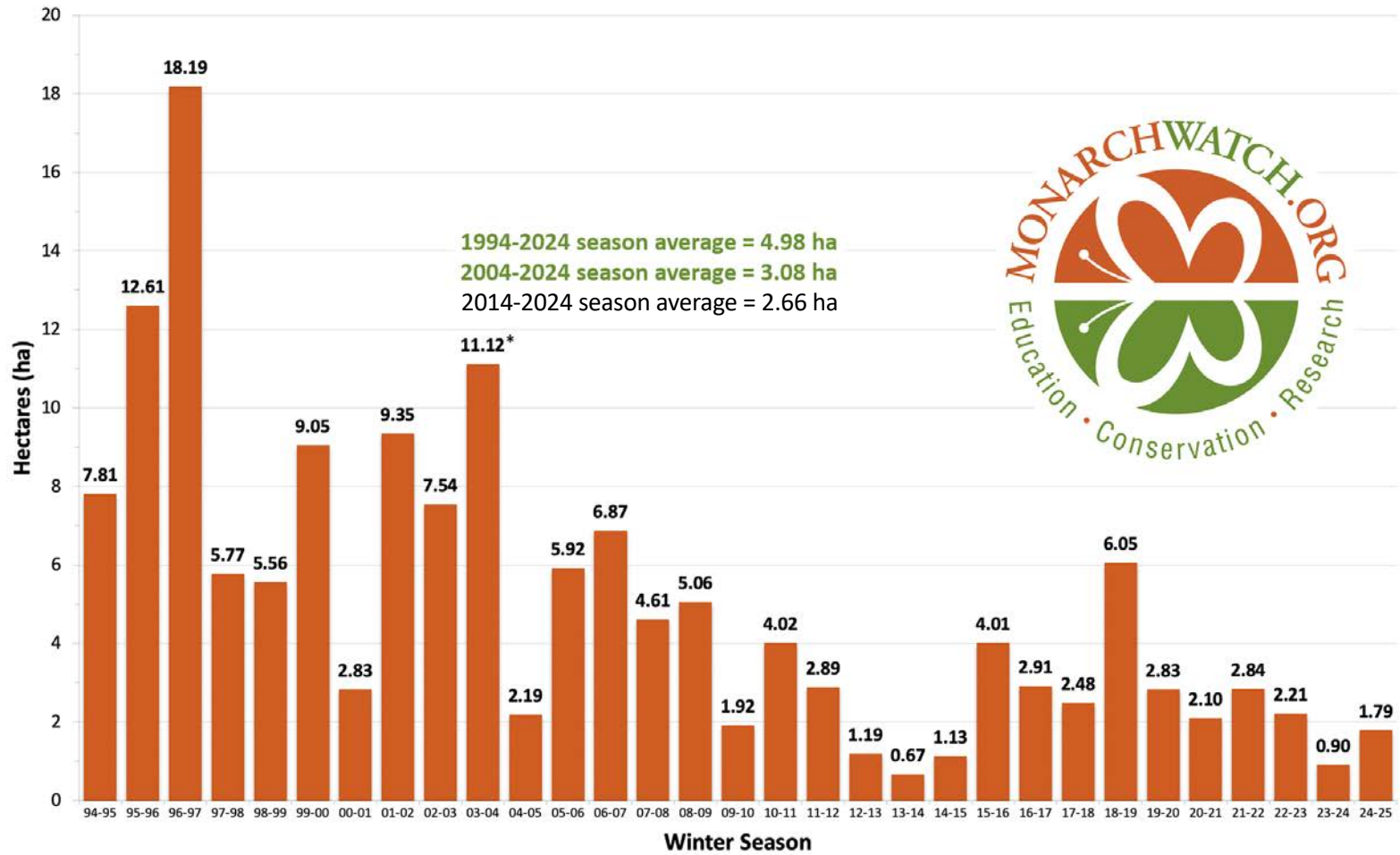
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## Total Area Occupied by Monarch Colonies at Overwintering Sites in Mexico

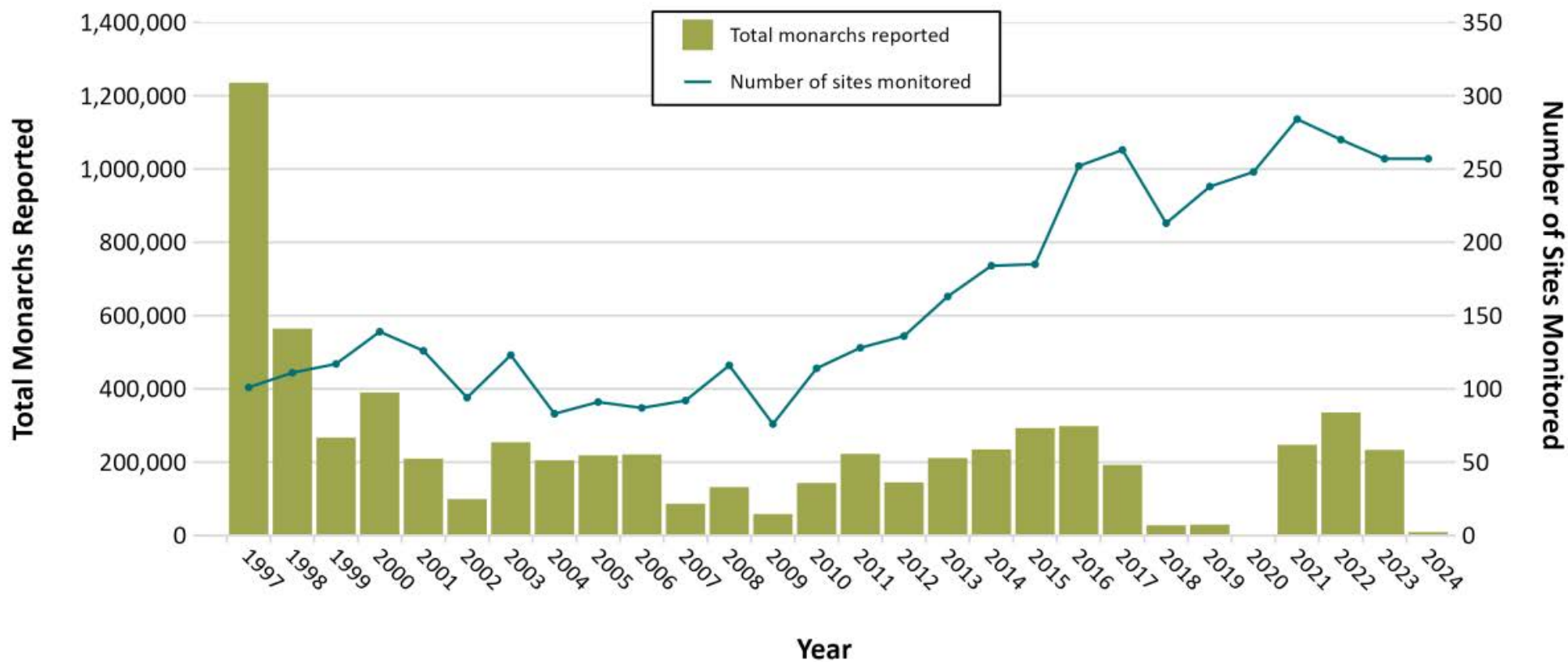


1994-2003 data collected by personnel of the Monarch Butterfly Biosphere Reserve (MBBR) of the National Commission of Natural Protected Areas (CONANP) in Mexico. 2004-present data collected by World Wildlife Fund Mexico in collaboration with the National Commission of Natural Protected Areas (CONANP), the National Autonomous University of Mexico (UNAM), and 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

## Western Monarch Count

Total monarchs reported and number of sites monitored from 1997-2024.  
Data Available at: [WesternMonarchCount.org](https://WesternMonarchCount.org)





PRESS RELEASE

## Fish and Wildlife Service Proposes Endangered Species Act Protection for Monarch Butterfly; Urges Increased Public Engagement to Help Save the Species

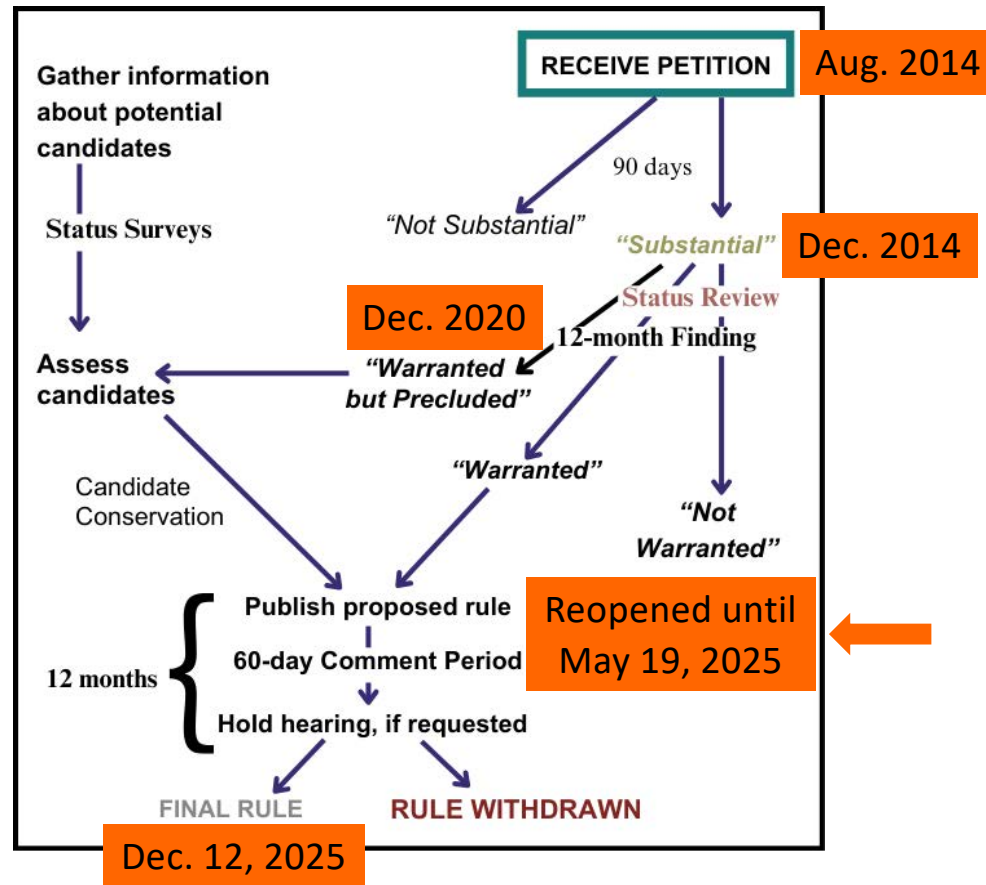
Dec 10, 2024

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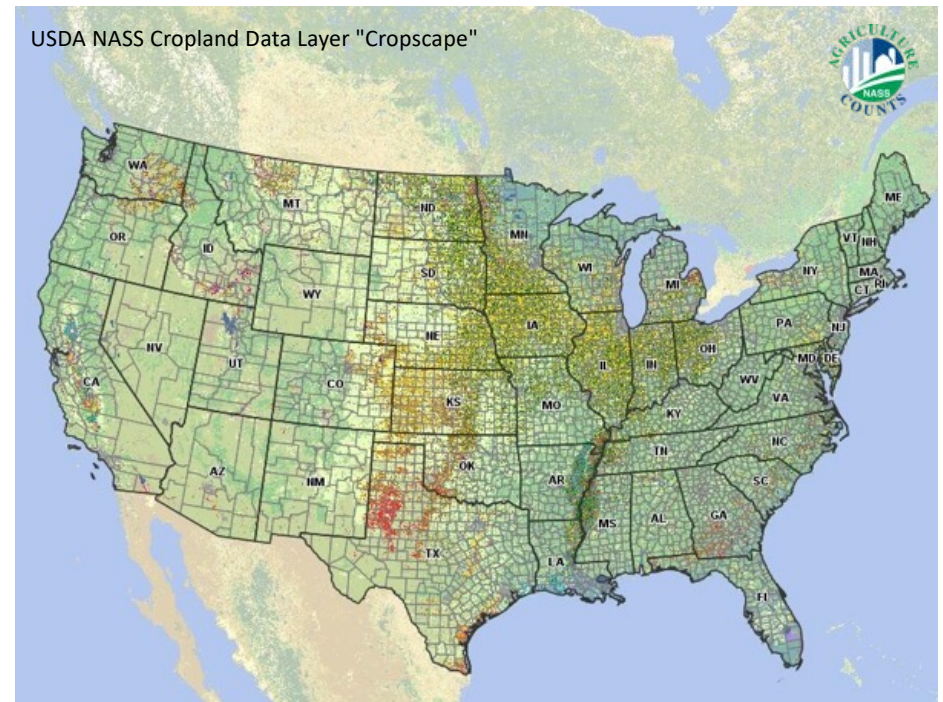
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# 1. Habitat Loss



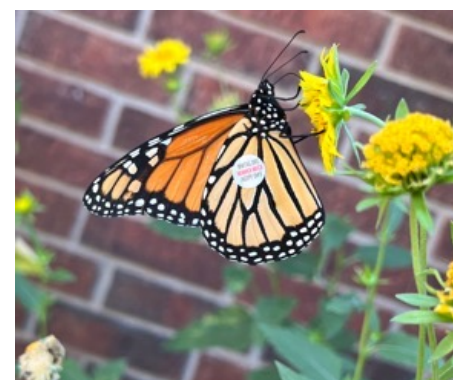
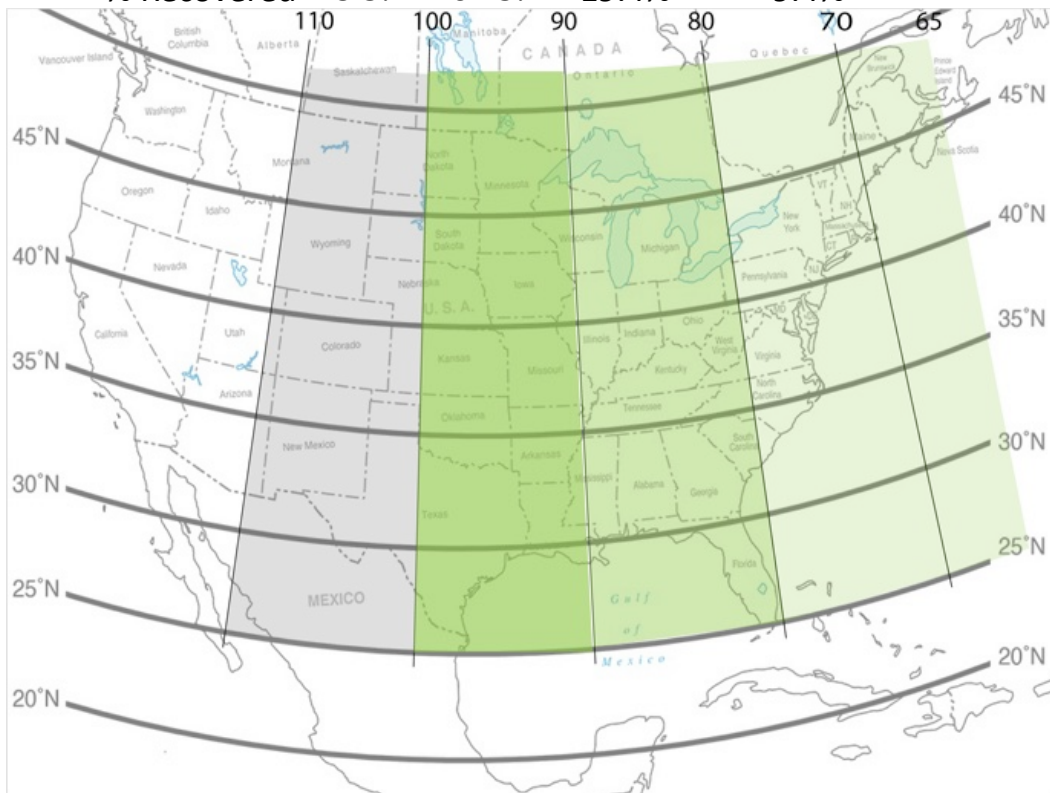
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% Tagged	1.2%	40.9%	25.1%	32.9%	2004-2015
% Recovered	3.5%	67.5%	19.4%	9.4%	



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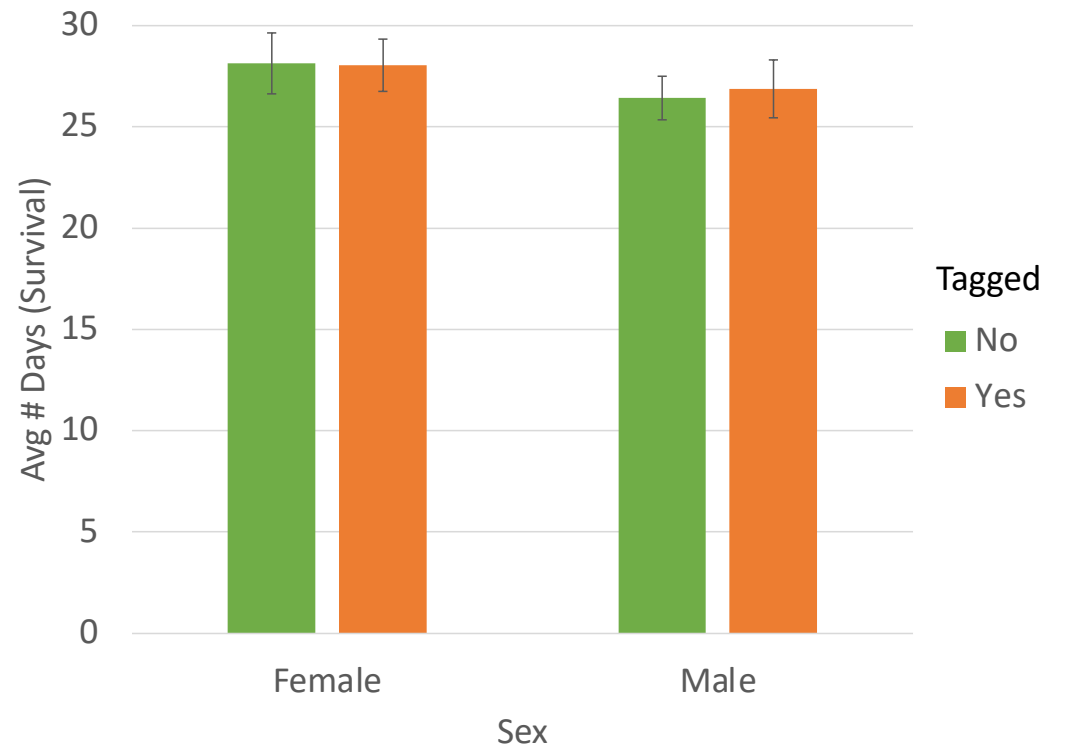
266 monarchs; ½ tagged and ½ untagged

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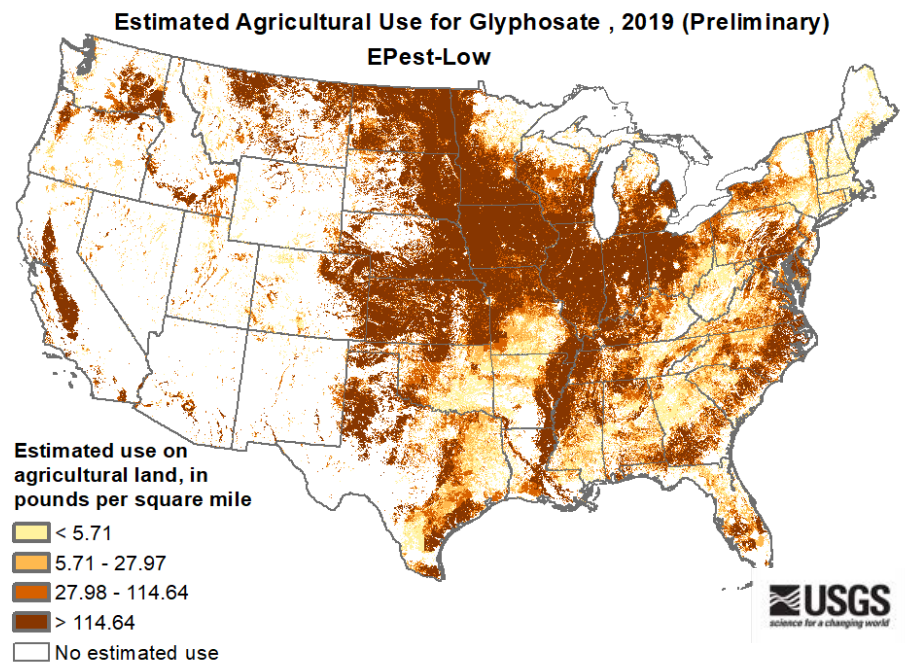
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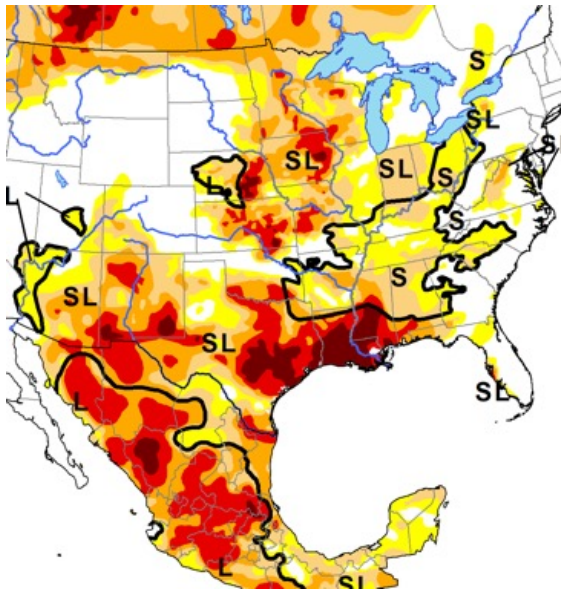


## 2. Pesticides

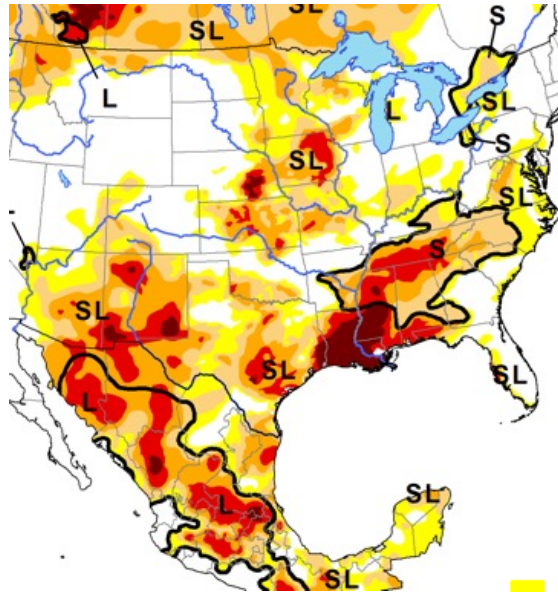


### 3. Climate Change

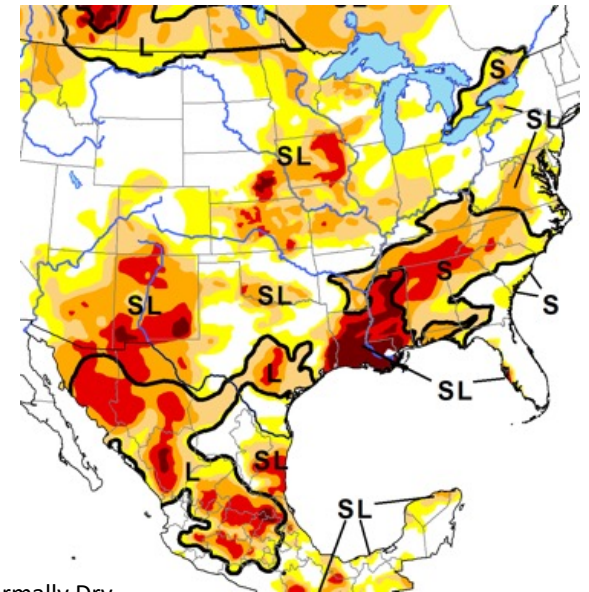
September 30, 2023



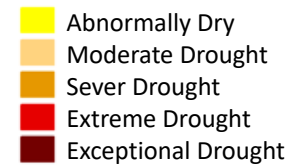
October 31, 2023



November 30, 2023



Source: <https://droughtmonitor.unl.edu/NADM/Maps.aspx>

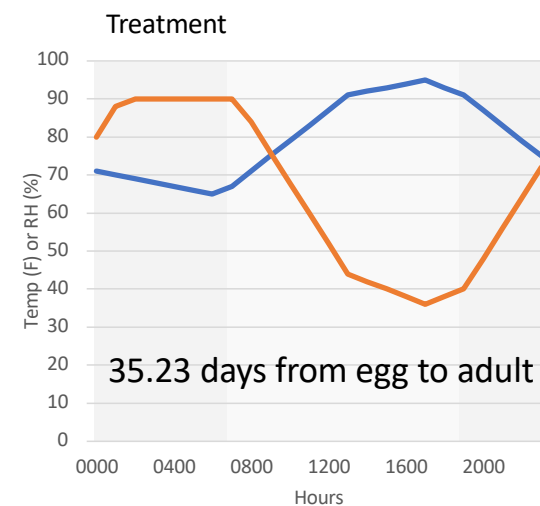
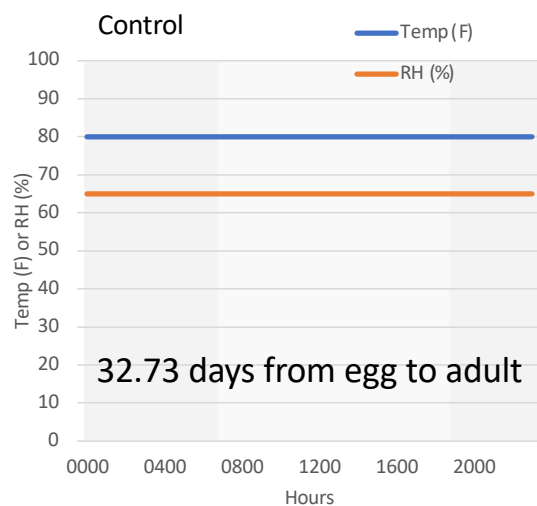
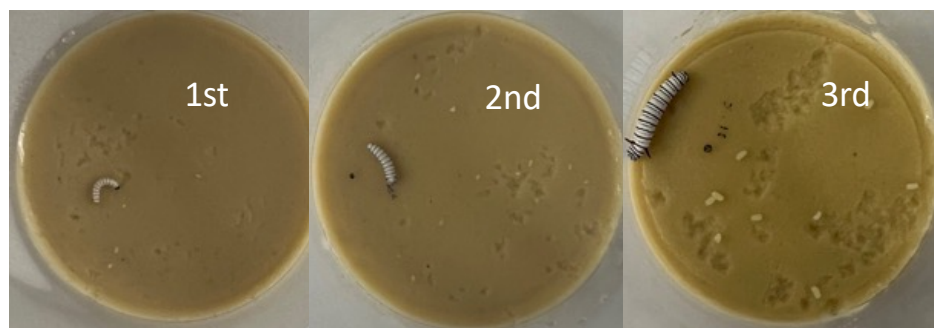


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## Endangered and Threatened Wildlife and Plants; Threatened Species Status With Section 4(d) Rule for Monarch Butterfly and Designation of Critical Habitat

A Proposed Rule by the [Fish and Wildlife Service](#) on 12/12/2024



This document has a comment period that ends in 46 days. (03/12/2025)

**SUBMIT A PUBLIC COMMENT**

**10861** comments received. [View posted comments](#)

PDF

Document Details

Document Dates

PUBLISHED DOCUMENT: 2024-28855 (89 FR 100662)

DOCUMENT HEADINGS

Department of the Interior  
Fish and Wildlife Service  
50 CFR Part 17  
[Docket No. FWS-R3-ES-2024-0137; FXES1111090FEDR-256-FF09E21000]  
RIN 1018-BE30



# Identified needs

- Increase the availability of milkweed and nectar plants
- Protect and enhance overwintering habitat
- Reduce the negative impacts of pesticides
- Maintain public support for monarch conservation



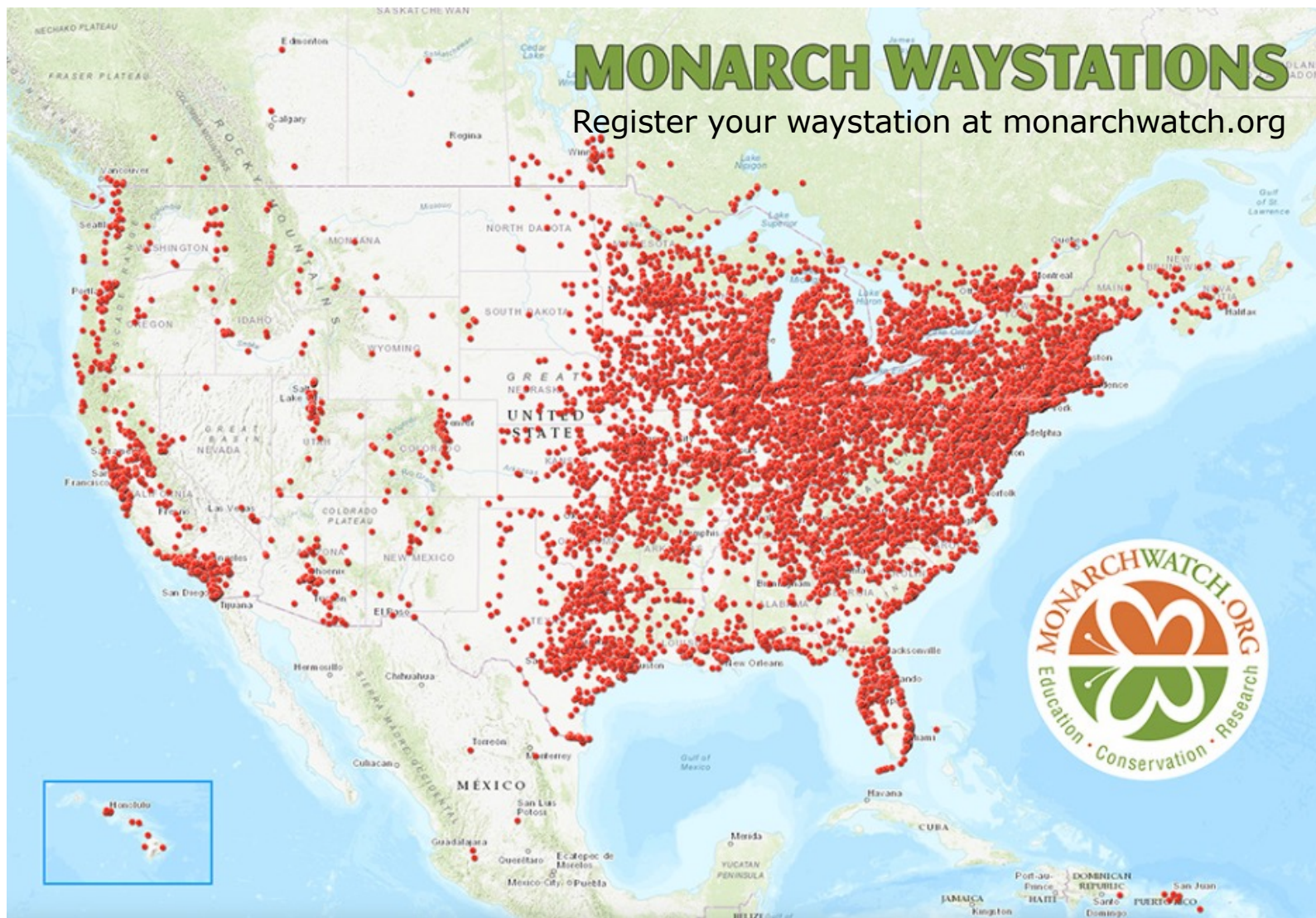
Identified  
Need #1:  
Increase the  
availability of  
milkweed  
and nectar  
plants

Activities may continue that do not result in conversion of native or naturalized grassland, shrubland, or forested habitat

- Habitat restoration and management activities
- Livestock grazing and routine ranching activities
- Routine agricultural activities and conservation practices
- Fire management
- Silviculture and forest management
- Management on residential and other developed properties
- Vegetation management activities when monarchs are not present

Rationale: localized removal of milkweed and nectar plants would be outweighed by the overall addition of milkweed and nectar plants at larger scales; reduce fear of regulation; incentivize voluntary efforts





49,870  
Monarch  
Waystations  
registered  
from 2005 –  
Mar. 28, 2025

Located in 12  
countries or  
territories  
worldwide

20-year  
anniversary  
Apr. 21, 2025!

# Monarch Waystation Program



*Create, Conserve, & Protect  
Monarch Habitats*  
monarchwatch.org

**Size.** Any size, ideally 100+ sq ft

**Exposure.** Sunny

**Soils.** Good drainage

**Shelter.** Dense plants (2-10/sq ft), but not crowded

**Milkweed Plants.** 10+ plants, ideally 2 or more species

**Nectar Plants.** Sequentially or continuously blooming plants, including several annuals and perennials

**Management.**

- Don't use insecticides
- As needed: thin, mulch, water, etc.
- Add features to support education and other pollinators/wildlife





## Kansas Native Caterpillar Food Plants

English Name	Botanical Name	Family	Ht	Flower/ Nectar?	Foodplant for	Growing Hints/ Comments
Little Bluestem	<i>Schizachyrium scoparium</i>	Grass	2'	NA	Common Wood Nymph & Skipper	KANSAS STATE GRASS Beautiful clumping grass for the garden
Woolly Pipevine	<i>Aristolochia tomentosa</i>	Pipevine	Large vine	beige	Pipevine Swallowtail	Needs stout fence or trellis. Self-sows & suckers (which is good! The cats keep those suckers trimmed.)
Passionflower	<i>Passiflora incarnata</i>	Passion-flower	Large Vine	Blue	Gulf & Variegated Fritillaries	Amazingly beautiful flowers but a suckering thug.
Paw-Paw	<i>Asimina triloba</i>	Custard-apple	15'	maroon	Zebra Swallowtail	
Hop Tree	<i>Ptelea trifoliata</i>	Citrus	20'	Greenish	Tiger & Giant Swallowtail	Small trees of the understory. Moist soil & partial shade
Prickly Ash	<i>Zanthoxylum Americana</i>		15'	Greenish	Giant Swallowtail	
Spice Bush	<i>Lindera benzoin</i>	Laurel	10'	Pale yellow	Spice Bush Swallowtail	
Sassafras	<i>Sassafras albidum</i>					
Tulip Tree	<i>Liriodendron tulipifera</i>	Magnolia	80'	Cream & orange	Tiger Swallowtail	Magnificent tree. Prefers rich, moist soil. I keep mine trimmed to 6' high.
Black Cherry	<i>Prunus serotina</i>	Rose	60'	White	Tiger ST, Red-spotted Purple	The dark red cherries are sour, but eaten by birds. Self-seeds.
Hackberry	<i>Celtis occidentalis</i>	Elm	50'	Greenish	Hackberry, Tawny, Snout, Question Mark	Self-seeds like crazy!
HERBACEOUS PLANTS						
Milkweed	<i>Asclepias syriaca</i> <i>Incarnata</i> & <i>tuberosa</i> & <i>viridis</i> & <i>verticillata</i> , etc	Milkweed	8' to 5'	White, Pinks, orange & reds YES Nectar!	Monarch	The MUST-HAVE for a butterfly garden or habitat
Golden Alexanders	<i>Zizia aurea</i>	Carrot	18"	Yellow	Black Swallowtails	Likes moist soil & full sun. Self-seeds
Goatweed	<i>Croton monanthogynus</i>	Euphorbia	10"	Whitish (tiny)	Goatweed Leafing	An annual that vigorously self-seeds. A delightful lemony fragrance
Cassia species	<i>Cassia marilandica</i> & <i>Chamaecrista fasciculata</i>		m-4' f-12'	Bright yellow YES Nectar!	Sulfurs	Full sun & dry, gravelly soil. Deadhead to avoid too much self-seeding
Indigo Bush	<i>Amorpha fruticosa</i>	Pea	8'	Violet	Silver-spotted Skipper, Hairstreaks & Sulfurs	Wetlands, water's edge
Pussytoes	<i>Antennaria parvifolia</i> & <i>A. neglecta</i>	Aster	12"	White	American Lady	Low-growing silvery ground cover
Violets	<i>Viola sp.</i>	Violet	6"	various	Fritillaries	Secretive cats, but large spectacular butterflies
Wild Petunia	<i>Ruellia humilis</i>	Acanthus	12"	Pale lavender	Buckeye	Dry prairies
Evening Primrose	<i>Oenothera biennis</i>	Evening Primrose		Yellow YES Nectar!	White-lined Sphinx Moth	Biennial
False Nettle	<i>Boehmeria cylindrica</i>	Nettle	3'	Greenish	Red Admiral, Comma, Question Mark	Non-stinging nettle Cats form rolled leaf nests
ADDITIONAL NATIVE TREE CAT FOODS						
Willows	<i>Salix nigra</i>	Willow	80'	Greenish	Viceroy, Tiger Swallowtail	Close proximity of native trees greatly increases the variety and density of butterfly populations. I grow many of these in my butterfly garden by whacking them to the ground every March. Thus, they remain short bushes and I can see the caterpillars without climbing on a ladder.
Ash	<i>Fraxinus americana</i>	Olive	100'	Greenish	Tiger Swallowtail	
Wild Plums	<i>Prunus sp.</i>	Rose	6-10'	Pale Pink	Red-spotted Purple	
Black Oak	<i>Quercus nigra</i>	Beech	25'	Greenish	Banded Hairstreaks	
E.Red Cedar	<i>Juniperus virginiana</i>	Pine	50'	NA	Juniper Hairstreak	

Lenora Larson  
K-State Extension Master Gardener

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## 3 bumble bee species petitioned for listing under the ESA

- American bumble bee (*Bombus pensylvanicus*)
- Southern Plains Bumble Bee (*Bombus fraterus*)
- Variable Cuckoo Bumble Bee (*Bombus variabilis*)
  - last observed in KS in 1990







## Pithy-Stemmed Plants that are also important Monarch Nectar Plants

Common name(s)	Scientific name
Beardtongue	Penstemon spp.
Bee balm	Monarda spp.
Boneset	Eupatorium spp.
Coneflower	Echinacea spp.
Cup plant/Rosinweed	Silphium spp.
Goldenrod	Solidago spp.
Ironweed	Vernonia spp.
Joe-pye weed	Eutrochium spp.
Mountain mint	Pycnanthemum spp.
Thistle	Cirsium spp.
Wild sunflower	Helianthus spp.





Green Antelopehorn



Poppymallow



Prairie Fleabane



Diamond-Flowers



Slimflower Scurfpea

Plant Species	May	June	July	August	September
Green Antelopehorn	28%	20%		3%	3%
Poppymallow	25%				
Prairie Fleabane	11%	2%			
Diamond-Flowers		14%	11%	6%	2%
Slimflower Scurfpea	4%	11%	1%	2%	
Purple Prairie Clover		1%	22%		
Baldwin's Ironweed			21%	9%	
Prairie Broomweed				16%	11%
False Gaura				9%	1%
Snow on the Mountain				8%	3%

Purple Prairie Clover



Baldwin's Ironweed



Prairie Broomweed

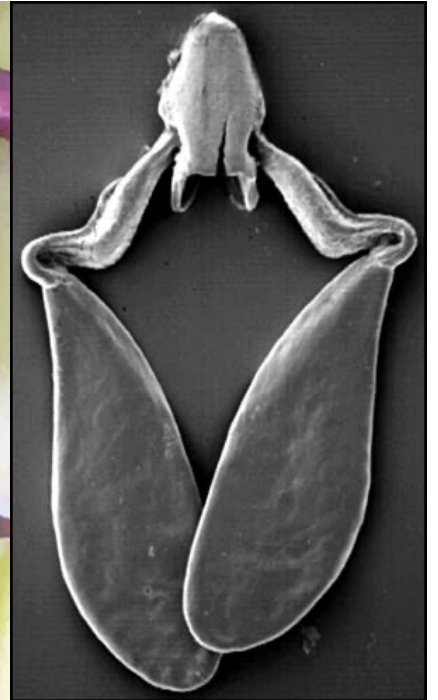


False Gaura



Snow on the Mountain



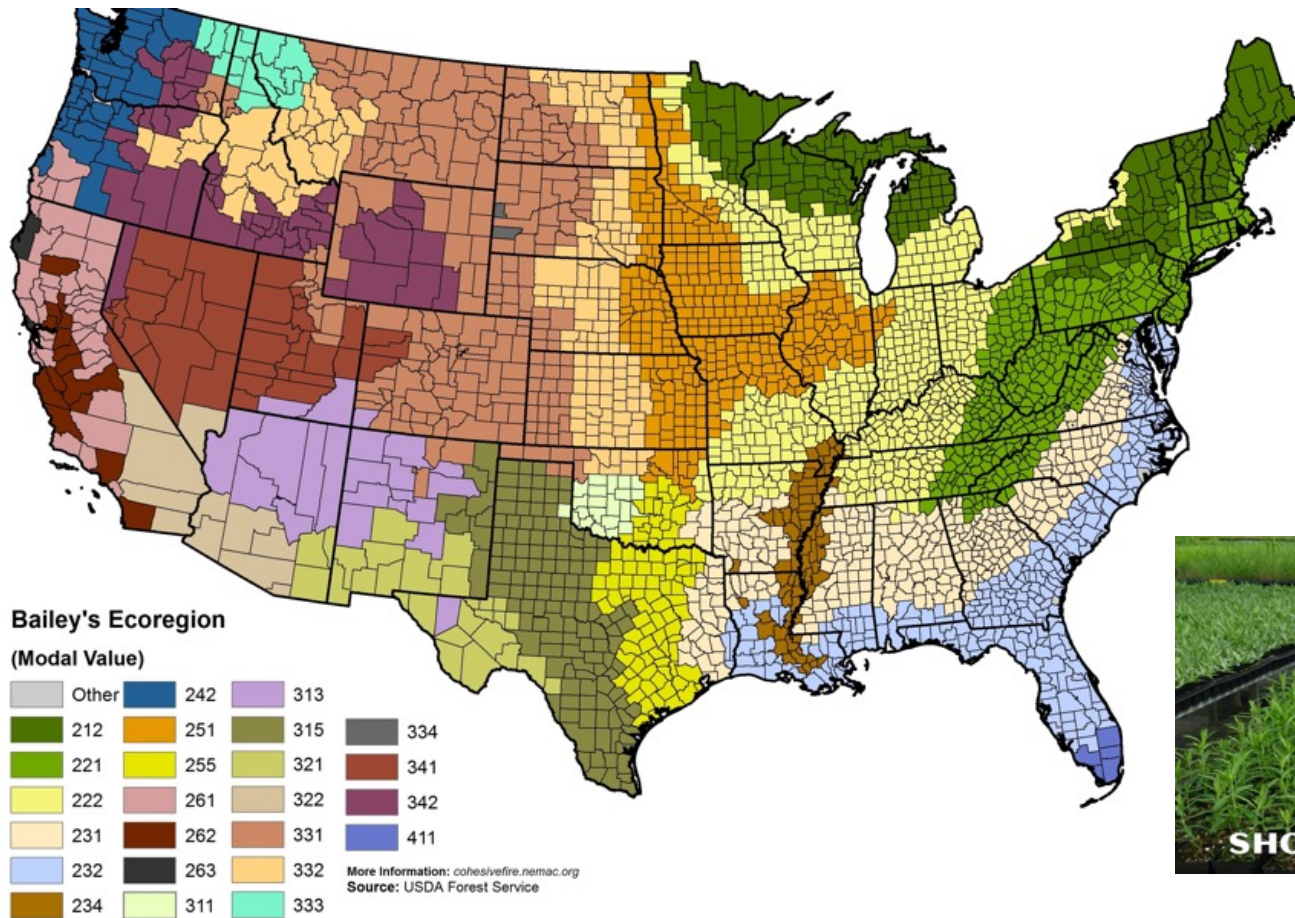


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## Free Milkweeds for Restoration Projects



- Two acres or more
- Native habitat restoration (gardens/landscaping not eligible)
- Land management plan
- Nectar sources pre-existing or to be added

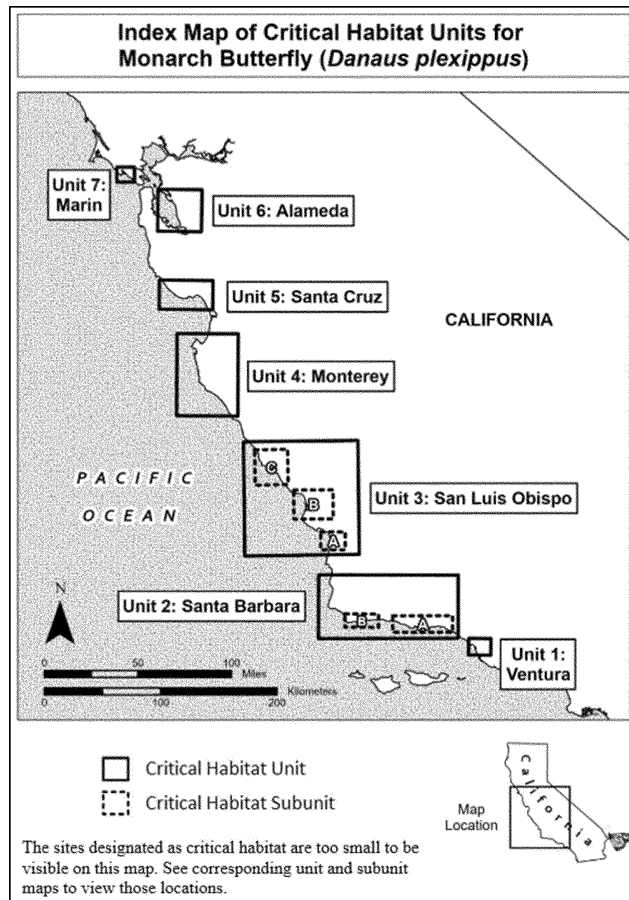
Applications Open near the  
End of Each Year; Apply Early!

- Educational goals
- Maintenance plan
- Suitable space
- Nectar plants to be added
- Letter(s) of support



## Free Milkweeds for Schools & Educational Non-profits





## Identified Need #2: Protect and enhance overwintering habitat

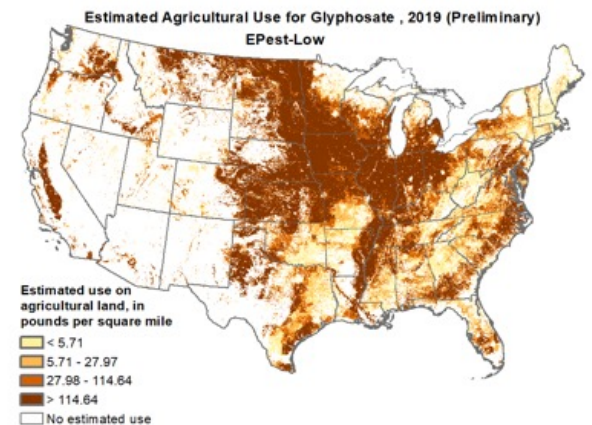
- The critical habitat designation identifies specific areas that are critical for the conservation of the species and may need special management or protection.
- Critical habitat only affects federal agency actions, including activities funded by federal agencies or that require authorization by federal agencies, such as permits or licenses.
- Activities by private landowners are not affected unless federal funding or permitting is involved.



## Identified Need #3: Reduce the negative impacts of pesticides

### Public Comment Requested on Exception for Pesticide Use

We seek public comment on how to address pesticide use under a 4(d) rule for the monarch. We recognize that certain types of pesticide use can have direct or indirect negative effects on monarchs, including aerial broadcast application of insecticides, use of herbicides that remove milkweeds, and use of some biopesticides. However, not all uses and application methods will impact monarchs. For example, insecticide application using hand-held sprayers, soil injection, in furrow sprays, tree trunk drenching, or tree injection, are unlikely to result in ([print page 100688](#)) pesticide exposure to monarchs. We seek comment on which pesticide uses and application methods result in exposure and adverse effects to monarchs, whether to except take from those uses in a 4(d) rule, and whether the exceptions for those uses should include measures to mitigate the effects of pesticides on monarchs. We also seek comment on whether we should tailor any measures according to the areas and times of the year when monarchs are present and, if so, what is the most feasible method to convey this information to pesticide users. Further, any measures should focus on minimizing impacts to monarchs by reducing exposure to the species, but we also seek comment on whether it is appropriate to offset unavoidable impacts such as through habitat restoration and, if so, how to accomplish this in a 4(d) rule.



## Identified Need #4: Maintain public support for monarch conservation



- Exemption included for the small-scale collection, possession, captive-rearing, and release of monarchs. "Small-scale" is defined as 250 or fewer butterflies.
- That same 250-or-fewer number is applied to scientific research, educational activities, and the sale of captively reared monarchs.





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## Which Monarch Community Science Program is Right for You?

What interests you?	What time can you spend?	Where are you?	When can you participate?	What would you like to do?	Check out this program!
	15 min +		At least one in spring, summer, or fall	Identify milkweed or any monarch stage	
	15 min +		As convenient, when milkweed is visible	Identify milkweed or any monarch stage	
	30 min +		At least once annually	Sample scales from wild or reared adult monarchs**	
	30 min to 1 hour		Weekly when monarchs are breeding	Identify milkweed and immature monarchs	
	15 min +		At least one in spring, summer, or fall	Identify and count milkweed or any monarch stage	



\*See reverse side for details  
\*\*Handling of monarchs not allowed in CA without permit



## MONARCH JOINT VENTURE

45 min to 3 hours +



At least annually when monarchs could be present

Identify milkweed, flowering plants, or any monarch stage



15 min +



As convenient, when monarchs are present

Identify dry or withered plants that adult monarchs visit

Monarch Rx

15 min +



As convenient, when monarchs are present

Identify any monarch stage

MonarchaMX

15 min +



At least once during fall migration

Identify adult monarchs



30 min +



At least once during fall migration

Safely handle and tag wild or reared adult monarchs\*\*



2-3 days



1-2 times annually in fall & winter

Identify adult monarchs

Western Monarch Count

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© Ann Dean Photo

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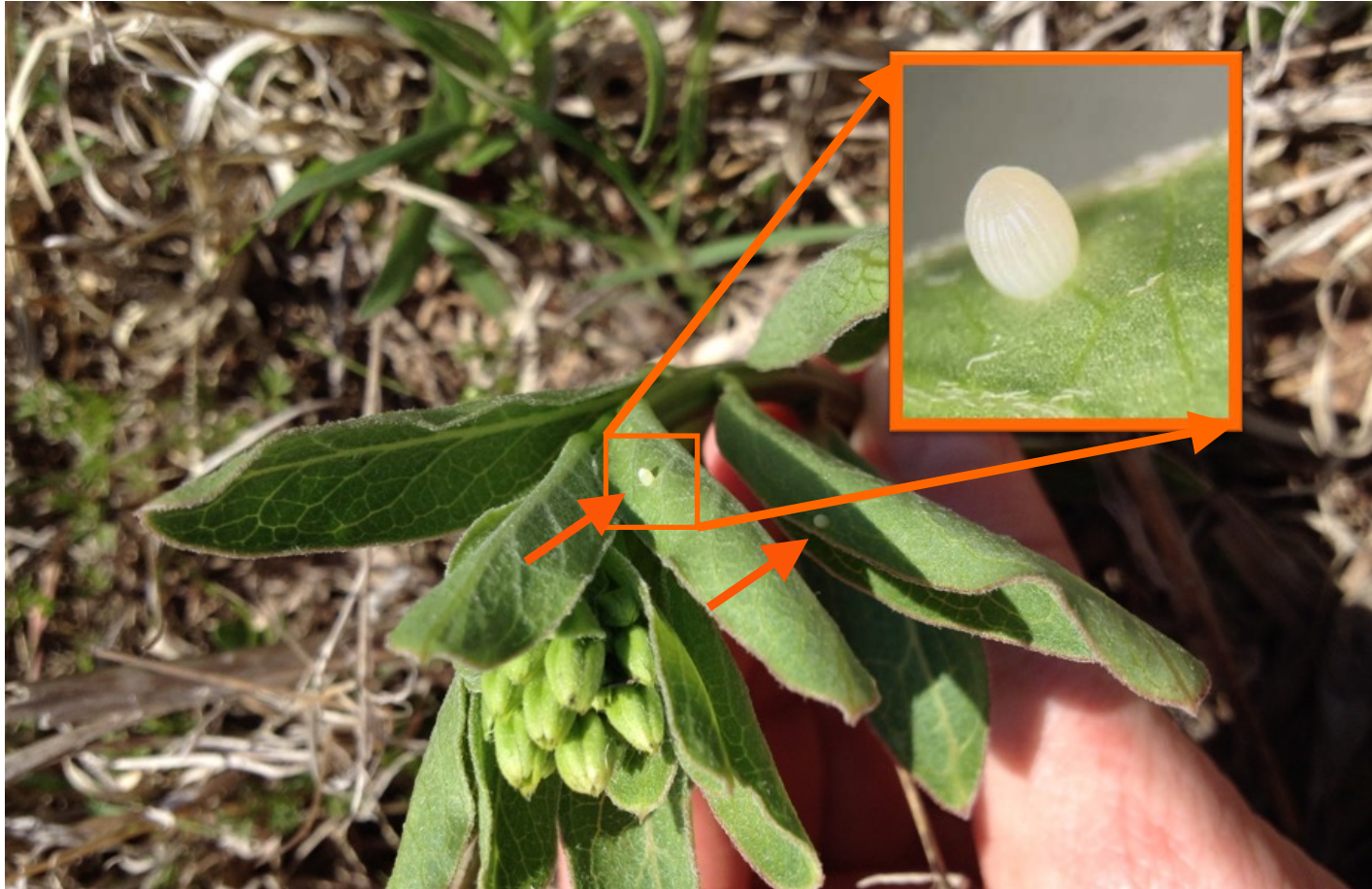


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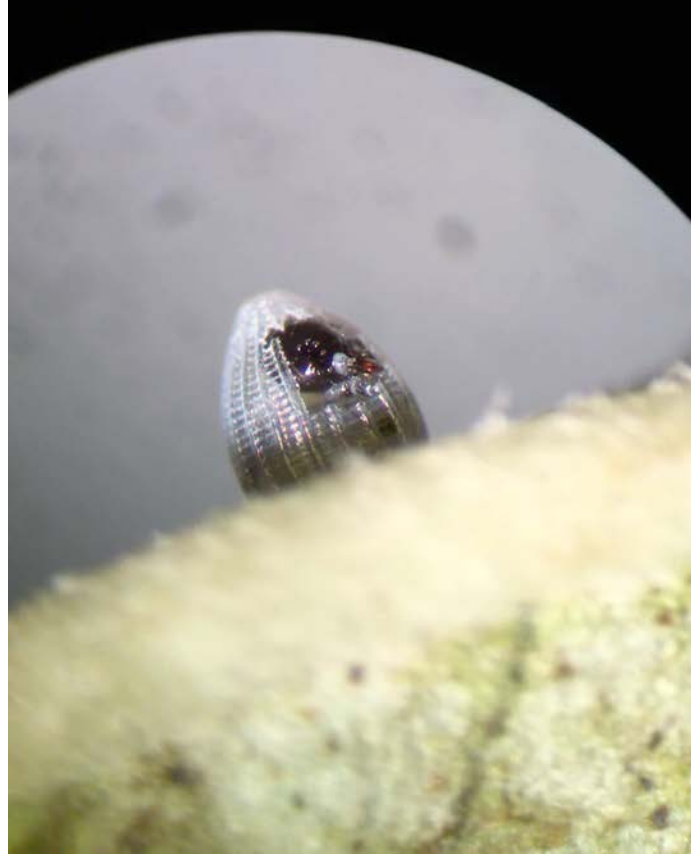
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<https://youtu.be/IFhEL8rrldo>

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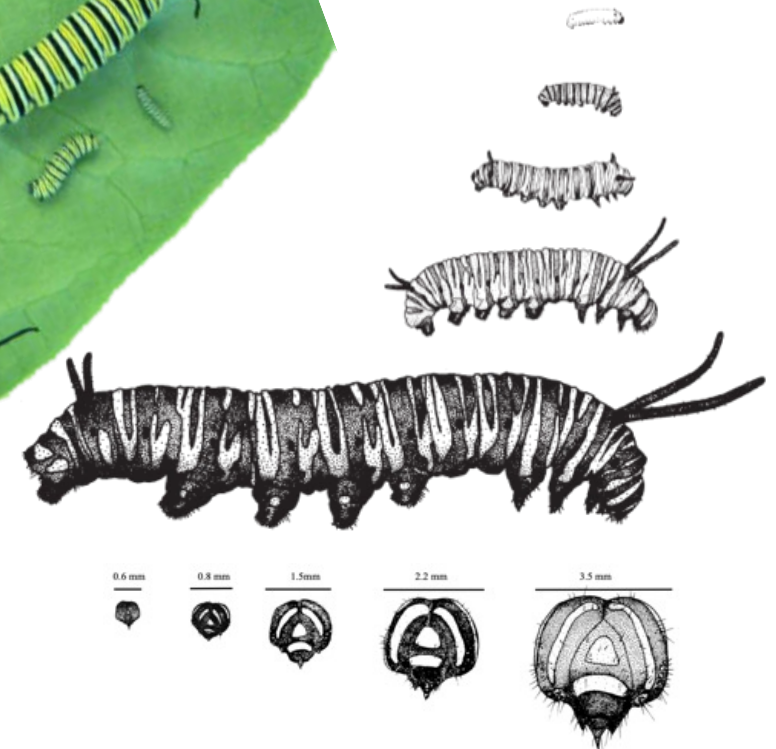
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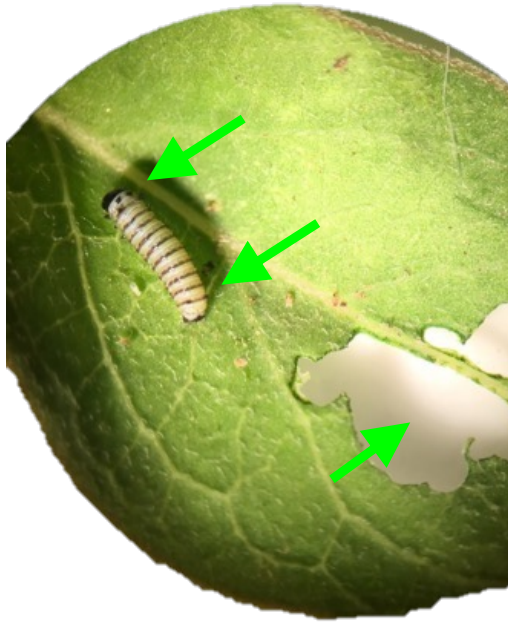


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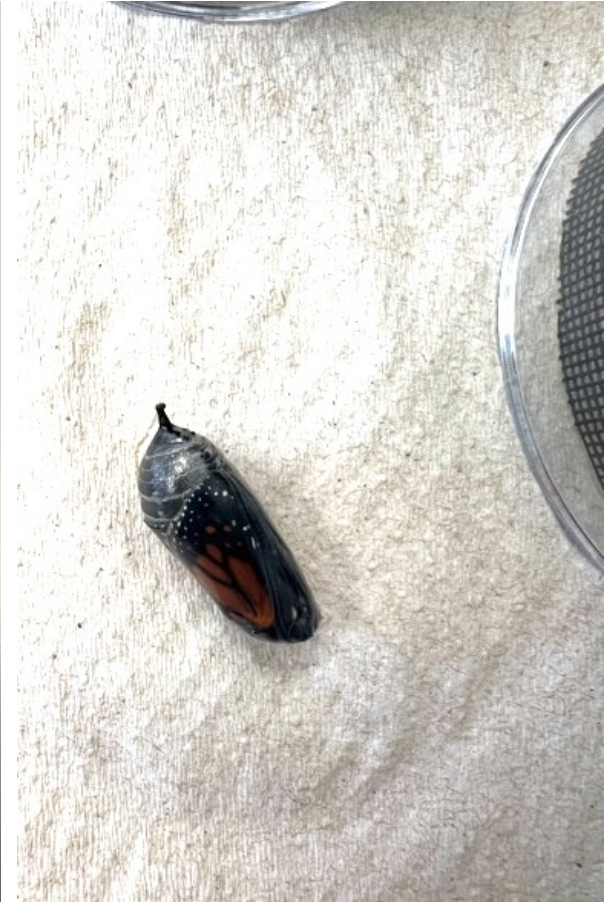


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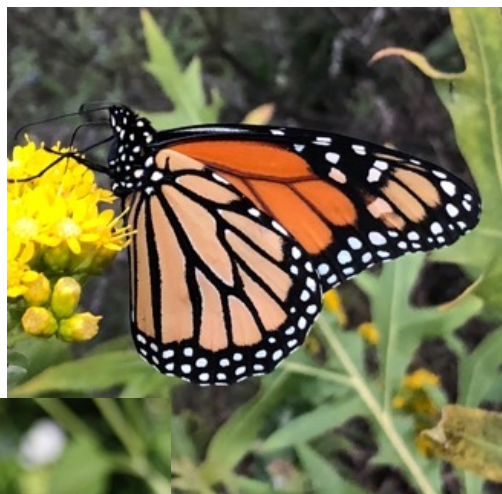


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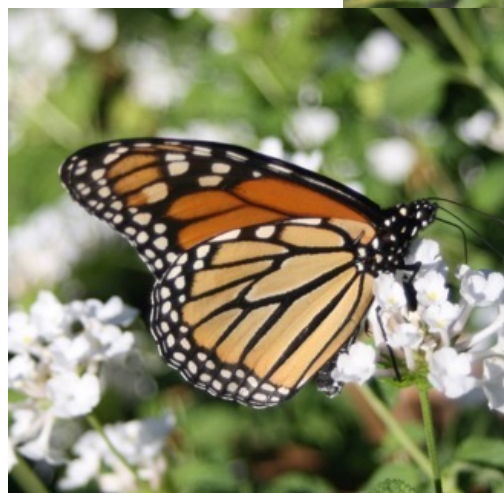
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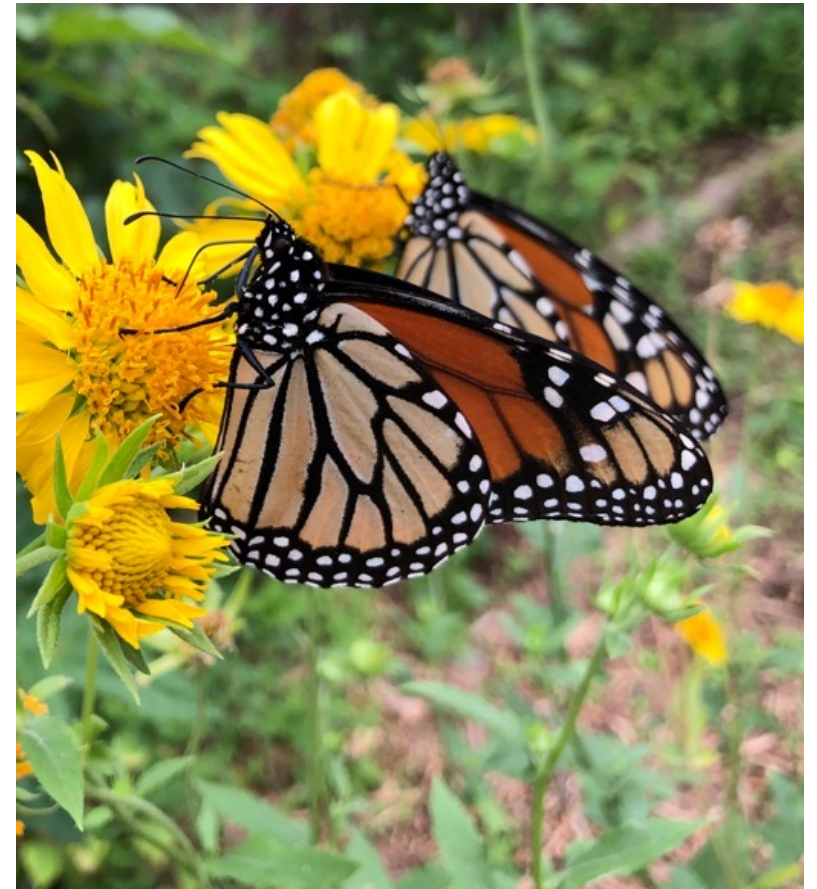


**Male**



**Female**



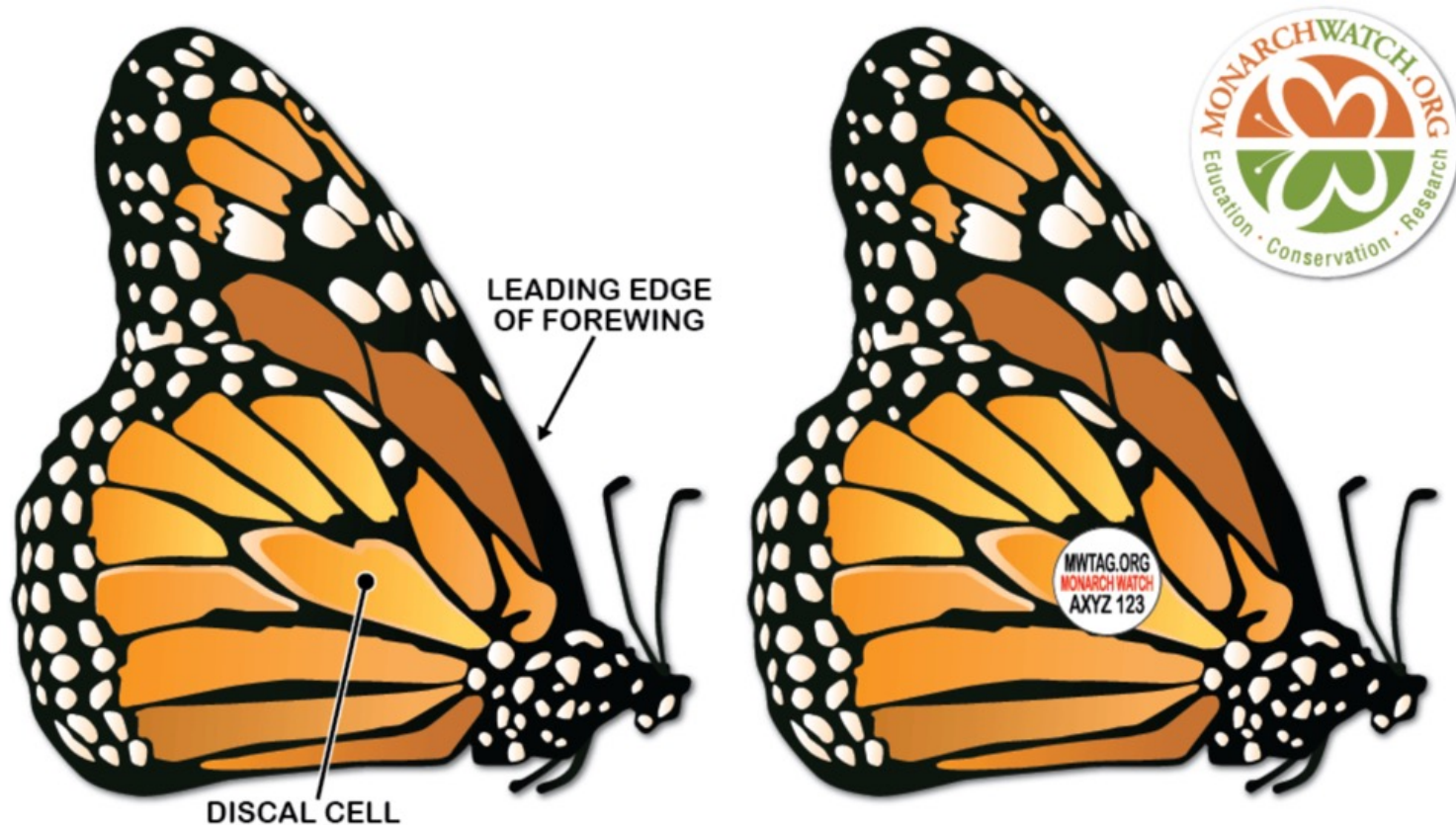


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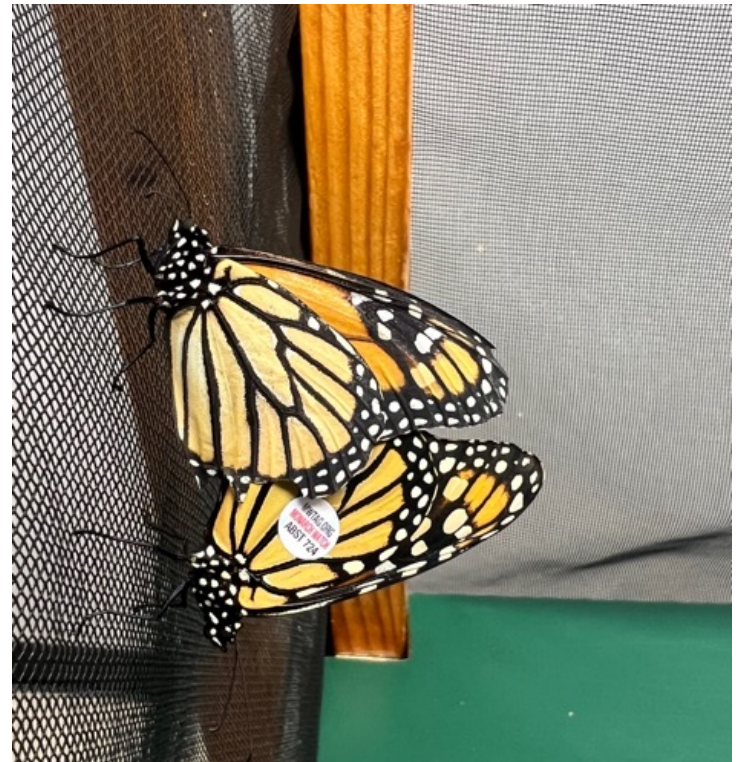


**PROPER PLACEMENT OF MONARCH WATCH TAGS**  
[monarchwatch.org/tagging](http://monarchwatch.org/tagging)

**Male**



**Female**

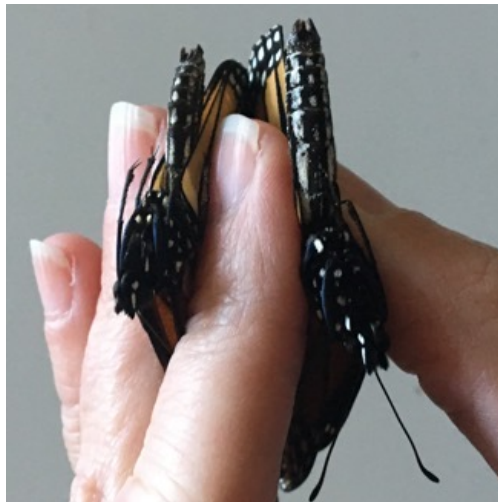
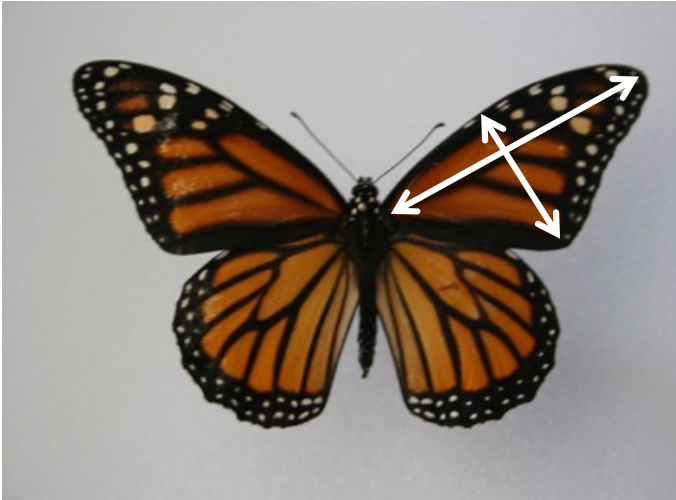


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Tagged, Ohio, 9-25-2023  
Photographed, El Rosario, 1-22-2024  
@courtwhelan on Insta

tag code for each monarch, as v tags are 4 letters, 3 numbers.	1. Carefully hold a monarch finger along the leading edge to the body, (not the tip) and ten-shaped cell on hindwings)
ase date – month, day & year.	
e sex of the tagged butterfly;	2. Record all data before remo



# TAGGING NEWSLETTER

by Chip Taylor,  
Director, Monarch Watch

Greetings, taggers!

Welcome to the 2019 monarch tagging season. This year marks Monarch Watch's 28th season! Over the years, thousands of taggers have contributed to our tagging database. It is an enormous record and a veritable gold mine of information about how the migration functions. The record represents at least 1.8 million tagged butterflies and lists where, when and by whom each butterfly was tagged. The sex of each butterfly and whether the butterfly was wild-caught or reared, tagged and released is also recorded. The data have told us a lot about the migration. Yet, this record could be improved but we need your help. Diving into the data has revealed a number of differences between reared monarchs and the probability monarch will fly is higher for 0.9% vs 0.5% from the wild—tell us the more. Frankly, for scientists to set the record. That doesn't mean but its uses are.

Given the differences in recovery rates between reared monarchs going forward, we have to need to get taggers from various westward

**Monarch Watch**  
University of Kansas  
2021 Constant Avenue  
Lawrence, KS 66047

**MONARCH**  
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and those tagged have high recovery rates. Increased tagging in this area



**Release Location.** Record the location as a zip (postal) code and country (US/CAN).

You might find it easier to work with  
taking turns tagging and recording

POUCHES  
(MALE)

It's pretty easy to tell a male monarch (above) from a female monarch (below) when you know what to look for.



FEMALE

**MONARCH WATCH TAGGING DATASHEET**

PAGE \_\_\_\_\_ OF \_\_\_\_\_

TOTAL NUMBER OF TAGS RECEIVED: \_\_\_\_\_ COMPLETE TAG CODE SERIES: \_\_\_\_\_

**Please submit your data online!** Datasheets and instructions are available at [monarchwatch.org/tagging](http://monarchwatch.org/tagging)

Contact Name/Org \_\_\_\_\_

Address \_\_\_\_\_

City, State, Zip \_\_\_\_\_

Email and/or Phone \_\_\_\_\_

Online submission is preferred.  
but if mailing please send to:  
Monarch Watch  
University of Kansas  
2021 Constant Ave  
Lawrence, KS 66047

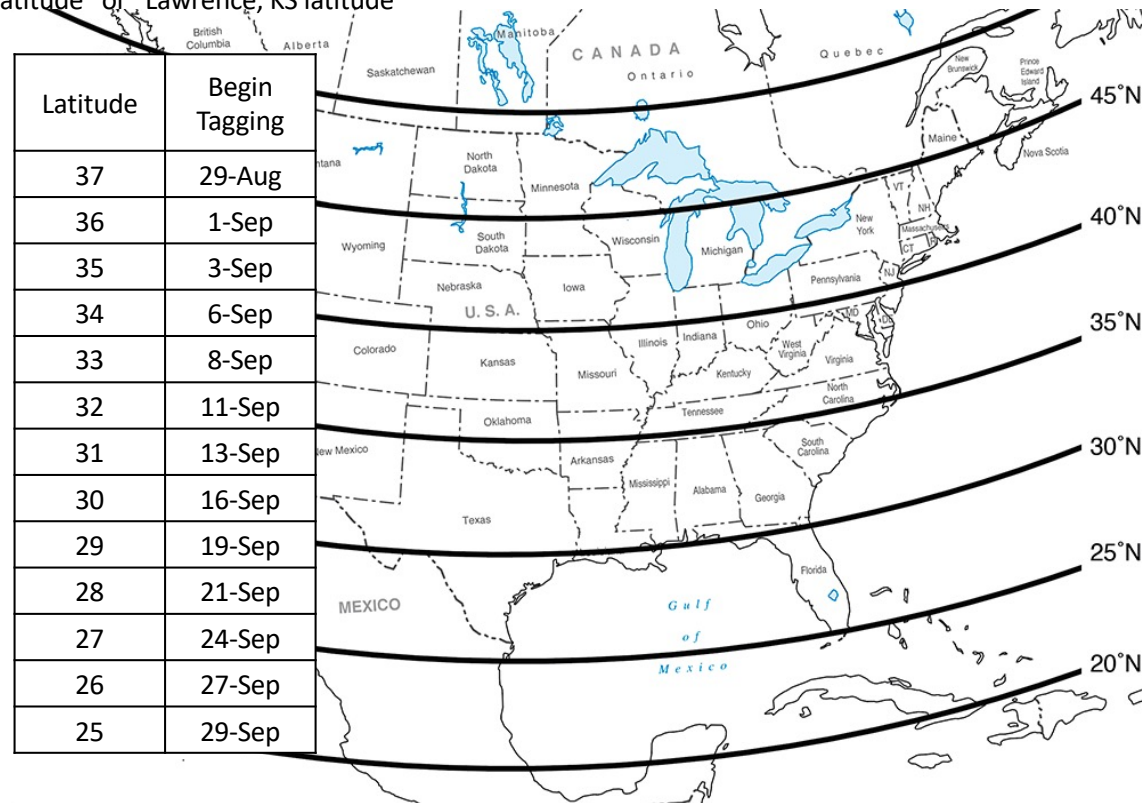
[illegible]

## When should I begin tagging monarchs?

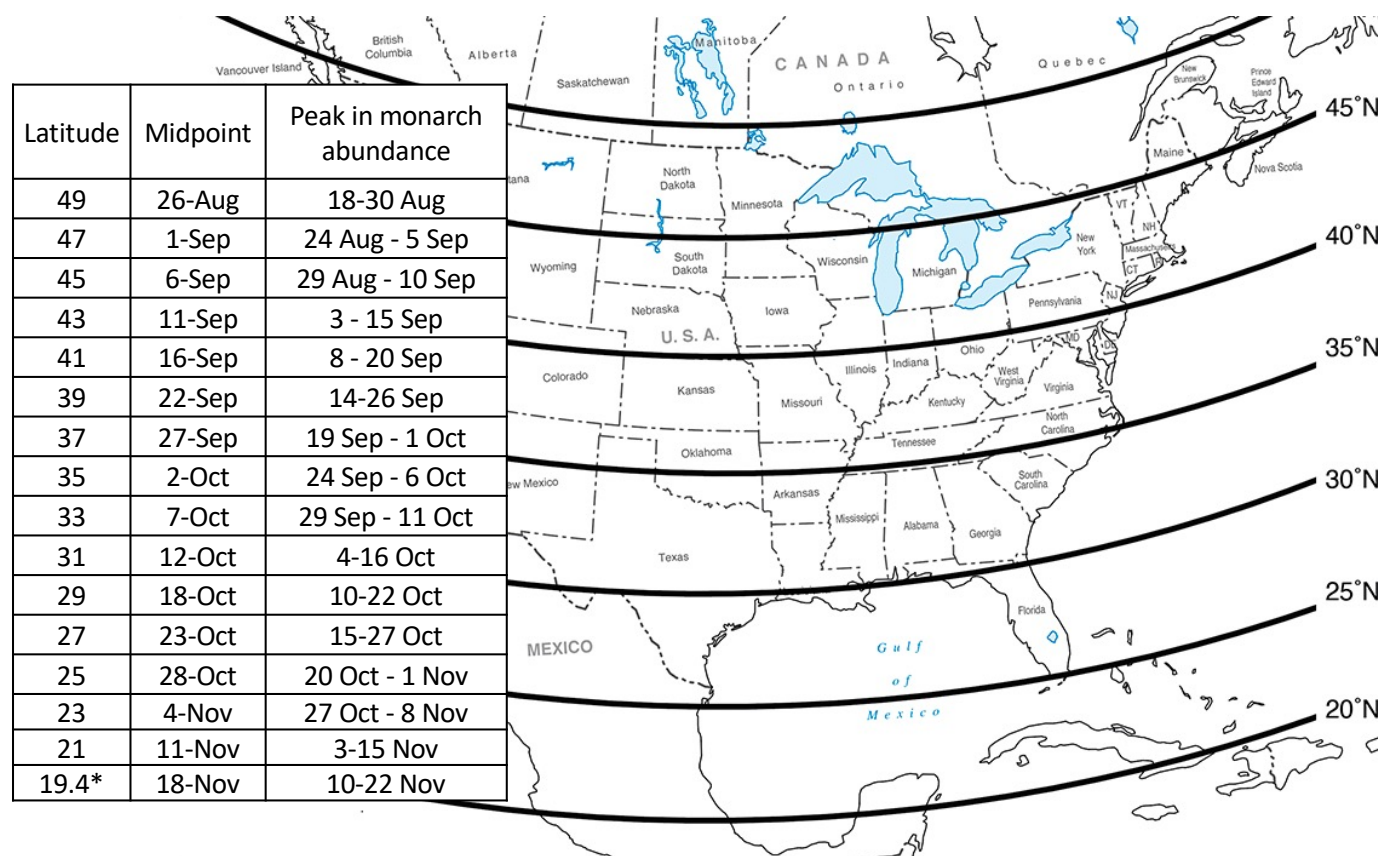
Use this map to estimate your latitude or search the internet for your city and state or zip code + "latitude"  
For example: "66047 latitude" or "Lawrence, KS latitude"

Latitude	Begin Tagging
50	1-Aug
49	1-Aug
48	1-Aug
47	1-Aug
46	4-Aug
45	7-Aug
44	10-Aug
43	13-Aug
42	16-Aug
41	19-Aug
40	21-Aug
39	24-Aug
38	27-Aug

Latitude	Begin Tagging
37	29-Aug
36	1-Sep
35	3-Sep
34	6-Sep
33	8-Sep
32	11-Sep
31	13-Sep
30	16-Sep
29	19-Sep
28	21-Sep
27	24-Sep
26	27-Sep
25	29-Sep



When should I expect peak abundance for fall migrating monarchs?





## Thoughts about Next Steps

- Consider people
  - Right plant, right place, right person
  - Add in other concerns/interests/needs
  - Does everyone need to contribute in the “ideal” way to make a difference?
- “Plant it and they will come” only works with long-term management of habitats
- Don’t do the same thing at the same time everywhere (for planting, management, etc.)
- Proposed 4(d) rule: What will make a positive difference by adding more to monarch-conservation efforts?





## MONARCH WATCH MILKWEED MARKET



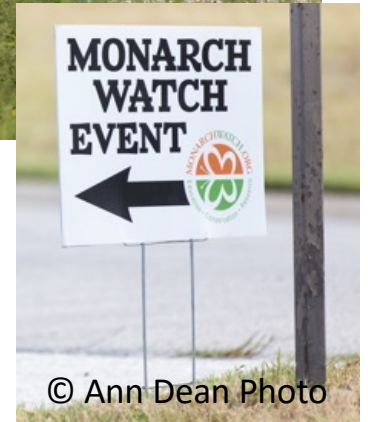
Spring Open House & Plant Sale  
May 10, 2025



Fall Open House  
September 13, 2025



Fall Tagging Event  
September 20, 2025



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