



Photo by  
Judy Kesser

# *Wild For Monarchs*

# Wild Ones Mission

To promote environmentally sound landscaping practices to preserve biodiversity through the preservation, restoration and establishment of native plant communities. Wild Ones is a not-for-profit environmental education and advocacy organization.



Photo by  
Judy Kesser



**Wild Ones  
has joined with  
Monarch Joint  
Venture and  
Monarch Watch's  
Bring Back the  
Monarch program.**

**Special promotion  
by Audubon-Toyota  
TogetherGreen  
program.**



Photo  
Judy Kesser

***Go Wild for Monarchs* and grow more  
milkweed to help save America's favorite  
butterfly, the Monarch.**



# Monarch Joint Venture Vision

*“The vision of this Joint Venture is abundant monarch populations that can be sustained into perpetuity, and more broadly to promote monarchs as a flagship species whose conservation will sustain habitats for pollinators and other plants and animals.”*





# Goals



**Habitat  
Conservation**



**Education  
& Outreach**



**Research &  
Monitoring**





# in collaboration with



[www.monarchjointventure.org](http://www.monarchjointventure.org)



# Monarch Life Cycle



Photo  
Candy Sarikonda



Photo  
Judy Kesser

# Monarch Larvae



Photo  
Karen Oberhauser



# Chrysalis Formation



# Eclosure

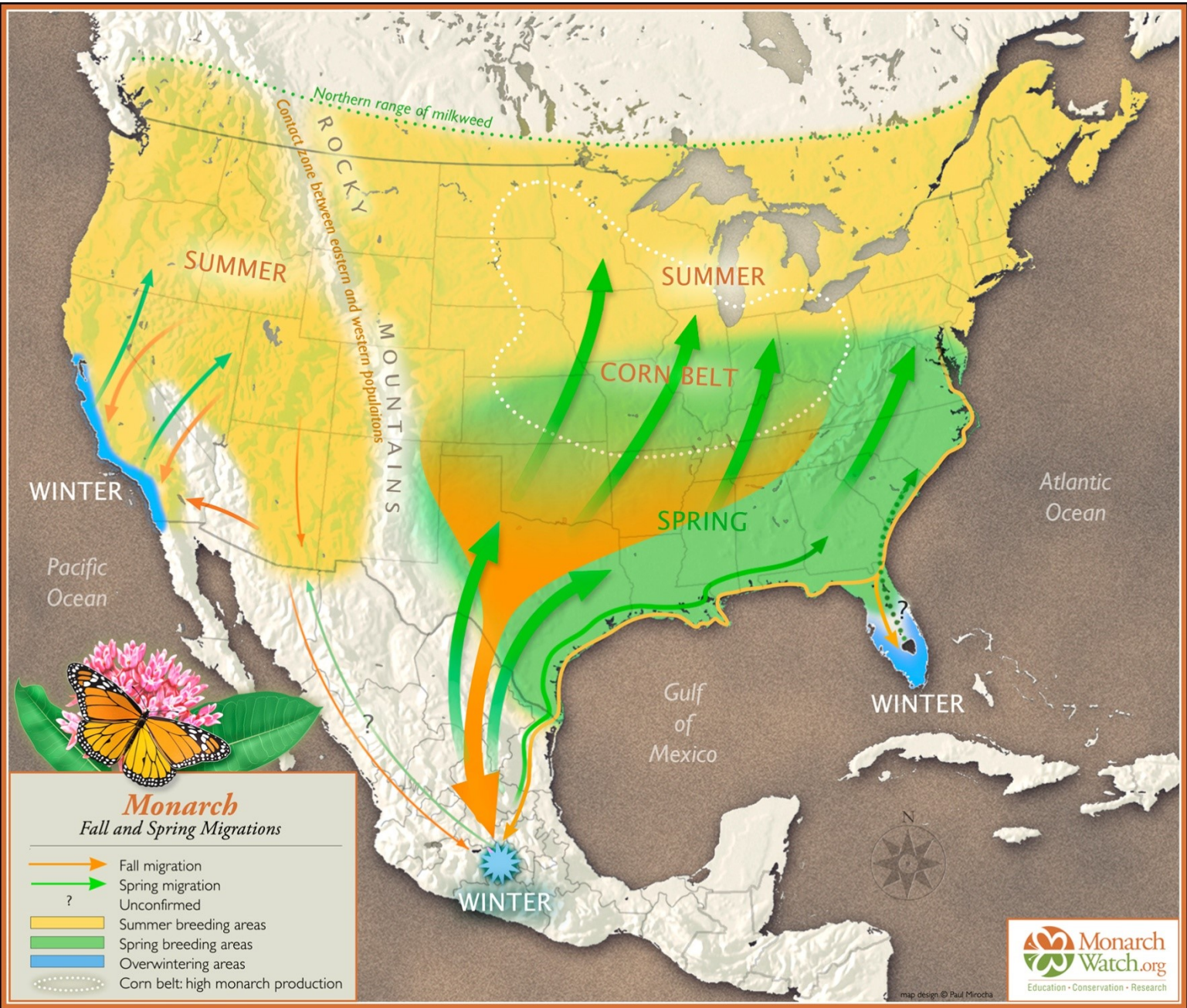


# Adult Monarchs

**Male**

**Female**





**Monarch**  
Fall and Spring Migrations

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



map design © Paul Mirocha



## Western Monarch Migration

From November to March, the native forests of California including Monterey pines and cypress provide shelter for the monarchs, and the introduced Australian eucalyptus provide a source for nectar and for roosting.

Shrinking open space and loss of floral resources has led to the decline of the Monarch population.



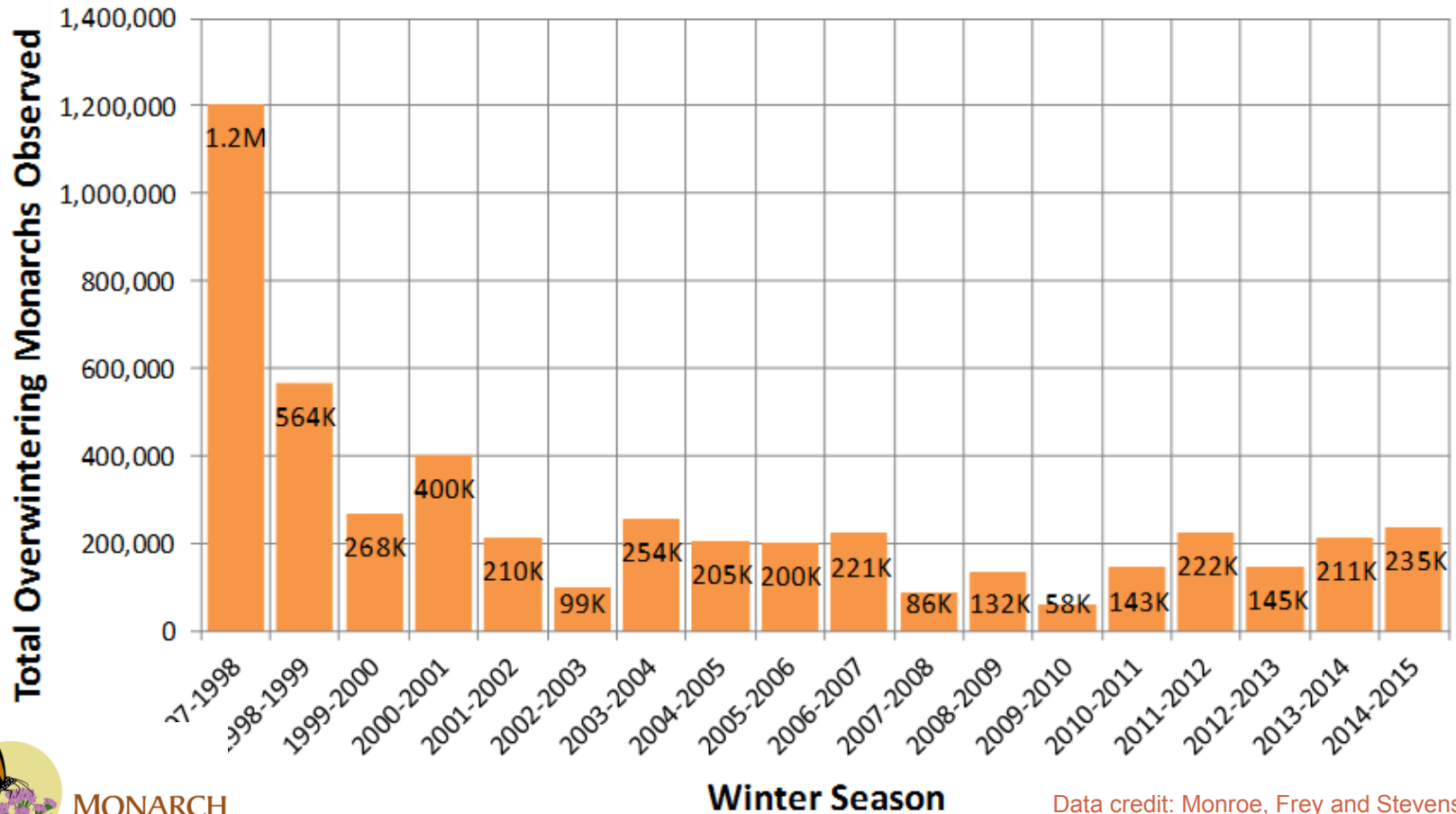
Photo Candy Sarikonda

**Monarchs west of the Rockies migrate to many towns along California's Central Coast and down into Mexico to overwinter.**

# Western Population Trends



## Total Overwintering Monarchs Observed 1997-2015



MONARCH  
JOINT VENTURE

Data credit: Monroe, Frey and Stevens 2012  
Data from Xerces Society



# Eastern Monarch Migration



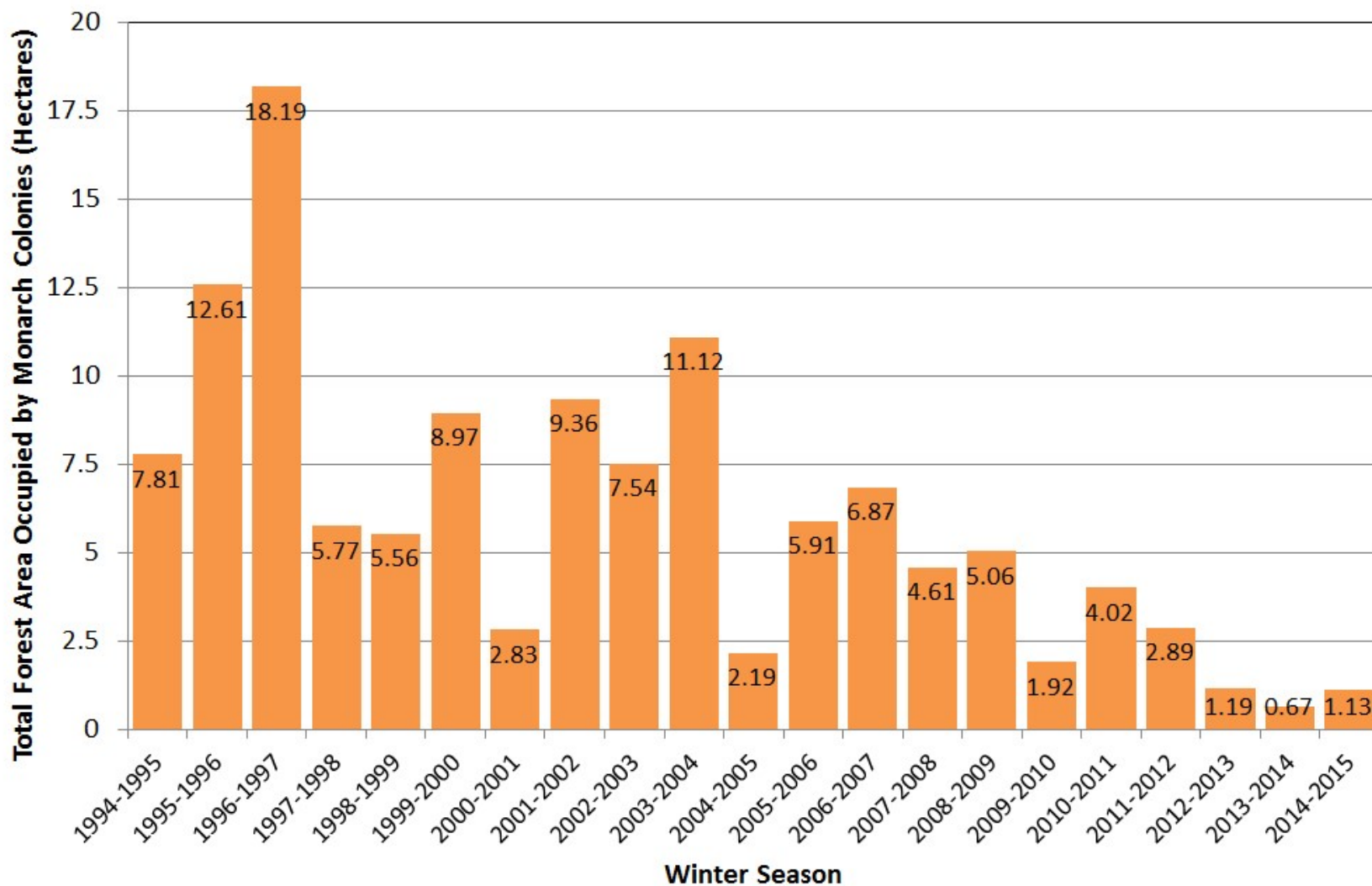
Photo  
Natalie Miller

Tagging was first used by Dr. Fred and Norah Urquhart to find where the Monarchs overwintered.

Kenneth and Cathy Brugger of Mexico City located the first Mexican sanctuaries in January 1975.

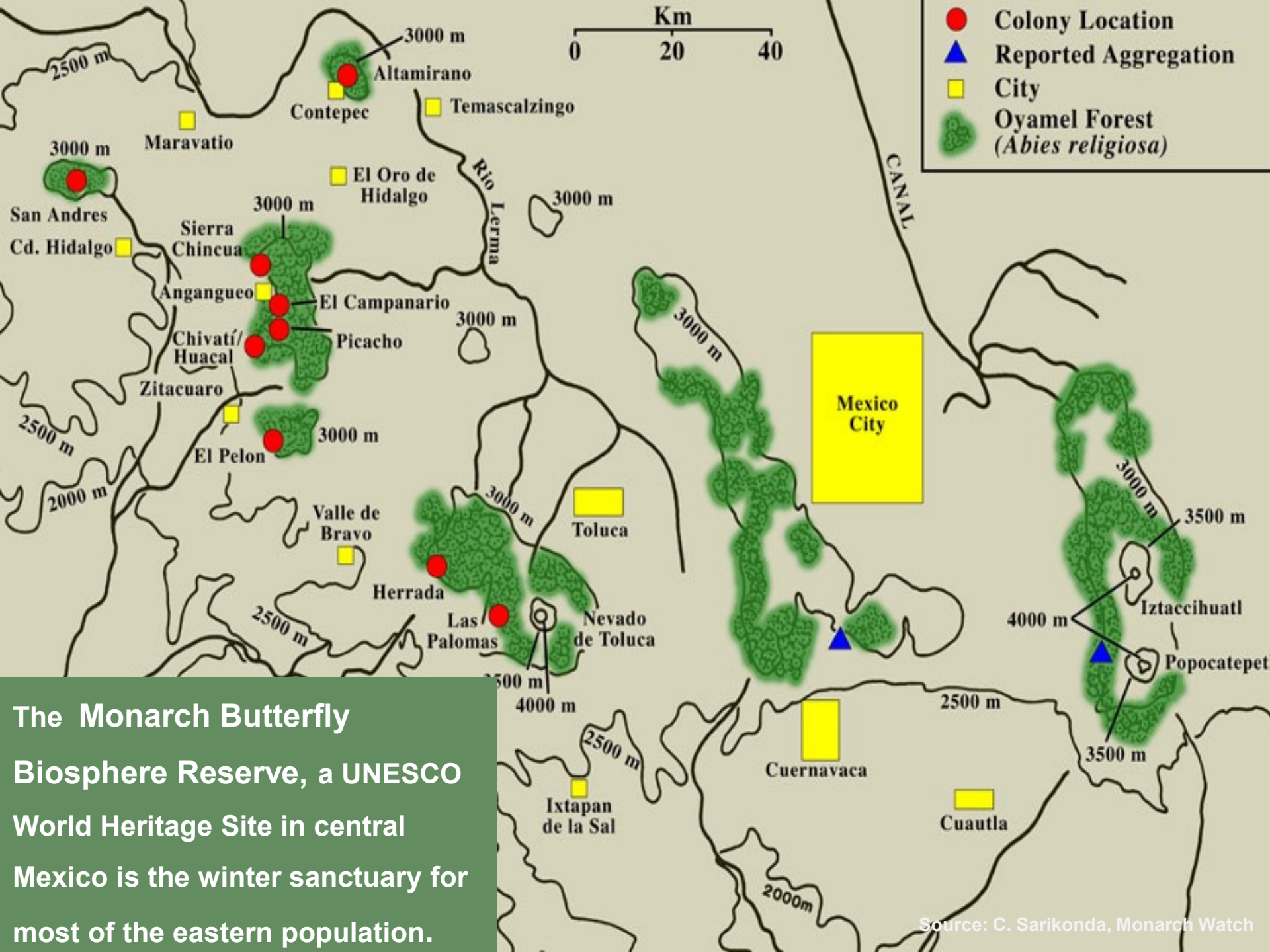
This amazing story is told in the 3-D movie, *Flight of the Butterflies*.

## Total Area Occupied by Monarch Colonies At Overwintering Sites in Mexico 1994/1995 - 2014/2015



data from 1994-2003 were collected by personnel of the Monarch Butterfly Biosphere Reserve (MBBR) of the National Commission of Protected Natural Areas (CONANP) in Mexico. Data from 2004-2015 were collected by the WWF-Telcel Alliance, in coordination with the Directorate of the MBBR. 2000-01 population number as reported by Garcia-Serrano et. al (The Monarch Butterfly: Biology and Conservation, 2004)





- Colony Location
- ▲ Reported Aggregation
- City
- Oyamel Forest (*Abies religiosa*)

**The Monarch Butterfly Biosphere Reserve, a UNESCO World Heritage Site in central Mexico is the winter sanctuary for most of the eastern population.**

Source: C. Sarikonda, Monarch Watch



**Overwintering  
Monarchs cluster  
on trunks of  
Oyamel fir trees  
(*Abies religiosa*)  
in a moist, cool  
mountain habitat  
using southwest-  
facing mountain  
slopes at about  
10,000 feet.**

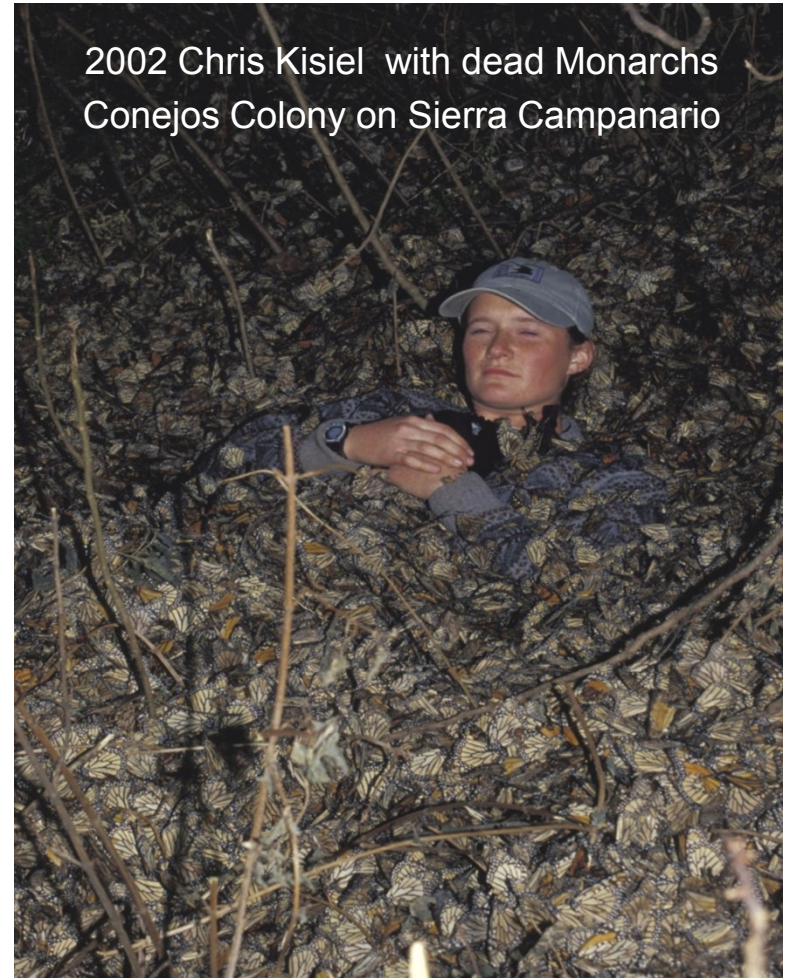


# Severe Weather Events Affect Survival

A survey by Dr. Brower and colleagues reported that early in 2002, a storm caused a 75% monarch mortality in Mexico.

Approx 195 million died in this colony pictured here with an estimated total loss to be about 500 million from all colonies.

2002 Chris Kisiel with dead Monarchs  
Conejos Colony on Sierra Campanario



# Threats to Monarchs in Mexico



## Overwintering habitat is degraded by:

- **Illegal logging**
- **Climate change**
- **Higher temperatures in Mexico stressing fir trees**
- ***Scolytus* beetles attacking stressed Oyamel fir trees in Mexico's Monarch Reserve**
- **Harsh winter storms that can kill monarchs**

# Threats to Monarchs in U.S.



Increasing spring/summer temperatures, droughts and stronger storm events stress nectar and roosting sites throughout the range.

## Habitat loss in U.S.

- **Development:** 6,000 acres per day=2.2million acres/year
- **Milkweed Reduction:** intensive agriculture use with small field margins
- **Milkweed Loss:** 100 million acres of herbicide-tolerant corn and soy allows farmers to spray indiscriminately

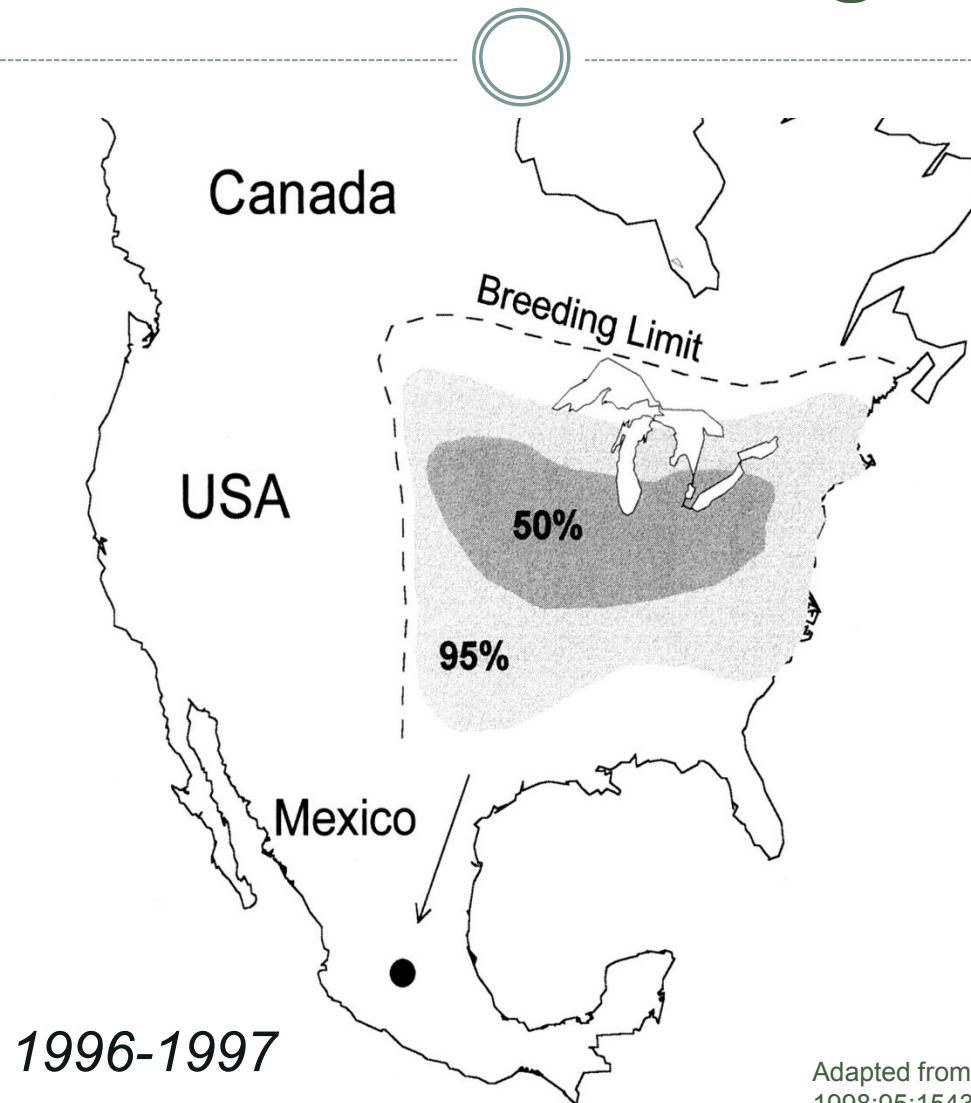
## Herbicide and Pesticide Use

- **Spraying roadsides & fields**
- **Misconception that milkweed is “weedy”**
- **Mosquito and gypsy moth control**

**Mowing** when roadside milkweed and important nectar plants are needed most.

Sources: Monarch Watch, KBB Recovery Plan

# Geographic Natal Origins of Monarchs on the Summer Breeding Range



Adapted from Wassenaar L I , Hobson K A PNAS  
1998;95:15436-15439

# Help Save the Monarch Migration Plant Milkweed



Photo Chip Taylor



- Widespread, in 44 states of lower U.S.
- Deep pink flowers
- Prefers moist, rich soil
- Monarch favorite
- Blooms feed many pollinators
- Has fibrous roots; can be divided or transplanted easily



Photo Janet Allen

## **Swamp Milkweed** ***(A. incarnata)***





- Widespread in US, except far west
- Long-blooming showy flowers
- Excellent nectar source used by many butterfly species and pollinators
- Prefers well-drained soils; can be grown in clay
- Drought tolerant



## **Butterfly-weed** ***(A. tuberosa)***

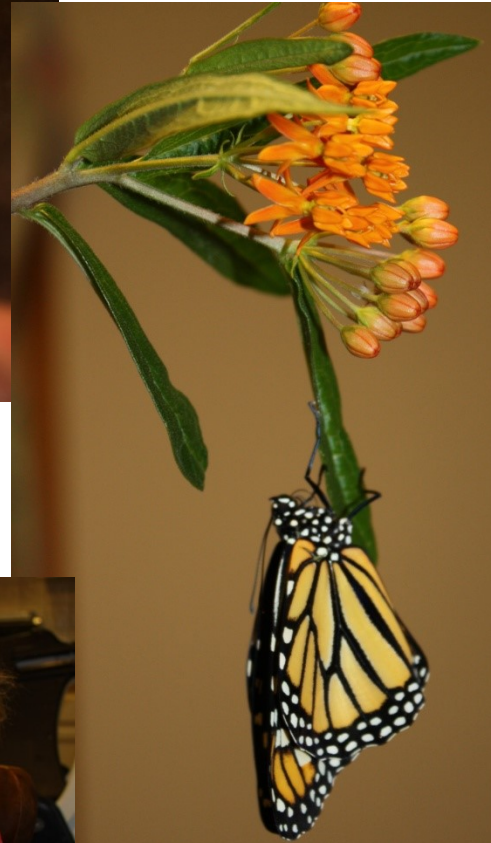
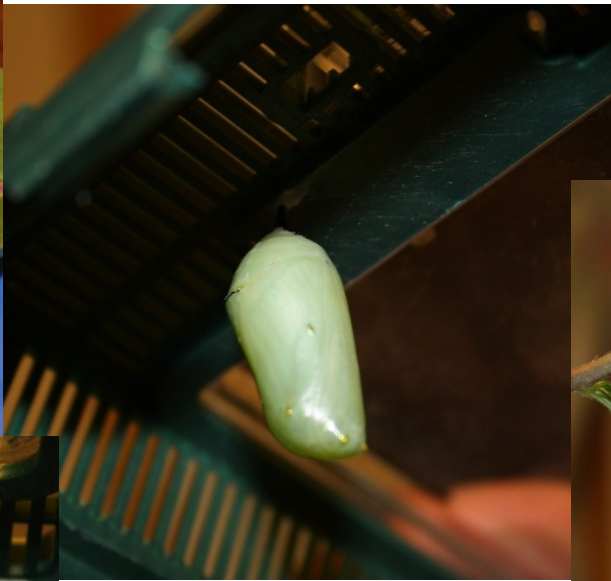


- Native to Western U.S. and Canada
- Similar color as common milkweed
- Clonal
- Full sun in full range of soils
- Deep taproot; propagated best by seed
- Downy leaves



Photo Bobby Gendron

## **Showy Milkweed** ***(A. speciosa)***



# Get Involved

- Be a butterfly advocate. See [wildones.org/learn/monarch](http://wildones.org/learn/monarch) for ideas.
- Help protect butterfly habitats.
- Find out what's planned for your city, state and community.
- Work with public officials.



Photo  
Judy Kesser

**Create habitats for butterflies by growing native plants in your yard and neighborhood, at your school and work, and by promoting use in parks.**

# Plant a Native Butterfly Garden

Plant milkweed and larval host plants for other butterflies

Grow nectar plants that bloom throughout the seasons



Photo Donna VanBuecken



Photo Judy Kesser

# Plant a Butterfly Garden



## Tips

- **Pick an open, sunny area with windbreaks or perches nearby.**
- **Avoid using pesticides and insecticides.**
- **Become a “lazy gardener” in the summer & fall.**
- **Bright, colorful flowers.**
- **Plant clumps of flowers to make them more visible.**
- **Butterflies like flowers that provide large landing pads.**
- **Provide blooms throughout the season.**

# Native Nectar Plants



## Milkweed

- **Bee Balm** (*Monarda fistulosa*)
- **Penstemons**
- **Gayfeather** (*Liatris sp.*)
- **Verbena** (*Verbena bipinnatifida*)
- **Coneflowers** (*Ratibida columnifera*)
- **Goldenrod** (*Solidago sp.*)
- **Rocky Mtn. Bee Plant** (*Cleome serrulata*)
- **Sunflowers**
- **Asters**
- **Black-eyed Susan** (*Rudbeckia hirta*)
- **Indian Blanket** (*Gaillardia aristata*)

# Butterfly & Moth Native Host Plants



Plant specific host plants as food for caterpillars.

- ***Monarch***: milkweeds
- ***Viceroy***: willow, poplar, aspen
- ***Skippers***: little bluestem, blue grama
- ***W. Tiger Swallowtail***: chokecherry, cottonwoods, willows
- ***Fritillaries***: violets, purslane, sedum
- ***Checkered White***: Rocky Mtn Bee Plant (*Cleome serrulata*) & others in the mustard family
- ***Pearl Crescent***: asters
- ***Painted, American Lady***: thistle, mallow, everlasting
- ***Red Admiral, Comma, Question Mark***: nettles, hops
- ***Gray Hairstreak, Southern Dogface***: False Indigo (*Amorpha canadensis*)
- ***Lupine Blue***: Sulphur Flower (*Eriogonum umbellatum*):





Register your  
butterfly garden  
or habitat  
through *Monarch  
Watch* as a  
certified **Monarch  
Waystation**.



Photo Debi Nitka

If your butterfly garden or habitat is at least 75% native plants, contact Wild Ones for further recognition.





- **Share your knowledge and enthusiasm!**
- **Teach others what you have learned in schools and parks.**
- **Volunteer to help monitor monarchs and other butterfly populations.**



Photo  
Denise Gehring

## **What You Can Do to Help**

# Become a Citizen Scientist to monitor Monarchs



It's fun to do! Monitoring data is important for  
butterfly research and conservation

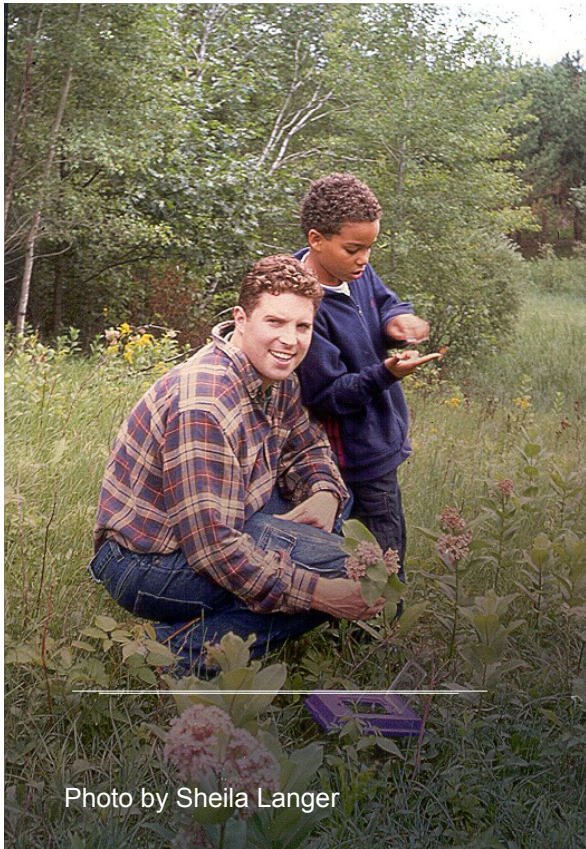


Photo by Sheila Langer

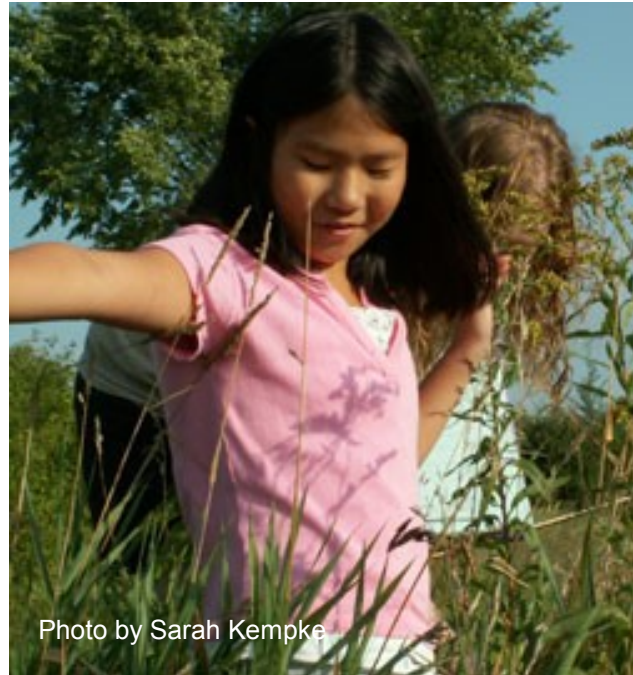


Photo by Sarah Kempke

[monarchjointventure.org](http://monarchjointventure.org)

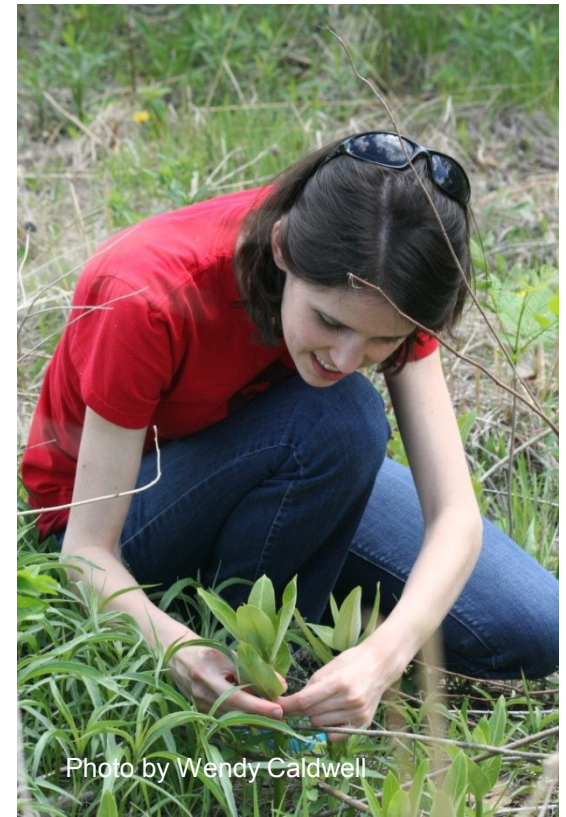


Photo by Wendy Caldwell



**What are Monarch population trends?**

**What is driving the trends?**

- **Climate?**
- **Milkweed availability?**
- **Predators?**
- **Parasites?**
- **Other factors?**

**Which milkweeds are preferred?**

**Where should we target our efforts?**



Photo  
Betty Hall

**Citizen Science helps find answers to important conservation questions.**



Citizens from the US and Canada purchase Monarch Watch “tags” that have a unique 6-digit code and a toll-free phone number to call to report a dead Monarch.



Photo  
Candy Sarikonda




## Monarch Watch Tagging Program

# Tagging—How Does It Work?

The tag is entered and cross-referenced in the Monarch Watch Recovery Database against recovered tags from the U.S. and Mexico.



Photo by  
Pam Wolfe



## Tagging -- what can we learn?



Photo  
Natalie Miller

- Tagging helps identify migration pathways, best monarch production regions, and survival with latitude/longitude and date.
- Researchers analyze tag recovery records to determine peak migration dates for a given latitude.
- Tagging can help document changes in migratory behavior in response to climate change.



## Volunteers in this monitoring program:

- Estimate monarch densities
- Quantify milkweed quality
- Estimate parasitism
- Track weather



## Monarch Larva Monitoring Project (MLMP)



# Monarch Larva Monitoring Project Outcomes



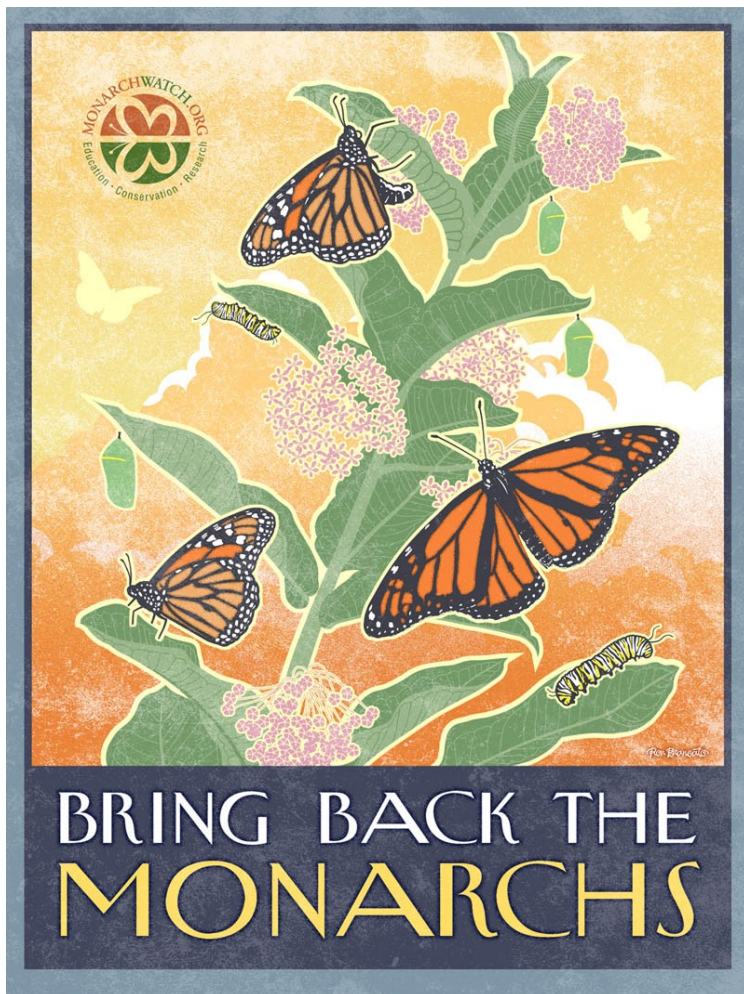
Photo  
Priya Shahani



Photo MLMP

- Increased understanding of local ecosystems and how to apply the data
- Habitat Restoration & Land Stewardship
- Support of Species Conservation
- Environmental Advocacy
- Outreach and Education for all ages

# Monarch Watch Milkweed Restoration Campaign



In Partnership  
with Wild Ones:



- Advocates restoration of 20 Milkweed species
- Sets regional priorities and cooperates with establishment
- Develops sites using local and geographically appropriate genetic sources
- Provides a source of Milkweed plants for gardens



# Milkweed Restoration: Challenges

- Lack of knowledge of the importance of milkweeds
- Resistance to milk “weeds”
- Plant and seed shortage, especially local genotype
- Absence of market for some milkweeds
- Small scale of restorations
- Misunderstanding about toxicity



Photo  
Pam Wolfe

# Help the Monarchs



Photo Denise Gehring

**Collect & Grow  
Milkweed Seeds  
for Butterfly Habitats**



Photo Denise Gehring

# Steps for Collecting Milkweed

## Notes:

- *Collect no more than 33% of seed in one planting.*
- *Take care -- milkweed sap may harm eyes.*
- *Do not collect near busy highways.*



Photo  
Mike Meyers

# Seed Harvesting Tips



- Collect from native wild plants and species targeted for your region.
- Collect pods when mature; avoid pods with milkweed bug or aphid damage.
- Use paper bags. One species per bag for each site.
- Use Wild Ones Labels.
- Please dry the pods.
- Give seed to a local grower and to parks and preserves.
- Or, mail seeds to Monarch Watch.



Photo  
Chan Mahanta

# Milkweed Seed Label



***LABEL every bag. Collect in paper Bags. Any amount is welcome.***

**Circle Milkweed Species: Common/Swamp/Butterflyweed**

**Other species \_\_\_\_\_ Date \_\_\_\_\_**

**Location \_\_\_\_\_ Zip code \_\_\_\_\_**

**Circle Soil Type: Sand/Clay/other \_\_\_\_\_**

**EcoRegion/Habitat \_\_\_\_\_**

**Name of Collector \_\_\_\_\_**

**Email /phone# \_\_\_\_\_**

*Wild Ones thanks you for helping the Monarch Butterfly!*



# To Learn More



Photo Jusy Kesser

**Contact Wild Ones**  
**[www.wildones.org](http://www.wildones.org)**

## Our Partners:

- Monarch Joint Venture [monarchjointventure.org](http://monarchjointventure.org)
- Monarch Watch: Bring Back the Monarchs [monarchwatch.org](http://monarchwatch.org)
- TogetherGreen: [togethergreen.org](http://togethergreen.org)

## Other Resources:

- Journey North: [learner.org/jnorth](http://learner.org/jnorth)
- Monarch Larva Monitoring Project (MLMP): [mlmp.org](http://mlmp.org)
- North American Butterfly Association: [NABA.org](http://NABA.org)
- Xerces Society: [Xerces.org](http://Xerces.org)
- [Bringing Nature Home](#) By Douglas W. Tallamy





Contact your  
Local  
Wild Ones  
Chapter:

[www.wildones.org/  
connect/](http://www.wildones.org/connect/)



Photo Candy Sarikona

**Help Restore Nature,  
One Yard at a Time**



Photo  
Candy Sarikonda

# *Wild For Monarchs*

**Monarch memories last a lifetime!**

# Special Thanks to:



Photo  
Candy Sarikonda

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**Trish Hacker Hennig**  
**Judy Kesser**  
**Tim Lewis**  
**Hal Mann**  
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**Cynthia Nelson**  
**Pete Oberhauser**  
**Diane Olson-Schmidt**  
**Henrica Regez**  
**Candy Sarikonda**  
**Priya Shahani**  
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