

# AFWA and MAFWA Monarch Conservation Coordination and Planning

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LEADERSHIP GROUP,  
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2017 NORTH AMERICAN  
WILDLIFE AND NATURAL  
RESOURCES CONFERENCE



Ed Boggess

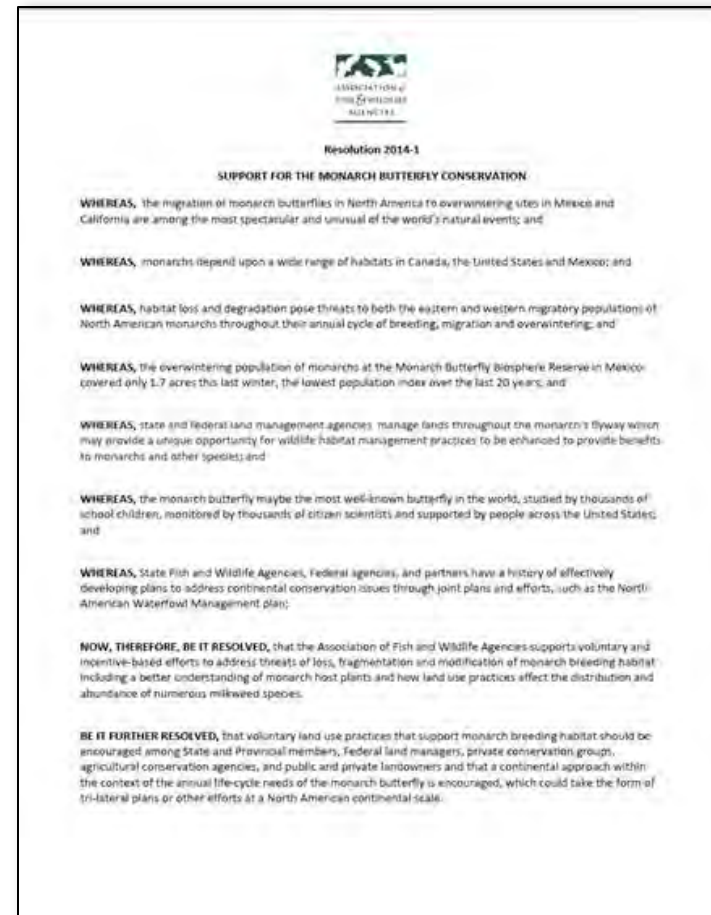


Claire Beck

# States' Monarch Conservation

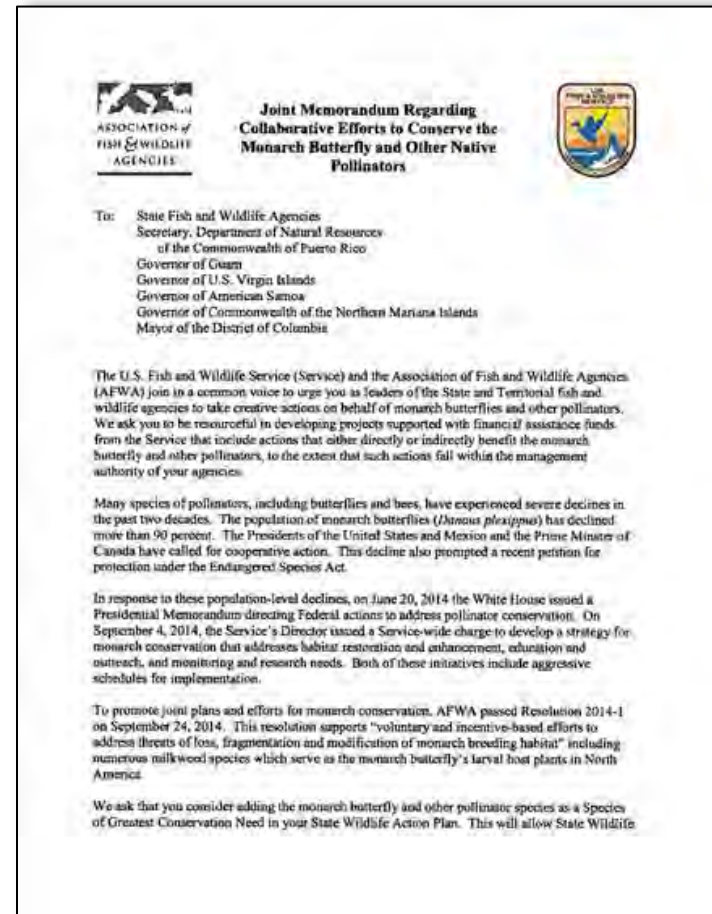
❖ **States' Jurisdictional authority** – Authority to manage resident wildlife resources is a trust responsibility of the states. Some state fish and wildlife agencies do not have specific authority to manage insects.

❖ **AFWA Resolution on Monarch Butterfly Conservation, Sep. 2014** – Encourages voluntary actions by states and partners on monarch butterfly conservation.



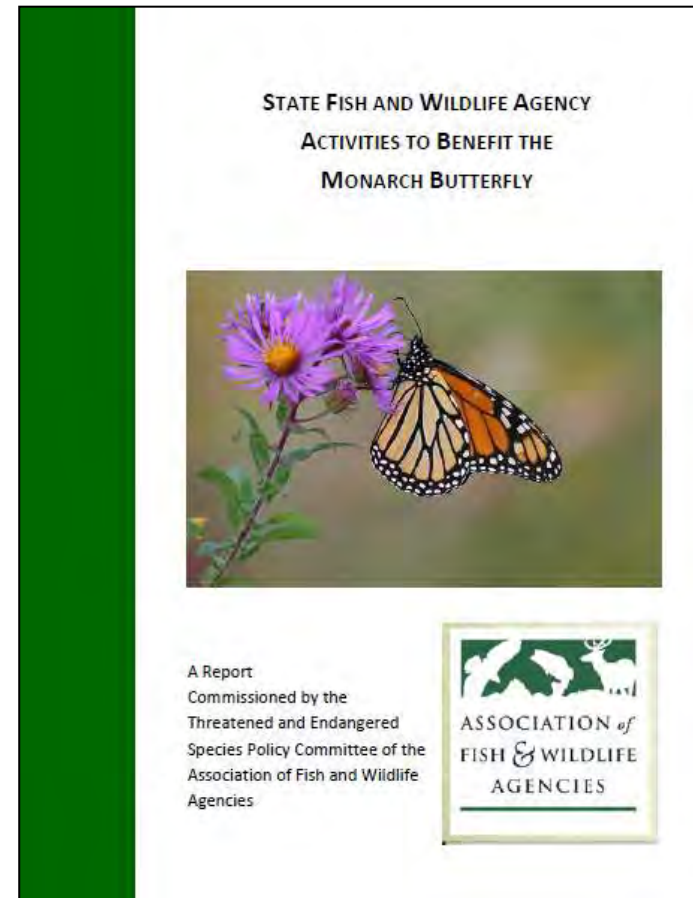
# States' Monarch Conservation

- ❖ **AFWA-FWS Joint Memorandum, Mar. 2015** –Joint memorandum encouraging states to incorporate monarch and pollinator conservation measures as appropriate.
- ❖ **AFWA and Regional Associations**  
Representatives appointed to Monarch Joint Venture (MJV) Board from AFWA, MAFWA, NEAFWA, SEAFWA, WAFWA.



# AFWA Monarch State Fish and Wildlife Agency Report – Oct 2015

- ❖ 46 states are engaged with Monarch.
- ❖ 29 states have Monarch in revised State Wildlife Action Plan.
- ❖ 20 states with Monarch as Species of Greatest Conservation Need.
- ❖ States without explicit insect management authority are finding ways to be involved.

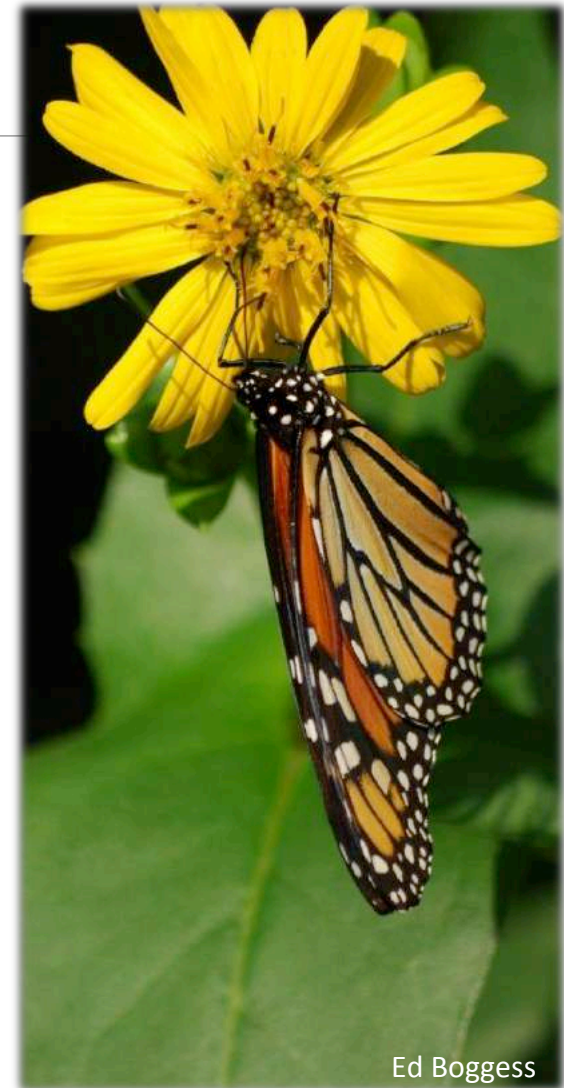




# MAFWA States' Activities 2015-2016

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- ❖ State Engagement in Monarch Conservation Science Partnership, Monarch Joint Venture, and Monarch Collaborative through Keystone Policy Center
- ❖ MAFWA Monarch Meeting, Des Moines, IA, October 2015 (over 75 attendees from 10 states, 3 federal agencies, NGO partners)
- ❖ USFWS Structured Decision Making Workshop on Resource Optimization Tools; Nine MAFWA States and FWS, May 2016
- ❖ Ad hoc monarch conservation technical committee (MAFWA states ++)



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# State Conservation Planning

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## ❖ State Monarch/Pollinator Summits/Statewide Meetings:

- ❖ Missouri, Arkansas, Kentucky, Nebraska, Illinois, Texas, Michigan, and Oklahoma have completed summits. Indiana (late summer/fall 2017), South Dakota (spring 2017), and Wisconsin (spring 2017) are planning summits.
- ❖ Other related meetings: Minnesota (Feb. 2016 pollinator summit convened by MDA), Kansas (March 2016 summit partners meeting facilitated by Xerces), Ohio OPHI pollinator meetings, Texas Monarch Symposium (Spring 2017).

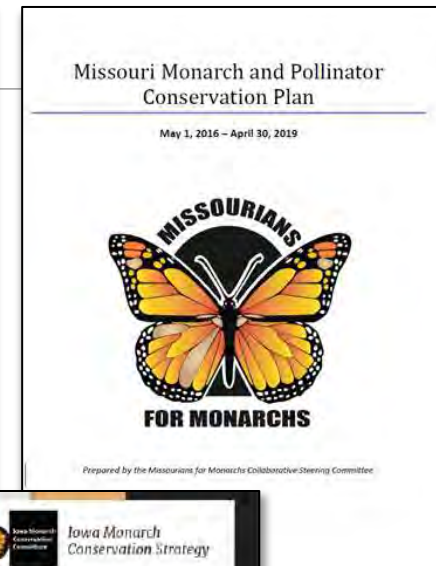
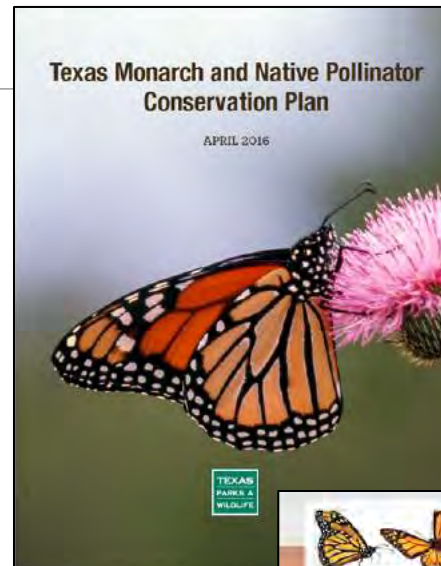


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# State Conservation Planning

## ❖ State Plans:

- ❖ Texas, Missouri, and Iowa have completed state-wide monarch/pollinator conservation plans. A number of other states are working on plans.
- ❖ In addition to those who are developing plans based on summits, Iowa used a partnership consortium to inform planning; Others are meeting with key stakeholders and drafting plans.
- ❖ Wisconsin has a state pollinator protection plan (WDA)



# Developing a Regional Framework

- ❖ 2015- NWF, MAFWA, AFWA, and PF/QF received a NFWF Grant to develop state summit materials and host a coordination meeting in Texas, January 2017
- ❖ July 2016 – MAFWA obtained a USFWS grant to establish a monarch conservation liaison
- ❖ August 2016 - MAFWA received a second NFWF grant to develop a regional monarch conservation strategy and contract a technical coordinator



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# Developing a Regional Framework

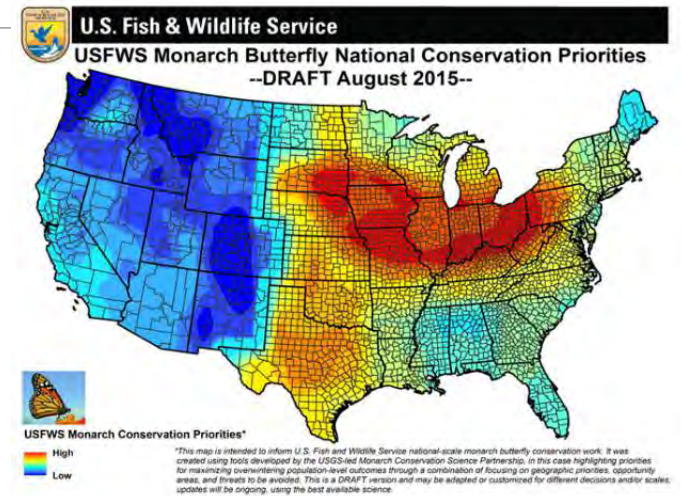
- ❖ Develop a **Mid-America Monarch Conservation Strategy** that would conserve the eastern population of monarchs and help inform the USFWS PECE analysis and monarch listing decision.
- ❖ The Mid-America Monarch Conservation Strategy framework would include the following outcomes:
  - ❖ Policy and shared priorities across states
  - ❖ Decision making structure and oversight of technical committees to develop, implement, monitor, and report on the Strategy
  - ❖ Collaboration and information sharing with partners



Claire Beck

# Mid-America Monarch Conservation Strategy

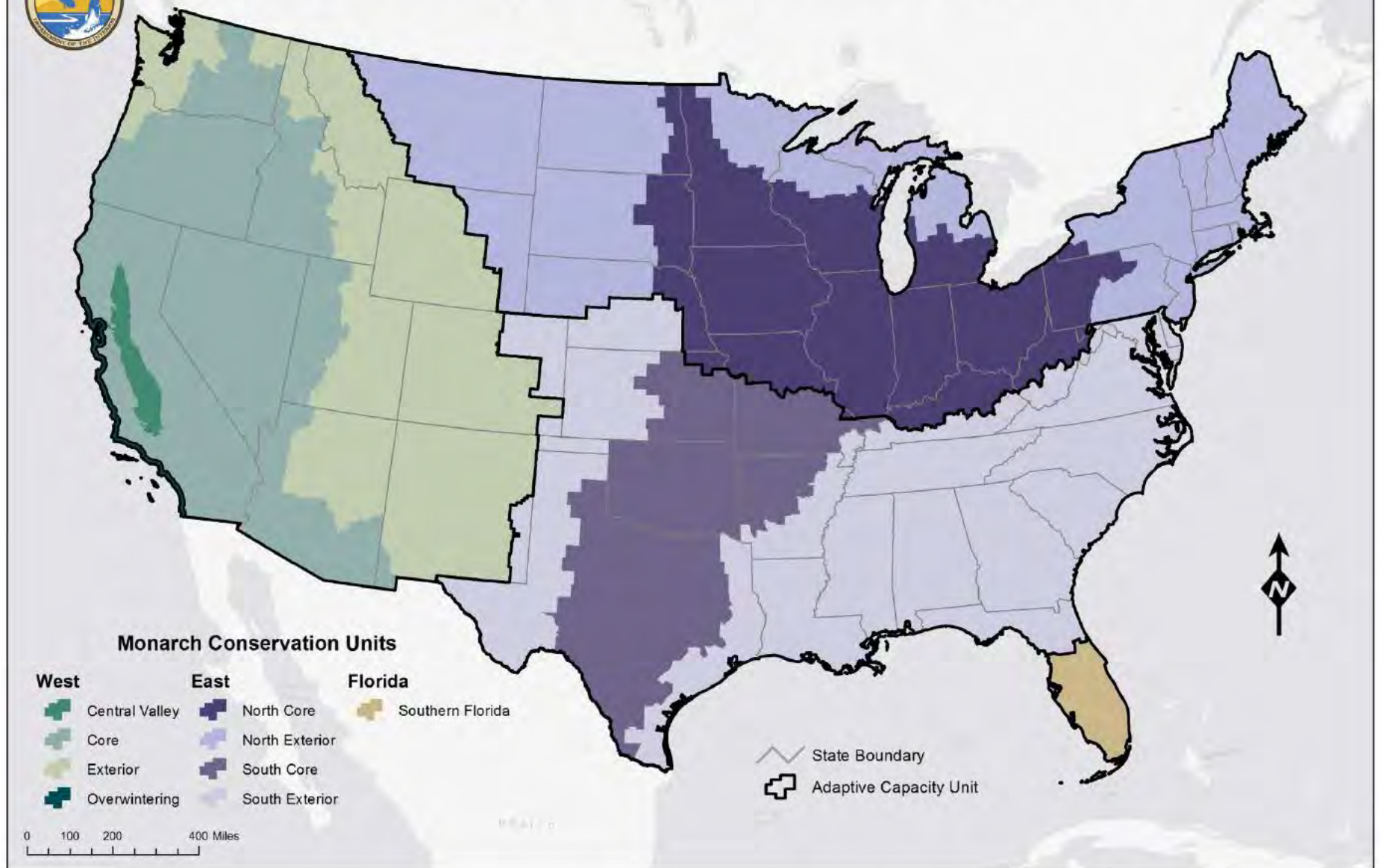
- ❖ Coordination of conservation efforts, science, communications, monitoring, and evaluation.
- ❖ Use acres of diverse grasslands as a metric to measure available habitat (including stems of milkweed) for monarch's and other pollinators' success.
- ❖ How many acres of habitat is needed to conserve monarchs by states and sectors?
- ❖ Use best available science to develop strategy
- ❖ Potential solution: use USFWS and USGS optimization model, that accounts for differences across states, to help inform each state's decision.



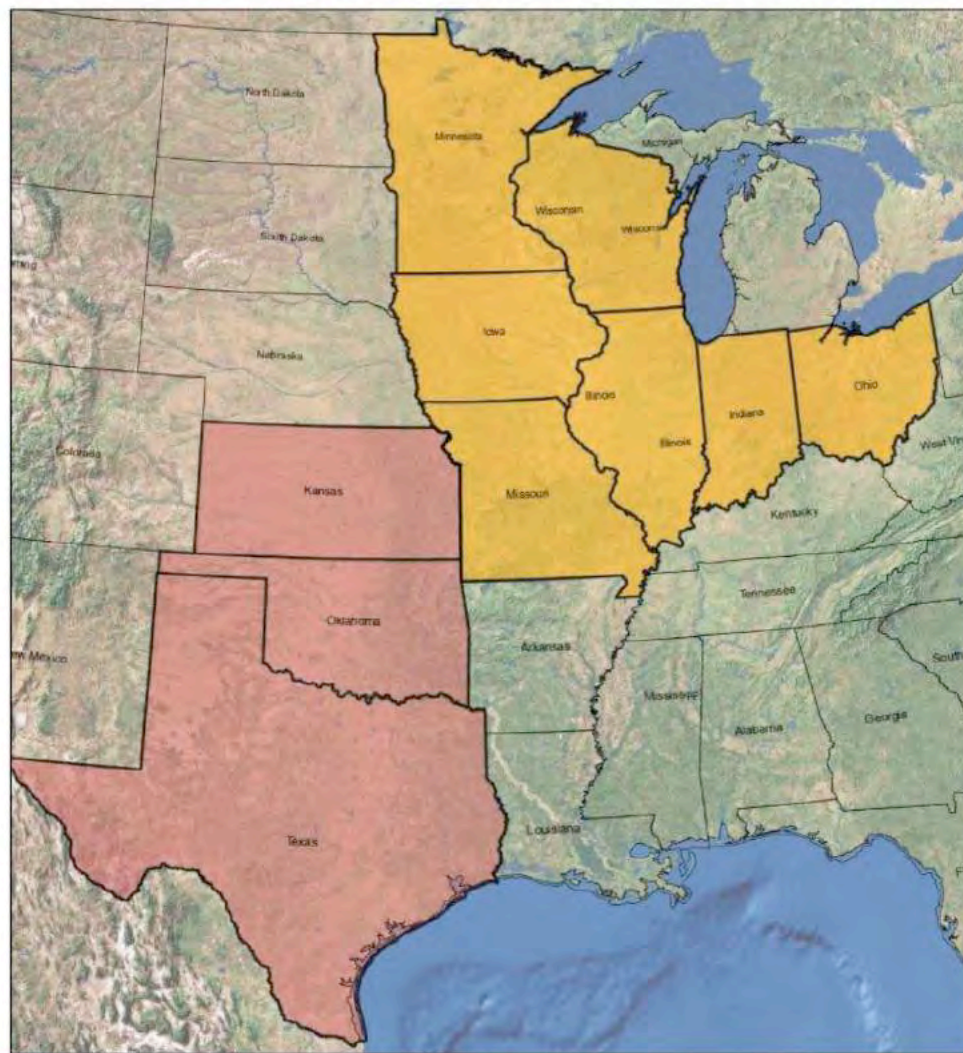




## Monarch Butterfly Conservation Units in the U.S.



## NRCS Monarch Butterfly Habitat Emphasis Area



MidWestSubregion  
SouthCentralSubregion

1:12,000,000

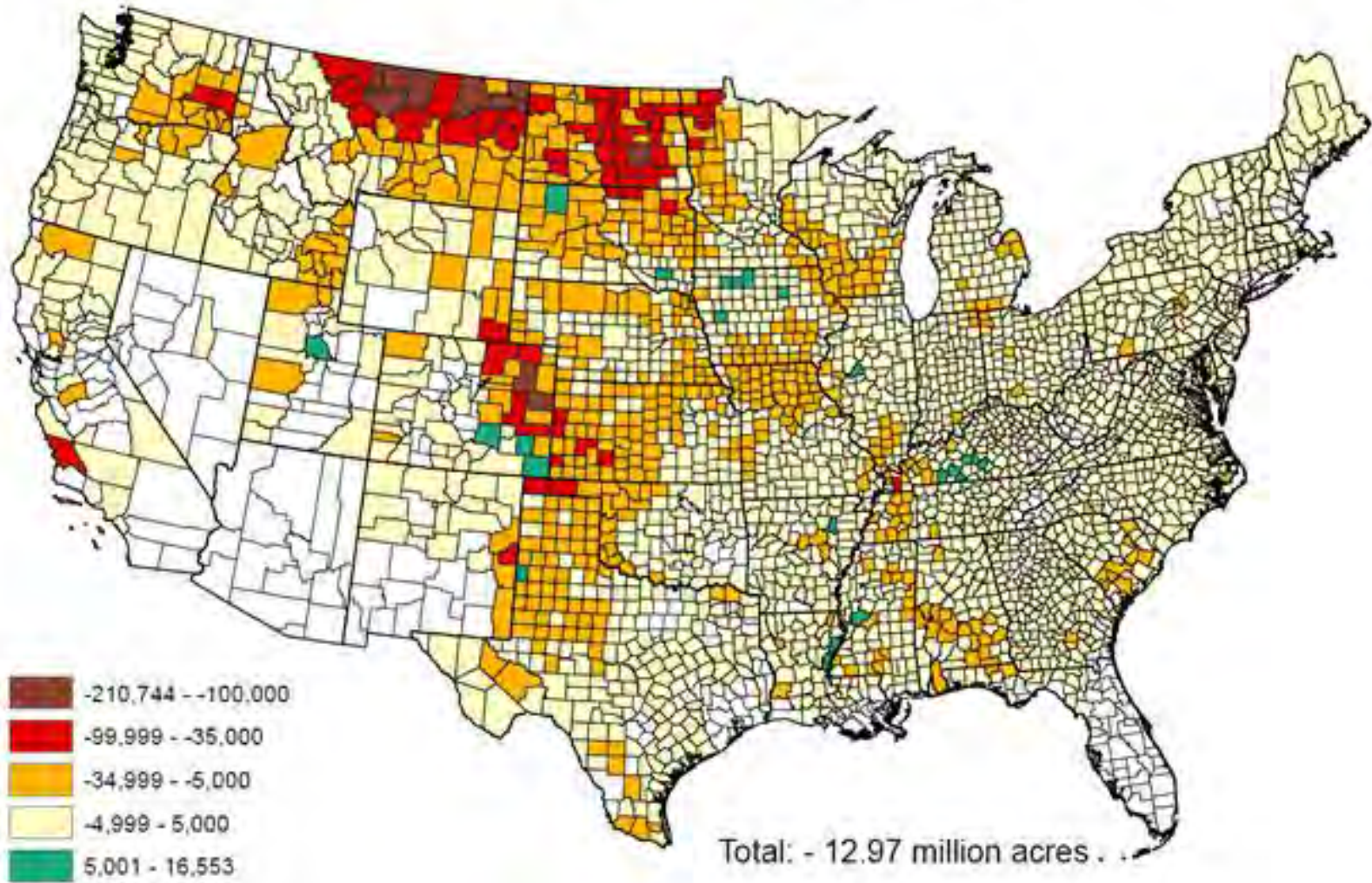
Author: Dwain Daniels and Lee Davis,  
Central National Technology Support Center  
Fort Worth, TX  
USDA-NRCS Map No. 2015-30

Date: 5/20/2015

Coordinate System: USA Contiguous  
Albers Equal Area Conic USGS  
Projection: Albers  
Datum: North American 1983



## Change in CRP Enrollment 2007 - 2016

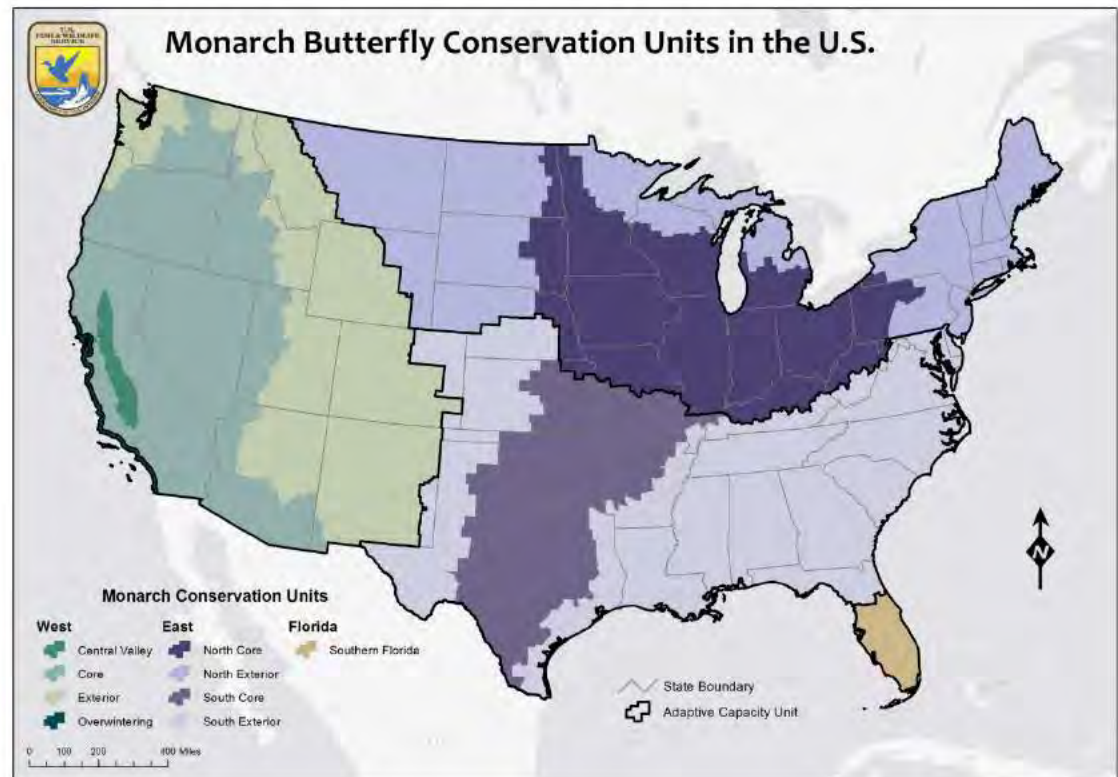


Note: Data as of the end of April 2016

Prepared by FSA/EPAS/NRA

# Implications for Monarch Conservation

- ❖ All of the lower 48 states plus Hawaii have some potential role in monarch conservation.
- ❖ The magnitude of the habitat challenge will require an “all-hands-on-deck” approach including public lands, rights-of-way, urban lands, and especially private lands, particularly marginal crop lands.



# Next Steps

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- ❖ **MAFWA President has appointed an Interim Monarch Conservation Leadership Group (including representation from SEAFWA and NEAFWA states):**

- ❖ Members include directors from Michigan (chair), Iowa, Missouri, Ohio, Texas, and West Virginia
- ❖ Charged with drafting a governance structure for the regional monarch conservation strategy targeting the core range of the eastern population.

- ❖ **Timeline**

- ❖ October 2017 – 1<sup>st</sup> Draft of Strategy for review
- ❖ May 2018 – Approved Strategy

- ❖ **Partners**

- ❖ Will work with partners in all sectors
- ❖ Agriculture sector partners and programs will be key



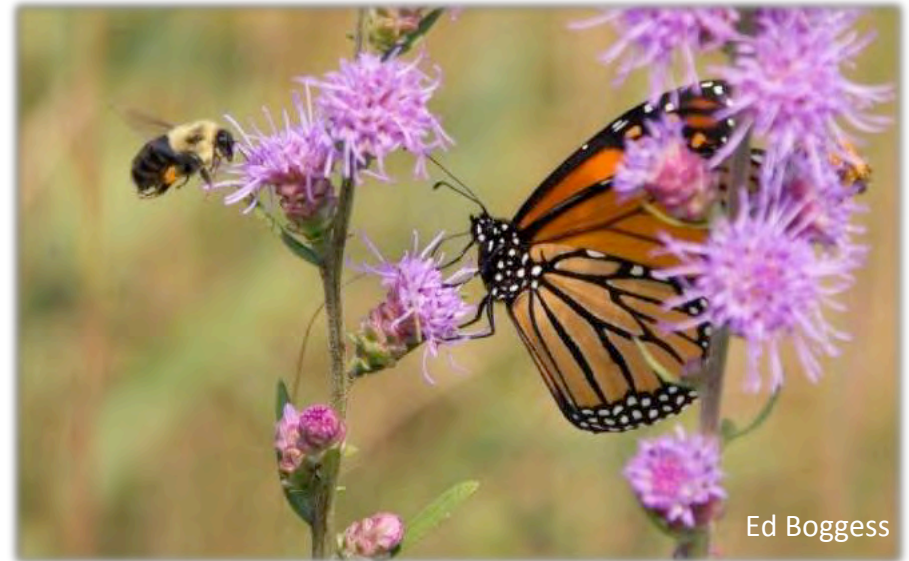
Ed Boggess



# Partnerships

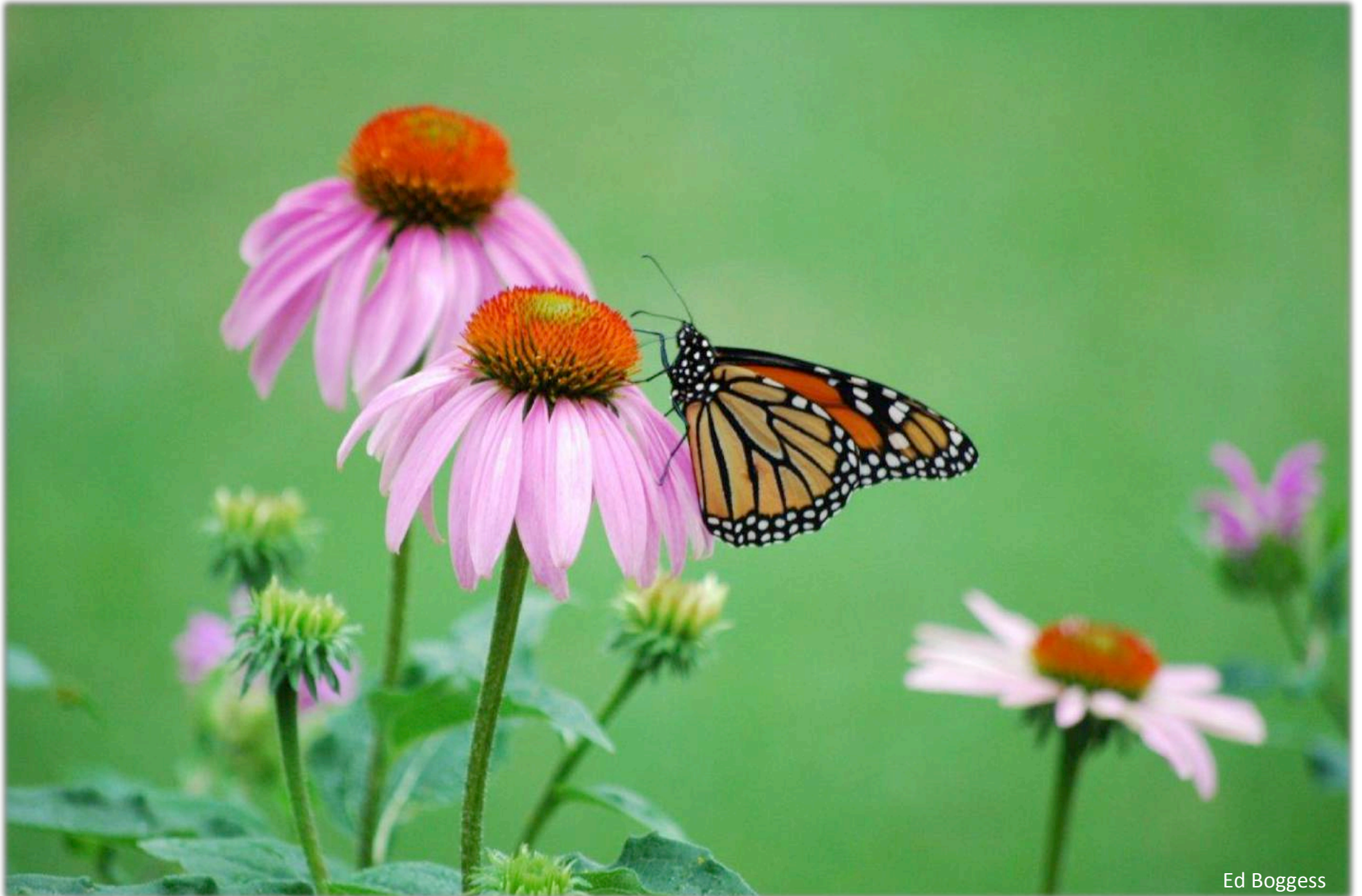
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- ❖ MAFWA
- ❖ AFWA and its regional organizations
- ❖ USFWS and LCCs
- ❖ Monarch Joint Venture
- ❖ Pheasants Forever/Quail Forever
- ❖ National Wildlife Federation
- ❖ Keystone Center for Policy: Monarch Collaborative
- ❖ Other agencies, including: FS, USGS, NRCS, FSA, DOT, State Agriculture Departments, etc.



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*Questions?*

# Mid-America Monarch Conservation Planning



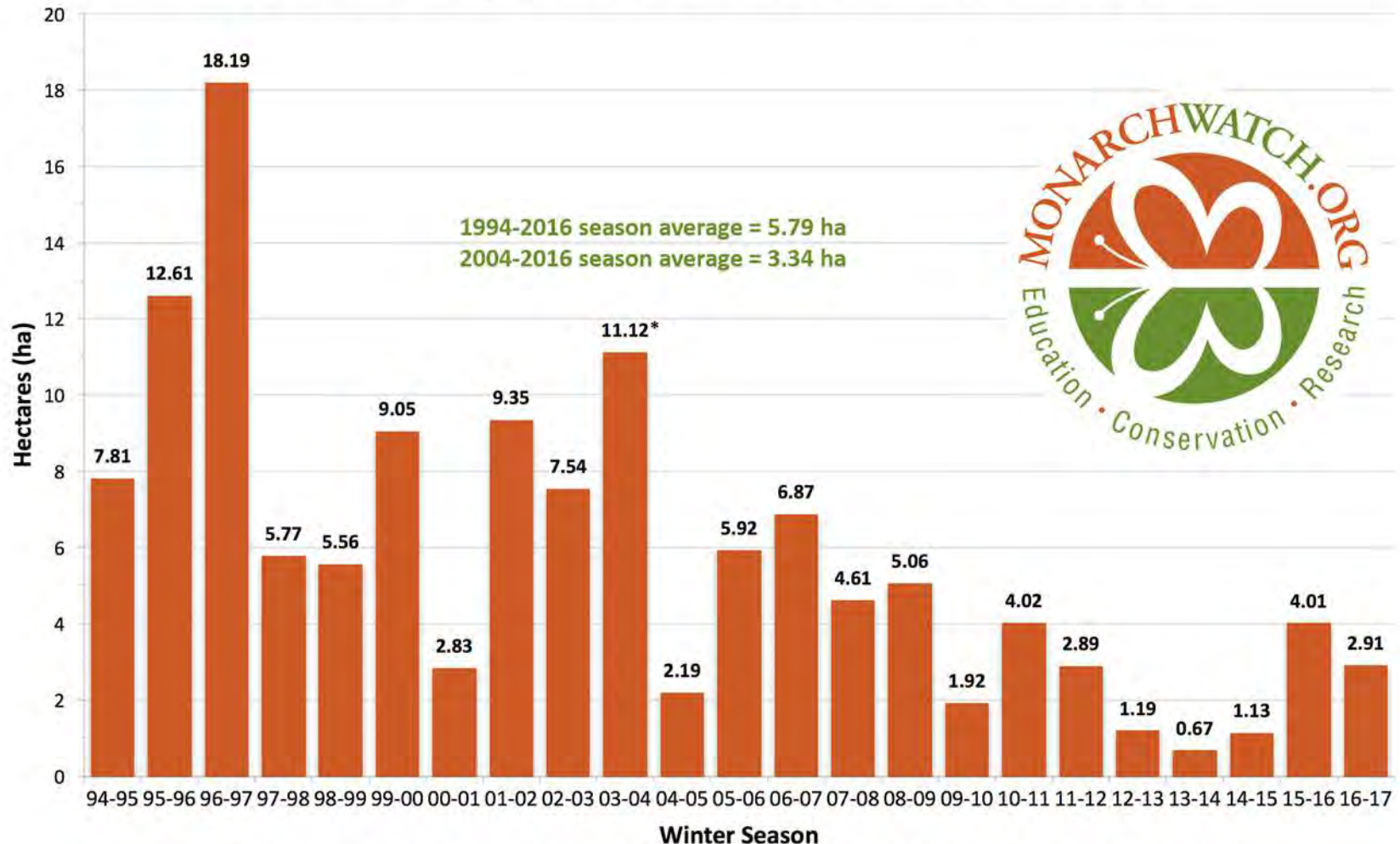
Ed Boggess and Claire Beck  
MAFWA

2017 AFWA Annual Meeting, Sandy, UT



# Eastern Migratory Population Trends

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.

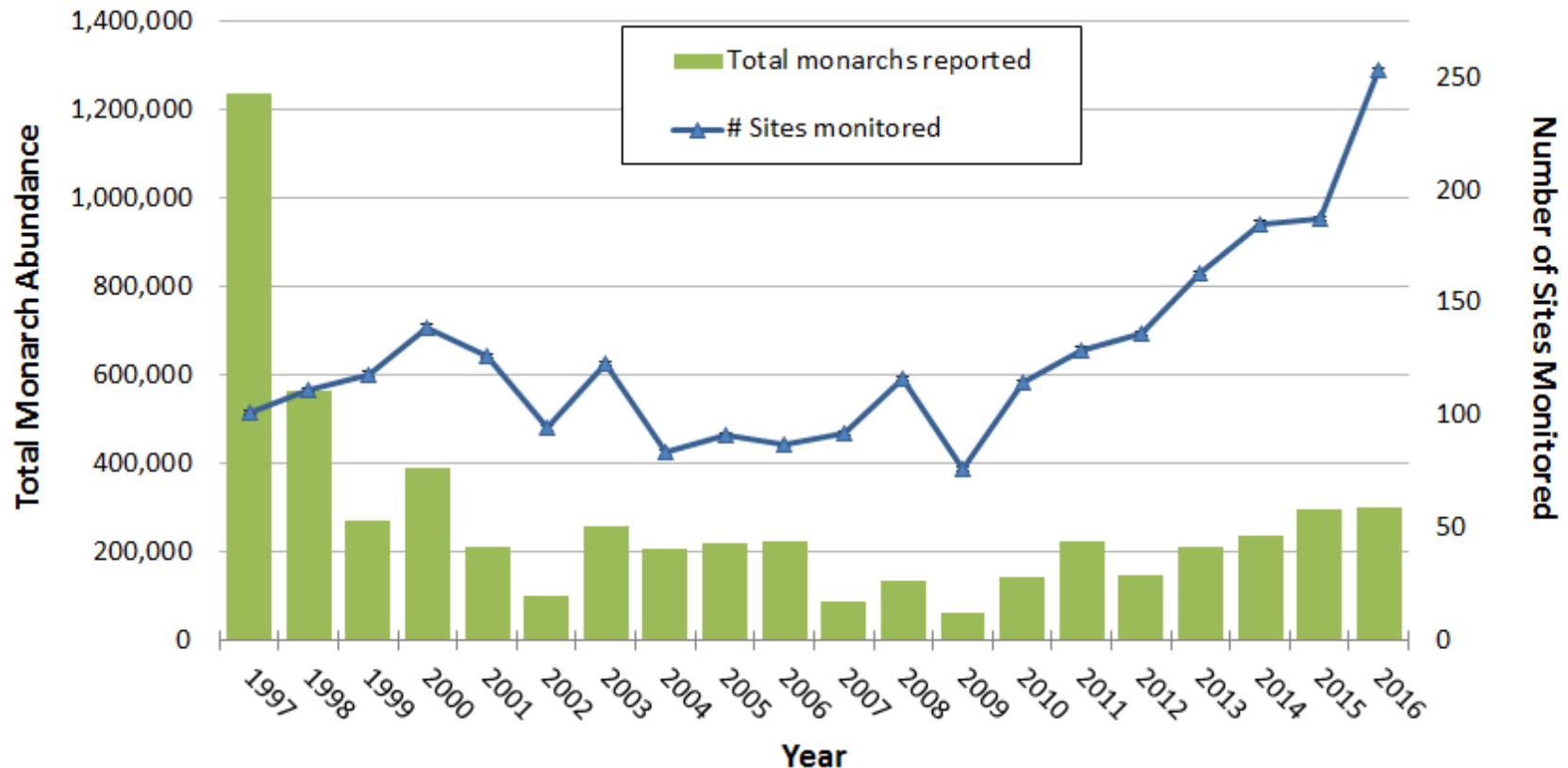
\* Represents colony sizes measured in November of 2003 before the colonies consolidated. Measures obtained in January 2004 indicated the population was much smaller, possibly 8-9 hectares. CT

# Western Migratory Population Trends

## Western Monarch Thanksgiving Count

Total Abundance Estimates w/ Number of Sites Monitored  
from 1997-2016  
(Monroe *et al.* 2017)

© The Xerces Society for Invertebrate Conservation 2017



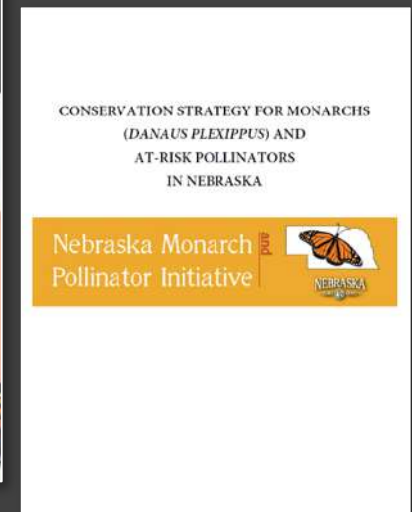
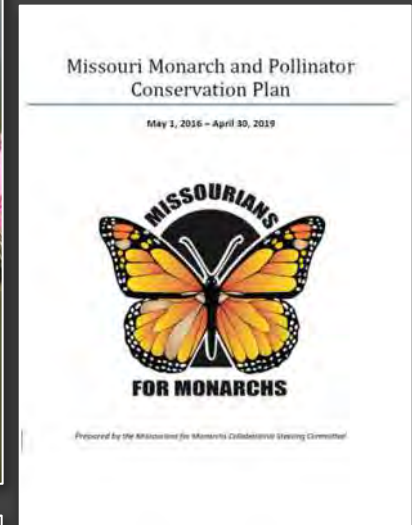
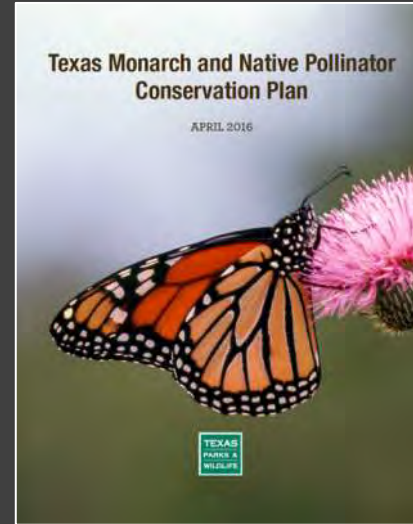


# States' Monarch Conservation



# State Conservation Planning

- ❖ State plans are building blocks for developing regional strategy and for implementation.
- ❖ At least 8 states have monarch and/or pollinator plans in draft or completed (IA, KY, MN, MO, NE, ND, TX, WI); others in process.
- ❖ Several states have pollinator plans with state departments of agriculture with strong honeybee focus.
- ❖ State plans emphasize diverse habitats and species.





# AFWA Regional Monarch Participation



## ❖ MAFWA

- ❖ Mid-America monarch strategy Board
- ❖ MJV Board
- ❖ SSA Team
- ❖ States' technical team



## ❖ NEAFWA

- ❖ Mid-America monarch strategy Board
- ❖ MJV Board
- ❖ SSA Team
- ❖ States' technical team



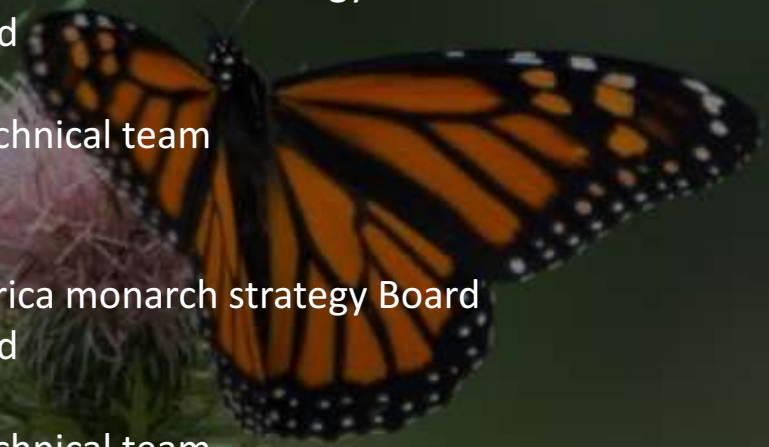
## ❖ SEAFWA

- ❖ Mid-America monarch strategy Board
- ❖ MJV Board
- ❖ States' technical team



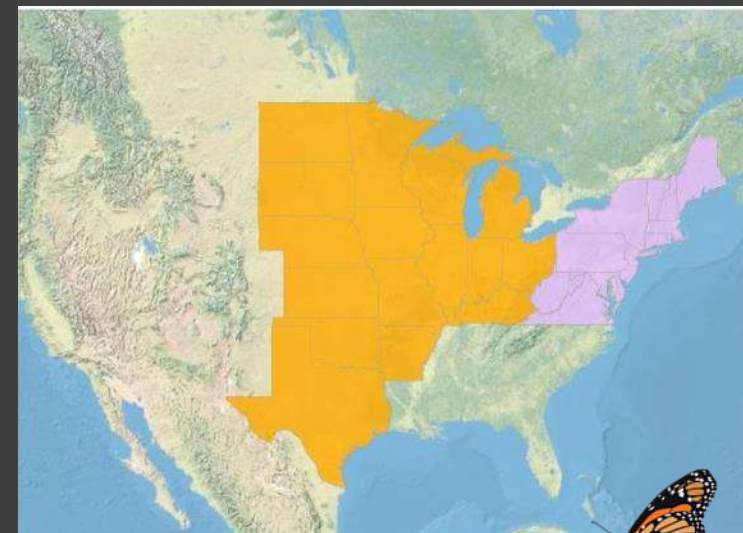
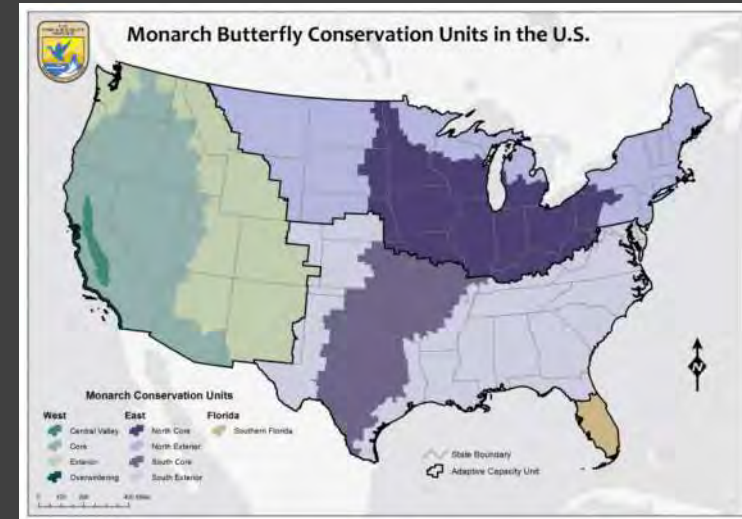
## ❖ WAFWA

- ❖ MJV Board
- ❖ SSA Team
- ❖ States' technical team



# Mid-America Monarch Conservation Strategy

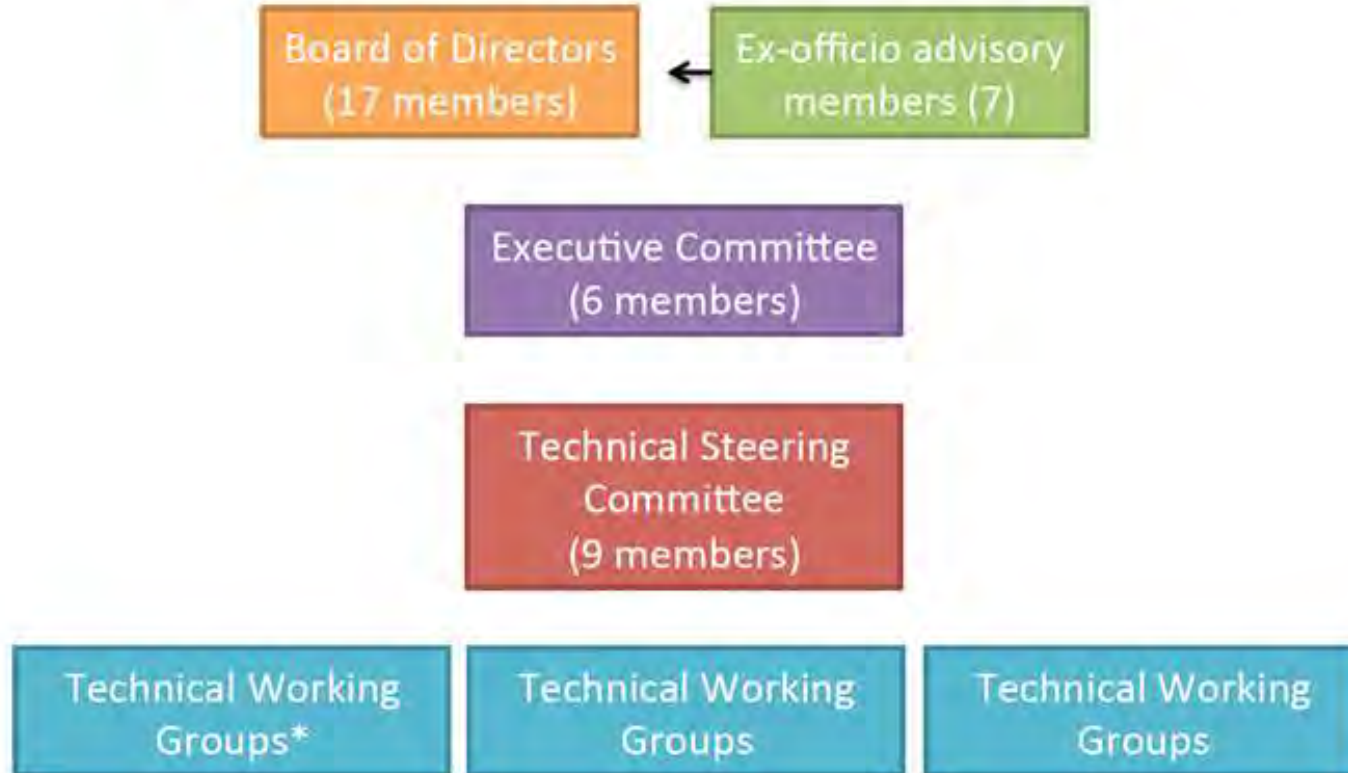
- ❖ Coordination of conservation efforts, science, communications, monitoring, and evaluation.
- ❖ Use acres of diverse grasslands (including stems of milkweed) as a metric to measure available habitat for monarchs and other pollinators.
- ❖ How many acres of habitat are needed to conserve monarchs by states and sectors?
- ❖ Use best available science to develop strategy.
- ❖ Potential solution: USFWS/USGS allocation model to help inform each state's decisions.





# Mid-America Monarch Conservation Strategy

## Structure and Governance



\* Current Technical Work Groups: Habitat Allocation (north core); Habitat Allocation (south core); Agriculture/Private Working Lands; Public and Private Conservation Lands; Rights-of-Way; Urban Conservation and Engagement; Education and Outreach; Science, Monitoring and Adaptive Management; Policy.

# Mid-America Monarch Conservation Strategy - Technical Work Groups

- ❖ **Habitat Allocation and Goals**
  - ❖ North Core
  - ❖ South Core
- ❖ **Agriculture/Private Lands**
- ❖ **Public and Private Conservation Lands**
- ❖ **Rights-of-Way**
- ❖ **Urban Conservation and Engagement**
- ❖ **Education and Outreach**
- ❖ **Science, Monitoring, and Adaptive Management**



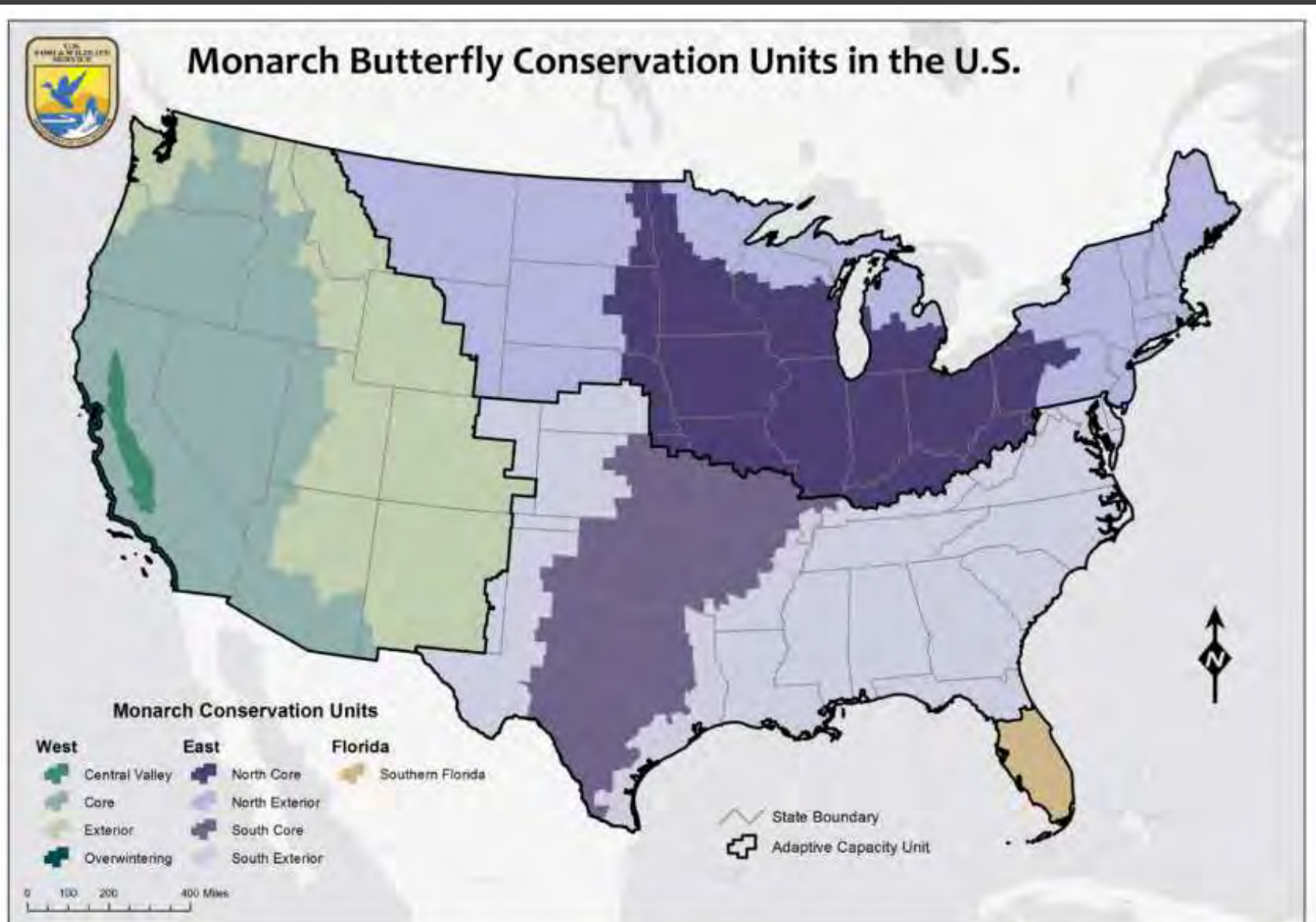
# Habitat Allocation Tool

*Translating Conservation Targets into Management Action*





# Monarch Conservation Units



# Target in North Core:

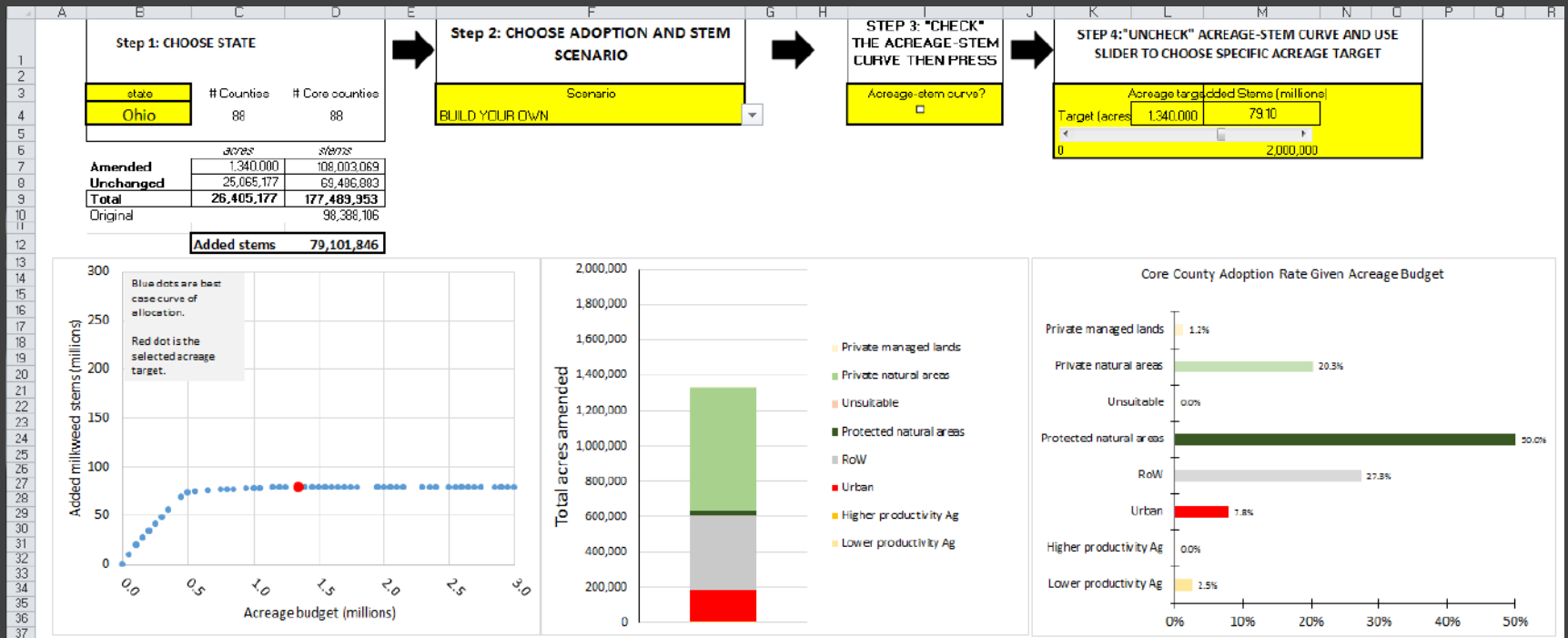
Indexed by Projected Additional Milkweed Stems

- Assumptions:
  - Different US 'sectors' currently support different numbers of milkweed; all could be increased.
  - Preliminary analysis: 6 HA of overwintering eastern population monarchs will maintain the population and allow for “boom and bust” populations characteristic of insects.
  - Current science suggests an additional 1.3-1.8 billion 'stems' of milkweed needed





# Allocation Tool for Scenario Planning





# Next Steps

- State Agencies (“North Core”) explore the allocation tool and share with partners to refine planning efforts and discuss how to reach desired targets across the region.
- Workshop this winter to define and understand monarch habitat needs and targets in the “South Core” region.
- Mid-America Strategy developed by June 2018 to provide clear conservation goals and implementation strategies, consistent with PECE policy evaluation needs, and to identify future challenges/opportunities.





# All Hands on Deck





# It's About More Than Monarchs and Milkweeds!

Benefits include wildlife and pollinator habitat and soil and water protection.



Photo credit: Pheasants Forever; from symposium: **“Bees, Butterflies, Birds and You”** - Featuring eight top pollinator experts at the ***National Pheasant Fest and Quail Classic*** at the Minneapolis Convention Center, February 17, 2017



# Questions?

- **MAFWA Website:**

Mid-America Monarch Conservation Strategy Tab at: **[www.mafwa.org](http://www.mafwa.org)**

- **USFWS SSA Website:**

**[www.fws.gov/savethemonarch/SSA.html](http://www.fws.gov/savethemonarch/SSA.html)**

- **MAFWA Monarch Email:**

- Claire Beck, Monarch Technical Coordinator: **[Claire.Beck@dnr.state.oh.us](mailto:Claire.Beck@dnr.state.oh.us)**
- Ed Boggess, Monarch Conservation Liaison: **[Ed.Boggess@state.mn.us](mailto:Ed.Boggess@state.mn.us)**



# Mid-America Regional Monarch Conservation Strategy

*North American Wildlife and Natural  
Resources Conference  
Norfolk, Virginia*

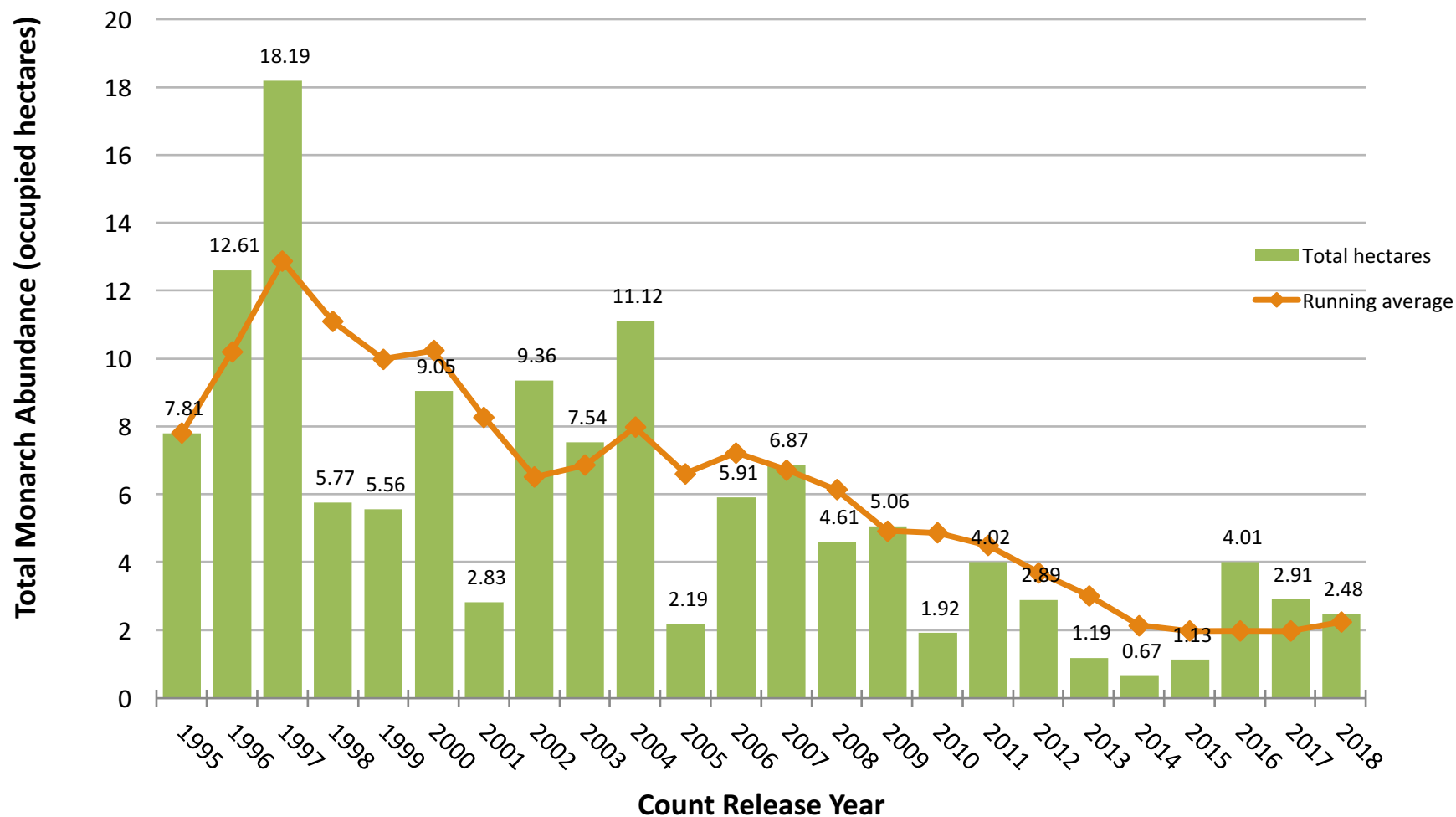
*Ed Boggess, Claire Beck,  
and Bill Moritz  
Midwest Association of  
Fish and Wildlife Agencies*



Photos: Ed Boggess

# Monarch Overwintering Occupied Area - Mexico

With Running Average (5-year average beginning with 1999)





# Threats

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❖ For the eastern monarch population, primary threats have been preliminarily identified\* as:

- ❖ Overwintering habitat forest loss\*\*
- ❖ Loss or degradation of milkweed resources
- ❖ Loss or degradation of nectar resources
- ❖ Impacts of insecticides

\*Source: USFWS Species Status Assessment Update, Aug. 2017  
<https://www.fws.gov/savethemonarch/pdfs/Monarch.pdf>

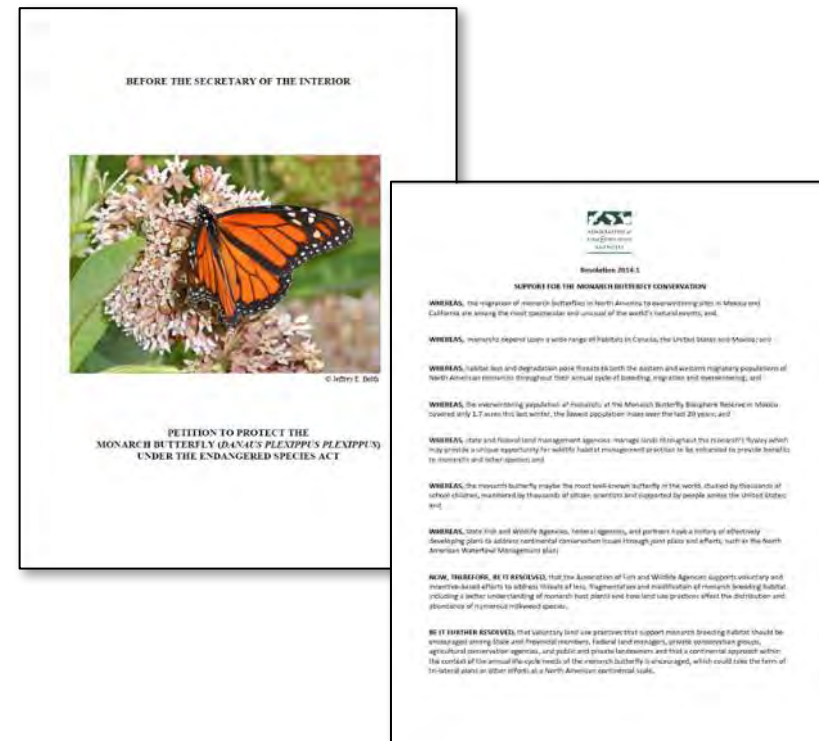
\*\*Outside the scope of this Strategy



Photos: Ed Boggess

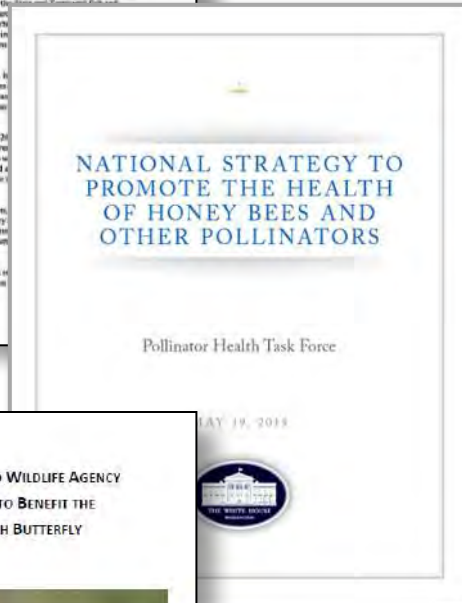
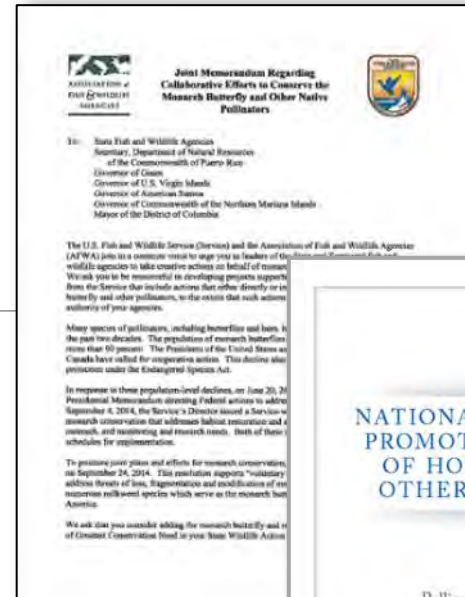
# 2014

- ❖ **February** - Lowest monarch overwintering counts recorded; high concerns about honey bees, monarchs, and other pollinators
- ❖ **May** - Directive to create a federal strategy to promote the health of honey bees, monarchs, and other pollinators
- ❖ **August** – Petition to list monarch butterfly as Threatened under the Endangered Species Act
- ❖ **September** – Association of Fish and Wildlife Agencies (AFWA) adopts Resolution 2014-1 supporting monarch conservation



# 2015

- ❖ **March** – AFWA/USFWS Joint Memorandum encouraging states to incorporate monarch and pollinator conservation into state programs.
- ❖ **May** – National Pollinator Strategy released:
  - ❖ Advocated “All Hands on Deck” approach to pollinator conservation;
  - ❖ Monarch goal: Increase overwintering monarch butterfly population to 225 million, occupying an average of ~15a (6ha);
  - ❖ Restore or enhance 7 million acres for pollinator conservation by 2020.
- ❖ **October** – AFWA state monarch conservation survey/report:
  - ❖ 46 states were engaged with monarch;
  - ❖ 29 included monarch in revised State Wildlife Action Plan
  - ❖ 20 listed monarch as a Species of Greatest Conservation Need (SGCN)





# Need For a Monarch Regional Strategy

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- ❖ States are leading development of a regional strategy to help ensure a viable eastern monarch population and to get “ahead of the curve” in the pre-listing phase and preclude the need for a listing under ESA.
- ❖ The formal Species Status Assessment will help to inform threats analyses and needed conservation measures, but will not be completed until later this year.
- ❖ Given timing and uncertainties, the Strategy will be a living document and will use an adaptive approach as more information and analyses become available.

# Compressed Timelines

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Example timelines for other multi-state and landscape-scale species conservation planning efforts in relation to timing of Endangered Species Act listing candidate determinations.

## ❖ **Monarch**

- ❖ SSA will be complete late 2018 and finding on listing candidate status by **June 2019**
- ❖ Regional Strategy by **June 2018**

## **Other multi-state regional conservation strategies with ESA connections**

### ❖ **New England Cottontail**

- ❖ SSA complete and listing warranted (but precluded) – candidate status **2006**
- ❖ Regional Strategy **2012**

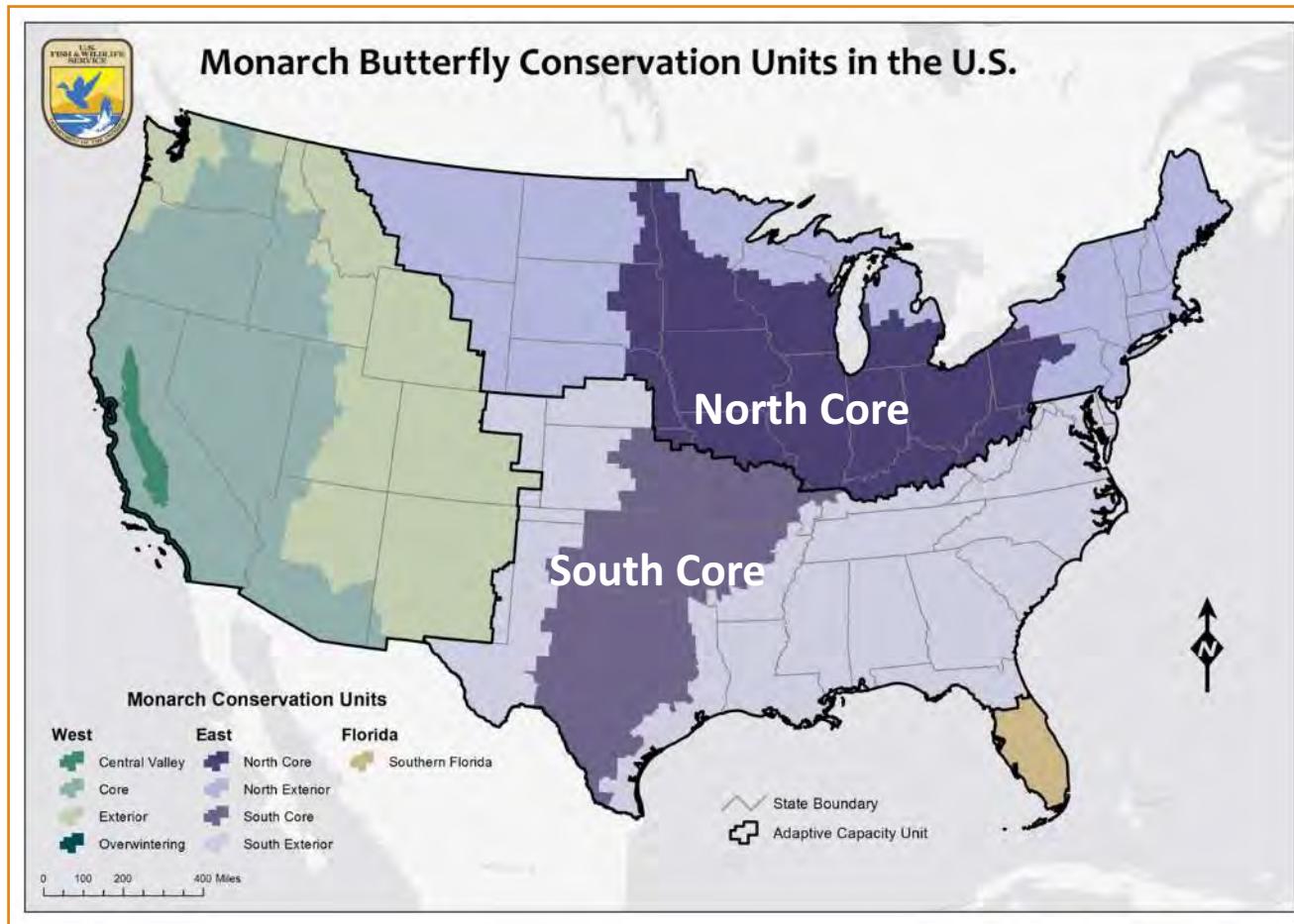
### ❖ **Lesser Prairie Chicken**

- ❖ SSA complete and listing warranted (but precluded) – candidate status **1998**
- ❖ Regional Strategy **2013**

### ❖ **Greater Sage Grouse**

- ❖ SSA complete and listing warranted (but precluded) – candidate status **2010**
- ❖ Regional Strategy **2012**

# Proposed Monarch Butterfly Conservation Units



USFWS  
March 2017



# Mid-America Monarch Conservation Strategy

Mid-America Regional Monarch Conservation Strategy:  
Project Area and Participating States

NFWF grant covers  
16-state Midwest  
and South-central  
geography.  
Northeastern  
states  
collaborating  
through NEAFWA.



# AFWA Regional Association Monarch Conservation Engagement



## ❖ MAFWA

- ❖ Mid-America monarch strategy Board of Directors
- ❖ MJV Steering Committee
- ❖ SSA Team
- ❖ States' technical team



## ❖ NEAFWA

- ❖ Mid-America monarch strategy Board of Directors
- ❖ MJV Steering Committee
- ❖ SSA Team
- ❖ States' technical team
- ❖ Regional monarch strategy summary supplement



## ❖ SEAFWA

- ❖ Mid-America monarch strategy Board of Directors
- ❖ MJV Steering Committee
- ❖ States' technical team



## ❖ WAFWA

- ❖ MJV Steering Committee
- ❖ SSA Team
- ❖ States' technical team
- ❖ Western population team



# Developing a Mid-America Monarch Conservation Strategy

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- ❖ **June-July 2016** – MAFWA Board approves and receives USFWS grant for liaison among states and between MAFWA/USFWS
- ❖ **Fall 2016** – MAFWA receives NFWF grant to help support development of a “mid-continent” (aka “Mid-America”) monarch conservation strategy and contract a Technical Coordinator to lead the effort
- ❖ **December 2016** – MAFWA contracts Monarch Technical Coordinator (Claire Beck) through June 2018

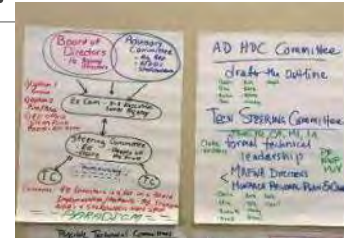


Ed Boggess



# Developing a Mid-America Monarch Conservation Strategy

- ❖ **January 2017** – Regional monarch “Mid-America Conservation Strategy” coordination meeting, Burnet, TX with states, agencies, NGOs, researchers.
- ❖ **March 2017** – MAFWA Executive Committee acts on recommendations from Texas workshop to approve strategy elements and governance to guide strategy development.
- ❖ **April 2017** – NEAFWA joins Mid-America strategy process through regional representation
- ❖ **May-August 2017** – Governance Structure implemented



## Structure and Governance



\* Current Technical Work Groups: Habitat Allocation (north core); Habitat Allocation (south core); Agriculture/Private Working Lands; Public and Private Conservation Lands; Rights-of-Way; Urban Conservation and Engagement; Education and Outreach; Science, Monitoring and Adaptive Management; Policy.

# Landscape conservation

- ❖ Habitat conservation at a landscape scale is the primary focus of this Strategy.
- ❖ Goals include additional milkweed stems embedded in diverse grassland and open habitats and increased seasonal nectar resources.
- ❖ Natural and planted grasslands and rangelands are some of the most diminished and degraded habitats in the Midwest and Great Plains, as reflected by the decline of many grassland and open land dependent species.
- ❖ In addition to declining monarch and native pollinator populations, many species of grassland and open lands birds and some mammals are also in significant decline.
- ❖ This illustrates the need and opportunity for eastern monarch conservation to be part of larger landscape conservation efforts focused on native rangelands and prairies, planted grasslands, and other open lands, with an emphasis on the Midwest and Great Plains states.



Photos: Ed Boggess

# Strategy Overview

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- ❖ This Strategy represents a regional, landscape-scale approach to addressing monarch conservation needs in the heartland of America, which is also the heart of production and migration for the world's largest monarch population.
- ❖ The Strategy builds on and helps coordinate state-led efforts, engages partners in conservation at all levels and from all sectors, and identifies shared habitat goals and strategies.
- ❖ The vision is a diverse, resilient, and appropriately-connected habitat base to support a healthy and robust eastern population of monarch butterflies, sustained by long-term conservation efforts of governmental, non-governmental, and citizen conservationists.
- ❖ The desired outcome is widespread and resilient eastern monarch populations capable of overcoming identified threats and reversing the declining population trend documented over the past 20 years.



Photos: Ed Boggess



# Strategy Overview

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- ❖ Alignment with USFWS **Policy for the Evaluation of Conservation Efforts (PECE)**
  - ❖ Provide certainty that conservation efforts will be effective
  - ❖ Provide certainty that conservation efforts will be implemented
- ❖ Leverage authority of state wildlife agencies and resources of many partner agencies to plan and implement additional **1.3-1.8 billion milkweed stems** embedded in diverse, forb-rich habitats in the eastern U.S. by 2038 through **voluntary, incentive-based programs**
- ❖ Strategy focuses on habitat creation and management in **North Core** and **South Core** conservation units, organized into **land use sectors**



# Land Use Sectors

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❖ This Strategy divides habitat creation and management strategies into major land use “sectors” – a combination of land use and land ownership factors, as follows:

❖ **Private agricultural lands;**

❖ **Protected natural lands** (public and private);

❖ **Rights-of-way** (transportation, energy);

❖ **Energy infrastructure and mined lands;** and

❖ **Urban and developed lands.**

*Land in agricultural production comprises 46% of total acres in the North Core and 64% of total acres in the South Core.*

# Assumptions – North Core

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- ❖ The Midwest is a major summer breeding area for monarchs that ultimately reach the Mexico overwintering areas (Wassenaar & Hobson 1998, Flockhart et al. 2013, Flockhart et al. 2017).
- ❖ The decline of milkweed host plants is the primary influence on eastern monarch population status (Oberhauser et al. 2001, Brower et al. 2011, Pleasants & Oberhauser 2013).
- ❖ The greatest loss of milkweeds has occurred in agricultural fields due to the use of glyphosate herbicide in conjunction with the adoption of glyphosate-tolerant corn and soybeans (Hartzler 2010; Pleasants & Oberhauser 2013).
- ❖ Conversion of native prairie to development and cropland expansion into grassland, including lands formerly enrolled in the Conservation Reserve Program (CRP), have also been a factor in monarch habitat decline (NRCS & USFWS 2016).
- ❖ Restoring >1.3 billion stems of milkweed to the Midwestern US will require participation from all land management sectors, but most importantly from the agricultural sector where the majority of milkweed stems have been lost over the last two decades (Thogmartin et al. 2017a).



Ed Bogges



# How much milkweed is enough?

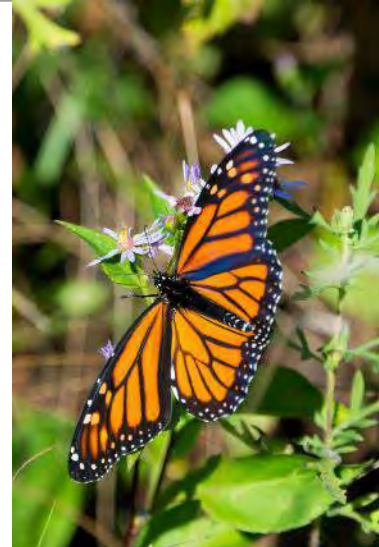
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- ❖ The following estimates of monarch milkweed habitat need have been posited for the Midwest and/or northern monarch breeding range:
  - ❖ **1.6 billion** additional stems east of 98 degrees W and north of 38 degrees N based on milkweeds lost and productivity in agricultural and non-agricultural areas (Pleasants 2017)
  - ❖ **≥ 1.3 billion** additional stems in the Midwest based on current milkweed numbers and the need to double them to double the average overwintering population (Thogmartin et al. 2017a)
  - ❖ **>1.8 billion** additional stems, based on density estimates of overwintering monarchs per hectare and the hypothesized number of milkweed stems needed per fall migrant monarch (Thogmartin et al. 2017b)

# Conservation Goals – North

❖ “The goal of the Mid-America Monarch Conservation Strategy for the North Core is to work with partners to support an average of 6 hectares of overwintering eastern monarch population through an additional 1.3 billion stems of milkweed in the North Core monarch conservation unit by 2038, with a baseline year of 2014 for counting additional conservation efforts.”  
*(Mid-America Monarch Conservation Strategy Board of Directors, September 2017)*

❖ Milkweed stems will also be added in the North Exterior monarch conservation unit through state and partner conservation programs that will further contribute to eastern monarch conservation.



Photos: Ed Boggess

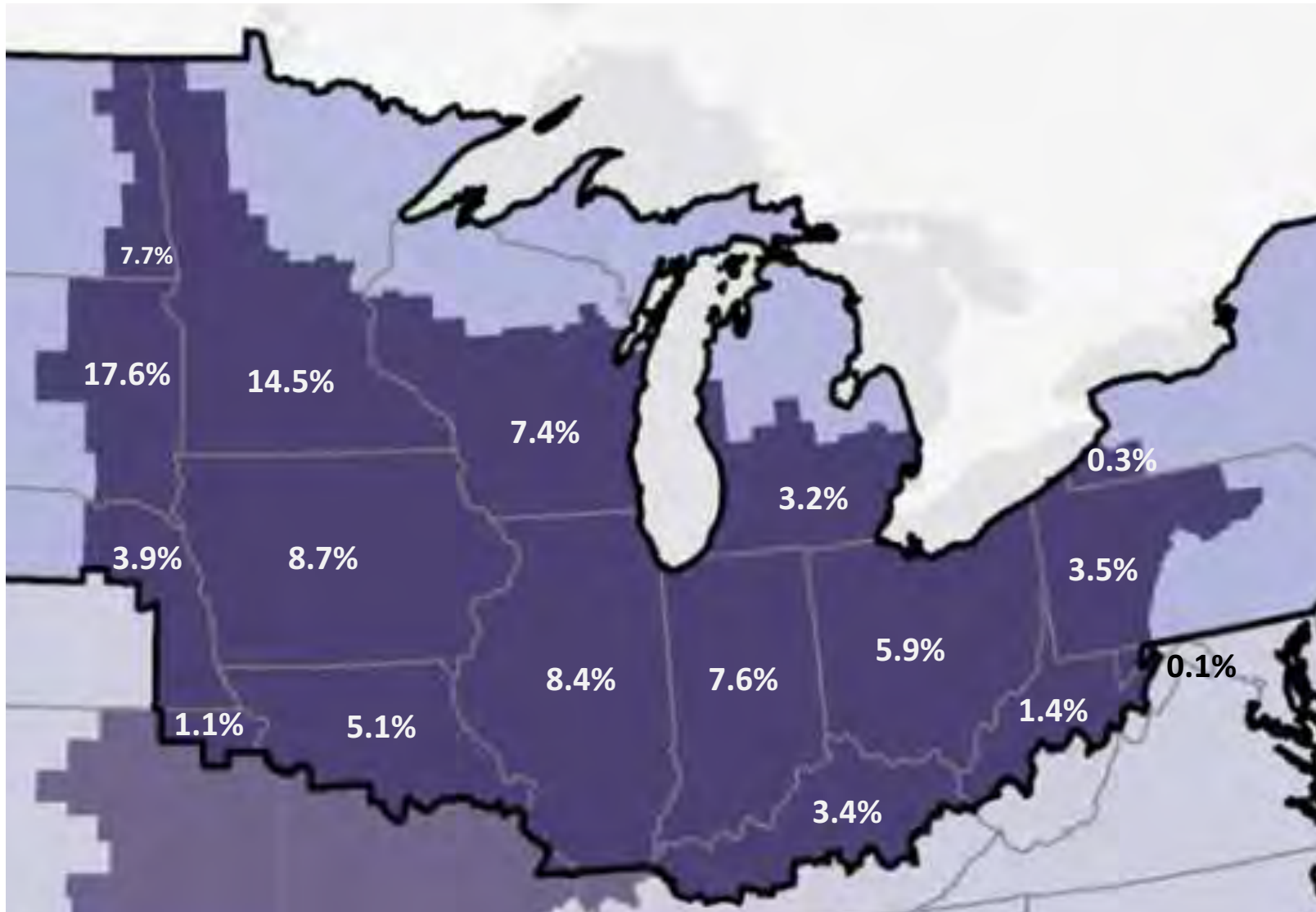
# Targeting Conservation Efforts

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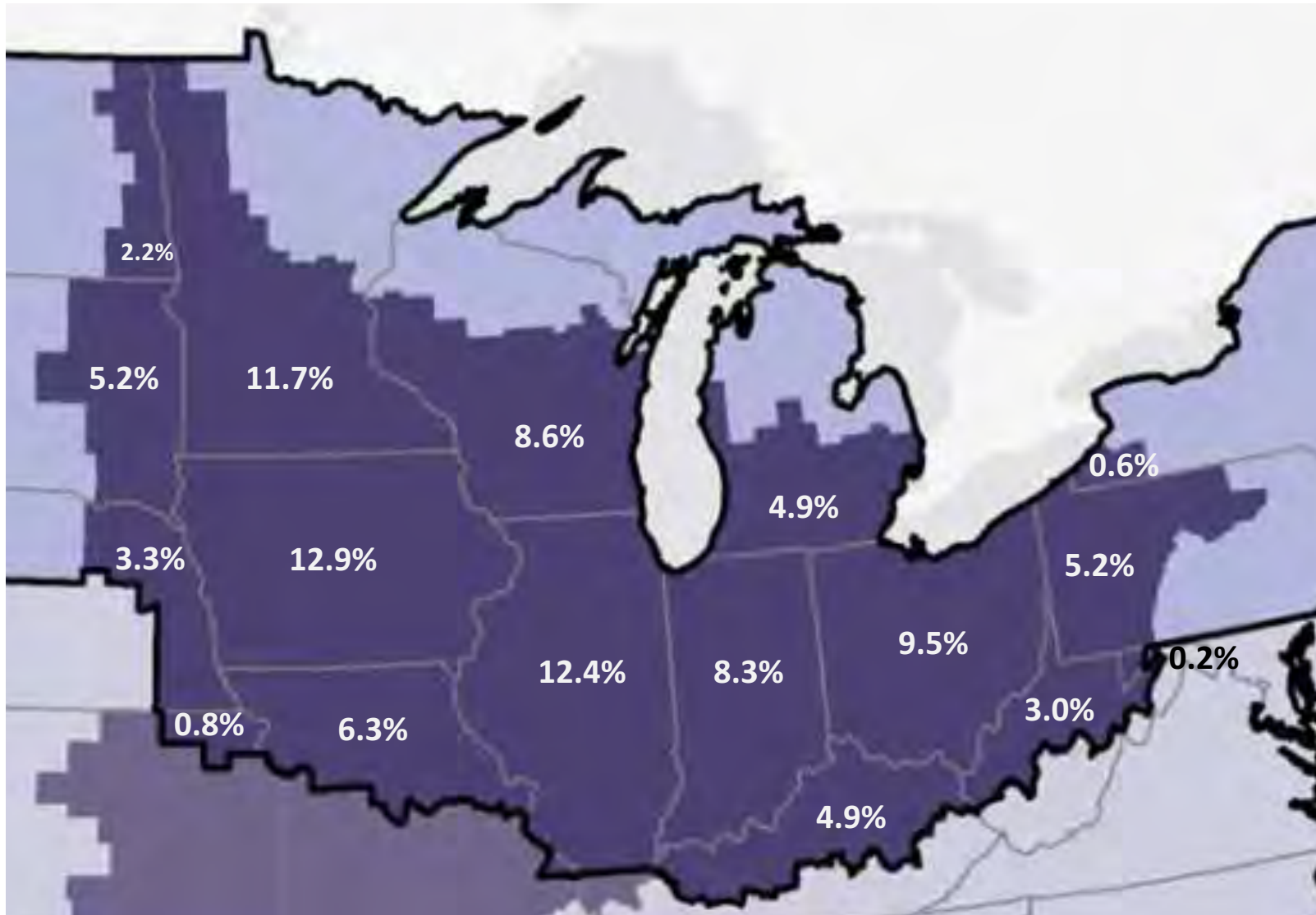
- ❖ Where can the overall milkweed stem goal be targeted most efficiently and effectively?
- ❖ States worked with USFWS and USGS to develop a planning tool for helping to inform decisions on allocating conservation efforts within the North Core.
- ❖ Grassland conservation in the North Exterior, while less targeted to monarchs, will continue to be important:
  - ❖ The “North-central” (17%), “Northeast” (15%) and “Northwest” (12%) portions of eastern monarch range as identified by Flockhart et al. (2017) roughly comprise the North Exterior and contributed an estimated 44% to overwintering, while the “Midwest” (roughly the North Core plus central plains) contributed an estimated 38%.



## Percent by State, based on North Core Allocation Tool



## Percent by State, based on North Core Land Area



# Targeting Conservation Efforts

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- ❖ Some states are using this tool to help inform discussions with partners within their states.
- ❖ States are at various stages of developing monarch/ pollinator conservation plans.
- ❖ Some states have already completed state-level monarch conservation plans; some are in process; some are working on a broader landscape scale and participating heavily in the regional monarch Strategy, rather than creating a stand-alone monarch plan.
- ❖ Each of the states is engaged in monarch conservation at local, state, and regional levels and is committed to the goal of enhancing and maintaining a viable eastern monarch population.



# Assumptions – South Core

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- ❖ The South-central states are major breeding areas for the first generation of monarchs produced in the spring and are important flyway and feeding areas for migratory monarchs in both spring and fall (Flockhart et al. 2013).
- ❖ Habitat for both reproduction and for migration are equally important within the Southern Great Plains.
- ❖ Improving habitat quality is important to increase nectaring plant species richness, abundance, and connectivity, as well as milkweed-dependent monarch reproduction habitat.
- ❖ Potential habitat limiting factors in the South Core include:
  - ❖ Limited nectar resources, potentially including milkweeds
  - ❖ Rangeland management practices that favor grasses over forbs
  - ❖ Negative impacts of drought to grassland and forb habitat
  - ❖ Woody plant expansion and invasive herbaceous species encroachment into native grasslands.

# Conservation Goals – South

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- ❖ Provide seasonal milkweed and reproduction habitat and grassland and nectaring habitat for breeding and migrating monarchs.
- ❖ The South Core currently lacks science-based information regarding direct relationships between milkweed stem or nectar resource densities and monarch demographic data to guide development of specific habitat conservation targets.
- ❖ Highest potential for gains in habitat in this region are on private grazing lands by implementing rangeland management practices that maximize plant species richness and habitat structure or convert from introduced monoculture grass systems to species-rich native grasslands. (NRCS & USFWS 2016).



Ed Boggess

# South Core Monarch Conservation Goals

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- ❖ South Core Habitat Technical Work Group is collaborating with a small group of partners to develop a non-spatially explicit monarch habitat model for the South Core geography, similar to the “habitat allocation tool” employed in the North Core.
- ❖ This tool will incorporate acreage and milkweed and nectar resource density data for multiple land cover classes across the South Core geography.
- ❖ As resource and capacity allows, there is interest in developing a spatially-explicit model that will incorporate spatially-explicit data to help identify major gaps in food resources and as a tool to help identify priority areas for conservation efforts.
- ❖ Used in conjunction with spatially-explicit information about land-use change, a South Core model may provide capability to estimate nectar and milkweed resource changes over time and would be an important first step towards defining quantified habitat restoration targets.

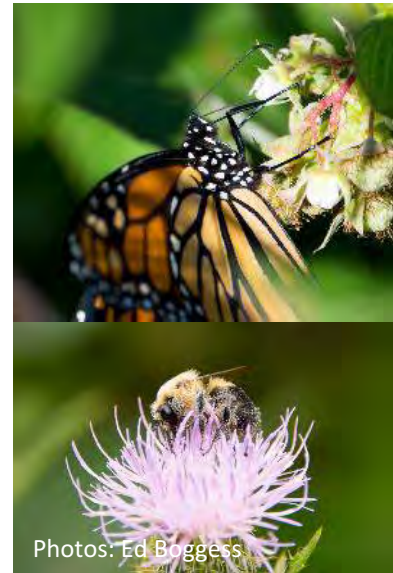


# Outreach and Education

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- ❖ Outreach and education to landowners and agency and NGO partners are important components of the Strategy.
- ❖ Due to their broad public recognition and support, monarchs have become a potent symbol for the plight of many pollinator species, many of which are in serious decline in the United States and worldwide.
- ❖ Monarchs present an opportunity to engage a wide variety of individuals and groups in a wildlife conservation issue at a magnitude that is unprecedented.
- ❖ The overarching message for monarch conservation in the United States is relatively simple:

*“Monarchs need habitat with both milkweeds and diverse flowers throughout times of the growing season when they are present across their breeding and migratory range; these habitats should be sufficiently connected to ensure reproductive and migratory success.”*



Photos: Ed Boggess

# Research and Monitoring; Adaptive Approach

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- ❖ Monitoring and research will be critical to evaluating the effectiveness of conservation efforts and guiding adaptive management of future efforts.

## The Strategy:

- ❖ Identifies key research priorities
- ❖ Describes available and planned biological monitoring approaches
- ❖ Presents an adaptive management approach to modify Strategy implementation as there is learning from implementation and monitoring
- ❖ Addresses information management and database approaches for tracking habitat conservation efforts and biological monitoring of monarchs



# Challenges and Opportunities

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- ❖ Integrating with other pollinator and landscape conservation efforts
- ❖ Regional sector engagement; emphasis on agriculture and private lands
- ❖ Better understanding milkweed, nectar plant, and monarch population uncertainties related to conservation targets
- ❖ Defining specific conservation objectives towards the goal; setting goals for South Core
- ❖ Identifying resources and programs to provide the magnitude of conservation delivery required
- ❖ Standardizing and/or coordinating approaches, especially monitoring, reporting, and data management
- ❖ Identifying and addressing the highest priority research and monitoring priorities
- ❖ Communicating effectively around the Strategy and overall monarch conservation needs with landowners, the public, and policy makers



Photos: Ed Boggess



# Next Steps



Photos: Ed Boggess



- ❖ March 2018: Initial public review draft of Strategy available; comments received through April 6.
- ❖ April/May 2018: Final public review draft.
- ❖ May 2018: Final draft of Strategy completed and submitted to Monarch Board of Directors and MAFWA Executive Committee.
- ❖ June 30, 2018: Strategy “finalized” as a deliverable of the NFWF grant.
- ❖ Summer/Fall 2018: Strategy will continue to be a “living document” and will be updated as more state plans and new information become available. Will contribute to the USFWS Monarch Conservation Database and PECE analysis to help inform June 2019 listing decision.
- ❖ July 2018: MAFWA NFWF monarch regional conservation strategy implementation grant begins.
- ❖ Fall 2018: MAFWA, in partnership with MJV, will host a partners Regional Monarch Conservation Conference focused on coordinated implementation, actions, and monitoring.



# Questions?

**MAFWA Website: : [www.mafwa.org](http://www.mafwa.org)**

**MAFWA Monarch Emails:**

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Bill Moritz, Board Chair: [moritzw@michigan.gov](mailto:moritzw@michigan.gov)



# Mid-America Monarch Conservation Strategy

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SEPTEMBER 2018 UPDATE  
AFWA ANNUAL MEETING  
TAMPA, FL





# Overview

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- ❖ Review of MAFWA Monarch Project context and grant funding timeline
- ❖ Summary of Mid-America Monarch Conservation Strategy document
  - Content
  - Major commitments and actions
  - Public input process
- ❖ Next Steps for MAFWA Monarch Project



# MAFWA Monarch Project – Grant Funding (NFWF)

## NFWF I

- Funding to support state-level monarch summits and plans, as well as initial regional monarch conservation workshops (joint with NWF, PF, AFWA – funding to NWF)
- 2015-2016

## NFWF II

- Funding to contract technical coordinator to develop Mid-America Strategy and provide travel support for meetings
- 2016-2018

## NFWF III

- Funding to contract implementation coordinator and support implementation of Mid-America Strategy through large partner conference and workshops for state technical staff
- 2018-2019



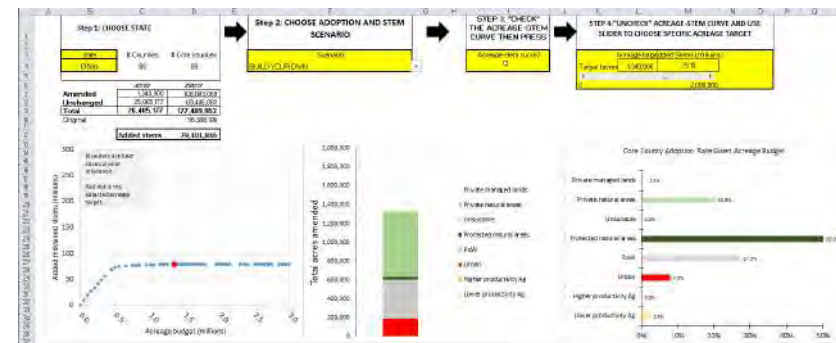
# MAFWA Monarch Project – Grant Funding (other)

## MAFWA

- Funding to support initial scoping workshop
- Oct 2015

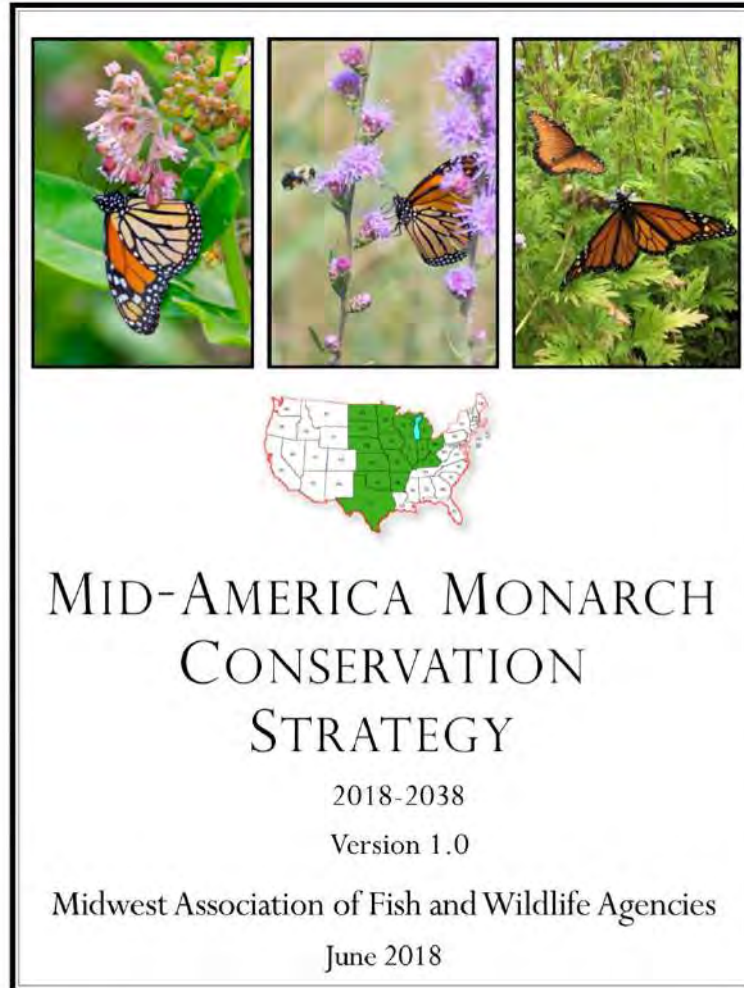
## USFWS

- Funding to support conservation liaison and states' meetings and monitoring
- 2016-2018





# Mid-America Monarch Conservation Strategy - Contents



# Mid-America Monarch Conservation Strategy - Contents

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- ❖ PART ONE – Introduction
- ❖ PART TWO – Species Population and Habitat Goals
- ❖ PART THREE – Habitat Creation and Management
- ❖ PART FOUR – Outreach and Education
- ❖ PART FIVE – Research, Monitoring, Adaptive Management, and Information Management
- ❖ PART SIX – Capacity, Funding, and Implementation of Regional Strategy
- ❖ PART SEVEN – State Monarch Conservation Summaries

# Mid-America Monarch Conservation Strategy - Contents

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## **The Mid-America Monarch Conservation Strategy:**

- Envisions implementation over a 20-year time period, 2018-2038;
- Includes regional habitat goals but relies on state wildlife agencies and conservation partners for specific implementation actions and timelines;
- Provides information on current monarch conservation efforts and strategies as well as potential areas for improvement;
- Ensures regional coordination of strategies, progress tracking, and adaptive management throughout the next 20 years.

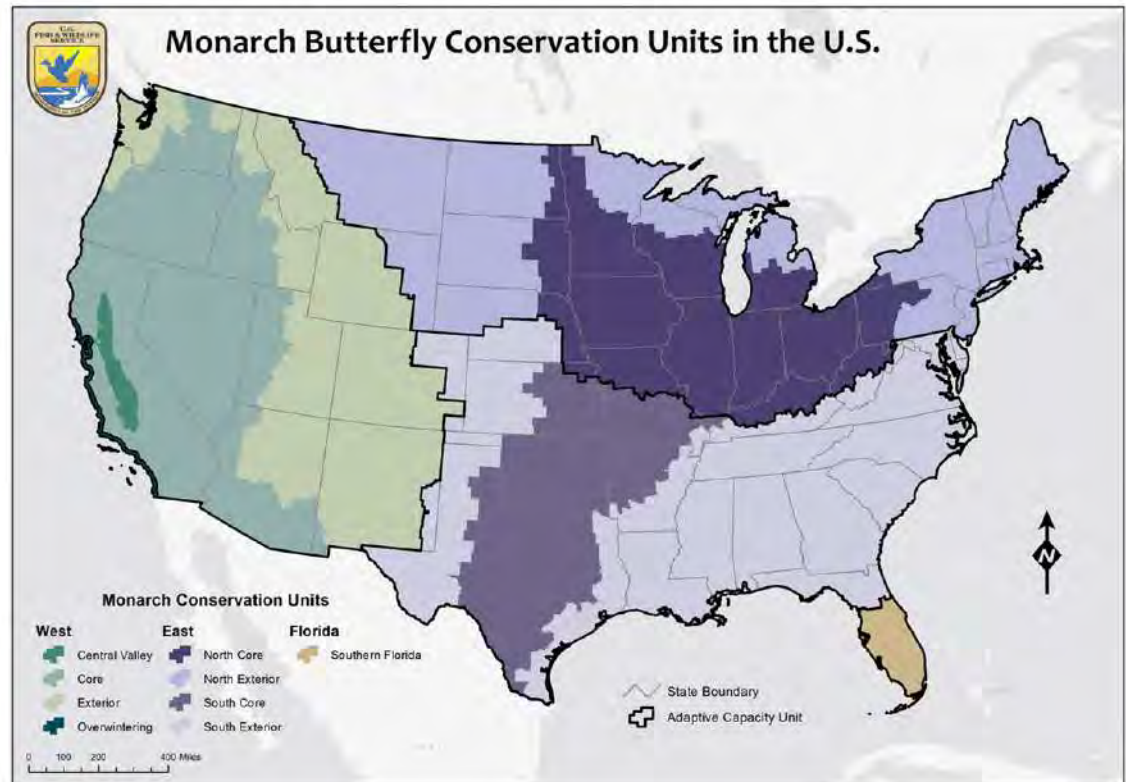




# Mid-America Strategy – Major Commitments and Actions

## Habitat Goals

- Regional goal of 1.3 billion additional milkweed stems in North Core conservation unit by 2038
- South Core conservation unit goals TBD in 2019
- Most states in North Core have adopted state-level milkweed stem goals
- Work with partners to develop acreage targets by sector that will be needed to meet population and habitat goals
- Work to incorporate monarch habitat needs into broader landscape conservation programs and actions

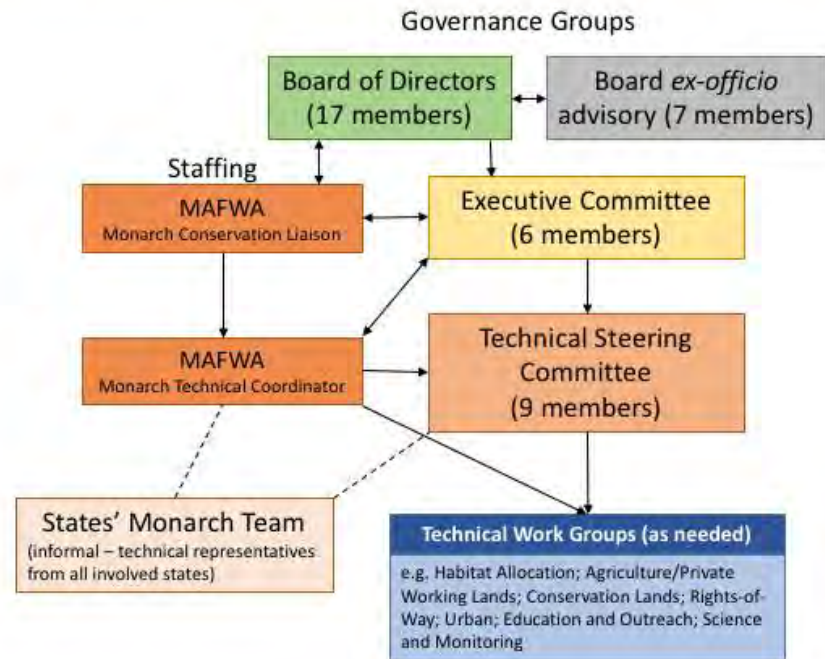


# Mid-America Strategy – Major Commitments and Actions

## Governance

- MAFWA Mid-America Monarch governance structure in place through 2038, including Board, Executive Committee, and Technical Steering Committee
- Further staffing beyond 2019 dependent on additional funding

### Mid-America Monarch Conservation Strategy - Governance Model



# Mid-America Strategy – Major Commitments and Actions

## Adaptive Management

- Mid-America Monarch governance structure committed to adaptive management of strategy goals and actions
- Technical Steering Committee has primary responsibility for reviewing inputs into adaptive management strategy and suggesting updates

Action	Initiation Year	Frequency	Completion	Group Responsible
Review species status data and new pertinent scientific literature	2019	Annually	n/a	Mid-America Monarch Technical Steering Committee
Review performance of participating partners, including progress towards habitat goals as well as suggested actions/improvements by sector	2019	Annually	n/a	Mid-America Monarch Technical Steering Committee
Review and propose Strategy adaptations based on new information and performance reports	2019	Review information annually; produce report every five years beginning in 2023	n/a	Mid-America Monarch Technical Steering Committee



# Mid-America Strategy – Public Input Process



## New plan aims to reverse monarch butterfly decline

Posted on [May 11, 2018](#) by [admin](#)

The Midwest Association of Fish and Wildlife Agencies (MAFWA) welcomes public comments through May 31 on a draft conservation plan that provides a blueprint for reversing the decline of the eastern monarch butterfly population.

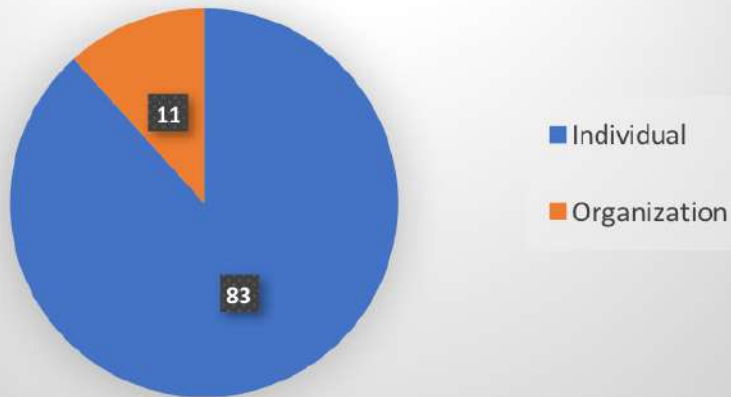
The draft plan, called the [Mid-America Monarch Conservation Strategy](#), builds on existing efforts of state, federal, and local agencies and private organizations and individuals.



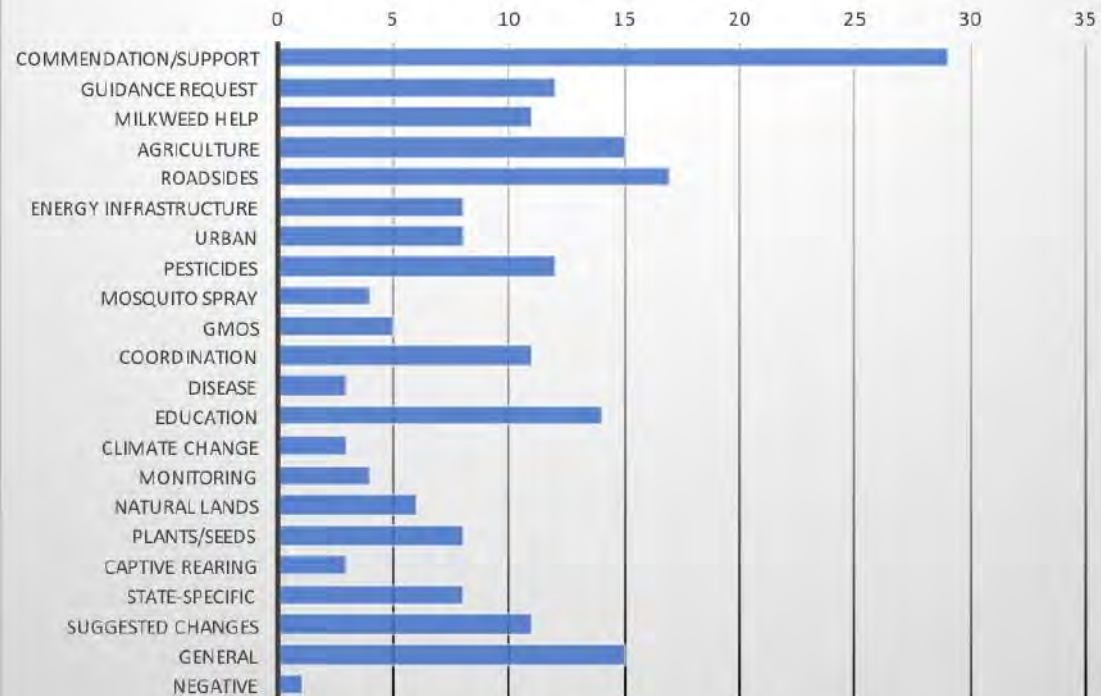
- Three formal rounds of input, starting with only members of the governance structure and ending with a full public review in May
- Several state agencies helped spread the word through press releases
- 94 total unique comments received during public input period
- Several comments and suggestions resulted in changes to Strategy document contents

# Mid-America Strategy – Public Input Process

Type of Commenter



Comment Themes



# Monarch ESA Listing Decision: Upcoming Actions

- **Species Status Assessment:**

- Currently out for peer review

- **Monarch Conservation Database:**

- Effort and plan entries encouraged by September 10<sup>th</sup> for initial data pull and input into Policy for the Evaluation of Conservation Efforts (PECE)

- **Listing Decision:**

- Initial listing decision scheduled for June 2019



## Species Status Assessment: *Monarch Butterfly*



Monarch butterfly on on purple coneflower by Jim Hudgins/USFWS.



# MAFWA Monarch Project – Next Steps

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- Strategy document Version 1.0 now available
- Partner conference (with MJV) in November 2018 to refine strategies, actions, and next steps
- Updates to Strategy document as needed in response to Species Status Assessment, results of the November conference, and initial listing decision in June 2019
- Workshops with state agency technical staff to assist with Strategy implementation, habitat progress tracking, and further goal refinement for South Core states



Photos: Ed Boggess

# Questions?

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**MAFWA Monarch Emails:**

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Bill Moritz, Board Chair: [moritzw@michigan.gov](mailto:moritzw@michigan.gov)