

# Managing land for pollinators

**“Conservation is a state of  
harmony between men and  
land”**

**~ Aldo Leopold**

Karner Blue Recovery Program  
Monarch Recovery

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# Presentation outline

- Developing management techniques - what we learned
- Karner Blue Recovery Program
- Tools – Modelling
  - Karner blue butterflies
  - Monarchs



Top: Bauer Brockway Barrens State Natural Area  
Bottom: Crex Meadows Wildlife Area, Photos by Anna Hess



# Karner Blue Recovery: species recovery

- Federally listed in 1992
- Habitat Conservation Plan Partnership
  - Formation of Habitat Conservation Partnership 1993-1998
  - Single species focus
  - Goal: avoid, minimize, mitigate
- USFWS Karner Recovery Plan - 1999
  - Applied to entire range
  - Established recovery goals for each state
  - Wisconsin program began in 2006

“When one tugs at a single thing in nature, he finds it attached to the rest of the world.” ~ John Muir

**Species specific recovery:  
how we started**



- Black River State Forest, Karner blue female, Photo by Anna Hess
- Sandhill Wildlife Area, wild blue lupine, Photo by Robert Hess
- Greenwood Wildlife Area, Brush mowing, Photo by Anna Hess

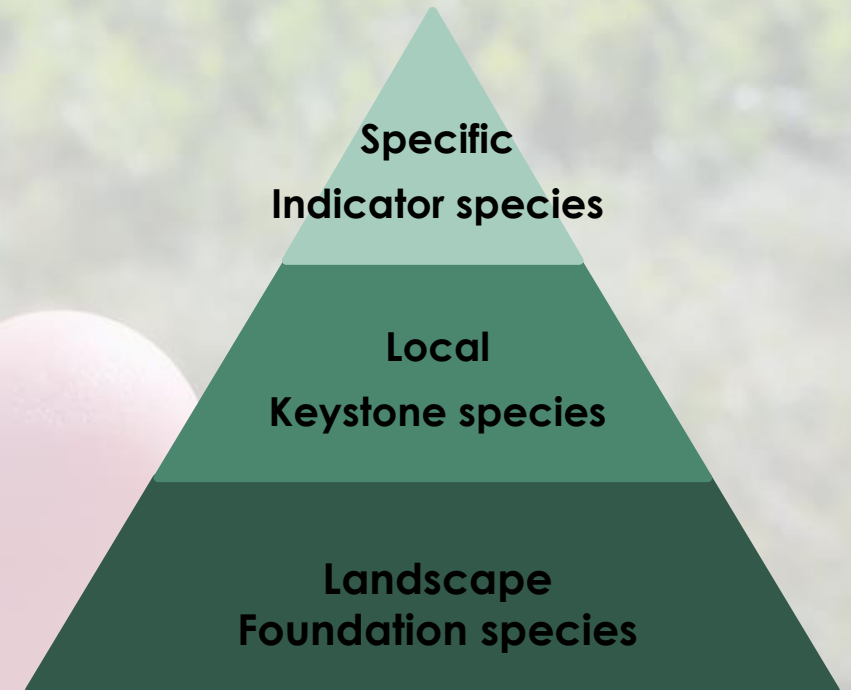
# How does Landscape scale management work?

“Algo is algo. Peor es mascar laucha” ~Don Luis Pincheira

Meaning: “Making a little progress is far better than doing nothing at all”

- ▶ How does the broad habitat work?
  - ▶ Shifting mosaics, multiple large (Core) habitat areas with connections to smaller habitat sites (Communication)
- ▶ Timelines: A long term process
  - ▶ Disclaimer: Habitat restoration for pollinators is not something that you do once and then walk away from it
  - ▶ Monitor pollinator levels and fluctuations
  - ▶ **Maintenance** is key to stable populations
    - ▶ Select management tools that will work in the area
    - ▶ Track natural succession

Land management  
dynamics: what we learned





# Karner Blue Recovery: developing community recovery

“When one tugs at a single thing in nature, he finds it attached to the rest of the world.”

~ John Muir

## Community recovery: multi-species approach

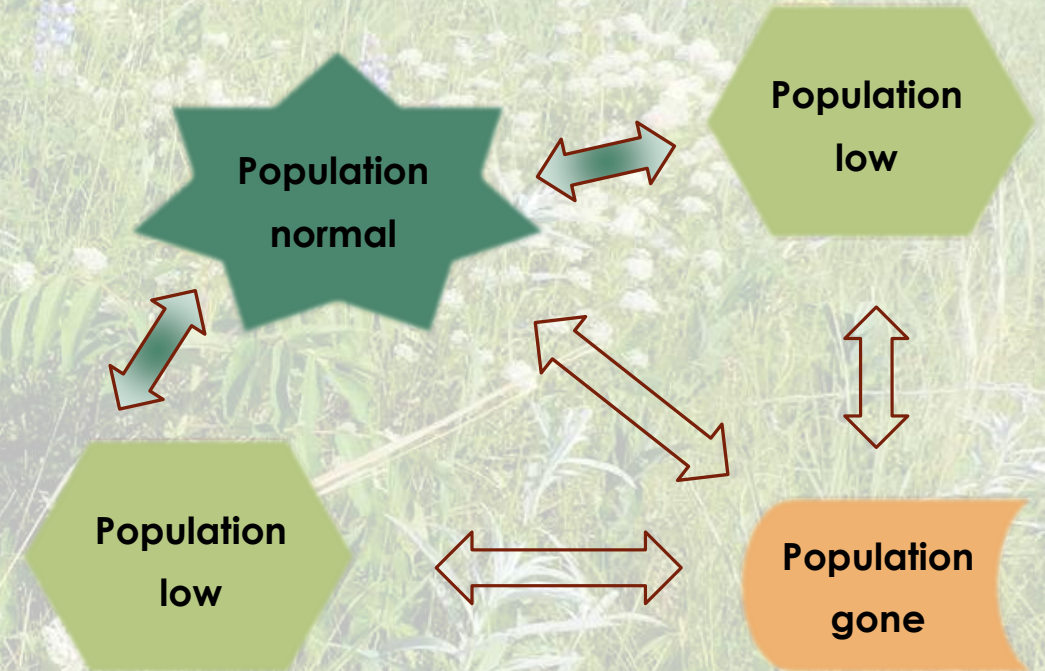
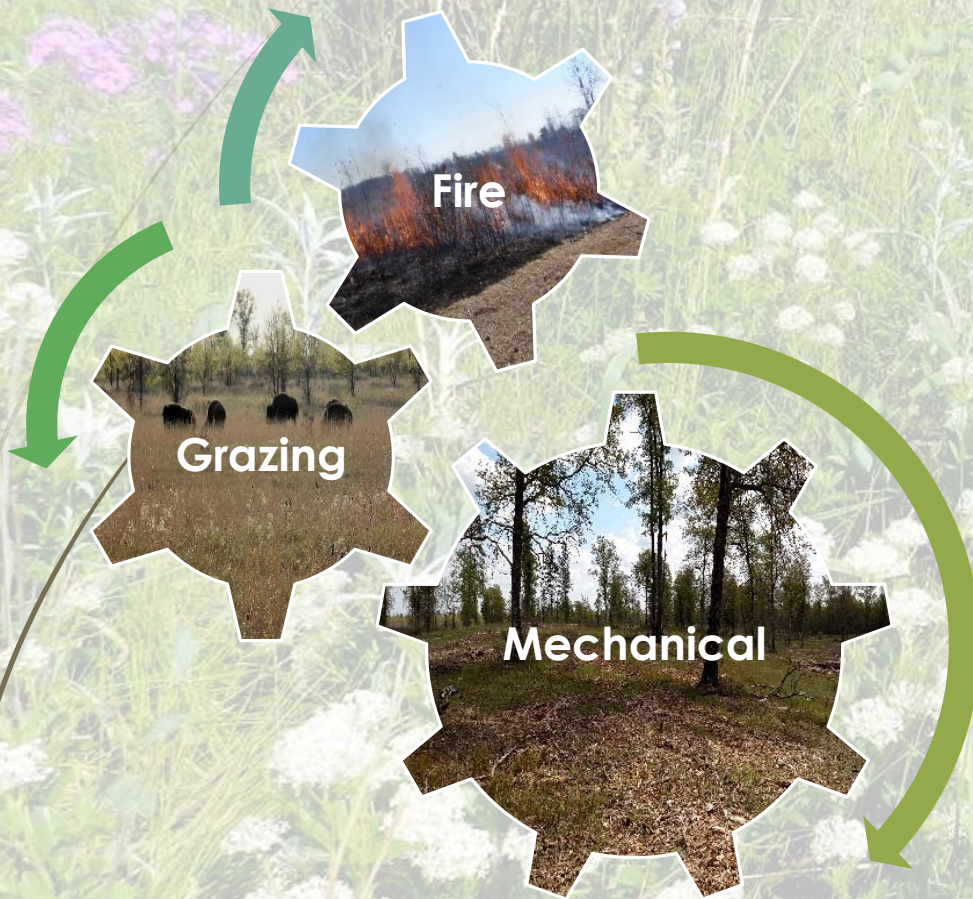
- Evolution of the recovery program
  - Monitoring/restoration/adaptation
  - Citizen participation
- Insights gained
  - Karner/other wildlife restoration benefits – similar
  - Shift to wholistic management → Multiple species management
  - Multi-state grants (marketability)
  - Cross functional applications (Cooperation)
  - Citizen scientists and habitat restorations
  - Considerations for inconsistent temp/precip



- Sandhill Wildlife Area, Leps, Photo by Anna Hess
- Crex Meadows Wildlife Area, Wildflowers, Photo by Anna Hess
- Sandhill Wildlife Area, Bison, Photo by Robert Hess



## Understanding your tools and avoiding panic



- St Croix State Park, Rx fire, Photo by Rick Dunkley
- Sandhill Wildlife Area, Bison grazing, Photo by Robert Hess
- St Croix State Park, Brush mowing, Photo by Anna Hess



# The timeless question: should we panic yet?

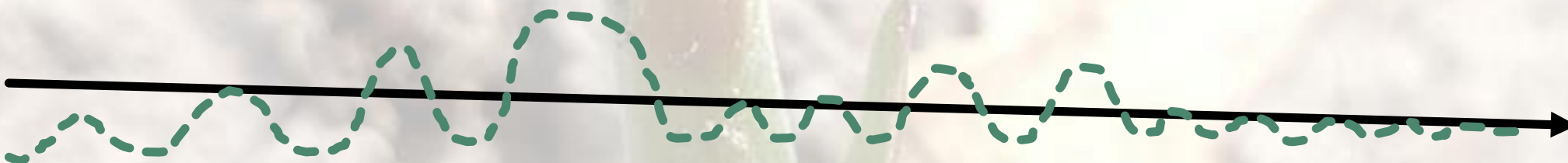
- Short term population cycles

- Populations will go up and down
- We don't know all the reasons, but they go up and down



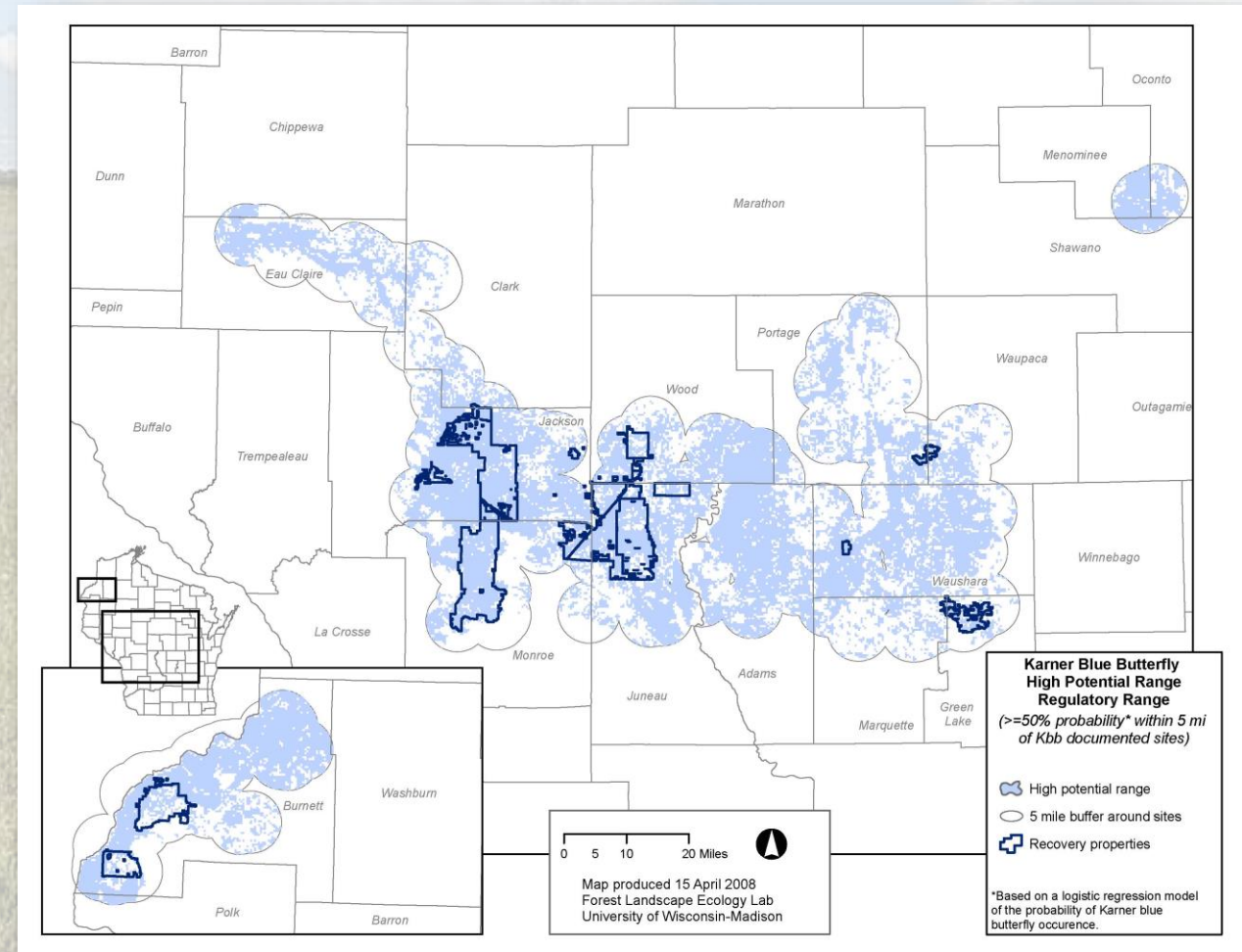
- Long term population trends

- Long-term population declines are alarming and indicate significant issues



# Karner Habitat Modelling

- Emergence Model, 2008
  - Predicts emergence and peak calendar dates of Karner blue flights
- HPR, 1998
  - Predicts occurrence of lupine and predicts habitat potential
  - Two Parts
    - High potential range – based on suitable habitat characteristics
  - Karner blue locations
    - Buffer indicates the outside boundary, always within 5 miles of an elemental occurrence

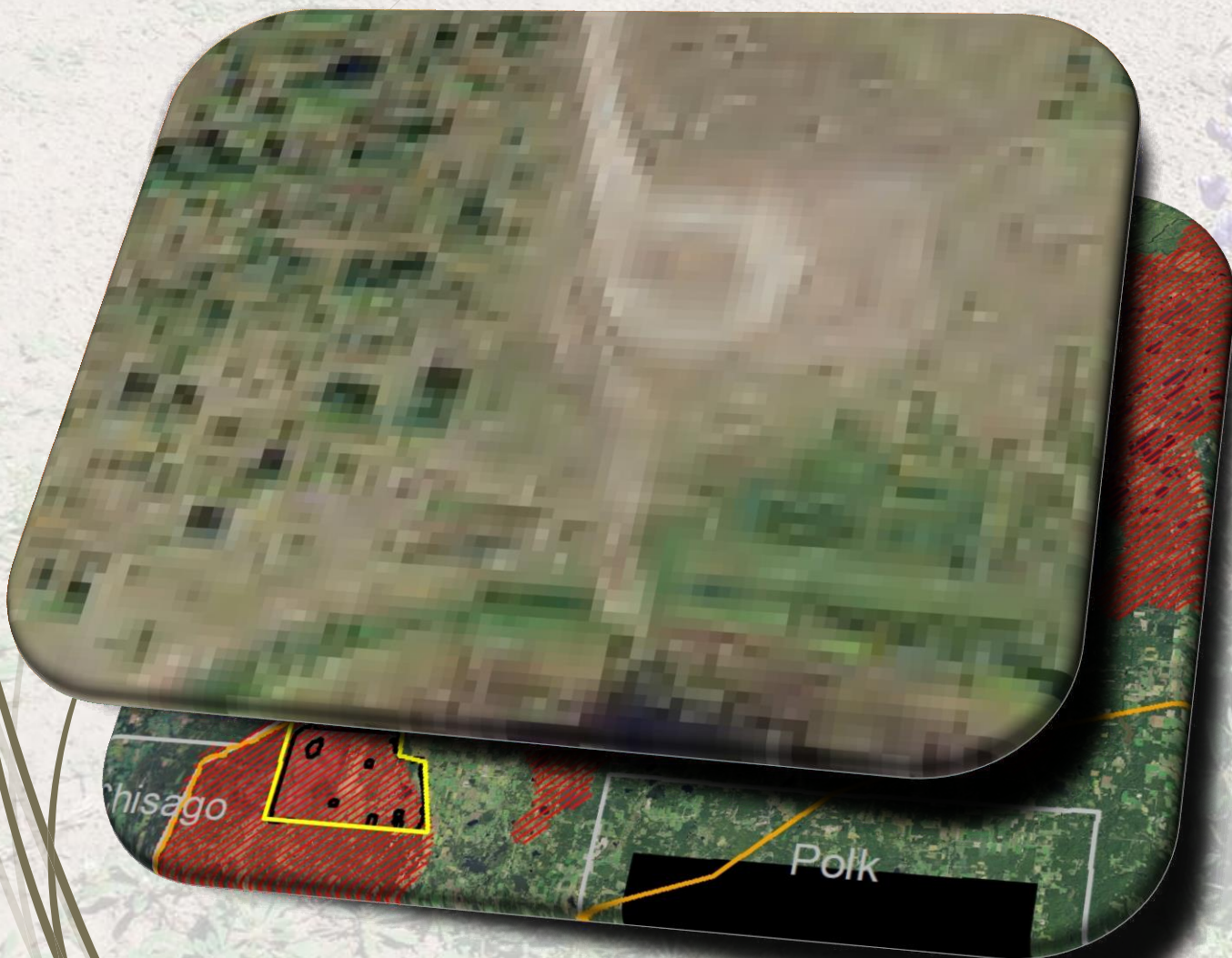




# Karner Habitat Modelling and creative tinkering

“The power of imagination makes us infinite”

~ John Muir



- Working across the landscape: Development brought about by a need to identify sites more easily
- Required inexpensive imports (we had no money, this was important)
- Identify system values
- Develop layers that highlight the gradient of characteristics



# Monarch Recovery

“Oh no!”  
~ Everyone

- Arguably the most recognized butterfly in North America, traveling 3000 miles during migration, over 4 life cycles
- **Numbers have decreased ~90% in two decades**
  - Loss of habitat and host plant – milkweed (*Asclepias*)
  - Other contributions include extreme weather events
- Large-scale migratory invertebrate

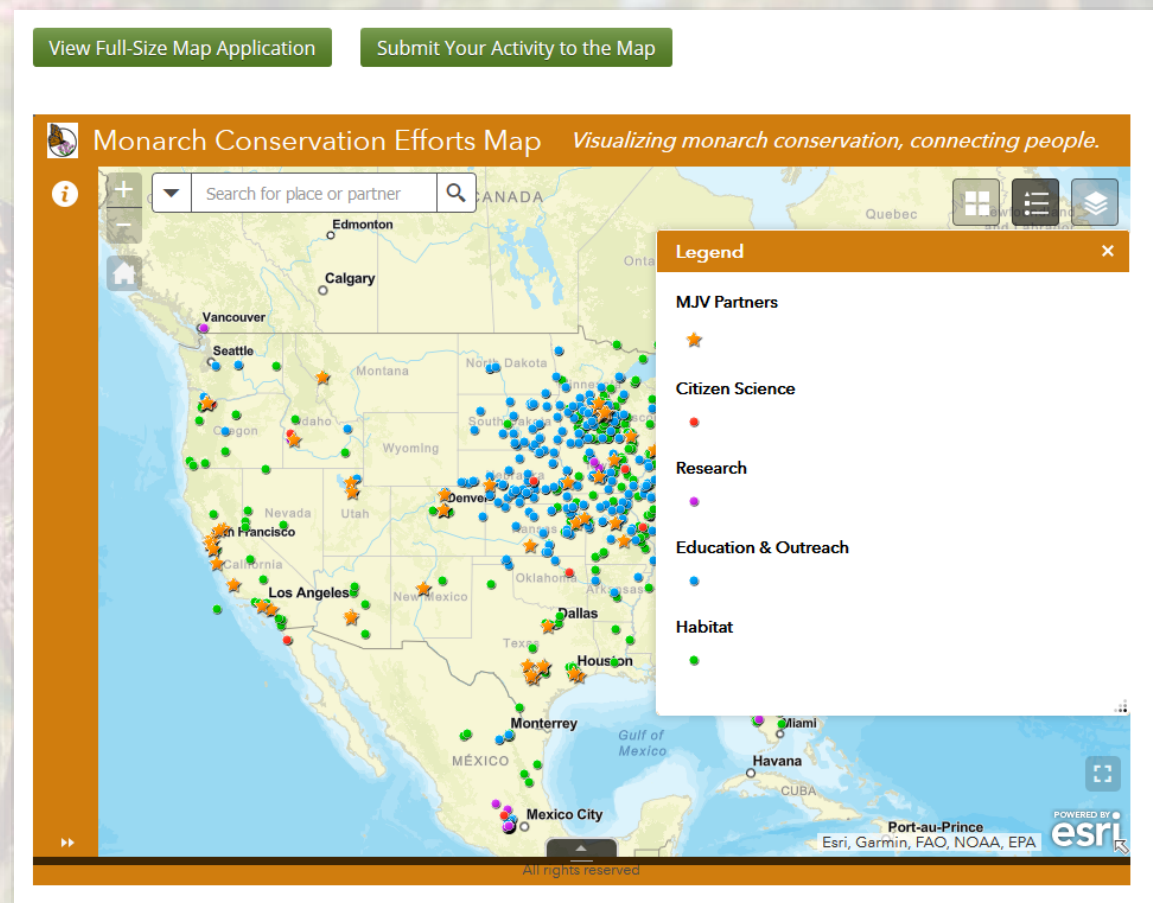


Central Wisconsin, monarch migration, Video by Anna Hess



# Monarch Recovery – collaborative efforts and modelling

- Programs and efforts
  - Monarch Joint Venture
  - Monarch Highway Effort
  - Monarch Conservation Strategy
  - MNDNR and MNDOT
- Modelling
  - Requires different sampling and modelling techniques
  - Monarch Conservation Efforts Map:  
<https://monarchjointventure.org/our-work/monarch-conservation-efforts-map>
  - Habitat allocation tool designed by UMN and USFWS
  - Monarch Conservation Database – USFWS





# Karner blue and Monarch Recovery

- Public Engagement at its best
  - Through education efforts, public engagement and citizen science has contributed huge amounts of enhanced habitat for Karner blue and monarch habitat
  - Increased Karner blue awareness and micro-habitat development
  - Promoted planting of Asclepias across the range
  - Monarch numbers have measurably increased in the summer generation (2018) with increased 'feeding stations' along migratory routes



## Lessons learned? Questions? Fun field stories?

“Like winds and sunsets, wild things were taken for granted until progress began to do away with them. Now we face the question whether a still higher ‘standard of living’ is worth its cost in things natural, wild and free.”

~ **Aldo Leopold, A Sand County Almanac**

“I only went out for a walk and finally concluded to stay out till sundown, for going out, I found, was really going in.”

~ **John Muir**