Managing land for pollinators

Karner Blue Recovery Program
Monarch Recovery

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“Conservation is a state of harmony between men and land”
~ Aldo Leopold
Presentation outline

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

- 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

“Algo is algo. Peor es mascar laucha” ~Don Luis Pincheira
Meaning: “Making a little progress is far better than doing nothing at all”
Karner Blue Recovery: developing community recovery

- 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

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

Crex Meadows Wildlife Area, 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

- 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

“The power of imagination makes us infinite”
~ John Muir

Sandhill Wildlife Area, Lupine in bison wallow, Photo by Anna Hess
Monarch Recovery

- 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

"Oh no!" ~ Everyone
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

Hartman Creek State Park, Karner blue training session, Photo by Anna Hess
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