

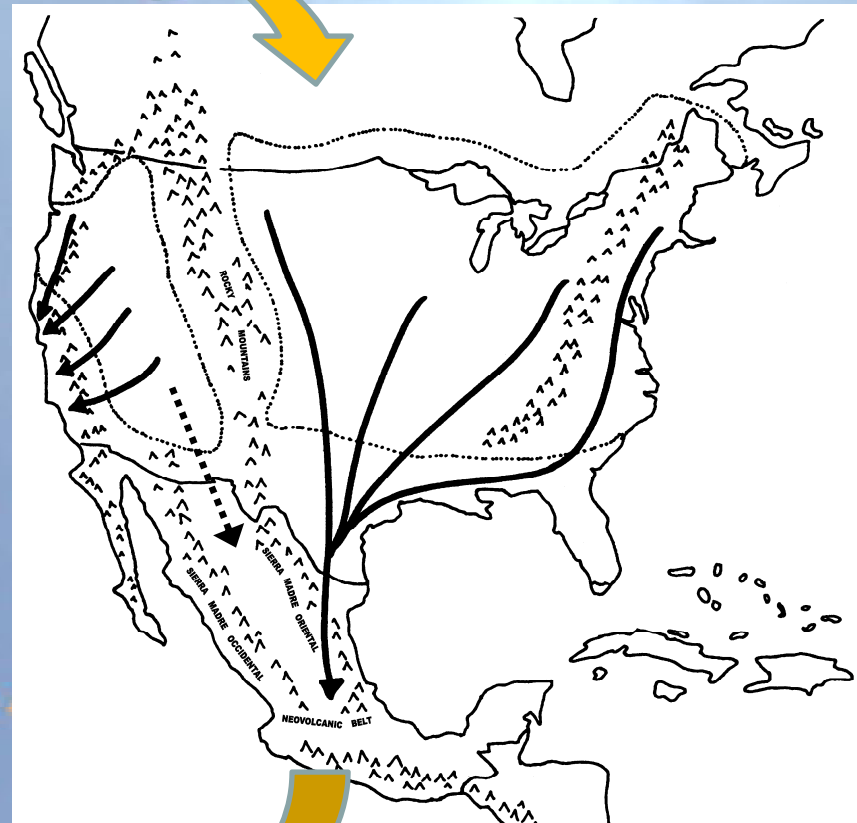
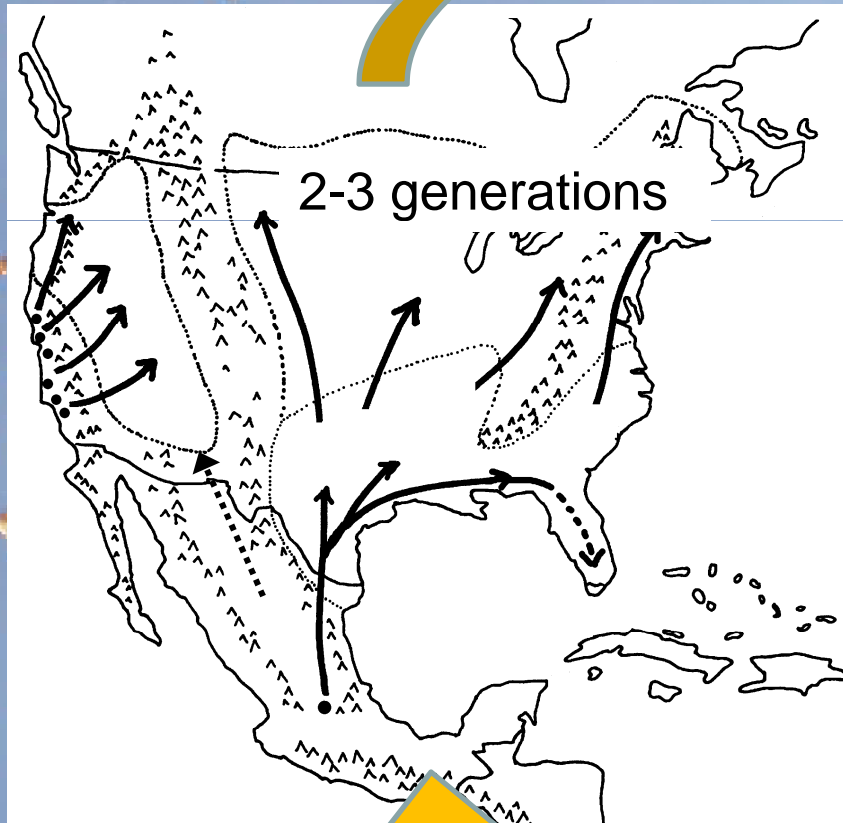
A large number of monarch butterflies are seen flying in a clear blue sky. The butterflies are scattered across the frame, with some appearing larger and more detailed than others. The overall scene is bright and clear, suggesting a sunny day.

# Building Capacity and Expanding Participation with Monarchs

Karen Oberhauser, Leslie Ries, Sonia Altizer,  
James Battin, Zipkin, Elizabeth Howard, Andy  
Davis, Dennis Frey, Nate Nibbelink, Becky Bartel

# Annual Cycle

(breeding, migrating S, overwintering, migrating N)

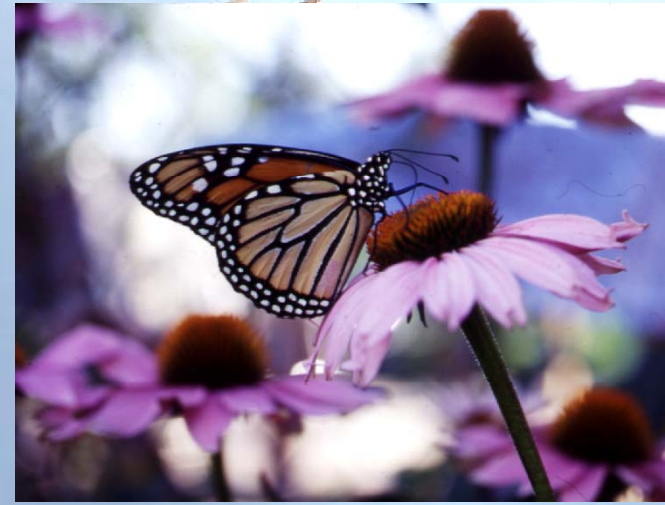


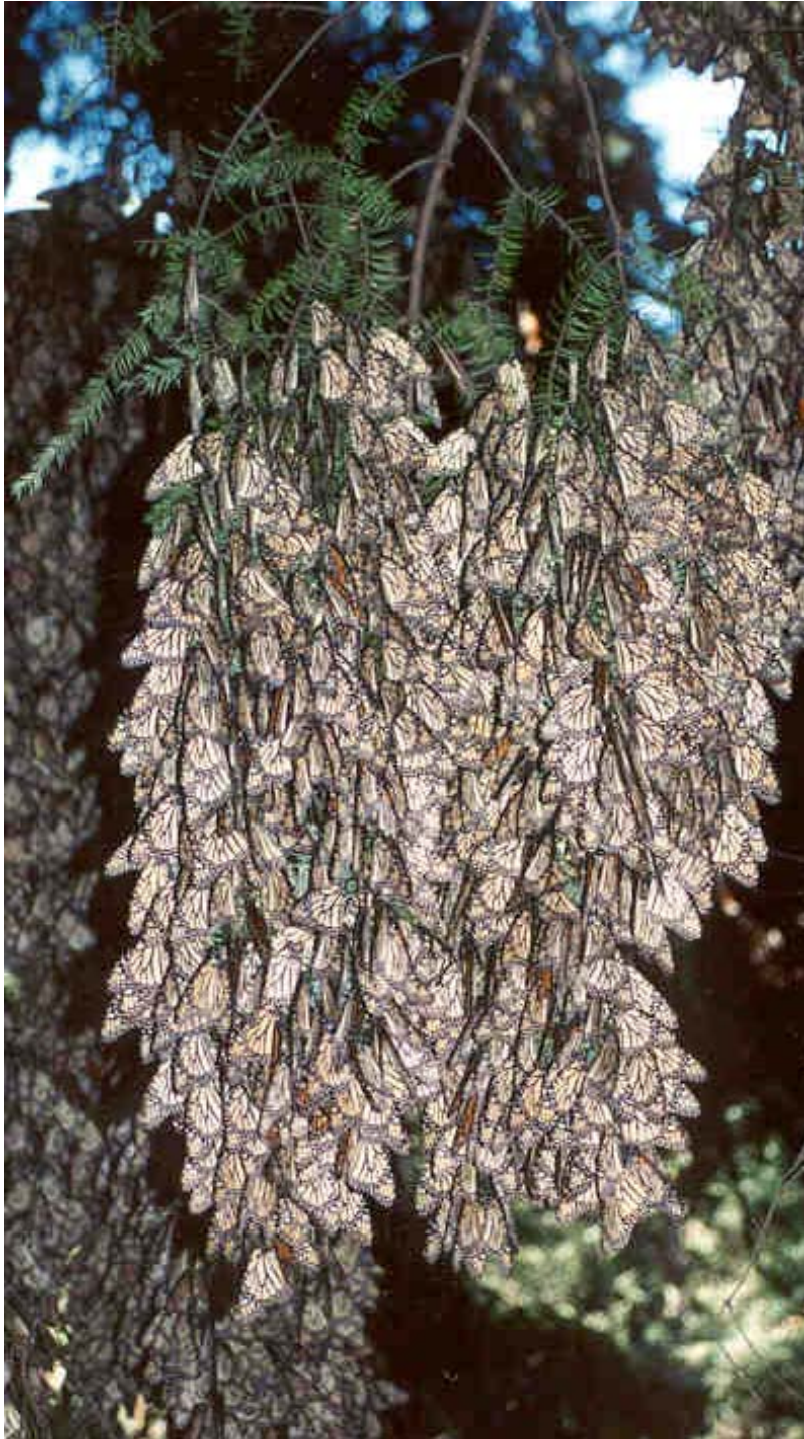




## North shore of Lake Ontario: Journey North







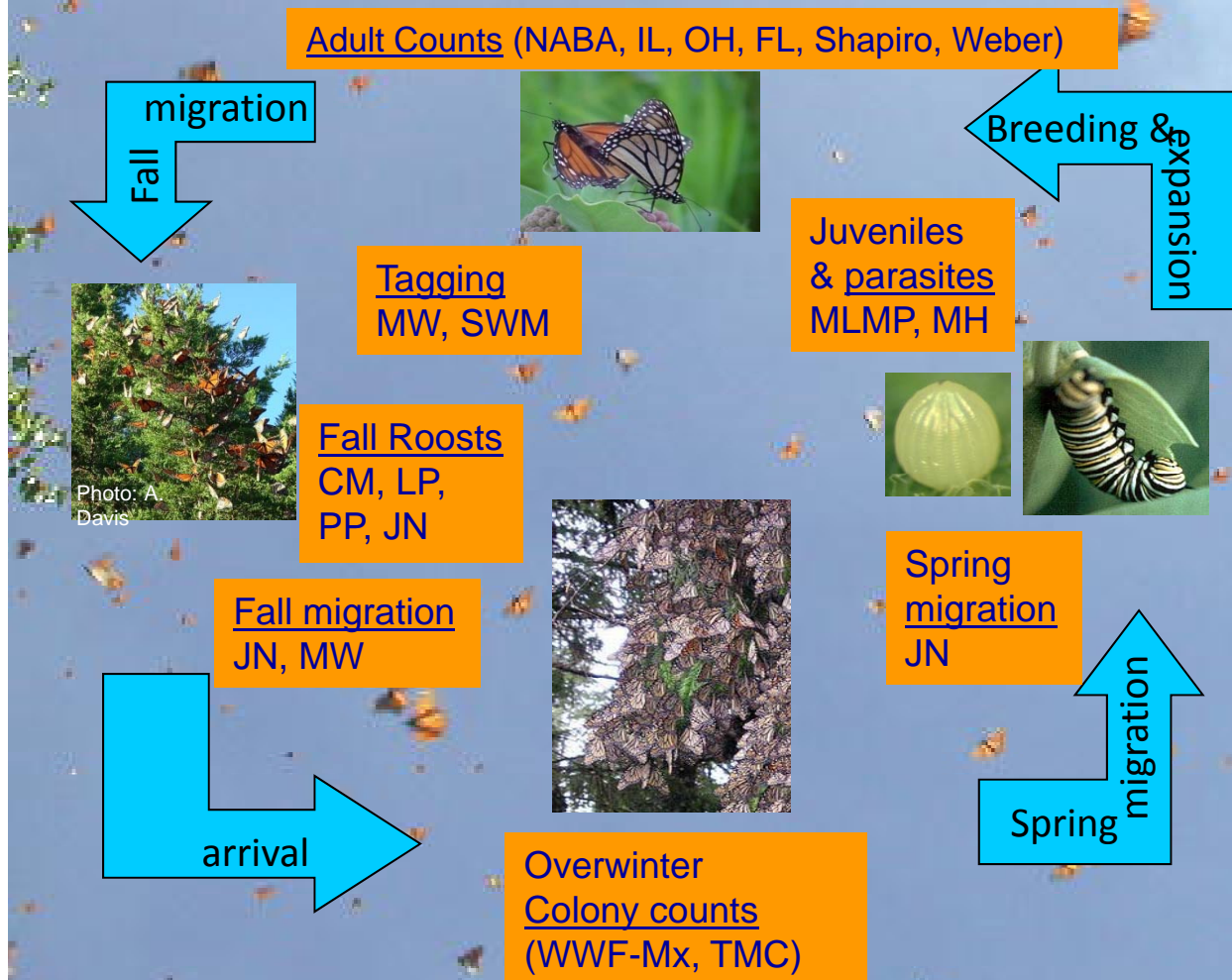


# Natural Enemies





# Monarchs are intensively monitored



## MONITORING PROGRAMS

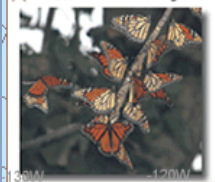
- NABA: North American Butterfly Association count program
- IL: Illinois monitoring network
- OH: Ohio monitoring network
- Shapiro: No. CA monitoring program
- Weber: MN monitoring site
- MLMP: Monarch Larvae Monitoring Project
- MH: Monarch Health
- JN: Journey North
- WWF-Mx: World Wildlife Fund in Mexico
- TMC: Thanksgiving Monarch Counts
- MW: MonarchWatch
- SWM: Southwest Monarchs
- CM: Cape May roost monitoring
- LP: Long Point roost monitoring
- PP: Peninsula Point roost monitoring

August 30

**Monarch Butterfly  
Overnight Roosts**

- Fall 2002-2008
- Before Aug. 30
  - Aug. 30 - Sep. 5
  - Sep. 6 - Sep. 12
  - Sep. 13 - Sep. 19
  - Sep. 20 - Sep. 26
  - Sep. 27 - Oct. 3
  - Oct. 4 - Oct. 10
  - Oct. 11 - Oct. 17
  - Oct. 18 - Oct. 24
  - After Oct. 24

★ Mexican overwintering sites



Winter Sightings

**Monarch Butterfly  
(FIRST adult sighted)**

- Winter (Jan-Feb)
- Mar 1 - Mar 14
- Mar 15 - Mar 28
- Mar 29 - Apr 11
- Apr 12 - Apr 25
- Apr 26 - May 9
- May 10 - May 23
- May 24 - Jun 6
- Jun 7 - Jun 20
- After Jun 20



# Protozoan parasite (*Ophryocystis elektroscirrha*)

- Reduced survival to adulthood
- Shorter adult lifespan
- Smaller body size
- Slower flight and less stamina

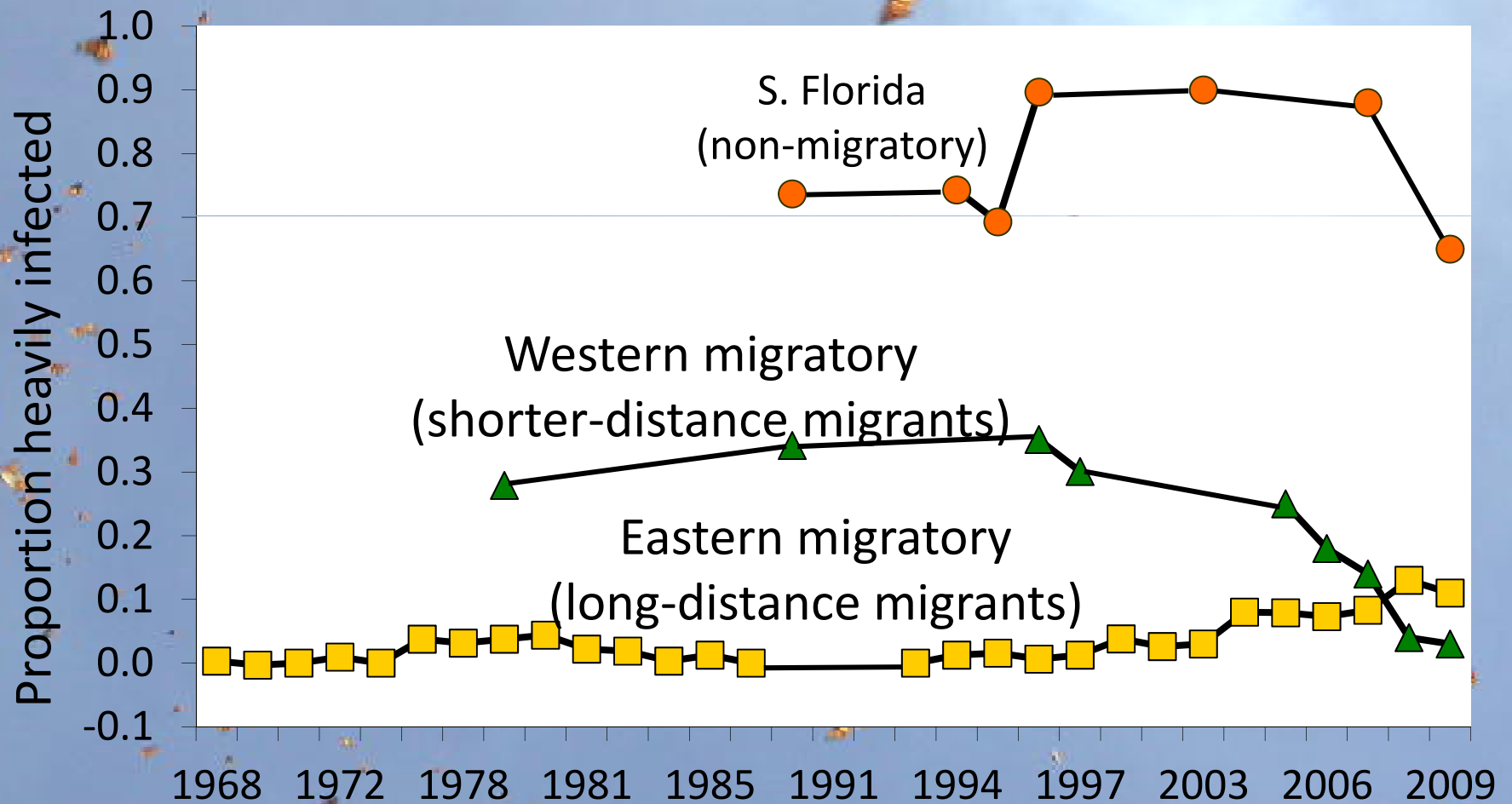


# Monarch Health

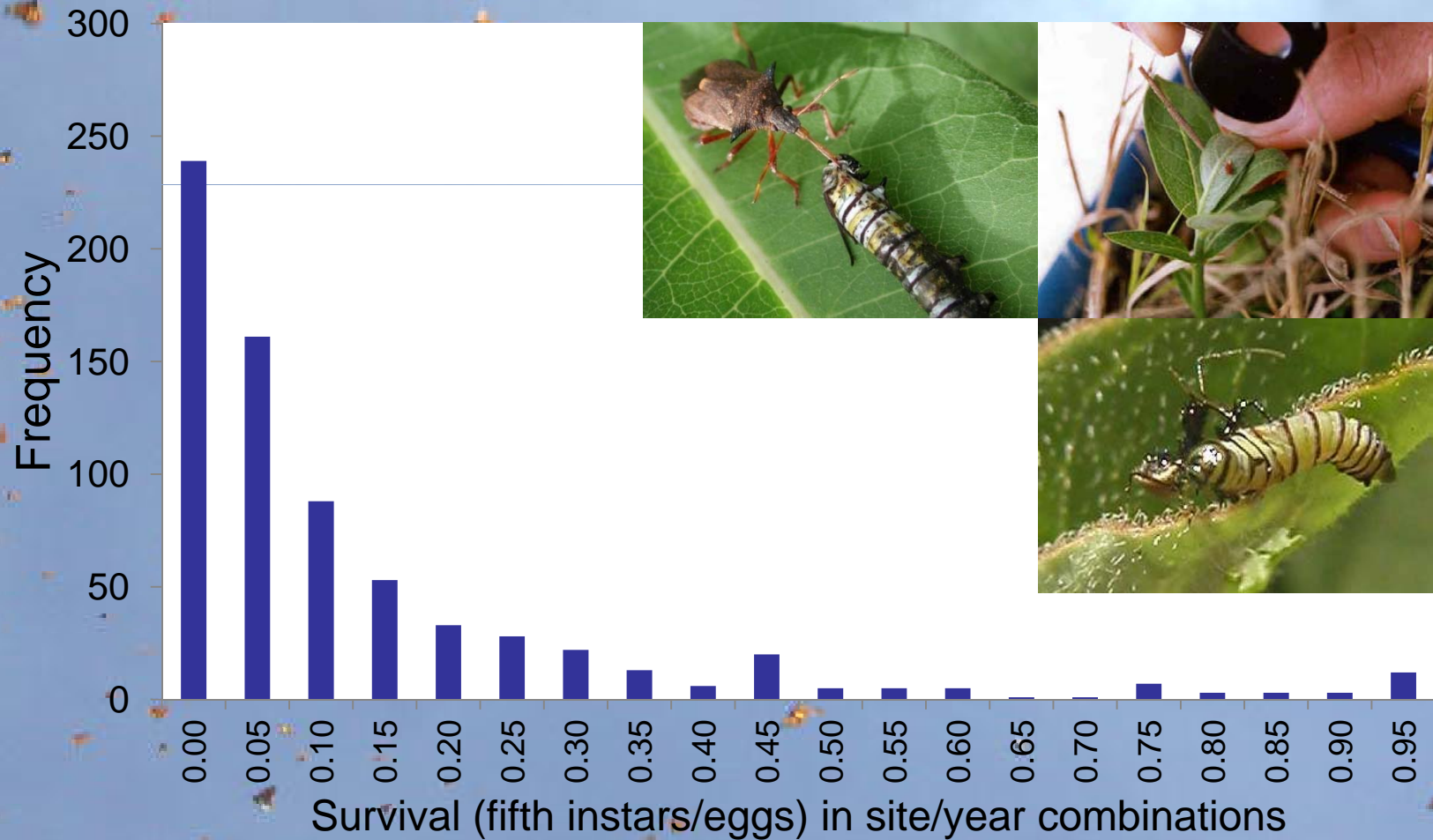
- Field data
  - Many historical collections during all phases of annual cycle
  - Intensive sampling of wild fall migrants (2006-2009)
  - Overwintering migrants (2007-2009)
- Citizen Science (Monarch Health) data (2006-2010): 23 states, 2 Canadian provinces



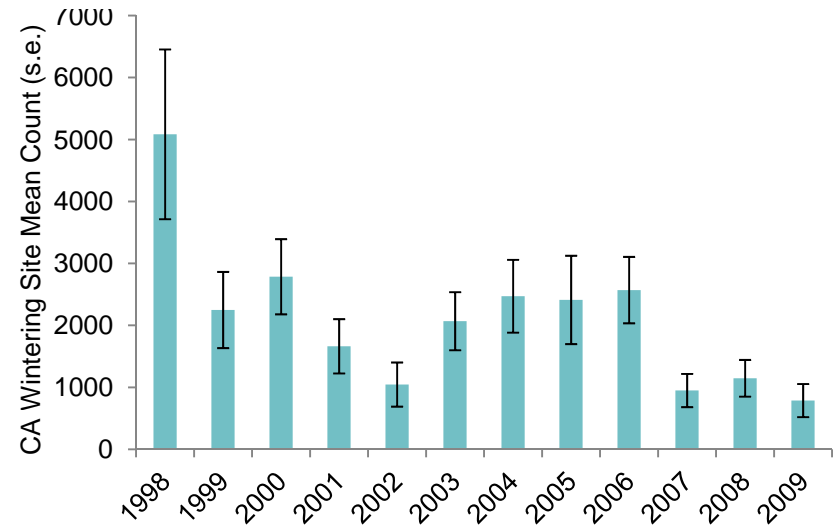
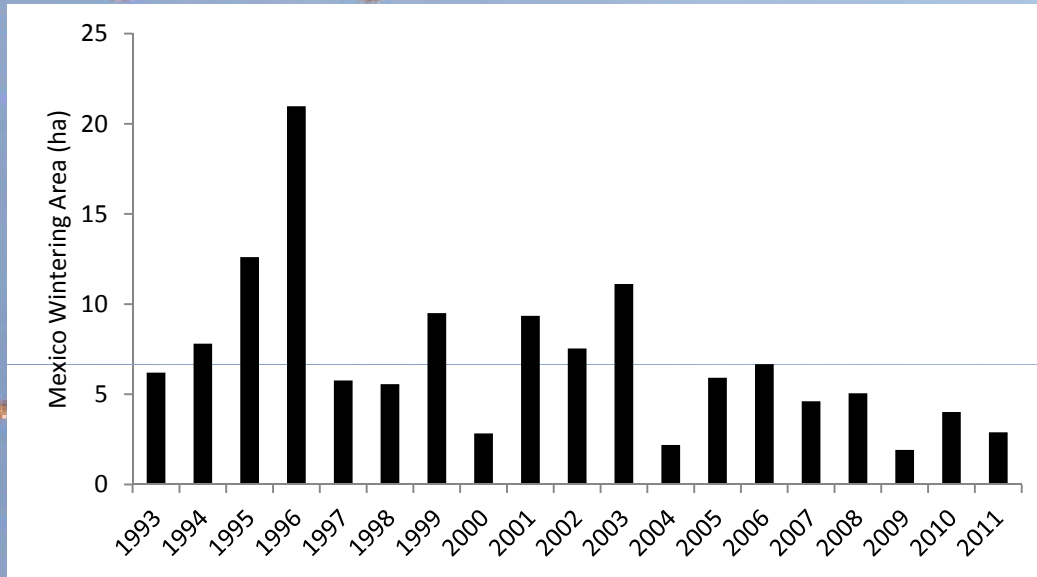
# Parasite Infection over Time



# Egg and Larval Survival is Low and Variable

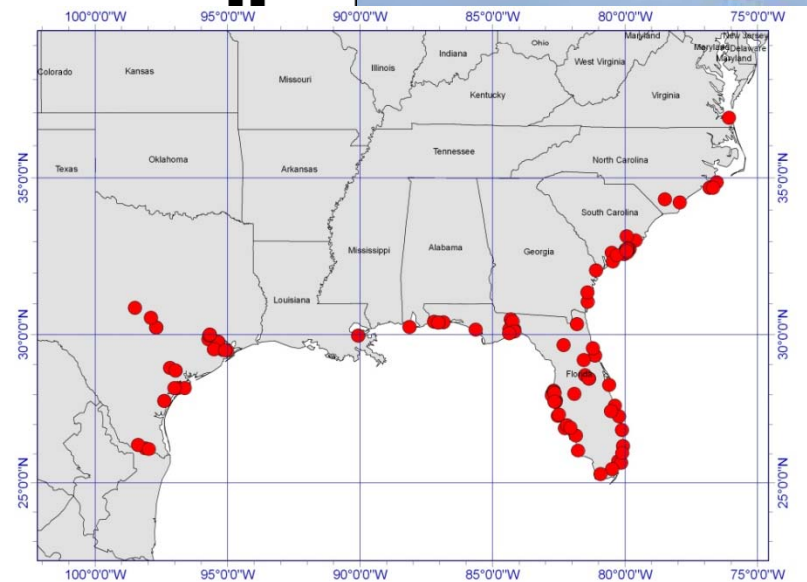
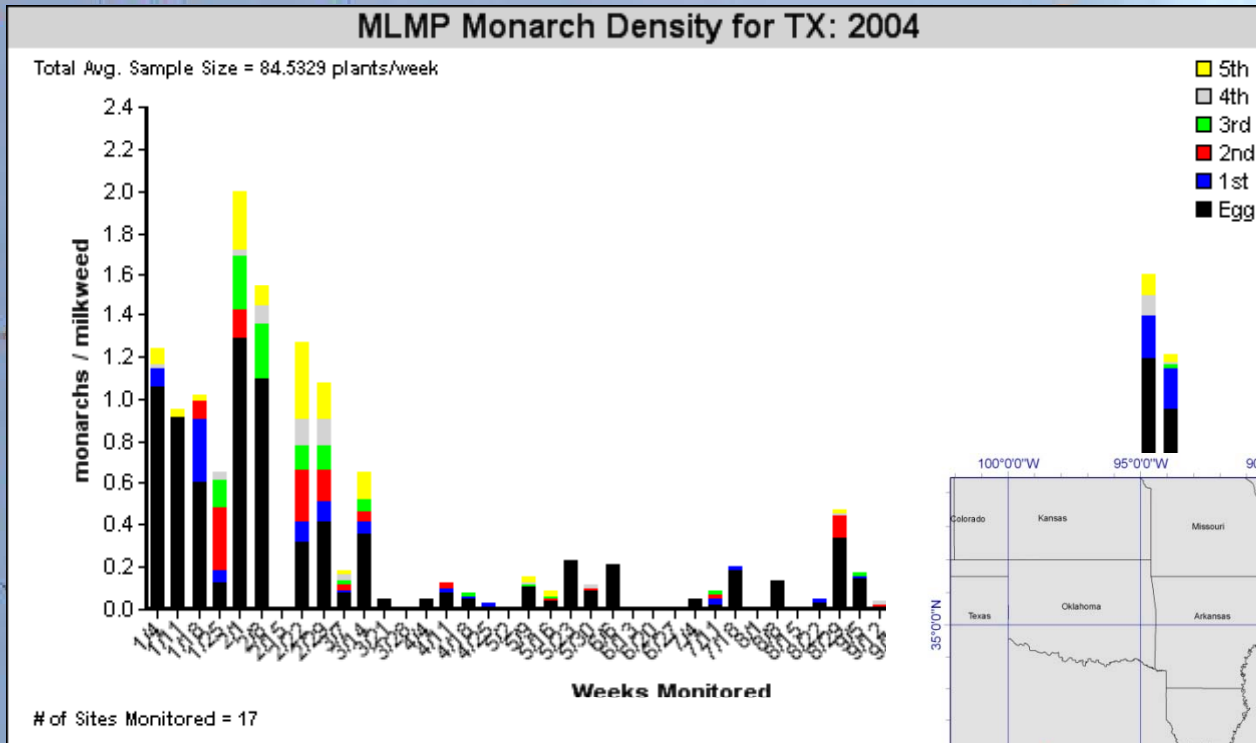


# Overwintering Counts/Area Occupied



# Migratory Behavior

## Monarchs in the US throughout Winter





# Conservation Outcomes (besides data): Volunteer Activities

- Land stewardship: Long-term engagement in project supports “adaptive management” practices
- Outreach and education: volunteers develop expertise that empowers them to share their findings and knowledge
- Environmental advocacy: awareness/prevention of habitat loss



# NAMCP and Monarch Joint Venture

1. Education / Public Outreach
2. Habitat protection, restoration and enhancement
3. Biological Monitoring: support for workshops, monarch monitoring handbook

