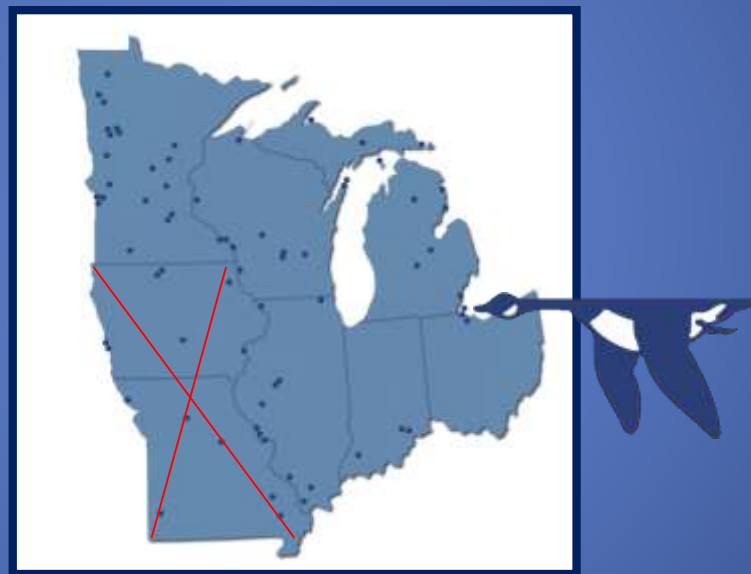




# Adaptive Management of Forest Invasives in the Central Hardwoods



Joshua Booker

Inventory and Monitoring Branch

Division of Natural Resources and Conservation Planning

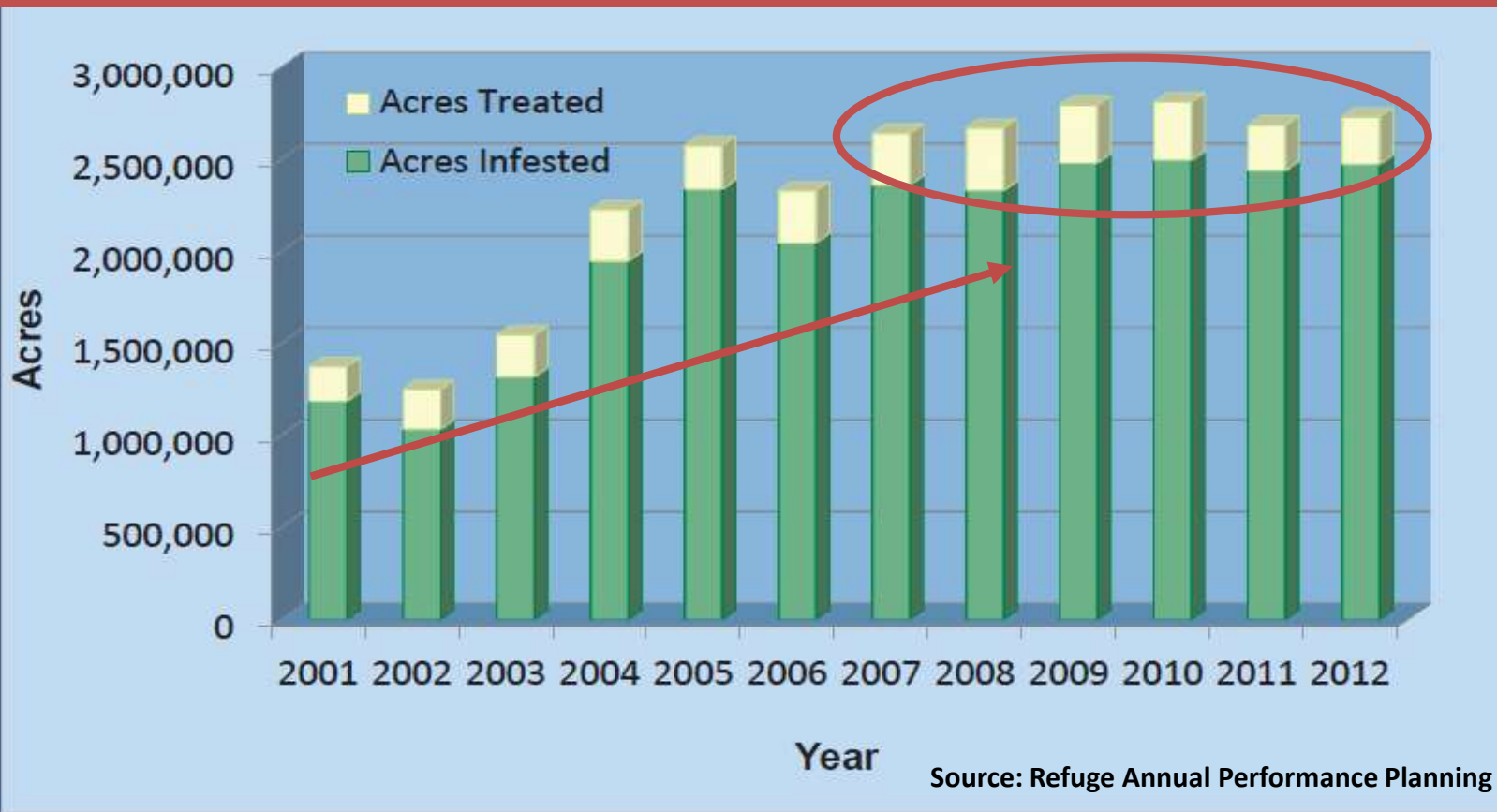
U.S. Fish and Wildlife Service, Great Lakes Region

*Amanda McColpin, Dan Wood, Karen Mangan, Brad Pendley, Ben Walker*



# The Problem

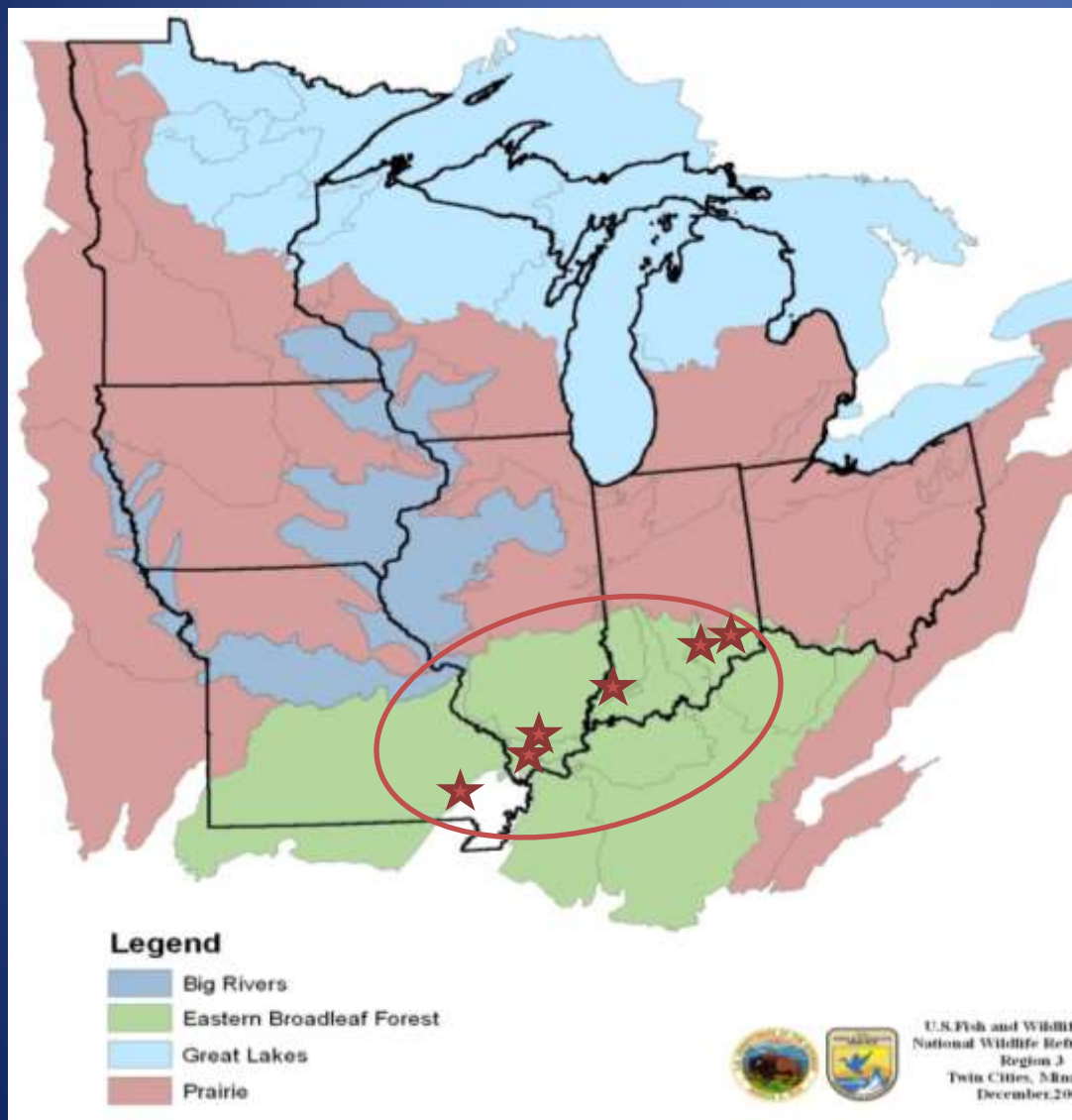
## Total number of acres infested and treated on Refuges, 2001-2012



- Increasing infestation over time
- Only able to treat ~10% of the infestation every year
- These data are not very reliable (mostly anecdotal, no consistent methods)



# The Problem



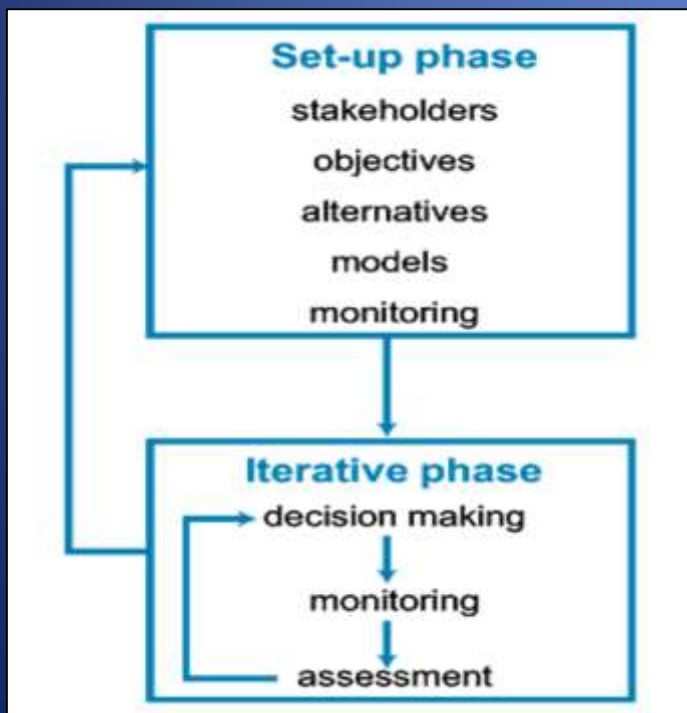
- In 2009, six Refuges went through a structured decision making process
- Two primary areas of uncertainty:
  - 1)management effectiveness at the small management unit scale, and
  - 2)management effectiveness at the Refuge scale





# Adaptive Management: the solution?

- Iterative cycle of decision making, monitoring, and assessment



The image shows the cover of a technical guide titled "Adaptive Management" published by the U.S. Department of the Interior. The cover features a scenic landscape with a tree and birds. A circular graphic is divided into five segments, each representing a key principle of adaptive management:

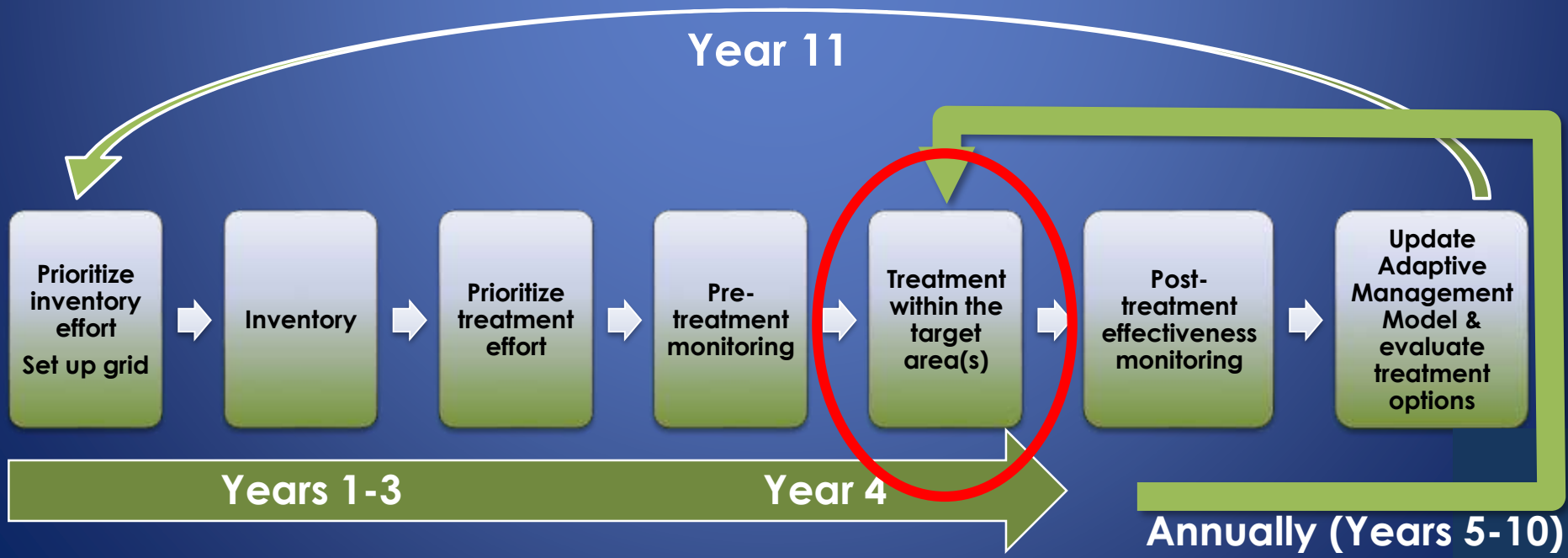
- Reducing Ecological Uncertainty (Red)
- Repeated Decisions (Green)
- Mandatory Decisions (Purple)
- Variety of Management Actions (Teal)
- Long-term commitment (Orange)

The U.S. Department of the Interior logo is in the top right corner, and the National Wildlife Refuge System logo is in the bottom right corner.



# A Comprehensive Solution: Forest Invasives Adaptive Management (FIAM)

- Standardized protocol for inventory and effectiveness monitoring
- Online, centralized database
- Management prioritization model
- Adaptive management model





# Struggles

- Inventory takes too long

Refuge	Acres	Years inventoried
Big Oaks	7,668	2012 – 2015 (4)
Crab Orchard	27,488	2013 – 2017 (4)
Cypress Creek	6,669	2012 – 2018 (6)
Loess Bluffs	946	2015-2019 (5)
Mingo	5,412	2013 – 2017 (5)
Muscatatuck	6,810	2011
<b>TOTAL</b>	<b>54,993</b>	<b>2011-2019 (9)</b>



# Struggles

- Inventory takes too long
- Switching databases





# Struggles

- Inventory takes too long
- Switching databases
- Staff turnover

Participant	Organization
<del>Melinda Knutson (coordinator)</del>	<del>Region 3 I&amp;M</del>
<del>Sean Blomquist (coordinator)</del>	<del>Region 3 I&amp;M</del>
<del>Eric Lonsdorf (modeler)</del>	<del>Lincoln Park Zoo</del>
<del>Vicky Hunt (modeler/database manager)</del>	<del>Chicago Botanic Garden</del>
Sarah Jacobi (modeler/database manager)	Chicago Botanic Garden
<del>Perry Williams (biologist)</del>	<del>Big Oaks NWR</del>
Judson Spicer	Crab Orchard NWR
<del>Damon Lesmeister (biologist)</del>	<del>Crab Orchard NWR</del>
Brad Pendley (biologist)	Mingo NWR
Daniel Wood (biologist)	Muscatatuck NWR
<del>Hanna Jorgens (biologist)</del>	<del>Muscatatuck NWR</del>
Karen Mangan (biologist)	Cypress Creek NWR
<del>Lindsey Landowski (manager)</del>	<del>Patoka River NWR</del>
<del>Alisha Maves (biologist)</del>	<del>Patoka River NWR</del>
Joe Robb (project leader)	Big Oaks NWR



Vacant P

Vacant P

Amanda McColpin (coordinator)	Contractor
Joshua Booker (coordinator)	Region 3 I&M
Chris Evans (science advisor)	Univ. of Illinois Ext.







# Struggles

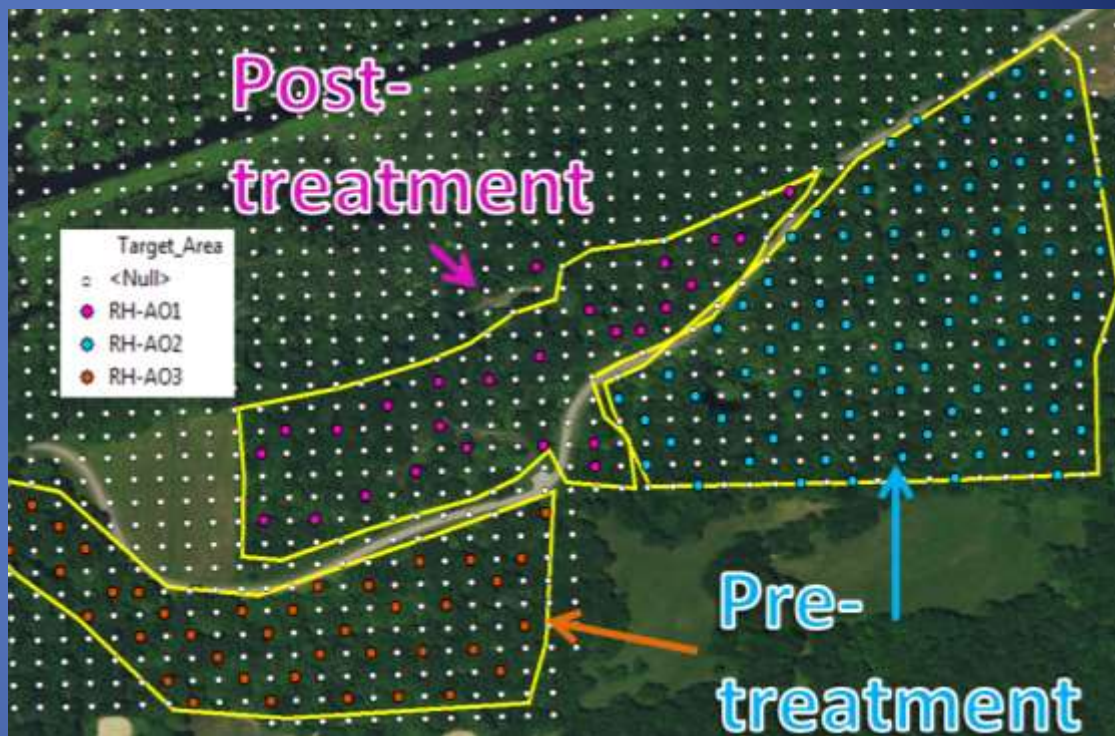
- Inventory takes too long
- Switching databases
- Staff turnover
- Lack of forest management





# Struggles

- Inventory takes too long
- Switching databases
- Staff turnover
- Lack of forest management
- Monitoring takes too much effort





# The Future of Adaptive Management

- Revisit adaptive management frameworks
- Focus on tracking management actions and opportunistic monitoring consistently



NPAM: Native Prairie Adaptive Management

GMT: Grassland Monitoring Team



Reed Canary Grass Adaptive Management Project



# Search for “Forging the Future Adaptive Management”

