

# Using Adaptive Management to Address Uncertainty in the Management of Missouri River Cottonwoods



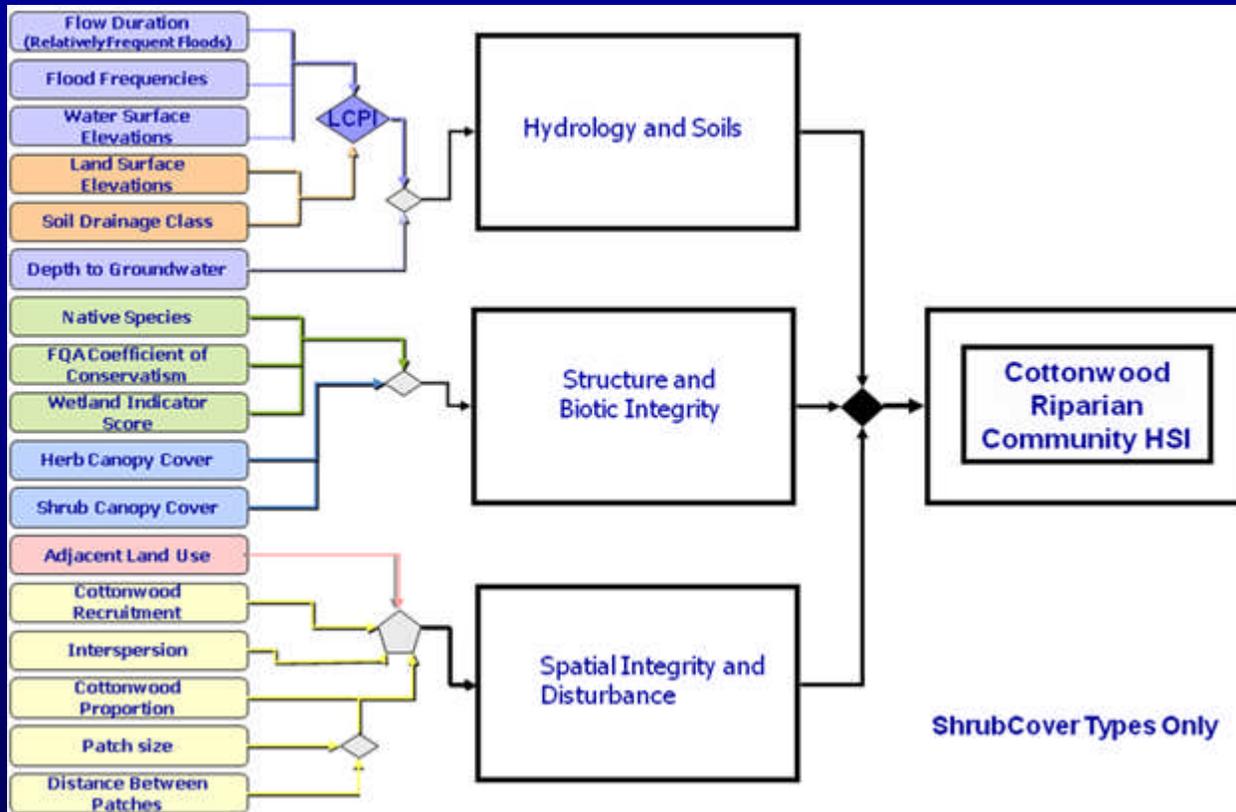
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# Review of Cottonwood Program

- **The 2000 and 2003 BiOps identified the need for CMP; 6 priority segments; three RPMs:**
- **Map and evaluate current health of cottonwood forest that could provide bald eagle habitat**
- **Develop a Cottonwood Management Plan**
- **Ensure no more than 10% of existing suitable habitat is lost for bald eagles**



# Cottonwood Community Habitat Model



- Measurable variables
- Habitat components
- Community Habitat Suitability Index

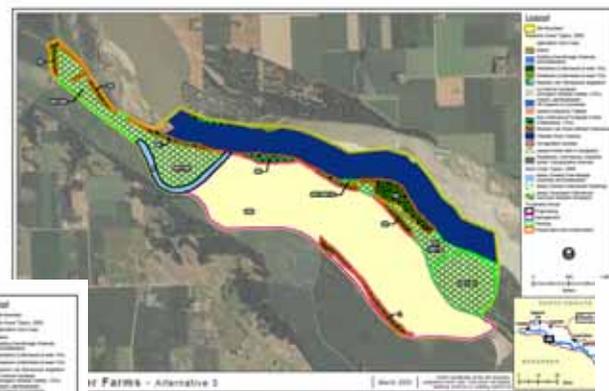
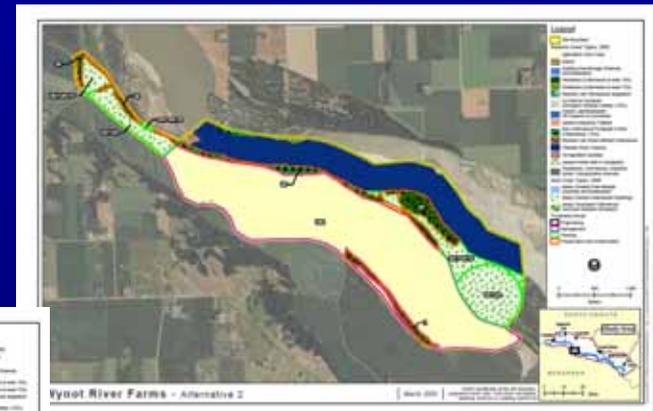
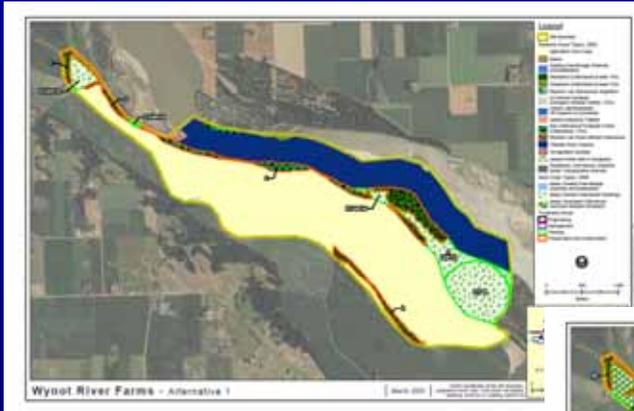
# Implementation Measures



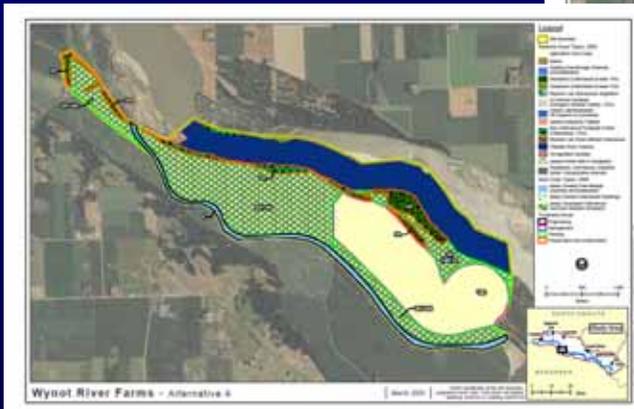
- **Protect existing stands**
  - Conservation easements
  - Purchase lands
- **Restore hydrologic and geomorphic processes**
  - Increase sediment supply
  - Create side channels & chutes
- **Planting**
  - Cottonwood seedlings
  - Manage invasives
- **Management Policies**
  - Collaborate with conservation groups
  - Use mitigation to require cottonwood plantings

# Implementation of Selected Alternative

Single measure

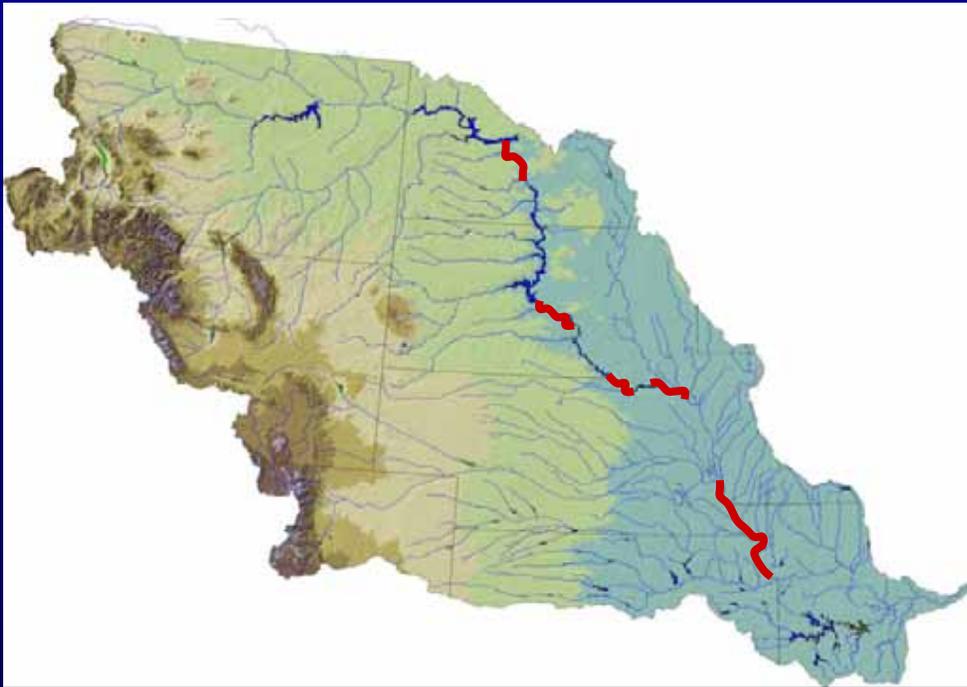


Multiple measures



Maximum number of measures

# Why Adaptive Management?



- **Geographic Scope**
- **Temporal Scope**
  - 100 year period of analysis
- **Natural Variation**
- **Development**
- **Other MR programs**

# Adaptive Management Process

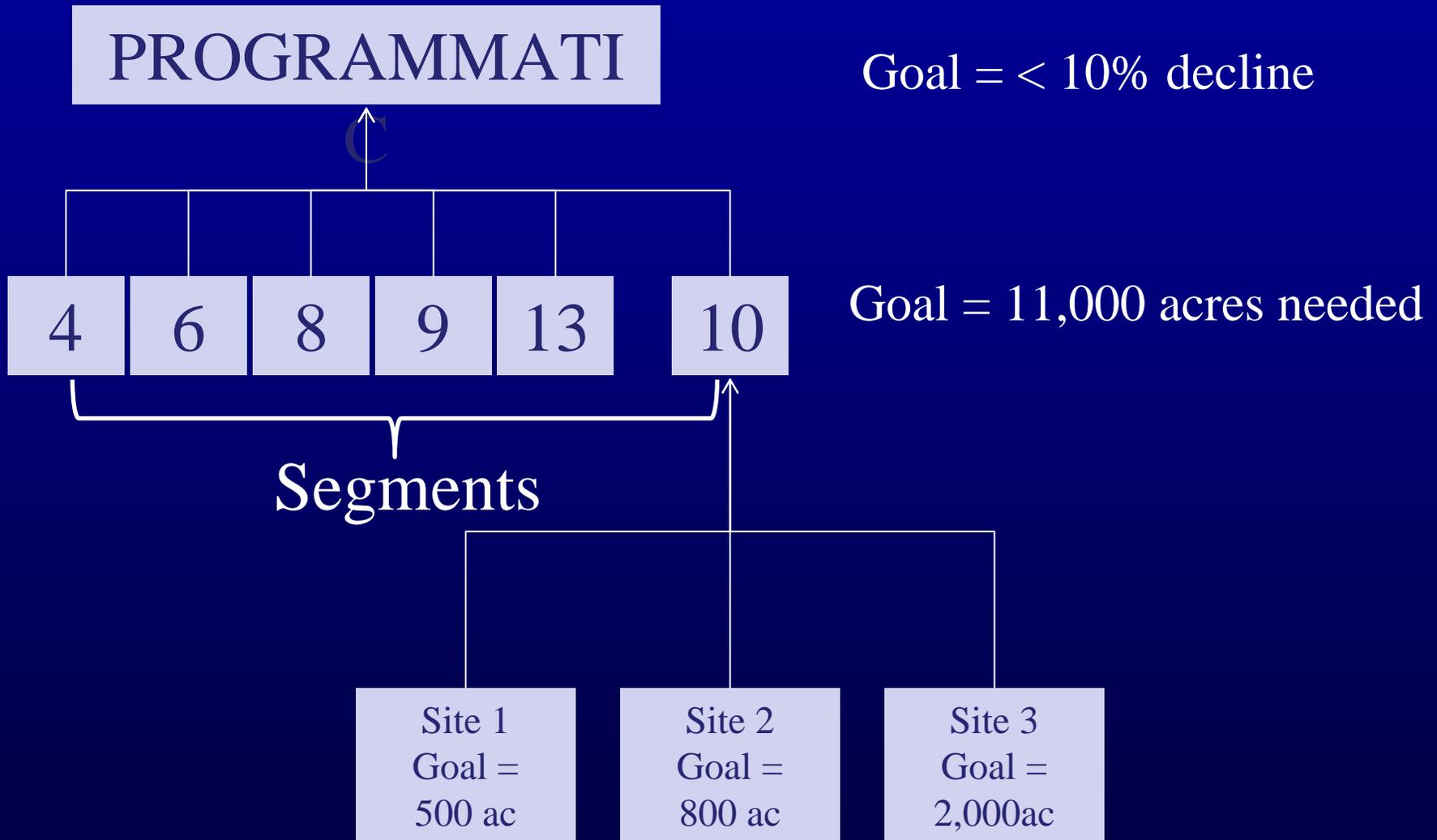
- Establish team (CMP)
- Identification of problem(s)
- Establish objectives
- Use data to predict how alternatives will alter the system.
- Test and select alternatives based on modeling.
- Design field experiments
- Implementation
- Monitoring and assessment
- Feedback to update models, reassessment, update plan
- Repeat as necessary to achieve objectives, goals and vision.

# Monitoring

- Program/Segment Level
  - Landscape level monitoring
  - Same methods used for baseline data
  - Completed every 5 years
- Site Level
  - Dependent on implemented measure(s)
- Protect existing stands
  - Same as baseline methods
- Planting
  - Propagation success
  - Annual monitoring



# Multi-Level Monitoring

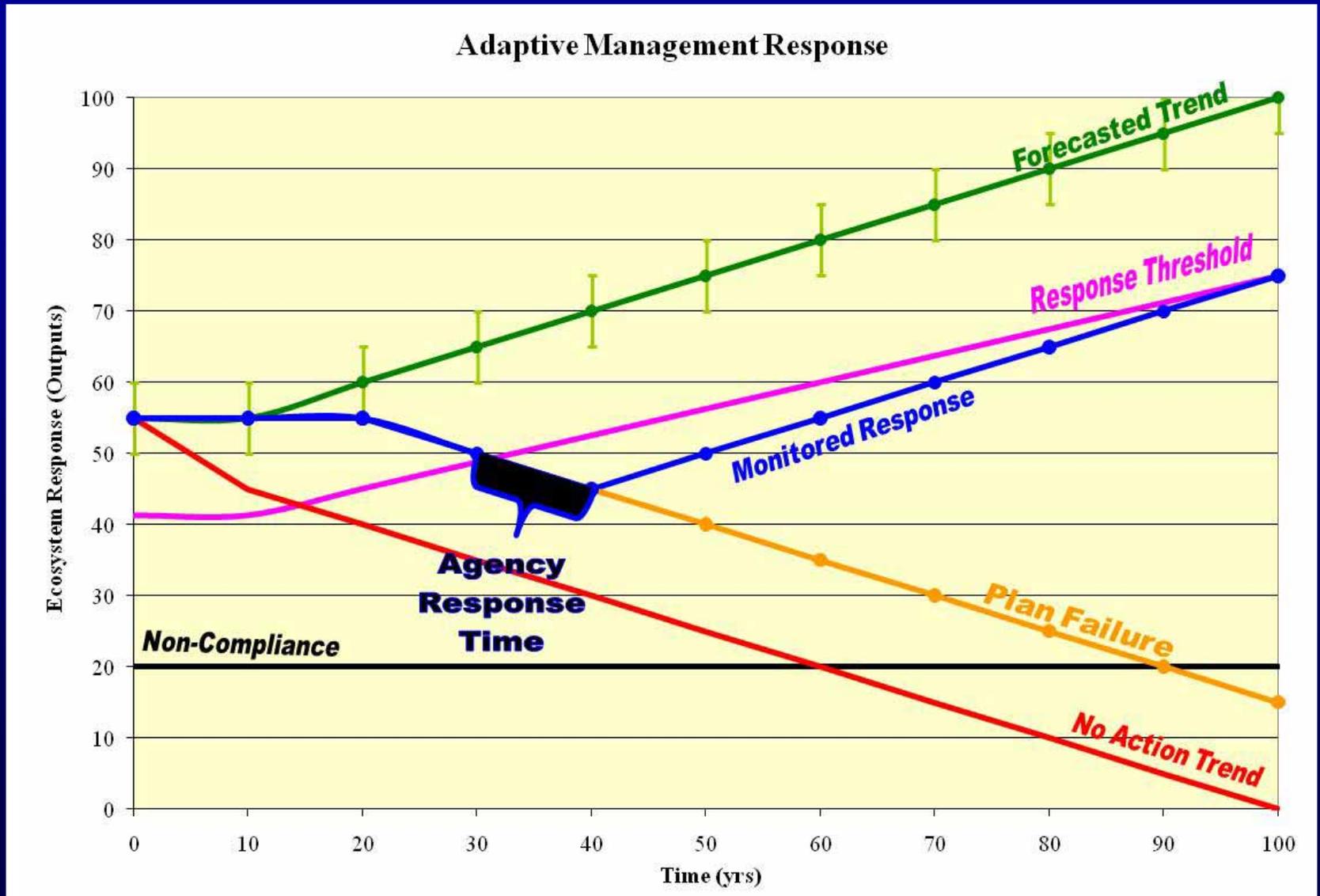


# Threshold for Action

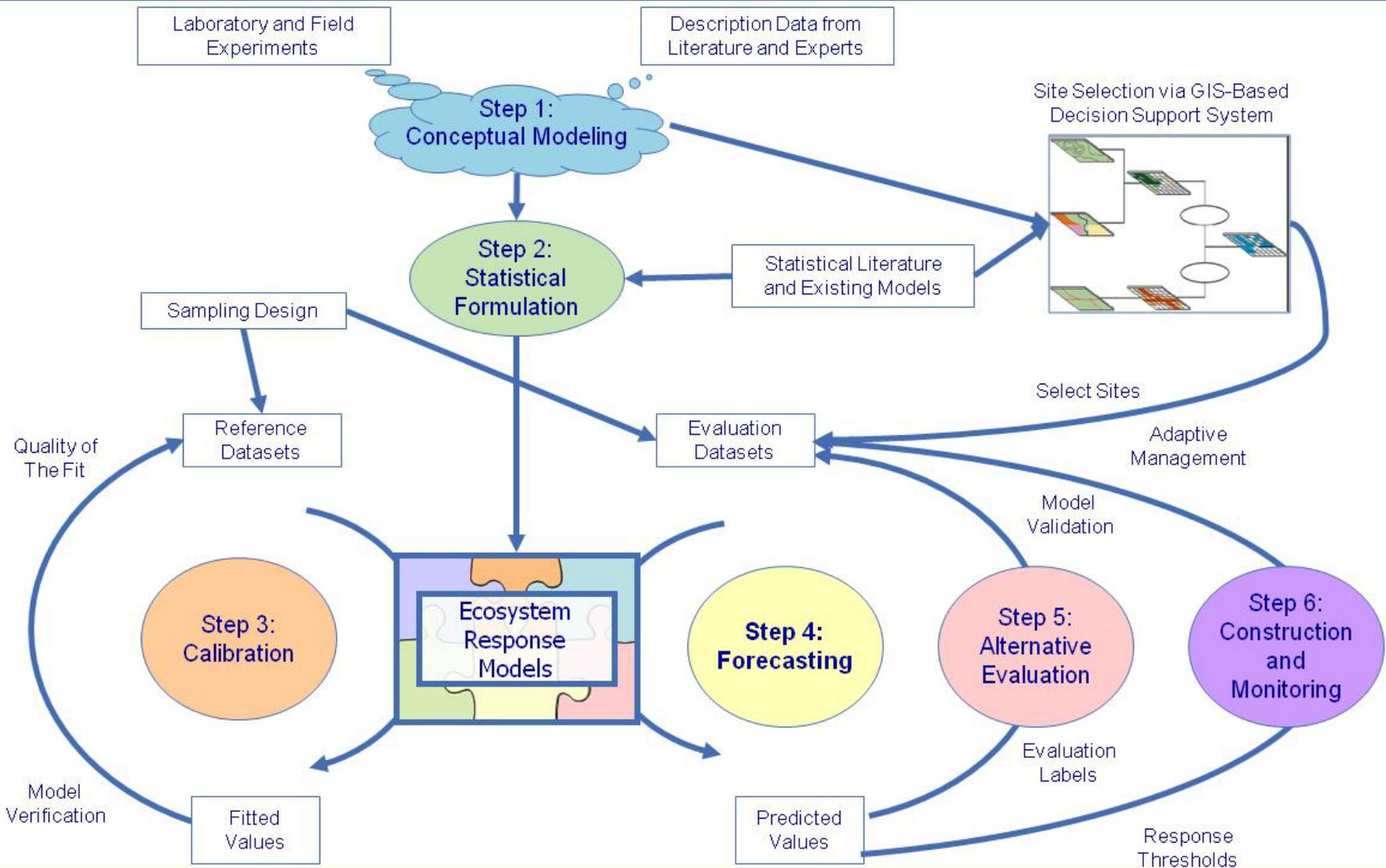
- Monitoring evaluates success
- Threshold stipulates need for action
- How to develop?



# Program Threshold for Action



# Adaptive Management



# Program Questions



- How will our data benefit other programs
- How will we incorporate data from other programs?
- Continued support from team members

# Questions