FEMC

Forest Ecosystem Monitoring Cooperative

Monitoring Method Decision Tool to Evaluate the Impacts of Recreation

Presented by Elissa Schuett

Annual FEMC Conference

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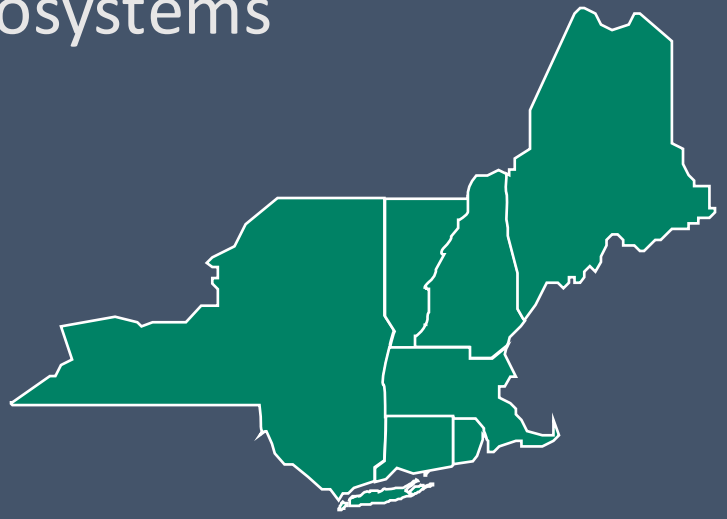
Project Background

- FEMC regional project process
- Partner-identified need – ability to track and measure how recreation impacts forest ecosystems



Needs assessment

Initial needs identified – literature review

Stakeholder perspective – interviews and working groups

Gaps in existing resources – need for aid in selecting a method to use

Scope of This Project

- Provide a collection of monitoring methods to evaluate the impact of ***non-winter, non-motorized, trail-based*** recreation on forest ecosystems
- Three areas of focus
  - Soil – erosion and compaction
  - Invasive plants - spread
  - Wildlife – behaviors and habitat
- Products
  - A **report** with methods and design recommendations and guidance to develop and implement monitoring programs
  - A **decision-support tool** for users to aid in selecting methods that align with user goals






Photos: boot – backpacker.com, mountain biker – Hello Burlington, soil erosion –Green Mountain Club, invasive plant monitoring – Acadia National Park, bobcat – The Nature Conservancy Vermont, wood thrush – Vermont Center for Ecostudies

Recreation Impacts

SOIL

INVASIVE PLANTS

WILDLIFE

Soil – Impacts of Recreation

Soil erosion – impacts – Salesa and Cerda, 2020

- Soil disturbance
  - Erosion
  - Compaction
- Secondary impacts
  - Loss of nutrients
  - Sedimentation
  - Vegetation damage
  - Invasive plant opportunity
  - Damage to sensitive habitats

Japanese Knotweed – Acadia National Park, NPS

- Introduction
- Expansion

Japanese Knotweed – Acadia National Park, NPS

Impacts of Recreation – Wildlife

Birds	Mammals	Amphibians and Reptiles
• Conflicting data – opportunity to learn more with additional monitoring	• Species specific – large mammals more disrupted than small • Habitat fragmentation due to trails and road networks • Behavior – flight initiation distance	• Lacking data • Depends on location of recreation – more likely to impact if water source, including vernal pools and wetlands are disturbed

Method collection

Appropriate for northeastern forests

Well-established, validated methods

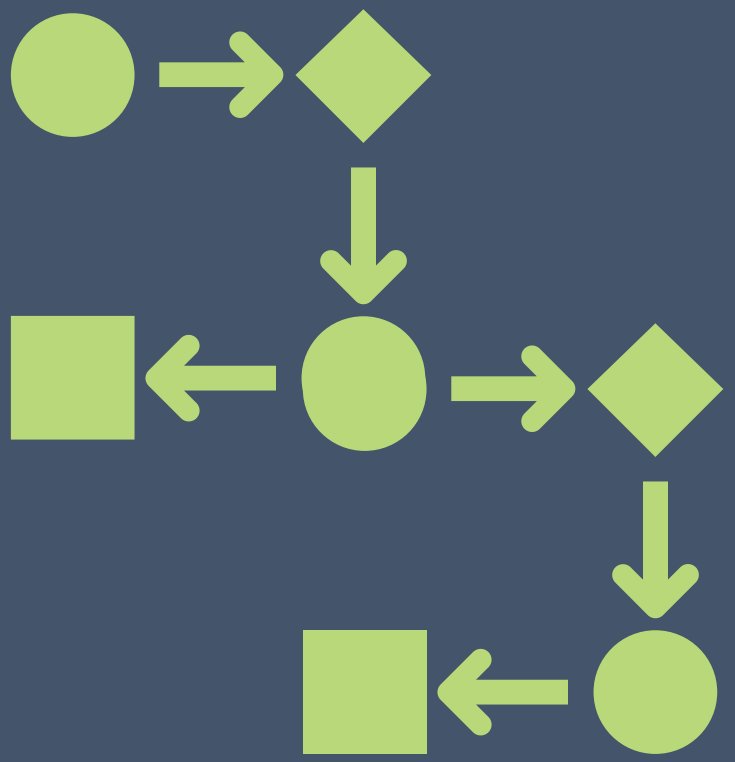
75 Methods reviewed and refined

Variety of outputs and requirements

Inventory or monitoring needs

Skills required, time to set up, return visit requirements

Decision tree



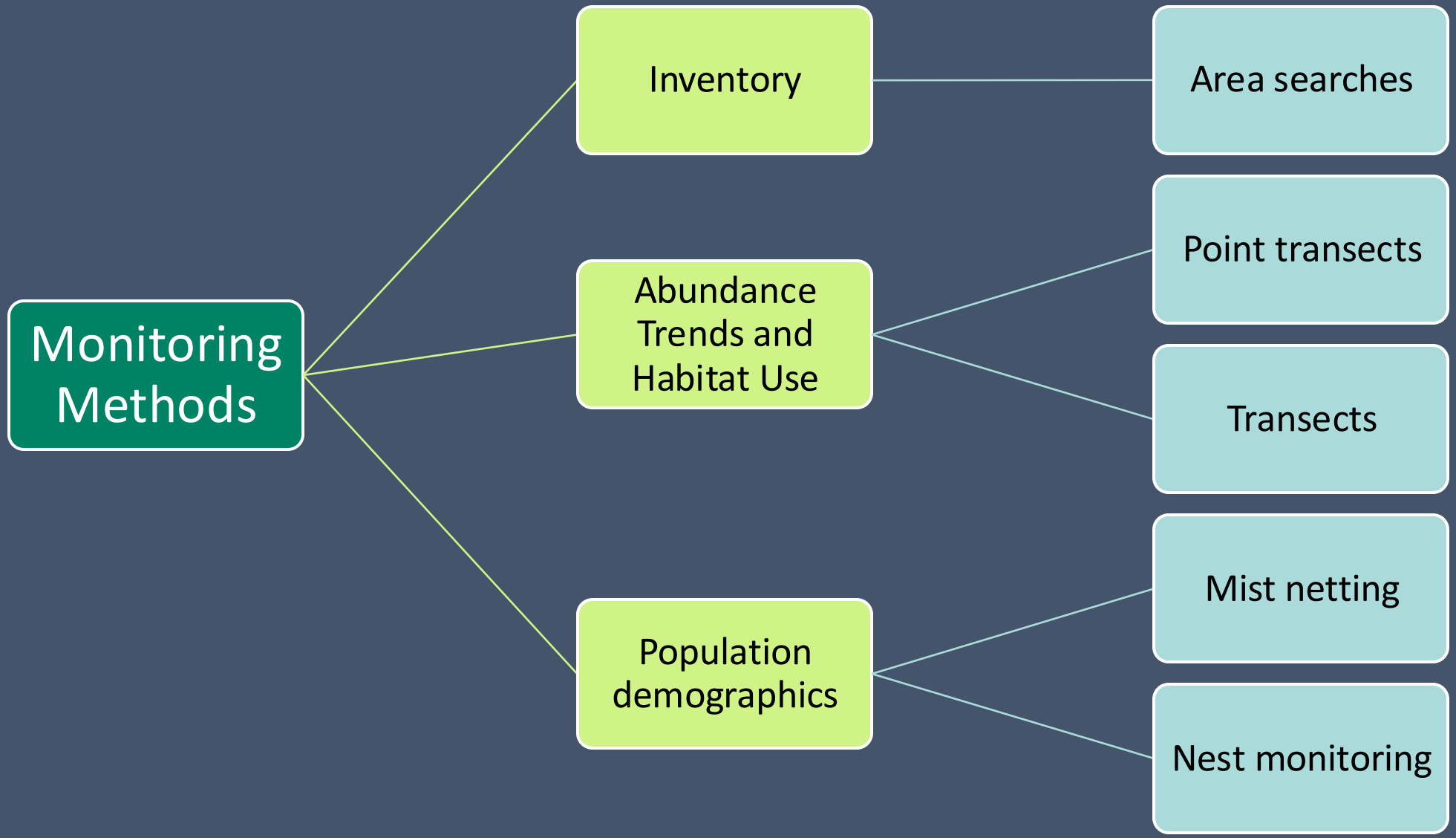
Development

- Review methods
- Categorize and organize

Using the Tool

- Method exploration
- Refining options to meet goals

Bird Monitoring Methods



Birds

These methods for monitoring birds are suggested by the Methods for Monitoring Landbirds from the U.S. National Park Service based on the objectives below.

Ovenbird fledgling in White Clay Creek State Park, Delaware.

What is your objective? (select all that apply)

Inventory

- [ ] Rapid assessment

Abundance Trends and Habitat Use

- [x] Relative abundance and population trend data correlated with habitats or other sites
  - [x] Comparing abundance trends at specific locations, and/or a transect line is difficult to maintain
    - [x] I have enough resources for 2 observers for every bird observation
  - [ ] I want to cover a large area and assess habitat structure using transects
- [ ] Behavior and habitat usage of territorial birds

o calculate

creational areas
ential

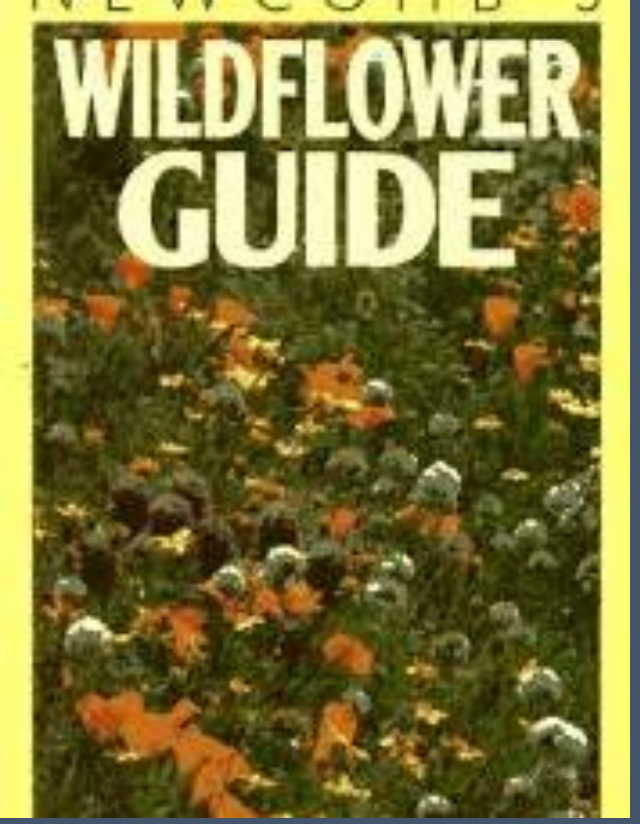
ce; Trends in

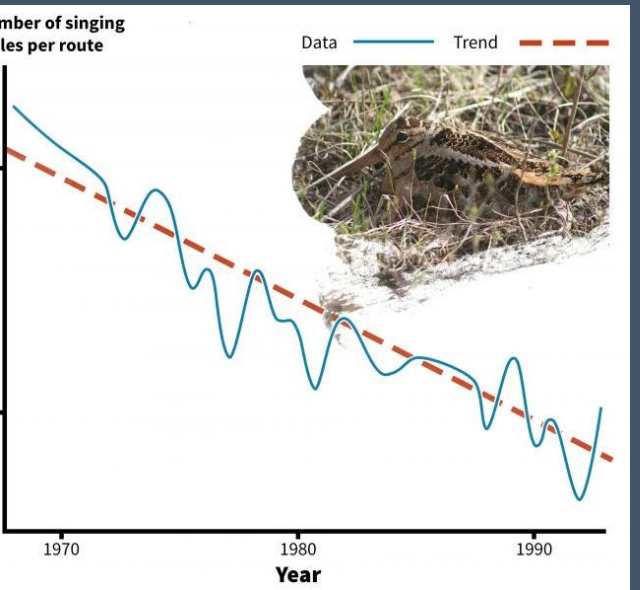
population size; Comparative abundances.

Limitations: Results may vary with observer ability and habitat characteristics; Challenges in pooling data from different observers or habitats.

Developing a monitoring program

- What is the purpose of monitoring or the goal of a program?
  - Measure change over time or conduct an inventory for a point in time
  - Use to make management decisions?





Design and planning considerations

- Time and resources
  - Skills, equipment
  - Location and number of plots, return visits
- Impact of interest
  - Data output
  - Long-term trends or a point in time

Population trend – McComb et al., 2018, Shermann trap – USGS, Monitoring plot – National Park Service, Newcomb's wildflower guide

Modifying methods for recreation questions

- Before-after analysis prior to trail establishment
- Plot proximity to trails
- Trailhead monitoring

Photo: Green Mountain Club

What’s Next

- Additional methods
- Opportunities for you to add monitoring data to the database

Acknowledgements and Photo credits

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Photos