

PROJECT UPDATE:

Performance Measures for U. S.
Wildlife Conservation Activities

Jonathan Mawdsley

Robin O'Malley

The Heinz Center

Questions Project Is Addressing

- What are the steps for developing performance measures for wildlife conservation activities?
- What are some sample measures that might be used at the state level to:
 - Measure and evaluate individual implementation projects
 - Report on “how wildlife are doing” in the state

Where we are now:

- 2 meetings of project working group
- Clear consensus from literature, working group on steps to be followed in developing performance measures
- Sample metrics for lots of different types of activities (including non-biological responses)
- Suggestions for a few **large-scale, state-wide metrics**
- Developing report, other materials TBD
- Interest in testing approach with individual states

Project Working Group

- State agency staff from:
 - Vermont (Jon Kart)
 - Florida (Tim O'Meara)
 - Nebraska (Mark Humpert)
 - Oregon (Audrey Hatch)
 - Non-profits: AFWA, NFWF, NWF, NCASI, etc.
 - Federal agencies: FWS, BLM, FS, USGS
 - Business: International Paper
 - Academia: Dennis Murphy, Barry Noon
- Plus a number of informal advisors

A Conversation with Wildlife Diversity Managers

Some topics:

- Importance of Measuring – And Reporting!
- Coarse Filter Metrics
- Fine Filter Metrics
- Opportunity for Regional Brainstorming
- Steps for Selecting Performance Indicators (for specific implementation projects)

Importance of Measuring

- Congress, OMB, U. S. FWS want **results**
- Interest in longer-term, big-picture **outcomes**, more so than short-term outputs
- Program evaluation now being done on the basis of a **very few (1-5)** measures
- We are in a fortunate position to be able to suggest possible indicators!

Sample Metrics:

Start with a Coarse Filter Approach

- Committee emphasized the importance of a coarse filter approach, given the extreme resource limitations facing states
- Coarse filter asks how are ecosystems, major habitat units doing? By inference, how are species within those units doing?
- Committee reviewed two types of coarse filter measures: ecosystem extent and landscape pattern

Questions Addressed by Extent Measures

- How much of the (ecosystem type, veg. cover class, habitat type, landscape of interest, focal area...) do we have?
- What are the trends in extent (are we losing ground)?
- How much have we protected?
- How much do we have in some form of conservation management?
- How much of this area have we done other conservation work on (restoration, etc.)

Extent Measures

- Area of (ecosystem, veg. cover class, landscape...) of interest. Can measure quantitatively using GIS, satellite imagery.
- Trends in area (increasing, stable, decreasing)
- Amount of this area protected
- Amount of this area that is in some form of conservation management

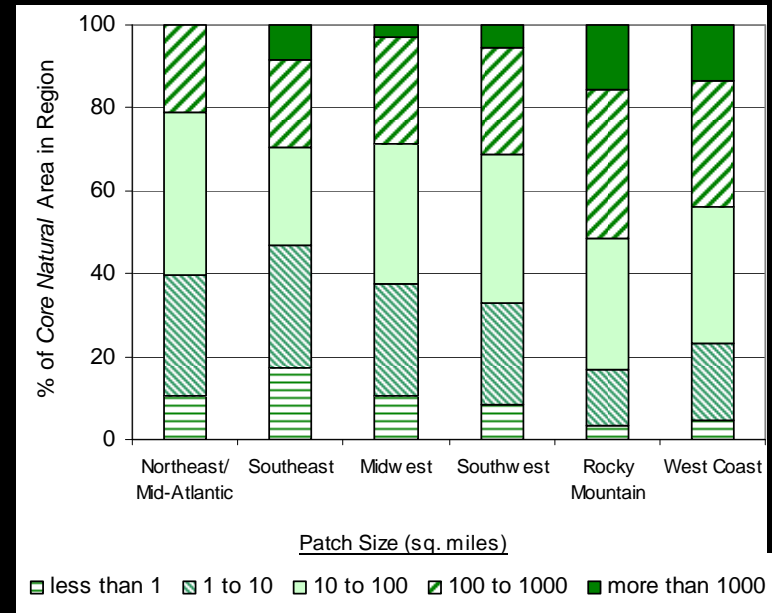
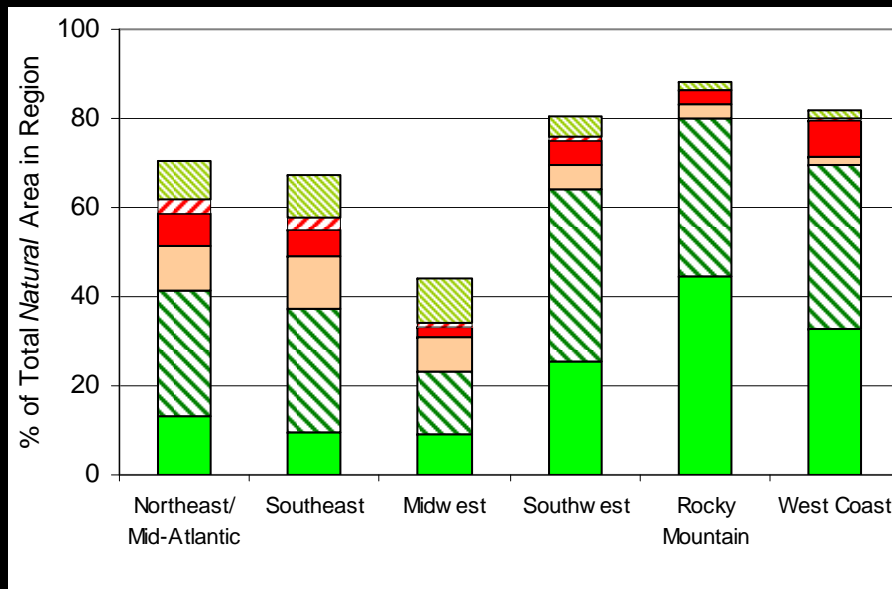
Questions Addressed by Landscape Pattern Measures

- How is the (ecosystem, veg. cover class, habitat type...) of interest distributed across the broader landscape?
- How fragmented is the (ecosystem, veg. cover class, habitat type...) of interest?
- What are the surroundings of a particular natural area / park / conservation interest area?

Landscape Pattern Measure

- Heinz Center has developed GIS-based approach using National Land Cover Dataset (30 m resolution)
- Looks at surroundings of each pixel representing a “natural” vegetation type, and determines whether surroundings are also “natural,” or anthropogenic.
- Also determines size of “natural” patches

Landscape Pattern Measure



- Scale-independent: can be applied to any data set with pixels
- Can be applied to a variety of scenarios:
 - Surroundings of a particular natural area
 - Surroundings of a particular veg. cover type

Sample Metrics – Fine Filter

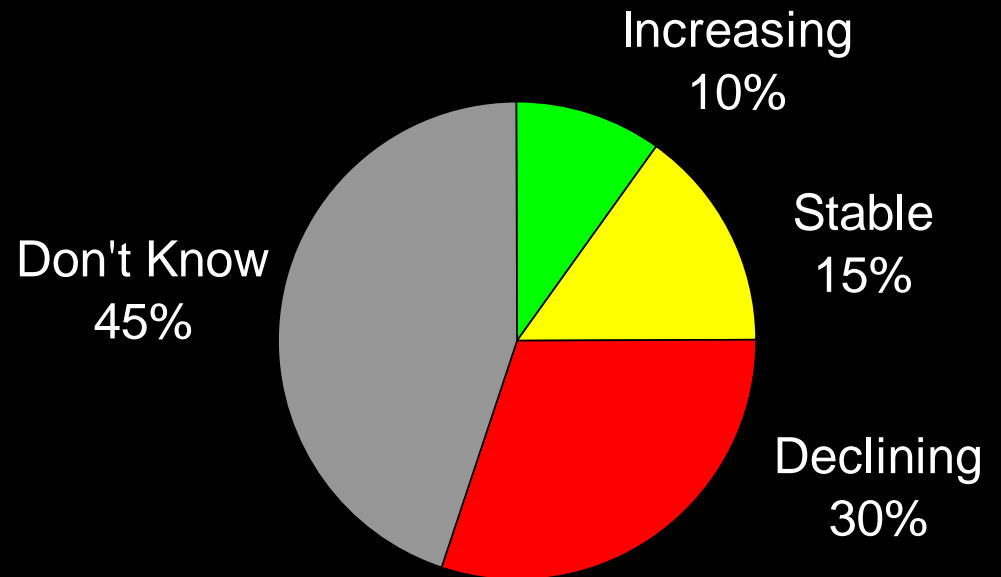
- Strong public & political interest in the question of “how species are doing”
- Simply not feasible to measure, report on every species
- Two approaches:
 - In-depth study of a few select species
 - Summary statistics for a larger group of species (e.g. migratory birds, butterflies, listed species, top priority SGCN)

Fine Filter Measures – Single Species

- Select a small group of species and report on each one individually
 - Very hard to do well or with sufficient precision to make definitive statements about population status and trends
 - Demographic parameters may be more important than counts of individuals
 - May be feasible for a few species in each state (some game species, ESA-listed species)

Fine Filter Measures – Multiple Species

- Report trends across a larger group of species
 - Not feasible to do for all SGCN
 - Committee felt it might be helpful to know percentage of your **focal species** for which populations were either increasing, stable, declining, or don't know
 - Looked at many possible multi-species indices, didn't like any of them



“Pie chart” allows you to combine non-quantitative and quantitative assessments in a single graphic

Regional Break-out

- What are priority species across some/all states in your region?
- What are priority habitat types across some/all states in your region?
- Other monitoring issues that may be more appropriate at a regional level?
- Does a regional approach make sense?
If so, what would next steps be?

General Approach for Selecting Performance Measures For Implementation Projects

Consensus from literature,
project working group

Steps in the Development of Performance Measures

- Define the **goals and objectives** of management
- Identify key **resources/processes** for stewardship
- Identify **threats** to these resources/processes
- Identify **actions** to address management needs
- Develop **conceptual models** linking stressors to resource states/process rates
- Select **indicators** of resource state/process rates
- Develop protocols for indicator measurement
- Implement project, including monitoring
- Link monitoring results to decision-making

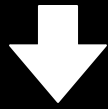
Simple Conceptual Models:

Causal chains / Results Chains /
Logic Frameworks

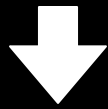
Why Models?

- Ground a project in current / best available science
- Explicitly state your assumptions regarding cause-and-effect relationships (theory of change) in a project/program
- Expedite story-telling and reporting
- If theory wrong, project likely to fail
- If theory right, project can still fail (implementation failure)

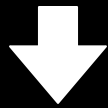
Prescribed fire and
mechanical control of
woody vegetation



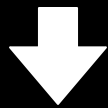
Reduction in woody
vegetation cover



Increase in nesting,
foraging habitat for
grassland birds



Increase in grassland
bird reproduction,
survivorship

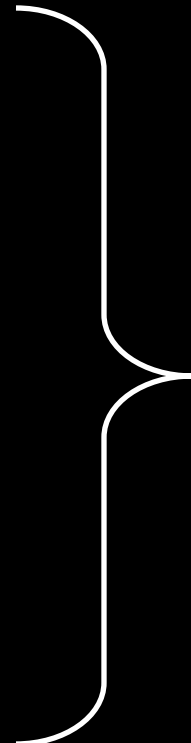


Grassland bird
populations increase

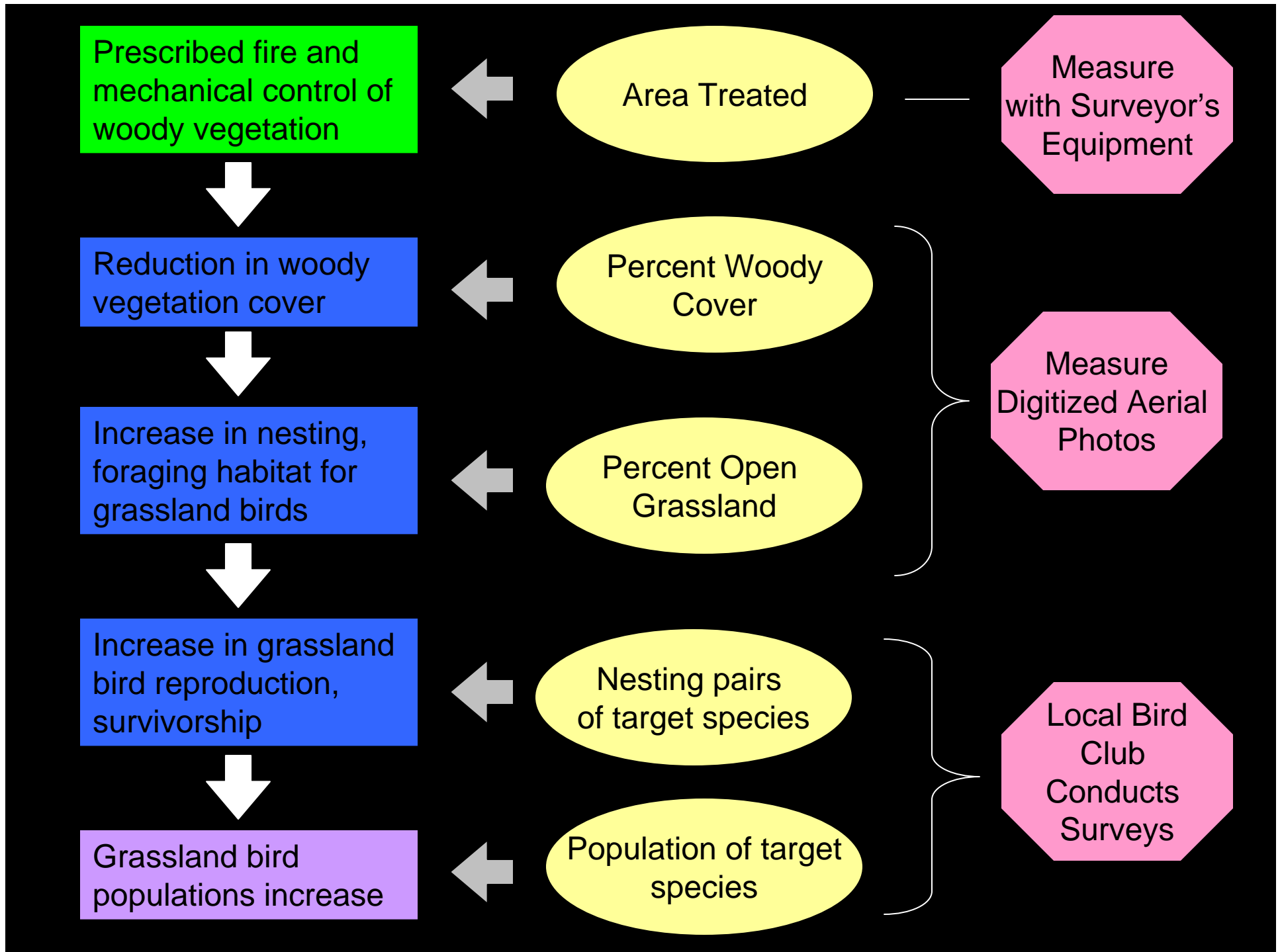
CONSERVATION
ACTIVITIES

INTERMEDIATE
OUTCOMES

ULTIMATE OUTCOME

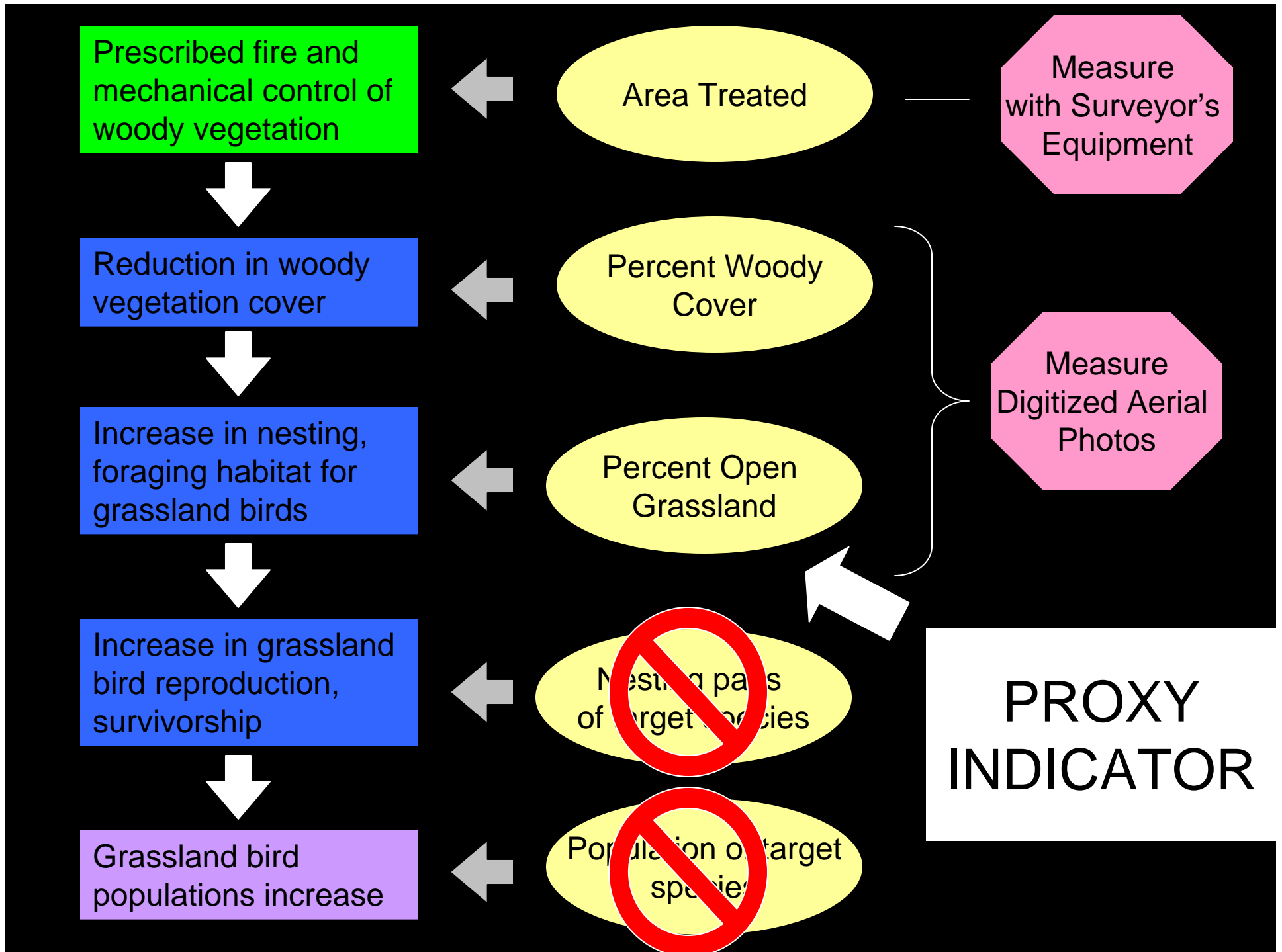


Models can help with indicator selection, too!



What happens if you can't measure ultimate outcome(s) directly?

- Time lag between activity and outcome
- Prohibitively expensive
- Monitoring system not in place
- Existing monitoring system not at right spatial scale, time interval, etc.
- Don't have good protocols or approaches for monitoring a particular species or group of interest



Non-Biological Responses

We recognize that many implementation activities will not necessarily show an immediate biological response:

- Coalition development
- Outreach
- Education and training
- Fundraising
- Further planning

How to Measure Non-Biological Responses?

Typical short-term outputs:

- Number of members of Teaming coalition
- Dollars raised / leveraged
- Number of people who see your presentation
- Number of people who attend trainings or workshops
- Plans written / documents produced

How to Measure Non-Biological Responses?

More informative short-term measures:

- Number of acres managed for wildlife by your partners
- Number of citizens represented by organizations in your coalition
- How many of your new partners do on-the-ground habitat management? land protection work? Etc.
- Other opportunities for leveraging from new partners (\$, resources, expertise)?

Logic Models Can Help Here, Too!

- Explain how you think these other implementation activities will lead to longer-term biological outcomes (wildlife & habitat)

(Helps explain why are you doing these other activities)

- Use logic models to show the steps leading from these other implementation activities to wildlife & habitat outcomes

Logic Model of Garden Club Visit

Give Presentation To Garden Club



Garden Club Members Identify
SWAP-Compatible Activities



Garden Club Members Build,
Install Bluebird Nest Boxes



Increased Nesting
Habitat for Bluebirds



Increased Bluebird Populations