Natural resource indicator process

(http://www.southatlanticlcc.org/page/indicators)
Approved by SALCC Steering Committee: Nov 7, 2012

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Introduction

What is the South Atlantic LCC?

A partnership of private, state, and federal organizations dedicated to conserving a landscape capable of sustaining the nation's natural and cultural resources for current and future generations. The 2-4 year mission of the South Atlantic LCC is to "design a shared blueprint for landscape conservation actions that sustain natural and cultural resources in the South Atlantic region"

Why are indicators needed?

Designing and evaluating the success of a shared blueprint for landscape conservation actions in the South Atlantic will require some specific measures of what success would look like for natural resources. The ecosystems of the South Atlantic are complex and indicators help simplify the modeling and monitoring of those systems. We cannot measure everything all of the time. Indicators are designed to integrate many ecological functions and represent other components of the system that are either too expensive or time consuming to model and measure.

How will indicators be used?

Indicators will be used to help design a shared blueprint for landscape conservation actions that sustain natural and cultural resources in the South Atlantic region. This blueprint will include an interactive map depicting the key places and actions needed to sustain those resources in the face of future change (e.g., urban growth, climate change, sea level rise). Indicators and measurable targets for those indicators will be used to help design this interactive map and evaluate the effectiveness of actions based on it.

How will this affect me?

This process will help identify shared measures of conservation success for large landscapes. This in turn will lead to a shared vision for conservation action - a blueprint. Members of the Cooperative will seek to commit their resources in pursuit of the shared vision as represented by the Blueprint. It is not meant to replace what we each currently do but to help facilitate the connections and identify how our actions add up to help shape the future of the South Atlantic region. Simply put, this work builds up to an implementable plan that demonstrates places and actions where each partner can apply their respective tools to accomplish something bigger than we could individually. It builds on and works within existing efforts (e.g., Longleaf Partnerships, Fish Habitat Partnerships, Wildlife Action Plans, Bird Joint Ventures, etc) to make connections across habitats, resources, and jurisdictional boundaries. This process is also the first step in generating new funding from non-traditional sources for implementing conservation. Broadly shared metrics of success and the Conservation Blueprint they will help create will be powerful tools for bringing new funding from private companies, individuals, foundations, and other non-traditional funding sources to the region.

What does this document do and not do?

This document describes a draft process for selecting Natural Resource Indicators for the South Atlantic LCC. It does not select specific indicators. It only deals with Natural Resources and does not describe a process for selecting Cultural or Socioeconomic Resource Indicators. Discussion on a potential process for those indicators will begin in 2013.

Who developed this document?

This document was created and approved by the South Atlantic LCC Natural Resources Indicators Team. The team was designed to include a mix of people with different ecological (marine, freshwater, terrestrial), spatial (small areas, large landcapes), and organizational (private, state, nonprofit, federal) experience. The members include:

- Jon Ambrose - GA Department of Natural Resources
- Shannon Deaton - NC Wildlfe Resources Commission
- John Stanton - US Fish and Wildlife Service
- Linda Pearsall - NC Department of Environment and Natural Resources, Natural Heritage
- Robert Boyles - SC Department of Natural Resources, Marine division
- Pete Campbell - US Fish and Wildlife Service
- Maria Whitehead - The Nature Conservancy
- Dean Carpenter - Albemarle-Pamlico National Estuary Program
- Mary Long - US Forest Service
- Tim Pinion - National Park Service
- Wilson Laney - US Fish and Wildlife Service
- Roger Pugliese - South Atlantic Fishery Management Council
- Reggie Thackston - GA Department of Natural Resources, Private lands
- Breck Carmichael - SC Department of Natural Resources
- Rick Durbrow - US Environmental Protection Agency
- Jimmy Evans - GA Department of Natural Resources
- Vic Engel - US Geological Survey
- Rua Mordecai - South Atlantic LCC Science Coordinator

Definitions

Sources

- Bennett, James P. 2000. Ecological Indicators for the Nation: Committee to Evaluate Indicators for Monitoring Aquatic and Terrestrial Environments, National Research Council, National Academy Press, Washington, DC. 180 p., ISBN 0-309-06845-2.

- Doren, R.F., Trexler, J.C., Harwell, M., and Best, G.R., Editors, 2008. System-wide Indicators for Everglades Restoration 2008 Assessment. Unpublished Technical Report. 43pp. http://www.sfrestore.org/scg/documents/2008_System-wideIndicatorsReport.pdf
- South Atlantic LCC 2012 Science Assessment. http://www.southatlanticlcc.org/page/science-assessment-1

Objective

A goal with associated indicators and targets

Goal

Desired conservation outcome that is difficult to measure (e.g., Ecological Integrity of rivers and streams)

Indicator

A metric that is designed to inform us easily and quickly about the conditions of a system (e.g., Miles of fishable and swimmable streams). Used to measure progress toward a goal

Target

A measurable endpoint for an indicator (e.g., Maintain total miles of fishable and swimmable streams). Used to measure whether an indicator has reached the desired level.

Additional examples of objectives

- Maximize integrity of open pine systems (goal) - Brown-headed Nuthatch (indicator) - Increase coastal plain population by 50% (target)
- Maximize integrity of estuarine (goal) - Sea grasses collectively (indicator) - Double the area of sea grasses (target)
- Maximize integrity of freshwater aquatic systems (goal) - % unimpaired waterbody segments as defined in EPA 303d list (indicator) - Reduce the number of impaired waterbodies by 10% (target)

Framework for SALCC indicators

Sources

SALCC Optimal Conservation Strategies project, Albemarle Pamlico National Estuary Program's Comprehensive Conservation Management Plan, United Nations' Millennium Ecosystem Assessment, and Heinz Center State of the Nation's Ecosystems

Note: This overall process document only addresses Indicators and Targets related to Natural Resources. Identification of indicators for Cultural and Socioeconomic Resources will begin in 2013.

Natural Resources

Goal 1

Maximize the integrity of ecological systems that characterize natural areas and managed landscapes that people care about. Ecological Integrity is defined as the ability to support and maintain a balanced, integrated, and adaptive community of organisms having a species composition, diversity and functional organization comparable to those of natural habitats (Karr, J. R. and D. R. Dudley. 1981). Ecosystem integrity is measured by the percent of indicator targets met within each of the ecosystem types below.

- Marine
- Estuarine
- Beach and dunes
- Forested wetlands
- Freshwater and tidal marshes (managed and unmanaged)
- Freshwater aquatic (streams, lakes, ponds)
- Grasslands / Prairie
- Scrub-shrub (includes cliffs and outcrops)
- Pine woodlands and savannas (includes longleaf, loblolly, and slash systems)
- Upland hardwood forests
- Landscapes (Habitat aggregate)
- Waterscapes (Habitat aggregate)

Please see the crosswalk between these ecosystems and existing national ecosystem classifications (Natureserve ecological systems, National Land Cover Database [NLCD], and Coastal and Marine Ecological Classification Standard [CMECS]) for more detail.

Goal 2

Ensure the persistence of species of priority conservation concern as identified in state, regional, and national conservation plans. It may be necessary to identify additional indicators and targets, if maximizing the integrity of ecological systems is not enough to maintain the persistence of these key species.

Cultural Resources

Our cultural heritage is ethnographic; that is, it has a relationship to what people do on the landscape. Examples include huntable and fishable populations of animals, opportunities for recreation and access to public lands and waters, archaeological sites and objects. The process of identifying cultural heritage indicators and targets is scheduled to begin in 2013

Socioeconomic Resources

Factors sustaining human communities directly affect quality of life for humans and contribute to their livelihood and health. Examples include clean water (waters are safe for personal contact, fish and game are safe for human consumption), food, fuel, fiber. A team is now being created to scope out a process to identify the specific indicators in this goal. Contact Janet Cakir, SALCC Socioeconomic and Climate Change Coordinator - Janet_Cakir@nps.gov, for more info.

Crosswalk of partner indicators to SALCC framework

Introduction

To help the SALCC indicator process build off existing efforts, a spreadsheet was developed to crosswalk indicators and targets already identified in regional conservation plans to the ecosystems described in the framework for SALCC indicators (Natural Resources, Goal 1)

Plans covered

Currently included

Indicators

Atlantic Coast Joint Venture (ACJV)/Partners in Flight
Albermarle Pamlico Sound National Estuary Program (APNEP) - 2012 Ecosystem Assessment
Southeast Aquatic Resources Partnership (SARP) - Southeast Aquatic Habitat Plan
America's Longleaf Conservation Plan
U.S. Fish and Wildlife Service Southeast Biologists Conference
National Parks Service (NPS) Inventory and Monitoring Program (I&M)
US Forest Service Management Indicator Species
NOAA Southeast and Caribbean Regional Team (SECART)
State Wildlife Action Plans - Priority species of Greatest Conservation Need
National Fish and Wildlife Foundation Longleaf Stewardship Fund

Targets

Fishery Management Plans
Endangered Species Recovery Plans
National Bobwhite Conservation Initiative 2.0
Atlantic Coast Joint Venture / Partners in Flight

In development

Eastern North Carolina / Southeast Virginia Strategic Habitat Conservation Team Strategic Plan

Accessing the spreadsheet

The latest version is available here:
https://docs.google.com/spreadsheet/ccc?
key=0Ai7ex6mYoQaRdFNjVU1zOVRRNm5CR296VmJtZmxfVUE#gid=13

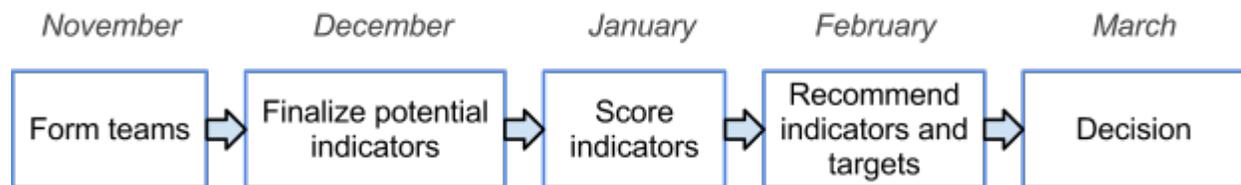# Process for selecting SALCC indicators

Fig. 1. A simple flowchart of the process from November to March 2013

Nov 2012: Form two teams to select and revise indicators

Selection team role

This team will gather expert input and recommend indicators and associated targets to the SALCC Steering Committee

Revision team role

This team will gather expert input as needed and recommend a process for evaluating and revising the indicators selected by the Steering Committee in March 2013.

Dec 2012: ID key indicators not in crosswalk of partner indicators

Selection team gathers input and makes decision

Selection team gets input from the Web Community and Partnership Committee and identifies key indicators that should be considered in the process but weren't captured in the "Crosswalk of Partner Indicators to SALCC Framework"

Revisions team captures lessons learned

Suggestions for future process improvements from selection team are sent to the revisions team to incorporate in the draft process to test and revise indicators

Jan 2013: Key audiences score potential SALCC indicators

Selection team uses online surveys based on the "Criteria for selecting SALCC indicators" and targeted interviews to allow key audiences to rank potential indicators. Key audiences include:
- Overall conservation community (Web Community + targeted interviews)
- Large partnerships (Partnership committee)
- Steering Committee organizations
- Surrounding LCCs

Revisions team captures lessons learned

Suggestions for future process improvements from selection team are sent to the revisions team to incorporate in the draft process to test and revise indicators

Feb 2013: Recommendations from selection and revisions team

Selection and revisions team meet to make final recommendations

Selection team uses summary scores from key audiences as a starting point for identifying indicators to recommend to the steering committee. Selection team uses crosswalk of existing targets as a starting point for identifying targets for each indicator recommended to the steering committee. Revisions team incorporates additional lessons learned and key uncertainties from the selection team into a final recommended process to test and revise the indicators after they are selected by the Steering Committee

Mar 2013: Steering committee decision on indicators and process to test and revise

Decision on recommendations from selection and revisions team

Steering committee meets to consider the recommendations from the selection and revisions team and selects indicators, targets, and a process to test and revise them in the future

Spring 2013?: Assessment of indicator function

Begin implementation of revision process

While the exact process will be determined by the revision team and steering committee, it will likely include the following elements:

- Post doc does quantitative evaluation of how well final indicators predict the condition of other species, guilds, and ecosystem elements (i.e., sensitivity analysis)
- LCC community assesses how well final indicators will work in supporting their conservation actions, monitoring strategies, and other organizational efforts
- Use revision process to adjust or modify indicators and foundational documents as needed
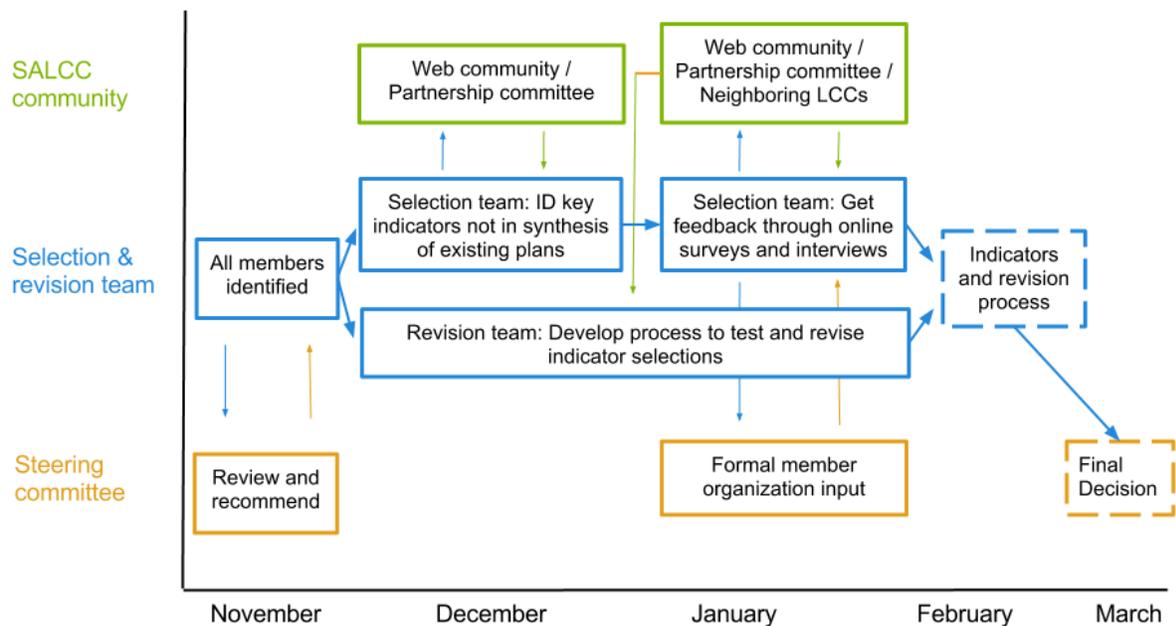

Fig. 2. A detailed flowchart of the process from November to March 2013

Criteria for selecting SALCC indicators

"A useful Ecological Indicator must produce results that are clearly understood and accepted by scientists, policy makers, and the public" (Jackson et al., 2000, Evaluation Guidelines for Ecological Indicators. U.S. Environmental Protection Agency).

Sources

Based on suggestions from Natural Resource Indicator Team, [Open Standards for the Practice of Conservation](#), Third Thursday Web Forum, and in person workshops in Raleigh, NC and Savannah, GA.

What should indicators represent?

The collection of all indicators for an ecosystem should represent the integrity of the ecosystem and how that integrity could be threatened by landscape scale stressors in the future (Fig. 1). The percent of indicator targets met for each ecosystem will be used to measure overall ecosystem integrity. See also "How will indicators be used?" in the overall introduction to this document.
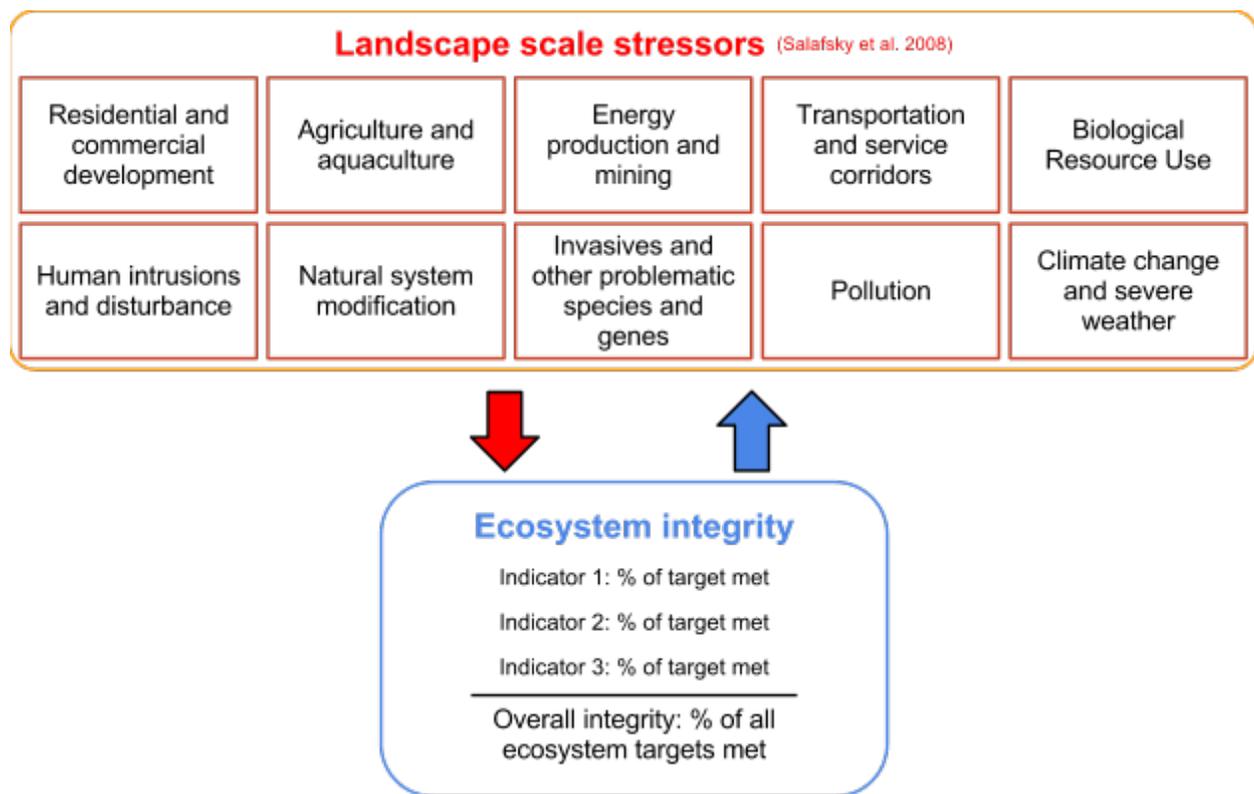

Fig. 3. A simple conceptual model of landscape stressors affecting ecosystem integrity

What can be a natural resource indicator?

Any metric that meets the indicator definition in Section 2 (Definitions) and focuses on ecosystem integrity as defined in Section 2 (Framework) can be a potential natural resource indicator. This could include positive indicators (e.g., species, guilds, native habitat extent, etc.) or negative indicators (e.g., nonnative species, extent of habitat alteration, etc.). Indicators can be either biotic or abiotic.

What can be a natural resource target?

Any metric that meets the target definition in Section 2 (Definitions) and focuses on ecosystem integrity as defined in Section 2 (Framework) can be a potential natural resource target. Examples include measures related to distribution (e.g., double the area of seagrasses, 50% of longleaf with a wiregrass understory, 1 million acres of longleaf), policy adoption (100% of states with an instream flow policy), vital rates (e.g., increase recruitment of Atlantic Sturgeon by 25%), and population size (e.g., double the coastal plain population of brown headed nuthatch)

How many indicators will each habitat have?

The indicator selection team will attempt to choose 3 indicators per ecosystem. Depending on the ecosystem, the selection team may choose slightly more or less depending on how well potential indicators score on the criteria below. The two in person workshops discussing this process included in depth discussions of "lessons learned' from other organizations in identifying indicators. Many of those "lessons" included minimizing the number of indicators especially in the initial selection. This was for two major reasons: 1) Too many indicators become difficult to model and monitor and 2) Once an indicator is selected it can be difficult to remove or replace. Discussions began with the recommendation of a maximum of 8 indicators per ecosystem based on the Open Standards for the Practice of Conservation but given the 12 ecosystem involved in this effort the group felt that a smaller number of initial indicators per ecosystem (~3 instead of 8) was more practical.

Selection criteria

Indicators

Ecological criteria
- Ability to represent a variety of organisms and ecological attributes within that habitat type throughout a major portion of the LCC
- Sensitivity to big landscape threats in the region while having predictable and limited sensitivity to other factors such as natural variations or disturbances (i.e., high signal to noise ratio)

Practical criteria
- Ease of monitoring with existing programs and resources
- Amount of overlap with existing plans and processes
- Ability to model indicator based on current data or existing projects

Social and cultural criteria
- Ability to resonate with the American public
- Ability to link with an economic value
- Level of interest by public land or water managers
- Level of interest by private land or water managers

Targets

- Amount of overlap with existing plans and processes
- Potential to achieve the target
- Capacity to monitor the target
- [In the future] Amount of overlap with cultural and socioeconomic goals (Framework - #2, #3)