Task Force Directives System-wide Ecological Indicators

Briefing to the SCG Jan 13, 2012
Interim Chair

Slides adapted from R. Doren and M. Harwell

Thanks to Carrie Beeler

Background

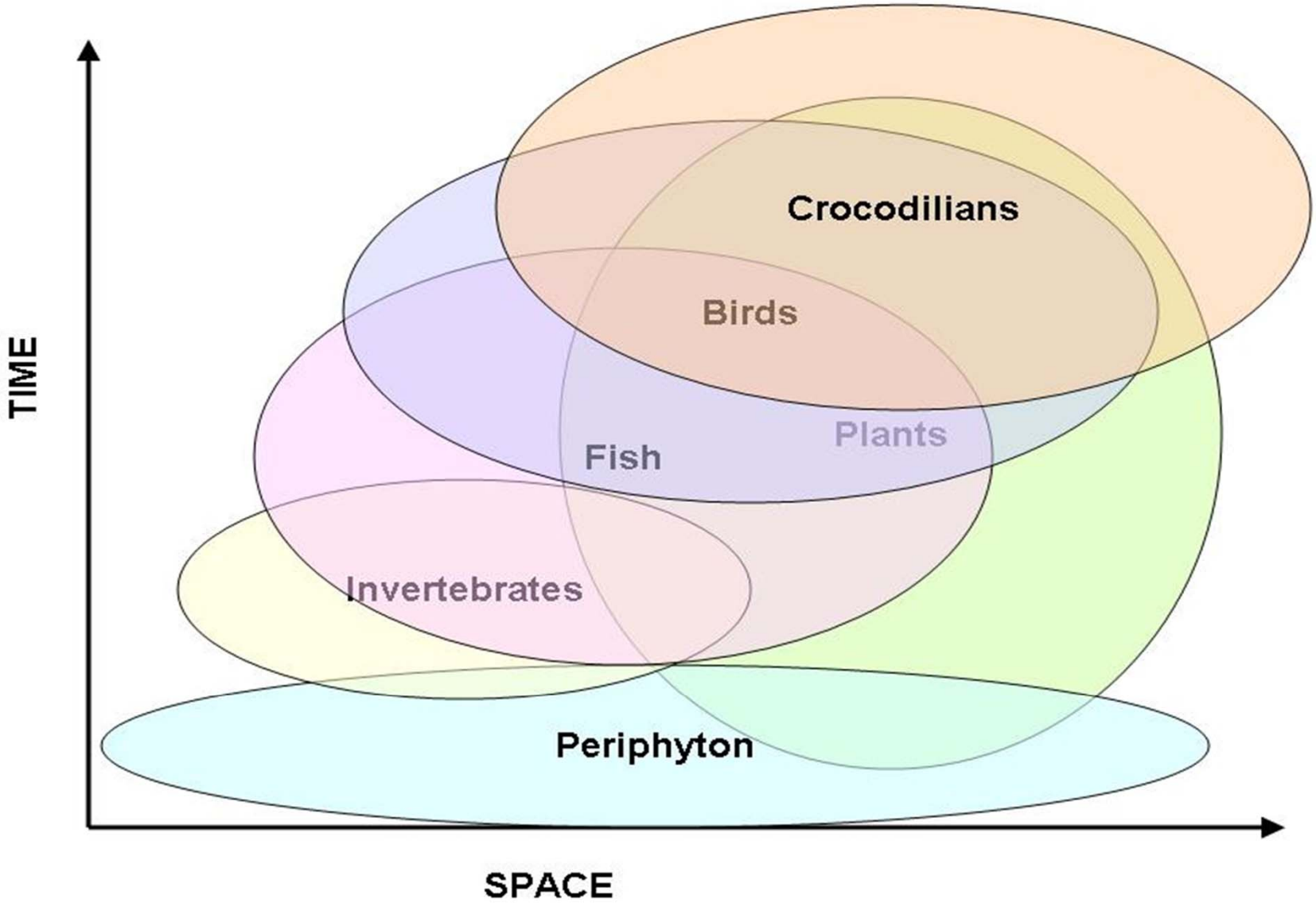
- **WRDA 1996 Directs TF to report Restoration progress/benefits.**
- **Reports from 2003 GAO -Task Force Needs to Improve Science Coordination to Increase the Likelihood of Success**
- **August 2004 Task Force Directive – Science Coordination Group (SCG) to develop small set of System-wide Indicators for Restoration**
- **SCG developed a process to identify indicators using criteria established in the literature**
- **Provide for Independent Scientific Review (ISR) of System-wide Indicator**
- **Reports and ISR at: www.sfrestore.org**

Ecological Indicators

- Periphyton-Epiphyton
- Marsh Fish & Macroinvertebrates
- Roseate Spoonbills
- Woodstork & White Ibis
- Eastern Oysters
- Exotic Plants
- Juvenile Pink Shrimp
- Florida Bay SAV
- Florida/Biscayne Bay Algal Blooms
- Lake Okeechobee Littoral Zone
- Crocodilians

Drawn largely from longer list of measures from RECOVER

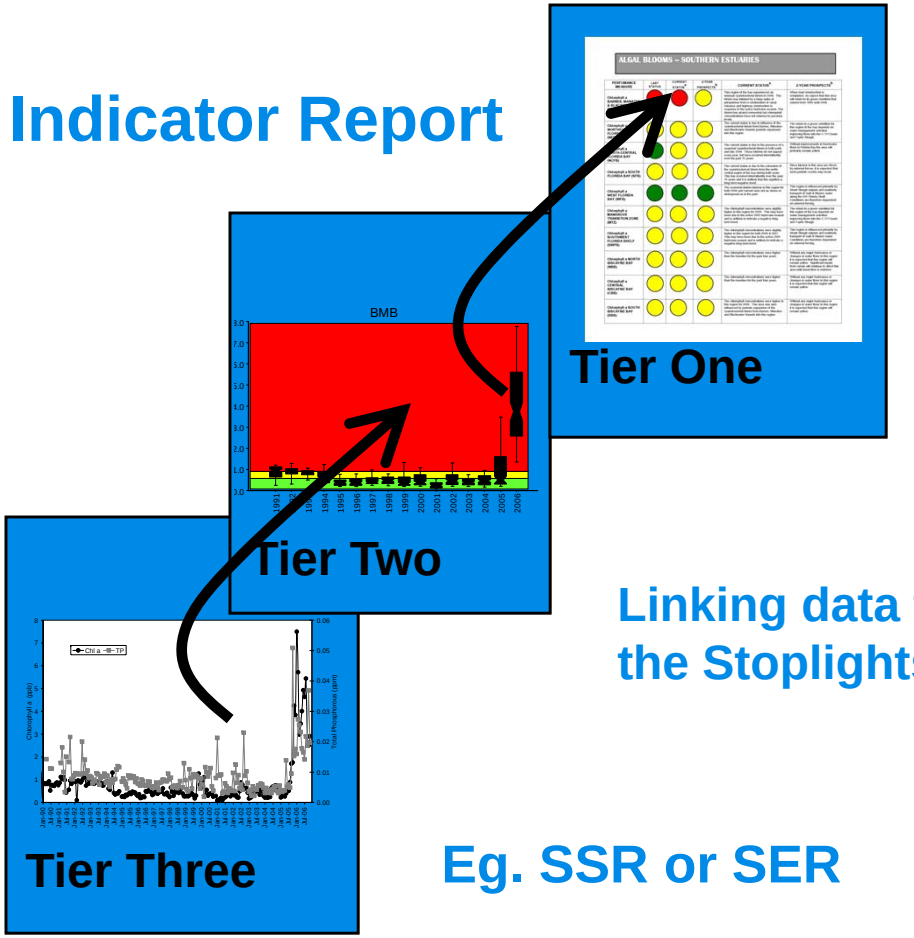
“System-wide” Suite of Indicators (collectively covers short-long and small-large scales)



8 Essentials

- **Scientific Consensus** on Ecosystem Structure & Function – CEMS
- **Indicators** reflecting Ecosystem Structure or Function (Environmental Conditions)
- **Reference or Baseline** to establish points of comparison
- **Monitoring Program** to collect the data for assessments
- **Performance Measures** using *metrics to* compare interim and end point results with desired outcomes
- **Targets** to set interim goals or end points against which to measure trends
- **Assessments** to analyze the data and evaluate the progress and results
- **Communication Tools** to inform, advise and educate the restoration community-Stoplight Report (TF and Congress)

Indicator Report



Linking data to the Stoplights

Eg. SSR or SER

Task Force Biennial Report

STOPLIGHTS – ALGAL BLOOMS SOUTHERN ESTUARIES

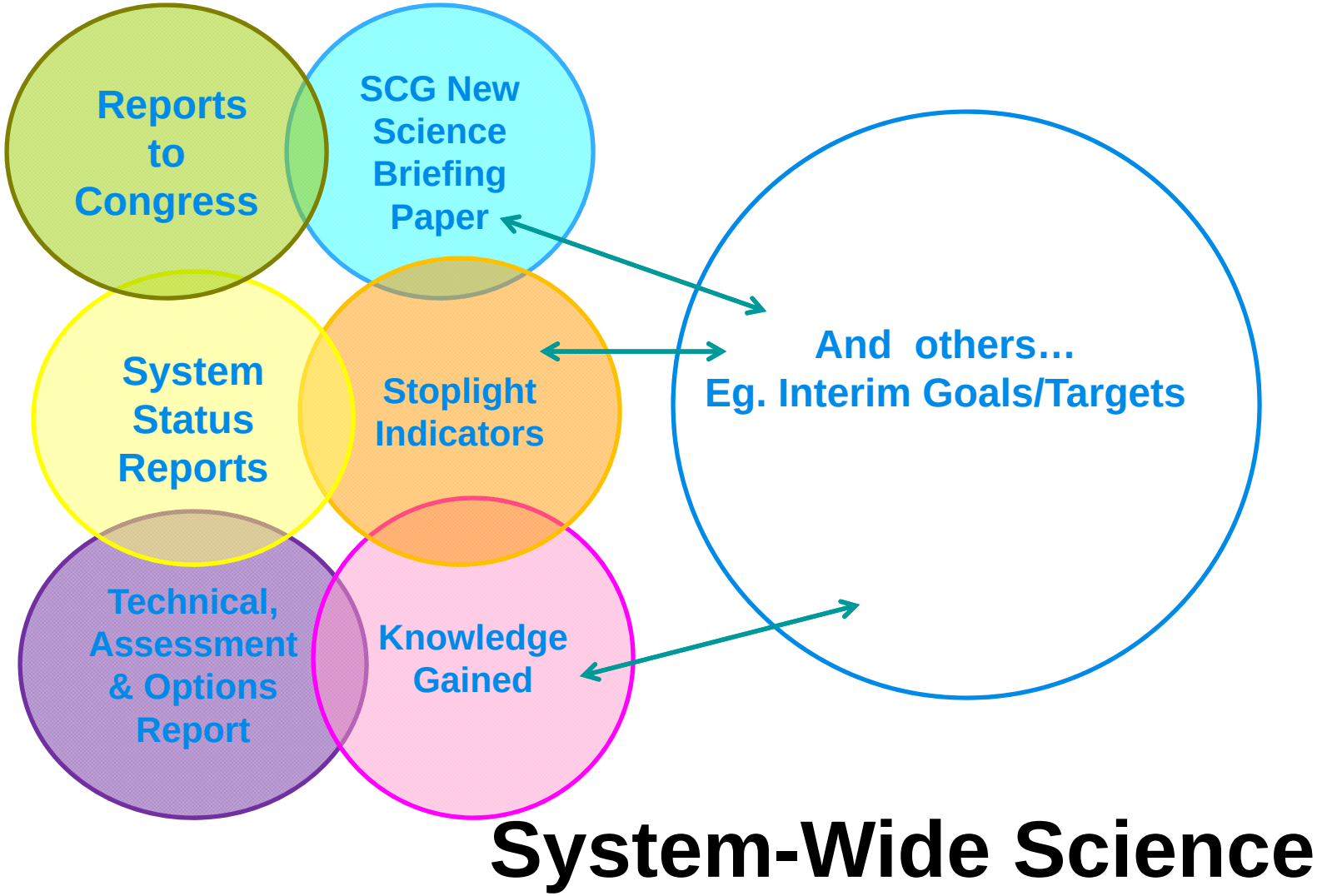
Performance Measure Chlorophyll a	CURRENT STATUS [2]	CURRENT STATUS
BARNES, MANATEE & BLACKWATER SOUNDS (BMB)		This region of the bay experienced an unusual cyanobacterial bloom in 2006. The bloom was initiated by a large spike in phosphorus from a combination of highway construction and canal releases in response to the active hurricane season. The bloom has abated somewhat but chlorophyll concentrations have not returned to previous levels.
NORTHEAST FLORIDA BAY (NEFB)		The current status is due to the periodic expansion of the cyanobacterial bloom from Barnes, Manatee and Blackwater Sounds into this region.
NORTH-CENTRAL FLORIDA BAY (NCFB)		The current status is due to the presence of a seasonal cyanobacterial bloom in both early and late 2006. These blooms do not appear every year, but have occurred intermittently over the past 15 years. It is unlikely that this signifies a long-term negative trend.
SOUTH FLORIDA BAY (SFB)		The current status is due to the extension of the cyanobacterical bloom from the north-central region of the bay during both years. This has occurred intermittently over the past 15 years and it is unlikely that this signifies a long-term negative trend.
WEST FLORIDA BAY (WFB)		The seasonal diatom blooms in this region for both 2006 and current were not as dense or widespread as in the past.
MANGROVE TRANSITION ZONE (MTZ)		The chlorophyll concentrations were slightly higher in this region for both 2006 & 2007. This may have been due to the active 2005 hurricane season and is unlikely to indicate a negative long-term trend.
SOUTHWEST FLORIDA SHELF (SWFS)		The chlorophyll concentrations were slightly higher in this region for both 2006 & 2007. This may have been due to the active 2005 hurricane season and is unlikely to indicate a negative long-term trend.
NORTH BISCAYNE BAY (NBB)		The chlorophyll concentrations were slightly higher in this region for both 2006 & 2007. Neither year had concentrations that were significantly higher than baseline.
CENTRAL BISCAYNE BAY (CBB)		The chlorophyll concentrations were slightly higher in this region for both 2006 & 2007. Neither year had concentrations that were significantly higher than baseline.
SOUTH BISCAYNE BAY (SBB)		The chlorophyll concentrations were slightly higher in this region for both 2006 & 2007. This area was also influenced by periodic expansion of the cyanobacterial bloom from Barnes, Manatee and Blackwater Sounds into this region.

Heirarchical Approach

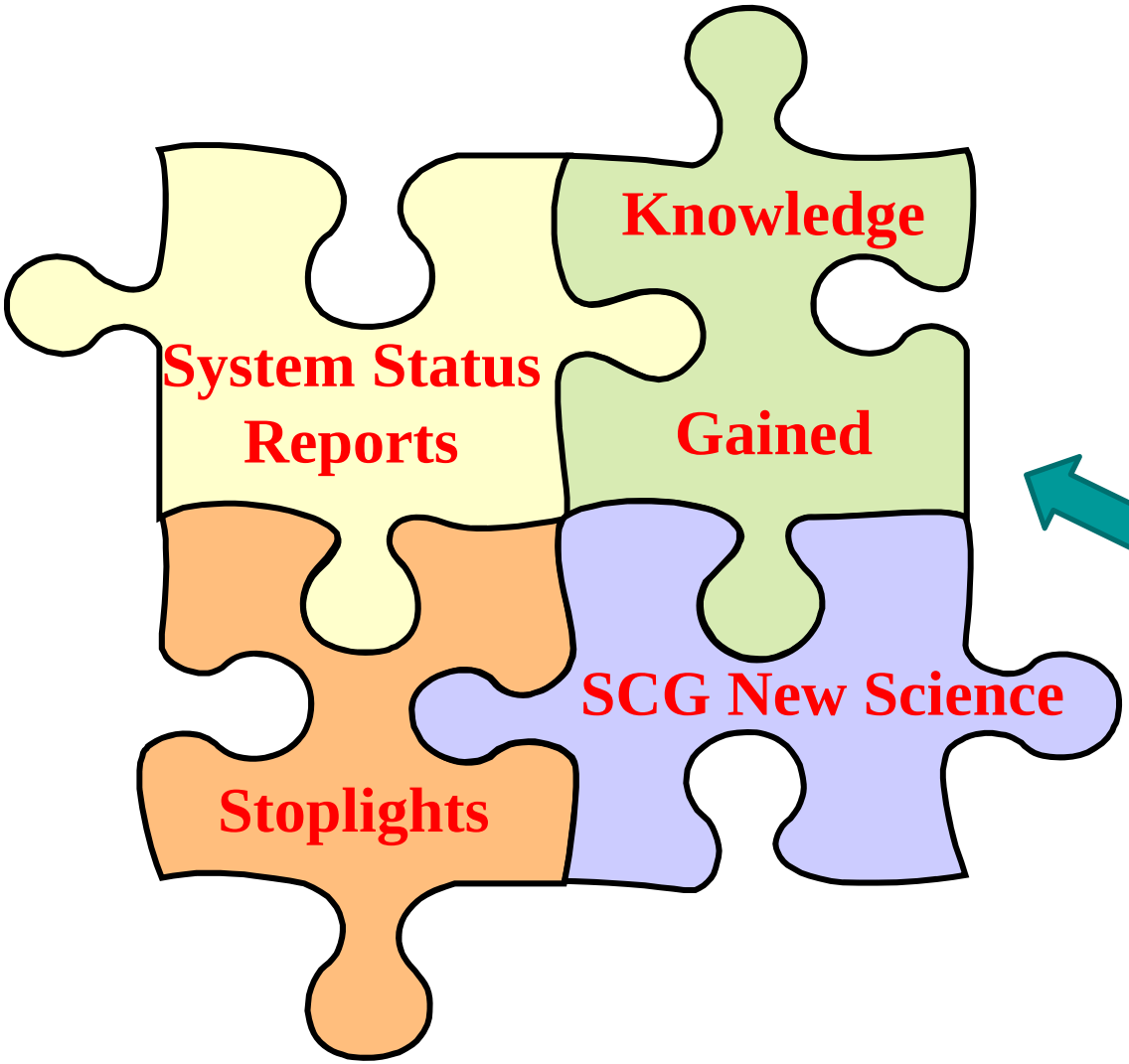
Tier 1. Stoplight Reports
Tier 2. Summary graphics and data charts
Tier 3. Detailed data, theory, and analyses

How do the Task Force System-wide Indicators Integrate and Coordinate with RECOVER Assessments & Adaptive Management Program & Other Science?

System-wide science reporting umbrella



System-Wide Science



Other Reports

- Technical Report
- Assessment Report
- Options Report
- Interim Goals
- AM Integration Guide
- SFER
- R-EMAP
- Others

Each piece has different *audiences, objectives* but relies on *common science*...

Scientists to revise CEMs, Hypotheses, Performance Measures

Managers to understand restoration progress and evaluate options to adjust management options

Policymakers to communicate general status, incorporate information into decision processes related to improving current and future projects

Public to inform on progress, promote feedback, and build support for continued restoration, science, and changes

Progress Toward Restoring the Everglades: The 3rd Biennial Review NRC 2010

"This committee reiterates the critical importance of the MAP for informing implementation and management decisions, as well as for providing assessments of restoration progress."

"The document prepared for dissemination to the public, including managers and decision makers (Doren et al., 2009b), does an excellent job of communicating the scientific underpinnings of the system and the status of each indicator."

"Altogether, the stoplight report should greatly improve communication to both the general public and decision makers. However, rather than assuming this to be the case, the Science Coordination Group staff should systematically solicit feedback from these audiences, assess the effectiveness of the current stoplight indicators, and continue to refine and improve them."

"Also, the committee encourages RECOVER to continue to develop and implement plans to assemble MAP-derived and other data across modules to allow for a systemwide assessment."

TF Workshop Feb 2011- Naples

- The Stoplight Assessment Tool is helpful in communicating the current status of the ecosystem.

Agree	Disagree	Neutral
33	0	6

- Over Time the Stoplight Assessment Tool will be helpful in communicating the ecosystem response to restoration.

Agree	Disagree	Neutral
29	1	13

Recommendations
From Oct 2011 TF Meeting

1. Direct the SCG to assess the loss of system-wide ecological indicators and provide recommendations on how to best retain their intended purpose

   Biennial Report – due this year

2. Direct the SCG and WG to work with RECOVER to review the MAP to ensure it is positioned to support the Everglades next step planning process, evaluate ongoing projects, and continue an adaptive management approach to restoration regarding monitoring recommendations related to the System-wide Ecological Indicators reporting and support of the Central Everglades Planning Project (CEPP)

Selection Guidelines

1. Is the indicator relevant to the ecosystem and does it respond to variability at a scale that makes it applicable to the entire system or an important portion of it?
2. Is the indicator feasible to implement (i.e. is someone already doing it?)
3. Is the indicator sensitive to system drivers (i.e. rainfall)?
4. Is the indicator interpretable in a “common” language?
5. Are there situations where an “optimistic” trend in the indicator might suggest a “pessimistic” restoration trend?
6. Are there situations where a “pessimistic” trend in the indicator may be unrelated to restoration?
7. Is the indicator scientifically defensible?
8. Can clear measurable targets be established for the indicator to allow for evaluation of success?
9. Does the indicator have enough specificity to be able to be used to correct or redirect restoration actions?
10. Does the suite of indicators cover the critical range of ecosystem “features” including processes and structures?