Communicating Science Information on Everglades Restoration

Moving Beyond Data Rich, But Information Poor in Science Communication

Laura A. Brandt

U.S. Fish and Wildlife Service, Davie, FL, USA

BLUF

- We have made progress in our communication
- There is still room for improvement in:
  - Audience identification
  - Understanding what is important
  - Understanding what resonates
  - Explicit efforts to coordinate and integrate
  - Explicit commitment of resources for communication

South Florida Ecosystem Restoration Task Force System-wide Ecological Indicators

- Background
- Communication framework
- Example:
  - Task Force Biennial Report System-wide Ecological Indicators

South Florida Ecosystem Restoration Task Force

- Established by WRDA 1996
- 14 member organizations
  - 7 federal, 2 tribal, and 5 state and local government representatives
- Secretary of Department of Interior as Chair

The South Florida Ecosystem Restoration Program

- A healthy South Florida Ecosystem that supports diverse and sustainable communities of plants, animals, and people

  - Get the water right
  - Restore, preserve, and protect natural habitats and species
  - Foster compatibility of the built and natural systems

Reporting Requirement

- Biennial Report to Congress

  – Summarize activities

  – Report on progress toward restoration

The South Florida Ecosystem Restoration Program

- Comprehensive Everglades Restoration Plan (CERP)
- Non-CERP
  - Kissimmee River Restoration Project
  - Everglades Construction Project
  - C-111 Project
  - Modified Water Deliveries to Everglades National Park Project
  - “Critical Projects” authorized by WRDA 1996
  - South Florida Multi-species Recovery Plan
  - State water quality plans
  - State land acquisitions authorized for Save Our Rivers(SOR) and Conservation and Recreation Lands (CARL) programs
  - Federal land acquisitions for national parks, preserves and wildlife refuges

Progress Towards Ecosystem Restoration

Goal 1: Get the Water Right

Subgoal 1-A: Get the Hydrology Right

Objective 1-A.1: Provide 1.8 million acre-feet of surface water storage by 2036.

Objective 1-A.2: Develop alternative water storage systems capable of storing 1.7 billion gallons per day by 2030.

Objective 1-A.3: Modify 361 miles of impedi-ments to flow by 2020.

Subgoal 1-B: Get the Water Quality Right

Objective 1-B.1: Construct 96,010 acres of stormwater treatment areas by 2035.

Objective 1-B.2: Prepare locally based plans to reduce pollutants as de-termined necessary by the total maximum daily loads by 2014.

Goal 2: Restore, Preserve, & Protect Natural Habitats & Species

Subgoal 2-A: Restore, Preserve, & Protect Natural Habitats

Objective 2-A.1: Complete acquisition of 5.7 million acres of land identified for habitat protection by 2020.

Objective 2-A.2: Protect 20 percent of the coral reefs by 2015.

Objective 2-A.3: Improve habitat quality for 2.4 million acres of natural areas in south Florida.

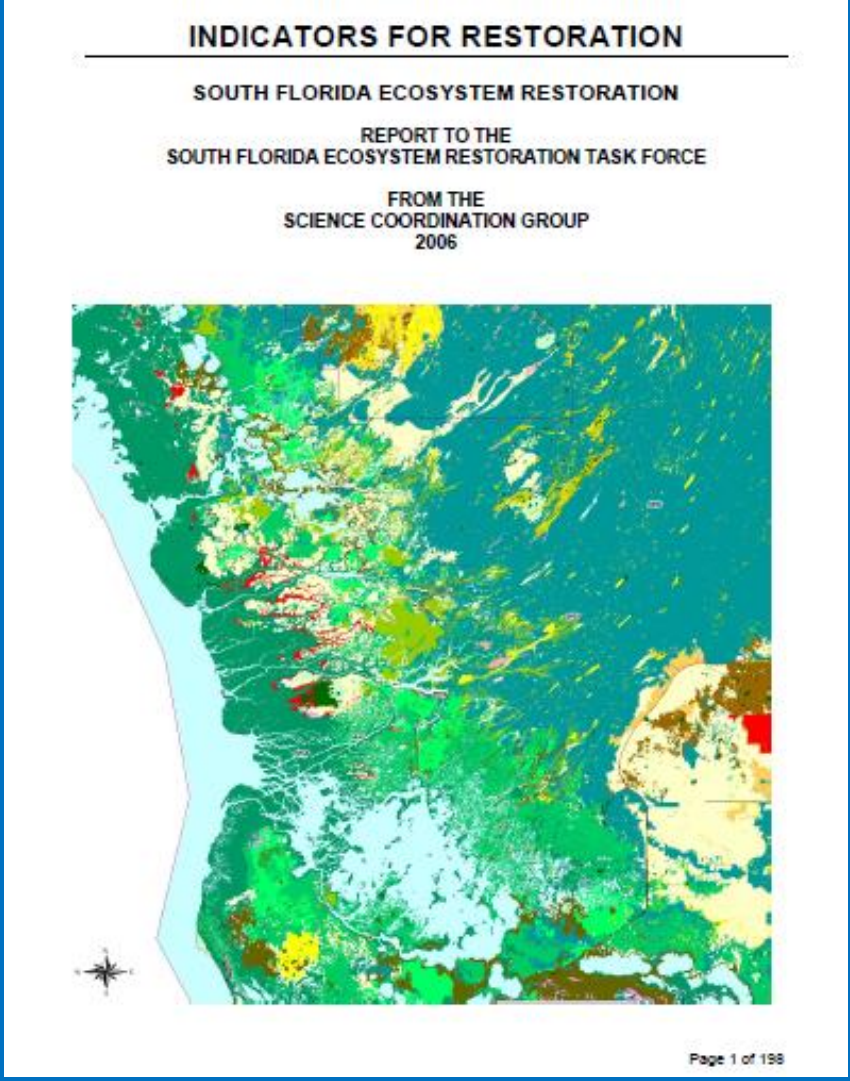
Subgoal 2-B: Control Invasive Exotic Plants & Animals

Objective 2-B.1: Achieve maintenance control of Brazilian pep-per, melaleuca, Australian pine, and Old World climbing fern on south Florida's public conserva-tion lands by 2020.

Objective 2-B.2: Release two biological control insects per year for the control of invasive exotic plants.

Objective 2-B.3: Achieve eradication of Gambian pouch rat by 2014.

2005


INDICATORS FOR RESTORATION

SOUTH FLORIDA ECOSYSTEM RESTORATION

REPORT TO THE
SOUTH FLORIDA ECOSYSTEM RESTORATION TASK FORCE

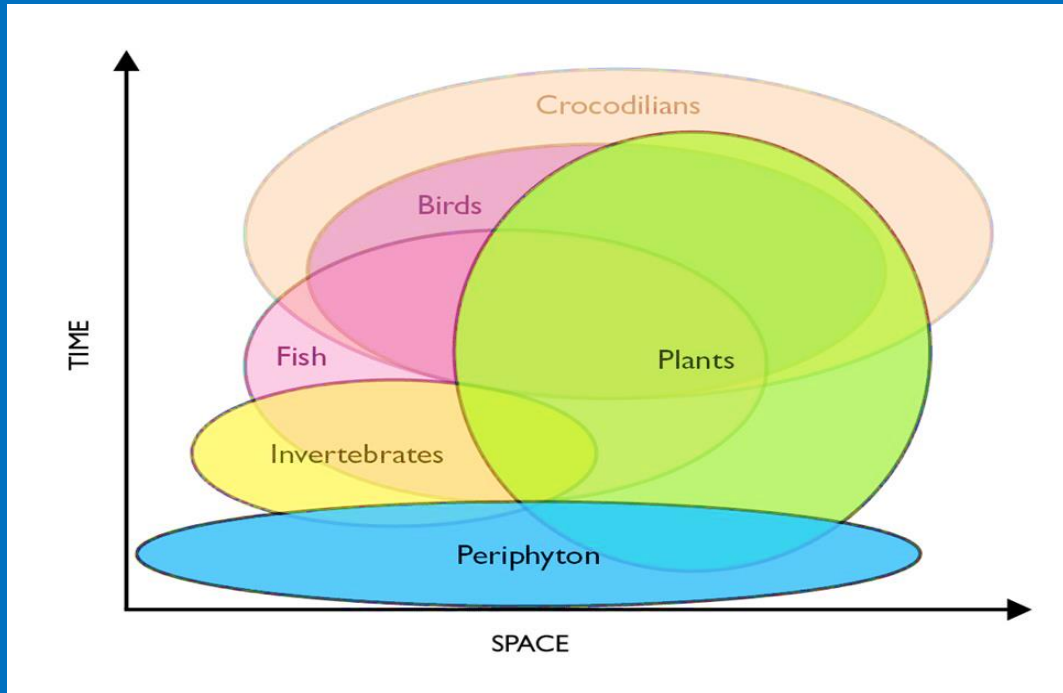
FROM THE
SCIENCE COORDINATION GROUP
2006

Page 1 of 198

- Task Force directed SCG to develop a "suite" of system-wide indicators for restoration
  - Judge the performance of CERP and Non-CERP projects
  - Evaluate ecological change from implementation
  - Coordinated with RECOVER to create a harmonious communication tool

System-wide Ecological Indicators

- Invasive Exotic Plants
- Lake Okeechobee Nearshore Zone Submersed Aquatic Vegetation
- Eastern Oysters
- Crocodilians (American Alligators and Crocodiles)
- Fish and Macroinvertebrates
- Periphyton and Epiphyton
- Wading Birds (White Ibis and Wood Stork)
- Southern Estuaries Algal Blooms
- Florida Bay Submersed Aquatic Vegetation
- Juvenile Pink Shrimp
- Wading Birds (Roseate Spoonbill)



Generalizable Strategic Communication Conceptual Framework using a Strategic Communication Matrix

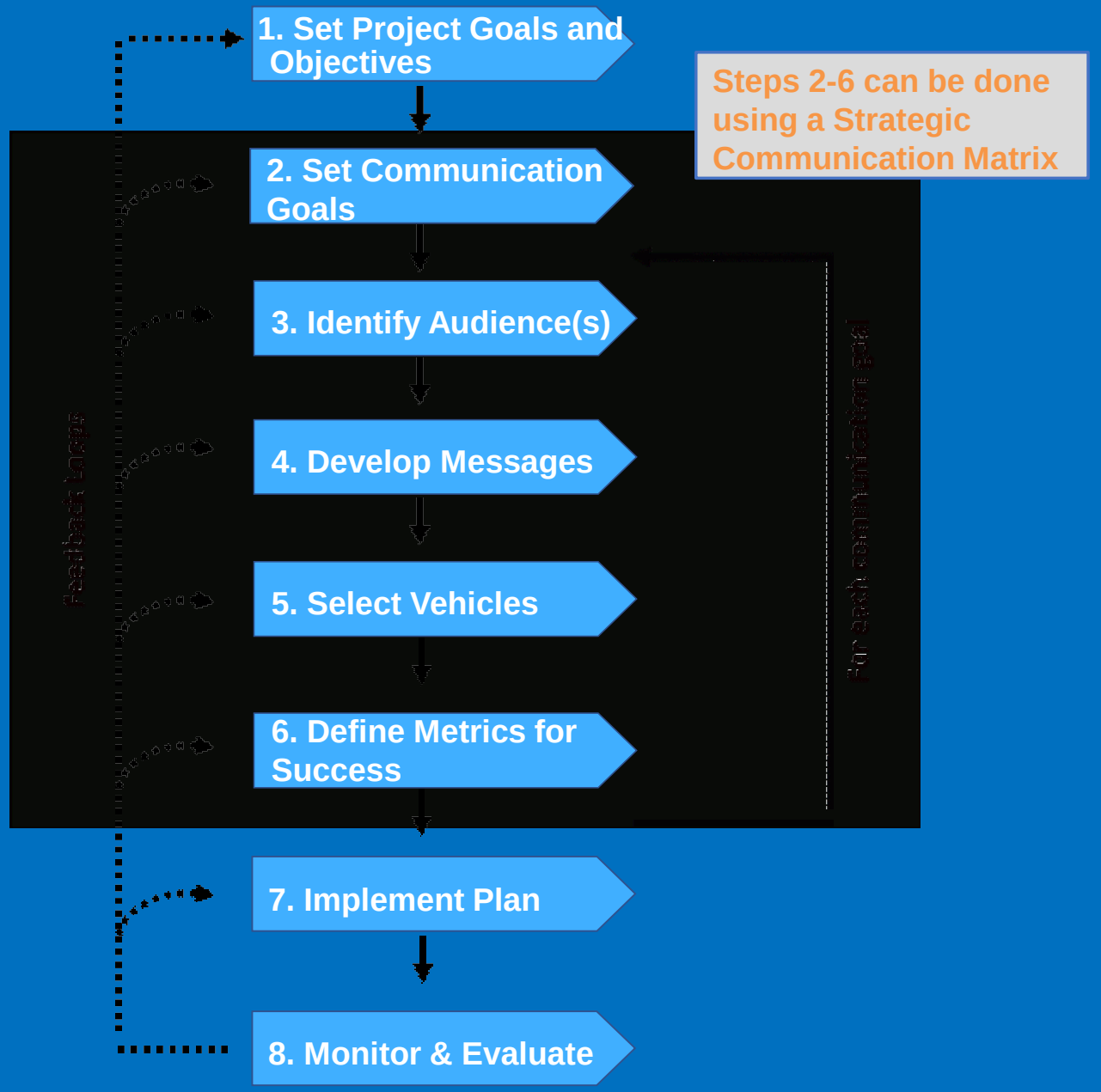


Figure by M.C. Harwell

Set Communication Goals

- Biennial report
  - Report to Congress on progress made towards restoration
  - Assess the current status of the ecosystem
  - Track responses to restoration projects and system-wide operational changes

Identify Audiences

- Biennial report
  - United States Congress
  - Florida Legislature
  - Seminole Tribe of Florida
  - Miccosukee Tribe of Indians of Florida

Develop Messages

- Biennial report
  - We are making progress towards restoration
  - Investments are worth it
  - Continued investments will get us to full restoration

Select Vehicles

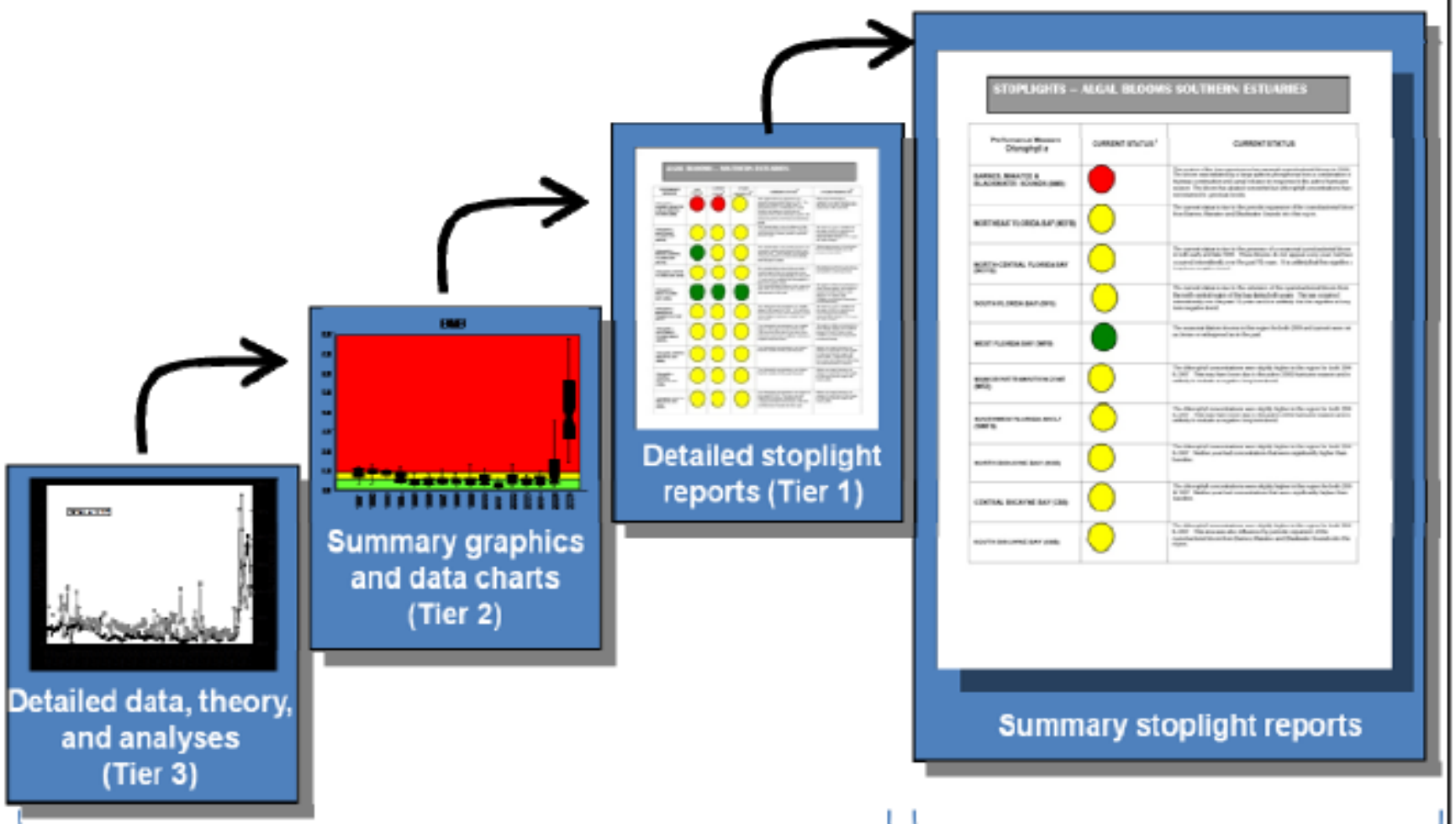
- Biennial report
  - Stoplight presentation

Red-Substantial deviations from restoration targets creating severe negative condition that merits action

Yellow-Current situation does not meet restoration targets and may require additional restoration action

Green-Situation is within the range expected for a healthy ecosystem within the natural variability of rainfall. Continuation of management and monitoring effort is essential to maintain and be able to assess “green” status

Development of Summary Stoplight Reports



System-wide Indicators Assessment Report

Streamlined Report/Biennial Report

Changes to System-wide Ecological Indicator Reporting in the Biennial Report

- Shorter
- Focus on audience of Congress, Legislature, and Tribes
- Summary of indicators
  - Indicators at a glance
  - One page per indicator
- Case studies/story lines- examples of ecological responses to investments

Indicators at a Glance

	Water Year 2008	Water Year 2009	Water Year 2010	Water Year 2011	Water Year 2012
Lake Okeechobee					
Invasive Exotic Plants					
Lake Okeechobee Nearshore Zone Submersed Aquatic Vegetation					
Northern Estuaries					
Invasive Exotic Plant Species					
Eastern Oysters					
Greater Everglades					
Crocodilians					
Fish and Macroinvertebrates (WCA 3 and ENP only)					
Invasive Exotic Plants					
Periphyton and Epiphyton					No species composition data
Wading Birds (White Ibis and Wood Stork)					
Southern Coastal System					
Crocodilians					
Southern Estuaries Algal Blooms**					
Florida Bay Submersed Aquatic Vegetation					
Invasive Exotic Plants					
Juvenile Pink Shrimp*	Data used as base	Data used as base	Data used as base		
Wading Birds (Roseate Spoonbill)					Prey community data not yet processed
Wading Birds (White Ibis and Wood Stork)					

System-wide Ecological Indicators

Helpful Hints for Reading the Indicators
Within the system-wide indicator tables, the "Current Status" column contains the most recent indicator information, which for most indicators is the end of WY 2016 (May 1, 2015 to April 30, 2016). The "Previous Status" column contains information for WY 2014 (May 1, 2013 to April 30, 2014). Status is shown using green, yellow, and red stoplight colors as explained below.

Stoplight Color Legend

Red (R) Substantial deviations from restoration targets creating severe negative condition that merits action. ***Well below restoration target.***

Yellow (Y) Current situation does not meet restoration targets and may require additional restoration action. ***Below restoration target.***

Green (G) Situation is within the range expected for a healthy ecosystem within the natural variability of rainfall. Continuation of management and monitoring effort is essential to maintain and be able to assess "green" status. ***Meets restoration target.***

Black (B) No data or inadequate amount of data were collected due to reductions in funding.

INDICATORS AT A GLANCE	Previous Status Water Year 2014	Current Status Water Year 2016
Invasive Exotic Plants	Y	Y
Lake Okeechobee Nearshore Zone Submerged Aquatic Vegetation	Y	Y
Eastern Oysters - **Modified (Northern Estuaries only)**	Y	Y
Crocodilians (American Alligators and Crocodiles) - **Modified (DOI Lands Only)**	R	R
Fish & Macroinvertebrates (WCA3 and ENP only)	R	R
Periphyton - **Modified (no species composition)**	Y	Y
Wading Birds (White Ibis and Wood Stork)	R	R
Southern Coastal Systems Phytoplankton Blooms - **Modified (no southwest shelf)**	Y	R
Florida Bay Submerged Aquatic Vegetation	Y	Y
Juvenile Pink Shrimp - **Modified (no sampling)**	B	B
Wading Birds (Roseate Spoonbill)	R	R

Indicator Sections

CROCODILIANS (AMERICAN ALLIGATORS & CROCODILES) INDICATOR

STATUS	PREVIOUS (WATER YEAR 2012)	CURRENT (WATER YEAR 2014)
SYSTEM-WIDE (Modified DOI lands only)	Y	R

A full system-wide status for crocodilians for WY 2012–WY 2014 cannot be provided because some routes were eliminated when funding was suspended in WY 2012. However, surveys have continued on Department of Interior lands (Arthur R. Marshall Loxahatchee National Wildlife Refuge, Big Cypress National Preserve, Crocodile Lake National Wildlife Refuge, Biscayne National Park, and ENP).

The stoplight color for the crocodilian indicator in the areas listed above has changed to red for WY2014, although positive responses of crocodiles to restoration actions by ENP have occurred around Cape Sable {See Cape Sable Case study} and the interagency efforts in the C-111 Basin (See C111 case study). In addition, encounter rates of alligators in areas with longer hydroperiods (periods of seasonal flooding) are generally increasing or remaining constant {See 2014 System-wide Indicator Report and 2014 System Status Report}. The change from yellow to red from WY2012 to WY2014 is a reflection of two factors: lower survival rates of juvenile crocodiles in Biscayne Bay and an overall index that has consistently hovered near the threshold between yellow and red.

Data collected during 2004–2014 were used to refine what is known about the relationship between alligators and hydrology, and this information was used to plan for the CEPP. Alligator relative abundance is stable or increasing in areas with longer hydroperiods such as the southwest portion of Water Conservation Area 3, but declining in areas that dry out more frequently such as Water Conservation Area 3A north and northeastern Shark Slough in Everglades National Park downstream of the Tamiami Trail bridge project. Alligators south of the Tamiami Trail bridge project currently have low body condition (are skinnier than target levels) and low relative abundance, but increasing trends in these measures are expected as hydrologic regimes are restored.

Data relating salinity to growth and survival of juvenile crocodiles were used as an ecological planning tool for CEPP, which helped to evaluate alternatives and understand the benefits of the various plans. Analysis of data collected during 1978–2013 within Everglades National Park supports the hypothesis that juvenile survival and growth rates increase with lower salinity levels.

Challenges to Communication

Challenge

- Information reported for different time periods by each indicator scientist
- Presentation of data was by area
- Reporting across indicators not integrated
- The “so what” is not always clear
- Integration with other reports to make sure harmonious communication

Solution

- Now reporting on SFWMD water year
- Now a “system-wide” summary for each indicator
- Working on better coordination among scientists
- Identified as a challenge that requires interaction with audience(s)
- Identified as an issue and coordination is improving

Define Metrics for Success

- Biennial report
  - Continued support for restoration
  - Do people find the report useful?

BLUF

- We have made progress in our communication
- There is still room for improvement in:
  - Audience identification
  - Understanding what is important
  - Understanding what resonates
  - Explicit efforts to coordinate and integrate
  - Explicit commitment of resources for communication