

System-wide Ecological Indicators for Everglades Restoration 2016

*The South Florida
Ecosystem Restoration Task
Force
Strategy and Biennial Report
July 2014—June 2016*

*Working Group/Science
Coordination Group Meeting 21
March 2016*

Presented by Laura Brandt



SOUTH FLORIDA ECOSYSTEM RESTORATION TASK FORCE

JULY 2012 - JUNE 2014
STRATEGY AND BIENNIAL REPORT

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Biennial Report to Congress



SYSTEM-WIDE ECOLOGICAL
INDICATORS
FOR
EVERGLADES RESTORATION
2014

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Full Report

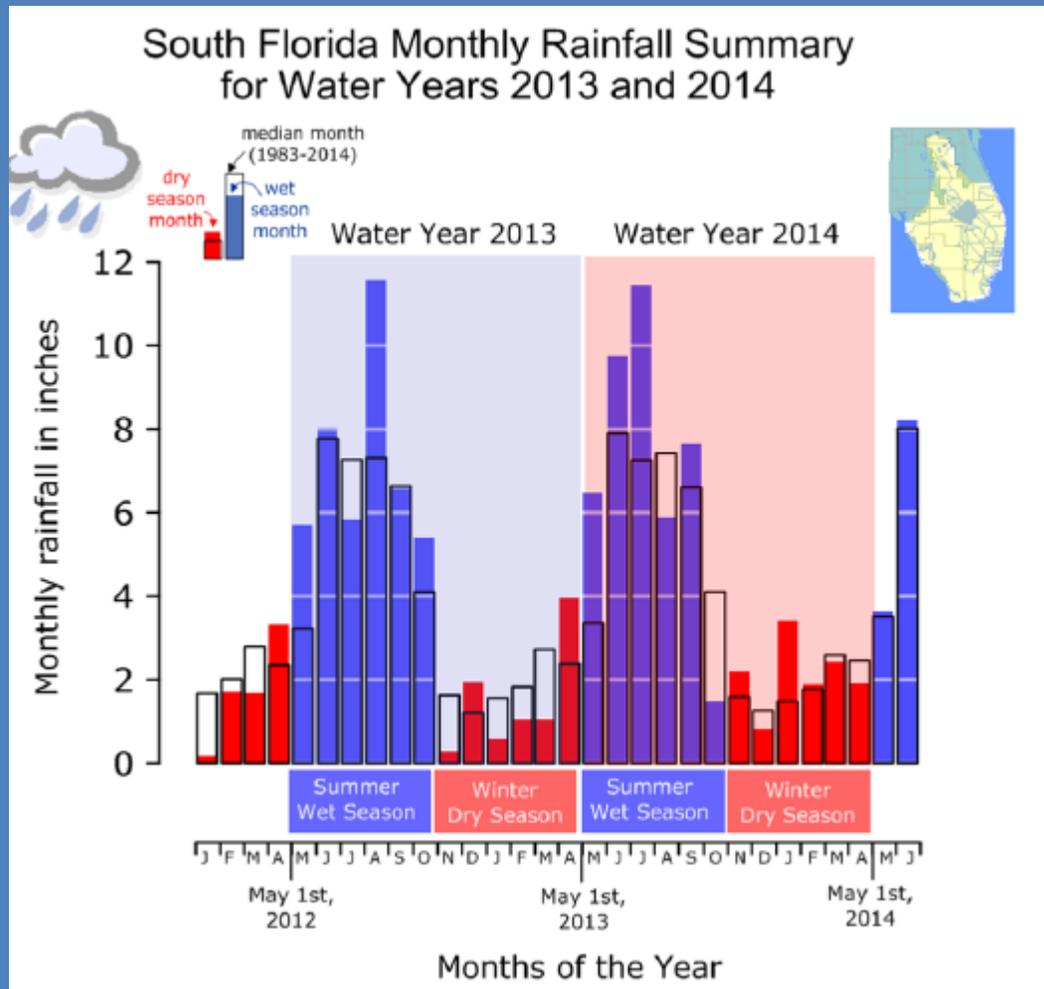


Biennial Report to Congress System-wide Ecological Indicators

- *Background*
- *Hydrologic Context for Water Years 2015 and 2016*
- *Indicators at a Glance*
- *One page for each indicator*
- *Case Studies*

Links to more information in the full System-wide Ecological Indicators for Everglades Restoration 2016 Report , Systems Status Report, and South Florida Environmental Report

Hydrologic Context



WY13- Average rainfall

Wet beginning and end of wet season

WY14- Above average rainfall

Unusually wet spring

11 System-wide Ecological Indicators

<i>Indicators at a Glance 2014</i>	Previous Status	Current Status
	WY2012	WY2014
Invasive Exotic Plants	Yellow	Yellow
Lake Okeechobee Nearshore Zone Submerged Aquatic Vegetation	Red	Yellow
Eastern Oysters- Modified (Northern estuaries only)	Yellow	Red
Crocodylians (American Alligators & Crocodiles)- Modified (DOI Lands Only)	Yellow	Red
Fish and Macroinvertebrates (WCA3 and ENP only)	Red	Red
Periphyton- Modified (no species composition)	Yellow	Yellow
Wading Birds (White Ibis and Wood Stork)	Red	Red
Florida Bay Algal Blooms- Modified (no southwest shelf)	Yellow	Yellow
Florida Bay Submerged Aquatic Vegetation	Yellow	Yellow
Juvenile Pink Shrimp- Modified (no sampling)	Yellow	Black
Wading Birds (Roseate Spoonbill)	Red	Red

Drawn largely from longer list of measures from RECOVER

Format for Each Indicator

- *Indicator*
- *Status*
- *Tie to restoration actions*
- *What have we learned*
- *Links to full report*

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 spotlight 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.



Case Studies

Show where local restoration actions have resulted in the type of positive ecological responses that we expect to see one day system-wide

- Kissimmee River Restoration Project
- Lake Okeechobee Restoration Project
- C-111 Spreader Canal Western Project
- Cape Sable Canals Restoration Project



Full System-wide Ecological Indicators Report

- *Introduction*
- *Hydrologic context*
- *Stoplight format*
- *Indicators overview*
- *Individual indicators*
 - *Summary/key findings*
 - *Stoplight table (5 years)*
 - *Updates on calculation of the indicator*
 - *How have the data been used*
 - *New insights relevant to future restoration decisions*
 - *Publications/report*
 - *Map showing indicator status WY16*

Contributors to 2014 report

Lead Scientist for Indicator Report

First Name	Last Name	Agency	Indicator
Chris	Kelble	NOAA	Florida Bay Algal Blooms **
Joan	Browder	NOAA	Pink Shrimp
Peter	Frederick	UF	White Ibis and Wood Stork
Evelyn	Gaiser	FIU	Periphyton
Jerry	Lorenz	Audubon of Florida	Roseate Spoonbill **
Chris	Madden	SFWMD	Florida Bay SAV **
Frank	Mazzotti	UF	Crocodylians
LeRoy	Rodgers	SFWMD	Invasive Exotic Species **
Andy	Rodusky	SFWMD	Lake Okeechobee Nearshore **
Joel	Trexler	FIU	Fish and Macroinvertebrates
Aswani	Volety	FGCU	Oysters

Others involved ** Contributed to case studies

Dave	Rudnick	NPS	Florida Bay Algal Blooms **
Steve	Kelly	SFWMD	Florida Bay Algal Blooms **
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Lawrence	Glenn	SFWMD	Kissimmee Case Study
Ellen	Hardy	NPS	Technical Editing
Bob	Sobczak	NPS	Hydrology

Questions?

- *What significant events (climate, hydrological, water management) should we mention?*
- *What projects should be included as case studies?*
- *Additional Contacts for hydrologic context or indicators?*