System-wide Ecological Indicators for Everglades Restoration 2018

The South Florida Ecosystem Restoration Task Force Strategy and Biennial Report July 2016—June 2018

South Florida Ecosystem Restoration Task Force 25 July 2018

Presented by Nick Aumen

Biennial Report to Congress

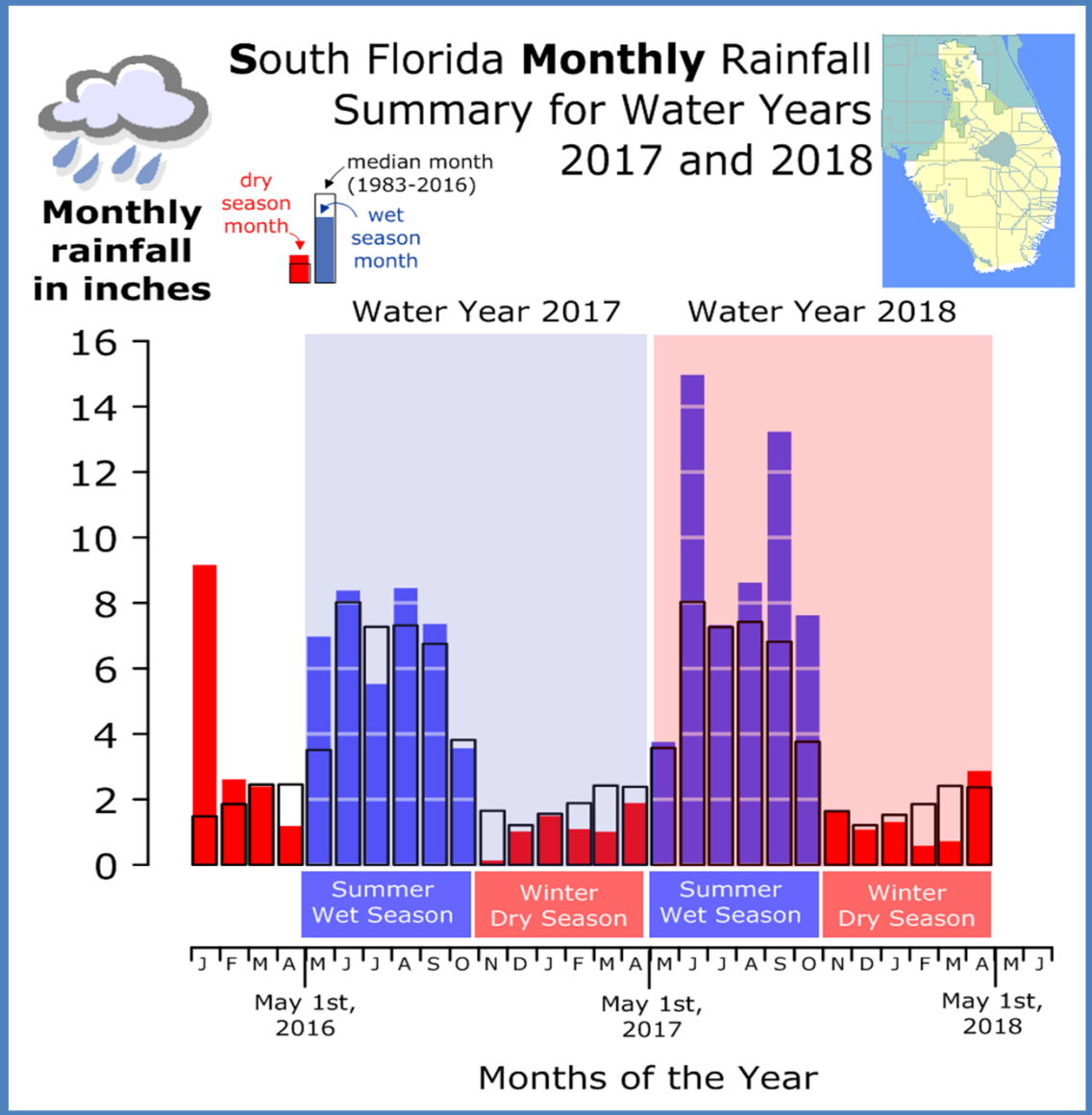
Full Report

Biennial Report to Congress System-wide Ecological Indicators

- *Background*
- *Hydrologic Context for Water Years 2017 and 2018*
- *Indicators at a Glance*
- *One page for each indicator*

Links to more information in the full System-wide Ecological Indicators for Everglades Restoration 2018 Report , Systems Status Report, and South Florida Environmental Report

Hydrologic Context



WY17- Average wet season; below average dry season

WY18- Record rainy wet season; below average dry season

11 System-wide Ecological Indicators

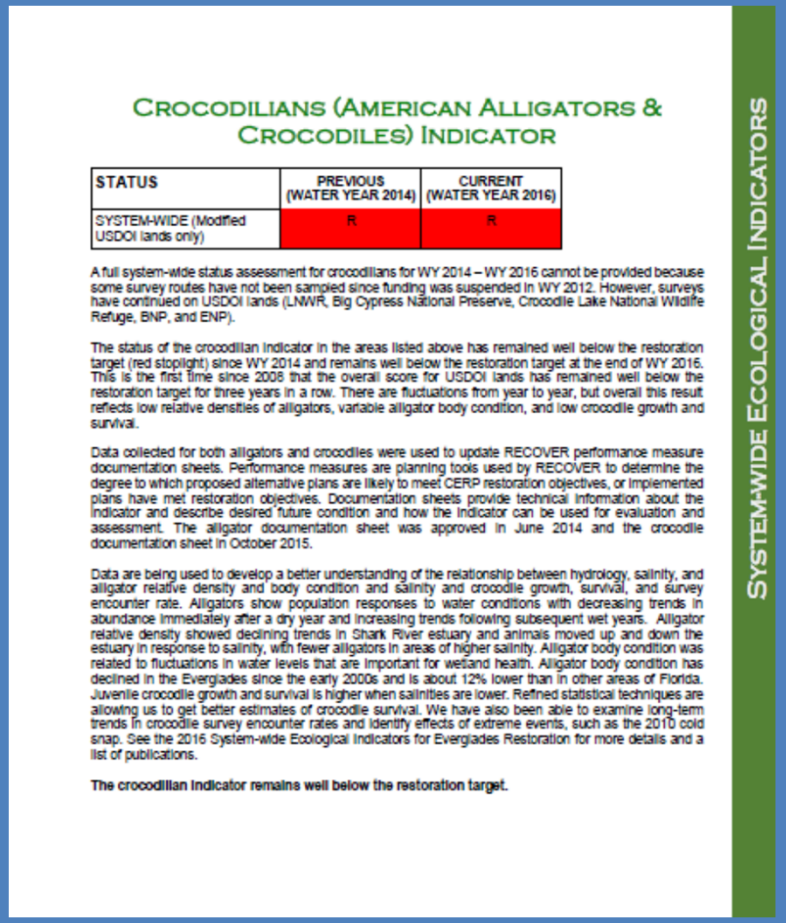
Indicators at a Glance 2018

	Previous Status WY2016	Current Status WY2018
Invasive Exotic Plants	Y	Y
Lake Okeechobee Nearshore Zone Submerged Aquatic Vegetation	Y	Y
Eastern Oysters- Modified (Northern Estuaries only)	Y	R
Crocodilians (American Alligators & 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 & Wood Stork)	R	R
Southern Coastal Systems Phytoplankton Blooms- Modified (no southwest shelf)	R	R
Florida Bay Submersed Aquatic Vegetation	Y	Y
Juvenile Pink Shrimp- Modified (no sampling)	B	B
Wading Birds (Roseate Spoonbill)	R	R

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 and other supporting information such as RECOVER SSR, South Florida Environmental Report



Crocodilians (American Alligators & Crocodiles) Indicator

STATUS	PREVIOUS (WATER YEAR 2014)	CURRENT (WATER YEAR 2016)
SYSTEM-WIDE (Modified USDOI lands only)	R	R

A full system-wide status assessment for crocodilians for WY 2014 – WY 2016 cannot be provided because some survey routes have not been sampled since funding was suspended in WY 2012. However, surveys have continued on USDOI lands (LNWR, Big Cypress National Preserve, Crocodile Lake National Wildlife Refuge, BNP, and ENP).

The status of the crocodilian indicator in the areas listed above has remained well below the restoration target (red stoplight) since WY 2014 and remains well below the restoration target at the end of WY 2016. This is the first time since 2008 that the overall score for USDOI lands has remained well below the restoration target for three years in a row. There are fluctuations from year to year, but overall this result reflects low relative densities of alligators, variable alligator body condition, and low crocodile growth and survival.

Data collected for both alligators and crocodiles were used to update RECOVER performance measure documentation sheets. Performance measures are planning tools used by RECOVER to determine the degree to which proposed alternative plans are likely to meet CERP restoration objectives, or implemented plans have met restoration objectives. Documentation sheets provide technical information about the indicator and describe desired future condition and how the indicator can be used for evaluation and assessment. The alligator documentation sheet was approved in June 2014 and the crocodile documentation sheet in October 2015.

Data are being used to develop a better understanding of the relationship between hydrology, salinity, and alligator relative density and body condition and salinity and crocodile growth, survival, and survey encounter rate. Alligators show population responses to water conditions with decreasing trends in abundance immediately after a dry year and increasing trends following subsequent wet years. Alligator relative density showed declining trends in Shark River estuary and animals moved up and down the estuary in response to salinity, with fewer alligators in areas of higher salinity. Alligator body condition was related to fluctuations in water levels that are important for wetland health. Alligator body condition has declined in the Everglades since the early 2000s and is about 12% lower than in other areas of Florida. Juvenile crocodile growth and survival is higher when salinities are lower. Refined statistical techniques are allowing us to get better estimates of crocodile survival. We have also been able to examine long-term trends in crocodile survey encounter rates and identify effects of extreme events, such as the 2010 cold snap. See the 2016 System-wide Ecological Indicators for Everglades Restoration for more details and a list of publications.

The crocodilian indicator remains well below the restoration target.

System-Wide Ecological Indicators

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 WY18*

Contributors to 2018 report

Lead Scientists for Indicator Report			
First Name	Last Name	Agency	Indicator
Joan	Browder	NOAA	Pink Shrimp
Peter	Frederick	UF	White Ibis and Wood Stork
Evelyn	Gaiser	FIU	Periphyton
Chris	Kelble	NOAA	Southern Coastal Systems Phytoplankton Blooms
Jerry	Lorenz	Audubon of Florid	Roseate Spoonbill
Chris	Madden	SFWMD	Florida Bay Submersed Aquatic Vegetation
Frank	Mazzotti	UF	Crocodilians
Melanie	Parker	FWC	Oysters
LeRoy	Rodgers	SFWMD	Invasive Exotic Species
Andy	Rodusky	SFWMD	Lake Okeechobee Nearshore
Joel	Trexler	FIU	Fish and Macroinvertebrates
Others Involved			
Marsha	Banshee	OERI	Document Compilation
Laura	Brandt	FWS	Crocodilians, Document Coordination
Ventia	Briggs-Gonzalez	UF	Crocodilians
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Jose	Cabaleiro	OERI	Web Document
Seth	Farris	UF	Crocodilians
Dale	Gawlik	FAU	White Ibis and Wood Stork
Angie	Huebner	USACE	Invasive Exotic Species
Caitlin	Hackett	UF	Crocodilians
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Jeff	Kline	NPS	Fish & Macroinvertebrates
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Jessica	Spencer	USACE	Invasive Exotic Species

Questions?