

2012–2017

EVERGLADES

Report Card



This is a RECOVER product that provides a transparent, timely, and geographically detailed assessment of health of the Florida Everglades using data from May 1, 2012–April 30, 2017.



UNDERSTANDING SOUTH FLORIDA

Hydrology connects ecosystems in south Florida

The Everglades encompasses **four regions interconnected by water**—the Northern Estuaries (Caloosahatchee River Estuary, Loxahatchee River Estuary, and St. Lucie River Estuary), Lake Okeechobee, the Greater Everglades, and the Southern Coastal Systems (Biscayne Bay, Florida Bay, and Southwest Coast). When people talk about the Everglades, they are usually thinking about the Greater Everglades. This is a vast freshwater wetland mosaic composed of sawgrass ridges, sloughs, tree islands, and marl prairie.

Historically, the Greater Everglades received water flowing out of Lake Okeechobee at its northern end and discharged water south into the Southern Coastal Systems. The Northern Estuaries were isolated from outflow from the lake. Urban development and drainage for agriculture have disrupted this pattern. Water that used to flow south out of Lake Okeechobee is now redirected into the St. Lucie and Caloosahatchee estuaries. The capacity of the freshwater wetlands to store water also has been lost.

These changes have degraded natural habitat needed by wildlife like fish and wading birds. Loss of water storage and connectivity diminishes options available to water managers to sustain natural ecosystems and satisfy the needs of south Florida residents for water supply and flood protection.

Restoration of the Everglades will improve conditions for both people and ecosystems and sustain the Everglades for generations to come. This is being done through numerous projects to improve conditions locally and through coordinated actions to improve conditions on a regional scale.



Tree island in the Greater Everglades region. Photo by SFWMD.



Development in south Florida has altered water flow and habitats. Photo by SFWMD.

How was health calculated?

THE REPORT CARD PROCESS

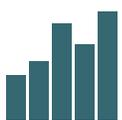
1 CONCEPTUALIZE



2 CHOOSE INDICATORS



3 DETERMINE THRESHOLDS



4 CALCULATE SCORES



5 COMMUNICATE

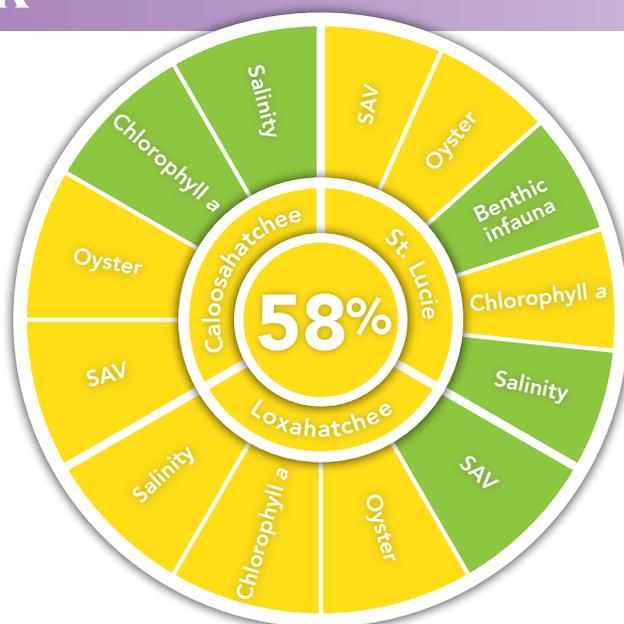


Environmental report cards are used by resource managers to assess and report on the ecosystem health of a region. Developing rigorous, quantitative assessments provides accountability to support environmental protection efforts. A five-step process of developing report cards is used to assess progress: 1) determine values and threats, 2) choose indicators, 3) define thresholds, 4) calculate scores, and 5) communicate results. This report card provides a transparent, timely, and geographically detailed assessment of health in the Everglades using data from May 1, 2012–April 30, 2017.

Everglades health is defined as the progress of region-specific indicators toward scientifically-derived thresholds, targets, or goals. The indicators for each region were developed by regional coordinators, principle investigators, and scientists with specific expertise in these regions. The indicators are combined into an overall region score for each of the four regions. These four region scores are area-weighted into an overall score for the entire Everglades system. The scoring system ranges from 0%–100%, with 100% as the best score, and 0% as the worst score. For more information on specific indicators, methodology, and scoring, please visit evergladesecohealth.org.

NORTHERN ESTUARIES: FAIR

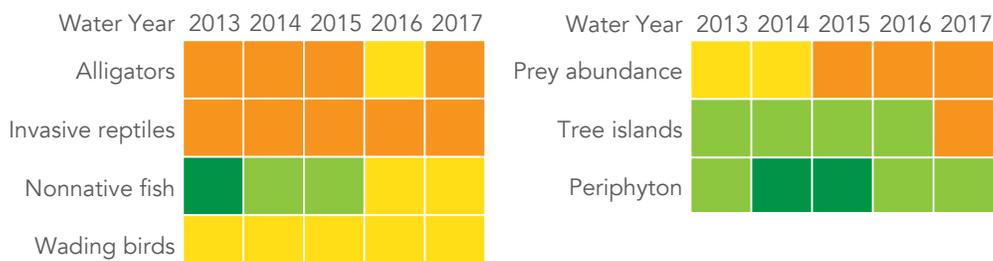
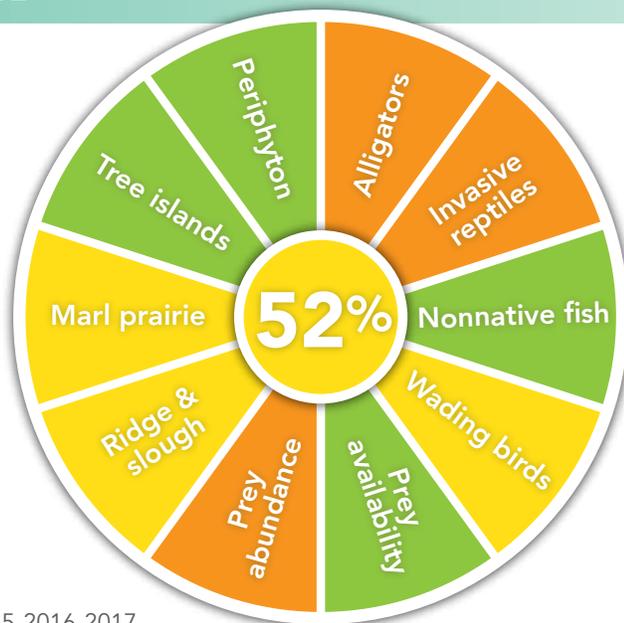
In general, the Northern Estuaries (Caloosahatchee River Estuary, Loxahatchee River Estuary, and St. Lucie River Estuary) are in fair to good condition. Submerged aquatic vegetation (SAV) declined or remained stable at low densities in all regions. Oyster scores ranged from poor to good throughout the five years with mostly fair scores. A cycle of salinity perturbations negatively affected oysters, but when salinities were favorable the oysters rebounded. Benthic infauna were in good condition, while salinity and chlorophyll a were in good to fair condition. The Northern Estuaries are impacted by human control of flows that alter volume, distribution, circulation, and temporal patterns of freshwater inflows, and natural events like hurricanes, El Niño, and drought. These cause sub-optimal salinities that have negative impacts on SAV, oysters, and benthic infauna.



Select indicator scores by year from Water Years 2013–2017.

GREATER EVERGLADES: FAIR

In the Greater Everglades region, conditions varied throughout the five-year reporting period with indicator scores ranging from good to poor. Conditions for periphyton were good despite a shift in periphyton community structure. Tree islands were also in the good range due to resilience of the islands in conservation areas. Although nonnative fish had a good score overall, the score ranged from good to fair with more nonnatives in recent years. Invasive reptiles also continued to increase in number and expand their range, scoring poor overall. Multiple years of wet conditions impacted prey availability, and as a result, most wading bird targets were not met. Prey abundance and alligator indicators were impaired. Marl prairie and ridge and slough habitat were degraded; however some areas of marl prairie habitat have shown improvement.

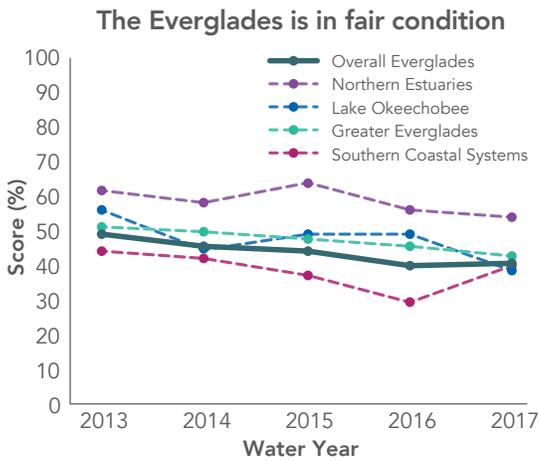
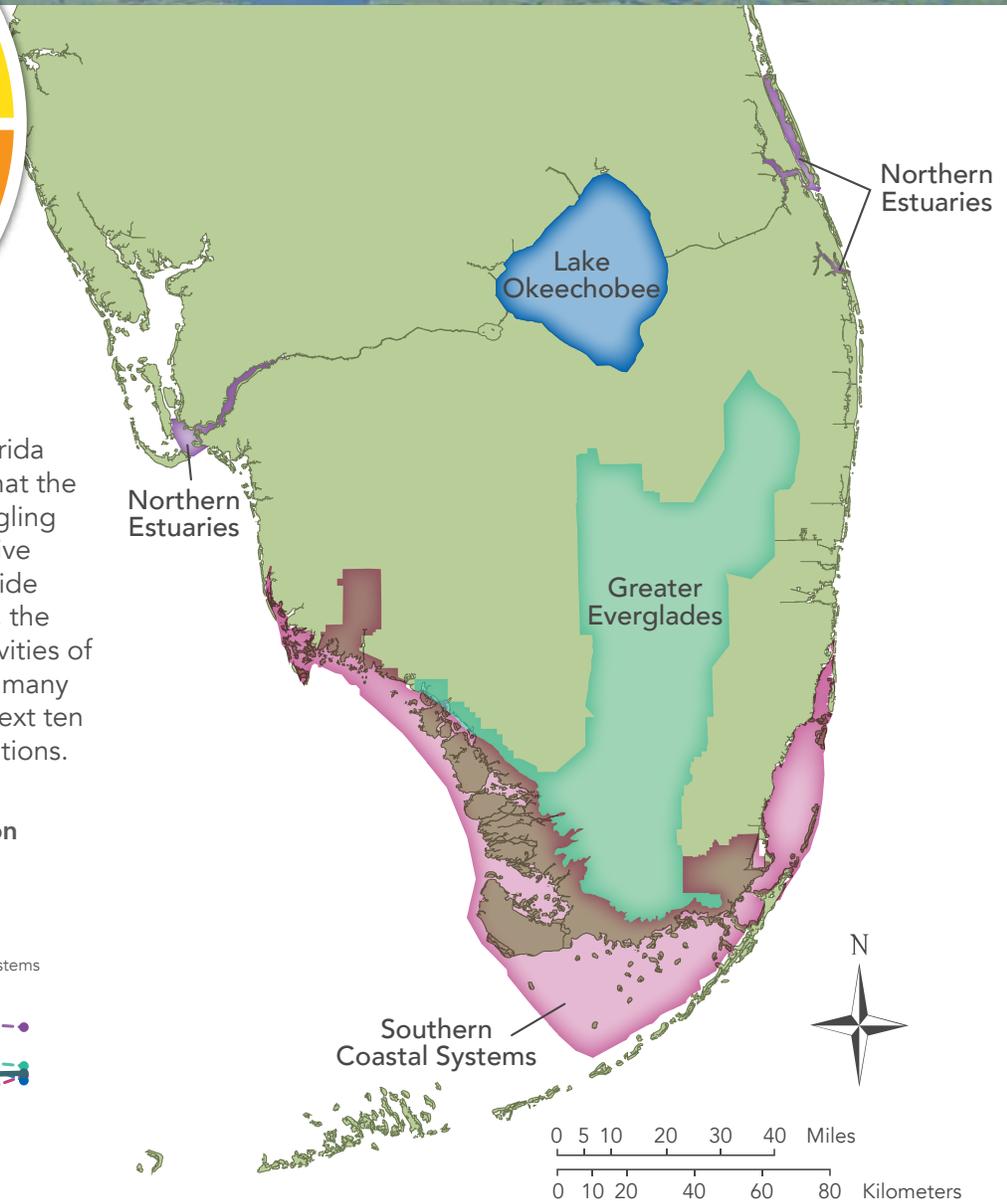


Select indicator scores by year from Water Years 2013–2017.

2012–2017 EVERGLADES: FAIR



An overall score of 45%, fair, for the Florida Everglades is concerning. This means that the ecosystems of the Everglades are struggling to support the plants and animals that live there and the natural services they provide to people. Without healthy ecosystems, the economy, tourism, and recreational activities of south Florida suffer. However, there are many restoration projects scheduled for the next ten years that will help improve these conditions.



Everglades overall and region scores from Water Years 2013–2017 (May 1, 2012–April 30, 2017).

evergladesechohealth.org

What do the scores mean?

0–20% Very poor

These regions or indicators are extremely vulnerable and are unable to provide ecosystem function. Essential ecological functions are extremely degraded and unsustainable.

20–40% Poor

These regions or indicators are highly vulnerable and are struggling to provide ecosystem function. Essential ecological functions are highly degraded and unsustainable.

40–60% Fair

These regions or indicators are vulnerable to further ecological degradation and provide minimal ecosystem function. Essential ecological functions are degraded and unsustainable.

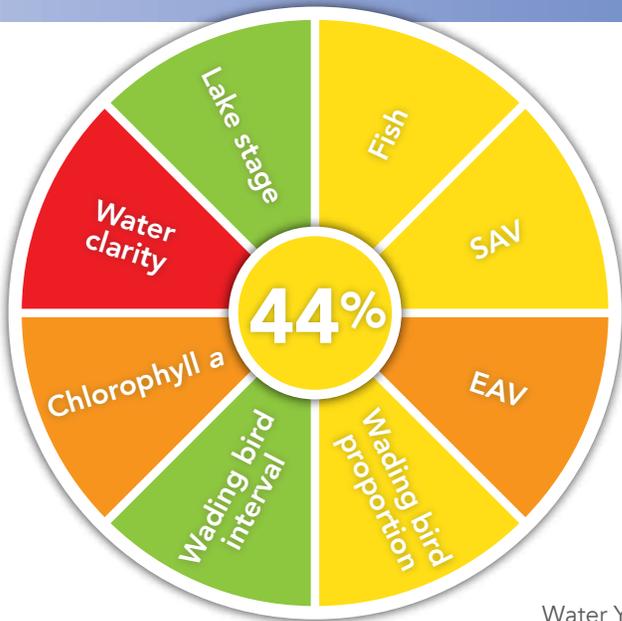
60–80% Good

These regions or indicators are slightly vulnerable, but are maintaining ecosystem function. Essential ecological functions are somewhat sustainable.

80–100% Very good

These regions or indicators are minimally vulnerable and are maintaining high ecosystem function. Essential ecological functions are sustainable.

LAKE OKEECHOBEE: FAIR

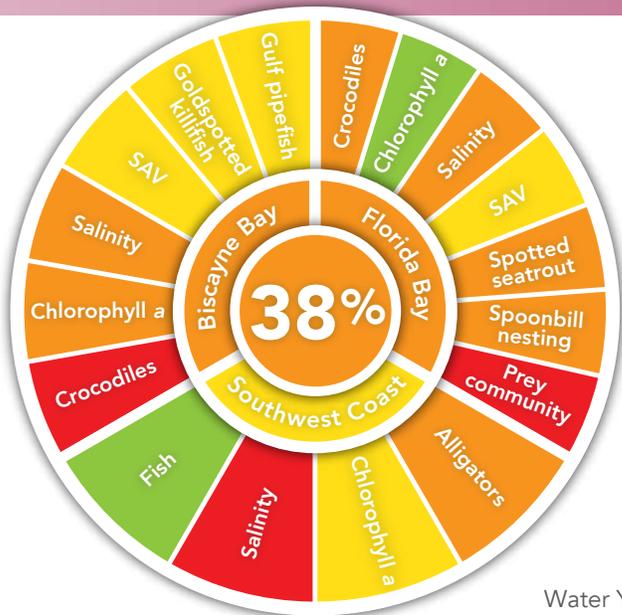


Indicators evaluated in Lake Okeechobee were fish, submerged aquatic vegetation (SAV), emergent aquatic vegetation (EAV), wading bird proportion (based on prey density), wading bird interval between exceptional nesting years, chlorophyll a, water clarity, and lake stage. Lake stages were close to desired targets, except for several high-water events during the peak of the summer growing season. These untimely exceedances may explain the difference between lake stage scores and those for flora and fauna. EAV and SAV were poor to fair, likely affecting fish and wading bird indicators; though the wading bird interval indicator scored well. Water clarity scores were very poor and chlorophyll a scores were poor, likely affecting SAV and fish indicators.

Water Year	2013	2014	2015	2016	2017	Water Year	2013	2014	2015	2016	2017
Fish	Green	Yellow	Green	Green	Yellow	Chlorophyll a	Green	Red	Red	Green	Red
SAV	Green	Orange	Orange	Orange	Orange	Water clarity	Yellow	Red	Red	Red	Red
Wading bird proportion	Orange	Yellow	Yellow	Yellow	Orange	Lake stage	Green	Yellow	Green	Green	Orange

Select indicator scores by year from Water Years 2013–2017.

SOUTHERN COASTAL SYSTEMS: POOR



Overall, the Southern Coastal Systems regions (Biscayne Bay, Florida Bay, and the Southwest Coast) are in poor to fair condition. Reduced freshwater flow combined with sea level rise has resulted in increased salinity throughout the region. Elevated salinity, due to a local drought in 2014 and 2015, negatively impacted crocodiles, gulf pipefish, and submerged aquatic vegetation (SAV) in Biscayne Bay and Florida Bay. Spoonbill nesting, prey community, and spotted seatrout are in poor to very poor condition. Gold spotted killifish, gulf pipefish, and fish in the Southwest Coast region were in fair to good condition. To improve the ecological processes and overall health of the Southern Coastal Systems region, restoration of freshwater flow will need to continue in the years to come.

Biscayne Bay						Florida Bay					
Water Year	2013	2014	2015	2016	2017	Water Year	2013	2014	2015	2016	2017
Crocodiles	Red	Red	Red	Red	Orange	Crocodiles	Yellow	Yellow	Yellow	Orange	Orange
Salinity	Orange	Orange	Red	Orange	Orange	Salinity	Yellow	Yellow	Red	Orange	Orange
SAV	Yellow	Yellow	Orange	Yellow	Yellow	SAV	Green	Green	Green	Yellow	Yellow
Gulf Pipefish	Yellow	Green	Yellow	Yellow	Yellow	Spoonbill Nesting	Yellow	Orange	Orange	Orange	Orange

Select indicator scores in Biscayne Bay and Florida Bay by year from Water Years 2013–2017.

EVERGLADES RESTORATION

Projects are restoring flow and redistributing water in south Florida

Over the past five years, the Comprehensive Everglades Restoration Plan (CERP) has made progress in several restoration projects. Some projects implemented under the CERP are:

- First phases of the Picayune Strand Restoration Project
- Biscayne Bay Coastal Wetlands Project Phase 1
- C-111 Spreader Canal

Projects under construction:

- C-43 Reservoir
- C-44 Reservoir and STA

Other important foundation projects that are contributing to early restoration success include:

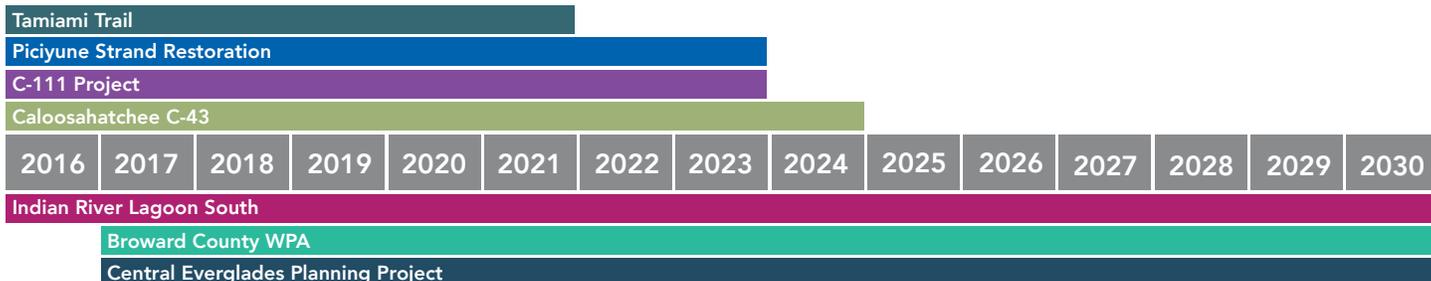
- Kissimmee River Restoration
- Tamiami Trail Bridging
- Modified Water Deliveries to Everglades National Park

Progress is expected to continue as more projects are planned and implemented. During the next five years, the Central Everglades Planning Project will make significant progress towards increasing water storage, improving water quality, and removing canals and levees to restore natural flow patterns. Planning



Water flowing under Tamiami Trail bridge. Photo by Susan Bennett.

is underway for the next phase of CERP, including the Western Everglades Restoration Project, the Lake Okeechobee Watershed Restoration Project, the Loxahatchee River Watershed Restoration Project, and the Lake Okeechobee System Operations Manual.



Timeline of important projects in Everglades restoration.

ACKNOWLEDGMENTS

This report card provides a transparent, timely, and geographically detailed assessment of health of the Florida Everglades using data from May 1, 2012–April 30, 2017 (Water Years 2013–2017). This report card was produced by RECOVER (REstoration COordination and VERification) and the Integration and Application Network, University of Maryland Center for Environmental Science and was released in March 2019. The data and methods underpinning this report card represent the collective effort of many individuals and organizations working within the Everglades scientific and management community. For more information on specific methodologies, indicators, thresholds, and scoring, please visit evergladesecohealth.org.

Cover photos clockwise from top left: Caloosahatchee River Estuary, SFWMD; Lake Okeechobee, SFWMD; Broad River, SFWMD; Aerial view of Rookery Branch, Franco Tobias. Banner photo page 4: Everglades National Park Service.

