Coastal Georgia Ecosystem Report Card 2017

DNR/CRD

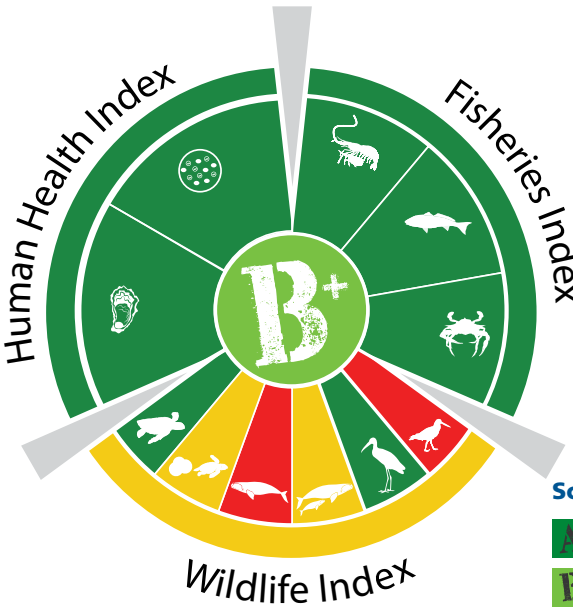
T. Keyes

A. Mackinnon

Coastal Georgia monitoring programs assess oyster reefs (top), wood stork productivity (middle), and sea turtle hatching (bottom).

health

Moderately good health in 2017



Scoring Legend

- A ≥80–100% good
- B ≥60–<80% moderately good
- C ≥40–<60% moderate
- D ≥20–<40% poor
- F 0–<20% very poor

Coastal Georgia received a B+, 78%, a moderately good score. Three indices covering 11 indicators including human health, fisheries, and wildlife data make up the grade for coastal Georgia. Scores ranged from 100% for sea turtle nesting trends to 12% for right whale population trends.

The human health index scored a 87%, or A, in 2017. Overall, human health indicators are good, meaning that it is generally safe to swim and eat local shellfish. Data on fish consumption advisories was insufficient for use in the report this year.

The fisheries index scored a 95%, or A+, in 2017. Overall, fisheries indicators are very good, which means that sustainable fishing practices are used and that the coastal environment is able to support most commercial and recreational species. The blue crab indicator rebounded in 2017 with a score of 100%.

The wildlife index scored a 51%, or C, in 2017. Overall, wildlife indicators are moderate. Woodstork and sea turtle populations are being maintained, while Oystercatcher numbers were down. This may be attributed to the two recent hurricanes. Right whale population and right whale calving also declined.

Indicators	fecal coliform 90%	enterococcus 97%	shrimp 84%	red drum 100%	blue crabs 100%

methods

Analyzing data & calculating scores

Environmental report cards are used by resource managers to assess and report on the ecosystem health of a region. Developing rigorous, quantitative assessments provides an accountability that is increasingly beneficial to support environmental protection efforts. A five-step process is used to develop report cards: 1) conceptualize, 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 coastal Georgia. Coastal Georgia health in 2017 is defined as the progress of **two human health indicators** (enterococcus and fecal coliform), **three fisheries indicators** (red drum, blue crabs, and shrimp), and **six wildlife indicators** (wood storks, American oystercatchers, sea turtle hatching, sea turtle nesting, right whale calves, and right whale population growth rate) toward scientifically-derived thresholds or goals. Each of these groups of indicators are averaged into indices; the human health, fisheries, and wildlife indices. The three indices are combined into the Coastal Georgia Ecological Health Score.

Preliminary analysis of water quality indicators was conducted during development of this report card. Although there are thresholds for water quality indicators through EPA's National Coastal Condition Assessment, they do not adequately apply to the unique conditions in coastal Georgia (see *highlights* page).

For detailed information on indicators, thresholds, and methodology visit **CoastalGaDNR.org/ReportCard.**

1 What is the big picture?

CONCEPTUALIZE

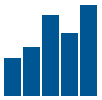
Create a framework defining key goals, values, and threats.

2 What do we measure?

CHOOSE INDICATORS

Select indicators that convey meaningful information.

3 What is healthy?



DEFINE THRESHOLDS

Define reporting regions and method of threshold attainment.

4 How does it add up?

CALCULATE SCORES

Calculate indicator scores and combine into index grades.

5 What is the story?

COMMUNICATE RESULTS

Communicate results using visual elements, such as photos, maps, and conceptual diagrams.

Grading scale for the indicators

The report card grading scale is a little different from the grading scale you saw in school. We use a 20-point scale to score the indicators, instead of the 10-point scale. Using a 20-point scale for environmental report cards is widely accepted as the best way to communicate health of an ecosystem. By using a scale that is equally divided, small changes in indicators can be more easily seen over time.

A ≥80–100%
All human health, fisheries, and wildlife indicators meet desired levels. Indicators in these locations tend to be very good, most often leading to preferred habitat conditions.

B ≥60–<80%
Most human health, fisheries, and wildlife indicators meet desired levels. Indicators in these locations tend to be good, often leading to acceptable habitat conditions.

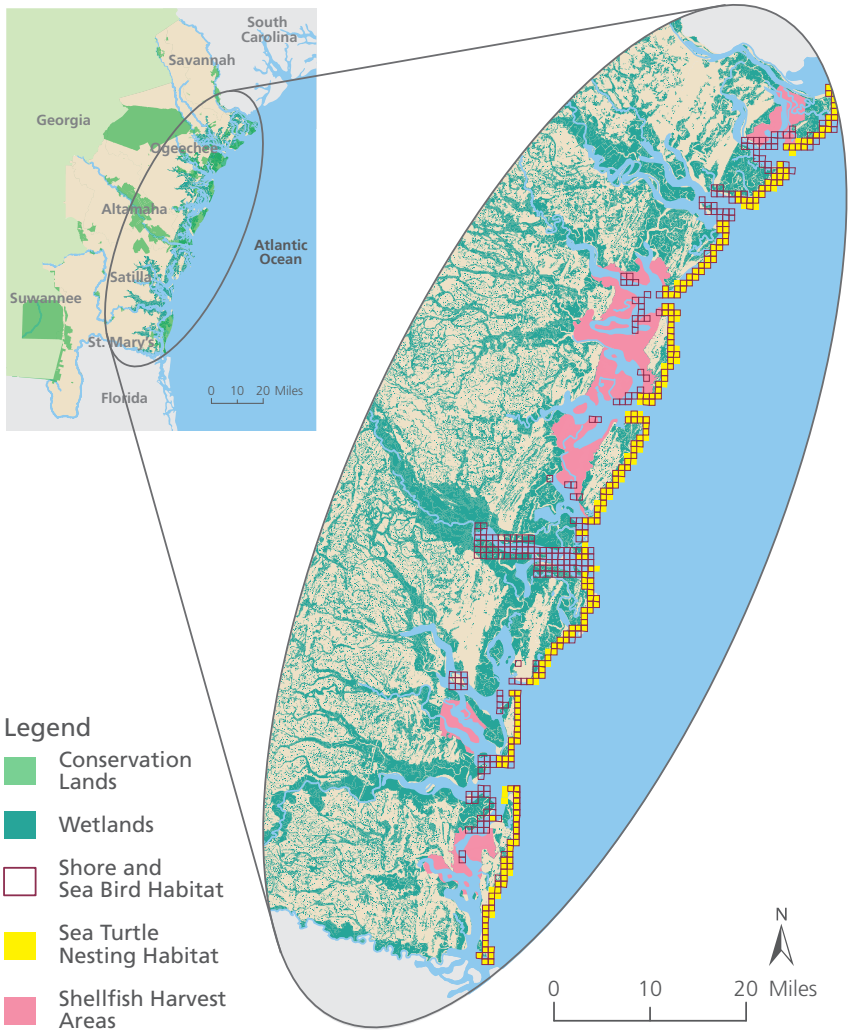
C ≥40–<60%
There is a mix of good and poor levels of human health, fisheries, and wildlife indicators. Indicators in these locations tend to be fair, leading to sufficient habitat conditions.

D ≥20–<40%
Some or few human health, fisheries, and wildlife indicators meet desired levels. Indicators in these locations tend to be poor, often leading to degraded habitat conditions.

F 0–<20%
Very few or no human health, fisheries, and wildlife indicators meet desired levels. Indicators in these locations tend to be very poor, most often leading to unacceptable habitat conditions.

features

Marshes, beaches, & estuaries



Coastal Georgia is dominated by marshes and wetlands, and provides habitat for birds, shellfish, and sea turtles.

Located in the center of the South Atlantic Bight, coastal Georgia is a region rich in history, beauty, and natural wonders. Georgia's coast is bound on the east by 14 barrier islands which buffer the mainland from the Atlantic Ocean. Most of these islands remain undeveloped and boast pristine beaches perfect for nesting sea turtles and shorebirds.

Five major freshwater rivers feed the Georgia coast, forming an extensive estuarine ecosystem. The 368,000 acres of saltmarsh provide essential nursery grounds for a diverse range of animals including fish, shrimp, oysters, and birds. Saltmarshes protect upland areas from the force of tides and serve as a natural filtration system for pollutants and nutrients that often enter waterways leading to the ocean.

Coastal Georgia's river system is woven together by hundreds of streams, brackish and freshwater marshes, bogs, and swamps that extend far inland. This network delivers vast amounts of freshwater to the coast and creates a range of habitats that support diverse wildlife.

Although relatively undeveloped, the coastal Georgia landscape is changing nonetheless. New residents are drawn by the region's natural beauty and abundance of recreational opportunities. Through a combination of wise management, stewardship, and collaboration, everything we love about coastal Georgia can be conserved for generations to come.

The importance of creating a report card

The Georgia Department of Natural Resources (DNR) is the state agency entrusted to manage Georgia's diverse coastal natural resources. DNR collects data through numerous inventory and monitoring activities conducted along the coast. This report card contains grades for various categories produced by comparing and contrasting data from monitoring activities with known standards and reference points. While this report card does not address every indicator or environmental issue facing the coast, it does provide the public with broad fact-based knowledge about the condition of Georgia's coastal resources.

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Monitoring a marsh in coastal Georgia.

highlights

Water quality & dissolved oxygen

DNR monitors water quality throughout the coastal region. Dissolved oxygen (DO) is one important indicator used to quantify the health of a water body. Low DO is often a sign of degraded water quality. However, some areas in coastal Georgia, especially upriver blackwater creeks and coastal estuaries not fed by freshwater rivers, naturally experience low DO in warmer months without the expected negative effects of algal blooms, fish die-offs, and reduced species diversity observed elsewhere.

A preliminary analysis of DO data from 2017 was conducted for this report card using thresholds established by EPA's National Coastal Condition Assessment. Coastal Georgia's overall DO score is an 85%, or an A.

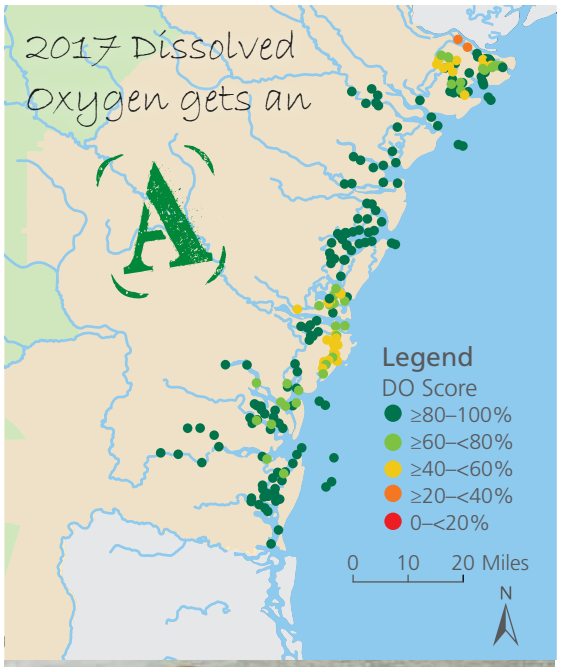
Additional monitoring and research is underway by DNR to understand how changes in water quality affect these complex systems and to determine other appropriate indicators of coastal health.

B. Maher

Red drum numbers are up likely due to a successful 2016 spawn

Dissolved oxygen trend

2014	2015	2016	2017
81%	85%	83%	85%



DNR/CRD

Dissolved Oxygen station scores in 2017(top). Water quality monitoring occurs throughout coastal Georgia (bottom).

Fisheries & blue crabs

Fisheries indicators in Georgia are important to analyze as they constitute a huge resource along the coast. Juvenile (Age 1) red drum remained above average (100%) while the blue crab spawning stock increased from a score of 47% in 2016 to 100% in 2017.

The decline in shrimp (84%) is somewhat misleading. Sampling was not conducted in September and October and less than half the stations were completed in November. This was due to Hurricane Irma and its aftermath, along with emergency repairs that put the Research Vessel Anna in dry dock for eight weeks. The fall is typically the peak season for white shrimp harvest and abundance. The absence of these fall collections are most likely the cause for the lower than average shrimp score in 2017.

Regardless, the 2017 Fisheries Index score of 95% is the highest report in the four years of publishing this report card.

W. Hughes

Blue crabs increased this year. This is most likely related to environmental conditions that lead to a successful spawn and following recruitment.

trends

Looking at four years of data

	2014	2015	2016	2017
fecal coliform	92%	92%	92%	90%
enterococcus	82%	91%	94%	97%
shrimp	100%	100%	97%	84%
red drum	83%	69%	100%	100%
blue crabs	22%	62%	47%	100%
American oystercatchers	46%	61%	30%	19%
wood storks	67%	70%	62%	84%
right whale calves	57%	57%	49%	45%
right whale population	66%	66%	*12%	*12%
sea turtle hatching	77%	68%	64%	46%
sea turtle nesting	100%	100%	100%	100%

Hurricane Matthew, in 2016, caused acute damage to three offshore bars important to shorebird (such as oystercatchers) nesting (Ogeechee Bar, St Catherines Island Bar and Pelican Spit) one of which (St Catherines Island Bar) was completely lost, while the others were eroded significantly. Matthew also brought a broad scale deterioration of nesting habitat by eroding many stretches of beach and shell rakes making nesting sites more prone to flooding.

Hurricane Irma, in 2017, added to the damage of several nesting bars which will likely continue to affect shorebird and seabird productivity during the 2018 nesting season.

Hurricane Matthew had minimal impact on sea turtle hatching success, however hurricane Irma did have a minor impact, hence the slight decline in the hatching score.

Right whale #2790 at the surface with her calf, 12 miles east of Blackbeard Island, GA. This is 2790's fourth known calf. Credit: Photo by Sea to Shore Alliance, taken under NOAA research permit #15488.

*North Atlantic right whale photo-identification data are collected by numerous organizations along the Atlantic coast of the U.S. and Canada, and are analyzed annually by scientists at the National Marine Fisheries Service. In 2016 the NMFS changed the survey methodology to better estimate survival rates and population size, which changed the grading calculation.

looking forward

Programs, plans and funding

These programs are made possible through funding provided, in part, by the following federal grants:

Georgia Coastal Management Program Grants
- Provides technical assistance to 11 coastal counties to support sustainable environmentally sensitive economic growth
- Disburses $850,000, annually, in Coastal Incentive Grants
- Administers the Shellfish Program for commercial and recreational harvest of shellfish
- Reviews federal projects to ensure they do not conflict with the best interests of the State of Georgia

Atlantic Coastal Fisheries Cooperative Management Grants
- Coordinates the management of coastal fish species
- Supports data collection of numerous coastal fishes for management purposes

Interjurisdictional Marine Fisheries Grants
- Gathers information and conducts activities to support management of U.S. multi-jurisdictional fisheries
- Supports shrimp and crab management through state and regional fishery management plans

NOAA Species Recovery Grants
- Authority to States pursuant to Section 6 of the Endangered Species Act (ESA)
- Supports programs to recover federally listed species

Sport Fish Restoration Grants
- Derived from federal excise taxes paid by the outdoor fishing and boating industry
- Supports fisheries research, boating access, and outreach and education
- Supports vessel pump-out monitoring at local marinas

State and Tribal Wildlife Grants
- Provides federal funds to states for developing and implementing programs that benefit wildlife and their habitats, including species not hunted or fished
- Provides funds for research, survey, and management programs for proactive conservation of high priority species and habitats identified in the State Wildlife Action Plan

Cooperative Endangered Species Conservation Fund
- Provides funding for listed species and habitat conservation actions on non-Federal lands
- Supports the States' ability to recover those federally listed and candidate species under USFWS authority (e.g., wood stork, American oystercatcher)

Beaches Environmental Assessment and Coastal Health Grants
- Protects public health by monitoring beach water quality
- Collaborates with the Public Health Departments and the Georgia Environmental Protection Division to resolve chronic issues
- Informs citizens of the risk of swimming in waters with elevated bacteria - GaHealthyBeaches.org

Wetland Program Development Grants
- Monitors the health of coastal marshland plant communities and tidal waters
- Supports wetland restoration efforts of the Department
- Supports project development on federal, state, and local levels

involvement

You can help protect Georgia's coastal resources

	How you can help	Benefits
	Install a rain barrel for your home to collect water for irrigation	Conserves water which is essential for healthy productive estuaries.
	Inspect and pump out your septic system every 3-5 years	Functioning septic systems keep bacteria from entering waterways, which in turn can help reduce beach advisories and shellfish harvest closures.
	Abide by all beach lighting rules and ordinances during sea turtle nesting and hatching season	Hatchling sea turtles can become easily disoriented and fail to crawl to the water if our homes and flashlights illuminate the beach.
	Know your recreational fishing catch and size limits	These limits help sustain a healthy population of fish species.
	Buy a Georgia hunting or fishing license	License fees support research and conservation of coastal species and habitats.
	Pick up after your pets	Fecal bacteria from pet waste can wash into creeks and rivers, resulting in beach swimming advisories or shellfish harvest closures.
	Participate in monitoring and clean-up activities in local waterways	Citizen data can alert resource managers to potential issues. Visit AdoptaStream.Georgia.gov and RiversAlive.Georgia.gov.

activities

Georgia DNR sustains, protects, & conserves the coast

The mission of the Department of Natural Resources is to sustain, enhance, protect, and conserve Georgia's natural, historic, and cultural resources for present and future generations, while recognizing the importance of promoting the development of commerce and industry that utilize sound environmental practices. Along Georgia's coast, several Divisions of DNR work collaboratively, including the Coastal Resources Division (CoastalGaDNR.org), Wildlife Resources Division (GeorgiaWildlife.org), and Environmental Protection Division (EPD.Georgia.gov). Together they manage the region's unique natural resources for wildlife habitat, as well as recreational and commercial uses by the citizens of Georgia.

Acknowledgements

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Workshop participants in December 2014 who helped produce this report card.

GEORGIA DEPARTMENT OF NATURAL RESOURCES
COASTAL RESOURCES DIVISION

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