Coastal Georgia Ecosystem Report Card

Heath Kelsey and Alexandra Fries

University of Maryland Center for Environmental Science

Brunswick, GA

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Integration & Application Network

IAN's aim is to enable better communication to empower change.

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Solving, not just studying environmental problems

STUDY

- Dispassionate
- Embrace complexity
- Publish & funding via peer review
- Getting it right

SOLVE

- Passionate
- Simplify
- Publish & funding via stakeholders
- Getting it done

IAN Personnel

Recruiting and retaining talented and committed people

- Science Integrators
  - PhD scientists
- Science Communicators
  - MS scientists
- Interns
  - Undergraduate scientists

IAN Themes

COMMUNICATING SCIENCE EFFECTIVELY

REPORTING ECOSYSTEM STATUS

TEACHING & TRAINING

CATALYZING CONSERVATION OUTCOMES

ADVANCING CHESAPEAKE BAY RESTORATION

BUILDING STRATEGIC PARTNERSHIPS

CREATING GOOD CITIZENSHIP MODELS

Communicating science effectively

Creating innovative ways to
visually present science















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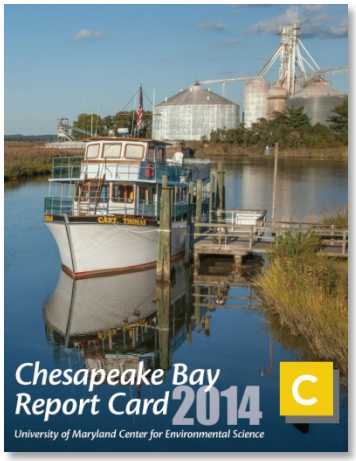
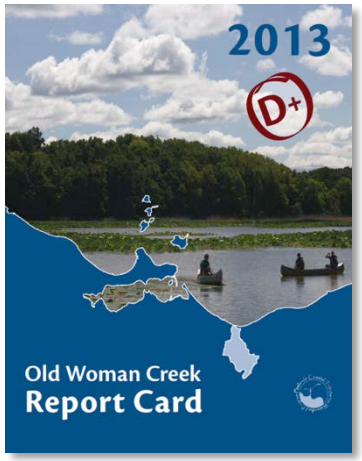
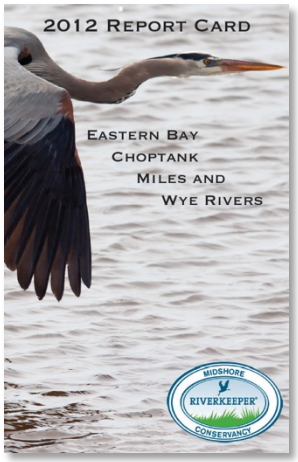
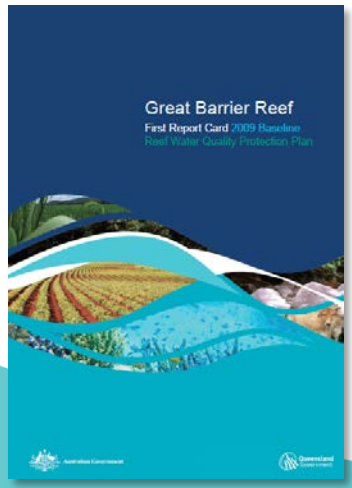
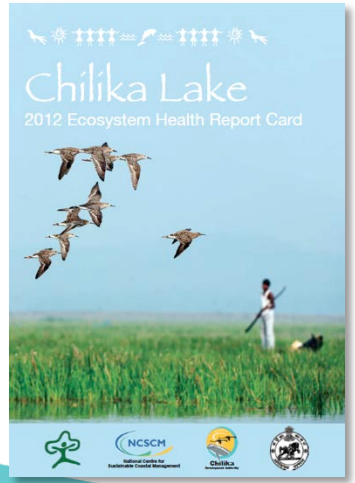
Report Card Examples

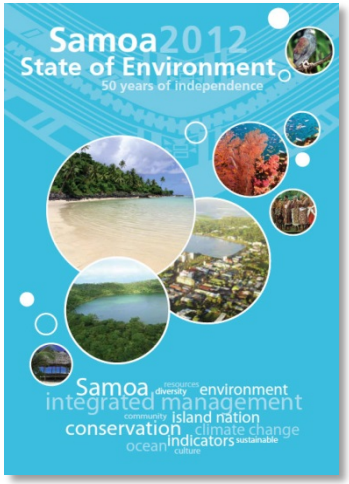


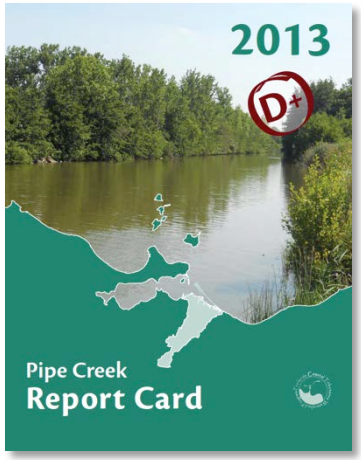


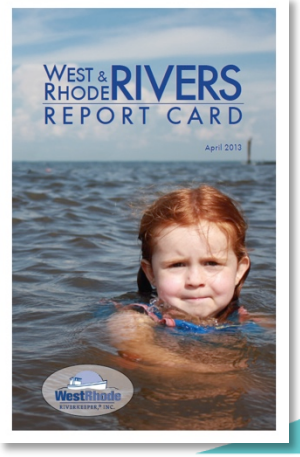












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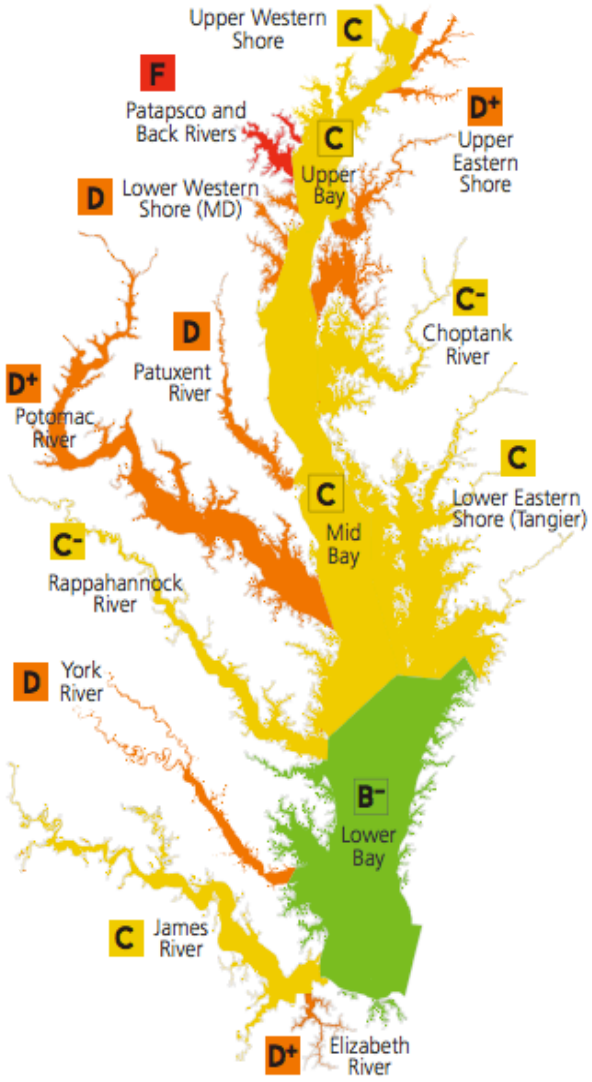
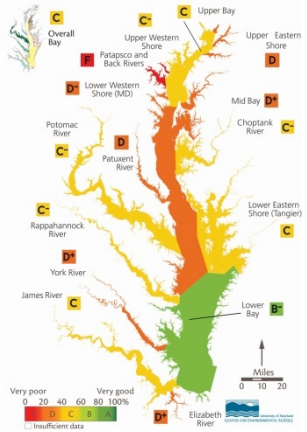
What is an ecosystem health report card?

- Broad-level assessments of a region or system
- Communicate complex information
- Based on real data: transparent and defendable
- Provide accountability
- Engage communities



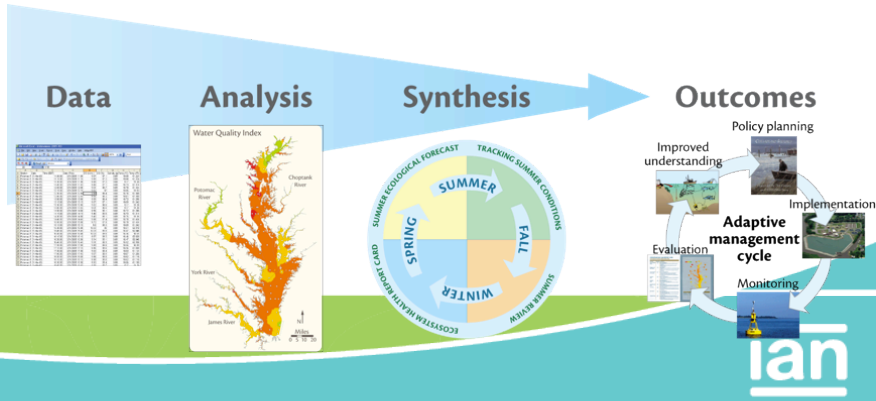
Ecosystem health report cards are an effective communication tool

- Peer pressure is a powerful human motivator



- Educational report cards are a common experience

- Report cards synthesize large amounts of data



Report cards are a five step process

1 What is the big picture?

CONCEPTUALIZE

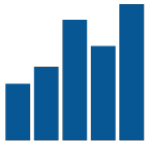
Create a framework defining key goals, values, and threats.

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.

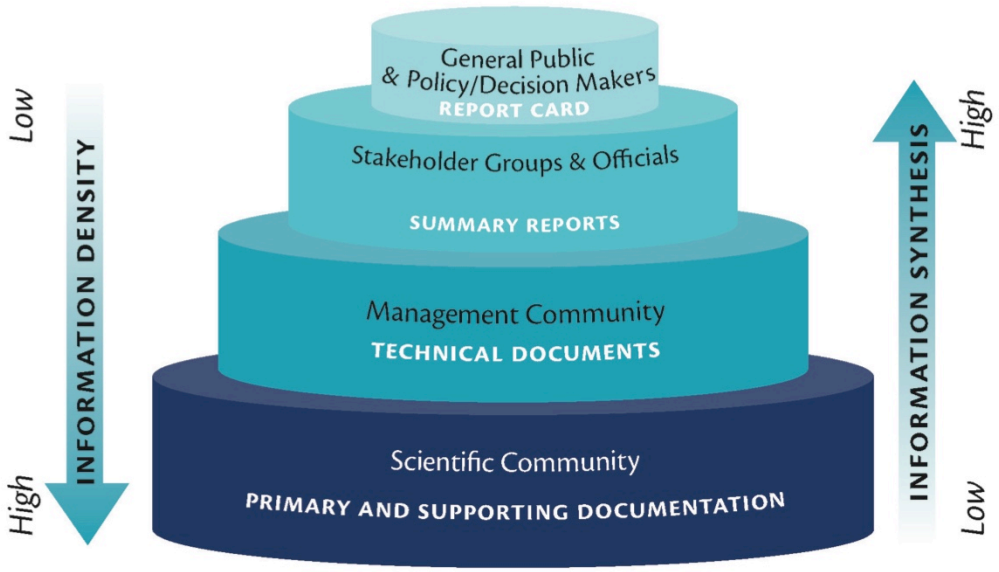
5 What is the story?

COMMUNICATE RESULTS

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

The report card supports Georgia DNR's management

- Top tier = Report card
- 2nd Tier = GA DNR management plans
- 3rd Tier = Technical reports, scientific literature
- Base = Data



Why create a report card for Coastal Georgia?

- Provide the public with broad, fact-based knowledge about the condition of Georgia's coastal resources.
- Highlight the need for continued management of Georgia's coastal natural resources by Georgia DNR.
- Highlight the numerous monitoring and inventory activities Georgia DNR collects.

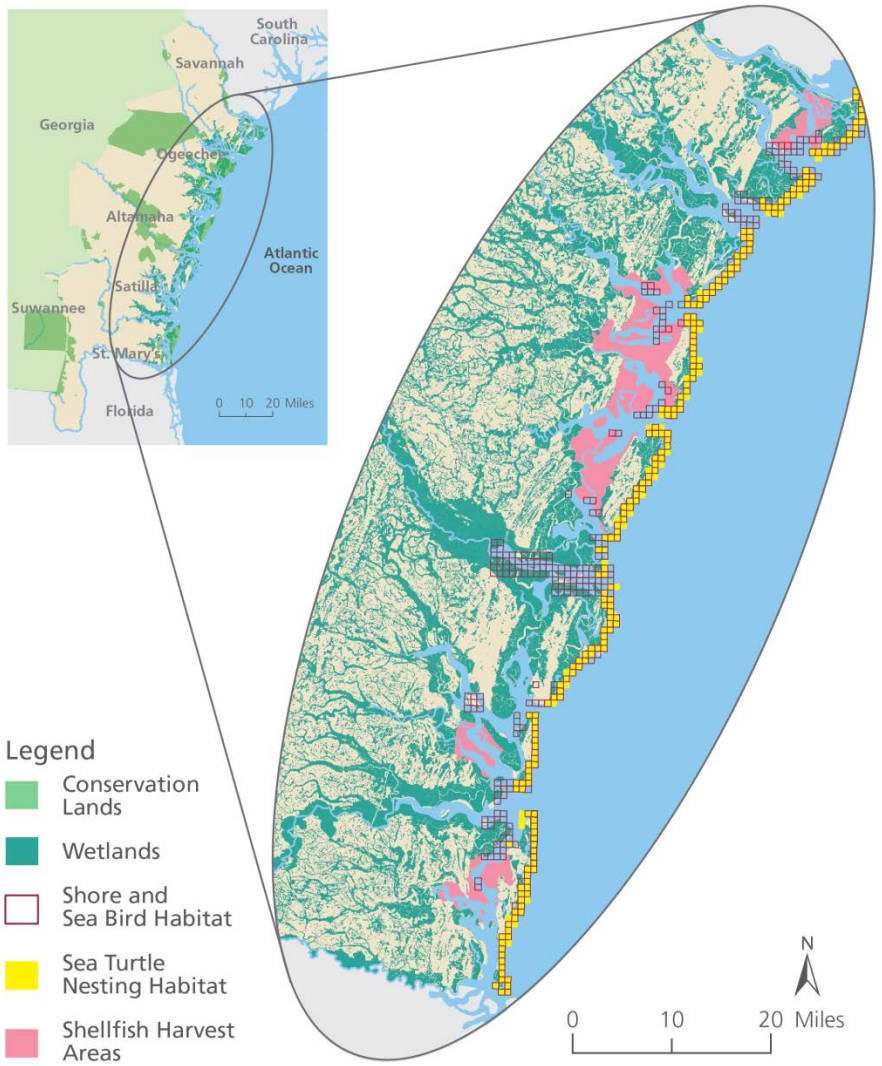
Coastal Georgia project goals

1. Provide an overall ecosystem health report card for Coastal Georgia.
2. Communicate monitoring results.
3. Engage communities to increase awareness of environmental issues.
4. Provide recommendations to improve coastal ecosystem condition.
5. Improve awareness of the work Georgia DNR is doing.

Coastal Georgia ecosystem report card timeline

- Workshop (winter 2014)
- Data gathering (spring 2015)
- Final report card (September 2015)
- Report card release (November 2015)

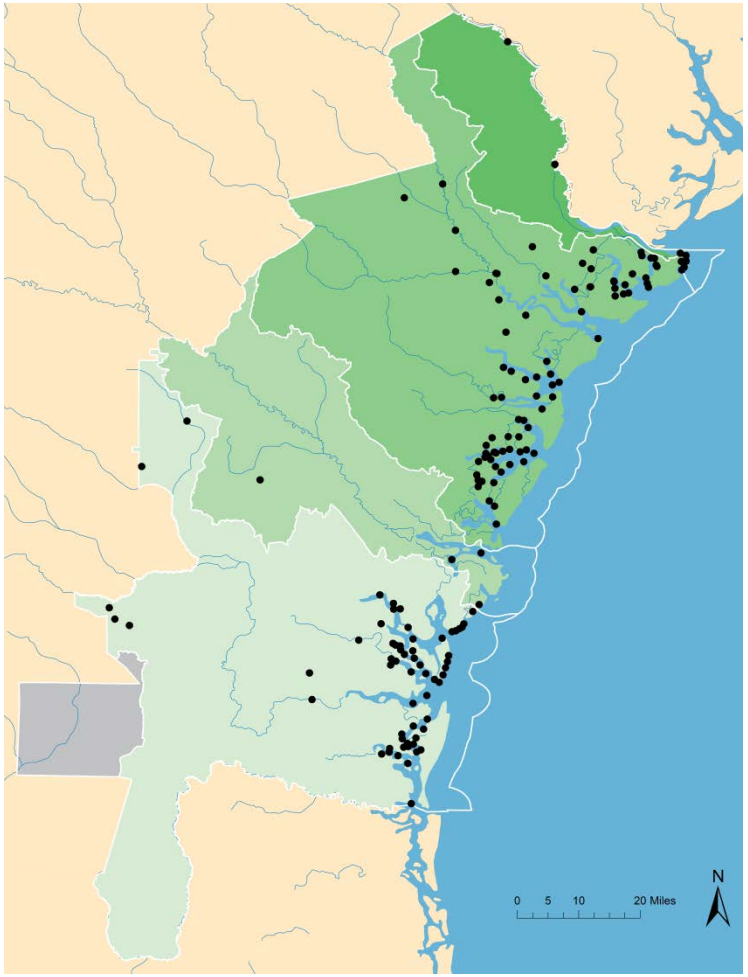
Features in Coastal Georgia



- 14 barrier islands
- Most islands are undeveloped with beaches for sea turtles and shorebirds
- Five rivers feed the coast
- 368,000 acres of saltmarsh provide nursery grounds for animals like fish, shrimp, oysters, and birds
- Hundreds of streams, brackish and freshwater marshes, bogs, and swamps extend inland
- The coastal Georgia landscape is changing with growing development

Coastal Georgia sampling locations

- Five watersheds in the 11 county area where the Coastal Resource Division works
- Many sampling sites in the St. Mary's/Satilla and Ogeechee watersheds
- Limited sampling sites in the Altamaha, Savannah, and none in the Sewanee
- Analyzed the data for the overall area, and did not separate it out by watershed



How were the indicators chosen?

- DNR project managers met with UMCES IAN staff to determine what data to include in the report card.
- Data needed to be part of long-term monitoring programs, be linked to resource management activities, and needed to be coast-wide.
- Lists of potential indicators were prioritized and final selections were made by DNR staff.

Indicators in the coastal Georgia Report Card

3 Human Health Indicators

- enterococcus
- fecal coliform
- fish consumption advisories

3 Fisheries Indicators

- shrimp
- red drum
- blue crabs

6 Wildlife Indicators

- american oystercatchers
- wood storks
- right whale calves
- right whale population
- sea turtle hatching
- sea turtle nesting

Summary of indicators and thresholds

Indicator	Threshold	Time period	Location	Protocol
Enterococcus	70 CFUs	Year round	Beach sampling sites (CRD)	US EPA's Beach Action Value
Fecal coliform	43MPN and 14MPN	Year round	Shellfish area sites (CRD & EPD)	National Shellfish Sanitation Program
Fish consumption advisories	No restrict, 1 meal per week, 1 meal per month, do not eat	2014	Coastal areas, no open ocean samples (EPD)	GA DNR, Fish Consumption Guidelines
Blue crabs	long-term geometric mean 1995-2014	2014 (March – April)	Coastal trawls	GA DNR EMTS
Red drum	long-term geometric mean 2003-2014	2014 (June – August)	Estuarine gill nets	GA DNR MSPHS
Shrimp	long-term mean 1995-2014	2014 (all months)	Coastal trawls	GA DNR EMTS

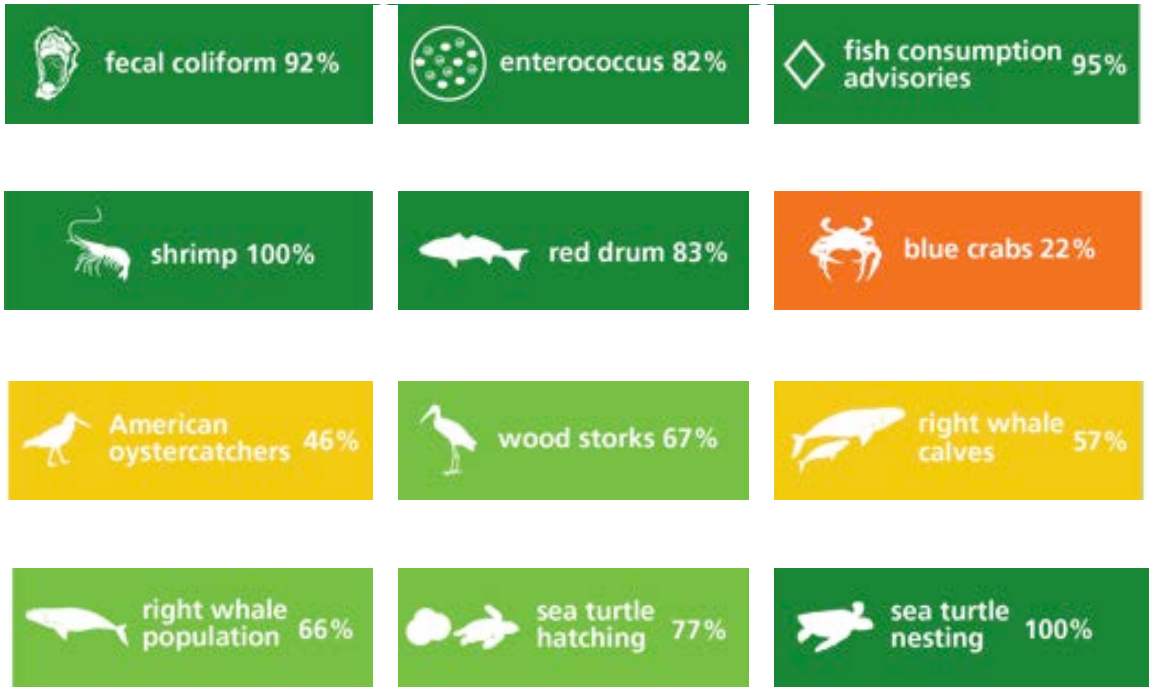
Summary of indicators and thresholds

Indicator	Threshold	Time period	Location	Protocol
Wood stork productivity	>2.0, 2.0-1.5, 1.5-1.0, 1.0-0.5, 0.5-0	2014	Beach nest locations	1.5 chicks per nest, regional productivity range
American oystercatcher	>0.5, 0.5-0.32, 0.32-0.2, 0.2-0.1, 0.1-0	2014	Beach nest locations	replacement rate of 0.32
Sea turtle nesting trends	>2% increase, 1%-2% increase, 0-1% increase, 0-1% decrease, >1% decrease	2014	Beach nest locations	National Marine Fisheries Service and US Fish and Wildlife Service recov. goal = 2% increase over 50yr
Sea turtle hatching success	>70%, 60%-69%, 50%-59%, 40%-49%, 30%-39%	2014	Beach nest locations	National Marine Fisheries Service and US Fish and Wildlife Service recov. goal
Right whale population growth rate	>=3.5%, 2.5%-3.49%, 1.5%-2.49%, 0.5%-1.49%, <0.5%	2011	Ocean surveys	National Marine Fisheries Service
Right whale calf production index	>=0.075, 0.05-0.075, 0.025-0.05, 0.0125-0.025, <0.0125	2011	Ocean surveys	National Marine Fisheries Service

Report Card Results

- **Coastal Georgia received a B+,** 76%, a moderately good score.
- **The human health index** scored a 90%, or **A**, in 2014.
- **The fisheries index** scored a 68%, or **B**, in 2014.
- **The wildlife index** scored a 69%, or **B**, in 2014.

Detailed indicator scores

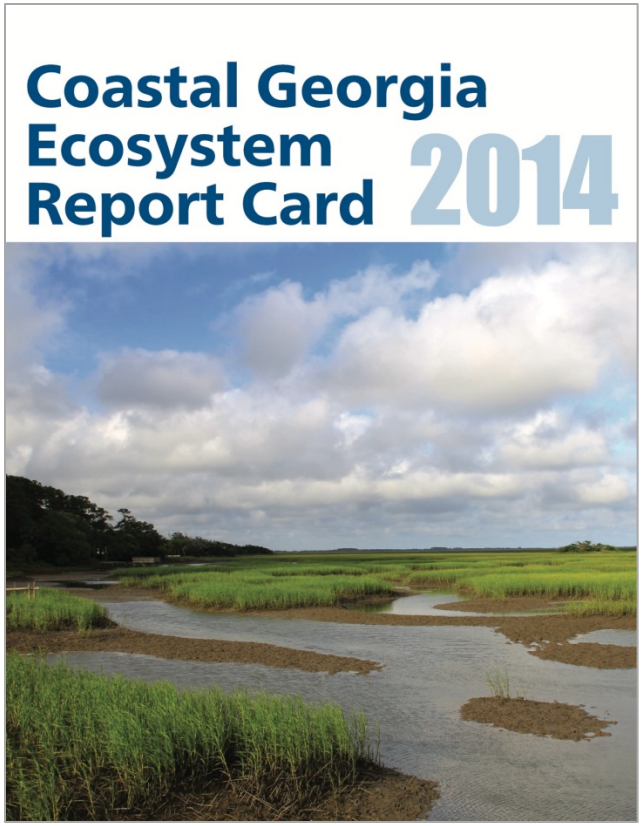


Scoring Legend

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

Key messages from the report card

- Coastal Georgia has moderately good ecosystem condition that we want to protect.
- Georgia DNR will keep working to protect and restore coastal Georgia.
- Pressure on Georgia's coast will increase requiring sustained protection.
- Healthy ecosystems mean healthy natural resources, a healthy economy, and healthy people.



What do the scores mean?

- Final grades are equally divided to provide a clearer picture of health.
- Following the typical school grading scale overall does not provide information about small improvements or declines in ecosystem health.
- The equally divided grading scale allows evaluation of small changes in ecosystem health, even at the very poor, poor, and moderately poor ranges.

≥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.

≥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.

≥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.

≥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.

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.

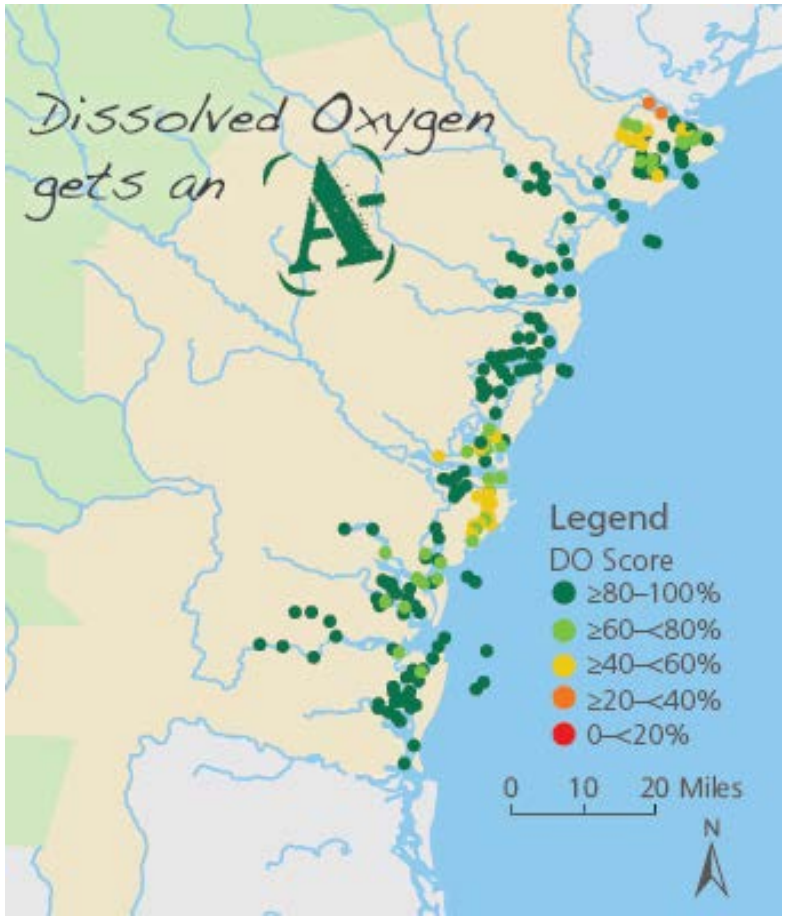
Blue crabs declined in 2014

- Blue crabs scored the lowest of any indicator in the report card.
- This indicator is based on the number of spawning female crabs.
- The decline observed in 2014 is similar to the downward trend seen in commercial harvest and catch per unit effort data.

- DNR's trawl survey reported a 65% decline in juveniles in 2014 and an 88% decline from the 20-year mean spawning stock.
- In 2014, spawning and larval recruitment success was affected by cooler than normal fall water temperatures and double the average spring rainfall.

Water quality monitoring

- Preliminary water quality indicators were analyzed.
- Dissolved oxygen was not included in the overall report card scoring, but it was scored and communicated in the report card.
- The thresholds are < 2mg/l, 2–5 mg/l and >5 mg/l from EPA's NCCA.
- Water quality indicators, can be included in future report cards with further research.



Take home messages

- This report represents information gathered by various DNR programs.
- Coastal Georgia's ecosystem is in moderately good health for 2014.
- Our purpose for preparing a report card is to share with the public what we know about the state of coastal natural resources.

You can help protect coastal Georgia!

	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 GeorgiaAdoptaStream.com and Riversalive.com/index.htm.

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Thanks!

Heath Kelsey
hkelsey@umces.edu

Alexandra Fries
afries@umces.edu

Jill Andrews
Jill.Andrews@dnr.ga.gov

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DEPARTMENT OF NATURAL RESOURCES
COASTAL RESOURCES DIVISION

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