

# Rising Seas On Cedar Key

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Seaweed piles up on the shore of the beach area in Cedar Key.  
[BRAD MCCLENNY/STAFF PHOTOGRAPHER]

The Gainesville Sun continues today Aug. 20, 2017 with its series about seas rising. This segment deals with Cedar Key\.

Comments by OSFR historian Jim Tatum.

-A river is like a life: once taken, it cannot be brought back-

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# On Cedar Key, salt water is already creeping up

✖ By Cindy Swirko  
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Cruising in her golf cart down a narrow road in the Cedar Key Cemetery, the Gulf of Mexico a bait cast away on her right past a new linear city park, Sue Colson nodded toward her father's grave on her left.

The grave is inundated during storms, but he wanted to be buried near the water – he spent his life working on boats in the Big Bend.

Colson knows that at some point, her father's grave will be forever underwater. A retired oysterwoman and clam farmer who also spent her life on the Gulf, Colson knows that much more water is pushing landward. Areas that used to be marsh are now underwater, and uplands are becoming marshes.

Sea level rise, caused by climate change: "It is happening. It really is," Colson said. "We have been on top of it. I don't know about the rest of the Nature Coast but we are – we're living in it."

Colson is Cedar Key's vice mayor and is a former Suwannee River Water Management District governing board member.

The island, which has managed to remain a working fishing and clamming village while also catering

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[BRAD MCCLENNY/STAFF PHOTOGRAPHER]

to tourists, has continued to evolve since white settlers established the town of Way Key there in the early 1840s. In the 1880s, it was the secondlargest city in the state. Even so, it will look very different as more of it becomes inundated.

Vic Doig, a wildlife biologist with the U.S. Fish and Wildlife Service, said changes are already evident.

Doig said the agency, which operates the Cedar Keys and Lower Suwannee national wildlife refuges, has done an extensive study that shows changes so far on sea levels and tries to predict the future.

“There is definite evidence of climate change around the Cedar Key area. There’s changes in vegetation – red mangroves, Brazilian pepper – and in fauna from snook, reddish egrets and roseate spoonbills. There are more tropical species occurring in the Cedar Key area because the climate is changing,” Doig said. “We’re starting to think about it. The refuge did a modeling process looking at the effects on different habitats with sea level rise – what we can expect to gain, what we can expect to lose.”

The Lower Suwannee refuge covers 86,000 acres with a variety of ecosystems including undeveloped dry land, swamp, regularly flooded marsh and tidal swamp.

Historical records show that from 1983 to 2008, the sea rose 4.3 centimeters. That may not seem like much, but it was enough to submerge to varying extents 840 acres of dry land, according to the study. Meanwhile, tidal swamp acreage increased by 3,441 acres.

The study estimates that dry land and swamps will continue to disappear from the refuge, giving way to tidal marsh and open water.

Predictions are given at 25-year intervals from 2025 to 2100. The modeling includes predicted losses for various amounts of sea level rise with a loss of more than nearly 7,400 acres of dry land by 2100 under the worst scenario.

“Simulation results predict that ... 14,000 to 62,000 acres will be covered by open water or tidal flat by 2100 depending on the (sea level rise) scenario,” the report states. “Forecast results reveal a refuge greatly susceptible to inundation from (sea level rise) by 2100.”

Cedar Key lies at the southwestern tip of the refuge, now about 10 feet above sea level, and it is also likely to have major inundation.

In 2014, the University of Florida and its Sea Grant program undertook an exercise called Planning for Coastal Changes in Levy County that estimates how sea level rise will impact the island – which areas may stay high and dry and which will face inundation.

The study shows tidal gauge measurements from 1913 to 2016. The mean sea level trend is a rise of 1.80 millimeters a year from 1914 to 2016 – about seven inches in 100 years. The rise is accelerating – the Cedar Key gauge has shown a 5 percent increase from 2006 to 2013. Some low-lying parts of the town now flood with minor storms or with strong tides.

Meanwhile, the U.S. Army Corps of Engineers calculated a sea level rise at Cedar Key from a low of  $1\frac{1}{2}$  feet to a high of five feet. The scenarios are  $2\frac{1}{2}$  times to  $8\frac{1}{2}$  times the rise of the past 100 years, according to the Levy County report.

So what does that mean for Cedar Key and other area Gulf communities such as Yankee Town and Steinhatchee? It means a wave of problems.

Some areas will be underwater either permanently or with tides and storms – expected to become more frequent with climate change. Homes and businesses may be forced to relocate.

Water lapping up on land creates erosion to buildings, roads and other structures. That can be costly to repair.

Cedar Key has already experienced saltwater intrusion of its drinking water wellfield. The system was shut down in 2012 from mid-June to the end of July, when a reverse osmosis system was installed. Sea level rise will create more saltwater intrusion, stressing the system. Residents farther inland, who rely on well water, will also have to cope with saltwater intrusion.

The UF project included many community events to both explain the project and get thoughts, suggestions and perspective from Levy County residents.

Not everyone was onboard with the idea that the climate is changing and that it is causing sea level rise. The report stated that some county commissioners and residents questioned sea level rise and wanted more information.

Current commission Chairman John Meeks said the current commissioners are believers that sea level rise is happening. Meeks said the county must plan for it not only directly on the coast but inland as well.

“I have questions about some of this but I don’t doubt that sea level rise is a real thing. If you remember anything from physics class, when water boils it expands. With seawater heating up, it will expand,” Meeks said. “There is a group that I have been kicking around whether we need to participate in called Resiliency Florida. It’s a board and one of the things it focuses on is sea level rise and hardening a preparing for hurricanes.”

Among Resiliency Florida members are coastal cities and counties including St. Augustine, Marco Island, Miami Beach and Leon, Monroe and Broward counties. Its goal is to help cities and counties

get funding, regulatory and legislative support for projects regarding sea level rise.

Micheal Allen, a UF professor of fisheries and aquatic sciences who works at UF's facility in Cedar Key, said island residents and those who make a living in the Gulf know the sea is rising.

Allen said smaller islands such as Gomez Key and Derrick Key have shrunk. Some are now mere sandbars with a few scraggly trees.

"You can see big changes in the vegetation and the island composition. The outermost islands will start losing their palm trees when more and more salt water is inundating the islands," Allen said. "The most evidence for it is at the end of the chain where islands formerly has scrub oaks and cedars and cabbage palms, and then they end up losing those trees and becoming more like salt marsh."

The increased frequency and intensity of storms is also having an impact, Allen said.

Oysters, which used to be scraped from their beds with long tongs, require a finelytuned mix of fresh water pouring from river with the salt water of the Gulf.

The increased swing from drought to flood and back to drought also disrupts the balance.

On the other hand, some of the changes in the water will be welcome by some. Snook, a popular gamefish that was rarely seen north of Tampa, is now common in the Cedar Key area.

“What’s going to happen with rainfall patterns is ecologically a bigger deal than just sea level rise itself,” Allen said. “It’s both the extreme event like hurricanes and extreme droughts. That’s really the driver that is going to have an impact on the ecological health of this region.”

Colson, who also had a career as a registered hospice nurse, also talks about health in regard to sea level rise and climate change. It is personal for Colson, who was diagnosed with Stage 4 cancer several years ago and has been through all kinds of treatment.

The diagnosis of sea level rise is in for Cedar Key, Colson said. It’s now up to residents to determine how they are going to treat it – some may choose to move; some may boost their house higher; the town will have to decide what to do about city streets and buildings; the Florida Department of Transportation will have to decide what to do with State Road 24, the only road into town.

“We’ve been given the Stage 4 diagnosis here – so we can do some chemo or radiation to elongate your time. Each of these remediations are only possibly going to buy you time, but is it good time, is it bad time, are you going to be vomiting, are you going to lose your hair?” Colson said.

“You adapt and you accept. I think we should do the best we can with what we have to continue the lifestyle that we have, but also be mindful of investment and not make the investment too high so that you don’t go broke fighting the inevitable.”

 Sue Colson, the vice mayor of Cedar Key and a former member of the Suwannee River Water Management District, stands at the dock of the Cedar Key Living Shoreline and Tyree Canal Enhancement Project in Cedar Key on June 22. [BRAD MCCLENNY/STAFF PHOTOGRAPHER]

✘ The Cedar Key Living Shoreline and Tyree Canal Enhancement Project aims to reintroduce vegetation to the eroding shoreline on Cedar Key. [BRAD MCCLENNY/STAFF PHOTOGRAPHER]

✘ The graves of John and Claire Kuszyna lie as close to water as possible. The father of Cedar Key's vice mayor, Sue Colson, Kuszyna spent his life working on boats in the Big Bend. Already the graves are flooded from time to time, and at some point the area is expected to be permanently underwater.