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Land loss, not nutrients, biggest problem for seagrass around the Chandeleur Islands

NEW REPORT PUBLISHED IN ESTUARIES AND COASTS

BATON ROUGE, La. (March 15, 2017) – A new report released in *Estuaries and Coasts* finds that nutrients – nitrogen and phosphorus – in Chandeleur Islands seagrass beds broadly mimic levels found in the lower Mississippi River. However, unlike other parts of the world, periodic elevated nutrient levels don't appear to be a factor in the well-documented seagrass decline in these Louisiana islands.

Instead, researchers agree with previous reports that the largest reason for the reduction in seagrass is the significant land loss the Chandeleur Islands have experienced over the last 150 years – a decrease in land area of more than 65 percent.

“While nutrient concentrations in these seagrasses are high in some years relative to seagrass globally, we didn't find evidence that nutrients increased over time; rather, nutrients showed high variability between years,” said Kelly Darnell, lead author of the report and research assistant professor at The University of Southern Mississippi. “Survival of these meadows depends on protection provided by the Chandeleur Islands. If the islands go, the seagrass goes.”

The Chandeleur Islands contain the only marine seagrass beds in Louisiana and are the only location where the species *Thalassia testudinum*, also known as turtle grass, is found along 930 miles between west Florida to central Texas. The coastal marshes of the Mississippi Delta contain a different array of submerged vegetation that grows in the much fresher water areas of the coast.

Excess nutrients, like those that flow down the Mississippi River and cause Louisiana's annual “dead zone,” are commonly a cause of seagrass decline due to reduced water quality. In order to determine if nutrient loading from the Mississippi River had a similar effect around the islands, researchers set out to determine the amounts of nitrogen and phosphorus in *Thalassia testudinum* from 1998 to 2015 through a combination of field work and previously unpublished data.

Computer modeling looked at three scenarios of fresh water flow and potential interaction with the islands – a spring flood in the Mississippi River with the Bonnet Carré Spillway closed, spring flood with the Bonnet Carré Spillway open, and during typical conditions during a cold front with a dominant south wind.

Results showed a number of scenarios in which Mississippi River water would be carried to the Chandeleur Islands, which explained the potential connection between plant and river nutrient levels.

This historical loss of Chandeleur Islands seagrass, and the likely continued land loss, makes it likely that the remaining seagrass beds will be largely, or even completely removed, if the islands become below-water shoals.

“Due to the seagrasses growing there, the Chandeleur Islands are a highly productive nursery ground for many fish species, stopping off point for migratory birds, and storage of large amounts of both nutrients and carbon,” said Tim Carruthers, director of Coastal Ecology for The Water Institute of the Gulf. “We do not know how connected these meadows are to the rest of the coast, or what may be the consequences if they are completely lost.”

Partners in the study include The Water Institute of the Gulf, The University of Southern Mississippi, University of New Orleans, University of Louisiana at Lafayette, and the Natural Resources Conservation Service. A link to the full report is [here](#).

About The Water Institute of the Gulf

The Water Institute of the Gulf is a not-for-profit, independent research institute dedicated to advancing the understanding of coastal, deltaic, river and water resource systems, both within the Gulf Coast and around the world. This mission supports the practical application of innovative science and engineering, providing solutions that benefit society. For more information, visit www.thewaterinstitute.org.