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Study targets sea-level rise; Flagler reserve key to research

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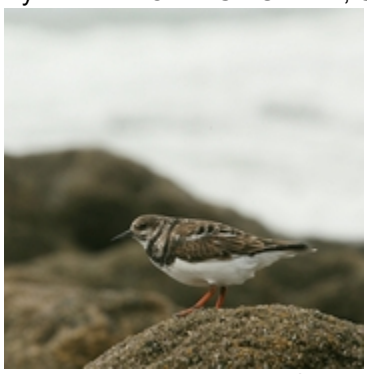

A tern rests on the rocks Saturday at the River to Sea Pre serve in Marineland. (NJ | David Massey)

A pair of researchers concerned about how future increases in sea level could spell trouble for fragile coastal areas of Flagler and St. Johns counties will use a new federal grant to start a regional planning process.

The narrow coastline and marshes that fringe the Matanzas River south of Matanzas Inlet and make up the Guana Tolomato Matanzas National Estuarine Research Reserve are home to many varieties of animals and plants. Starting a planning process to ensure the estuary and surrounding areas are prepared and protected is the focus of the new research grant recently awarded to the research reserve.

The $618,377 grant from the National Oceanic and Atmospheric Administration will be awarded over three years to a collaborative effort between the reserve and scientists with the University of Florida. The grant was one of two received recently by the Florida Department of Environmental Protection out of only seven awarded to research reserves nationwide.

The grant will help the reserve further its research on how future changes in climate, particularly potential sea level increases, might impact the southern section of the reserve and people who live in the region.

The Matanzas Basin study area includes Summer Haven, Marineland and part of Palm Coast, a region about 25 miles long by 10 miles wide, covering around 100,000 acres between St. Augustine and Palm Coast. About 60 percent of the basin is in public ownership.

"These next three years will involve hard work and dedication by our scientists and our researchers as they apply coastal science to issues faced by local decision makers," Reserve Manager Mike Shirley said in a statement.

The project's lead researcher, Kathyrn Frank with the University of Florida, said they will develop a process of planning for future increases in sea level by identifying areas that might be vulnerable and looking at opportunities to protect ecological connections for plants and animals. It will also help identify the potential human impacts from sea level rise.

"We're gathering information and doing some analysis about what the potential impacts could be in the Matanzas basin," said Frank, an assistant professor with the College of Design, Construction and Planning.

Researchers plan to work with a basin steering committee, as well as public officials, public and private landowners and interest groups to look at some of the available information and discuss strategies for adapting to

climate change.

Though the general topic of climate change remains controversial, discussion about potential impacts in Florida from sea level rise has increased statewide in the past several years.

"A lot of the impacts of sea level rise are very similar to what happens through coastal hazards, so the coastal hazards community has been planning for these kinds of things the longest, and there's action at the state and national level," Frank said. With the research project, Frank and Shirley hope to focus on how officials can collect essential information for making decisions.

Based on historical information collected at some of the state's oldest tidal gauges, such as Key West and Mayport in Jacksonville, scientists say sea levels around Florida appear to be rising at the rate of about 2 millimeters a year, or about 8 inches over the past 100 years.

Scientists' projections about how that rate could increase in the future vary, with total estimates by 2100 ranging from a foot to more than six feet.

Because estimates vary, Frank said they will use a range for this study, considering how different levels will affect the reserve. She said they will look at which levels would be "tipping points," where policies might need to change or be hurried up.

Other studies cited by state planning officials have shown a sea level rise of a few feet could have serious impacts to low-lying areas along the coast, such as areas that already experience flooding during extreme high tides. The studies also indicate rising seas could cause flooding along low-lying areas of the St. Johns River as far south and inland as Volusia County.

Many areas of the beach along Flagler and Volusia counties already are considered critically eroded by state environmental officials. Experts say any sea level increases would only make that erosion worse.

"We want the communities to be aware of sea level rise as a potential issue to plan for," Frank said. "The more people understand what the science is telling us and what the options are, then the better the communities will be able to make decisions about projects."

The project proposal for the Matanzas Basin stated rising sea levels would increase the need for structural protection such as bulkheads and dikes. Eventually, possible over one to three centuries, higher ocean levels could flood tidal wetlands and low-lying coastal forests, the proposal stated.

Frank and her collaborators hope to develop a cost-effective process that can be used in other estuarine reserves throughout the Southeast.

The Matanzas basin offers a "rare potential," Frank said, because more than 90 percent of it remains undeveloped.

The basin includes more than 100 species of mammals, reptiles and amphibians. Also seen within the basin are more than 350 bird species and 300 fish species.
