

# Jimmy Buffet Highway is Going the Byway:

Assessing Coastal Erosion on Little Talbot Island, FL.

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## INTRODUCTION

Little Talbot Island (Figure 1) contains a portion of the historic scenic route Jimmy Buffet Memorial Highway (State Road A1A), which was constructed in 1927.

Coastal erosion on the south end of Little Talbot Island threatens to wash this road into the Atlantic Ocean, possibly due to the inlet going into Fort George Inlet (Fitzgerald, 1988). Longshore transport which is the process that transports sediment along coastlines is pushing the local inlet north, further enhancing erosion on the south end. The south end also has a park which is not currently maintained and has heavily deteriorated due to erosion and lack of use.



Figure 1. Little Talbot Island's South End. The star notes where the island is in Florida. A1A is the yellow line next to the white sand.

## COMMUNITY PARTNER & OBJECTIVES

My community partner is Mr. Wade T. Smith with the Florida Department of Environmental Protection.

The objectives of this project are to:

1. Assess the threat to Jimmy Buffet Memorial Highway from erosion and inlet encroachment.
2. Calculate the current erosion rate of the south end of Little Talbot Island along the Atlantic.
3. Assess what the best course of action in regards of what to do about Jimmy Buffet Memorial Highway.

## METHODS

1. Using the online resource, Google Earth Pro, the area of sand along the water was analyzed for the years between 1994 and 2025 (Figure 2).
2. This data was then plotted in Microsoft Excel, and the graph was split between Pre 2010 and Post 2010.
3. One meeting with the community partner took place on April 1<sup>st</sup>, 2025. During this meeting, the history of the island was discussed as well as what possible solutions there are for the erosion problem.
4. Research for tide and wave buoys was conducted to find information to calculate the Coastal Vulnerability Index for Little Talbot Island and neighboring Amelia Island. A transect was drawn in Google Earth Pro to calculate the average coastal slope. The geomorphology was also determined from Google Earth Pro as well.



Figure 2. Area analyzed on Google Earth between 1994 and 2025

## RESULTS

The erosion rate for the south end of Little Talbot prior to 2010 fluctuated, but there was no net gain or loss in area of the beach. Following 2010, however, there has been a consistent trend of loss (Figure 3). The CVI for Little Talbot Island is 11.55 indicating the island is slightly vulnerable to climate change and erosion (Table 1). Amelia Island to the north had a CVI of 5.16 which indicates it has a low vulnerability to coastal change (Table 2).

Erosion Rate for the South End of Little Talbot Island

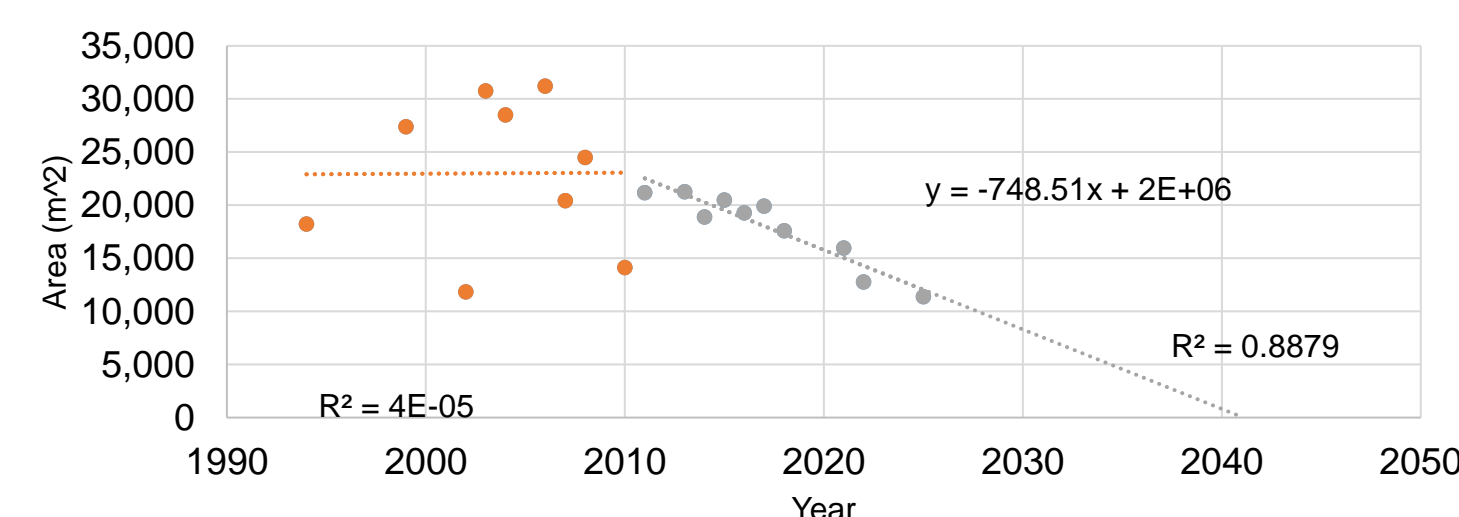


Figure 3. Erosion trends of the beach on the southern end of Little Talbot, with projections of when the beach near the road will be completely eroded.

Variable	Value	Rank	Notes
Geomorphology	Barrier Island, Sandy Beaches, Salt Marsh	5	
Coastal Slope (%)		0.33	2 0 to 9 Km Offshore
Relative Sea-Level Rise(mm/yr)		2.59	Station ID: 8720218, 28720030
Erosion / Accretion (m/yr)		-6.59	5 1994 to 2025
Mean Tide Range (m)		1.66	4 Tide Station 8720194
Mean Wave Height (m)		0.7	2 Wave Station 41112

Table 1. Coastal Vulnerability Index for Little Talbot Island

Variable	Value	Rank	Notes
Geomorphology	Barrier Island, Sandy Beaches, Salt Marsh	5	
Coastal Slope (%)		0.20%	2 0 to 5 km offshore
Relative Sea Level Rise (mm/yr)	2.28 mm/yr		Station ID 8720030, 2 and 8720218
Erosion / Accretion (m/yr)	Accretion of 5.16 m/yr		1 From 1994 to 2025
Mean Tidal Range (m)	1.84 m		4 Station ID 8720030
Mean Wave Height (m)	0.7 m		2 Wave Buoy 41112

Table 2. Reference Coastal Vulnerability Index for Amelia Island just north of Little Talbot

## CONCLUSIONS

Given these results, we can conclude that:

1. Jimmy Buffet Memorial Highway is extremely vulnerable to washing away with projections showing it will be gone in 15 years if nothing is done.
2. The south end of Little Talbot Island is eroding at 748.5 m<sup>2</sup> per year post 2010. This erosion is mainly due to Fort George Inlet due south of Little Talbot.
3. After further assessment and talks with my community partner, the current best course of action is to just stand by and let nature take its course. There is already a rock revetment installed to protect A1A, but it will have a high maintenance cost over the years due to the accelerated erosion rate. Due to this fact the cost of maintenance may not be worth it to the state.

## PERSONAL LEARNING OUTCOMES

From this project I learned how to cold call / email other professionals to conduct partnered research. I was also able to expand my geospatial skills using Google Earth Pro and the tools it provides.

The multiple practice presentations, and this conference have enhanced my public speaking skills and ability to engage with an audience.

Work I would like to conduct in the future is surveying in the coastal zone. I also plan to take drone courses to gain more professional skills for both environmental and other construction work.

## ACKNOWLEDGEMENTS

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## REFERENCES

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