

COASTAL GEOLOGY - INTRODUCTION

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[MUSIC PLAYING] Welcome, everyone, to Caladesi Island. This is a state park, part of the State of Florida parks system. And it's one of the very few undeveloped barrier islands in the state of Florida. And what that means, undeveloped, is that there is no development here, as far as there's not people living here. There's very few buildings on the beach.

So it's a very special protected area. Recreationally, it's a really cool place. It was voted the number one beach in the nation for several years in a row, and that just has a lot to do with the quality of the beach.

And we call it a beach recreationally, but geologically and in oceanography, we would call this a barrier island system, because it forms a barrier between the mainland and storms. Storms that come in, whether it's hurricane-strength storms or just the regular storms normally that we have in the state of Florida, that are just a lot of wind build-up from offshore that move inshore. So they prevent flooding inland or on the mainland, flooding, and actually capture that initial energy to protect where we, most of us, live.

This is the protected side of the island, and it's surrounded by rows and rows of just beautiful, lush mangroves. Mangroves also form a barrier in protecting the sediment and keeping it in place, or sand, we might think of it as. And then this side of the island also is where we would find our highest vegetation. So this is where we would see tree-size plants. And that's, again, because they're protected on this side.

So north of us is Honeymoon Island, which used to be connected to this island. And then a large hurricane in 1921 came and split the island in two. And on the south side of us is Clearwater Beach.

In order to get here today, we had to take a boat ferry to ride over here. So the island, the only access is by boat. It's a great recreational place for fishing. There's actually overnight camping on the island, shelling, and just boating and kayaking. Just a really beautiful, nice place.

Our goals today-- we'd like to learn what a beach is. We'd like to know what influences a beach. What's really neat-- barrier islands don't stay in place. So there's forces that are always moving the island.

And what's happening here is the island is actually building up on the clearwater end, so at a low tide, you can literally walk from Clearwater Beach onto Caladesi Island. Whereas on the other end of the beach, the north end, the sand is actually washing away. So there's an erosion process happening at that end of the beach.

So it's really dynamic. We've been visiting this beach for well over 20 years, and we've been able to document and see how the beach is changing over time. So that's our goal today, is to learn what a

beach is, learn how winds, currents, tides impact the beach. Measure some of the currents that are very important in distributing the sand that comprises the beach.

And kind of look at the history of the beach by looking inside of the beach. We're going to dig a large pit, and we'll actually look down into the sand. And we'll look at the plants and see how they're adapted to hold the sand in place. Measure the longshore currents.

And we'll do a profile. So we'll actually take measurements to help us to outline the shape of the beach. A beach looks pretty flat. Not much shape there. But if we take the time to take incremental measurements, we can actually measure that there is elevation and change in the shape of the beach.

So hopefully during our walk today, will find all of those features. We'll stop and conduct some measurements. And then we'll be able to have that data for other research. So a lot of the working end is done in the lab, but here in the field, there's some information we can only gather in the field. So that's what we're going to focus on today.

And just for history, geologically, we're looking at a lot of the geology and physical aspects of oceanography. And just for reference, Caladesi Island is roughly about 7,000 years old. So was probably formed at that time, at a time when sea-level rise was down in the geologic history line. And you have to remember, Florida's been flooded, where water's been high above the state of Florida, or that water drops and exposes areas like this, like Caladesi Island.

So come enjoy our day at the beach. And by the end of the day, may you have a completely different view of what a beach is in Florida.