

Dunes must be protected in order to reduce flooding

Beach-goers should not sit, walk, or play on sand dunes

Reviewing the characteristics of sea oats recently at the University of Florida's online site, I was struck by one characteristic. Under pests, which is, of course, most often addressing insects destructive to a particular species, it states that there are "none known." Yet these important native plants that spanned our coast lines from Virginia to Florida, strengthening sand dune structures that protect the regions from coastal flooding, have actually been threatened and endangered. Why? The answer is simple: because, for generations, there has been a very large bipod pest creating damage to natural the settings necessary for the survival of not only sea oats, but also entire coastal communities. What is that pest? Humans!

I have written several articles over the past near-decade on "*Uniola paniculate*," or sea oats. They are beautiful plants, appearing to many visitors and residents to be simple sand weeds that will somehow survive even if increasing large mammal traffic continues to trample over them. Also, some folks still clip "just a few" for that vase on the screened porch or dining room table. Seriously, they really are just wild flowers. Right?

I am writing this article because of recent conversations and what I have witnessed personally in the actions of both visitors and residents alike who not only appear to be under-educated about what these plants do to serve our community, but also seem to actually believe the antithesis of what you're saying when you attempt to explain the science to them. You can legally grow these in your garden and you can even find seeds available, but you cannot remove them from the wild—not legally.

What we name as primary dune systems after a major storm, like the two we recently had, will show the structure that we often do not see in the dunes. After Hurricane Matthew, I photographed entire sections of dunes in Ponte Vedra, Jacksonville Beach, Neptune Beach, and Atlantic Beach. What the photographs reveal are un-



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derground stems called rhizomes and thick roots that are often twenty to thirty feet long. The fibrous webbing of material that compose roots from sea oats reach down to the top of the water table as far as thirty to forty feet.

Often, among older sea oats that were destroyed in Matthew, the tap roots exposed were ten to twelve feet long.

As a longtime resident of the coastal community, I was incredibly pleased with the efforts of our regional communities to work at restoring the dune structures after serious damage in Hurricane Matthew. Having Hurricane Irma assault those structures just eleven months later was stressful to me, because I know that, while the new sand piles of restorative dune structures were hit hard by Irma, they prevented or lessened some flooding.

Nonetheless, many of the new plants put out to further strengthen the dunes were lost or damaged. After Irma, I also photographed small plant structures put in just this past spring that were washed up and lying on the beach or on the dunes, pulled out by wind, or, in some cases, by a human footprint of folks who had been playing on the dunes in the storm.

Watching local news coverage of the nor'easter as the storm approached was disheartening. In multiple news segments, people could be seen frolicking on the dunes with news crews stating on-camera that such behavior was not helpful. Since the storm has ended, I have, as I often do, continued to take photographs, including those of people who have converted the tops of dune structures into personal playgrounds and patios. Dragging lawn chairs onto the top of these

dunes, sitting on them, playing on them with your children, and other similar activities just simply are not helpful to recovery; that kind of behavior threatens the entire community with future flooding.

I have had conversations recently with area residents who disagree that the sand dunes are natural structures because, they say, "we just put them up." These folks fail to understand the need for the efforts to work with nature to rebuild and repair things that not only storms, but also humans, have damaged. A number of years ago, I knew someone in the area who was given a contract to build homes sites. He was told that the property developer had a permit to move dunes. When he told me that, I asked him to be sure he saw the permit before starting the work. You should be very suspicious of someone who believes construction in sand dunes is permitted and/or that the community, flood control groups, or neighbors who will potentially lose their homes to flooding in the next storm will not object.

That is why I am writing this article as a reminder today. In several conversations since the storm, I have had people try to justify why the dunes are free for play, with some saying they grew up playing on them and using them as activity areas. When I have attempted to reason with them about the science, they simply don't believe it. One even commented that all the dunes did was harbor rodents. Yes, there are sometimes a species of mice in the dunes. In fact, the Beach Mouse (*Peromyscus polionotus*) actually works with the dune structures to build them up. Its primary food source is sea oat seeds, which spread throughout the structures. By the way, this beach mouse is also endangered because of loss of habitat through human and storm destruction of dune structures. Another species that help build dune structures are sea turtles, which are also endangered. When sea turtles were plentiful, they deposited nutrients that fed the plants that stabilized these massive dune structures.

In early development, we did not fully understand the

issues of flooding related to storm surge and what the sand dune structures did to protect billions of dollars' worth of property behind the dunes and inland. The re-nourishment and restoration projects of sand dunes are not simply a man-made device; they are the efforts by man to replace and work with natural systems that protect lives and property.

The rise in conversation by those who seem not to know better, or who have failed to learn from decades of advice from civil engineers and observing communities with history in dealing with storm surge, is troubling to me. The behavior of those destroying new, costly structures for the pleasure of a frolic in the sand should be stressful for any resident who wants a sustainable beach community.

Of the new sea oats that were planted during the last multi-million-dollar restoration project after Hurricane Matthew, the survival percentage of seedlings we plant can be low, especially if they are not protected from human foot traffic. It takes two years for them to become established. Sadly, we had only eleven months. Some are still struggling to hold on, but with folks dragging lawn chairs over them or climbing the dunes and sitting on these plants, we can expect a lower stabilizing effect to this very expensive and worthy project. Without the dune structures, we can expect increased flooding. We can also expect rising costs and decreasing availability of property insurance for those living in areas where dunes have been compromised by poor planning and/or inadequate enforcement of laws to protect them.

There are many reasons to educate the public, even those dead set against new understanding, about why sand dunes are not an appropriate floor mat for our free, expressive play. Let's all work together with the many who are already giving of their time and resources to protect our dunes. Please help spread the word.

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