Environmental Proposal: Implementing Manmade Mangroves Along Cape May's Coastline

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Introduction

During World War II the New Jersey coastline, particularly the coastline of Cape May County, was a hotspot of activity for German ships torpedoing U.S. ships that were heading to and from the Delaware Bay and its ports. As a result, the U.S. Army Corps of Engineers decided to dig a 3-mile-long canal that stretches from the Delaware Bay to the Atlantic Ocean. This canal would serve to protect those US vessels traveling to and from the Delaware Bay. This is not the only major reshaping the Cape May Coastline has seen over the years, but it might be one of the most damaging. The canal, in conjunction with the older jetties, have been largely instrumentational in the serious deterioration of the Cape May beaches over the last 70 plus years (Fox 2009). Former Army Corps project manager, Dwight Pakan, stated:

> It's obvious from aerial photographs that the north jetty creates a severe offset that interferes with the river of sand that flows offshore. The sand gets trapped at the north jetty and impedes the natural drift southward toward beaches in Cape May City, the Cove, the Meadows, the Lighthouse beach and Cape May Point. (Fox 2009)

There are several possible solutions for this problem. The current solution is to award a multi-million-dollar contract to a dredging company every few years. That company then dredges beach sand and fills in the eroded areas of the Cape May beaches. This is not only costly, but also can be

destructive to the various species of marine life and wildlife that make their homes in the areas being dredged. Alternatives to that costly and temporary solution are that Cape May County could fill in the canal, or they could remove the old north jetty. Although these solutions seem like viable alternatives, they both carry serious opposition from the local population, as well as serious costs in the case of filling in the canal.

Proposed Solution

I am proposing an alternative solution that I believe will not only help save our beaches from eroding but will also help us in the years to come with rising sea levels. My solution for the erosion of the Cape May beaches, and the proposal that I am asking for your consideration in funding, is to build and implement manmade mangroves along the Cape May shorelines. Mangroves are incredible resources where they grow naturally in tropical and subtropical climates that are not far from the equator. However, mangroves are unable to withstand freezing temperatures. This is why I am proposing to create a manmade mangrove.

I would like to create a "sectional mangrove" barrier constructed from bamboo and recycled plastic. The bamboo would simulate the roots and body of the mangrove, and the recycled plastic would assist in the necessary modifications that would need to be made to the bamboo in order for it to more resemble and function as an actual mangrove. The barrier would be semi-movable, inasmuch as a mangrove root is moveable. The actual size of the sections would vary, but a general size would be approximately 3 to 6 feet above the water's surface and 12 feet deep/wide. The sections would connect similarly to the way that sound reducing walls along a busy highway connect. A complete span of connected barriers would run for approximately 1000 feet. This would not have

to be done along the entire coastline. I would place these manmade forests strategically along the Cape May coastline at intervals of 1 forest every half of a mile. In total there would be roughly 5 of these 1000 feet long manmade mangrove barrier forests. Natural mangroves would obviously be ideal, however that is not possible in the climate of Cape May, New Jersey.

I believe that these manmade mangrove forests will not only cause the end of beach erosion in Cape May, but I also believe they will bring back beach area to sizes not seen since prior to the construction of the Cape May canal. The socioeconomic consequences of a larger beach for Cape May would be tremendously positive (Van der Stocken 2019). However, this is not the only positive outcome produced by the mangroves now populating the Cape May coastline. In addition to restoring the beach area, my solution will also provide shelter and support for threatened and endangered species. The fishing industry is one of the largest contributors to the economy of Cape May, and the new mangroves would be a sanctuary, mating area, and hatchery for all types of marine life (Fang Wang 2019). The manmade mangroves would also help to mitigate the disaster caused by hurricanes and other seasonal storms that frequently batter our coastline. Hurricane Sandy caused $65 billion in damage, and the New Jersey coastal towns were some of the hardest hit areas. In a study in Central America on the effects of whether mangroves can help decrease the effects of hurricanes on economic activity, it was found that coastal lowlands not protected by mangroves saw a drop of up to 24%. However, in the areas protected by 1 or more kilometers of mangrove belts, the effects were completely mitigated (del Valle 2020).

With your support, I believe that we can stop and reverse the beach erosion occurring in Cape May through the construction of my proposed manmade mangrove forests. However, if that positive outcome from their construction is

not enough, then look at the secondary and tertiary results of my proposal. I believe that these manmade mangroves will: a. stop and reverse beach erosion; b. provide shelter and support for marine life, therefore positively contributing to the fishing industry; c. help protect the coastline from frequent storms and hurricanes that can case extensive damage to our beaches, town and economy. I hope that you choose to move forward with this proposal, so that we can truly see the amazing value these manmade mangroves would bring to our Cape May beaches.

Bibliography

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