Coverage of Coastal Destruction

By: Zachary Green

University of North Carolina Undergraduate Research

Abstract

Estuaries are brackish coastal areas that are known as the “nursery of the sea” as many sea animals rely on estuaries for breeding and nesting. Unfortunately, estuaries in NC in areas such as the Pamlico and Albermarle sounds have been destroyed as a result of housing developments and environmental disasters such as hurricanes. I want to research the way that social media covers the destruction of estuaries. I want to see if I can find patterns in how the media covers this topic as I have noticed that within the last five years, the media has ignored a lot of reasons for this destruction and has not been as critical of development companies as they should have been. I believe that in order for estuaries to be better protected in the future, the media needs to talk more and cover more of the destruction of estuaries. I expect to find that the media ignores certain developments while calling out and making articles about others. As a result, we will see that estuaries, where the media has had an outcry for protection, will be much better off than estuaries without any media backing. In the future, I believe that it will be vital for the media to hold large developmental companies accountable. Instead of picking and choosing when to cover/care about estuaries in NC, there need to be covered to help protect all estuaries in NC.

Importance of these areas

Estuaries and sounds such as the Pamlico in NC are vital to the ecosystem as a whole. These are areas where inland rivers meet the ocean and play host to a huge amount of the biodiversity in the world. The majority of shellfish and fish that is eaten in the United States comes from these habitats. Esuaries act as a buffer between marine life and rivers and help protect plants and animals in both the salt and freshwater. This buffer can help protect marine life from human caused problems such as pollution that can be damaging to their health. These habitats also help the coast recover from storms. They can help soak up large amounts of storm water and help prevent erosion on the coastlines. Without these areas the flooding and damages during natural disasters such as hurricanes would be much worse.

The Problem at Hand

Unfortunately, the coastline, sound, and estuaries have not been taken care of the way they should have been. More than one-half of wetland areas in North Carolina have been lost since Europeans began settling in the areas. This is extremely concerning as 70 percent of endangered species in NC rely on wetlands to be their habitat. As a result of the destruction of the wetlands, NC has seen a major drop in biodiversity. There are three main causes of this that I would like to present. The first cause is due extreme weather events. Climate change has accelerated and made the effects of hurricanes and storms much more severe as well as much more common. There is no doubt that not only are natural disasters partly responsible for the destruction of wetland areas, but climate change has also been accelerating and increasing the impact of natural disasters. However, there are also two other factors that are equally significant. The second major factor is destruction due to farming. Between 1950-1970 NC lost 458,000 acres of wetlands largely due to government incentives to destroy wetland areas for farming purposes. This hurts the wetlands in two major ways. Not only is the land and area being destroyed so the benefit of having those wetlands is gone, but also there is extreme pollution due to runoff from these farms. As we have seen there have been extreme nitrogen blooms as a result of nitrogen increase in waters. The final issue at hand is the destruction of wetlands for housing developments. As we all know everyone wants to live at the beach. However, the addition of communities has put extreme stress on water sources and land areas. As the population continues to grow we will continue to push to the limits the capabilities of coastal areas to maintain large populations.

Methods and Research

After I found out about the different reasons for the destruction, I decided I wanted to learn more about the situation. As I was digging through all of the resources I could find on the topic I noticed a common theme. The vast majority of my sources would talk about the natural disasters that have damaged the wetlands. All the sources I could find discussed how hurricanes have significantly damaged these areas and the pace at which hurricanes are picking up as a result of climate change is concerning for the wetlands. All of this information is true, however, I noticed these articles consistently left out information regarding other factors. Outside of scientific reports, it was impossible to find any mention of the destruction as a result of farming and housing developments in the wetlands. It became clear to me that despite the scientific community acknowledging all of the main contributors, the regular media did not have much to say on the situation. It is obvious that the media is ignoring some of the main causes such as the contributions of farming through land destruction and runoff as well as coastal housing development.

Conclusion

It is clear that there is a lack of coverage of other contributing factors to wetland destruction. One may wonder why this is the case. It is easy for the media to put the blame on external factors such as natural disasters. While there is the human element attributed to climate change enhancing these natural disasters, there really is no specific blame being put by just blaming it on climate change. This lack of accountability by the media is extremely concerning. There could be some reasons why this is the case. As well there are significant economic factors in play. The coast is home to some of the most expensive homes for some of the state’s wealthiest people. It is likely that the government and media do not want to risk losing out on the economical benefits by trying to protect the environmentally sensitive area. Furthermore, another economic factor is the farming and money generated from it. Agriculture is a huge part of North Carolina’s economy and the majority of farming is done in the eastern half of the state towards the coast. Once again, the dollar is far more valued than the health of the environment and as a result the ecosystem and biodiversity in North Carolina will suffer.

Solution

In order to solve this problem there has to be more accountability. The media needs to do a better job of spreading awareness on this subject and explaining the whole story instead of blaming it on issues that are not controllable. In order to get our ecosystem back on track, the government and media need to put the health of our environment over the economic benefits of its destruction. While there has been a slowing down of the destruction of wetlands in recent years it is simply not enough. If housing development and farming continue to destroy our coastal wetlands at this rate it will put immense pressure on the ecosystem and we will continue to lose biodiversity. This will lead to significant erosion and an inability to handle any flooding or natural disasters such as hurricanes. As a result, every time a hurricane rolls through we will have to continue to spend billions and billions of dollars just to rebuild areas that will need rebuilding the very next year.

References

Alexandria G. Hounshell, Jacob C. Rudolph, Bryce R. Van Dam, Nathan S. Hall, Christopher L. Osburn, Hans W. Paerl, Extreme weather events modulate processing and export of dissolved organic carbon in the Neuse River Estuary, NC, Estuarine, Coastal and Shelf Science, Volume 219, 2019, Pages 189-200, ISSN 0272-7714, https://doi.org/10.1016/j.ecss.2019.01.020. (https://www.sciencedirect.com/science/article/pii/S0272771418308185)

Almar, Rafael, et al. "Coastal Topo-Bathymetry from a Single-Pass Satellite Video: Insights in Space-Videos for Coastal Monitoring at Duck Beach (NC, USA)." *Remote Sensing (Basel, Switzerland)*, vol. 14, no. 7, 2022, pp. 1529.

Byrd, Barbie L., et al. "Strandings as Indicators of Marine Mammal Biodiversity and Human Interactions Off the Coast of North Carolina." *Fishery Bulletin (Washington, D.C.)*, vol. 112, no. 1, 2014, pp. 1-23.

Cira, Emily K., Hans W. Paerl, and Michael S. Wetz. "Effects of Nitrogen Availability and Form on Phytoplankton Growth in a Eutrophied Estuary (Neuse River Estuary, NC, USA)." *PLoS One*, vol. 11, no. 8, 2016. *ProQuest*, http://libproxy.lib.unc.edu/login?url=https://www.proquest.com/scholarly-journals/effects-nitrogen-availability-form-on/docview/1812536297/se-2, doi:https://doi.org/10.1371/journal.pone.0160665.

Conery, Ian, J. P. Walsh, and D. R. Corbett. "Hurricane Overwash and Decadal-Scale Evolution of a Narrowing Barrier Island, Ocracoke Island, NC." *Estuaries and Coasts*, vol. 41, no. 6, 2018, pp. 1626-1642.

Flynn, Michael J., et al. "Coastal Science for Resilience and Management at the Cape Hatteras National Seashore, NC, USA." *Southeastern Geographer*, vol. 63, no. 1, 2023, pp. 54-77.

Goldberg, Liza A., et al. "Global Declines in Human-Driven Mangrove Loss." *Global Change Biology*, vol. 26, no. 10, 2020, pp. 5844-5855.

John C. Whitehead, Albemarle–Pamlico Sounds revealed and stated preference data, Data in Brief, Volume 3, 2015, Pages 90-94, ISSN 2352-3409, https://doi.org/10.1016/j.dib.2015.01.006. (https://www.sciencedirect.com/science/article/pii/S2352340915000066)

McNamara, Dylan E., et al. "Climate Adaptation and Policy-Induced Inflation of Coastal Property Value." *PloS One*, vol. 10, no. 3, 2015, pp. E0121278-e0121278.

Munroe, Robert, and Scott Curtis. "Storm Surge Evolution and its Relationship to Climate Oscillations at Duck, NC." *Theoretical and Applied Climatology*, vol. 129, no. 1-2, 2017, pp. 185-200.

New Findings from University of North Carolina in the Area of Climate Change Reported (Carbon Stocks of Mangroves within the Zambezi River Delta, Mozambique). NewsRX LLC, 2015.

Nicholas Zaremba, David J. Mallinson, Eduardo Leorri, Stephen Culver, Stanley Riggs, Ryan Mulligan, Eric Horsman, Siddhartha Mitra, Controls on the stratigraphic framework and paleoenvironmental change within a Holocene estuarine system: Pamlico Sound, North Carolina, USA, Marine Geology, Volume 379, 2016, Pages 109-123, ISSN 0025-3227, https://doi.org/10.1016/j.margeo.2016.04.012.

(https://www.sciencedirect.com/science/article/pii/S0025322716300664)

Paerl, Hans W., et al. "Ecosystem Impacts of Three Sequential Hurricanes (Dennis Floyd, and Irene) on the United States' Largest Lagoonal Estuary, Pamlico Sound, NC." *Proceedings of the National Academy of Sciences of the United States of America*, vol. 98, no. 10, 2001, pp. 5655-60. *JSTOR*, http://www.jstor.org/stable/3055682. Accessed 9 Mar. 2023.

Paerl, Hans W., et al. "Ecological Response to Hurricane Events in the Pamlico Sound System, North Carolina, and Implications for Assessment and Management in a Regime of Increased Frequency." *Estuaries and Coasts*, vol. 29, no. 6, 2006, pp. 1033-45. *JSTOR*, http://www.jstor.org/stable/4124836. Accessed 9 Mar. 2023.

Parton, Lee C., and Steven J. Dundas. "Fall in the Sea, Eventually? A Green Paradox in Climate Adaptation for Coastal Housing Markets." *Journal of Environmental Economics and Management*, vol. 104, 2020.

Pelletier, Marguerite C., et al. "Landscape Structure and Land use Affect Estuarine Benthic Invertebrates in the Virginian Biogeographic Province, USA." *Environmental Monitoring and Assessment*, vol. 191, no. 4, 2019, pp. 252-15.

Raimundo Lopes, Namir D., et al. "Factors Influencing Coastal Land Cover Change and Corresponding Impact on Habitat Quality in the North-Western Coastline of Guinea-Bissau (NC-GB)." *Ocean & Coastal Management*, vol. 224, 2022, pp. 106181.

Research Conducted at North Carolina State University has Provided New Information about Shelf Science [the Role of Multiple Stressors in a Dwarf Red Mangrove Dieback]. NewsRX LLC, 2020.

Rothenberger, Meghan B., JoAnn M. Burkholder, and Cavell Brownie. "Long-Term Effects of Changing Land Use Practices on Surface Water Quality in a Coastal River and Lagoonal Estuary." *Environmental Management (New York)*, vol. 44, no. 3, 2009, pp. 505-523.

Stahle, Daniel K., Dorian J. Burnette, and David W. Stahle. "A Moisture Balance Reconstruction for the Drainage Basin of Albemarle Sound, North Carolina." *Estuaries and Coasts*, vol. 36, no. 6, 2013, pp. 1340-1353.