

COASTAL EROSION IN THE CARIBBEAN

BY: KOLBI HOLSTON





Figure 7: Houses on stilts in Panama. #1

THE START OF MASS TOURISM

The popularity of beaches can be directly tied to the start of tourism. In the mid 1800s British sailors began to popularize beaches when they deemed it a cool and relaxing hangout. Beaches continued to be favored as the idea of “tanning” gained a positive connotation. The wealthy started to associate it with health and leisure. As more wealthy people sought beaches, the concept of traveling to other countries with tropical beach landscapes became more common.

At its foundation the concept of tourism was meant to offer a new visual and cultural experience. Tourism also offers the opportunity for positive economic benefit for the cities being visited. In the 1980’s, mass tourism boomed as it became more economical and practical to travel. This greatly increased tourism rates among middle class citizens in North America and Europe. Popularity continued to grow as visual media supported a narrative that showed over saturated colors, tropical biophilia, beach fronts, tourists relaxing, crystal blue water, rolling hills, clear skies, etc. These cliches contributed to making tourism appear as an ideal and exotic experience. Despite this picturesque concept, something the post cards and ads never pictured, was what was happening to local communities as these resorts were being developed.

TOURISM AND THE ENVIRONMENT

There is a toxic link between tourism and the environment. Beaches have transitioned from relaxing landscapes into a tool for economic gain. Resort developers channeled all their focus on urban sprawl and profit instead of the vitality of the community and environment. Between the stress put on the coast to support more expansive resorts and the results of climate change, coastal erosion is playing a major role in the future of the tourism industry. Tourism is greatly contributing to pollution, the disruption of the environment, overfishing, the dumping of waste in the ocean, excessive water use, etc. Simultaneously, people that live in these sought after resort locations are being bullied and mistreated. This is having a large influence on the urban development



Figure 8: Houses on stilts in Panama. #2

in surrounding areas. When the rate of resort construction ceases to slow down and the erosion of the coast continues to increase, a dangerous race to acquire more and more land begins.

COASTAL EROSION IN THE CARIBBEAN

According to beach monitoring data, the coast has been degrading for years in the Caribbean. An article by Gillian Cambers paints the picture of how beaches have continued to change over time in places like Barbuda, Anguilla, Nevis, St. Kitts, and Grenada. The findings are supported with numerical data and charts that log the number of beaches eroded, percent eroded, and years that the degradation took place. In Barbuda 6 coasts were monitored over a 5 year period (1995-1999). This monitoring concluded that 33% of the beaches had been eroded. Anguilla had more drastic findings during it’s 10 year period (1991-2000). 15 sites were monitored and 93% of them were eroded. In Nevis they studied 11 coasts over 13 years (1988-2000). Over this period a 64% erosion rate was observed. St. Kitts had slightly worse results with a 70% erosion rate over 10 years (1991-2000). This was calculated from observing 20 beaches. Grenada followed a similar pattern as the other locations with 12 beaches studied and a 75% erosion rate. The beaches in Grenada were studied over a 15 year period (1985-1999) (Cambers, Gillian, 2009). With most of these studies being concluded approximately 20 years ago, it can be assumed that a lot of the documented beaches are significantly smaller or simply no longer exist. Since the late 1990s, not much has been done to preserve the environment. Advances in technology and products have contributed to humans increasing our pollution and waste levels. Due to this, coasts are likely to erode faster than they did 30 years ago.

TOURISM AND THE URBAN ENVIRONMENT

When faced with this severe issue of land degradation developers saw it as a sign to get more creative instead of stopping their monopoly. Some of the solutions being explored are the use of cruise ships, reengineered beaches, and urban sprawl. In reaction to these strategies we see more negative impacts on the

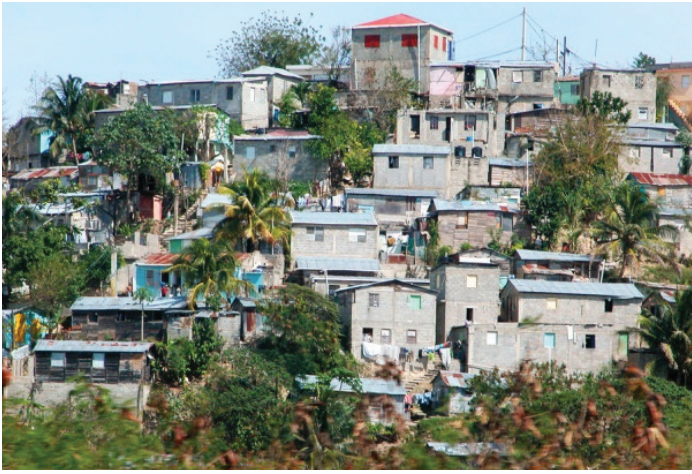


Figure 22: Informal settlements in the Caribbean region. #3



Figure 23: Informal settlements in the Caribbean region. #4

environment and more local residents being displaced. This leads to architectural responses like informal settlements and gentrified areas. Smart growth strategies are one positive response from the battle of resort developers against the eroding coast.

FLOATING RESORTS

As land disappears one solution being explored was the idea of cruise ships. The modern cruise ship industry first developed in the 1960s. Similar to tourism, cruises were painted as an idyllic and fun experience. This was a great solution to areas experiencing severe coast erosion, because this allowed people to tour these tropical islands without developers needing permanent real estate along the coast. This solution would have also offered relief to the local communities that were being displaced in an effort to make room for more resorts. Despite seeming like a feasible and perfect solution, cruise ships posed a different set of issues. Their impact on the environment attacks the water ecosystem in a way land tourism never could. Cruise ships have been reported for dumping ship waste directly into the oceans. It has been recorded that the dropping of cruise ship anchors can destroy up to a yard of coral reef. The ships also pollute the air and contribute to increased material waste levels in the ocean (Wiki, 2021).

REENGINEERED BEACHES

For developers that didn't want to let go of the prime coastal real estate, reengineered beaches were worth exploring. This concept is similar to the methods used to create man made islands. As the

coast erodes it is simply built back. While this seems to preserve the site, it allowed resort developers to alter the authenticity of the coast. Cases of imported trees and foreign or fake sand were frequent during the reconstruction of these beaches. A sand experiment was conducted that proved that a number of the beaches tested in the Caribbean used dyed or hybrid sand grains. In the Caribbean man made coasts have been attempted in places like Jamaica, Grenadines, Anguilla and Curacao (Hall, Ron, 2009). Reengineered beaches are a response to a degrading coast, but they are also being used as a way to make beaches in places that didn't have a beach in the first place. This would allow developers to continue to capitalize on coastal real estate. Another factor is the cost. While it's not taking any more land away from local residents, it costs millions to attempt a feat like this. One way they might acquire payment for projects of this scale could come from an increase in taxes.

GENTRIFYING THE CARIBBEAN

The increase of taxes is one factor that leads to gentrification. As taxes, property values, and the cost of living in areas increase, it forces lower income residents to relocate. Tourism has shot up the value of homes closer to the coast since the view and land are so sought after. Situations like this delegate who is able to enjoy the coast and these beautiful views. As residents are pushed further to the outskirts of the city or inland, they have a harder time enjoying beaches and other aspects that have been consumed by tourists. The homes closer to eroding coasts now need to be equipped with strategies to counter it. Implementing certain housing strategies is sometimes an expensive factor.

Architectural responses to coastal degradation and increased hurricanes are being reflected through the use of stilts, new set back regulations, and the integration of vegetation. Although all of these methods are not widely used in the Caribbean yet, we see signs of this language spreading. Cities that border the Caribbean Sea like Panama, a major port city for the Caribbean, are beginning to place their homes on stilts along the coast. Figures 7 and 8 illustrate this. As the coast continues to weaken and climate change continues to bring more extreme elements like hurricanes, the architecture will have no choice but to continue to adapt.

INFORMAL SETTLEMENTS

Informal settlements are a form of informal urbanism. They are homes that are constructed with inadequate access to sanitation, inadequate access to safe water sources, poor structural quality of homes, overcrowding, and insecure residential status. These settlements are a result of residents being pushed to the outskirts of the city without the income to adequately support themselves. Figures 22 and 23 show examples of these structures. Informal homes are usually built quickly and with whatever materials can be collected (Baldwin, Jeff, 2000). Informal settlements can be considered an architectural response to a lack of resources and a lack of government assistance. The government is continuing to take more land as the coast erodes and the cost of living rises in the places that they haven't monopolized. This leaves lower income families no choice but to lose their homes and move further from the coast and sometimes even the city.

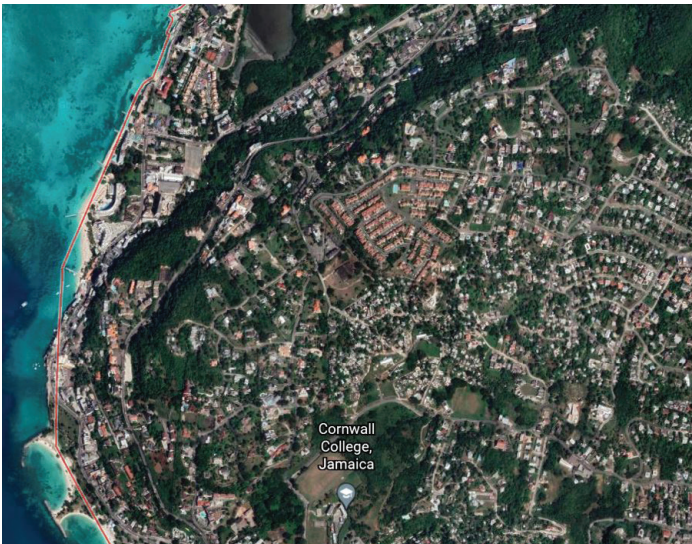


Figure 32: Google Earth image of Montego Bay 2021. #5

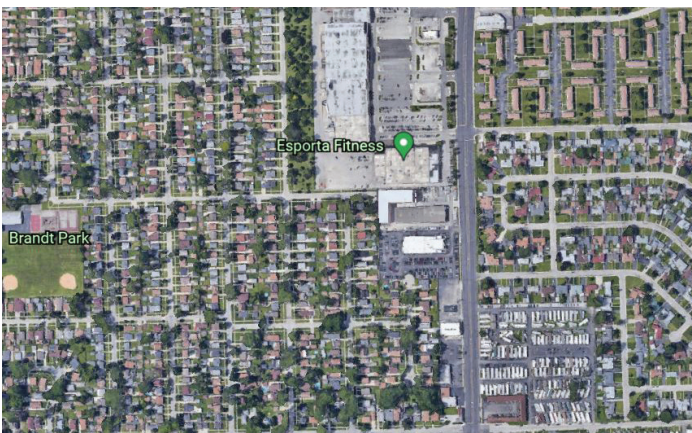


Figure 35: Google Earth Image of suburb near Chicago IL. #6



Figure 38: Home for sale in Montego Bay. #7



Figure 39: Home for sale in Montego Bay. #8

URBAN SPRAWL

Another architectural response to the setbacks on the coast is urban sprawl. Urban sprawl is the expansion of an urbanized area at an uncontrolled rate. The best example of this is United States suburban areas. The formation of “cookie cutter” homes as far as the eye can see. As Caribbean countries continue to gentrify coastal cities, it is important to look inland at the architectural urban response. In Figure 32 we see a Google Earth view of Montego Bay in 2021. The language of the urban fabric is almost identical to Figure 35 which is a suburban area in the US. It is clear that Jamaica is adopting suburban sprawl strategies as the coast is being gentrified and residents are moving inland. Despite what is advertised in the post cards, a city full of beaches and tropical trees, Montego Bay is becoming an urbanized location. These suburban-like areas are composed of more and more large vacation homes and expensive houses. The urban fabric is changing and so is the culture of the people that are moving in.

Figures 38 and 39 show examples of homes currently for sale in Montego Bay. From this we are able to see the style of homes being integrated on the island.

SMART GROWTH

When urban sprawl and resort development spread uncontrolled, negative impacts will continue to develop. This can be reflected in residents being forced into informal settlements due to a lack of land and resources. Urban sprawl also has a negative impact on the environment when greenery and other vegetation are sacrificed for more buildable land. Smart growth is a concept that deploys compact thinking into conscious urban planning tactics. This initiative prioritizes the formation of compact structures so that walkability and open space can be preserved. This helps to counter the parasite-like effect that urban sprawl can have on cities. Some of the main smart growth strategies include:

- Revitalizing existing communities

- The conservation of resources

- Mixed use development

- Preserving open space

- Utilizing compact building design

These strategies help to develop cities that are conscious of human quality of life and the environment. Smart growth is an

Mixed use development

Preserving open space

Utilizing compact building design

These strategies help to develop cities that are conscious of human quality of life and the environment. Smart growth is an initiative that has improved multiple cities across the world. They are small tactics that when implemented in urban development create big change. When we use conscious methods in planning and design we see positive effects in the growth of cities in the future. In the Caribbean, smart growth strategies can be traced in the development of compact and movable homes. Figures 71 and 72 show examples of Chattel movable homes in Barbados. This will allow for flexibility with urban planning and easy adaptation to the changing coast profiles and land degradation. Other countries in the Caribbean are developing or using similar strategies. As the coast continues to erode, preserving the land and open space that is left is so important. The resort developers that have the toxic “build more, consume more” mentality are hurting the environment and the quality of life for local residents. The coast eroding could be a sign that it is time to slow down and save what is left.

CONCLUSION

Overall, it is clear that coastal erosion is a threat to the tourism industry. The changes it is forcing tourism to endure is having a ripple effect on the surrounding communities, authenticity of the coast, architecture, and the environment. Despite what approaches developers continue to try, climate change and hurricanes are continuing to progress. There comes a point when fighting with nature will only result in losing battles. Thinking and building smarter and more resilient structures is how you work with change instead of against it. Governments need to not only be conscious of the environment but also with how their structures and need for expansion are impacting the housing and livelihood of the local community. Responses like informal settlements and gentrification should never occur in a system that has enough money to correctly take care of its residents. A moment of self reflection and strategizing is the best way to better the damage that is already being done. Tourism in itself is not a bad concept. When greed and irresponsibility play a role, then it results in negative outcomes. Until we build and design cities for conscious and resilient growth, it is hard to say what the future of tourism will look like in the Caribbean.

ENDNOTES

1. Baldwin, Jeff. “The Contested Beach.” Essay. In *Resistance and Resort Development in Antigua, West Indies*, 222–41. Tourism Geographies, 2000.
2. Cambers, Gillian. “Caribbean Beach Changes and Climate Change Adaptation.” *Aquatic Ecosystem Health and Management Society*, 2009. <https://research.fit.edu/media/site-specific/researchfitedu/coast-climate-adaptation-library/latin-america-and-caribbean/puerto-rico-usvi-bvi/Cambers.--2009.--Caribbean-Beaches--CC-Adaptation-in-Puerto-Rico-.pdf>.
3. Hall, Ron. “The Caribbean: The Secret in the Sand.” *Condé Nast Traveler*, March 23, 2009. <https://www.cntraveler.com/stories/2009-03-23/the-caribbean-the-secret-in-the-sand>.
4. “Impact of Tourism in Coastal Areas: Need of Sustainable Tourism Strategy.” *Impact of tourism in coastal areas: Need of sustainable tourism strategy - Coastal Wiki*. Wiki, 2021. http://www.coastalwiki.org/wiki/Impact_of_tourism_in_coastal_areas:_Need_of_sustainable_tourism_strategy.



Figure 71: Moveable Chattel style homes in Barbados. #9



Figure 72: Moveable Chattel style home in Caribbean. #10

ENDNOTES - IMAGES

1. Limited, Alamy. “House on Stilts at Cayo Coral Southern Headland Bastimentos Island Bocas Del Toro Archipelago Republic Panama Central America Stock Photo.” Alamy, 2021. <https://www.alamy.com/stock-photo-house-on-stilts-at-cayo-coral-southern-headland-bastimentos-island-75791728.html>.
2. “Vacation Rentals, Cabins, Beach Houses, Unique Homes & Experiences.” Airbnb, 2021. https://www.airbnb.com/rooms/7510860?source_impression_id=p3_1639494999_o13ptKWJabWvVvAq&guests=1&adult
3. Michael G. Donovan and Therese Turner-Jones | April 20, 2017. “Caribbean Housing Is Expensive and Scarce. Here’s How to Change That.” *Americas Quarterly*. Accessed December 14, 2021. <https://www.americasquarterly.org/article/caribbean-housing-is-expensive-and-scarce-heres-how-to-change-that/>.
4. World Bank Group. “Kenya Receives \$150 Million to Improve Living Conditions for 1.7 Million Residents in Urban Informal Settlements.” World Bank. World Bank Group, August 7, 2020. <https://www.worldbank.org/en/news/press-release/2020/08/07/kenya-receives-150-million-to-improve-living-conditions-for-17-million-residents-in-urban-informal-settlements>.
5. Google earth. Google. Accessed December 14, 2021. <https://earth.google.com/web/@41.72943857,-87.73608823,185.85023134a,2040.01590228d,35y,0h,0t,0r>.
6. Google earth. Google. Accessed December 14, 2021. <https://earth.google.com/web/@41.72943857,-87.73608823,185.85023134a,2040.01590228d,35y,0h,0t,0r>.
7. “10 Bedroom Luxury House for Sale, Montego Bay, Jamaica.” 7th Heaven Properties, September 20, 2021. <https://www.7thheavenproperties.com/real-estate/jamaica/montego-bay-luxury-house-for-sale-10-bedroom/>.
8. “6 Bedrooms 6 Bathrooms, House for Sale in Montego Bay MLS-40679 under Contract.” 6 Bedrooms 6 Bathrooms, House for Sale in Montego Bay , CBJR, 2021. <https://cbjamaica.com/property-details/MLS-40679>.
9. “The Moveable Chattel Houses of Barbados.” Minto Lounge, October 25, 2020. <https://lifestyle.livemint.com/news/talking-point/the-movable-chattel-houses-of-barbados-111603379579852.html>.
10. Written by: Sally & Keith and Keith Miller PUBLISHED: Jun 9th 2017. “The Bajan Chattel House.” *My Guide Barbados*, October 30, 2012. <https://www.myguidebarbados.com/travel-articles/the-bajan-chattel-house>.

COLLAGE IMAGES

1. Corburn, Jason. “Collaborative Planning in Nairobi’s Informal Settlements.” *Frameworks*, November 24, 2015. <https://frameworks.ced.berkeley.edu/2012/collaborative-planning-in-nairobi-informal-settlements/>.
2. Hines, Morgan. “27 People on Board Carnival Cruise Line Ship Test Positive for Covid-19.” *USA Today*. Gannett Satellite Information Network, August 13, 2021. <https://www.usatoday.com/story/travel/cruises/2021/08/12/carnival-cruise-ship-covid-27-positive-cases-carnival-vista/8105767002/>.
3. “Difference between a Hotel and Resort.” *Catalonia Hotels & Resorts Blog*, March 19, 2020. <https://www.cataloniahotels.com/en/blog/difference-between-a-hotel-and-resort/>.
4. Inc, Huge. “Caribbean and Bermuda Luxury Real Estate - Homes for Sale.” *SIR-Webserver*. Accessed December 14, 2021. <https://www.sothebysrealty.com/eng/sales/caribbean-and-bermuda>.
5. Kiley Jacques writes about homes and gardens for New Old House, Kiley Jacques, and Kiley Jacques writes about homes and gardens for New Old House. “North Palm Beach Anglo-Caribbean Home - Old House Journal Magazine.” *Old House Journal Magazine - Renovation DIY and old-house restoration, traditional styles, period kitchens, historical decorating, period gardens, from colonial and Victorian through Arts & Crafts and Mid-century Modern: all from Old-House Journal magazine and special-interest titles Old-House Interiors, New Old House, and Early Homes*, June 17, 2021. <https://www.oldhouseonline.com/house-tours/fairfax-sammoss-creates-anglo-caribbean-home/>.
6. Lieu, David. “Urban Sprawl: The Importance of a Strong Central City Core.” *Owlcation*. Owlcation, October 22, 2014. <https://owlcation.com/social-sciences/Urban-Sprawl-The-Consequences-of-a-Substandard-Central-City-Core>.
7. Medina, Sarah. “All the Caribbean Countries Currently Open for an Island Vacation.” *Time Out United States*. Time Out, May 3, 2021. <https://www.timeout.com/usa/news/all-the-caribbean-countries-that-are-currently-open-for-tourism-122120>.