

Loving our coasts to death: Coastal Building is Demolishing our Coasts.

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Over half of the world's population live on or within 100 miles of a coastline. In 2012 in the US alone, 52% of the population lived in coastal counties. With the coastal areas booming to support the marine tourism and housing demands, the construction is devastating to marine life, but it doesn't have to be.

If you still want to be able to walk out of your beach side condo onto a sandy beach, and see marine life instead of litter, we must plan our coastal developments carefully to limit sedimentation, changes in run off, sewage, and pollution.

No building would be permitted if we were not entirely sure that the roof would not collapse now or in the future. Why these same practices are not in place to ensure that the land itself would not disappear, is beyond me. New developments should not be permitted without a detailed plan to reduce or eliminate any negative impacts on the ecosystem, and being able to prove that the plan is continuously implemented.

Building for climate change builds for a better future. With ocean acidification, storm intensification, sea level rise and warming our marine ecosystems are already under enough stress without us destroying our coasts by loving them to death.

We cannot zone wildlife to facilitate human developments, our zoning must reduce our impacts on wildlife now and into the future. Meaning that it is absolutely essential to consider future variations that are predicted with climate change. No deer will cross the road only where

there is a deer crossing sign, just as sea turtles will not nest on a beach with a sea turtle nesting sign or protections in place.

If we must go through innumerable measures to protect our development from inevitable natural events, then we are throwing money, time and resources away. All the while we are also destroying the very thing drawing us to these areas. Seawalls are one example of humans stretching our means while also blocking important wildlife corridors.

Corals are highly productive, diverse, and rich habitats, supporting more species per area than any other marine environment. Making them one of the most valuable ecosystems on earth. The coral reef of the Florida Keys is valued at \$7.6 billion, and global reefs can provide goods and services valued at \$375 billion every year, even though coral reefs cover less than 1% of the earth's surface.

Half a billion people across the world live within 100km of a coral reef and benefit from its production and protection. Coral reefs are much more than just beautiful habitat for over 4500 species and counting. They act as a natural buffer to shorelines to slow the action of waves, prevent erosion, as well as weakening storms.

A stressed coral will expel its symbiotic zooxanthellae algae, which is able to photosynthesize and provide food and nutrients to the coral. Without their symbiotic algae partner, the coral will turn white and eventually die. The U.S. lost half of its coral reefs in the Caribbean in 2005 alone due to a massive bleaching event caused by thermal stress of warmed water. In 1997 the El Nino Season caused a mass bleaching of corals, killing 70-80% of shallow-water corals of the Indo-Pacific and Caribbean.

Corals can be stressed by many changes in their environment such as temperature, sea levels, nutrients, pH, salinity, etc. Large natural events such as hurricanes or cyclones can be strong enough to break or flatten large corals. Long exposure during very low tides may expose coral and is very damaging.

Coastal Developments threaten nearly 25% of the worlds coral reefs. Coral reefs are directly harmed by pollution, sedimentation, destructive fishing practices, sand dredging, harvest for the aquarium coral market, mining them for building material, and countless others. The destruction of coral reefs leads to a loss of marine tourism, and harms the local economy and fishing industry.

Light pollution is just one type of pollution that is harming coral reefs. The International Dark Sky Association reported that “the introduction of artificial light probably represents the most drastic change human beings have made to their (nocturnal animals) environment.” In a study by Bar-Ilan University and the University of Queensland, they confirmed that artificial light pollution prevents corals from sensing moonlight and prevents them from spawning. With more and more corals bleaching and dying every year, a hit to reproduction would wipe their chances of ever recovering.

Corals are not the only species harmed by artificial light pollution, other animals include sea turtles, birds, and insects. Sea turtles nest on beaches, and when hatchlings emerge from the nest they can distinguish the bright horizon over the ocean and navigate to the water. Artificial light pollution on or near nesting beaches throws off the hatchlings directions and the hatchlings scamper towards the artificial lights to their demise.

Migratory birds navigate by moonlight and starlight, artificial light draws the birds off course and into cities. Millions of birds die every single year by flying into buildings and towers. The artificial light can also cause them to migrate early or too late, and they can miss ideal nesting, foraging, and mating conditions. Coastal Birds often hunt at night when they can go undetected by their prey, they cannot successfully hunt during the day and with the added light from cities they are not able to hunt at night either.

We have all heard the phrase ‘like a moth to a flame’, but not everyone knows the effect that light pollution can have on insects. Insects are drawn to street lights, and can starve because of their attraction, they can be burnt or trapped, and easily preyed upon. Insects are very important in the food web, and their decline can affect any species that relies on insects as a food source or as a pollinator.

There are numerous ways that we are harming coastal ecosystems with our presence, but there are also many solutions to lessen our effects. To mitigate light pollution, we can implement shielded lights, use low-pressure sodium-vapor lighting, turtle safe red lights or turn off lights at night around delicate habitats, as well as others. Know where you go- research hotels and resorts before choosing where to vacation, even EcoTourism can be falsely advertised, looking for Eco Certified Ecotourism seal is one of the many ways to double check any Eco- claims. And overall, be mindful that even the smallest things like a porch light can be devastating to the ecosystem. This is mother nature’s world, we are just living in it. It is time to be gracious guests on our planet.