Administration (NOAA), “Living deep-sea corals have been dated to be more than 4,000 years old, and dead corals forming deep banks have been radiocarbon-dated to be more than 40,000 years old.”(NOAA, ) These coldwater corals grow slowly, approximately 5-25mm a year: In comparison, tropical corals can average growth over 200mm in a single year. Both of these ecosystems are well known for their biodiversity and it is through such biological variety that they are capable of impacting the modern world in rather significant ways.

Based on the ecological impacts and influence reefs hold, there should be no question as to the viability of coral reefs being a necessity to the continuation of life on Earth. This, partnered with their economical importance, shows why these ecosystems are a key shard to the human race’s survival. The living structures support more species per unit area ($ft^2$, $m^2$, etc.) than any other marine environment on the planet. This includes around 4,000 species of fish, 800 species of corals, and hundreds of other marine crustaceans/ invertebrates. By providing enhanced feeding opportunities, hiding places from predators, fish spawning sites, and nursery areas for juveniles, coral reefs provide a natural utopia for marine life to thrive. These underwater paradises have a tendencfs3 (fs be)6(in)-11(g)10( a)4( n)-9(e)4(c)4(e)4(ssi)-3(t)-21(y)272.024.0000c

popular tourist destinations have taken a serious blow, greatly weakening such economies. New impediments to the sustainment of healthy ecosystems has resulted due to the gradual collapsing of many reefs in the tropics.

Over the last two decades coral bleaching has become one of the primary concerns of marine biologists across the globe. Occurring in the tropical reefs along the equator, this event is caused by symbiotic algae being repelled from the coral's pores due to heat stress: This process

over 20% of today’s coral reefs have either been kille

*Figure 2*



(NOAA, "Fishing Impacts."*)*

introducing this truly ‘invasive’ species to the tropics of the Atlantic, perpetrators have already greatly weakened the ecological well being of these reef systems; however, this has not been nearly as detrimental as the impacts of direct human interaction has had on coldwater reefs.

Believed by scientists to be more diversified in coral species than their tropical sibling, coldwater reefs are a recently discovered natural phenomenon; regretfully, they are being destroyed before marine biologists are even able to study them in detail. Deep sea trawling is a popular commercial fishing practice worldwide, especially in the cold waters of Alaska and Norway. However, these are the locations of coral reefs which have endured thousands of years of climate change, tectonic shifts and other global events through evolution, only to be destroyed by massive metal weights being dragged behind the boats of such fishermen (See figure 5). John Pickrell, from National Geographic, reported on the subject concerning actions being taken by the United Nations, “Concerned that many species may be lost before they are identified, a group of 1,136 scientists from 69 countries is (are) appealing for new laws to protect deep-ocean corals and sponges... ‘We urge the United Nations and appropriate international bodies to establish a moratorium on bottom trawling on the high seas’.”(Pickrell, "Trawlers Destroying Deep-Sea Reefs, Scientists Say.") While there has been a tightening on the management of such industries since the preliminary debates held back in 2004, there continues to be vast

*Figure(s) 5*

The top *Oculina* coral reef is undisturbed. Trawling has devastated the one below, located at Oculina Banks off the coast of Florida. Only about 10 percent of *Oculina* habitat remains intact. Photo Credits: Top: R.G. Gilmore
(NOAA, "Fishing Impacts.")

amounts of destruction to the coldwater reefs. It is believed that through tighter international restriction the devastation can be stopped: Laws allotting specific areas to be trawled and utilized for commercial fishing would provide personal incentives to the fishermen to preserve those plots of ocean. Such legislation has failed to be passed as of yet. However, based upon recent

The rising populations of lionfish within the keys and gulf coast regions of Florida continue to mar the fragile reefs in the region: In order to combat this invasive species a number of organizations have begun to raise awareness for the issue through competitions and community events. The Reef Environmental Education Foundation (REEF) hosted its first annual ‘lionfish derby’ in 2009. A spearfishing competition, REEF’s event has since grown in popularity, having spread throughout the surrounding areas into the Keys and Florida peninsula by groups with similar goals. A marine ecologist at Oregon State University, Stephanie Green, has been monitoring lionfish populations before and after such derbies, “Her team has found that killing between 75% and 95% of lionfish off reefs in the Bahamas was enough to help populations of local fish rebound.”

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counteract such entities continue to be utilized. In 1936, Winston Churchill made a prediction: “The era of procrastination, of half-measures, of soothing and baffling expedients, of delays is coming to its close. In its place we are entering a period of consequences.” Churchill may have been referring to the impending onset of World War II but this statement has never rang more true than when applied to today’s coral crisis. While the majority of progress has been made in tropical waters around the Keys, rather than in the deep abysses which contain the deepwater reefs, scientists are still optimistic towards future legislation coming in time to conserve the degrading ecosystems of the deep before they transpire. Until such regulations come, efforts to reduce the invasive species and restore the reef systems are humanity’s best chance of preserving their most valuable resource.

# Works Cited

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