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## Disappearing Dolphins:

### How Humans Are Poisoning Our Oceans

Watching the pale blue waves crash against the hull of the catamaran, I could feel the strength of the ocean as it ebbed and flowed beneath me, gently rocking me forward and backward. The warm sea breeze tousled my hair as I slipped my snorkel goggles over my face. While cleaning out my snorkel, I heard people yelling and pointing out in the distance.

“Dolphins!” they hollered, and sure enough, I could spy the telltale arch of their streamlined bodies as they leaped above the surf. Since we were on the Hawaiian coast, these were spinner dolphins; they are playful and energetic by nature, which is partially how they got their name, since they are known for horizontally spinning when they jump out of the water.

It was clear that everyone felt a connection with these vivacious creatures as they curiously circled our boat. Before long, the pod of dolphins took off to hunt for fish and we were left in their wake. I swelled with a feeling of admiration for these mysterious and intelligent animals, which propelled me to learn more about them and the ocean. What I found both astonished and horrified me.

First of all, dolphins are remarkably similar to humans. In the National Geographic article “Thinking Like a Dolphin”, author Joshua Foer details the complex social structures, utilization of tools and most importantly, the extreme intellect of dolphins. Foer delves into the three tiers of

dolphin companionship from their tight-knit inner circle relationships that can last for decades, to bigger groups that combine to steal females and fight rival pods. They also exhibit the “us versus them” mentality common to primates that distinguish between friend and foe in the wild.

But the dolphin’s story takes a disturbing turn, and it’s all at the hands of humans. I am referring to the swampy soup of plastics steadily accumulating in the ocean, especially in the main ocean gyres. This plastic comes in varying forms, all of which negatively impact dolphins.

In its smaller form, fragmented pieces of plastic are eaten by small fish and other lower food chain organisms. The toxins from these plastic particles bioaccumulate as the small fish are eaten by bigger fish, and those bigger fish are eaten by even bigger fish, and so on. Since dolphins are large marine mammals, they are very high in the ocean food chain and ingest all of these accumulated plastics. In terms of large plastics, plastic bags are one of the worst offenders. The way plastic bags float in the ocean mimics the movements of squid, which are a prime food source for dolphins. Each of these forms of plastic block the dolphin’s digestive tracks. This accidental ingestion of plastics and other forms of pollution has led to “hundreds of cetaceans, mostly dolphins, [to die] in “mass die-offs” linked to viral and algal outbreaks” (Reader’s Digest 148). Other negative physical impacts that plastic has on dolphins is related to “some of the compounds used in the manufacture of plastics, such as nonylphenol, phthalates, bisphenol A (BPA) and styrene monomers, as these can have adverse health effects at high concentrations. This may include impacts on the endocrine system involved in regulating hormone balance. Some studies have suggested that such effects might be expected on land and in freshwater ecosystems” (Teuten et al.). Adverse effects include impairment of reproductive, developmental,

neurological and immune systems in the body, all of which are essential for the survival of the individual and the species.

As I alluded to before, plastics also pose chemical threats to the livelihood of dolphins in addition to their physical threats. According to the study *Plastics in the Ocean*, “Chemical pollutants...concentrate in whales’ brains and other vital organs, and organochlorines, such as DDT and PCBs. These substances, carried through the oceans by currents, become more concentrated as they pass up through the food web. Some stranded dolphins have been so heavily contaminated that authorities declared them to be “toxic waste” (Reader’s Digest 149). Toxins are attracted to plastics, which is why plastics act as a vector for these chemicals. These chemical pollutants can be dissolved plastics, but they can also be other hazardous materials such as heavy metals, like mercury. Unfortunately, even when plastics aren’t the direct source of health problems, they can act as a vector for these other hazardous materials.

But how are all of these plastics making their way into our oceans? It’s due in large part to the negligence of the fishing industry and plastic consumers, “All kinds of plastic debris, from nets and other fishing gear to the thousands of different consumer items that find their way to the ocean, break down into fragments that can absorb PBTs that are already present in seawater and sediments (Matoet al. 2001, Rios et al. 2007, Macfadyenet al. 2009). PBTs include polychlorinated biphenols (PCBs), polyaromatic hydrocarbons (PAHs), hexachlorocyclohexane (HCH) and the insecticide DDT, together with other Persistent Organic Pollutants (POPs) that are covered under the Stockholm Convention” (Stockholm Convention on Persistent Organic Pollutants 2011). Plastic fishing line and other nets constitute a huge percentage of dolphin

casualties through both entanglement and the degradation of the netting into microplastics that present chemical hazards as was formerly mentioned.

The other main source of plastic in the ocean is consumer packaging waste. This includes objects such as disposable water bottles, plastics shopping bags, food packaging and more. Each of these forms of plastics end up in the environment as litter all too often. When people drop plastic bags, water bottles, etc. on the street, they typically get washed into storm drains by rain. These storm drains lead to the ocean where the plastic is finally deposited and begins its journey potentially to the digestive tract of a dolphin. The sad news is, these materials can make their way into the ocean even if they are disposed of properly. Most of these plastics end up in landfills, even some of the ones that are correctly recycled. Generally, people tend to think of landfills as revolting mountains of trash left to rot responsibly in a far off land. But they aren't nearly as responsible as people think; too often, weather causes toxins (including plastics) to leach from the landfills into nearby waterways that deposit the harmful materials into oceans. (Friedland, Relyea, Courard-Hauri)

After discovering so much about the impacts of plastics in the ocean and how they affect dolphins, I couldn't help but picture myself back on the beach in Hawaii. I can almost feel the fine grains of dazzling white sand wriggle between my outstretched toes and the radiant warmth of sun as it washed over me through a cloudless sky. It is a memory that's charged with feelings of joy, beauty and tranquility. But what if the pristine beaches were littered with plastic bottles? Or plastic poisoned mammals washed up out of the ocean? Or plastic shopping bags that clung to nearby tree branches swayed in the ocean breeze? Unless swift action is taken, that is the future I see for our beaches and for our marine organisms, most importantly, the dolphins. In order to

stop this rapid wildlife and habitat destruction, it is imperative that humans stop using plastics commercially in addition to finding a method of disposal that is 100% ocean and environment friendly. If we don't act now, we may lose the dolphins forever. So what do you say, are you in?

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Reflection:

I chose to write about dolphins because I had recently read the National Geographic article “Thinking Like a Dolphin”, which I reference in my essay. This article inspired me because I learned about the intricacies of dolphin life and their advanced intelligence; these were characteristics of dolphins I had heard of but didn’t know much about, and what I learned was truly eye opening. To learn shortly after that dolphins were being killed by plastics that humans put in their habitat was deeply troubling. I wanted to learn more about how plastics were hurting these dolphins and other marine mammals, as well as what we could do to stop this atrocity. I had begun to feel connected to dolphins and wanted to spread the word on how to help them.