WATER FILTRATION MATTERS

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White Band Disease

Poor water filtration is a prominent factor in contribution of coral disease, similar to many diseases and bacteria found in Colorado rivers. Coral populations are drastically declining due to the negative impact of various diseases. Numerous diseases have fundamentally altered the reef ecosystem and continue to pose a threat to coral and other marine populations globally.

Roatan, Honduras coral populations, specifically Elkhorn and Staghorn coral, are experiencing a direct decline from the host specific White Band Coral disease (Aronson, 2001). Due to the Staghorn and Elkhorn coral being keystone species, their dramatic decline is significantly impacting the dynamics of the Roatan coral reef ecosystem, as well as impacting coastal management, local economics, and human health.

The White Band Disease is thought to be associated with the Vibrio bacteria, which harms the tissue of the Staghorn and Elkhorn coral (Sunagawa, 2009). The Vibrio pathogen contaminates Roatan waters via inadequate treated sewage systems (Williams, 2006). Continuous pollution and poor filtration has resulted in water-associated disease, like Vibrio.

Furthermore, the insufficient wastewater treatment system in Roatan does not fully remove the Vibrio bacteria from sewage waters, allowing the pathogen to enter the ocean (Ben-Haim, 2002). Poor filtration of sewage water and a high amount of run-off, along with warm water temperature is allowing the bacteria to flourish (Osunla, 2017). In order to sustain a healthy reef ecosystem, Roatan water treatment and filtration must be improved. If the water treatment is not enhanced, the effects of the bacteria will be detrimental for a wide array of marine organisms, the economy, and human health.

Colorado River

Similar to the coral reef ecosystem, the Colorado River provides a habitat for extreme biodiversity. Adequate water quality in the Colorado River is vital for a healthy ecosystem and is continually being compromised due to poor policy management, a deprived filtration system, and the prioritized agenda for humans versus wildlife. Poor water quality in the Colorado River, due to an insufficient system, impacts not just individual species, but the whole ecosystem, as well as Colorado economics and human health (Harold, 2000).

Plants and animals that reside in the Colorado River are experiencing great pressure from poor water quality caused by chemical contaminants, heavy metals, human pollution, and an overall deprived water filtration system (Department of Public Health & Environment, 2017). The Colorado River water quality is greatly impacted by agricultural drainage and mining runoff. Due to the Colorado River experiencing poor drainage and a lack of treatment, the water pH and salinity levels are altered, and there is an increase in chemicals, metals, and bacteria found within the river (McGinley, 2009). It is commonly known and understood that bacteria, such as E.coli, found in the Colorado River can significantly harm human health, but little is comprehended about how various bacteria is directly impacting river species and the river ecosystem (Williams, 2006). Additionally, mining runoff and mining spills are not uncommon to find in the Colorado River. The inadequate system for mining waste has caused toxic acidic water to enter the river, containing concentrated heavy metals like lead, iron, and zinc (Adler, 2007). When the river water is determined toxic, Colorado citizens are banned or highly encouraged to not enter the water for their safety. But what is happening to the species that reside in the river and do not have the option to avoid the contaminants? What chemicals are absorbed by the species that we are eating? Alike Roatan, Colorado experiences difficulties with runoff, poor wastewater systems, inadequate filtration, and failing septic systems. If the problem of poor water quality within the Colorado River is not addressed, it is very likely that the river will experience drastic changes, comparable to the coral reef ecosystem in Roatan.

In order to maintain a healthy ecosystem and avoid similar outcomes that Roatan is facing, it is essential to improve our water filtration system. If the water filtration system is not upgraded in a timely manner, the Colorado River may start to see serious impacts, such as diseases and a decline in populations. All in all, it is necessary to dedicate Colorado resources on water filtration to avoid the negative outcomes that Roatan is experiencing from lack of quality water.

The Colorado River, and all connecting bodies of water to the river, are under great danger. Due to Colorado having a large amount of agricultural practices and mining, as well as a heavy amount of human pollutants, the species that reside in the river are at severe risk (Harold, 2000). In order to prevent bodies of water in Colorado from experiencing a harmed aquatic ecosystem like Roatan, the topic of water filtration must be addressed. Not only do the pollutants harm aquatic ecosystems, but it impacts human health based off of viable drinking water and the products being consumed from the river (Adler, 2007). Additionally, the state of Colorado makes a great profit from recreational usage of the Colorado River. To maintain a high monetary value of the Colorado River, the water must support a healthy ecosystem (Adler, 2007).

Colorado, as well as Roatan, must gain a better understanding of the origin of the water contamination. It is vital to educate citizens of Colorado and prioritize resources for water filtration. Many contaminants can be diminished and prevented by frequently testing the quality of the water, as well as understanding the source of the issue. Moreover, sites that contain a concentrated amount of pollutants, that is easily accessible to the bodies of water, must be treated adequately. Proper systems to avoid spills and drainage must be installed. In order to install proper systems and prevent poor water quality, Colorado must dedicate time and resources to the issue.

Roatan illuminates a perfect depiction of a compromised ecosystem and what could happen to the Colorado River, if it's not already currently happening. It is fundamental that Coloradoans prevent the river ecosystem from anymore damage. If water filtration is not improved in Colorado, what will happen to the species that live in the rivers? How will the poor water quality impact human health? How will the inadequate system influence the Colorado economy?