Your Name

Instructor Name

Course Number

Date

Argumentative Essay: Balance in the Ecosystem is Critical

The ecosystem is considered the naturally balanced system which surrounds us. All of us must keep it clean and so that it helps us to live a peaceful and healthy life. Although, pollution in the ecosystem regarded as one of the major threats for Earth and will affect us latterly. People are going to suffer through their flaws. Pollution endangers the existence of human and other species as well as destroy the living environment. It is expected that the future will be either green or dark.

The ecology concept describes that this natural system is in the equilibrium state. This means that every system is in its preferably best state and must not be disturbed. The naturally balanced system is the one in which both animal and plants communities exist. It can be maintained through adaptation, competition as well as the interaction of various other species such as community members with their nonliving conditions. The nature balance theory can be applied in which pollution is based on one another. It can also be implemented with association between ecosystem and earth with the atmosphere composition and the world weather.

The balanced ecosystem is necessary as if the keystone predator removed from environment it will decline other species. The ocean intertidal zone area is the one which is the intersection line of low and high tides. It is considered as the toughest area to survive, but the reward of these waves includes access to oxygen and nutrients which the waves bring itself. Robert Pine was one of the most renowned ecologists who experimented in 1963 at the Pasic Coast intertidal pool with the 8-meter stretch, and he started ripping of starfish from rocks and throw them in the ocean. He removed all the starfishes from that intact area. Before starting this experiment, Paine observes that 15 other species were also living in the same area. When he came back after a year, he observes that from 15 species, only 8 left. The starfish unavailability has reduced the other species diversity in a huge number, almost 50% in a year(*Nature up Close: Keystone Species - CBS News*). The Paine observation is based on changing organism ecological environment as before that no one ever altered the ecological environment of any species. Through this simplest experiment of Paine, he completely changed the way through which the ecological system complexities are studied, which results in the development of a food pyramid. In 1995 it was also observed that when wolves returned to the Lamar Valley, more cottonwood trees and willows developed there. They also result in more aspen trees in the valley. So, through this experiment, it is concluded that in nature, everything is connected.

The sea otters are referred to as the keystone species, which covers the important part of the ocean communities as, without them, the entire ecosystem could be collapsed. However, the scientist are still searching that the sea otters can produce far-reaching effects related to the expanded terrestrial communities and will change the behavior up to the top predator such as bald eagle(*Decline in Alaskan Sea Otters Affects Bald Eagles’ Diet | EurekAlert! Science News*). The bald eagles reside in higher densities along the Alaska coast, and their nests are found in sea stacks shoreline and coastal cliffs. Through analysis, it can be observed that more than 90% of eagles acquired their food through oceans. The huge part of the marine coastal environment based on these islands through the sea otters population is declined significantly about the main predators. It is also observed that otters absence or presence significantly influence on the terrestrial animal. It is associated with the complex food linkage which could also reach at the five different food chain levels. The linkage starts from sea otters to the sea urchins, kelp, marine fish and end at bald eagle. It is analyzed that top predators affect entire ecosystem in the ways that are still needed to understand. Though the eagle propensity adapts the environmental changes quickly, which can allow them to flourish more and also the scenario can be difficult for the more predators who are specialized.

It is also analyzed that several predators are disappeared long before researchers studied the ecological roles, the apex predators of marine decline still required to unfold. It is also observed that sharks are widely effected by communities and prey. It also represents that the sharks' abundance is vulnerable in natural diversity. The reduction in the bigger predatory sharks disturb natural mortality even the small marine mammals, such as sea turtles and also some other predators(*Patterns and Ecosystem Consequences of Shark Declines in the Ocean - Ferretti - 2010 - Ecology Letters - Wiley Online Library*). The shark's top-down effects some of the coastal ecosystems are affected significantly. So, it is concluded that sharks are strong contributors to shaping the marine communities at large temporal and spatial scales. For that, a study is conducted for the empirical evidence for the generality test, which affects the ocean entirely. For instance, it is observed that because of the reduction of both shark and human, morality might have affected the frequent increase in the grey seals at Eastern Canada. Through analysis, it is also observed that because of fishing as well as the increase in the cownose rays, natural morality might contribute to the bay scallops collapse in the region of North Carolina. The major objective of conducting this analysis is that the natural ecology can be visualized and quantify temporally and spatially dynamic landscapes because of the mortality and risk which integrate complex effects in human as well as non-human predators.

In other research, it is observed that because of the predators’ removal, either the CO2 emission is decreased or increased. For this, I conducted a research analysis it is observed that because of the removal of top predators such as sharks, lions, and wolves it would badly affect the ecosystem and produce worst changes in climate. A study is conducted in Canada by Trisha Atwood; in this experiment, she removed the predators’ fishes from the ponds and rivers of Costa Rica and Canada. Across the entire ecosystem range and climate, she found a similar pattern everywhere. After the removal of fish predators, the emission of CO2 is increased almost ten times. According to her, it is not necessary that because of the removal of predators, CO2 always increases as the removal of top predators decreases the CO2 emission. Trisha Atwood said, “But we show that something so seemingly unrelated, like fishing all the trout from a pond or removing sharks from the ocean, could have big consequences for greenhouse-gas dynamics(Pearce).”

I also observed that because of pollution and overfishing becoming a reason for the extinction of coral reefs. Through research, I found that because of global heating, all the coral reefs of the world will die. Since 1998 because of the heat waves, over 90% of the coral reefs died worldwide. The total portion of the ocean floor covered by the coral reefs is almost 0.5%, but it could support about 30% of the marine species of the world. If they got extinct, it would badly affect biodiversity. In my perspective, it is required to take rapid actions for reef protection(Morrison et al.). It is observed that the entire world ecosystem can be controlled through the reef protection. For this purpose, it is required to safeguard the areas of the coastal catchment. It is required to protect the ecosystem through a series of functions and services, as it is observed that it is necessary both politically and socially. For the coral reefs protection, it is required to reduce the emission of greenhouse gases, to improve the quality of water, and to redevelop the stock for fishing.

Plastic is also playing a major role in ecosystem destruction it is required to properly dispose of the plastic materials. The pollution of plastic is affecting both the human population and other habitats. As compared to the other common use materials plastic has an extremely low level of productivity. The rates of recycling dramatically vary from one country to the other country. If the plastic is recycled properly it does not affect the ecosystem as improper disposal is the major cause of plastic pollution. As the oceans are usually downstream through almost all the terrestrial locations which means they are consuming a major amount of land plastic waste. In 2014 it is estimated that almost 5.25 trillion plastic particles float near the ocean surface and are the most significant reason for ocean pollution. Through the study, it was analyzed that most of the marine mammals killed due to plastic pollutions(“Plastic Pollution | Sources & Effects”). Some of the other aspects of plastic pollution include clog of the drainage system and they are also becoming the reason for flooding. There are various solutions through which plastic pollution can be prohibited such as preventing the improper disposal of plastic and also limited use of plastic is also necessary. It is required to aware people of zero waste and regarding the serious consequences of plastic both by government and public organizations.

For their livestock protection farmers used to kill top predators such as coyotes and their killing making the ecosystem even worst. For maintaining the biodiversity of our ecosystem it is required that farmers use non-lethal techniques for the protection of their livestock (US). Humans must understand complex issues and deal with wildlife effectively. So, it is required to take mitigation and prevention methodologies effectively. The professional of wildlife must address human issues effectively without killing wildlife as it will harm the environment.

The decline of polar bears is also effectively observed because of the loss of sea ice. They require to put extra energy in traveling far distances for food which is unbalancing their energy and effecting negatively on their reproductive success. It is found that because of the physiological issues as polar bears observed shrinking of sea ice(*Polar Bear Videos Reveal Impact of Melting Arctic Sea Ice*). A research was conducted through video footage, it was found that out of 9 bears 5 lost their body mass in 11 days. While the four bears who caught and ate lost 10% of the body mass which is almost 18kg. Through these huge changes, it can easily determine that bears are affecting heavily.

It is also observed that overhunting is also affecting the ecosystem. For this, research is conducted on the group of 100 guanacos in which 70 were placed at protected areas while 30 in unprotected areas(Cappa et al.). The FID (flight-initiation distance) and the group size are more in the unprotected areas as compared to the protected areas. It is observed that FID increased when vegetation is decreased although both group size and FID were not affected from slope. It is viewed that the guanacos were more at risk in areas that cover the vegetation in a higher amount. It can be seen that the habitat structure influence greatly on the population.

Through research, I found that human is also the major reason in affecting the biodiversity through overhunting of animals, chemical pollution, and by introducing species to the non-native environment(*Endangered Species Any Species That Is at Risk of Extinction Because of a*). All of the species played a major role in making the ecosystem work. The dangerous species even make the biome so it is required to take necessary actions for their survival as their extinction will unbalance our ecosystem.

**Work Cited**

Cappa, F., et al. “The Effects of Poaching and Habitat Structure on Anti-Predator Behavioral Strategies: A Guanaco Population in a High Cold Desert as Case Study.” *PloS One*, vol. 12, no. 8, 2017, pp. e0184018–e0184018. *europepmc.org*, doi:10.1371/journal.pone.0184018.

*Decline in Alaskan Sea Otters Affects Bald Eagles’ Diet | EurekAlert! Science News*. https://www.eurekalert.org/pub\_releases/2008-10/esoa-dia092508.php. Accessed 27 Nov. 2019.

*Endangered Species Any Species That Is at Risk of Extinction Because of a*. https://www.coursehero.com/file/ptov7cm/Endangered-species-any-species-that-is-at-risk-of-extinction-because-of-a/. Accessed 28 Nov. 2019.

Morrison, Tiffany H., et al. “Save Reefs to Rescue All Ecosystems.” *Nature*, vol. 573, no. 7774, Sept. 2019, pp. 333–36. *nature.webvpn.ustc.edu.cn*, doi:10.1038/d41586-019-02737-8.

*Nature up Close: Keystone Species - CBS News*. https://www.cbsnews.com/news/nature-up-close-keystone-species/. Accessed 27 Nov. 2019.

*Patterns and Ecosystem Consequences of Shark Declines in the Ocean - Ferretti - 2010 - Ecology Letters - Wiley Online Library*. https://onlinelibrary.wiley.com/doi/full/10.1111/j.1461-0248.2010.01489.x. Accessed 27 Nov. 2019.

Pearce, Fred. “Wiping out Top Predators Messes up the Climate.” *New Scientist*, https://www.newscientist.com/article/dn23182-wiping-out-top-predators-messes-up-the-climate/. Accessed 28 Nov. 2019.

“Plastic Pollution | Sources & Effects.” *Encyclopedia Britannica*, https://www.britannica.com/science/plastic-pollution. Accessed 28 Nov. 2019.

*Polar Bear Videos Reveal Impact of Melting Arctic Sea Ice*. https://www.cbsnews.com/news/polar-bears-arctic-sea-ice-melting/. Accessed 28 Nov. 2019.

US, Megan M. Draheim, The Conversation. “Why Killing Coyotes Doesn&rsquo;t Make Livestock Safer.” *Scientific American*, https://www.scientificamerican.com/article/why-killing-coyotes-doesn-rsquo-t-make-livestock-safer/. Accessed 28 Nov. 2019.