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An essay on the factors affecting mammal population in the neotropics and the challenges managing these populations.

Introduction

The Neotropics includes Mexico, Central America, South America, the Caribbean and Southern Florida and it also hold the greatest amount of standing forests. These wooded wildlands are mosaic in a variety of green that together add up to some 1.37 million acres. Mammals in these areas are affected by several factors which affect their livelihood and sustenance. As a result, any of these species are either being extinct or reduced.

Mammals are described as any of a large group of warm-blooded vertebrate animals characterized by having mammary glands in the female, which is used for suckling the young. Other features includes hairs which are very reduced in some species such as whales, a middle ear formed from three small bones (ossicles), a lower jaw consisting of two bones only, seven vertebrae in the neck and no nucleus in the red blood cells. Mammals belong to the class Mammalia. They are divided into three groups. Eutherians (Placental mammals), this is where the young develop inside the mother's body in the uterus and receives nourishment from the blood of the mother via the placenta. The Marsupials (Pouched mammals), where the young's are born at an early stage of development and develop further in a pouch on the mother's body where they are attached to and feed from a nipple and the final group being, Monotremes (Egg-laying mammals), this is where the young hatch from an egg outside the mother's body and then nourished with milk.

The monotremes are the least evolved and have been largely displaced by more sophisticated marsupials and placentals, so they are only a few types surviving platypus and echidna. Placental mammals have spread to all parts of the globe where they have competed with marsupials; they have in general displaced the marsupial types. However, marsupials occupy many specialized niches in South America and especially Australia.

There are over 4000 species of mammals, adapted to almost every way of life, with the smallest shrew weighing 2g/0.07oz and the largest the whale up to 140 tons.

According to the Red list of endangered species published by the World Conservation Union for 1996, 25% of mammal species population is threatened with extinction. The Red list of

endangered species is a scientific assessment of the status of the world's animal species. Although it carries no legal force this international compilation is seen by many scientist and conservationist as a warning of global decline in the wildlife biodiversity.

The report also states that 24 of the 26 orders of mammalian species are at the brink of extinction globally with an excess of 50% of the neotropical mammalian species. A leading cause of this decline in population is due to habitat degradation and destruction which is mostly due to human population and economic development, such as, over hunting, pollution and deforestation. There is also the introduction of non native species that plays a significant threat to mammalian species survival along side climatic changes.

This assignment will discuss the factors affecting mammal population in the neotropics and also I will seek to list the challenges managing these populations.

Humans are the chief cause of neotropical mammalian loss. They destroy the plants which provide food and also shelter for the animals and also hunt for them and utilize their meat as food and their skin for clothing. Plants are generally taxonomically diverse and omnipresent. They function as primary producers hence; they are the most critical components in the maintenance of a vibrant functional mammalian population. It provides food for almost all mammals, coverings for numerous organisms, stabilize water sheds functioning and also provide a variety of other critical ecological functions such as stabilizing the earth's oxygen content and nitrogen fixation which are vital for the animals' survival. Most of this destruction by humans (a mammal) occurs to clear land for agriculture and cattle grazing, even though much of the forested land is inappropriate for farming or ranching. Cutting down of the plant removes most of the nutrients from the ecosystem, leaving soil that will only be able to support intensive agriculture for a couple of seasons. Over the past decade, Large-scale forest fires, timber extraction by local and foreign companies, mining, the building of dams, and population growth have also made significant contributions to forest loss in the neotropics. Population growth and economic expansion have led to the construction of new roads and buildings that both physically and ecologically fragment the forest, reducing its vitality. The now plantless lands or once forested areas are subsequently being used for the construction of homes, and consequently animals are being forced to migrate from these areas resulting in reduction in the species population.

Habitat fragmentation could result in the loss and strain on the mammalian population. Some animals can benefit from the fragments of land while others may not. Depending on the size of

the island patches large animals like jaguars can find it very difficult to obtain sufficient food for their survival.

Many mammals such as manatees, cows, pigs, and sheep just to name a few are hunted and used by humans for food purposes. In addition to be hunted for food purposes some animals are hunted primarily for clothing and ornamental purposes.

Wildlife trade also reduces the population or destroys the habitat of many neotropical mammals. Wild life trade is the third largest illegal trade in the world and it has an estimate of \$1 billion on the Brazilian market alone. It affects most of the species that are officially listed as endangered species. As it relates to Brazil wildlife animals are officially being held in captivity including the threatened species such as the golden lion tamarin and the capuchin monkeys. Over the years, penalties have been enforced on poachers and people who obtain the wild animals. Mammals that are being taken out of their natural habitat are being trained and used as game animals for exhibition and economical purposes.

Neotropical environments are also threatened by intensifying and poorly planned developments. Such development has resulted in ecosystem devastation. Pollution of rivers, beaches and other water beds by industrial, municipal and human waste has resulted in the loss or illness of many aquatic mammals such as dolphins. In the most industrialized country, Brazil, pollution in the area has often resulted in acid rain over the forest remnants. Fires such as campfires and accidental forest fires play a critical role in the depletion of the species.

Noise pollution also plays a part in the disturbance of mammals' population especially underwater noise pollution which is a disturbing problem that is quickly degrading the ocean life. This type of pollution can be described in many ways, simply because the ocean is filled to the brim with loud noises coming from various sources for example, military sonar, used for defensive and research purposes, fishing boats, merchant ships, research vessels, and oil rigs. Some of these noises are as a result of human activity.

The increase of noise in the ocean has adverse effects on marine mammals in almost every aspect of their life, one of which is their behaviour. In order to communicate with each other, many species of whales depend on hearing calls from other whales. These calls can easily be hidden behind acoustic masking from sounds in the same frequency ranges. For example, the calls of baleen whales (humpback, blue, fin, and grey whales) are frequencies that range from 20 to 500 Hz. Sonar and even natural sources frequencies of sounds can mask the calls of whales and other marine mammals and significantly alter their natural behaviors. This noise can also

cover other behaviors such as dolphin special echolocation skills used for navigational purposes, foraging for food, and communication within the specific group members.

The building of roads and other building can divide biomes and isolate many animals in the neotropics through the clearing of trees. Road traffic also causes pollution and also kills many of the animals. Many highways and buildings have been built without necessary environmental impact reports, and many are left unfinished, leaving neighboring areas vulnerable to severe erosion, that can have negative outcome on the animals' survival.

Climatic changes can also have impacts on the species population. High environmental temperatures can lessen male fertility by damaging or killing sperm, While, it can also trigger blood flow changes that reduce the flow of blood to the uterine tract, damaging or killing developing embryos in females thus lowering, their fertility rate.

All the above factors can have and is having a great impact on the neotropical mammal population.

Although neotropical mammals, are faced with many challenges in dealing with their continuous existence, various managing schemes are being put in place to prevent these hazardous impacts to control their population.

Conservation projects have being established in selected areas in an attempt to reverse the trend in declining population sizes. These projects play a vital part in the development of ecotourism in almost all parts of the neotropics and also the protection and conservation of various animal species. In terms of ecotourism development, tourists will have to pay to visit areas with interesting natural and cultural features. Conservationists from the various projects can also work along with local communities to educate people about the value of the wildlife in the area, to eliminate illegal hunting and to assist communities in developing farming and logging methods that are habitat and also animal friendly. The implementation of national parks and other private organizations can also play a part in conservation activities that can help to eradicate and protect the neotropical animals who lives are at stake.

In addition to the development in ecotourism, the establishment of protected areas can also play a part in protecting the species diversity. Protected areas establishment will tend to have important economic as well as social function in conserving biodiversity.

Captive breeding is another managing scheme which can help with this. It focuses on the reproduction of rare animals in captivity. The legal practice of captive breeding increases the population of many endangered species world wide. Species that are being held captive in this way can serve as a demographic and genetic reservoir for the species. Examples of few neotropical mammals held captive are the golden lion tamarin the capuchin monkeys, seals manatees and wildcats such as jaguar. A penalty of a fixed amount should be enforced to the various people of the different regions who practice the illegal capturing and use of the animals in the wild for their own purposes such as exploitation and over hunting.

In 1975, the Convention of International Trade in Endangered Species (CITES) treaty prohibited international trade on most wild cats and was dramatically effective in curtailing trade of jaguar skins.

In closing it can be noted that a wise approach towards the neotropical regions can be of great importance in the conservation of the animals species diversity. Although many of these approach are being taken by humans (a mammal), much more measures should be put in place try and curb this situation, because they are some heartless people who are still practicing these unlawful activities and should be punished for their heartless actions.

With this in place there will be a rich mammalian population not only in the neotropical regions but also other parts of the world.