

Conservation Efforts for *Panthera Tigris*

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Introduction

Tigers are the largest member of the cat species. There are two subspecies of tiger currently existing which include *Panthera tigris tigris* and *Panthera tigris sondaica*. Their day-to-day life consists of hunting by using sight and sound rather than smell, like many other predators. Tigers are territorial to which the size, generally very large, is dependent on the abundance of prey, and they mark their territory with urine, feces, and behaviors to warn others such as vocalizations. The current population of tigers remains less than 4,000 globally and within their habitats consisting of tropical rainforests, temperate forests, mangroves, grasslands, and savannas in Asia. With such a low population number, the tiger species are endangered, and the populations are currently continuing to decrease (WWF, 2022). Tigers are known to have a wide range of habitats, ranging in temperature and altitude, however, tigers need a minimum of thick vegetation, adequate prey population, and availability of water surrounding them to thrive ecologically. Unfortunately, the abundance of optimal habitat for tiger species is very low due to anthropogenic activities and a low density of prey availability. Tigers are carnivorous felines who prey on both large animals such as hooved mammals, baby elephants, and other carnivores, and small animals such as fishes and reptiles (Kumar, 2021).

Importance

Tigers help to prevent overgrazing by limiting the number of herbivores, maintaining the balance between prey herbivores and the vegetation upon which they feed. Tigers are solitary and have large home ranges making them excellent 'umbrella' species for which a large variety of other species can thrive under. Being an umbrella species, the conservation of tigers can lead to the protection of other threatened species whether they are directly involved with the tiger

food web or not. Laying at the top of the food chain, being an apex predator, tigers help regulate the energy flowing throughout the ecosystem, and without the presence of tigers, the stability of the food chain and ecosystem would be negatively altered leading to changes in the populations of other species (Kumar, 2021).

Tigers also play a role in Chinese culture with their body parts providing medicinal purposes. Chinese medicine is based on natural ingredients, such as plants and animal parts. Tiger bones are the main part that provides medicinal purposes by grinding up the bone and adding additional spices to create a wine-like drink to treat the people of China (DW, 2018). It has been known that tiger bones can treat ulcers, malaria, and intestinal diseases while whiskers can be used to aid aches and pains (Neme, 2010). Protecting existing tiger habitats and the reforestation of degraded habitat could help protect the poorest communities in Asia against the impacts of river siltation and flooding while providing global benefits (Why tigers are...2017). The habitats of tigers consist of watersheds within the Asian continent that provide water to over 800 million people. The conservation of tiger protected areas not only benefits the tigers' habitat, but it also prevents droughts, flooding, and the effects of climate change, benefiting humans both culturally and economically. (WWF, 2021). Not only are tigers important in the ecosystem, but they are also a large part of Asian culture in art and traditions. Tigers are worshiped in communities around the continent and are even represented in the Chinese calendar every 12th year which is considered to be a representative of luck and power. Without the presence of tigers in the ecosystem, the presence of tigers in the culture will be missed by the entire population since the species has been represented in Asian culture for thousands of years (The Editors of Encyclopedia Britannica, 2022).

Threats

Tiger species have lost over half of its population since 2000. Factors such as poaching, habitat degradation and destruction, and depletion of prey have contributed to the decline of tiger species (Aziz, 2013). With the decrease in population of tiger's conservation areas to protect the endangered animal have been implemented to prevent the continuation of tiger population decline. However, even with conservation and protected zones for tigers to reside, tigers still are threatened with the possibility of their population continuing to decline. There is a current increase in need for natural forest materials and with the vast amount of forest the tiger landscapes are in danger of being harvested. Also, the demand for tiger parts such as their fur and trade. These threats, even in the conservation areas, put tiger species in an increased danger to becoming extinct (Wibisono, 2010). Not only is direct destruction of their habitat and direct killings of the animal posing a threat to their population, but the animals that tigers prey upon are also decreasing in population. Prey depletion is a major driver for large carnivores, such as tigers, population decline because they do not have a food source to continue the food chain. There is a direct relationship between predator and prey abundance. Specifically large carnivores like tigers. When prey abundance is not sufficient for the biomass of tigers, the population declines due to lack of nutrition. With the decline in wild prey for tigers they begin to seek alternative options to finding food, such as livestock. This poses multiple threats to the tigers. One, they need a food source because of a decrease in prey abundance; and two, the owners of the livestock the tigers begin to prey upon instead of their natural prey cause a human-wildlife conflict. This conflict poses a threat to the tigers because the livestock owners will begin to see tigers as a threat to their business, ultimately increasing the risk of them killing the tigers in defense of their animals. In addition to livestock owners posing a threat to tigers because of the

loss of prey, tigers will begin to move depending on the location of prey. As a result of the tigers migrating to find alternative food sources, they face a threat of additional anthropogenic factors such as a greater exposure to mortality due to roads (Wolf, 2016).

Challenges to Conservation

The role of a tiger in its ecosystem as stated earlier is to be an apex predator. The one who's on top, shapes and holds the shape of their ecosystem to maintain it. A major social issue that has become more known is tiger poaching. Many people enjoy poaching animals such as tigers due to them being known as "big game." They are large, quick, dangerous, and beautiful which leads to them being considered "big game." People have protested the hunting of tigers in the past, due to the verge of extinction for tigers and for people who are anti-poaching. Conserving land for a species such as tigers is complex due to the role they have in an ecosystem, a large enough area, other occurrences in their ecosystems and the government may or may not want to conserve the land for tigers. The costs for conservation are a lot due to the land that's required to make it appear as their ecosystem.

Another issue with conservation is trying to actually have animals there to protect. Over the past couple of years, many tigers have been a part of "Tiger Farms," these farms take tigers from the wild, have tigers breed, once cubs are born they either: stay to grow up and breed, are sold illegally to other "Tiger Farms" or zoos, and some even get killed for their fur or meat. (Shutting Down Tiger Farms...2022). These farms make it hard for the government to distinguish the illegal breeding farms from the legal breeding farms which help with conservation. With the government being unsure of which farms are legal for tiger breeding, it adds another niche issue within trying to conserve the species.

Recovery Plan

In order to prevent tigers from going completely extinct, these animals must be protected. In Asia specifically, the government has become involved to preserve these animals' habitats. While hunting and poaching do still exist, although it is illegal, the government is attempting to continue to educate its people on the importance of conservation. The main plan of action to prevent these animals from going extinct is to monitor the tigers themselves, the accessibility to prey, protecting their habitats, and obstructing human and tiger interactions. Currently, these strategies are being implemented through the use of camera traps, monitoring these animals and their prey, and accumulating excrement to evaluate the tigers' nutrition and their movement habits. Due to tigers having fragmented habitats, the goal is to connect these areas to reduce the fragmentation. Currently, there is a plan being acted out called, biological corridors, that is being used to connect these areas. The general idea behind biological corridors is that they are small stretches of protected land that connect two or more larger protected areas providing safe passage for dispersing or migrating species. These biological corridors, if built with the focus on encouraging the animals to use them rather than being the ideal habitat could potentially lead to a rise in tiger populations as well as other species who live in these fragmented habitats. The black market is also a major concern for conservation efforts because of how common it is for people to sell tiger parts there. The global wildlife trade is attempting to put an end to wildlife crimes by having the government shut down black market retailers (Knoka, et al., 2018).

Conclusion

Tigers are an endangered species whose numbers are continuing to decrease despite being an apex predator with very broad home ranges. Tigers are very important ecologically in that

they are apex predators who prevent overgrazing and keep energy flowing through their ecosystem as well as culturally in that their absence would be felt by the entire population due to their massive representation in Chinese culture. Conservation for this species may be difficult due to poaching and a sheer lack of wild individuals. However, currently the Chinese government is making great efforts to aid in the conservation of tigers. This is not just about saving a beautiful animal, it's about protecting a key member of the ecosystem that, should it disappear, would have many ecological and cultural consequences.

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