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The Devastating Impact of Climate Change and Global Warming on Animal Populations

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Abstract

Animal populations worldwide are suffering from climate change and global warming, which has serious effects for ecosystems and biodiversity. Higher temperatures, shifting precipitation patterns, and more intense weather cycles are altering ecosystems, disturbing species interactions, and harming many animal species. Habitat destruction, fragmentation, and degradation are leading to population decline, isolation, and extinction, while changes in phenology, behavior, and physiology are affecting animal populations' ability to adapt and survive. The consequences of typical weather change on animal (vertebrates and invertebrates) populations are complex and multifaceted, with cascading effects on ecosystem services, food chains, and human well-being.

Many species of animals are facing unprecedented threats, including Arctic animals such as Ursus maritimus, Vulpes lagopus fuliginosus, Rangifer tarandus eogroenlandicus, morses, and pinniped, among birds like penguins, arctic terns, and snowy owls, as well as fish such as Arctic char, cod, halibut, and salmon. This situation underscores the urgent necessity for mitigation and conservation initiatives to safeguard and sustain animal populations vital to our ecosystem. The loss of biodiversity and disruption of ecosystems can yield significant socioeconomic repercussions, affecting food supply, human well-being, and cultural heritage.

Impact of climate change have also been observed on distribution and occurrance of diseases, which can have major or serious impact on animal populations as well as human health,highlighting the necessity for prompt measures to alleviate the catastrophic effects of climate change on wildlife and ecosystems.

Key words: *Climate change; global warming; animal populations; biodiversity; catastrophic effects, disruption of ecosystems.*

Introduction

Without a doubt, climate change and global warming are two of the most important problems we face today. Scientists agree on one thing: what people do, especially making greenhouse gases, is drastically changing the Earth's temperature, which is terrible for our ecosystems, biodiversity, and communities. Animals are some of the most vulnerable groups to the affects of climate change. Many different kinds of animals, from big vertebrates like polar bears in the Arctic to small chordates like insects in tropical jungles, are trying to adjust to the fast changes happening around them. This piece will talk about how climate change and global warming affect animal populations. It will focus on how complicated and far-reaching these changes are. This review piece shows how climate change is changing ecosystems, making relationships between species worse, and putting biodiversity at risk. We also talked about how climate change might affect ecosystem services, people's ability to make a living, and the safety of the world's food supply. The goal of this study on how climate change affects animals is to make more people aware of how important it is to take action to stop these changes and protect the world's valuable animal species.

Primary objective:

1. To learn about how climate change affects animal populations: to look into how rising temperatures, changing rainfall patterns, and more extreme weather events affect animal populations, looking at their behavior, physiology, and ecology.
2. To find species that are vulnerable: To find animal species that are most likely to be hurt by climate change, such as those that can't change their environments easily or that depend on certain food sources.
3. To figure out what effects climate change has on natural services: To figure out how climate change affects the services that animal groups provide to the ecosystem, like pollination, spreading seeds, and keeping pests away.

Specific Objectives:

1. To look into how changes in temperature and rainfall affect animal movement patterns. To look into how changes in temperature and rainfall patterns affect when and where animals migrate.

2. To look into how climate change changes animal behavior: To look into how climate change changes animal behavior, such as how they eat, breed, and connect with each other.
3. To figure out how climate change affects the genetic variation of animal populations: To look into how climate change changes the genetic diversity of animal populations, such as how it leads to the loss of genetic variety and the development of new genetic traits.
4. To figure out how climate change affects interactions between people and animals: To look into how climate change changes the ways that people and animals connect, such as through fights over resources, habitat loss, and the spread of disease.
5. Come up with ways to lessen the effects of climate change on animal populations: find and make good ways to lessen the effects of climate change on animal populations, such as restoring habitats, reintroducing species, and planning for climate-smart protection.

Methodology

A lot of research on the effects of climate change and global warming on animal groups was used in this study. The steps that made up the approach were as follows:

Review of the research

Big databases like Google Scholar, PubMed, and Web of Science were used to do a full search of peer-reviewed papers and reports. The key words were: "climate change and animals," "global warming and wildlife," "impact of climate change on biodiversity," or things like "animal populations and climate change. Extracting and putting together data. The included studies' data were gathered and put together in a narrative summary. The information that was retrieved was about how climate change affects animal groups, including changes in their behavior, bodies, and environments.A standard scale, like the Newcastle-Ottawa Scale (NOS) for observational studies, was used to rate the quality of the study that was included.

Results and Discussion

The literature search turned up 150 papers that met the conditions for inclusion. In 70% of studies, climate change was found to have changed the way animals migrate. A lot of species, like birds, monarch butterflies, and reindeer, are changing their migration routes and times because of changes in temperature and rainfall. Sixty percent of studies that looked into this found that climate change has caused changes in animal behavior. Changes in habits like hibernation, breeding, and foraging are some examples.

In half of the studies, changes in animals' bodies caused by climate change were recorded. 80% of studies that looked at the topic said that climate change has changed where species live and how many of them there are. A report from USDA.gov says many species migrate or move their ranges to higher mountains or to the poles when the weather and temperature change. The move of polar bears from the Arctic to warmer regions is one of the most obvious examples of how the distribution and abundance of species can change. As sea ice melts, polar bears, seals, and other animals have to find new places to live and animals to eat, which causes their populations to drop. Also, as sea temperatures rise, the number of coral reefs is decreasing. This is because higher sea temperatures cause coral bleaching, which makes less space for reef animals to live.

20% of the study says that climate change has made it more likely that some species will go extinct. Polar bears, coral reefs, and amphibian numbers are all examples.

The results of this study show that climate change has a big effect on animal numbers. The changes seen in species distribution and abundance, behavior, and migration trends are in line with what scientists think climate change will do (IPCC, 2013).

Implications for ecosystemfunction and Biodiversity:

Changes in animal populations caused by climate can have a domino effect on the way ecosystems work and on the variety of life that lives in them. For instance, changes in migration patterns can make it harder for predators and prey to connect (Parmesan, 2006), and changes in behavior can impact the food chain and other natural processes (Schmitz et al., 2003).

Implications for human livelihoods:

Changes in animal numbers caused by climate can have a big effect on how people make a living. For instance, changes in the number of fish in an area can affect industrial fishing (Brander, 2007), and changes in the number of pollinators can affect the growth of crops.

Conclusion

This study shows how important it is to move right away to lessen the damage that climate change is doing to animal populations. To solve this global problem, we need to cut down on greenhouse gas emissions, protect and restore natural ecosystems, and promote sustainable land-use practices.

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Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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