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Endangered Species Protection and Habitat Conservation

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ABSTRACT

The extinction risk of critically endangered species in India is due to rapid human population growth, anthropogenic activities, and urban expansion. The environmental biodiversity and the species residing in it are continuously under stress and facing the threat of extinction. The World wildlife fund (WWF) and The Department of Endangered Species Management (ESM) works to conserve rare and critically endangered wildlife in India through status surveys, research, monitoring, the development of conservation action plans, and advocacy as per Wildlife Institute of India. This article highlights the many endangered species and their habitats on this day and every day, working to raise awareness and partnerships with local communities, governments, businesses, and the rest of the world to take action to protect them.

Keywords*: Extinction, Endangered species, environmental biodiversity, anthropogenic activities, wildlife.*

I. INTRODUCTION

The International Union for Conservation of Nature (IUCN) is the world's most comprehensive information source on the global extinction risk status of animal, fungal, and plant species. It is a non-profit organization that is used by governmental bodies as well as individuals. According to their report, there are more than 45,300 species threatened with extinction, including 41% amphibians, 26% mammals, 34% conifers, 12% birds, 37% sharks & rays, 36% reef corals, 28% selected crustaceans, 21% reptiles, and 71% cycads.[2] India is known for its rich biodiversity of flora and fauna, home to nearly 6.5% of the world's known wildlife species. Roughly 7.6% of the world's mammals and 12.6% of the world's birds are found in India. An analysis report by the (IUNC) red list highlighted the alarming acceleration of the sixth mass extinction, with over 500 species of land animals facing imminent extinction within the next two decades. According to the (IUCN) red list analysis, the extinction risk of critically endangered species in India was the rapid human population growth, anthropogenic activities,

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[2] *The IUCN Red List of Threatened Species.*https://www.iucnredlist.org/ (Last Accessed: 14 July 2024).

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and urban expansions, which are predictably prevalent.[3] Due to this, the environmental biodiversity and the species residing in it are continuously under stress and closing in towards the extinction of critically endangered species in India.

II. WHAT IS AN ENDANGERED SPECIES AND MAJOR REASONS OF ENDANGERED?

An endangered species is a type of organism that is a threatened by extinction. Species become endangered for two reasons:

1. **Loss Of Habitat:**

A loss of habitat can happen naturally. Non- avian dinosaurs, for instance, lost their habitat about 65 million years ago. The hot, dry climate of the Cretaceous period changed very quickly, most likely because of an asteroid striking Earth. The impact of the asteroid forced debris into the atmosphere, reducing the amount of heat and light that reached Earth's surface. The dinosaurs were unable to adapt to this new, cooler habitat. Non- avian dinosaurs became endangered, then extinct.

[4]Human activity can also contribute to a loss of habitat. Development for housing, industry, and agriculture reduces the habitat of native organisms. This can happen in a number of different ways. Development can eliminate habitat and native species directly. In the Amazon rainforest of South America, developers have cleared hundreds of thousands of acres. To "clear" a piece of land is to remove all trees and vegetation from it. The Amazon rainforest is cleared for cattle ranches, logging, and urban use.

Development can also endanger species indirectly. Some species, such as fig trees of the rainforest, may provide habitat for other species. As trees are destroyed, species that depend on that tree habitat may also become endangered. Tree crowns provide habitat in the canopy, or top layer, of a rainforest. Plants such as vines, fungi such as mushrooms, and insects such as butterflies live in the rainforest canopy. So, do hundreds of species of tropical birds and mammals such as monkeys. As trees are cut down, this habitat is lost. Species have less room to live and reproduce. Loss of habitat can also lead to increased encounters between wild species and people. As development brings people deeper into a species range, they may have more exposure to wild species.

2. **Loss Of Genetic Variation**

[3] *IUCN red list: Critically endangered species in India, categories*, https://byjusexamprep.com/upsc-exam/iucn-red-list (Last Accessed: 14 July 2024).
[4]*Endangered species National Geographic*.https://education.nationalgeographic.org/resource/endangered-species/ (Last Accessed: 14 July 2024).

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Genetic variation is the diversity found within a species. Its why human beings may have blond, red, brown, or black hair. Genetic variation allows species to adapt to changes in the environment. Usually, the **greater the population of a species, the greater its genetic variation.**

Loss of genetic variation can occur naturally. Cheetahs (Acinonyx jubatus) are a threatened species native to Africa and Asia. These big cats have very little genetic variation. Biologists say that during the last Ice Age, cheetahs went through a long period of inbreeding. As a result, there are very few genetic differences between cheetahs. They cannot adapt to changes in the environment as quickly as other animals, and fewer cheetahs survive to maturity. Cheetahs are also much more difficult to breed in captivity than other big cats, such as lions (Panthera leo).

Human activity can also lead to a loss of genetic variation. Over hunting and overfishing have reduced the populations of many animals. Reduced population means there are fewer breeding pairs. A breeding pair is made up of two mature members of the species that are not closely related and can produce healthy offspring. With fewer breeding pairs, genetic variation shrinks.

III. WHY DO ANIMALS AND PLANTS BECOME ENDANGERED?

Although extinctions occur naturally, the current rate of plant and animal extinctions is much higher than the natural or historical rates. Habitat loss is the primary cause of higher extinction rates. Other causes include habitat changes, over-exploitation of wildlife for commercial purposes, and the introduction of harmful non-native species, pollution, and the spread of diseases. Some of the major reasons of animals and plants become endangered are as follows:

1. Overhunting Or Overharvesting:

History abounds with stories of animals going extinct because of hunting and the consequent deaths of their predators if not by direct hunting as well, then by starvation because they no longer have a food source.

And a long history of wildlife depletion it is… There are many historical accounts about how humans have over hunted and over harvested species, leading to their endangerment, and often, extinction. One extinct species, the Passenger Pigeon, is a classic example of how humans over hunted a species, leading to the extinction of the entire species.

A recent study suggests that the reason for the mass extinction of large mammals like mammoths, mastodons, and camels in the Americas between 13,300 and 15,000 years ago was

because today humans hunted them into extinction.[5]

Plant species can also be over-harvested, leading to their endangerment. For example, the Goldenseal plant is a very popular medicinal plant in the United States that has now become threatened due to over harvesting in the wild.

2. Pollution:

The Declining Amphibian Phenomenon is one of the more obvious measures of the declining state of our biosphere due to pollution. Although biologists have been unable to isolate a single cause for the recent rapid decline in numbers and extinctions of many species, it appears that much of it is due to pollution. The expansive and majestic ocean is home to some of the world's most amazing animals. But due to pollution and commercial fishing, though, many undersea creatures are endangered and decreasing in population.

3. Robust and hearty environment:

In a robust and hearty environment there is always an accurate balance between the number of predators and their prey animals. The predators who are natural enemies of their prey animals choose the old and sick preys as they cannot keep up with their group. In this scenario, the relationship between them is totally healthy as the predators only eat these prey animals that are already nearing the end of their life. But the problems become more apparent when the predators wander in such an area where they will get only a few numbers of their prey animals.

4. Low Birth Rate:

It is believed that reproduction rates are a natural way of maintaining population equilibrium. Some species do not reproduce very often, and they may have few offspring each time when they breed. Other species may take a number of years to become sexually mature, thus reducing their opportunity to breed over their lifetime.

Consequently, when large mammals suffer man-induced mortality, it takes longer for their populations to recover**.** A good example is marine mammals whose populations were diminished by commercial exploration.

5. A Particular Species Is Rare To Begin With:

Some species can be found only in certain areas. If there are only a limited number of individuals of a species that are in existence to begin with, and the environment changes, there is a lower probability that such a species will survive in the future.

[5] Greentumble *10 reasons why species become endangered*, *Greentumble*. https://greentumble.com/10-reasons-why-species-become-endangered#over (Last Accessed: 15 July 2024).

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Rare species can easily become extinct in the face of hunting. The Sumatran Tiger is an example of a rare species that was over hunted to the point of extinction, as there were a very limited number of individuals to begin with.[6]

IV. IMPORTANCE OF PROTECTING ENDANGERED SPECIES

The conservation of endangered species is not just a matter of ethical responsibility—it's a fundamental necessity for the health of our planet. Many human activities have been undeniably detrimental to many animal species, both directly and indirectly. The extinction rate of species is up to 1000 times higher than in pre-human times, and scientists suggest we are living through the planet's sixth mass extinction. There has been a 68% decline in mammal, bird, reptile, amphibian, and fish species between 1970 and 2012. We're losing biodiversity quicker than we ever have in the past. Preserving endangered species safeguards the intricate balance of our planet's life, ensuring a healthier and more secure future for ecosystems and people.[7]

1. Endangered species are essential for biodiversity: We can think of biodiversity as nature's balancing act, where the entire world's species work together to keep populations in check and protect our planet's ecosystems. When certain species become endangered or extinct, that balance is upset, causing ripples throughout the rest of the world's species.

Take bees as an example. These insects play a crucial role in pollinating plants, helping maintain biodiversity and ensuring the availability of fruits, vegetables, and nuts in our ecosystem

2. Indicators of Environmental Health: Endangered species can also serve as indicators of environmental health. When populations decline, it can signify underlying issues such as habitat destruction, pollution, or climate change, which, if addressed, can threaten the stability of the entire ecosystem and many other species. For example, declining populations of bald eagles in North America allowed scientists to discover that the environment had been contaminated with DDT, a pesticide used to control mosquitoes and other insects.

3. Climate Change:

Climate change is closely linked to biodiversity loss. So, protecting and restoring bio diverse ecosystems is vital in the fight against climate change

Biodiversity helps ecosystems adapt to climate change, as various plant and animal species can sequester carbon dioxide, regulate temperatures, and support resilience in the face of climate

[6] *Why should we protect endangered animals?* https://www.ifaw.org/international/journal/why-should-we-protect-endangered- (Last Accessed: 15 July 2024).
[7] *Why should we protect endangered animals?*https://www.ifaw.org/international/journal/why-should-we-protect-endangered-animals (Last Accessed: 15 July 2024).

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impacts. When biodiversity is reduced due to habitat destruction or species loss, ecosystems become more vulnerable and compromised. Meanwhile, climate change contributes to habitat loss and rising temperatures that further endanger these animals. With a 4.3°C increase in global temperatures, 16% of the world's species would be driven to extinction. Currently, more than 25% of animals on the IUCN endangered species list are threatened by climate change. Scientists predict that one third of all animal and plant species will be under threat due to climate change by the year 2070.

(A) What is an habitat conservation and why its important?

Habitat conservation for wild species is one of the most important issues facing the environment today – both in the ocean and land.

The habitat conservation is a management practice that seeks to conserve, protect and restore habitats and prevent species extinction, fragmentation or reduction in range.

As human populations increase, land use increases, and wild species have smaller spaces to call home. More than half of Earth's terrestrial surface has been altered due to human activity, resulting in drastic deforestation, erosion and loss of topsoil, biodiversity loss, and extinction. Species cannot survive outside of their natural habitat without human intervention, such as the habitats found in a zoo or aquarium, for example. Preserving habitats is essential to preserving biodiversity. Migratory species are particularly vulnerable to habitat destruction because they tend to inhabit more than one natural habitat. This creates the need to not only preserve the two habitats for migratory species, but also their migratory route. Altering a natural habitat even slightly can result in a domino effect that harms the entire ecosystem.[8]

(B) Major causes and impacts of habitat loss:

1. **Natural Impact -** Habitat loss and destruction can occur both naturally and through anthropogenic causes. Events leading to natural habitat loss include climate change, catastrophic events such as volcanic explosions and through the interactions of invasive and non-invasive species. Natural climate change, events have previously been the cause of many widespread and large-scale losses in habitat. For example, some of the mass extinction events generally referred to as the "Big Five" have coincided with large scale such as the Earth entering an ice age, or alternate warming events. Other events in the big five also have their roots in natural causes, such as

[8] *Habitat conservation ~ marinebio conservation society* (2023) https://www.marinebio.org/conservation/marine-conservation-biology/biodiversity/habitat-conservation/#:~:text=Bycatch-,Habitat%20conservation%20for%20wild%20species%20is%20one%20of%20the%20most,smaller%20spaces%20to%20call%20home (Last Accessed: 16 July 2024).

volcanic explosions and meteor collisions,

2. **Human Impact** - Humans have been the cause of many species' extinction. Due to humans' changing and modifying their environment, the habitat of other species often become altered or destroyed as a result of human actions. The altering of habitats will cause habitat fragmentation, reducing the species' habitat and decreasing their dispersal range. This increases species isolation which then causes their population to decline. Even before the modern industrial era, humans were having widespread and major effects on the environment. [9]

V. GLOBAL INITIATIVES AND AGREEMENTS FOR PROTECTING ENDANGERED SPECIES

(A) Endangered Species Act of 1973:

The Endangered Species Act (ESA) was established in 1973 to protect "imperilled species and the ecosystem upon which they depend" and help them recover. Fish, wildlife, and plants that are listed as threatened or endangered; provides for adding species to and removing them from the list of threatened and endangered species, and for preparing and implementing plans for their recovery; provides for inter-agency cooperation to avoid take of listed species and for issuing permits for otherwise prohibited activities; provides for cooperation with States, including authorization of financial assistance; and implements the provisions of the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES)[10].

(B) Conservation On International Trade In Endangered Species Of Wild Fauna And Flora (CITES):

The Convention on International Trade in Endangered Species of Wild Fauna and Flora, also known as the Washington Convention, was signed on March 3, 1973, in Washington, D.C., and went into effect on July 1, 1975.

CITES talks about how international trade in wild animals and plants is legal, sustainable, and traceable and does not threaten the survival of the species in the wild. It reflects all three dimensions of sustainable development – social, economic, and ecological – and contributes to the achievement of Sustainable Development Goals through People, Planet, Prosperity, and

[9] *Habitat conservation* (2024) *Wikipedia*. https://en.wikipedia.org/wiki/Habitat_conservation (Last Accessed: 16 July 2024).
[10] *Endangered species act: U.S. Fish & Wildlife Service FWS.gov*. https://www.fws.gov/law/endangered-species-act (Last Accessed: 16 July 2024).

Partnership.[11]

(C) Department Of Endangered Species Management:

The Department of Endangered Species Management (ESM) works to conserve rare and endangered species in India through status surveys, research, monitoring, the development of conservation action plans, and advocacy as per Wildlife Institute of India.

(D) World Wide Fund For Nature (WWF):

Endangered Species Day will be celebrated on May 19, 2023, and this year marks the 50th anniversary. WWF highlights the many endangered and critically endangered wildlife on this day and every day, working to build awareness and partnerships with local communities, governments, businesses, and the rest of the world to take action to protect them.

VI. ENDANGERED SPECIES PROTECTION IN INDIA

Endangered species protection in India requires a comprehensive approach involving government initiatives, community involvement, and public awareness. Here are some key strategies for endangered species protection:[12]

(A) Habitat Conservation:

Preserve and restore natural habitats through national parks, wildlife sanctuaries, and protected areas. Implement sustainable forest management practices to maintain biodiversity. The Wildlife Protection Act of 1972 provides legal safeguards for endangered species and their habitats by regulating hunting and trade. The Indian government and conservation organizations work on community-based conservation programs, promoting sustainable practices that benefit both local communities and wildlife.

(B) Anti-Poaching Measures:

Invest in training and equipping forest rangers and law enforcement agencies to combat poaching effectively. Use modern technology like drones and camera traps for surveillance.

(C) Collaboration with NGOs:

Partner with non-governmental organizations (NGOs) and international conservation agencies to leverage expertise, funding, and resources for conservation projects. Some prominent NGOs involved in this cause include:

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[11] *Convention on International Trade in Endangered Species of Wild Fauna and flora* | https://cites.org/eng/disc/text.php (Last Accessed: 17 July 2024).

[12] Juris Centre (2023) *Protection of Endangered Species in India* https://juriscentre.com/2023/03/07/protection-of-endangered-species-in-india/ (Last Accessed: 17 July 2024).

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a) **Wildlife Trust of India (WTI):** WTI focuses on wildlife conservation and has various projects aimed at protecting endangered species across India.

b) **Wildlife SOS:** This organization is known for its efforts to rescue and rehabilitate wildlife, including endangered species like elephants, bears, and big cats.

c) **World Wide Fund for Nature (WWF) India:** WWF India works on diverse conservation projects, including initiatives related to endangered species and their habitats.

(D) Policy Development:

Development and implementation of policies that promote sustainable development while ensuring the protection of wildlife and their habitats. Encourage eco-friendly practices and discourage activities harmful to the environment.

India has implemented several policies and laws to address the conservation of endangered species:

a) **Wildlife Protection Act (1972):** This act serves as the primary legal framework for wildlife conservation in India. It prohibits hunting, poaching, and trade of endangered species, providing essential protection to wildlife.

b) **Project Tiger: Launched in 1973**, Project Tiger aims to protect the Bengal tiger and its habitats. It has been instrumental in the conservation of this endangered species.

c) **Project Elephant: Started in 1992**, this project focuses on elephant conservation, addressing issues like habitat protection and human-elephant conflict mitigation.

d) **National Biodiversity Action Plan (2008):** This plan outlines strategies and actions for biodiversity conservation, including efforts to protect endangered species and their habitats.

VII. LANDMARK JUDGMENTS BY THE SUPREME COURT OF INDIA TO PROTECTING FAUNA

"The greatness of a nation and its moral progress can be judged by the way its animal are treated - Mahatma Gandhi."

The Supreme Court has taken and passed various judgement for protecting the fauna in India. Some of the landmark judgments by the court are:

1. Tarun Bharat Sangh, Alwar V. Union of India, 1993

This case dealt with illegal mining activity in an area declared as Tiger Reserve. The petitioner, a voluntary organization interested in protecting the environment, approached the court complaining of the widespread illegal mining activity going on in the area declared as a Tiger Reserve in the State of Rajasthan. It prayed that in the interest of ecology, environment and rule of law, the activity should stop. It was alleged that there were notifications prohibiting all mining activity, and yet the State Government had granted hundreds of licenses for mining marble, dolomite and other materials and that such section was contrary to law.

The Court appointed a committee to ensure due observance of the various Acts and Notifications that had been issued in respect of the protected area. The committee stated that there were 215 mines completely falling within the areas declared as protected forest while 47 mines fell partly inside and partly outside the areas declared as protected forest.

The court emphasized that this was not a case where the court was called upon to shut down an activity being carried on lawfully, in the name of higher considerations of ecology and environment. It was a simple case to ensure observance of enacted laws made by the State to protect the environment and ecology of the area.

It concluded that the mining activity was illegal and had to stop. Maybe this would have the effect of bringing to halt the activity involving a good amount of capital and a large number of workers. But in view of the inherent illegality attaching to them, there was no option but to close them. [13]

2. Animal Welfare Board Of India V. A. Nagaraja & Ors (2014):

In this case, the Supreme Court banned the use of bulls and bullocks in "entertainment activities" such as Jallikattu and bullock cart racing, among others.

Previously, the court on multiple occasions has held that animals have a fundamental right against the infliction of pain. It was held in this landmark judgment that the Bulls must not be used in any type of performance which includes races, bullfights.[14]

The judgment also added that Governments and Animal Welfare Board must protect the 'five freedoms' of animals. This includes;

[13] *Tarun Bharat Sangh, Alwar v. Union of India & Ors | UNEP Law and Environment Assistance Platform*. https://leap.unep.org/en/countries/in/national-case-law/tarun-bharat-sangh-alwar-v-union-india-ors (Last Accessed: 17 July 2024).

[14] *Animal Welfare Board of India vs a Nagaraja & Ors UPSC IAS Preparation for Aspirants*. https://forumias.com/blog/animal-welfare-board-of-india-vs-a-nagaraja-ors/ (Last Accessed: 17 July 2024).

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a) Freedom from hunger and thirst;

b) Freedom from discomfort; Freedom from pain, injury, and disease;

c) Freedom from fear and distress

d) Freedom to express normal behaviour.

3. Mk Ranjitsinh & Ors V. Union Of India & Ors:

On March 21, 2024, a progressive judgment related to climate change was delivered by the Supreme Court in the case of MK Ranjitsinh & Ors v. Union of India & Ors. The choice was between promotion of solar power generation and protection of an endangered species. On the face of it, both are virtuous causes and the Court was tasked with the responsibility of deciding which one should be given primacy over the other.

The Great Indian Bustard (GIB) is a large bird found in arid regions, particularly Rajasthan. It is a critically endangered species due to various reasons including pollution, climate change, low rate of reproduction etc. Therefore, the Court recalled its injunction order dated April 18, 2021 and stated that there is no basis to impose a general prohibition on the installation of transmission lines for the distribution of solar power in an area of about 99,000 sq. km. Additionally, it was held that this move would not serve the cause of conservation of the (GIB) and that there are many technical hurdles in under-grounding of these lines.

This is a crucial stance taken by the Supreme Court owing to the recognition of the right to be free from the adverse effects of climate change for the first time in domestic jurisprudence. In addition to this, the recall of the interim order was completely justified because it would have had no impact on the conservation of the GIB. The endangered status of the GIB is owing to various factors including the fragmentation of their population, laying of mostly a single egg with a short incubation period of one month, crushing of the eggs by wild animals etc.

The more appropriate remedies to preserve them, as rightly noted by the Court, would be establishment of insulation breeding centres, predator-proof enclosures, local grass seed dissemination. The Court adopted a balanced approach between conservation of endangered species and the fight against climate change.[15]

[15] Mathur, S. *MK Ranjitsinh v. Union of India: The Supreme Court's very own Sophie's choice moment*, *Bar and Bench - Indian Legal news* https://www.barandbench.com/columns/mk-ranjitsinh-v-union-of-india-the-supreme-courts-very-own-sophies-choicemoment#amp_tf=From%20%251%24s&aoh=17210834783565&referrer=https%3A%2F%2Fwww.google.com&ampshare=https%3A%2F%2Fwww.barandbench.com%2Fcolumns%2Fmk-ranjitsinh-v-union-of-india-the-supreme-courts-very-own-sophies-choice-moment (Last Accessed: 17 July 2024).

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VIII. CONCLUSION

In conclusion, the text highlights the alarming rate of species extinction globally, with India facing significant risks due to human population growth and anthropogenic activities. The main reasons for species endangerment include loss of habitat and genetic variation, with over-hunting, pollution, and low birth rates contributing to the decline. Protecting endangered species is crucial for biodiversity, environmental health, and climate change mitigation, emphasizing the importance of habitat conservation in preserving ecosystems and preventing further species loss. The importance of protecting endangered species from extinction cannot be overstated. The loss of even a single species can have far-reaching consequences for the health and stability of our planet's ecosystems, as well as for our cultural heritage and quality of life. We must accept responsibility for this situation and take immediate action to ensure that future generations inherit a diverse and abundant natural world.

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