Climate Change – Threat to Endangered Wild Life Species

Hema Kulkarni

Govt. NCJ College, Dalli Rajhara, District Balod, Chhattisgarh

ABSTRACT

It is nearly impossible the overstate the threat of climate change. Global worming will have catastrophic effects such as accelerating sea level rise, droughts, floods, storms, and heat waves. This will threaten vitally important species, habitats and ecosystems. Animals and plants are suited to cooler climates will need to move pole wards or uphill when the climate becomes even just that little bit warmer. The processes have been observed in many places- in the Alps, in mountainous Queensland in Australia and in the misty forests of Costa Rica. Fish in the North sea have been observed moving northwards too- fish stocks that used to be common around Cornwall have moved as far north as the Shetland and Orkney islands. The impact on species are becoming so significant that their movements can be used as an indicator of a warming world. They are the silent witnesses of the rapid changes being reflected on the earth. Scientists predicted that global warming could contribute to the mass extinction of wild animals in the near future. An overheating world is creating a big change in climatic conditions and this can harm the dedicate ecosystems in which species live. The polar bear could disappear in the wild unless the pace of global warming slows. Experts believe that the Arctic sea ice is melting at a rate of 9% per decade, endangering the polar bears habitat and existence. Similarly, sea turtles in South America lay their eggs on Brazilian beaches, many of which are threatened by rising sea levels. Climate change also threatens the offspring of sea turtles, as nest temperature strongly determines the sex- the coldest sites produce male offspring while the warmer sites produce female offspring. In America, North Atlantic right whale is one of the most endangered species of all large whales. Since warming water contains less plankton for whales to feed on , the availability of food due to climatic fluctuations is also becoming an increasing cause of morality. Experts estimate that there are as few as 3200 tigers left in the wild, due to poaching, the loss of their habitat. The largest remaining areas where tiger occur are the mangroves forests of India. The projected rise in the sea levels could cause these living spaces of the tiger to vanish altogether.

1. INTRODUCTION

The earth's climate varies naturally, but scientists now have strong evidence that the relatively big, long-lasting changes in climate we are experiencing are likely to be the result of human behavior.

Greenhouse gases have a vital role in keeping the planet warm enough to support life. They allow the sun's rays through but stop some of the heat from escaping back into outer space.

However, a lot of greenhouse gases, such as water vapour, carbon dioxide and methane are now produced through human activity. These extra greenhouse gases trap more of the sun's heat and cause the temperature to rise. A rising carbon dioxide (CO2) level is a particular problem because it has a long lifespan. Humans upset the natural carbon cycle by emitting CO_2 through the burning of fossil fuels and the destruction of habitats. The effects of climate change are already apparent and will become more so in future. The average temperature of the earth's surface has already risen by 0.75ºC since 1900, with most of this warming occurring in the last 30 years. This may not sound like much but small changes in temperature can have a massive effect on people and wildlife. Rainfall patterns are changing worldwide. Scientists predict that extreme weather conditions, such as torrential rain, flooding and heat waves could become more common in future. One quarter of CO_2 is absorbed by the world's oceans, making them more acidic. However, they also absorb heat and warmer oceans expand, causing sea levels to rise. Rising temperatures also mean that glaciers are retreating and land ice is shrinking, which again increases sea levels. If this continues, coastal areas and small islands are at risk of flooding and land loss. The way we live is strongly linked to the world's climate. A changing climate will affect our water supplies, agriculture, power and transport systems and our health and safety.

Living things face a constant barrage of external stresses or threats that challenge their ability to survive and reproduce. If a species is unable to successfully cope with these threats through adaptation, they may face extinction. A constantly changing physical environment requires organisms to adapt to new temperatures, climates, and atmospheric conditions. Living things must also deal with unexpected events such as volcanic eruptions, earthquakes, meteor strikes, fires, and hurricanes.

In nature, pathogens can be transmitted directly between animals or indirectly through intermediate "hosts," such as infected prey or biting insects. Indirect transmission cycles are often affected by environmental conditions such as temperature and rainfall. Higher temperatures associated with climate change may contribute to an increase in pathogens within intermediate hosts and vectors, or increased survival of animals that harbor disease. For example, warmer summer temperatures in the Arctic now allow the lung nematode larvae often found in muskoxen to develop to the infectious stage within the intermediate host, the marsh slug, at a rate that has reduced the parasite's life cycle from 2 years to 1 year (Kutz and others, 2005).

2. PREVENTABLE MAN MADE THREATS TO ENDANGERED SPECIES

Since man is indeed part of nature, man-made threats are merely a subset of natural threats. But unlike other natural threats, man-made threats are threats that we can prevent by changing our behavior.

As humans, we have a unique ability to understand the consequences of our actions, both present and past. We are capable of learning more about the effects our actions have on the world around us and how changes in those actions could help to alter future events. By examining how human activities have adversely impacted life on earth, we can take steps to reverse past damages and prevent future damage. Man-made threats can be classified into the following general categories:

- **Habitat Destruction & Fragmentation** - The destruction or splitting up of once continuous habitat to enable humans to use the land for agriculture, development of towns and cities, construction of dams, or other purposes.
- **Climate Change** - Human activities such as the burning of fossil fuels, have altered the Earth's atmosphere and have resulted in global climate changes.
- **Introduction of Exotic Species** - Accidental and intentional introduction of non-native species into regions never before occupied by the species have resulted in the extinction of numerous endemic species.
- **Pollution** - Pollutants (pesticides, herbicides, etc.) released into the environment are ingested by a wide variety of organisms.
- **Over-Exploitation of Resources** - Exploitation of wild populations for food has resulted in population crashes (over-fishing, for example).
- **Hunting, Poaching, Illegal Trade of Endangered Species** - Some endangered species are targeted for their value on illegal markets.
- **Accidental Deaths** - Car hits, window collisions (birds), collisions with ships (whales).

Sea levels are rising and oceans are becoming warmer. Longer, more intense droughts threaten crops, wildlife and freshwater supplies. From polar bears in the Arctic to marine turtles off the coast of Africa, our planet’s diversity of life is at risk from the changing climate. Climate change poses a fundamental threat to the places, species and people’s livelihoods WWF works to protect. To adequately address this crisis we must urgently reduce carbon pollution and prepare for the consequences of global warming,

Greenhouses gases, such as carbon dioxide, trap heat in the atmosphere and regulate our climate. These gases exist naturally, but humans add more carbon dioxide by burning fossil fuels for energy (coal, oil, and natural gas) and by clearing forests. Greenhouse gases act like a blanket. The thicker the blanket, the warmer our planet becomes. At the same time, the Earth’s oceans are also

absorbing some of this extra carbon dioxide, making them more acidic and less hospitable for sea life.

The increase in global temperature is significantly altering our planet's climate, resulting in more extreme and unpredictable weather. For instance, heat waves are becoming more frequent and many places are experiencing record droughts followed by intense rainfalls

3. DEFORESTATION

Forests help protect the planet by absorbing massive amounts of carbon dioxide (CO2), the most abundant type of pollution that causes climate change. Unfortunately, forests are currently being destroyed or damaged at an alarming rate. Logging and clearing land for agriculture or livestock release huge amounts of carbon dioxide and other harmful greenhouse gases into the atmosphere. It also diminishes those regions' ability to absorb carbon pollution.

4. FOSSIL FUELS

Burning fossil fuels, such as coal, oil and natural gas, to generate energy has the greatest impact on the atmosphere than any other single human activity. Globally, power generation is responsible for about 23 billion tonnes of CO2 emissions per year – in excess of 700 tonnes every second. Coal is especially damaging to our atmosphere, releasing 70% more carbon dioxide than natural gas for every unit of energy produced.(Burchmore 1990)

Humans and wild animals face new challenges for survival because of climate change. More frequent and intense drought, storms, heat waves, rising sea levels, melting glaciers and warming oceans can directly harm animals, destroy the places they live, and wreak havoc on people's livelihoods and communities.

5. ENDANGERED ILD LIFE SPECIES

We all hear about how polar bears are decreasing at an unruly rate due to the climate change all around the world. But did you know there are many more animals with the same fate? With pollutants in the air, land and sea, it has become hard to live a safe life for anyone. Climate change not only is hitting the arctic with the Polar Bears, Emperor Penguin and seals, it's also hitting those in the warmer climate areas as well.

The impacts of climate change are much faster melting of ice in the Arctic, an effect much faster than anywhere else in the world; it threatens the ecosystem of the species native to this region of the planet. Ocean acidification caused by increased uptake of carbon dioxide is occurring more

rapidly in the Arctic than in warmer waters. Marine creatures like sea butterfly are particularly vulnerable to acidification. (Tynan, Cynthia1994)

On land, the Arctic fox, found in the southern edges of the Arctic tundra, is facing "multiple threats of climate change, including the shrinking sea ice and tundra, the decline of prey for food and increasing competition from larger and dominant species. The Arctic is ground zero for climate change and we are pushing many species to extinction. The key to preventing their loss is the reduction of emissions of greenhouse gases. Specifically carbon dioxide, a level of 350 ppm or less is the ideal level at which leading scientists believe they can restore the Arctic sea ice. Other animals listed as most endanger from climate change is a wide range from land to sea are as follows-

Leather back sea turtles. Unfortunately, these gentle giants are threatened by dual environmental forces. Over-hunting and becoming entangled in fishermen's nets kill thousands of sea turtles each year. Global warming plays an equally destructive role with beaches eroding away due to severe storms, and the sands in which the turtles lay their eggs literally becoming too warm for healthy development of baby turtles.

Stag horn Coral. Coral bleaching occurs when conditions lead to the decline of the corals' symbiotic algae, which results in a pale, dying reef. Stag horn Coral is currently one of the most threatened species of coral.

Coral Reefs: Corals are affected by the warming of surface waters, which causes bleaching to occur. Coral bleaching is whitening caused by the death or expulsion of symbiotic, algae-like protozoa, from the coral, which is a result of stress to the coral .There are key temperature thresholds for mass bleaching to occur. It is projected that annual or bi-annual exceedance of bleaching thresholds will occur at the majority of reefs worldwide by 2030 to 2050 In 1998 the largest bleaching event to date occurred, killing 16% of the worlds corals, and leading to shifts in reef fish species composition . (Hoegh-Guldberg, 1999) Corals are also affected by increased atmospheric CO^2 concentrations, which results in declining calcification Corals are also physically damaged through wave action and light attenuation by storms, such as hurricanes, tropical storms, and tsunamis. Climate change is increasing the intensity and frequency of storm, posing further threat to reefs. Corals could become rare on tropical and subtropical reefs by 2050 due to the combined effects of increasing CO2 and increasing frequency of bleaching events. Coral reefs are habitat for about a quarter of marine species and are the most diverse marine ecosystems . (Hennessy etal 2007)

Clown fish. With the decline of coral reefs (some estimate that more than half of the world's coral reefs will vanish in the next 20 years), the fish that depend on their cover could be left homeless. The Clownfish – famously depicted in Disney's "Finding Nemo" is one flagship species under watch by the IUCN (International Union for Conservation of Nature)

Emperor Penguins. Penguins are at risk as the Antarctic Peninsula is warming faster than anywhere else in the Southern Hemisphere. The loss of sea ice in harming Emperor Penguins who rear their chicks on land locked sea ice. When the sea ice breaks up before the chicks have matured and grown their waterproof feathers, chicks are likely to be swept into the ocean and drown. Loss of sea ice also leads to lower food availability, which raises mortality rates . Along with the Arctic Fox, Emperor Penguins are literally feeling the heat from shrinking ice and snow cover, on the opposite pole. The Antarctic, like the Arctic region, is affected by melting ice and snow, which threatens the penguins' habitat. Emperor penguins breed almost exclusively on pack ice, with only a very small number that have ever breed on land. In addition, icebergs and ice cliffs form protective barriers for the breeding colonies. Without them, the chances of survival diminish.

Beluga Whale. The Beluga Whale has been in severe decline in waters off the coast of Alaska, and has been listed as an endangered species under the U.S. Endangered Species Act. Sadly, the listing has done little to help its numbers. A number of factors have contributed to the Belugas' decline, from hunting to noise pollution and strikes by shipping vessels. Changes in the temperature of Arctic waters affect not only the whales' habitat, but its food supply.

Koalas. The icon of Australia, Koalas are among the animals most affected by global warming. With rising CO2 levels in the atmosphere, eucalyptus plants produce fewer leaves, which are lower in protein and also filled with poor-tasting tannins. Because Koalas live exclusively on eucalyptus leaves, their survival is directly connected to the health of the plants. In recent years, the marsupials have had to consume greater amounts of eucalyptus to prevent starving to death. They have also been found getting diseases such as AIDS as well as urban encroachment.

Salmon. The reason why the scientists chose Salmon as a flagship species is because its home streams have been experiencing changes in flow rate due to earlier snow melt. We'll be able to witness the impact of a rise in a few degrees in temperature relatively quickly when it comes to these spawning fish.

6. STEPS TO BE TAKEN FOR MINIMIZING EFFECTS OF CLIMATE CHANGE

To avoid the worst consequences of climate change, we need to dramatically reduce the world's carbon emissions. But we must also prepare for the significant changes in weather that the world is

presently experiencing because of the pollution already in the atmosphere. Around the globe. (Kutz, etal 2005)WWF works with local communities, governments and others to help nature and people successfully adapt to a changing climate. WWF prepares communities around the globe for climate change. To do this WWF -

- Help communities in the Eastern Himalayas adapt to increasing water scarcity by collecting rainwater and promoting drought-resistant crops
- Restore mangrove forests in Coastal East Africa to buffer shorelines from storm erosion
- Protect coral reefs in the Coral Triangle to build their resilience against bleaching events
- Identify areas where polar bears can live on solid Arctic sea ice for decades to come
- Help farmers protect their crops from severe rainfall and droughts .

7. PROTECTING FORESTS

Forests are home to many of the world's most endangered wildlife. They also protect the planet by absorbing carbon dioxide (CO2), a major source of pollution that causes climate change. WWF fights climate change by saving forests. To do this WWF :

- Ensure that global climate change agreements reduce forest destruction and degradation and protect wildlife
- Work directly with countries, especially developing ones, to protect forests and benefit the livelihoods of local communities
- Use satellite images and aerial mapping technologies to track illegal logging
- Study the vulnerability of forests to climate change and explore ways to help them adapt

8. POLICY IMPLEMENTATION WITH PROPER INFLUENCE

Government must play a central role to tackle the climate crisis. Govt. must have work to implement advance policies that reduce carbon pollution, support clean energy technologies, prepare for the effects of climate change, and curb deforestation. At international negotiations, WWF encourages to play a constructive role in developing global climate agreements that:

- Substantially reduce carbon pollution to avoid the worst consequences of climate change
- Provide financial support to developing countries so people and nature can successfully adapt
- Combat forest destruction and protect wildlife that live there
- Help transition developing countries to clean energy sources like wind and solar .

The issues facing the animal kingdom are broad and complex. The link between climate change and observed impacts on species can be difficult to substantiate given all the contributing factors

that can possibly affect changes in animal behavior, distribution, and health. While more evidence is needed, there is a strong correlation between the observed physical changes to the environment and responses from animals. The countless studies and observations of animal species across the globe show us how animals are being affected, and expert predictions for the future are grim without a halt to the current climatic trends. (Freeman etal.1994)

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