
Effects of Global Climate Change on Endangered Species Conservation

Today, world population has exceeded over 70 billion people, and excessive amount of carbon oxides is being released into the air every single seconds. As a sequence, oceans are becoming warmer, and sea level is rising high. More frequent, more intense droughts are threatening crops, wildlife, and water supplies. From marine turtles off the coast of Africa to polar bears in the Arctic, our planet's diversity of life is at risk from the changing climate. 'Climate change is already affecting species and ecosystems on a global scale and these effects are projected to become more rapid and extensive (IPCC 2014).' There are mainly three major effects on endangered species conservation which are caused by climate change; changing distribution, mistiming, and change in proportion of male and female population. Either of these are causing its population of species to decline or even leading to extinction.

Many species are responding to altered precipitation rules and temperature by shifting their geographic fields. This has lead to alterations in ecological community composition where habitat for some species may increase in size, but on the hand for the others, available area decrease or disappear altogether. The reason why some species will decrease in their population sizes is that when species move to a different environment, it is hard for them to find the food resources which they used to eat in previous habitat. In addition, the migration process and adaptation to the new environment requires a huge amount of energy, taking away the vitality to survive. Many species listed as threatened or endangered are habitat specialists occupying small geographic areas and relatively rare; thus, listed species may be disproportionately affected by climate change.

For example, the endangered Uncompahgre fritillary butterfly has been found only in willow forests located on northeast-facing slopes above 3,780m in Colorado, United States. The 11 known populations inhabit areas that provide the coolest and wettest microclimates available, but the climate change appears to be the largest threat to the long-term survival of the species (Britten et al. 1994). It made the fritillary butterfly to alter their home. It is tough for them to live in a warmer place, but rising temperature is inevitable in all areas because of the global warming. Thus the number of the fritillary butterfly has declined greatly.

Another species which was forced to move their habitat area due to the climate change is a blue whale. Blue whale is the biggest wildlife-animal in the world, having almost 35 meters in length and 190 tons in weight. They inhabit oceans around all over the world, and feed on planktons such as krill. They move to a higher latitudes sea area during summer and move to lower latitude sea are during winter in accordance with sea temperature. However, when the seawater temperature rises, the water flow becomes still and the cold ocean current from the bottom area is blocked, and therefore, the planktons stop to appear in front of blue whales.

Thus, they are obliged to move their habitat to 200 km to 500 km southern area. Migration of its habitat will harm their body by consuming so much energy and lead to a reduction of breeding period. It will also result in a contraction of breeding area. Either way, shifting species' geological range would lead to population decline, especially on the endangered species because of their characteristics of their habitats. These examples illustrate how threatened and

endangered species may be affected by environmental changes resulting from climate change. Preserving ecosystems and species in their current locations may become increasingly difficult because climate change is emerging as the greatest conservation challenge of the future.

Climate change also causes mistiming in some species, resulting in their population to decline as well. As the climate continues to warm up, phenologies of organisms including both plants and animals across the taxa are continuing to change. According to Joseph(2013), these changes are resulting in mismatches in resource acquisition. Specifically, migratory birds are experiencing population declines as a result of their food resources emerging at different times in their breeding grounds. Scientists found out that those that do not change their migration timing to match their resources available are at a significant disadvantage (Burgeret al., 2012). Møller et al. (2008) used a long-term data set of 100 migratory bird species in Europe to determine any population declines due to mistiming of bird phenologies with their food sources. They collected 289 estimates of changes in mean spring migration dates in birds.

When the scientists analyzed population trends from 1970-1990, they found that the most important variables for population trends were farmland breeding habitat and body mass. Migration timing was not a significant predictor of population trends for this time period. However, when they focused on population trends from 1990-2000 the only significant factor affecting population trends was change in migration date. The data showed that populations that accelerated their spring migration showed stable population trends, while those that did not accelerate their spring migration timing experienced declines in populations. These population declines are due to the inability of later-migrating birds to capitalize on spring food resources. Birds that arrive sooner have a greater chance of getting necessary food resources than those that arrive later. Moreover, birds that arrive sooner were also found to have larger clutch sizes than those that arrived later. This is most likely due to the fact that birds that arrived sooner had a longer time to acclimate to the environment of their breeding site, including climate and resource availability.

Therefore, birds that do not alter their spring migration time to coincide with the changing climate will not fare well in the future. The most remarkable result, however, was that migration date was not a significant predictor of population trends for the 1970-1990 period, but migration date was the only significant predictor for the 1990-2000 period. The authors noted that this is a clear evidence that climate-mediated changes in phenology in European migratory birds have intensified in recent years. Reindeer is another species whose life cycle is messed up due to the climate change. Reindeer inhabits around north pole area in the north sphere. Like birds and sea turtles, they travel many hundreds and thousands of miles in keeping with seasons through Tundra area in the extreme northern space. As the timing of ice melting and ice emerging changes due to the global warming, the timing of them visiting tundra during summer also changes. Since reindeer visit plant abundant tundra to take enough nutrients needed for the reproduction during fall, this timing is very important. Rising temperature trigger not only this trouble, but it also will make the population size of mosquitoes grow. Mosquitoes could kill reindeer by spreading some kind of harmful diseases. As a result of these changes, the number of reindeer has declined from 480,0000 to 289,0000 in these years.

Another outcome caused by global climate change is a change in ratio of male and female population. An external environment factors can influence whether an egg hatches a male or female baby in some species, meaning that climate change could cause imbalance in their number of sex. When the balance of the male and female numbers is disrupted, they will not

able to breed successfully. Therefore, this will also lead to population decline as well as to extinction. It is the sea turtle which suffers from this issue.

Unlike humans, the sex of the egg laid by parent sea turtle is determined according to the temperature of the sand below the eggs. Warmer conditions birth more females, while cooler ones produce males. It means that only a little change in the temperature will cause the number of either sex to expand and another to decline. When the balance is disrupted, it gets hard to mate. Kavya(2017) says that in recent years, scientists have been noticing an overwhelming proportion of female hatchlings on Florida's beaches, possibly because of steady temperature increases in the region. Scientists are worried because skewed sex ratio will affect the future of the species as a whole.

All of those impacts intrigued by a changing climate will accelerate the speed of population decline and as a consequence lead to species extinction. It is suggested that the global warming will continue to on an unprecedented scale, it will continue to have a negative impacts on species, especially on threatened or endangered ones. Even though we cannot stop the climate change, there are at least a few things we can do to prevent species from disappearing altogether.

eduzaurus.com