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Elephant habitat in the Indian subcontinent to shift towards the Himalayas, says study

Already struggling with the loss and fragmentation of its habitat, the Endangered species of the Asian elephant (*Elephas maximus*) will be faced with further “heavy loss” in its habitat over the next few decades due to climate change.



By Mayank Aggarwal

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Already struggling with the loss and fragmentation of its habitat, the Endangered species of the Asian elephant (*Elephas maximus*) will be faced with further “heavy loss” in its habitat over the next few decades due to climate change, said a recent study, which predicts that with this situation, elephant range would likely shift towards higher elevations in the Himalayas.

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| NTPC | 245.55 | ₹8.50 | 3.59 |
| Hero Motocorp | 3,057.25 | ₹87.25 | 2.94 |
| Dr Reddys Labs | 5,587.00 | ₹157.90 | 2.91 |
| Divis Labs | 3,765.15 | ₹100.15 | 2.73 |

The study, recently published in the journal Diversity and Distributions emphasised that climate change will cause redistribution of species, directly through temperature and water availability and indirectly through further habitat modification.

Currently, the Asian elephant occupies only a small fraction of its historical range, with India and Nepal being home to more than 60 percent of the total population of the wild Asian elephants, said the study. But the species is under constant threat from land use changes due to the conversion of its habitat for agriculture, urbanisation, transportation and industry.

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The results of the study suggested that by the end of this century, around 41.8 percent of the 256,518 square kilometres of habitat available at present, will be lost due to combined effects of climate change and human pressure. The projected habitat loss would be “higher in human-dominated sites at lower elevations due to intensifying droughts, leading elephants to seek refuge at higher elevations along valleys with greater water availability in the Himalayan mountains.”

It stressed that while a few regions in the north and northeast of the subcontinent may provide more suitable habitats in the future, overall a heavy loss is probable in all scenarios.

The study was done by an international team of scientists from Spain, Germany, India, Portugal, Denmark, Nepal, Italy and Myanmar. The results of the study are important as protection and expansion of suitable habitats for wildlife is considered key to the conservation of an endangered species but due to climate and land use changes the habitats that are ideal today may not be so in 30-50 years.

“We have found that in addition to ongoing human-induced disturbances such as land-use change, the elephants are predicted to lose nearly half of their habitat to global climate change, mostly in human-dominated regions, by the end of this century. This will result in elephants shifting towards higher elevations, along river valleys where there are extensive human settlements,” Rajapandian Kanagaraj, the lead author of the study, told Mongabay-India.



Elephants amidst cropland in the Coimbatore district. Photo by T. Muruganandham.

For the study, the researchers included the effects of climate changes into their distribution model to predict future elephant distributions and possible range shifts. Relying on climate and land use data projections for 2050 and 2070, different scenarios were calculated and “all scenarios strongly indicate that the interaction between climate change and land use will compound existing threats to the elephant.”

“The negative effect is especially severe in the human-dominated landscapes in eastern and southern India,” said study co-authors Priya Davidar and Jean-Philippe Puyravaud (Sigur Nature Trust, India), in a statement.

However, the gain in potential habitat is indicated in northern and north-eastern habitats particularly along the valleys in the Himalayan foothills.

In India, the population of Asian elephants in the wild is 27,312 while in Nepal

their population is estimated to be between 100 and 125. Of the total population of Asian elephants in India, the north and the north-eastern regions account for 2,085 and 10,139 wild elephants respectively.

Change In Range May Lead To Higher Human-Elephant Conflict

India has a long history of protection of elephants and, in 2010, it was declared as a national heritage animal. But the severe loss of elephant habitat is leading to an increase in human-elephant conflict and resulting in deaths of both elephants and humans.

According to the February 2019 data of the Ministry of Environment, Forest and Climate Change (MoEFCC), 373 elephants died in the last four years (eight every month) between 2015-16 and 2018-19 (till December 31, 2018) due to reasons like electrocution, train accident, poaching and poisoning. During the same period, a total of 1,713 human lives were lost in human-elephant conflict (at least one every day) for which authorities paid a compensation of Rs 510 million (Rs 51.66 crore).

It means, on average, eight elephants and 38 humans lost their lives every month in the last four years. The government also paid a compensation of over Rs 1.74 billion (Rs 174.42 crore) for loss of crops and damage to property in the said period.



On average, at least one human life was lost in India in human-elephant conflict in last four years. Photo by Tintu Shaj/Wikimedia Commons.

Further habitat loss will only aggravate the situation. Explaining the impact of the loss in habitat, Kanagaraj, who is from the National Museum of Natural Sciences (MNCN) in Madrid, Spain, warned that “there is potential for an increase in incidents of elephant damage to infrastructure, crops and people.”

“Elephants will also suffer excess mortality due to increasing temperatures, droughts and loss of forage in their natural habitats. Therefore steps need to be taken now to mitigate these effects,” he emphasised.

Conservation Plans With Climate Change In Mind

In a statement, the team of researchers stated that their “study provides a first assessment on the effect of climate change on the distribution of the Asian elephant in its major habitats in India and Nepal, which could help other assessments over its entire range across south and southeast Asia, and be

useful for developing management plans for wildlife conservation under the aegis of climate change.”

The study also said the projections could be effectively used to identify critical habitat areas that require immediate conservation attempts and adjust current habitat protection strategies to minimise biodiversity loss due to habitat degradation.

Kanagaraj stressed that “we need to reduce human pressure within elephant habitat by reducing land use change, and create core and buffer zones to give elephants their own space, and increase connectivity between fragmented habitats to facilitate their movement.”

“We also need to undertake habitat restoration measures to increase habitat quality and the extent to avert extinctions of elephants in the subcontinent. Otherwise, their populations will crash,” he added.

Impact on elephants would also affect other species

Conservation and management of elephant populations impacted by global changes should include the design of movement corridors to enable dispersal of the elephant and other associated species to more conducive environments, according to the study.

The analysis suggested that the fragmented core areas that are located along the foothills, forests and floodplains of the Himalaya could be “connected by a mixture of poor and high-quality habitat that should form specific targets for management.”

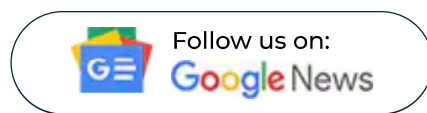
Kanagaraj explained that “a megaherbivore such as the Asian elephant requires space, abundant food, and water.”

“It is an ‘umbrella’ species that facilitates the survival of other species, therefore, maintaining forests and biodiversity. If the elephant goes extinct, then the same factors that led to its extinction such as climate change and increasing loss of forests will also affect other species and our human populations as well,”

he said.

[The story was originally published in Mongabay-India.](#)

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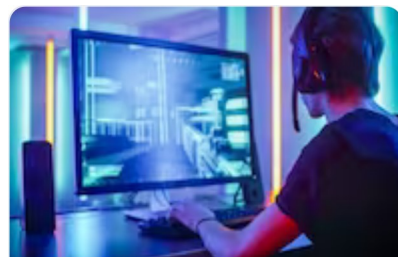
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