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ENDANGERED ASIAN ELEPHANT HAS LOST MOST OF ITS OPTIMAL HABITAT IN NILGIRI RESERVE: STUDY

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Human settlements hinder the movement of elephants, keeping them confined to hilly areas. File | Photo Credit: The Hindu

Elephants winding their way up the rocky green hills in the Nilgiri Biosphere Reserve (NBR) make for pretty photographs. But a recent article says the endangered Asian Elephant has lost most of its “optimal” habitat: flat terrain that is easily negotiable.

A paper, *Fencing Can Alter Gene Flow of Asian Elephant Populations within Protected Areas*, was published in the international, peer-reviewed, open-access journal *Conservation*, by a multi-disciplinary team of ecologists, conservationists and scientists.

In it they say, “The WG [Western Ghats] is an escarpment running north–south along the western coastline of India, interrupted towards the south by the low-lying Palghat Gap that separates the northern from the southern elephant populations. This gap has been transformed by agriculture for several centuries, is 3 km at its narrowest, and 40 km at its widest. The northern part of the WG includes the Nilgiri Biosphere Reserve [NBR] and its surrounding PAs [protected areas], which contain the largest remaining population of wild elephants, ca. 6000 animals.”

The Palghat Gap is a break in the Ghats that is “relatively flat and consequently easily negotiable by elephants”. However, human settlements and crop cultivation have hindered the movement of the elephants, keeping them confined to the hilly areas, considered sub-optimal habitats.

Why is this important? Priya Davidar, a conservation biologist, and one of the authors of the paper, has the answer: “In these sub-optimal habitats, their chances of survival are lower due to dangerous terrain for animals of this size. Our study shows that when barriers are erected, particularly in areas with slopes, their movement is blocked and gene flow reduced. This could ultimately lead to increasing the extinction risk of this endangered species,” she said.

If movement is restricted and gene flow reduced, there is more in-breeding, and low genetic diversity, pushing up chances of disease, and lowering fertility rates.

A 2021 paper published in the scientific journal *Global Ecology & Conservation* found moderate

levels of genetic differentiation between the northern and southern populations, indicating limited gene flow between the two regions.

Over thousands of years, elephants roamed freely across South-East Asia, all the way to China, but “anthropogenic pressures” have restricted them to mountain chains, says the paper. Ironically, most elephant reserves in India are found in mountainous habitats.

Jean-Philippe Puyravaud, from the Sigur Nature Trust and one of the lead authors of the paper, stated that enclosing protected areas without ensuring connectivity through maintaining corridors for elephants to pass through severs gene flow between populations. “Enclosing reserves without looking at how the terrain is distributed leads to fragmentation. If elephants cannot move from one valley to the next on relatively flat terrain, then population connectivity gets severed,” said Mr. Puyravaud.