

EASTERN GHATS: LAND USE POLICIES, CLIMATE CHANGE HIT ENDEMIC PLANT HABITATS

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Looming threat: Intensifying agricultural practice and urbanisation can reduce precious habitats.

The broken hill-ranges of the Eastern Ghats, spread across Odisha, Telangana, Andhra Pradesh, Karnataka and Tamil Nadu, are home to unique ecosystems. Though it has over 450 endemic plant species, the region remains one of the most exploited and degraded ecosystems of India. With intensifying agricultural practices, urbanisation and pressures from mining and deforestation, the precious habitat of endemic and rare, endangered and threatened (RET) species could be reduced, even leading to species loss, notes a new study.

The study team looked at available plant species data and identified 22 endemic species recorded from over 250 locations and 28 RET species recorded from nearly 800 locations in the Eastern Ghats. They then studied the soil, land use, anthropogenic activities and climate changes in these areas. They used simulations to predict how the area will change by 2050 and 2070.

The results published in *Environmental Monitoring and Assessment* show that by 2050 the total human population in the Eastern Ghats region is expected to reach 2.6 million, raising pressure from anthropogenic activities. There will be a demand for land for food, road and other activities leading to encroachments and threat to the habitats of endemic and RET species. Parth Sarathi Roy from Centre for Earth, Ocean and Atmospheric Sciences, University of Hyderabad explains that unsupervised tourism also affects the distribution of these species. "Ecotourism with regulatory guidelines is a positive way to educate and promote conservation. The highly threatening human activities in the Eastern Ghats area are mining, urbanisation/settlements, dam construction, firewood collection and agricultural expansion," he adds in an email to *The Hindu*. Prof. Roy is one of the lead authors of the paper.

The endemic species were found to be distributed in the core areas of the forests - Kalahandi, Mahendragiri, Nallamalai-Seshachalam, Kolli and Kalrayan hill forests. On the other hand, the rare, endangered and threatened species were distributed not only in the core areas but also in the periphery of the forests, thus taking a greater hit from anthropogenic disturbances.

The mean temperature and rainfall were all crucial for the plant species and simulations showed that the temperature is likely to increase by 1.8 degree Celsius by 2050 to 1.98 degree Celsius by 2070. The rainfall is also projected to increase by 113 millimetre by 2050 and 160 millimetre by 2070.

The team adds that the regional or local climate change (warming) has led to frequent prolonged non-rainy days, increased number of days with maximum and minimum temperatures resulting in loss of soil moisture and soil degradation. These factors have also contributed to the occurrence of frequent forest fires, eliminating regeneration of the less-frequent endemic species in the forest.

Studies from across the globe have shown that the tropics are losing more plant biodiversity than other regions, stressing the need for urgent conservation strategies. The team adds that more studies and setting up species inventories to identify and record species can help on

conservation efforts.

“It is of utmost importance that biodiversity conservation initiatives of Ministry of Environment, Forest and Climate Change of Government of India and State forest departments focus on the Eastern Ghats to protect declining habitats of endemic and RET species. The boundaries of national parks and sanctuaries should be redefined based on the richness of endemic and RET species,” says lead author Reshma Ramachandran from the University of Hyderabad.

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