

Netravali forests compare to Amazon's, but show signs of climate change: Study

Gauree.Malkarnekar
@timesofindia.com

Panaji: For the first time, a patch of tropical semi-evergreen forest in the Western Ghats in India has been picked as a long-term forest monitoring (LTM) site, which is located on a 1-hectare plot inside the Netravali Wildlife Sanctuary.

The study at the site, by researchers of Indian Institute of Science, Bengaluru, Wildlife Institute of India, Dehradun, and BITS Pilani KK Birla Goa Campus, among others, has found that these forests at Netravali are in certain respects comparable to the forests of Borneo and Amazon.



At 84/hectare, the study found high tree density at Netravali

However, the study has also recorded the impact of climate change in the patch and emphasises the need for closer monitoring of the changes.

There were already nine LTM sites in the Western Ghats, one of the eight most sig-

nificant hotspots of biodiversity in the world. The sites help researchers understand the make-up of these forests, their ecological services, and the impact of climate change on them.

► Biodiversity, P 2

'Biodiversity abundance at Netravali plot'

► From P 1

However, nine existing LTM sites were primarily located in evergreen and deciduous forest types.

Now the first LTM site, covering the 1-hectare area in a semi-evergreen forest inside Netravali's forests in the central Western Ghats fills up a major gap for researchers as all LTM plots were concentrated in the southern states of Karnataka, Tamil Nadu, and Kerala with none until now in the region of Goa, Maharashtra, and Gujarat.

The study carried out at Netravali finds that "the recorded stem density (899 stems/ha) is higher compared to tropical forests across various continental scales, such as central/east Amazon (597stems/ha), Borneo in Asia (602stems/ha), and central Africa (425stems/ha)".

The study found high tree diversity at Netravali (84/ha), but comparable statistics for

this parameter are not available for other regions.

The net primary productivity of the forest in terms of carbon stock and biomass was found to be lower than the estimates at the continental level in central and east Amazon and in central Africa, but comparable to the forests in the southern Western Ghats.

The findings have now been published in the paper 'Woody species diversity, structure, and carbon stock in a tropical semi-evergreen forest in Western Ghats, India'.

"The Netravali plot shows an abundance of tree density, basal area, and biodiversity as it receives very high rainfall (3,400mm annual rainfall compared to 1,000mm all India annual rainfall)," states the paper. "Additionally, the plot is located at a distance of 150m from a small stream. Studies have reported high species richness and density along the riverine vegetation. Studies show that high species rich-

ness is likely attributed to nutrient-rich soil with greater moisture content and favourable microclimatic conditions."

The work has been carried out by researchers from multiple institutions — Karun Jose, Nasla Najeed, Rajiv Kumar Chaturvedi, Kshitija Suryawanshi, S Suresh Hebbalalu, and Navendu Page from the department of humanities and social sciences, BITS Pilani KK Birla Goa Campus; Bengaluru's Centre for Ecological Sciences, Divecha Centre for Climate Change, and Indian Institute of Science; and Dehradun's Wildlife Institute of India.

"In the current study, approximately 41% of species demonstrate good regeneration potential, and 41% of new recruitments. The species that show poor and no regeneration potential could be at risk in the future," the study says. It adds, "Among the six species found only as adults, *Eugenia*

macrosepala, an endemic species of the Western Ghats, shows no regeneration, raising concerns about its conservation status...continuous monitoring of newly recruited species is essential, as they have the potential to alter forest composition overtime."

LTM plots become a crucial tool for understanding the forest responses to changes in temperature and CO₂ concentration. Moreover, these datasets from LTM plots help in the documentation of new species, the study states.

The researchers noted that while Forest Survey of India provides robust historical data every five years, "its standardised protocols focus primarily on structural parameters (e.g., tree density, basal area, and biomass) and lack continuous, high-resolution monitoring of ecological processes such as recruitment, mortality, phenology, and microclimatic variations as monitored by LTM plots".