

PARLIAMENT QUESTION: DISCOVERY OF NEW SPECIES OF LICHEN IN WESTERN GHATS

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A new species of lichen, *Allographa effusosoredica*, has been discovered in the Western Ghats, providing significant insights into ancient symbiotic relationships between fungi and algae or cyanobacteria (photosynthetic partners). The newly identified species is crustose lichen characterized by effuse soredia and the presence of norstictic acid, a rare chemical trait within the *Allographa* genus. It is the first *Allographa* species from India to be confirmed with molecular data, using DNA sequencing of multiple genetic markers (mtSSU, LSU, RPB2 for fungi, and ITS for algae). A team of Indian scientists from Agharkar Research Institute Pune, an Autonomous Institute of the Department of Science and Technology (DST) has discovered this previously unknown species of lichen, becoming the 53rd species from the genus reported from India and the 22nd from the Western Ghats alone. The study was funded by the Anusandhan National Research Foundation (ANRF), erstwhile Science and Engineering Research Board (SERB), under the project "Unravelling the symbiosis of algal and fungal partners in lichen family Graphidaceae and Parmeliaceae from the Western Ghats through polyphasic taxonomic approach and ecological studies."

Allographa effusosoredica plays a vital role in its ecosystem, contributing to soil formation, providing food for insects, and serving as a bioindicator of environmental health due to its sensitivity to air quality and climate changes. Its symbiotic relationship with *Trentepohlia* algae enhances understanding of tropical photobiont diversity and locally adapted symbiotic interactions. The presence of norstictic acid and its unique morphological traits underscores its ecological distinctiveness. As part of the Western Ghats biodiversity, this lichen support ecosystem stability and highlights the region's role as a global biodiversity hotspot. The discovery emphasizes the need for further molecular studies to uncover hidden lichen diversity and their ecological contributions.

The government is actively promoting research and conservation efforts in biodiversity hotspots like the Western Ghats through various policies, initiatives, and funding mechanisms. The research on rare or ancient species often employs both traditional taxonomic methods as well as modern molecular techniques to identify and classify the species, and to understand their evolutionary history and conservation status. The Department of Science and Technology (DST), Department of Biotechnology (DBT), Council of Scientific & Industrial Research (CSIR), Anusandhan National Research Foundation (ANRF), Ministry of Environment Forest and Climate Change (MoEF &CC) etc. support key research areas focusing study of ecosystem, evolutionary history, ancient lineages, conservation, human-wildlife interactions, restoration etc. The government has established numerous National Parks, Biosphere Reserves and Wildlife Sanctuaries to protect biodiversity hotspots.

The Government is already involved in identifying and recognizing new biodiversity spots, particularly through the declaration of Biodiversity Heritage Sites (BHS) and the expansion of Other Effective Area-based Conservation Measures (OECMs). The identification of new biodiversity spots is a continuous process, with the active involvement of National Biodiversity Authority (NBA) and State Biodiversity Boards. Various Research Organisations, Educational Institutions and Government Agencies like Agharkar Research Institute (ARI), Botanical Survey of India (BSI), National Botanical Research Institute (NBRI), Gobind Ballabh Pant National Institute for Himalayan Environment (GBPNIHE) etc. are continuously exploring other biodiversity spots of the Country by conducting exploratory research and field studies.

This information was given by Dr. Jitendra Singh, Union Minister of State (Independent Charge) for Science and Technology, Earth Sciences, MoS PMO, MoS Personnel, Public Grievances & Pensions, Department of Atomic Energy and Department of Space, in a written reply in the Rajya Sabha today.

NKR/PSM

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