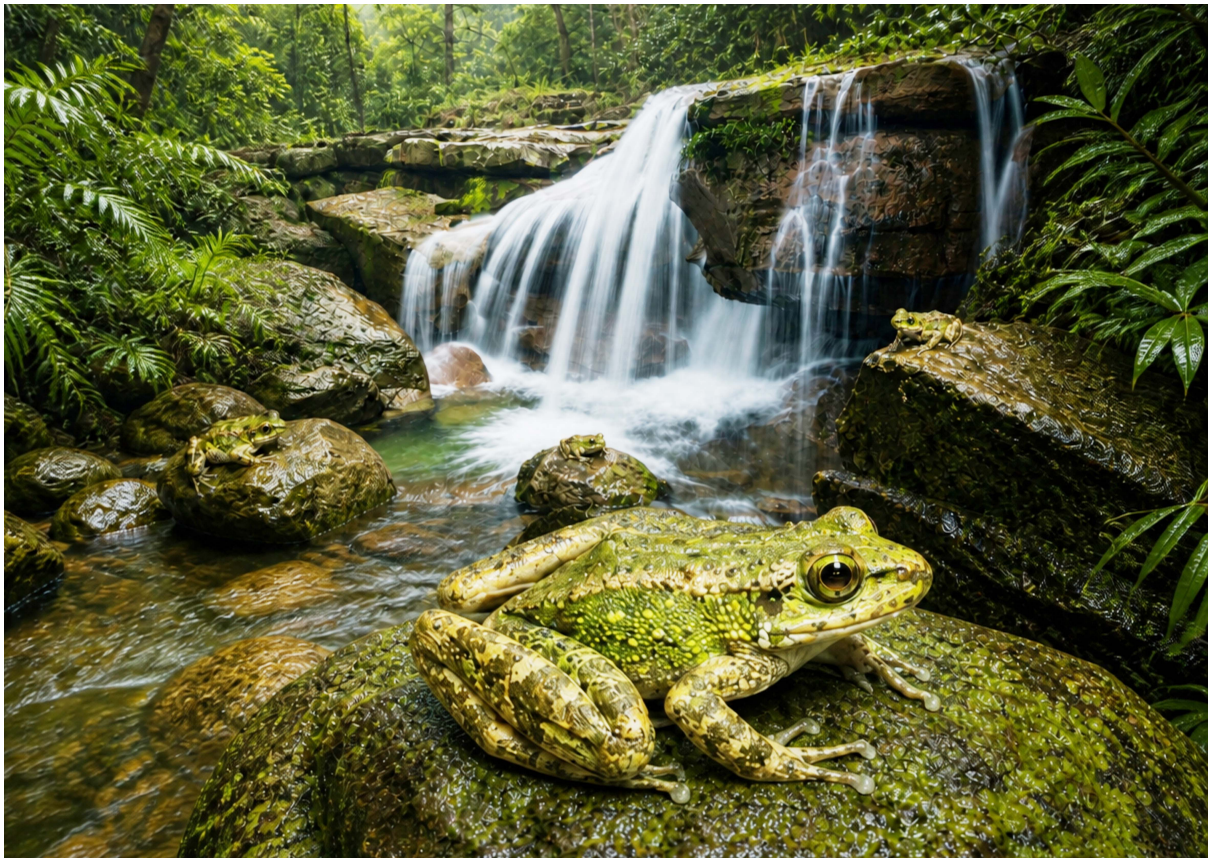

Three new Cascade Frog species discovered in Northeast India: One named after the late social worker fondly called Ammachi

Scientists have reported three new species and five new records of Cascade Frog species *from fast-flowing streams in the North-eastern states of Tripura, Nagaland, and West Bengal. For the first time, they also report the occurrence of five other species previously not known from India. The study sheds light on the dispersal and diversification patterns of Cascade Frogs within India and across Asia.*

More than 15 years of extensive exploration in mountainous regions across seven Northeast Indian states have led to the discovery of three new species of Cascade Frogs, according to a study published on 11 August 2026 in the *Bulletin of the Museum of Comparative Zoology* https://publications.mcz.harvard.edu/index.html?publication=bullmcz, a prestigious scientific journal published since 1863 by Harvard University.

Northeast India is part of two globally recognised biodiversity "hotspots" — the Himalayas and Indo-Burma — that are among the world's most biologically rich regions, harbouring exceptional plant and animal diversity found nowhere else on Earth. The three newly discovered species are Cascade Frogs, scientifically classified in the genus *Amolops*, a group that comprises around 100 species widely distributed across Asia. Their common name refers to their typical habitat in and around rocky waterfalls found in forest hill streams.

The new species were discovered by a team of scientists led by Professor S. D. Biju from University of Delhi. Through extensive fieldwork spanning all of northeastern India, the researchers documented more than 300 geographic populations of Cascade Frogs. Subsequent laboratory

studies integrating DNA analysis and detailed morphological comparisons of adults and tadpoles established that three populations from Tripura, Nagaland, and West Bengal represent new species.

To understand the evolutionary relationships among Cascade Frogs and the historical dispersal events that resulted in their high diversity, the study employed DNA-based dating analyses. Their findings reveal that Cascade Frogs experienced extensive diversification around 32 million years ago during the Eocene-Oligocene transition, a geologic period marked by widespread extinctions and rapid turnover of many floral and faunal groups, both marine and terrestrial. The new study suggests that this time period was marked by multiple waves of colonization of Cascade Frogs from east to west within Asia. Their biogeographic analyses especially highlight the role of early Himalayan mountain uplift in mediating a complex "into-and-out-of-Himalaya" dynamic in structuring the contemporary distribution and high species diversity observed in these frogs.

"This study is a work of over 15 years to comprehensively study India's Cascade Frogs. It is a taxonomically challenging group but we have now clarified several confusing aspects of its biology, which will help in proper identification and conservation of species. Our study reaffirms that many Indian faunal groups remain poorly studied and contain undiscovered biodiversity, especially in the lesser explored northeastern states that are part of two internationally recognised biodiversity hotspots," said lead author Professor S. D. Biju.

One of the new species, Ammachi's Cascade Frog (*Amolops ammachi*), was discovered in Jampui Hills in Tripura. It is named in honour of the late Ms. Padmini Varkey, a renowned social worker and philanthropist from Kerala, India, who was fondly referred to as "Ammachi," or "mother" in Malayalam. Her unconditional love for and readiness to help those in need were widely admired. *Amolops ammachi*, a medium-sized frog approximately 80 mm in length, has a light brown body interspersed with beautiful olive-green reticulations.

The two other species — Sendenyu Cascade Frog (*Amolops sendenyu*) and Beautiful Cascade Frog (*Amolops bella*) — were discovered in Nagaland and West Bengal, respectively. Sendenyu Cascade Frog (*Amolops sendenyu*) is named after Sendenyu Village, where the species was discovered. The Beautiful Cascade Frog is named for its striking green body colouration with yellowish-green or reddish-brown mosaic patterns.

Authors

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Title

'Systematics, molecular phylogeny, diversification, and biogeography of Cascade Frogs (Ranidae: *Amolops*) from India: an integrative assessment with description of three new species.'