

Named after their habitats, three new frogs add to Arunachal's biodiversity

by Arathi Menon on 1 January 2024

- *The biodiversity hotspot of Kamlang-Namdapha landscape in Arunachal Pradesh has three new-to-science frog genera to its credit.*
- *Named after their habitats, the researchers hope, the naming would inspire better conservation of the habitats and the species.*
- *So far, around 470 amphibian species have been recorded in India with many more yet to be scientifically described. However, climate change and anthropogenic disturbances are globally causing an amphibian decline.*

Adding to the large repertoire of amphibian species found in the biodiversity hotspots in India are three new-to-science frog species discovered from the Namdapha-Kamlang landscape of Arunachal Pradesh. These discoveries are significant for two different reasons: the unique landscape where they were spotted and the new biological classification they create.

According to the lead researcher Abhijit Das of the Wildlife Institute of India, the discoveries underscore the distinction of Namdapha National Park as a tiger reserve with high biodiversity in the country. Tucked between Myanmar and India, Namdapha is considered the northernmost limit of the tropical rainforest in the world. Another specialty of the landscape, according to Das, is its elevational diversity gradient "starting

Conversation

from 100 metres and going up to 5000 metres that says a lot about the biodiversity of the region". "Our initial observations show a dominant influence of southeast Asian faunal elements in the lower elevations and largely Himalayan ones in the upper reaches. However, more surveys are needed to ascertain these faunal boundaries," he said. Namdapha region, located on the border, faces many anthropogenic pressures that pose conservation challenges, said Das.



Kamlang tiger reserve. Three new-to-science frog species were discovered recently from the Namdapha-Kamlang landscape of Arunachal Pradesh. Photo by Abhijit Das.

Another reason why these discoveries are special is because those are not just three new species but three new genera — a taxonomic category comprising species exhibiting similar characteristics — recorded from India. Das described the new frogs as rare with distinct appearances and calls.

New frogs emerge from unique habitats

The first discovery, *Gracixalus patkaiensis* (https://imgs.mongabay.com/wp-content/uploads/sites/30/2023/12/31135829/Gracixalus-patkaiensis-1-17-1_compressed.pdf), is a green frog that's almost transparent, resembling jelly. A tiny frog of about 2.2 cm in length, it occupies the thick understory of the evergreen forest. With a distinct insect-like call, the frog could be mistaken for one of the many crickets in the vicinity, explained Das.



*A *Gracixalus patkaiensis* with eggs listens to the calling males. Photo by Abhijit Das.*

The discovery of the second frog, named *Alcalus fontinalis* (<https://imgs.mongabay.com/wp-content/uploads/sites/30/2023/12/31135213/Alcalus-fontinalis.pdf>), more than a decade after the last species in the genus, *A. rajae* was discovered from Indonesia, brings the total number of species in the genus *Alcalus* to six. Das described it as a brown dwarf frog with a unique trickle-like call and lives in fast flowing streams or brooks below the vegetation.

The newest and the third frog to be discovered is found in marshy areas and is named after the Noa-Dihing river, the lifeline of Namdapha. Like in the previous discoveries where the scientists explored unique habitats like canopies, understories and brooks, this "music frog", named *Nidirana noadihing* (https://imgs.mongabay.com/wp-content/uploads/sites/30/2023/12/31135823/Nidirana-noadihing_compressed.pdf), was discovered from the knee-deep marshes in the region. The frog is distinct for its call which consists of two different types of notes, call duration and dominant frequency of the call.

Most amphibian discoveries in science in India have so far been made from the Western Ghats, yet another biodiversity hotspot in the country. Scientist K.V. Gururaja who has discovered 23 frog species from the Western Ghats points to a new found enthusiasm in studying amphibians and advancement in technology as the prime reasons for previously-undescribed frogs being brought to light. Technology has made morphological, molecular and acoustics studies possible, he said.



Alcalus fontinalis is a dwarf frog with a trickle-like call and lives in brooks. Photo by Abhijit Das.

Species named after habitats to inspire conservation

The scientific records of amphibian species in India, which began in 1799 with five species beir (<https://www.indianamphibians.org/#:-:text=Approximately%2047%20species%20of%20amphib> Gururaja, who is not associated with the discoveries from Namdapha, said that there may be 10 to the global amphibian decline (<https://www.nature.com/articles/s41586-023-06578-4#:-:text=We%20find%20that%20amphibians%20are,salamanders%20and%20in%20the%20Neotr> as a cause of concern.

From his experience discovering and naming new frog species, Gururaja said that despite new discoveries, conservation is a slow process and naming of new species play a crucial role in achieving it. "When you name a new species based on the location (where it is found) and its characteristics, there is a better chance of local communities owning it and

contributing to its conservation," he said. He pointed to the case of the purple frog or pignose frog (*Nasikabatrachus sahyadrensis*) endemic to Kerala and Tamil Nadu in the Western Ghats which was named Mahabali frog (https://imgs.mongabay.com/wp-content/uploads/sites/30/2023/12/31145714/Survival_Blueprint_2019_Purplefrog_India.pdf), after the mythological demon king revered in Kerala, which eventually augmented its status as well as conservation. "Scientists cannot work in silos and need community participation for conservation," he said.



Nidirana noadihing frog species is named after the Noa-Dihing river which is the lifeline of Namdapha. Scientists say that naming species after their habitats can help boost conservation. Photo by Abhijit Das.

Following the same concept, the three frogs discovered in Namdapha were named based on the habitats where they were found. While the first one is named after the Patkai hills where the low elevation of Namdapha falls and the third one named after Noa-Dihing river, the second one was named based on its habitat, the brooks or fontinalis. The researchers say that the Namdapha region needs more studies to document the diversity of the region, especially the higher elevations from 1500m to 4000m which have so far remained unexplored. On the cards are field guides and stories from the region depicting its diversity to communicate it to all stakeholders, Das said.

Banner image: *Gracixalus patkaiensis*, a green frog resembling jelly is one of the three new-to-science frog species discovered from the Namdapha-Kamlang region of Arunachal Pradesh and is named after Patkai hills. Photo by Abhijit Das.

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