



Frog in the pitcher



Sitting atop the lotus leaf, swimming in the water and jumping across the grassy wetlands, frogs had beckoned him to follow them through the most unusual paths. However, the one which had him following it to a pitcher plant in the Bornean forest proved to be the most amazing, for it turned out to be one of the tiniest he had ever seen! **Dr Indraneil Das** recounts his chance discovery of the Old World's smallest frog



Unusual homes: The Old World's tiniest frog has made the pitcher plant its home

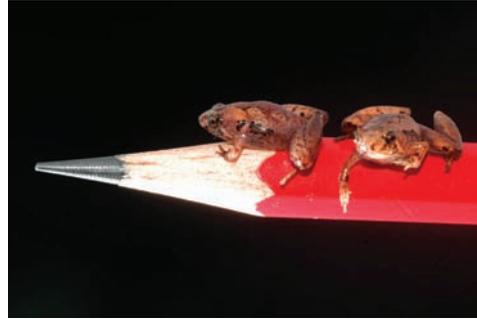
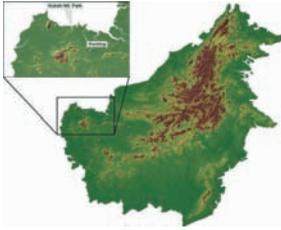
out of the zoological taxonomy text' story is true and I, from the Institute of Biodiversity and Environmental Conservation, at Universiti Malaysia Sarawak, together with Alexander Haas of Biozentrum Grindel und Zoologisches Museum of Hamburg, feel lucky to be the first to have identified this amazing new species. The smallest in the Old World, the only thing that gave the frog away and distinguished it as a different species and not a juvenile, was its unusual call. That's the only way we could locate the tiny frog on the side of the Gunung Serapi, the summit of the Matang mountain range in Borneo.

We first noticed this frog on September 4, 2004, late at night. Having completed our field work at a pond in Kubah National Park in Sarawak, where we were monitoring the local amphibians breeding. We stopped to listen to an unfamiliar call, which we initially associated with some insect akin to the cricket. Following it, we realised it was similar to that of a frog. A closer examination (lying flat on our stomachs), we saw it for the first time – the tiniest frog we had ever seen. Carrying a specimen back to the lab proved to be an arduous task, taking us a good half hour

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In the depths of the Bornean tropical forests, making themselves cozy inside the *Nepenthes* pitcher plants, live the Old World's (comprising the three continents of Africa, Asia and Europe) tiniest frogs, five of which will easily perch on your fingernail. May sound unbelievable, but, this 'right

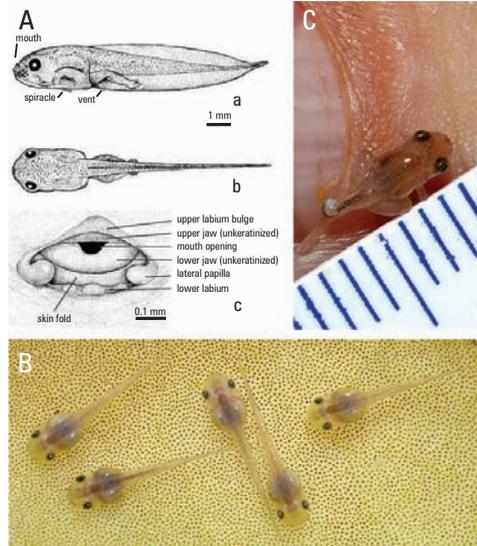


Scientific Name:
Microhyla nepenthicola

Where:
Matang Range, Sarawak,
Malaysian Borneo

When:
Published August
2010 in *Zootaxa*

Field Notes:
Given the small size of the species, finding specimens was particularly difficult: most were tracked down by their calls, which are a series of harsh rasping notes. Males gather in and around the pitcher plants at dusk and early evenings to call.



to get our first specimen. The samples were compared with museum specimens (some of which were over a 100 years old) in the United States, Europe, and Asia, and it proved that the species was new to science.

Described in scientific parlance as a new diminutive species of microhylid frog (genus *Microhyla*), sighted in the Matang Range, Sarawak, Malaysian Borneo, the new species is an obligate of the pitcher plant, *Nepenthes ampullaria* and named *Microhyla nepenthicola* after the pitcher plant. The male frogs measure just 10.6 to 12.8 mm long, however, the females are nearly twice as long. The status of being the smallest frog in the world is however enjoyed by the gold frog in Brazil and the Monte Iberia dwarf frog in Cuba, which measure 9.8 mm in length.

Since the amphibians have a high surface-to-volume ratio, they tend to lose water quickly and therefore restrict their breeding and feeding to areas surrounding the pitcher plants. Unlike most frog species, *Microhyla nepenthicola*

have a shrunken first finger and less webbing on their feet than typical frogs. This probably helps them to climb and cling on to the pitcher plant's surface, which is often waxy and slippery. The findings have been published in the scientific journal, *Zootaxa*.

These frogs use the plant's mature pitchers to breed because the pitchers have an open cavity and grow in damp, shady forests. The sides and bottoms of the pitcher are where the frogs deposit their eggs. Upon hatching, the tadpoles grow in the liquid that accumulates inside the pitchers.

It's not just the size, but also the chorus of harsh, raspy sounds that adult males emit at dusk, which distinguish this species from other smaller frogs that have been identified till date. The call peaks between 7 pm and 9 pm.

A weak, broken, mid-vertebral ridge, starting from forehead and continuing along body; the absence of dermal fold across forehead; phalanges with longitudinal grooves, forming two scale-like structures; and dorsum brown with an hour-glass shaped mark on scapular region are some of the other distinguishing features exhibited by the species.

Though it has been described very recently in a scientific journal, the species has not remained hidden to human eye. Scientists have seen it previously, but mistook the miniature frogs to be the juveniles of other species common to the area.

One of the most severely threatened group in the world, amphibians help in controlling insects that spoil crops. They also help in maintaining healthy freshwater systems. Since they breathe through their skins, they are extremely sensitive to the surroundings. Scientists are studying them to see how the changing global climatic patterns are affecting them. 🌍