

Knowledge Enterprise



Secret of egg-caring treefrogs unveiled

A treefrog found in Thailand and Cambodia displays unusual care in ensuring the survival of its offspring, discovered NUS biologists. The *Chiromantis hansenae* (*C. hansenae*) is the only treefrog species in the Southeast Asian region known to exhibit such behaviour.

The finding, made by Assistant Professor David Bickford and PhD student Ms Sinlan Poo from the NUS Department of Biological Sciences, was recently published as the cover story in *Natural History*, a popular magazine of nature and science. In contrast to previous reports that were purely observational, the latest work represents the first systematic observational and experimental study of the Southeast Asian amphibian that shows how the offspring benefit from parental care.

This research is timely as *C. hansenae* is listed as Data Deficient under the International Union for Conservation of Nature's Red List of Threatened Species.

The NUS team noted that *C. hansenae* demonstrates a form of parental care known as egg attendance, where a parent remains with the egg mass at a fixed location and covers the mass with its body. The female occasionally makes trips down to the pond, presumably to soak up more water, and returns to secrete the liquid over the egg mass to keep it moist.

The investigators conducted a total of 1,448 field observations of natural egg masses and compared offspring survival between natural egg masses and egg masses where parent frogs were experimentally removed. They found that although *C. hansenae* breeds very close to water sources, there is still an extremely high risk of the eggs drying out. Thus, the behaviour of the parents is essential to ensure the survival of their offspring.

Said Ms Poo: "Our study is the first experimental investigation of parental care in Southeast Asia, a region with over 700 species of amphibians. This highlights the need for more of such natural history studies. Currently, much of the mechanisms, adaptations, and driving forces of egg attendance in *C. hansenae* require further exploration, through which a more coherent understanding of parental care can be formed."

Asst Prof Bickford pointed out that the research is significant because Ms Poo has shown how parental care works in Asian treefrogs in the context of her study system in Thailand. "Moreover, the impact for the larger scientific community is that we now know more about how and why parental care evolves, and the forces like evolution and natural selection that enable such behaviours to evolve – even in frogs." Researchers from NUS discovered that *Chiromantis hansenae* is currently the only species in the treefrog family in Southeast Asia known to practise parental care

> The female *C. hansenae* practises egg attendance by covering the egg mass with its body to increase its offspring's survival rate

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