

Researchers discover unusual parenting behavior by a Southeast Asian treefrog

May 28 2014



Researchers from the National University of Singapore discovered that *Chiromantis hansenae* is currently the only species in the treefrog family in Southeast Asia that is known to practice parental care. Credit: Sinlan Poo

Researchers from the Department of Biological Sciences at the National University of Singapore (NUS) Faculty of Science have discovered that a Southeast Asian species of treefrog practices parental care to increase the likelihood of survival of its offspring. *Chiromantis hansenae* (C.

hansenae), is currently the only species in the treefrog family in Southeast Asia that is known to exhibit such behaviour. This discovery was recently published as the cover story in a popular magazine of nature and science, *Natural History*, in May 2014.

The study investigates parental care in a frog of Southeast Asia, specifically, the small treefrog, *C. hansenae*, which is found in mainly in the northeastern forests of Thailand and parts of Cambodia. It is the first systematic observational and experimental study that shows the benefits to the offspring as a result of parental care in a Southeast Asian amphibian. Previous reports of parental care in amphibians in the region were purely observational.

The researchers, Assistant Professor David Bickford and Ms Sinlan Poo, a PhD student, from the NUS Department of Biological Sciences, observed that *C. hansenae* exhibits a form of parental care, known as egg attendance, in which a parent remains with the egg mass at a fixed location. These frogs care for their offspring by covering the egg mass with its body. Occasionally, the females will make trips down to the pond, presumably to soak up more water, and return to secrete the liquid over the egg mass, keeping it moist.

By comparing offspring survival between natural egg masses and egg masses where parent frogs were experimentally removed, the researchers found that although *C. hansenae* breeds very close to water sources, there is still an extremely high risk of the eggs drying out, a process called egg desiccation. As such, the behaviour of the parent is essential to the survival of their offspring. The researchers made these findings after conducting a total of 1,448 field observations of the 126 egg masses over two years, from July 2011 to October 2012.

While egg attendance is the most common form of parental care in amphibians, *C. hansenae* has a number of life-history characteristics that

deviate from other species with parental care. For example, most frogs with parental care have fewer and larger eggs, breed in more terrestrial habitats, and males care for direct-developing eggs, which are eggs that hatch as frogs directly. In contrast, *C. hansenae* has lots of tiny eggs, breed above ponds, and females care for non-direct-developing eggs, which are [eggs](#) with a free-swimming tadpole stage. The researchers concluded that the unusual parental care in *C. hansenae* plays a critical role in preventing egg desiccation and is a possible mechanism for buffering environmental pressures for their offspring.

The study is timely as *C. hansenae* is listed as Data Deficient under the International Union for Conservation of Nature's Red List of Threatened Species. A recent study by Dr Samuel Howard from the Evolutionary Ecology and Conservation Lab at NUS led by Asst Prof Bickford, showed that Data Deficient amphibians are likely to be more threatened than species that are fully assessed. The research also highlights the importance of field research in a region where very little is known about the life history and behavior of most species.

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."

Said Asst Prof Bickford, "This research is significant because Sinlan has shown how parental care works in Asian treefrogs, at least 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 behaviors to evolve – even in frogs."

Provided by National University of Singapore

Citation: Researchers discover unusual parenting behavior by a Southeast Asian treefrog (2014, May 28) retrieved 26 April 2024 from <https://phys.org/news/2014-05-unusual-parenting-behavior-southeast-asian.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.