# Hinchinbrook gets its own frog

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One species of frog has become three including one unique to Hinchinbrook Island following studies of their genetics and mating calls

Research published by James Cook University's Dr. Conrad Hoskin and colleagues shows that this particular north Queensland rainforest frog really consists of three species.

"Even though these three species look and sound quite similar to us as humans, there is very little interbreeding between them," Dr. Hoskin said.

"This is in large part due to the degree of genetic difference among them but also probably due to the differences in mating call. They probably don't find each other attractive or perhaps they don't even recognize each other as potential mates"

Detailed research on variation in genetics and mating calls across populations of the Ornate Nursery-frog (Cophixalus ornatus) over the past decade has revealed that one species is really three.

The Ornate Nursery-frog (Cophixalus ornatus) was formerly considered to be found through much of the mountainous rainforest of the Wet tropics region, between approximately Townsville and Port Douglas.

However, the findings, published in the international science journal The American Naturalist, show that there are substantial genetic differences between populations in the northern half of the range, those in the

southern half of the range, and those on Hinchinbrook Island.

The genetic data shows that these populations diverged from each other millions of years ago. Where the north and south frogs overlap in distribution on Mt. Bartle Frere (behind Innisfail), there is very little hybridization between them.

Dr. Hoskin said that the populations are so different that they represent three different species, one in the north of the Wet Tropics, one in the south, and one on Hinchinbrook Island.

He has now described and named the new species in the most recent edition of the international science journal *Zootaxa*.

The northern populations retain the original name, the Ornate Nursery-frog (Cophixalus ornatus), because that is where the first specimens came from in the late 1800s.

Dr. Hoskin has named the southern species the Southern Ornate Nursery-frog (Cophixalus australis), with the australis bit of the species name being Latin for 'southern'; and he has named the island species the Hinchinbrook Island Nursery-frog (Cophixalus hinchinbrookensis), with the species name meaning 'belonging to Hinchinbrook' in Latin.

Dr. Hoskin said the Hinchinbrook Island species is particularly interesting.

"This is the only vertebrate species that is restricted to Hinchinbrook Island," he said.

"Everybody knows Hinchinbrook Island is an amazing place, but this just adds to the environmental value of the island. The genetic data shows that the frogs have clearly been doing their own thing on Hinchinbrook

Island for an incredibly long time."

"Cyclone Yasi battered Hinchinbrook Island, but now Hinchinbrook gets a positive in being recognized for having its own unique frog." Dr. Hoskin said.

The new species are small frogs (approx. 2.5 cm in length) that live in leaf litter and low vegetation.

Males climb up on to tree trunks and other elevated spots to call in summer after rain. The calls are loud and sound a bit like the bleat of a lamb.

The frogs are called nursery-frogs because, unlike most other frogs, they lay their eggs on land and the males look after them.

"These frogs lay small numbers of eggs in moist areas on the forest floor and the tadpole develops cramped up inside the egg. When it's developed into a small frog it hatches out of the jelly egg and goes off into the forest to look after itself," Dr. Hoskin said.

"The process is amazing. The eggs are clear so you can watch the tadpoles developing into frogs inside the eggs.

"These frogs further show us the unique environment we live in in north Queensland. The area has unique diversity found nowhere else, including new species we are still only just discovering".

**More information:** Hoskin CJ. 2012. Two new frog species (Microhylidae: Cophixalus) from the Australian Wet Tropics region, and redescription of Cophixalus ornatus. *Zootaxa* 3271: 1-16.

Hoskin CJ, et al. 2011. Persistence in peripheral refugia promotes

phenotypic divergence and speciation in a rainforest frog. *The American Naturalist* 178: 561-578.

Provided by James Cook University