CASE STUDY

FITZROY BASIN ASSOCIATION

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HELPING RARE FROGS

Searching and song-catching

Rare frogs in rainforests of central Queensland are caught in a conservation paradox - more information about the frogs is needed to decide how to conserve them, but their very scarcity means that information is hard to come by.

The first step is finding frogs

For researchers in the area, this has meant their efforts have focused on literally looking under rocks and logs and listening for croaks. The setting for this search is Kroombit Tops, about 85km west of Gladstone, a protected national park.

Kroombit Tops is a high plateau of volcanic rocks with streams that run off the ranges that have carved narrow gullies where rainforests grow. This ancient and beautiful landscape is what's known as a biodiversity 'hot spot' because so many different plants and animals live there - some that are found nowhere else and many of which are rare or threatened.

The Kroombit tinkerfrog is one species that calls the area home – it is critically-endangered, being found in just 12 discrete patches of rainforest within Kroombit Tops totalling less than 600 hectares in total.

Since being identified in 1983 as a unique species the Kroombit tinkerfrog has been the focus of research and monitoring, including a program supported by the region's peak natural resource management group Fitzroy Basin Association Inc. (FBA). From 2012 to 2013 FBA received funding through the Queensland Government to continue its support of this research.

Frog searches and technology

The project includes physical surveys of Kroombit Tops – these enable volunteers and scientists to record frog numbers by listening for frog calls, as well as look out for threats to frogs in the park. Threats discovered include the fatal amphibian chytrid fungus, animals trampling the frogs' habitat, and wildfires destroying parts of the rainforest.

Recent monitoring showed that feral pigs, horses and cattle are still causing damage to threatened frog habitat and that more control activities need to be undertaken to reduce feral animal abundance.

Despite regular searches, we are still almost completely clueless about the Kroombit tinkerfrog's breeding habits. Fortunately recent advances in technology are helping to increase our understanding. The FBA project enabled the installation of automated Song Meter recording devices.

The tinkerfrog is so-called because of the "tink" noise it makes when croaking to potential mates. Song Meter devices within Kroombit Tops record for one minute every half an hour of every day – hoping to capture as many "tinks" as possible.

The next challenge is discerning Kroombit tinkerfrog calls in hundreds of thousands of recordings collected via the Song Meters. By using software that can be programmed to match the tinkerfrog calls to similar sounds in the recordings, this laborious task is being accomplished.

Understanding breeding

While the tinkerfrog population at Kroombit appears to be relatively static, the collection of more comprehensive data through the Song Meters will allow for greater scrutiny of tinkerfrog calling behaviour and thus their reproductive biology. This will create an opportunity for scientists to establish a captive breeding program to safeguard the species from extinction.

Queensland Government Senior Conservation Officer Harry Hines said the technology implemented through the project had automated analyses of recordings and enabled validation of these analyses.

"The results of this work have been highly informative in terms of the diurnal and seasonal patterns of calling of Kroombit tinkerfrog," Mr Hines said.

Future work will further examine the sensitivity and specificity of the software used to identify tinkerfrog calls, and investigate the relationships between calling and time of day, season, temperature, moon phase and other variables.

Fitzroy Basin Association Incorporated
PO Box 139, Rockhampton QLD 4700
Phone: (07) 4999 2800
www.fba.org.au

Queensland Government