

OBSERVATIONS OF CALLING NORTHERN TINKER FROGS (*TAUDACTYLUS RHEOPHILUS*) ON MOUNT BELLENDEN KER

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Since its 'rediscovery' in 1996 the northern tinker frog has only been recorded spasmodically on Mount Bellenden Ker with calling males last recorded in 1996. In December 2000 calling northern tinker frogs were recorded on seven occasions during two trips. Subsequent trips by QPWS staff and James Cook University researchers have failed to detect the species at the site. It is concluded that this is a critically endangered species and some basic recommendations are detailed for future monitoring. □ *Northern tinker frog, calling, management, endangered, Mount Bellenden Ker.*

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Taudactylus rheophilus is an endangered species (Queensland Nature Conservation Act 1994, Environmental Protection and Biodiversity Conservation Act 1999) known from Carbine Tableland, Lamb Range, Thornton Peak and Mt Bellenden Ker in the Wet Tropics (McDonald, 1992). Between 1991 and 1996 this species was not recorded in the wild and it was assumed that it had declined or even disappeared. In 1996 they were 'rediscovered' on Mt Lewis and Mt Bellenden Ker (Marshall, 1998). Since this time reports of this species at both these sites have been few and spasmodic (Hero et al., 2002; D. James, pers. com.; E. Bolitho, pers. com.; Keith McDonald & A.B. Freeman, unpubl. data). No other populations have been located despite a significant search effort, particularly on the Carbine Tableland (K. McDonald & A.B. Freeman, unpubl. data).

The records of *T. rheophilus* on Bellenden Ker, between 1996 and November 2000 include five individuals recorded along 150m of stream in 1996 (Marshall, 1998), one juvenile captured in 1998 (Hero et al., 2000) and an unconfirmed observation of a *Taudactylus* tadpole in 2000 (E. Bolitho, pers. com.). The latter was made by a researcher with 4 years experience with *Taudactylus* tadpoles from mid-east Queensland and was based on the type of pool that it was observed in and the behaviour of the tadpole. Unfortunately the animal was not captured so a confirmed identification could not be made.

This paper details observations of *T. rheophilus* made by QPWS staff on the 12th, 13th, 18th, 19th and 20th of December 2000 on Mt Bellenden Ker

and three subsequent trips on the 3rd September, 2001 and 23rd and 24th of January, 2002 and the 26th April 2002.

STUDY AREA

Mt Bellenden Ker is the second highest peak in Queensland at 1582m and part of the Bellenden Ker Range. The summit vegetation is low growing simple microphyll vine-fern forest (Tracey, 1982). On Mt Bellenden Ker *T. rheophilus* is known from a perennial stream in the upper catchment of the Mulgrave River, 600m SE of the summit (17°15'56", 145°51'22").

METHODS

The first *T. rheophilus* sighting made by the QPWS team occurred on the 12th December 2000 during an opportunistic survey associated with an ongoing frog monitoring program. Subsequent searches concentrated on the area where the initial observation had been made. Active searching (turning rocks) was abandoned when it became apparent that this was likely to cause damage to the habitat. Subsequent sampling involved passively recording calling individuals.

When a *T. rheophilus* was seen or heard for the first time air temperature and humidity along with general weather information were recorded for the site (the one exception for this was the morning of the 13th).

For the two individuals that were captured snout vent length (SVL) was measured to the nearest 1mm using 200mm dial calipers and weight was taken to the nearest 0.1gm using a

TABLE 1. Sightings of *T. rheophilus* on Bellenden Ker. * Tissue samples were taken for analysis by disease researchers at James Cook University, Townsville from two individuals. These samples subsequently came back as negative for chytrid fungus.

Date	Time	Weather	No. of frogs	Site	Measurements
12 Dec	20:00	Overcast, Light showers, Air temp 14.5BC, Humidity 94%	1*	Calling between rocks in crevice 52cm above stream. Captured by hand.	SVL: 24.9mm Wght: 1.65g Sex: ♂
13 Dec	08:10	Overcast, Light showers, Air temp cool.	1	Calling amongst rocks and streamside vegetation. Ceased calling 08:20.	
18 Dec	15:00	Overcast, Light rain, Air temp 18.5BC, Humidity 95%	2*	Found under rock on edge of water. One captured by hand.	SVL: 20.5mm Wght: 0.85gm Sex: ?
18 Dec	15:30	Overcast, Heavy rain, Air temp 18.0Bc, Humidity 100%	2	Calling amongst rocks and streamside vegetation.	
19 Dec	08:00	Overcast, Light rain, Air temp 16.0BC, Humidity 100%	2	Calling amongst rocks and streamside vegetation. Still calling at 09:00.	
19 Dec	15:45	Overcast, Heavy rain, Air temp 16.0BC, Humidity 100%	2	Calling amongst rocks and streamside vegetation. Calling intermittent before petering out around 16:05.	
20 Dec	08:10	Overcast, Light showers, Air temp 16BC, Humidity 95%	1	Calling amongst rocks and streamside vegetation. Calling continued at irregular intervals until 09:10.	

10gm Pesola™ spring balance. Sex of the male was ascertained by the presence of nuptial pads.

RESULTS

The initial observations, on the 12th of December 2000, were made by A.B. Freeman, L. Dwyer, C. Schmidt. During this trip two calling *T. rheophilus* were heard over two days. One of these was captured to confirm identification. This was the first time calling *T. rheophilus* had been recorded on Bellenden Ker since 1996. A further trip was made for two days during the following week in an attempt to clarify the status of *T. rheophilus* on Mt Bellenden Ker. This was after a trip to the Carbine Tableland to establish if *T. rheophilus* was active at this site.

Approximately 18 hours was spent at the Bellenden Ker site over the two trips, with searching taking place during the day and the night. Most of this time was spent at the site where frogs had previously been recorded.

T. rheophilus was observed or heard seven times during the two trips to Bellenden Ker (12-13th December and 18-20th December) (Table 1). Observations included calling individuals, visual sightings and individuals in hand. Two individuals were captured by hand, one individual was observed but not captured and another 2-3 individuals were heard.

Over 400m of stream was searched above, and below, the site while the frogs were calling. Most of the search effort concentrated on downstream habitat, as it appeared to be more suitable for *T.*

rheophilus although historically the whole stream had *T. rheophilus* (K. McDonald, pers. com.). All the observations of *T. rheophilus* were made in an area of habitat less than 9m² in size.

On the 21st December, 2001 a trip was also made to the Carbine Tableland in the hope that the activity on top of Bellenden Ker would be replicated at the other site where they were known to be present. No activity was detected on this trip.

Subsequent trips were made in September 2001, January 2002 and April 2002 to the Bellenden Ker site. The September and April trips were made to ascertain if breeding had taken place by checking the site for tadpoles. None were detected. The visit in January took place over two days with the primary aim of surveying the stream day and night, no activity was detected.

DISCUSSION

The number of individual frogs within this area appears to be small. A conservative estimate of the population was made at 3-5 males. While it cannot be said for certain that frogs do not occur outside this area, searches both upstream and downstream of the site have not located other *T. rheophilus*. This includes four previous searches by QPWS staff of the stream during earlier trips to the site over a period of two years. These searches were carried out at similar times of the year in similar conditions. Experienced frog researchers from James Cook University also

made ten trips to the summit of Bellenden Ker between the 12th January and the 2nd March 2003. On each of these trips the stream where *T. rheophilus* was recorded was checked for frog activity with none being recorded (E. Bolitho, pers. com.; Richard Retallick, pers. com.).

There is little doubt that *T. rheophilus* is a critically endangered species surviving in very low numbers on Mt. Bellenden Ker and possibly the Carbine Tableland. The Carbine Tableland population has not been detected since January 1999 (K. McDonald & A.B. Freeman, unpubl. data). I am concerned by the lack of *T. rheophilus* activity recorded on Bellenden Ker since December 2000. Three trips between January 2001 and April 2002 have failed to find any sign of the species.

T. rheophilus is not an easy species to work with on Bellenden Ker. The specific habitat of the frogs is notable for the dense ground layer of *Helmholtzia acorifolia* on granite boulders. Calling individuals are difficult to locate visually in the densely vegetated rocky terrain. It was noticeable that the actions of just one person searching for calling frogs amongst this habitat resulted in significant trampling of the vegetation on part of the site. Future monitoring should concentrate on censusing calling frogs during the day and night or nighttime searches for non-calling individuals out on vegetation or rocks. Active searching by turning and dismantling habitat should be kept to a minimum. Visits to the specific site of *T. rheophilus* other than conducting monitoring should not be permitted.

MANAGEMENT RECOMMENDATIONS

The population should be monitored more frequently than is currently the case particularly over the early wet season months (Oct-Dec).

Visits to the specific site by people other than those directly involved in the monitoring program should not be permitted.

Future monitoring should concentrate on the census of calling animals and night time searches for non-calling individuals out on vegetation and rocks. Active searching involving disturbing habitat should be kept to a minimum.

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