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Caroline Lee

Clay Ritter

Kristine Shaw

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It's a Rat! It's a Kangaroo! It... Smells?

Musky Rat-Kangaroo Populations in Northeastern Queensland,

Written by Caroline Lee, Clay Ritter, and Kristine Shaw

Illustrated by Leah Potoff

Even if you know nothing about the “Land Down Under,” you can likely still picture the iconic kicking marsupial creature to which Australia holds such established ties. While the musky rat-kangaroo might not match up to the “conventional” idea of a kangaroo, even the smallest (and smelliest) marsupial deserves some love.

Coming in at 50 centimeters long and 700 grams, the rat-like marsupial prefers to spend its time satisfying an omnivorous appetite rather than challenging its other kangaroo relatives in the ring. As a diurnal species, they emerge with the sun from their nesting spots on the forest floors of northeastern Queensland. In a hopping stride that resembles a bunny's, they use all four limbs to move along dense vegetation that borders lakes and streams. The animal's primary import is seed dispersal. Like the American squirrel, the rat-roos stash fruit around the rainforest floor for later use; however, most of their buried fruits are forgotten, which means the seeds can germinate and replenish the forest's vegetation. You might be lucky enough to catch these shy creatures in the act of feeding or sunbathing on open logs, but many hikers will walk popular transects without any idea of their ecological importance.

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While staying on the Atherton Tablelands in North Queensland, a group of 18 student researchers split into small groups to complete walking transects across three different locations: Chambers Rainforest Lodge, Lake Eacham, and Lake Barrine. The two lakes form Crater Lake National Park, a protected plot of complex vine rainforest. With Chambers Rainforest Lodge (The Chambers for short) just a short hike from Lake Eacham, all three locations are ideal for spotting the musky rat-kangaroo. The group trekked along the transects with a watchful eye and careful steps, maintaining a steady pace so as not to miss the subtle signs and sounds of a nearby musky rat-kangaroo.

Eager to catch a glimpse of this up-and-coming Aussie celebrity, camera traps were set up around the Chambers path over the three days of our hike. Three cameras were placed near fruit trees to catch the kangaroo scavenging for fruit, and three more were placed roughly 300 meters apart from each other to ensure the entire 1.3-kilometer route was covered. One of the cameras was placed near a stream adjacent to the path with the intention of catching a musky rat-kangaroo in action quenching

its thirst or heading home after its morning snack at the nearby lemon aspen tree. We retrieved the trail cameras and found that we had not captured a single photo of a musky rat-kangaroo. Yet we were not completely disappointed; plenty of other wildlife showed up, including a blurry picture of an elusive dingo (the Australian analog of a coyote).

Fortunately, the hours spent strolling around lakes and taking in the natural beauty (the primary method of data collection) were more successful.. Lake Barrine rendered musky rat-kangaroo sightings in the double digits, which was a relief after walking our first transect and spotting zero rat-roos. Although we never doubted the value of our study, as any data is useful data, we had begun to lose hope that we would produce satisfying results. But on our final walk around Barrine, we finished with a total of five sightings, and we were not the only ones; the other groups' work brought the total sightings at Lake Barrine to 24 musky rat-kangaroos. The Chambers and Lake Eacham sites paled in comparison, the former having a total of two sightings and the latter having one. This gave us the following rates of musky rat-kangaroo sightings: nearly six per three hours spent at Lake Barrine, just over one per three hours at Chambers, and somewhere around a quarter sighting per three hours at Lake Eacham.

To put that in perspective, a previous study in 2018 of Lakes Eacham and Barrine found the rates of musky rat-kangaroo sightings to be 81 percent higher than ours on average. But do not fear, for the musky rat-kangaroo might not disappear! Studies show that musky rat-kangaroo populations typically fluctuate because their population density correlates with their reproductive patterns, which depend on fruit availability. Musky rat-kangaroos strategically mate so that after their offspring are born, they will emerge from their mothers' pouches during peak fruit availability. Conducting this study during September meant we were almost at peak fruit availability, but not quite there yet. Peak fruit season occurs in October, so all the joeys were tucked away in their mothers' pouches, which caused the population to appear lower.

If we had repeated the same surveying process a month later, we might have totals much higher than the six individuals we could spot as a small group. A stable musky rat-kangaroo population is important for successful seed dispersal and thus rainforest regeneration. The rainforests in northeast Queensland are threatened by deforestation and climate change, so we need all the help we can get to encourage forest growth. With a hopeful outlook for the future of these Australian underdogs, we hope that readers will come to consider the musky rat-kangaroos as just as important and endearing as their nationally celebrated relatives. ● ● ●

