Animal assistance for propagating a rare rainforest tree.

A unique relationship between an endangered Australian bird and a rare Australian tree, which could play a critical role for the survival of the tree, has been discovered by researchers in the School of Botany at The University of Melbourne. The study by Bruce Webber and Ian Woodrow found that efficient germination of the seeds of *Ryparosa*, a rainforest tree from far north Queensland, could be achieved only if they were first passed through the gut of a cassowary, a large flightless bird. The research suggests cassowaries greatly enhance the chances of seed germination and may aid the long-term survival of *Ryparosa* in the Daintree region.

The researchers found that more than 90 per cent of *Ryparosa* seeds recovered from cassowary droppings germinated, compared with only 4 per cent of 'unprocessed' seeds. This remarkable improvement could not be replicated in lab treatments that simulated the effect of cassowaries eating the seeds, in which approximately 30 per cent of seeds germinated. *Ryparosa* is a rare and unusual rainforest tree that is only found in coastal lowland rainforest in the Daintree region. Very little is known about the tree; however, the scientists have recently discovered that it naturally produces toxic chemicals that protect it from being eaten. To study the tree in more detail, Dr Webber needed to establish a glasshouse population without having any negative impact on natural populations. Traditional methods of plant propagation were tested on vegetative material with little success. Initial attempts to germinate seeds efficiently were also unsuccessful. To find a solution to the problem, the scientists decided to turn to nature and investigate how it is done "in the depths of the Daintree".

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Understanding the relationship that exists between *Ryparosa* and the animals that consume its fruit is critical in developing a greater understanding of the complex world of tropical rainforests and in this case, helping the seeds to grow. Cassowaries are big emu-like birds, standing about 1.6 metres tall, and are one of the only large frugivores in north Queensland rainforests. The cassowary's main source of food is the fleshy fruit of several hundred rainforest plants. The cassowary digests the fruit flesh, but the bird has a very gentle digestive system that allows the hard seeds of some fruit to pass through the gut and out in the droppings relatively unharmed.

Many rainforest trees depend on the cassowary to 'process' their seeds in this way and then distribute them over a wide area in their droppings, where the seeds then start to grow. It is possible that this sort of relationship between the cassowary and *Ryparosa* could well be the missing link that would explain why normal methods of germinating seeds were not effective. It appears that the cassowary has a significant effect on improving germination in *Ryparosa*. Unfortunately, development of the Daintree rainforest is not only threatening populations of this rare tree, but also potentially impacting on what may be an important interaction with the increasingly endangered cassowary.

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