

Flightless parrots, burrowing bats helped parasitic Hades flower

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A New Zealand short-tailed bat pictured while eating dactylanthus. Credit: Nga Manu Nature Reserve.

(Phys.org)—Ancient dung from a cave in the South Island of New Zealand has revealed a previously unsuspected relationship between two of the country's most unusual threatened species.

Fossilised dung (coprolites) of a now rare parrot, the nocturnal flightless kakapo, contained large amounts of pollen of a rare parasitic plant,

dactylanthus (commonly known as "wood rose" or "Hades flower"), which lives underground and has no roots or leaves itself.

Researchers from the Australian Centre for [Ancient DNA](#) (ACAD) at the University of Adelaide and Landcare Research and the Department of Conservation in New Zealand report the discovery today in the journal [Conservation Biology](#).

The musky sweet smell of the dactylanthus flower attracts the only remaining known native pollinator, the endangered New Zealand lesser short-tailed bat, which forages extensively on the forest floor.



The parasitic plant, *Dactylanthus taylorii*, attached to the root of a host tree.
Credit: Phil Bendle.

Kakapo are extinct from mainland New Zealand and their recent introduction to the island sanctuary of Hauturu/Little Barrier Island, where *dactylanthus* survives, has re-united the two [species](#) for the first time in potentially a century.

"This is an important example of an apparent tight co-evolutionary relationship between threatened endemic species - the plant and burrowing bat - simply representing 'the last men standing'," said ACAD Director Professor Alan Cooper.

"The coprolites suggest that kakapo may have served as [pollinators](#), probably along with other species, which is critical for conservation - and reveal the extent of the ecosystem links which have been broken."

Lead researcher Dr Jamie Wood, from Landcare Research in New Zealand, said: "Coprolites are one of the only ways to reconstruct important pre-human ecological relationships, such as pollination and [seed dispersal](#), which must be restored to conserve these species over the long term."

The team is funded by a New Zealand Marsden grant to study the pre-human ecosystem using preserved [coprolites](#) from caves and rockshelters across New Zealand.

Dr Janet Wilmhurst from Landcare Research said: "Dactylanthus is now restricted to around 4% of its pre-human range, due to forest clearance, predation by introduced mammals and a lack of pollinators and seed dispersers. Scattered populations only survive in the central North Island."

Provided by University of Adelaide

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