

# Scientists 'rebuild' giant moa using ancient DNA

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(PhysOrg.com) -- Scientists have performed the first DNA-based reconstruction of the giant extinct moa bird, using prehistoric feathers recovered from caves and rock shelters in New Zealand.

Researchers from the University of Adelaide and Landcare Research in New Zealand have identified four different moa species after retrieving [ancient DNA](#) from moa [feathers](#) believed to be at least 2500 years old.

The giant birds - measuring up to 2.5 metres and weighing 250 kilograms - were the dominant animals in New Zealand's pre-human environment but were quickly exterminated after the arrival of the Maori around 1280AD.

PhD student Nicolas Rawlence from the University's Australian Centre for Ancient DNA says until now, the scientific community has not known what the 10 different species of moa looked like. "By using ancient DNA we have been able to connect feathers to four different moa species," he says.

The researchers compared the feathers to others found in the sediments from red-crowned parakeets that are still living today, determining they had not faded or changed in colour. They then reconstructed the appearance of the stout-legged moa, heavy-footed moa, upland moa and the South Island giant moa.

Their findings were published today in the Proceedings of the *Royal*

*Society of London Series B.*

“The surprising thing is that while many of the species had a similar, relatively plain brown plumage for camouflage, some had white-tipped feathers to create a speckled appearance,” Mr Rawlence says.

A co-author of the study, Dr Jamie Wood from Landcare Research, says it is likely that the drab colouring was driven by selection to avoid predation by the extinct Haast’s eagle, the largest and most powerful eagle in the world.

The research team also demonstrated that it is possible to retrieve DNA from all parts of the ancient feathers, not just the tip of the quill, as previously thought.

“This important finding opens the way to study DNA from museum bird skins while causing almost no damage to these valuable specimens, just by clipping a small part of a single feather,” says Dr Kyle Armstrong from the Australian Centre for Ancient DNA (ACAD).

ACAD Director Professor Alan Cooper says this finding suggests it may be possible to reconstruct the appearance of other extinct birds using feathers from fossil deposits.

“There are so many enigmatic [extinct species](#) that it would be great to see ‘clothed’,” Professor Cooper says.

Provided by University of Adelaide ([news](#) : [web](#))

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