

MOAS ARK REBORN?

The Return of the Giant Moa

**Adj Prof. Paul
Scofield**





Colossal Laboratories
& Biosciences

MAY 12, 2025

TIME

~~Extinct~~

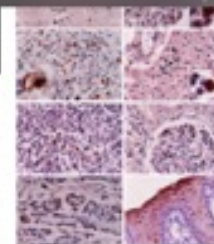
This is Remus. He's a dire wolf.
The first to exist in over 10,000 years.
Endangered species could
be changed forever

by
JEFFREY KLUGER

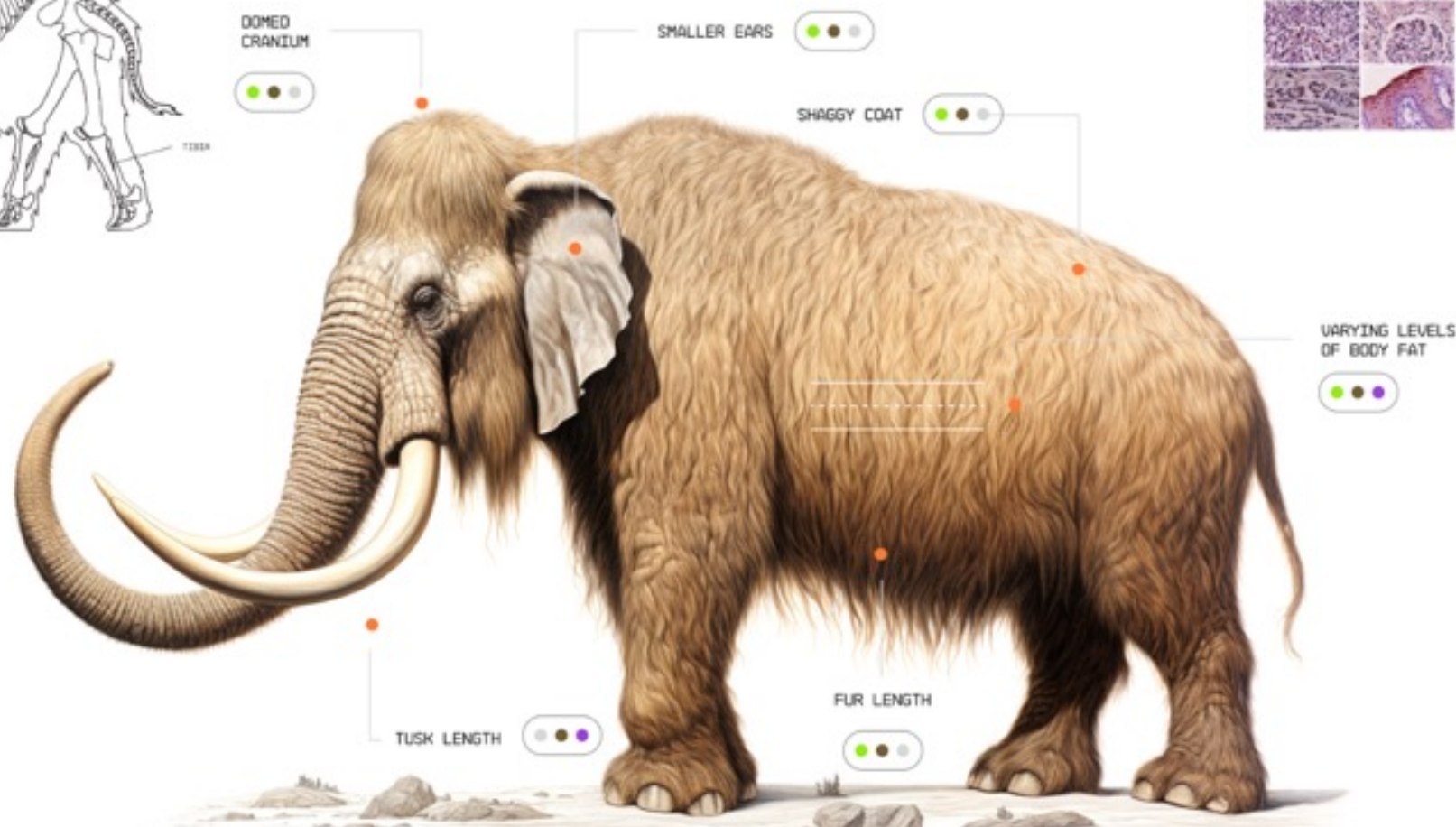
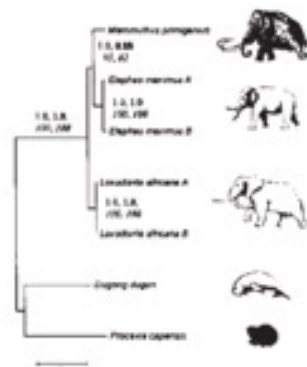




STUDIES



>>>>> CRISPR / CAS9
TECHNOLOGY



PROTECTOR MAGNETIC

Rewilding the World: Restoration at Scale

Returning flagship species to their original habitats to reverse the damage of the Anthropocene.



CASE 01: THE WOOLLY MAMMOTH

ROLE: The Climate Protector

Reintroducing a cold-tolerant grazer to the Arctic Tundra to restore the Mammoth Steppe.

❄️ ↑ Disturbance of ice-locked surfaces exposes carbon-trapping grasses.

🌲 ✖ Elimination of low-oxygen trees.

🌍 ↑ Global cooling system restoration.



CASE 02: THE THYLACINE

ROLE: The Apex Stabilizer

Hunted to extinction in 1936.
Partnering with TIGRR Lab.

👑 Return of the apex predator to Tasmania.

🔗 Stabilization of the food chain.

💚 Restoration of ecosystem health.

THIS IS THE DAWN OF RESTORATIVE BIOLOGY. BY MERGING THE BIODIVERSITY OF THE PAST WITH THE INNOVATION OF THE PRESENT, WE REAWAKEN THE LOST WILDS OF EARTH.

Colossal: The Science of De-Extinction



**Modern Noah's Ark: UAE
to Build Futuristic 'BioVault'
Storing DNA of 10,000+
Species as a Backup for Life**



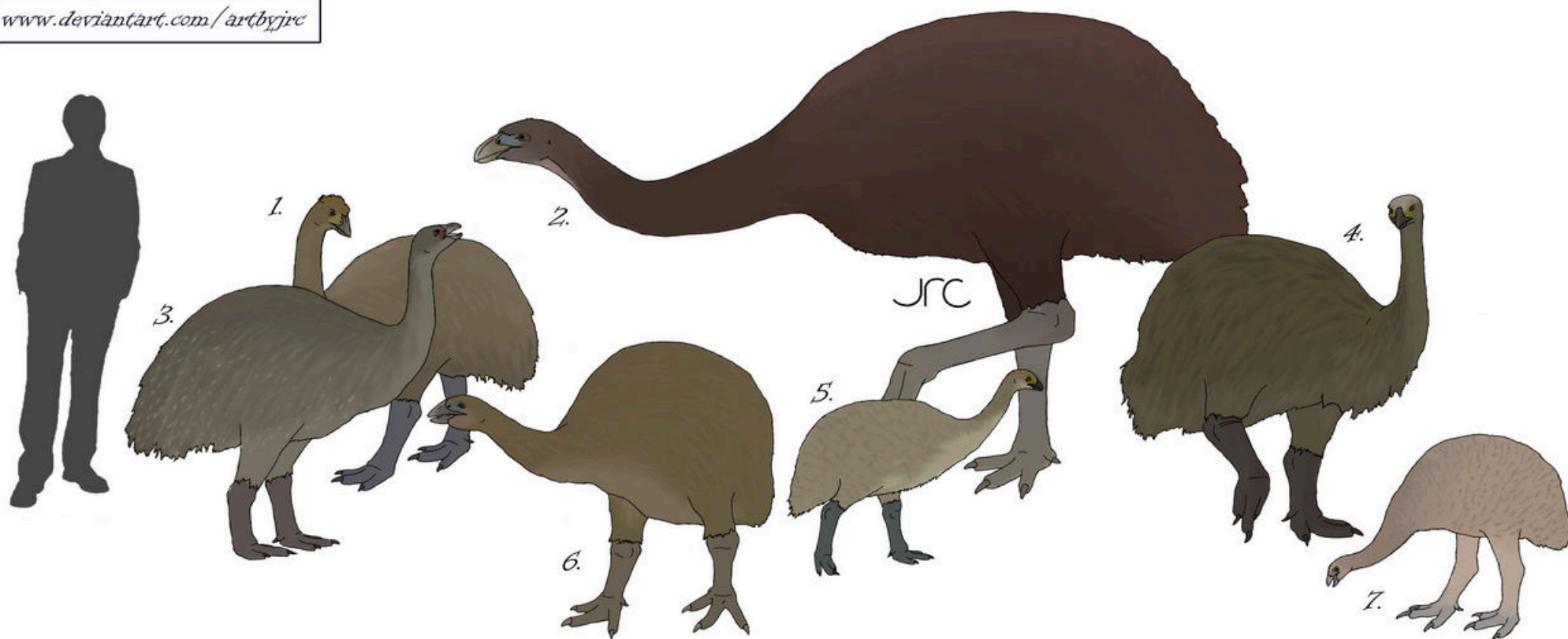


Early Polynesian Arrival 1280 AD

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1. Crested Moa - *Pachyornis australis* (S New Zealand) 2. South Island Giant Moa - *Dinornis robustus* (S New Zealand)

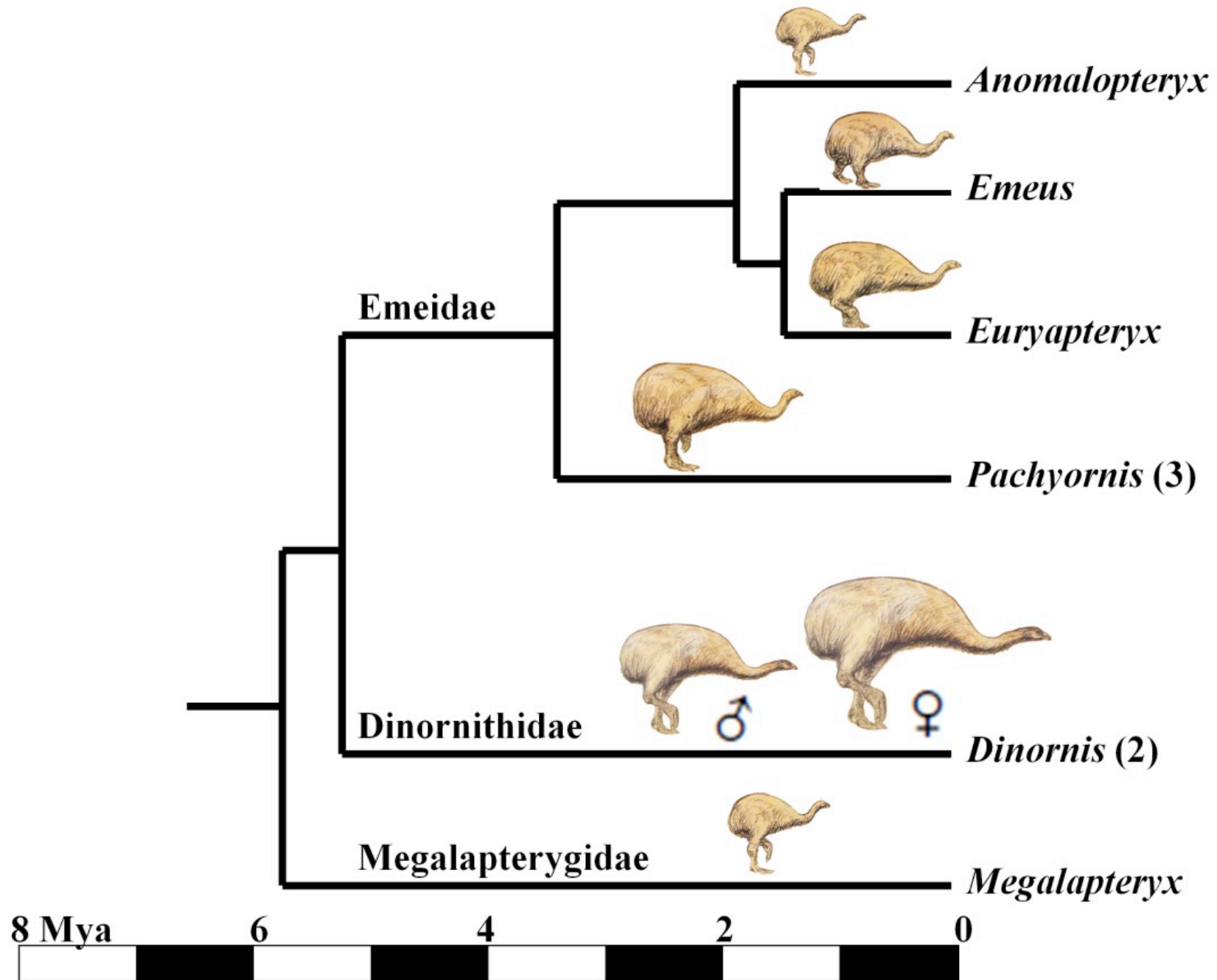
3. Coastal Moa - *Euryapteryx curtus* (N + S New Zealand)

4. Heavy-footed Moa - *Pachyornis elephantopus* (S New Zealand)

5. Bush Moa - *Anomalopteryx didiformis* (N + S New Zealand)

6. Eastern Moa - *Emeus crassus* (S New Zealand)

7. Upland Moa - *Megalapteryx didinus* (S New Zealand)

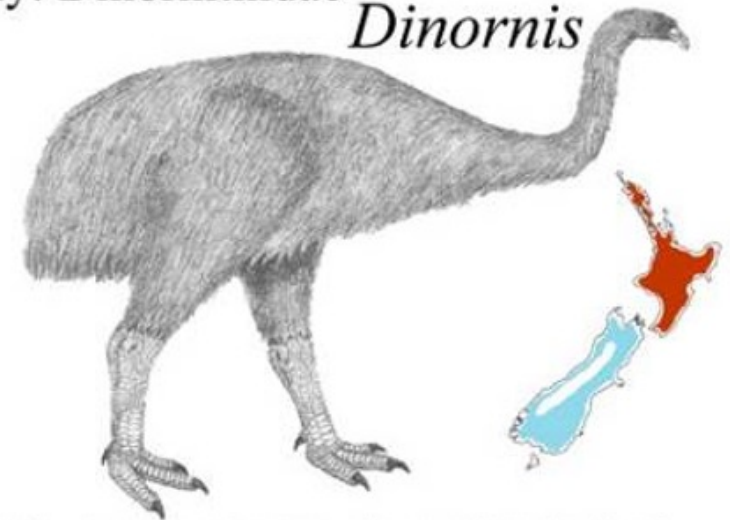




Giant Moa *Dinornis*

Family: Dinornithidae

Dinornis

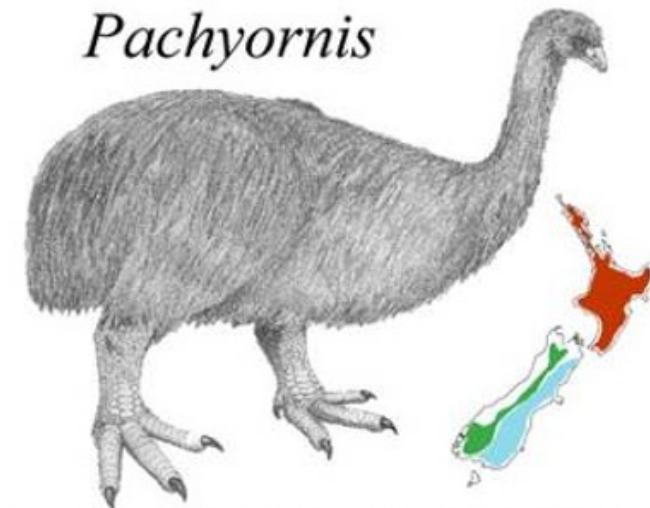


Systematics: Two species *D. robustus* (South Island, blue) and *D. novaezealandiae* (North Island, red)

Dimensions: 56-249 kg and 90 to 200 cm in height - significant sexual dimorphism with females up to three times the mass of males.

Habitat: Browsing generalist - has been found in upland, lowland and open forest habitats. The larger forms occupied low rainfall areas.

Heavy footed Moa *Pachyornis*



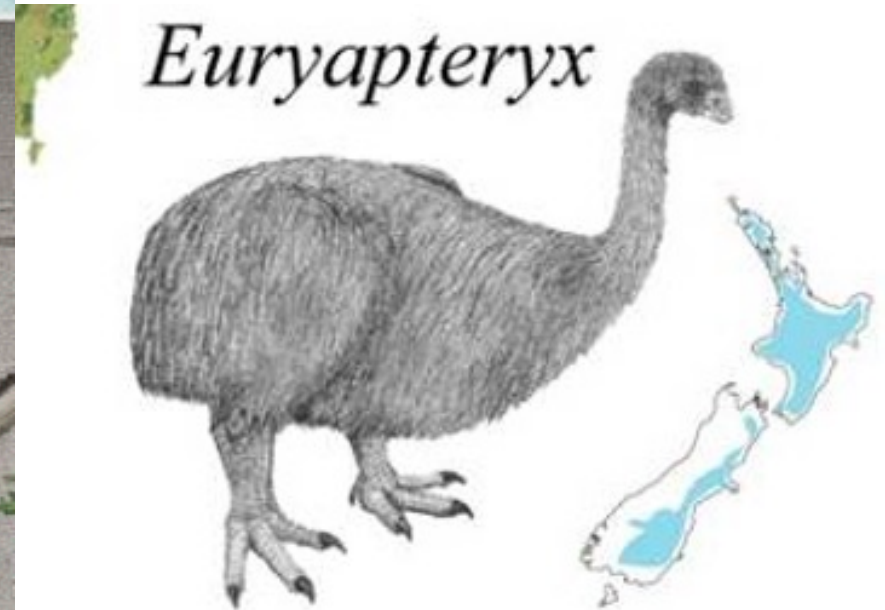
Systematics: *P. geranoides* (North Island), *P. elephantopus* (blue) and *P. australis* (green) (South Island).

Dimensions: 17-163 kg and 54 to 121 cm in height.

Habitat: *P. australis* occupied subalpine grassland, *P. geranoides* and *P. elephantopus* preferred lowland forest edges and wetland vegetation.



Stout legged Moa *Euryapteryx*



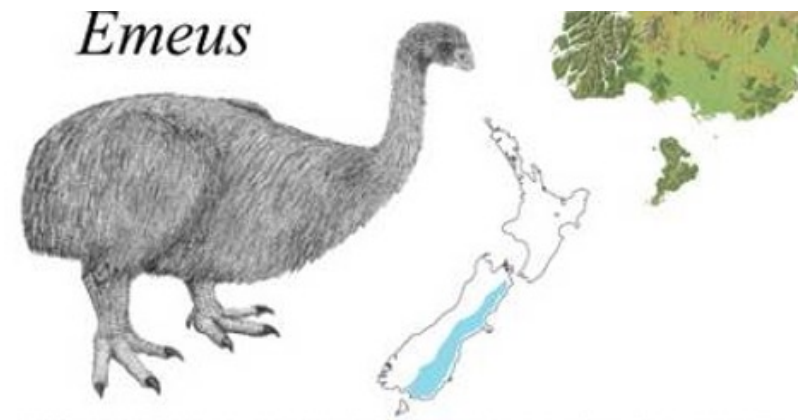
Systematics: Monotypic, *E. curtus* (formally *E. gravis* and *E. geranoides*).

Dimensions: 12-109 kg and 51 to 103 cm.

Habitat: Drier climates - typically lowland open forest and coastal sites.



Coastal or Eastern Moa *Emeus*

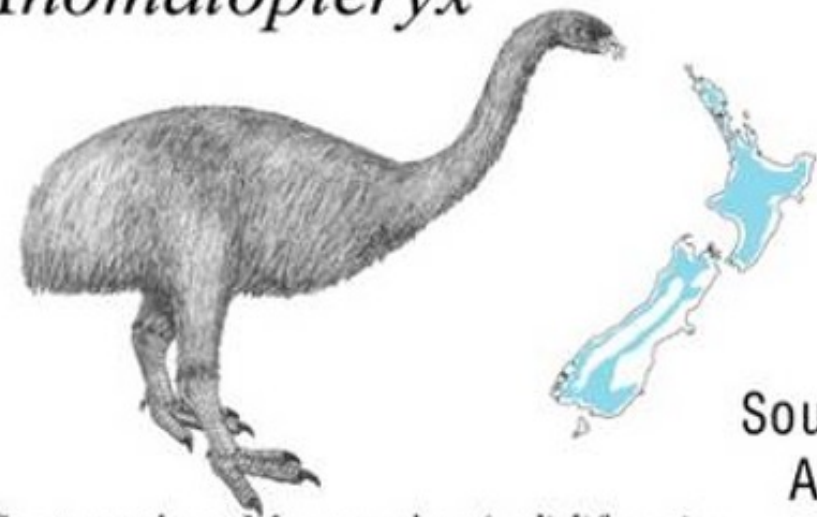


Systematics: Monotypic, *E. crassus*, (South Island).
Dimensions: 36-79 kg and 73 to 99 cm in height.
Habitat: Preference for lowland forest (usually <200m) and swamps.



Little Bush Moa *Anomalopteryx*

Anomalopteryx



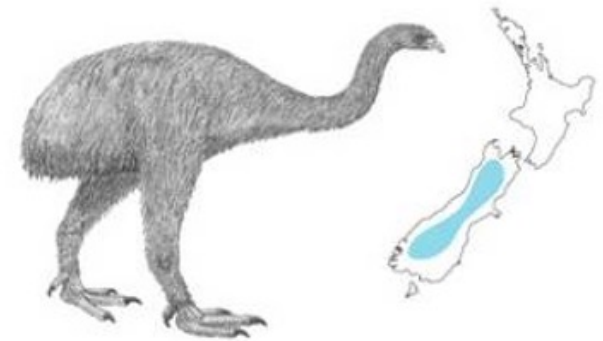
Systematics: Monotypic, *A. didiformis*.
Dimensions: 26-64 kg and 50 to 90 cm.
Habitat: Non-coastal lowland forests
with a continuous canopy.



Upland Moa *Megalapteryx*

Family: Megalapterygidae

Megalapteryx



Systematics: Monotypic, *M. didinus*, (South Island).

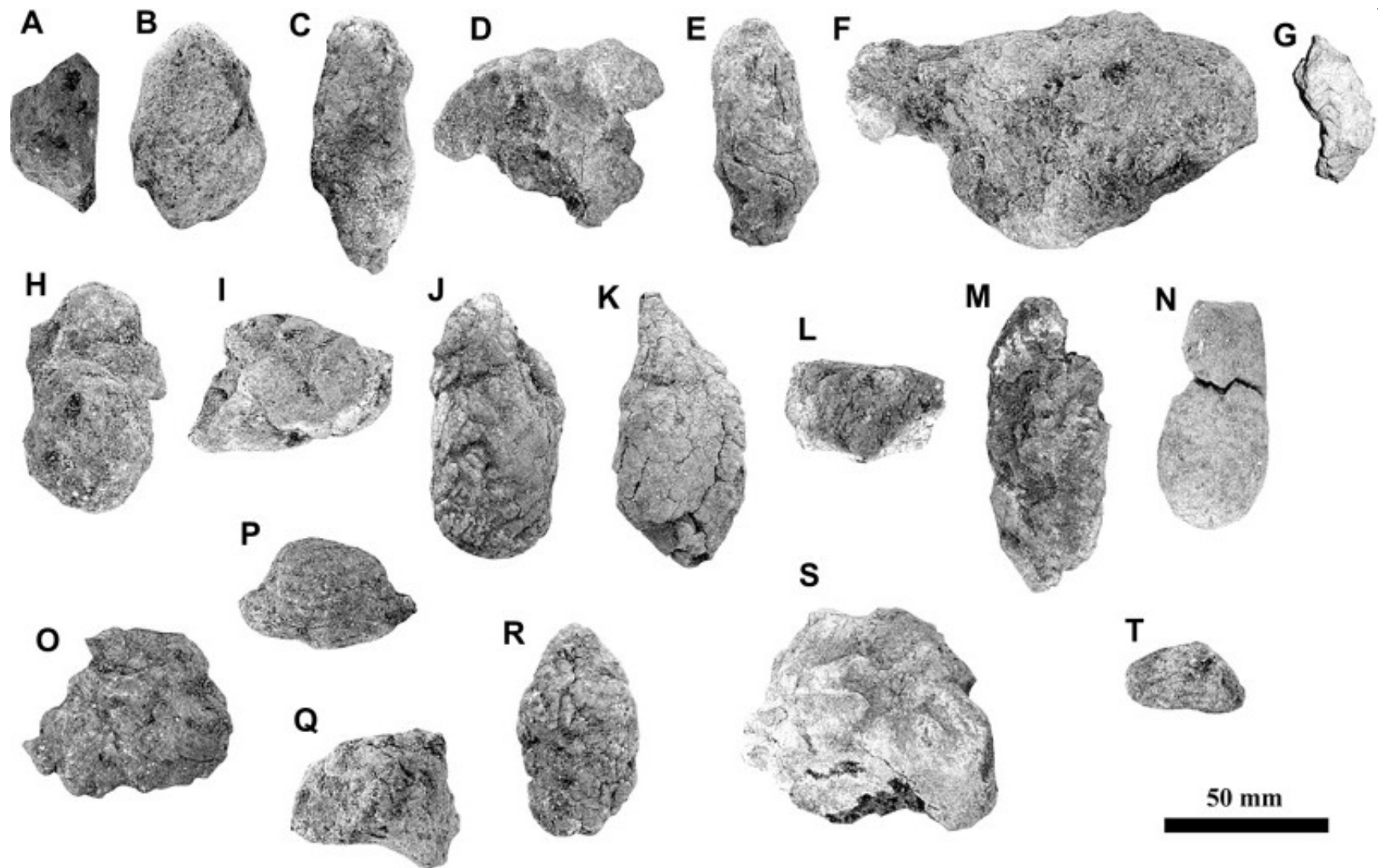
Dimensions: 28-80 kg and 65 to 95 cm. Pleistocene specimens are significantly larger than Holocene forms.

Habitat: Subalpine scrub, grassland and high country forests (usually >900m).

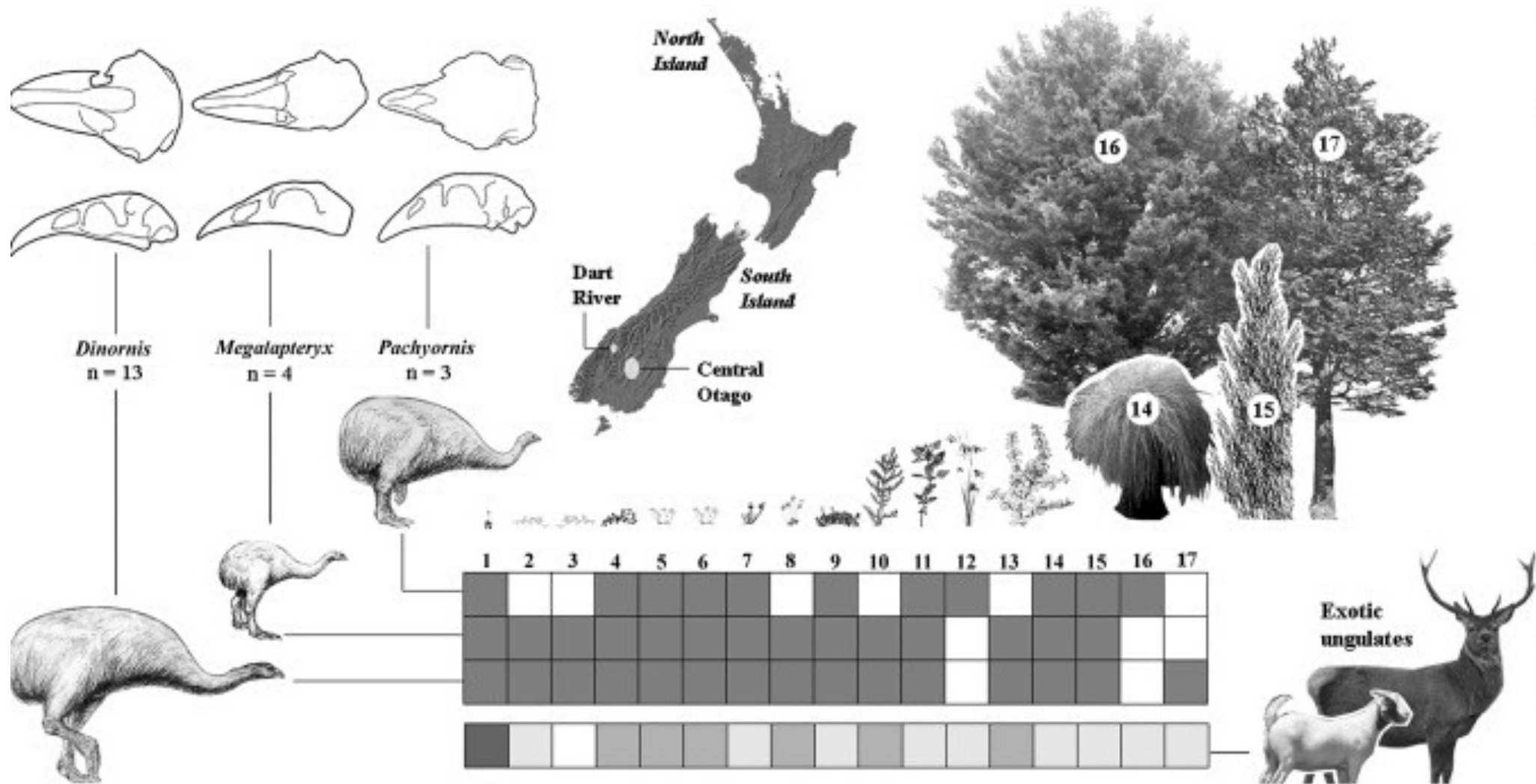
Diet & Ecosystem Effects?



Coprolites









Divaricating Scrubs









— Sir Peter Jackson, Filmmaker & Investor

Colossal is moving de-extinction from speculative science fiction into an awe-inspiring new reality. Restoring the Past for a Better Future.

THE ALLIANCE: SCIENCE MEETS INDIGENOUS WISDOM



Ngāi Tahu
Research Centre

Ensuring the project is
South Island Māori-led.

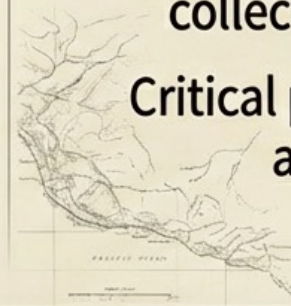
Conducted in accordance with
Rangatiratanga (ancestral authority)
and *tikanga* (customs).



**CANTERBURY
MUSEUM**

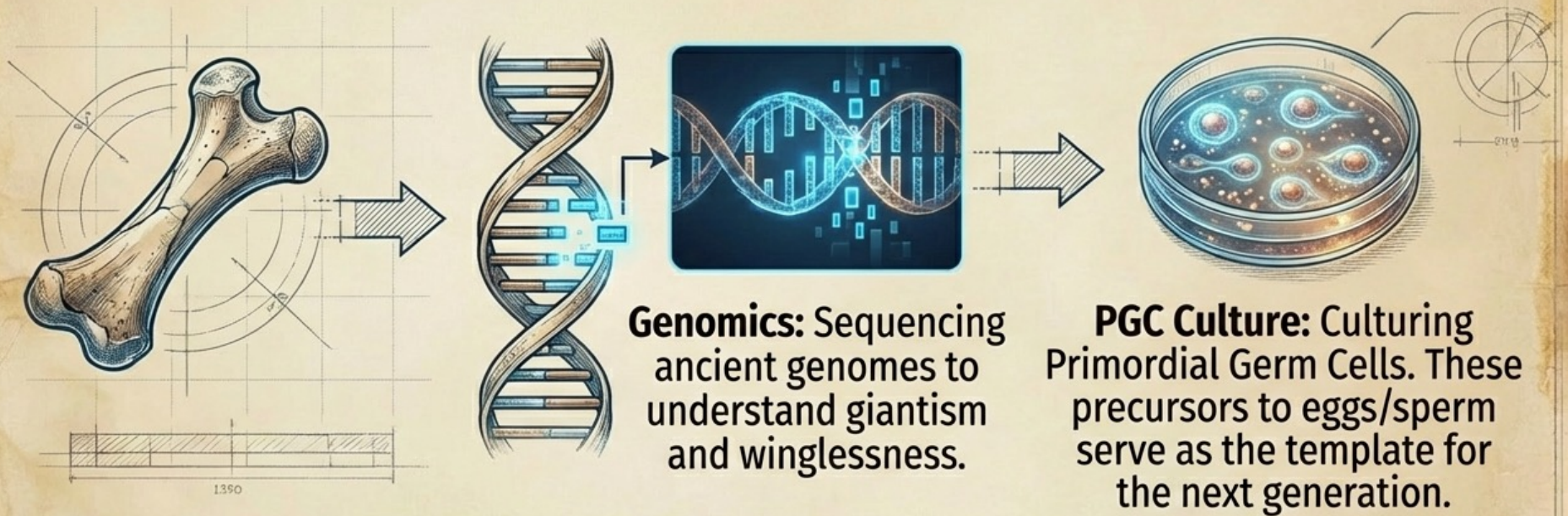
Home to the world's largest
collection of Moa specimens.

Critical partner for DNA sampling
and historical data.



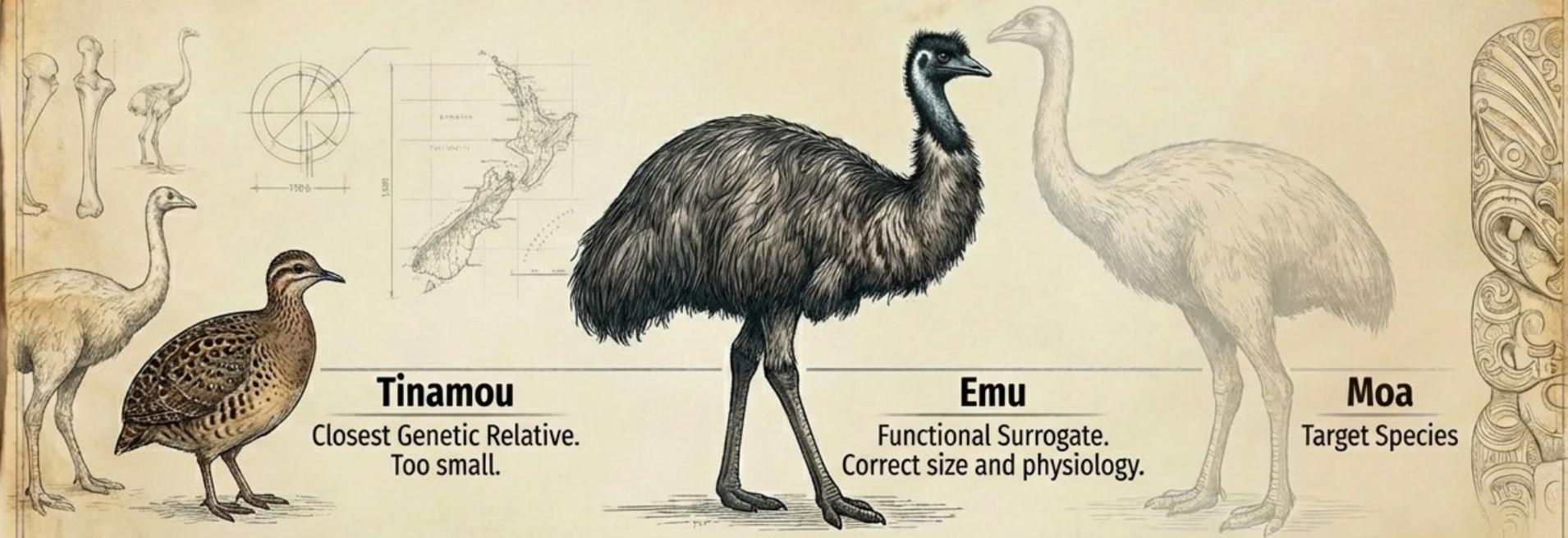
"This initiative enables us to exercise our rangatiratanga and the potential to bring ecological and economic aspirations into a singular frame." — Prof. Mike Stevens

THE BLUEPRINT PART I: GENOMICS & PGCs



The Challenge: Millions of genetic changes are needed to bridge the gap between ancient DNA and living relatives.

THE BLUEPRINT PART II: THE SURROGATE PARADOX



Tinamou

Closest Genetic Relative.
Too small.

Emu

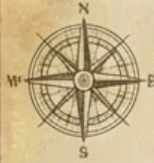
Functional Surrogate.
Correct size and physiology.

Moa

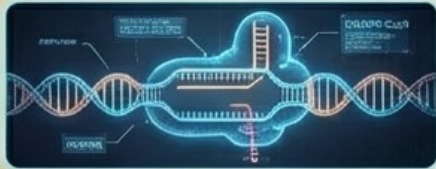
Target Species

The Genetic Relative: The Tinamou is the closest relative but is flighted and tiny.

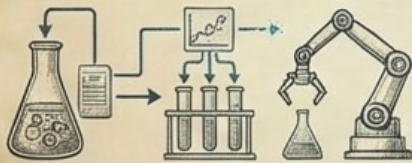
The Functional Surrogate: The Emu is distinct genetically but offers the necessary biological vessel (egg size and flightless physiology) for the Moa.



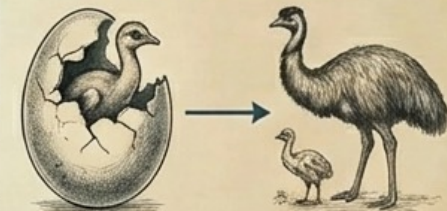
Step 05: Multiplex Editing



Step 06: Automation



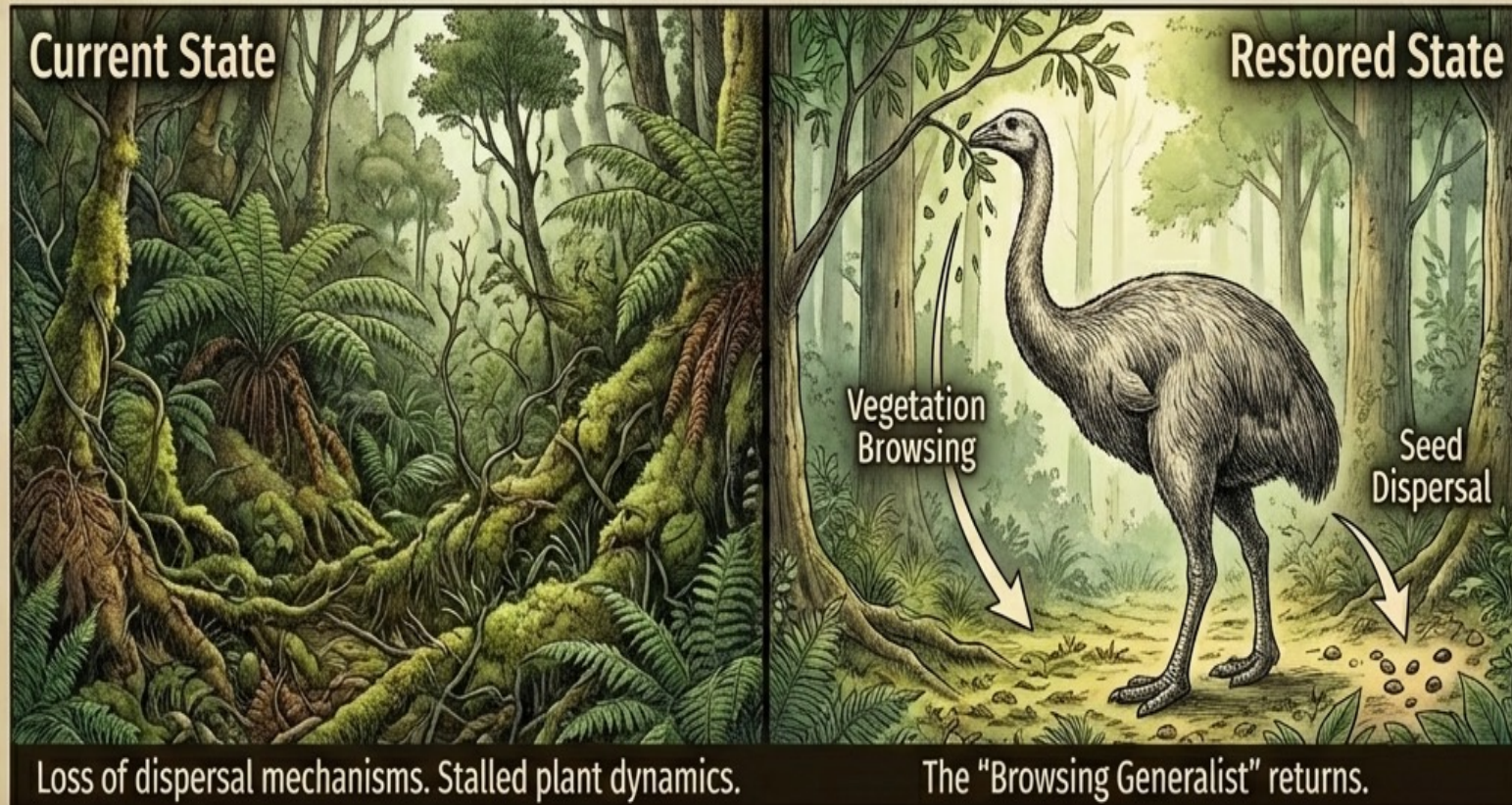
Step 07: The Hatch



From digital code to living breath.



ECOLOGICAL HEALING



The Moa functioned like deer or antelope. Returning them restores the natural flow of the ecosystem and plant community dynamics that have been stalled for 500 years.



A BETTER WORLD

Rewriting history tomorrow.

De-extinction is not just about the past. It is a partnership of science and culture, using breakthrough technology to rescue endangered species and ensure progress is conducted with Rangatiratanga.

“As far as the health of the natural world goes, this is the most positive news any of us could hope to receive.” — Sir Peter Jackson.