

Living on the Ledge

Rare Plants of Waitaki Limestone Outcrops



Waitaki Dwarf Broom, *Carmichaelia hollowayi*



INTRODUCTION

Limestone outcrops are a significant geological feature of the Waitaki region. Famous for their fossilised marine creatures and Māori rock art, limestone sites are also refugia for some of New Zealand's most critically endangered plants.

The Waitaki River valley is home to many locally endemic plant species. Endemic means they are found nowhere else in the world. Limestone cliffs, crevices and ledges offer unique habitats for small, low-growing plants to take hold.

Each limestone outcrop is like an island, isolated from other outcrops. The limestone substrate is high in minerals such as calcium and does not hold water for long, therefore it is often dry. Rock outcrops are very exposed to the elements, so are prone to weathering and erosion.

Life isn't easy for plants on a limestone ledge. They face many challenges and will need the help of conservation experts and our local community to ensure their long-term survival.

CHALLENGES FOR LIMESTONE PLANTS

- Very small population sizes
- Significant habitat loss
- Browsing by introduced pests (rabbits, hares, possums, etc.) and stock
- Invasion by weeds causing competition for space on rock outcrops
- Failure to set seeds or reproduce
- Exposure to extreme weather and wind
- High rate of habitat erosion
- Isolated from similar sites
- Difficult sites to manage due to topography, private land, etc.

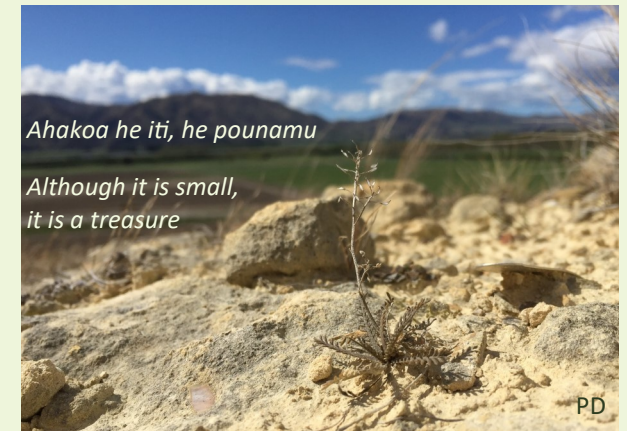
HOW THESE PLANTS ARE BEING HELPED

Protection from animal browsing:

- Rabbit-proof fencing
- Pest animal control at significant sites
- Stock kept out of limestone outcrops
- Cages placed over most vulnerable plants

Reduction of invasive weeds:

- Maintain weeded areas around rarest plants
- Removal of woody weeds (gorse, broom, etc.)



Lepidium sisymbrioides

Replanting native trees and shrubs:

- Local seeds sourced for propagation
- Local community involvement

Increasing the number of rare plants:

- Collect their seeds
- Propagate seeds in nurseries
- Translocate back to natural site

Monitoring and managing:

- Survey sites to understand plant distribution
- Increase public awareness and engage with private land owners

Text: Petrina Duncan **Photography:** Peter Heenan (PH), O2 Landscapes (O2), Petrina Duncan (PD)

Pachycladon exile

NC W ☀️ ★

Limestone Cress

- Found in only one location; previously widespread
- NZ's sixth most endangered species
- < 50 individual plants remaining
- Small, slender herb up to 100 mm tall
- Favours dry, exposed habitats
- 3-10 white flowers on a long stem in Oct-Nov
- Dependent on regular weed management
- Prone to fungal diseases and insect damage



Carmichaelia hollowayi

NC W ☀️ ★

Waitaki Dwarf (Holloways) Broom

- Known from three Waitaki limestone sites
- A member of the legume (pea) family
- Can fix nitrogen from the air into the soil
- Grows up to 0.5 m tall and 1-2 m across
- Sprawling growth form with leafless stems
- Clusters of pink/purple/white flowers, Nov-Dec
- Small seed pods in Jan-May containing 1-3 seeds



Gentianella calcis subspecies *calcis*

Awahokomo Gentian

NC W ☀️ ★

- Found at three Waitaki limestone sites
- A small plant with long, narrow leaves
- Beautiful white flowers from March-June
- Explosive seed pods; dispersal by wind or water
- Partially dies back over winter
- Found only on limestone bluffs in cracks, crevices or thin, stony soils



Lepidium sisymbrioides

NC ☀️ ★

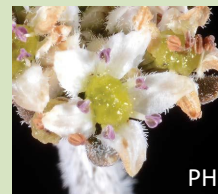
- A cress from the Brassica family
- *Lepidium* means 'scale-shaped pods'
- Small plant, 10-15 cm tall, with tall flower stems
- Delicate bronze-coloured foliage
- Tiny white flowers in Sept-Nov
- Deep roots (up to 2 m) to anchor plant
- Seeds can attach to animals for dispersal
- At three sites in Waitaki; also in Central Otago



Chaerophyllum basicola

NC ☀️ ★

- A member of the parsley family
- Grows in thin soils overlying limestone bedrock
- Tiny cream flowers in Nov-Jan
- Plants may die after flowering
- Wind-dispersed seeds
- Grey-green to blue-grey leathery leaves
- At one site in Waitaki; also in Southland



Key:

NC Threatened – 'Nationally Critical'

W Found only in the Waitaki River valley

☀️ Grows on bare or sparsely vegetated sites

★ All populations at serious risk of decline

Cardamine bilobata

NC W ☀️ ★

- A cress from the Brassica family
- Grows on shallow limestone soils and pavements
- Limited to one limestone site
- Leathery leaves, red-brown to green colour
- White flowers, Sept-Dec, in clusters of 4-20
- Reliant on weed control for space
- Seeds in long pods; explosive seed dispersal
- From the Greek *kárdamon*, a spice plant

