

*Oncidium riograndensis*  
KAI-RE-MBOJAP





Alta Floresta, Mato Grosso

# The Alula: Kaua'i's Cliff-Hanging Plant Comes Back from the Brink

Evolution has shaped the alula to survive on the rocky, windswept coasts of Kaua'i and Ni'ihau (where it is known as 'olulu'). Its thick trunk stores water. A waxy coating on its leaves keeps them from drying out in the constant trade winds.

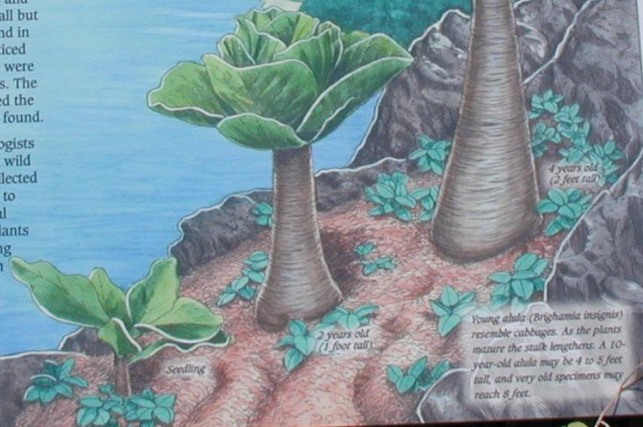
But this hardy plant came close to extinction. Feral goats and cattle eliminated it from all but the steepest sea cliffs. And in the 1970s, biologists noticed that the surviving plants were producing very few seeds. The insect that once pollinated the alula was nowhere to be found.

To save the species, biologists pollinated the remaining wild plants by hand. They collected the seeds and sent them to Kaua'i's National Tropical Botanical Garden. The plants you see here are offspring of the plants grown from seed collected in the wild. Today these plants — perhaps pollinated by wind or insects — are successfully producing seeds.

Closely related species rarely survives on Makohala.



Alula flowers



Seedling

2 years old (1 foot tall)

4 years old (2 feet tall)

Young alula (*Brighamia insignis*) resemble cabbages. As the plants mature the stalk lengthens. A 10-year-old alula may be 4 to 8 feet tall, and very old specimens may reach 8 feet.



### What pollinated the alula?

The alula's white to yellow, trumpet-shaped flowers resemble mainland flowers that are pollinated by sphinx moths, but no one has ever seen a sphinx moth visit an alula flower. The alula's primary pollinator may be extinct, or so rare that it's unlikely to ever find an alula plant. Today the alula is a living symbol of how much we still have to learn about Hawai'i's unique plants and animals.



To save the species, biologists had to become "surrogate pollinators." They rappelled down the steep cliffs where the last of these plants grew, and used small brushes to transfer pollen from one plant to another.



# CHRISTIANS IN RECONCILIATION







MISSIONARY  
EARTHKEEPING

EDITED BY  
CALVIN B. DEWITT  
AND  
GHILLEAN T. PRANCE

INTRODUCTION BY  
J. MARK THOMAS

MISSIONARY  
EARTHKEEPING

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Introduction by J. Mark Thomas

In our day, mission programs that once condoned—or even promoted—  
destruction of Creation are being propelled into a new awareness that  
comes from the interplay of increasing environmental degradation and  
biblical teachings on the care and keeping of Creation.

—from the Preface

... World *missions* has become *world* missions. This volume represents an  
attempt to develop an understanding of this newly emerging world  
situation, especially as it is manifest in ecological threat. . . . The five  
contributors to this work represent five different Christian traditions—  
Catholic and Protestant, First World and Third World, missionary and  
academic. They do not share a common theology or ideological commit-  
ment. . . . All are concerned with the meaning of "missionary earth-  
keeping."

—from the Introduction by J. Mark Thomas

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