The Geographer

Spring 2025

The magazine of the Royal Scottish Geographical Society

The Growing Value of Gardens

Royal Scottish Geographical Society

"When you plant something, you invest in a beautiful future amidst a stressful, chaotic and, at times, downright appalling world."

Monty Don, garden writer and broadcaster

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plus news, books, and more…

The miraculous survival of a tiny plant in Ecuador

John L Clark, Marie Selby Botanical Gardens, Sarasota, Florida, USA

I had the opportunity to be part of a team that discovered *Amalophyllon miraculum*, a tiny iridescent plant species, in the western Andean slopes of Ecuador. This region, long thought to have lost much of its native biodiversity due to deforestation, surprised us with a new chapter in its story. The two-inch-high plant, with iridescent leaves and white ephemeral flowers, was found in an area once believed to be a barren agricultural landscape.

Our research team, consisting of Ecuadorian and international scientists, had been conducting ongoing expeditions in the Centinela region. Centinela is famous for being the site where many plants were described during the 1970s and 1980s, but rapid deforestation had led many scientists to believe that much of its native plant life had disappeared. Alwyn Gentry and Calaway Dodson's 1993 publication, *Biological extinction in western Ecuador,* famously documented the loss of up to 97% of the western Ecuadorian lowland rainforest and the massive extinction of plant species due to deforestation. EO Wilson referred to this phenomenon as 'Centinelan extinction', where species went extinct as their habitats were destroyed.

> *"Even places thought to be lost forever can still harbour hidden biodiversity treasures."*

At first, it seemed unthinkable that fragments of intact rainforest could still be hiding in Centinela. However, in 2021, a team of scientists made a discovery that challenged this belief. Just 20 miles from the city of Santo Domingo, one of Ecuador's major urban centres, we rediscovered small, isolated forest fragments nestled among agricultural fields. Despite their remoteness, these patches were harbouring native vegetation. I arrived in 2022, after the initial expedition, and found *Amalophyllon miraculum*, a plant so small and elusive that it had escaped detection for years. Its iridescent foliage and delicate flowers were a rare treasure in a region once written off as deforested and devoid of native biodiversity.

The significance of this discovery goes beyond the plant's beauty. *Amalophyllon miraculum* represents a vital lesson in the resilience of nature. Named after the miraculous circumstances of its rediscovery, the plant proves that hope remains for this once-thought-to-be-deforested region. The name *miraculum* reflects the amazement we felt upon finding such a rare species in an area transformed by deforestation. It's a reminder that even places thought to be lost forever can still harbour hidden biodiversity treasures.

The tiny forest fragments where we found this plant are vital refuges for a range of other plant and animal species, some of which are critically endangered. These 'islands' of biodiversity persist thanks to local landowners, who have worked tirelessly to conserve patches of forest around waterfalls and steep slopes. Without their commitment, the survival of these fragments would not have been possible.

Ongoing conservation efforts by organisations like Fundación de Conservación Jocotoco and the Jardín Botánico Padre Julio Marrero of the Pontificia Universidad Católica del Ecuador are essential to protecting these areas. I am especially proud to work alongside farmers and conservation groups who have made these remarkable stories of survival possible.

Looking back on the discovery of *Amalophyllon miraculum*, I reflect on how far we've come in understanding the resilience of the natural world. It gives me hope for the future of conservation in regions like Centinela. While human activity has altered much of the landscape, the surviving fragments of intact rainforest provide hope and inspiration. These ecosystems demonstrate the importance of preserving even the smallest remnants so that biodiversity can flourish.

In our publication *Amalophyllon miraculum (Gesneriaceae),* we documented the details of this new species. It's a discovery that challenges us to think differently about conservation in landscapes once thought to be lost. It affirms that biodiversity can endure, even in unexpected places.

The discovery of *Amalophyllon miraculum* and other rediscovered species in Centinela is a testament to nature's resilience. It inspires us to keep seeking opportunities to protect these disappearing ecosystems and to celebrate the miracles that still exist in our world.

FURTHER READING & VIEWING

JL Clark, A Fernández, JN Zapata, C Restrepo-Villarroel, DM White, N Pitman (2024) *Amalophyllon miraculum (Gesneriaceae), an exceptionally small lithophilous new species from the western Andean slopes of Ecuador* (PhytoKeys, **phytokeys.pensoft.net**)

Viva Centinela! website (**sites.google.com/view/vivacentinela/home**)

Video of initial discovery (**www.instagram.com/p/Cf8Da5RMpyI**)