

A tiny treasure of Whangamarino – the swamp helmet orchid



Objective 4: Maintain and enhance indigenous species diversity and threatened species

The Nationally Critical swamp helmet orchid (*Corybas carsei*) is only found in Whangamarino Wetland. Active management is underway but there is still much to learn about this tiny plant.

Out in the vast expanses of the Whangamarino Wetland lives a population of *C. carsei*. With its single heart-shaped leaf that is the size of a thumbnail and its tiny height of only 1–3 cm when flowering, this orchid is easily overlooked.

This species was first discovered in 1911 at Lake Tangonge in Northland but was thought to be extinct in New Zealand since the mid-1970s. However, a small population was serendipitously rediscovered in 1983 when a group of botanists visiting the wetland sat down for lunch, only to find they were sitting on top of this tiny orchid living there in secret.



Population status

More than 350 individual plants were found in a 2018 survey, which is the highest count since monitoring began in 2006. The next round of monitoring is scheduled for spring 2019.



Corybas carsei is now recognised as the same species as the later-described Australian species *C. fordhamii*,¹ which is also critically threatened.

Distribution and ecology

Corybas carsei prefers to live among the stunted, open vegetation that is typical of the central surface of bogs or disturbed wetland habitat. Frequent fires in the 20th century initiated by sparks from the nearby railway would have created suitable sites in the Whangamarino Wetland for the establishment of this orchid.

Historically, *C. carsei* was found between Kaitiaki (Northland) and Ohaupo (Waikato), but a small area of the Whangamarino Wetland is now its only known location.





Controlled burns to clear vegetation and stimulate *C. carsei* flowering. Photo: DOC

Managing a mystery

Disturbance

The priority for management is maintaining suitable habitat for *C. carsei* through prescribed disturbance. Scrub bar clearing was trialled for the removal of dense vegetation, but this only stimulated vegetative reproduction in the orchids.

The current management strategy is to perform controlled burns of sections of the habitat on a 5-year rotation, as the burning action stimulates sexual reproduction (flowering).

Translocation

The long-term goal is to propagate and then translocate individuals to other suitable sites. However, this requires a better understanding of the reproductive ecology of *C. carsei* and its fungal associations.

A helping hand

Like other orchid species, the dust-like seeds of *C. carsei* contain almost no energy reserves, instead relying on the presence of specific fungi in the soil for germination and growth.²

Threats

The drainage and modification of wetlands has diminished the habitat of many wetland species, including *C. carsei*. Residing in the protected Whangamarino Wetland, this orchid is now threatened by natural plant community succession, leading to a denser canopy which blocks light from reaching the ground surface where the orchid grows.

Low reproductive rates also limit the productivity of this tiny plant and it is the attractive and scarce flowers that make the plants appealing to orchid collectors. It is for this reason their exact location is kept secret.

References

1. Dr Peter de Lange, expert opinion, Unitec Institute of Technology, Auckland.
2. Rasmussen, H.N.; Rasmussen, F.N. 2009: Orchid mycorrhiza: implications of a mycophagous lifestyle. *Oikos* 118: 334-345.



Corybas Carsei. Illustration: Rebecca Terborg.

Next actions...



A population size of 150 plants was set as a minimum target before research could occur to avoid negatively affecting this important population. This number has now been exceeded so research can begin.

Research topics of interest include:

- fungal associate species
- pollination ecology
- genetic diversity of the population
- seed storage options
- alternatives to burning to trigger flowering, eg smoke application.

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