

Northern Kakabeak & Eastern Kakabeak

Clianthus puniceus (G.Don) Sol. ex Lindl. &
Clianthus maximus (Colenso) Kirk

Kōwhai ngutukākā

Plant icon on the brink



Clianthus maximus flowers. Mike Thorsen

Quickfacts

Well known in cultivation

Wild populations disappearing extremely rapidly

Northern kakabeak now survives only in cultivation

So brightly coloured, so hard to find – and protect

Kakabeak are well known for the large bright red flowers (their English and Maori name refers to the parrot beak shaped flower), but they are surprisingly difficult to find in the wild places they occur. This is because the only plants that now remain inhabit very steep cliffs that are inaccessible to goats and other browsers. This also means they are inaccessible by people, which makes it very difficult if you're trying to care for one of the last wild plants: first you have to find the plant, then you have to be able to get to the plant, before you can begin to do any conservation work. What makes it even harder is that it is thought that there are only 153 eastern kakabeak plants left in the wild, and the last wild northern kakabeak died ten years ago! Seedlings occasionally appear at the site where this plant grew, but so far all have died.

Despite these huge obstacles a small team of dedicated people are passionately protecting the wild kakabeak – often using surprising methods to do so. In addition to the 'normal' conservation techniques of building fences and cages around plants, trapping





possums and shooting deer, kakabeak workers have also coated plants in foul gunk to stop goats eating them, planted them on roadsides so that passing cars have a good chance of squashing any possums that are attracted to the tasty leaves, and are using shotguns to shoot the hard seeds into new cliff homes.

Luckily, kakabeak grow well in gardens – a fact Maori knew as they grew plants near their villages, ate the unripe seed pods in a similar fashion to snowpeas, and wore the flower as an ear ornament. Unluckily, much of the plants in today's gardens are descended from very few plants and so contain little of the genetic diversity of the wild population. Gardens, both people's personal gardens and the conservation gardens on Motuarohia (Robertson Island) in the Bay of Islands and Tiritiri Matangi Island in the Hauraki Gulf, are now the only home of the northern kakabeak. Cultivation also saved a very distinctive white-flowered race of kakabeak from extinction when a jar of seed left in a gardener's shed was discovered to contain kakabeak seed, which on being grown turned out to be a lost white-flowered form. This white-flowered form has now been returned to where it was originally found – the cliffs above Te Reinga marae, inland of Gisborne.

The tasty leaves, seed pods and seedlings of kakabeak have been its downfall. It seems that in addition to the native insects that eat kakabeak, all the new plant eaters that have been brought to New Zealand: deer, goats, rabbits, possums, hares, cattle, sheep, snails, slugs, caterpillars, bugs and aphids, also love to eat kakabeak. Some may even travel surprising distances and climb near sheer bluffs to reach a mouthful of what is obviously a very tasty plant. A large kakabeak plant can only survive its leaves been continually eaten for so long before it has no energy remaining, and dies. Seedlings are very delicate and can only survive a small amount of nibbling before dying.

Kakabeak also have to compete with masses of weeds for its preferred habitat of newly-created open sunny (but not sun-baked) spaces caused by storms and slips. Many weed species also like this type of environment as there is lots of light, open space and highly fertile soil – exactly the same reasons the fast-growing, short-lived (to ten years) kakabeak likes them! These open spaces only last for a short period of time before becoming overgrown by taller plants, which shade-out the lower-growing kakabeak. One method some kakabeak employ to escape being shaded-out is to grow runners up to 4m long to seek out other sunny sites. Also, the kakabeak seed pod opens up to form a 'sail' which can transport seeds a considerable distance from their parent.

Kakabeak have one surprising attribute – they produce masses of flower buds all year, but these are all aborted unless the climate is suitable and then they are 'allowed' to develop into masses of flowers. It is likely this is an adaption to cope with a variable climate, but further research is needed on the climate conditions that promote flowering and why this timing would be beneficial to the plant. Kakabeak can flower at any time, though most flowering occurs between August and January, and they were likely to have been a very important nectar source for honey-eating birds such as hihi

Notiomystis cincta, tui *Prosthemadera novaeseelandiae* and bellbird *Anthus melanura* during winter. Kakabeak growing in garden conditions are frequently visited by tui and bellbird (hihi are now extinct on the mainland). Kakabeak flowers are prevented from being self-pollinated (fertilised by the male portion of the flower) by the presence of a cap on the female portion (stigma). If not knocked off by a visiting bird, this protective cap falls from the stigma as the flower ages in the northern kakabeak, but remains until the flower falls in the eastern kakabeak. This is thought to maximise the cross pollination that occurs by birds. A number of native insects feed naturally on kakabeak, and one feeds on nothing else: as its exclusive host is now highly endangered, the obligate mite *Aceria clianthi* is also highly endangered. Luckily, this mite also occurs in some cultivated plants.

Long ago (1847), it was thought there were two kakabeak species, but botanists did not believe this and considered all the kakabeak were one species. In 2000, it was decided that there are actually two kakabeak species in New Zealand, *Clianthus puniceus* in Northland and near Auckland and *Clianthus maximus* in the eastern North Island at Hawkes Bay and East Cape. The main physical difference is the northern kakabeak has paler pink flowers and leaves than the dark-leaved red-flowered eastern kakabeak. The distribution pattern of the two species is complicated as it appears likely that plants were traded between Maori tribes and planted as a food in village gardens.

To protect the last of the wild kakabeak, conservation workers are going to extraordinary lengths to trap all the animals that eat kakabeak. This is creating spaces where kakabeak seed can spread and where new plants can be planted. Schools have often been involved in kakabeak conservation projects by planting them in roadside areas and growing them in a nursery. The northern kakabeak is being cared for in one nursery on an island. It is hoped conservation gardens will provide a 'seed garden' where seed is harvested and spread in likely wild places. There is also a need to undertake the first ever eradication of exotic slugs and snails from a small northern island to provide a safe spot for the northern kakabeak to flourish. A recovery plan is being prepared and it is planned to investigate exposing suitable habitat to stimulate seed germination, protecting wild plants from weeds and pest animals, monitoring plant health and numbers, research kakabeak population ecology, and encouraging people to participate in kakabeak conservation.

Kakabeak still turn up in surprising places. Their seed is very long lived, and can lie dormant in the soil for many years before sprouting when exposed by a fresh land slip. Scientists do not know how long this dormancy can last, but there is hope that some of the lost populations can resprout when times are right for the buried seed.

What next?

To protect kakabeak, the following will really help.

1. Maintain genetically-diverse seed orchards of kakabeak.

It is important to both protect the remaining genetic diversity of kakabeak, and to also provide seed that can be used as the basis of restoring wild populations. Fenced and managed seed orchards are the ideal technique to achieve these. A studbook for each plant is needed and the plants in the seed orchard will require continual management of diseases and pests.

Each seed orchard is likely to cost around \$8,000 to install and around \$1000 per year to maintain.

2. Eradicate mice, rats, possums, slugs and snails from a small northern island.

Creating a safe haven for northern kakabeak is essential for us to understand its natural population dynamics. Eradicating rats, mice, possums, slugs and snails from a small island will provide a safe haven without many of the worst pests of adult and seedling kakabeak. Ideally these pests on two islands will be eradicated, one each within the range of northern kakabeak and eastern kakabeak.

Eradicating these pests from a small island is likely to cost around \$50,000, but care will need to be taken to protect native slugs and snails.

3. Care for wild kakabeak.

Kakabeak have always survived as small scattered groups (scientists call this a metapopulation) and to continue to survive kakabeak groups of kakabeak need to be planted at a range of places and these protected from weeds and pest animals using simple fences. But first a simple fence needs to be designed that keeps possums, rats, mice, goats and deer out.

Designing and trialling fences is likely to cost \$100,000 over three years.

Planting, fencing and caring for a group of kakabeak plants is likely to cost \$5,000 initially (for the fence) and around \$1,000 per year after that.

More information

- Website: Department of Conservation kakabeak recovery programme. [Link](#)
- Website: Forest Liferforce Trust. [Link](#)
- Website: New Zealand Plant Conservation Network: *Clianthus maximus*. [Link](#)
- Website: New Zealand Plant Conservation Network: *Clianthus puniceus*. [Link](#)
- Scientific paper: Simple sequence repeat markers for the endangered species *Clianthus puniceus* and *C. maximus* (Fabaceae). By Gary J. Houliston, Ana Ramón-Laca, Reema Jain, Caroline M. Mitchell, Dagmar F. Goeke. Applications in Plant Sciences, Vol. 3. 2015. [PDF](#)
- Article: Saving kakabeak in the wild. Radio NZ, 21 November 2014. [Link](#)
- Article: Island provides seeds of hope. The Northern Advocate, 29 July 2013. [Link](#)
- Scientific paper: Expression of floral identity genes in *Clianthus maximus* during mass inflorescence abortion and floral development. By Jiancheng Song, John Clemens, Paula E. Jameson. Annals of Botany, Vol. 107, pages 1501-1509, 2011. [PDF](#)
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- Factsheet: Kakabeak/Kōwhai ngutukaka. Department of Conservation, Christchurch. 2006. [PDF](#)
- Report: Is the New Zealand endemic gall mite *Aceria clianthi* endangered? By N. Martin. DOC Science Internal Series No. 146. Department of Conservation, Wellington. 2003. [PDF](#)
- Scientific paper: *Clianthus* (Fabaceae) in New Zealand: a reappraisal of Colenso's taxonomy. By P.B. Heenan. New Zealand Journal of Botany, Vol. 38, pages 361-371, 2000. [Link](#)
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- Scientific paper: The ecology and conservation of the endemic shrub, Kōwhai ngutukākā *Clianthus puniceus* in New Zealand. By W.B. Shaw, B.R. Burns. Biological Conservation, Vol. 81, pages 233-245. 1997.
- Scientific paper: The typification of *Clianthus puniceus* (Fabaceae-Galegeae). By P.B. Heenan. New Zealand Journal of Botany, Vol. 33, pages 561-562. 1995. [Link](#)
- Report: Kowhai ngutukaka Recovery Plan (*Clianthus puniceus*) (outdated). By W.B. Shaw. Threatened Species Recovery Plan Series No. 8. Department of Conservation, Wellington. 1993. [PDF](#)



Photos



Wild eastern kakabeak. Mike Thorsen



Graeme Atkins (DOC) with wild eastern kakabeak, East Cape. Mike Thorsen



DOC rangers with old eastern kakabeak cage, Hawkes Bay. Mike Thorsen, DOC



Roadside planting of eastern kakabeak, East Cape. Mike Thorsen, DOC

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