



Dactylanthus / pua o te reinga

Native plants

Dactylanthus taylorii is a highly unusual plant and is the only fully parasitic flowering plant native to New Zealand. It is sometimes also referred to as New Zealand wood rose.

It lives underground where its tuber-like stem attaches to the roots of a native tree or shrub. In response to the infection, the host root forms a characteristic distortion that looks like a fluted wooden rose. It is through this placenta-like attachment that dactylanthus draws all its nutrients.

The Māori name for this plant is pua o te reinga, meaning 'flower of the underworld', which alludes to the way its flowers emerge from below ground.

Where is it found?

Dactylanthus is unique to New Zealand and is currently known from Puketi Forest in Northland to Mount Bruce in the Wairarapa, and from Mount Taranaki in the west to Te Araroa on the East Coast. There are also populations on Little Barrier Island. The species also lived in the northern South Island until recently and it is possible that populations still remain there today.

Dactylanthus has always been a difficult plant to find, in particular now that it is less common than it might have been before the impact of human-induced browsers and change of land-use. Since dactylanthus grows underground, it is impossible to know the total number of plants that survive today. However, the distribution and number of plants has declined this century, and only a few thousand likely still exist. Some sites are probably known only to collectors, and therefore not listed on official records.

Male dactylanthus flowers
R. Stanley



Dactylanthus colonies occur in widely scattered sites. It prefers damp but well-drained areas and is often found growing at the head of small streams. It lives where trees form a dense, leafy canopy and where the ground is well covered under tall forest or marginal shrubland. It is found on flat and sloping sites and is sometimes even found on vertical rock faces where roots are exposed.

Dactylanthus facts

- The plant is visible mostly in autumn, when thumb-sized flowering shoots break through the soil surface, although some tubers may occur partly above ground.



- The 'wood rose' formed by the host root is considered a curio by some people, and over the years collectors have dug up thousands of plants to obtain these ornaments. These can still be found in some souvenir shops, although they are now illegal to collect from public conservation land and buying or selling 'wood roses' is strongly discouraged.



- Dactylanthus has no green leaves or roots of its own. It must get all of the nutrients it needs by tapping into a host tree through its swollen underground stem.

- Dactylanthus is known to parasitize about 30 species of native broadleaved trees and shrubs. It does not parasitize non-native plants.

- Dactylanthus

plants flower profusely, which means a large supply of seeds are available for dispersal if flowers are pollinated and are not browsed before setting seed. It flowers between February and May and it has minute flowers which are aggregated in separate male and female inflorescences that are purplish to grey-brown.

- It has a strong scent, which is useful for attracting pollinators but which may also attract damaging browsers such as possums.
- Some plants have been aged at over 30 years old.

Did you know?

Prior to the 1990s, dactylanthus pollination was a great mystery to botanists, and so it caused quite a stir when video evidence finally showed that the short-tailed bat is at least one of its native pollinators. This makes dactylanthus the only plant in the world that flowers at ground level and is pollinated by bats.

In the absence of terrestrial mammalian predators such as rats and possums, the short-tailed bat became well-adapted to feeding on the ground and it evolved a mutually beneficial relationship with dactylanthus. With robust, dull-coloured inflorescences producing copious quantities of sweet, strongly scented nectar over many weeks, dactylanthus flowers are well adapted to attract the short-tailed bat. In turn, the bat's ability to fly rapidly over long distances and its agility on the ground provide the plant with a very effective form of pollination where they are still present.

Threats

Possums are the single greatest long-term threat to dactylanthus. They eat flowers and prevent plants from producing seeds. Attempts to protect flowers by controlling possum numbers have had limited success, although excluding possums by caging plants may be more effective.

Another major threat is a decline in the number of short-tailed bats, which pollinate the plant. Today there are probably only a few sites where the short-tailed bats and dactylanthus still coexist. At the sites where bats are now absent, the plant must depend on insects, rats, mice or other animals for pollination. Although rodents do pollinate dactylanthus, they often destroy the flowers (rats) in the process or later destroy the seeds (mice).

Other threats include habitat depletion, destruction and modification, as well as the collection of wood roses for souvenirs and curio shops.

How can you help?

Report any wood rose collections to the Department of Conservation. It is illegal to collect these endangered plants from any public conservation land, and trade is strongly discouraged as it adds to the pressure of already declining populations. You can help this plant indirectly by becoming involved in bat spotting and assisting the Department of Conservation in determining bat distribution throughout New Zealand.

Further information

For further information about this plant, please contact your local Department of Conservation office or visit our website, www.doc.govt.nz.