

Macadamia ternifolia.
Photo courtesy of Ian McConachie.



MISSION MACADAMIA

Are you able to distinguish a threatened Macadamia tree from a cultivar?



Liz Gould, Science & Innovation Coordinator – Biodiversity at Healthy Land and Water (HLW).

Arborists can play an important role in the government-endorsed Macadamia Recovery Plan by reporting locations of wild Macadamia trees.

Australia is the only country where Macadamias grow naturally in the wild. They can be found in rainforests remaining along the east coast of Australia, from Bauple in south east Queensland, to Lismore in northern New South Wales, with an isolated population found in central Queensland.

Approximately 80 per cent of Macadamia habitat has been lost due to clearing to make way for a growing urban footprint, agriculture and associated infrastructure. All four Macadamia species are now under

threat of extinction in the wild. However, rare discoveries of the original species are being reported in suburban bushland and even older residential areas.

Liz Gould is Science & Innovation Coordinator – Biodiversity at Healthy Land and Water (HLW). In partnership with the Macadamia Conservation Trust, HLW provides education and awareness to the general public, landholders, local governments and the macadamia industry and also fundraises for surveys, research into genetics and onground protection. Funding support is provided by Hort Innovation, the macadamia industry and Redland, Brisbane and Scenic Rim councils through their environmental grants programs.

One of Liz's most exciting finds was a large number of wild Macadamia trees and individual trees at a site in Logan (SEQ). She said arborists are in an ideal position to assist in the search for original macadamias.

"Identification of the big, old trees is important as they could contain genetics of long lost wild populations. During the 1800s and early 1900s, prior to the import of cultivars from Hawaii, tens of thousands of nuts were collected from wild populations and planted in backyards and orchards across Australia. Some of these wild populations no longer exist," she said.

Macadamias grow in a wide range of rainforest types; ranging from rich complex rainforests growing on fertile volcanic soil or alluvium to simple dry rainforest types growing on rocky scree slopes. They were a treasured food for aboriginal people and trees that grew at the fringes of the rainforest were regularly harvested. Much of this rainforest has been cleared since European settlement and what is left is highly fragmented. For reasons unknown, Macadamias tend to occur in population clusters with other areas of apparently suitable habitat unoccupied. It is thought to be related to its lack of ability to disperse



Large wild tree.
Photo courtesy of Liz Gould.



Multi-stemmed wild tree.
Photo courtesy of Liz Gould.

"Macadamias are part of our heritage and a food that has long been treasured and traded by Australia's traditional owners."



Macadamia habitat.
Photo courtesy of Liz Gould.

long distances. A bushfire or disease could result in a total population being lost.

Liz said conserving wild Macadamia trees is important to support the macadamia industry, providing access to new genetic material to assist long-term productivity.

"Genetic diversity is vitally important in helping Macadamia species adapt to changing conditions and new diseases," she said.

"Macadamia cultivars contain only a tiny proportion of the genetic diversity present in the wild trees, which evolved over millions of years. Several community groups and indigenous plant nurseries propagate Macadamia but generally in small numbers and usually by seed/nut. Recent research, however, has shown that pollen transfer between cultivated trees and wild trees is occurring. This is reducing the genetic diversity within the resultant seeds, as cultivated trees originated from only a handful of Macadamia trees exported to Hawaii in the early 1900s."

TREES IN TROUBLE

Macadamia industry in a nutshell

The earliest attempts to farm Macadamias in Australia date from the 1870s at Rous Mill near Lismore. However the fledgling Australian industry failed to develop through lack of knowledge, native insect pests and fire.

The Hawaiians commercialised the industry in the 1920s from wild Macadamia tree seeds sourced from south east Queensland rainforests. Hawaiian varieties became the cultivars of the Australian and global industries, leading the world industry until the 1980s.

Australia has since taken its place as the world's largest producer of Macadamia nuts. The local industry currently employs about 5,000 people, produces 40,000 tonnes of nuts and directly contributes millions of dollars to the Australian economy.

The Australian Macadamia industry assists the Macadamia Recovery Plan with funding through annual contributions from processing companies and growers and by including conservation in the constitution of the industry's representative body, the Australian Macadamia Society.

Macadamias are part of our heritage and a food that has long been treasured and traded by Australia's traditional

Bulberin Nut (*Macadamia janseni*) is the most threatened of the four macadamia species – known from a one small population in central Queensland; the Trust has worked closely with the University of the Sunshine Coast, the Gidarjil people and Tondoon Botanic Gardens to create ex-situ and in-situ replica populations to try to safeguard against loss of the wild population. Photo courtesy of Liz Gould.



“Sadly, 80 percent of wild macadamia trees have been lost since European settlement, but a lot is now being done to secure their future.”



owners. The loss of most of Macadamias' rainforest habitats has also put at risk the many other native plant and animal species that share these habitats including Coxen's Fig-parrot, Spotted-tailed Quoll, Giant Barred Frog, Richmond Birdwing Butterfly and a multitude of plant species.

Sadly, 80 percent of wild macadamia trees have been lost since European settlement, but a lot is now being done to secure their future. Liz Gould believes implementing the recovery plan will take many more years.

“There has been good success over the last seven years, especially with awareness and database establishment. However, resources have limited success in other areas, for example research into key threats and long-term conservation.”

How to identify the four macadamia species. Look closely at leaf and nut morphology, e.g. three or four leaves to a node, entire or toothed leaves, pointed or rounded ends, pink or green new flush, bumpy or smooth shelled nuts.

- ***Macadamia integrifolia*** (Smooth-shelled Macadamia, Queensland Nut or Bauple Nut) – three leaves to each node, leaves are not as serrated as tetraphylla; new flush is green; flowers are cream; nut shells are smooth
- ***Macadamia tetraphylla*** (Bush Nut or Rough-shelled Macadamia) – four leaves to each node, leaves are spiny with a pointed tip, the new leaf flush is red/brown; flowers generally pinkish-purple; nuts are rough-shelled
- ***Macadamia ternifolia*** (Maroochy or Gympie Nut) – three leaves to each node, leaves have spiny margins and a pointed tip; flowers and new flush are pink; nuts are small and smooth shelled
- ***Macadamia janseni*** (Bulberin Nut) – three leaves with smooth margins to each node; flowers are cream; new flush is green or pink; nuts are small and smooth shelled. AA



If you are interested in learning more or making a contribution to the Macadamia Conservation Trust please visit www.wildmacadamias.org.au or contact Liz Gould on 0400 748 157 or email wild@macadamias.org.

For more information about the Macadamia industry visit the Australian Macadamia Society website at www.australian-macadamias.org/consumer/



From left, Liz Gould with Martin Bennett, Land for Wildlife Officer, Lockyer Valley Regional Council.