Monitoring Quiver Trees

A Quiver Tree of which the life cycle will be monitored over many years

The Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform embarked on a Quiver Tree monitoring project that will cover the majority of the distribution area of the species. This ranges from the Richtersveld in the north to the town of Nieuwoudtville in the south and further eastwards from Klein Pella to Upington, Kenhardt and Prieska. A set of trees within each population was selected and marked, the GPS location of each tree recorded, and the growth and health of the plants are monitored. Other research institutions investigating Quiver Trees include the University of Cape Town and the South African Environmental Observation network

Quiver Trees, like many other plants adapted to arid environments, are dependent on moisture, even if their natural habitat is an arid landscape. This fact, the realities of climate change, impacts from land use, our growing population and economy and natural enemies are all keys to understanding the wellbeing of the species.

Pests such as aphids can be detrimental to Quiver Tree health

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The Quiver Tree: a life history through the mists of time

Sunbirds are important pollinators of Quiver Trees

The common Quiver Tree, *Aloidendron dichotomum,* is a ubiquitous, but enigmatic plant of the arid regions of the Northern Cape, yet is poorly understood. In order to manage the species responsibly and ensure its welfare for future generations, it is important to understand it's life history.

Aloidendron dichotomum is one of three arid region Quiver Tree species, the other two being *A. pillansii* (Giant Quiver Tree) and *A. ramosissimum* (Maiden Quiver Tree). The common Quiver Tree has a broad distribution through the Northern Cape and Namibia, whereas the sister species are restricted to the Richtersveld in Namaqualand and southern Namibia. As such *A. dichotomum* is the most readily encountered species and most at risk from direct use impacts or secondary land use impacts. Quiver Trees prefer rocky, well drained soil habitats and occur in summer and winter rainfall regions.

Why do Quiver Trees die?

Various factors can affect the health of Quiver Trees. Some are natural, for example porcupines stripping bark from the trunk, baboons feeding on flowers, pest infestation, trees uprooted during strong winds or under their own weight when soil is moist and soft. Human-induced impacts include theft, vandalism, development pressures and climate change related factors. It is believed that Quiver Trees can amputate their branches when stressed, for example during droughts.

Quiver Trees blown over by strong winds

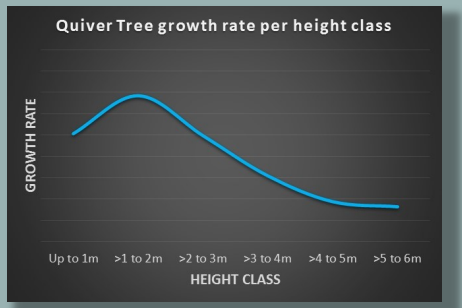
When do seedlings emerge?

New seedlings emerge after good rainfall periods

A Quiver Tree can have a productive life right up to the end. It is often observed that sets of young Quiver Tree plants occur within a particular population which are more or less the same height. This indicates that the seedlings emerge sporadically and require a number of successive good rainfall seasons to survive their vulnerable youth stages. Young plants are often found within surrounding bushes, shrubs or rock crevices where some protection is provided from heat and desiccation.

Quiver Tree life cycles and the climate change question

Calculating Quiver Tree age through trunk growth rings as with other trees are impossible due to the soft, fibrous center which is used for water storage. Lifespan estimates derived from growth rates range between 150—200 years for the common Quiver Tree and more than 380 years for the Giant Quiver Tree. With only periodic successful recruitment events we only have a small window during our lifetimes to view Quiver Tree life cycles. The potential impacts of climate change, such as reduced rainfall or more erratic rainfall and extended heat periods on populations are therefore difficult to assess. Scientists are attempting to circumvent this problem through computer modelling, growth rate monitoring and age estimates.



Quiver Tree age can be estimated from growth rates. As plants age height increase slows, because the canopy and trunk widens