

Threatened Species of the Northern Territory

Santalum acuminatum

(R.Br.) A.DC

(SAPINDACEAE)

DESERT QUANDONG

Conservation status

Australia: Not listed

Northern Territory: Vulnerable



Photos: D. Albrecht

Description

Santalum acuminatum is a shrub or small tree 6-8 m tall, with rough grey-black bark. The branchlets are often pendulous (George 1981). The flowers are small (2-4 mm long), partly creamy-green and partly orangish. The fruit is 1.5-2.6 cm diameter and is a shiny bright red edible drupe. It is distinguished from other species in the genus by the smaller flowers, acute longer leaves, and bright red fruit (George 1984). Like most species in the family Santalaceae, *S. acuminatum* is hemiparasitic, extracting xylem sap from host plant roots (Tennakoon et al. 1997). The species spreads clonally by prolific root/rhizome suckering (up to 10 m long) and multiple-stemmed stands may in fact comprise very few individuals. The fruit is highly prized by Aboriginal people and the species is under commercial production.

Flowering: September-January

Fruiting: Recorded for all months except April, but mainly August-October

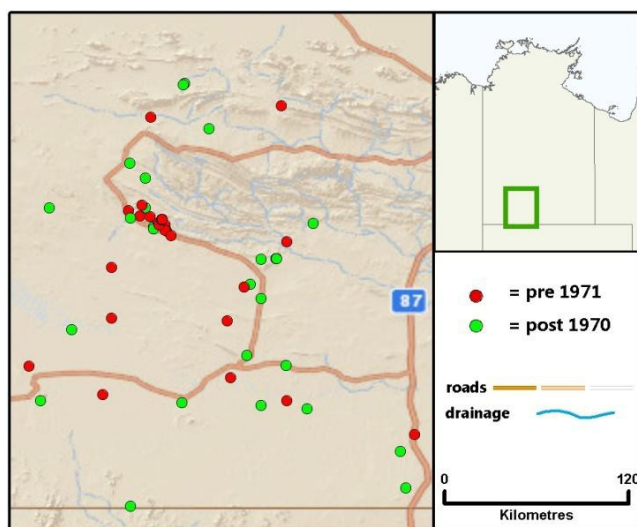


Distribution

This species is known from all Australian mainland states. It is common and widespread in Victoria, South Australia and Western Australia (George 1981, 1984). The Northern Territory (NT) population represents the northernmost extent of this species' range. In the NT, the species occurs west and south-west of Alice Springs. It has a latitudinal extent of 279 km and a longitudinal extent of 228 km. Although there are many locality records of the species in the southern NT, the majority of populations consist of few (<10)

plants and the extent of clonality in these small stands is likely to be high. The population at Watarrka National Park is by far the largest (>120 plants were recorded in September 2010).

Conservation reserves where reported:
Watarrka National Park and Uluru-Kata Tjuta National Park.



Known locations of the desert quandong

Ecology

The quandong occurs in dune swales, along creeks, on plains and low rises, and rarely on hills. It typically occurs in areas where the soils are sandy or loamy, sometimes with limestone or sandstone shallowly below the soil surface.

Under cultivation, seedlings take at least four years to become reproductive. In the wild, basal resprouts (2° juveniles) are relatively fast-growing (c. 25 cm year⁻¹) and can attain sexual maturity within eight years or less (C. Nano & A. Schubert unpublished data 2010). Fire is therefore unlikely to directly limit maturation in this species.

Data from the Watarrka population suggest that the species is a strong resprouter; but other studies show that the fire response may vary among populations (see Tennakoon et al. 1997). The loss of a number of tagged large

adult trees after the 2002 fires suggests that resprouting ability may diminish with age, but this is untested.

Due to the 2002 fires, the Watarrka population presently supports very few large quandong plants. Both the Stokes Ck. and the Kathleen Springs populations are dominated by basally resprouting plants <2 m tall (66 per cent and 45 per cent). Only the Kathleen Springs population had individuals >4.5 m tall (five per cent). Shorter plants are more vulnerable to browsing and grass fire effects and they are likely to have smaller seed crops. The result is therefore indicative of a negative population trend that should be addressed through management.

The establishment of new wild populations is likely to be strongly limited by inherently low rates of seedling establishment and low levels of seed dispersal. In the 2010 Watarrka survey, seedlings were recorded only from the Kathleen population, and these were all concentrated under a single adult plant. The Emu (itself of conservation concern) is now believed to be the principle seed vector in the NT.

Conservation assessment

Santalum acuminatum is classified in the NT as **Vulnerable** (under criteria A4(a,c,d,e)+C1+C2a(i)) based on:

- a suspected past and future population reduction where the causes have not ceased based on (a) direct observation; (c) decline in Area of Occupancy and Extent of Occurrence and habitat quality (weed invasion, fire & camels); (d) exploitation due to wood harvesting, and (e) effects of introduced taxa (viz. Buffel Grass and camels); and
- Small population size (<10 000 mature individuals) & continuing decline of at

least ten per cent in ten years or three generations; and

- <1 000 mature individuals in each subpopulation.

Threatening processes

Heavy camel browsing may result in direct mortality of adults, seedlings and resprouts and/or in reduced reproductive output. Wildfire and introduced herbivores (camels, rabbits, horses) may interact to cause localised extirpation of quandong populations if regrowth is repeatedly browsed. Wood harvesting for artifact carving is believed to have had a significantly negative impact on this species, but some measures are currently in place to try to limit this practice (T. Guest pers. comm.). Low genetic variability in small, isolated stands may result in sexual reproductive failure if the species is self-incompatible (see Warburton et al. 2000).

Conservation objectives and management

The populations at Watarrka National Park and Uluru-Kata Tjuta National Park are periodically surveyed, but demographic monitoring programmes need to be established at these and at several non-reserved stands to quantify the mechanisms and rates of decline. Indigenous ecological knowledge has been documented and Indigenous people have expressed a strong desire to be involved in the conservation of this highly-prized species. Traditional owners from Lilla, Ulpanyali, and Mutitjulu communities are working with the Central Land Council, Parks and Wildlife Commission of the NT and the Flora and Fauna Division (Department of Land Resource Management) on a monitoring and conservation project at Watarrka National Park.

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References

- George, A.S. (1981). Santalaceae. In: *Flora of Central Australia*. (ed. J. Jessop) pp. 25-26. (Reed Books, Sydney.)
- George, A.S. (1984). Santalaceae. In *Flora of Australia* 22 (ed. A.S. George), pp. 65-66. (Australian Government Publishing Service, Canberra.)
- Tennakoon, K.U., Pate, J.S. & Arthur, D.A. (1997) Ecophysiological aspects of the woody root hemiparasite *Santalum acuminatum* (R. Br.) A. DC and its common hosts in south Western Australia. *Annals of Botany* 80, 245-256.
- Warburton, C.L., James, E.A., Fripp, Y.J., Trueman, S.J. & Wallace, H.M. (2000) Clonality and sexual reproductive failure in remnant populations of *Santalum lanceolatum* (Santalaceae). *Biological Conservation* 96, 45-54.