Threatened Species of the Northern Territory

MERBAU (KWILA, IPIL, MOLUCCAN IRONWOOD)

Intsia bijuga

Conservation status
Australia: Not listed
Northern Territory: Critically Endangered

Photos: I. Cowie

Description

Intsia bijuga is a semi-deciduous tree to 35 m or more in height. The trunk is slightly buttressed. Bark is pale, mottled and shed in coarse flakes but is otherwise smooth. Leaves are compound with four (sometimes two) ovate, oblique, opposite leaflets around 15 cm long. Scented flowers occur in dense terminal panicles or spikes to *c.* 10 cm long, the solitary petal white turning pink and three red stamens. Pods are flat, oblong to *c.* 25 cm by 7 cm, and contain between one and eight seeds (Verdcourt, 1979).

Flowering: March in the wild, June and December in cultivation.

Fruiting: June and December in cultivation. Not recorded for the NT wild population.

Leaves (a) and bark (b) of *Intsia bijuga*

Distribution

Intsia bijuga is known in the Northern Territory (NT) from only a single location; at Rocky Bay near Yirrkala in East Arnhem Land. In Australia, the species also occurs on the Torres Strait Islands and the East Coast of Queensland. *Intsia bijuga* is widespread on the coasts and islands of the Indian and Pacific Oceans from East Africa to Indo-China and the Philippines, including neighbouring Timor-Leste and New Guinea (Verdcourt, 1979).

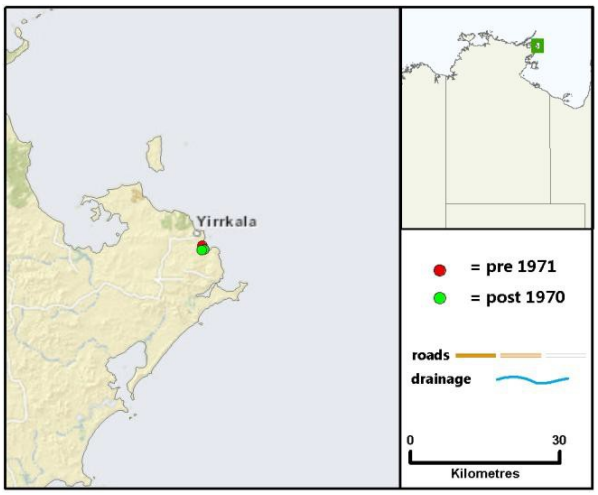
Intsia bijuga occurs in coastal and lowland evergreen and semi-evergreen tropical rainforest. The single known population in the NT occurs in sandy humic soil situated on an old low coastal hind dune. The semi-

evergreen rainforest at this site is dominated by *Horsfieldia australiana, Myristica insipida, Syzygium nervosum and S. angophoroides*.

The dune is unusual in that it is surrounded by a spring-fed swamp providing a near-permanent high water table, without being waterlogged as well as having a high degree of fire protection. The surrounding swamp is dominated by *Melaleuca leucadendra* with a dense understorey of the sedges *Scleria* and *Baumea rubiginosa*.

The seed pods of *I. bijuga* are widely dispersed by ocean currents, consistent with its coastal distribution. *Intsia bijuga* is probably a relatively recent immigrant to the NT presumably arriving since sea levels stabilized at the end of the last ice age *c.* 5800 years before present and during or after formation of the coastal plain at Rocky Bay (Woodroffe et al., 1987). However, it is not treated here as a vagrant species as it appears well-established and reproducing *in situ* in a situation where there is no immigration in a time scale sufficient to influence this assessment.

Conservation reserves where reported:
None.



Known locations of *Intsia bijuga*

Conservation assessment

The extent of occurrence is estimated at 1.2 ha. As the species is known from only a single population in the NT, area of occupancy equals the extent of occurrence.

The population at the site consists of two distinct size classes with approximately 30 mature individuals counted (with diameters at breast height of 30-90 cm) and hundreds of juveniles (mostly <1-1.5 m tall) estimated.

It is unlikely that this conspicuous tree species has been overlooked, and as coastal rainforest patches have been well surveyed across the NT (Russell-Smith 1991; Liddle *et al*. 1994) the single location for *Intsia bijuga* in the NT is probably an accurate representation. The unusual juxtaposition of substrates and habitats suggests the probability of finding further populations is low.

This species qualifies as **Critically Endangered** in the NT (under criterion D), based on:

- Number of mature individuals < 50.

Threatening processes

The fact that only a single population of *Intsia bijuga* occurs in the NT places the species at increased risk of extinction within this jurisdiction. This population is within a few kilometres of the growing community of Yirrkala and closer still to the bauxite mine at Gove.

Small populations are inherently susceptible to stochastic events. For *I. bijuga* the most likely threat is cyclone induced damage to the rainforest stand. Tropical cyclones (TC) are a feature of the coastal region where *Intsia bijuga* occurs, with the northwestern Gulf of Carpentaria near Gove having the highest concentration of cyclone days per season and receiving the highest frequency (two cyclones per annum) of cyclones across the NT. A

severe tropical cyclone could potentially level the rainforest stand at Rocky Bay if in the direct path as evident by the aftermath of TC Monica in 2006 and TC Ingrid of 2005. There is some evidence that *I. bijuga* exhibits a degree of resistance to wind damage, as trees in Samoa apparently suffered relatively minor damage from TC Ofa in 1991.

Intsia bijuga may have some potential for recovery after cyclone or fire as the species is apparently capable of resprouting faculatively from basal stem buds (eg lignotuber, basal stem) or epicormic shoots depending on conditions such as moisture or fire intensity. A number of mature trees at Rocky Bay also showed evidence of old fire damage in 2007, suggesting some capacity to survive at least infrequent fire. In addition, the NT population has a well developed 'seedling bank' or 'regeneration bank' which provides some protection against loss of mature individuals from cyclone, although these may be susceptible to fire. Plants are slow growing and reported to take 80 years to reach maturity in a forestry situation (World Agroforestry Centre 2011).

Rainforest stands of low-lying coastal areas such as the site at Rocky Bay are further threatened in the long term by rising sea levels associated with global climate change.

The semi-evergreen rainforest stand that supports the *Intsia bijuga* population and the surrounding spring-fed swamp appear to be reliant on an elevated water table. This small patch of rare, ground water dependent habitat and *I. bijuga* are both potentially susceptible to decline through change to the hydrological regime of the site as a result of infrastructural development, ground water exploitation and/or mining-related activities in the general area.

The species is also vulnerable to edge effects and marginal attrition of the rainforest stand that may occur through increased fire frequency resultant from increased human use of the area or changes to the hydrology.

In South East Asia, *Intsia bijuga* produces one of the most valuable timbers and the species has been intensively exploited for its timber in most countries. The species is regarded as Vulnerable (International Union for the Conservation of Nature Red List VU A1cd) across its range (World Conservation Monitoring Centre 1998). It has been exploited so intensively that few sizeable natural stands remain and few plantations are established.

Conservation objectives and management

Adequate buffering of the rainforest stand and the spring-fed swamp would afford a level of protection from disturbance in adjacent areas. Fire should be excluded from the rainforest community and prevented from incurring into the surrounding swamp vegetation from adjoining areas. Invasive weeds need to be controlled in the vicinity. Establishment of *exsitu* populations would provide additional protection.

Complied by

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[updated December 2012]

References

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