Threatened Species of the Northern Territory

Clausena sp. Tipperary (G.J. Leach 2152) (RUTACEAE)

Photo: I. Cowie

Conservation status
Australia: Not listed
Northern Territory: Endangered

Description

Clausena sp. Tipperary is either an undescribed species or a disjunct subpopulation of a Malesian species.

It grows as a slender shrub 0.5–3 m in height. Leaves are compound with *c.* 10–30 leaflets. Leaflets ovate 3-6 cm long, ca. 1.5 cm wide, asymmetrical, finely hairy and aromatic with a distinctive aniseed or sarsaparilla smell. Plants can produce a compound inflorescence of pale green or cream coloured flowers in the leaf axils. Fruit are small, hairy and fleshy.

Flowering: November (in cultivation).

Immature fruit: December.

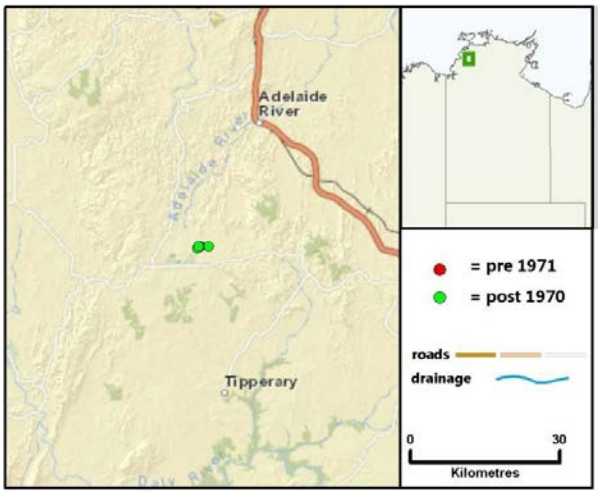
Leaflet of *Clausena* sp. Tipperary. (Photo: I. Cowie)

Distribution

This taxon is currently not formerly described and has the informal phrase-name *Clausena* sp. Tipperary (G.J.Leach 2152) (RUTACEAE). Two other species are known in Australia, *C. brevistyla* in north Queensland and the recently described *C. smyrelliana*, a rare and critically endangered species from southern Queensland (Forster 2000).

Clausena sp. Tipperary is apparently endemic to the Northern Territory (NT). This highly restricted species is known from only a small area approx. 4–5 km north-west of Mt. Burrell, on Tipperary Station in the Daly Basin Bioregion. It has been recorded from only two sites approximately 0.5 km apart. The tenure of the property is privately owned perpetual pastoral lease.

Conservation reserves where reported:
None.



Known locations of *Clausena* sp. Tipperary

Ecology

Clausena sp. Tipperary has been collected from the exposed edges of two small monsoon vine thicket patches situated on limestone (karst) geology. One site consists of broken, outcropping limestone and the other is the perimeter of a limestone sinkhole.

In common with several other plants of monsoon vine thickets this species may be facultatively deciduous during the Dry season to reduce water loss and stress over the long rainless period.

The plant is a basal resprouter and has been observed to produce profuse root suckers.

Conservation assessment

A recent targeted search for the species confirmed its presence at the vine forest patch from which it was originally recorded in 1989. This is a relatively large and substantial limestone vine forest remnant and 15 small stands of *Clausena* sp. Tipperary were located on the northern margins of this patch. In total these stands were assessed to contain some 260 resprouting stems in 85 clumps. This is therefore thought to represent at least 85 individual plants. An exact accurate number of 'mature individuals' is difficult to determine due to the resprouting or apparent clonal nature of the species. Several root suckers dug for exsitu conservation showed no development of separate root systems. No fertile material was found at this site, although one individual showed evidence of recent flowering/fruiting. Four other patches of monsoon vine forest on limestone west of the known site were also searched but *Clausena* sp. Tipperary appears to be absent from these patches.

The other previously known site was also revisited in 2010 and consists of a single stand with an estimate of up to 50–60 stems/plants (K. Brennan pers. comm.). The number of 'mature individuals' is likely to be considerably less than this due to the clonal nature of growth and the apparent immature stage of most stems. Immature fruit occurred on a few plants at this site. There is no quantitative data to infer past declines or future change.

The two patches of habitat that this taxon is known from are situated approximately one half kilometre apart and it is evident from satellite imagery that the large patch is approximately 6.25 ha in area and the other is approximately 2 ha. *Clausena* sp. Tipperary appears to occupy only the margin or fringe of the monsoon vine forest, and was not found in the interior of this habitat. The plant is likely to rely on the protection from fire afforded by the limestone rock outcrops but may also require the higher light levels available at the forest edge. Maximum area of occupancy for the populations as currently known is very small indeed and far less than 1 km^2 given that plants are found only at the periphery of the two limestone vine thicket habitat patches.

As monsoonal rainforests (of which vine thickets are a type) have in general been relatively well sampled across the NT (Russell-

Smith 1991; Liddle *et al.* 1994), the few records of *Clausena* sp. Tipperary suggest that it is indeed a rare species.

Additional smaller patches of limestone vine thicket vegetation are evident on satellite imagery in the general vicinity of the known sites, but remain to be surveyed. Even if *Clausena* was found to occur at these patches, the total area of occupancy would still be less than 1 km^2. Potential habitat in the area is otherwise rare.

Clausena sp. Tipperary qualifies as **Endangered** in the NT (under criterion D), based on:

- A small population size, estimated to number fewer than two hundred and fifty mature individuals.

Threatening processes

Clausena sp. Tipperary is only known from the Daly Basin, a region of the NT that is the focus of land-use intensification and agricultural development. Although this species is known from rocky limestone areas that are unlikely to be directly affected by land clearing in the Daly Basin, populations occur on the perimeter of the vine thicket community and as such are susceptible to edge effects, weed invasion, marginal attrition of the vine thicket patch through too frequent or intense fires, and land use activities (e.g. disturbance from stock) in the adjacent woodland vegetation. Physical disturbance to *Clausena* plants from stock and feral pigs is a threat as their tracks are prominent in the vicinity of the stands. If further land clearance occurs in the general vicinity, increased impacts from stock may be expected.

The immediate major threat to *Clausena* sp. Tipperary is incursion of Gamba Grass (*Andropogon gayanus*) into its ecotonal habitat. Gamba Grass is a high-biomass producing introduced perennial grass species and is now established and common at the main site. A massive propagule source of Gamba Grass occurs in the large cleared paddocks 1.5 km to the south and satellite populations also occur sporadically in the intervening woodland. Gamba Grass forms taller, denser stands, curing later in the Dry season. This results in substantial changes to savanna fire regimes. It can dramatically increase local fuel loads from the 2–4 tonnes/ha typical for native grasses to 11–15 tonnes/ha or sometimes even 30 tonnes/ha for Gamba Grass resulting in later, more intense fires that can kill or reduce the vigour of tree species (Rossiter et al. 2003; Ferdinands et al. 2006). Gamba Grass may also out compete native woody species both by grossly altering the availability of nitrogen to native plant species and by using larger amounts of water than native grasses. (Rossiter et al. 2004; Rossiter-Rachor et al. 2009).

These changes are likely to have a severe impact on vine thicket edge species such as *Clausena* sp. Tipperary. Gamba Grass (and Mission Grass) are abundant in the local district and their elevated fuel loads appear to have lead to tree death and decline in several remnant woodland patches along the nearby Daly River Road.

Conservation objectives and management

Survey of other nearby limestone vine thicket vegetation for the presence of *Clausena* sp. Tipperary is a priority, as is investigation into the size, extent and status of populations. A monitoring site should be established for this species at least one of the sub-populations.

Adequate buffering from land use activities in the adjacent woodland vegetation is required. Judicious fire management is essential. Fire should be prevented from incurring into the limestone vine thicket community and

ecotone from adjoining areas. Gamba Grass and other invasive weeds (especially perennial grasses) should be controlled and managed at the known sites to prevent the development of excessive fuel loads that will inevitably result in high intensity fires that pose a very real threat of loss or decline in the *Clausena* sp. Tipperary stands.

Complied by

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