

# Threatened Species of the Northern Territory

## Hibbertia brennanii

### Conservation status

Australia: Not listed

Northern Territory: Vulnerable



Photo: R. Kerrigan

### Description

Formerly referred to as *Hibbertia* sp. stellate above (J.L.Egan 4812). Now formally described and conventionally accepted (Toelken 2010).

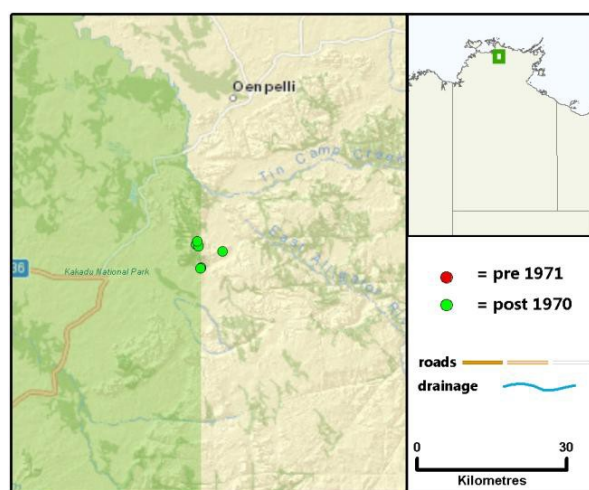
*Hibbertia brennanii* is a subshrub with wiry branches that grows to 0.3 m high, of a low spreading, somewhat delicate habit. The discolourous leaves are elliptic in shape, and about 3–9 mm long by 2–5 mm wide, appressed pubescent above and ciliolate-scaly below. Solitary pale yellow flowers occur with bilobed petals about 4 mm long (Toelken 2010). It is in the *H. lepidota* subgroup and is closely related to *H. incurvata*.

Flowering and Fruiting: March–May. (Holtze 2010).

### Distribution

This species is endemic to the Northern Territory (NT), where it is very localised in a small protected area straddling the boundary between Kakadu National Park (KNP) and Arnhem Land. It is known only from a single northern sandstone outlier of the Western Arnhem Land escarpment.

*Conservation reserves where reported:*  
Kakadu National Park.



Known locations of *Hibbertia brennanii*

### Ecology

*Hibbertia brennanii* grows in rock crevices in dissected sandstone on top of the escarpment of the Arnhem Plateau. Plants have been recorded growing in cracks or amongst rocks on sandstone pavement or amongst sandstone heath or Spinifex (*Triodia* species) hummock grasses.

### Conservation assessment

*Hibbertia brennanii* is a highly restricted plant species, known to occur only around one northern outlier of the Western Arnhem Land escarpment. There have been nine collections (Holtze 2010) from an area which occupies a

narrow extent of occurrence of just 18 km<sup>2</sup>. Most records are from within KNP but one collection and therefore part of its area of occupancy extends east into adjacent Arnhem Land.

Herbarium labels indicate that the frequency of plants within suitable habitat has been recorded as 'occasional' (Holtze 2010). Boundaries of individual subpopulations have not been delineated. *H. brennanii* is apparently not uncommon on the one outlying block of sandstone, with plants probably extending between the collection points (and thus representing a single population) with a size of >1 000 individuals (K. Brennan *pers. comm.* 2010).

This is a very well known area botanically but also very complex with 62 points per 100 km<sup>2</sup> within the immediate half degree (30 by 30 minute) cell, the cell with the second highest survey density in the NT. The population extends marginally into the adjacent Arnhem Land cell which is also well surveyed with 25 points per 100 km<sup>2</sup>). No additional subpopulations have been located on adjacent outliers despite intensive general survey of the area. In addition, there is a pattern of short range endemism in the genus and in the sandstone flora of Western Arnhem Land in general (Woinarski et al, 2006; Toelken 2010). While it is possible that the extent of occurrence and area of occupancy may be larger than is currently known, the high level of general survey in the area suggests that substantial increases are unlikely.

This species qualifies as **Vulnerable** in the NT (under criterion D2), based on:

- Restricted to an area of less than 20 km<sup>2</sup>;
- Known from a single location; and
- Threats from human activities and inappropriate fire regimes.

The species is also listed as a short range endemic in the NT.

### Threatening processes

Fifty per cent of Arnhem Land sandstone heath shrub species are obligate seeders (Russell– Smith et al. 1998), and therefore sensitive to inappropriate fire regimes such as too frequent fire. Short time intervals between successive fires limit the capacity of post-fire germinants to attain reproductive maturity and replenish soil seed reserves. The precise fire response of *Hibbertia brennanii* is not known but this species is also likely to be an obligate-seeder. Its rocky sandstone habitat however would afford a measure of small-scale topographic protection from fire.

### Conservation objectives and management

Research priorities include investigation of the extent of the species across the Northern Arnhem Land escarpment outlier and whether subpopulations are contiguous. Establishment of monitoring plots would assist in study of the fire response of the species and allow population reassessment following perturbations. Fire management of the sandstone heath in this area of KNP should take account of the presence of this species. A key management objective would be to ensure a fire regime that is suitable to this species and such a regime is likely to be characterised by low frequency and long intervals (>three years) between fires. Fire management prescriptions can be refined with results of investigation into the life history attributes of *H. brennanii*.

### Compiled by

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[updated December 2012]

## References

- Russell-Smith, J., Ryan, P.G., Klessa, D., Waight, G., and Harwood, R. (1998). Fire regimes, fire-sensitive vegetation and fire management of the sandstone Arnhem Plateau, monsoonal northern Australia. *Journal of Applied Ecology* 35, 829-846.
- Toelken, H.R. (2010). Notes on *Hibbertia* (Dilleniaceae) 5. *H. melhanioides* and *H. tomentosa* groups from tropical Australia. *Journal of the Adelaide Botanical Gardens* 23, 1-117.
- Woinarski, J.C.Z.; Hempel, C.; Cowie, I.; Brennan, K.; Kerrigan, R.; Leach, G.; Russell-Smith, J. (2006). Distributional patterns of plant species endemic to the Northern Territory, Australia. *Australian Journal of Botany* 54, 627-640.