

NSW Threatened Species Scientific Committee

Notice of and reasons for the Final Determination

The NSW Threatened Species Scientific Committee, established under the *Biodiversity Conservation Act 2016* (the Act), has made a Final Determination to list *Hibbertia fumana* Sieber ex Toelken as a CRITICALLY ENDANGERED SPECIES in Part 1 of Schedule 1 of the Act. Listing of Critically Endangered species is provided for by Part 4 of the Act.

The NSW Threatened Species Scientific Committee has found that:

1. *Hibbertia fumana* Sieber ex Toelken (family Dilleniaceae) has been described by Toelken and Miller (2012) as a “Decumbent shrublet, prostrate, with many branches from the base, moderately to much branched; branches, wiry, with raised leaf bases shortly decurrent, shortly fascicled-pubescent. *Vestiture* persistent, consisting of more or less coarse simple hairs over fine fascicled hairs on tubercles; *on branches* more or less densely covered with short subequal multiangulate fascicled hairs (4–7 equal arms) and without simple hairs except for intrapetiolar tufts of hairs in leaf axils; *on leaves above* scattered, short antrorse fine bi- or triforked to simple hairs, sparse becoming denser onto the petiole, few simple hairs along the flanks, all wearing off soon; *on leaves below* dense, with short subequal multiangulate fascicled hairs (4–12 subequal arms) particularly on central vein, overtopped by few simple hairs on the flanks of the revolute margins; *on outer calyx* moderately outside dense, with spreading coarse antrorse simple hairs over erect-spreading multiangulate fascicled hairs (8–15 subequal arms), inside dense, with forked to simple antrorse hairs over most of surface; *on inner calyx lobes* outside dense with spreading multiangular fascicled hairs (2–12 subequal or unequal arms) becoming smaller towards the membranous margins, overtopped by coarse antrorse simple hairs along the central ridge, inside glabrous except for a few simple hairs towards the apex. *Leaves* with intrapetiolar axillary tuft of hairs up to 0.7 mm long; *petiole* 0.2–0.45 mm long; *lamina* narrowly oblong, rarely linear-elliptic, (1.9–) 2.1–3.1 (–3.3) × 0.5–0.8 mm, obtuse, with terminal tuft on a somewhat recurved apex of the central vein, more or less abruptly constricted into petiole, above ± flat and puberulous to glabrescent, below with broadened central vein recessed below the level of revolute margins and protruding into apex, pubescent to puberulous. *Flowers* single, terminal, commonly on main branches; *flower stalk* 2–8 mm long, recurved and elongating after flowering; *bract* linear to linear-triangular, 1–1.3 mm long, fascicled-pubescent, on lower third of flower stalk. *Calyx* distinctly accrescent, with lobes subequally long; *outer calyx lobes* lanceolate, 4.5–5.7 × 1.3–1.65 mm, acute to acuminate, without ridge, outside strigose-pubescent, inside finely strigose with antrorse forked hairs on much of the surface; *inner calyx lobes* oblong-ovate, 4.5–5.8 × 3.1–3.5 mm, usually cuspidate, outside strigose along the central vein and tomentose towards the margins, inside glabrous with few forked hairs at the apex. *Petals* obovate, 4–5.2 mm long, broadly bilobed. *Stamens* 5 or 6 (7), subequal, clustered on one side of the ovaries; *filaments* 0.4–0.6 mm long, basally connate; *anthers* broadly oblong, 1.3–1.4 mm long, ± abruptly constricted above and below. *Pistils* 2; *ovaries* obovoid but ± laterally compressed, each with 4 ovules, fascicled-tomentose, with style attached to dorsal apex then base recurved to the base and up on either side of the stamens with stigmas exposed above the anthers. *Fruit* and *seeds* unknown”.
2. *Hibbertia fumana* is endemic to New South Wales (NSW) and was considered to be extinct when described by Toelken and Miller (2012) as, at the time of description, the species was known from only three herbarium collections made in the early 19th Century. Two of these had vague collection details (viz. “near Sydney” and “occidental [western] Sydney”) and the third came from “near South Head”.

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3. *Hibbertia fumana* was rediscovered at the Moorebank Intermodal Terminal Precinct (<http://simta.com.au/>) in Moorebank, south-western Sydney, during flora surveys in October 2016 (see Duretto *et al.* 2017). This site was re-surveyed in November 2016 when c. 370 individuals were located growing in the transition zone between Castlereagh Ironbark Forest and Castlereagh Scribbly Gum Woodland in the Sydney Basin Bioregion (a listed Vulnerable Ecological Community under the Act) and with *H. puberula* (a listed Endangered species under the Act) (A. Orme *in litt.* November 2016, J. Rodd *in litt.* February 2017). The population occupies an area of c. 5 ha (A. Orme pers. comm. November 2016).
4. Little is known about the life history of *Hibbertia fumana*. Seed production and plants of different ages were recorded within the only known population (A. Orme *in litt.* November 2016). The species does sucker (A. Orme *in litt.* November 2016) suggesting it may be able to resprout from rootstock following fire.
5. *Hibbertia fumana* appears to have had a significant reduction in distribution over the last 200 years. Historically it was more widespread being recorded from both eastern (South Head) and western Sydney but is now believed to be extinct at South Head. It is unknown if the historic western Sydney collection was made in the same area as the extant population. Since there have been very few records of this species, it may always have been rare and/or has suffered significant habitat loss during the early growth of Sydney.
6. The distribution of *Hibbertia fumana* is very highly restricted. As there is only one known extant population, the area of occupancy (AOO) and the extent of occurrence are both estimated to be 4 km². The AOO is based on a single 2 x 2 km grid cell, the scale recommended for assessing AOO by IUCN (2016).
7. The only known population of *Hibbertia fumana* is within the Moorebank Intermodal Terminal Precinct and is potentially threatened by habitat loss and degradation. Habitat at the site is disturbed with the population being traversed by a railway line. Infrastructure work in the area is likely to result in further habitat loss and disturbance which is likely to facilitate weed invasion (Lake and Leishman, 2004). Alterations to fire regimes in this isolated habitat fragment may also adversely affect the species. 'Clearing of native vegetation' and 'High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition' are listed as a Key Threatening Processes under the Act.
8. *Hibbertia fumana* Sieber ex Toelken is eligible to be listed as a Critically Endangered species as, in the opinion of the NSW Threatened Species Scientific Committee, it is facing an extremely high risk of extinction in Australia in the immediate future as determined in accordance with the following criteria as prescribed by the *Biodiversity Conservation Regulation 2017*:

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Clause 4.3 - Restricted geographic distribution of species and other conditions
(Equivalent to IUCN criterion B)

The geographic distribution of the species is:	
(a)	for critically endangered species very highly restricted.
and the following conditions apply:	
(d)	the population or habitat of the species is severely fragmented or nearly all the mature individuals of the species occur within a small number of locations,
(e)	there is a projected or continuing decline in any of the following:
(i)	an index of abundance appropriate to the taxon,
(ii)	the geographic distribution of the species.

Dr Marco Duretto
Chairperson
NSW Threatened Species Scientific Committee

Exhibition period: 01/12/17 – 26/01/18

Proposed Gazettal date: 01/12/17

References:

Duretto MF, Orme AE, Rodd J, Stables M, Toelken H (2017) *Hibbertia fumana* (Dilleniaceae), a species presumed to be extinct rediscovered in the Sydney region, Australia. *Telopea* **20**, 143-146.

IUCN Standards and Petitions Subcommittee (2016) Guidelines for Using the IUCN Red List Categories and Criteria. Version 12. Prepared by the Standards and Petitions Subcommittee. <http://www.iucnredlist.org/documents/RedListGuidelines.pdf>.

Lake JC, Leishman MR (2004) Invasion success of exotic plants in natural ecosystems: the role of disturbance, plant attributes and freedom from herbivores. *Biological Conservation* **117**, 215–226.

Toelken HR, Miller RT (2012) Notes on *Hibbertia* (Dilleniaceae) 8. Seven new species, a new combination and four new subspecies from subgen. *Hemistemma*, mainly from the central coast of New South Wales. *Journal of the Adelaide Botanic Gardens* **25**, 71–96.

**A notice of determination to provisionally list this species
as an critically endangered species was gazetted on 16/12/16**