Image by Richard Schahinger

Hibbertia basaltica

basalt guineaflower

TASMANIAN THREATENED FLORA LISTING STATEMENT

Scientific name: ***Hibbertia basaltica*** A.M.Buchanan & R. B. Schah., *Muelleria* 22: 105 (2005)

Common Name: basalt guineaflower (Wapstra et al. 2005)

Group: vascular plant, dicotyledon, family **Dilleniaceae**

Name history: *Hibbertia* sp. 'Pontville' (A.M.Buchanan, HO 522274)

Status: *Threatened Species Protection Act 1995*: **endangered**

Environment Protection and Biodiversity Conservation Act 1999: **Endangered**

Distribution: Endemic status: **Endemic to Tasmania**

Tasmanian NRM Region: **South**

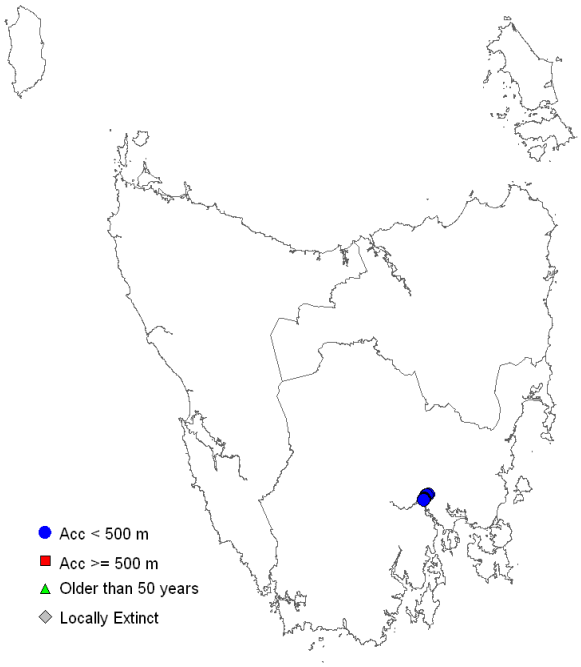

Figure 1. Distribution of *Hibbertia basaltica,* showing NRM regions

Plate 1. *Hibbertia basaltica:* habit & habitat (image by Richard Schahinger)

IDENTIFICATION AND ECOLOGY

Hibbertia basaltica is a mat-forming woody sub-shrub in the Dilleniaceae family (Plate 1). It has linear-oblong leaves less than 1 cm long, and bright-yellow flowers that occur on 1 to 2 cm long stalks at the ends of short leafy branches. Flowering may occur from late September to early January, peaking in mid-late October (Buchanan & Schahinger 2005).

Little is known of the species' pollination mechanism or germination triggers. Other *Hibbertia* species in Australia are known to be pollinated either by bees (Bernhardt 1984 & 1986) or a range of flies (e.g. hover flies, tachinids, bee flies). Seed scarification and smoke are thought to play a key role in breaking seed dormancy in *Hibbertia* species (Allan et al. 2004, Dixon et al. 1995), while environmental factors, time, heat and burial are all likely to play a role in triggering germination. Field observations indicate that *Hibbertia basaltica* may resprout after fire, with recruitment from a soil-stored seedbank. A woody species such as *Hibbertia basaltica* might be expected to have a lifespan of 10 to 20 years, though any estimate of generation length remains speculative.

Survey techniques

Surveys for *Hibbertia basaltica* should be undertaken during its peak flowering period. The species is very showy when in flower and can be easily detected in its typical native grassland habitat. However, difficulties may be encountered later in the season due to the abundant annual growth of native grasses, as well as the proliferation of yellow-flowered exotic 'daisies' in more degraded native pastures.

Description

Hibbertia basaltica is a woody sub-shrub with branches to 40 cm in length. It has a mix of simple and stellate hairs on its branches, leaves and floral parts. Leaves are linear-oblong, 3 to 7 mm long, with margins revolute almost to the broad midrib and with a blunt apex. Flowers are solitary, terminating numerous short lateral branches on 1 to 2 cm long peduncles, with a flat narrow-elliptic bract 1.5 to 3 mm long attached to the peduncle's middle to lower third (Plate 2). Each flower has five bright yellow petals that are obcordate in shape and 7.5 to 10 mm long (about twice as long as the sepals). The stamens are arranged in two groups (of 4 to 5 and 1) on opposite sides of the two carpels. The ovaries are shortly pubescent. Seeds are smooth, kidney-shaped, reddish-brown to black, and are about 2 mm long (Buchanan & Schahinger 2005).

Plate 2. *Hibbertia basaltica* flowering branchlet and seeds (scanned image)

Confusing Species

Hibbertia basaltica may be distinguished from the other *Hibbertia* species currently recognised in Tasmania by the arrangement of its stamens, its prostrate habit and pedunculate flowers (Buchanan & Schahinger 2005). An undescribed taxon on dolerite in the Tea Tree – Richmond – Dulcot area, informally known as '*Hibbertia* sp. Richmond dolerite', shares many features with *Hibbertia basaltica*, but its habit is rather more open and wiry, the peduncle is much shorter (up to 4 mm long), and its petals tend to be relatively narrow, meaning that the sepals are exposed when flowers are viewed from above; in addition, the number of stamens in the groups either side of the two carpels varies from 2 to 7 on one side and 0 to 1 on the other.

DISTRIBUTION AND HABITAT

Hibbertia basaltica is endemic to southern Tasmania, being restricted to areas of Tertiary basalt between Pontville and Bridgewater. The species occurs along the lower reaches of the Jordan River and one of its tributaries, where it grows within native grassland dominated by kangaroo grass (*Themeda triandra*) and spear grasses (*Austrostipa* species), and the occasional prickly box (*Bursaria spinosa*) (Plate 1). Rock cover is typically high, with shallow clay-loam soils. Slopes vary from 0 to 15 degrees and altitude from 15 to 45 m above sea level, with rainfall about 600 mm per annum (Buchanan & Schahinger 2005).

The species has a linear range of 5.5 km, an extent of occurrence of 2.9 km^2, and an area of occupancy of 5 to 6 hectares.

Co-occurring plants listed on the Tasmanian *Threatened Species Protection Act 1995* include the vascular species *Austrostipa scabra*, *Cryptandra amara*, *Dianella amoena*, *Isoetopsis graminifolia*, *Pterostylis ziegeleri, Pultenaea prostrata, Triptilodiscus pygmaeus* and *Vittadinia muelleri*, and the lichens *Xanthoparmelia amphixantha* and *Xanthoparmelia molliuscula*.

POPULATION ESTIMATE

The total population is estimated to be about 3,500 mature individuals (Table 1). The species occurs in three subpopulations (northern, central and southern), defined as occurrences of plants separated by discontinuities of at least 1 km (Keith 2000); about half the plants occur in the 'central' subpopulation.

Potential habitat in the Bridgewater–Pontville area has been subject to an intensive survey effort over the past decade as part of the Pontville Bypass and Brighton Transport Hub projects. The likelihood of there being other significant occurrences in the region is considered to be low.

RESERVATION STATUS

Hibbertia basaltica occurs in Jordan Nature Reserve.

CONSERVATION ASSESSMENT

Hibbertia basaltica was listed as rare on the schedules of the Tasmanian *Threatened Species Protection Act 1999* in 2006 under the name *Hibbertia* sp. 'Pontville'. It was uplisted to endangered in 2008 following a review of its status as part of a Species Information Partnership between the Australian and Tasmanian Governments. The species qualifies under criterion B, as it occupies less than 10 ha, has a severely fragmented distribution, occurs in no more than 5 locations and there is an observed and projected continuing decline in the quality of habitat and number of mature individuals.

Table 1. Population summary for *Hibbertia basaltica*

Site	Location	Tenure	NRM Region	1:25000 mapsheet	Year last (first) seen	Area occupied (ha)	Mature plants
N	Strathallan Rivulet	Private	South	Tea Tree	2005 (2005)	0.03	200–250
C1	Ford Road, Pontville	Nature Reserve	South	Tea Tree	2013 (1999)	2.50	1500–1600
C2	Ford Road, Pontville	Private	South	Tea Tree	2005 (1999)	0.30	c. 200
C3	Ford Road, Pontville	Private	South	Tea Tree	2004 (2004)	0.01	20–30
S1	Woodrieve	Private	South	Tea Tree	2010 (2004)	1.20	400–500
S2	Crooked Billet Creek	Private/Crown	South	Broadmarsh	2009 (2004)	0.20	200–300
S3	Horses Head (north)	Private	South	Broadmarsh	2009 (2004)	0.60	200–300
S4	Horses Head (south)	Private	South	New Norfolk	2009 (2004)	0.30	c. 100
S5	Parkholm	Private	South	New Norfolk	2004 (2004)	0.15	100–150

Three subpopulations, represented by sites N (North), C1–C3 (Central), and S1–S5, (South), respectively; NRM region = Natural Resource Management region.

THREATS, LIMITING FACTORS AND MANAGEMENT ISSUES

Hibbertia basaltica occurs in an area of southern Tasmania that has been heavily modified since European settlement. Much of the more arable land on Tertiary basalt has been cleared for agriculture, housing and light industry, with an unknown number of plants likely to have been lost. The species survives for the most part in areas too rocky to have been ploughed. Clearance continues to pose a threat to those occurrences on private land, as does weed encroachment, heavy grazing and stochastic events. The species' habitat includes *Themeda triandra* grassland (Harris & Kitchener 2005); these grasslands are a facies of the ecological community *Lowland Native Grasslands of Tasmania* which is listed as Critically Endangered under the EPBC Act. In consequence, there are controls on further clearance of known sites and potential habitat.

Clearance: Those plants on private property are at risk from clearance associated with ongoing residential and agricultural development, as well as extensions to existing quarrying activities.

Grazing: Observations of the 'northern' subpopulation in 2005 indicated that grazing by sheep may have a detrimental effect on the species. Plants were restricted to the protective cover of rock crevices, and had very few flowering shoots compared with those at ungrazed sites, and hence a diminished capacity for reproduction.

Weed encroachment: All subpopulations are under threat to varying degrees from woody weed invasion, primarily gorse and briar rose.

Climate change: Projections for the Brighton Municipality in the 21st century include a rise in average air temperatures and a change in the frequency, intensity and duration of hot and cold extremes (Grose et al. 2010). These changes will impact upon the habitat of *Hibbertia basaltica*, though the mechanisms for the impact and the degree of threat to the species have not been quantified.

Stochastic events: *Hibbertia basaltica* tends to occur in small localised patches and in consequence faces a high risk of local extinctions due to unforeseen chance events.

MANAGEMENT STRATEGY

The main objectives for the recovery of *Hibbertia basaltica* are to maintain the viability of subpopulations and promote conditions for the species' successful recruitment.

What has been done?

Awareness: Buchanan and Schahinger (2005) provided a formal description of the species, and brief notes on its distribution, habitat and conservation status.

Surveys: Targeted extension surveys of potential habitat in the Pontville–Bridgewater area were undertaken in 2004 and 2005 at the request of DPIPWE's Threatened Species Section (TSS). A census of the Ford Road subpopulation was conducted in November 2011 by TSS personnel with assistance from volunteers with the Wildcare group Threatened Plants Tasmania (Table 1).

Fencing & weeding: That part of the Ford Road subpopulation on Crown land (C1) has had stock excluded and been fenced; funding for materials and labour was supplied by the World Wildlife Fund and the Tasmanian NRMs. Numerous weeding days have been undertaken since 2005, initially under the auspices of the Threatened Species Network and latterly by Threatened Plants Tasmania, the main targets being gorse, briar rose and hawthorn.

Ecological burns: Part of the area supporting the Ford Road subpopulation was subject to an ecological burn in the autumn of 2009. The burn was conducted by the Tasmanian Parks and Wildlife Service and was designed to re-invigorate the species' native grassland habitat. *Hibbertia basaltica* was observed to resprout following fire, as well as recruiting from a soil-stored seedbank.

Formal Reservation: In December 2011 the Crown land block supporting the bulk of the Ford Road subpopulation was proclaimed the Jordan Nature Reserve under the Tasmanian *Nature Conservation Act 2002*.

Seed collection: Seed has been collected from the Ford Road subpopulation and lodged for long-term conservation storage at the Tasmanian Seed Conservation Centre (Royal Tasmanian Botanical Gardens, Hobart).

What is needed?

Recovery actions necessary to decrease the extinction risk to *Hibbertia basaltica* include:

- provide information and extension support to relevant Natural Resource Management Committees, local councils, government agencies, development proponents and the local community on the locality, significance and management of the known subpopulations and potential habitat;
- prepare and implement a management plan for Jordan Nature Reserve (site C1): issues to be addressed include woody weed invasion (gorse, briar rose, hawthorn), the timing and frequency of ecological burns, and the instigation of formal monitoring for *Hibbertia basaltica* and other threatened flora species;
- encourage owners of private land supporting *Hibbertia basaltica* to enter into formal land management agreements that incorporate longer-term habitat maintenance objectives and actions as a high priority;
- undertake formal monitoring at known sites to determine the response of *Hibbertia basaltica* to a range of disturbances, and to better understand the species' pollination mechanisms and germination requirements.

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View:
www.dpipwe.tas.gov.au/threatenedspecieslists

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Permit: It is an offence to collect, disturb, damage or destroy this species unless under permit.