

A new endemic species of *Hibbertia* (Dilleniaceae) from Tasmania

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Abstract

Hibbertia basaltica A.M.Buchanan & R.B.Schahinger from southern Tasmania is newly described and illustrated, and its habitat and conservation status discussed.

Introduction

Hibbertia is a genus with more than 115 species, found mainly in Australia (all states and mainland territories), but also in Madagascar and some Pacific islands (Toelken 1996; Harden & Everett 2000). In Tasmania, 14 species of *Hibbertia* are currently recognised, including one endemic (*H. hirsuta* (Hook.) Benth.) and one that is presumed extinct (*H. rufa* N.A.Wakef.) (Curtis & Morris 1975; Toelken 1998, 2000; Buchanan 2005).

In February 1999, botanist Andrew North collected an indigenous *Hibbertia* species from a native grassland remnant near the historic town of Pontville in southern Tasmania (North 1999). The taxon was recognised at the time as differing from other Tasmanian species in its stamen arrangement and pedunculate flowers (North, pers. comm.). An examination of fresh flowering and fruiting material collected by the authors in 2004 and during extension surveys in the greater Pontville area (RBS), has allowed us to formally describe the taxon as *H. basaltica* A.M.Buchanan & R.B.Schahinger, and provide an account of its distribution, habitat and conservation status.

Taxonomy

Hibbertia basaltica A.M.Buchanan & R.B.Schahinger, *sp. nov.*

Hibbertiae pedunculatae similis sed staminibus quaternis, quinis vel rare usque ad septina aggregatis singuloque his in latere postico carpellorum duorum dispositis illo antico differt.

Type: Tasmania, old quarry near ford, Ford Rd, Pontville, A.M. Buchanan, 8 Oct. 2004 (holotype: HO 527774; isotype AD).

Prostrate to procumbent *subshrub*. *Branches* to 40 cm long with a sparse covering of short stellate hairs and scattered or absent simple hairs. *Leaves* alternate, shortly petiolate, with axillary tufts of hair, linear-oblong, 3–6 mm long and 1–1.6 mm wide, with scattered forward-directed simple acicular hairs above and sparse short simple and stellate hairs below, becoming glabrescent with age; apex blunt with a terminal tuft of hairs; margins entire, revolute almost to the broad midrib; central vein usually confluent with the apical margins. *Flowers* 5-merous, solitary and pedunculate, terminating numerous short lateral branches. *Peduncles* to 20 mm long, recurved at fruiting stage, with a moderate covering of short stellate hairs and very occasional longer simple hairs; bract single (rarely 2) attached in the middle to lower third, flat, narrow-elliptic, 1.5–3.0 mm long, with simple and short stellate hairs. *Sepals* imbricate, spreading, persistent, the two outer ones narrow-ovate, 4.5–5 mm long by 2.5–3 mm wide, the three inner ones oblong-ovate and slightly shorter; the exposed outer surfaces of sepals (i.e., prior to anthesis) bearing long

simple and short stellate hairs, the membranous marginal surfaces glabrous; the unexposed outer surfaces with a dense cover of short stellate hairs; inner surfaces glabrous below but with scattered short stellate hairs and simple hairs near the apex. *Petals* obovate, 7.5–10 mm long, yellow, caducous. *Stamens* arranged in two groups on opposite sides of the carpels, (3–)4–5(–7) on the posterior side and 1 on the anterior side, erect, the filaments in the former group joined only at the very base; anther and filament \pm equal, their combined length c. 3.5 mm; anthers dehiscing by vertical slits. *Carpels* 2, fused at base; ovaries shortly pubescent with 4(–5) ovules in each; *styles* attached at the dorsal apex of each ovary, spreading and erect, c. 3 mm long. *Seeds* subglobular, 1.5–2 mm diam., smooth, reddish-brown. **Basalt guinea flower.** Figs 1–3.

Etymology: The species is named after its preferred substrate, Tertiary basalt.

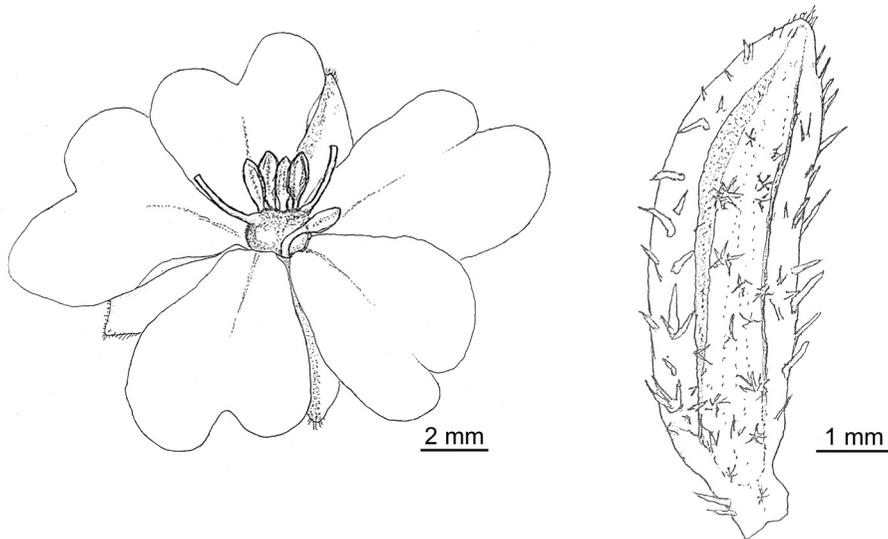


Figure 1. *Hibbertia basaltica*. Flower at anthesis and dorsal leaf surface. (Schahinger HO 530837)

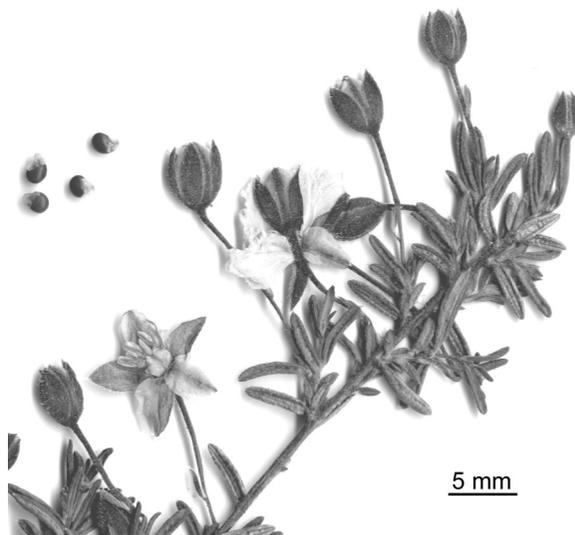


Figure 2. *Hibbertia basaltica*. Flowering branchlet and seeds. (Schahinger HO 530838)



Figure 3. *Hibbertia basaltica* habit and habitat at Pontville, Tasmania.

Additional Specimens Examined: **TASMANIA:** Old quarry near ford, Ford Rd, Pontville, A. Buchanan, 8 Oct. 2004 (HO 527775; AD); 'Horses Head', E side of the Jordan River, c. 2 km SSW of Brighton, R. Schahinger, 27 Oct. 2004 (HO 529454; AD); 1 km S of Brighton, on slopes above Jordan River (E side), R. Schahinger, 6 Dec. 2004 (HO 529455; AD); Bagdad Rivulet, upstream of ford across Jordan River, R. Schahinger, 26 Oct. 2004 (HO 530837); S of ford across Jordan River, Pontville, R. Schahinger, 13 Oct. 2004 (HO 530838 & HO 530839).

Distribution and Ecology: *Hibbertia basaltica* is known only from the Pontville–Brighton–Bridgewater area in southern Tasmania (Fig. 4), where it is associated with rocky basalt outcrops on slopes above the Jordan River. Several patches have been recorded along a 7 km stretch of river, with an altitude range of 15 to 45 m. The species occurs in native grassland dominated by *Themeda triandra* Forsskal. (Kangaroo grass) and *Austrostipa* spp. (Spear grasses), with the occasional tall shrub *Bursaria spinosa* Cav. (Prickly box); the proportion of surface rock and lichen cover is high.

Phenology: *Hibbertia basaltica* flowers from late September to late November, peaking in mid-late October; seed is mature by mid-December.

Conservation Status: Population parameters for *Hibbertia basaltica* are as follows: number of known subpopulations, 3 (with 1, 2 and 5 discrete patches, respectively); linear extent, 5.5 km; extent of occurrence, 2.9 km²; area of occupancy, 4–5 ha; number of mature individuals, c. 2500.

The conservation code for *Hibbertia basaltica* according to the ROTAP criteria of Briggs and Leigh (1996) is **2ECi**, while the species qualifies for listing as endangered on both the Tasmanian *Threatened Species Protection Act 1995* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

Seven of the eight known *Hibbertia basaltica* patches occur on private property and are under threat from land clearance, woody weed invasion (Gorse and Briar rose), and over-grazing by sheep and cattle; five of the patches are threatened by the likely future expansion of a major quarry. The eighth patch is mostly within a 3.2 ha parcel of Crown Land but it too is threatened by woody weed invasion, while the recent subdivision of adjoining land for residential use is also likely to have an impact through 'edge' effects. The taxon's extremely small area of occupancy — with the largest known patch c. 1 ha — also leaves it open to unforeseen stochastic events, such as the threat of prolonged drought.

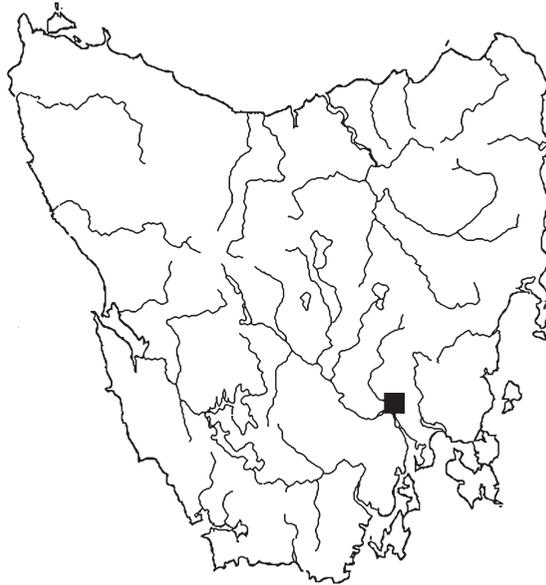


Figure 4. Distribution of *Hibbertia basaltica* in Tasmania.

Considerable areas of *Hibbertia basaltica* habitat in the Pontville–Bridgewater area have been cleared over the past 200 years for agricultural, residential and light industrial purposes. Only small remnants of native grassland on basalt remain, typically on land considered too rocky for development.

Discussion

The species of *Hibbertia* in Tasmania fall into two groups, those with *stamens in a single cluster on one side of the two carpels*, and those with *stamens surrounding the carpels* (Curtis & Morris 1975; Toelken 1996).

Hibbertia basaltica does not fall within either of these groups, its stamens being arranged in two clusters (of 4–5 and 1) on opposite sides of the two carpels. The species is distinguished further by its pedunculate flowers (with a single bract attached in the middle to lower third of the peduncle), its procumbent habit, and its vestiture of stellate and simple hairs. The unique stamen arrangement of *H. basaltica* was found to be consistent across the populations in the Pontville–Bridgewater area, and it is concluded that the taxon represents a distinct and localised species.

Hibbertia basaltica resembles *H. pedunculata* (*sensu* Toelken 1996) in its mostly procumbent habit and in its long-pedunculate flowers. However, it differs in the number and arrangement of the stamens, having 8 at most, instead of 16–25 as in *H. pedunculata*. The arrangement, with only a single stamen on one side of the 2 carpels and usually 4–5 on the opposite side, is diagnostic. It differs further in the size of the petals, 7.5–10 mm long, twice the size of those in *H. pedunculata* in Victoria. *Hibbertia pedunculata* is not known from Tasmania.

Acknowledgments

We are grateful to Andrew North for providing information on known and potential *Hibbertia basaltica* sites in the Pontville area, and to Hellmut Toelken (AD) for helpful comments on the original material collected from the Pontville site in 1999. Tony Orchard and Gintaras Kantvilas kindly assisted with the Latin diagnosis.

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