

Boronia boliviensis (Rutaceae series Erianthae), a new rare granite outcrop endemic from north-eastern New South Wales

John B. Williams†¹ and John T. Hunter²

¹Botany, Centre for Ecology, Evolution and Systematics, University of New England, Armidale
NSW 2351, Australia

²School of Human & Environmental Studies, University of New England, Armidale, NSW 2351,
Australia

Abstract

Boronia boliviensis J.B.Williams & J.T.Hunter, a new rare granite outcrop restricted species from the Bolivia Hill area of the Northern Tablelands of New South Wales is described and notes are provided on its distribution, ecology and conservation status.

Introduction

The rock outcrop environment of the New England Batholith has recently been a fruitful area for the discovery and description of narrow-endemic species (Hunter & Williams 1994; Hunter 1997, 1998; Hunter & Bruhl 1999; Hunter & Copeland 2001; Williams & Hill 2001). In particular Bolivia Hill, a granite area between Tenterfield and Deepwater, has yielded a number of plant species restricted to the hill and nearby surrounds (*Acacia pycnostachya* F.Muell., *Eucalyptus boliviana* J.B.Williams & K.D.Hill, *Homoranthus croftianus* J.T.Hunter and *Pimelea venosa* Threlfall). Bolivia Hill also contains a number of other rare or threatened vascular plants with restricted distributions (*Babingtonia odontocalyx* A.R.Bean, *Brachyloma saxicola* J.T.Hunter, *Callistemon pungens* Lumley & R.D.Spencer, *Cryptandra lanosiflora* F.Muell., *Daviesia elliptica* Crisp, *Hibbertia patens* Toelken, *Kunzea bracteolata* Maiden & Betche, *Olearia gravis* (F.Muell.) F.Muell. ex Benth., *Philothea conduplicatus* (Paul G.Wilson) P.I.Forst., *Plectranthus suaveolens* S.T.Blake, *Pultenaea pycnocephala* Benth., *Thesium australe* R.Br. and *Thelionema grande* (C.T.White) R.J.F.Hend.) and was duly listed as a hotspot for conservation initiatives by Quinn et al. (1995). In October 1989 the senior author collected specimens of a *Boronia* from Bolivia Hill. The taxon is clearly a member of the section *Valvatae*, however it did not match with any presently known species. While awaiting formal publication the entity has been recognised and included in cladistic and systematic revisions of the section *Valvatae* as *Boronia* aff. *granitica* (Duretto &

† Deceased 31 July 2005

Ladiges 1999; Duretto 1999). These investigations have firmly placed this taxon within the series *Erianthae*. This new taxon is described here at specific rank and represents yet another species restricted to Bolivia Hill.

Taxonomy

Boronia boliviensis J.B.Williams & J.T.Hunter, *sp. nov.*

Similis *B. graniticae* Maiden & Betche sed indumento ramuli et foliorum longo, arachnoideo, non denso differt.

Holotype: New South Wales: Northern Tablelands: Bolivia Hill, c. 33 km south of Tenterfield (29°20'S 151°20'E), *Williams* 89556, 2 Oct 1989 (holo: NSW; iso: BRI, CANB, NE, MEL, HO.)

Boronia sp. J, sensu Quinn et al. (1995, p. 72); Hunter & Clarke (1998, p. 591).

Boronia aff. *granitica*, sensu Duretto & Ladiges (1999, p. 647, 649, 652, 653, 655, 656, 661 & 663).

Boronia aff. *granitica* (Bolivia Hill), sensu Duretto (1999, p. 11 & 47).

Boronia boliviensis J.B.Williams ms. (Williams 89556), sensu Weston & Duretto (2002, p. 272).

Much-branched *shrub* to 1.5 (–2.2 m) tall, odoriferous; branchlets with a dense covering of very short, sessile, multi-angular yellowish stellate hairs, becoming glabrous with age. *Leaves* pinnate with mostly 7–11 leaflets, rarely with 1–5 leaflets on some leaves (especially on flowering branchlets); rachis 2–12 (–20) mm long, jointed, 8–15 mm wide, narrowly winged, rachis wings flat or recurved; leaflets narrow-elliptic, sessile, 3.8–9 mm long, 0.5–1.5 mm wide, apex acute to sub-obtuse, broadest above the middle, margins entire and closely revolute, rarely only recurved, upper surface deep green with a sparse indumentum of stellate hairs or ± glabrous, the surface and margin dotted with large, sunken oil glands, lower surface often hidden by revolute margins but when visible markedly paler, usually glabrous; petiole 1–3 mm long. *Inflorescences* axillary, 1–3-flowered; prophylls unifoliate; peduncle 1.5–2 mm long; pedicels 2–3 mm long. Calyx lobes deep red, narrow-deltate, acute or acuminate, 2.5–3.8 mm long, 1–2 mm wide, shortly stellate-hairy abaxially. Petals pink, 4–9 mm long, 3–4 mm wide, valvate in bud, very shortly stellate-tomentose abaxially, glabrous or almost so with fine simple hairs adaxially, persistent in fruit. *Filaments* 1–2 mm long, glandular to tuberculate; anther with erect apiculum. *Style* glabrous or sparsely hairy. *Fruit* with cocci glabrous, 4–5 mm long, 2–3 mm wide. Seed 3–4 mm long, 1–2 mm wide. Flowers mainly September to November but flowers also recorded in May, August and December.

Etymology: the epithet *boliviensis* refers to the location of all known populations on the Bolivia Range (south of Tenterfield, on the Northern Tablelands of New South Wales).

Distribution: the known populations are all restricted to the higher parts of the Bolivia Range, particularly on Bolivia Hill south of Tenterfield in the Northern Tablelands Botanical District of New South Wales and the New England Tablelands Bioregion.

Notes: in a cladistic analysis of *Boronia* section *Valvatae*, Duretto & Ladiges (1999) demonstrated that *Boronia boliviensis* (*Boronia* aff. *granitica*) was most closely related

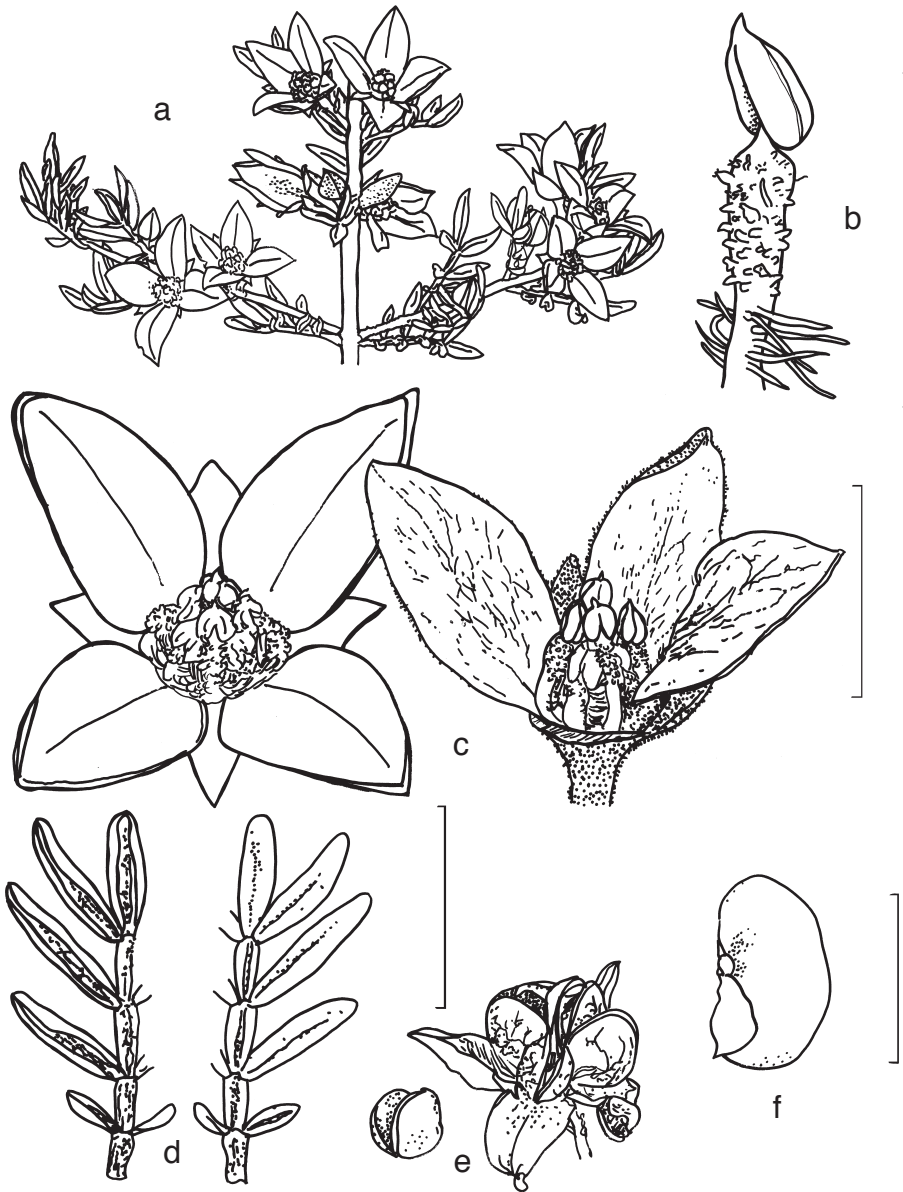


Fig. 1. *Boronia boliviensis* J.B.Williams & J.T.Hunter **a**, branchlet; **b**, filament and anther , showing anther apiculum and glandular hairs on the filament; **c**, mature flower showing staminal arrangement; **d**, foliage morphology; **e**, mature cocci; **f**, mature seed.

Scale bar: a & b, a = 50 mm, b = 2 mm; c, d & e = 10 mm; f = 2 mm.

to *B. granitica* Maiden & Betche and *B. ruppii* Cheel. These three taxa were placed along with *Boronia eriantha* Lindl. and *B. warrumbunglensis* P.H. Weston within the series *Erianthae*. *Boronia granitica* can be distinguished by its branchlets and leaves lacking long, slender (arachnoid) multi-angular stellate hairs and by its deltate red sepals. The species has been commonly known as Bolivia Hill *Boronia*.

Habitat: *Boronia boliviensis* is currently known from altitudes between 900 to 1200 m which receive a mean annual rainfall between 800–900 mm. The species occurs in Low Shrublands and Heaths on granite rock outcrops, described as Element 4 by Hunter & Clarke (1998), which is dominated by *Leucopogon neoanglicus* and *Micromyrtus sessilis* but commonly includes other shrub species such as *Acacia pycnostachya*, *Boronia anethifolia*, *Brachyloma saxicola*, *Kunzea bracteolata*, *Leptospermum nova-eangliae*, *Leptospermum brevipes*, *Melichrus urceolatus* and *Cryptandra lanosiflora* all of which are associated with *Boronia boliviensis*. *Boronia boliviensis* may also occur within adjacent low forest and woodlands on shallow rocky soils surrounding exposed granite sheets and is here associated with *Acacia adunca*, *Callitris endlicheri*, *Eucalyptus andrewsii*, *Eucalyptus prava* and *Eucalyptus youmanii*.

Conservation status: the species is currently listed as Endangered on Schedule 1 of the NSW *Threatened Species Conservation Act* as Endangered. This species is currently known from an estimated 3000 individuals within 12 discrete populations, all of which are included within the boundaries of Bolivia Hill Nature Reserve (Hunter & Earl 1999; Hunter 2002). Threats to the species include fires of too high a frequency, browsing by goats and prolonged drought and climate change.

Specimens examined: Northern Tablelands: Bolivia Hill, c. 34 km south of Tenterfield, Williams 95231 & Quinn, 7 May 1995 (NE, NSW, BRI, MEL); Bolivia Hill, Hunter 3066, 30 Apr. 1995 (NE); Bolivia Hill, Hunter 3040 (NE); Bolivia Hill, c. 35 km south of Tenterfield, Falconer & Morsley, 2 Dec 1996, plants in fruit (BRI, NE, NSW, CANB, MEL, AD); Bolivia Hill, Williams, Nov. 1996 (NE, NSW, CANB, MEL).

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