



Oxylobium bracteosum (Fabaceae: Mirbelieae), a new species endemic to Mount Imlay in south-eastern New South Wales

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Introduction

The genus *Oxylobium* Andrews is endemic to Australia. In its broadest concept it comprised about 50 species but revisions since 1992 (Taylor and Crisp 1992, Crisp *et al.* 1995, Chandler *et al.* 2002) have assigned most taxa to other genera. There are currently six species recognised in the genus, although *O. oxylobioides* (F.Muell.) Crisp & R.L.Barrett, syn. *Mirbelia oxylobioides* F.Muell., has yet to be taken up by all jurisdictions (e.g., VicFlora 2023). All species are restricted to eastern Australia.

Oxylobium ellipticum (Vent.) R.Br. is one of the most widespread *Oxylobium* species, occurring in New South Wales, the Australian Capital Territory, Victoria, and Tasmania in a range of habitats from near-coastal to alpine. The variety *O. ellipticum* var. *alpinum* Maiden and Betche (1898) was named for low-growing, high-elevation representatives, but is no longer accepted as distinct (CHAH 2011).

McDougall *et al.* (2023) noted that the population of *Oxylobium ellipticum* on Mount Imlay in south-eastern New South Wales differed in its arrangement of flowers and in some leaf characters, and consequently recommended further taxonomic investigation. Following field observations and inspection of 32 collections of *O. ellipticum* at MEL and CANB representing the full known geographic range of this species, the

Abstract

The genus *Oxylobium* has undergone several revisions in the last 30 years with recent works resulting in most previously-recognised species being re-assigned to other genera. One of the few remaining species, *Oxylobium ellipticum*, is widespread in south-eastern Australia, occurring from near-coastal to alpine habitats, and is highly variable in many morphological characters. Collections from the isolated summit of Mount Imlay in south-eastern New South Wales appear distinctive within *O. ellipticum* and, following field and herbarium studies, this entity is herein described as *O. bracteosum* K.L.McDougall & N.G.Walsh. From its low known population size and geographic restriction, the new species is likely to be eligible for listing as threatened.

Keywords: Threatened species, Mount Imlay, Endemic flora

Mt Imlay entity is here elevated to species rank. Also provided are notes on residual forms representing *O. ellipticum* based on author examination of these collections, highlighting the need for further study of this species in particular and the genus *Oxylobium* overall—a task beyond the scope of the present study. The authors have chosen here to focus on the Mt Imlay population, rather than embarking on a lengthy, genus-wide revision in the hope that recognition will enhance conservation outcomes of this highly restricted species.

Taxonomy

Oxylobium bracteosum differs from *O. ellipticum* most distinctively in having flowers in a spicate raceme (rather than a corymb), larger floral bracts (9–11.5 mm long compared with 4–8 mm in *O. ellipticum*) that completely obscure the developing flowers when in bud (Figure 1), and larger bracteoles (9–10 mm long compared with 2.5–5 mm in *O. ellipticum*) that are attached just below the calyx rather than mostly near midway on the pedicel. Other features that are generally distinctive are the decurved rather than straight leaf apices and the longer stipules, when present to 3 mm long versus to 1.5 mm long in *O. ellipticum*. The orange keels of

O. bracteosum flowers (in contrast to red in collections of *O. ellipticum*) may also be diagnostic.

Oxylobium bracteosum K.L.McDougall & N.G.Walsh *sp. nov.*

Type: AUSTRALIA. New South Wales, 20 km SW of Eden, Mount Imlay, near trig., 25.x.1977, *M.D. Crisp 3504* (holo MEL 05441211; iso CBG!, NSW photo!)

Erect, sparsely-branching *shrub* to 2 m, young stems villous with pale to golden, simple hairs to 2 mm long, overlying a layer of shorter subappressed hairs, older stems with subappressed hairs only, or ultimately glabrescent. *Leaves* crowded, irregularly arranged, or in approximate whorls of 3, narrowly ovate to narrowly obovate or oblong elliptic, 11–25(–40) mm long, 2.5–8(–11) mm wide, reticulate and tuberculate with scattered to dense silky hairs on adaxial surface when young, finally glabrous, abaxial surface densely covered with silky appressed to sub-appressed hairs; margins strongly recurved; midrib depressed on upper surface; leaf apex decurved, mucronate, with a firm point to 2 mm long, usually deciduous; petiole to 2.5 mm long, sericeous; stipules (when present) to 3 mm long, sericeous, tapering to a glabrescent tip. *Flowers* in a



Figure 1. The habit and distinctive inflorescences of *Oxylobium bracteosum*. a. Inflorescences of *O. bracteosum* prior to anthesis; note the silky floral bracts obscuring the sepals in bud (J.D.Briggs 1959 & D.E.Albrecht, CANB 366966); b. the distinctive spicate inflorescences of *O. bracteosum* on the summit of Mount Imlay. (Photo: Genevieve Wright, with permission)

condensed, spike-like raceme to 3.5 cm long, pedicels silky hairy to 4 mm long; floral bracts narrowly ovate, acuminate, 9.5–11.5 mm long, 3–4 mm wide, abaxially sericeous, adaxially glabrous, completely obscuring the developing flower until just prior to anthesis, caducous; bracteoles at anthesis narrowly lanceolate to linear, to 9 mm long and 1 mm wide, attached just below calyx. *Calyx* sericeous, 8–9.5 mm long, 3–4 mm wide, teeth more-or-less equal, as long as or slightly longer than tube. *Standard* suborbicular, emarginate, 10–12 mm long (including a claw 3–4 mm long), 9.5–13 mm wide, orange with a red basal flare, wings orange, obliquely obovate, 8.5–10 mm long (including a claw to 4 mm long), ca. 2.5 mm wide, keel orange, 9–10 mm long. *Ovary* silky hairy. *Fruits* and seeds unknown.

Additional specimens examined: NEW SOUTH WALES.

Mount Imlay, no date, *W.L. Morton s.n.* (MEL!, NSW photo!); Mount Imlay National Park. Just below the summit of Mount Imlay on a spur due south, 17.vii.1986, *D.E. Albrecht 2687* (MEL!); Northern end of summit ridge of Mount Imlay, 26.v.2023, *K.L. McDougall s.n. & G.T. Wright* (MEL!); Mount Imlay National Park. 500 m S of summit of Mount Imlay, 17.vii.1986, *J.D. Briggs 1959 & D.E. Albrecht* (CANB!, NSW photo!); Mount Imlay Peak, adjacent to walking track. Mount Imlay National Park, 27.x.2016, *G.T. Wright 465* (CANB!); Mt. Imlay National Park, Mt. Imlay Summit, 16.v.1978, *S.I. Parker s.n.* (CBG!); Mt Imlay, NNE spur just below summit, 15 km directly SW of Eden on walking track, 25.x.1987, *M. Parris 9220* (CANB!).

Distribution and ecology: Known only from the summit area of Mount Imlay near Eden in south-eastern New South Wales between 850 and 880 m above sea level, where it is locally common in sparse woodland dominated by *Eucalyptus sieberi* L.A.S.Johnson. Soils are typically skeletal and plants grow amongst outcropping Devonian sandstone.

Conservation status: *In situ* observations of *Oxylobium bracteosum* satisfy IUCN 3.1 Red List CR (Critically Endangered) Criteria B2ab(v) (IUCN 2012), i.e., the species has an area of occupancy <10 km², is known from a single location, and there has been an observed (albeit small) reduction in mature individuals as a direct consequence of the introduced pathogen *Phytophthora cinnamomi* Rands, which is present within the entire

population. All plants were burnt in the bushfire of 2019/20 but resprouting was observed after about six months (McDougall *et al.* 2023).

Notes on *Oxylobium ellipticum sens. strict.*

In examining many specimens of *Oxylobium ellipticum* from across its range, both in the herbarium and the field, considerable variation in morphology was noticed, with some ‘variants’ possibly representing distinct and as yet undescribed taxa or requiring reassignment to other existing species, the boundaries of which may warrant re-circumscription. For instance, the distinction between *O. ellipticum* and *O. arborescens* R.Br. is sometimes unclear and collections of *O. arborescens* have occasionally been incorrectly determined as *O. ellipticum* or determined as one species at one herbarium and as the other in duplicate collections held elsewhere. Intermediates between these species may occur naturally. Willis, in notes on collections from Mount Bowen in eastern Victoria (MEL515088 and 515089), suggested two forms of *O. ellipticum* were present at the site. MEL515089 seems to be intermediate between *O. ellipticum* and *O. arborescens* in leaf dimensions and floral bract length. It is not known if typical forms of both species are present in this case or in other areas where apparent intermediates occur. The length of the floral bracts (<3 mm in *O. arborescens* and 4 mm or more in *O. ellipticum*) and flower arrangement (mostly few-flowered axillary corymbs in *O. arborescens* and many-flowered terminal corymbs in *O. ellipticum*) seem to be the most consistent characters of difference. The length to width ratio character cited as diagnostic between *O. arborescens* and *O. ellipticum* in the key to *Oxylobium* in the New South Wales Flora Online (2023) does not appear to be discriminatory in all cases.

Collections examined from the Blue Mountains area (CBG3165, CBG6213, CBG6262) and Budawang Ranges (CBG49103), currently held under *Oxylobium ellipticum*, consistently have leaves with cordate bases, which tend to be sparsely hairy on leaf under-surfaces, characters shared with *O. cordifolium* Andrews. The assignment of those specimens to *O. ellipticum* appears to be based on leaf size (to 14 mm long × 8 mm wide in the Blue Mountains collections compared with 8 mm long × 5 mm wide in *O. cordifolium*) rather than other traits, and further investigation of this apparently aberrant form is warranted.

The outlier population of *Oxylobium ellipticum* from Barrington Tops on the Northern Tablelands of New South Wales appears to differ in some characters (e.g. plants to 2.5 m tall with highly discoloured leaves to 28 mm long) from the dense, compact, alpine or subalpine forms of *O. ellipticum* from the Australian Alps and Tasmania, however, little fertile material is available to make a definitive comparison. Further collections are warranted to ascertain how best to treat the Barrington Tops population.

Barrett *et al.* (2021) noted that further taxonomic work is required on the genus *Oxylobium*. Genomic analyses may assist in delineating boundaries between existing species and potentially elucidating new species. It is hoped that in segregating *O. bracteosum* from *O. ellipticum*, a challenging task is made at least somewhat simpler.

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