

A taxonomic revision of *Olearia elliptica* DC. (Asteraceae: *Astereae*) with the description of two new species *O. fulgens* A.R.Bean and *O. praetermissa* (P.S.Green) A.R.Bean

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Summary

Bean, A.R. (2020). A taxonomic revision of *Olearia elliptica* DC. (Asteraceae: *Astereae*) with the description of two new species *O. fulgens* A.R.Bean and *O. praetermissa* (P.S.Green) A.R.Bean. *Austrobaileya* **10(4)**: 656–662. The broadly circumscribed *Olearia elliptica* DC. is taxonomically revised and two new species *O. fulgens* A.R.Bean sp. nov., and *O. praetermissa* (P.S.Green) A.R.Bean comb. et stat. nov. are recognised. All three species are fully described with an identification key and a distribution map provided. A lectotype is chosen for *Olearia elliptica*.

Key Words: Asteraceae; *Olearia*; *Olearia elliptica*; *Olearia fulgens*; *Olearia praetermissa*; Australia flora; Queensland flora; New South Wales flora; new species; taxonomy; identification key

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Introduction

Olearia Moench is the largest genus of Asteraceae in Australia, with around 130 species (Lander 1992). Recent taxonomic and phylogenetic papers (Cross *et al.* 2002; Messina *et al.* 2013, 2014; Walsh 2014; Messina & Walsh 2019) have contributed to our knowledge of *Olearia*, but have also shown that further research is required to properly understand and elucidate the taxonomy and phylogeny of the genus.

Olearia elliptica DC. was originally described by Augustin de Candolle from a specimen collected by Allan Cunningham in the Illawarra region, south of Sydney. The current circumscription of *O. elliptica* (following the determinavit slips of N. Lander) is a broad one, encompassing all *Olearia* taxa from New South Wales (including Lord Howe Island) and Queensland with petiolate, alternate, viscid leaves.

It has long been recognised that two distinct forms of *O. elliptica* occur on the mainland (Stanley & Ross 1986; Harden *et al.* 2006; Leiper *et al.* 2017). In addition, an

Olearia taxon from Lord Howe Island has been described as a subspecies of *O. elliptica*.

The two mainland forms can be separated readily in the herbarium merely by leaf size and shape, as well as glossiness and petiole length, but there are several other differences as outlined below. The two forms also occupy different habitats; one (*O. elliptica sens. str.*) grows in more easterly areas with higher rainfall; the second form grows in more westerly localities that receive lower rainfall. These two ‘forms’ are regarded as being specifically distinct, with the more westerly taxon here described as *O. fulgens* A.R.Bean sp. nov. The two species are allopatric except possibly in the Hunter Valley.

Olearia elliptica subsp. *praetermissa* P.S.Green, described from Lord Howe Island, differs from *O. elliptica sens. str.* in several morphological characters, and is here raised to species rank.

Materials and methods

This paper is based on a study of herbarium specimens held at BRI, CANB and MEL, and images of specimens at G, K and NSW, indicated as *i.d.v.* (*imago digitalis visa*). Specimens at NSW were not available for loan when this paper was prepared.

Measurements were taken from dried material, except for individual florets, where they were taken from material preserved in spirit or reconstituted with boiling water. Dimensions are inclusive, *viz.* 1–1.7 indicates 1.0–1.7.

The distribution map was prepared using Diva 7.5.0 software. In the specimen citations, National Park is abbreviated as ‘NP’, and State Forest as ‘SF’.

Taxonomy

Olearia elliptica DC., *Prodr. [A. P. de Candolle]* 5: 271 (1836); *Olearia elliptica* subsp. *elliptica*, P.S.Green, *Kew Bull.* 48: 311 (1993). **Type:** New South Wales. Illawarra, [October–November 1818], *A. Cunningham* 27 (lecto: G 00494308 *i.d.v.* [designated here]; isolecto: K 000838958 *i.d.v.*).

Aster ellipticus DC., *Prodr. [A. P. de Candolle]* 5: 271 (1836), *nom. inval., pro syn.*

Eurybia illita F.Muell., *Fragm.* 1: 16 (1858); *Aster illitus* (F.Muell.) F.Muell., *Fragm.* 5: 76 (1865). **Type:** Queensland. MORETON DISTRICT: Mt Lindesay, *s.dat.*, *W. Hill s.n.* (syn: K 000838960 *i.d.v.*; syn: K 000838961 *i.d.v.*).

Olearia illita F.Muell., *Fragm.* 5: 76 (1865), *nom. inval., pro syn.*

Illustration: Leiper *et al.* (2017: 478).

Bushy shrub to 2 m high. Stems terete, but with several longitudinal ridges; glabrous, but with many viscid glands. Leaves alternate, petioles 10–17 mm long, not or obscurely decurrent; lamina elliptic to ovate, 65–113 × 19–37 mm (2.5–3.5 times longer than broad), markedly discoloured, viscid glands abundant on both surfaces, the exudate usually covering only part of the surface, giving a somewhat shiny, blotchy appearance; apex acute; margins entire or rarely toothed; venation faintly visible on upper surface, readily visible below, penninerved, with 5–7 pairs of lateral veins raised from the surface. Capitula terminal, in corymbose clusters of 10–30, pedunculate, radiate, 6–9 mm long, 7.5–9.5 mm diameter. Peduncles (2–)12–23 mm long, often with a few small bracts along their

length. Involucral bracts 18–25, graduated in length, 3–4-seriate, outer surface with short hairs, viscid or not viscid; margins entire, scarious, apex obtuse; outer bracts ovate to elliptic, 1.4–3 × 0.7–0.9 mm, inner bracts rectangular to elliptic, 3.6–4.5 × 1–1.1 mm. Receptacle convex, 1.5–2.5 mm across, with short irregular projections between the floret scars. Ray florets 8–20, uniseriate, female, corolla tube 2.2–3.4 mm long, with sparse antrorse hairs; ligule 5–9 mm long, white to lilac, apex minutely 3-lobed; stylar arms lanceolate, 1.1–1.4 mm long. Disc florets 9–25, bisexual, yellow, corolla tube 3.2–4 mm long, with a few small antrorse eglandular hairs; corolla lobes 5, 1–1.5 mm long, acute, outer surface glabrous; anthers *c.* 1.5 mm long, not caudate. Achenes forming from both disc and ray florets, cylindrical, slightly dorsi-ventrally flattened, 2.6–3.2 mm long, with 4 or 5 prominent longitudinal ribs and sparse antrorse eglandular hairs throughout, carpodium small, white, slightly oblique. Pappus comprising 20–30 white or straw-coloured barbellate bristles all equal in length, 4.5–4.9 mm long, barbellae < 0.05 mm long, and occasionally with 3–7 short bristles (0.3–0.4 mm long) in an outer whorl, thinner than the inner whorl. *Sticky daisy-bush.*

Additional selected specimens examined: Queensland. MORETON DISTRICT: Bithongabel Lookout, Lamington NP, Dec 1960, *Smith 11286* (BRI); Wagawn, Aug 1960, *Blake 21361A* (BRI); National Park, Macpherson Range, Jan 1919, *White s.n.* (BRI [AQ249690]); Springbrook, Dec 1969, *Smith s.n.* (BRI [AQ410828]); Mt Merino summit, Lamington NP, Jan 1995, *Forster PIF16070 & Leiper* (BRI, MEL); Mt Lindesay, Nov 1990, *Forster PIF7556* (BRI, MEL, PERTH); Best of All Lookout, Springbrook, Nov 1976, *McDonald 1701 & Batianoff* (BRI). **New South Wales.** NORTHERN TABLELANDS: Double head, Carrai Plateau, Sep 1980, *s.coll.* (CANB 00502632); Point Lookout, New England NP, Nov 1997, *Donaldson 1811* (CANB); Apsley Falls, SE of Walcha, Dec 1970, *Telford 2726* (CANB). NORTH COAST: Whian Whian, Oct 1964, *Jones 2893* (CANB); Whian Whian SF, Jul 1956, *Webb & Tracey 15* (BRI); Tyalgum Ridge, Macpherson Range, *c.* 25 km WNW of Murwillumbah, Dec 1977, *Haegi 1528* (BRI, NSW). CENTRAL COAST: Cessnock – Broke Road, W of Tyrrells Vineyard, Mar 2010, *Purdie 7651* (CANB, NSW); Budderoo NP, N of Minnamurra Falls, *c.* 2 km E of Knight’s Hill, Oct 1993, *Gilmour 7506* (CANB, MEL); Yengo NP, access through ‘Darrowby’, *c.* 3.5 km W of Broke on the road to Milbrodale, Mar 1991, *Palmer 337* (CANB). CENTRAL TABLELANDS: Blue Mountains NP, Wentworth Falls, Princes Rock lookout, Oct 2011, *Schmidt-Lebuhn 1249*

(CANB); Fitzroy Falls, along walking track to fall from visitor centre, Oct 1996, *Errington 556* (NSW). SOUTH COAST: Jervis Bay, Aug 1968, *Groot Oblink s.n.* (CANB cbg15227.1).

Distribution and habitat: *Olearia elliptica* occurs from the Lamington National Park, Queensland to Jervis Bay, New South Wales (**Map 1**). It grows in *Eucalyptus*-dominated open forest or rainforest edges where the annual rainfall exceeds 1000 mm. Altitude varies from near sea level at the southern end of its range to 1150 metres at the Queensland – New South Wales border.

Phenology: The majority of flowering and fruiting specimens were collected from October–December. A few fertile specimens have been collected in August, and from January–April.

Notes: A few specimens from the Hunter Valley of New South Wales are somewhat intermediate between *Olearia elliptica* and *O. fulgens*, and it is possible that some genetic interchange is occurring in that area.

Olearia fulgens A.R.Bean **sp. nov.** with affinity to *O. elliptica* but differing by the narrower, more glossy leaves, with the lateral veins not raised, the shorter achenes, the shorter corolla lobes on the disc florets, and the presence of tiny hairs on the corolla lobes of the disc florets. **Typus:** Queensland. DARLING DOWNS DISTRICT: State Forest 595, Talgai, Mount Gammie North, 9 January 1993, *D. Halford Q1630* (holo: BRI; iso: MEL, NSW).

Illustration: Leiper *et al.* (2017: 186) [as *O. elliptica*].

Bushy shrub to 2.5 m high. Stems terete, but with several longitudinal ribs; glabrous, but with many viscid glands. Leaves alternate, petioles 5–10 mm long, not decurrent; lamina narrowly elliptic to lanceolate, 43–88 × 10–21 mm (3.6–5.5 times longer than broad), slightly to markedly discoloured, viscid glands abundant on both surfaces, the exudate often covering the entire surface, giving a shiny, varnished appearance, or covering only part of the surface, giving a blotchy appearance; apex acute to acuminate; margins entire; venation not visible on upper surface, but faintly

visible below, penninerved, with 4–6 pairs of lateral veins not raised from the surface. Capitula terminal, in corymbose clusters of 7–25, pedunculate, radiate, 6–7.5 mm long, 7–9 mm diameter. Peduncles 5–14 mm long, often with a few small bracts along their length. Involucral bracts 18–25, graduated in length, 3–4-seriate, outer surface glabrous, often viscid; margins entire, scarious, apex obtuse to acute; outer bracts ovate to elliptic, 1.1–1.8 × 0.5–0.7 mm, inner bracts elliptic, 2.6–3.6 × 0.8–0.9 mm. Receptacle convex, 1.2–2 mm across, with short irregular projections between the floret scars. Ray florets 6–14, uniseriate, female, corolla tube 2.1–2.7 mm long, with sparse antrorse hairs; ligule 4.5–6 mm long, white, apex minutely 3-lobed; stylar arms filiform, 1.1–1.5 mm long. Disc florets 8–14, bisexual, yellow, corolla tube 3.8–4.3 mm long, with a few small antrorse eglandular hairs; corolla lobes 5, 0.7–1.1 mm long, acute, outer surface with a few small eglandular hairs; anthers *c.* 1.5 mm long, not caudate. Achenes forming from both disc and ray florets, cylindrical, slightly dorsi-ventrally flattened, 2.1–2.7 mm long, with 4 or 5 prominent longitudinal ribs and sparse antrorse eglandular hairs throughout, carpodium small, white, slightly oblique. Pappus comprising a single whorl of 25–35 white or straw-coloured barbellate bristles all equal in length, 3.3–4.8 mm long, barbellae < 0.05 mm long. *Peach-leaved daisy-bush*. **Fig. 1.**

Additional selected specimens examined: Queensland. LEICHHARDT DISTRICT: Carnarvon NP, Buckland Tableland section, via Tanderra, SW of Springsure, Aug 2004, *Eddie Lot 6 & McDonald* (BRI). BURNETT DISTRICT: *c.* 4 km SSW of Elgin Vale, Jan 1991, *Pedley 5591* (BRI, K, MEL). WARREGO DISTRICT: Near Caldervale – Kyber Road, SE of Tambo, May 2010, *Bean 29830* (BRI). MARANO DISTRICT: ‘Oakwells’, W of Injune, Jan 2008, *Eddie BC027 & Cosh* (BRI); ‘Andromeda’, *c.* 25 km NNE of Mungallala, Mar 2015, *Mathieson MTM2001* (BRI); Mt Mobil section of Chesterton Range NP, Sep 1995, *Bean 8970 & Grimshaw* (BRI). DARLING DOWNS DISTRICT: *c.* 35 km E of Texas, Jan 1973, *Pedley 4062* (BRI); Gowrie, *s.dat.*, *Bailey s.n.* (BRI [AQ249686]); W of Kogan on Condamine Highway, Aug 1951, *Webb s.n.* (BRI [AQ249676]); Forest Lookout, Jack Creek, 17 miles [*c.* 28 km] WNW of Millmerran, Aug 1969, *Ward WW83* (BRI); 3 km W of Gladfield, Jun 1986, *Forster PIF2469 et al.* (BRI, NSW); Mt Bullaganang, Mar 1994, *Forster PIF15054* (BRI, MEL); Durakai SF, Dec 1999, *Thompson WAR16*

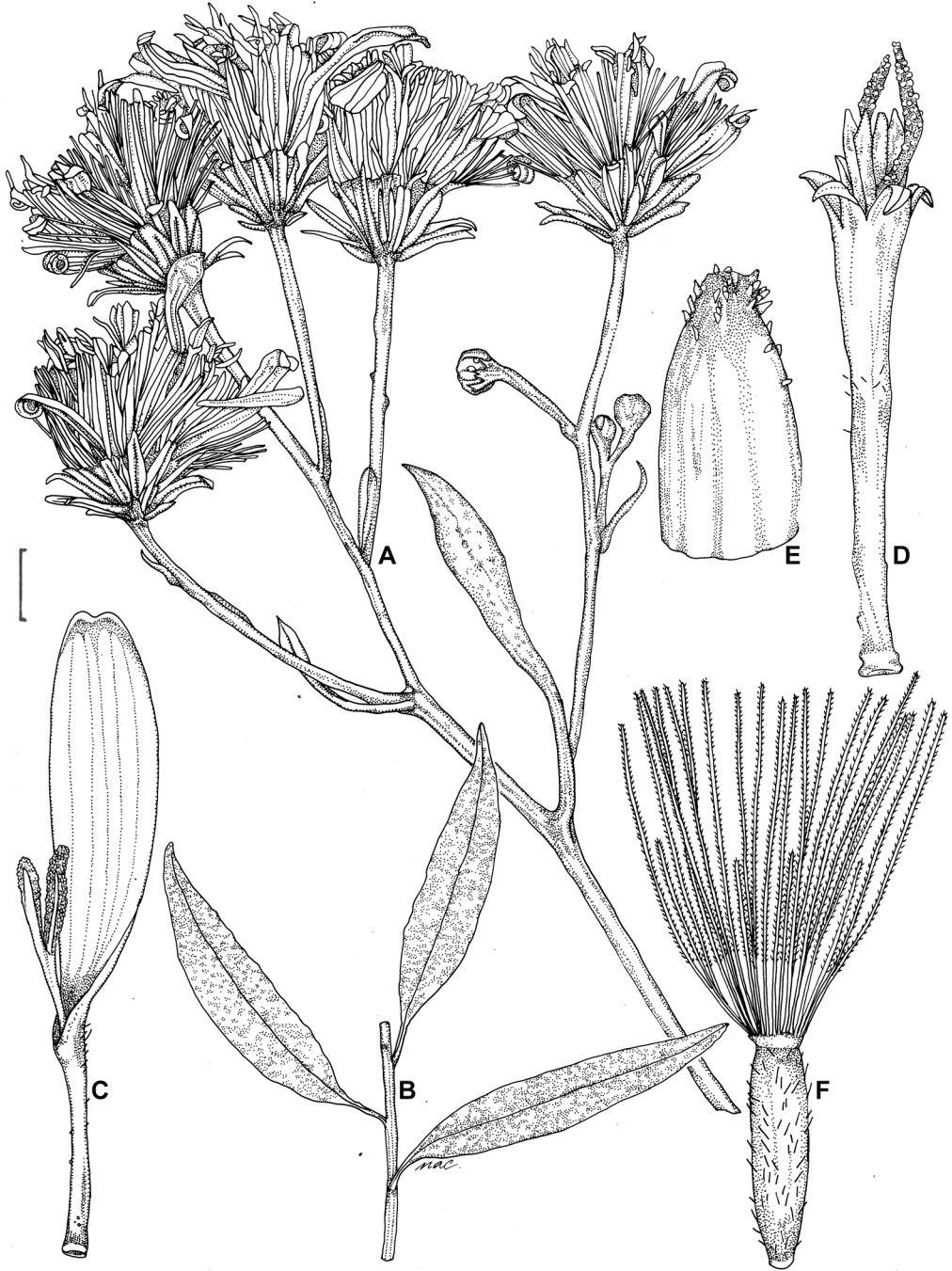


Fig. 1. *Olearia fulgens*. A. flowering branchlet $\times 3$. B. leaves $\times 1$. C. ray floret $\times 10$. D. disc floret $\times 15$. E. apex of disc corolla before anthesis $\times 40$. F. achene and pappus $\times 10$. A,C,E from Thompson WAR16 & Weatherhead (BRI); B from Ward WW83 (BRI); D from Bean 11627 (BRI); F from Eddie BC027 & Cosh (BRI). Scale bar = 10 mm at $\times 1$ magnification. Del. N. Crosswell.

& *Weatherhead* (BRI); c. 12 km S of Dunmore Forest Station, via Cecil Plains, Jan 1997, *Bean 11627* (BRI); Pincotts Road between Mt Colliery and Gambubal, Jan 2012, *Forster PIF38542* & *Leiper* (BRI, NSW, US); between Karara and Cobba-da-mana, May 1936, *Everist & White 3* (BRI). MORETON DISTRICT: Bidwillii Logging Area, SF 283, NNE of Blackbutt, Nov 2005, *Bean 24475* (BRI). **New South Wales.** NORTH WEST SLOPES: ‘Cuffin-Collar’, 11 km WNW of Warialda, S of Mosquito Creek Road, Mar 2011, *Forster PIF37867* & *Hodge* (BRI, NE); Munro SF, on Bingara – Copeton Dam Road, 35 km SE of Bingara, Jan 2005, *Orchard 7394* (BRI, CANB, MEL); Warrumbungle NP car park, Jun 1986, *Clarke s.n.* (BRI [AQ493639]). NORTHERN TABLELANDS: Kildare Road, 0.1 km S of Bruxner Highway, NW of Tenterfield, Apr 2004, *Bean 21898* (BRI, MEL, NSW); 7.8 km SW of Tenterfield, Feb 2006, *Bean 24674* (BRI, NSW); c. 8 km along the road from Kingstown towards Uralla, Mar 1997, *Lyne 2160* (BRI, CANB, NSW, PERTH). CENTRAL WEST SLOPES: 14 km S of Bundella – Bomera Road on Pandora’s Pass Road, Liverpool Range, Feb 2004, *Orchard 7206* (CANB); Coorangoore Trig, 8 km from Stuart Town, Sep 1966, *Phillips 121* (CANB).

Distribution and habitat: *Olearia fulgens* occurs from near Tambo and Springsure in Queensland, to Stuart Town and Capertee Valley in New South Wales (**Map 1**). It grows in *Eucalyptus* – *Callitris* woodland on hillsides and ridges with infertile soil, where the annual rainfall is 600–800 mm.

Phenology: Most flowering and fruiting specimens were collected from December to April, while a few were collected in May and June.

Affinities: *Olearia fulgens* differs from *O. elliptica* by its narrowly elliptic to lanceolate leaves, 3.6–5.5 times longer than broad (versus elliptic to ovate, 2.5–3.5 times longer than broad for *O. elliptica*); the lateral veins not raised (and obscure) on the lower leaf surface (versus lateral veins raised and prominent on lower leaf surface for *O. elliptica*); petioles 5–10 mm long (10–17 mm long for *O. elliptica*); the glabrous involucre bracts (versus involucre bracts sparsely hairy at distal end for *O. elliptica*); the presence of tiny hairs on the corolla lobes (outer surface) of the disc florets (versus glabrous lobes for *O. elliptica*); the corolla lobes of the disc florets 0.7–1.1 mm long (1–1.5 mm long for *O. elliptica*); and the achenes 2.1–2.7 mm long (2.6–3.2 mm long for *O. elliptica*).

Etymology: From the Latin *fulgens*, meaning ‘gleaming, shining’. This is in reference to the very shiny leaves possessed by this species.

Notes: *Olearia fulgens* flowers mainly in the summer and autumn months, whereas *O. elliptica* is predominantly a spring-flowering species.

Olearia praetermissa (P.S.Green) A.R.Bean **comb. et stat. nov.**; *O. elliptica* subsp. *praetermissa* P.S.Green, *Kew Bull.* 48: 311 (1993). **Type:** New South Wales. Lord Howe Island, 25 March 1971, *A.N. Rodd 1771* (holo: K 000838957 *i.d.v.*; iso: NSW *n.v.*).

Bushy shrub 0.25–1 m high. Stems with several longitudinal ridges; glabrous, but with some viscid glands. Leaves alternate, petioles 4–13 mm long, not decurrent; lamina oblanceolate to obovate, 24–53 × 9.5–17 mm (2.3–3.9 times longer than broad), slightly discoloured, viscid glands present on both surfaces, the exudate usually covering only part of the surface, giving a somewhat shiny, blotchy appearance; apex obtuse or acute; margins entire; venation not visible on upper surface, and faintly visible below, penninerved, with 2–4 pairs of lateral veins not raised from the surface. Capitula terminal, in corymbose clusters of 4–15, pedunculate, radiate, 6–7 mm long, 7–9 mm diameter. Peduncles 5–12 mm long, with several small bracts along their length. Involucre bracts 20–30, graduated in length, 2 or 3-seriate, outer surface glabrous or with short hairs, viscid; margins entire, scarious, apex acute; outer bracts ovate to deltate, 1.2–2.2 × 0.6–0.8 mm, inner bracts rectangular to lanceolate, 3.2–3.6 × 0.7–1.1 mm. Receptacle flat to convex, 2–2.3 mm across, with short irregular projections between the floret scars. Ray florets 15–20, uniseriate, female, corolla tube 2.2–2.4 mm long, with sparse antrorse hairs; ligule 2.2–2.6 mm long, white, apex minutely 3-lobed; stylar arms lanceolate, 0.7–0.8 mm long. Disc florets 13–16, bisexual, yellow, corolla tube 2.5–3.3 mm long, with a few small antrorse glandular hairs; corolla lobes 5, 0.7–0.9 mm

long, acute, outer surface glabrous; anthers *c.* 1.2 mm long, not caudate. Achenes forming from both disc and ray florets, cylindrical, slightly dorsi-ventrally flattened, 1.6–1.8 mm long, with 4 or 5 prominent longitudinal ribs and sparse antrorse eglandular hairs throughout, carpodium small, white, slightly oblique. Pappus comprising an inner whorl of 15–20 pale brown or straw-coloured barbellate bristles all equal in length, 2.3–3 mm long, barbellae < 0.05 mm long, and an outer whorl of 7–15 white bristles 0.4–0.5 mm long, thicker than the inner whorl.

Additional specimens examined: New South Wales. Near the Goathouse, NE slope of Mt Lidgbird, Lord Howe Island, Nov 1963, *Hoogland 8817* (CANB); S of Goat House cave, Lord Howe Island, Apr 1996, *Crawford 3819* (CANB); Goathouse, Mt Lidgbird, Lord Howe Island, Oct 1984, *Hutton 213* (CANB); cliff below Grey face, Mt Lidgbird, Lord Howe Island, Nov 1983, *Hutton 61* (CANB); below the Nobbin, Mt Lidgbird, Lord Howe Island, Jun 1991, *Hutton 656* (CANB); Goat House, N slope of Mt Lidgbird, Lord Howe Island, Oct 1978, *Crisp 4520 & Telford* (CANB).

Distribution and habitat: *Olearia praetermissa* is endemic to Mt Lidgbird on Lord Howe Island (**Map 1**). It grows in basalt crevices on steep hillsides in open shrubland.

Phenology: Flowering or fruiting specimens have been collected in the months of April, June, October and November.

Affinities: *Olearia praetermissa* is similar to *O. elliptica*, but differs by the obovate to oblanceolate leaves (elliptic to ovate for *O. elliptica*); the consistent presence of two whorls of pappus bristles (usually one whorl only in *O. elliptica*); the ligules 2.2–2.6 mm long (5–9 mm long for *O. elliptica*); and the achenes 1.6–1.8 mm long (2.6–3.2 mm long for *O. elliptica*).

Notes: In a molecular study, Cross *et al.* (2002) sampled both *Olearia elliptica s. str.* and *O. elliptica* subsp. *praetermissa*, and found little support for a sister relationship between these taxa, despite their similar morphology.

Key to the species allied to *Olearia elliptica*

- 1 Leaves obovate to oblanceolate; ray florets with ligules 2.2–2.6 mm long; achenes 1.6–1.8 mm long; pappus in two whorls **O. praetermissa**
- 1. Leaves elliptical to ovate; ray florets with ligules 4.5–9 mm long; achenes 2.1–3.2 mm long; pappus usually in one whorl **2**
- 2 Leaves 3.6–5.5 times longer than wide; petioles 5–10 mm long; involucre bracts glabrous; corolla lobes of disc florets with tiny hairs **O. fulgens**
- 2. Leaves 2.5–3.5 times longer than wide; petioles 10–17 mm long; involucre bracts sparsely hairy at distal end; corolla lobes of disc florets glabrous **O. elliptica**

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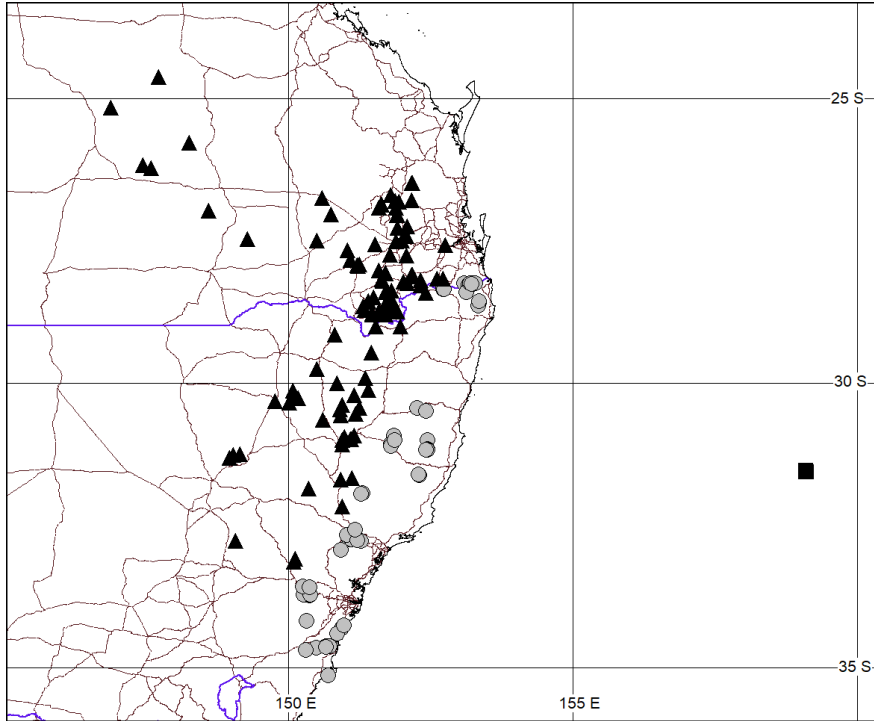
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Map 1. Distribution of *Olearia* spp. *O. elliptica* ●; *O. fulgens* ▲, *O. praetermissa* ■.