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Bursaria cayzerae (Pittosporaceae), a vulnerable new species from north-eastern New South Wales, Australia

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Abstract

Bursaria cayzerae I.Telford & L.M.Copel. (Pittosporaceae), a species endemic to north-eastern New South Wales, is described. Its distribution is mapped, and habitat and conservation status discussed. The attributes of the new species, *B. longisepala* and *B. spinosa*, are compared. A key to species of *Bursaria* that occur in New South Wales, including this new species, is provided.

Introduction

Bursaria (Pittosporaceae) is an endemic Australian genus with currently seven named species. In eastern Australia, the most common taxon is *Bursaria spinosa* Cav. subsp. *spinosa*, plants of which may flower in their juvenile stage. These neotonous plants superficially resemble small-leaved, long-spined species such as *B. longisepala* Domin. Revisionary studies by Cayzer et al. (1999) showed *B. longisepala s.str*. to be restricted to the Blue Mountains; material from elsewhere mostly represented misidentifications of specimens of neotonous plants of *B. spinosa* subsp. *spinosa* or collections from several populations from the Grafton area (Makinson 1992, 2011) that represent a distinct new species.

Morphological examination of herbarium material from these populations from the Grafton to Glenreagh area (as held at NE and CFSHB), together with field assessment of the plants, indicated that plants from the above area were morphologically different from both *B. longisepala* and *B. spinosa*. The new species *Bursaria cayzerae* is described to accommodate these plants. A comparison of selected morphological attributes of the new species with those of *B. longisepala* and *B. spinosa* is presented in Table 1.

Taxonomy

Bursaria cayzerae I.Telford & L.M.Copel. ***sp. nov.***

Bursaria cayzerae differs from *B. longisepala* by its adult leaves being larger than the juveniles, generally smaller sepals (2.4–3.6 mm long) and larger fruit (6–10.2 mm long).

Type: New South Wales: North Coast: 3 km ESE along Bostock Road from Tucabia Road, 20 km ENE of Grafton, 29°40'26''S, 153°09'08''E, 8 Dec. 2012, *L.M. Copeland 4513 & F.J. Edwards*; holo: NSW823160 (Fig. 1); iso: BRI, CANB, K, MEL, MO, NE.

Shrub to 2 m, sparsely branched. *Branchlets* tomentose with ± spreading hairs. *Juvenile leaves* subsessile, clustered around short spinescent axillary shoots to 10 mm long; lamina narrowly elliptic or narrowly oblanceolate, 2.4–9 mm long, 0.9–2 mm wide, shortly mucronate, glabrous. *Adult leaves* on spinescent shoots to 5.2 mm long (including spine); petiole c. 0.7 mm long; lamina narrowly elliptic to narrowly oblanceolate, 9.5–18.8 mm long, 1.7–3 mm wide, glabrous, with margin thickened. *Inflorescence* mostly axillary, solitary flowers, rarely 2–5-flowered racemes to 16 mm long, or terminal racemes or botrya to 30 mm long; pedicels 0.8–1.2 mm long, elongating up to 8.5 mm long in fruit, tomentose. *Sepals* 5, lanceolate, 2.4–3.6 mm long, 0.7–1 mm wide, acute, glabrous, green, persistent. *Petals* 5, narrowly oblanceolate, 7.2–9 mm long, 1.2–2.2 mm wide, acute, glabrous, white. *Stamens* 5, inserted opposite sepals; filaments 4.6–5 mm long; anthers elliptic, c. 0.8 mm long. *Ovary* compressed obovoid, 2.5–3 mm long, c. 1.2 mm wide, attenuate and tapering into style, glabrous; style c. 1.5 mm long. *Fruit* a compressed subglobose to broadly cordiform capsule, 6–10.2 mm long (excluding stylar remnants if present), 6.5–11.2 mm wide, apex rounded or slightly emarginate, often with stylar remnants, minutely transversely striate, glabrous, ripening brown. *Seeds* compressed, ovate to ± orbicular, 3.5–3.7 mm long, 2.5–2.8 mm wide, slightly winged, brown. Figs 2A & B

Distribution and habitat: *Bursaria cayzerae* is restricted to within 30 km of Grafton on the North Coast of New South Wales (Fig. 3). The species inhabits *Eucalyptus* shrubby woodland on shallow, sandy soils derived from sandstone of the Grafton Formation, Kangaroo Creek Sandstone and Malanganee Coal Measures. At the type locality, dominants are *Eucalyptus propinqua*, *E. fibrosa* and *Corymbia variegata* with *Allocasuarina littoralis* and *Acacia falcata* in the understorey. Dominant species at Shannon Creek are *Eucalyptus bancroftii* and *Angophora robur* with *Dodonaea* sp. Coaldale (H.J.Wissmann NE40546), another Grafton area endemic in the understorey. At Rocky Creek, *Lophostemon suaveolens* and *Eucalyptus* sp. Coaldale (J.B.Williams NE36714) are dominant, with two additional localised endemics, *Acacia ruppii* and *Prostanthera sejuncta,* in the shrub stratum. The dominant tree at the Wells Crossing Flora Reserve site is *Eucalyptus tetrapleura*, another Grafton Sandstone endemic.

Phenology: flowering appears to be restricted to November and December with mature fruits being formed a month later, in December and January, respectively. Dehisced capsules are retained on the plants.

Specimens examined (selection): NEW SOUTH WALES: North Coast: Rocky Creek, c. 30 km NNW of Grafton, 100 m SW of Grafton–Coaldale road crossing, 14 Sep 2004, *Copeland 3780* (BRI, CANB, NE, NSW); Sportsmans Creek, Banyabba Nature Reserve, 15 Sep 1996, *Floyd 2239* (CFSHB); 4 km N of Upper Copmanhurst, 30 Dec 1982, *Wissmann NE40546* (CANB, NE, NSW);Wells Crossing Flora Reserve, Newfoundland State Forest, 2 Nov 1987, *Tweedie s.n.* (CFSHB); Shannon Creek Dam Compensatory Habitat Area, 1.5 km E of dam wall, c. 8 km W of Coutts Crossing, 8 Dec 2012, *Copeland 4514 & Edwards* (NE, NSW).

Conservation Status: *Bursaria cayzerae* is currently known from eight small populations with the largest of these appearing to be at the type locality east of Tucabia. At least 150 plants occur there although some of these are threatened by their close proximity to a road verge which appears to suffer occasional disturbance. The population near Shannon Creek Dam contains some 55 plants. Most other populations surveyed appear to consist of fewer than 20 plants and the total known population is less 300 mature adults. As such, the species meets the criteria to be considered 'Vulnerable' following the IUCN guidelines (IUCN 2011). It would probably meet the requirements to be listed as Vulnerable on both the *NSW Threatened Species Conservation Act 1995* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. Small populations are known to be conserved in Banyabba Nature Reserve, Wells Crossing Flora Reserve, Fortis Creek National Park, Ramornie National Park and Chambigne State Conservation Area.

Etymology: the specific epithet, *cayzerae*, honours Lindy Cayzer, whose revisionary studies in Pittosporaceae considerably broadened our knowledge of the family.

Notes: this new species has been confused previously with *B. longisepala* and neotonous *B. spinosa* subsp. *spinosa*. *Bursaria cayzerae* differs from the former in its smaller juvenile and larger adult leaves, shorter sepals and larger capsules, from the latter in larger, persistent sepals (Table 1).

The species has been separated for some time at NE under the phrase name *Bursaria* sp. Coaldale (J.B.Williams NE70878) and some replicates have been distributed as such.

Fig. 1. Holotype of *Bursaria cayzerae* I.Telford & L.M.Copel. (NSW823160).

Fig. 2. *Bursaria cayzerae*. A. branchlet showing flowers and young fruit, Tucabia, N.S.W., *Copeland 2513 & Edwards*; B. habit showing dehisced capsules, Rocky Creek, N.S.W., Copeland 3780.

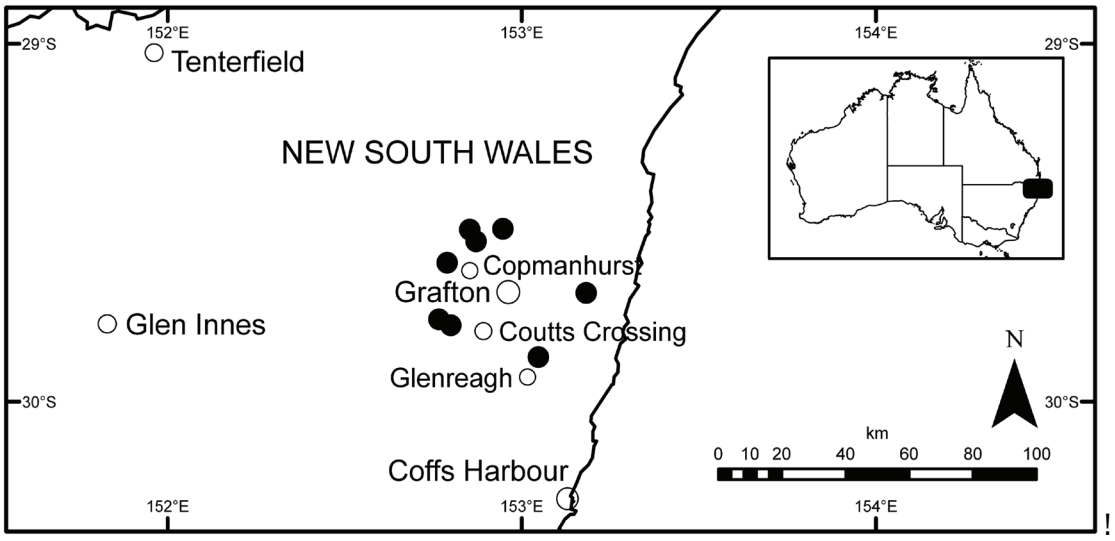

Fig. 3. Distribution of *Bursaria cayzerae*.

Table 1. Comparison of selected morphological attributes of *Bursaria cayzerae* with those of *B. longisepala* and *B. spinosa* subsp. *spinosa*.

Attribute	*B. cayzerae*	*B. longisepala*	*B. spinosa*
Juvenile leaf length (mm)	2.4–9.5	8–12	3–16
Adult leaf length (mm)	9.5–18.8	6–9	16–43
Adult leaf width (mm)	1.7–3	1–3	5–12
Spine length (mm)	2.8–8.2	5–10	6–23
Sepal length (mm)	2.4–3.6	3.5–4	0.7–1.2
Petal length (mm)	7.2–9	6–8	3.8–4.5
Capsule length (mm)	6–10.2	5–6	5–7
Capsule width (mm)	6.5–11.2	5–8	6–9

Key to species of *Bursaria* occurring in New South Wales

1a. Sepals < 2 mm long, caducous 2

1b. Sepals > 2 mm long, persistent 3

2a. Leaves glabrous ..... *Bursaria spinosa* subsp. *spinosa*

2b. Leaves abaxially white hairy ..... *Bursaria spinosa* subsp. *lasiophylla*

3a. Young branchlets densely covered with persistent, appressed hairs; occurs on limestone-derived soils; restricted to Wombeyan Caves area ..... *Bursaria calcicola*

3b. Young branchlets usually with spreading hairs; occurs on sandstone-derived soils 4

4a. Sepals 3.5–6 mm long; capsules 5–6 mm long; restricted to Blue Mountains ..... *Bursaria longisepala*

4b. Sepals 2.4–3.6 mm long; capsules 6–10 mm long; restricted to Grafton–Coffs Harbour area ..... *Bursaria cayzerae*

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