



## 58 ZYGOPHYLLACEAE <sup>1</sup>

AM Gray <sup>2</sup>

Annual or perennial herbs, sub-shrubs or shrubs, rarely trees, largely xerophytes or halophytes; branches sometimes jointed at the nodes. Leaves opposite, alternate or clustered, stipulate, often fleshy, bifid or pinnate, rarely simple or ternate; lobes usually entire. Inflorescences in terminal cymes or flowers in pairs or solitary and axillary. Flowers actinomorphic, bisexual, 4–5-merous. Sepals joined at the base, often imbricate, rarely valvate, persistent. Petals imbricate or contorted. Stamens free, usually 2–3 times as many as the petals, in 1–3 whorls, the outer whorl opposite the petals; filaments often with a scale-like basal appendage; anthers 2-celled, dorsifixed or basifixed, dehiscence latrorse. Disc usually present. Carpels 3–5, fused; ovary superior, often angled or winged; placentation axile; ovules pendulous, with more than one per loculus; style simple; stigma capitate or lobed. Fruit a loculicidal capsule, indehiscent nut, schizocarp or, rarely, a drupe, often winged or with thorns. Seed with or without endosperm.

A family of about 22 genera and 285 species; pantropical but extending into temperate regions of both hemispheres. The family is particularly abundant in arid regions of the Mediterranean. 5 genera and about 35 species in Australia. Zygophyllaceae are most closely related to Krameraceae (Americas) and the two families are the sole representatives of Zygophyllales. The family is of little economic or horticultural importance. Some species of *Zygophyllum* and *Tribulus* L. are potentially poisonous to stock due to their high levels of nitrates. Some species of *Tribulus* have spiny mericarps that may cause damage to sheep if ingested or caught in their hooves. These spiny mericarps may also become imbedded in fleeces, thus lowering the value of the fleece.

Synonymy: Tribulaceae.

External resources: accepted names with synonymy & distribution in Australia (APC); author & publication abbreviations (IPNI); mapping (AVH, NVA); nomenclature (APNI, IPNI).

### 1 ZYGOPHYLLUM

*Zygophyllum* L., *Sp. Pl.* 1: 385 (1753).

Synonymy: *Roepera* A.Juss., *Mém. Mus. Hist. Nat.* 12: 454, t. 15, no. 3 (1825).

Annual herbs or perennial undershrubs, glabrous or nearly so; branches often fleshy. Leaves opposite, often fleshy, sessile or petiolate; lamina entire, bifid, or two lobed where the expanded petiole is continuous with the leaflets. Flowers solitary, usually pedicillate. Sepals 4–5, imbricate, with membranous margins and greenish centres. Petals (3)4–5(6), yellow or white and drying yellowish (Tas.), or orange or rarely red, free, imbricate, shortly clawed. Stamens usually twice as many as the petals, inserted at the base of disc. Disc fleshy, often distinctly lobed, lobes at the base of septa that separate the locules of the ovary. Ovary superior, 3–5 celled, 3–5 angled; style subulate; stigma lobed or capitate. Fruit a 4–5-angled loculicidal capsule, or an indehiscent capsule with 3–4 longitudinal wings or ridges, or separating into 2–4 dorsally winged mericarps. Seeds 1–6 in each loculus, with endosperm, testa mucilaginous when wet.

A genus of about 120 species that is most abundant in desert, saline and calcareous areas in tropical and subtropical regions, particularly in western Asia and Africa. About 30 species are endemic to Australia, one of

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<sup>2</sup> Tasmanian Herbarium, Tasmanian Museum & Art Gallery, Private Bag 4, Hobart, Tasmania 7001, Australia.

which extends to Tasmania. *Zygophyllum apiculatum* F.Muell. was recorded in error for Tasmania by Hooker (1860, as *Roepera latifolia* Hook.f.), Bentham (1863) and Curtis and Morris (1975).

Key reference: Barker (1998).

**1 *Zygophyllum billardierei* DC., *Prodr. (DC.)* 1: 705 (1824) [as *Z. Billardierii*] Coast Twin-leaf**

*Roepera billardierei* (DC.) G.Don, *Gen. Hist.* 1: 770 (1831). *Zygophyllum billardieri* Benth., *Fl. Austral.* 1: 293 (1863), orth. var. *Zygophyllum billardierei* [as *Z. Billardieri*] var. *stenophyllum* F.Muell. ex Diels & E.Pritz., *Bot. Jahrb. Syst.* 35: 314 (1904).

*Illustrations:* Jessop & Toelken, *Fl. S. Austral.* 2, 4<sup>th</sup> edn: 731, fig. 393A (1989); Jeanes, *Fl. Victoria* 4: 201, fig. 37j (1999); Corrick & Fuhrer, *Wildflowers of Victoria* 241, fig. 837 (2000); Harris *et al.*, *One Hundred Islands: the Flora of the Outer Furneaux* 249 (2001).

Procumbent to ascending perennial herbs or small shrubs, 20–40 cm high; sometimes scrambling or climbing over other plants, with many slender branchlets to c. 1 m long, jointed at the nodes. Leaves petiolate, 1.5–4 cm long, fleshy; leaflets 2, divergent, 1–3 cm long, articulated at base or continuous with the petiole and forming narrow wings, narrow oblong-elliptic to elliptic, apex blunt or truncate. Sepals 4, 5–9 mm long, deflexed or spreading in fruit. Petals 4, pale to bright yellow but usually drying to white, 8–15 mm long, rounded to emarginate. Stamens 8, subulate, filaments not winged. Fruiting pedicels 5–15 mm long. Fruit a 4-winged loculicidal capsule, pendulous, apex obliquely truncate with a short, blunt appendage at the apex of each ridge; style persistent. Seed 1–2 per loculus. Flowering & fruiting (Aug.-)Nov.-Feb.

Tas. (FLI); also WA, SA, Vic. In Tasmania found only on the islands of eastern Bass Strait. Found on coastal dunes and along rocky shorelines, extending inland on granites and calcareous deposits, usually on poor, arid sites in low scrub and grassy areas. Listed as ‘rare’ under the *Tasmanian Threatened Species Protection Act 1995*.

## REFERENCES

APC (Australian Plant Census) <http://www.chah.gov.au/apc/about-APC.html>

APNI (Australian Plant Name Index) <http://www.anbg.gov.au/cgi-bin/apni>

AVH (Australia’s Virtual Herbarium) (Council of Heads of Australasian Herbaria) <http://www.anbg.gov.au/avh.html>

Barker RM (1998) Notes on *Zygophyllum* (Zygophyllaceae) in Australia including the descriptions of five new species and one new subspecies, revised keys and typifications. *Journal of the Adelaide Botanic Gardens* **18** 43–74.

Bentham B (1863) XXVI Zygophylleae. *Flora Australiensis* **1** 286–294.

Curtis WM, Morris DI (1975) Zygophyllaceae. *The Student’s Flora of Tasmania* **1**, 2<sup>nd</sup> edn, 93.

Hooker JD (1860) *The Botany of the Antarctic Voyage. Part III. Florae Tasmaniae Vol. 1. Dicotyledones.* (Lovell Reeve: London)

IPNI (International Plant Name Index) <http://www.ipni.org/index.html> or <http://www.us.ipni.org/index.html>

NVA (Natural Values Atlas) (Department of Primary Industries and Water: Hobart) <http://www.dpiw.tas.gov.au/inter.nsf/WebPages/LJEM-6TV6TV?open>

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INDEX

**C**

Coast Twin-leaf ..... 2

**K**

Krameraceae ..... 1

**R**

*Roepera billardierei* ..... 2

*Roepera latifolia* ..... 2

**T**

Tribulaceae ..... 1

*Tribulus* ..... 1

Twin-leaf ..... 2

**Z**

Zygophyllaceae ..... 1

Zygophyllales ..... 1

*Zygophyllum* ..... 1

*Zygophyllum apiculatum* ..... 2

*Zygophyllum billardierei* ..... 2

*Zygophyllum billardierei* var. *stenophyllum* ..... 2

*Zygophyllum billardieri* ..... 2

*Zygophyllum Billardieri* ..... 2

*Zygophyllum Billardierii* ..... 2