



66 NOTHOFAGACEAE ¹

Marco F Duretto ²

Deciduous or evergreen trees or shrubs, usually monoecious. Leaves alternate or rarely opposite; stipules peltate, usually deciduous; lamina simple but sometimes deeply lobed, pinnately veined. Inflorescences usually made up of either entirely male or female flowers; flowers solitary or in few-flowered clusters surrounded by an involucre of bracts; male inflorescence a 1–5-flowered reduced dichasia; female flowers 1–3, surrounded by persistent involucre, at the base of the male inflorescence or from separate axils. Male flowers; perianth segments in a single whorl, (4–)6(7), scale like; stamens (4–)6–12(–90); pistillode sometimes present. Female flowers: carpels 3, united to form a compound ovary; ovary inferior; loculi 3, each with 2 ovules; styles distinct. Fruit a nut or nuts enclosed within the enlarged involucre or cupule. Seed without endosperm.

A monogeneric family (see genus for species and distributional details). The family is isolated in the Fagales with the other families being more closely related to each other than any are to Nothofagaceae (see Stevens 2007 & references cited therein). The other families placed in Fagales are Betulaceae (N Hemisphere & S America), Casuarinaceae (Australia, SW Pacific to SE Asia & Madagascar), Fagaceae (mainly N Hemisphere), Juglandaceae (New Guinea, Eurasia, Americas), Myricaceae (Eurasia, Africa, Americas), Rhoipteleaceae (China) and Ticodendraceae (Central America) (see Stevens 2007 & references cited therein).

Key references: Harden (2000); Jury (2007).

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

1 NOTHOFAGUS

Nothofagus Blume, *Mus. Bot.* 1(18): 307 (1851).

Synonymy: *Fagus* section *Nothofagus* (Blume) A.DC., *Prod. (Candolle)* 16(2): 121 (1868).

Trees or shrubs, deciduous or evergreen. Leaves distichous, petiolate, simple, entire or toothed. Inflorescences axillary, on current years growth. Staminate flowers sessile or shortly pedunculate in dichasia of 1–3 flowers; stamens 6–18, anthers linear, basifixed, latrorse. Pistillate flowers in axils above the staminate flowers in 1–3-flowered dichasia, enclosed within the 4-valved involucre. Fruit of a 2-winged central nut and 2–3-winged lateral nuts enclosed within the hardened cupule.

A genus of 35 species in South America, New Zealand, Australia, New Caledonia and New Guinea; 3 species (all endemic) in Australia; 2 (1 endemic) in Tasmania. The third Australian species, *N. moorei* (F.Muell.) Krasser, is found in higher elevated areas of south-eastern Queensland and north-eastern New South Wales. *Nothofagus* is classified into 4 subgenera (Hill & Read 1991), 2 of which are found in Australia: subgenus *Fuscaspora* R.S.Hill & J.Read (see *N. gunnii*); and subgenus *Menziesospora* R.S.Hill & J.Read (see *N. cunninghamii*).

The genus is a popular choice for biogeographic studies because of its disjunct distribution in the southern hemisphere and extensive fossil record (see Hill 1991; Hill & Read 1991; Hill & Jordan 1993; Linder & Crisp 1995; Ladiges *et al.* 1997; Swenson, Backlund *et al.* 2001; Swenson, Hill *et al.* 2001; Heads 2006; and references cited therein).

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

Many species, including *N. cunninghamii*, are harvested as hardwood for furniture and building construction.

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|----|--|---------------------------------|
| 1. | Deciduous shrub or small tree; leaves plicate | 1 <i>N. gunnii</i> |
| 1: | Evergreen tree (or at higher altitudes a shrub); leaves flat | 2 <i>N. cunninghamii</i> |

1 *Nothofagus gunnii* (Hook.f.) Oerst., *Kongel. Danske Vidensk.-Selsk. Skr. ser. 5, 9: 354* (1871)

Deciduous Beech, Tanglefoot, Fagus

Fagus gunnii Hook.f., *Hooker's Icon. Pl.* 9: t. 881 (1851).

Illustrations: Stones & Curtis, *The Endemic Flora of Tasmania* 5: t. 117, No. 196 (1975); Morley & Toelken (Eds), *Flowering Plants in Australia* 68, fig. 34c-d (1983); Hewson, *Fl. Australia* 3: xiv, fig. 15; 99, fig. 44c-f (1989); Kirkpatrick, *Alpine Tasmania* 40, fig. 15c; 85, pl. 12 (1997); Cameron, *A Guide to Flowers and Plants of Tasmania*, 3rd edn, 21, pl's 1–2 (2000); Whiting *et al.*, *Tasmania's Natural Flora* 183 (2004); Simmons *et al.*, *A Guide to Flowers and Plants of Tasmania*, 4th edn, 19 (2008).

Small, deciduous tree up to 6(–8?) m high or, in exposed situations on mountain slopes, a shrub with numerous wiry tangled branches, a stand of the bushes forming an almost impenetrable scrub. Leaves stipules persistent; petioles short, hairy; lamina bright green at first, turning golden-brown to red before falling in Autumn, broadly ovate to almost orbicular, 15–22.5 mm long, margin regularly crenate, narrowly recurved, adaxial surface plicate, with the pinnate lateral veins deeply impressed, abaxial surface with the veins prominent and bearing long appressed golden hairs, apex ciliate at first, base with a swollen hardened knob. Staminate flowers axillary, often on short lateral shoots, borne on short recurved pedicles, solitary or 2–3 together, surrounded by lanceolate brown bracts; perianth campanulate, unequally 3–6-lobed, hairy, c. 4 mm long; stamens usually 6–12. Pistillate florets sessile in the axils of the upper leaves, 3 together, surrounded by an involucre of 4 bracts, each bract bearing 4–6 irregular blunt scales, the involucre enlarging and hardening in fruit, forming a cupule c. 8 mm long. Lateral nuts trigonous, 3-winged; central nut flat, 2-winged,. Flowering Nov.–Mar.; fruiting Dec.–Apr.

Tas. (TCH, TSR, TWE), endemic. Found on rainforest margins, lake shores, subalpine shrubberies and heath, from c. 750 to 1200 m alt. The species produces a spectacular Autumnal display. Though this is not unique in Australia, as many tropical and subtropical species are also Winter deciduous and some spectacularly so, it is so for cool temperate Australia. *Nothofagus gunnii* is classified into subgenus *Fuscaspora* which contains 3 species from New Zealand (*N. fusca* (Hook.f.) Oerst., *N. solandri* (Hook.f.) Oerst., *N. truncata* (Colenso) Cockayne) and another deciduous species, *N. alessandri* Espinosa, from Chile (Hill & Read 1991; Hill & Jordan 1993).

2 *Nothofagus cunninghamii* (Hook.) Oerst., *Kongel. Danske Vidensk.-Selsk. Skr. ser. 5, 9: 355* (1871)

Southern Beech, Myrtle Beech, Myrtle

Fagus cunninghamii Hook., *J. Bot. (Hooker)* 2: 152, t. 7 (1840) [as *F. Cunninghamii*].

Illustrations: Morley & Toelken (Eds), *Flowering Plants in Australia* 68, fig. 34a-b (1983); Walsh & Entwisle, *Fl. Victoria* 3: 117, pl. 4 (1996); Kirkpatrick, *Alpine Tasmania* 40, fig. 15a (1997); Harden, *Fl. New South Wales* 1, rev. edn: 507 (2000); Cameron, *A Guide to Flowers and Plants of Tasmania*, 3rd edn, 39, pl's 57–58 (2000); Whiting *et al.*, *Tasmania's Natural Flora* 182 (2004); Simmons *et al.*, *A Guide to Flowers and Plants of Tasmania*, 4th edn, 49 (2008).

Evergreen tree up to 50 m high in favourable situations, with a girth of 1.5–2 m but as an understorey in wet sclerophyll forest 6–18 m high and at altitudes of 900–1200 m forming low dense shrubs. Leaves alternate; stipules membranous, deciduous except on inflorescence-branches; petioles short; lamina ovate to triangular-rhomboid or almost orbicular, obtuse, (4–)6–20 mm long, coriaceous, rigid, flat or slightly convex, margin coarsely and bluntly crenate-toothed, thickened, upper surface dark green, shining, with scattered oil glands, these often obscure in older leaves; young leaves in spring often golden-bronze. Inflorescences near the ends of the branches, on short lateral shoots; staminate flowers at lower nodes, pistillate above. Staminate flowers solitary,

pedicellate, perianth broadly campanulate, ferruginous, unequally 6-lobed, c. 2.5 mm long, tomentose, stamens 8–12. Pistillate flowers sessile, 3 together closely surrounded by the involucre of 4 bracts which at flowering are gland-tipped, puberulent, c. 1.5 mm long; perianth lobes 3 minute on the angles of the ovary, gland-tipped; stigmas 3, broad, thick, blunt. Involucre at the fruiting stage enlarging to form a woody cupule c. 6 mm long, each valve bearing 4–5 rows of recurved scales, gland-tipped at first but becoming hardened and acute. Lateral nuts trigonous, 3-winged; central nut flat, 2-winged. Flowering Sep.-Feb. (Mar.); fruiting Nov.-Apr.(-Jun.).

Tas. (BEL, KIN, TCH, TNS, TSE, TSR, TWE); also Vic. Widespread and a major component of temperate rainforest and the understorey community in wet sclerophyll eucalypt forest; also found in subalpine shrubberies. The wood is sought after for cabinet making. The species is classified into subgenus *Menziesospora* which contains 3 deciduous South American species and 3 evergreen species from Australia (*N. cunninghamii*, *N. moorei*) and New Zealand (*N. menziesii* (Hook.f.) Oerst.) (Hill & Read 1991; Hill & Jordan 1993). Interestingly, *N. moorei* appears to be more closely related to *N. menziesii* than it is to *N. cunninghamii* (Hill & Jordan 1993).

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- NOTE: Web addresses can and do change: a list of current web addresses will be maintained on the *Flora of Tasmania Online* website [www.tmag.tas.gov.au/floratasmania].

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