

Corymbieae

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HISTORICAL OVERVIEW AND TRIBAL RELATIONSHIPS

The generic name *Corymbium* was employed by Linnaeus in *Corollarium Generum Plantarum* (Linnaeus 1737), *Hortus Cliffortianus* (Linnaeus 1738), and *Genera Plantarum* ed. 2 (Linnaeus 1742) and ascribed to Gronovius (in Burman's *Rariorum Africanarum Plantarum*, 1738–39). With valid publication in *Species Plantarum* (Linnaeus 1753) the official name became *Corymbium* L. Linnaeus placed the genus in his Syngenesia Monogamia together with *Jasione*, *Lobelia*, *Viola* and *Impatiens* on account of the unusual capitular and floral morphology, but in his outlines of a natural system he placed the genus with the other members of Compositae. Thus in the *Fragmenta Methodi Naturalis*, which appeared as an appendix in the Paris edition of the *Genera Plantarum* (1743), he placed *Corymbium* in “XXI Ordo”, comprising all genera that he would later refer to as Compositae.

Cassini (1818, 1829) referred *Corymbium* without hesitation to Vernoniae, where it has since traditionally been placed (Lessing 1832; De Candolle 1836; Harvey 1865; Bentham 1873a, b; Hoffmann 1890–1894; Jones 1977; Weitz 1989, 1990), although the genus has never fit comfortably in that tribe. Bentham (1873b) noted that the pistil of *Corymbium* has a distinct ovary that is long, cylindrical, and densely hirsute, and very short style branches, while in typical Vernoniae the ovary is not densely hirsute and the style branches are long and slender (Jones 1977). Bolick (1978) also noted that *Corymbium* pollen differed from that of other Vernoniae. Based on significant differences in sesquiterpene lactones and diterpenes, Bohlmann

and his collaborators (Zdero and Bohlmann 1988; Bohlmann and Jakupovic 1990) suggested *Corymbium* be removed from Vernoniae. Bremer (1994) in a cladistic analysis of Compositae found *Corymbium* morphologically anomalous in Vernoniae and removed it from the tribe. In his treatment *Corymbium* was placed in subfamily Cichorioideae but without a tribal assignment. Similarly, Robinson (1996) excluded *Corymbium* from Vernoniae based on the chemistry and morphology, but proposed no other tribal placement.

Molecular data (Panero and Funk 2002, 2008) reflect the morphological, palynological and chemical disparities noted by earlier workers (described above). Sequence information showed that *Corymbium* did not belong in any existing tribe or subfamily and so was placed in its own tribe, Corymbieae, and its own subfamily, Corymbioideae (Panero and Funk 2002) (see the metatree in Chapter 44). In addition, *Corymbium* was strongly supported as the sister group to the entire subfamily Asteroideae which contains 65% of the genera within the family. The removal of *Corymbium* from Vernoniae has been accepted by the systematic community (Nordenstam 2007) and the recent molecular phylogeny of Vernoniae by Keeley et al. (2007) did not include this genus.

TAXONOMY

Although reported on in the 1600s (Breynius 1680; Plukenet 1696), the first valid publication of the genus was by Linnaeus (1753) who recognized a single species, *Corymbium africanum* L. Later Linnaeus (1767a, b)

distinguished two species, *C. scabrum* L. and *glabrum* L., and abandoned the name *africanum*, which is not in agreement with present rules of nomenclature. The first taxonomic revision after Harvey (1865, with seven species) was published by Markötter (1939), who accounted for

twelve species. Jones (1977) stated the number of species to be seventeen. In the latest revision by Weitz (1989, 1990) nine species, four subspecies and five varieties are recognized.

Tribe Corymbieae Panero & Funk (2002)

Scapose perennial herbs with a stout, silky-hairy rhizome. Leaves alternate, mainly rosulate, sessile, entire, linear-lanceolate to narrowly elliptic-oblong, flat or conduplicate, parallel-veined, more or less coriaceous, sometimes cartilaginous or herbaceous, acute to acuminate, narrowing toward the base, glabrous or pubescent, sometimes glandular; cauline leaves gradually smaller. Capitula pedunculate or rarely sessile, several to many in corymbs to panicles terminating a stout erect bracteate scape, discoid, single-flowered. Involucre cylindrical, calyculate; involucre bracts 2, enclosing the floret, narrowly oblong to lanceolate, flat or keeled, 3-nerved, glabrous or glandular, sometimes scabrid, often with a purplish tinge, apically 2–3-fid or fimbriate; outer bracts 2 or 3, short. Receptacle flat, naked. Florets hermaphroditic; corolla 5-lobed, pink to purplish or white; corolla lobes linear to oblong, spreading, apically cucullate and dorsally papillate. Stamens 5; anthers tetrasporangiate with blackish thecae, shortly sagittate; apical appendage reduced. Style bifurcate with linear branches; style branches and uppermost part of shaft hairy. Achenes narrowly oblong, somewhat compressed, densely pubescent. Pappus of basally connate short scales and/or discrete fine bristles.

Corymbium is obviously a well-defined genus without close relatives. At first sight the plants may give a monocotyledonous impression. They are perennial tufted herbs with a fibrous rhizome covered by silky hairs. The rosulate, entire, linear to lanceolate leaves are parallel-veined (Figs. 32.1, 32.2). The narrow capitulum consists of two involucre bracts enclosing the single floret, which is white, pink or purplish, never yellow.

POLLEN

The pollen grains of *Corymbium* are caveate, in contrast to those of Vernoniae (Bolick 1978). A caveate exine structure is commonly found in subfamily Asteroideae but only occasionally in Cichorioideae (Nordenstam and El-Ghazaly 1977; Skvarla et al. 1977; Robinson and Marticorena 1986).

CHROMOSOME NUMBERS

The basic chromosome number is estimated to be $x = 8$, based on a single count of $2n = 16$ in *C. congestum* E. Mey. ex DC. (Weitz 1989).



Fig. 32.1. *Corymbium glabrum* L. var. *glabrum*. Note the narrow leaves with parallel veins, the densely hirsute ovary, and the single floret per head. [Illustration (as *C. nervosum* Thunb.) by Ethel Dixie and Joseph Pohl in Marloth (1932: pl. 55).]



Fig. 32.2. *Corymbium*. Note the single-flowered heads and grass-like leaves. **A, B** *C. glabrum* L. (South Africa); **C** *C. laxum* Compt. subsp. *laxum* (South Africa, Cedarberg Tafelberg); **D** *C. africanum* L. (South Africa). [Photographs: A, B, N. Bergh; C, B. Nordenstam, *Nordenstam 9607*; D, J. Manning.]

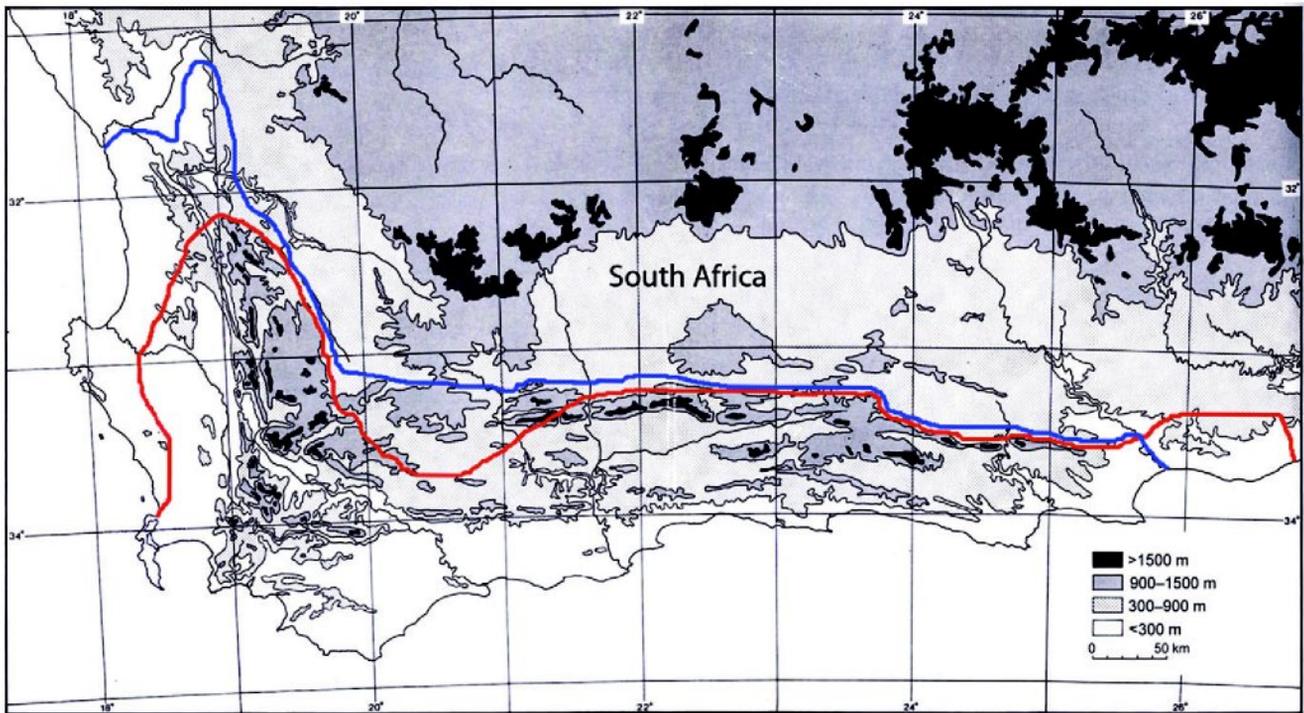


Fig. 32.3. Distribution of the genus *Corymbium* (red) and range of the Cape Floristic Region (blue). [Compiled from data in Weitz (1989) and Goldblatt and Manning (2000).]

CHEMISTRY

Corymbium possesses macrolide diterpenes and lacks sesquiterpene lactones, by these characters differing markedly from Vernoniaeae (Zdero and Bohlmann 1988; Bohlmann and Jakupovic 1990; Alvarenga et al. 2005).

BIOGEOGRAPHY

The distribution of *Corymbium* is confined to the southwestern and southern Cape Province and coincides remarkably well with the range of the Cape Floral Kingdom, or Cape Floristic Region of South Africa (Fig. 32.3). The habitats are poor sandy soils of Table Mountain Sandstones and coarser soils derived from granitic and phyllitic formation (Bokkeveld and Malmesbury series), sometimes clayey soil or even marshes (Weitz 1989). The members of the genus are found from sea level up to 1850 m in the Cedarberg and the mountains of Ceres and Worcester districts. The complete metatree showing the position of *Corymbium* can be found in Chapter 44.

BIOLOGY

Corymbium species produce copious nectar, which has rendered them the vernacular name “heuningbossie”, although this name is used also for other nectar-bearing plants (Smith 1966). “Plampers” is another, more unequivocal name given to *Corymbium* species (Smith 1966). Bees, wasps, beetles and ants are reported as visitors and likely pollinators (Weitz 1989). It has been reported that the species of this genus flower during the first few years after fire. Fire adaptation is a common phenomenon in the Cape flora (cf. e.g., Linder and Ellis 1990; Schutte et al. 1995; Cowling et al. 1996; Campbell and Van der Meulen 2004).

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