

The identity of *Eucalyptus virgata* Sieb. ex Spreng.

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Abstract

Eucalyptus virgata was validly published in 1827, but the name has not been in common usage for several decades. Its identity has been uncertain because the type lacks mature flower buds and fruits, and there was no description provided for bark or habit. The current availability of numerous images of the type has allowed a careful examination of salient characters, and *E. virgata* is thought to be conspecific with *E. oreades* R.T.Baker, or possibly *E. dendromorpha* (Blakely) L.A.S.Johnson & Blaxell. Morphological comparisons are made with other related species that have been attributed to *E. virgata* over the years.

Introduction

Eucalyptus virgata Sieb. ex Spreng. was validly published by Kurt Sprengel in 1827, based on a collection by Franz Sieber made in 1823. Sieber is well known by Australian botanists for the plant collections he made in the greater Sydney region. He collected specimens of 645 species of angiosperm (Dietrich 1881), each well pressed and usually comprising numerous duplicates. Sieber was one of the first botanists to assign a unique number to each gathering before distribution of the duplicates. Consequently, it is easy to match up duplicates now occurring in different herbaria. The species list provided by Dietrich (1881) shows that his numbers were not assigned in a chronological sequence. Sieber evidently sorted his collection into families and genera then assigned numbers accordingly. For example, numbers 436 to 466 are all *Acacia* spp.; numbers 467–480 are all *Eucalyptus* spp. In no case did Sieber indicate a collecting locality, beyond “Nov. Holl”, but it is known that he ranged widely along the coastal areas north and south of Sydney and also in the Blue Mountains (Ducker 1990).

Confusion has surrounded the name *Eucalyptus virgata* for many years. Its identity has been uncertain because the type lacks mature flower buds and fruits, and there was no bark or habit description provided. Candolle (1828) had only Sieber’s collection (Sieb! pl. exs. nov.-holl. n. 467) to work with, and he provided the final unadulterated description of *E. virgata*. Bentham (1867) accepted *E. virgata*, and he cited Sieber’s collection, but his description is almost entirely based on specimens of a tree with dark fibrous bark on the trunk and smooth upper branches, with the common name Silvertop ash.

Mueller (1879) apparently agreed with Bentham’s taxonomic interpretation of *Eucalyptus virgata*, but he took the extraordinary step of replacing *E. virgata* with his own name, *E. sieberiana*, because “the original adjective ‘virgata’ is very misleading”. As he ignored

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the rule of priority, *E. sieberiana* F.Muell. is an illegitimate name. That fact was recognised by Johnson (1962), who coined the name *E. sieberi* L.A.S.Johnson for the Silvertop ash.

J.H. Maiden studied all species of *Eucalyptus* as part of his 'Critical Revision of the genus *Eucalyptus*'. In the first part of that work, Maiden (1909) considered that *E. virgata* and *E. stricta* Sieb. ex Spreng. were synonymous. He stated that "Typical *E. virgata*, Sieb., is usually a tall shrub, as its name denotes". Maiden had no way of knowing that *E. virgata* was a tall shrub because Sieber did not provide that information, but the statement shows that Maiden was heavily influenced by the specific epithet in deciding the identity of *E. virgata*, and he seemingly discounted any tree-form species as a candidate for *E. virgata*. Later, Maiden (1920) decided that *E. virgata* was synonymous with the mallee species *E. luehmanniana* F.Muell. Blakely (1934) followed Maiden's more recent opinion by accepting *E. virgata* and placing *E. luehmanniana* as a synonym of it.

Johnson (1962) stated that he had seen an isotype of *Eucalyptus virgata* at NSW, and that it "undoubtedly represents the occasional hybrids between *E. luehmanniana* F.Muell. and either *E. obtusiflora* DC. or *E. stricta* Sieb. ex Spreng. s. str.". He provided no evidence at all that the *E. virgata* type is a hybrid. Hybrids between the mentioned species are rare, if they exist at all: no specimen of *E. luehmanniana* × *E. stricta* is recorded on AVH (2024). Only one specimen of *E. luehmanniana* × *E. obstans* (replacement name for *E. obtusiflora* auct. non DC.) is recorded on AVH (2024), i.e. *Coveny 16408 & Whalen* (BRI, NSW), and that specimen was determined by Johnson. The specimen has 7–13-flowered umbels, flattened peduncles and angular branchlets, and in my opinion, it lies within the range of variation exhibited by *E. luehmanniana*.

Pryor and Johnson (1971) echoed Johnson (1962) by stating that *Eucalyptus virgata* is a hybrid between *E. luehmanniana* and *E. obtusiflora*. Chippendale (1988), in the *Flora of Australia*,

accepted the assertion of Pryor and Johnson (1971) and relegated *E. virgata* to one of many 'Presumed Hybrids' listed in an appendix.

Taxonomy

Eucalyptus virgata Sieb. ex Spreng., *Systema Vegetabilium* ed. 17, 4(2): 195 (1827); *E. sieberiana* F.Muell., *Eucalyptographia Decade 2*, 9th plate (1879), *nom. illeg.*; *E. virgata* Sieb. ex Spreng. var. *virgata*, H.Deane & Maiden, *Proceedings of the Linnean Society of New South Wales* 26(1): 124 (1901). **Type:** Nov. Holl., [June–December 1823], *F.W. Sieber 467* (lecto: BM 000799425, here designated; isolecto: BM 000799424, BR 522977, G 00227792, G 00227791, G 00227790, GH 00069087, FI 011468, H 1386839, HAL 89646, K 000279932, M 0137422, MEL 567382, MEL 1616396, NSW 26896, NSW 325435, S 07-11590, W 34408, W 178167, W 0047648, W 0047649).

I have examined images of 19 duplicates of the type of *Eucalyptus virgata*, held at 12 herbaria (JSTOR 2024). All comprise leafy branches bearing immature flower buds. These clearly all belong to the same taxon, and because the flower buds are consistent in their level of maturity and the leaves are of very similar size and shape, it is probable that all duplicates originated from the same tree. There are 2 additional duplicates at NSW (AVH 2024).

I believe that the type material of *Eucalyptus virgata* belongs to the species currently known as *E. oreades* R.T.Baker (Blue Mountains Ash), because of shared features such as 7-flowered inflorescences with a flattened peduncle, the conical, obtuse operculum and the falcate leaves with acutely angled lateral veins and many raised oil glands, but *E. dendromorpha* is also a possibility. The morphological features of *E. virgata* (type material) are compared below with *E. oreades* and all other species ever linked to *E. virgata*, i.e. *E. sieberi*, *E. burgessiana*, *E. stricta*, *E. luehmanniana*, and *E. dendromorpha* (Table 1).

Table 1. A comparison of leaf, branchlet and flower bud characters for *Eucalyptus virgata*, *E. oreades*, *E. sieberi*, *E. luehmanniana*, *E. stricta*, *E. burgessiana* and *E. dendromorpha*. Leaf widths are derived from Slee *et al.* (2020). All other characters have been assessed from herbarium specimens and Research Grade iNaturalist observations.

Character	<i>E. virgata</i> (type)	<i>E. oreades</i>	<i>E. sieberi</i>	<i>E. luehmanniana</i>	<i>E. stricta</i>	<i>E. burgessiana</i>	<i>E. dendromorpha</i>
Buds per umbel	3–6	7	7–15	7–15	7	7	7
Peduncle shape	flattened	flattened	terete	flattened	terete	± terete	flattened
Bud shape (immature)	cylindrical	cylindrical to narrowly ellipsoidal	obovoid to clavate	diamond shaped	obovoid	obovoid to narrowly ellipsoidal	obovoid to clavate
Operculum shape	conical, obtuse, unribbed	conical, obtuse, unribbed	patelliform (shallow dome)	acuminate, longitudinally ribbed	hemispherical, umbonate, unribbed	hemispherical, umbonate, unribbed	conical or hemispherical, umbonate, unribbed
Branchlets shape	terete except at end of branchlet	terete except at end of branchlet	terete throughout	prominently square in cross-section	terete throughout	terete throughout	terete except at end of branchlet
Leaf width (mm)	11–27	10–32	12–38	20–45	6–16	13–25	10–25
Leaf shape	falcate	falcate	lanceolate to falcate	falcate	linear to lanceolate	narrow lanceolate to falcate	falcate

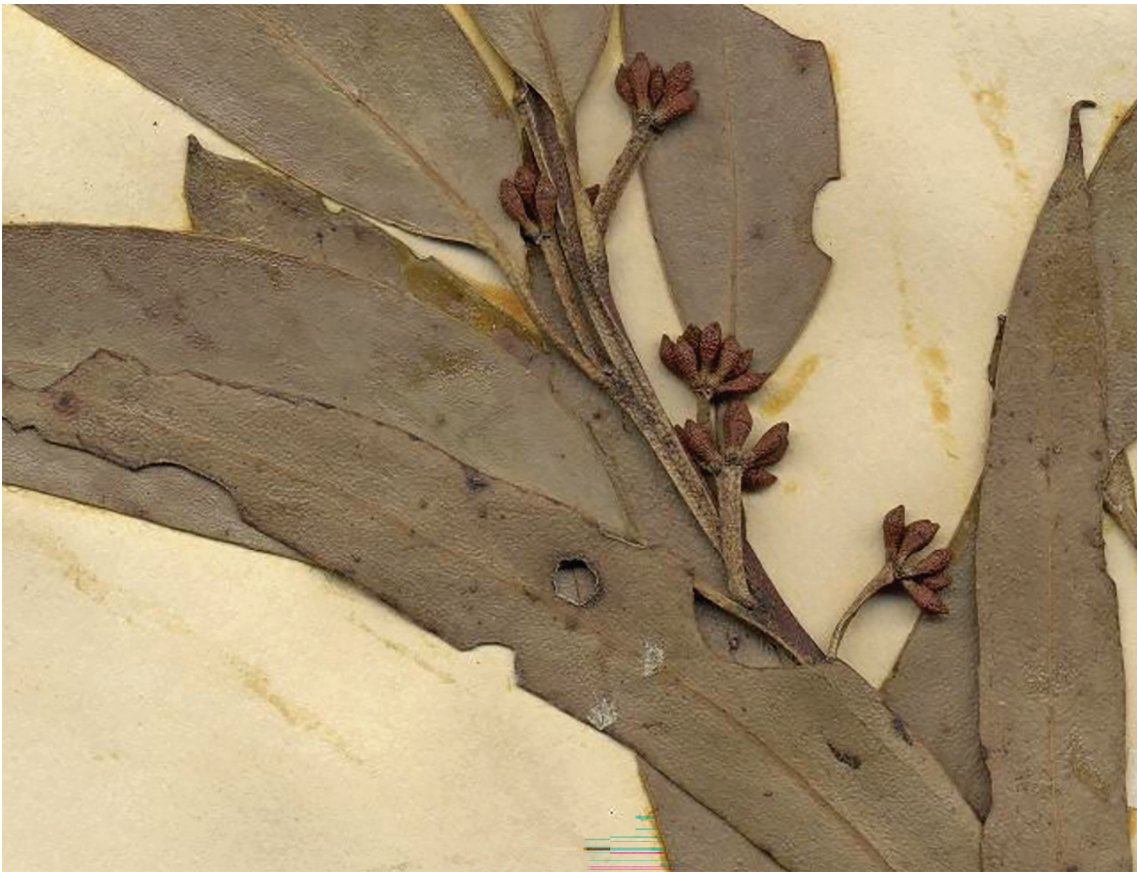


Fig. 1. Isolectotype of *Eucalyptus oreades* (K 000279930).



Fig. 2. Isolectotype of *Eucalyptus virgata* (M 0137422).

Eucalyptus sieberi differs from the type of *E. virgata* by the patelliform (shallow dome-like) operculum, the greater number of buds per umbel and the terete peduncles. *Eucalyptus luehmanniana* differs from the type of *E. virgata* by the prominently angular branchlets, the greater number of buds per umbel, and the beaked and ribbed operculum. *Eucalyptus stricta* differs from *E. virgata* by the narrower, non-falcate leaves and the terete peduncles. *Eucalyptus burgessiana* L.A.S.Johnson & Blaxell (syn: *E. obstans* L.A.S.Johnson & K.D.Hill, *E. obtusiflora* auct. non DC.) differs from *E. virgata* by the terete or almost terete peduncles, the hemispherical and umbonate operculum, and the branchlets terete throughout. *Eucalyptus dendromorpha* differs from *E. virgata* only by the broader obovoid buds.

Eucalyptus oreades matches the *E. virgata* type in all regards, viz. the flattened peduncles, the falcate leaves, the branchlets angular at the ends only, the conical unribbed operculum, and umbels with a maximum of 7 buds, but it is not possible to exclude the possibility that *E. virgata* = *E. dendromorpha*, which is very similar in most available characters.

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