

# The identity of *Erica vinacea* and notes on hybridization in *Erica*

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**Keywords:** *Erica fastigiata*, *E. fervida*, *E. × vinacea*, hybridization in *Erica*

## ABSTRACT

The rediscovery of *Erica vinacea* L. Bol. among sympatric populations of two other species led to a comparison of their morphological characters. Results of this study indicate a putative hybrid origin: *E. × vinacea* L. Bol. = *E. fastigiata* L. × *E. fervida* L. Bol.

Recently Mr A. W. Schumann of Cape Town discovered *E. vinacea* L. Bol. north-west of Platberg in the Kogelberg Reserve. In this locality, which falls in the area indicated on the type specimen, *E. vinacea* was found growing as scattered plants throughout a large marsh dominated by the restiad, *Chondropetalum mucronatum* (Nees) Pillans. In the same marsh there occurred numerous plants of *E. fastigiata* L. and groups of *E. fervida* L. Bol. It was immediately suspected that the scattered plants were hybrids between the two more common species.

*E. fastigiata* is a common species in the area from the Hottentot's Holland Mountains to Hermanus where it can be sometimes abundant on moister slopes and in seepage zones. It is a highly variable species and has several closely allied species such as *E. walkeria* Andr., *E. daphniflora*, *E. hendricksei* H. A. Baker and *E. turrishabylonica* H. A. Baker, none of which, however, occurs within the Kogelberg Reserve. *E. fastigiata* can easily be recognized by its very large spreading corolla lobes which are usually white to pale pink, the outside colour of the flowers being deep red. In the centre of each flower (see Fig. 1.1a) there is a darker area of red or green which acts as a nectar guide. The long foliage-like bract, bracteoles and sepals, together with the crowded imbricate leaves, hide most of the flower from view. The flowers are typically arranged in groups of four at the ends of the branches. In the area surrounding Platberg most of the collections of this species exhibit corolla tubes which are very slightly and finely hairy whereas elsewhere they are mostly glabrous.

*E. fervida* is a remarkable species closely allied to that rare and endangered species, *E. pillansii* H. Bol. Both have vivid scarlet, noticeably puberulous flowers and are endemic in the Kogelberg Reserve. The flowers are borne at the ends of very short lateral branchlets (brachyblasts) which are crowded along the main branches. *E. pillansii* has, however, much larger flowers and flowers in May/June, whereas *E. fervida* flowers in October/November.

*E. vinacea* has dark pinkish red flowers with small spreading lobes which have a slightly paler upper surface. The flowers are borne at the ends of short

lateral branchlets (dolichoblasts) which are more loosely crowded towards the ends of the branches than in *E. fervida*.

A comparison of the main distinguishing characters of the three taxa is given in Table 1. From this table it can be seen that the main differences lie in the degree of hairiness of nearly all the organs, the inflorescence arrangement, flower shape and details of the anther and ovary. In most cases the characters of *E. vinacea* are intermediate between those of *E. fastigiata* and those of *E. fervida* and tend towards either one or the other.

The occurrence of scattered plants of *E. vinacea* amongst numerous plants of the other two species in the locality north-west of Platberg indicates that the plants are chance first generation crosses that have not become reproductively established. The plants of the putative hybrid appeared to be of the same age as those of the other two species and are thought to have grown up soon after the last fire in the area about 40 years ago. All three species are single-stemmed and must regenerate from seed after a fire. It was not possible to revisit the locality to check on seed-set and seed fertility.

Two other isolated populations of *E. vinacea* growing together with *E. fastigiata* and *E. fervida* have been reported (A. W. Schumann pers. comm.).

The pollen of the collection *Oliver 8611* is typical of the genus *Erica*, namely in tetrads, and did not show any abnormalities. The few species of *Erica* which have so far been investigated all have  $n=12$  with extremely small chromosomes. A thorough investigation of the cytology of the three taxa may reveal some additional evidence on their relationships.

The facts as discussed above and set out in Table 1 indicate a putative hybrid origin of *E. vinacea* L. Bol. (*E. × vinacea* L. Bol. = *E. fastigiata* L. × *E. fervida* L. Bol.).

## HYBRIDIZATION IN *ERICA*

The hybrid origin of *E. × vinacea* poses an intriguing question as to how such crosses took place. In a paper on pollination syndromes of *Erica* species in the south-western Cape (Rebello *et al.* 1985), *E. fervida* is classified as being ornithophilous, involving species of sunbirds (Nectariniidae). *E. fastigiata* on the other hand is classified as being rhinomyio-

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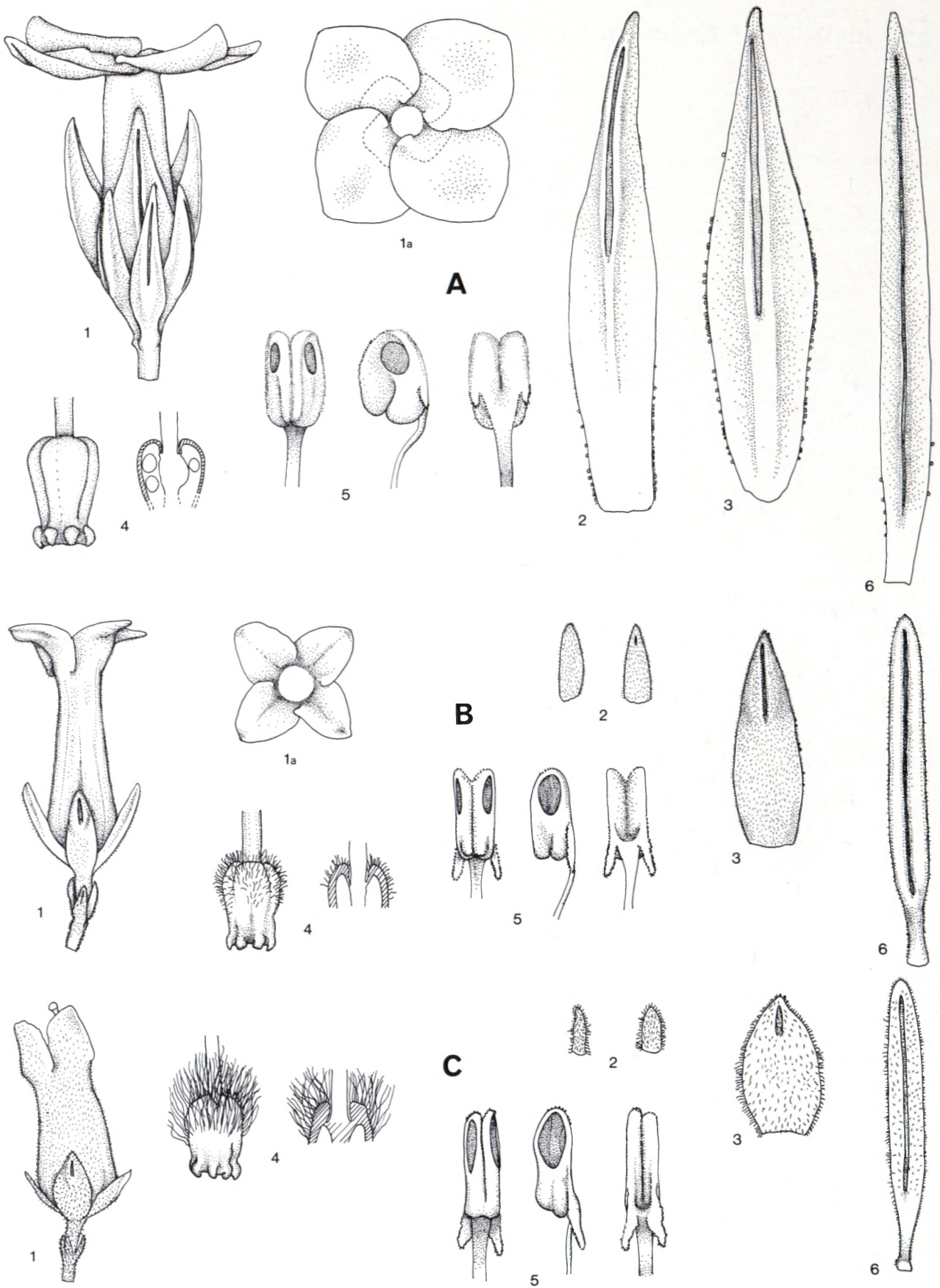


FIG. 1. —A, *Erica fastigiata*, B, *Erica* × *vinacea* and C, *Erica fervida*: 1, flower, × 6; 1a, flower from above, × 6; 2, bracteole and bract, × 12; 3, sepal, × 12; 4, anther, front, side and back views, × 25; 5, ovary and diagrammatic longitudinal section of upper half of ovary, × 12; 6, leaf, × 12. Drawn from *Oliver 8609, 8611 & 8610* (STE) respectively.

TABLE 1.—Comparison of morphological characters of *E. fastigiata*, *E. × vinacea* and *E. fervida*

	<i>E. fastigiata</i>	<i>E. × vinacea</i>	<i>E. fervida</i>
Branches	Sparsely pubescent	Shortly pubescent	Pubescent
Leaves	4-nate Erect imbricate Glabrous, ciliate with very short hairs and sessile glands	4-nate Erect Sparsely strigulose and ciliate	4-nate Erect spreading Sparsely pubescent and ciliate
Flowers	3–4-nate at ends of main branches and occasionally short dolichoblasts	(1)–3–(6)-nate at ends of short dolichoblasts somewhat crowded towards ends of branches	(1)–3–(4)-nate at ends of brachyblasts crowded along branches into congested synflorescences
Pedicels	Length ratio to corolla, 2:11 Glabrous to subglabrous	Length ratio to corolla, 3:7 Finely puberulous	Length ratio to corolla, 1:2 Distinctly puberulous
Bracts/ bracteoles	Large and foliar Approximate $\frac{3}{4}$ to as long as calyx  Glabrous to subglabrous	Small and scarious Median Reaching base of calyx or slightly longer Finely puberulous	Small and scarious Median Not reaching calyx  Puberulous
Calyx	$\frac{3}{4}$ to equal to corolla tube Elongate elliptic Carinate sulcate Naviculate Totally green or tinged red	$\frac{1}{3}$ – $\frac{1}{2}$ as long as corolla tube Ovate attenuate Slightly carinate sulcate Slightly naviculate Totally green or tinged red	$\frac{1}{4}$ as long as corolla tube Broadly ovate acute Very slightly sulcate Flat Totally scarlet
Corolla	Tube tubular-conical, dark red, glabrous to very minutely puberulous Lobes large, stellately spreading, distinctly & densely papillate, pale pink to white above with distinct nectar guides	Tube conical, dark pinkish red, minutely puberulous  Lobes small partially spreading, minutely papillate, paler pink above with no guides	Tube tubular-campanulate, bright scarlet, puberulous  Lobes small erect, glabrous, scarlet
Anthers	Thecae broadly elliptic Minute dorsal awns  Pores $\frac{1}{4}$ as long as thecae	Thecae oblong Distinct subbasal awns  Pores $\frac{1}{3}$ as long as thecae	Thecae oblong, subprognathous Distinct subbasal partially decurrent awns  Pores $\frac{1}{2}$ as long as thecae
Ovary	Turbinate, stipitate Very slightly emarginate Glabrous	Obovoid, sessile Emarginate Puberulous	Subcylindric, sessile Deeply emarginate Villous

philous, a term coined to describe the most discrete insect-pollination syndrome in *Erica* where pollination is performed by hovering dipterans with very long proboscises. In the latter situation the opening to the corolla tube is extremely small and the nectar guides are very prominent. It would seem then that there are two very different pollinating agents for the two parent species. This problem needs investigation in the field.

This is not the first time that hybridization has been recorded for *Erica*. Oliver (1977) considered *E. × flavisepala* Guth. & Bol. to be a putative hybrid between the very unlikely parent species *E. thunbergii* Montin and *E. spaerocephala* Wendl. (Oliver 1977). Salter (1950) mentions the following hybrids occurring between some 28 species of *Erica* on the Cape Peninsula, one of which is described and documented as *E. × fontensis* Salter (Salter 1935):

- E. fontana* Salter × *E. capensis* Salter
- E. fontana* Salter × *E. laeta* Bartl.
- E. eburnea* Salter × *E. laeta* Bartl.
- E. capensis* Salter × *E. laeta* Bartl.
- E. heleogena* Salter × *E. laeta* Bartl.
- E. hirtiflora* Curt. × *E. heleogena* Salter
- E. hirtiflora* Curt. × *E. mauritanica* L.

- E. hirtiflora* Curt. × *E. pyxidiflora* Salisb.
- E. mauritanica* L. × *E. baccans* L.
- E. phylicifolia* Salisb. × *E. nudiflora* L.
- E. curvirostris* Salisb. × *E. nudiflora* L.
- E. pulchella* Houtt. × *E. nudiflora* L.
- E. lutea* Berg. × *E. corifolia* L.
- E. gnaphaloides* L. × *E. palliflora* Salisb.

#### Specimens examined:

##### *Erica fastigiata*

CAPE PROVINCE.—3418: Kogelberg (–BB), *Compton 16454* (NBG; STE); Buffelskloof (–BD), *Barker 8033* (NBG; STE); Platberg (–BD), *Boucher 183* (STE); 877 (STE); 2653 (STE); road to Platbos (–BB), *Haynes 696* (STE); Wynand Louwsbos (–BD), *Lamb 124* (STE); Buffelstalberg (–BD), *Oliver sub STE 30052* (STE); neck NW of Platberg towards Buffelstalberg (–BD), *Oliver 8609* (STE); Platbos (–BD), *Stehle 254* (STE); Platberg (–BD), *Thompson 495* (STE).

##### *Erica fervida*

CAPE PROVINCE.—3418: Kogelberg Reserve, neck NW of Platberg towards Buffelstalberg (–BD), *Oliver 8610* (BM; E; K; MO; P; PRE; S; STE).

##### *Erica × vinacea*

CAPE PROVINCE.—3418: Kogelberg Reserve, neck NW of Platberg towards Buffelstalberg (–BD), *Oliver 8611* (BM; E; K; MO; P; PRE; S; STE); between Platteberg and Kogelberg (–BB/BD), *Stokoe sub BOL 17599* (BOL, holo.).

## UITTREKSEL

*Die herontdekking van Erica vinacea L. Bol. in simpatriese populasies van twee ander soorte het aanleiding gegee tot 'n vergelyking van hul morfologiese eienskappe. Die resultate van die ondersoek dui op 'n vermeende hibridiese oorsprong: E. × vinacea L. Bol. = E. fastigiata L. × E. fervida L. Bol.*

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