

Notes on Certain South African Erythrina Species.

By

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The notes recorded here are supplementary to the review of South African *Erythrina* species by Collett in *Bothalia*, 4: 219 (1941), which presents a sound reflection of the position, except in regard to the line of demarcation between *E. lysistemon* Hutch. and *E. caffra* Thunb. Further information also seemed desirable on the distinction between *E. latissima* E. Mey. and *E. abyssinica* Lam. (= *E. tomentosa* R. Br. ex A. Rich.). Collett omits to supplement his conclusions with supporting data and therefore it is not always clear what evidence influenced him in making his decisions. It was in order to remedy this lack, especially with regard to the correct naming of species occurring in the Kruger National Park, that the present studies were undertaken.

1. *E. LYSISTEMON* Hutch. and *E. CAFFRA* Thunb.

E. lysistemon Hutch., Kew Bull. 422 (1933) is a name that has not generally been taken up. It is based on certain Transvaal specimens, namely: Belfast District, Rietvlei, *Smuts* 66 (type); Pretoria District, *Nelson* 84; Magaliesberg, *Burke*; Rustenburg District, *Nation*; Soutpansberg District, *Hutchinson and Gillett* 4155. In distinguishing his species from *E. caffra* Thunb., he states: "Superficially the two species are very much alike, but I was induced to investigate further on account of the small and narrow vexillum and the peculiar shape of the leaflets of the Transvaal plant. That these were of importance was revealed on dissection, for in the new species the vexillary stamen was found to be quite free from the split staminal tube, whilst in *E. caffra* it is adnate to it below the middle".

Collett upholds *E. lysistemon*, but to a more limited extent citing, in addition to the type, *Leemann*, N.H. 22845 from Pretoria and *Taylor* 732 from the Soutpansberg. The rest of the Transvaal specimens and all the Natal specimens he places under *E. caffra*. An examination of the material indicated that this division was not in agreement with natural affinity and that the line of distinction between the two species would more likely be found in the area between the Kei River and southern Natal, an area from which specimens were almost completely lacking. An opportunity to study this critical zone more closely occurred in August 1953, when a tour was made from Grahamstown to Durban. A visit to the type area of *E. lysistemon* was made shortly afterwards in September 1953.

The examination of many dried and fresh flowers indicates that the stamen character stressed by Hutchinson is not a reliable one, but that general appearance of the inflorescence, together with combined measurements of floral parts, enables one to classify the material into two natural groups. The distinguishing characters are summarised in Table I and, although there is overlapping in some of the dimensions, there was practically no impression in the field of the two species grading into one another. Diagnosis in the Herbarium is most reliably based on length of the wings and keel, and the ratio of vexillum length to calyx length. In only two cases did the impression gained in the field disagree with subsequent measurement, and these were

both cultivated trees, one near Mqanduli and one at the Marburg Mission near Port Shepstone. It is felt that these two isolated cases, although to some extent intermediate in character, do not break down the distinction between the two species. It may be mentioned that the difference in leaflet shape put forward by Hutchinson does not hold good. The leaflets of *E. caffra* are constantly ovate-deltoid, while those of *E. lysistemon* vary from ovate-deltoid to hastate, so that it is not always possible to distinguish between the two species when flowers are absent. A small difference, which may have significance, became apparent when seeds of the two species were germinated in seed tins. In *E. caffra*, the hypocotyl always lengthened, raising the cotyledons about 2 cm. above soil level while, in *E. lysistemon*, the cotyledons invariably remained at soil level.

TABLE I.
Comparison of *E. caffra* and *E. lysistemon*.

	<i>E. caffra</i> .	<i>E. lysistemon</i> .
Peduncle, length.....	2.0-7.0 cm.	4.0-18.0 cm.
Vexillum, shape.....	Relatively short and broad, strongly arcuate, exposing the stamens	Relatively long and narrow, slightly arcuate, enclosing the stamens.
Vexillum, colour.....	Orange scarlet (rarely cream)	Scarlet (rarely pink or orange-scarlet).
Vexillum, length.....	3.8-5.4 cm.	3.7-6.8 cm.
Vexillum, breadth.....	2.0-3.4 cm.	1.5-2.9 cm.
Calyx, length.....	1.3-1.8 cm.	0.8-1.3 cm.
Wings and keel, length.....	2.0-2.5 cm.	0.9-1.8 cm.
Ratio of vexillum to calyx.....	2.3-3.4	3.7-6.6
Leaflets, shape.....	Ovate-deltoid	Ovate-deltoid to hastate.

E. caffra Thunb., Prodr. Pl. Cap. 121 (1800); Fl. Cap. ed. Schult. 559 (1823); E. Mey., Comm. Pl. Afr. Austr. 149 (1835); E. & Z., Enum. Pl. Afr. Austr. 259 (1836); Harv. in Fl. Cap. 2: 236 (1862), pro parte; Sim, For. Fl. Cape Col. 201, t.53 (1907); Collett, l.c., pro parte.

E. viarum Tod., Nuovi Gen. e Spec. 62 (1861).

E. constantiana Micheli in Rev. Hort. 68: 524 (1896).

PLATES 1 and 2.

TYPE: A Thunberg specimen at Uppsala "e Cap. b. Spei".

NATAL.—Port Shepstone, Codd 8000.

CAPE.—Libode, Codd 7990. Mqanduli, Codd 7988. Elliotdale, Codd 7985. Willowvale, Kriel FD 8865. Kentani, Pegler 89; 1134; Marais 476. Komgha, Flanagan 319. East London, Smith s.n.; Codd 7979. Albany, Galpin 67; Codd 7976. Alexandria, Sim 2135; Archibald 5906. Uitenhage, Zeyher 1691. Humansdorp, Fourcade 1406; 4466.

CULTIVATED.—Durban, Collett s.n.; Forbes s.n. Stegi, Swaziland, Keith s.n.

E. caffra occurs near the coast from Port Shepstone to Humansdorp Districts, the furthest it was seen from the coast, in the wild state, being about 35 miles in the Albany District. It is associated with coastal forest and wooded stream banks, averaging 30 to 40 feet high, but often attaining to 60 feet or more. The flowers are normally orange-scarlet in colour, though near East London an occasional tree with cream flowers is found. They are characterised by having a relatively short, broad vexillum which arches strongly away from the flowering axis, exposing the stamens. The wings and keel are comparatively long, exceeding 2 cm. in length, while the peduncle is short, rarely exceeding 5 cm. in length.

In 1861, Todaro described two species which appear to show a close relationship to *E. caffra*, namely, *E. viarum* and *E. insignis*. A reply to an enquiry sent to the Director, Instituto ed Orto Botanico dell' Università di Palermo, reveals that corresponding type specimens apparently do not exist, but that trees referred to under the name of *E. viarum* are growing in Palermo. A specimen at Kew collected by Wilman in Palermo under the name *E. viarum* is, according to our liaison officer at Kew, identifiable as *E. caffra*. *E. insignis* is described at some length by Todaro but, in the absence of supporting measurements, the species cannot be identified with certainty. It may be the same as the species described later as *E. lysistemom* Hutch. As there is no type specimen and hence little chance of its ever being satisfactorily placed, it is felt that the name may justifiably be disregarded.

There is little doubt that *E. constantiana* Mich. can be relegated as a synonym of *E. caffra* Thunb. The plate and description are based on a tree of unknown origin in the garden of M. Constant at Golfe Juan in the South of France. The dimensions of the flowers and leaves are somewhat larger than is usual in *E. caffra*, but this is no doubt due to cultivation. It is fairly evident that *E. lysistemom* came into cultivation in Europe and America as *E. caffra* before the true *E. caffra*, with the result that the latter received a new name. This was confirmed when cultivated specimens were sent to us for naming by Miss Elizabeth McClintock of the California Academy of Sciences, San Francisco. The trees grown in America as *E. caffra* were, in fact, *E. lysistemom*, while true *E. caffra* was cultivated under the name *E. constantiana*.

E. lysistemom Hutch. in Kew Bull. 422 (1933); Collett in Bothalia, 4: 223 (1941). *E. caffra* auct. plur. non Thunb. e.g., Wood, Natal Pl. 6: t.542 (1912); Phillips in Fl. Pl. S. Afr. 2: t.59 (1922); Baker, Trop. Legum. 369 (1925); Burtt Davy, Fl. Pl. Ferns Tvl. Swaz. 2: 415 (1932); Collett, l.c., pro parte; Codd, Trees and Shrubs K.N.P. 70, t.66 (1951).

PLATE 3.

TYPE: Smuts 66, Rietvlei, Belfast District, Transvaal.

S. RHODESIA.—Gilliland 706. Matobo, Miller 1643, 1879; Plowes 1461. Bikita, Wild 4417. Belingwe, Wild 4343.

MOCAMBIQUE.—Manica e Sofala, Pedro and Pedrogao 148, 7549, 7560, 8053.

BECHUANALAND.—Kanye, Hillary and Robertson 570.

TRANSVAAL.—Soutpansberg, Hutchinson and Gillett 4155; Taylor 732; Bailey in Hb. Burtt Davy H3015. Letaba, Botha s.n.; Krige 25. Waterberg, Story 1528; Meeuse 9335. Zeerust, Gerstner 3356. Rustenburg, Rose Innes 47; Turner 16. Krugersdorp, Bunting 31. Brits, Prosser 1356. Pretoria, Burtt Davy 1777, 1850; Phillips 1648; Mogg 15157; 15742; Leeman in Nat. Herb. 22845; C. A. Smith 309; Codd 6149, 6547; de Winter 395; Marais 1; Prosser 1038. Belfast, Smuts 66 (PRE, isotype); Codd 8003. Lydenburg, Barnard 534; Codd 8005, 8006. Pilgrims Rest, Smuts and Gillett 2344. Nelspruit, Pole Evans 3927; Codd 8008; Codd and de Winter 5127; van der Schyff 13, 402. Barberton, Galpin 494; Legat H2462.

SWAZILAND.—Codd 7807.

NATAL.—Hlabisa, Pole Evans 3648. Mtunzini, Thode A1528. Entonjaneni, Codd 1916. Durban, Medley Wood 10016; Thode A1514; Lansdell s.n. Umzinto, Smuts s.n.; Codd 8002. Port Shepstone, Codd 7998, 7999; Dyer and Dohse 5417.

CAPE.—Bizana, Codd 7993, 7994, 7997. Libode, Codd 7991. Mqanduli, Codd 7986, 7987. Elliotdale, Codd 7983. Engcobo, Codd 7981, 7982.

According to Baker, l.c., the species occurs also in Nyasaland and Angola. Its distribution overlaps that of *E. caffra* from Port Shepstone to Bashee Mouth and extends further inland. It inhabits drier situations than *E. caffra*, such as scrub forest, coastal sand dunes, dry savannah and rocky, wooded slopes, rarely exceeding 40 feet in height and usually considerably less. The flowers are normally brilliant scarlet, the main variants being a pink-flowered form near Umkomaas and a tree with orange scarlet flowers at Marburg Mission near Port Shepstone. The vexillum is relatively long and narrow, arched to a smaller extent than in *E. caffra* and folded to enclose the stamens. The wings and keel are comparatively short, rarely exceeding 1.5 cm. in length, while the peduncle is seldom shorter than 6 cm.

Specimens from Southern Rhodesia and the Northern Transvaal (Soutpansberg District) are characterised by having a shorter vexillum, varying from 3.7–5.1 cm. as against 4.6–6.2 cm. for those with a more southerly distribution. In all other respects they appear to be identical with the more southern (typical) specimens and therefore there are insufficient grounds for separating this northern form as a distinct variety.

2. *E. LATISSIMA* E. Mey. and *E. ABYSSINICA* Lam.

There was at one time a tendency to place *E. latissima* E. Mey. (type: Drege, between Umgazana and Umzimvubu Rivers) as a synonym of the more tropical species, *E. abyssinica* Lam. (= *E. tomentosa* R. Br. ex A. Rich.). Examples are to be found in Wood, Natal Pl. 4: t. 384, 385 (1906); Sim, For. Fl. Cape Col. 201 (1907); and Marloth, Fl. S. Afr. II. 1: 81 (1925). More recent authors, such as Burtt Davy (1932) and Collett (1941), uphold the name *E. latissima* for the South African plant, but they omit to give reasons for their decision.

An examination of available herbarium material indicated that corolla length could serve as a basis for sorting the material into two groups, which differed to some extent in leaf size and texture and also in geographical distribution. The two groups meet in Southern Rhodesia but do not appear to grade into one another, thus providing support for the view that they represent two distinct species. It has not been possible to study this problem personally in the field, but useful confirmatory evidence has been supplied by Dr. H. Wild of Salisbury Herbarium and Mr. D. C. H. Plowes of Nyamandhlovu Pasture Research Station. The main distinguishing characteristics are summarised in Table II. In addition, observers state that in *E. abyssinica* the calyx is bright red, especially in the young stage. The colour is not evident in herbarium specimens, so it is not known how constant a feature it is. In *E. latissima*, the calyx has a rusty brown colour.

TABLE II.
Comparison of *E. latissima* and *E. abyssinica*.

	<i>E. latissima</i> .	<i>E. abyssinica</i> .
Vexillum, length.....	4.0–5.5 cm.	2.8–3.8 cm.
Wings, length.....	1.7–2.4 cm.	0.7–0.9 cm.
Keel, length.....	1.3–1.8 cm.	0.5–0.7 cm.
Terminal leaflet, shape.....	More or less rotund, broader than long	Broadly ovate to rotund, often longer than broad.
Terminal leaflet, length.....	9.5–21.0 cm.	5.5–14.0 cm.
Terminal leaflet, breadth.....	11.0–29.0 cm.	6.0–14.0 cm.

On the basis of the above distinctions, it appears necessary to add *E. gibbsae* Bak. (type: Gibbs 73, Matoppos) to the list of synonyms of *E. latissima* given by Collett, l.c. Although the type has not been seen, no constant characters could be found for separating specimens from the Matoppos from *E. latissima*.* A point arising out of this investigation but falling outside its scope, is the validity of the name *E. abyssinica* Lam. The original description is hardly sufficient to sustain it and enquiries have failed to reveal the existence of a type specimen. The species is fully described by A. Richard in his Tent. Fl. Abyss. 1: 213, 214 (1847), where it is identified with a Quartin Dillon specimen, and it may be noted that *E. tomentosa* R. Br. ex A. Rich. is described for the first time in this work also.

The distribution of *E. abyssinica* is from Abyssinia, through tropical Africa to Southern Rhodesia and Mocambique, without entering the Union of South Africa, while *E. latissima* extends from Southern Rhodesia and, probably, the highlands of Mocambique, through eastern Transvaal and Natal to the Transkei.

* In a recent communication, Mr. Plowes informs me that, having compared flowering specimens of *E. gibbsae* and *E. latissima*, he considers that the two may be distinct.



PLATE 1.—*Erythrina caffra* Thunb., photograph of type specimen at Uppsala Herbarium.



PLATE 2.—*Erythrina caffra* Thunb., East London (Codd 7979).



PLATE 3.—*Erythrina lysistemon* Hutch., Rietvlei, Nelspruit District (Codd 8008).