

## Notes on African plants

VARIOUS AUTHORS

### FABACEAE

#### OPHRESTIA OBLONGIFOLIA (PHASEOLEAE) IN SOUTHERN AFRICA

##### INTRODUCTION

*Ophrestia* H.M.L.Forbes is a member of the sub-tribe Ophrestiinae in tribe Phaseoleae (Fabaceae). This sub-tribe was erected by Lackey (1977) to include three genera: the mostly African *Ophrestia*, the tropical African *Pseudoeriosema* Hauman (both previously in Glycininae) and the South-East Asian *Cruddasia* Prain (formerly in Galactiinae). Although the Ophrestiinae appear to have affinities with some Asian *Tephrosia* Pers. (*Tephrosia* is currently placed in the tribe Millettieae), Lackey (1977) decided to keep them within the Phaseoleae due to their twining habit. The Ophrestiinae can therefore be described as ‘*Tephrosia*-like Phaseoleae’. A cladogram generated from a combination of molecular datasets (including Kajita *et al.* 2001—*rbcl*; Hu *et al.* 2002—ITS; and Wojciechowski *et al.* 2004—*matK*) nonetheless points to a sister relationship of Ophrestiinae with the core-Millettieae (Schrire 2005). These datasets, however, included only two representatives of the Ophrestiinae, i.e. *Ophrestia hedysaroides* (Willd.) Verdc. and *O. radicata* (A.Rich.) Verdc.

*Ophrestia*, an anagram of *Tephrosia*, was created by Forbes (1948) to accommodate *T. oblongifolia* E.Mey. and three other species, which she described as new at the time: *O. nervosa* H.M.L.Forbes, *O. retusa* H.M.L.Forbes and *O. swazica* H.M.L.Forbes. The latter three were all subsequently placed into the synonymy of *O. oblongifolia* (E.Mey.) H.M.L.Forbes by Verdcourt (1970), who argued that the leaf characters given by Forbes (1948) were “quite unusable and too variable”. *Ophrestia* and *Tephrosia* (especially the Asian species) share a number of characters, including pentafoliolate leaves, silky petals and obscure stipels (Lackey 1981). *Ophrestia*, however, differs from *Tephrosia* in having leaflets with fewer, prominent and widely-spaced lateral veins, which loop back without forming a marginal vein, as opposed to the many, inconspicuous, and closely-spaced parallel veins that form a marginal vein in *Tephrosia* (Forbes 1948; Verdcourt 1970).

Verdcourt (1970) expanded the circumscription of *Ophrestia* by amalgamating it with *Paraglycine* F.J.Herm. and *Pseudoglycine* F.J.Herm. on the basis that Herman’s (1962) characters were not adequate to separate these two genera from *Ophrestia*. *Paraglycine* is characterized by having 1–7 leaflets, pubescent exterior of corolla, and a swollen, cartilaginous, ariloid strophole (Herman 1962). *Pseudoglycine* has 5–7 leaflets, sericeous standard on the outside towards the apex, and

a hilum covered by a membranaceous collar; it can also be characterized by petaloid calyx lobes and a persistent style in the fruit (Hermann, 1962). *Ophrestia* can be characterized by lateral veins which loop back without forming a marginal vein on the leaflets, it has 1–11 leaflets, pubescent corolla on the outer surface, and a prominent aril. Some species of *Ophrestia* are superficially similar to certain species of *Glycine* Willd., which would explain why a number of the species transferred from *Paraglycine* to *Ophrestia* were originally placed in *Glycine* (e.g. Harms 1899; Baker 1929; Hauman 1955). *Ophrestia*, however, differs from *Glycine* in having short petioles, silky standard petals (glabrous in the latter), and prominent seed arils (Lackey 1977, 1981). In addition, *Glycine* is generally trifoliolate, while *Ophrestia* is 1–5-jugate (Forbes 1948). As currently circumscribed (Schrire 2005), *Ophrestia* comprises 16 species occurring mainly across Tropical Africa (8), and also in Madagascar (4), Asia (3), and thinly distributed in southern Africa (1). We describe and illustrate the southern African *O. oblongifolia* for the first time since its description, correct the typification, and also provide a distribution map.

##### MATERIALS AND METHODS

Plant material was studied mainly from herbarium specimens loaned from PRE, which has a comprehensive collection of *Ophrestia* specimens. Habitat affinities are described according to Mucina & Rutherford (2006). Type specimens were viewed at [www.plants.jstor.org](http://www.plants.jstor.org).

##### TAXONOMIC TREATMENT

***Ophrestia*** H.M.L.Forbes in *Bothalia* 4: 1003 (1948); Verdc. 24: 257 (1970); J.B. Gillett *et al.*: 670 (1971). Type species: *O. oblongifolia* (E.Mey.) H.M.L.Forbes

*Paraglycine* F.J.Herm.: 52 (1962); Hutch.: 448 (1964). Type species: *P. hedysaroides* (Willd.) F.J.Herm. (= *Ophrestia hedysaroides* (Willd.) Verdc.)

*Pseudoglycine* F.J.Herm.: 74 (1962); Hutch.: 448 (1964). Type species: *P. lyallii* (Benth.) F.J.Herm. (= *Ophrestia lyallii* (Benth.) Verdc.)

Prostrate, climbing or erect perennial herbs or shrubs, arising from a woody rootstock. Leaves digitately or pinnately 3–11-foliolate or unifoliolate, leaflets elliptic-oblong, ovate-oblong or lanceolate-oblong,

with 5–7 prominent nerves above; stipules linear; stipels minute or absent. *Inflorescence* axillary racemes, slender, sometimes much longer than leaves, few- to many-flowered. *Bracts* persistent, linear-lanceolate; bracteoles persistent, linear or filiform. *Calyx* campanulate, sometimes cylindric-campanulate, 5-lobed, tube membranous; lobes subequal, all shorter than tube, upper two ± connate. *Corolla* longer than calyx, purple, purplish pink, violet, whitish pink or yellow; standard oblong-pandurate, lower part auriculate, silky on outer side, with well-developed, channelled claw; wings usually oblong, auriculate near base, with well-developed linear claw, silky outside; keel narrowly elliptic, with well-developed linear claw, auriculate near base, silky outside. *Stamens* diadelphous, vexillary stamen free or slightly joined to others, filaments alternatively long and short, anthers all uniform in size. *Ovary* subsessile, silky, ovules 2–8, style glabrous or hairy along one side, stigma small, capitate. *Fruit* oblong or linear-oblong, dehiscent, obovate, margins slightly thickened, glabrous or slightly hairy, 2–5-seeded. *Seeds* oblong-ovate, smooth, aril prominent.

16 spp.; southern Africa (South Africa and Swaziland), northwards into Tropical Africa, extending to Asia and also in Madagascar.

*Diagnostic characters:* *Ophrestia* shares a number of characters with *Tephrosia*, notably the penta-foliolate leaves, silky petals and obscure stipels, but is distinguished from it by the fewer, prominent and widely-spaced lateral veins which loop back without forming a marginal vein on the leaflets.

***O. oblongifolia*** (E.Mey.) H.M.L.Forbes in *Bothalia* 4: 258 (1948); Verdc. 24: 258 (1970). *Tephrosia oblongifolia* E.Mey.: 108 (1836); Meisn.: 86 (1843); C.Krauss: 54 (1846); Harv.: 209 (1862); O.Kuntze: 175 (1891); Wood: 42 (1907); Burt Davy: 377 (1932). Type: South Africa, [KwaZulu-Natal], *Drège s.n. P03453602* (P, lecto!, here designated). [Syntypes: [Eastern Cape], ‘ad Omsamcaba’ [Msikaba River], *Drège s.n.* (syn., not located); ‘prope Omtendo et’ [Mtentu River], *Drège s.n.* (P!, K!, syn.)]. [Note: The fruiting specimen in P is chosen as lectotype because it was annotated by Meyer and because it is the only one with fruits (the fruits were described in the prognosis)].

*Glycine? wilmsii* Harms: 302 (1899). Type: South Africa, [Mpumalanga], “bei Lydenburg”, *Wilms 383* (B†, holo.; K, lecto!, here designated).

*O. nervosa* H.M.L.Forbes: 1006 (1948). Type: South Africa, [North-West], Marico district, *Thode A 1394* (NH, holo!).

*O. retusa* H.M.L.Forbes: 1005 (1948). Type: South Africa, [North-West], N of Magaliesberg *Dyer & Verdoorn 3405* (PRE, holo!).

*O. swazica* H.M.L.Forbes: 1005 (1948). Type: Swaziland, Dalriach at Forbes’ Reef *H. Bolus 11845* (PRE, holo!; GRA!, K!, NH!, iso.).

Scandent perennial herb with trailing stems, up to 1 m wide. *Leaves* 1–5-jugate, rarely unifoliolate; leaf-

lets oblong, 40–75 × 20–30 mm, densely silky beneath, glabrescent above, petiole (25–)45–80 mm long; stipules linear-lanceolate, 5–7 × 1–2 mm; stipels absent. *Inflorescences* few- to many-flowered axillary racemes; peduncles 7–35 cm long. *Flowers* purple, purplish pink, violet, whitish pink, yellow or bluish-purple, (6–)11–15 mm long; bracts persistent, linear-lanceolate, 4–6 × ± 0.5 mm; bracteoles linear-lanceolate, 2–3 × ± 0.2 mm. *Calyx* bilabiate, densely silky hairy, two upper lobes fused up to two-thirds of their length, upper lip 6–8 mm long, lower lip 6–8 mm long. *Petals:* standard oblong, 10–12 × 4–6 mm, silky on outside, claw 2–4 mm long; wings oblong, 6–10 × 4–6 mm, silky on outside, claw ± 3 mm long; keel narrowly elliptic, 5–9 × 3–4 mm, claw 3–4 mm long. *Stamens* diadelphous, vexillary stamen slightly joined to others. *Ovary* 4–5 mm long, linear-oblong, 2–4-ovuled, style with few hairs along one side, curved upwards. *Fruit* linear, laterally compressed, 20–40 × 7–8 mm, glabrescent, 1–2-seeded. *Seeds* brown to black, oblong to ovoid, ±4 × ±3 mm, aril prominent. *Flowering time:* Nov.–Feb. (Figure 1).

*Distribution:* *Ophrestia oblongifolia* is the only species of the genus that occurs in southern Africa and is endemic to South Africa (Limpopo, North-West, Gauteng, Mpumalanga, and KwaZulu-Natal) and Swaziland (Figure 2).

*Diagnostic characters:* close to *O. hedysaroides* and *O. radicata* in having generally oblong leaflets, however in these two species the petioles are shorter than in *O. oblongifolia* (the longest being up to 5.5 cm in *O. radicata* vs. 7.5 cm in the latter). In all African species of *Ophrestia* (except *O. hedysaroides*), the leaflets are narrower than in *O. oblongifolia* (up to 18 mm in *O. unifoliolata* (Bak.f.) Verdc. compared to up to 2.5 cm). *O. oblongifolia* also lacks stipels.

#### Key to varieties of *O. oblongifolia*:

- 1a. Leaves 3–7-foliolate, sparsely to densely covered with whitish hairs . . . var. *oblongifolia*
- 1b. Leaves 3–11-foliolate; whole plant densely covered with brownish hairs . . . var. *velutinosa*

#### ***O. oblongifolia* var. *oblongifolia***

Leaves with 3–7 leaflets. Whole plant sparsely to densely covered with whitish hairs.

*Diagnostic characters:* *Ophrestia oblongifolia* var. *oblongifolia* is less robust (with fewer leaflets than var. *velutinosa*) and is sparsely to densely covered with whitish hairs while in the latter the hairs are brownish.

*Distribution and habitat:* This variety is much more widespread than var. *velutinosa*, occurring in South Africa (Limpopo, North-West, Gauteng, Mpumalanga, and KwaZulu-Natal) and the Mbabane area in Swaziland (Figure 2). It grows on sandy soil in the Savanna and Grassland Biomes in the following vegetation types: Zeerust Thornveld, Gold Reef Mountain Bushveld; Central Sandy Bushveld, Makhado Sweet Bushveld; Polokwane Plateau Bushveld, Legogote Sour Bushveld, Swaziland Sour Bushveld, Carletonville Dolomite Grassland, KaNgwane Montane Grassland, KwaZulu-

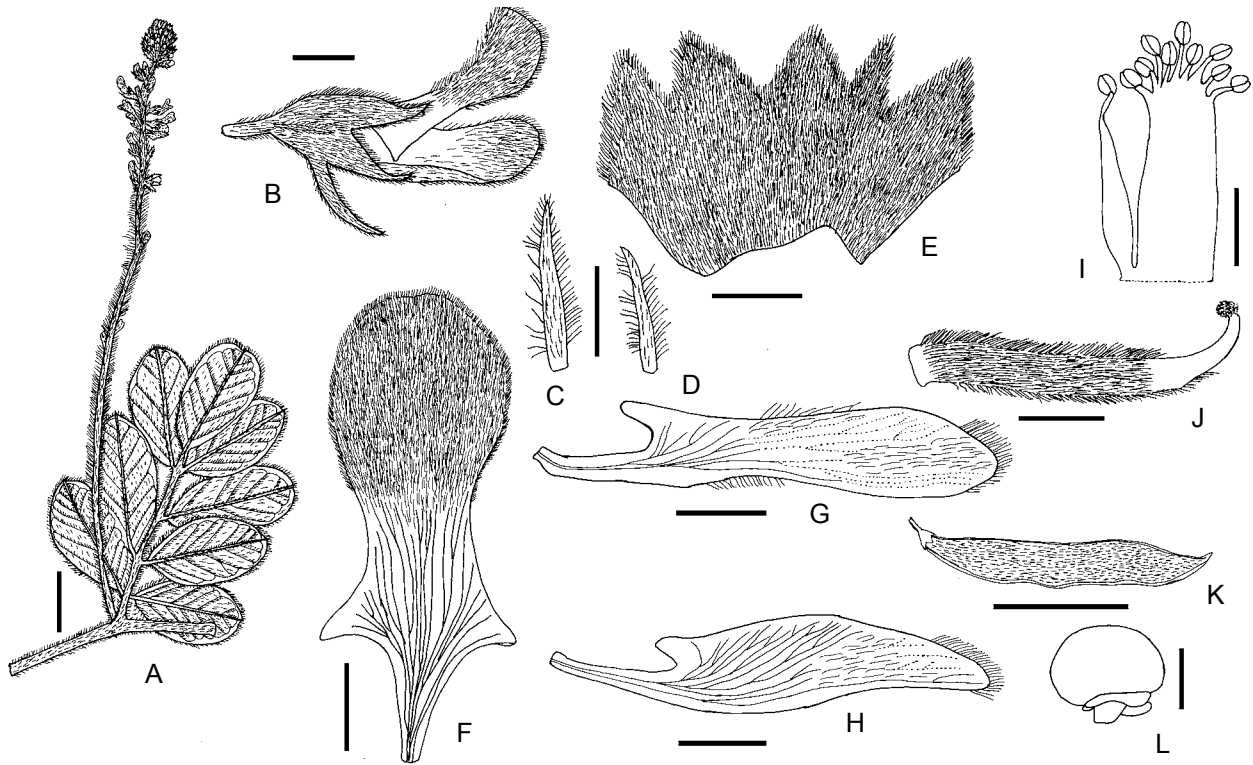


FIGURE 1.—Vegetative and reproductive morphology of *Ophrestia oblongifolia* (all from var. *oblongifolia*): A, flowering branch; B, flower in lateral view; C, abaxial view of bract; D, lateral view of bracteole; E, calyx opened out with upper lobes to the left; F, standard petal; G, wing petal; H, keel petal; I, stamens; J, pistil; K, lateral view of pod; L, lateral view of seed. Vouchers: A & B from *S. Venter 11304* (PRE); C–J from *G.K. Theron 1311* (PRE); K, L, from *B.J. Huntley 1551* (PRE). Scale bars: all 1 mm except K, 20 mm.

Natal Coastal Belt, Thukela Thornveld, and Ngongoni Veld (Mucina & Rutherford, 2006).

*Additional specimens*

LIMPOPO.—**2329** (Polokwane): Polokwane, Hillside plot, Duvenhageskraal Farm 686 LS, (–CD), 3 Dec. 1985, *S. Venter 11304* (PRE). **2428** (Nylstroom): near Loubadspruit Bridge on road between Nylstroom and Alma, (–CA), 4 Mar. 1985, *M. Welman 504* (PRE). **2429** (Zebediela): Percy Fyfe Nature Reserve (–AA), 22 Feb. 1968, *B.J. Huntley 1551* (PRE). **2430** (Pilgrim’s Rest): Graskop (–DB), 27 Nov. 1981, *A.-E. van Wyk 5204* (PRE).

NORTH-WEST.—**2526** (Zeerust): Zeerust, (–CA), Mar. 1912, *T.J. Jenkins 11679* (PRE); Grasfontein, Lichtenburg, (–CC), 8 Dec.

1929, *J.D. Sutton 302* (PRE). **2527** (Rustenburg): Rustenburg Nature Reserve, (–CA), 28 Dec. 1970, *N. Jacobsen 1598* (PRE); Wolhuters Kop (–DA), Dec. 1916, *T. Nunns 9* (PRE). **2626** (Klerksdorp): NNE of Lichtenburg, near side of the road to Koster, (–AA), 9 Mar. 1967, *J.C. Scheepers 1491* (PRE); 42 miles [68 km] from Koster on Lichtenburg road, (–AB), 13 Oct. 1971, *B. Clarke 249* (PRE); road to Ventersdorp, 22 km from turn-off of Koster/Lichtenburg road, (–BA), 8 Mar. 1985, *M. Welman 590* (PRE); 8 miles [13 km] NW of Ventersdorp, (–BD), 1 Feb. 1946, *J.P.H. Acocks 12400* (PRE).

GAUTENG.—**2528** (Pretoria): camp adjoining govt house, Bryntirion, (–CA), 14 Nov. 1926, *C.A. Smith 3353* (PRE); Botanical Reserve, Silverton, (–CB), 16 Dec. 1946, *R. Story 1420* (PRE).

MPUMALANGA.—**2529** (Witbank): Loskopdam, Nooitgedacht, (–AD), 12 Jan. 1967, *G.K. Theron 1131* (PRE). **2531** (Komatipoort): Kangwane, Songimvelo Game Reserve, Mlembe Mountain, (–CC), 7 Dec. 1992, *G. Germishuizen 5683* (PRE).

SWAZILAND.—**2631** (Mbabane): Dalriach at Forbes Reef, (–AA), *H. Bolus 11845* (GRA, K, NH, PRE); Malolotja Nature Reserve, (–AA), 18 Nov. 1985, *L.M. Heath 418* (PRE).

KWAZULU-NATAL.—**2830** (Dundee): Hamewith, Mtunzini District, (–CB), 18 Nov. 1919, *A.O.D. Mogg 5978* (PRE). **2930** (Pietermaritzburg): Key Ridge, (–DA), 18 Jan. 1987, *P. Goldblatt & J. Manning 8395* (PRE); Inanda, Natal, (–DB), Jun. 1879, *J.M. Medley-Wood 402* (PRE). **2931** (Stanger): Port Natal [Durban], (–CC), *Drège s.n. c.* (P). **3030** (Port Shepstone): Mgayi, (–BC), 27 Jan. 1968, *C.J. Ward 6351* (PRE); Uvongo Beach, (–CD), Mar. 1967, *L.C.C. Liebenberg 7995* (PRE); Hibberdene, (–DA), 1 Jan. 1964, *N. Grobbelaar 60* (PRE).

EASTERN CAPE.—**3129** (Port St. Johns): Lusikisiki, Umsikaba River mouth, (–BC), 20 Jan. 1937, *A.O.D. Mogg 13325* (PRE); Mkambati Game Reserve, (–BD), 10 Dec. 1985, *C. Shackleton 368* (PRE). **3130** (Port Edward): Port Edward, (–AA), 5 Jan. 1981, *G. Germishuizen 1727* (PRE).

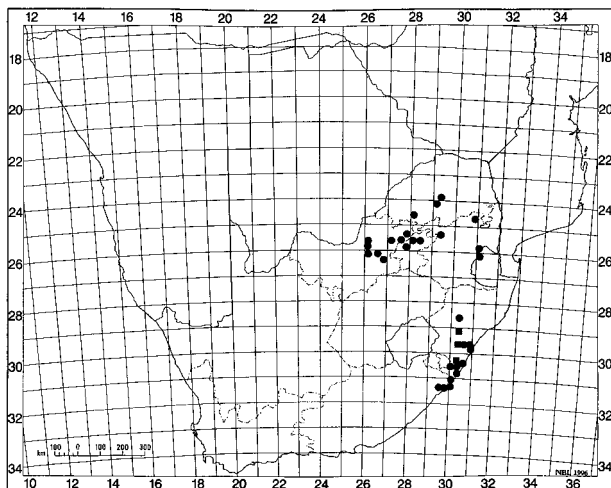


FIGURE 2.—Distribution of *Ophrestia oblongifolia* var. *oblongifolia*, ●; *O. oblongifolia* var. *velutinosa*, ■.

**O. oblongifolia** var. **velutinosa** *H.M.L. Forbes* in *Bothalia* 4: 1004 (1948). Type: South Africa, [KwaZulu-

Natal], 'Zululand', *Gerrard 1082* (NH, holo.!, BM!, K!, P!, iso.).

Leaves with 3–11 leaflets. Whole plant densely covered with brownish hairs.

*Diagnostic characters:* this variety appears to be more robust (with 3–11 leaflets as opposed to 3–7 leaflets) than the typical variety, and much more hairy, with brown rather than white hairs.

*Distribution and habitat:* var. *velutinosa* appears to be restricted to the KwaZulu-Natal coastal belt, from Port Shepstone to north of Durban. It occurs on sandy soil in Midlands Mistbelt, Thukela Valley Bushveld and Eastern Valley Bushveld (Mucina & Rutherford 2006).

#### *Additional specimens seen*

KWAZULU-NATAL.—2931 (Stanger): Halfway between Tugela Bridge and turn-off to Ultimatum Tree, (–AB), 14 Dec. 1972, *N. Grobelaar 1661* (PRE). 3030 (Port Shepstone): District Alexandria, Station Dumisa, Farm Friedenau, (–AD), 5 Dec. 1908, *H. Rudatis 520* (PRE); Dududu, Umkomaas, 2 km W of the Cedars Farm, (–BA), 5 Nov. 1992, *A.M. Ngwenya 1051* (PRE); St. Michael-on-Sea, (–CB), 25 Dec. 1966, *R.G. Strey 7090* (PRE).

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A. N. MOTEETEE\*† and B-E. VAN WYK\*

\*University of Johannesburg, Department of Botany and Plant Biotechnology, P.O. Box 524, Auckland Park 2006, Johannesburg, South Africa.

†Corresponding author: e-mail address: amoteetee@uj.ac.za.

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