

A NOTE ON THE REDISCOVERY OF *ARGYROLOBIUM INVOLUCRATUM* (THUNB.) HARV. AND THE GENERIC BORDERLINE BETWEEN *ARGYROLOBIUM* AND *MELOLOBIUM* (FABACEAE-CROTALARIEAE)¹

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ABSTRACT

The species currently known as *Argyrobium involucratum*, and previously known only from the type collection made by Carl Thunberg in the 1770s, has been rediscovered on the Roggeveld escarpment, Cape Province, South Africa. Until now the distribution of the species has been unknown because this information was not given in Thunberg's (1800) protologue of *Psoralea involucratum*, the basionym. The species has many attributes unusual in *Argyrobium*, but characteristic of the related Crotarioid genus *Melolobium*, and we suggest that this species may correctly belong in the latter genus.

A species which has been identified as *Argyrobium involucratum* (Thunb.) Harv. was collected in 1976 by Goldblatt in the Williston district of the Cape Province, South Africa. It was located 68–70 km south of Calvinia on the Blomfontein road to Middelpos and was found growing in clay soil among rocks at an altitude of ca. 1300 m. This area lies along the edge of the Roggeveld escarpment and it receives considerably more precipitation than the country lying immediately east, towards the interior.

The find is of great interest because the distribution of this species was not previously known. No locality was given in the protologue of *Psoralea involucrata* Thunb., the basionym of the species, and since then the species does not seem to have been collected.

We surmise that Thunberg collected his specimens in the same general area, if not at the same site on his third trip into the interior of the Cape, to the Roggeveld, in 1774 (Karsten, 1939). While the exact route Thunberg took on this journey seems to be unknown, Karsten indicates he travelled south from the Hantam Mts. (Calvinia) along the foot of the Roggeveld escarpment, but at some point ascended the 800 m range onto the plateau, and here he probably made his type collection of *Psoralea involucrata*.

The population of *Argyrobium involucratum* was fairly localized, as far as was possible to estimate, and grew along the road on a rocky ridge about 0.5 km from the escarpment edge. Most likely there are more populations along the escarpment in inaccessible sites, but no plants were seen elsewhere although the species is conspicuous and the road traverses the escarpment for some distance before turning inland towards Middelpos. A formal account of the species is as follows.

¹ Collected on a field trip supported by grant DEB-76 11907 from the U.S. National Science Foundation. We thank R. M. Polhill and C. Stirton for the help and comments on the identity and disposition of the species.

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***Argyrolobium involucratum* (Thunb.) Harv., Flora Cap. 6:75. 1862.—(Fig. 1.)**

Psoralea involucrata Thunb., Prod. Pl. Cap. 2:136, 1800; Fl. Cap. 2:607, 1823. TYPE: South Africa, Cape "e Cap. b. Spei. Thunberg *Psoralea involucrata*," Thunberg s.n. (UPS-THUNB 17575, lectotype).

Erect or ascending shrub 50–100 cm high, with rigid, densely and shortly villous branches. Leaves glabrous (except on the petiole), pale light-green, trifoliolate, shortly petiolate, with large stipules that are connate, perfoliate, and adnate to the petiole. Stipules of most vegetative leaves ovate, between 3×5 and 5×7 mm, those in lateral short shoots smaller, but those of the upper leaves ovate to broadly ovate, often pale on the lower parts and up to 11×8 mm, fused on the leaf-opposed side for up to 3–4 mm. Petiole (free part) 0.2–1.0 mm long, villous. Leaflets obovate, conduplicate, $2-5 \times 1.5-3$ mm, rounded to acute, with a distinct acute-apiculate point.

Inflorescence a pseudo-umbel of, as a rule, 4–6 flowers; the pedicels and often the base of the calyces enclosed by the sheathlike stipular involucre of the uppermost leaf. The internode below this leaf may be longer than the others and slightly peduncle-like. Pedicel 3–4 mm long in flowering, up to 9 mm in fruiting stage, villous, merging gradually into the calyx. Bract and bracteoles lacking. Calyx cylindrical (–campanulate), 2.5–9.5 mm long incl. lobes, pale yellowish on basal part, more or less deeply purplish on lobes and distal parts of tube, sparsely pubescent on the tube, more densely so on the lobes. Upper two lobes triangular, ca. 3.2 mm long and almost equally broad at base; lower three lobes mutually coherent to a lip, narrower and shorter than the upper, the lowest about 2×1 mm or less (Fig. 1C). Corolla pale yellow with purplish tinge especially on back of vexillum and distal parts of alae, becoming increasingly purple when fading. Standard blade ovate, obtuse, ca. $7.5-8.5 \times 6$ mm large, glabrous except along the midrib of the back; claw ca. 4 mm. Wing blades linear-elliptic, ca. $7.5-8.5 \times 3.7-4.0$ mm, rounded at the apex and with a rounded upper basal lobe, subglabrous but with a line of few hairs on the apical half of the outer side; basal upper part with ca. 5–7 rows of small lunulate foldlets; claws ca. 5.0–5.5 mm long. Keel blades lunate, $7.0-7.8 \times 3.5-4.0$ mm, with slightly concave upper margin, obtuse at apex, with a slight lobe at the base of the upper side, apical half pubescent, a low longitudinal pouch present on basal half; claws 5–5.5 mm long. Stamens united to form a sheath with a slit going right to the base on either side of the upper medial stamen; filaments fused for ca. 15–20 percent of their length. Anthers alternately long (1.0–1.2 mm) and basifixed, and short (ca. 0.8 mm) and dorsifixed. Pistil sessile (stipeless), the ovary linear, densely pubescent, merging into the upcurved style which is likewise densely pubescent except on the apical upcurved parts comprising ca. 3 mm of the length. Stigma small, apical, capitate. Ovules mostly 6–7 in number. Legume (Fig. 1I) linear, ca. 30×35 mm large, very slightly curved, covered with dense villous pubescence, supplemented with short glandular hairs (Fig. 1J). Seeds (causing 5–7 prominent convexities on legume surface), ca. 2.6×1.8 mm, smooth, dark and dull in color.

Distribution.—(See above) Roggeveld escarpment south of Calvinia, near Middelpos.

Flowering Time.—October–November.

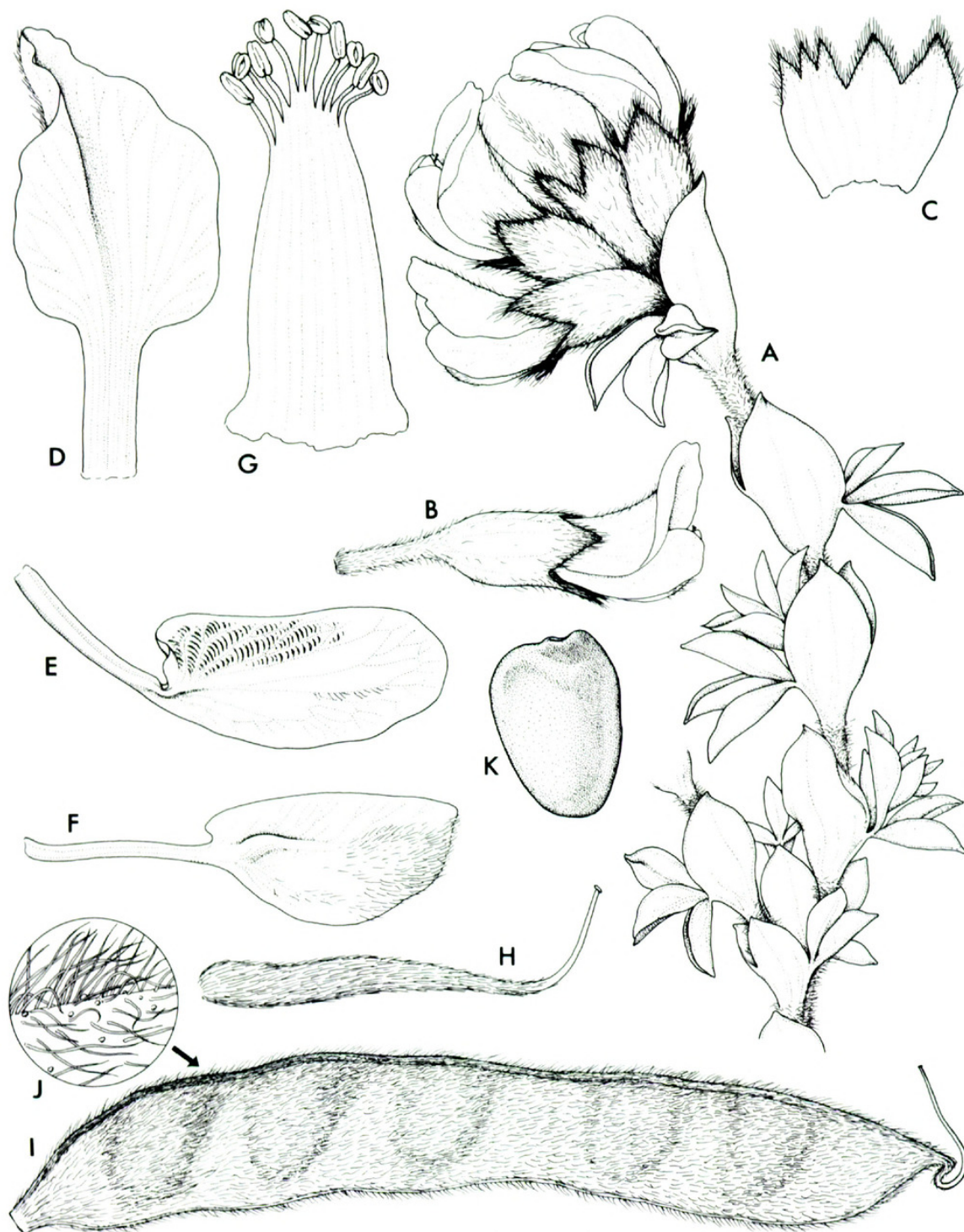


FIGURE 1. *Argyrolobium involucreatum*: A. Inflorescence. B. Flower. C. Lower calyx lobes (A–C, $\times 2.5$). D. Standard. E. Wing. F. Keel. G. Androecium. H. Gynoecium. I. Legume. (D–I, $\times 5$). J. Detail of legume showing glandular hairs ($\times 25$). K. Seed ($\times 10$).

DISCUSSION

The type specimen of Thunberg's deviates from the richer material (*Goldblatt* 4389, 4614) in having a longer (up to 2.5 cm) internode below the uppermost leaf, and in the sheath-like stipular involucre enclosing the inflorescence. The pedicels also seem to be somewhat longer, but this may be due to difference in stage.

The morphology clearly indicates that this species—to whichever genus it belongs—is a typical member of the tribe Crotalariaeae sensu Polhill (1976). Its foliage is mostly glabrous with the exception of the petioles, which are covered with villous hairs. It may be remarked that beneath the ordinary hairs on the petioles, as on the legume, there are short glandular hairs similar to those that occur in *Melolobium*.

The development of the stipules is exceptional: broad, ovate, fused to the basal part of the petiole, enclosing the stem, meeting on the leaf-opposed side and fused on this side for some millimeters at the base. This condition, somewhat reminiscent of that in the South American genus *Anarthrophyllum*, but no doubt developed independently of this, is also found in *Argyrobium connatum*, a species with “silky-canescens” pubescence and paired flowers having “villous vexillum and carina.”

The calyx is characteristic in having its three lower lobes fused into a “lip”-like structure, whereas the upper two are larger and separated from each other and from the lower “lip” by deeper incisions. This is a feature characteristic of *Melolobium* as well as *Argyrobium* and is a common feature in the tribe Genisteae (sensu Polhill, 1976). The petals are typical of the tribe Crotalariaeae, similar shapes being found in genera such as *Aspalathus* (Dahlgren, 1963), *Lotononis*, *Melolobium* and other genera. Also typical of the tribe Crotalariaeae is the androecium, in which the filaments are fused to form a sheath with an adaxial slit, running to the very base of the filaments, on either side of the upper median stamen. This is wholly in agreement with genera such as *Aspalathus*, *Lebeckia*, *Wiborgia*, *Rafnia*, *Lotononis*, and *Melolobium*, while the Genisteae s. str. principally are characterized by a closed staminal tube. The anthers are alternately long-basifixed and short-dorsifixed, as is generally the case in the Crotalariaeae.

The legume, finally, is linear and covered with short gland-hairs as well as ordinary hairs, as in *Melolobium*.

Thus, there seem to be some decidedly *Melolobium*-like features of the present species, and its position in *Argyrobium* is challenged. It seems that *Argyrobium* at least is a heterogenous genus as circumscribed by Harvey (1862) and also by Polhill (1976). This is even the more obvious, as the genus is included in the keys both of the tribe Crotalariaeae and the tribe Genisteae in Polhill's treatise of the Genisteae s. lat.

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DOI: <https://doi.org/10.2307/2398890>

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