S. Afr. J. Bot., 1987, 53(5): 395 – 397

Taxonomic notes on *Argyrolobium variopile* (Fabaceae), and the status of *Lotononis magnistipulata*

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Accepted 15 June 1987

The nomenclature and taxonomy of *Argyrolobium variopile* N.E. Br. has been studied. Morphologically the species resembles species of *Dichilus* DC. and *Lotononis* (DC.) Eckl. & Zeyh., but its taxonomic position in *Argyrolobium* is confirmed. It is also shown that *Lotononis magnistipulata* Duemmer is a synonym of this species.

Die nomenklatuur en taksonomie van *Argyrolobium variopile* N.E. Br. is bestudeer. Morfologies toon dit ooreenkoms met soorte van *Dichilus* DC. en *Lotononis* (DC.) Eckl. & Zeyh. maar die taksonomiese posisie in *Argyrolobium* word bevestig. Dit word ook bewys dat *Lotononis magnistipulata* Duemmer 'n sinoniem vir hierdie soort is.

Keywords: *Argyrolobium*, chromosome number, Fabaceae, *Lotononis*, taxonomy

Introduction

Argyrolobium variopile N.E. Br., a poorly defined perennial herb from the eastern parts of southern Africa, is often confused with species of *Dichilus* DC. and *Lotononis* (DC.) Eckl. & Zeyh. Duemmer (1913) apparently overlooked the characteristic trifid lower lip of the calyx and described it as a new species of *Lotononis*, viz. *L. magnistipulata*. The variability of the species no doubt added to the confusion. In this paper it is shown that *Argyrolobium variopile* is the correct name for *Lotononis magnistipulata* and some specimens found under various other names in South African herbaria.

Description

Argyrolobium variopile *N.E. Br.* in Kew Bulletin 1906: 18 (1906); Types: Natal, Charlestown, *Wood 5693* (BOL!, K, NH! PRE!), *Wood 6355* (K, NH!).

Lotononis magnistipulata Duemmer in Transactions of the Royal Society of South Africa 3(2): 299 (1913), synon. nov. Type: Natal, Faku's Territory [probably Pondoland, Transkei], *Sutherland s.n.* (K, holo.!).

Procumbent or erect perennial herb, up to 0,4 m tall. *Stems* often sparsely leafy, with conspicuous stipular scars on older parts; vestiture very variable, pubescent to sparsely pilose. *Leaves* (Figure 1H) densely to sparsely pubescent or pilose, rarely subglabrate. *Stipules* (Figure 1H) lanceolate-cordate, midrib excentric, variable in size, up to 12 mm long and 7 mm wide, free at the base, apex acute to acuminate, base very broad, cordate. *Petiole* slender, about as long as the terminal leaflet. *Leaflets* elliptic-obovate, (5 –)8 – 12(– 20) mm long, (3 –)4 – 6(– 12) mm wide; apex obtuse to rounded, minutely mucronate; base broadly cuneate; abaxially appressed-pubescent to pilose. *Inflorescence* a few-flowered subterminal raceme, often pseudo-umbellate; peduncle very variable in length, (5 –)15 – 30(– 65) mm long; bracts variable in size and shape, usually narrowly linear, but sometimes lanceolate, up to 7 mm long and 4 mm wide; bracteoles small, up to 2 mm long and 0,5 mm wide; pedicels short or almost absent, up to 2 mm long. *Flowers* (1 –)2 – 3(– 15) per inflorescence, bright yellow fading to orange-brown. *Calyx* (Figure 1J) deeply 2-lipped, 5 – 8 mm long, with narrow acuminate lobes; upper lip bifid with lobes almost free, lower lip trifid with lobes fused for about half their length. *Standard* (Figure 1A) broadly cordate-orbicular, 6 – 9 mm long; limb 5 – 8 mm long and wide, abaxially pubescent, slightly reflexed at anthesis; claw short, 1 – 2,5 mm long. *Wing petals* (Figure 1C) nearly as long as the keel, oblong; sculpturing present, upper basal and upper left central. *Keel* (Figure 1B) slightly shorter than the standard, semi-circular, only slightly pointed, pocketed. *Androecium* (Figure 1D) with staminal tube split above, vexillary stamen often nearly free; anthers dimorphic. *Pistil* (Figure 1E & F) oblong-linear, subsessile, densely hirsute; stigma oblique, with elongated papillae. *Fruit* variable in size and shape, oblong to linear, 6 – 25 mm long, 3 – 4 mm wide,

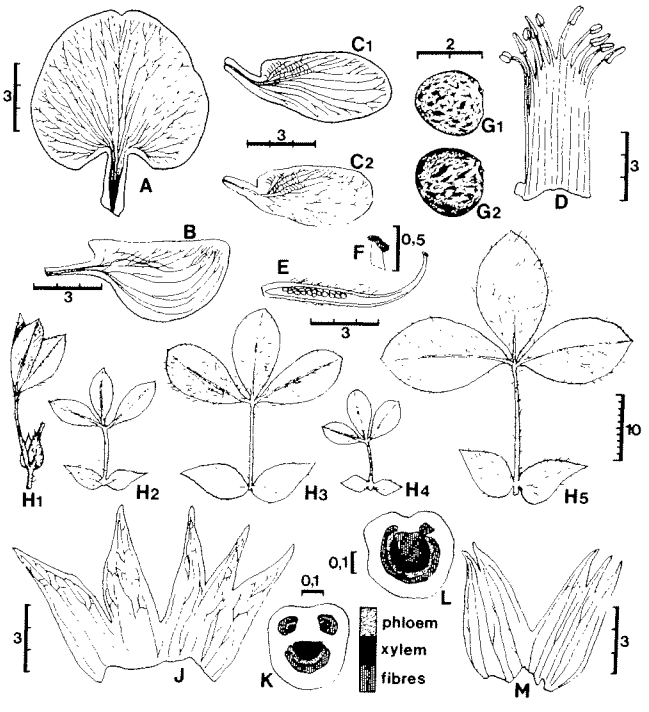

Figure 1 *Argyrolobium variopile*. A, standard; B, keel; C1, C2, wing petals; D, androecium; E, pistil; F, stigma; G1, G2, seeds; H1, leaf showing natural position of the stipules; H2 – H5, leaves and stipules opened out (abaxial surface) showing variation in size and vestiture; J, calyx opened out with upper lobes to the left, vestiture not shown; K, transverse section through middle of petiole showing vascular bundles. *Dichilus pilosus*. L, transverse section through middle of petiole showing group of fibres above abaxial vascular bundle; M, calyx opened out with upper lobes to the left, vestiture not shown. A, B, C1, D, E, F & J from *Jacot Guillarmod et al. 74*; C2, H1 & K from *Van Wyk 1781*; G1 & G2 from *Schutte 200*; H2 from *Devenish 587*; H3 from *Thode 3098*, H4 from *Van Wyk 1566*; H5 from *Van Wyk 1885*; L & M from *Schutte 94* (JRAU). Scale in mm.

pilose to glabrescent at maturity, not constricted between the seeds. *Seed* (Figure 1G) semi-orbicular in side view, laterally flattened, 1,4 – 2 mm long, 1,8 – 2,3 mm wide, pale brown mottled dark brown; hilar area conspicuously swollen, hilar valve hidden within; aril inconspicuous, with a small tongue-like remnant of the funicle to one side; surface reticulate. Chromosome number: 2n = 30! (Voucher specimen: *Schutte 201*, Rand Afrikaans University Herbarium). Flowering occurs from November to March.

The species is also referred to by Wood (1909), Phillips (1917), Bews (1921), Ross (1972) and Gibbs Russell *et al.* (1984). In the latter, it is listed under both *Argyrolobium* and *Lotononis*.

Distribution and Geographical variation

Argyrolobium variopile appears to be endemic to southern Africa where it has been recorded from summer-rainfall grassland areas. Although considered a perennial, observations of a population near Irene, Pretoria indicate that it does not have the ability to resprout after fire. The species often grows in rocky areas where it would be protected from fire. It is confined to high altitudes towards the northern parts of its range, but extends to coastal areas in the eastern Cape (Figure 2). This interesting distribution is shared by at least one other related legume, namely *Dichilus strictus* E. Mey. (Schutte pers. comm.)

Despite considerable variation in the size and vestiture of the leaflets, stipules and fruit, no significant discontinuities could be found to justify any infraspecific taxa. The habit is also very variable. At high altitudes (Sani Pass, for example) the plant has a prostrate habit and is no more than 0,1 m tall. In rocky areas along the eastern Transvaal escarpment, it grows to a rounded shrub of about 0,4 m tall. On the Witwatersrand it reaches the same height, but the habit is much sparser. When growing in shade, it is even more sparse and the leaf size increases dramatically. Some specimens (including the types cited above) dried to a dark brown or black colour, while others remained bright green. This character does not appear to be geographically correlated. I have studied most of the different forms *in situ* and consider it best to include them all under *A. variopile* until *Argyrolobium* as a whole is revised.

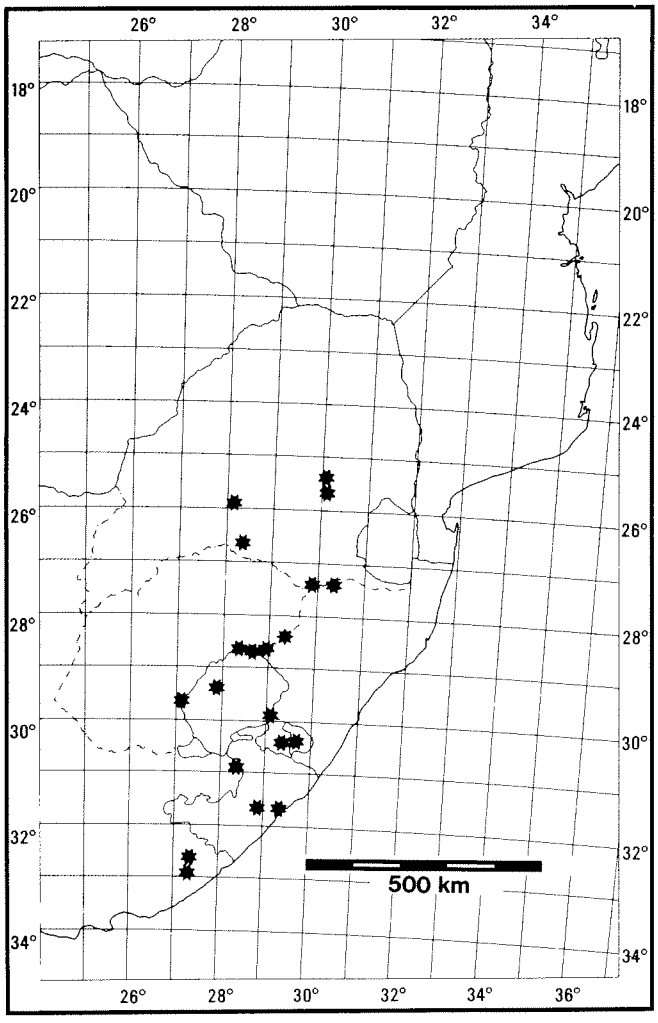

Figure 2 The known geographical distribution of *Argyrolobium variopile*.

Systematic position

Details of the calyx, corolla and stipules leave little doubt that *A. variopile* (*Lotononis magnistipulata*) is a species of *Argyrolobium*. The chromosome base number of 15 conforms to previous counts for this genus (Goldblatt 1981) and differs from *Dichilus*, where 2n = 28 (Goldblatt 1981; Schutte pers. comm.).

Argyrolobium variopile is remarkably similar to *Dichilus pilosus* Conr. ex Schinz, but differs in the much larger stipules, the pseudo-umbellate inflorescences and the lesser degree of fusion of the upper calyx lobes (Figure 1J & M). The anatomy of the petiole (Figure 1K & L) is also distinctly different. A group of fibres is present along the adaxial side of the main vascular bundle in all species of *Dichilus* (Schutte pers. comm.), but absent in *A. variopile*.

Argyrolobium variopile belongs to the section *Chasmone* (*Brevipedes* group) of Harvey (1862). It resembles *A. pilosum* Harv., but the latter is more robust and much larger in all parts. The recently described *A. summomontanum* Hilliard & Burtt is also similar, but differs in the dense reddish-brown vestiture and the much larger flowers and fruit. *A. variopile* contains significant quantities of anagyrine as the major alkaloid and is in this respect almost identical to the more distantly related *A. crassifolium* Eckl. & Zeyh. (Van Wyk *et al.* 1987). It does not match any of the species from tropical Africa enumerated by Polhill (1968). The taxonomy of *Argyrolobium* in southern Africa is in such a state of confusion (a fact also commented on by Polhill 1968) that speculation on relationships will serve no purpose at this stage. Suffice it to state that *Lotononis magnistipulata* is neither a *Lotononis* nor a *Dichilus*. It is clearly conspecific with *Argyrolobium variopile* N.E. Br. and should therefore be relegated to the synonymy of this species.

Specimens examined

(JRAU refers to the Rand Afrikaans University Herbarium. This acronym will be listed in the eighth edition of Index Herbariorum).

— **2528** (Pretoria): Koppie east of Irene (– CC), *Schutte 199, 200, 201* (JRAU); *Van Wyk 1781* (JRAU).
— **2530** (Lydenburg): 1 km from Dullstroom towards Lydenburg (– AC), *Van Wyk 1885* (JRAU); Belfast (– CA), *Leendertz 9179* (PRE) (the last not typical).
—**2628** (Johannesburg): Farm 'Houtpoort' 309, 53,6 km SE of Johannesburg, 9,6 km SE of Heidelberg (– CB), *Mogg 18541* (JRAU).
— **2729** (Volksrust): Hill-side near Charlestown (– BD), *Wood 5693* (BOL, NH, PRE); *Wood 6355* (NH).
— **2730** (Vryheid): Opposite the Zaaihoek Dam, between Volksrust and Groenvlei (– AC), *Van Wyk 2503* (JRAU); Wakkerstroom

distr., Oshoek (–AD), *Devenish 587* (PRE); Altemooi (–AD), *Thode 3098 & 3124* (STE).
— **2828** (Bethlehem): Clarens commonage (–CB), *Ferreira 229* (PRE); Generaalskop, Golden Gate National Park (–DA), *Roberts 3100* (PRE); Witzie's Hoek (–DB), *Junod s.n. sub PRE 17364* (PRE).
— **2829** (Harrismith): 16 km SE of Harrismith (–AC), *Codd 10519* (PRE).
— **2927** (Maseru): 22 km from Wepener towards Hobhouse (–CA), *Van Wyk 1566* (JRAU); Bushman's Pass (–BD), *Schmitz 8483* (PRE).
— **2929** (Underberg): Sehlabathebe (–CC), *Jacot Guillarmod, Getliffe & Mzamane 74* (PRE).
— **3028** (Matatiele): Tsitsa footpath, E. slopes of the Drakensberg (–CD), *Galpin 6606* (BOL).
— **3029** (Kokstad): Kokstad, Franklin road (–AD), *Hilliard & Burtt 7222* (PRE); 25,6 km NE of Kokstad (–BC), *Acocks 22053* (PRE); Zuurbergen (–BC), *Schlechter 6571* (GRA).
— **3128** (Umtata): Near Umtata (–BD), *Flanagan 2857* (BOL, PRE).
— **3129** (Port St. Johns): Near Insinuka (–CB), *Bolus s.n. sub STEU 24864* (STE).
— **3227** (Stutterheim): Dohne Hill (–CB), *Sim 182* (PRE); King William's Town (–CD), *Sim 182* (GRA).
Without precise locality: Natal, Faku's Territory [perhaps Pondoland, Transkei], *Sutherland s.n.* (K).

Acknowledgements

I am grateful to the curators of BOL, GRA, K, NH, PRE and STE, who have kindly allowed me to study their material. Ms A.L. Schutte is thanked for technical assistance. Thanks are also due to anonymous referees for constructive comments. This study was partly financed by the Rand Afrikaans University.

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