

Studies in the genus *Lotononis* (Crotalarieae, Fabaceae). 12. Four new species of the *L. falcata* group, section *Leptis*

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ABSTRACT

The taxonomic position of *Lotononis falcata* (E. Mey.) Benth. and related species is briefly discussed. These species were previously included in the section *Leptis* (Eckl. & Zeyh.) Benth. but new information indicates an affinity with the section *Oxydium* Benth. Four new species of this group are described: *L. fruticoides* B-E. van Wyk, *L. pachycarpa* Dinter ex B-E. van Wyk, *L. linearifolia* B-E. van Wyk and *L. schreiberi* B-E. van Wyk. The known geographical distribution and diagnostic characters of the new species are given.

UITTREKSEL

Die taksonomiese posisie van *Lotononis falcata* (E. Mey.) Benth. en verwante spesies word kortliks bespreek. Hierdie spesies is voorheen ingesluit in die seksie *Leptis* (Eckl. & Zeyh.) Benth. maar nuwe inligting dui op 'n verwantskap met die seksie *Oxydium* Benth. Vier nuwe spesies van hierdie groep word beskryf: *L. fruticoides* B-E. van Wyk, *L. pachycarpa* Dinter ex B-E. van Wyk, *L. linearifolia* B-E. van Wyk en *L. schreiberi* B-E. van Wyk. Die bekende geografiese verspreiding en diagnostiese kenmerke van die nuwe spesies word aangegee.

INTRODUCTION

A study of *Lotononis falcata* (E. Mey.) Benth. and its allies [previously included in the section *Leptis* (Eckl. & Zeyh.) Benth.] has shown the presence of four undescribed species. The purpose of this paper is to describe the new species and to show that the *L. falcata* group is better placed in the section *Oxydium* Benth. than in *Leptis*.

The original concept and limits of the genus *Leptis* Eckl. & Zeyh. were considerably broadened by Bentham (1843) when he included it as a section within *Lotononis* (DC.) Eckl. & Zeyh. As presently circumscribed (Dümmer 1913), *Leptis* is undoubtedly an artificial group. It appears to have been used as a convenient position for species that did not seem to fit comfortably elsewhere.

Similarities and differences between the section *Oxydium* and various groups of the section *Leptis* are given in Table 1. The *L. laxa* and *L. falcata* groups clearly have more in common with *Oxydium* than with *Leptis sensu stricto*. This is indicated by chemical similarities as well as the subequally lobed calyx, the basally dilated standard petal, the strongly dimorphic anthers and the keel petals, which are often beaked. In the *L. falcata* group however, the keel petals are usually not distinctly beaked but all the other characters are typical for *Oxydium*. The panduriform shape of the standard petal (see Figures 1, 3–5) is a useful diagnostic character for the *L. falcata* group and the annual habit also distinguishes this group from *L. laxa* and related species.

Lotononis fruticoides B-E. van Wyk, sp. nov., *L. falcatae* valde affinis sed habitu valde robustiore (planta annua fruticiformis 0,3–0,6 m alta), pedunculis longis (*L. falcata* pedunculis \pm absentibus), inflorescentiis

plerumque 3-floris (plerumque 1- vel rarius 2-floris in *L. falcata*), foliis angustioribus acutis, leguminibus valde brevioribus, distributione magis orientali differt.

TYPE.—Cape Province, 3224 (Graaff-Reinet): Naudesberg Pass, 39 km from Graaff-Reinet, 31.08.1986, Van Wyk 2020 (PRE, holo.; K, MO, NBG, SAAS, iso.).

Robust annual up to 0,6 m high and wide. *Branches* divaricate, rigid, sparsely leafy, glabrescent. All mature parts (except the corolla) sparsely and minutely strigillose. *Leaves* trifoliolate, (6–)12–25(–36) mm long; petiole \pm half as long as the terminal leaflet; leaflets very narrowly elliptic to linear, (4–)10–20(–30) \times (0,5–)1–2 mm, sparsely and inconspicuously strigillose on both surfaces. *Stipules* absent or when very rarely present then single at each node, linear, 1 mm long. *Inflorescences* leaf-opposed, distinctly pedunculate, umbellately (1–)3(–5)-flowered; peduncle short, (3–)5–10(–27) mm long; bracts minute, linear, \pm 0,5 mm long; bracteoles absent. *Flowers* 8–10 mm long, yellow; pedicel short, 1–1,5 mm long. *Calyx* subequally lobed but with the lower lobe narrower than the upper four, the sinuses of equal depth; lobes narrowly triangular, acute. *Standard* panduriform, as long as the keel; claw much dilated at the base, 2,5–3 \times 1–1,5 mm at the base, with a small central callosity; lamina 5–7 \times 4–5 mm, without lobes or callosities, glabrous but with a few minute hairs dorsally along the middle, often with a reddish brown line along the midrib. *Wing petals* oblong, slightly shorter than the keel, folded into a long shallow pocket near the base, glabrous; apex rounded; sculpturing indistinct or absent. *Keel petals* half oblong-elliptic, auriculate, glabrous; apex acute but not beaked. *Androecium* with the anthers markedly dimorphic; basifixed anthers linear, more than 2 \times longer than the small ovoid dorsifixed anthers; carinal anther intermediate in size and shape. *Gynoecium* sessile; pistil ovoid-oblong, sparsely pubescent; style only slightly curved. *Pods* sessile, shortly oblong, 10–14 \times 2,5–3,5 mm,

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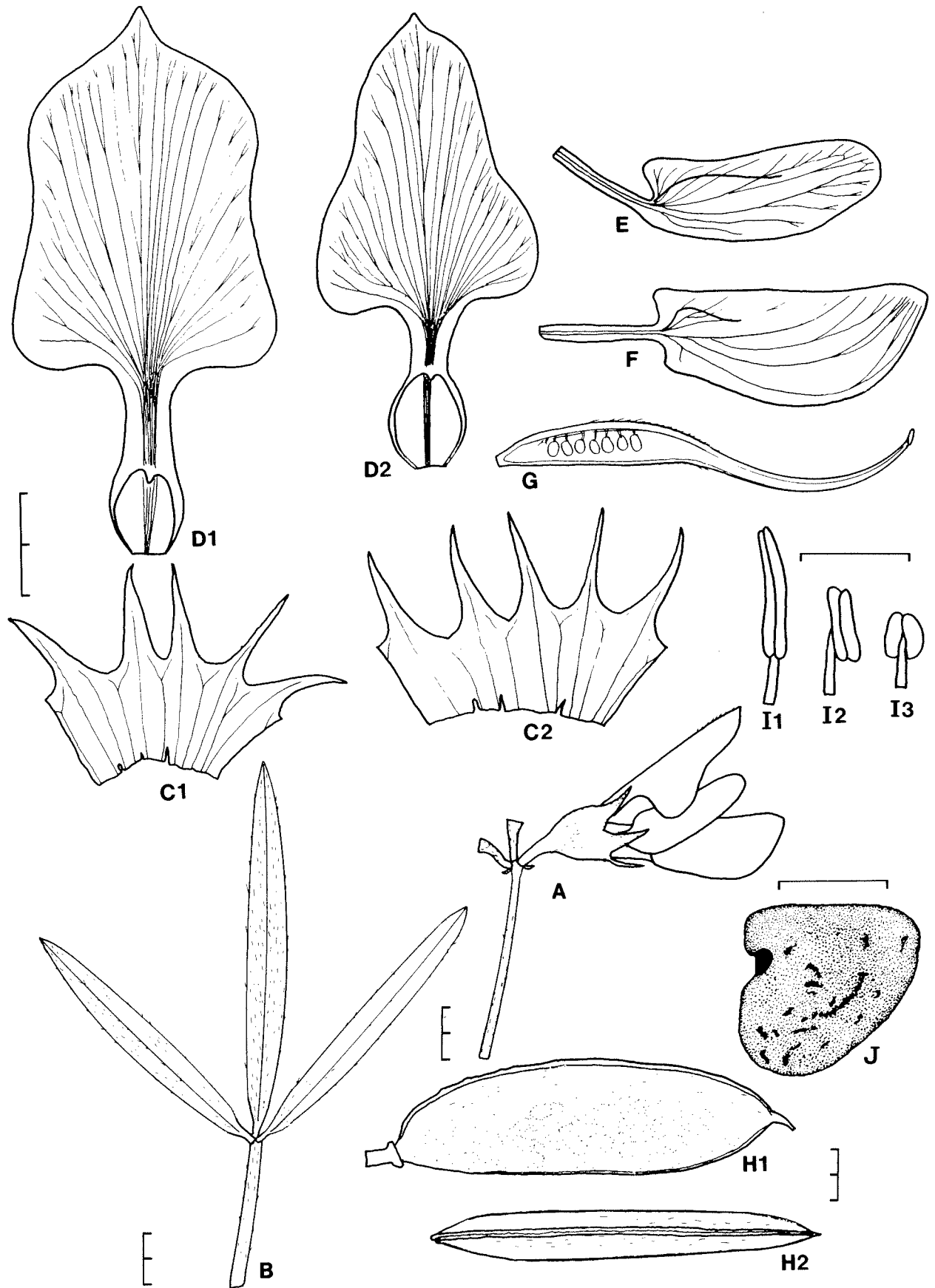


FIGURE 1.—*Lotononis fruticoides*. A, inflorescence and flower; B, leaf in adaxial view (note absence of stipules); C1 & C2, calyces opened out with the upper lobes to the left; D1 & D2, standard petals, showing the panduriform shape, dilated claw and central callosity; E, wing petal (note absence of sculpturing); F, keel petal; G, pistil; H1 & H2, pods: H1, in lateral view, H2, in top view; I1, I2 & I3, anthers: I1, basifixed anther, I2, carinal anther, I3, dorsifixed anther; J, seed, showing the tuberculate surface. All from Van Wyk 2020 except C2 & D1 from Schutte 220. Scales in mm.

TABLE 1.—Summary of similarities and differences between *Lotononis* section *Oxydium* and various groups of the section *Leptis*

	sect. <i>Oxydium</i>		sect. <i>Leptis</i>	
		<i>L. falcata</i> group	<i>L. laxa</i> group	<i>L. calycina</i> group
Habit	annual or perennial	annual	perennial	annual or perennial
Juvenile leaves	often unifoliolate	trifoliolate	unifoliolate	trifoliolate
Calyx	subequally lobed	subequally lobed	subequally lobed	lateral sinuses shallower than upper and lower ones
Standard petal				
claw	dilated	dilated	dilated	not dilated
callosity	rarely present	often present	often present	absent
shape	suborbicular to ovate	panduriform	suborbicular to ovate	oblong
Wing petals	rarely pubescent	rarely pubescent	glabrous	pubescent
Keel petals	acute to beaked	obtuse to acute	acute to beaked	rounded
Anther length (basifixed: dorsifixed)	> 2 : 1	> 2 : 1	> 2 : 1	< 2 : 1
Hair type	biramous, rarely uniseriate	biramous, rarely uniseriate	biramous	uniseriate
Cyanogenesis	mostly cyanogenic	invariably cyanogenic	mostly cyanogenic	acyanogenic
Alkaloids	pyrrolizidine	pyrrolizidine	pyrrolizidine	quinolizidine

compressed, glabrous, apex somewhat cuspidate, upper suture \pm smooth, \pm 6-seeded, the seeds on 1,5–2 mm long funicles. Seeds subtriangular, \pm 1,5 mm in diameter; testa pale yellow, often with dark purple marks, densely but minutely tuberculate (Figure 1).

L. fruticoides is closely related to *L. falcata*, but differs in the much more robust habit (a shrub-like annual of 0,3–0,6 m high), the long peduncles (peduncles \pm absent in *L. falcata*), the predominantly 3-flowered inflorescences (usually 1- or rarely 2-flowered in *L. falcata*), the narrower and acute leaflets, the much shorter pods and in the more eastern distribution. A form of *L. falcata* from the Calvinia-Sutherland area is rather similar to *L. fruticoides* and may be confused with it, but in this form the leaflets are broadly obovate to oblanceolate and the habit totally different. *L. fruticoides* has been recorded only from the south-eastern regions of the Cape Province, where it appears to be very common (Figure 2). It is highly cyanogenic (Van Wyk 1989), and stock losses reported from the Beaufort West area (Burt Davy 1912) may be due to this species rather than *Dichilus gracilis* Eckl. & Zeyh., with which it is often confused. The chromosome number of *L. fruticoides* ($2n = 18$) has been reported by Van Wyk & Schutte (1988) and the presence of pyrrolizidine alkaloids by Van Wyk & Verdoorn (1989).

CAPE.—3125 (Steynsburg): Middelburg division, Bangor Farm (–AC), Bolus s.n. sub BOL 14075 (BOL). 3222 (Beaufort West): \pm 80 km west of Beaufort West, back of the mountain on Farm Ezels Kom, adjoining the Farm Layton (–AB), Shearing 1272 (JRAU); Karoo National Park, rocky plateau just above Wagenpad Dam (–AD), Bengis 474 (PRE); Molteno Pass near Beaufort West (–BA), Van Wyk 2137 (JRAU, NBG, PRE); start of Molteno Pass (–BC), Schutte 219 (GRA, JRAU, K, MO, NBG, PRE), 220 (BOL, GRA, JRAU, PRE, SAAS, STE). 3223 (Rietbron): Courlands Kloof, Nelspoort (–AA), Pearson 832 (NBG). 3224 (Graaff-Reinet): Naudesberg Pass, 39 km from Graaff-Reinet (–BA), Van Wyk 2020 (PRE, holo.; JRAU, K, MO, NBG, iso.), 2021 (GRA, JRAU, PRE, S, SAAS), 2022 (JRAU, NBG, PRE), 2023 (BOL, BLFU, JRAU, STE), 2024 (JRAU, KMG, PRE, STE), 2025 (JRAU, M, NH, WIND), 2026 (JRAU); C. M. van Wyk s.n. (JRAU).

L. pachycarpa Dinter ex B-E. van Wyk, sp. nov.

L. pachycarpa Dinter in sched. *Amphinomia curtii* (Harms) Schreiber sensu Schreiber: 286 (1957), pro parte. *L. leptoloba* auct. non H. Bol.: Schreiber: 82 (1970).

L. linearifoliae valde affinis, sed foliis oblanceolatis vel obovatis (non linearibus), stipulis valde maioribus, pube patentiore, leguminibus ovoideis turgidibus. A *L. curtii* forma magnitudineque florum, vexilla panduriformi, pedicellis longioribus atque forma leguminum differt. Etiam cum *L. leptoloba* confusa est, sed species altera pedicellos brevissimos in pedunculis longis (pedicellus longus, pedunculo \pm deficiente in *L. pachycarpa*) et flores omnino dissimiles magnitudine et forma habet. *L. leptoloba* habet alas valde longiores, vexillum valde maiorem omnino forma dissimilem, legumina oblongos (non ovoideos), et distributionem geographicam dissimilem.

TYPE.—Namibia, 2615 (Lüderitz): Halenberg, 29.08.1929, Dinter 6648 (PRE, holo.; BM, BOL, K, M, SAM, STE, iso.).

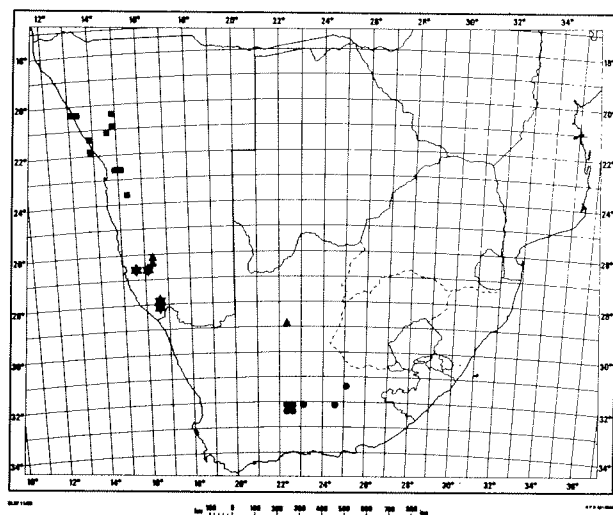


FIGURE 2.—The known geographical distribution of *Lotononis fruticoides*, ●; *L. pachycarpa*, ★; *L. linearifolia*, ▲; and *L. schreiberi*, ■.

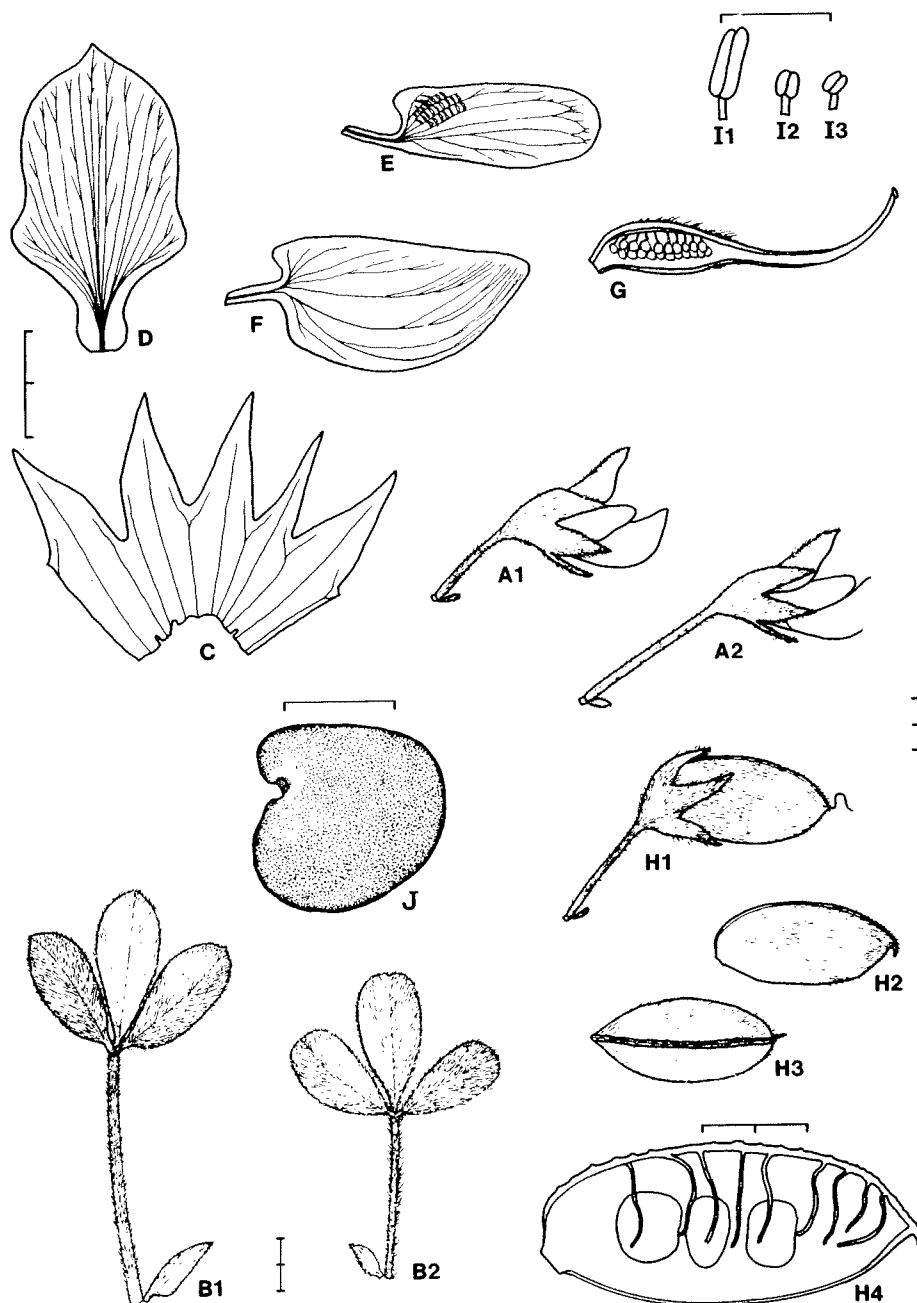


FIGURE 3.—*Lotononis pachycarpa*. A1 & A2, inflorescences and flowers (note the long pedicels); B1 & B2, leaves in adaxial view; C, calyx opened out with the upper lobes to the left; D, standard petal; E, wing petal; F, keel petal; G, pistil; H1, H2, H3 & H4, pods: H1 & H2, in lateral view, H3, in top view, H4, after dehiscence as viewed from inside (note verrucose upper suture and long funicles); I1, I2 & I3, anthers: I1, basifixed anther, I2, carinal anther, I3, dorsifixed anther; J, seed, showing the tuberculate surface. A1 from *Dinter 4070*; A2, B2, H1, H2, H3 & H4 from *Dinter 6648*; C, D, E, F, G, I1, I2 & I3 from *Merxmüller & Giess 28505*; B1 & J from *Giess, Volk & Bleissner 5462*. Scales in mm.

Small annual up to 0,1 m high and up to 0,3 m wide. *Branches* divaricate, slender, sparsely leafy. All mature parts (except the corolla) densely but minutely silky-strigillose. *Leaves* trifoliolate, (6–)8–16(–26) mm long; petiole long or longer than the terminal leaflet; leaflets oblanceolate to obovate, (2–)4–8(–14) × (1–)2–3 mm, sparsely silky-strigillose on both surfaces. *Stipules* single at each node, small, lanceolate, 1–3(–4) mm long. *Inflorescences* leaf-opposed, invariably single-flowered; peduncle ± absent, up to 0,5 mm long; bracts very small, linear, up to 1,5 mm long; bracteoles absent. *Flowers* small, 4,5–7 mm long, yellow; pedicel long and slender, as long or longer than the calyx, up to 10 mm long. *Calyx* subequally lobed but with the lower lobe a little narrower than the upper four and the lateral sinuses slightly shallower than the upper and lower ones; lobes triangular, acute. *Standard* broadly panduriform, as long as the keel; claw very short, slightly dilated at the base, 1–2 × ± 1 mm, without callosities; lamina 4–5 × 3–4 mm, without lobes or callosities, glabrous but with a few hairs

dorsally along the middle. *Wing petals* oblong, slightly shorter than the keel; apex rounded; sculpturing in ± 3 rows of intercostal lunae fading into a few transcostal lamellae towards the auricle. *Keel petals* subtriangular, auriculate, glabrous; apex acute but not beaked. *Androecium* with the anthers markedly dimorphic; basifixed anthers oblong, more than 3x longer than the small ovoid dorsifixed anthers; carinal anther slightly larger than the dorsifixed anthers. *Gynoecium* subsessile; pistil ovoid-oblong, pubescent; style only slightly curved. *Pods* subsessile, small, ovoid, 6–10 × 3–4 mm, much inflated laterally, minutely silky-strigillose, apex obtuse, upper suture minutely but distinctly verrucose, 8–15-seeded, the seeds on up to 2 mm long funicles. *Seeds* suborbicular, ± 1,5 mm in diameter; testa brown, densely but minutely tuberculate (Figure 3).

L. pachycarpa is closely related to *L. linearifolia*, but differs in the oblanceolate (not linear) leaflets, the much

larger stipules, the more spreading vestiture and the ovoid, turgid pods (Figure 3). From *L. curtii* it differs in the shape and size of the flowers, the panduriform standard petal, the longer pedicels and also in the shape of the pods. It has also been confused with *L. leptoloba* (Schreiber 1970) but the inflorescence structure is only superficially similar (a long pedicel with the peduncle \pm absent in *L. pachycarpa*; a short pedicel on a long peduncle in *L. leptoloba*). The flowers are also totally different in size and structure. *L. leptoloba* has much longer wing petals, a much larger and differently shaped standard petal, oblong (not ovoid) pods, and a different geographical distribution. *L. pachycarpa* occurs in southern Namibia (Figure 2), whereas *L. leptoloba* has been recorded only from the western and north-western parts of the Cape Province.

NAMIBIA.—2615 (Lüderitz): Halenberg (–DA), *Dinter 4070* (BOL, PRE, SAM), 6648 (PRE, holo.; BM, BOL, K, M, SAM, STE, iso.). 2616 (Aus): 12 miles [19,2 km] west of Aus on the way to Lüderitz (–CA), *Giess, Volk & Bleissner 5462* (PRE, M, MO, WIND). 2716 (Witputz): 9 km N of Rosh Pinah (–DC), *Merxmüller & Giess 28505* (M, WIND). 2816 (Oranjemund): Namib, west of Obibberge, 14 km S of Obib Wasser (–BA), *Merxmüller & Giess 32363* (M).

L. linearifolia B-E. van Wyk, sp. nov., *L. pachycarpae* similis, sed foliis gracilibus linearibus, stipulis inconspicuis, pube breviori plus arcte appressa ac leguminibus oblongo-linearibus tantum parum inflatis differt. Etiam similis est *L. falcatae*, sed ab illa speciebusque affinis pedicello longo gracili (calyce longiore) ac foliis anguste linearibus, plus dense sericeo-strigillosis differt.

TYPE.—Cape Province, 2822 (Glen Lyon): Hay 0.303 [see map in Wilman (1946)], 09.07.1936, *Acocks 506* (PRE, holo.; BOL, KMG, PRE, iso.).

Very small annual up to 0,1 m high and 0,25 m wide. *Branches* procumbent, slender, sparsely leafy. All mature parts (except the corolla) densely but minutely strigillose. *Leaves* trifoliolate, slender, (12–)18–28(–42) mm long; petiole usually very much longer than the terminal leaflet; leaflets very narrowly oblanceolate or usually linear, (4–)6–14(–18) \times (0,5–)1–1,2(–2) mm, densely but minutely strigillose on both surfaces. *Stipules* single at each node, inconspicuous, linear, up to 1 mm long. *Inflorescences* leaf-opposed, invariably single-flowered; peduncle \pm absent, up to 0,5 mm long; bracts very small, linear, up to 1 mm long; bracteoles absent. *Flowers* small, 4,5–7 mm long, yellow; pedicel long and slender, as long or much longer than the calyx, up to 8 mm long. *Calyx* subequally lobed but with the lower lobe a little narrower than the upper four and the lateral sinuses slightly shallower than the upper and lower ones; lobes triangular, acute. *Standard* broadly panduriform, as long as the keel; claw short, slightly dilated at the base, \pm 1,5 \times \pm 1 mm, with a central callosity; lamina \pm 4,5 \times \pm 3 mm, without lobes or callosities, glabrous but with a few hairs dorsally along the middle. *Wing petals* oblong, slightly shorter than the keel; apex rounded; sculpturing in \pm 3 rows of intercostal lunae fading into a few transcostal lamellae towards the auricle. *Keel petals* shortly oblong, auriculate, glabrous; apex acute but not beaked. *Androecium* with the anthers markedly dimorphic; basifixed anthers oblong, more than 3 \times longer than the small ovoid dorsifixed

anthers; carinal anther slightly larger than the dorsifixed anthers. *Gynoecium* subsessile; pistil oblong, pubescent; style curved upwards. *Pods* subsessile, oblong to linear, (8–)10–14 \times 2,5–3 mm, not inflated laterally, minutely strigillose, apex obtuse, upper suture distinctly and evenly verrucose, 10–15-seeded, the seeds on up to 1,5 mm long funicles. *Seeds* suborbicular, \pm 1,2 mm in diameter; testa brown, densely but minutely tuberculate (Figure 4).

A distinct species, similar to *L. pachycarpa* but differs in the slender, linear leaflets, the inconspicuous stipules, the shorter and more closely appressed vestiture and the oblong-linear and only slightly inflated pods. It is also similar to *L. falcata*, but differs from this and related species in the long slender pedicel (much longer than the calyx) and the linear, densely silky-strigillose leaflets (Figure 4).

L. linearifolia was listed as an unidentified species by Wilman (1946: 52) and the two specimens from Namibia were cited by Schreiber (1970: 82) as perhaps belonging to *L. leptoloba* sensu Schreiber (= *L. pachycarpa*). It is highly cyanogenic (Van Wyk 1989) and, according to notes on the Kinges specimen in M, is said to have caused sheep losses. The only known localities (southern Namibia and the northern Cape) are given in Figure 2, but the species is probably not as rare as the scanty herbarium record would suggest.

NAMIBIA.—2616 (Aus): Lüderitz District, Farm Weissenborn (–AB), *Kinges 2433* (M); Namib plain between Neisip and Eureka (–AD), *Merxmüller & Giess 2876* (M). 2822 (Glen Lyon): Hay 0.303 [near the Orange River W of Groblershoop, see map in Wilman (1946)] (–CD), *Acocks 506* (PRE, holo.; BOL, KMG, PRE, iso.).

L. schreiberi B-E. van Wyk, sp. nov., species distincta sine affinitatibus manifestis. *L. leptolobae* superficialiter similis, sed stipulis perpusillis inconspicuis, pedunculo subnullo, vexillo panduriformi (non late cordato) conspicue striato pubescenti, apice acuto (non obtuso) basi dilatato, antheris plus valde dimorphis, leguminibus breviter ellipticis (non oblongis) cum \pm 12–15 seminibus (non \pm 30 seminibus) differt. Etiam *L. falcatae* speciebusque affinis similis, sed ab illis speciebusque omnibus sectionis *Oxydii* alis carinisque pubescentibus differt.

TYPE.—Namibia, 2113 (Cape Cross): Cape Cross, about 0,5 km from the coast, 29.04.1965, *Giess 8707* (PRE, holo.; K, M, WIND, iso.).

Small annual up to 0,1 m high and 0,3 m wide. *Branches* prostrate, divaricate, often densely leafy. All mature parts densely to sparsely pubescent. *Leaves* trifoliolate, variable in size, (7–)10–20(–28) mm long; petiole as long or often much longer than the terminal leaflet; leaflets oblanceolate to obovate, (3–)5–10(–14) \times (2–)3–5(–7) mm; vestiture very variable, densely to sparsely pubescent on both surfaces, adaxial surface glabrescent and often totally glabrous at maturity. *Stipules* single at each node, minute and inconspicuous, linear, up to 2 mm long. *Inflorescences* leaf-opposed, single-flowered, very rarely 2-flowered; peduncle \pm absent, up to 0,5 mm long; bracts very small and inconspicuous, linear, up to 1 mm long; bracteoles absent. *Flowers* 9–11 mm long, yellow;

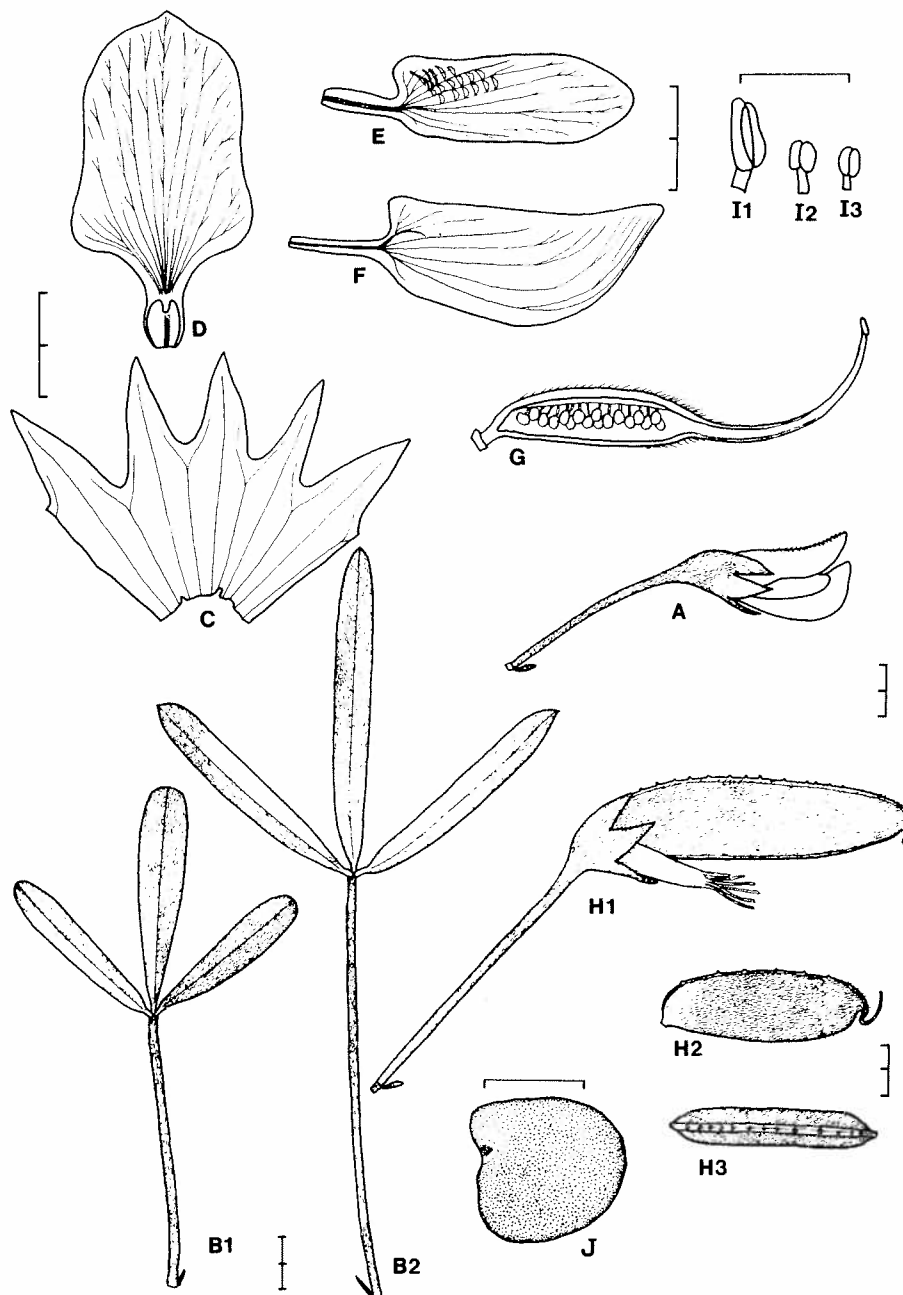


FIGURE 4. — *Lotononis linearifolia*. A, inflorescence and flower (note the long pedicel); B1 & B2, leaves in adaxial view; C, calyx opened out with the upper lobes to the left; D, standard petal, showing the panduriform shape of the lamina, dilated claw and central callosity; E, wing petal; F, keel petal; G, pistil; H1, H2 & H3, pods (note verrucose upper suture); H1 & H2, in lateral view, H3, in top view; I1, I2 & I3, anthers: I1, basifixed anther, I2, carinal anther, I3, dorsifixed anther; J, seed, showing the tuberculate surface. All from Acocks 506 except B1 from Merxmüller & Giess 2876 and H2, H3 & J from Kinges 2433. Scales in mm.

pedicel short, 2–3 mm long. *Calyx* subequally lobed; lobes long, very narrowly triangular, acute. *Standard* broadly panduriform, as long as the keel; claw short, slightly dilated at the base, $\pm 2 \times \pm 1,5$ mm, often with an inconspicuous central callosity; lamina 7–9 \times 4–5 mm, without lobes or callosities, strongly striated, dorsal surface densely pubescent; apex tapering to an acuminate tip. *Wing petals* narrowly oblong, slightly shorter than the keel, distinctly auriculate, pubescent along the lower margin; apex rounded; sculpturing in ± 5 rows of intercostal lunae. *Keel petals* oblong, distinctly auriculate, pubescent along the lower half, strongly striated; apex obtuse. *Androecium* with the anthers markedly dimorphic; basifixed anthers oblong, more than 2 \times longer than the ovoid dorsifixed anthers; carinal anther slightly larger than the dorsifixed anthers. *Gynoecium* subsessile; pistil oblong, densely pubescent; style long and slender, upper part curved upwards. *Pods* subsessile, shortly oblong, 8–10 \times 3–3,5 mm, only slightly inflated laterally, pubescent, apex obtuse, upper suture distinctly verrucose,

12–15-seeded, the seeds on up to 1,5 mm long funicles. *Seeds* suborbicular, $\pm 1,2$ mm in diameter; testa brown, densely tuberculate (Figure 5).

This species (named after Dr Annelis Schreiber of the Botanische Staatssammlung München) was listed as *L. spec.* (no. 18) in the *Prodromus einer Flora von Südwestafrika* (Schreiber 1970). *L. schreiberi* is a very distinct new species and has no obvious affinities. The relatively large flowers, pubescent and striated petals and single-flowered inflorescences are useful diagnostic characters (Figure 5). It is superficially similar to *L. leptoloba*, but differs in the very small, inconspicuous stipules, the panduriform (not broadly cordate) and conspicuously striated, pubescent standard petal, with an acute (not obtuse) apex and a dilated base, the more markedly dimorphic anthers, the shortly elliptic (not oblong) pods that are ± 12 –15-seeded (not ± 30 -seeded). It is also superficially similar to *L. falcata* and related species, but

differs from these and all other species of the section *Oxydium* in the pubescent wing and keel petals (*L. arenicola* Schltr. is the only species of *Oxydium* with pubescent wing and keel petals but the morphology of this species is totally different). Several collections of *L. schreiberi* have been made in the north-western parts of Namibia, where it appears to be quite common (Figure 2).

NAMIBIA. — 2013 (Unjab Mouth): Skedelkuspark (—AC), Venter 9025 (BLFU); 23 km SE of Torra Bay (—AD), Giess 8020 (M, PRE, WIND); 14 miles [22,4 km] E of Torra Bay (—AD), Giess, Volk & Bleissner 6277 (M, PRE, WIND); 15 miles [24 km] SE of Torra Bay (—AD), Nordenstam 3789 (M). 2014 (Welwitschia): Welwitsch, Damaraland (—BD), Galpin & Pearson sub Galpin 7547 (PRE, SAM); koppies S of Ugab River Station (—DD), Müller & Louit 1096 (M, WIND). 2113 (Cape Cross): flats a few miles inland on road to Brandberg West Mine (—BD), Oliver & Müller 6660 (PRE, partly); Cape Cross, about 0,5 km from the coast (—DD), Giess 8707 (PRE, holo.; K, M, WIND, iso.). 2114 (Uis): S of the Messumberge ± 12 miles [19,2 km] E of the coast (—BA), Giess 3576 (PRE, WIND). 2214 (Swakopmund): track from Goanicones to Rossing Mountain (—DB), Kers 1311 (WIND). 2215 (Trekopje): Farm Nordenberg, Swakop River at Tsavischab (—CA), Kers 4 (WIND); Swakop River, along the track from Swakop

at Tsavischab to Farm Nordenberg and Karibib (—CA), Kers 1532 (WIND). 2315 (Rostock): Kuiseb River, SE of Hope Mine, on the Namib plain between Hope Mine and Garob Mine (—CB), Kers 1580, 1586 (WIND).

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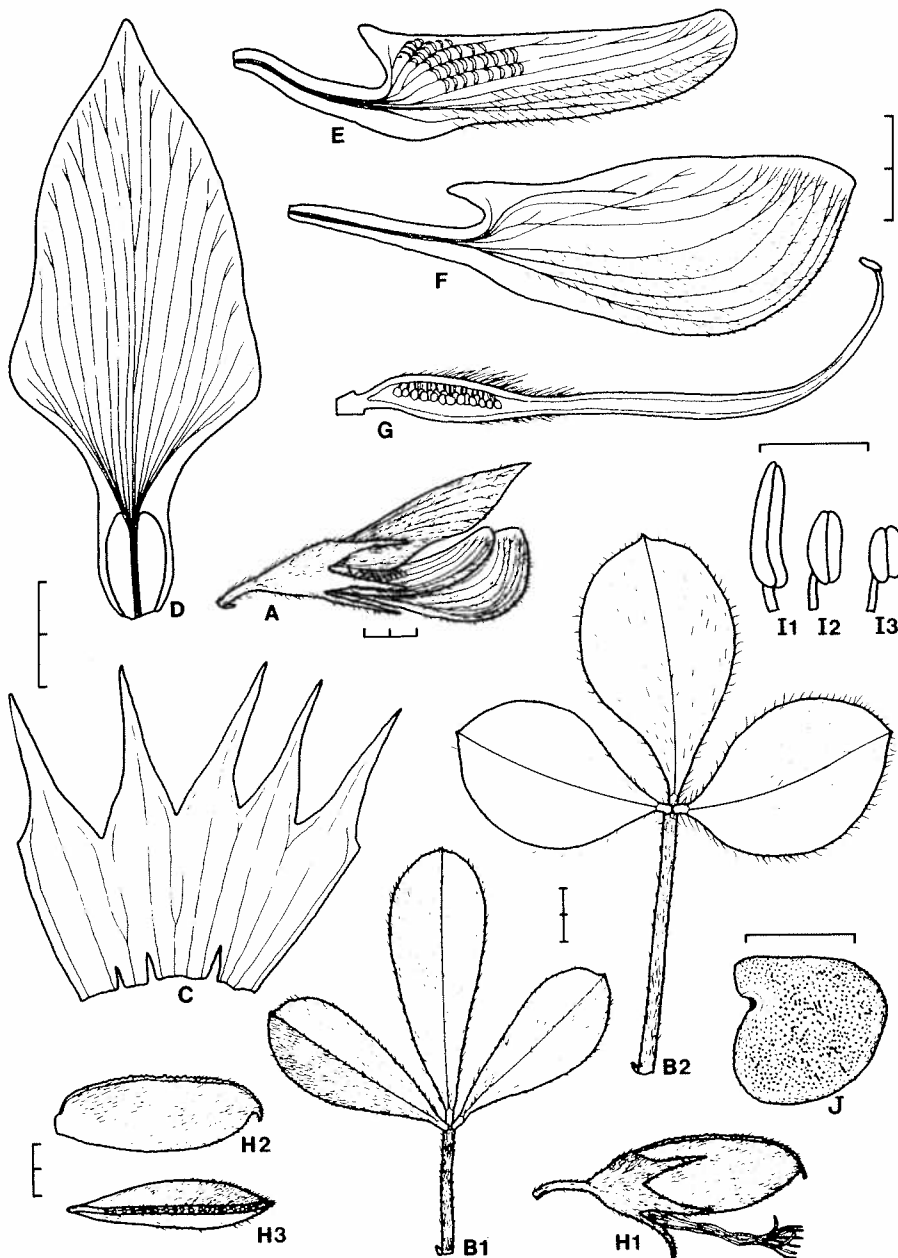


FIGURE 5.—*Lotononis schreiberi*.

A, inflorescence and flower (note the absence of a peduncle); B1 & B2, leaves in adaxial view, showing the variation in pubescence and leaflet shape (note the small stipules); C, calyx opened out with the upper lobes to the left; D, standard petal, showing the panduriform shape of the lamina, dilated claw and central callosity; E, wing petal (note vestiture); F, keel petal (note vestiture); G, pistil; H1, H2 & H3, pods (note verrucose upper suture): H1 & H2, in lateral view, H3, in top view; I1, I2 & I3, anthers: I1, basifixed anther, I2, carinal anther, I3, dorsifixed anther; J, seed, showing the tuberculate surface. All from Giess 8020 except B1, C, D, E, F & G from Kers 1586. Scales in mm.

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