STUDIES IN THE GESNERIACEAE OF THE OLD WORLD XL: THE GENUS LOXOSTIGMA

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ABSTRACT. The position of the plant currently known as *Briggsia kurzii* (incl. *B. amabilis*) is discussed and, despite the absence of seed-appendages, it is transferred to *Loxostigma*. The generic characters of *Loxostigma* are revised and key and enumeration of species provided. *Loxostigma* is regarded as a link between the tribes Didymocarpeae and Trichosporeae.

In 1883 C. B. Clarke established the genus *Loxostigma* for a species, *L. griffithii*, which had already been formally placed in two other genera, *Didymocarpus* and *Dichrotrichum*, and bore herbarium names in *Chirita* and *Lysionotus* as well. It will be noticed that these generic names span the two tribes Didymocarpeae (*Didymocarpus* and *Chirita*) and Trichosporeae (*Dichrotrichum* and *Lysionotus*). How far *Loxostigma* is really a link between the two tribes will be discussed after the scope of the genus has been established.

Loxostigma griffithii is an epiphyte in which the lower part of the stem creeps on mossy tree trunks; the leaves of a pair are markedly unequal; flowers are borne in many-flowered inflorescences on axillary peduncles; bracts are small, calyx divided to the base; the corolla is large (c. 4–5 cm long) the tube expanding upwards but markedly ventricose in the middle, yellow with purple spotting inside; there are 4 fertile stamens, the anthers all of equal size and apparently the anthers all contiguous with more or less parallel thecae; the stigma is unequally bilamellate; the fruit without a stipe, somewhat flattened, dehiscing loculicidally along both edges; the seeds have a well-developed appendage at each end.

That assemblage of characters has enabled *L. griffithii* to maintain its generic status without question. The addition of *L. mekongense* (*L. forrestii*) required no change in generic characters: it is very closely allied to *L. griffithii*. The addition of *L. cavaleriei*, however, did extend the generic range slightly, though perhaps it is more important in emphasising that some characters of *L. griffithii* (such as habit) are of generic value. I transferred this plant from Craib's *Briggsia* to *Loxostigma* when seeds became available for examination and proved to have short but distinct tails. It is a much more delicate plant than *L. griffithii* and instead of bearing many-flowered inflorescences on stout peduncles, the flowers are borne singly or in pairs on very slender peduncles.

At the time I transferred *L. cavaleriei* from *Briggsia* to *Loxostigma* I was only too well aware that I was leaving behind another species with which it has several features in common. This is *Briggsia kurzii* (C.B. Cl.) W. E. Evans, in which I include *B. amabilis* (Diels) Craib. While the seeds of *B. kurzii* are drawn out to a somewhat hooked beak at either end, they cannot be described as appendaged: and appendaged seeds then seemed to be the hall-mark of *Loxostigma*.

Over the years I have become more and more dissatisfied with the position of *Briggsia kurzii*. All the other species of *Briggsia* are rosette plants with a stout central caudex; their leaves are "evergreen": in fact they are plants of the pattern of the well-known European gesneriads *Ramonda* and *Haberlea*. *B. kurzii* alone is of different growth: it has a thin underground rhizome which produces annually a rather sappy leafy stem. The distribution of the thin membranous leaves is by no means regular. The lower part of the stem is usually bare, or carries one much reduced leaf, rarely more. At the top of the stem the leaves are arranged in an irregular cluster to whose complexity both single and paired leaves, marked anisophylly and internodal reduction all play their part. The flowers are borne on slender axillary peduncles either singly or in inflorescences of up to 4 flowers.

Turning back from *Briggsia kurzii* to *Loxostigma cavaleriei*, this has a slender epiphytic creeping stem, equivalent to the underground rhizome of *B. kurzii*. The leaves on the flowering shoots are not so clearly differentiated into a leafless portion and an apical tuft of leaves, but the arrangement of the leaves at the shoot tip shows just the same internodal contraction and anisophylly as in *B. kurzii*, but rather fewer leaves are involved.

The flowers of the two species are very similar (ventricose corollas spotted inside and four fertile stamens), so are the fruits. It is only in the seeds that the difference lies. The presence of seminal appendages in the epiphytic tribe Trichosporeae may not unreasonably be regarded as correlated with habit: the appendages help the seeds to drift slowly down (or to be blown away) from the parent tree and also to attach them to a suitable branch if one is touched in passing. Once the idea that seminal appendages are necessarily a tribal character is dropped, then the presence of short appendages in the epiphytic *L. cavaleriei*, their absence in the terrestrial *B. kurzii*, provides no good reason for separating plants that are otherwise so closely similar.

In referring *L. begoniifolium* to *Didissandra* in a previous note (Notes R.B.G. Edinb. 23:100, 1960) I remarked that "the seeds quite definitely lack the tails necessary for its inclusion in *Loxostigma* and there is no other indication that it belongs there". This statement must obviously be re-examined, in the light of the inclusion of the tail-less *L. kurzii* in *Loxostigma*, and the last phrase must be translated into positive form. There are, in fact, other very good reasons for continuing to exclude *L. begoniifolium*: the corolla is widened more or less evenly upwards, it is not markedly ventricose nor is it spotted within; the stamens are markedly didynamous, the longer pair having anthers with more or less parallel thecae but the shorter pair having the thecae distinctly divergent; furthermore the inflorescence is at first covered by conspicuous ovate bracts—from which W. W. Smith, who described the same plant in *Chirita*, took the epithet *chlamydata*.

L. aureum is known only from the type specimen (Kwantung, Shakan, NW River, *Ford* 249–K). It lacks the large bracts of *L. begoniifolium*, but like it has a corolla which is more or less evenly widened upwards (not markedly ventricose) and there is no spotting in the tube. Furthermore the stamens are markedly didynamous and the longer pair have distinctly larger anthers than the shorter. *Didissandra* is a genus of somewhat uncertain limits, but as it stands at present it is there, probably near *D. aspera* Drake, that *Loxostigma aureum* is best placed, and *L. begoniifolium* is probably not too far from this affinity.

Although I have extended *Loxostigma* to include a species with tail-less seeds, it still remains, in this concept, a small compact group of four species. The three species with tailed seeds have this important character in common with *Lysionotus* and they are also epiphytes with the lower part of the stem creeping and rooting. *Lysionotus* differs particularly in its corolla being gradually widened upwards with well developed lower lip and two strong yellow palatal ridges and in its thicker fleshier leaves, a character in which it shows an approach to *Aeschynanthus*.

All the species of *Loxostigma* have two features that are not found in the tribe Trichosporeae but are found in Didymocarpeae: the ventricose corolla spotted within (found in several species of *Briggsia*) and the thin membranous leaves. Since these characters are common to all the species of *Loxostigma* I prefer to place the genus in the tribe Didymocarpeae, which is also the tribe to which it has most affinity in general facies. Nevertheless, I consider that the points of resemblance to *Lysionotus* in Trichosporeae are true indicators of affinity and thus that *Loxostigma* does form a genuine link between the two tribes.

Loxostigma C.B.Cl. in DC., Mon. Phan. 5:60 (1883), et in Hook. f., Fl. Brit. Ind. 4:344(1884); K. Fritsch in Engl. & Prantl, Nat. Pflanzenfam. 4, 3B:154 (1894).

Type species: *L. griffithii* (Wight) C.B.Cl.

Terrestrial or epiphytic herbs, with underground rhizome or the lower part of the stem creeping and rooting. *Leaves* membranous, usually opposite, those of a pair markedly unequal. *Internodes* sometimes condensed giving irregular pseudowhorls of leaves. *Flowers* 1–2 to many, cymose on axillary peduncles. *Calyx* 5-partite to base. *Corolla* c. 4–5 cm long, tubular, ventricose in the middle, spotted within. *Stamens* 4, filaments curved, those of the upper pair slightly longer; anthers equal, cohering by their tips either all 4 together or in pairs, opening downwards. *Disc* cupular. *Ovary* sessile, elongate, passing gradually into style; stigma obliquely bilamellate. *Fruit* sessile, somewhat compressed laterally, dehiscing loculicidally along both edges. *Seed* with or without an appendage at each end.

KEY TO THE SPECIES OF LOXOSTIGMA

1a. Plants terrestrial with underground rhizome; seeds without appendages . . . . . 1. *kurzii*

1b. Plants epiphytic, lower part of stem creeping on tree trunks and bearing numerous roots; seeds with an appendage at each end . 2

2a. Flowers in many-flowered inflorescence on stout peduncle; seed appendage c. 1 mm long 3

2b. Flowers 1–2 on slender peduncle; seed appendage 0·5 mm long 2. *cavaleriei*

3a. Leaves membranous when dried, thinly hairy; flowers yellow, purple spotted in throat . . . . . 3. *griffithii*

3b. Leaves thicker, rather densely hairy; flowers white flushed mauve, spotted in throat . . . . . 4. *mekongense*

1. L. kurzii (C.B.Cl.) B. L. Burtt, **comb. nov.**
Type: Sikkim, prope Kursiong, 5–6000 ft, *Kurz*.
Syn.: *Didymocarpus* ? *kurzii* C.B.Cl., Comm. & Cyrt. Beng. 96, tab. 66 (1874).
Chirita kurzii (C.B.Cl.) C.B.Cl. in Journ. Linn. Soc. Bot. 15:145 (1876), et in DC., Mon. Phan. 5:117 (1883), et in Hook. f., Fl. Brit. Ind. 4:358 (1884).
Didissandra amabilis Diels in Notes R.B.G. Edinb. 5:224 (1912). Syntypes: Yunnan, Lichiang Range, *Forrest* 2689 (E); Tali Range, *Forrest* 4385 (E).
Briggsia amabilis (Diels) Craib in Notes R.B.G. Edinb. 11:263 (1919); Stapf in Bot. Mag. tab. 9181 (1929); Roy. Hort. Soc. Dict. Gard. 1:312 (1951).
Briggsia kurzii (C.B.Cl.) W. E. Evans in Notes R.B.G. Edinb. 16:133 (1928).
Distr.: Sikkim, Upper Burma, China (Yunnan and Szechuan).

Briggsia amabilis has been retained as a distinct species by Stapf, and it is certainly in most cases a more slender plant with flowers solitary or only paired, rather than up to 4 or 5 in an inflorescence. Nevertheless other differences are somewhat intangible and one specimen from Szechuan (McLaren's coll. AC.252), a specimen which ought to belong to *amabilis* on geography, has the more numerous flowers of *kurzii*. At the moment therefore I am not inclined to transfer *B. amabilis* to *Loxostigma* as an independent species.

2. L. cavaleriei (Lévl. & Van.) B. L. Burtt in Notes R.B.G. Edinb. 22:310 (1958).
Type: China, Kweichow, Pin-fa, 21 viii 1902, *Cavalerie* (holo. E).
Syn: *Didissandra cavaleriei* Lévl. & Van. in Compt. Rend. Assoc. France 1905, 34:425 (1906).
Didymocarpus cavaleriei (Lévl. & Van.) Lévl. in Compt. Rend. Assoc. France 1905, 34:427 (1906)—non *D. cavaleriei* Lévl. (1911).
Briggsia cavaleriei (Lévl. & Van.) Craib in Notes R.B.G. Edinb. 11:263 (1919).
Distr.: China (Kweichow and Kwangsi).

3. L. griffithii (Wight) C.B.Cl. in DC., Mon. Phan. 5:60 (1883) et in Hook. f., Fl. Brit. Ind. 4:344 (1884); Pellegrin in Lecomte, Fl. Ind. Chin. 4:501 (1930); Kanjilal & Das, Fl. Assam, 3:394 (1939); Hara, Fl. East. Him. 299 (1966).
Type: Assam, Khasya Hills, *Griffith*.
Syn.: *Didymocarpus griffithii* Wight, Ill. Ind. Bot. 2:182, t. 159 (1850); Walp., Ann. 3:97 (1852).
Dichrotrichum griffithii (Wight) C.B.Cl., Comm. & Cyrt. Beng. 78–79, tab. 51 (1874).
Distr.: E Nepal (fide Hara), Sikkim, Bhutan, India (NEFA and Assam), Burma, China (Yunnan, Szechuan), N Vietnam.

The range of this species extends in a broad arc from E Nepal and Assam across northern Burma and S China to Cha-pa (22°20′N, 103°50′E) in N Vietnam near the Chinese border. The northernmost locality is on Mt Omi in Szechuan. *L. griffithii* is very constantly recorded as epiphytic on mossy tree trunks.

4. L. mekongense (Franch.) B. L. Burtt in Notes R.B.G. Edinb. 22:310 (1958).

Type: China, Yunnan, near the Mekong between Tali-fou and Tsekon, *Prince Henri d'Orléans* (P!, photo. E).

Syn.: *Roettlera mekongensis* Franch. in Bull. Mus. Hist. Nat. Paris 5:252 (1899).

Loxostigma forrestii Anth. in Notes R.B.G. Edinb. 18:199 (1934). Type: NE Burma, hills around Htawgaw, 26°N, 98°25′E, Oct. 1925, *Forrest* 27362 (E).

Distr.: China (Yunnan) and NE Burma.

The type localities of *L. mekongense* and *L. forrestii* are little more than 100 miles apart and within the general range of the more widespread *L. griffithii*. The leaves of *L. mekongense* are thicker and more hairy than in *L. griffithii* and Anthony also relied heavily on the ground colour of the corolla being white flushed mauve rather than yellow. It is to be noted however that this degree of variability is known in *Chirita macrophylla* Wall. The claim of *L. mekongense* to specific rank needs confirmation.

SPECIES EXCLUDENDAE

L. aureum Dunn in Journ. Bot. 45:403 (1907) = **Didissandra aurea** (Dunn) B. L. Burtt, **comb. nov.**

L. begoniifolium (Lévl.) Anthony in Notes R.B.G. Edinb. 18:199 (1934) = *Didissandra begoniifolia* Lévl. (see Burtt in Notes R.B.G. Edinb. 23:100, 1960).

L. ? sesamoides Hand.-Mazz. in Oesterr. Bot. Zeitschr. 85:217 (1936) = *Staurogyne sesamoides* (Hand.-Mazz.) B. L. Burtt in Notes R.B.G. Edinb. 22:311 (1958).