HYLODESMUM, A NEW NAME FOR *PODOCARPIUM* (*LEGUMINOSAE*)

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Hylodesmum H. Ohashi & R.R. Mill (*Leguminosae* or *Fabaceae*, tribe *Desmodieae*), based on *Desmodium* sect. *Podocarpium* Benth. (= *D.* subgen. *Podocarpium* (Benth.) H. Ohashi), is a replacement name proposed here for *Podocarpium* (Benth.) Y.C. Yang & P.H. Huang published in 1979 for Chinese species belonging to the genus. The name it replaces, *Podocarpium* (Benth.) Y.C. Yang & P.H. Huang, is a later homonym of two earlier names, *Podocarpium* A. Braun ex Stizenb. (fossil *Leguminosae* or *Fabaceae*) and *Podocarpium* Unger (fossil *Podocarpaceae*) and it is also inadmissible under Art. 20.2. New combinations in *Hylodesmum* are proposed for 14 species and nine infraspecific taxa. A description of the genus is given as well as brief notes on the distribution of each taxon. *Shuteria longipes* Franch. and *Desmodium duclouxii* Pamp. are newly regarded as conspecific; the correct name for these in *Hylodesmum* is *H. longipes*. Notes on typification are given for several names.

Keywords. *Desmodium*, *Fabaceae*, *Leguminosae*, new genus, new combinations, *Podocarpaceae*, *Podocarpium* (1851), *Podocarpium* (1864), *Podocarpium* (1979), *Shuteria*.

INTRODUCTION

In recent years, *Podocarpium* (Benth.) Y.C. Yang & P.H. Huang has often been recognised by Chinese taxonomists as an independent genus (Yang & Huang, 1979, 1995; Cui *et al*., 1987; Wu, 1991; Huang, 1998) for Chinese species of *Desmodium* subgen. *Podocarpium* (Benth.) H. Ohashi (*Leguminosae–Desmodieae*). *Podocarpium* was erected by Bentham (1852) as a section of the genus *Desmodium* and was raised by Ohashi (1973) to subgeneric rank within *Desmodium*. *Desmodium* subgen. *Podocarpium* (Benth.) H. Ohashi is distinct from the other subgenera of the genus by the following characters: large flat seeds lacking a rim-aril around the hilum; shallowly obtriangular articles; stipitate and deeply constricted pods that are pubescent exclusively with hooked hairs; monadelphous androecium; lax-flowered pseudoracemes; and ebracteolate calyx (Ohashi, 1973). The hypogeal mode of germination in some species (Ambrose, 1967; Ohashi, 1973), the herbaceous habit, and the preference for forest habitats are also recognised as characteristic of subgen. *Podocarpium* among *Desmodium*. Subgenus *Podocarpium* was considered by Ohashi (1973) to be a distinct group evolved from *D.* subgen. *Dollinera* Schindl. and to be one of the most advanced groups of *Desmodium*. The results of chloroplast DNA studies of *Desmodium* subgen. *Podocarpium* by Kajita & Ohashi (1994) suggested

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that the subgenus was monophyletic and that *Desmodium elegans* DC. of subgen. *Dollinera* was the sister group of subgen. *Podocarpium*. The recognition of subgen. *Podocarpium* as an entity distinct from other subgenera of *Desmodium* is, therefore, clear (Ohashi, 1995a). Whether it is treated as a subgenus of *Desmodium* (as by Huang *et al*., 1996) or a genus distinct from *Desmodium* was regarded as a matter of opinion. To resolve this problem further, comprehensive researches on *Desmodium* and its related genera were suggested to be necessary (Ohashi, 1995a). Since then, Ohashi has revised *Desmodium* and its related genera for *Flora Malesiana* and for *Flora of Japan*, and decided to recognise subgen. *Podocarpium* as a distinct genus; precursory papers for these Floras are in preparation (by Ohashi). The name *Podocarpium* (Benth.) Y.C. Yang & P.H. Huang was the name applicable to the intended genus, although Yang & Huang (1979) proposed their genus in order to accommodate only Chinese species of subgen. *Podocarpium* and their circumscription of the subgenus was a narrow one.

However, the generic name *Podocarpium* cannot be used for the genus, for two reasons. Firstly, the name is a later homonym of two fossil genera, *Podocarpium* A. Braun ex Stizenb. (Stizenberger 1851; fossil *Fabaceae*) and *Podocarpium* Unger (Unger 1864; fossil *Podocarpaceae*), and is thus illegitimate under *International Code of Botanical Nomenclature* Art. 53.1 (Greuter *et al.*, 1994). Secondly, *Podocarpium* (Benth.) Y.C. Yang & P.H. Huang coincides with a morphological technical term, *podocarpium*, which has occasionally been used in *Podocarpaceae* to denote the fleshy receptacle-like structure on which the seeds of some taxa, e.g. most *Podocarpus* species, are borne. Being published after 1912, *Podocarpium* (Benth.) Y.C. Yang & P.H. Huang would therefore be inadmissible under Art. 20.2 of the *ICBN* even if it had been legitimate. Hence, for both these reasons *Podocarpium* (Benth.) Y.C. Yang & P.H. Huang requires to be replaced. *Podocarpium* Unger must also be replaced since, although as it was published prior to 1912, Art. 20.2 does not apply to it, it too is an illegitimate homonym of *Podocarpium* A. Braun ex Stizenb. To complicate matters even further, the fossil legume, *Podocarpium knorrii* A. Braun ex Stizenb. (commonly known as *Podogonium knorrii* Heer 1857 *nom. illegit.*), was recently renamed *Podocarpium podocarpum* (A. Braun) Herend. by Herendeen (1992) because an earlier basionym, *Gleditsia podocarpa* A. Braun, had been traced. Herendeen's combination is a later double-homonym (i.e. involving both the generic name and the specific epithet) of *Podocarpium podocarpum* (DC.) Y.C. Yang & P.H. Huang. However, as the latter name is illegitimate it may be possible to retain Herendeen's combination for the fossil legume although to do so would upset the nomenclature of several names published under the later name *Podocarpium* Unger in order to maintain the correct name for what appears to be a monospecific genus. Hence, conservation of *Podocarpium* Unger over *Podocarpium* A. Braun ex Stizenb. may be the more desirable option. This paper deals only with Yang & Huang's genus of living *Leguminosae*. The replacement or conservation of *Podocarpium* Unger will be the subject of a separate paper by Mill; should *P. podocarpum* (A. Braun) Herend. require to be replaced, the necessary paper will be prepared by Mill and Ohashi.

For *Podocarpium* (Benth.) Y.C. Yang & P.H. Huang, the name *Hylodesmum* is here proposed. The name is derived from Greek, *hyle* (=forest) plus *desmos* (=a chain, for an abbreviated form of *Desmodium*)]. It has already appeared invalidly in a recent publication by Ohashi (1999), where the citation of its basionym (*Desmodium* sect. *Podocarpium* Benth.) lacked a full bibliographic reference and date and so did not comply with the requirements of ICBN Art. 33.2. The genus comprises 14 species and nine infraspecific taxa (including autonyms). They are distributed mostly in East Asia but three (*Hylodesmum glutinosum* (Muhl. ex Willd.) H. Ohashi & R.R. Mill, *H. nudiflorum* (L.) H. Ohashi & R.R. Mill, and *H. pauciflorum* (Nutt.) H. Ohashi & R.R. Mill) are disjunct in eastern North America, four in occur in South-East Asia and India, and one (*H. repandum* (Vahl) H. Ohashi & R.R. Mill) extends to Africa and Arabia.

TAXONOMIC TREATMENT

Hylodesmum H. Ohashi & R.R. Mill, **nom. nov.**
Type species: *Hylodesmum podocarpum* (DC.) H. Ohashi & R.R. Mill (=*Desmodium podocarpum* DC.).
Syn.: *Desmodium* sect. *Podocarpium* Benth. in Miq., Pl. Jungh.: 226 (1852), p.p., excl. *D. axillare* et *D. securiforme*; Isely in Brittonia 7: 185 (1951). Type species: *Desmodium podocarpum* DC. (Lectotype chosen by Isely in Brittonia 7: 185, 1951).

Desmodium sect. *Heteroloma* subsect. *Podocarpia* Benth. in Benth. & Hook. f., Gen. Pl. 1: 520 (1865). [This was a new name, not a combination based on *Desmodium* sect. *Podocarpium* Benth., since the orthography was changed and there was no reference to *D.* sect. *Podocarpium*.]

Desmodium subgen. *Podocarpium* (Benth.) H. Ohashi in Ginkgoana 1: 120 (1973) p.p.; based on *D.* sect. *Podocarpium* Benth., and excluding sect. *Monarthrocarpus* (Merr.) H. Ohashi and sect. *Repanda* H. Ohashi p.p. (but *including* its type species *D. repandum*).

[*Podocarpium* (Benth.) Y.C. Yang & P.H. Huang in Bull. Bot. Lab. North-East. Forest. Inst. 4: 4 (1979) & in Fl. Reipubl. Popul. Sin. 41: 47 (1995), *nom. illegit.*, non A. Braun ex Stizenb., Uebers. Verstein. Baden: 90 (1851; fossil *Leguminosae*) nec Unger in C.G.F. Hochst., Paläontol. Neu-Seeland, Geol. Theil 1(2): 13 (post Nov. 1864; fossil *Podocarpaceae*)].

Perennial herbs, usually 30–150cm high; rootstock more or less woody, often subtuberous or tuberous. *Stems* erect or often ascending, terete. *Stipules* scarious (or thinly chartaceous in *H. longipes*), striate, nearly glabrous or variously hairy; stipels scarious, filiform. *Leaves* 3-foliolate or (3–)5–7-foliolate in *H. oldhamii*, entire or undulate in *H. longipes*. *Inflorescences* terminal or terminal and axillary, sometimes a fertile shoot separately arising from basal part of main stem, pseudoracemose or lax-paniculate, lax-flowered, with 2–5 flowers at each node; primary bracts subtending secondary bracts; pedicels usually densely uncinate-hairy; bracteole absent.

Calyx broadly or very broadly campanulate, 4-lobed; upper lobe entire or minutely 2-toothed at the apex. *Petals* clawed. *Stamens* monadelphous. *Ovary* stiped. *Loments* distinctly stiped, 2–5-jointed, densely uncinate-hairy on lateral surfaces, nearly glabrous or entirely glabrescent on both sutures, upper (=dorsal) suture distinctly thickened and straight or shallowly undulate, lower (=ventral) suture very deeply incised, isthmus less than ⅕ as broad as pod; articles obliquely depressed or very shallowly obtriangular. *Seeds* flat, obliquely depressed obovate, broadest at about ⅔ of the distance towards the anterior end, without rim-aril around hilum. *Cotyledons of seedlings* hypogeous, remaining underground being enclosed in loment-segment.

An infrageneric system for *Hylodesmum* is in preparation (by Ohashi & Mill) but has not yet been fully worked out. Meanwhile a key to the species is provided and the necessary new combinations for species and infraspecific taxa are enumerated below in alphabetical order.

Key to species

1a. Stamens connate at base; pods 1-seeded ——— **H. dolabriforme**
1b. Stamens connate to top; pods 2–5-seeded ——— 2

2a. Calyx-lobes not shorter than the tube; primary bracts ovate to broadly ovate; flowers longer than 8mm ——— 3
2b. Calyx-lobes much shorter than the tube; primary bracts narrowly ovate or narrowly triangular, less than 2mm wide; pedicels 2–20mm long; flowers less than 10mm long ——— 5

3a. Stipules broadly ovate, 3.5–11mm wide; leaflets irregularly undulate along the margin, long-acuminate to caudate at apex; primary bracts 6–11mm wide ——— **H. longipes**
3b. Stipules narrowly ovate to ovate or narrowly triangular, 1–3mm wide; leaflets entire or slightly undulate along margin, acute to shortly acuminate at apex; primary bracts 1–5mm wide ——— 4

4a. Stipules patent or reflexed, 10–20mm long, 2–3mm wide; leaflets slightly undulate along the margin; corolla orange to red ——— **H. repandum**
4b. Stipules erect, 5–6(–10)mm long, 1(–3)mm wide; leaflets entire along margin; corolla pink to purplish pink ——— **H. williamsii**

5a. Leaflets 5–7-foliolate; flowers 8–10mm long; pods mostly 2-jointed; articles 10–15mm long ——— **H. oldhamii**
5b. Leaflets 3-foliolate ——— 6

6a. Principal lateral nerves looped within the margin; fruit stipes usually more than 10mm long ——— 7
6b. Principal lateral nerves reaching the margin; fruit stipes usually less than 7(–10)mm long ——— 12

7a. Articles 3–5.5cm long; terminal leaflets 13–19cm long ——— **H. menglaense**
7b. Articles less than 2cm long ——— 8

8a. Articles semiobovate, 6–7mm long — **H. laterale**
8b. Articles asymmetrically obtriangular, more than 9mm long — 9

9a. Articles 12–18mm long; leaflets with white spots and poor nerves beneath — **H. leptopus**
9b. Articles 9–10mm long; leaflets pale green and with distinct nerves beneath — 10 (**H. laxum**)

10a. Leaves evergreen, usually sparse on stem or approximate on lower parts; terminal leaflets elliptic or ovate, 6–8.5cm long, 3.5–5cm wide — subsp. **laxum**
10b. Leaves probably deciduous — 11

11a. Leaves approximate at the top of stem; terminal leaflets broadly elliptic or broadly ovate, 4–5cm long, 2.7–3.2cm wide — subsp. **falfolium**
11b. Leaves approximate on upper part of stem; terminal leaflets narrowly elliptic, about 4.5cm long, 1.5cm wide — subsp. **lateraxum**

12a. Stem densely villose; stipules triangular, 4–6mm long, 2–2.5mm broad — **H. densum**
12b. Stem sparsely to densely pubescent; stipules subulate to narrowly triangular, 5–10mm long, 0.5–1mm broad — 13

13a. Flowers 3–5mm long, wings not spurred; stipels small and early deciduous (Asian species) — 14 (**H. podocarpum**)
13b. Flowers 5–9mm long, wings spurred; stipels obsolescent, rarely observed (American species) — 18

14a. Terminal leaflets broadly obovate to orbicular, broadest at or above the middle, apex rounded with an acute tip — subsp. **podocarpum**
14b. Terminal leaflets narrowly ovate to rhomboid, broadest below the middle, apex acute to acuminate — 15

15a. Loment stipes (4–)6–8(–10)mm long; terminal leaflets broadly rhombic-ovate to rhombic-ovate — subsp. **fallax**
15b. Loment stipes (1–)3–4(–7)mm long; terminal leaflets narrowly elliptic-ovate to elliptic-ovate — 16

16a. Terminal leaflets narrowly elliptic-ovate — subsp. **szechuenense**
16b. Terminal leaflets elliptic-ovate — 17 (subsp. **oxyphyllum**)

17a. Leaflets chartaceous to subcoriaceous, pale green beneath; leaves scattered over whole stem or clustered near or above the middle of the stem; flowers pink — var. **oxyphyllum**
17b. Leaflets thinly chartaceous, usually glaucous beneath; leaves clustered near or below the middle of the stem; flowers whitish to pale pink — var. **mandshuricum**

18a. Loment stipes 9–10mm long, inflorescence scapose, only rarely leaf-bearing — **H. nudiflorum**
18b. Loment stipes 4–6mm long; inflorescence terminating the leaf-bearing stem — 19

19a. Leaves alternate, leaflets ovate, acute or barely acuminate; flowers white ____ **H. pauciflorum**

19b. Leaves clustered, occasionally alternate, leaflets broadly ovate, conspicuously acuminate; flowers pink to purplish pink ____ **H. glutinosum**

1. Hylodesmum densum (C. Chen & X.J. Cui) H. Ohashi & R.R. Mill, **comb. nov.** Illustr.: Huang *et al*. in J. Jap. Bot. 71: 73, fig. 1 (1996) as *Desmodium densum*. Type: China, Yunnan, Marlipo, *K.M. Feng* 13574 (lecto. KUN, sheet with branched stem; designated by Ohashi in J. Jap. Bot. 70: 142 (1995), since the type designated by the original authors was composed of two sheets of the same number.)
Syn.: *Podocarpium fallax* (Schindl.) C. Chen & X.J. Cui var. *densum* C. Chen & X.J. Cui in Acta Bot. Yunnan. 9: 306 (1987).

Desmodium densum (C. Chen & X.J. Cui) H. Ohashi in J. Jap. Bot. 70: 142 (1995).

Podocarpium densum (C. Chen & X.J. Cui) P.H. Huang in Bull. Bot. Res., Harbin 18: 6 (1998).

Distribution. China (Guangxi and Yunnan) and Taiwan. A detailed discussion of its affinities was given by Huang *et al.* (1996).

2. Hylodesmum dolabriforme (Benth.) H. Ohashi & R.R. Mill, **comb. nov.** Illustr.: Ginkgoana 1: pl. 15a (1973) as *Desmodium dolabriforme.* Type: [India] 'in Peninsula Indica ad Courtallum', *Wight* (holo. K; iso. CAL, GH; probable iso. E).
Syn.: *Desmodium dolabriforme* Benth. in Miq., Pl. Jungh.: 226 (1852); H. Ohashi in Ginkgoana 1: 126 (1973).

Distribution. (NW & ?) South India (Gujarat?, Tamil Nadu).

This species appears to have been overlooked by the compilers of regional Floras of South India, since the name *D. dolabriforme* is not used in any of several that have been consulted such as *Flora of the Tamilnadu Carnatic* (Matthew, 1983), *Flora of Karnataka* (Saldanha, 1984) and even *Flora of Courtallum* (Nair & Nayar, 1986) despite the fact that Courtallum was the type locality. The species is apparently very rare and may even be extinct. The only reference to it traced by us in an Indian work is by Sanjappa (1992: 152), who gives very little information. He records it from Gujarat and Tamilnadu; because of the wide disjunction from the type locality, the Gujarat record should be considered extremely doubtful unless it can be substantiated.

Hylodesmum dolabriforme was treated by Ohashi (1973: 126) as a member of *Desmodium* sect. *Monarthrocarpus* (Merr.) H. Ohashi, but is here excluded from the latter taxon, which now only comprises its type species, *D. securiforme* Benth. and might deserve generic recognition as *Monarthrocarpus securiformis* (Benth.) Merr. (Merrill, 1910; Ohashi, in prep.).

3. Hylodesmum glutinosum (Muhl. ex Willd.) H. Ohashi & R.R. Mill, **comb. nov.** Illustr.: Gleason, New Britton & Brown Illustr. Fl. 2: 427 (1952); Steyermark, Fl. Missouri t. 217 f. 1 (1963). Type: 'Habitat in America boreali.' (holo. B–Willd. 13821–n.v., from Pennsylvania; microfiche E!).

Syn.: *Hedysarum glutinosum* Muhl. ex Willd., Sp. Pl. 3: 1198 (1802).

D. glutinosum A.W. Wood, Class-book Bot.: 120 (1845) – frequently cited as *D. glutinosum* (Muhl. ex Willd.) A.W. Wood. See discussion.

D. glutinosum (Muhl. ex Willd.) Schindl., Repert. Sp. Nov. Regni Veg. 22: 258 (1926)?non A.W. Wood (1845). See discussion.

Distribution. Eastern USA (Maine to Nebraska, Florida and Texas), and Mexico.

Hb. B–Willd. 13821 consists of a single sheet of a specimen collected by Muhlenberg in 'Pensylvania'. This consists of two detached leaves and a detached inflorescence. It is not a mixed gathering as was surmised by Isely (1951: 223) who noted that the phrase in Willdenow's description, 'Panicula e basi caulis scapiformis' was reminiscent of *H. nudiflorum*. Schindler in 1914 determined the sheet as *Desmodium grandiflorum* (Wall.) DC. but B. Schubert in 1951 agreed that it represented *Desmodium glutinosum* (Muhl. ex Willd.) A.W. Wood. Isely (1951) pointed out that the latter name should be cited as *D. glutinosum* A.W. Wood since Wood cited no name-bringing synonym and thus was in fact describing a new species although (as Schubert, 1942 argued) his intention may have been to re-combine Willdenow's epithet under *Desmodium*. Isely further pointed out that, if Wood's name were to be regarded as that of a new species rather than a combination, it would block the transfer of *Hedysarum glutinosum* to *Desmodium* and thus render the combination *D. glutinosum* (which was definitely made, based on *Hedysarum glutinosum* Willd., by Schindler in 1926; see synonymy) illegitimate. However, these problems do not arise when Willdenow's name is transferred to *Hylodesmum*.

4. Hylodesmum laterale (Schindl.) H. Ohashi & R.R. Mill, **comb. nov.** Illustr.: Fl. Reipubl. Popul. Sin. 41: t. 8 f. 4–5 (1995) as *Podocarpium laxum* var. *laterale*.

Syn.: *Desmodium laterale* Schindl. in Repert. Spec. Nov. Regni Veg. 22: 258 (1926). Syntypes from SE China, 'Fukien, Westfluss, NW. von Amoy', *Price* 1214, 1184; Ryukyu Is., 'Riu-Kiu-Inseln', *C. Wright* 62 (US, designated lectotype by Isely in Brittonia 7: 202, 1951). The Wright specimen had previously been misidentified as *Desmodium podocarpum* by Forbes & Hemsley (J. Linn. Soc., Bot. 23: 74, 1887).

D. hainanense Isely in Brittonia 7: 206 (1951). Type: Hainan, Sha Po Shan, *Tsong* 620 (holo. A, iso. US).

D. laxum DC. subsp. *laterale* (Schindl.) H. Ohashi in Ginkgoana 1: 137 (1973).

Podocarpium laxum (DC.) Y.C. Yang & P.H. Huang var. *laterale* (Schindl.) Y.C. Yang & P.H. Huang in Bull. Bot. Lab. N.E. Forest. Inst., Harbin 4: 7 (1979).

Distribution. Japan, Taiwan, Ryukyu Islands and southern China (including Hainan).

Yang & Huang (1979, 1995) treated this species as a variety of the following, but DNA analyses and morphological studies suggest that they both merit recognition at species rank.

5. Hylodesmum laxum (DC.) H. Ohashi & R.R. Mill, **comb. nov.**
Syn.: *Desmodium laxum* DC. in Ann. Sci. Nat. 4: 102 (1825). Type: 'In Napaulia', *Wallich* (G–DC–n.v., microfiche E!). See discussion.

D. gardneri Benth. in Miq., loc. cit. 226 (1852), p.p. excl. lectotyp., quoad specimin. [Sri Lanka] 'In Ceylona', *Gardner* 220 (syntype, K). [The lectotype here designated of *D. gardneri* is synonymous with *H. leptopus* (A. Gray ex Benth.) H. Ohashi & R.R. Mill: see below, species 6.]

D. podocarpum var. *laxum* (DC.) Baker in Hook.f., Fl. Brit. India 2: 165 (1876).

Podocarpium laxum (DC.) Y.C. Yang & P.H. Huang in Bull. Bot. Lab. N.E. Forest. Inst., Harbin 4: 7 (1979).

Distribution. As subsp. *laxum* (below). Three subspecies are recognised, following the classification of *D. laxum* in Ohashi (1995b).

The name *Desmodium laxum* does not appear in Wallich's *Numerical List* (Wallich, 1831–1832). The type material in G–DC comprises three separate elements: (a) a specimen with leaves and a long inflorescence bearing four labels or tickets: (i) a standard 'Prodromus' printed label giving name and page reference; (ii) a modern scale bar labelled 'Herb. genevense Boite 254'; (iii) a handwritten label that reads only 'Mr Wallich'; (iv) another handwritten label reading '*Desmodium* [with *Priestleya* crossed out beneath] *laxum* DC.'; (b) a specimen comprising part of a stem and eight leaves only, bearing only a standard 'Prodromus' label; (c) a specimen of a stem and three leaves bearing a 'Prodromus' label and a handwritten ticket reading '*Glycine* Napaul Mr. Wallich 1821'. Baker (1876) included *D. trinerve* Graham, an invalid name for *Wallich* 5720 that appeared without a validating description under that number in Wallich's *Numerical List*, in the synonymy of his var. *laxum*.

5.1. Hylodesmum laxum (DC.) H. Ohashi & R.R. Mill subsp. **laxum**. Illustr.: Ginkgoana 1: pl. 17a (1973) as *Desmodium laxum* subsp. *laxum*; Fl. Reipubl. Popul. Sin. 41: t. 8 f. 6–7 (1995) as *Podocarpium laxum* var. *laxum*.
Syn.: *Desmodium laxum* DC. subsp. *laxum*: autonym established by H. Ohashi, Ginkgoana 1: 139 (1973).

Distribution. Japan, China, Thailand, Indo-China, Malesia, India (eastern Himalaya, to Assam), Nepal, Sri Lanka.

5.2. Hylodesmum laxum (DC.) H. Ohashi & R.R. Mill subsp. **falfolium** (H. Ohashi) H. Ohashi & R.R. Mill, **comb. nov.** Illustr.: J. Jap. Bot. 70: 145, f. 1 (1995) as *Desmodium laxum* subsp. *falfolium*.
Syn.: *Desmodium laxum* subsp. *falfolium* H. Ohashi in J. Jap. Bot. 70: 146 (1995). Type: China, Hunan, Baojin County, Shipong, *L.H. Liu* 9858 (holo. KUN).

Distribution. China (Hunan).

5.3. Hylodesmum laxum (DC.) H. Ohashi & R.R. Mill subsp. **lateraxum** (H. Ohashi) H. Ohashi & R.R. Mill, **comb. nov.** Illustr.: J. Jap. Bot. 70: 146, f. 2 (1995) as *Desmodium laxum* subsp. *lateraxum*.
Syn.: *Desmodium laxum* subsp. *lateraxum* H. Ohashi in J. Jap. Bot. 70: 147 (1995). Type: China, Guizhou, 8 ii 1959, *Expedition team to Anxun* 10 (holo. KUN).

Distribution. China (Guizhou).

6. Hylodesmum leptopus (A. Gray ex Benth.) H. Ohashi & R.R. Mill, **comb. nov.** Illustr.: Ginkgoana 1: pl. 17b (1973) as *Desmodium laxum* subsp. *leptopus*; Fl. Reipubl. Popul. Sin. 41: t. 8 f. 1–3 (1995) as *Podocarpium leptopus*.
Syn.: *Desmodium leptopus* A. Gray ex Benth. in Miq., Pl. Jungh.: 226 (1852). Lectotype designated here: [Philippines] 'In Luzonia (*Exped. Explor. Americanas*).' Isely (Brittonia 7: 200, 1951) indicates that this is *Wilkes' Expl. Exped.* s.n. from Luzon, Los Baños, Laguna Prov. (lecto. K, isolecto. US).

D. gardneri Benth. in Miq., loc. cit. 226 (1852). Lectotype designated here: [Sri Lanka] 'In Ceylona', *Walker* (K, formerly one of two syntypes; the other syntype, *Gardner* 220, belongs to *H. laxum*).

Desmodium laxum subsp. *leptopus* (A. Gray ex Benth.) H. Ohashi in Ginkgoana 1: 141 (1973).

Podocarpium leptopus (A. Gray ex Benth.) Y.C. Yang & P.H. Huang in Bull. Bot. Lab. N.E. Forest. Inst., Harbin 4: 6 (1979).

Desmodium tashiroi Matsum. in Ito & Matsum., J. Coll. Sci. Imp. Univ. Tokyo 12 (Tent. Fl. Lutchu.): 415 (1899). Type: [Ryukyu Islands] 'in Liukiu: insula Okinawa', 1887, *Y. Tashiro* (holo. TI).

Distribution. Japan, Taiwan, Ryukyu Islands, S China, Indo-China, Malesia and Sri Lanka.

7. Hylodesmum longipes (Franch.) H. Ohashi & R.R. Mill, **comb. nov.** Illustr.: Ohashi in Ginkgoana 1: fig. 49, tab. 16 (1973) as *Desmodium duclouxii*.
Syn.: *Shuteria longipes* Franch., Pl. Delavay.: 179 (1889), **syn. nov.**; non *Desmodium longipes* Craib in Kew Bull. 1910: 20 (1920). Type: China, Yun-nan, *Delavay* 2722 (P) – also a syntype of *Desmodium henryi* Schindl.

Desmodium duclouxii Pamp. in Nuov. Giorn. Bot. Ital., n.s. 17: 10 (1910). Type: [China, Yunnan] 'Lan-ngy-tsin près Lon-san', 4 ix 1904, *Ducloux* 389 (P).

D. henryi Schindl. in Repert. Spec. Nov. Regni Veg. 22: 260 (1926, 'hernyi',

sphalm.). Several syntypes from Yunnan, China: Mengtze, 2100m, *A. Henry* 9700 (isosyn. E); Feng-shou-lin, 2100m, *A. Henry* 9700B (isosyn. E); Minkwong valley, *Forrest* 8564 (isosyn. E); Mekong valley between Talifu and Tengyueh, *Forrest* 1118 (isosyn. E); Hokin, *Delavay* 2722 (P, also type of *Shuteria longipes* Franch.); *sine loc.*, *Ducloux* 762 (P).

D. duclouxii Pamp. var. *henryi* (Schindl.) H. Ohashi, Ginkgoana 1: 159 (1973).

Podocarpium duclouxii (Pamp.) Y.C. Yang & P.H. Huang in Bull. Bot. Lab. N.E. Forest. Inst., Harbin 4: 12 (1979.

Distribution. Bhutan, China (Yunnan), Myanmar [Burma].

This plant has hitherto been known as *Desmodium duclouxii* or *Podocarpium duclouxii* but *Shuteria longipes* has been found to be conspecific. Being the earliest valid name, the epithet *longipes* must be taken up in *Hylodesmum*. It should not be confused with *Desmodium longipes* Craib, which is now known as *Phyllodium longipes* (Craib) Schindl. (see Ohashi, 1973: 274).

8. Hylodesmum menglaense (C. Chen & X.J. Cui) H. Ohashi & R.R. Mill, **comb. nov.** Illustr.: Acta Bot. Yunnan. 9: 306, f. 1 (1987) as *Podocarpium menglaense*.
Syn.: *Podocarpium menglaense* C. Chen & X.J. Cui in Acta Bot. Yunnan. 9: 305 (1987). Type: China, Yunnan, Mengla, Menglun, 620m, *G.D. Tao* 209050 (holo. YUTBI–n.v.).

Desmodium menglaense (C. Chen & X.J. Cui) H. Ohashi in J. Jap. Bot. 70: 142 (1995). Type: as *Podocarpium menglaense* (above).

Distribution. China (Yunnan).

9. Hylodesmum nudiflorum (L.) H. Ohashi & R.R. Mill, **comb. nov.** Illustr.: Gleason, New Britton & Brown Illustr. Fl. 2: 427 (1952); Steyermark, Fl. Missouri t. 216, f. 1 (1963).
Syn.: *Hedysarum nudiflorum* L., Sp. Pl.: 749 (1753). 'Habitat in Virginia'. Lectotype designated by J.L. Reveal in Taxon 46: 472 (1997): *Herb. Clayton* 124 (BM–n.v.).

Desmodium nudiflorum (L.) DC., Prodr. 2: 330 (1825).

Distribution. East and Central USA (Maine to Texas).

10. Hylodesmum oldhamii (Oliv.) H. Ohashi & R.R. Mill, **comb. nov.** Illustr.: Okuyama, Col. Illustr. Wild Pls. Japan 5: 73, no. 3 & col. pl. 389, no. 3 (1960) as *Desmodium oldhami*; Ginkgoana 1: pl. 18b (1973) as *D. oldhamii*.
Syn.: *Desmodium oldhamii* Oliv. in J. Linn. Soc. 9: 165 (1865, 'oldhami'); H. Ohashi, Ginkgoana 1: 131 (1973). Type: none designated, provenance uncertain ('probably from the neighbourhood of Nagasaki, though it may have been collected in the Korean archipelago' [by Richard Oldham, in 1862–63; specimen probably at K]).

Meibomia oldhamii (Oliv.) Kuntze, Revis. Gen. Pl. 1: 198 (1891).

Podocarpium oldhamii (Oliv.) Y.C. Yang & P.H. Huang in Bull. Bot. Lab. N.E. Forest. Inst., Harbin 4: 6 (1979, 'oldhami').

Distribution. Eastern Asia (Japan, Korea, China, Russian Far East).

11. Hylodesmum pauciflorum (Nutt.) H. Ohashi & R.R. Mill, **comb. nov.** Illustr.: Gleason, New Britton & Brown Illustr. Fl. 2: 427 (1952) as *Desmodium pauciflorum*; Steyermark, Fl. Missouri t. 218 f. 1 (1963) as *D. pauciflorum*.
Syn.: *Hedysarum pauciflorum* Nutt., Gen. N. Amer. Pl. 2: 109 (1819). Type: none designated ('in the shady forests of Ohio, Kentucky and Tennessee (common)'). Type material may be at NY but has not been seen.
Desmodium pauciflorum (Nutt.) DC., Prodr. 2: 330 (1825).

Distribution. Eastern USA from Iowa to Florida and Texas. Nuttall did not describe the stamens but nevertheless included it in a group that has diadelphous stamens. This was incorrect; they are in fact monadelphous.

12. Hylodesmum podocarpum (DC.) H. Ohashi & R.R. Mill, **comb. nov.**
Syn.: *Desmodium podocarpum* DC. in Ann. Sci. Nat. 4: 102 (1825). Type: 'In Napaulia', *Wallich* (G–DC, n.v., microfiche E!). See discussion.
Hedysarum podocarpum (DC.) Spreng., Syst. Veg. 3: 317 (1826).
Podocarpium podocarpum (DC.) Y.C. Yang & P.H. Huang in Bull. Bot. Lab. N.E. Forest. Inst., Harbin 4: 7 (1979).

Prain (*J. Asiat. Soc. Bengal* 66(2): 391, 1897) indicated that what he said was the type of *D. podocarpum* (*Wallich* 5711, p.p.) was in fact collected in Kumaon (N India) by Blinkworth, who gave it to Wallich whence it was incorporated in the Wallich Herbarium (cf. Isely, 1951: 210, footnote no. 19). Isely and Prain were only partially correct; the Wallich *Numerical List* enumerates two separate elements under no. 5711. Specimen 5711A is the Blinkworth collection; 5711B was collected by Wallich himself. There are two specimens in the De Candolle Herbarium at Geneva (which must be taken as the syntypes); both are labelled 'Napaul, Mr. Wallich 1821'. There is therefore nothing on the Geneva labels that could be used to link the Geneva type material with the Blinkworth specimen; nor, unfortunately, can either of the Geneva specimens be linked directly with *Wallich* 5711 as none of the *Desmodium* sheets in G–DC have Wallich's '*Numer. List*' numbers on them.

12.1. Hylodesmum podocarpum (DC.) H. Ohashi & R.R. Mill subsp. **podocarpum**. Illustr.: Grierson & Long, Fl. Bhutan 1(3): t. 43f & g (1987) as *Desmodium podocarpum*.
Syn.: *Desmodium bodinieri* Lévl., Fl. Kouy-Tchéou 232 (1914–1915). Type: China (unlocalized, probably Yunnan), *Bodinier* s.n. in herb. Léveillé (holo. E).
Desmodium podocarpum DC. subsp. *podocarpum*: autonym established by H. Ohashi in Ginkgoana 1: 154 (1973).

Distribution. Himalaya (Pakistan to Arunachal Pradesh, scattered), China, Tibet, Japan, Taiwan and Philippines (Luzon).

12.2. Hylodesmum podocarpum (DC.) H. Ohashi & R.R. Mill subsp. **fallax** (Schindl.) H. Ohashi & R.R. Mill, **comb. nov.** Illustr.: Ginkgoana 1: pl. 19b (1973) as *Desmodium podocarpum* subsp. *fallax*; Fl. Reipubl. Popul. Sin. 41: t. 9 f. 3 (1995) as *Podocarpium podocarpum* var. *fallax* (leaves only).
Syn.: *Desmodium fallax* Schindl. in Bot. Jahrb. Syst. 54: 55 (1916). Numerous syntypes from China (Sichuan and Jiangxi), Japan and Korea. Lectotype not designated.

D. podocarpum DC. subsp. *fallax* (Schindl.) H. Ohashi in Hara, Fl. E. Himal. 2: 65 (1971) & Ginkgoana 1: 149 (1973).

Podocarpium podocarpum (DC.) Y.C. Yang & P.H. Huang var. *fallax* (Schindl.) Y.C. Yang & P.H. Huang in Bull. Bot. Lab. N.E. Forest. Inst., Harbin 4: 8 (1979), p.p., excl. syns. based on var. *mandschuricum* (Maxim.) Nakai: see 12.3.2 below.

Podocarpium fallax (Schindl.) C. Chen & X.J. Cui in Acta Bot. Yunnan. 9: 306 (1987).

Distribution. Japan, Korea and China.

12.3. Hylodesmum podocarpum (DC.) H. Ohashi & R.R. Mill subsp. **oxyphyllum** (DC.) H. Ohashi & R.R. Mill, **comb. nov.**
Syn.: [*Hedysarum racemosum* Thunb. in Murray, Syst. Veg. ed. 14: 675 (May 1784) & Thunb., Fl. Japon.: 285 (Aug. 1784), *nom. illegit.*, non Aubl., Hist. Pl. Guiane Fr. 2: 774 (1755)].

Desmodium oxyphyllum DC. in Ann. Sci. Nat. 4: 102 (Jan. 1825). Type: 'in Napaulia', *Wallich* (G–DC, n.v.; microfiche E!). See discussion.

[*D. racemosum* (Thunb.) DC., Prodr. 2: 337 (Nov. 1825), *comb. illegit.*].

D. japonicum Miq. in Ann. Mus. Bot. Lugduno-Batavi 3: 46 (1867), p.p. (non *D. oxyphyllum* DC. var. *japonicum* Matsum.).

D. oxyphyllum DC. var. *japonicum* Matsum. in J. Coll. Sci. Imp. Univ. Tokyo 12 (Tent. Fl. Lutchu.): 415 (1899). Type: [Japan] 'insula Oshima', ix 1887, *Y. Tashiro* (holo. TI).

D. racemosum (Thunb.) DC. var. *pubescens* F.P. Metcalf in Lingnan Sci. J. 19: 605 (1940): fide Huang (1998, sub *P. podocarpum* var. *japonicum*). Type: [China, Fujian] 'Fukien, near Chekiang border, 600–1200m, viii 1924, *Ching* 2513 (holo. US). Metcalf (1940) distinguished this variety only by its pubescent, not glabrous, pods.

D. podocarpum DC. subsp. *oxyphyllum* (DC.) H. Ohashi in Hara, Fl. E. Himal. 2: 65 (1971) & in Ginkgoana 1: 150 (1973).

Podocarpium podocarpum (DC.) Y.C. Yang & P.H. Huang var. *oxyphyllum* (DC.) Y.C. Yang & P.H. Huang in Bull. Bot. Lab. N.E. Forest. Inst., Harbin 4: 9 (1979).

Podocarpium podocarpum var. *japonicum* (Matsum.) P.H. Huang in Bull. Bot. Res., Harbin 18: 6 (1998).

In G–DC there are three separate specimens (syntypes) of *D. oxyphyllum*. One only bears a standard printed 'Prodromus' label giving the name and page reference. The second bears two tickets, one reading '*Hedysarum* Napaul Mr. Wallich 1821' and the other, '*Desmodium* [with *Priestleya* crossed out beneath it] *oxyphyllum* DC.' The third specimen has three labels: a standard printed 'Prodromus' label, one reading '*Glycine* Napaul Mr. Wallich 1821' and the third, by T. Nakai, reads '*Hedysarum racemosum* Thunberg in Paris Museum is this form. Very likely this is *Desmodium racemosum*! T. Nakai'. All specimens are reasonably complete, bearing stems, leaves and inflorescences.

Distribution of subspecies. Japan, Ryukyu Islands, Korea, China, Myanmar [Burma], India, Malesia, Russia (Ussuria).

12.3.1. Hylodesmum podocarpum (DC.) H. Ohashi & R.R. Mill subsp. **oxyphyllum** var. **oxyphyllum** (DC.) H. Ohashi & R.R. Mill. Illustr.: Okuyama, Col. Illustr. Wild Pls. Japan 69, no. 3 & col. pl. 387, no. 3 (1960) as *Desmodium oxyphyllum*; Fl. Reipubl. Popul. Sin. 41: t. 9 f. 4 (1995) as *Podocarpium podocarpum* var. *oxyphyllum*; Dy Phon *et al*., Fl. Camb., Laos, Vietn. 29: 71, t. 13 (1994) as *Desmodium repandum*. Synonymy and typification as subsp. *oxyphyllum*.

Distribution of variety. Japan, Ryukyu Islands, Korea, China, Myanmar [Burma], India, and Malesia.

12.3.2. Hylodesmum podocarpum (DC.) H. Ohashi & R.R. Mill var. **mandshuricum** (Maxim.) H. Ohashi & R.R. Mill, **comb. nov.** Illustr.: Ono *et al*., Revised Makino's New Illustrated Flora of Japan 330, f. 1319 (1989).
Syn.: *Desmodium podocarpum* var. *mandshuricum* Maxim. in Bull. Acad. Imp. Sci. Saint-Pétersbourg 31: 28 (1886) & Mélanges Biol. Bull. Phys.-Math. Acad. Imp. Sci. Saint-Pétersbourg 12: 440 (1886); H. Ohashi in Ginkgoana 1: 151 (1973). Type: [Russia] 'Wladiwostok, ad sylvarum margines rarius, ins. Russk. sylva graminosa frequens', *Maximowicz* (LE).

[*D. mandschuricum* (Maxim.) Nakai in T. Mori, Enum. Pl. Cor. 214 (1922), *comb. inval*. (Art. 33.2).]

D. mandschuricum (Maxim.) Schindl. in Repert. Spec. Nov. Regni Veg. 21: 3 (1925).

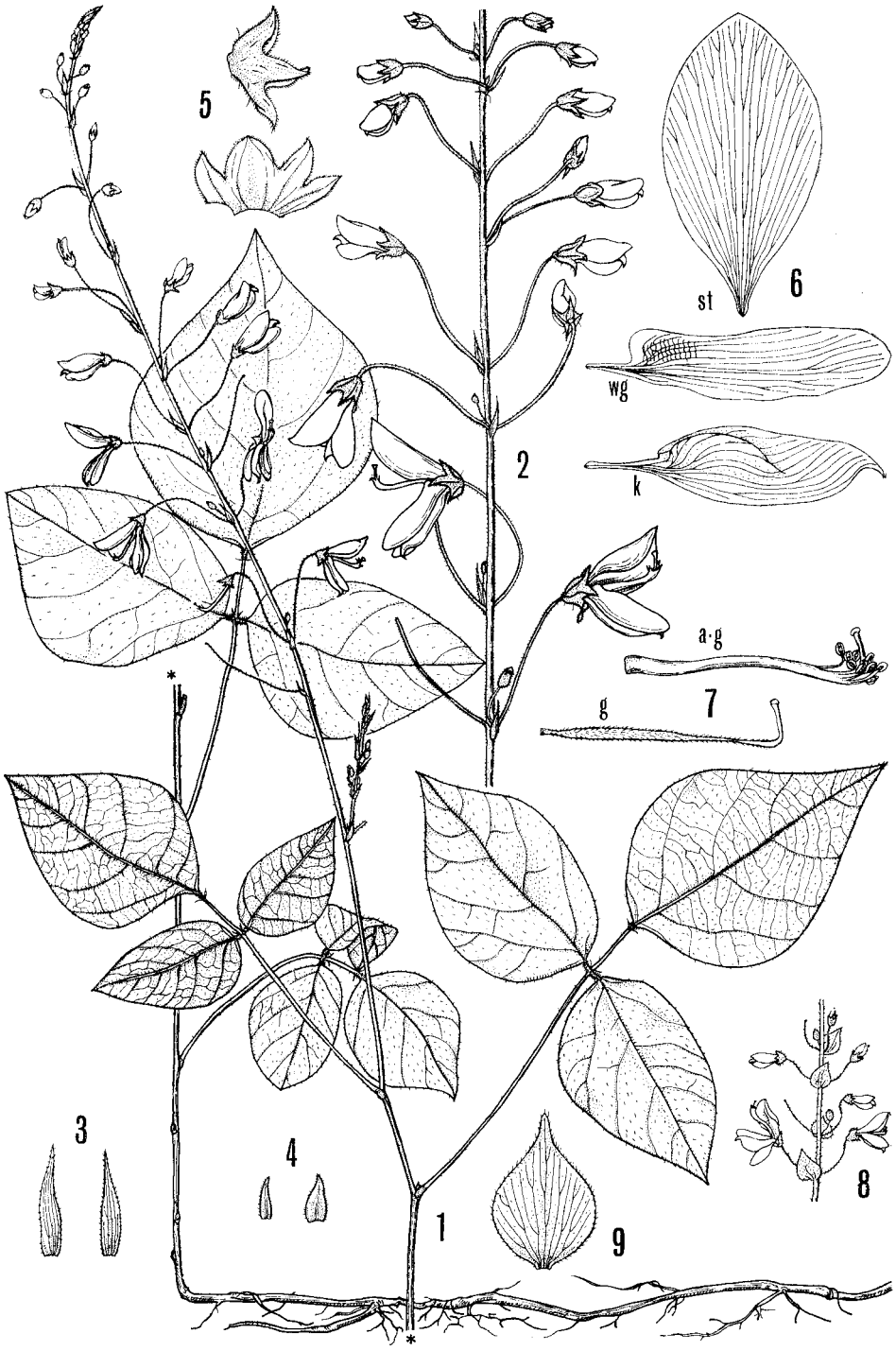
D. fallax Schindl. var. *mandschuricum* (Maxim.) Nakai in Bot. Mag. (Tokyo) 44: 32 (1930).

D. racemosum (Thunb.) DC. var. *mandschuricum* (Maxim.) Ohwi, Fl. Jap. 683 (1953) p.p. excl. syn. cit. *D. fallax*.

D. oxyphyllum var. *mandshuricum* (Maxim.) H. Ohashi in J. Jap. Bot. 41: 155 (1966).

Podocarpium podocarpum var. *mandshuricum* (Maxim.) P.H. Huang in Bull. Bot. Res., Harbin 18: 6 (1998).

Distribution. Japan, Korea, N & NE China, Russia (Ussuria).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12.4. Hylodesmum podocarpum (DC.) H. Ohashi & R.R. Mill subsp **szechuenense** (Craib) H. Ohashi & R.R. Mill, **comb. nov.** Illustr.: Ginkgoana 1: pl. 20b (1973) as *Desmodium podocarpum* subsp. *oxyphyllum* var. *szechuenense*; Fl. Reipubl. Popul. Sin. 41: t. 9 f. 5 (1995) as *Podocarpium podocarpum* var. *szechuenense*.
Syn.: *Desmodium podocarpum* DC. var. *szechuenense* Craib in Sarg., Pl. Wilson. 2: 104 (1914). Syntypes: [China, Sichuan] Ya-chou Fu, 300–1000m, ix 1908, *Wilson* 2933 (K, isosyns. A, E); without precise locality, 1904, *Veitch exped.* 4830 (K, isosyn. A); Mt. Omei [Emei Shan], *A. Henry* 167 (K).

Desmodium szechuenense (Craib) Schindl. in Repert. Spec. Nov. Regni Veg. 21: 3 (1925).

D. oxyphyllum var. *szechuenense* (Craib) H. Ohashi in J. Jap. Bot. 41: 155 (1966).

Podocarpium podocarpum (DC.) Y.C. Yang & P.H. Huang var. *szechuenense* (Craib) Y.C. Yang & P.H. Huang in Bull. Bot. Lab. N.E. Forest. Inst., Harbin 4: 10 (1979).

Desmodium podocarpum DC. subsp. *szechuenense* (Craib) H. Ohashi in J. Jap. Bot. 70: 114 (1995).

Distribution. South-Central and South-East China (Yunnan, Sichuan, Guangdong, Hubei).

13. Hylodesmum repandum (Vahl) H. Ohashi & R.R. Mill, **comb. nov.** Illustr.: Dy Phon *et al*., Fl. Camb., Laos Vietn. 27: 71, t. 13 (1994).
Syn.: *Hedysarum repandum* Vahl, Symb. Bot. 2: 82 (1791). 'Habitat in Arabia, *Forsskal*'. Type (fide Hepper & Friis, 1994: 180): Yemen, 1763, *Forsskal* (holo. C–Vahl).

Desmodium repandum (Vahl) DC., Prodr. 2: 334 (1825); Ohashi in Ginkgoana 1: 160 (1973).

D. scalpe DC., Prodr. 2: 334 (1825). Type: [Mauritius] 'in insula Borbonia et forsan Madagascar' (G–DC, microfiche seen: two specimens, both apparently from Mauritius. See comments below.).

D. strangulatum Wight & Arn., Prodr. 1: 228 (1834). Syntypes: [South India] *Wight* 772, 773, 774 (K, isosyns. of all three numbers at E).

D. caffrum Eckl. & Zeyh., Enum. Pl. Afric. Austral. 251 (Jan. 1836). Type: [South Africa] 'In locis humidis in hiatu montis sylvoso ad flumen ''Makasanirivier'' (Kafferland), Maio', *Ecklon & Zeyher* (holo.?MEL, n.v.; iso. K, n.v.).

FIG. 1. *Hylodesmum williamsii.* 1, whole plant (×0.6); 2, inflorescence (×1.2); 3, primary bracts (×3); 4, secondary bracts showing a range of variation (×6); 5, calyx (×3); 6, petals (×3; st, standard; wg, wing; k, keel petal); 7, androecium (a) and gynoecium (g) (×3); 8, inflorescence (×0.6); 9, primary bract (×3). 1–7, Ludlow, Sherriff & Hicks 20893; 8–9, Forrest 10825. Reproduced from *Ginkgoana* 1 (1973) with kind permission of H. Ohashi.

D. schimperi Hochst. ex A. Rich., Tent. Fl. Abyss. 1: 205 (1847). Type: 'in locis opacis umbrosis, in monte Taber, prope Adde-Tsela, provincia Semiène,' *Schimper* pl. Schimp. Abyss. sect. II, 857 (BM, n.v.).

Podocarpium repandum (Vahl) Y.C. Yang & P.H. Huang in Bull. Bot. Lab. N.E. Forest. Inst., Harbin 4: 13 (1979).

Distribution. Asia (Bhutan and China to India (Karnataka) and Malesia), Arabia (Yemen), tropical and southern Africa.

The two syntypes of *D. scalpe* in G–DC are:
1. An apparently sterile plant (the long 'inflorescence' extending beyond the leaves apparently bears no flowers, fruits or even lateral branches; a structure at its very base is difficult to interpret from the microfiche but is either a partly turned over leaf-margin revealing a small part of the underside of the leaf, or a sessile pod). This specimen bears two labels besides a standard 'Prodromus' printed label giving name and page reference:
   a. 'I. de B (*Clitoria* deleted) *Hedysarum scalpe*'
   b. '*Hedysarum repandum* Poir. non Vahl
      scalpe Comm.!
      Aeschynomene ramosa Poir.
      Desmodium scalpe DC.'
2. A specimen that is fertile, the flowers on long thin opposite pedicels. This is labelled 'Ile de France ou de Bourbon. Museum de Paris 1821'.

14. Hylodesmum williamsii (H. Ohashi) H. Ohashi & R.R. Mill, **comb. nov.** Illustr.: Ginkgoana 1: 165, t. 51 (1973) as *Desmodium williamsii*. **Fig. 1.**
Syn.: *Desmodium williamsii* H. Ohashi, Ginkgoana 1: 163 (1973). Type: Bhutan, Denchung, 7500ft, 6 vii 1949, *Ludlow, Sherriff & Hicks* 20893 (holo. BM, iso. TI).

D. williamsii H. Ohashi subsp. *magnibracteatum* H. Ohashi, Gingkoana 1: 166 (1973). Type: China, Yunnan: on the Long Shan in Yangtze bend, 27°20′N, 8000–9000ft, viii 1913, *Forrest* 10825 (holo. E, iso. BM).

Podocarpium williamsii (H. Ohashi) Y. C. Yang & P.H. Huang in Bull. Bot. Lab. N.E. Forest. Inst., Harbin 4: 13 (1979).

Distribution. China (Yunnan, Sichuan), Tibet, Bhutan, Nepal and India (Arunachal Pradesh).

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