

## *Ototropis*, a Genus Separated from *Desmodium* (*Leguminosae*)

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*Desmodium* subgenus *Dollinera* is recognized as the genus *Ototropis* Nees. A new infrageneric system of the genus, a new section *Hayataea*, and new combinations for 2 sections, 2 series, 13 species, 1 subspecies, 3 varieties, and 1 form are proposed. Keys to the sections, series, and species of *Ototropis*, to the infraspecific taxa of *O. elegans*, and to those of *O. megaphylla* are presented. *Dollinera* Endl. is regarded as a superfluous name, for *Ototropis*, whereas *Desmodium* sect. *Dollinera* Benth. is validly published as a new name. Two species of *Desmodium*, *D. garhwalensis* Dangwal & Gaur and *D. likabali* Bennet & Chandra, are newly included in *Ototropis* as synonyms.

**Key words:** *Desmodium*, *Dollinera*, *Leguminosae*, *Ototropis*, section *Hayataea*.

*Desmodium* subgenus *Dollinera* is distinct from other subgenera of the genus *Desmodium* in morphology and palynology (Ohashi 1971, 1973). In our studies of *Desmodium* and its related genera for Flora of China, Flora Malesiana and Flora of North America we noted the distinctness of subgenus *Dollinera* in total a combination of many features. *Dollinera* are shrubs or trees copiously branched panicles, rarely racemes, with secondary bracts and bracteoles, 4-lobed calyx usually with highly connate adaxial lobes, more flowers per fascicle (3–7 per node), larger flowers (usually more than 7 mm long) each of which wings have longer, rarely shorter, than the keel-petals, monadelphous stamens with vexillary stamen connate to the middle with others, and seeds with rather thickened rim-aril (Figs. 1, 2). In contrast, other subgenera of *Desmodium* (the genus circumscribed in Ohashi 2005) are generally herbs, subshrubs or sometimes shrubs

in having racemes or sometimes panicles with or without secondary bracts and without bracteoles, 4- or 5-lobed calyx, less (2–4 per node) and smaller (usually less than 7 mm long) flowers with wings shorter than or equal to the keel-petals, usually diadelphous stamens, and seeds with less thickened rim-aril.

*Dollinera* is closely related to subgenus *Desmodium* in having monadelphous stamens and a 4-lobed calyx, but these two subgenera have a clear distinction in pollen morphology in addition to gross morphological differences. Pollen grains of *Dollinera* are characterized by microreticulate (the lumina are 0.5–1 μm in diameter) sculpture and continuous foot-layer except for *Desmodium sequax* with finely rugulate sculpture and very reduced foot-layer, whereas those of subgenus *Desmodium* are finely rugulate or verrucate and have a very reduced, almost absent foot-layer. Furthermore, recent molecular analyses of the tribe

*Desmodieae* indicate that subgenus *Dollinera* as represented by *Desmodium elegans* DC. is monophyletic and separated from the remaining bulk of genus *Desmodium* (Kajita and Ohashi 1994, Stefanovič et al. 2009, Kajita per. comm.). Accordingly, we propose subgen. *Dollinera* as a genus distinct from all the other genera of tribe *Desmodieae* (Ohashi 2005).

The legitimate generic name separating the members of *Dollinera* from *Desmodium* is *Ototropis* Nees. Although *Tetranema* Sweet, Hort. Brit. ed. 2, 149 (1830) on the basis of *T. nutans* (Hook.) Sweet, was published earlier, the name is an earlier homonym of the conserved *Tetranema* Benth., Edwards's Bot. Reg. 29: t. 52 (1843) (ICBN Art. 14.10). The second-earliest name is *Ototropis* Nees. However, several confusions occurred on its nomenclature. First, although the name was regarded as "*Ototropis* Schauer, Index Sem. Hort. Wratislaw. 1839, non Benth." (Endlicher 1840), "*Ototropis* Nees, Del. Sem. Hort. Vratisl. (1838); ex Linnaea, xiii. (1839) Litt. 120" (Jackson 1895)" or "*Ototropis* Nees [Del. Sem. Horti Vratisl. (1838)] ex Schltld. in Linnaea 13: Litt. 120 (1839), non Benth. (1838)" (Ohashi 1971), the generic name was validly published by Nees in the Index Seminum (1838, published probably in January 1839). Second, "*Ototropis microphyllus* Benth. in Ann. Wien. Mus. [Naturgesch.] ii. (1838) 142 (Jackson 1895)", which would rank *Ototropis* Nees a later homonym, does not exist (Gandhi per. com., cf. IPNI after 3 Nov. 2011). In the Index Seminum, the generic name "*Ototropis* Nees" is published among a foot note on page 3 and "*Ototropis sambuensis* N. ab E." is listed on page 2. Almost simultaneously the generic name *Dollinera* was proposed by Endlicher (1840) instead of *Ototropis* as follows: "*Dollinera* Endlicher msc. 1839. *Ototropis* Schauer, Index Sem. Hort. Wratislaw. 1839, non Benth." His proposal of *Dollinera* as a replacement name of *Ototropis* would be because he regarded it illegitimate. *Ototropis* is, however, valid, hence *Dollinera* Endl. is invalid by inclusion of *Ototropis* in the synonymy of *Dollinera*.

*Desmodium* section *Dollinera* Benth., though the name might be derived from *Dollinera* Endl., is irrelevant from the genus *Dollinera* Endl., because Bentham (1852) published the section without citation of *Dollinera* Endl. nor *Dollinera sambuensis* Endl. that is the first species of the genus published by Endlicher in 1841. Bentham (1852) cited five species in the section including *Desmodium multiflorum* DC. We regard, therefore, the name *Dollinera* was legitimately published by Bentham (1852) and select here *Desmodium multiflorum* DC. as the lectotype of the section, because this species is now recognized to be identical with *Dollinera sambuensis* Endl. that is the lectotype of the genus *Dollinera*. Later, Bentham (1865) adopted section *Dollinera* citing *Ototropis* Nees and *Dollinera* Endl. as synonyms, but did not cite his first section *Dollinera* published in 1852. Was Bentham excluding his 1852 section *Dollinera* from the 1865 section that was based on the genus *Dollinera* Endl.? We recognize, however, the Bentham's first section is indirectly cited in the second section as "Species 5, Indiae orientalis incolae. Bot. Mag. t. 2867, 2960 (Bentham 1865)". Bot. Mag. t. 2867 and t. 2960 show *Desmodium nutans* and *D. dubium*, respectively. Bentham cited the specific names in 1852, but these table numbers in 1865 without citation of each specific name. Although *Desmodium* sect. *Dollinera* (Endl.) Benth. has been accepted, sect. *Dollinera* Benth. is correct with priority from 1852.

An infrageneric system for subgen. *Dollinera* was proposed by Schindler (1926) and Ohashi (1971). Schindler (1926) recognized two sections: *Tillifolia* and *Floribunda*, whereas Ohashi (1971) four sections: *Dollinera*, *Kingiana*, *Sequax*, and *Siamensia*. Ohashi (1971) included *Phyllodium siamense* Schindl. in subgen. *Dollinera* as *Desmodium siamense* (Schindl.) Craib and accommodated the species in sect. *Siamensia*. The identity of the species remains ambiguous, hence we exclude the section and species from *Ototropis*. In the present work we revise Ohashi's (1971) system

excluding sect. *Siamensia*, and propose a new infrageneric system for the genus *Ototropis*, which is divided into four sections: *Ototropis*, *Hayataea* (new section), *Kingiana*, and *Sequax*. Section *Ototropis* is composed of three series: *Ototropis*, *Khasianae*, and *Tiliifoliae*.

### Taxonomic treatment

***Ototropis*** Nees, Index Seminum [Wroclaw/Breslau (Vratislav)] 1838: 3 (1839), adnot.

**Type:** *Ototropis sambuensis* (D. Don) Nees, Index Seminum [Wroclaw/Breslau (Vratislav)] 1838: 2 (1839) (= *O. multiflora* (DC.) H. Ohashi & K. Ohashi).

Etymology: *Ototropis* is composed from Greek *otos* “an ear” and *tropis* “petal”.

*Tetranema* Sweet, Hort. Brit. ed. 2 (1830) 149. Type: *T. nutans* (Hook.) Sweet, nom. rej. [Earlier homonym of *Tetranema* Benth., nom. consv.].

“*Dollinera* Endl.”, Gen. 1285 (1840), nom. superfl.; Walp., Rep. Bot. Syst. 1: 736 (1842).

*Desmodium* sect. *Dollinera* Benth. in Miq., Pl. Jungh. 225 (1852), adnot. Type: *Desmodium multiflorum* DC.; Benth. in Benth. & Hook. f., Gen. Pl. 1: 520 (1865), ut “(Endl.) Benth.”; Baker in Hook. f., Fl. Brit. Ind. 2: 166 (1876), p.p., excl. sp. cit. *D. oblongum* & *D. oblatum*.

*Desmodium* sect. *Heteroloma* Benth. subsect. *Laxiflora* Benth. in Miq., Pl. Jungh. 224 (1852), adnot., p.p., incl. *D. sequax* & *D. megaphyllum*; excl. *D. wightii* & *D. walkeri*.

*Desmodium* [unranked] *Heteroloma* (Benth.) Baker in Hook. f., Fl. Brit. India 2: 168 (1876), p. p., incl. *D. sequax*; cet. excl.

*Desmodium* subgen. *Dollinera* (Benth.) Schindl. in Repert. Spec. Nov. Regni Veg. 22: 262 (1926), ut “(Endl.) Schindl.”; H. Ohashi in H. Hara, Fl. E. Himal. 2: 260 (1971), p.p., excl. sect. *Siamensia*.

### Infrageneric taxa of *Ototropis*

(1) sect. *Ototropis*

(1-1) ser. *Ototropis*

(1-2) ser. *Khasianae* (Schindl.) H. Ohashi & K. Ohashi

(1-3) ser. *Tiliifoliae* (Schindl.) H. Ohashi & K. Ohashi

(2) sect. *Hayataea* H. Ohashi & K. Ohashi

(3) sect. *Kingianae* (H. Ohashi) H. Ohashi & K. Ohashi

(4) sect. *Sequax* (H. Ohashi) H. Ohashi & K. Ohashi

### Key to the sections, series and species of *Ototropis*

1. Legumes dehiscent along abaxial suture; keel-petals as long as wings; calyx-tube shorter than lateral lobes [sect. *Kingianae*] ..... *O. kingiana*
1. Legumes articulate, each article falling apart at joints; keel-petals usually longer or shorter than wings; calyx-tube as long as or longer than lateral lobes ..... 2
2. Loments moniliform, densely ferruginous or brown hooked hairy; seeds less than 2 mm in size; adaxial calyx-lobes distinctly 2-toothed; stipules linear [sect. *Sequax*] ..... *O. sequax*
2. Loments linear to narrowly oblong, adaxial sutures less notched than abaxial, hair not as above, usually with both hooked and straight hairs; adaxial calyx-lobes entire or slightly 2-toothed; stipules narrowly ovate-triangular .  
..... 3
3. Keel-petals distinctly longer than wings, conspicuously mucronate; calyx longest among species of the genus, 6–8 mm long, abaxial lobe longer than lateral ones [sect. *Hayataea*] ..... *O. hayataea*
3. Keel-petals not longer than wings, acute or obtuse, rarely slightly mucronate; calyx less than 6 mm long, abaxial lobe nearly as long as lateral ones [sect. *Ototropis*] ..... 4
4. Bracteoles present [ser. *Tiliifoliae*] ..... 5
4. Bracteoles absent ..... 9
5. Loments with hooked hairs, rarely glabrous; wings incurved, distinctly longer (2.5–4 mm) than keel-petals; stipules 12–16 mm long .....  
..... *O. megaphylla*
5. Loments without hooked hairs; wings almost straight, longer (0.5–1.5 mm) than keel-petals; stipules usually 4–10 mm long ..... 6
6. Terminal leaflet narrowly ovate (4–6 times

- longer than broad), attenuate, glabrous; loment glabrous; standard elliptic, up to 6 mm wide ..... *O. stenophylla*
6. Terminal leaflet variable but basically normally to broadly rhombic-ovate (less than 3 times longer than broad), obtuse to acute, rarely acuminate; loment pubescent, rarely puberulent; standard broadly elliptic to orbicular, more than 8 mm wide ..... 7
7. Inflorescences terminal, very copiously branched large panicle ..... *O. yunnanensis*
7. Inflorescences terminal and axillary, panicle, not so copious as above ..... 8
8. Loment sparsely puberulent, often nearly glabrescent; terminal leaflet smaller (1.5–4 cm long); pedicels filiform; flowers ca. 10 mm long, apex of standard rounded; branchlets subglabrous ..... *O. calliantha*
8. Loment pubescent or sometimes puberulent; terminal leaflet larger (usually 4–7 cm long); pedicels slender; flowers 10–15 mm long, apex of standard emarginate; branchlets pubescent ..... *O. elegans*
9. Secondary bracts absent; primary bracts early deciduous; calyx-lobes almost equal length [ser. *Khasianae*] ..... *O. khasiana*
9. Secondary bracts present; primary bracts covering young parts of inflorescences; abaxial calyx-lobes longer than others [ser. *Ototropis*] ..... 10
10. Pods stalked, (2–)3–4-jointed; articles 8–11 mm long, 4–5 mm wide; terminal leaflet obovate or elliptic, cuneate; stipules early deciduous, triangular ..... *O. conferta*
10. Pods sessile, 4–10-jointed; articles 3–7 mm long, 3–4 mm wide; terminal leaflet elliptic or ovate, not cuneate; stipules rather persistent, narrowly ovate ..... 11
11. Leaflets narrowly elliptic, apex acuminate; branchlets terete; loment (6–)8–9(–10)-jointed ..... *O. kulhaitensis*
11. Leaflets elliptic or obovate, apex obtuse or acute, rarely acuminate; branchlets sharply angular; loment 4–7(–8)-jointed. .... 12
12. Loment glabrous; abaxial surfaces of leaflets tomentose, hence inconspicuously

- reticulate-veined; stipules 12–15 mm long; stipels 3–6 mm long ..... *O. amethystina*
12. Loment densely appressed sericeous; abaxial surfaces of leaflets densely sericeous, conspicuously reticulate-veined; stipules less than 11 mm long; stipels 1–3 mm long .....  
..... *O. multiflora*

### Enumeration of the taxa of *Ototropis* with their synonyms and bibliography

Gen. *Ototropis* Nees

(1) Sect. *Ototropis*

[*Meibomia* sect. *Dollinera* (Endl.) Kuntze in Post, Lex. Gen. Phan. 356 (1903), nom. nud.]

*Desmodium* sect. *Floribundae* Schindl. in Repert. Spec. Nov. Regni Veg. 22: 268 (1926). Type: *Desmodium floribundum* (D. Don) Sweet.

*Desmodium* subgen. *Dollinera* sect. *Dollinera* (Endl.) H. Ohashi in H. Hara, Fl. E. Himal. 2: 263 (1971).

(1-1) Ser. *Ototropis*

*Desmodium* subgen. *Dollinera* sect. *Dollinera* subsect. *Dollinera* (Endl.) H. Ohashi in H. Hara, Fl. E. Himal. 2: 263 (1971).

1. *Ototropis multiflora* (DC.) H. Ohashi & K. Ohashi, comb. nov. [Fig. 1A]

*Desmodium multiflorum* DC. in Ann. Sci. Nat. (Paris) 4: 101 (Jan. 1825); Benth. in Miq., Pl. Jungh. 225 (1852), adnot.; H. Ohashi in H. Hara, Fl. E. Himal. 2: 272 (1971), for further synonyms and bibliography; T. C. Huang & H. Ohashi in Fl. Taiwan ed. 2, 3: 259 (1993); H. Ohashi in Morat, Fl. Camb. Laos Vietn. 27: 98, pl. 21 (1994); P. H. Huang & H. Ohashi in Fl. China 10: 276 (2010).

*Hedysarum sambuense* D. Don, Prodr. Fl. Nepal. 243 (26 Jan.–Feb. 1825).

*H. floribundum* D. Don, Prodr. Fl. Nepal. 244 (Feb. 1825).

*Desmodium sambuense* (D. Don) DC., Prodr. 2: 335 (Nov. 1825).

*Desmodium floribundum* (D. Don) Sweet ex G. Don, Gen. Hist. 2: 297 (1832).

*Ototropis sambuensis* (D. Don) Nees, Index Seminum [Wroclaw/Breslau (Vratislav)] 1838: 2

(1839).

*Dollinera sambuensis* (D. Don) Endl. in Rep. **1**: 736 (1842).

Distr. N.W. & N.E. India, Nepal, Sikkim, Bhutan, Myanmar, Thailand, Laos, Vietnam, China and Taiwan.

2. *Ototropis amethystina* (Dunn) H. Ohashi & K. Ohashi, comb. nov.

*Desmodium amethystinum* Dunn in Gard. Chron. ser. 3, **32**: 210 (1902); H. Ohashi in H. Hara, Fl. E. Himal. **2**: 264 (1971); P. H. Huang & H. Ohashi, Fl. China **10**: 276 (2010).

Distr. Thailand and China.

3. *Ototropis conferta* (DC.) H. Ohashi & K. Ohashi, comb. nov.

*Desmodium confertum* DC. in Ann. Sci. Nat. **4**: 101 (Jan. 1825); H. Ohashi in H. Hara, Fl. E. Himal. **2**: 266 (1971) for further synonyms and bibliography.

*D. likabaliu* Bennet & Chandra in J. Econ. Tax. Bot. **3**: 993 (1982), syn. nov.

Distr. Nepal, Sikkim, Bhutan and E. India (Assam).

4. *Ototropis kulhaitensis* (Prain) H. Ohashi & K. Ohashi, comb. nov.

*Desmodium kulhaitense* C. B. Clarke ex Prain in J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. **66**: 395 (1897); H. Ohashi in H. Hara, Fl. E. Himal. **2**: 266 (1971).

Distr. Sikkim.

(1-2) Ser. *Khasianae* (Schindl.) H. Ohashi & K. Ohashi, comb. nov.

*Desmodium* subgen. *Dollinera* sect. *Khasiana* Schindl. in Repert. Spec. Nov. Regni Veg. **22**: 268 (1926). Type: *D. khasianum* Prain.

*Desmodium* subgen. *Dollinera* sect. *Dollinera* subsect. *Khasiana* (Schindl.) H. Ohashi in H. Hara, Fl. E. Himal. **2**: 275 (1971).

5. *Ototropis khasiana* (Prain) H. Ohashi & K. Ohashi, comb. nov.

*Desmodium khasianum* Prain in J. Asiat.

Soc. Bengal, Pt. 2, Nat. Hist. **66**: 395 (1897); H. Ohashi in H. Hara, Fl. E. Himal. **2**: 275 (1971).

Distr. Nepal, Sikkim, Bhutan and E. India (Assam).

(1-3) Ser. *Tiliifoliae* (Schindl.) H. Ohashi & K. Ohashi, comb. nov.

*Desmodium* subgen. *Dollinera* sect. *Tiliifolia* Schindl. in Repert. Spec. Nov. Regni Veg. **22**: 263 (1926). Type species: *D. elegans* DC.

*Desmodium* subgen. *Dollinera* sect. *Dollinera* subsect. *Tiliifolia* (Schindl.) H. Ohashi in H. Hara, Fl. E. Himal. **2**: 278 (1971).

6. *Ototropis elegans* (DC.) H. Ohashi & K. Ohashi, comb. nov.

*Desmodium elegans* DC. in Ann. Sci. Nat. **4**: 100 (Jan. 1825); H. Ohashi in H. Hara, Fl. E. Himal. **2**: 278 (1971), for further synonyms and bibliography; P. H. Huang & H. Ohashi, Fl. China **10**: 276 (2010).

*Hedysarum tiliifolium* D. Don, Prodr. Fl. Nepal. 244 (Feb. 1825), ut “*tiliaefolium*”.

*Desmodium tiliifolium* (D. Don) Wall., Numer. List n. 5707 (1831–32), ut “*tiliaefolium*”; G. Don, Gen. Hist. **2**: 297 (1832); Schindl. in Repert. Spec. Nov. Regni Veg. **22**: 264 (1926).

Distr. Afghanistan, Pakistan, India (NW. & N. Bengal), Nepal, Sikkim, Bhutan, Myanmar and SW China.

*Ototropis elegans* is distributed widely in the Himalayan regions and shows an extreme range of morphological variations (Ohashi 1971). The species is differentiated into polymorphic forms in SW China, especially Yunnan and Sichuan from where many species and infraspecific taxa have been described, although they are regarded as identical with *Desmodium elegans* (Ohashi 1971, Huang and Ohashi 2010). The species is divided into the following taxa:

[Key to the subspecies and varieties of *O. elegans*]

1. Pods sparsely puberulent; terminal leaflet mostly narrowly ovate to ovate (2–3 times longer than broad), up to 2 cm wide; pedicels 13–22 mm long ..... subsp. *wolohoensis*
1. Pods pubescent and often puberulent; terminal

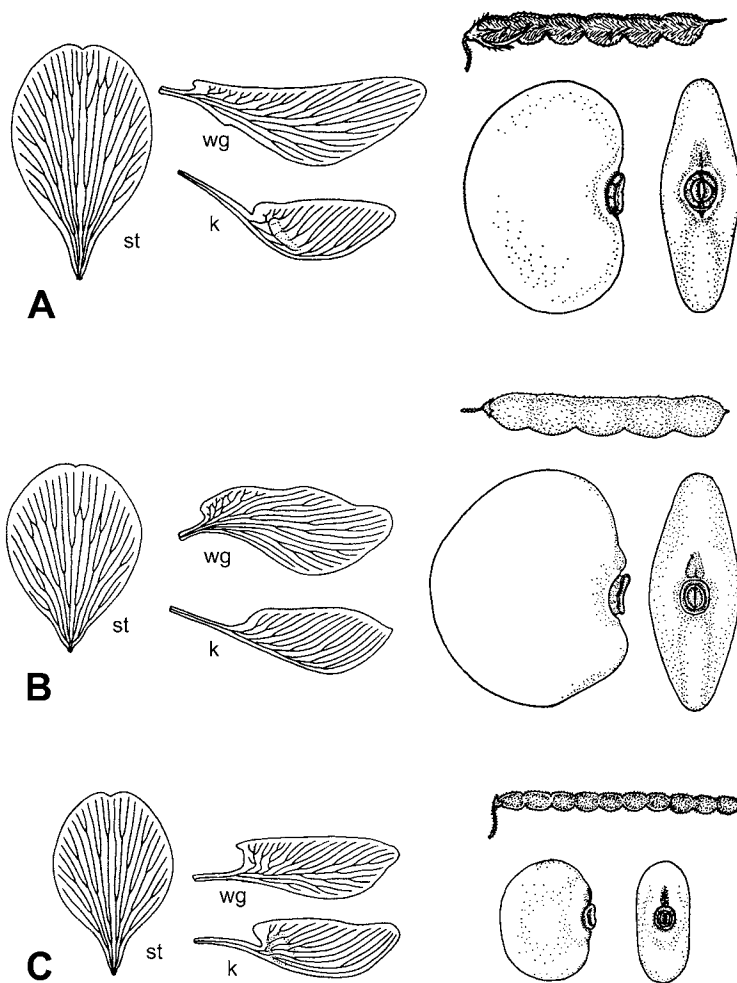


Fig. 1. Corollae (st: standard, wg: wing, k: keel-petal), loment and seeds (left: lateral surface, right: adaxial surface, upper: proximal side of loment) of sections in *Ototropis*. A. Sect. *Ototropis* (*O. multiflora*: corolla, Hayata s.n., TI; loment and seeds, Tagawa et al. T.1545, TI). B. Sect. *Kingiana* (*O. kingiana*: corolla, Kerr 9086, BK; loment and seeds, Sutheesorn 1991, TI). C. Sect. *Sequax* (*O. sequax*: corolla, Kaulback 409, TI; loment and seeds, Hara et al. 6301439, TI). Scale bar indicates 6 mm (petals), 15 mm (loment), 1.5 mm (seeds), modified from Ohashi (1971).

- leaflet basically normally to broadly rhombic-ovate, 2–5 cm wide; pedicel 4–10 mm long  
.....subsp. *elegans* (2)
- 2. Terminal leaflet nearly orbicular to very broadly obovate (0.7–1.2 times longer than broad), apex rounded or often mucronate; branchlets densely hairy with silver-gray hairs  
..... var. *nutans*
- 2. Terminal leaflet not as above (1.2–3 times longer than broad), apex usually acute or sometimes obtuse; branchlets sparsely to densely hairy with white or yellowish hairs 3
- 3. Abaxial surface of leaflets and loment spreading white tomentose and sericeous .....  
..... var. *handelii*
- 3. Abaxial surface of leaflets and loment usually

appressed pubescent ..... var. *elegans*

6-1. subsp. *elegans*

6-1-1. var. *elegans*

*Desmodium elegans* DC. var. *elegans*: H. Ohashi in H. Hara, Fl. E. Himal. **2**: 294 (1971); P. H. Huang & H. Ohashi, Fl. China **10**: 277 (2010), for further synonyms.

*D. garhwalensis* Dangwal & Gaur in J. Bombay Nat. Hist. Soc. **99**: 96, fig. 1 (2002) [Type. India. Nauti, Chamoli district, Garhwal Himalaya, Uttaranchal, 900 m. L. R. Dangwal 13512 A (GUH-holo.)], syn. nov.

Distr. Afghanistan, Pakistan, NW India, Nepal, Sikkim, Bhutan, Myanmar and China.

A white-flowered form of this species is *Ototropis elegans* subsp. *elegans* var. *elegans* f. *albiflora* (P. C. Li) H. Ohashi & K. Ohashi, comb. nov. (*Desmodium elegans* var. *albiflora* P. C. Li, Fl. Xizang. **2**: 892, 1985).

6-1-2. var. *handelii* (Schindl.) H. Ohashi & K. Ohashi, comb. nov.

*Desmodium handelii* Schindl. in Hand.-Mazz. in Anz. Akad. Wiss. Wien. Math.-Nat. **62**: 234 (1925).

*D. elegans* DC. var. *handelii* (Schindl.) H. Ohashi in H. Hara, Fl. E. Himal. **2**: 297 (1971); P. H. Huang & H. Ohashi, Fl. China **10**: 277 (2010).  
Distr. China (Yunnan, Szechuan).

6-1-3. var. *nutans* (Hook.) H. Ohashi & K. Ohashi, comb. nov.

*Desmodium nutans* Hook. in Bot. Mag. 55: t. 2867 (1828).

*D. elegans* DC. var. *nutans* (Hook.) H. Ohashi in H. Hara, Fl. E. Himal. **2**: 297 (1971).

*Hedysarum nutans* Graham in Edinb. New Philos. J. 173 (Apr.–June 1828).

Distr. NW. India and W. Nepal.

6-2. subsp. *wolohoense* (Schindl.) H. Ohashi & K. Ohashi, comb. nov.

*Desmodium wolohoense* Schindl. in Repert. Spec. Nov. Regni Veg. **21**: 1 (1925).

*D. elegans* DC. var. *wolohoense* (Schindl.) H.

Ohashi in H. Hara, Fl. E. Himal. **2**: 297 (1971); P. H. Huang & Ohashi, Fl. China **10**: 277 (2010).

*D. elegans* DC. subsp. *wolohoense* (Schindl.)

H. Ohashi in J. Jpn. Bot. **70**: 113 (1995).

Distr. China (Yunnan, Szechuan).

7. *Ototropis stenophylla* (Pamp.) H. Ohashi & K. Ohashi, comb. nov.

*Desmodium stenophyllum* Pampan. in Nuovo Giorn. Bot. Ital. n.s. **17**: 15, fig. 4 (1910); H. Ohashi in J. Jpn. Bot. **70**: 115 (1995); P. H. Huang & Ohashi, Fl. China **10**: 277 (2010).

*D. tiliifolium* (D. Don) Wall. var. *stenophyllum* (Pamp.) Schindl. in Bot. Jahrb. Syst. **54**: 60 (1916).

*D. elegans* DC. subsp. *stenophyllum* (Pamp.) H. Ohashi in H. Hara, Fl. E. Himal. **2**: 291 (1971).  
Distr. China (Endemic to Yunnan).

8. *Ototropis calliantha* (Franch.) H. Ohashi & K. Ohashi, comb. nov.

*Desmodium callianthum* Franch., Pl. Delavay. 173 (1890); P. H. Huang & Ohashi, Fl. China **10**: 277 (2010).

*D. elegans* DC. subsp. *callianthum* (Franch.) H. Ohashi in H. Hara, Fl. E. Himal. **2**: 291 (1971).  
Distr. Tibet and China (Yunnan, Szechuan).

9. *Ototropis megaphylla* (Zoll. & Moritzi) H. Ohashi & K. Ohashi, comb. nov.

*Desmodium megaphyllum* Zoll. & Moritzi in Natuur-Genesesk. Arch. Ned.-Indië. **3**: 58 & 77 (1846) [Type: Java. Junghuhn 144 (K)]; H. Ohashi in H. Hara, Fl. E. Himal. **2**: 299 (1971); H. Ohashi in Morat, Fl. Camb. Laos Vietn. **27**: 96 (1994); H. Ohashi in J. Jpn. Bot. **79**: 127 (2004) for further synonyms; P. H. Huang & H. Ohashi, Fl. China **10**: 278 (2010).

*Desmodium karenium* Kurz in J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. **45**(4): 228 & 232 (1877).

Distr. E. India (Assam), Myanmar, Thailand, Malaysia, Laos, Vietnam, Indonesia (Sumatera, Java, Maluku), and China (Yunnan).

*Ototropis megaphylla* is distributed south of *O. elegans*. These two species are similar, but the former is usually easily distinguishable

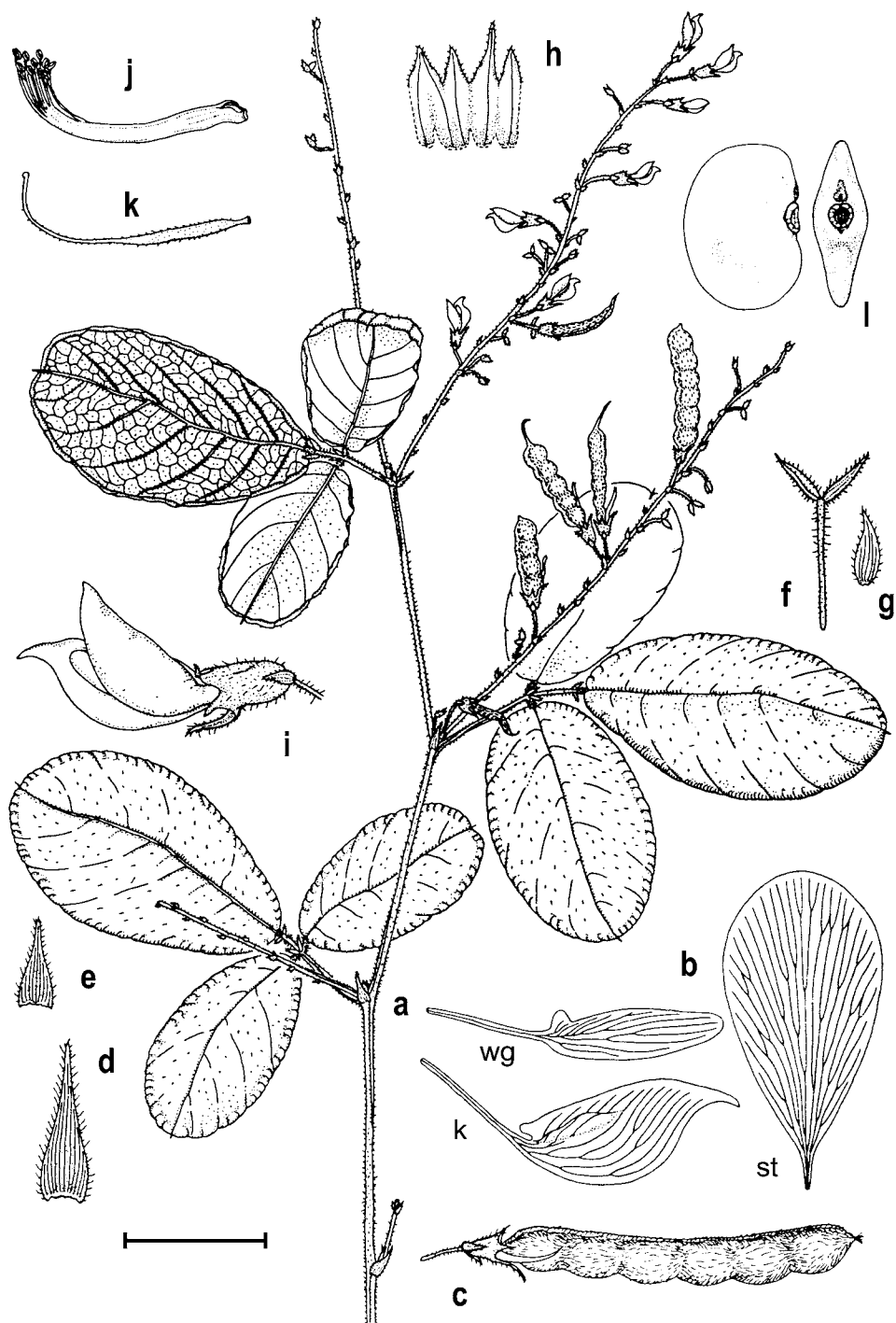


Fig. 2. *Ototropis hayatae*. a. Part of plant. b. Corolla (st: standard, wg: wing, k: keel-petal). c. Loment with filaments, calyx and bracteole. d. Primary bract. e. Secondary bract. f. Pedicel with bracteoles. g. Bracteole. h. Calyx opened, adaxial lobes (left). i. Flower. j. Monadelphous stamens. k. Pistil. l. Seed. (Hayata s.n., TI, holotype). Scale bar indicates a = 34 mm, b = 6 mm, c = 15 mm, d–g = 3.4 mm, h–k = 6 mm, l = 3 mm. Modified from Ohashi (1971).



from the latter by the terminal leaflet with acuminate to somewhat caudate apex. *Ototropis megaphylla* is sometimes similar to *O. sequax* in the shape of leaflets, but *O. sequax* has rhomboidal or obtrullate terminal leaflet with undulate upper margin. A variety of *O. megaphylla* is recognized as follows:

[Key to the varieties of *O. megaphylla*]

1. Abaxial surface of leaflets densely sericeous; pedicels more or less densely spreading and hooked hairy, 4–10 mm long; articles 6–7 × 5–6 mm, pubescent and minute hooked hairy  
..... var. *megaphyllum*
1. Abaxial surface of leaflets sparsely pubescent; pedicels nearly glabrous, 9–17 mm long; articles 8–9(–10) × 7–8 mm, nearly glabrous  
..... var. *glabrescens*

9-1. var. *megaphyllum*.

“*Desmodium prainii* Schindl.”, Repert. Spec. Nov. Regni Veg. **21**: 2 (1925), nom. illeg. superfl.

*D. megaphyllum* Zoll. & Moritzi var. *megaphyllum*: H. Ohashi in H. Hara, Fl. E. Himal. **2**: 301 (1971).

9-2. var. *glabrescens* (Prain) H. Ohashi & K. Ohashi, comb. nov.

*Desmodium megaphyllum* Zoll. & Moritzi var. *glabrescens* Prain in J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. **66**: 399 (1897); H. Ohashi in H. Hara, Fl. E. Himal. **2**: 300 (1971); P. H. Huang & H. Ohashi, Fl. China **10**: 278 (2010).

*D. prainii* var. *glabrescens* (Prain) Schindl. in Repert. Spec. Nov. Regni Veg. **21**: 3 (1925).

10. *Ototropis yunnanensis* (Franch.) H. Ohashi & K. Ohashi, comb. nov.

*Desmodium yunnanense* Franch., Pl. Delavay. 172 (1890); H. Ohashi in H. Hara, Fl. E. Himal. **2**: 304 (1971); P. H. Huang & H. Ohashi, Fl. China **10**: 278 (2010).

*D. praestans* Forrest ex W. W. Sm. in Notes Roy. Bot. Gard. Edinb. **10**: 28 (1917); H. Ohashi in J. Jpn. Bot. **70**: 114 (1995).

*D. rockii* Schindl. in Repert. Spec. Nov.

Regni Veg. **22**: 266 (1926); H. Ohashi in H. Hara, Fl. E. Himal. **2**: 301 (1971).

*D. yunnanense* Franch. subsp. *praestans* (Forrest) H. Ohashi in H. Hara, Fl. E. Himal. **2**: 307 (1971).

Distr. China (Yunnan, Szechuan).

(2) Sect. *Hayataea* H. Ohashi & K. Ohashi, sect. nov.

Sectio insignis calyce suis longissimo (6–8 mm longis), carinis alarum superantibus apparenter mucronatis, a sectionibus cetera nobis notis bene distincta.

**Type:** *Ototropis hayatae* (H. Ohashi) H. Ohashi & K. Ohashi.

This new section is distinct among the genus in having a longer calyx (6–8 mm long against less than 5(–5.5) mm in the other sections) and mucronate keel-petals that are longer than the wings.

11. *Ototropis hayatae* (H. Ohashi) H. Ohashi & K. Ohashi, comb. nov. [Fig. 2]

*Desmodium hayatae* H. Ohashi in H. Hara, Fl. E. Himal. **2**: 308, fig. 45 (1971).

Distr. Thailand.

(3) Sect. *Kingiana* (H. Ohashi) H. Ohashi & K. Ohashi, comb. nov. [Fig. 1B]

*Desmodium* subgen. *Dollinera* sect. *Kingiana* H. Ohashi in H. Hara, Fl. E. Himal. **2**: 308 (1971), ut “*Kingianae*”, p. p., excl. *D. hayatae*.

The section *Kingiana* is emended here from the previous circumscription by exclusion of *Ototropis hayatae*. One of the diagnoses of this section is in having legumes dehiscent along abaxial suture, although the pericarp is jointed at the nodes as in *Codariocalyx* and a few species of *Desmodium*.

12. *Ototropis kingiana* (DC.) H. Ohashi & K. Ohashi, comb. nov.

*Desmodium kingianum* Prain in J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. **66**: 398 (1897); H. Ohashi in H. Hara, Fl. E. Himal. **2**: 311 (1971); H. Ohashi in Morat, Fl. Camb. Laos Vietn. **27**: 93,

pl. 18: 4–6 (1994).

*Desmodium pseudarthrioides* Schindl. in Bot. Jahrb. Syst. **54**: 61 (1916).

Distr. Myanmar, Thailand, Cambodia and Laos.

(4) Sect. *Sequax* (H. Ohashi) H. Ohashi & K. Ohashi, comb. nov. [Fig. 1C]

*Desmodium* subgen. *Dollinera* sect. *Sequax* H. Ohashi in H. Hara, Fl. E. Himal. **2**: 314 (1971).

**Type:** *Desmodium sequax* Wall.

13. *Ototropis sequax* (Wall.) H. Ohashi & K. Ohashi, comb. nov.

*Desmodium sequax* Wall., Pl. Asiat. Rar. **2**: 46, t. 157 (1831); H. Ohashi in H. Hara, Fl. E. Himal. **2**: 315 (1971), for further synonyms; Huang & H. Ohashi in T. C. Huang & al., Fl. Taiwan ed. 2, **3**: 265, pl. 129 (1993); H. Ohashi in Morat, Fl. Camb, Laos Vietn. **27**: 95, pl. 20 (1994); H. Ohashi in J. Jpn. Bot. **79**: 129 (2004); P. H. Huang & H. Ohashi, Fl. China **10**: 278 (2010).

*Dollinera sequax* (Wall.) Schindl. ex Hochr. in Candollea **6**: 483 (1936).

Distr. India, Nepal, Sikkim, Bhutan, Myanmar, Thailand, Laos, Vietnam, China, Taiwan, Indonesia and Papua New Guinea.

We wish to thank Dr. T. Kajita of Chiba University for his information on unpublished data from molecular analyses of *Desmodieae* and Dr. K. Gandhi of Harvard University for his examination of the validity of "*Ototropis microphyllus* Benth."

大橋広好<sup>a</sup>, 大橋一晶<sup>b</sup>: マメ科フジバナマメ属 *Ototropis* の設立

最近 Flora of China, Flora Malesiana, および Flora of North America の地域のヌスビトハギ連を研究してきた結果, これまでシバハギ属 *Desmodium* に含まれていた *Dollinera* 亜属 (Schindler 1926, Ohashi 1971, 1973) を *Ototropis* として独立属と認めることとした. *Desmodium* とは外部形態と花粉形態で異なっている.

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さらに, *Ototropis* は分子系統解析から単系統であると推測される. 形態上の基本的な違いは円錐花序を持ち, 各節に 3–7 花をつけ, 小苞片があり, 翼弁は竜骨弁よりも長く, 単体雄蕊をもつことなどである. 花粉形態は表面模様と foot-layer が *Desmodium* とは異なる.

*Ototropis* は 1839 年に Nees がそれ以前の *Desmodium*

*sambuense* (D. Don) DC. (1825) を *Ototropis sambuensis* (D. Don) Nees と別属にしたことに始まり、Endlicher (1840) は属名を *Dollinera* としたが、その後別属説は生かされなかった。しかし、1960 年代に至るまでにこの種の近縁種が次第に記載されてきて多数が知られるに至り (Ohashi 1971, 1973), 今日では上記のような違いも明らかとなった。本研究では *Ototropis* に 13 種 1 亜種 3 変種 1 品種を認め、それらを新たに 4 節に分け、その一つの sect. *Ototropis* を 3 列に分類した。また、節・列・種に対する検索表と 2 種 *O. elegans* と *O. megaphyllum* についてはそれぞれ種内分類群に対する検索表とを作製した。

属名 *Ototropis* はギリシャ語由来で“otos”「耳」+ “tropis”「花卉」から命名された。和名は台湾にも分布するタイプ種 *O. multiflora* に対して (当時は *Desmodium floribundum* とされていた) 早田文蔵の命名したフジバナマメを採用した。フジに似た花をつける豆「藤花豆」の意であると思われる。フジは蝶形花をもつマメ科植物を象徴する意味である。現在の本種の台湾名は「多花山蚂蝗」で、「多花のヌスビトハギ」を意味する。

この属はアフガニスタンからパキスタン、インド、

ネパール、ブータンにわたるヒマラヤ地域から中国大陸および東南アジアから台湾の山地に分布する。中国の雲南、四川と周辺には 8 種 3 変種 1 品種がある。この地域は他の地域に比べると分類群の数も各種類の形態的変異も著しく多様であり、フジバナマメ節 sect. *Ototropis* の分布の中心である。一方、東南アジア (ニューギニアまで) から台湾には別の節に属する sect. *Hayataea*, *Kingiana*, *Sequax* が分布し、ヒマラヤー中国大陸地域と対照的である。日本には *Ototropis* は自生しない。しかし、1990 年頃に *O. elegans* (DC.) H. Ohashi & K. Ohashi var. *elegans* f. *elegans* が愛媛県西条市林道笹ヶ峰線道路の法面に帰化して採集されている。この植物が採集者の自宅で栽培されていたものに基づいてハナヌスビトハギと命名した (大橋広好・伊藤隆之 2003. マメ科の新帰化植物ハナヌスビトハギ. 植物研究雑誌 78: 48-50)。この帰化品は中国からの移入と推定される。最近ではハナヌスビトハギの生品が園芸店で販売されているようになった。多分原産地は中国であろう。

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