

A synopsis of the genus *Uraria* (Leguminosae-Papilionoideae) in Thailand

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ABSTRACT. Taxonomic study of genus *Uraria* Desv. (Leguminosae-Papilionoideae) in Thailand is revised. Fifteen species are recognised. *Uraria acaulis* Schindl., *U. campanulate* (Benth.) Gagnep., *U. cochinchinensis* Schindl., *U. cordifolia* Wall., *U. oblonga* (Wall. ex Benth.) H. Ohashi & K. Ohashi and *U. rotundata* Craib are lectotypified and *U. pierrei* Schindl. is reduced to be a synonym of *U. rotundata*. A key to the species, generic description, distributional and ecological data and specimens examined are presented.

KEYWORDS: Desmodieae, Fabaceae, taxonomy, *Urariopsis*

INTRODUCTION

Uraria Desv. is a small genus of herbs or small shrubs with pink, purple or violet flowers. It consists of *ca.* 20 species and is distributed in the Old World tropics with the center of distribution in India to Indo-China (Lewis *et al.*, 2005; Mabberley, 2008). Some species are used for medicine such as *Uraria crinita* (L.) Desv. ex DC. (Chamratpan & Homchuen, 2005; Pholhiamhan *et al.*, 2018) and *U. lagopodioides* (L.) Desv. ex DC.

(Chansuvananch *et al.*, 2004), some can be ornamental as it has a large inflorescence with beautiful flowers *viz.* *U. crinita* (Suvatti, 1978). The genus is characterised by very long and narrow calyx lobes and the pod is divided transversely into rounded segments each folded over the other. These pods' character was found in the related genera, *Christia* Moench. and *Urariopsis* Schindl. The genus is similar to *Christia* by the

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arrangement of the loment in a zigzag pattern. The *Christia* differs from *Uraria* and *Urariopsis* by persistent dry-membranous calyx on the pods (Thuân *et al.*, 1987).

The genus was established by Desvaux (1813) based on *Hedysarum pictum* Jacq. (= *U. picta* (Jacq.) Desv. ex DC.). It is composed of four species; *U. crinita* (= *H. crinitum* L.), *U. lagopodioides* (= *H. lagopodioides* L.), *U. picta* (= *H. pictum*) and *U. cercifolia* Desv. (= *U. lagopodioides*). After that, Schindler (1916) described the genus *Urariopsis* which was later reduced to be a synonym of *Uraria* by the similarity of pod shape (De Haas *et al.*, 1980). For taxonomic study in the tribe Desmodieae, some researchers supported the separation of the three genera (*Christia*, *Uraria* and *Urariopsis*) (Huang *et al.*, 2010), while others contended that *Urariopsis* should be reduced to *Uraria* (Thuân *et al.*, 1987; Ohashi *et al.*, 2006).

For the phylogenetic study, based on both nuclear ITS and nine chloroplast regions is supported the relationship the *Desmodium* group and the results show *Christia* species and *Uraria* species are different genera and *Desmodium oblongum* Wall. ex Benth. was transferred to *Uraria* as *U. oblonga* (Wall. ex Benth.) H. Ohashi & K. Ohashi. (Ohashi *et al.*, 2018a). In the recent molecular phylogenetic assessment of six species; *Christia vespertilionis* (L. f.) Bakh. f., *Urariopsis brevissima* Yen C. Yang & P.H. Huang, *U. lagopodioides*, and three species of other relative genera in the tribe Desmodieae by Zhao & Zhu (2020). The evidence from the study, which was based on complete chloroplast genomes and phylogenetic

analyses, showed that *Urariopsis* is a distinct genus rather than a synonym with *Uraria*. The number of the sample was so small, just a representative species in each genus. Therefore, our paper still accepts that *Urariopsis* is a synonym with *Uraria* as Thuân *et al.* (1987) and Ohashi *et al.* (2006) did.

For the species reported from Thailand, Craib (1928) made a list of Thai plants including 11 species of *Uraria*. Later, Suvatti (1978) and The Forest Herbarium (2014) reported nine species and 11 species, respectively. From 1987–2020, the taxonomy of *Uraria* was studied and *ca.* 16 species have been reported from Thailand (Thuân *et al.*, 1987; Tokaew & Chantaranothai, 2008, 2013; Ohashi *et al.*, 2018a; Tokaew *et al.*, 2020). In addition, *Uraria barbaticaulis* Iokawa, T. Nemoto, J. Murata & H. Ohashi is placed in *Sohmaea* as *S. barbaticaulis* (Iokawa, T. Nemoto, J. Murata & H. Ohashi) H. Ohashi & K. Ohashi by morphological characteristics and molecular analysis (Ohashi *et al.*, 2018b). The species is not included here because no key to the species and details of the genus are available for Thailand. Therefore, this study will provide preliminary work on the genus for Thailand.

MATERIALS AND METHODS

This study was based on information from fieldwork in Thailand as well as types and herbarium specimens kept at AAU, ABD, BCU, BK, BKF, BM, CMU, CMUB, E, K, KKU, KYO, PBM, PSU, QBG, TCD and TI. Downloaded high-resolution images were examined on virtual herbaria of A, C, G,

MBK and P, and specimens available on JSTOR website (<https://plants.jstor.org>) (herbarium acronyms follow Thiers, 2023). Nearly all specimens cited here have been seen, those that have not been seen are indicated by *n.v.* The citation of authors of plant names follow Brummitt & Powell (1992).

TAXONOMIC TREATMENT

URARIA

Desv., J. Bot. 1: 122. 1813. Type species: *Uraria picta* (Jacq.) Desv. ex DC.—*Doodia* Roxb., [Hort. Beng.: 98. 1814, *nom. nud.*] Fl. Ind. 3: 365. 1832, non R. Br., 1810.—*Urariopsis* Schindl. in Engl., Bot. Jahrb. Syst. 54: 51. 1916.

Perennial herbs, subshrubs or shrubs. *Leaves* subalternate or alternate, odd-pinnate, 3–7(–11)-foliolate or all 1-foliolate; leaflets opposite, stipellate; stipules free, acuminate, striate at base, persistent. *Inflorescences* terminal and/or axillary, elongated or spike-like racemes or panicles, with lax or dense

flowers. *Flowers* pinkish or purplish; pedicels becoming hooked distally; bracts ovate or lanceolate, acuminate, caducous. *Calyx* 4–5-lobed; lobes subulate-acuminate, spreading; two upper ones shorter, rarely entirely connate; three lower ones becoming by resupination, brownish green, pinkish green or green. *Corolla* 5, papilionaceous; standard petal orbicular or obovate, clawed and auriculate at base; wing petals falcate-oblong, adhering to keel, clawed; keel petals slightly incurved, obtuse, clawed. *Stamens* diadelphous; anthers uniform. *Ovary* sessile or shortly stipitate, with 1–10 ovules; style filiform, inflexed above; stigma terminal, capitate. *Pods* sessile, compressed, divided transversely into rounded segments, each folded over the other and becoming coiled into a flat circle, sometimes enclosed in the persistent calyx or rarely deeply indented along both sutures into heart-shaped segments (in *U. cordifolia* Wall.) and straight or slightly curved in *U. oblonga*. *Seeds* usually reniform, rarely globose or heart-shaped.

KEY TO THE SPECIES

1. Leaves with 1-foliolate; leaflets cordate to orbiculate, rarely ovate
 2. Leaflets cordate to orbiculate, lower surface scabrous
 3. Calyx with hooked hairs; pods with hairs **14. *U. rotundata***
 3. Calyx without hooked hairs; pods glabrous **1. *U. acaulis***
 2. Leaflets orbiculate to ovate, cordate, lower surface pilose
 4. Inflorescence racemose; calyx with hooked hairs **9. *U. lagopodioides***
 4. Inflorescence paniculate, rarely racemose; calyx without hooked hairs
 5. Inflorescence less than 17 cm long; calyx 3–4 mm long **5. *U. cochinchinensis***
 5. Inflorescence more than 17 cm long; calyx 4.5–6 mm long **6. *U. cordifolia***

1. Leaves (1–)3–9(– 11)-foliolate; leaflets elliptic, ovate, obovate, lanceolate, oblong or linear, rarely cordate
6. Inflorescence racemose; flowers dense
7. Stems prostrate; leaves 1–3-foliolate
8. Floral bracts broadly ovate or ovate, rarely narrowly ovate, apex caudate
- 9. U. lagopodioides**
8. Floral bracts lanceolate, apex acuminate
- 14. U. rotundata**
7. Stems erect; leaves 3–9(–11)-foliolate
9. Leaflets elliptic, orbiculate to ovate or oblong
10. Pedicels 3–7 mm long; calyx with hooked hairs
11. Floral bracts broadly ovate or ovate, rarely narrowly ovate, apex caudate
- 9. U. lagopodioides**
11. Floral bracts lanceolate, apex acuminate
- 14. U. rotundata**
10. Pedicels 10–14 mm long; calyx without hooked hairs
- 7. U. crinita**
9. Leaflets lanceolate, narrowly lanceolate, narrowly oblong or linear
12. Lower leaf surface scabrous; ovary with 2–5 ovules
13. Pods with 2 segments; pedicels 13–14 mm long **13. U. pseudoacuminata**
13. Pods with 3–4 segments; pedicels 8–10 mm long **2. U. acuminata**
12. Lower leaf surface pubescent; ovary with 6–8 ovules
14. Pods glabrous; pedicels 10–15 mm long **11. U. picta**
14. Pods with hairs; pedicels 18–20 mm long **3. U. balansae**
6. Inflorescence paniculate or racemose; flowers lax
15. Leaflets broadly elliptic, elliptic, broadly obovate, obovate, narrowly ovate, or ovate; pods without hooked hairs
16. Terminal leaflets elliptic or ovate, rarely obovate, broadly obovate, or broadly elliptic, lower surface pilose **8. U. lacei**
16. Terminal leaflets obovate or broadly obovate, lower surface tomentose
- 12. U. poilanei**
15. Leaflets oblong to narrowly lanceolate, ovate, elliptic or broadly elliptic, pods with hooked hairs
17. Calyx 4-lobed; pods straight or slightly curved **10. U. oblonga**
17. Calyx 5-lobed; pods folded
18. Calyx 2–3 mm long, with straight and bulbous-based straight hairs; pods with (4–)6–8 segments **15. U. rufescens**
18. Calyx 4–7 mm long, with straight hairs; pods with 3–4(–7)segments
- 4. U. campanulata**



FIGURE 1. Species of *Uraria* in Thailand: A. *U. acaulis*; B. *U. acuminata*; C. *U. campanulata*; D. *U. cordifolia*; E. *U. crinita*; F. *U. lagopodioides*; G. *U. pseudoacuminata*; H. *U. rotundata*; I. *U. rufescens*.

1. *Uraria acaulis* Schindl. in Engl., Bot. Jahrb. Syst. 54: 52. 1916. Type: Laos, Khammouane, Phon Thane, *Spire 167* (lectotype P, first-step designated by Thuân *et al.* (1987); second-step *Spire 167* [P02142540!], designated here; isolectotype P [P02142541!]). Fig. 1A.

Thailand.—NORTHERN: Mae Hong Son [Salawin NP, 26 Aug. 1998, *Phengklai et al. 11191* (BKF)]; Chiang Mai [Doi Suthep-Pui NP, 500 m alt., 13 Sep. 1989, *Maxwell 89-1079* (CMU)]; Chiang Rai [Mae Chan, 12 Dec. 1967, *Nimanong & Phusomsaeng 124* (K)]; Phayao [Doi Luang NP, 610 m alt., 23 Sep. 1997, *Petrmitr 102* (CMUB)]; Nan [Doi Tia, 1,100 m alt., 23 Jul. 1993, *Larsen et al. 43515* (AAU, PSU)]; Lamphun [Doi Khun Tan NP, 550 m alt., 30 Aug. 1994, *Maxwell 94-954* (BKF, CMUB)]; Lampang [Chae Son NP, 575 m alt., 10 Aug. 1996, *Panatkool 160* (CMUB)]; Mueang Pan, 380 m alt., 25 Aug. 2021, *Thammarong et al. 3058* (QBG); Ban Thung Sakae, 486 m alt., 26 Aug. 2021, *Thammarong et al. 3114* (QBG)]; Phrae [Mae Yom NP, 15 Oct. 1991, *Maxwell 91-909* (CMU)]; *ibid.*, 270 m alt., 24 Aug. 2021, *Thammarong et al. 3022* (QBG)]; Tak [Thi Lo Su waterfall, 19 Sep. 2003, *Mattapha 324* (KKU, QBG)]; Kamphaeng Phet [Mae Wong NP, 11 Jul. 1999, *Chayamarit 1521* (BKF)]; NORTH-EASTERN: Phetchabun [Nam Nao NP, 23 Sep. 1994, *Boyce 1037* (K)]; Loei [Phu Kradueng, 16 Jul. 1953, *Bunpheng 662* (BKF)]; Sakon Nakhon [Phu Phan NP, 3 Aug. 1997, *Leeratiwong 99-86* (KKU)]; EASTERN: Yasothon [Kut Chum, 5 Sep. 1998, *Chuakul WCK02425* (PBM)]; Ubon Ratchathani

[Sirindhorn, 6 Jul. 1997, *Chuakul WCK00267* (PBM)]; SOUTH-WESTERN: Kanchanaburi [Sai Yok, 170 m alt., 19 Dec. 1961, *Larsen 8822* (C)]; Phetchaburi [Nong Ya Plong forest, 10 Sep. 2002, *Puudjaa 1114* (BKF)]; Prachuap Khiri Khan [Huai Yang NP, 28 Feb. 1997, *Lamxay 40-060* (KKU)]; CENTRAL: Saraburi [Sam Lan waterfall, 100 m alt., 16 Dec. 2005, *Maxwell 05-705* (CMUB)]; Nakhon Nayok [no date, *Floto 7793* (C)]; Bangkok [1 Nov. 1931, *Kerr 20577* (BM-2 sheets, K)]; SOUTH-EASTERN: Chon Buri [Si Racha, 15 Nov. 1926, *Put 461* (K, TCD)].

Distribution.— Laos (type), Cambodia, Vietnam.

Ecology and Phenology.— In dry evergreen, mixed deciduous and dipterocarp-oak forests, 100–1,100 m alt. Flowering: August–September and fruiting: September–December.

Vernacular.— Hang krarok (หางกระรอก) (Ubon Ratchathani, Chon Buri), hang ma (หางหมา) (Mae Hong Son), khi non (ขี้หนอน) (Yasothon), phuang hang krarok (พวงหางกระรอก) (Saraburi), ya non (หญ้าหนอน) (Ubon Ratchathani).

Notes.— The distinguishing features of *U. acaulis* are unifoliate leaves with an orbiculate or nearly so, cordate or rounded-base leaflet, very dense raceme inflorescence and covered the whole plant with reddish brown hairs. Thuân *et al.* (1987) designated *Spire 167* as the lectotype of *U. acaulis*. The P herbarium harbours two Spire's collections *viz.* P02142540 and P02142541. Therefore, the P02142540 is designated here as the

second-step lectotype because its leaves are more complete than another one, the other is the isolectotype.

2. *Uraria acuminata* Kurz, J. Asiat. Soc. Bengal. Pt. 2, Nat. Hist. 45(4): 235. 1877. Type: Myanmar [Burma], Pegu and Martaban, Kurz *s.n.* (holotype K, *n.v.*). Fig. 1B.

Thailand.—NORTHERN: Mae Hong Son [500–600 m alt., 9 Sep. 1974, *Larsen & Larsen 34313* (AAU)]; Chiang Mai [Doi Chiang Dao WS, 500–600 m alt., 11 Nov. 1989, *Maxwell 89-1388* (CMU)]; Doi Suthep, 610 m alt., 3 Sep. 1910, *Kerr 1367* (K)]; Si Lanna NP, 500 m alt., 21 Sep. 1995, *Larsen et al. 46792* (AAU)]; Chiang Rai [Pong Phrabat waterfall, 20 Nov. 2007, *Tokaew & Chantaranothai 423* (KKU)]; Lampang [Chae Son NP, 550 m alt., 25 Oct. 1996, *Panatkool 104* (CMUB)]; Uttaradit [Nam Pat, Huai Mun, 1,630 m alt., 31 Oct. 2019, *Thammarong et al. 1054* (QBG)]; Tak [Thi Lo Su waterfall, 18 Nov. 2015, *Tokaew 917* (KKU)]; Sukhothai [Mueang Kao, 5 Nov. 1971, *Maxwell 71-715* (AAU, BK)]; Phitsanulok [Thung Salaeng Luang NP, *S.P. et al. 90* (BKF)]; NORTH-EASTERN: Loei [Phu Kradueng, *Bunpheng 134* (BKF); *ibid.*, 8 Aug. 1957, *Bunpheng 597* (BKF)]; Phu Luang WS, 29 Sep. 1990, *Chantaranothai & Parnell 90/455* (KKU)]; EASTERN: Chaiyaphum [Phu Khiao, Thung Kamang, 600–700 m alt., 4 Aug. 1972, *Larsen & Larsen 31388* (AAU)]; Ubon Ratchathani [Khong Chiam, *Grajay 387* (KKU)]; SOUTH-WESTERN: Kanchanaburi [Thong Pha Phum, Ban Tha Maduea, 200 m alt., 17 Nov. 2001, *Srapathat 63* (BCU)]; CENTRAL:

Saraburi [Muak Lek, 5 Sep. 1928, *Put 1891* (BK, K)]; Nakhon Nayok [28 Nov. 1953, *Kasin 494* (BK)]; Bangkok [Yan Nawa, 30 Aug. 1962, *Sirirugsa 33* (BCU)]; SOUTH-EASTERN: Rayong [Khao Chamao NP, 100 m alt., 7 Nov. 1994, *Maxwell 94-1177* (BKF, CMUB)]; Chanthaburi [125 m alt., 4 Oct. 1956, *Smitinand 3530* (BKF)]; PENINSULAR: Chumphon [Sawi, 6 Oct. 1990, *Herb. Trip 7* (BCU)]; Narathiwat [Budo-Su-ngai Padi NP, 100 m alt., 11 Oct. 1991, *Larsen et al. 42310* (AAU)].

Distribution.— Myanmar (type), Laos, Cambodia, Vietnam.

Ecology and Phenology.— In evergreen, dry evergreen, deciduous and dipterocarp forests, 0–1,630 m alt. Flowering: August–September and fruiting: September–December.

Vernacular.— Hang krarok (หางกระรอก), hang ma (หางหมา) (Sukhothai), salet phangphon (เสลดพังพอน) (Chiang Rai), ya hang suea (หญ้าหางเสือ) (Chiang Mai).

Notes.— *Uraria acuminata* is characterised by its pinnately compound leaf with (3–)5–9 lanceolate leaflets, dense raceme inflorescence, an ovary with 4(–5) ovules and pods covered with tiny straight hairs.

3. *Uraria balansae* Schindl. in Engl., Bot. Jahrb. Syst. 54: 53. 1916. Type: Vietnam, Tonkin, Mocha, *Balansa 4448* (lectotype P [P02142542!], designated by Tokaew *et al.* (2020); isolectotype P [P02142543!]).

Thailand.—PENINSULAR: Narathiwat [Sirindhorn waterfall, 7 May 2001,

Niyomdham 6492 (BKF); Hala-Bala WS, Ai Ka Po waterfall, 50 m alt., 23 Aug. 2006, *Poopath et al. 72* (A, BKF)].

Distribution.— Vietnam (type).

Ecology and Phenology.— Open area, 50 m alt. Flowering: August–September and fruiting: September–December.

Vernacular.— Hang suea halabala (หางเสือฮาลาบาลา).

Notes.— *Uraria balansae* is only known from the specimen's collection. The distinguishing features of this species are only 3-lanceolate leaflets and the pedicels up to 2 cm long at maturity. It differs from *U. acuminata* in the number of leaflets and ovary with 6–7 ovules.

4. *Uraria campanulata* (Benth.) Gagnep. in Lecomte, Fl. Indo-Chine 2: 543. 1920.— *Lourea campanulata* Benth. in Miq., Pl. Jungh.: 215. 1852. Type: Myanmar [Burma], *Wallich Numer. List 5685* (lectotype K [K001121725!], designated here; isolectotype K [K001121726!]).— *Christia campanulata* (Benth.) Thoth., Curr. Sci.: 178. 1963.— *Desmodium formosanum* Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 77. 1911 (Mat. Fl. Formos). Type: Taiwan [Formosa], Banchoryo, Juchori, Oct. 1905, *Nakahara 586* (n.v.).— *Uraria formosana* (Hayata) Hayata, Ic. Pl. Formos. 9: 26. 1920. Fig. 1C.

Thailand.— NORTHERN: Mae Hong Son [500–600 m alt., 10 Sep. 1974, *Larsen & Larsen 34341* (BKF, K)]; Chiang Mai [Doi Chiang Dao WS, 475 m alt., 11 Nov. 1989, *Maxwell 89-1396* (CMU)]; Doi Suthep,

335 m alt., 4 Nov. 1911, *Kerr 1553B* (BM, K, TCD); *ibid.*, 525 m alt., 14 Nov. 1987, *Maxwell 87-1427* (AAU, BKF); *ibid.*, 500 m alt., *Sørensen et al. 5675* (C)]; Chiang Rai [Doi Tung, Ban Laba, 1,250 m alt., 13 Oct. 2010, *van de Bult 1079* (BKF)]; Lampang [Chae Son NP, 550 m alt., 6 Dec. 1995, *Maxwell 93-1300* (BKF)]; NORTH-EASTERN: Phetchabun [Lom Kao, Nam Nao NP, 900 m alt., 18 Nov. 1973, *Maxwell 73-642* (AAU, BK); *ibid.*, 900 m alt., 18 Nov. 1973, *Maxwell 73-692* (AAU); *ibid.*, 26 Oct. 2007, *Tokaew & Chantaranothai 409* (KKU)]; Sakon Nakhon [Phu Phan NP, 100 m alt., 12 Dec. 1999, *Leeratiwong 99-115* (PSU); *ibid.*, 4 Oct. 2007, *Tokaew & Chantaranothai 394* (KKU)]; SOUTH-WESTERN: Kanchanaburi [750 m alt., 11 Nov. 1971, *van Beusekom et al. 3668* (BKF, C, K, KYO)]; CENTRAL: Saraburi [Sam Lan forest, 150 m alt., 27 Oct. 1973, *Maxwell 73-553* (AAU, BK)].

Distribution.— India, Myanmar (type), China, Taiwan, Cambodia, Vietnam.

Ecology and Phenology.— In dry evergreen and deciduous forests, 100–1,250 m alt. Flowering: October and fruiting: October–December.

Vernacular.— Luk lip ton (ลูกลิบตัน).

Notes.— *Uraria campanulata* is distinctive on account of its pods enclosed in fresh calyx and the calyx with straight hairs. The basionym of *U. campanulata* was described by Benth (1852) based on *Wallich Numer. List 5685* which has two sheets. The sheet K001121725 is designated here as the type because it has more floral parts.

5. *Uraria cochinchinensis* Schindl. in Fedde, Repert. Spec. Nov. Regni Veg. 21: 14. 1925. Type: Vietnam, Dong Nai, Mt. Dinh, Baria, *Pierre s.n.* [8.1866] (lectotype P, first-step by Thuân *et al.* (1987); second-step *Pierre s.n.* [8.1866] P [P02142544!], designated here; isolectotypes P [P02142545!, P02142546!, P02142547!]).— *U. collettii sensu* Gagnep. in Lecomte, Fl. Indo-Chine 2: 548. 1920, non Prain, 1897.— *Urariopsis brevissima* Yen C. Yang & P.H. Huang, Bull. Bot. Lab. N. E. Forest. Inst., Harbin 1980(8): 7. 1980. Type: China, Yunnan, *Mao 03142* (holotype PE [PE00022375!]).

Thailand.— NORTH-EASTERN: Sakon Nakhon [Phu Phan NP, 29 Jun. 2003, *Chantaranothai et al. s.n.* (KKU); *ibid.*, 13 Dec. 1978, *Leeratiwong 98-20* (KKU)]; EASTERN: Surin [15 Sep. 1984, *Chuakul WCK 00176/21* (PBM)]; Si Sa Ket [Cambodian border about 20 km south of Kantharalak, 210 m alt., 8 Oct. 1984, *Murata et al. T-49635* (AAU, BKF)].

Distribution.— China, Laos, Cambodia, Vietnam (type).

Ecology and Phenology.— In dry evergreen forest, 100–600 m alt. Flowering: September and fruiting: September–December.

Vernacular.— Hang ma (หางหมา) (Surin).

Notes.— *Uraria cochinchinensis* differs from *U. acaulis* in its cordate leaflets and curved downward panicle. *Pierre s.n.* [8.1866] at P herbarium is designated as the type of *U. cochinchinensis* by Thuân *et al.* (1987) but the collection has four sheets

[P02142544, P02142545, P02142546, P02142547]. The P02142544 is designated here as the second-step lectotype because the leaves of the whole plant are more complete than other sheets.

6. *Uraria cordifolia* Wall., Pl. Asiat. Rar. 1: 33, t. 37. 1830. Type: Myanmar [Burma], Irrawaddy, *Wallich Numer. List 5679A* (lectotype K [K001121706!], designated here; isolectotype K [K001121707!]).— *Uraria cordata* Wall., Numer. List [Wallich]: 5679A. 1831–1832, *nom. nud.*— *Urariopsis cordifolia* (Wall.) Schindl. in Engl., Bot. Jahrb. Syst. 54: 51. 1916.— *Uraria latifolia* Prain, J. Asiat. Soc. Bengal. Pt. 2, Nat. Hist. 66(2): 383. 1897. Type: Myanmar, Fort Stedman, *King's Collector s.n.* (holotype K). Fig. 1D.

Thailand.— NORTHERN: Mae Hong Son [730 m alt., 11 Jun. 1989, *Anderson 5982* (CMU); 450 m alt., 8 Jul. 1958, *Smitinand 4593* (BKF); Pha Bong, 500 m alt., 11 Aug. 2022, *Thammarong et al. 3885* (QBG)]; Chiang Mai [Chiang Dao, 6 Jun. 1957, *Khantachai 560* (BKF); Doi Inthanon, Mae Klang river, 450 m alt., 30 Jul. 1988, *Fukuoka T-62370* (BKF); Doi Saket, 575 m alt., 1 Jul. 1990, *Maxwell 90-712* (CMU); Doi Suthep, 426 m alt., 21 Jul. 1910, *Kerr 1275* (K); *ibid.*, 450 m alt., 4 Jul. 1987, *Maxwell 87-596* (CMU); Mae Soi, 475 m alt., 8 Sep. 1990, *Maxwell 90-946* (CMU); Mae Taeng, 900 m alt., 24 Aug. 1994, *BGO staff 1443* (QBG); Bo Luang near Ban Om Khut, 400 m alt., 6 Jul. 1968, *Larsen et al. 2217* (AAU, C, K)]; Chiang Rai [13 Jul. 1931, *Put 3990* (BM, C, K)]; Nan [Doi Cham On, 400–700 m alt., 6 Sep. 1995, *Larsen et al. 46129* (AAU)]; Lamphun

[Doi Khun Tan, 1,000 m alt., 15 Jul. 1993, *Maxwell 93-758* (BKF, CMUB); Pa Sang, 575 m alt., 30 Jun. 2004, *Maxwell 04-292* (CMUB)]; Lampang [Mae Mo, 300 m alt., 22 May 1919, *Kerr 3603* (BM, K); Ngao, 20 May 1954, *Amnat 60* (BKF); *ibid.*, 450 m alt., 8 Jun. 2001, *Niyomdham 6507* (BKF)]; Tak [Doi Kha, 700–800 m alt., 31 May 1973, *Geesink et al. 5628* (AAU, BKF, K); *ibid.*, 700 m alt., 22 Jul. 1973, *Murata et al. T-16815* (BKF, KYO)]; Sukhothai [between Sukhothai and Sawankhalok, 150 m alt., 28 Jul. 1973, *Murata T-17031* (BKF, KYO)]; NORTH-EASTERN: Phetchabun [Nam Nao, 760 m alt., 18 Sep. 1994, *BGO staff 1679* (QBG)]; Loei [Tha Li, 396 m alt., 7 Apr. 1915, *Winit 364* (BKF, K)]; Sakon Nakhon [Phu Phan NP, *Chantaranothai et al. 1188* (BKF, KKU); *ibid.*, 3 May 1999, *Leeratiwong 9951* (KKU)]; EASTERN: Nakhon Ratchasima [Ban Chum Saeng, 21 Mar. 1930, *Put 3072* (BM, C, K)]; SOUTH-WESTERN: Kanchanaburi [Wang Khanai, 100 m alt., 14 May 1927, *Marcan 2173* (BM, C, K); *ibid.*, 100 m alt., 14 May 1928, *Naroan 2173* (C, K)].

Distribution.— India, Myanmar (type), Laos, Cambodia, Vietnam, Indonesia.

Ecology and Phenology.— In dry evergreen, deciduous dipterocarp and dipterocarp-oak forests, 100–1,000 m alt. Flowering: August and fruiting: August–October.

Vernacular.— Hang ma (หางหมา) (Chiang Mai), non tai yak (หนอนตายอยาก) (Nakhon Ratchasima).

Notes.— *Uraria cordifolia* is distinct from other species of *Uraria* in having heart-

shaped pod segments. It is similar to *U. cochinchinensis* but differs by having an erect panicle.

Schindler (1916) described *U. cordifolia* based on *Wallich Numer. List 5679A* which has two samples on the same sheet, K001121706 and K001121707. The K001121706 is designated here as the lectotype because it has more leaves, morphological details and dissected floral parts.

7. *Uraria crinita* (L.) Desv. ex DC., Prodr. 2: 324. 1825.— *Hedysarum crinitum* L., Mant. Pl. 1: 102. 1767. Type: *Herb. Linn. no. 921.70* (lectotype LINN [LINN-HL921-70!], designated by Dy Phon & Adema (fide Turland & Jarvis, 1997).— *Doodia crinita* (L.) Roxb., [Hort. Beng.: 98. 1814, *nom. nud.*] Fl. Ind.: 3: 369. 1832.— *Uraria picta* Wight, Ic. Pl. Ind. Or. 2(1): pl. 411. 1840, *non* Desv. ex DC., 1825.— *U. macrostachya* Wall., Pl. Asiat. Rar. 2: 8, t. 110. 1831. Type: Wall., Pl. Asiat. Rar. 2: t. 110. 1831.— *U. crinita* var. *macrostachya* Wall., Pl. Asiat. Rar. 2: 8, t. 110. 1831. Fig. 1E.

Thailand.— NORTHERN: Chiang Mai [Doi Suthep, 335 m alt., 20 Aug. 1910, *Kerr 1330* (K, TCD)]; Chiang Rai [Mueang, Nang Yao, 20 Nov. 2007, *Tokaew & Chantaranothai 422* (KKU)]; Phayao [Chiang Klang, 12 Jul. 1913, *Put 3976* (BK, BM, K)]; Nan [Tha Wang Pha, 500 m alt., 14 Nov. 1993, *Larsen et al. 44344* (AAU)]; Lamphun [Doi Khun Tan NP, 550–700 m alt., 30 Aug. 1994, *Maxwell 94-952* (BKF, CMUB)]; Lampang [Doi Luang NP, 650 m alt., 5 Sep. 1997, *Maxwell 97-944* (BKF, CMUB)]; Mueang Pan, Ban Thung Sakae, 486 m alt., 26 Aug.

2021, *Thammarong et al.* 3089 (QBG)]; Phrae [Mae Yom NP, 400 m alt., 10 Dec. 1993, *Maxwell 93-1470* (CMUB)]; Tak [Fang forest, 25 Feb. 1958, *Sørensen et al.* 1660 (BKF, C)]; Sukhothai [23 Dec. 1993, *Chuakul WCK01821* (PBM)]; Phitsanulok [Phu Miang, *S.P. et al.* 75 (BKF, KYO-2 sheets)]; Kamphaeng Phet [Mae Wong NP, 170 m alt., 4 May 1999, *van de Bult 315* (BK, CMUB)]; Nakhon Sawan [Hua Wai, 28 Aug. 1931, *Put 4073* (BK, BM, K)]; NORTH-EASTERN: Phetchabun [Nam Nao NP, 280–350 m alt., 28 Oct. 1984, *Murata et al.* *T-51699* (BKF, KYO)]; Loei [Phu Luang WS, 11 Sep. 1966, *Bunchuai 1313* (BKF)]; Nong Khai [Phon Phisai, 23 Oct. 1973, *Smitinand 547* (BKF)]; Bueng Kan [Bung Khla, Khok Kwang, 12 Sep. 2015, *Tokaew 903* (KKU)]; Chet Si waterfall, 210 m alt., 11 Dec. 2019, *Thammarong et al.* 1117 (QBG)]; Sakon Nakhon [Phu Phan NP, 16 Oct. 1990, *Chantaranothai & Parnell 90/762* (K, KKU, TCD)]; Mukdahan [Nong Sung Nuea, 5 Oct. 2014, *Tokaew 892* (KKU)]; Kalasin [10 Oct. 1996, *Nantasan s.n.* (BKF-101795)]; Maha Sarakham [Kantharawichai, Kham Rieng, 4 Jul. 2014, *Tokaew 885* (KKU)]; Khon Kaen [Phu Wiang, 16 Sep. 1994, *BGO staff 1637* (QBG)]; EASTERN: Chaiyaphum [Mueang, 470 m alt., 14 Jan. 1970, *Lekagul & Phengklai 70* (BKF)]; Nakhon Ratchasima [Khao Yai, 290–350 m alt., 2 Oct. 1984, *Murata et al.* *T-37188* (BKF)]; Surin [Sirindhorn, 15 Sep. 1994, *Chuakul WCK00112* (PBM)]; Ubon Rachathani [Khong Chiam, Huai Yang, Ban Bahai, *Greijmans 187* (BKF, CMUB)]; SOUTH-WESTERN: Uthai Thani [Ban Rai, Khao Din Daeng, 29 May 1974, *Sutheesorn 8018* (BK)]; Kanchanaburi [Thong Pha Phum, Ban Tha Maduea, 200 m alt., 7 Oct. 1998, *Srapathat 26* (BCU)]; Ratchaburi [Mueang, 1 Oct. 1972, *Maxwell 72-410* (AAU, BK)]; Phetchaburi [Mae Prachan, 15 m alt., Sep. 1916, *Winit 362* (BKF, K)]; Prachuap Khiri Khan [Pa Klang Ao FP, 5–10 m alt., 20 Oct. 1994, *Jonganurak 128* (BCU)]; CENTRAL: Saraburi [Sam Lan forest, 150 m alt., 19 Nov. 1972, *Maxwell 73-669* (BK)]; Bangkok [2 Oct. 1920, *Kerr 4500* (BK, BM, K)]; SOUTH-EASTERN: Sa Kaeo [Aranyaprathet, 17 Oct. 1928, *Put 1994* (BK, BM, C, K)]; Chon Buri [Si Racha, 12 Oct. 1923, *Collins 999* (BM, K)]; Rayong [Klaeng, 29 Nov. 1964, *Sutheesorn 258* (BK)]; Chanthaburi [Khung Kraben bay, 12 Mar. 2000, *Chuakul WCK03506* (PBM)]; PENINSULAR: Chumphon [Tha Kradan hill, 25 Aug. 1995, *Khompat KK7* (PSU)]; Ranong [1.2 m alt., 31 Dec. 1918, *Kerr 16465* (BK, BM, K)]; Surat Thani [Khan Thuli peat swamp forest, 11 Sep. 1931, *Put 4205* (K)]; Phatthalung [Khao Pu-Khao Ya NP, 140 m alt., 15 Jul. 2000, *Middleton et al.* 478 (BKF)]; Trang [Thung Khai Botanical Garden, 40 m alt., 16 Dec. 1995, *Mauric 45* (BKF)]; Satun [Thale Ban, 100–150 m alt., 5 Nov. 1990, *Larsen et al.* 41140 (AAU, PSU)]; Songkhla [PSU campus, 0 m alt., 21 Jun. 1976, *Warosini 36* (PSU)]; Yala [Bannang Sata, Bo Hin forest, 14 Nov. 1959, *Ploenchit 1663* (BKF)]; Narathiwat [Hala-Bala, 17 Aug. 1997, *Puudjaa 418* (BKF)].

Distribution.— India, Myanmar, China, Taiwan, Laos, Cambodia, Vietnam, Malaysia.

Ecology and Phenology.— In evergreen, dry evergreen, deciduous, dipterocarp-oak

and dipterocarp forests, 0–1,000 m alt. Flowering: July–November and fruiting: September–December.

Vernacular.—Chang nga diao (ช้างงาเดี๋ยว) (Nakhon Ratchasima), hang krarok (ทางกระรอก) (Phrae, Sakon Nakhon, Khon Kaen, Surin, Chon Buri, Chanthaburi, Chumphon, Songkhla), hang ma chok (ทางหมาจอก) (Chiang Mai, Loei, Sakon Nakhon, Maha Sarakham, Kanchanaburi), hang sing (ทางสิงห์) (Surat Thani, Songkhla), hang suea (ทางเสื่อ) (Phrae, Loei), niao ma (เหินยวหมา) (Surat Thani), niao non (เหินยวหนอน) (Sa Kaeo), khi non (ขี้หนอน) (Chaiyaphum, Kalasin, Khon Kaen), non nai (หนอนหนาย) (Nong Khai, Sakon Nakhon), non yai (หนอนใหญ่) (Sakon Nakhon), rae ngae (แรง) (Yala), tong tit (ตองติต) (Sa Kaeo), ikong mia chae (อีกงเมี้ยแซ) (Yala), luk lip ton (ลูกลิบตัน) (Chiang Mai), ya hang maeo (หญ้าหางแมว) (Satun), ya hang suea (หญ้าหางเสื่อ) (Chiang Mai, Phayao, Phrae, Kanchanaburi, Ratchaburi, Chumphon).

Notes.—*Uraria crinita* is the most common species of the genus in Thailand. It has many features in common with *U. acuminata*. It differs in its oblong, elliptic and ovate leaflets, and its ovary with 4–7 ovules.

8. *Uraria lacei* Craib, Bull. Misc. Inform. Kew 1910(8): 276. 1910. Type: Myanmar, *Lace 4325* (lectotype K [K000858898!], designated by Thuân *et al.* (1987); isolectotypes E [E00301323!, E00813650!]). — *U. clarkei* Gagnep., Fl. Indo-Chine 2: 542. 1920. Type: Vietnam, *Balansa 4430* (holotype P [P02142551!]). — *U. pulchra* Hains., Bull. Misc. Inform. Kew 1921(8): 308. 1921. Type: India, *Haines 3962* (*n.v.*).

Thailand.—NORTHERN: Chiang Mai [Doi Suthep, 762 m alt., 27 Oct. 1912, *Kerr 2772* (BM, K, TCD)]; Chiang Rai [Mae Fa Luang, Thoet Thai, Ban Phraya Phrai Lao Ma, 1,100 m alt., 27 Nov. 2005, *Maxwell 05-659* (CMUB)]; Pari Tong, 1,000 m alt., 2 Dec. 1989, *Smitinand 89-44* (BKF); Phu Chi Fa NP, 15 Oct. 1999, *SC 353* (BKF)].

Distribution.—India, Myanmar (type), China, Laos, Vietnam.

Ecology and Phenology.—In evergreen and deciduous forests, 500–1,300 m alt. Flowering: October–November and fruiting: November–December.

Vernacular.—Tong tit bai khon (ตองติต ไบขน).

Notes.—*Uraria lacei* is characterised by having scabrous upper surface leaflets, pilose lower surface leaflets, obovate or ovate leaflets, paniculate inflorescences, and pods with bulbous-based straight hairs.

9. *Uraria lagopodioides* [*lagopoides*] (L.) DC., Prodr. 2: 324. 1825.—*Hedysarum lagopodioides* L., Sp. Pl.: 1198. 1753. Type: China, Yunnan, Mongtze, *Tanant s.n.* (neotype P [P02142552!], designated by Dy Phon & Adema (Turland & Jarvis, 1997); isotype P [P03103674!]). — *H. lagopoides* Burm. f., Fl. Indica: 168, t. 53, f. 2. 1768.—*Lespedeza lagopodoides* [*lagopoides*] Pers., Syn. Pl. 2: 318. 1807.—*Doodia lagopodioides* (L.) Roxb., [Hort. Beng.: 98. 1814, *nom. nud.*] Fl. Ind. 3: 366. 1832.—*D. alopecuroides* Roxb., [Hort. Beng.: 98. 1814, *nom. nud.*] Fl. Ind. 3: 368. 1832. Type: India (*n.v.*). — *Uraria alopecuroides* Sweet ex Wight, Ic. Pl.

Ind. Or. 1(15–16): t. 290. 1840.— *U. cercifolia* Desv., J. Bot. 1: 123, t. 5, f. 19. 1813, *nom. nud.* Type: *Macé s.n.* (P [P02756096!]).— *U. cylindracea* Benth., Fl. Austr. 2: 237. 1864. Type: *Brown s.n.* (P [P02756056!]). Fig. 1F.

Thailand.—NORTHERN: Mae Hong Son [Mae Sariang, 7 Jul. 1966, *Prayad 306* (BK); Tham Phra temple, 410 m alt., 13 Aug. 2019, *Thammarong et al. 932* (QBG); Tham Chakto, 390 m alt., 9 Aug. 2022, *Thammarong et al. 3769* (QBG); Pha Bong, 500 m alt., 11 Aug. 2022, *Thammarong et al. 3880* (QBG)]; Chiang Mai [Doi Suthep, 396 m alt., 23 May 1909, *Kerr 650* (BM, K, TCD)]; Chiang Rai [Mae Chan, Ban Mai Phatthana, 600 m alt., *Maxwell 85-819* (PSU)]; Phayao [Kwan Phayao, 50 m alt., 2 Jul. 1994, *BGO staff 1044* (QBG)]; Nan [700 m alt., 27 Jul. 1992, *Larsen et al. 43657* (AAU, BKF)]; Doi Samoe Dao, 800 m alt., 13 Nov. 2019, *Thammarong et al. 1103* (QBG)]; Lamphun [Kaeng Ko, 22 May 2019, *Thammarong et al. 690* (QBG)]; Lampang [Doi Khun Tan, 350 m alt., 24 Jun. 1994, *Maxwell 94-708* (BKF, CMU)]; Ban Huai Rak Mai, 14 Jan. 2020, *Thammarong et al. 1241* (QBG); Mueang Pan, 380 m alt., 25 Aug. 2021, *Thammarong et al. 3052* (QBG)]; Phrae [Song, 225 m alt., 13 Oct. 1991, *Maxwell 91-901* (AAU)]; Uttaradit [*Kasin s.n.* (BK-211519)]; Tak [Doi Kha, 700 m alt., 22 Jul. 1973, *Murata et al. T-16796* (AAU, BKF, KYO)]; Sukhothai [23 May 2014, *Tokaew 884* (KKU)]; Thung Saliam, 175 m alt., 21 Jul. 2022, *Thammarong et al. 3718* (QBG)]; Phitsanulok [Thung Salaeng Luang NP, 700 m alt., 21 Jul. 1960, *Larsen et al. 673* (AAU, BKF, C)]; Kamphaeng Phet [150 m alt., 29 Jul. 1973,

Murata T-17282 (AAU, BKF, C, K, KYO)]; Nakhon Sawan [150 m alt., 21 Jul. 1973, *Murata et al. T-16588* (AAU-2 sheets, BKF, K, KYO)]; NORTH-EASTERN: Phetchabun [Nam Nao NP, 8 Sep. 2007, *Tokaew & Chantaranonthai 386* (KKU)]; Loei [Phu Kradueng NP, 800 m alt., 14 Jun. 1992, *Niyomdham 2956* (AAU, BKF)]; Bueng Kan [Si Chomphu, 23 Jun. 1963, *Adisai 552* (BK)]; Sakon Nakhon [Phu Phan NP, 31 Jun. 1999, *Leeratiwong 99-83* (PSU)]; Nakhon Phanom [Tha Uthen, Non Tan, Ban Ka Soem, 170 m alt., 16 Jul. 2024, *Thammarong et al. 4847* (QBG)]; Maha Sarakham [3 Nov. 1994, *Chuakul WCK00056* (PBM)]; Mukdahan [Phu Pha Thoep NP, 17 Sep. 2006, *Tokaew & Chantaranonthai 381* (KKU)]; Khon Kaen [Phu Wiang NP, 1 Oct. 2007, *Tokaew & Chantaranonthai 390* (KKU)]; EASTERN: Chaiyaphum [Thung Kamang, 700 m alt., 25 May 1974, *Geesink et al. 6964* (BKF, C, K, KYO)]; Nakhon Ratchasima [Sakaerat environmental research station, 400 m alt., 2 Nov. 1969, *van Beusekom & Charoenpol 2022* (AAU, BKF)]; Buri Ram [5 Oct. 1984, *Murata et al. T-37604* (BKF, KYO)]; Surin [18 May 1965, *Sutheesorn 261* (BK)]; Ubon Ratchathani [21 Dec. 1997, *Chantaranonthai et al. s.n.* (KKU7520)]; SOUTH-WESTERN: Kanchanaburi [Thong Pha Phum, Linthin forest, 210 m alt., 6 Nov. 1979, *Shimizu et al. T-21944* (BKF, KYO)]; Phetchaburi [Mae Prachan, 15 m alt., Sep. 1916, *Winit 362* (BKF, K)]; Prachuap Khiri Khan [Nam Tok Huai Yang NP, 25 Jun. 1997, *Lamxay 40-134* (KKU)]; CENTRAL: Bangkok [19 Mar. 1920, *Kerr 4065* (BM, K)]; SOUTH-EASTERN: Chon Buri [Si Racha, Khao Khiao, 26 Apr. 1975, *Maxwell 75-437*

(AAU, BK)]; Chanthaburi [Soi Dao, 220 m alt., 10 Jun. 1963, *Larsen 9965* (BKF, C)]; PENINSULAR: Surat Thani [50 m alt., 11 Aug. 1960, *Larsen et al. 1468* (AAU)]; Trang [150 m alt., 28 Jan. 1958, *Sørensen et al. 763* (BKF)]; Songkhla [Padang Besa, 1.5 m alt., 23 Dec. 1927, *Kerr 13652* (BK, BM, C, K)].

Distribution.— India, China (type), Taiwan, Laos, Cambodia, Vietnam, Malaysia, Indonesia, Australia, Polynesia.

Ecology and Phenology.— In hill evergreen, deciduous, dipterocarp, dipterocarp-oak and dipterocarp-pine forests, grassy places and cultivated areas, 0–1,000 m alt. Flowering: June–October and fruiting: July–January.

Vernacular.— Hang maeo (หางแมว) (Sakon Nakhon), hang suea noi (หางเสือน้อย) (Chaiyaphum), khang maeng bong (ขางแมงบัว) (Chiang Mai), khonthi din (คนที่ดิน) (Surat Thani, Songkhla), kon bung (กันบุง) (Nakhon Sawan), tan kho ma (ตาลคอม้า) (Chiang Rai), ya hang on (หญ้าหางอัน) (Chaiyaphum), ya hang suea noi (หญ้าหางเสือน้อย) (Sakon Nakhon).

Notes.— *Uraria lagopodioides* is the common species in Thailand. It is characterised by having 1–3 leaflets that are orbiculate to elliptic, ovate to lanceolate or nearly so, very dent raceme inflorescence, broadly ovate or ovate bracts, pods with 1–2 segments, and prostrate or erect habit.

10. *Uraria oblonga* (Wall. ex Benth.) H. Ohashi & K. Ohashi, *J. Jap. Bot.* 93(3): 185. 2018.— *Desmodium oblongum* Wall., *Numer. List [Wallich]: 5714.* 1831–1832,

nom. nud.] ex Benth. in *Miq., Pl. Jungh.*: 224. 1852. Type: Myanmar, Taong Dong, 1826, *Wallich Numer. List 5714* (lectotype K-W [K001121836!], designated here; isolectotypes BM [BM000946767!], CAL, *n.v.*, G!, K [K000858865!]).— *Meibomia oblonga* Kuntze, *Revis. Gen. Pl.* 1: 198. 1891.

Thailand.— NORTHERN: Mae Hong Son [Mae Sariang, Ban Om Phai, 16 Nov. 2002, *Pongamornkul 1809* (KYO-2 sheets, QBG-2 sheets); Tham Pla-Nam Tok Pha Suea NP, 19 Nov. 2013, *Lakoet 415* (QBG)]; Chiang Mai [Doi Chiang Dao WS, 5 Dec. 1965, *Hennipman 3223* (C-2 sheets, K, KYO, L, P); Doi Inthanon NP, 19 Nov. 1998, *Hara & Chaiudom C077* (BKF); *ibid.*, Doi Nang Ka, 3 Nov. 1930, *Put 3322* (AAU, ABD, BK, BM, E, K); Doi Suthep, 14 Dec. 1904, *Hosseus 258* (BM, C, E, G-2 sheets, K, L, P); Doi Lang, 1,900 m alt., 25 Nov. 2020, *Thammarong et al. 2726* (QBG); QSBG highland, 1,037 m alt., 29 Nov. 2022, *Thassaklang et al. 83* (QBG); *ibid.*, *Thassaklang et al. 97* (QBG)]; Chiang Rai [Khun Chae NP, 12 Nov. 1940, *Wongchai WU037* (BKF-2 sheets)]; Phayao [Chiang Kham, 8 Dec. 1967, *Prayad 1108* (BK, TI); Charoen Rat, Pha Daeng, 1,300 m alt., 27 Oct. 2022, *Thammarong et al. 3987* (QBG)]; Nan [Doi Phu Kha NP, 31 Oct. 2013, *Clark et al. 294* (K)]; Lamphun [Mae Tha, 18 Nov. 1993, *Maxwell 93-1373* (BKF-2 sheets, L)]; Lampang [Doi Khun Tan NP, 27 Dec. 1984, *Koyama & Phengklae T-39092* (BKF, KYO)]; Phrae [Huai Champa Kla, Nov. 1937, *Franck 1444* (P)]; Uttaradit [Phu Soi Dao NP, 19 Nov. 2009, *Norsaengsri & Intamusik 6268* (QBG)]; Huai Mun, 1,630 m alt., 31 Oct.

2019, *Thammarong et al. 1065* (QBG)]; Tak [Bhumibol Dam, Dec. 1959, *Sanchai 644* (BK)]; Sukhothai [Khiri Mat, 23 Nov. 1977, *Phengklai et al. 3886* (BKF-2 sheets)]; NORTH-EASTERN: Phetchabun [Lom Sak to Nam Nao NP, 17 Nov. 2011, *Maknoi 4478* (QBG)]; Nam Nao NP, 17 Nov. 1973, *Maxwell 73-626* (AAU, BK)]; Loei [Phu Kradueng NP, 28 Nov. 1965, *Tagawa et al. T-518* (AAU, BKF, KYO, L, TI)]; Nong Bua Lam Phu [Phu Seng Khong, 3 Jan. 1976, *Sutheesorn 3584* (BK)]; Sakon Nakhon [Phu Phan NP, 11 Nov. 1998, *Leeratiwong 98-65* (KKU)]; Khon Kaen [Phu Wiang NP, 11 Nov. 2014, *Saisorn et al. 296* (KKU)]; SOUTH-WESTERN: Uthai Thani [Huai Kha Khaeng WS, 12 Nov. 1979, *Shimizu et al. T-22426* (BKF-2 sheets, KYO, L)]; Kanchanaburi [Huai Ban Kao, 10 Nov. 1971, *van Beusekom et al. 3640* (BKF, C, K, KYO, L-2 sheets, P)].

Distribution.— India, Bhutan, Myanmar (type), China, Laos, Cambodia, Vietnam.

Ecology and Phenology.— Open place, and hill evergreen, dry evergreen, coniferous, mixed deciduous and dry dipterocarp forests, 100–2,150 m alt. Flowering: September–May and fruiting: October–June.

Vernacular.— Khram (คราม) (Chiang Mai), khrua phaeo (เครือแพว) (Loei), ma hae nok (มะแฮะนวก) (Chiang Mai), nat kham (หนาดคำ) (Chiang Mai), si nam ngoen (สีน้ำเงิน) (Chiang Mai), ton rak noi (ต้นรากน้อย) (Loei), ya hak lueang (ยาฮากเหลือง) (Chiang Mai), ya kae hak lueang (ยาแก้ฮากเหลือง) (Chiang Mai), ya kho kio (หญ้าคอกิ้ว) (Chiang Rai), ya ton kamlang phra (ยาต้นกำลังพระ) (Chiang Mai).

Notes.— *Uraria oblonga* is readily distinguished from all other members of its genus in Thailand by its 4-lobed calyx, straight or slightly curved pods and the pods nearly glabrous with both hooked and bulbous-based straight hairs. All specimens are 1-foliolate leaves except for two specimens, *Tagawa et al. T518* (AAU) and *van Beusekom et al. 3640* (C, BKF, KYO, L, P) with 2- or 3-foliolate leaves. The protologue of *Desmodium oblongum* Wall. ex Benth. was valid and based on a collection of *Wallich Numer. List 5714* (Miquel, 1852). Ohashi *et al.* (2018a) reported five duplicates housed at BM, CAL, G, K and K-W. Therefore, a well-preserved specimen at the Wallich herbarium at K, K001121836, is designated here as the lectotype and the others are isoelectotypes.

11. *Uraria picta* (Jacq.) Desv. ex DC., Prodr. 2: 324. 1825.— *Hedysarum pictum* Jacq., Collect. Bot. 2: 262. 1788. Type: Jacquin, Ic. Pl. Rar. 3: t. 567. 1792!.— *Doodia picta* Roxb., [Hort. Beng.: 98. 1814, *nom. nud.*] Fl. Ind. 3: 368. 1832.— *Uraria linearis* Hassk., Flora 25, Beibl. 2: 48, 61. 1842. Type: *n.v.*

Thailand.— NORTHERN: Chiang Mai [QSBG, Huai Phan Si, 700 m alt., 2 Oct. 1996, *BGO staff 7660* (QBG)]; Wang Mao, 244 m alt., 6 Sep. 1911, *Kerr 2013* (K)]; Chiang Rai [Chiang Rai to Phayao, 400 m alt., 6 Sep. 1923, *Winit 769* (BKF, K)]; Tham Pum-Tham Pla, 380 m alt., 18 May 1924, *Garrett 174* (BKF, K-2 sheets)]; Phayao [north of Phayao, 340 m alt., 4 Sep. 1924, *Garrett 174a* (K)]; Nakhon Sawan [Ban

Takhli, 20 m alt., 10 Nov. 1922, *Marcan 1080* (BM, C); Pak Nam Pho, Jul. 1920, *Vanpruk 1012* (K); 150 m alt., 21 Jul. 1973, *Murata et al. T-16574* (AAU, BKF, KYO)]; NORTH-EASTERN: Udon Thani [Nong Han, 1.5 m alt., 3 Jul. 1932, *Lakshnakara 1042* (BK, BM, K, TCD)]; Sakon Nakhon [Phu Phan NP, 18 Oct. 1990, *Chantaranothai & Parnell 90/761* (KKU); *ibid.*, 5 Oct. 2007, *Tokaew & Chantaranothai 397* (KKU); *ibid.*, *Tokaew & Chantaranothai 398* (KKU)]; CENTRAL: Saraburi [Ban Nong Bua, 2 Oct. 1927, *Put 1132* (BK, BM, K)]; PENINSULAR: Songkhla [Padang Besa, 1.5 m alt., 23 Dec. 1927, *Kerr 13560* (BK, BM, K)].

Distribution.— Africa, India, China, Taiwan, Cambodia, Vietnam, Philippines, Indonesia, Australia.

Ecology and Phenology.— In dry evergreen and deciduous forests, savanna and grassy places, 0–700 m alt. Flowering: September–October and fruiting: October–December.

Vernacular.— Non nai (หนอนหนาย) (Sakon Nakhon), salet phangphon (เสลดพังพอน) (Nakhon Sawan).

Notes.— *Uraria picta* is distinguishable from *U. acuminata* and *U. crinita* by its having linear leaflets and glabrous pods, rarely with tiny straight hairs. *Uraria picta* is a widespread species in Thailand but now the number of plants has been dramatically reduced than other species, according to many habitats have been changed for agriculture, housing and tourism.

12. *Uraria poilanei* Dy Phon in Thuân, Dy Phon & Niyomdham, Fl. Camb., Laos & Vietn. 23: 109, pl. 19. 1987. Type: Laos, Xieng Khouang, Phou Koud, Ban Na Koud, La cave [Tam La], *Poilane 2159* (holotype P [P02142557!]; isotypes P [P02142558!, P02142559!, P02142560!]).

Thailand.— NORTHERN: Chiang Mai [Chiang Dao, 28 Nov. 1963, *Bunchuai 1377* (BKF); *ibid.*, 925 m alt., 3 Nov. 1995, *Maxwell 95-1039* (BKF, CMUB); *ibid.*, 28 Nov. 1963, *Put 4410* (K); *ibid.*, Huai Yang, 18 Nov. 1963, *Adisai 688* (BK); Doi Suthep-Pui NP, 700 m alt., 26 Nov. 1996, *Maxwell 96-1550* (BKF, CMUB); Doi Suthep, 600 m alt., 19 Nov. 1988, *Maxwell 88-1331* (CMU); *ibid.*, 800 m alt., 26 Dec. 1988, *Maxwell 88-1405* (BKF, CMU); Doi Saket, 1,250 m alt., 2 Nov. 1996, *Maxwell 96-1465* (BKF); Pa Miang, Tat Moei, 1,250 m alt., 2 Nov. 1996, *Maxwell 96-1466* (CMUB); Mae Rim, Mae Raem, Ban Mae Mae, 700 m alt., 20 Nov. 1995, *BGO staff 5274* (QBG); *ibid.*, Mae Sa valley, 700 m alt., 6 Dec. 1995, *BGO staff 5394* (QBG); *ibid.*, QSBG, 800 m alt., 21 Jan. 1996, *BGO staff 50* (QBG); Mok Fa waterfall, 500 m alt., 24 Nov. 1993, *Larsen et al. 44777* (AAU)]; Lamphun [Doi Khun Tan NP, 1,175 m alt., 22 Nov. 1993, *Maxwell 93-1436* (CMUB); *ibid.*, 31 Jan. 1994, *Maxwell 94-151* (CMUB)]; Lampang [Mueang Pan, Chae Son NP, 550 m alt., 19 Nov. 1996, *Panatkool 44* (CMUB)]; NORTH-EASTERN: Loei [Ban Na Luang, 300 m alt., 20 Nov. 1968, *Chermsiriwathana 1184* (BK)]; Khon Kaen [Phu Khiao, 8 Nov. 1984, *Murata et al. T-41997* (BKF, KYO-2 sheets); *ibid.*, *Murata et al. T-50249* (BKF, KYO)];

EASTERN: Chaiyaphum [700 m alt., 13 Dec. 1971, *van Beusekom et al.* 4206 (BKF)]; SOUTH-WESTERN: Kanchanaburi [Tham Than Lot NP, Khao Kamphaeng, 1,370 m alt., 30 Nov. 1982, *Koyama et al.* T-30495 (BKF, KYO)].

Distribution.— Myanmar, Laos (type).

Ecology and Phenology.— In deciduous forests, 300–1,370 m alt. Flowering: November–December and fruiting: December–January.

Vernacular.— Tong tit bai yai (ตองติตใบใหญ่).

Notes.— *Uraria poilanei* differs from *U. lacei* in its obovate leaflets rarely ovate, scabrous upper surface and tomentose lower surface.

13. *Uraria pseudoacuminata* W. Tokaew & Chantar., *ScienceAsia* 39(3): 327, f. 1, 2c–e. 2013. Type: Thailand, Bueng Kan, Bung Khla, Phu Wua WS, 240 m alt., 21 Oct. 2007, *Tokaew & Chantaranothai* 403 (holotype KKU!; isotype BKF!). Fig. 1G.

Thailand.— NORTH-EASTERN: Udon Thani [Nong Saeng, *Sidajium* 54 (BKF)]; Bueng Kan [Bung Khla, Phu Wua, 300 m alt., 9 Aug. 2004, *Nielsen et al.* 1580 (AAU)]; *ibid.*, 240 m alt., 21 Oct. 2007, *Tokaew & Chantaranothai* 403 (BKF, KKU, type)]; Khon Kaen [Phu Khiao, 850 m alt., 8 Nov. 1984, *Murata et al.* T-41860 (BKF, KYO)]; EASTERN: Chaiyaphum [600 m alt., 11 Dec. 1971, *van Beusekom et al.* 9167 (BKF)]; Nakhon Ratchasima [Khao Yai NP, near Pak Thong Chai, 350 m alt., 3 Nov. 1970,

Charoenpol et al. 4491 (AAU)]; Sakaerat environmental research station, 2 Oct. 1968, *C.H.* 374 (BKF); *ibid.*, 22 Oct. 1971, *van Beusekom et al.* 3299 (BKF, C, K, KYO); *ibid.*, 24 Oct. 2014, *Tokaew* 825 (KKU)]; SOUTH-EASTERN: Chon Buri [Si Racha, Khao Khiao, 500 m alt., 4 Sep. 1976, *Maxwell* 76-631 (AAU)]; Chanthaburi [Pong Nam Ron, 350 m alt., 3 Oct. 1998, *Sangkachand s.n.* (BKF-13174)].

Distribution.— Vietnam.

Ecology and Phenology.— In dry evergreen and deciduous forests, 240–1,000 m alt. Flowering: August–September and fruiting: September–December.

Vernacular.— Hang suea bai phai (หางเสือใบฝ่อ).

Notes.— *Uraria pseudoacuminata* has many features in common with *U. acuminata*. It differs in its glabrous pods, sometimes with a few tiny straight hairs, and the pod with only 2 segments.

14. *Uraria rotundata* Craib, *Bull. Misc. Inform. Kew* 1912(3): 151. 1912 & *Contrib. Fl. Siam.*: 60. 1912. Type: Thailand, Chon Buri, Si Racha [Sriracha], *Kerr* 2136 (lectotype K [K000858886!], designated here; isotypes BM [BM000946757!], E [E00275850!], TCD [TCD0015978!]).— *Uraria pierrei* Schindl. in *Engl., Bot. Jahrb. Syst.* 54: 53. 1916. Type: Cambodia, Kampong Speu, Thpong, *Pierre* 1009 [5.1870] (lectotype P [P02142554!], designated here; isolectotypes P [P02142555!, P02142556!]), **syn. nov.** Fig. 1H.

Thailand.—NORTHERN: Tak [Ban Na, Bhumibol Dam, 280 m alt., May 1959, *Bunnak 609* (BCU, BK)]; Samo Khon, Ban Tak, 150 m alt., 29 May 2011, *Pooma & Pattharahirantricin 7744* (AAU, MBK)]; NORTH-EASTERN: Khon Kaen [Ban Fang, Ban Hin Hao community forest, 27 Oct. 2015, *Tokaew 909* (KKU)]; EASTERN: Chaiyaphum [Kaeng Khro, 23 Oct. 1965, *Sutheesorn 663* (BK)]; Buri Ram [Khao Phanom Rung, 370 m alt., 3 Oct. 1984, *Murata et al. T-37279* (BKF, KYO-2 sheets); *ibid.*, *Murata et al. T-37375* (BKF, KYO); *ibid.*, 396 m alt., 28 Jun. 1986, *Thaithong et al. 217* (BCU)]; SOUTH-WESTERN: Kanchanaburi [Khao Ko Ai Mao, 15 Nov. 1969, *Sangkhachand 1577* (AAU, C, K); Nong Hoi, Khao Pu Mak Lai, 250 m alt., 10 Jul. 1978, *Phengklai et al. 4246* (BKF); Wang Khanai, 50 m alt., 14 May 1927, *Kerr 12847* (BK, BM, K); 70 m alt., 12 Jul. 1922, *Marcan 933* (BK, BM, C, K); 60 m alt., 28 Nov. 1971, *van Beusekom et al. 4012* (BKF)]; Ratchaburi [near Khaozon wildlife breeding center, 26 Sep. 2015, *Tokaew 904* (KKU)]; Phetchaburi [Huai Sai, 24 Aug. 1999, *Niyomdham 5766* (BKF); *ibid.*, 25 Aug. 1999, *Niyomdham & Puudjaa 5886* (BKF)]; Prachuap Khiri Khan [Huai Yang waterfall, 80–150 m alt., 22 Aug. 1982, *Shimizu et al. T-28714* (BKF, KYO); 20 Oct. 1964, *Chermsiriwathana 94* (BK)]; SOUTH-EASTERN: Chon Buri [Sattahip, Thung Prong, 50 m alt., 11 Jun. 1971, *Maxwell 71-932* (AAU, BK); *ibid.*, 0–70 m alt., 24 Jun. 2000, *Phengklai et al. 12522* (BKF); Si Racha, 28 Sep. 1911, *Kerr 2136* (BM, E, K, TCD) (type); *ibid.*, 250 m alt., 10 Apr. 1975, *Maxwell 75-412* (AAU, BK)].

Distribution.—Cambodia.

Ecology and Phenology.—In deciduous forest, 0–400 m alt. Flowering: May–October and fruiting: June–December.

Vernacular.—Mak ka nuan kui (มักก้านวนก้วย) (Buri Ram), ya hang on (หญ้าหางอัน) (Chon Buri) (type).

Notes.—*Uraria rotundata* is clearly similar to *U. lagopodioides* but differs by having an orbiculate or ovate leaflets and lanceolate bracts. Craib (1912a, 1912b) described *U. rotundata* based on four sheets of the type collection, *Kerr 2136* (K000858886, BM000946757, E00275850, TCD0015978). The K000858886 at K is selected here as the lectotype, according to the workplace of Craib. *Uraria pierrei* is supposed to be distinct from *U. rotundata* in having 3-foliolate and rarely 1-foliolate leaves. However, some specimens show marked character overlap with *U. rotunda* which usually has 1-foliolate leaves. Therefore, we do not consider the two taxa to be distinct. *Uraria pierrei* was described by Schindler (1916) based on three sheets of the type collection, *Pierre 1009* (P02142554, P02142555, P02142556). The P02142554 is designated here as the lectotype, because it has more inflorescence and dissected floral parts.

15. *Uraria rufescens* (DC.) Schindl. in Fedde, Repert. Spec. Nov. Regni Veg. 21: 14. 1925.—*Desmodium rufescens* DC., Ann. Sci. Nat. (Paris) 4: 101. 1825 & Prodr. 2: 335. 1825. Type: India, *de Candolle microfiche no. 95* (G-DC, n.v.).—*Meibomia rufescens*

(DC.) Kuntze, Revis. Gen. 1: 198. 1891.— *Hedysarum hamosum* Roxb. ex Wight & Arn., Hort. Beng.: 57. 1814, *nom. nud.*— *Doodia hamosa* Roxb., [Hort. Beng.: 98. 1814, *nom. nud.*] Fl. Ind. 3: 367. 1832. Type: India, Bengal, *Wallich Numer. List 5681B*, 1831–1832, K [K 001121714!].— *Uraria hamosa* (Roxb.) Wight & Arn., Prodr. Fl. Ind. Orient. 1: 222. 1834.— *U. paniculata* Hassk., Cat. Hort. Bog.: 273. 1844. Type: *n.v.*— *U. gracilis* Prain, J. Asiat. Soc. Bengal Pt. 2, Nat. Hist. 66(2): 383. 1897. Type: Myanmar, Sagaing, *King's Collector s.n. (n.v.)*. Fig. 11.

Thailand.— NORTHERN: Mae Hong Son [Mae Sariang, Ban Mae Salap, 275 m alt., 20 Nov. 1994, *Maxwell 94-1229* (BKF); Mueang, Doi Laem, 620 m alt., 21 Sep. 2023, *Thammarong et al. 4288* (QBG)]; Chiang Mai [Chiang Dao, Ban Ping Khong, 500 m alt., 29 Oct. 1997, *Maxwell 87-1307* (BKF, CMU); Doi Chiang Dao, 600 m alt., 3 Jan. 1990, *Maxwell 90-11* (CMU); *ibid.*, 450 m alt., 27 Oct. 1990, *Maxwell 90-1196* (AAU, CMU); Doi Suthep, 335 m alt., 4 Nov. 1911, *Kerr 1553B* (K); Mae Taeng, Ban Pao, 925 m alt., 14 Oct. 1990, *Maxwell 90-1161* (CMU)]; Chiang Rai [Thoeng, Chiang Khian, 22 Nov. 2007, *Tokaew & Chantaranothai 427* (KKU)]; Lampang [Doi Luang NP, *Petrmitr 404* (BKF)]; Phrae [Mae Yom NP, 225 m alt., 13 Oct. 1991, *Maxwell 91-905* (AAU)]; Tak [Ban Kon near Wang Chao, 100 m alt., 12 Nov. 1920, *Kerr 4563* (BK, BM, C, K, TCD); Mae Sot, Doi Din Ki, 9 Nov. 1988, *Paisooksantivatana Y-2291-88* (BK); *ibid.*, Ban Nong Nam Khiao, 750 m alt., 21 Oct. 1997, *BGO staff 9759* (QBG); Thi Lo Su waterfall, 15 Nov. 2008, *Tokaew*

& *Chantaranothai 448* (KKU)]; Nakhon Sawan [Pak Nam Pho, 40 m alt., 9 Dec. 1913, *Kerr 3008* (BM, K); Takhli, 26 Nov. 1928, *Put 2127* (AAU, BK, BM, C, K)]; NORTH-EASTERN: Phetchabun [Chon Daen, 24 Jan. 1969, *Vacharapang 383* (BK); Nam Nao NP, 1 Dec. 2007, *Tokaew & Chantaranothai 430* (KKU)]; Loei [Phu Suan Sai NP, 7 Nov. 2007, *Tokaew & Chantaranothai 414* (KKU)]; Wang Saphung, 300 m alt., 21 Nov. 1958, *Smitinand 4897* (BKF)]; EASTERN: Nakhon Ratchasima [Sakaerat environmental research station, 400 m alt., 2 Nov. 1969, *van Beusekom & Charoenpol 1987* (AAU, KYO)]; SOUTH-WESTERN: Uthai Thani [Huai Kha Khaeng WS, 300 m alt., 12 Nov. 1979, *Shimizu et al. T-22420* (AAU, BKF, C, KYO-2 sheets); *ibid.*, *Shimizu et al. T-22433* (BKF, C, KYO)]; Kanchanaburi [Sai Yok, 200 m alt., 11 Dec. 1961, *Larsen 8653* (C); Kanchanaburi to Tha Po, 200 m alt., 12 Dec. 1961, *Larsen 8882* (C)]; Prachuap Khiri Khan [Pran Buri, 26 Nov. 1929, *Put 2457* (AAU, BK, BM, K); Sam Roi Yot, 2 Dec. 1829, *Put 2518* (BK, BM, C, K, TCD)]; SOUTH-EASTERN: Chon Buri [Si Racha, Chan Ta Then waterfall, 200 m alt., 16 Nov. 1974, *Maxwell 74-985* (AAU, BK); *ibid.*, Khao Khiao, 300 m alt., 16 Nov. 1974, *Maxwell 75-1065* (AAU, BK)]; PENINSULAR: Surat Thani [10 m alt., 5 Jan. 1927, *Kerr 11269* (AAU, BK, BM, K)]; Songkhla [50 m alt., 24 Dec. 1927, *Kerr 13597* (BK, BM, K, TCD)].

Distribution.— India (type), Myanmar, China, Laos, Cambodia, Vietnam, Indonesia.

Ecology and Phenology.— In evergreen, dry evergreen and deciduous forests and

savanna, 0–1,000 m alt. Flowering: October–November and fruiting: November–December.

Vernacular.—Ton niao lek (ต้นเหนี่ยวเล็ก) (Prachuap Khiri Khan).

Notes.—*Uraria rufescens* is distinguishable from *U. campanulata* by its pods with dry and non-developed calyx. The calyx with straight hairs and bulbous-based straight hairs.

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