

A synopsis of the genus *Persicaria* (Polygonaceae) in Thailand

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ABSTRACT. A synopsis of *Persicaria* Mill. in Thailand is presented which summarizes the results of recent work on the family. Twenty-one species and 26 taxa are recognized, including three species, *Persicaria paradoxa*, *P. pubescens* and *P. wallichii* which are newly recorded in the country. *Persicaria barbata* var. *stagnina*, *P. nepalensis*, *P. paradoxa* and *Polygonum viscosum* var. *α-ramosissimum* are lectotypified. Two new combinations are made, *P. chinensis* var. *hispida* and *P. paradoxa*. Keys to the species and varieties are provided, together with information on distribution and ecology.

KEY WORDS: Synopsis, *Persicaria*, Polygonaceae, Thailand.

INTRODUCTION

The genus *Persicaria* (smartweeds) was established in 1754 by Miller but without typification. The genus was later lectotypified by Britton & Brown (1913) based on *Polygonum persicaria* L. *Persicaria* currently comprises 150 species worldwide. It is a cosmopolitan genus occurring mainly in temperate regions but with some species in tropical and subtropical regions, from sea level to high altitude (Heywood et al., 2007). The majority of taxa are perennials, some of which are edible and widely cultivated such as *P. odorata* (Vietnamese coriander).

The circumscriptions of *Persicaria* and *Polygonum* are still open to debate (Ronse Decraene & Akeroyd, 1988; Heywood et al., 2007). Many authors treat *Persicaria* as merely a section of *Polygonum s.l.* (Meisner, 1826; Dammer, 1892; Steward, 1930; Anjen et al., 2003). However, systematic studies based on palynological and anatomical data by Hedberg (1946) and Haraldson (1978) proposed recognizing *Persicaria* as a separate genus. Phylogenetic analyses using *rbcL* (Lamb Frye & Kron, 2003) and our own studies

(Kantachot in prep.) also suggest that the *Persicaria* should be recognized as genus, which we follow here.

Previous accounts of *Persicaria* in Thailand have not included keys and descriptions. Hosseus (1911) surveyed plants from northern Thailand and six taxa were reported, namely *Polygonum acuminatum*, *P. chinense*, *P. chinense* var. *ovatifolium*, *P. glabrum*, *P. plebeium* var. *indicum* and *P. roxburghii* var. *longifolium*. Larsen (1961) gave an overview of Thai Polygonaceae which was intended to be a preliminary account of the family. Nine species, *Polygonum alatum*, *P. barbatum*, *P. chinense*, *P. flaccidum*, *P. glabrum*, *P. minus*, *P. orientale*, *P. strigosum* and *P. tomentosum* were recognized. More recently a total of 13 species was listed by the Forest Herbarium, Royal Forest Department (2001). However, this work only gave details of scientific and vernacular names and plant habit.

As part of a revision of Polygonaceae for the Flora of Thailand (Kantachot in prep.), a synopsis of *Persicaria* in Thailand is presented here.

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MATERIALS AND METHODS

Herbarium materials were studied from AAU, BCU, BK, BKF, BM, C, E, CMU, K, KKU, L, P, PSU, QBG, SING and TCD. Voucher specimens obtained from fieldwork were deposited in BK, BKF and KKU. Leaf and ocrea characteristics were measured at the fourth, fifth and sixth leaves from the apex of each specimen. Appropriate synonymy is cited in this treatment. For synonyms where we have not been able to see the type, we have followed earlier protologues and Flora accounts.

TAXONOMIC TREATMENT

Herbs or climbing shrubs. Stems with swollen nodes; branches terete or angled with retrorse prickles. Leaves simple, alternate or spiral; blades elliptic, lanceolate to ovate and sometimes

triangular-peltate, apex acute or acuminate, rarely cuspidate, base attenuate to cordate, cuneate or hastate, glabrous or pubescent. Ocrea a tubular sheath, rarely perfoliate, scarious or hyaline, apex without appendage or present with incisions, foliaceous limbs, cilia and bristles, margins truncate and oblique. Inflorescence a single spike, a spicate panicle or capitate panicle, rarely a single capitulum, determinate, bisexual; ocreolae complete or incomplete enclose rachis, glabrous and pubescent; leafy bracts present or absent. Flowers in an ocreola, pink and white, sometimes yellow; tepals united at base, 3–5-merous, in 2 series, with or without glandular dots, often persisted in fruit; floral bracts 2, hyaline. Stamens (5–) 6–9, in 1 or 2 whorls; filament base united at tepal, glandular nectaries (5–) 6–9, appressed or pustulate; anthers dorsifixed, oblong or elliptic-oblong. Ovary with 2–3-cleft styles. Fruits lenticular, triangular or slightly circular.

KEY TO THE SPECIES

1. Inflorescence a capitate panicle or a single capitulum (Section *Cephalophilon*)
 2. Leaf base attenuate or winged
 3. Leaves entire with scale-like dots covering leaf surface **10. *P. nepalensis***
 3. Leaves runcinate or lyrate-pinnatifid without scale-like dots **16. *P. runcinata***
 2. Leaf base cuneate, not winged
 4. Ocrea glabrous with oblique margin
 5. Style less than 4 mm long **3. *P. chinensis***
 5. Style more than 4 mm long **13. *P. paradoxa***
 4. Ocrea with glandular hairs and truncate margin
 6. Tepals less than 3 mm long; cultivated plant **2. *P. capitata***
 6. Tepals more than 3 mm long; wild plant **21. *P. wallichii***
1. Inflorescence a single spike or a spicate panicle
 7. Stems and nodes with retrorse prickles (Section *Echinocaulon*)
 8. Ocrea with distinct foliaceous limbs
 9. Leaves hastate **18. *P. thunbergii***
 9. Leaves triangular-peltate **14. *P. perfoliata***
 8. Ocrea without foliaceous limb
 10. Prickles on petiole present; ocrea margin truncate with ciliate hairs or bristles
 11. Petioles less than 1 cm long; stamens in a single whorl **17. *P. strigosa***
 11. Petioles more than 1 cm long; stamens in two whorls **9. *P. muricata***
 10. Prickles on petiole absent; ocrea margin oblique with neither ciliate hairs nor bristles **4. *P. dichotoma***
 7. Stems and nodes without retrorse prickles (Section *Persicaria*)
 12. Apex of ocrea foliaceous; petioles more than 4 cm long **12. *P. orientalis***
 12. Apex of ocrea with or without bristle; petioles less than 4 cm long
 13. Style 2-cleft; fruits lenticular
 14. Ocrea pubescent or rarely glabrescent, with bristles at apex
 15. Ocrea less than 2 cm long **8. *P. minor***
 15. Ocrea more than 2 cm long **19. *P. attenuata* subsp. *pulchra***

14. Ocrea glabrous, without bristle at apex 7. *P. lapathifolia*
 13. Style 3-clefted; fruits triangular
 16. Inflorescence filiform, with lax flowers; rachis conspicuous
 17. Leaves glabrous; inflorescence erect
 18. Style less than 2 mm long; leaves without strong odour 6. *P. hydropiper*
 18. Style more than 2 mm long; leaves with strong odour (cultivated) 11. *P. odorata*
 17. Leaves pubescent; inflorescence pendulous 15. *P. pubescens*
 16. Inflorescence cylindrical or pyramidal, with dense flowers; rachis inconspicuous
 19. Plant with viscid hairs throughout; stamens in 1 whorl 20. *P. viscosa*
 19. Plant without viscid hairs; stamens in 2 whorls
 20. Apex of ocrea with bristles 1. *P. barbata*
 20. Apex of ocrea without bristles 5. *P. glabra*

Synopsis of the Thai species

1. *Persicaria barbata* (L.) H.Hara, Fl. E. Himal.: 70. 1966; Grierson & Long, Fl. Bhutan 1(1): 162. 1983.— *Polygonum barbatum* L., Sp. Pl.: 362. 1753; Roxb., Hort. Bengal.: 29. 1814 & Fl. Ind. 2: 289. 1832; Blume, Bidjr. 10: 533. 1825; Meisn.,

Monogr. Polyg.: 80. 1826; Steward, Contr. Gray Herb.: 52. 1930. Type: China, Canton, Sept. 1885, *Theophilus Sampson* 541 (conserved type **BM!**, proposed by Wilson, 1998).— *Polygonum barbatum* var. *vulgare* Meisn. in Wall., Pl. Asiat. Rar. 3: 56. 1832. Type: India, Kamaon [Kumaon], without date, *Blinkworth* s.n. (syntype **K-W!** 1708.1.3; isotype **NY!**).

KEY TO THE VARIETIES

1. Leaves punctate; tepal lobes with glandular dots c. var. *stagnina*
 1. Leaves not punctate; tepal lobes without glandular dots
 2. Venation of ocrea conspicuous; spike with less than 27 ocreolae b. var. *gracilis*
 2. Venation of ocrea inconspicuous; spike with more than 27 ocreolae a. var. *barbata*

a. var. *barbata*

Distribution.— Sri Lanka, India, Nepal, Bhutan, Myanmar, China, Taiwan, Vietnam, Peninsular Malaysia, Indonesia, Philippines, New Guinea.

Thailand.— NORTHERN: Mae Hong Son [Mueang district, Ban Huai Hi, 22 Dec. 2005, *Kantachot* 376 (**KKU**); 10 Sept. 1974, *Larsen* 34369 (**AAU, BKF, C, K, L**)]; Chiang Mai [along the highway between Chom Thong and Ban Luang forest station, 17 Sept. 1967, *Iwatsuki & Fukuoka* 10299 (**L**); Mae Sariang, 20 km W of Bo Luang towards, 4 July 1968, *Larsen, Santisuk & Warncke* 2091 (**AAU, BKF, C, E, K, L**); Fang district, 12 km SE of Fang along Fang-Chiang Rai trail, 26 July 1968, *Larsen, Santisuk & Warncke* 2731 (**AAU, BKF, E**); Mae Ton Luang, at km 16 along road number 1252, 25 Nov. 1993, *Larsen, Larsen, Nørgaard, Pharsen, Puudjaa & Ueachirakan* 44861 (**AAU**); Hang Dong district, Doi Suthep,

SW side, Mae Sa waterfall, 19 Nov. 1988, *Maxwell* 88-1334 (**BKF, CMU, L**); Mae Taeng district, Mok Fa waterfall, 9 Oct. 1989, *Maxwell* 89-1185 (**CMU, E**); Mae Chaem district, Thep Phanom Hot Spring area, 21 Dec. 1989, *Maxwell* 89-1577 (**CMU, E**); Chom Thong district, Mae Soi subdistrict, Mae Soi valley, 13 Jan. 1990, *Maxwell* 90-64 (**CMU, L**); Mae Taeng district, Sop Berg subdistrict, Mok Fa waterfall, along Mae How stream, 27 Jan. 1990, *Maxwell* 90-118 (**CMU, L**); Mueang district, Doi Suthep-Pui NP., Nawng Haw area, 31 Jan. 1990, *Maxwell* 90-144 (**CMU, E**); Mae Rim district, Doi Suthep-Pui NP., N part of Wahng Hahng falls, along Mae Rim stream, 10 Sept. 1992, *Maxwell* 92-527 (**P**); along Mae Ping river, 6 Dec. 1992, *Maxwell* 92-803 (**AAU, E, P**); Hot district, Mae Sanam, 26 Dec. 1978, *Niyomdham, Suangtho & Sangkhachand* 147 (**AAU, BKF, K, L**); Mae Rim district, Mae Sa waterfall, 22 Aug. 1989, *Pooma* 301 (**BKF**); Fang district, 22 Feb. 1958, *Sørensen, Larsen & Hansen* 1514 (**C**); Ob Luang,

8 Dec. 1965, *Vidal* 4625 (**P**); Chiang Rai [Mueang district, Kok river, 3 Feb. 2005, *Kantachot* 245 (**KKU**); Mueang district, Ban Rong Khun, 1 Dec. 2005, *Kantachot* 334 (**KKU**); Mae Sai district, Wat Thamsaohin Phayanak, 14 Feb. 1983, *Koyama, Terao & Wongprasert* T-33507 (**BKF, L**); Nan [Pua district, Doi Phu Kha NP., near summit, 21 Nov. 1993, *Larsen, Larsen, Nørgaard, Pharsen, Puudjaa & Ueachirakan* 44707 (**AAU**); Lampang [Huai Tak, 28 Jan. 1965, *Hamananda* 256 (**BKF**); Phrae [along road 1022 from Phrae to Ban Nam Klai, 15 Nov. 1993, *Larsen, Larsen, Nørgaard, Pharsen, Puudjaa & Ueachirakan* 44393 (**AAU**); Phitsanulok [Wang Thong district, Wang Khanun subdistrict, Ban Kaeng Charoen, Kaeng Chong waterfall, 15 Dec. 2005, *Kantachot* 347 (**KKU**); Kamphaeng Phet [Mueang district, 1 April 2006, *Kantachot* 424 (**KKU**); NORTHEASTERN: Loei [Phu Ruea district, Phu Ruea resort, in front of Phu Ruea NP., 24 April 2005, *Kantachot* 263 (**KKU**); Udon Thani [Ban Dung district, Kham Chanode, 26 Jan. 2004, *Kantachot* 223 (**KKU**); Sakon Nakhon [Phu Phan NP., without date, *Chantaranothai et al.* 1055 (**KKU**); Sawang Daen Din district, Sanchode pond, 20 Nov. 2005, *Kantachot* 312 (**KKU**); Maha Sarakham [Mueang district, Chee Long, Walai Rukhawate Research institute, 9 Nov. 2006, *Kantachot* 397 (**KKU**); Khon Kaen [Nam Phong district, Nam Phong subdistrict, Ban Nongtae, at Phong stream, 4 May, 2005, *Kantachot* 270 (**KKU**); Nam Phong district, Nong Kung subdistrict, Khao Din Wana Ram temple, 1 May 2005, *Kantachot* 273 (**KKU**); EASTERN: Chaiyaphum [Khon San district, 18 Nov. 2005, *Kantachot* 305 (**KKU**); Mueang district, Tadtone NP., Tadtone waterfall, 1 Jan. 2006, *Kantachot* 386 (**KKU**); Nam Phrom, 10 Dec. 1971, *van Beusekom, Phengklai, Geesink & Wongwan* 4114 (**L**); Nakhon Ratchasima [Phak Chong district, Khao Yai NP., Heo Suwat waterfall, 5 Sept. 2009, *Kantachot* 277 (**KKU**); Muak Lek waterfall, 19 Feb. 1961, *Larsen* 9685 (**C**); Phak Chong district, 31 Dec. 1923, *Marcen* 1546 (**BK, BM, K**); Khao Yai NP., near forest station, 22 Oct. 1969, *van Beusekom & Charoenphol* 1815 (**AAU, BKF, E, K, L**); Buri Ram [Lam Plai Mat district, Buri Ram to Surin road, Lammat stream, 30 Dec. 2005, *Kantachot* 382 (**KKU**); Si Sa Ket [Khun Han district, Samrong Kiat waterfall, 31 Dec. 2005, *Kantachot* 383 (**KKU**); SOUTHWESTERN: Uthai Thani [Ban

Rai district, Huai Kha Khaeng Reserve, southern section, 5 Feb. 1976, *Maxwell* 76-69 (**AAU, L**); Kanchanaburi [Khwa Noi river, 28 April, 1946, den Hoed 203 (**K, P**); Sai Yok, on bank of Huai Maenam Noi, 11 Dec. 1961, *Larsen* 8652 (**C, E**); Huai Maenam Noi, 2 Jan. 1962, *Larsen* 9106 (**C, SING**); Sri Sawat district, 6 Nov. 1971, *van Beusekom, Phengklai, Geesink & Wongwan* 3465 (**K, L**); Huai Bomkan, 15 Nov. 1971, *van Beusekom, Phengklai, Geesink & Wongwan* 3776 (**BKF, C, K, L**); Prachuap Khiri Khan [Pran Buri district, Pran river, 1 April 1926, *Ladell* 24 (**BK, C, K, L**); CENTRAL: Saraburi [6 March 1987, Lambinon 87/39 (**AAU**); Muak Lek district, 27 April 1992, *Marcen* 764 (**BK, BM**); Bangkok [8 Jan. 1920, *Kerr* 4002 (**BM, C, K, L, P**); Klong Sahn district, Thonburi, 10 Feb. 1971, *Maxwell* 71-77 (**AAU, BK**); May 1922, *Smith* 337 (**BM**); SOUTHEASTERN: Chachoengsao [Phanom Sarakham district, 4 Sept. 2005, *Kantachot* 275 (**KKU**); Chon Buri [Pan Sadhet-Sriracha forest, 9 Nov. 1926, *Collins* 1355 (**K, L, P**); Chanthaburi [at foot of Khao Soi Dao, 11 Feb. 1966, *Fukuoka* T-7330 (**BKF, L**); Khao Soi Dao, 15 Jan. 1958, *Larsen & Hansen* 365 (**C, SING**); PENINSULAR: Ranong [Kapoe district, 22 Nov. 1965, *Sangkachand* 1152 (**BKF, C, L, K, P**); Phatthalung [Kuan Khanun district, Thale Noi, 20 Oct. 2004, *Kantachot* 232 (**KKU**); Thale Sap, near Phatthalung, 24 Jan. 1958, *Sørensen, Larsen & Hansen* 610 (**C, L**); Trang [Nayong district, Kachong waterfall, 22 Oct. 2004, *Kantachot* 233 (**KKU**); Narathiwat [Sungai Kolok district, Nikom Waeng, 8 March 1974, *Larsen & Larsen* 33088 (**AAU, BKF, K, L**).

Ecology.— In marshy areas and stream-sides; 0–1,100 m altitude.

Notes.— The distinguishing features of *P. barbata* var. *barbata* are the sparse pubescence on the leaves and ocrea tube and the indistinct ocrea venation.

b. var. gracilis (Danser) H.Hara in Enum. Fl. Pl. Nep. 3: 175. 1982.— *Polygonum barbatum* L. subsp. *gracile* Danser, Bull. Jard. Bot. Buitenzorg Ser. 3, 8: 146, f. 2. 1927. Type: Indonesia, Java, Sunda, 1925, *Iboet* 329 (holotype **BO**, not seen).— *Polygonum barbatum* L. var. *gracile* (Danser) Steward, Contr. Gray Herb. 88: 55. 1930.— *Polygonum serrulatum* Lag. in Boiss., Fl. Orient.

4: 1028. 1799. Type: not located.— *Persicaria barbata* (L.) H.Hara subsp. *gracilis* (Danser) Soják, *Preslia* 46(2): 152. 1974.

Distribution.— India, China, Bhutan, Myanmar, Vietnam.

Thailand.— NORTHERN: Mae Hong Son [Pai district, Thung Yao subdistrict, Ban Thung Yao Nuea, 20 Feb. 2005, *Kantachot* 373 (**KKU**); Mueang district, Ban Huai Suea Tao, 22 Dec. 2005, *Kantachot* 378 (**KKU**); 10 Sept. 1974, *Larsen & Larsen* 34372 (**AAU, BKF, C, K**); Chiang Mai [Chom Thong district, Doi Inthanon NP., Wachirathan waterfall, 5 Feb. 2005, *Kantachot* 247 (**KKU**); Doi Suthep bog, 14 April 1958, *Larsen, Santisuk & Warncke* 2752 (**BKF**); Mueang district, Doi Suthep, Pha Lat temple, area along Pha Lat stream, 2 July 1988, *Maxwell* 88-843 (**BKF, CMU, L**); Phrae [Mae Khaem river, 5 Jan. 1972, *van Beusekom, Phengklai, Geesink & Wongwan* 4666 (**BKF, K, L**); Tak [Umphang district, 8 Nov. 2005, *Kantachot* 302 (**KKU**); NORTHEASTERN: Khon Kaen [Sichomphu district, Huai Sai Nung, 26 Oct. 2002, *Khampila* 45-07 (**KKU**); Sichomphu district, Huai Sai Nung, 17 April 1997, *Tubtintong* 40-04 (**KKU**); CENTRAL: Bangkok [12 March 1931, *Lakshnakara* s.n. (**BM**); PENINSULAR: Surat Thani [Ko Samui, Hin Lat waterfall, 3 Feb. 1987, *Maxwell* 87-134 (**AAU, BKF, CMU, L, PSU**); Phatthalung [Thale Noi, 20 km NE of Satun, 5 Nov. 1990, *Larsen, Larsen, Barford, Nanakorn, Ueachirakan & Siriruga* 41136 (**AAU, PSU**); Satun [Khuan Dohn district, Thale Ban NP., 26 Nov. 1985, *Maxwell* 85-1052 (**L, PSU**).

Ecology.— River banks, bamboo forest; 0–600 m altitude.

Notes.— var. *gracilis* is distinguished by being glabrous throughout except on the leaf margins. The ocrea venation is conspicuous and the spike has fewer than 27 ocreolae.

c. var. stagnina (Buch.-Ham. ex Meisn.) Grierson in *Notes Roy. Bot. Gard. Edinburgh* 40(1): 128. 1982.— *Polygonum stagninum* Buch.-Ham. ex Meisn. in *Wall., Pl. Asiat. Rar.* 3: 56. 1832.— *Polygonum barbatum* L. var. *stagninum* (Buch.-Ham. ex Meisn.) Steward, *Contr. Gray Herb.* 88: 54. 1930.— *Persicaria barbata* (L.) H. Hara subsp. *stagnina* (Buch.-Ham. ex Meisn.) Soják, *Preslia*

46(2): 152. 1974.— *Persicaria stagnina* (Buch.-Ham. ex Meisn.) M.A. Hassan, *Bangladesh J. Pl. Taxon* 3(1): 82. 1996. Type: Bangladesh, Sadullapur, 6 Jan. 1809, Wallich cat no. 1709.G (lectotype K-W!, selected here).— *Persicaria hosseusii* H.Lév., *Repert. Spec. Nov. Regni Veg.* 11: 496. 1913. Type: Thailand, Wang-Djao, Mae Ping river, 30 Sept. 1904, *Hosseus* 31.b (holotype **E!**; isotypes **BM!, C!, K!, L!, P!**).

Distribution.— India, Bangladesh.

Thailand.— NORTHERN: Chiang Mai [Mae Ping river, 30 Sept. 1904, *Hosseus* 31.b (**BM, C, E, K, L, P**); Mae Rim district, Samoeng road, Tard Mok waterfall, 26 Jan. 1999, *Larsen & Larsen* 47244 (**AAU**); Mok Fa waterfall, 40 km NE of Chiang Mai, along the road to Pai district, *Larsen, Larsen, Nørgaard, Pharsen, Puudjaa & Ueachirakan* 44787 (**AAU**); Chiang Rai [Mueang district, Kok river, 3 Feb. 2005, *Kantachot* 243 (**KKU**); Chiang Khong district, Wiang subdistrict, Teacher camp, Hua Wiang village, 2 Dec. 2005, *Kantachot* 317 (**KKU**); Phrae [20 Sept. 1904, *Hosseus* 2 (**BM, K**); Nakhon Sawan [Phak Nampho, July 1920, *Vanpruk* 1017 (**BKF, K**); NORTHEASTERN: Loei [Chiang Khan district, Kut Ku rapids, 24 April 2005, *Kantachot* 264 (**KKU**); Phongo bridge, along road to Phu Kradueng NP., 26 Oct. 2002, *Khampila* 45-08 (**KKU**); Phongo bridge, along road to Phu Kradueng NP., 25 Dec. 1998, *Tubtintong* 41-18 (**KKU**); Nong Khai [Tha Bo district, Mae Khong river, 25 March 2006, *Kantachot* 425 (**KKU**); Nakhon Phanom [Mueang district, Mae Khong river, 8 Jan. 2006, *Kantachot* 393 (**KKU**); That Phanom district, 18 June 1932, *Lakshnakara* 966 (**BK, BM, C, K, P**); EASTERN: Chaiyaphum [Thung Kamang, 9 Aug. 1972, *Larsen, Larsen, Neilsen & Santisuk* 31658 (**AAU**); CENTRAL: Bangkok [24 Feb. 1920, *Kerr* 4031 (**BM, C, L, K, P**); PENINSULAR: Surat Thani [Chai Buri district, 4 March 1932, *Kerr* 21344 (**BK, BM, C, K, L**).

Ecology.— Along the river banks; 0–700 m altitude.

Notes.— Var. *stagnina* is similar to the typical variety, but is distinguished by the strigose-pubescent hairs on the leaves and ocreae. It has conspicuous glandular dots on the tepal lobes and leaves which are punctate. *Hosseus* 2 (**BM, K**) is sparsely pubescent on the tepal lobes.

2. *Persicaria capitata* (Buch.-Ham.) H. Gross, Bot. Jahrb. Syst. 49: 277. 1913; Grierson & Long, Fl. Bhutan 1(1): 165. 1983.— *Polygonum capitatum* Buch.-Ham. ex D. Don, Prodr. Fl. Nep.: 73. 1825; Meisn., Monogr. Polyg.: 82. 1826; Meisn. in DC., Prodr. 14(1): 129. 1856; Steward, Contr. Gray Herb.: 78. 1930. Type: Nepal, on moist rocks, alt. 1,200–2,200 m (holotype not located).— *Polygonum repens* Wall. ex Meisn. in Wall., Pl. Asiat. Rar. 3: 60. 1832. Type: Nepal, 1830, *Wallich* cat. no. 1699 (syntype **K!**); India, Kumaon, 1821, *Wallich* cat. no. 1699.2 (syntype **K-W!**; isosyntype **NY!**); Bangladesh, Pandua, Feb. 1822, *Wallich* cat. no. 1699.3 (syntype **K-W!**; isosyntype **NY!**).

Distribution.— India, Nepal, Bangladesh, China, Vietnam.

Thailand.— Bangkok [Chatuchak market, 27 Feb. 2006, *Kantachot* 421 (**KKU**)].

Ecology.— Cultivated.

Notes.— *P. capitata* has a compact, globose inflorescence. It is cultivated as an ornamental plant. Chinese specimens are from forest on limestone and the vegetative parts are moderately pubescent.

3. *Persicaria chinensis* (L.) Nakai in Sasaki, List Pl. Form.: 168. 1928; Grierson & Long, Fl. Bhutan 1(1): 163. 1983.— *Polygonum chinense* L., Sp. Pl.: 363. 1753; Roxb., Fl. Ind. 2: 289. 1832; Meisn., Monogr. Polyg.: 60. 1826; Meisn. in DC., Prodr. 14(1): 130. 1856; Steward, Contr. Gray Herb.: 70. 1930. Type: “Habitat in India, China” (lectotype **LINN!** 510.30, selected by Scott (1994)), non *Polygonum corymbosum* Willd., Sp. Pl.: 452. 1799.— *Persicaria chinensis* (L.) H. Gross var. *si-amensis* H. Lévl. in Fed. Rep. 11: 496. 1913. Type: Thailand, Chiang Mai, Doi Suthep, 11 Dec. 1904, *Hosseus* 193 (syntype **K!**; isosyntypes **BM!**, **C!**, **P!**).

KEY TO THE VARIETIES

- | | |
|---|---------------------------|
| 1. Style less than 3 mm long; leaf apex cuspidate | c. var. ovatifolia |
| 1. Style more than 3 mm long; leaf apex acute or acuminate | |
| 2. Stem, branches and leaves hispid throughout | b. var. hispida |
| 2. Stem, branches and leaves usually glabrous, sometimes primary vein and petiole sparsely hispid | a. var. chinensis |

a. var. chinensis

Distribution.— Sri Lanka, India, Nepal, Bhutan, Myanmar, China, Peninsular Malaysia.

Thailand.— NORTHERN: Mae Hong Son [Mueang district, Doi Huai Phuling, without date, *BGO staff* 4732 (**QBG**)]; Chiang Mai [Doi Inthanon NP., 30 Jan. 1996, *BGO staff* 16 (**QBG**); Mae Rim district, QBG area, 21 Jan. 1996, *BGO staff* 43 (**QBG**); Mae Rim district, QBG area, without date, *BGO staff* 156 (**QBG**); Mueang district, Chang Khian, 5 June 1994, *BGO staff* 821 (**QBG**); QBG area, 16 June 1994, *BGO staff* 927 (**QBG**); Chiang Dao district, Mae Taman, 15 Sept. 1994, *BGO staff* 1903 (**QBG**); Chiang Dao district, Mae Taman, without date, *BGO staff* 1994 (**QBG**); Mae Rim-Samoeng, 4 Oct. 1994, *BGO staff* 2021 (**QBG**); Mueang district, Chang Khian, 28 Oct. 1994, *BGO staff* 2421 (**QBG**); Doi Inthanon NP., 16 Oct. 1995, *BGO staff* 4393 (**QBG**); Mae Rim district, Mon Luang, Pong Yaeng, 28 Sept. 1997, *BGO staff* 9670 (**QBG**); Doi Suthep, 11 Nov. 1992, *Balick & Nanakorn* 3453 (**C**); Doi Suthep, 10 Feb. 1926,

Collins 1215 (**BK, K**); Doi Inthanon NP., Pha Dam trail, without date, *Drechsler & Scholz* 30 (**QBG**); Doi Angka, 29 Dec. 1926, *Garett* 361 (**C, E, K, L, P**); Doi Chiang Dao, 4 Dec. 1965, *Hennipman* 3214 (**BKF, C, K, L**); Doi Angka-Kette, 17 Jan. 1905, *Hosseus* 345 (**BM, C, K, L**); Doi Suthep, 31 Dec. 1965, *Iwatsuki & Fukuoka* T-3977 (**BKF, L**); at higher elevation of Doi Suthep-Pui, 8 Sept. 1967, *Iwatsuki, Fukuoka & Nalampoon* T-9368 (**L**); Chom Thong district, Doi Inthanon NP., 18 Oct. 2003, *Kantachot* 211 (**KKU**); Chom Thong district, Doi Inthanon NP., 18 Oct. 2003, *Kantachot* 212 (**KKU**); Chiang Dao district, Doi Chiang Dao, Kew Lom, 19 Dec. 2003, *Kantachot* 216 (**KKU**); Chiang Dao district, Doi Chiang Dao, 20 Dec. 2005, *Kantachot* 220 (**KKU**); Chom Thong district, Doi Inthanon NP., near pagoda, 5 Feb. 2005, *Kantachot* 251 (**KKU**); Doi Suthep, 13 April 1910, *Kerr* 1104 (**BM, K, TCD**); 22 March 1921, *Kerr* 5123 (**BK, C, K, L**); Doi Pha Hom Pok, 3 April 1921, *Kerr* 5212 (**BK, BM, K**); Doi Inthanon NP., Doi Angka, 17 July 1922, *Kerr* 6303 (**BK, BM, K**); 2 May 1921, *Kerr* s.n. (**BM**); Huai Puu, 17 March

- 1998, *Jawamglas* 1 (**QBG**); Doi Inthanon NP., 8 Dec. 1984, *Koyama & Phengklai* T-48853 (**BKF, E, L**); Doi Inthanon NP., 8 Oct. 1998, *La-ongsri* 43 (**QBG**); Doi Inthanon NP., 28 Nov. 1993, *Larsen, Larsen, Nørgaard, Pharsen, Puudjaa & Ueachirakan* 44974 (**AAU, K, P**); Doi Suthep-Pui, 17 July 1968, *Larsen, Smitinand & Warncke* 2592 (**AAU, BK, BKF, C, K, L, P, SING**); Doi Suthep, 28 July 1968, *Larsen, Smitinand & Warncke* 2782 (**AAU, P**); Doi Suthep, 26 Jan. 1978, *Løjtnant & Niyomdham* 34 (**AAU**); Doi Inthanon NP., 2–3 Jan. 1978, *Løjtnant & Niyomdham* 110 (**AAU**); Mueang district, Doi Suthep, E side of Ru-see cave area, 15 Aug. 1987, *Maxwell* 87-845 (**E, K, L**); Mueang district, Doi Suthep, Phu Phing palace area, 5 Dec. 1987, *Maxwell* 87-1559 (**BKF, CMU, L**); Mae Chan district, Mueang Bah Gaw subdistrict, Ban Mai Phattana, 16 April 1989, *Maxwell* 89-464 (**BKF, CMU, L**); Doi Chiang Dao, 6 Dec. 1992, *Maxwell* 92-807 (**P**); Doi Inthanon NP., 5 Dec. 1984, *Mitsuta, Yahara & Nagamasu* T-43197 (**BKF, K, L, P**); Doi Chiang Dao, 2 Dec. 1961, *Murata, Iwatsuki & Phengklai* T-15205 (**BKF, K, L, P**); Doi Chiang Dao, 27 Sept. 1971, *Murata, Iwatsuki & Phengklai* T-15205 (**BKF, P**); Doi Chiang Dao, 27 Sept. 1971, *Murata, Iwatsuki & Phengklai* T-15206 (**AAU, BKF, L, P**); Doi Pui, 29 Sept. 1971, *Murata, Iwatsuki, Phengklai & Charoenphol* T-15352 (**BKF, L**); Doi Inthanon NP., Check Point 2, Mae Chan Rout, 15 Dec. 1996, *Nanakorn et al.* 8262 (**QBG**); Doi Pui, 8 Jan. 1969, *Nooteboom* c.s. 640 (**BKF, C, E, K, L, P**); Siriphum waterfall, 26 June 1978, *Phengklai, Tamura, Niyomdham & Sangkhachand* 4090 (**BKF, K**); Doi Pui, 14 Aug. 1968, *Phengnaren* 546 (**BKF, L**); Huai Pansri, 24 Dec. 1997, *Pongamornkul* 38 (**QBG**); Doi Nangka, 4 Nov. 1930, *Put* 3349 (**BK, BM, C, K, L**); Doi Nangka, 6 Nov. 1930, *Put* 3384 (**BK, BM, C, E, K, L**); 27 March 1998, *QBG* 10822 (**QBG**); Doi Inthanon NP., Kew Mae Pan, 7 Sept. 1998, *QBG* 11980 (**QBG**); Doi Chang mountain, near Hue San, 10 Jan. 1922, *Rock* 1709 (**E**); Upper slope of Doi Chang mountain, 11 Jan. 1922, *Rock* 1766 (**E, P**); Route from Chiang Saen to Burmese border, between Ban Hue Bong and the border, 20 Jan. 1922, *Rock* 1900 (**E**); Doi Pui, 14 Oct. 1979, *Shimizu, Toyokuni, Koyama, Yahara & Santisuk* T-18607 (**AAU, C, L, K, P**); Doi Inthanon NP., 13 April 1960, *Smitinand & Alsterlund* 6628 (**BKF, K**); Doi Inthanon NP., 30 Oct. 1962, *Smitinand, Poore & Robbins* 7662 (**BKF, P**); Doi Chiang Dao, 12 Feb. 1958, *Sørensen, Larsen & Hansen* 1026 (**C, P**); Doi Suthep, 20 April 1958, *Sørensen, Larsen & Hansen* 2933 (**C**); Doi Suthep, 3 May 1958, *Sørensen, Larsen & Hansen* 3208 (**C, E, SING**); Doi Inthanon NP., 8 May 1958, *Sørensen, Larsen & Hansen* 3300 (**C, L**); Doi Suthep, 2 Sept. 1958, *Sørensen, Larsen & Hansen* 4670 (**C, L**); Doi Suthep, 11 Sept. 1958, *Sørensen, Larsen & Hansen* 4912 (**BKF, C**); Doi Inthanon NP., at km 45–48, 6 Jan. 1998, *Srisanga, Puff & Pungamornkul* 22 (**QBG**); Mae Ai, Doi Pha Hom Pok, 23 Nov. 1998, *Suksathan* 1441 (**QBG**); Doi Chiang Dao, Den Ya Khat, 19 Nov. 1999, *Suksathan* 2103 (**QBG**); Doi Inthanon NP., 26 July 1988, *Tamura* T-60262 (**BKF**); W of Doi Inthanon NP., Mae Pau, 8 Dec. 1968, *van Beusekom & Phengklai* 2414 (**AAU, C, E, L**); Ban Phamon, 2 Oct. 1971, *Vidal* 5283 (**AAU**); Doi Inthanon NP., Kew Mae Pan, 22 Feb. 2004, *Wilkins, Supantee, Vajrodaya & Chaiwan* PW446 (**E, L, P**); Doi Angka, 5 April 1982, *Winit* 1345 (**BKF, K**); Chiang Rai [1 km SW of the Akha village of Huai Khi Lek, 25 Sept. 1987, *Anderson* 5465 (**CMU**); Mae Sai district, Mae Tameo village, 1 March 1989, *Bragg* 47 (**CMU**); Mae Sai district, Mae Tameo village, 3 March 1989, *Bragg* 80 (**CMU**); Higher elevation of Doi Thung, 25 Sept. 1967, *Iwatsuki, Fukuoka, Hutoh & Chaiglom* T-11080 (**L**); Thueng district, Wat Huafai bridge, Thubtao subdistrict, Traikad village, 2 Dec. 2005, *Kantachot* 332 (**KKU**); Mae Chan district, Bah Sahng subdistrict, Ban Pha Dueah, 6 Dec. 1990, *Maxwell, Suttajit, Pannavalee & Tantipathananandh* 11 (**CMU**); Mae Chan district, Bah Sahng subdistrict, Ban Pha Dueah, 8 Dec. 1990, *Maxwell, Suttajit, Pannavalee & Tantipathananandh* 11 (**CMU**); 25 Sept. 1967, *Shimizu, Fukuoka, Hutoh & Chaiglom* T-11073 (**L**); Phu Langka, 27 June 1954, *Smitinand* 1663 (**BKF, L**); Nan [Doi Khun Sathan, W of Na Noi, SW of Ban San Tha, 19 Nov. 1993, *Larsen, Larsen, Nørgaard, Pharsen, Puudjaa & Ueachirakan* 44629 (**AAU, L**); Doi Phu Kha, 16 Aug. 1995, *Parnell, Pendry, Jebb & Pooma* 95-122 (**K**); Pua district, Doi Phu Kha NP., 6 Sept. 1998, *Srisanga* 370 (**QBG**); Pua district, Doi Phu Kha NP., 26 July 1999, *Srisanga* 925 (**QBG**); Pua district, Doi Phu Kha NP., 11 Nov. 2000, *Srisanga* 1767 (**QBG**); Pua district, Doi Phu Kha NP., 13 Nov. 2001, *Srisanga* 2200 (**QBG**); Lampang [Mae Tha

district, 20 Feb. 1972, *Winit* 693 (**BK, K**); Sukhothai [Khiri Mat district, Ram Khamhang NP., Khao Luang, 15 Dec. 2005, *Kantachot* 365 (**KKU**)]; Phitsanulok [Foot hill of Phu Miang mountain, 27 July 1966, *Larsen, Smitinand & Warncke* 934 (**AAU, P**); Phu Miang, Phu Romrot, 2 Oct. 1967, *Shimizu, Iwatsuki, Fukuoka, Hutoh, Chaiglom & Nalampoon* T-11508 (**L**); Phu Hin Rong Kla, 13 Oct. 1998, *Suksathan* 1209 (**QBG**); Phu Hin Rong Kla, 14 Nov. 1998, *Suksathan* 1261 (**QBG**)]; NORTHEASTERN: Phetchabun [Lomsak district, Nam Nao NP., Dong Mafai, 21 Nov. 2004, *Kantachot* 239 (**KKU**); Khao Kho district, Nong Maena subdistrict, Thung Salang Luang NP., 18 Nov. 2005, *Kantachot* 306 (**KKU**); Lomsak district, Nam Nao NP., Dong Mafai, 20 Oct. 2004, *Kantachot* 430 (**KKU**)]; Loei [Phu Ruea district, Phu Ruea NP., 2 Feb. 2004, *Kantachot* 228 (**KKU**); Phu Ruea district, Phu Ruea NP., 2 Feb. 2004, *Kantachot* 229 (**KKU**); Phu Ruea district, Phu Ruea NP., 24 April 2005, *Kantachot* 269 (**KKU**); Phu Ruea district, Phu Ruea NP., Hin Wua Norn, 12 Nov. 2005, *Kantachot* 301 (**KKU**); Phu Ruea NP., 14 Sept. 2002, Khampila 45-01 (**KKU**); Phu Luang, 28 Nov. 1980, *Niyomdham & Vidal* 508 (**AAU, BKF, C, P**); 6 Dec. 1965, *Tagawa, Iwatsuki & Fukuoka* T-1783 (**BKF, L**)]; EASTERN: Nakhon Ratchasima [Khao Yai NP., Khao Khiew, 29 Oct. 1970, *Charoenphol, Larsen & Warncke* 4212 (**BKF, K, L**); Tachang district, 9 Jan. 1928, *Kerr* 9884 (**BK, BM, C, K, P**); Khao Yai NP., 19 Nov. 1962, *Smitinand* 7928 (**BKF, K, L**); Khao Yai NP., Khao Khiew, 13 Aug. 1999, *Tubtimtong* 41-12 (**KKU**)]; SOUTHWESTERN: Kanchanaburi [Huai Bankao, 10 Nov. 1971, *van Beusekom, Phengklai, Geesink & Wongwan* 3644a (**K, L**); Huai Bankao, 10 Nov. 1971, *van Beusekom, Phengklai, Geesink & Wongwan* 3644c (**C, L**)]; CENTRAL: Nakhon Nayok [Khao Yai NP., Khao Khiew, summit of Khao Khiew, 11 Aug. 1974, *Maxwell* 74-780 (**L**)]; SOUTHEASTERN: Chon Buri [Sriracha district, Khao Khiew, 7 Dec. 1975, *Maxwell* 75-1115 (**AAU, BK, L**)]; Chanthaburi [at foot of Khao Soi Dao, 11 Feb. 1966, *Fukuoka* T-7331 (**L**); Khao Prabath, 23 Nov. 1930, *Hosseus* 193 (**BM, C, K, P**); Phu Soi Dao Tai, 13 Dec. 2005, *Kantachot* 359 (**KKU**); Khao Prabath, 23 Nov. 1930, *Lakshnakara* 513 (**BK, BM, C, K, L, P**)]; PENINSULAR: Ranong [Khao Pawta Luang Keo, 30 Jan. 1929, *Kerr* 16895 (**BK, BM, C, K, L**)]; Krabi [Phanom Bencha, 20 March

1930, *Kerr* 18729 (**BK, BM, K**)]; Trang [Khao Sung, 17 April 1928, *Kerr* 15269 (**BK, BM, C, K, L, P**)]; Yala [Ban Koo Nom, Chana ca 3 km N of the Thai-Malaysian border, 15 Dec. 1986, *Maxwell* 86-1060 (**BKF, CMU, L, PSU**)].

Ecology.— In evergreen and pine-dipterocarp forests; 50–2,370 m altitude.

Notes.— *P. chinensis* var. *chinensis* is a very variable taxon, especially in the size and shape of its leaves. However, it is recognized by generally being glabrous throughout, although sometimes it is sparsely pubescent on the primary vein, petioles and nodes. The leaves are more or less elliptic, ovate or lanceolate.

b. var. hispida (Hook.f.) Kantachot, **comb. nov.**— *Polygonum chinense* var. *hispidum* Hook.f., Fl. Br. Ind. 5(13): 45. 1886.— *Polygonum chinense* f. *hispidum* (Hook.f.) Sam., Symbolae Sinicae 7(1): 180. 1929. Type: Myanmar, Tenasserim, *Gallatly* s.n. (holotype **CAL**).

Distribution.— India, Myanmar.

Thailand.— NORTHERN: Mae Hong Son [Mueang district, Mok Champae subdistrict, Ban Rak Thai, 21 Dec. 2005, *Kantachot* 355 (**KKU**); Pai district, 20 Feb. 2005, *Kantachot* 374 (**KKU**); Mueang district, Huai Phuling subdistrict, Ban Huai Hi, 22 Dec. 2005, *Kantachot* 379 (**KKU**)]; Chiang Mai [Chom Thong district, Doi Inthanon NP., 16 Jan. 1991, *Banziger* 854 (**CMU**); Doi Inthanon NP., Kew Mae Pan, without date, *BGO staff* 44 (**QBG**); Chiang Dao, Mae Taman, 27 Sept. 1994, *BGO staff* 1913 (**QBG**); Mueang district, Chang Khian, 28 Oct. 1994, *BGO staff* 2419 (**QBG**); Mueang district, Chang Khian, 28 Oct. 1994, *BGO staff* 2420 (**QBG**); Om Koi district, Bo Luang, 19 Jan. 1964, *Hansen, Seidenfaden & Smitinand* 10770 (**L, SING**); Doi Chiang Dao, 4 Dec. 1965, *Hennipman* 3210 (**BKF, C, K, L**); Doi Pha Hom Pok, 11 Sept. 1967, *Iwatsuki, Fukuoka & Chintayungkun* T-9555 (**L**); Chom Thong district, Doi Inthanon NP., 18 Oct. 2003, *Kantachot* 209 (**KKU**); Chiang Dao district, Doi Chiang Dao, 8 Dec. 2004, *Kantachot* 219 (**KKU**); Chom Thong district, Doi Inthanon NP., Angka, 24 Nov. 2005, *Kantachot* 341 (**KKU**); Mae Taeng district, Khun Mae Ya water managable unit, 19 Dec. 2005, *Kantachot* 400 (**KKU**); Fang district, Fang NP., 4

Feb. 2006, *Kantachot* 404 (**KKU**); Doi Inthanon NP., 7 Oct. 1998, *La-ongsri* 21 (**QBG**); Doi Pha Hom Pok, 5–7 Feb. 1978, *Lojtnant & Niyomdham* 181 (**AAU, K**); Doi Inthanon NP., 15 Dec. 1984, *Mitsuta, Yahara & Nagamasu* T-44248 (**BKF, K, L**); Hot district, Mae Sanan, 26 Dec. 1978, *Niyomdham, Sangtho & Sangkhachand* 146 (**AAU, BKF, K, L**); Wiang Hang-Maena, 16 Jan. 2001, *Norsangsri* 1248 (**QBG**); Doi Inthanon NP., 30 July 1980, *Phengkklai et al.* 7391 (**AAU, BKF, C**); Pang Kia, HQ of the Mae Lao, 1 Jan. 1922, *Rock* 1598 (**E, K**); Chom Thong district, Doi Inthanon NP., 16 Oct. 1979, *Shimizu, Toyokuni, Koyama, Yahara & Santisuk* T-18854 (**BKF, L**); Chom Thong district, Doi Inthanon NP., Mae Pan waterfall, 16 Oct. 1979, *Shimizu, Toyokuni, Koyama, Yahara & Santisuk* T-18951 (**BKF**); Om Koi district, Bo Luang tableland, Ban Om Koi to Mae Tuen watershed, improvement station, 17 Oct. 1979, *Shimizu, Toyokuni, Koyama, Yahara & Santisuk* T-19124 (**AAU, BKF, L**); Fang district, 22 Feb. 1958, *Sorensen, Larsen & Hansen* 1494 (**BKF, C**); Doi Pha Hom Pok, 24 Feb. 1958, *Sorensen, Larsen & Hansen* 1562 (**C**); Doi Inthanon NP., at km 45-48, 6 Jan. 1998, *Srisanga, Puff & Pungamornkul* 32 (**QBG**), 33 (**QBG**); Doi Pha Hom Pok, Mae Ai, 23 Nov. 1998, *Suksathan* 1484 (**QBG**); Doi Pha Hom Pok, Mae Ai, 8 Nov. 1998, *Suksathan* 1780 (**QBG**); Doi Pha Hom Pok, Mae Ai, 8 Nov. 1998, *Suksathan* 1781 (**QBG**); Doi Pui, 20 Oct. 1999, *Suksathan* 2057 (**QBG**); Doi Chiang Dao, 21 Jan. 1999, *Suksathan* 2156 (**QBG**); Doi Chiang Dao, 21 Jan. 1999, *Suksathan* 2157 (**QBG**); Ban Yang, at middle elevation of Doi Inthanon NP., 17 Dec. 1965, *Tagawa, Iwatsuki & Fukuoka* T-2472 (**BKF, L**); Doi Inthanon NP., 19 Dec. 1965, *Tagawa, Iwatsuki & Fukuoka* T-2846 (**BKF, L**); W flank of Doi Inthanon NP., Mae Pau, 6 Dec. 1969, *van Beusekom & Phengkklai* 2339 (**AAU, BKF, C, E, K, L, P**); Nan [Pua district, Doi Phu Wae, Doi Phu Kha NP., 13 Nov. 2001, *Srisanga* 416 (**QBG**)]; Lampang [Mueang district, Khun Tan NP., Yaw 2, 29 Jan. 2005, *Kantachot* 242 (**KKU**)]; Sukhothai [Khiri Mat district, Ram Khamhang NP., Khao Luang, 15 Dec. 2005, *Kantachot* 364 (**KKU**)]; NORTHEASTERN: Loei [Phu Kradueng, without date, *Chantaranothai, Parnell, Simpson & Sridit* 90/111 (**KKU, TCD**)]; Wang Sapung district, Phu Kradueng, 31 Oct. 1990, *Dee* 30 (**BKF**); Phu Kradueng district, Phu Kradueng NP., Sum Kokdon,

Kantachot 238 (**KKU**); Phu Kradueng, 12 Feb. 1931, *Kerr* 20125 (**BK, BM, C, K, L**); Phu Ruea NP., 14 Sept. 2002, *Khampila* 45-02 (**KKU**); Phu Kradueng, 27 Nov. 1965, *Phusomsaeng et al.* 100 (**BKF, L**); Phu Kradueng, 5 Sept. 1967, *Niyomdham, Sangtho & Sangkhachand* T-9003 (**AAU, L**); Phu Kradueng, 11 Feb. 1989, *Santisuk* 530 (**BKF**); Phu Kradueng, 27 Nov. 1965, *Tagawa, Iwatsuki & Fukuoka* T-360 (**BKF, L**); Phu Kradueng, at summit, 28 Nov. 1965, *Tagawa, Iwatsuki & Fukuoka* T-511 (**BKF, L**); Phu Kradueng, Phon Phop waterfall, 9 Sept. 1988, *Takahashi & Tamura* T-63473 (**AAU, BKF**); Phu Kradueng, 10 Oct. 1999, *Tubtimtong* 41-15 (**KKU**); Phu Kradueng, 23 Dec. 1971, *van Beusekan, Phengkklai, Geesink & Wongwan* 4512 (**BKF, C, K, L, P**)]; EASTERN: Nakhon Ratchasima [Khao Lam, 12 Jan. 1925, *Kerr* 9949 (**BK, BM, C, K, L, P**); Khao Lam, 27 Dec. 1930, *Put* 3547 (**BK, BM, C, K, P**); Khao Yai NP., Khao Lam, 22 Jan. 1972, *Smitinand & Phengkklai* 11591 (**BKF, L**)]; SOUTHWESTERN: Kanchanaburi [W of Sri Sawat district, 29 June 1974, *Larsen & Larsen* 33940 (**AAU, E**); Thong Pha Phum district, 6 July 1973, *Maxwell* 73-159 (**AAU**); Timuai forest protection unit, 1 May 1992, *Sorensen et al.* 52 (**BKF**); Huai Bankao, 8 Nov. 1971, *van Beusekom, Phengkklai, Geesink & Wongwan* 3512 (**L**); Huai Bankao, 10 Nov. 1971, *van Beusekom, Phengkklai, Geesink & Wongwan* 3544b (**L, K**); Huai Bankao, 8 Nov. 1971, *van Beusekom, Phengkklai, Geesink & Wongwan* 3550 (**BKF, C, K, L**)]; SOUTHEASTERN: Chanthaburi [Khao Khitchakut, 15 April 1924, *Nai Noe* 78 (**AAU, BK, BM, K, L, P**)]; PENINSULAR: Ranong [Suksamran, Khlong Nakha, 5 Nov. 1999, *Maknoi* 55 (**QBG**)].

Ecology.— In hill evergreen and deciduous forests; 300–2,565 m altitude.

Notes.— *P. chinensis* var. *hispida* differs from the typical variety in being hairy throughout. The leaves are usually elliptic or ovate and auricles are always present on young plants.

c. var. **ovatifolia** (Meisn.) H.Hara., Fl. E. Himal.: 71. 1966.— *Polygonum chinense* var. *ovatifolium* Meisn. in Wall., Pl. Asiat. Rar. 3: 60. 1832; Meisn. in DC., Prodr. 14(1): 131. 1856. Type: Nepal, *Wallich* cat. no. 1705.1 (syntype **K-W!**); without locality and collector (syntype **G-DC!**)

2250/3-21).— *Coccoloba crispata* Buch.-Ham. ex Roxb., Fl. Ind. 2: 292. 1832. Type: India, Calcutta, Hamilton s.n. (holotype **BM!**).— *Polygonum chinense* var. γ *longiflorum* Kuntze, Rev. Gen. Pl. 2: 555. 1891. Type: Sikkim, Tongloo, Kuntze 6940 (holotype **NY!**).— *Polygonum malaicum* Danser, Bull. Jard. Bot. Buitenzorg Ser. 3, 8: 218. 1927. Type: Indonesia, Sumatra, 30 July 1921, L  erzing 6046 (holotype **BO**).— *Polygonum chinense* var. *malaicum* (Danser) Steward, Contr. Gray Herb. 88: 73. 1930.

Distribution.— India, Nepal, Sikkim, China, Myanmar, Sumatra.

Thailand.— NORTHERN: Chiang Mai [Doi Inthanon NP., along road to summit km 32, 20 Sept. 1994, Boyce 996 (**K**); Doi Angka, 23 Nov. 1926, Garrett 319 (**C, K, P**); Doi Inthanon NP., Doi Angka, 19 Jan. 1905, Hosseus 355 (**BM, C, K, P**); Doi Pha Hom Pok, NW of Phan, 12 Aug. 1967, Iwatsuki, Fukuoka & Chintayungkun T-9617 (**L**); Chom Thong district, Doi Inthanon NP., 8 Oct. 2003, Kantachot 208 (**KKU**); Chom Thong district, Doi Inthanon NP., near pagoda, 5 Feb. 2005, Kantachot 250 (**KKU**); Chom Thong district, Doi Inthanon NP., Doi Angka, 24 Nov. 2005, Kantachot 343 (**KKU**); Fang district, Doi Pha Hom Pok, 19 Dec. 2006, Kantachot 367 (**KKU**); Fang district, Doi Pha Hom Pok, 2 April 1921, Kerr 5209 (**BK, BM, C, K, L**); Doi Inthanon NP., 5 Dec. 1984, Koyama & Phengklai T-44224 (**AAU, BKF, K, P**); Doi Inthanon NP., 11 Sept. 1974, Larsen & Larsen 34437 (**AAU, P, K**); Doi Pha Hom Pok, 5–7 Feb. 1978, L  jtnant & Niyomdham 179 (**AAU**); Doi Inthanon NP., 31 Dec. 1989, Maxwell 89-1623 (**CMU, L**); Doi Inthanon NP., 4 Dec. 1984, Mitsuta, Yahara & Nagamasu T-43198 (**AAU, BKF, L**); Doi Inthanon NP., higher elevation of Doi Inthanon, 3 Oct. 1971, Murata, Iwatsuki, Phengklai & Charoenphol T-16101 (**AAU, BKF, C, K, L, P**); Chom Thong district, Doi Inthanon NP., 22 Dec. 1985, Paisooksantivatana Y 16584-85 (**BK**); Mae Taeng district, at summit, 5 Dec. 1977, Santisuk 1485 (**AAU, L, K**); Chom Thong district, Doi Inthanon NP., 16 Oct. 1979, Shimizu, Toyokum, Koyama, Yahara & Santisuk T-18895 (**AAU, C**); Doi Inthanon NP., 30 Oct. 1962, Smitinand, Poore & Robins 7650 (**BK, C, L, P**); Doi Inthanon NP., 8 May 1967, Smitinand, Poore & Robins 37558 (**K**); Doi Inthanon NP., 18 Dec. 1965, Tagawa, Iwatsuki

& Fukuoka T-2623 (**BKF, L**); Doi Inthanon NP., 4 Aug. 1988, Tsugaru T-61872 (**AAU, K**); Doi Inthanon NP., without date, Tippan 302 (**BK**); W of Doi Inthanon NP., Mae Pau, 8 Dec. 1969, van Beusekom & Phengklai 2413 (**AAU, BKF, K, L**); Nan [Doi Phu Kha, ca 70 km NE of Nan, 13 Dec. 1990, Larsen, Larsen, Nanakorn, Ueachirakan & Sirirugsa 41922 (**AAU**)]; Phrae [Mae Khaem stream, 5 Jan. 1972, van Beusekom, Geesink, Phengklai & Wongwan 4667 (**BKF, C, K, L**)]; Phitsanulok [Nakhon Thai district, Phu Hin Rong Kla NP., Man Daeng waterfall, 20 March 2003, Kantachot 164 (**KKU**); Phu Rom Rot, one peak of Phu Miang, 3 Sept. 1967, Shimizu, Iwatsuki, Fukuoka, Hutoh, Chaiglom & Nalampoon T-11509 (**L**)].

Ecology.— In evergreen forest; 990–2,560 m altitude.

Notes.— *P. chinensis* var. *ovatifolia* is distinguished from *P. chinensis* var. *chinensis* and *P. chinensis* var. *hispida* in having larger leaf-blades and flowers, and cuspidate leaf apices. This variety occurs at altitudes above 950 m. Many collections cited in the protologue are of the typical variety and only two syntype specimens belong to var. *ovatifolia*.

4. *Persicaria dichotoma* (Blume) Masamune, Sci. Rep. Kanazawa Univ., Biol. 2: 82. 1954.— *Polygonum dichotomum* Blume, Bijdr. 11: 529. 1826.— *Truellum dichotomum* (Blume) Soj  k, Preslia 46(2): 145. 1974. Type: Indonesia, Java, Batavia, Blume 1175 (lectotype **L!**, selected by Wilson, 1988).— *Polygonum pedunculare* Wall. ex Meisn. in Wall., Pl. Asiat. Rar. 3: 58. 1832; Meisn. in DC., Prodr. 14(1): 133. 1856.— *Polygonum strigosum* R.Br. var. *pedunculare* (Wall. ex Meisn.) Steward, Contr. Gray Herb. 88: 91. 1930.— *Persicaria peduncularis* (Wall. ex Meisn.) Nemoto, Fl. Jap. Suppl.: 174. 1936. Type: Singapore, 1822, Wallich cat. no. 1718 (holotype **K-W!**).

Distribution.— India, China, Laos, Vietnam, Singapore.

Thailand.— NORTHERN: Mae Hong Son [Ban Na Papaek, 12 Nov. 1999, Suksathan 2059 (**QBG**)]; Chiang Mai [Doi Inthanon NP., 22 July 1988, Tsugaru T-61713 (**AAU**); Ban Mai Pattana, Mae Chan district, 29 July 1988, Maxwell 88-929

(**BKF, CMU, L**); Chom Thong district, 21 Aug. 1999, *Wattana, Suksathan & Argent* 598 (**QBG**); Chiang Rai [Mueang district, 20 Oct. 1992, *Maxwell* 92-156 (**AAU, E, P**)]; Phitsanulok [Thung Salang Luang, *Larsen, Smitinand & Warncke* 474 (**AAU**); Thung Salang Luang, 30 Sept. 1967, *Shimizu* T-11273 (**L**)]; NORTHEASTERN: Loei [Phu Ruea district, 25 April 2005, *Kantachot* 261 (**KKU**); Phu Ruea district, 25 April 2005, *Kantachot* 262 (**KKU**); Nong Khai [Khonglong lake, 8 Jan. 2006, *Kantachot* 396 (**KKU**)], Sakon Nakhon [Phu Phan NP., 15 Dec. 2004, *Kantachot* 360 (**KKU**); Phu Phan NP., 5 Feb. 1998, *Tubtintong* 41-05 (**KKU**)]; EASTERN: Chaiyaphum [Thung Kamang, 9 Aug. 1972, *Larsen, Larsen, Nielsen & Santisuk* 31606 (**AAU, BKF, P**); 29 May 1974, *Geesink, Hattink & Phengklai* 7040 (**AAU, BKF, K, L**)]; CENTRAL: Bangkok [9 Oct. 1820, Kerr s.n. (**BM**); 12 Sept. 1920, *Kerr* 4469 (**BM, K**); 19 Dec. 1920, *Marcan* 508 (**BM, K**)]; SOUTHEASTERN: Prachin Buri [Khao Yai NP., 11 July 1966, *Larsen, Smitinand & Warncke* 260 (**AAU, BKF, L, P**); Khao Yai NP., 21 June 1963, *Larsen, Smitinand & Warncke* 10237 (**AAU, BKF, C**)]; PENINSULAR: Phatthalung [Thale Noi, 21 Oct. 2004, *Kantachot* 231 (**KKU**)]; Narathiwat [Sungai Kolok, 17 Aug. 1995, *Larsen, Larsen, Tange, Moran, Niyomdham & Puudjaa* 45698 (**AAU**); Takbai, 18 Feb. 1984, *Niyomdham* 795 (**AAU, BKF, C, P**); Sungai Padee, 4 Sept. 1987, *Niyomdham & Sriboonma* 1537 (**AAU, BKF, C, E, K, P**)].

Ecology.— Swampy areas, marshy places and rice fields.

Notes.— Distinctive on account of its leaves which are ovate or hastate. Although it superficially resembles *P. strigosa* it differs in the entire leaf margin, the presence of petioles and the retrorse prickles on the primary vein on the lower leaf surface.

5. *Persicaria glabra* (Willd.) M.Gómez, *Anales Inst. Segunda Ensen.* 2: 278. 1896; Grierson & Long, *Fl. Bhutan* 1(1): 161. 1983.— *Polygonum glabrum* Willd., *Sp. Pl.*, ed. 4, 2(1): 447. 1799; D. Don, *Prodr. Fl. Nep.*: 71. 1825; Roxb., *Hort. Bengal.*: 29. 1814 & *Fl. Ind.* 2: 287. 1832; Meisn., *Monogr. Polyg.*: 78. 1826; Meisn. in DC., *Prodr.* 14(1): 114. 1856; Steward, *Contr. Gray Herb.*: 43. 1930. Type: India, 1795, *Klein* s.n. (holotype

B-WILLD! 7641).

Distribution.— Sri Lanka, India, Bhutan, Bangladesh, China, Taiwan, Myanmar, Vietnam, Java, Australia.

Thailand.— NORTHERN: Mae Hong Son [Ban Huai Hi, Mueang district, 22 Dec. 2005, *Kantachot* 375 (**KKU**)]; Chiang Mai [Ban Khunklang, Doi Inthanon NP., 25 Nov. 2005, *Kantachot* 2005 (**KKU**); Ban Phamon, Doi Inthanon NP., 14 Nov. 1999, *Suksathan* 2095 (**QBG**); Doi Inthanon NP., 8 Oct. 1998, *La-ongsri* 47 (**QBG**)]; Phrae [Song district, W bank of Yom river, 10 Nov. 1991, *Maxwell* 91-1009 (**E**)]; Tak [Doi Musoe, 8 Aug. 1968, *SP* 185 (**BKF**); Doi Musoe, 18 Aug. 1968, *Smitinand* 185 (**BKF**)]; NORTHEASTERN: Loei [Pha Nokkao, 11 Feb. 1958, *Ploenchit* 1272 (**BKF**)]; Nong Khai [Nong Songhong-Thabo road, 23 April 2001, *Kantachot* 432 (**KKU**)]; Sakon Nakhon [Phu Phan NP., 2 Nov. 2002, *Khampila* 45-09 (**KKU**); Huai Plahang, Sawang Dan Din district, 17 Oct. 2005, *Kantachot* 282 (**KKU**); Sunjod pond, Sawang Daen Din district, 20 Nov. 2005, *Kantachot* 313 (**KKU**)]; Khon Kaen [16 March 1932, *Kerr* 20675 (**BK, BM, K**); Phuwiang district, 30 March 1933, *Lakshanakara* 1342 (**BK, BM, K**); Si Chomphu district, 17 April 1997, *Tubtintong* 40-03 (**KKU**)]; EASTERN: Chaiyaphum [Ban Pontong, Mueang district, 12 Jan. 2006, *Kantachot* 403 (**KKU**); 29 Jan. 1931, *Kerr* 19954 (**BK, BM, C, K, L**)]; Ubon Ratchathani [Khong Chiam district, 18 Sept. 2006, *Kantachot* 445 (**KKU**)]; SOUTHWESTERN: Phetchaburi [Jan. 1914, *Collins* 599 (**C, K, L**); Kaeng Krachan, 27 Dec. 1963, *Umpai* 80 (**BK**)]; CENTRAL: Chai Nat [Mueang district, 13 March 2006, *Kantachot* 419 (**KKU**)].

Ecology.— Open marshy areas; 0–1,300 m altitude.

Notes.— This species is recognized by the 5-partite tepals and glabrous primary vein and petioles.

6. *Persicaria hydropiper* (L.) Spach., *Hist. Vég.* 10: 536. 1841; Grierson & Long, *Fl. Bhutan* 1(1): 162. 1983.— *Polygonum hydropiper* L., *Sp. Pl.* 1: 361. 1753; Meisn., *Monogr. Polyg.*: 76. 1826; Steward, *Contr. Gray Herb.*: 58. 1930. Type: “Habitat in Europae subhumidis” (lectotype **LINN!**

510.9, selected by Bhopal & Chaudhri (1977)).— *Polygonum gracile* R.Br., Prodr. Fl. Nov. Holl. 1: 419. 1810. Type: Australia, Port Jackson, Dec. 1804, R. Brown 3004 (lectotype **BM!**; selected by Wilson, 1988; isolectotype **K!**).— *Polygonum oryzetum* Blume, Bijdr. 10: 531. 1825. Type: Indonesia, Java, Blume 462 (holotype **L!**).— *Persicaria hydropiper* L. subsp. *oryzetum* (Blume) Soják, Preslia 46(2): 153. 1974.— *Polygonum punctatum* H.Lév., in Fedde. Rep. 11: 67. 1912. Type: South Korea, Quelpaert Island (Cheju Island), June 1911, *Taquet* 5896 (holotype **E!**).

Distribution.— Europe, India, Nepal, Sikkim, Bhutan, Bangladesh, Sri Lanka, Myanmar, China, Korea, Japan, Peninsular Malaysia, Sumatra, Java, Australia, North America.

Thailand.— NORTHERN: Chiang Mai [24 Oct. 1909, *Kerr* 853 (**BM, K, P, TCD**)]; Phrae [30 July 1931, *Marcan* 2702 (**BM, K**)]; Phitsanulok [28 July 1966, Phu Miang, *Larsen, Smitinand & Warncke* 952 (**AAU, BKF, P**)]; Phu Miang, 2 Oct. 1967, *Shimizu, Iwatsuki, Fukuoka, Hutoh, Chaiglom & Nalampoon* T-11333 (**L**); Phu Miang, *SP et al.* 54 (**BKF**)]; Nakhon Sawan [3 June 1922, *Kerr* s.n. (**BM**)]; NORTHEASTERN: Loei [Wang Sapung district, 21 June 1991, *Dee* 7 (**BKF**); Wang Sapung district, 21 June 1991, *Dee* 9 (**BKF**)]; Sakon Nakhon [Phanna Nikhom district, 16 Nov. 2002, *Khampila* 45-14 (**KKU**)]; Phanna Nikhom district, 25 July 1999, *Tubtimtong* 42-19 (**KKU**)]; Khon Kaen [Nam Pong river, Nam Pong district, 3

May 2005, *Kantachot* 271 (**KKU**)]; EASTERN: Chaiyaphum [Khon San district, 18 Nov. 2005, *Kantachot* 304 (**KKU**)]; Nakhon Ratchasima [Khao Yai NP., 21 June, *Larsen* s.n. (**BKF 52720)]; CENTRAL: Chai Nat [9 Jan. 1930, *Put* 2656 (**BM, BK, C, K, L**)]; Bangkok [16 Feb. 1932, *Kerr* s.n. (**BM**)]; Mae Ping river, 24 Oct. 1909, *Kerr* 853 (**BM, K, P, TCD**); Bang Plud, 4 Dec. 1955, *Smitinand* 3133 (**BKF**)]; PENINSULAR: Pattani [Ban Saikao, 30 March 1928, *Kerr* 14894 (**BK, BM, C, K, L**)].**

Ecology.— River banks, rice fields, stream-sides in hill evergreen forest; 300–1,000 m altitude.

Notes.— *P. hydropiper* is distinguished by the papery leaves and by having four tepals with conspicuous glandular dots.

7. *Persicaria lapathifolia* (L.) S.F.Gray, Nat. Arrang. British Pl. 2: 270. 1821; Grierson & Long, Fl. Bhutan 1(1): 162. 1983.— *Polygonum lapathifolium* L., Sp. Pl.: 360. 1753; Meisn. in DC., Prodr. 14(1): 119. 1856; Steward, Contr. Gray Herb.: 44. 1930. Type: “Habitat in Gallia” (**LINN!** 510.6, selected by Timson, 1963).— *Polygonum glandulosum* R.Br., Prodr. Fl. Nov. Holland. 1: 419. 1810. Type: Australia, 1804, R. Brown 3002 (holotype **BM!**; isotype **K!**).— *Polygonum pyramidale* H.Lév., Bull. Soc. Bot. France 54: 370. 1907. Type: China, Tchao-Tchao, 10 Aug. 1905, *Chanet* 85 (holotype **E!**).

KEY TO THE VARIETIES

1. Leaves glabrous

a. var. **lapathifolia**

1. Leaves with lanate hairs

b. var. **lanata**

a. var. lapathifolia

Distribution.— Europe, Africa, Pakistan, India, Nepal, Bangladesh, Myanmar, China, Taiwan, Vietnam, Indonesia, Philippines, New Guinea, Australia.

Thailand.— NORTHERN: Chiang Mai [Chiang Saen district, Mae Khong river banks, 10 April 1984, *Maxwell* 84-426 (**BKF**)]; Chiang Rai [Phu Lanka, Huai Namka, 1 July 1954, *Smitinand* 1784 (**BKF**)]; Tak [Bhumiphol dam, May 1959, *Smitinand* 515 (**BK**)]; Nakhon Sawan [Phak Nampho district, July 1920, *Vanpruk* 1018 (**BKF**,

K)]; NORTHEASTERN: Loei [Chiang Khan district, Kud Koo rapids, 24 April 2005, *Kantachot* 260 (**KKU**)]; Nong Khai [Thabo district, Kaew Wichot temple, Mae Khong river banks, 16 Nov. 2002, *Khampila* s.n. (**KKU**)]; Thabo district, Kaew Wichot temple, Mae Khong river banks, 23 Aug. 1999, *Tubtimtong* 42-09 (**KKU**)]; EASTERN: Amnat Charoen [Chanuman district, Ban Bung Khiaw, 16 April 2006, *Kantachot* 427 (**KKU**)].

Ecology.— River banks, roadsides; 250–500 m altitude.

Notes.— *P. lapathifolia* var. *lapathifolia* has

no lanate hairs on the stems and leaves whereas pubescent hairs are usually present on the leaf margin.

b. var. lanata (Roxb.) Soják, *Preslia* 46(2): 154. 1974.— *Polygonum lanatum* Roxb., *Fl. Ind.* 2: 285. 1832.— *Polygonum lapathifolium* var. *lanatum* (Roxb.) Steward, *Contr. Gray Herb.* 88: 46. 1930. Type: India, *Roxburgh* s.n. (holotype **BM!**).— *Polygonum lanigerum* R.Br., *Prodr. Fl. Nov. Holland.* 1: 419. 1810; Meisn., *Monogr. Polyg.*: 70. 1826; Meisn. in DC., *Prodr.* 14(1): 117. 1856.— *Persicaria lanigera* (R.Br.) Soják, *Preslia* 46(2): 153. 1974. Type: Australia, Port Jackson, in aren[osis] etc prope Hawkesbury [River] Dec. 1804–Jan. 1805, *R. Brown* (*Britten* 3003) (lectotype **BM!**, selected by Akeroyd (1987)).

Distribution.— India, Nepal, Bhutan, China, Japan, Malaysia, Java, Philippines, Australia.

Thailand.— NORTHERN: Mae Hong Son [Pai district, Ban Thungyao Nuea, near Pai river, 20 Dec. 2005, *Kantachot* 401 (**KKU**)]; Chiang Mai [Hot district, Ban Bo Luang, 6 Jan. 2006, *Kantachot* 407 (**KKU**); Doi Suthep bog, 8 Sept. 1988, *Sorensen, Larsen & Hansen* 4819 (**BKF, C**)]; Chiang Rai [Chiang Saen district, along Mae Khong river bank, 16 April 1989, *Maxwell* 89-462 (**BKF, CMU, L**)]; Kamphaeng Phet [Mueang district, 31 March 2006, *Kantachot* 423 (**KKU**)]; NORTHEASTERN: Udon Thani [Kumphawapi district, along road sides, 16 Nov. 2002, *Khampila* 45-04 (**KKU**); Kumphawapi district, along road sides, 9 March 1999, *Tubtimtong* 42-19 (**KKU**)]; Nakhon Phanom [9 May 1932, *Kerr* 21381 (**BK, BM, C, K, L**)]; CENTRAL: Chai Nat [5 March 1958, *Sorensen, Larsen & Hansen* 1916 (**C, E**)]; SOUTHEASTERN: Rayong [Ban Tak, 19 March 1913, *Kerr* 2962 (**BM, E, K**)].

Ecology.— Open wet areas; 100–300 m altitude.

Notes.— This variety differs from the typical variety in the conspicuous lanate hairs on leaves, stems or throughout. Its leaves are also longer than *P. lapathifolia* var. *lapathifolia*.

8. Persicaria minor (Huds.) Opiz, *Seznam*: 72. 1852.— *Polygonum minus* Huds., *Fl. Angl.*, ed. 1: 148. 1762; Steward, *Contr. Gray Herb.* 88: 63. 1930. Type: England, Westminster (not

seen).— *Polygonum strictum* All., *Fl. Pedem.* 2: 207, n. 2051, t. 68, f. 2. 1785. Type: Nepal (type not located).— *Polygonum tenellum* Blume, *Bijdr.* 2: 530. 1825; Roxb., *Hort. Bengal.*: 29. 1814 & *Fl. Ind.* 2: 289. 1832. Type: Indonesia, Java, Gunung Gede, *Blume* s.n. (holotype **L!** 0038865).— *Polygonum strictum* All. var. *a subcontinuum* Meisn. in Wall., *Pl. Asiat. Rar.* 3: 57. 1832. Type: Nepal, in 1821, *Wallich* s.n. (syntype **NY!**); Goalpara Lalgunj, *Hamilton* s.n. (syntype **NY!**).— *Persicaria tenella* (Blume) Hara, *J. Jap. Bot.* 44: 375. 1969; Grierson & Long, *Fl. Bhutan* 1(1): 163. 1983.

Distribution.— Europe, temperate Asia, India, Nepal, Bangladesh, Sri Lanka, China, Taiwan, Laos, Vietnam, Peninsular Malaysia, Indonesia, Philippines, New Guinea.

Thailand.— NORTHERN: Mae Hong Son [Mueang district, Ban Na Papaek, Huai Makhuea Som, 21 Dec. 2005, *Kantachot* 411 (**KKU**)]; Khun Yuam district, Ban Huaha, 13 Nov. 1999, *Suksathan* 2080 (**QBG**); Chiang Mai [13 Oct. 1921, *BK* 19968 (**BK**); Doi Inthanon NP., 4 June 1970, *Chual* 44 (**BKF**); Doi Suthep, 23 March 1937, *Deignan* 1530 (**K**); Doi Inthanon NP., Mae Klang river, 20 July 1988, *Fukuoka* T-62096 (**BKF**); Ban Bo Luang, in paddy field, 13 June 1973, *Geesink, Phanichapol & Santisuk* 5905 (**AAU, BKF, C, E, K, L**); Bo Luang, 29 Jan. 1964, *Hansen, Seidenfaden & Smitinand* 10969 (**BKF**); Chom Thong district, Ban Mae Klang Luang, 21 Nov. 2005, *Kantachot* 327 (**KKU**); Doi Suthep, 12 July 1912, *Kerr* 2422 (**BM, E, K**); 13 Aug. 1921, *Kerr* s.n. (**BK** 19967); Doi Inthanon NP., 7 Sept. 1998, *La-onsri* 16 (**QBG**); Doi Inthanon NP., 19 Sept. 1974, *Larsen & Larsen* 34472 (**AAU, BKF, K, L**); Thung Luang Royal Project, 15 Aug. 1980, *Paisooksantivatana* Y 316-80 (**BK, KKU**); Chom Thong district, Ban MaethongKlang, 31 Dec. 1985, *Paisooksantivatana* Y 1665A-85 (**BK**); Doi Inthanon NP., Mae Klang river, 20 July 1988, *Tsugaru* T-61679 (**AAU**); 22 July 1988, *Tsugaru* T-61714 (**AAU**)]; Phitsanulok [Thung Salang Luang, 13 Dec. 1964, *Hansen, Seidenfaden & Smitinand* 11196 (**BKF, L, SING**); Thung Salang Luang, 23 July 1966, *Larsen, Smitinand & Warncke* 770 (**AAU, BKF, P**); Thung Salang Luang, near guest house, 30 Sept. 1967, *Shimizu* T-11275 (**BKF, L**)]; NORTHEASTERN: Loei [Wang Sapung district, Ban Naluang, 10 April 1968, *Chermsirivathana* 816 (**BK**); Phu Ruea district, Phu

Ruea resort, 26 April 2005, *Kantachot* 267 (**KKU**); 8 Dec. 1965, *Tagawa, Iwatsuki & Fukuoka* T-1981 (**BKF, L**); Udon Thani [Ban Phue district, Ban Mueang, 16 April 2005, *Kantachot* 259 (**KKU**)]; Sakon Nakhon [Phu Phan NP., *Chantaranothai et al.* 1052 (**KKU**); Phu Phan NP., 22 Oct. 2002, *Khampila* 45-05 (**KKU**); Phu Phan NP., 5 Feb. 1998, *Tubtintong* 40-07 (**KKU**)]; EASTERN: Chaiyaphum [Tadtone NP., Mueang district, 1 Jan. 2006, *Kantachot* 384 (**KKU**)]; Nakhon Ratchasima [Ban Chumsaeng, 23 May 1929, *Nai Noe* 207 (**BK, BM, C, K, L**)]; SOUTHEASTERN: Chon Buri [Siracha district, 12 Nov. 1984, *Collins* 2009 (**BK, BM, C, K**)]; Satthathip district; Thung Brong, 28 March 1971, *Maxwell* 71-170 (**AAU, BK, L**)].

Ecology.— Paddy fields, marshy areas, streambanks; 330–1,700 m altitude.

Notes.— The distinctive features of *P. minor* are the small leaves and flowers, two stigmas and the lenticular nuts.

9. *Persicaria muricata* (Meisn.) Nemoto, Fl. Jap. Suppl.: 173. 1936.— *Polygonum muricatum* Meisn., Monogr. Polyg.: 74. 1826.— *Tracaulon muricatum* (Meisn.) Greene, Leaf. Bot. Obs. Crit. 1: 22. 1904.— *Truellum muricatum* (Meisn.) Soják, Preslia 46(2): 148. 1974. Type: Nepal, in 1819–1820, *Wallich* s.n. (lectotype **BM!**, selected by Shrestha & Bajracharya in litt.).— *Polygonum thunbergii* var. *spicatum* H.Lév., Bull. Soc. Bot. Fr. 51: 423. 1904. Type: Japan, Aomori, Sept. 1902, *Faurie* 5132 (holotype **E!**).— *Polygonum oliganthum* Diels, Notes Roy. Bot. Gard. Edinburgh 5: 260. 1912. Type: China, Northwest Yunnan, along eastern flank of Lichiang Range, alt. 10–11,000 ft., Sept. 1906, *Forrest* 2985 (holotype **E!**).

Distribution.— Nepal, China, Japan, Laos, Vietnam.

Thailand.— EASTERN: Chaiyaphum [Thung Kramang, 15 Dec. 1971, *van Beusekom, Phengklai, Geesink & Wongwan* 4315 (**BKF, C, K, L**)].

Ecology.— Along streambanks; 800 m altitude.

Notes.— In general, *P. muricata* is similar to *P. dichotoma* which has dense flowers but it differs by having a longer petiole covered in retrorse prickles and an ocrea margin which is truncate with bristles.

10. *Persicaria nepalensis* (Meisn.) H.Gross, Bot. Jahrb. Syst. 49: 277. 1913; Grierson & Long, Fl. Bhutan 1(1): 164. 1983.— *Polygonum nepalense* Meisn., Monogr. Polyg.: 84, t. 7, f. 2. 1826; Meisn. in DC., Prodr. 14(1): 128. 1856; Steward, Contr. Gray Herb.: 74. 1930. Type: Nepal, 1821, *Wallich* cat. no. 1701.1 (lectotype **K-W!**, selected here).— *Polygonum perforatum* Meisn., Monogr. Gen. Polyg.: 83. 1826. Type: Nepal, 1821, *Wallich* cat. no. 1700 (holotype? **K-W!**).

Distribution.— Tropical Africa, Afghanistan, Pakistan, India, Nepal, China, Korea, Japan, Laos, Vietnam, Peninsular Malaysia, Indonesia, Philippines, New Guinea.

Thailand.— NORTHERN: Mae Hong Son [Mueang district, Ban Na Papaek, Huai Makuea Som, 21 Dec. 2005, *Kantachot* 380 (**KKU**); Mueang district, Ban Na Papaek, 12 Nov. 1999, *Suksathan* 2058 (**QBG**); Mueang district, Ban Huai Hi, 24 Aug. 1999, *Wattana, Suksathan & Argent* 632 (**QBG**)]; Chiang Mai [Mae Rim district, Khun Maemae, 5 Sept. 1994, *BGO staff* 1513 (**QBG**); Chiang Dao district, Mae Taman, 27 Sept. 1999, *BGO staff* 1790 (**QBG**); Chiang Dao district, Mae Taman, *BGO staff* 1778 (**QBG**); Mae Rim district, 26 Oct. 1994, *BGO staff* s.n. (**QBG** 2385); Doi Inthanon NP., 7 Sept. 1998, *BGO staff* s.n. (**QBG** 11989); Chom Thong district, Mae Klang Luang village, Doi Inthanon NP., 25 Nov. 2005, *Kantachot* 344 (**KKU**); 17 July 1922, *Kerr* 4307 (**BM**); Doi Inthanon NP., Doi Angka, 17 July 1922, *Kerr* 6307 (**BK, BM, C, K, L**); Doi Chiang Dao, 2 Nov. 1922, *Kerr* 6524 (**BK, BM, K**); Doi Inthanon NP., near pagoda, 4 Aug. 1988, *Koyama* T-61087 (**BKF, L**); Doi Inthanon NP., around Mae Pan waterfall, 10 Dec. 1984, *Koyama & Nantasana* T-40088 (**BKF**); Doi Chiang Dao, NW slope of Doi Chiang Dao, 1 Dec. 1984, *Koyama, Nagamasu & Nanakorn* T-39872 (**BKF**); Doi Pha Hom Pok, NW of Fang, *Iwatsuki, Fukuoka & Chintayungkun* T-9619 (**L**); Doi Pha Hom Pok, 12 Sept. 1967, *Iwatsuki, Fukuoka, Hutoh & Chaiglom* T-11090 (**AAU, L**); Doi Inthanon NP., 7 Oct. 1998, *La-ongsri* 6 (**QBG**); Doi Inthanon NP., 13 Sept. 1974, *Larsen & Larsen* 34462 (**AAU, BKF, K, L**); Doi Inthanon NP., 28 Nov. 1993, *Larsen, Nørgaard, Pharsen, Puudjia & Ueachirakan* 44951 (**AAU**); 17 April 1932, *Kerr* 21095 (**BM**); Mueang district, Doi Suthep, 3 Oct. 1981, *Maxwell* 87-1111 (**BKF**,

CMU, L); Mueang district, Doi Suthep-Pui NP., Chang Khian village area, 12 Aug. 1989, *Maxwell* 89-1036 (**CMU, L**); Chom Thong district, Mae Soi subdistrict, Mae Soi ridge, 27 Oct. 1992, *Maxwell* 92-574 (**P**); Doi Chiang Dao, SW of Huai Mae Gark station, 10 Sept. 1995, *Maxwell* 95-628 (**BKF**); Doi Chiang Dao, upper village below the summit of Doi Luang, 11 Nov. 1995, *Maxwell* 95-1172 (**BKF**); Mae Taeng district, Doi Sang Liang, summit area above Gu-Gahp village, 21 Sept. 1997, *Maxwell* 97-1016 (**BKF**); Doi Chiang Dao, 27 Sept. 1971, *Murata, Iwatsuki & Phengklai* T-15165 (**BKF**); Doi Inthanon NP., en route from Pha Maew to camp, 2 Oct. 1971, *Murata, Iwatsuki, Phengklai & Charoenphol* T-15896 (**BKF, C, L, P**); Mae Rim district, Pong Yang Nai, Ban Buak Chan, 21 Dec. 1985, *Paisooksantivatana* Y 1642A-85 (**BK**); Fang district, Mae Ghora, 5 Feb. 1986, *Paisooksantivatana* Y 1789-86 (**BK**); Fang district, Mae Ghora, 5 Feb. 1986, *Paisooksantivatana* Y 1790-86 (**BK**); Doi Chang Khian, 4 Oct. 1986, *Paisooksantivatana* Y 1854-86 (**BK**); Chom Thong district, Doi Inthanon NP., below the summit, 9 Sept. 1994, *Palee* 242 (**BKF**); Doi Inthanon NP., 30 July 1988, *Phengklai et al.* 7390 (**BKF, C**); Doi Inthanon NP., 4 Aug. 1988, *Phengklai et al.* 7418 (**BKF**); Doi Angka, 5 Nov. 1973, *Sadakorn* 243 (**BK**); Doi Chiang Dao, below the summit, 14 Oct. 1967, *Shimizu, Koyama & Nalampoon* T-10146 (**AAU, L**); Chiang Rai [Wiang Kaen district, Phu Cheefa, 13 Dec. 2005, *Kantachot* 331 (**KKU**); Doi Suthep, around Phu Phing palace, 14 Oct. 1979, *Shimizu, Toyokuni, Koyama, Yahara & Santisuk* T-18688 (**BKF**); Omkoi district, Bo Luang tableland, Nang Kruan waterfall, 18 Oct. 1979, *Shimizu, Toyokuni, Koyama, Yahara & Santisuk* T-19327 (**BKF**); Mae Taeng district, forest station to top of Doi Chang, 23 Oct. 1979, *Shimizu, Toyokuni, Koyama, Yahara & Santisuk* 20502 (**L**); Doi Chiang Dao, 17 Aug. 1963, *Smitinand & Sleumer* 1069 (**BKF, L**); Doi Inthanon NP., 19 Oct. 1962, *Smitinand, Poore & Robbins* 7605 (**BKF**); Doi Chiang Dao, 21 Nov. 1999, *Suksathan* 2199 (**QBG**); Doi Pui, 16 Sept. 1999, *Suksathan & Middleton* 1847 (**QBG**); Huai Namdang, 18 Oct. 1999, *Suksathan & Middleton* 1867 (**QBG**); Doi Ang Khang, Ban Nor-Rae, 7 Sept. 1974, *Sutheesorn* 3065 (**BK**); Doi Inthanon NP., 4 Aug. 1988, *Tsugaru* T-61866 (**AAU, P**); Doi Chiang Dao, along trail from Ban Tham to summit, 20 June

1968, *van Beusekom & Phengklai* 1356 (**L**); Nan [Doi Phu Kha, 70 km in NE of Nan, 11 Oct. 1995, *Larsen, Larsen, Tange & Sookchalaem* 46342 (**AAU**); Pua district, Doi Phu Kha NP., near the office of Doi Phu Kha NP., 21 Oct. 1989, *Paisooksantivatana* Y 266-89 (**BK**); Pua district, Doi Phu Kha, 31 Aug. 2000, *Srisanga* 1496 (**QBG**); Uttaradit [Nam Pard, April 1961, *Phengklai* s.n. (**BKF** 28626, **K, L** 964294658)]; Phitsanulok [Phu Hin Rong Kla, 14 Oct. 1998, *Suksathan* 1248 (**QBG**)].

Ecology.— Moist areas in open grassy pine, dipterocarp-oak or hill evergreen forest; 900–2,560 m altitude.

Note.— This species is similar to *P. wallichii*, but differs in having glandular-punctate leaves and a distinct attenuate leaf base. Some specimens have hairs on the leaf.

Three different numbers of Wallich's specimens, 1701.1, 1701.2 and 1701.C, are found in **K-W**. The first number is chosen to be the lectotype of *Polygonum nepalense* because it is the only material which matched with the locality given in the protologue.

11. *Persicaria odorata* (Lour.) Soják, *Preslia* 46(2): 154. 1974.— *Polygonum odoratum* Lour., *Fl. Cochinch.* 1: 299. 1790; Meisn., *Monogr. Polyg.*: 76. 1826; Steward, *Contr. Gray Herb.*: 62. 1930. Type: Vietnam (holotype not located).

Distribution.— Vietnam, Cambodia, Peninsular Malaysia.

Thailand.— NORTHERN: Chiang Mai [Mueang district, Chang Khian, 17 Nov. 1995, *BGO staff* 4511 (**QBG**); Chiang Mai market, 28 Nov. 1920, *BK* 20002 (**BK**); Doi Chiang Dao, 16 Nov. 1963, *Bunnak* 1330 (**BKF**); Doi Inthanon NP., 8 Oct. 1998, *La-ongsri* 45 (**QBG**); Chiang Dao, Huai Mae Gawh station, 3 Nov. 1995, *Maxwell* 94-1042 (**BKF**); Mae Ai district, Mae Sue subdistrict, Mae Haeng village, 22 Oct. 1994, *Maxwell* 94-1110 (**BKF**); Tah Mawn, 18 April 1960, *Smitinand & Alsterlund* 6725 (**BKF**); Jan. 1953, *Winit* s.n. (**BK** R.E.D. herb no. 9012, **K**); Chiang Rai [Mueang district, 2 Dec. 2005, *Kantachot* 318 (**KKU**); Mueang district, Khun Korn subdistrict, 1 Nov. 2005, *Kantachot* 333 (**KKU**); Mae Chan district, Ban Yao Nikom, 7 Dec. 1990, *Maxwell*,

Suttajit, Pannavalee & Tantipathananandh 63 (CMU)]; Nan [Chiang Klang, Tard Man waterfall, at 1097 road, 18 Nov. 1993, *Larsen, Larsen, Nørgaard, Pharsen, Puudjaa & Ueachirakan* 44558 (AAU); Doi Khun Satan, W of Na Noi and SW of Ban San Tha, 19 Nov. 1993, *Larsen, Larsen, Nørgaard, Pharsen, Puudjaa & Ueachirakan* 44633 (AAU, C, E)]; Lamphun [Mae Ta district, Doi Khun Tan, Tah Goo station, 27 Oct. 1994, *Maxwell* 94-1124 (BKF)]; Tak [1979, *Phengklai* 3260 (BKF)]; NORTHEASTERN: Khon Kaen [23 Nov. 2002, *Khampila* 45-17 (KKU)]; 26 Sept. 1998, *Tubtimtong* 41-11 (KKU)]; EASTERN: Nakhon Ratchasima [Sakae Rat district, 23 Oct. 1971, *van Beusekom, Wild & Geesink* 3306 (BKF, C, K, L)]; SOUTHWESTERN: Kanchanaburi [2 June 1962, *Kasem* 202 (BK)]; SOUTHEASTERN: Prachin Buri [Krabin Buri district, Ban Keng, 11 Nov. 1930, *Kerr* 19858 (BK, BM, C, K, L)]; Chanthaburi [6 Dec. 1924, *Kerr* 9572 (BM, K)].

Ecology.— Villages and plantations.

Notes.— *P. odorata* has a filiform inflorescence and distinctive strong odour. The species is edible and widely cultivated.

12. *Persicaria orientalis* (L.) Spach, Hist. Nat. Veg. 10: 537. 1841; Grierson & Long, Fl. Bhutan 1(1): 164. 1983.— *Polygonum orientale* L., Sp. Pl.: 362. 1753; Meisn., Monogr. Polyg.: 53. 1826; Meisn. in DC., Prodr. 14(1): 123. 1856. Type: “Habitat in Oriente, India” (lectotype LINN! 510.16, selected by Wijnands (1983)).— *Lagunea cochinchinensis* Lour., Fl. Cochinch.: 220. 1790. Type: Vietnam, Prope folpas Loureiro s.n. (holotype BM!).— *Polygonum pilosum* Roxb., Fl. Ind. 2: 286. 1832; Steward, Contr. Gray Herb.: 62. 1930. Type: Roxburgh s.n. (syntype BM!); 1819, H.B.C. s.n., (syntype BM!); WNB 675 (syntype BM!).— *Polygonum schroeterianum* Danser, Bull. Jard. Bot. Buitenzorg Ser. 3, 12: 68. 1932.— *Persicaria schroeteriana* (Danser) Soják, Preslia 46(2): 155. 1974. Type: Indonesia, Java, 19 Sept. 1927, *Farslman* 2 (isotype K!).

Distribution.— Sri Lanka, India, Bhutan, Bangladesh, Myanmar, China, Taiwan, Vietnam, Cambodia, Indonesia, Philippines, Lesser Sunda islands, Australia, New Zealand.

Thailand.— NORTHERN: Chiang Mai [21

July 1912, *Kerr* 2627 (BM, E, K, TCD); Mae Sariang, Ban Huai Sai, 12 km of Mae Sariang, 12 July 1968, *Larsen, Santisuk & Warncke* 2384 (AAU, BKF, C, K, L, SING); Fang district, 19 March 1950, *Suvatabandhu* 318 (BK)]; Phayao [2 March 1958, *Sørensen, Larsen & Hansen* 1839 (AAU, BK, C, P, SING)]; NORTHEASTERN: Nong Khai [Tha Bo district, 9 Nov. 2002, *Khampila* 45-11 (KKU)]; Tha Bo district, along road from Mueang district to Tha Bo district, 13 Aug. 1999, *Tubtimtong* 41-10 (KKU)]; SOUTHWESTERN: Kanchanaburi [Sangkla Buri district, Rantee river, 6 May 2005, *Kantachot* 280 (KKU)]; CENTRAL: Ang Thong [Mueang district, Wat Klang, 3 March 1971, *Maxwell* 71-116 (AAU, BK)]; Bangkok [BKF 1771 (AAU); Bang Sali, 21 March 1920, *Kerr* 4092 (BM, C, L, K)]; 21 March 1920, Marcan 106 (BM)]; PENINSULAR: Phatthalung [Kuan Khanun, Thale Noi, 21 March 1986, *Maxwell* 86-187 (BKF, CMU, L, PSU)]; Songkhla [Had Yai district, Bueng Sritrang, 5 Sept. 1997, *Jindaporn* 6 (PSU)]; Hat Yai district, beside PSU canal, 19 Oct. 2004, *Kantachot* 235 (KKU)]; Hat Yai district, Phetkasem road, 2 Oct. 1991, *Kuneiad* 229 (PSU)].

Ecology.— River banks, roadsides, grassy fields; 0–250 m altitude.

Notes.— *P. orientalis* is distinguishable from all other members of the genus by the ocrea which is cylindrical truncate with a foliage limb at the margin.

13. *Persicaria paradoxa* (Lévl) Kantachot comb. nov.— *Polygonum paradoxum* H.Lév. in Fedde. Rep., 7: 339. 1909.— *Polygonum chinense* var. *paradoxum* (Lévl) A.J. Li, Fl. Reipubl. Popularis Sin. 25(1): 57. 1998. Type: China, Yunnan, *Maire* 351 (lectotype E!, selected here).— *Polygonum damrongianum* Hosseus, Fed. Rep.: 621. 1911. Type: Thailand, Doi Chiang Dao, alt. 2,100 m, 17 Feb. 1905, *Hosseus* 405a (holotype M!).

Distribution.— China.

Thailand.— NORTHERN: Chiang Mai [Doi Chiang Dao, 6 Jan. 1966, *Fukuoka* T-4373 (BKF, L)]; Chiang Dao district, Doi Chiang Dao, Kew Lom, 19 Dec. 2003, *Kantachot* 215 (KKU)]; Chiang Dao district, Doi Chiang Dao, Kew Lom, 19 Dec. 2003, *Kantachot* 218 (KKU)]; Chiang Dao district,

Doi Chiang Dao, Kew Lom, 20 Dec. 2003, *Kantachot* 230 (**KKU**); Chiang Dao district, Doi Chiang Dao, 1 Dec. 2005, *Kantachot* 321 (**KKU**); Fang district, Doi Pha Hom Pok, 12 Dec. 2006, *Kantachot* 368 (**KKU**); without location, 28 Jan. 1913, *Kerr* 2869 (**BM, K**); Doi Chiang Dao, 21 Dec. 1931, *Put* 4447 (**BK, BM, C, K, P**); Doi Chiang Dao, 14 Sept. 1964, *Shimizu, Koyama & Nalampoon* T-10145 (**L**); Doi Chiang Dao, 2 Dec. 1961, *Smitinand & Anderson* 7232 (**BKF, E, K**).

Ecology.— On limestones and open fields in evergreen forest; alt. 1,800–2,175 m.

Notes.— *P. paradoxa* is similar to *P. chinensis* var. *chinensis* but differs from the latter in having narrow leaves, two or three intramarginal veins and larger reproductive parts. It is restricted to limestone mountain at high elevation and in Thailand it is only found on Doi Chiang Dao.

We have selected *Maire* 351 (E) as the lectotype of *P. chinense* var. *paradoxum* because it is a well preserved specimen representative of this variety.

14. *Persicaria perfoliata* (L.) H.Gross, *Beih. Bot. Centralbl.* 37(2): 113. 1919; Grierson & Long, *Fl. Bhutan* 1(1): 160. 1983.— *Polygonum perfoliatum* L., *Syst. Nat.*, ed. 10: 1006. 1759; Roxb., [*Hort. Bengal.*: 29. 1814 & *Fl. Ind.* 2: 288. 1832; Blume, *Bidj.* 10: 533. 1825; Meisn., *Monogr. Polyg.*: 65. 1826; Meisn. in DC., *Prodr.* 14(1): 132. 1856; Steward, *Contr. Gray Herb.*: 81. 1930.— *Tracaulon perfoliatum* (L.) Greene, *Leafl. Bot. Observ. Crit.* 1: 22. 1904.— *Truellum perfoliatum* (L.) Sojak, *Preslia* 46: 148. 1974. Type: India, Burman s.n. (lectotype **LINN!** 510.35, selected by Park (1986)).

Distribution.— India, Nepal, Bhutan, Bangladesh, China, Korea, Japan, Vietnam, Indonesia, Philippines, New Guinea.

Thailand.— NORTHERN: Mae Hong Son [Ban Na Papaek, *Suksathan* 1977 (**QBG**)]; Chiang Mai [Chiang Dao district, Mueang Heng, 29 May 1921, *Kerr* 5514 (**BK, BM, K, TCD**)].

Ecology.— Open scrub, open marshy ground; 700–950 m altitude.

Notes.— *P. perfoliata* is distinguished by its ocrea apex expanding as wing, triangular-peltate

leaves and retrorse prickles on the leaves, petioles and stems.

15. *Persicaria pubescens* (Blume) H.Hara, *J. Jap. Bot.* 17(6): 335. 1941; Grierson & Long, *Fl. Bhutan* 1(1): 163. 1983.— *Polygonum pubescens* Blume, *Bijdr.*: 532. 1826; Steward, *Contr. Gray Herb.*: 81. 1930. Type: East Indies, *Blume* 114 (not located).— *Polygonum donii* Meisn., *Monogr. Polyg.* 1: 83. Pl. 7. 1826. Type: Nepal, no collector (holotype **G-DC!** 2242/2).— *Polygonum leptostachyum* De Bruyn in *Miq.*, *Pl. Jungh.* 3: 307. 1854. Type: Indonesia, Java, Panggalangan mountain, alt. 4,000 m, in Nov.–Oct., unknown collector (holotype **L!** 908174282).— *Polygonum pubescens* ssp. *prianganicum* Danser, *Bull. Jard. Bot. Buitenzorg Ser.* 3, 8: 194. 1927. Type: Indonesia, Java, alt. 2,000 m., 15 June 1920, *Backer* 30866 (syntype **K!**).

Distribution.— China, Vietnam, Java, Sumatra.

Thailand.— NORTHERN: Mae Hong Son [Mueang district, Mok Champae subdistrict, Rak Thai village, 21 Dec. 2005, *Kantachot* 354 (**KKU**); Khun Yuam district, 4 Sect. 1974, *Larsen & Larsen* 34061 (**AAU, BKF, K, L**); Pai district, S of Pai district, 25 Oct. 1995, *Larsen, Larsen, Tange & Sookchalaem* 46921 (**AAU**)]; Chiang Mai [Fang district, 8 Oct. 1973, *Boonkird* 31 (**BK**); Chiang Mai market, 4 Jan. 1921, *BK* 20000 (**BK**); Mae Sariang, 20 km W of Bo Luang, 4 July 1968, *Charoenphol, Larsen & Warncke* 2083 (**AAU, BKF, E**); Doi Chiang Dao, 12 Jan. 1975, *Geesink, Hiepko & Phengkklai* 8232 (**BKF, L**); Doi Pha Hom Pok, NW of Phan, *Iwatsuki, Fukuoka & Chintayungkun* T-9733 (**BKF, L**); Hot district, Bo Luang district, 23 Nov. 2005, *Kantachot* 319 (**KKU**); Chom Thong district, Mae Klang Luang, 25 Nov. 2005, *Kantachot* 328 (**KKU**); 23 Nov. 1921, *Kerr* 2788 (**BM, K, TCD**); Doi Chiang Dao district, Doi Chiang Dao, 18 Dec. 1990, *Lakshnakara* 1513 (**BK**); Mae Rim district, Tadmok waterfall, 26 Jan. 1999, *Larsen & Larsen* 47238 (**AAU**); Mae Lao-Mae Sae wildlife sanctuary, 17 Oct. 1995, *Larsen, Larsen, Tange & Sookchalaem* 46571 (**AAU**); Mae Sariang, 20 km W of Bo Luang, 4 July 1968, *Larsen, Santisuk & Warncke* 1083 (**AAU, BKF, E**); Mueang district, 13 Nov. 1987, *Maxwell* 87-1401 (**BKF, CMU, L**); Mae Rim district, Doi Suthep-Pui, N side of Maesa waterfall, 3

- May 1989, *Maxwell* 89-551 (**CMU, L**); Doi Chiang Dao, SE foothills of Ban Yang Pong Luang, 30 Sept. 1989, *Maxwell* 89-1161 (**CMU, E**); San Khampaeng district, Huai Kayo subdistrict, Ban Mae Kam Bawng, 3 Dec. 1989, *Maxwell* 89-1486 (**CMU**); Mae Taeng district, Bah Bae subdistrict, Ban Bah Bae, 6 Nov. 1990, *Maxwell* 90-1250 (**CMU**); Mae Taeng district, Bah Bae subdistrict, Bing Dust hot spring, 4 June 1992, *Maxwell* 92-259 (**E, P**); Doi Suthep, N part at Wahng Hang waterfall, *Maxwell* 92-525 (**AAU, P**); Doi Inthanon NP., 6 Dec. 1984, *Mitsuta, Yahara & Nagamasu* T-46450 (**AAU, BKF, L**); Kaeng Hua San, 22 Oct. 1921, *Nai Noi Mao* s.n. (**BK** 19965); Doi Inthanon NP., 12 Dec. 1984, *Nanakorn* 1091 (**BKF, C**); Mueang district, Ban Wangkhamnu, 27 Jan. 1981, *Pisooksantivatana* Y 546-81 (**BK**); Chom Thong district, Ban Mae Rhunglong, 22 Dec. 1985, *Pisooksantivatana* Y 1666A-85 (**BK**); Mae Chaem district, Mae Hae Royal Project, 9 Jan. 1986, *Pisooksantivatana* Y 1722-86 (**BK**); Mae Chaem district, Mae Hae Royal Project, 9 Jan. 1986, *Pisooksantivatana* Y 1723-56 (**BK**); Taten district, 6 Feb. 1986, *Pisooksantivatana* Y 1799-86 (**BK**); Mae Rim district, 27 Nov. 1986, *Pisooksantivatana* Y 1940-86 (**BK**); Hot district, Bo Luang, 2 Jan. 1965, *Prayad* 182 (**BK**); Omkoi district, Bo Luang table land, Nang Kruan waterfall, 8 Oct. 1997, *Shimizu, Toyokuni, Koyama, Yahara & Santisuk* T-19303 (**AAU, BKF, C, L**); Chiang Dao district, Tham Chiang Dao, 17 Feb. 1958, *Sørensen, Larsen & Hansen* 1209 (**C**); Samoeng district, Samoeng road, 13 Oct. 1958, *Sørensen, Larsen & Hansen* 4960 (**BKF, C, E**); 30 Oct. 1984, *Sørensen, Larsen & Hansen* 5984 (**C, SING**); Samoeng district, 13 Sept. 1958, *Sørensen, Larsen & Hansen* 7947 (**C**); Fang district, Doi Ang Khang, 14 Nov. 1980, *Sutheesorn* 5016 (**BK**); Chiang Rai [Chiang Khong district, Stan subdistrict, km 133 along the road no. 1020, 1 Dec. 2005, *Kantachot* 316 (**KKU**); Mueang district, Wat Rong Khun, 1 Dec. 2005, *Kantachot* 345 (**KKU**); Mae Sai district, Wat Tham Saohin Phayanak, 14 Feb. 1983, *Koyama, Terao & Wongprasert* T-33502 (**BKF**); Mae Sai district, Wat Thamsaohin Phayanak, 14 Feb. 1983, *Tagawa, Iwatsuki & Fukuoka* T-1983 (**BKF, L**); Phrae [along the road no. 1022 from Phrae to Ban Nam Klai, 15 Nov. 1993, *Larsen, Larsen, Nørgaard, Pharsen, Puudjaa & Ueachirakan* 44391 (**AAU**); Song district, Taopon, 27 Nov. 1986, *Pisooksantivatana* Y 1939-86 (**BK**); Mae Khaem stream, 5 Jan. 1972, *van Beusekom, Phengkklai, Geesink & Wongwan* 4645 (**BKF, C, K, L**); Tak [Doi Pa Pu, 14 March 1968, *Hansen & Smitinand* 12923 (**AAU, BKF, E, K, L**); Umphang district, along the road to Umphang district, 8 Nov. 2005, *Kantachot* 303 (**KKU**); Mueang district, cultivated herb, 4 Nov. 1984, *Pisooksantivatana* Y 1474-84 (**BK, L**); Umphang district, 10 Feb. 1987, *Pisooksantivatana* Y 2066-87 (**BK**); Nan [Bo Kluea, E side of Doi Phu Kha, 21 Nov. 1993, *Larsen, Larsen, Nørgaard, Pharsen, Puudjaa & Ueachirakan* 44675 (**AAU**); Sapan waterfall, N of Ban Bo Kluea, 7 Oct. 1995, *Larsen, Larsen, Tange & Sookchalaem* 46170 (**AAU**); Pua district, Phu Kha, 21 Oct. 1989, *Sadakorn* 266 (**BK**); Sukhothai [Mueang district, 2 Nov. 1971, *Maxwell* 71-638 (**BK**); Nakhon Sawan [Mueang district, Bueng Borapet, 26 Nov. 1987, *Vacharee* 819 (**BK**); Phetchabun [Phu Miang, 2 Oct. 1967, *Shimizu, Iwatsuki, Fukuoka, Hutoh, Chaiglom & Nalampoon* T-11332 (**AAU, L**); Phu Miang, 5 Oct. 1967, *Shimizu, Iwatsuki, Fukuoka, Hutoh, Chaiglom & Nalampoon* T-11731 (**AAU, L**); NORTHEASTERN: Loei [Wang Sapung district, Phu Kradueng NP., 6 May 1955, *Dee* 553 (**BK**); Dansai district, *Smitinand & Abbe* 6333 (**BKF**); Sakon Nakhon [Phu Phan district, Phu Phan NP., Ban Nakam Klang, 14 Dec. 2005, *Kantachot* 361 (**KKU**); Nakhon Phanom [Mueang district, 2 Nov. 1982, *Vacharee* 397 (**BK**); EASTERN: Chaiyaphum [Phu Khiew district, Phu Khiew wildlife sanctuary, 19 Oct. 2005, *Kantachot* 284 (**KKU**); Thung Kamang, 14 Dec. 1971, *van Beusekom, Phengkklai, Geesink & Wongwan* 4234 (**BKF, C, K, L**); Nakhon Ratchasima [Khao Yai NP., 1 Nov. 1970, *Charoenphol, Larsen & Warncke* 4438 (**AAU, BKF, C, K, L**); Khao Yai NP., Heo Suwat waterfall, 5 Sept. 2005, *Kantachot* 278 (**KKU**); CENTRAL: Nakhon Nayok [Khao Yai NP., 8 Sept. 1979, *Shimizu, Toyokuni, Koyama, Yahara & Santisuk* T-19526 (**L**); Bangkok [Nov. 1922, *Smith* 236 (**BK**); SOUTHEASTERN: Prachin Buri [Khao Yai NP., 21 June 1963, *Larsen* 10243 (**BKF, C**); PENINSULAR: Nakhon Si Thammarat [Thung Song district, Ban Thung Kamin, Huai Kahn, 26 Feb. 1987, *Maxwell* 87-231 (**BKF, CMU, PSU**); Yala [Betong district, 15 Dec. 1986, *Supapol* 234 (**CMU**); Narathiwat [Mukae Tamong forest, 16 Dec. 1962, *Bunnag* 934 (**BKF**).

Ecology.— Paddy fields, marshy areas, streamsides; 50–1,500 m altitude.

Notes.— *P. pubescens* is characterized by its pendulous inflorescence. The perianth and ocreolae have brownish or yellowish dots, sometimes with hirsute hairs on the ocreolae.

16. *Persicaria runcinata* (Buch.-Ham. ex D. Don) H. Gross, Bot. Jaarb. 49: 277. 1913; Grierson & Long, Fl. Bhutan 1(1): 164. 1983.— *Polygonum runcinatum* D. Don, Prodr. Fl. Nep.: 73. 1825; Meisn., Monogr. Polyg.: 85. 1826; Meisn. in DC., Prodr. 14(1): 130. 1856; Steward, Contr. Gray Herb.: 73. 1930. Type: Nepal, in 1821, *Hamilton* s.n. (holotype **K-W!**).— *Polygonum panduriforme* H. Lévl. & Vaniot, Bull. Géogr. Bot. 11: 343. 1902. Type: China, Kouy-Tcheou province, 13 June 1899, *Bodinier* 2615 (holotype **E!**).

Distribution.— India, Nepal, Sikkim, Bhutan, China, Sumatra, Philippines.

Thailand.— NORTHERN: Chiang Mai [Doi Inthanon NP., Pha Ngeam, 14 Oct. 1910, *Garrett* 71 (**BK, BM, K, L, P**)].

Ecology.— On rocks; 2,165 m altitude.

Notes.— This species has lyrate-pinnatifid or runcinate leaves. Specimens from China usually are pubescent throughout.

17. *Persicaria strigosa* (R. Br.) Nakai, Rigakkai 24: 299. 1926; Grierson & Long, Fl. Bhutan 1(1): 160. 1983.— *Polygonum strigosum* R. Br., Prodr. Fl. Nov. Holland. 1: 420. 1810; Meisn., Monogr. Polyg.: 85. 1826; Meisn. in DC., Prodr. 14(1): 134. 1856; Steward, Contr. Gray Herb.: 88. 1930.— *Tracaulon strigosum* (R. Br.) Greene, Leaf. Bot. Observ. Crit. 1: 22. 1904.— *Truellum strigosum* (R. Br.) Soják, Preslia 46(2): 149. 1974. Type: Australia, New South Wales, Port Jackson and Hunters River, 1802–1805, *Brown* (Britten 2997) (lectotype **BM!**, right-hand specimen on sheet, lying below the Brown label annotated ‘Port Jackson and Hunters River’, selected by Wilson (1996); isolectotypes **BM!, K!**).— *Polygonum strigosum* var. *rubrifolium* Kuntze, Rev. Gen. Pl. 2: 559. 1891. Type: India, Sikkim, 15 Nov. 1875, *Kuntze* 6598 (holotype **NY!**).

Distribution.— India, Nepal, Sikkim,

Bhutan, Bangladesh, China, Vietnam, Peninsular Malaysia, Indonesia, New Guinea, Australia.

Thailand.— NORTHERN: Mae Hong Son [Mueang district, Mok Champae subdistrict, Rak Thai village, 21 Dec. 2005, *Kantachot* 356 (**KKU**); Mueang district, Mok Champae subdistrict, Rak Thai village, Huai Makuea Som, 21 Dec. 2005, *Kantachot* 357 (**KKU**); Khun Yuam district, 4 Sept. 1974, *Larsen & Larsen* 34060 (**AAU**); Ban Na Pa Pak, 21 Oct. 1999, *Suksathan* 1978 (**QBG**); Ban Na Pa Pak, 12 Nov. 1999, *Suksathan* 2060 (**QBG**); Chiang Mai [Mae Tuea, 4 July 1922, *Kerr* 6236 (**BK, BM, C**); Doi Inthanon NP., 23 July 1988, *Phengklai et al.* 6873 (**BKF**); Doi Inthanon NP., Ban Yang, 17 Dec. 1965, *Tagawa, Iwatsuki & Fukuoka* T-2471 (**BKF, L**)]; NORTHEASTERN: Loei [Wang Sapung district, Phu Kradueng, 28 June 1981, *Dee* 41 (**BK**); Phu Kradueng, 6 May 1952, *Dee* 553 (**K**); Wang Sapung district, Phu Kradueng, Phon Pob waterfall, 28 Oct. 2005, *Kantachot* 290 (**KKU**); Phu Kradueng, Phon Pob waterfall, 9 Nov. 2002, *Khampila* 45-18 (**KKU**); Phu Kradueng, 15 Nov. 1975, *Shimizu, Toyokuni, Koyama, Yahara & Niyomdham* T-22786 (**AAU, BKF**); Phu Kradueng, 29 Nov. 1958, *Sorensen, Larsen & Hansen* 6315 (**BKF, C, K**); Phu Kradueng, 13 July 1959, *Sorensen, Larsen & Hansen* 7581 (**C**); Phu Kradueng, at the plain summit, 29 Nov. 1965, *Tagawa, Iwatsuki & Fukuoka* T-828 (**BKF**); Phu Kradueng, Phon Pob waterfall, 10 Oct. 1999, *Tubtimtong* 42-16 (**KKU**)]; EASTERN: Nakhon Ratchasima [21 June 1963, *Larsen, Smitinand & Warncke* 10237 (**AAU, BKF**)]; CENTRAL: Bangkok [Jan. 1922, *Smith* 238 (**BK**)]; PENINSULAR: Phatthalung [Kuan Khanun, Thale Noi, 13 Oct. 1998, *Sukkaenmanee* 66 (**PSU**)].

Ecology.— Along streamsides, marshy areas, wet places in evergreen forest; 0–1,600 m altitude.

Notes.— *P. strigosa* has distinct prickles on the petioles, primary vein of the lower leaf and leaf margins. Some specimens have stellate hairs on both upper and lower leaf surfaces.

18. *Persicaria thunbergii* (Siebold & Zucc.) Nakai, Fl. Quelpaert Isl.: 41. 1914; Grierson & Long, Fl. Bhutan 1(1): 160. 1983.— *Polygonum arifolium* sensu Thunb., Fl. Jap.: 168. 1784, non L., 1753.— *Polygonum thunbergii* Siebold &

Zuccarini, Abh. Math.-Phys. Cl. Konigl. Bayer Akad. Wiss. 4(3): 208. 1846; Meisn. in DC., Prodr. 14(1): 132. 1856; Steward, Contr. Gray Herb.: 83. 1930.— *Tracaulon thunbergii* (Siebold & Zuccarini) Greene, Leaflet Bot. Observ. Crit. 1: 22. 1904.— *Truellum thunbergii* (Siebold & Zuccarini) Sojak, Preslia 46: 149. 1974. Type: Japan, Nagasaki, *Thunburg* s.n. (holotype **UPS** 9644).— *Polygonum debile* Meisn. var. *hastatum* Meisn., Ann. Mus. Bot. Lugd.-Batav. 2: 63. 1865. Type: India, Assam, Mt Khasia, *Hooker & Thomson* 58 (lectotype **NY!**, selected by Park (1986); isolectotype **GH**).

Distribution.— China, Japan, Korea, Russia (Far East).

Thailand.— NORTHERN: Chiang Mai [2 April 1921, *Kerr* 5198 (**BM, BK, C, K, L**); Mae Fa Luang, Doi Nangnon, 27 Aug. 2000, *Wattana* 845 (**QBG**)].

Ecology.— Open areas on limestones, open grassy areas in hill evergreen forest; 1,900 m altitude.

Note.— *P. thunbergii* has a distinctive tubular ocrea with a foliaceous limb.

19. *Persicaria attenuata* (R.Br.) Soják, Preslia 46(2): 152. 1974.— *Polygonum attenuatum* R.Br., Prodr. Fl. Nov. Holland. 1: 420. 1810. Type: 18 Dec. 1802, *Brown (Bennett 2998)* (lectotype **BM!**, selected by Wilson (1990); probable isolectotypes **BM!, K!**).

subsp. ***pulchra*** (Blume) K.L. Wilson, Kew Bull. 45(4): 629.— *Polygonum pulchrum* Blume, Bijdr. 2: 530. 1825; Roxb., Fl. Ind. 2: 530. 1832.— *Persicaria pulchra* (Blume) Soják, Preslia 46: 154. 1974. Type: Indonesia, Java, Batavia, *Blume* 1171 (lectotype **L!**, 908, 174-1061, selected by Wilson (1990)).— *Polygonum tomentosum* Willd., Sp. Pl. ed. 4, 2 (1): 447. 1799; Roxb., Hort. Bengal.: 29. 1814; Roxb., Fl. Ind. 2: 287. 1832; Meisn., Monogr. Polyg.: 81. 1826; Meisn. in DC., Prodr. 14(1): 124. 1856; Steward, Contr. Gray Herb.: 49. 1930, nom. illegit. non Schrank, Baier. Fl. 1: 669. 1789.— *Polygonum pulchrum* ssp. *hallieri* Danser, Bull. Jard. Bot. Buitenzorg Ser. 3, 8: 158. 1927. Type: Borneo, Semitau, in 1893–1894, *Hallier* 1291 (holotype **BO**; isotype **K!** 2 sheets, **NY!**).

Distribution.— India, Sri Lanka, Philippines,

New Guinea.

Thailand.— NORTHERN: Chiang Mai [San Patong district, Nawng Sariang, 30 Oct. 1989, *Maxwell* 89-1475 (**CMU, E, L**); Mae Taeng district, 20 July 1988, *Sorensen, Larsen & Hansen* 5773 (**BKF, C**); Phayao [2 March 1958, *Sorensen, Larsen & Hansen* 1845 (**C, E, SING**)]; Phitsanulok [along Phitsanulok-Bang Rakam road, 27 July 1973, *Murata* T-17238 (**BKF, L**); 23 July 1999, *Vessaburt, Sasriat & Norsangsri* MN 837 (**QBG**); Kamphaeng Phet [8 Nov. 1977, *Phengklai* 3949 (**PSU**); 50 km E of Khamphaeng Phet, 19 Jan. 1959, *Sorensen, Larsen & Hansen* 6639 (**BKF, C**); Nakhon Sawan [Mueang district, Bueng Boraphet, 26 Nov. 1987, *Vacharee* 818 (**BK**)]; NORTHEASTERN: Phetchabun [Pha Mueang, *Santisuk* s.n. (**BKF** 118389)]; Loei [Phu Luang, en rout from Nam Thop to Ban Na Luang, E foot of Phu Luang, 8 Dec. 1965, *Tagawa, Iwatsuki & Fukuoka* T-1982 (**BKF, L**)]; Nong Bua Lam Phu [17 Nov. 1963, *Pradit* 656 (**BK**)]; Sakon Nakhon [Sawang Dan Din district, 20 Nov. 2005, *Kantachot* 314 (**KKU**)]; Khon Kaen [Uboratana district, Ubonratana dam, 3 July 2004, *Kantachot* 253 (**KKU**); Nampong district, 1 May 2004, *Kantachot* 272 (**KKU**); Nam Pong district, Wang Chai subdistrict, Khoak Sanga village, 7 Oct. 2005, *Kantachot* 281 (**KKU**); Mueang district, Ban Eawmong, 8 Dec. 1997, *Tubtimtong* 40-01 (**KKU**)]; EASTERN: Chaiyaphum [Phu Khiew dam, 9 Nov. 1984, *Murata* T-50417 (**BKF**)]; Nakhon Ratchasima [Phimai district, 16 Sept. 2005, *Kantachot* 285 (**KKU**); Ban Chumsaeng, 24 May 1929, *Nai Noe* 245 (**BK, BM, C, K, L, P**)]; Buri Ram [Lam Plai Mat district, Buri Ram-Surin road, 30 Dec. 2005, *Kantachot* 381 (**KKU**); without locality and date, *Phengklai et al.* 3381 (**BKF, PSU**)]; Surin [Rattanaburi district, Nam Khiew subdistrict, Ban Kosom, 1 Jan. 2006, *Kantachot* 385 (**KKU**); Tha Tum district, Thung Kula Ronghai, 6 Aug. 1970, *Sutheesorn* 2054 (**BK**)]; Si Sa Ket [20 km of Kantharak district, near Cambodian border, 8 Oct. 1984, *Murata, Phengklai, Mitsuta, Nagamasu & Nantasan* T-49661 (**AAU, BKF**)]; Ubon Ratchathani [Na Chaluai district, km 63 of 2248 road, Ban Kaeng Rueang, 23 Oct. 2005, *Kantachot* 287 (**KKU**)]; SOUTHWESTERN: Kanchanaburi [Khwa Noi river basin, 28 April 1946, *den Hoed* 203 (**BK, L**); Sai Yok district, Khao Khieo

reservoir, 7 May 2005, *Kantachot* 279 (**KKU**); W of Si Sawat, near Ongba cave, 28 Jan. 1962, *Larsen* 9329 (**C**); CENTRAL: Chai Nat [Nakhon Sawan-Chai Nat road, 15 Dec. 1999, *Sasriat* 152 (**QBG**)]; Ang Thong [26 Dec. 1989, Put 2570 (**BK, BM, K, L**)]; Nonthaburi [Mueang district, 15 March 1999, *Wongprasert* s.n. (**BKF** 123888)]; Bangkok [Bang Khen, 13 Nov. 1965, *Iwatsuki* T-244 (**BKF**); 8 Feb. 1920, *Marcan* 47 (**BM**); 31 Oct. 1920, *Marcan* 471 (**BM, K**); Oct. 1921, *Smith* 110 (**BK**)]; SOUTHEASTERN: Sa Kaeo [Aranyaprathet district, 17 Oct. 1928, *Put* 2002 (**K**)]; Chachoengsao [Chachoengsao to Nakhon Nayok road, 5 Sept. 2005, *Kantachot* 274 (**KKU**); Phanom Sarakam district, 4 Sept. 2005, *Kantachot* 276 (**KKU**); Chon Buri [8 km N of Sattahip, 25 Oct. 1972, *Maxwell* 72-575 (**BK, L**)]; Chanthaburi [Khao Soi Dao, 11 Feb. 1966, *Larsen* 10089 (**BKF**); N of Makham district, 22 Aug. 1966, *Larsen, Smitinand & Warncke* 1749 (**AAU, P, SING**); Sattahip district, 25 Oct. 1972, *Maxwell* s.n. (**BK** 48701)]; PENINSULAR: Phatthalung [Lam Pan, E of Phatthalung, Thale Luang, 21 March 1960, L.B. & Abbe, *Smitinand & Rollet* 9700 (**BKF**); Thale Noi, 28 Dec. 1978, *Hamilton & Congdon* 150 (**AAU, BKF, PSU**); Kuan Khanun, Thale Noi, 19 March 1999, *Sukkaenmanee* 65 (**PSU**)]; Trang [Khao Pina, 25 Km NE of Trang, 16 Nov. 1990, *Larsen, Larsen, Barford, Nanakorn, Ueachirakan & Sirirugsa* 41459 (**AAU, P, PSU**)]; Songkhla [Hat Yai district, along road to Ton Ngachang waterfall, 17 Oct. 2004, *Kantachot* 234 (**KKU**); Hat Yai district, 15 Sept. 1991, *Kunida* 13 (**PSU**); Chana district, along highway 43, 2 Oct. 1985, *Maxwell* 85-1049 (**AAU, BKF, CMU, E, PSU**)]; Narathiwat [Tak Bai district, Ban Khunthong, 18 Feb. 1984, *Niyomdham* 794 (**BKF**); Tak Bai district, 11 Jan. 1986, *Niyomdham et al.* 1113 (**AAU, BKF, C, K**)].

Ecology.— River banks, ditches, roadsides, swampy areas; 0–400 m altitude.

Notes.— *Persicaria attenuata* subsp. *pulchra* is the most common and widely distributed of the Thai *Persicaria* species. Distinguishing features are tomentose hairs throughout on leaves and ocreae, an attenuate leaf base, caudate apices and a 2-cleft stigma.

20. *Persicaria viscosa* (Buch.-Ham. ex D. Don) H. Gross ex Nakai, Fl. Quelpaert Isl. 42. 1914.— *Polygonum viscosum* Buch.-Ham. ex D. Don, Prodr.

Fl. Nep.: 71. 1825; Meisn., Monogr. Polyg.: 73. 1826; Steward, Contr. Gray Herb.: 48. 1930. Type: Nepal, May 1821, *Wallich* cat. no. 1713.A (lectotype K-W!; isolectotype **K!**, selected by Kantachot 2008).— *Polygonum viscosum* var. *a ramosissimum* Meisn. in Wall., Pl. Asiat. Rar. 3: 55. 1832. Type: Nepal, 1821, *Wallich* s.n. (syntype **NY!**).— *Polygonum hirsutum* Buch.-Ham. ex Meisn. in DC., Prodr. 14(1): 103. 1856. Type: U.S.A., Florida, May 1843, *Rugel* s.n. (lectotype **G-DC!** 2241/9, selected here).— *Polygonum kuekenhali* H. Léves., Cat. Pl. Yun-Nan 207. 1916. Type: China, Yunnan, Plain de Tong-Tchouan, Sept. 1912, *Maire* s.n. (holotype **E!**; isotype **E!**).

Distribution.— India, Nepal, China, Japan, Laos, Vietnam, U.S.A.

Thailand.— NORTH-EASTERN: Loei [Phu Ruea district, km 50 along road to Phu Ruea NP., 16 Aug. 2006, *Kantachot* 434 (**KKU**)]; Khon Kaen [Chum Phae district, Nong Ruea-Chum Phae road, 24 Aug. 2006, *Kantachot* 435 (**KKU**)]; EASTERN: Roi Et [Mueang district, Roi Et-Thawat Buri road, 16°03.316'N, 103°41.005'E, 9 April 2005, *Kantachot* 258 (**KKU**)].

Ecology.— Along roadsides in paddy fields; 135–300 m altitude.

Notes.— *P. viscosa* differs from other species of the genus by its distinctly hirsute and viscid hairs throughout, cylindrical inflorescence and pinkish red flowers. Specimens from Loei province are up to 3 m tall.

21. *Persicaria wallichii* (Meisn.) Greuter & Burdet in Willdenowia, 19(1): 41. 1989.— *Polygonum wallichii* Meisn., Monogr. Polyg. Pl. 7, f. 1: 83. 1826; Meisn. in DC., Prodr. 14(1): 129. 1856; Steward, Contr. Gray Herb.: 76. 1930. Type: Nepalia (Nepal), 1821, *Wallich* s.n. (syntype **G-DC!** 2249/18); Nepal, 1826, *Wallich* s.n. (syntype **G-DC!** 2249/20); Nepal, 1821, *Wallich* s.n. (syntype **G-DC!** 2249/21); 1826, *Wallich* s.n., (syntype **G-DC!** 2249/22).

Distribution.— India, Nepal, China.

Thailand.— NORTHERN: Chiang Mai [Doi Inthanon NP., Doi Angka, near summit, 29 Nov. 1926, *Garrett* 330 (**C, E, K, L**); Doi Inthanon NP., 31 Dec. 1974, *Geesink, Hiepko & Phengkklai* 7979 (**L**); Chiang Dao district, Doi Chiang Dao, 19 Dec.

2003, *Kantachot* 217 (**KKU**); Chiang Dao district, Doi Chiang Dao, 29 Nov. 2005, *Kantachot* 320 (**KKU**); Doi Chiang Dao, 2 Nov. 1972, *Kerr* 6528 (**BK, K, L, P**); Chom Thong district, top area of Doi Inthanon NP., 16 Oct. 1979, *Shimizu, Toyokuni, Koyama, Yahara & Santisuk* T-18842 (**BKF**)].

Ecology.— In moist and shady places of hill evergreen forest; 1,400–2,560 m altitude.

Notes.— *P. wallichii* is distinguished from *P. nepalensis* by its climbing habit, hispid hairs on the ocreae, five tepals and eight stamens.

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