

## The *Lonicera* (Caprifoliaceae) in Taiwan

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(Manuscript received 30 October, 1998; accepted 2 December, 1998)

**ABSTRACT:** The study included a taxonomic treatment and a distribution analysis of *Lonicera* in Taiwan. According to the recent revisions as well as taxonomic publications, the herbarium specimens and the field investigation, there are 7 species in this genus in Taiwan. A key to species, the morphological descriptions, a correction for one species name and the distribution data are provided for the identification, related investigation, and ecological as well as physiological studies in this group.

**KEY WORDS:** *Lonicera* (Caprifoliaceae), Honeysuckles, Systematics, Distribution, Taiwan.

### INTRODUCTION

While studying the structure and function of *Lonicera* including shrubs and lianas, how to identify and locate the plants of this group became critical. The recent taxonomic works related to this genus (Li *et al.*, 1978; Ou, 1979; Lu and Ou, 1994) enhanced the revisional work on the Taiwanese *Lonicera*. Comparing some floras of neighboring areas such as Flora Reipublicae Popularis Sinicae Tomus 72 (Hsu, 1988) and Flora of Japan (Iwatsuki *et al.*, 1993), limited number of species were restricted in Taiwan. The analysis of the species distribution may give an insight how the native environment is natural for the life and growth of these plants.

### MATERIALS AND METHODS

Materials of honeysuckles, *Lonicera sp.*, were examined from both field collections and herbarium specimens at TNM, TAI, HAST, TAIF, TCF, NCKU for the taxonomic treatment and distribution studies. The taxonomic treatments and species distribution were based on the morphological and habitat data from 378 herbarial specimens and 76 localities.

### RESULTS AND DISCUSSION

**LONICERA** Linn. Sp. Pl. 173, 1753; p. p. & Gen. Pl. ed. 5, 80, no. 210. 1754; Rehd, Ann. Rep. Missouri Bot. Gard 14: 35, 1903; Hutch., Gen. Fl. Pl. 2: 87, 1967. 忍冬屬

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Deciduous or evergreen shrubs or woody vines. Leaves simple, entire or rarely lobed, sessile or short petiolate, or sometimes connate, entire, estipulate or rarely with intrapetiolar stipules. Inflorescences axillary or terminal. Flowers in sessile whorls or pedunculate, and paired, each pair with 2 bracts and 4 bracteoles, bracteoles often connate and covering ovary, rarely absent or flowers; calyx 5-toothed, tube ovoid; corolla with slender or short tube, gibbous or straight at base, limb subequally 2-lipped, lobes 5; stamens 4 or 5, inserted on upper corolla tube, anthers introrse, mostly exerted; ovary inferior, 2- or 3-celled; style slender, stigma capitate; ovules several per cell in double rows. Fruit a berry, 1-3-celled; seeds few in each cell, ovoid or oblong; endosperm fleshy; embryo cylindrical.

About 200 species, throughout the temperate regions of the northern hemisphere; about seven species in Taiwan.

### Key to Species

1. Erect shrubs; leaves obovate to elliptic, less than 3 cm long.
  2. Leaves obovate, less than 1.5 cm long; fruit black ..... 5. *L. kawakamii*
  2. Leaves elliptic, more than 2 cm long; fruit red ..... 7. *L. oiwakensis*
1. Twisting or scrambling vines; leaves cordate to ovate-lanceolate, more than 3 cm long.
  3. Bracts large, ovate; leaf apex acute or rounded.
    4. Leaves cordate-ovate, nearly glabrous; peduncle less than 3 mm long ..... 2. *L. apodantha*
    4. Leaves elliptic-ovate, densely pubescent; peduncle more than 3 mm long ..... 4. *L. japonica*
  3. Bracts lanceolate to linear; leaf apex acuminate to caudate.
    5. Lower surface of leaves grayish, with glands ..... 3. *L. hypoglauca*
    5. Lower surface of leaves greenish, without glands.
      6. Flowers ca. 2-3 cm long; leaves less than 3 cm wide ..... 1. *L. acuminata*
      6. Flowers 4-7 cm long; leaves more than 3 cm wide ..... 6. *L. macrantha*

**1. *Lonicera acuminata* Wall., Roxb., Fl. Ind. Ed. Carey 2: 176. 1832; Li, Woody Fl. Taiwan 886. F. 359.1963; Ou, Quart. J. Chin. For. 12(1): 116, photo 2. 1979. 阿里山忍冬**

*Lonicera henryi* Hemsl. in J. Linn. Soc. Bot. 23: 363. 1888 (Ind. Fl. Sin.).

*Lonicera affinis* var. *angustifolia* Hayata in Journ. Coll. Sci. Univ. Tokyo 30(1): 138. 1911 (Mat. Fl. Formos.).

*Lonicera transarisanensis* Hayata, Icon. Pl. Formosan. 6: 25, fig. 2. 1916; Kanehira, Form. Trees rev. ed. 694, fig. 650. 1936; Liu, Ill. Nat. Intr. Lign. Pl. Taiwan 2: 1149, fig. 967. 1962.

*Lonicera henryi* var. *fulvo-villosa* Ohwi, Acta Phytotax. Geobot. 3: 85. 1934.

*Lonicera henryi* var. *angustifolia* (Hayata) Ohwi, Acta Phytotax. Geobot. 3: 85. 1934.

*Lonicera henryi* var. *transarisanensis* (Hayata) Yamamoto, J. Soc. Trop. Agric. 8: 68. 1936.

Semi-evergreen climbing or prostrate woody vines; branchlets usually strigose or sometimes glabrous. Leaves opposite, chartaceous, oblong-lanceolate to lanceolate, 3-8 cm long, 1-4 cm broad, base rounded to subcordate, apex acute to acuminate, margin entire, ciliate, glabrous on both surfaces except usually pubescent on midrib, upper surface dark, lower surface pale, midrib raised on both surfaces, lateral veins inconspicuous; petiole 3-10 mm long, strigose. Inflorescence axillary, 2-flowered cymes, often in many flowered short spikes at end of branchlets; floral leaves gradually reduced upward. Peduncle 2-10 mm long, pubescent or glabrous; calyx-teeth triangular-ovate, ciliate or glabrous; corolla 1.5-2.5 cm

long, white tinged with purple-red, tube ca. 7-10 mm long, slightly ventricose, limb slightly shorter, 2-lipped, upper lip erect at anthesis, lower lip reflexed; filaments ca. 5 mm long; style pilose, as long as corolla. Berry ovoid, black.

Eastern India to China. Taiwan, high mountains of the central range, 2000-3100 m (Fig. 1).

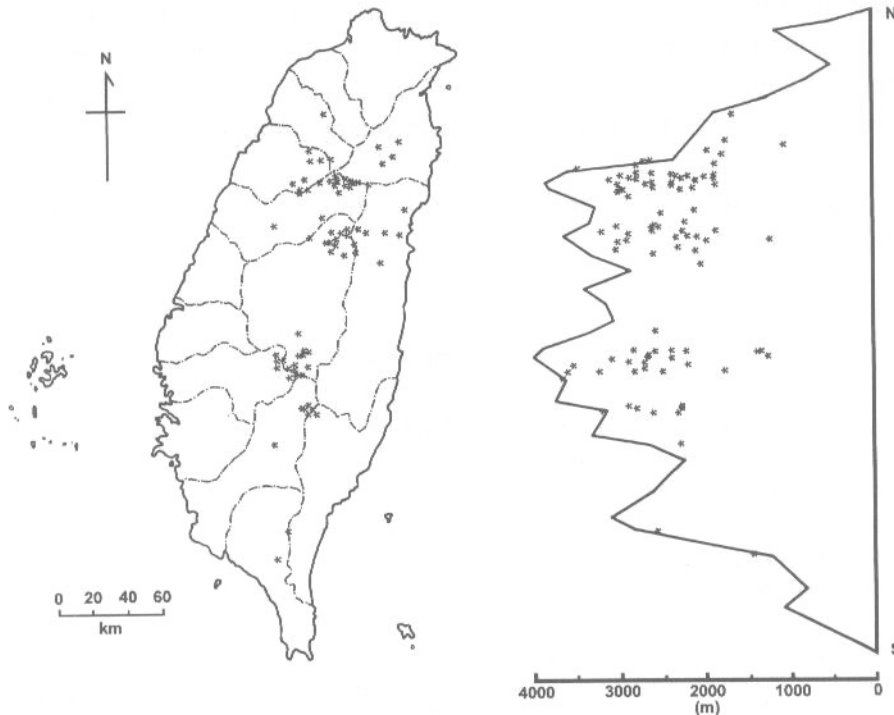


Fig. 1. The horizontal (left) and vertical (right) distribution of *Lonicera acuminata* Wall. in Taiwan.

**Specimens examined:** **Ilan:** Taipingshan, S. T. Chiu & S. J. Chen 177, Chuang, Chao & Kao 4625, Suzuki 917; Nanhutashan, Y. C. Jeng 1994, Sasaki s.n. 1922; Chilanshan, C. E. Chang 373, 4499, S. F. Huang 825. **Hsinchu:** Tabachienshan, C. S. Kuoh 3331; Kuanwu, Wang et al. 8235, T. C. Huang 6691; Wufeng, C. L. Huang 47; Chienshih, C. H. Chen 199; Chiuchiu lodge, C. F. Hsieh 1278. **Miaoli:** Chungshuehshan, T. Y. Yang 380; Tahsuehshan, Wang, Huang & Yang 4983. **Taichung:** Lishan, S. T. Chiu 1469; Hsueshan, S. T. Chiu 2313; Pahsienshan, Chuang, Kou & Kao 2650; Wuling, Wang & Huang 4004; Chika lodge, S. T. Chiu, J. N. Chen & H. Y. Lin 3963; Anmashan, T. Y. Yang 456; Yunlingshanchung, T. Y. Liu 967; Ssuyuan, S. T. Chiu 159. **Nantou:** Wushe, Chuang & Kao 4242; Yunhai-Tenchih, Huang, Hsieh & Kao 5752; Patungkuan, Tokio-Suzuki 13340; Sungkang, Ou et al. s. n. 1979; Tsuifeng, T. Y. Yang 126. **Chiayi:** Yushan, S. T. Chiu et al. 2410; Tatachia, Shimizu 10722; Alishan, C. S. Kuo 7455; Choushan, C. C. Hsu 8941; Mienyueh, S. T. Chiu, J. N. Chen & J. C. Yang 4264; Mt. Niitaka, Sasaki s. n. 1935; Mt. Tashan, T. C. Huang 10281; Tungpu, Chen 3820. **Kaohsiung:** Takuanshan, S. T. Chiu 1339; Shihshan, T. C. Huang 6490. **Pingtung:** Tawushan, T. C. Huang et al. 13698; Paiwan, Matuda 8650. **Taitung:** Kuanshanling, S. T. Chiu 1414; Taoyuan, L. Y. Lin 144. **Hualien:** Tayulin, S. T. Chiu, J. N. Chen & C. H. Chu 2618, Chuang et Kao 4451; Loying lodge, S. T. Chiu & H. H. Li 3814; Hohuanshan, T. H. Hsieh 946; Piluhsi, S. T. Chiu 117; Tailuko, Kuo, Chuma & Chang 8627; Muhkwashan, Liu, Chen et Kao 231.

**2. *Lonicera apodantha* Ohwi** in Acta Phytotax. Geobot. 3(8): 84-85. 1934; Suzuki in Masam., Short Fl. Formos. 206. 1936; Masam., List Vas. Pl. Taiwan 120, 1954.

Fig. 2 無梗忍冬

*Lonicera apodonta* Ohwi in Li, Woody Fl. Taiwan 889, 1963 (uncertain species); Ou, Quart. J. Chin. For. 12(1): 118, photo 3. 1979.



Fig. 2. *Lonicera apodantha* Ohwi (CAPRIFOLIACEAE). 1. flowering branch; 2. flower; 3. calyx and pistil; 4. stamen; 5. young fruits and bracts.

Prostrate to scandent woody vines, branchlets terete, grayish-brown pilose. Leaves coriaceous, ovate-oblong or ovate, base rounded, apex attenuate to acute, 2-4 cm long, 1-1.5 cm wide, upper surface glabrous except midrib minutely appressed pilose, lower surface glabrous or slightly pubescent when young; veins impressed on upper surface, prominently raised reticulate on lower surface; margin entire, slightly revolute, ciliate; petiole 3-6 mm

long, densely pubescent. Inflorescence an axillary and terminal 2-flowered cymes, not exceeding leaves; peduncle ca. 1.8 mm long, densely pubescent, flowers sessile; bracts leaf-like, ovate-oblong ovate, or oblanceolate, 3-6 mm long, 1-2 mm wide, slightly pubescent and ciliate; bracteoles more or less orbicular, 1 mm long, 0.7 mm wide, pubescent on both surfaces, margin pilose, glandular; calyx-tube glabrous, teeth 5, ovate-triangular, puberulous without, ciliate; corolla ca. 2 cm long, bilabiate, yellowish, purplish upwards, outer surface reflexed whitish setose intermixed with short stipitate reddish glands, tube 8-9 mm long, base narrow, non-ventricose, pilose inside, lower lip linear-lanceolate, obtuse, arcuate-recurved, upper lip as long as lower, oblong, curved, apex truncate, 4-toothed, teeth rounded; stamens 4, scarcely exerted, adnate to corolla throat; filaments whitish pilose toward base, anthers glabrous, 2 mm long; style glabrous, stigma capitate. Berry ovoid, ca. 5 mm long and wide, black.

Endemic, from the central part of the island at medium to high elevations (Fig. 3).

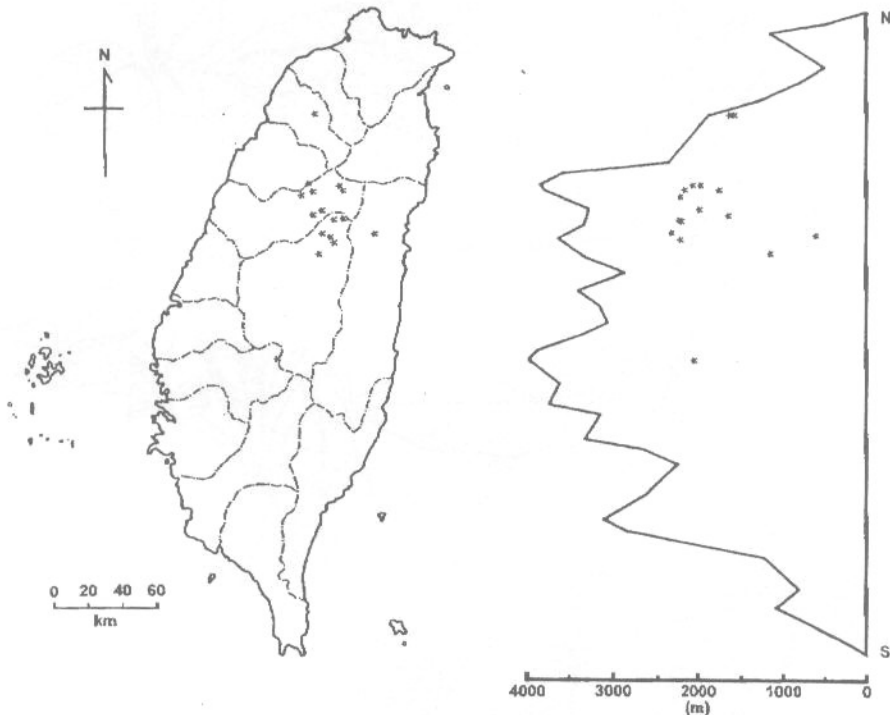


Fig. 3. The horizontal (left) and vertical (right) distribution of *Lonicera apodantha* Ohwi in Taiwan.

**Specimens examined:** **Hsinchu:** Ssumakussu, C. C. Liao *et al.* 835. **Taichung:** Chingshan-Lishan, S. T. Chiu 1466; Techu, S. T. Chiu, J. N. Chen & C. H. Chu 2606; Lishan, S. T. Chiu 1468, C. M. Kuo 8771, Feung & Kao, 4975; Huanshan, S. Y. Lu *s. n.* 1981; Tahsuehshan forest road, S. Y. Lu 14895, T. S. Liu *et al.* 143; Sungmao-Huanshan, K. C. Yang & C. C. Yang *s. n.* 1993; Wulin, S. Y. Shen 40. **Nantou:** Yuanfeng, S. T. Chiu, J. N. Chen & C. H. Chu 2982; Meifeng, M. T. Kao 9485; Juiyen, C. M. Wang & N. C. Chen 588, Tsuifeng, C. H. Chen 979, Ou 47237; Wusha, Ou *et al.* *s. n.* 1978; Piluchi, S. T. Chiu 1115, Lu & Ou 3572. **Chiayi:** Alishan, Chen *s. n.* **Hualien:** Tailuko, Panero & S. C. Hsiao 6496, Sasaki *s. n.* 1933.

Dr. W.-L. Li assumed that this species might be conspecific with *L. acuminata* due to no available specimen for study in 1963. From recent collection and examination of the herbarium specimens, the existence of this species has been confirmed and *L. apodantha* should be characterized with its very short or no peduncles.

3. *Lonicera hypoglauca* Miq., Ann. Mus. Bot. Lugd.-Bat. 2: 270. 1866; Kanehira, Form. Trees rev. ed. 692, fig. 647 1936; Yamamoto, J. Trop. Agric. 8(2): 67. 1936; Liu, Ill. Nat. Intr. Lign. Pl. Taiwan 2: 1146, fig. 964. 1962; Li, Woody Fl. Taiwan 885. 1963; Ou, Quart. J. Chin. For. 12(1): 119. photo 4. 1979.

Fig. 4 裡白忍冬



Fig. 4. *Lonicera hypoglauca* Miq. (CAPRIFOLIACEAE). 1. flowering branch; 2. flower; 3. berry; 4. glands and hairs on the lower surface of leaves.



- Lonicera affinis* Hook. & Arn. var. *pubescens* Maxim. in Mel. Biol. 10: 58. 1887.  
*Lonicera affinis* var. *hypoglauca* Rehd. in Rep. Missouri Bot. Gard. 14: 158. 1903.  
*Caprifolium hypoglaucum* (Miq.) Kuntze, Revis. Gen. Pl. 1: 274. 1891.  
*Lonicera rubropunctata* Hay., Icon. Pl. Formos. 9: 48. 1920.  
*Lonicera affinis* var. *mollissima* Mak., New Ill. Fl. Jap. 600. 1961.

Climbing woody vines; branchlets pubescent. Leaves thin-chartaceous, ovate-oblong, 6-8 cm long, 2.5-3.5 cm broad, base rounded, truncate to subcordate, apex acuminate, entire, upper surface dark, glabrous to pubescent along midrib, lower surface slightly paler, pubescent, minutely red glandular, midrib impressed on upper surface, raised on lower surface; petiole 5-10 mm long, densely pubescent. Inflorescences axillary cymes or congested toward end of branches, densely pubescent. Peduncles 5 mm long, pubescent; bracts spatulate-lanceolate, ca. 4 mm long; bracteoles orbicular, ciliate; calyx minutely 5-lobed; corolla white tinged with pink, tube slender, ca. 2 cm long, sparsely pubescent without, limb 2-lipped, ca. 2 cm long, upper lip 4-lobed; stamens 5, exserted, adnate to throat of corolla. Fruit globose to broadly elliptic, black.

China, Japan. Taiwan, in forests and thickets in the northern and central parts (Fig. 5).

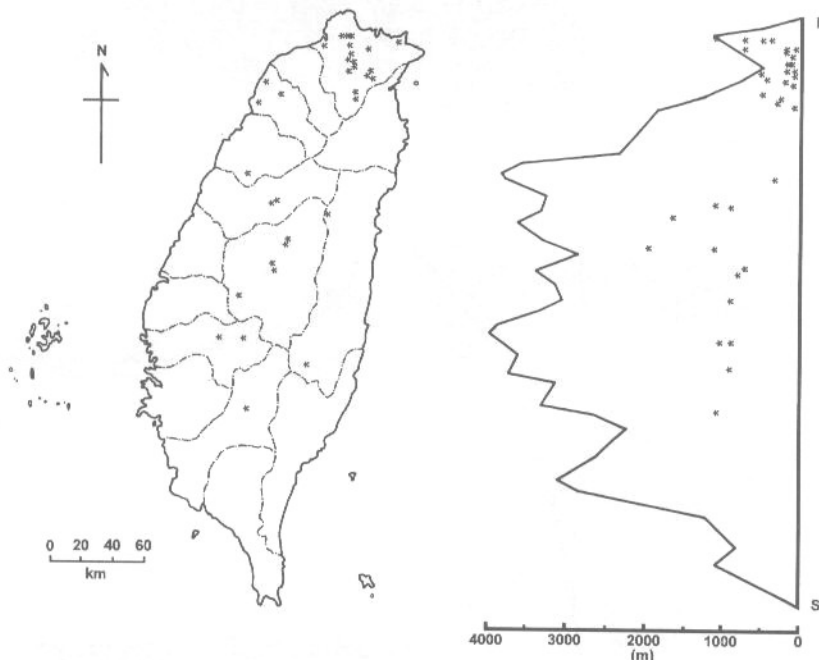


Fig. 5. The horizontal (left) and vertical (right) distribution of *Lonicera hypoglauca* Miq. in Taiwan.

**Specimens examined:** **Taipei:** Yangmingshan, S. T. Chiu & S. J. Chen 1234, M. T. Kao 7510; Chihshinshan, W. S. Tang 416; Waishuanghsi, C. M. Kuo 9705; Tanshui, S. T. Chiu 2127; Taitonshan, Suzuki 7535; Chungchengshan, C. M. Wang & Y. H., Tsai 2990; Shamaoshan, J. C. Wang 3175; Nanbuliao, T. Y. Yang 1864; Nankangshan, Y. C. Jeng 890; Kungliao, C. C. Liao & C. C. Wang 265; Chitu, C. C. Liao 792; Neihu, C. L. Huang 366; Huangtieten, S. H. Yang 28; Shihting, C. H. Chen 1702; Wawaku, Yu, Wang & Kou 232. **Ilan:** Chilanshan, S. T. Chiu & S. J. Chen 1175; Jiauhsi, S. L. Che. s. n. 1991. **Hsinchu:** Hsinpu, C. M. Wang 760; Ssumakussu, S. T. Chiu 2403. **Miaoli:** Tahu, S. J. Chen s. n. 1993; Kuantaoshan, Ou et al. s. n. 1989. **Taichung:** Takeng, Ou et al. s. n. 1986; Kukuan, Huang, Kao & Chou 9632; Chinshan, S. F. Huang 603; Alienshan, M. T. Kao 9661. **Nantou:** Luku, K. Y. Wang 164. **Chiayi:** Meishan, Y. R. Lin & C. H. Chen 500; Laichi, J. C. Wang et al. 6967. **Kaohsiung:** Taoyuan, C. C. Wang et al. 102. **Hualien:** Chenghsi, L. Y. Lin et al. 33.

4. *Lonicera japonica* Thunb., Fl. Jap. 89. 1784; Li, Woody Fl. Taiwan. 886. 1963; Li in Fl. Taiwan. 4: 709; Ou in Quart. J. Chin. For. 12(1): 120. photo 5. 1979.

Fig. 6 忍冬(金銀花)

*Lonicera affinis* Thunb. var. *sempervillosa* Hayata, Icon. Pl. Form. 9: 47. 1920; Kanehira, Form. Trees rev. ed. 692. fig. 648. 1936; Liu, Ill. Nat. Intr. Lign. Pl. Taiwan 2: 1147. fig. 965. 1962.  
*Lonicera shintenensis* Hayata, Icon. Pl. Form. 9:48. 1920; Ou in Quart. J. Chin. For. 12(1): 122. photo 8. 1979.

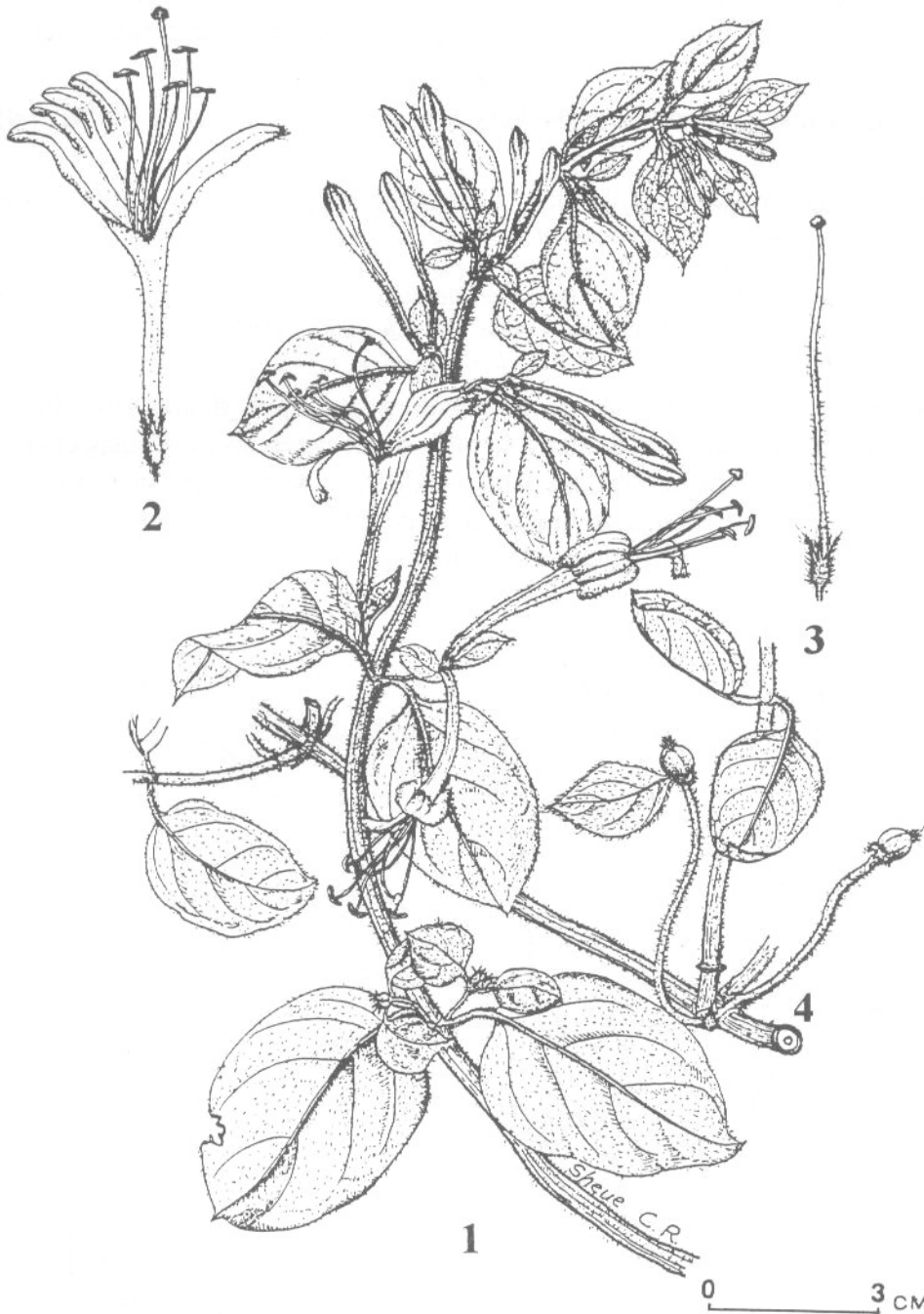


Fig. 6. *Lonicera japonica* Thunberg (CAPRIFOLIACEAE). 1. flowering branch; 2. flower; 3. calyx and pistil; 4. fruiting branches with young fruits and bracts.



Semi-evergreen twining to scandent woody vines; branchlets pubescent. Leaves chartaceous, broadly lanceolate, ovate to elliptic, 3-8 cm long, 2-3 cm broad, base rounded to subcordate, apex acute to obtuse or rounded, entire, upper surface slightly pubescent, lower surface densely so, midrib distinct, raised on both surfaces; petiole 3-10 mm long, densely pubescent. Inflorescences axillary, 2-flowered cymes; peduncle usually solitary, ca. 3-15 mm long, pubescent; bracts below each pair of flowers foliaceous, petiolate, densely pubescent; bracteoles suborbicular, pubescent. Flowers in pairs; calyx tube conical, pubescent; corolla 3-4 cm long, pubescent and glandular without, white tinged with purple, turning yellow in age, tube ca. 2 cm long, limb ca. 2 cm long; style 1; stamens 5, exserted. Fruit globose, black, 3-4 mm across.

China, Japan. Taiwan, common in thickets at low elevations mostly in the northern part (Fig. 7).

**Specimens examined:** **Taipei:** Kuanyinshan, *S. F. Huang* 1237; Pali, *S. T. Chiu* 1585; Hsinhuatien, *C. C. Hsu* 4432; Taipei, *Masamune* 2767; Shihmen, *H. N. Yang* 2591. **Taoyuan:** Taoyuan, *Ou et al. s. n.* 1980; Yungan, *M. T. Kao* 8763; Yangmei, *Y. C. Jeng* 847; Tayuan, *Huang, Hsieh & Lin* 8658; Shalun, *C. I. Peng* 7713; Luchu, *C. M. Wang & H. M. Lin* 1634. **Hsinchu:** Lienhuassu, *K. C. Yang* 4883; Emei, *C. M. Wang* 369. **Miaoli:** Chunan, *C. H. Lin et al.* 603. **Taichung:** Tachia, *S. T. Chiu* 3007; Taichung, *Ou et al. s. n.* 1986; Houli, *C. C. Hsu* 9020. **Penghu:** Shakang, *K. C. Yang & W. L. Chiou* 4839.

This species is highly variable in indumentum and leaf shape, resulting in many infraspecific taxa being named and many hybrids with other species suspected. *Lonicera shintenensis*, with limited specimens available, is difficult to distinguish from this species, differing only by its small triangular bracts. It is possible that *L. shintenensis* is a hybrid between *L. japonica* and *L. hypoglauca* or a related species, or that it might be recognizably distinct below specific rank.

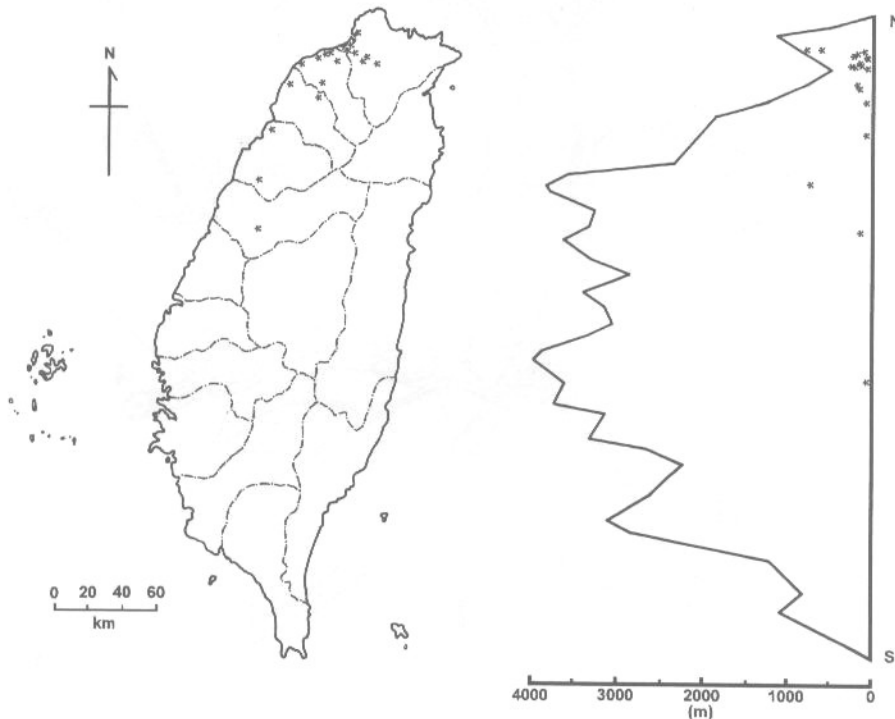


Fig. 7. The horizontal (left) and vertical (right) distribution of *Lonicera japonica* Thunberg in Taiwan.

5. *Lonicera kawakamii* (Hayata) Masamune in Journ. Soc. Trop. Agr. 3: 246. 1931; Kanehira, Form. Trees rev. ed. 693. f. 649. 1936; Liu, l.c. 2: 1148. f. 966. 1962; Li, Wood Fl. Taiwan. 888. 1963.

Fig. 8 川上氏忍冬

*Coprosma kawakamii* Hayata in Journ. Coll. Sci. Univ. Tokyo 30(1): 145. 1911 (Mat. Fl. Form.).

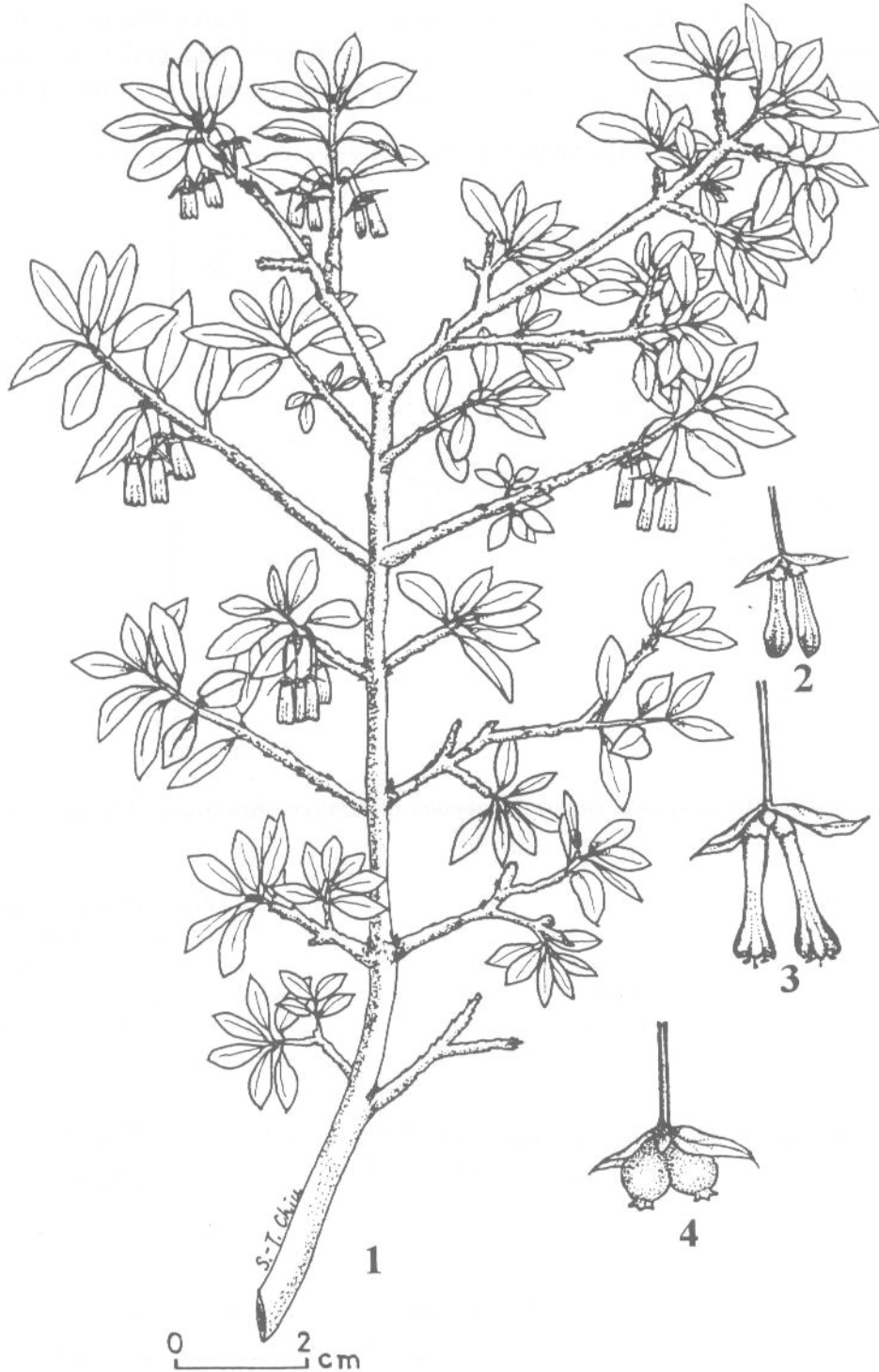


Fig. 8. *Lonicera kawakamii* (Hayata) Masamune (CAPRIFOLIACEAE). 1. flowering branch; 2. floral buds; 3. flowers; 4. young fruits and bracts.

Deciduous shrubs, 1-2 m tall. Leaves chartaceous, thin, cruciately arranged towards apex of branches, obovate, 6-12 mm long, 3-5 mm broad, base acute, apex rounded to obtuse, entire, slightly reflexed, glabrous on both surfaces, upper surface dark, lower surface pale, midrib and veins impressed on upper surface, slightly raised on lower surface, reticulations inconspicuous on lower surface; petiole 1-2 mm long. Flowers in pairs, peduncle axillary, solitary, slender, 5-14 mm long, glabrous, subtended by 1- or 2-paired bracts; calyx 5-lobed, lobes cupuliform to triangular-ovate, 1-2 mm long; stamens 5, attached to corolla throat; style pubescent; ovary 2-celled, ovule 1 per cell. Fruit globose, black, ca. 3 mm across.

Endemic. High mountains of the central range at 3,000-3,900 m (Fig. 9).

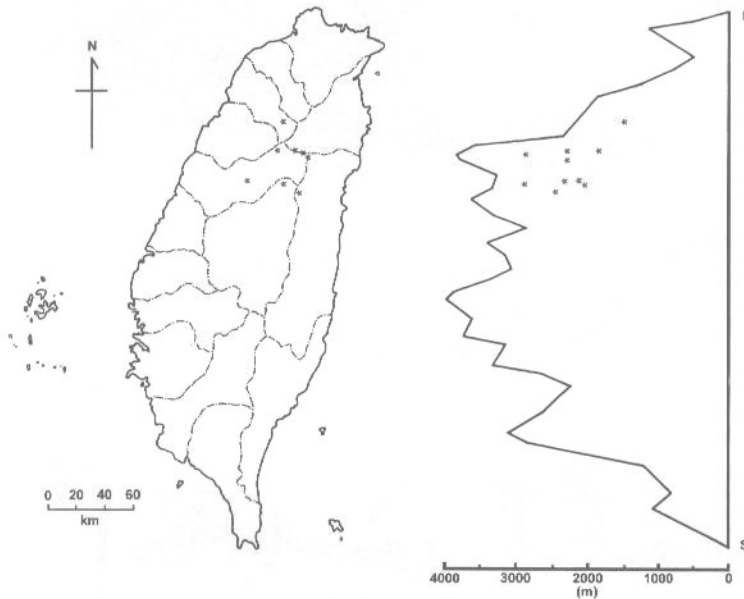


Fig. 9. The horizontal (left) and vertical (right) distribution of *Lonicera kawakamii* (Hayata) Masamune in Taiwan.

**Specimens examined:** **Ilan:** Nanhutashan, Suzuki, Hukuyama & Simada 17484. **Miaoli:** Chiuchiu lodge to Tapachienshan, C. I. Peng 8540. **Hsinchu:** Tapachienshan, C. Y. Li 20. **Taichung:** Nanhutashan, C. M. Wang 900; Hsuehshan, S. T. Chiu 1989; Tsikaoshan, T. C. Huang & C. F. Hsieh 7230; . **NANTOU:** Shihmenshan, S. T. Chiu, J. N. Chen & C. H. Chu 2975. **Chiayi:** Yushan, S. T. Chiu 2411. **Kaohsiung:** Kuanshan, T. Y. A. Yang et al. 7423; Fukuyama s. n. 1935. **Taitung:** Hsiangyangshan, S. T. Chiu, C. H. Chu & C. M. Chao 2933. **Hualien:** Chungyangchienshan, Suzuki & Fukuyama 15063.

**6. *Lonicera macrantha* (D. Don) Spreng., Syst. Veg. 4(2): 82. 1827; Hsu, Fl. China 72: 240. 1988; Lu & Ou, Trees of Taiwan rev. ed. 277. 1994. Fig. 10 大花忍冬**

*Caprifolium macranthum* D. Don, Prodr. Fl. Nepal. 140. 1825; Kuntze. Rev. Gen. Pl. 1: 274. 1891.

*Lonicera macrantha* (D. Don) DC. Prodr. 4: 333. 1830.

Semi evergreen woody vines; branchlets, petioles and peduncles densely long and short brown hairy. Leaves thick chartaceous, obovate to oblong-lanceolate, 5-10 cm long, base rounded, apex acute, covered with long and short brown hairs. Peduncles axillary, 2-flowered; flowers fragrant, mostly at ends of branchlets; peduncle 1-6 mm long; bracts and

bracteoles lanceolate to linear; calyx ca. 2 mm long; corolla white, 4.5-7 cm long. Fruits black when mature, globose or oblong.

Southern China, Nepal, northern India, Myanmar and Vietnam. Taiwan, at median elevations, rare (Fig. 11).



Fig. 10. *Lonicera macrantha* (D. Don) Spreng. (CAPRIFOLIACEAE). 1. flowering branch; 2. floral bud and bracts; 3. young fruits and bracts.

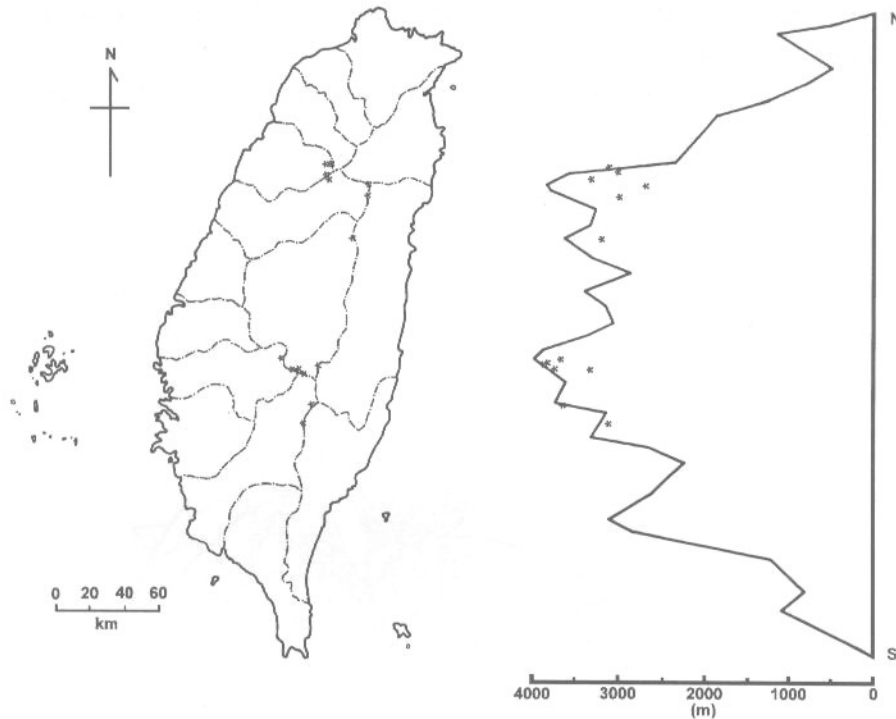


Fig. 11. The horizontal (left) and vertical (right) distribution of *Lonicera macrantha* (D. Don) Spreng in Taiwan.

**Specimens examined:** Nantou: Chungli, *Sasaki s. n.* 1928. Miaoli: Erpensung-Hsuechien, *T. C. Huang & S. F. Huang 15399*. Taichung: Anmashan, *T. S. Liu s. n.* 1957; Wungshih, *Sasak s. n.* 1930.

**7. *Lonicera oiwakensis* Hayata**, *Icon. Pl. Form.* 6: 24 pl. 5. 1916, 9: 47. 1920; Kanehira, *Form. Trees rev. ed.* 693. 1936; Li, *Woody Fl. Taiwan* 886. 1963. Fig. 12 追分忍冬

Erect shrubs, 1-2 m tall; branchlets pubescent. Leaves elliptic, rigid coriaceous, ca. 2.5 cm long, 1.5 cm wide, base rounded to truncate, apex emarginate or obtuse, entire, slightly revolute, minutely setose, sparsely pubescent on both surfaces; midrib distinct and raised on lower surface; petiole 2-3 mm long, pubescent. Peduncle usually solitary, axillary, slender, ca. 1 cm long, pubescent; flowers in pairs; bracts 2, linear-falcate, pubescent; calyx 5-lobed connate; corolla ca. 3 cm long, pubescent and glandular without, white, tinged with rose at tip, tube ca. 7 mm long, limb about 7 mm long; style 1, stamens 5, exserted; ovary 3-locular, ovules 4 or 5 per cell. Fruit red, lower part of paired berries adnate.

Endemic. Central ranges in forests, 1500-3,000 m, mostly on rocky mountain slopes, rare (Fig. 13).

**Specimens examined:** Ilan: Nanhutashan, *C. K. Liu et al. s. n.* 1996. Taichung: Piluhsi-Lishan, *S. Y. Lu, 16371, S. Y. Lu s. n.* 1981; 710 forest road-Nanhutashantengshankou, *S. T. Chiu 1894, 2212, S. T. Chiu, J. N. Chen & C. H. Chu 2740*. Nantou: Tsuifong, *Hayata 24861* (Type, TFRI).

Although this genus is generally distributed throughout the world, it is richest in temperate parts (Heywood, 1993). The temperature effect causes the altitudinal zonation of vegetation in Taiwanese mountains. The altitudinal distribution from low to high for the



Fig. 12. *Lonicera oiwakensis* Hayata (CAPRIFOLIACEAE). 1. flowering branch; 2. fruiting branch; 3. flower; 4. young fruits and bracts; 5. mature berries.

*Lonicera* lianas are *L. japonica*, *L. hypoglauca*, *L. macrantha*, *L. apodantha* and *L. acuminata*. The shrub, *L. kawakamii*, is restricted in the subalpine zone and the *Abies* forest. The other shrub, *L. oiwakensis*, habitates mostly on rocky mountain slopes at the middle altitudes but it is rarely found. Most mountane species, such as *L. apodantha*, *L. acuminata*, *L. oiwakensis* and *L. kawakamii* have some trichomes but shorter and less than the others have. Whether trichomes of *Lonicera* is related to the thermal, UV or both effect needs to be further studied.

Three endemic species, *L. apodantha*, *L. kawakamii* and *L. oiwakensis*, are all in the central parts of Taiwan. The high endemic ratio (3/7) in Taiwan implies that Taiwanese *Lonicera* may be separated from the continental species for a long time. The *L. japonica*, a common species in eastern Asia but weedy in northern American (Heywood, 1993), has been found in low altitudinal area of western Taiwan; especially near the coastal regions. The



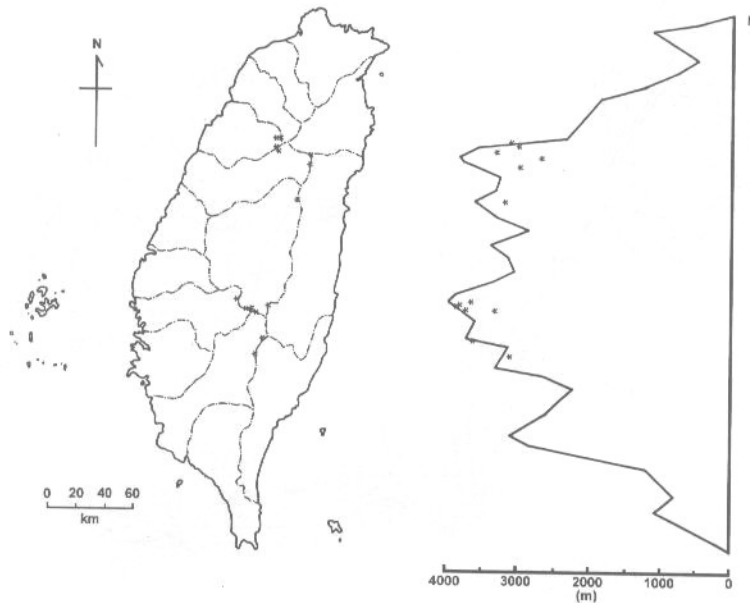


Fig. 13. The horizontal (left) and vertical (right) distribution of *Lonicera oiwakensis* Hayata in Taiwan.

reduced specimen records of *L. japonica* implies that decreased suitable habitats happens in this species. Taiwan may be the edge for the distribution of certain *Lonicera* species. These species proceeding the isolation and adaptation are very important and good for the studies in relation to the structural evolution, functional morphology and evolutionary ecology.

### ACKNOWLEDGEMENTS

This work was supported by a grant from the National Science Council (NSC 82-0203-B-178-008-T). I wish to express my gratitudes to Dr. Kuoh-Cheng Yang and Dr. Ching-I Peng for their encouragement and valuable discussion, to Prof. Tseng-Chieng Huang, Prof. H. Ohashi and Dr. David E. Boufford for their critical review and helpful suggestions, and to Chiou Rung Sheue for her professional illustration.

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## 臺灣的忍冬屬植物

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(收稿日期: 1998 年 10 月 30 日; 接受日期: 1998 年 12 月 2 日)

### 摘 要

本研究整理臺灣忍冬屬植物近年來之訂正，並根據野外調查與臘葉標本之採集記錄，計分 7 種。本文包括各種的形態特徵描述及 1 種學名之訂正，並提供各分類群之分布資料，供調查鑑定及生態生理相關研究之用。

關鍵詞：忍冬屬(忍冬科)、忍冬、系統分類、分佈、台灣。

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