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Notes on the Genus *Taxillus* Van Tieghem (Loranthaceae) in Taiwan

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ABSTRACT : The confusion of the taxonomic treatment of the *Loranthus* Jacq., *Scurrula* L. and *Taxillus* Van Tiegh. in the Taiwanese mistletoes was due to the profound botanical publication with the little understanding in such great diversity and phylogeny within this group. This paper provides the taxonomic treatment of *Taxillus* Van Tiegh. in Taiwan, including the description of the new combined genus, the key to the ten species of this genus in Taiwan, one newly recorded species, one new species and two varieties.

KEY WORDS : ***Taxillus*, Revision, Taiwan, Taxonomy**

INTRODUCTION

The major distinguishable characters between the genus *Scurrula* and *Taxillus* were whether the calyx tube, the ovary and the fruit attenuate towards the base (Chao, 1976; Danser, 1931,1935; Kiu, 1988; Liu *et al.*, 1988). However, certain range of variation for some species also exists in the field and the herbarial specimens. Some species have been treated in *Taxillus* or *Scurrula* depending on the determination, for examples, *T. theifer vs. S. theifer* and *T. pseudochinensis vs. S. pseudochinensis* (Kiu, 1988; Liu *et al.*, 1988). The genus *Scurrula* was wide-spread and limited in tropical Asia (Chao, 1976; Danser, 1931). The genus *Taxillus* also distributed in the overlapping range with *Scurrula* in southeastern Asia (Danser, 1935). The differences between these two genera seem to be not very outstanding.

The genus *Loranthus* and the taxonomic treatment of the Loranthaceae (*s.l.*) provides a fascinating story which has little direct relevance to the biology of these plants (Calder and Bernhardt, 1983). Less than 1% of the known mistletoes of the world are included in "Species Plantarum" and their treatment there as a group which is essentially tropical and paratropical with a strong southern bias is understandably inadequate and has led to some problems. Most taxonomists might not be awared of the great diversity within the genus *Loranthus* (*s.l.*). Therefore, a consequent debate was made due to the domination of the European flora in the early taxonomic descriptions. Since 1972, it was determined that *Scurrula* L. was a synonym of *Loranthus* Jacq. in the International Nomenclature Rule 2074 of Appendix III (Stafleu *et al.*, 1972). However, most predetermined *Scurrula* sp. in Taiwan,

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and the 50 or so species of *Scurrula* in southern and southeastern Asia, are phylogenetically related to the *Taxillus* and not to *Loranthus* (*s.s.*). New combinations in *Taxillus* of Taiwan are made in this treatment.

This paper provides the taxonomic treatment including the description of the new combined genus, the key to the species of this genus in Taiwan, one newly recorded species, one new species and two new varieties.

TAXONOMIC TREATMENT

TAXILLUS Van Tiegh., Bull. Soc. Bot. France **42**: 256. 1859; Danser in Bull. Jard. Bot. Buitenzorg Ser. 3, **10**: 354. 1929, et in Verhand. Kon. Akad. Wetensch. Amsterdam Afd. Natuurk. Sect. 2, **29**(6): 123. 1933; H. S. Kiu in Acta Phytotax. Sin. **21**: 177. 1982.

鈍果桑寄生屬

Parasitic shrubs, slender or rather stout. Leaves opposite or subopposite, simple, entire, glabrous or covered by stellate hairs. Inflorescence a few flowered simple umbel; flowers with 1 bract; perianth united, 4-5-merous, zygomorphic, tube cylindrical in bud, later ellipsoidal acutely club shaped or capitate and becoming reflexed at the narrowest part, the lobes all reflexed to one side, spathulate or lanceolae, usually acute, one of slit much deeper than the other three; anthers obtuse, basifixed, 4-celled, locellate or not; style with or without articulation, as long as perianth. Fruits ovoid, ellipsoid or club shaped, the exocarp coriaceous, mesocarp viscid, endocarp woody and fibrous.

Over 75 species mainly in southeastern Asia and south Africa. The genus *Taxillus* is widespread in tropical Asia. Ten species are found in Taiwan, three of which are endemic.

Key to the species

1. Leaves subopposite, narrow-spathulate; calyx urceolate; corolla glabrous ... 4. *T. matsudai*
1. Leaves opposite or subopposite, not narrowly spathulate; calyx not urceolate; corolla pubescence
  2. Leaves concolorous or mature leaves green with sparse stellate hairs
    3. Leaves 2-6 cm long, elongate-obovate, apex rounded
      4. Leaves thick coriaceous, obvato-oblonga, 4-6 cm long, 2-2.5 cm wide; anthers 3-4.5 mm ..... 8. *T. ritozanensis*
      4. Leaves thin coriaceous, obovato-spathulate, 2-4 cm long, 1-1.5 cm wide; anthers 2-2.5 mm ..... 9. *T. theifer*
    3. Leaves 4-12 cm long, oblong, apex obtuse
      5. Leaves coriaceous, mature leaf glabrous, yellowish green; buds covered with dark reddish brown hairs ..... 2. *T. liquidambaricolus*
      5. Leaves thick chartaceous, mature leaf with sparse stellate hairs, green; buds covered with brown hairs; young shoots drying black ..... 1. *T. limprichtii*
  2. Leaves bicolored, with stellate hairs on the back
    6. Apex of flower bud globose, limb spathulate
      7. Flowers less than 2cm long, apex rounded; abaxial leaf surface with reddish brown stellate hairs ..... 3a. *T. lonicerifolius* var. *lonicerifolius*

7. Flowers more than 2 cm long, apex pointedly globose; abaxial leaf surface with tannic brown stellate hairs ..... 3b. *T. lonicerifolius* var. *longifolius*
6. Apex of flower bud ellipsoid, acute club shaped or acute capitate, limb lanceolate.
8. Leaves abaxial densely stellate hairy, dark reddish brown
9. Flowers 2.4-3.2 cm long, anthers 3-4 mm long; fruit ellipsoid or clavate ..... 7. *T. rhododendricolus*
9. Leaves thick chartaceous, ovate; ovary and fruit attenuate toward the base ..... 5. *T. parasiticus*
8. Young leaves with deciduous stellate hairs
10. Leaves thin coriaceous; flowers ferruginous - tomentose, 1.6 cm long, anthers less than 2.5 mm ..... 6. *T. pseudochinensis*
10. Leaves coriaceous; flowers sparsely stellate hairy, 1.8-2.4 cm long, anthers 2.5-3.5 mm long ..... 10. *T. tsaii*

1. Taxillus limprichtii (Grüning) Kiu. in Acta Phytotax. Sin. **12:** 178. 1983.

木蘭桑寄生

Loranthus limprichtii Grüning Fedde, Repert. Sp. Nov. **12:** 500. 1913.

Buds and young branchlets densely brownish tomentose, glabrous at maturity. Leaves thick chartaceous to thin coriaceous, oblong to oblong-ovate, oblique sometimes, 4-12 cm long, 2.5-6 cm broad. Calyx tube cylindrical, 4-lobed, lobes triangular. Corolla tube red, cylindrical, apex acute capitate, limb 6 mm long, 1.5 mm broad, obtuse. Stamens 4, anthers sessile, 2-dentate at apex. Styles filiform. Fruits 7 mm long and 3-4 mm in diam., obconical-cylindric.

Southern China. Parasitic on *Castanea mollissima* Blume, *Alnus formosana* (Burk.) Makino etc. in the southern and central parts of the island.

CHIAYI: Alishan, *Chiu & Lin. 3127*; Yushan, *Chiu et al. 2409*; KAOHSIUNG: Takuanshan, *Chiu et al. 1372.* PINGTUNG:Chuyunshan, *Liu & Chen, 10492; Ou et al. 10390.*

This is newly recorded species in Taiwan. It was found mostly in the southern and southeastern China.

2. Taxillus liquidambaricolus (Hayata) Hosokawa in J. Jap. Bot. **12:** 421. 1936.

大葉桑寄生

Loranthus liquidambaricolus Hayata, Icon. Pl. Form. **6:** 38. 1916.
Scurrula liquidambaricolus (Hayata) Danser in Bull. Jard. Bot. Buit. III. **10:** 351. 1929

Buds and young branchlets densely reddish dark brown tomentose, glabrous at maturity. Leaves coriaceous, oblong to oblong-ovate, 6-8 cm long, 2.5-5 cm broad, apex truncate-rounded, base acute; petioles 1-2 cm long. Calyx tube cylindrical, 4-lobed, lobes linear, 6 mm long, 1.5 mm broad, obtuse. Stamens 4, anthers sessile, 2-dentate at the apex. Styles filiform, 2.5 cm long. Fruits 6 mm long and 3 mm in diam., obconical-cylindric.

Parasitic on *Ginkgo biloba* L., *Thuja occidentalis* L., *Liquidambar formosana* Hance, *Eleocarpus decipiens* Hemsl., *Diospyros kaki* L., *Mallotus japonicus* (Thunb.) Muell.-Arg.,

Styrax formosana Matsum., *Schima superba* Gardn. & Champ. var. *kankaoensis* (Hayata) Keng, *Cammellia oleifera* Abel., *Prunus phaeosticta* (Hance) Maxim., *Viburnum luzonicum* Rolfe, *Ilex* sp., *Symplocos cochinchinensis* (Lour.) Moore subsp. *laurina* (Retz.) Noot., *Prunus mume* Sieb. & Zucc., *Prunus taiwaniana* Hayata, *Carpinus kawakamii* Hayata, *Aleurites montana* E. H. Wilson, *Pyrus serotina* Rehder, *Pistacia chinensis* Bunge, *Gordonia axillaris* (Roxb.) Dietr., *Rhus succedanea* L. and *Cinnamomum sp.* etc. throughout the island at 100-2000 m altitude.

TAIPEI: Ayu, *Suzuki 18642*. ILAN: Pengpengshan, *Kao 312*. TAOYUAN: Litungshan, *Wang 1906, 1945*; Kueishan, *Suzuki 21405*. HSINCHU: Kuanhsi, *Ou s. n.* 1970. TAICHUNG: Chiapaotai, *Liu et al. 466*; Pahsienshan, *Sasaki s. n.* 1928; Tungshih, *Chiu et al. 2544*. NANTOU: Liehhuachih, *Chiu 2553;* Hunghsiang, *Chiu et al. 3240;* Hsitou, *Chiu et al. 3160*; Hsinyi, *Shen 154*; Sun Moon Lake, *Sasaki s. n.* 1929, *Kudo & Sasaki 15083*; Chitou, *Feng & Kao 312*; Nantou, *Kawakami 8636*; Chiangtzuliao, *Soma 8637* (Isotype, TAIF). CHIAYI: Tefuyeh, *Chiu & Lin 3116*; Taiping, *Chiu &Lin 3110*. TAINAN: Sheliaochiao, *Yashukawa 8639*. TAITUNG: Chihpen, *Sasaki s. n.* 1934. HUALIEN: Yuli, *Suzuki 19766*.

This species is readily distinguished by its having rusty stellate hairs on the buds and young branchlets.

3. Taxillus lonicerifolius (Hayata) Chiu, *comb. nov.*

Loranthus lonicerifolius Hayata, Icon. Pl. Form. **5:** 181. 1915.
Scurrula lonicerifolius (Hayata) Danser in Bull. Jard. Bot. Buit. III. **10:** 352. 1929

3a. var. **lonicerifolius** 忍冬葉桑寄生 Fig. 1

Leaves coriaceous, ovate-oblong, variable in size, ca. 4.5-5 cm long, 2-2.5 cm broad, apex obtuse, base rounded, upper surface tomentose, lower surface reddish tomentose; petioles 8 mm long. Flowers with short pedunculate or sessile, fascicled on lateral branches; bracts thick, triangular, tomentose; calyx tube densely tomentose, 1.5-2.5 mm long, margins denticulate; corolla tube thick, 9-13 mm long, 2-4 mm in diameter, lobes spathulate, 3.5 mm long, 1.5 mm broad, greenish and glabrous inside, reflexed; anthers 1.5-2 mm long; style 2-2.5 mm long, glabrous, ovary and fruit reddish brown tomentose.

Endemic. Parasitic on *Thuja occidentalis* L., *Rhododendron morii* Hayata, *Quercus dentata* Thunb., *Q. variabilis* Blume., *Alnus japonica* (Thunb.) Steud., *Cryptomeria japonica* (L. f.) d. Don, *Ilex sugeroki* Maxim. var. *brevipedunculata* (Maxim.) S. Y. Hu, *Styrax suberifolia* Hook. & Am., *Cyclobalanopsis sp., Cammellia oleifera* Abel. and *Cinnamomum myrianthum* Merr., etc. Mountain areas at low to high elevations throughout the island.

NANTOU: Techi, *Lai s. n. 1986*; Tahsuehshan, *Chan 981*; Aowanta, *Lu et al 959*; Hwang, *Chiu et al. 3232*; Lienhuachih, *Chiu et al. 2603, 3088*. TAICHUNG: Pahsienshan, *Liu et al. 376.* HUALIEN: Panpien, *Sasaki s. n. 1929*; *Suzuki 1684*; Liwushan, *Chen 288*. TAITUNG: Liyuan, *Liu et al. 9798*.

Compare to the isotype of the typical variety, the leaves of the Taiwan plants are ovate and more ferruginous. This variety may be conspecific with *Taxillus nigrans* (Hence) Danser in mainland China.

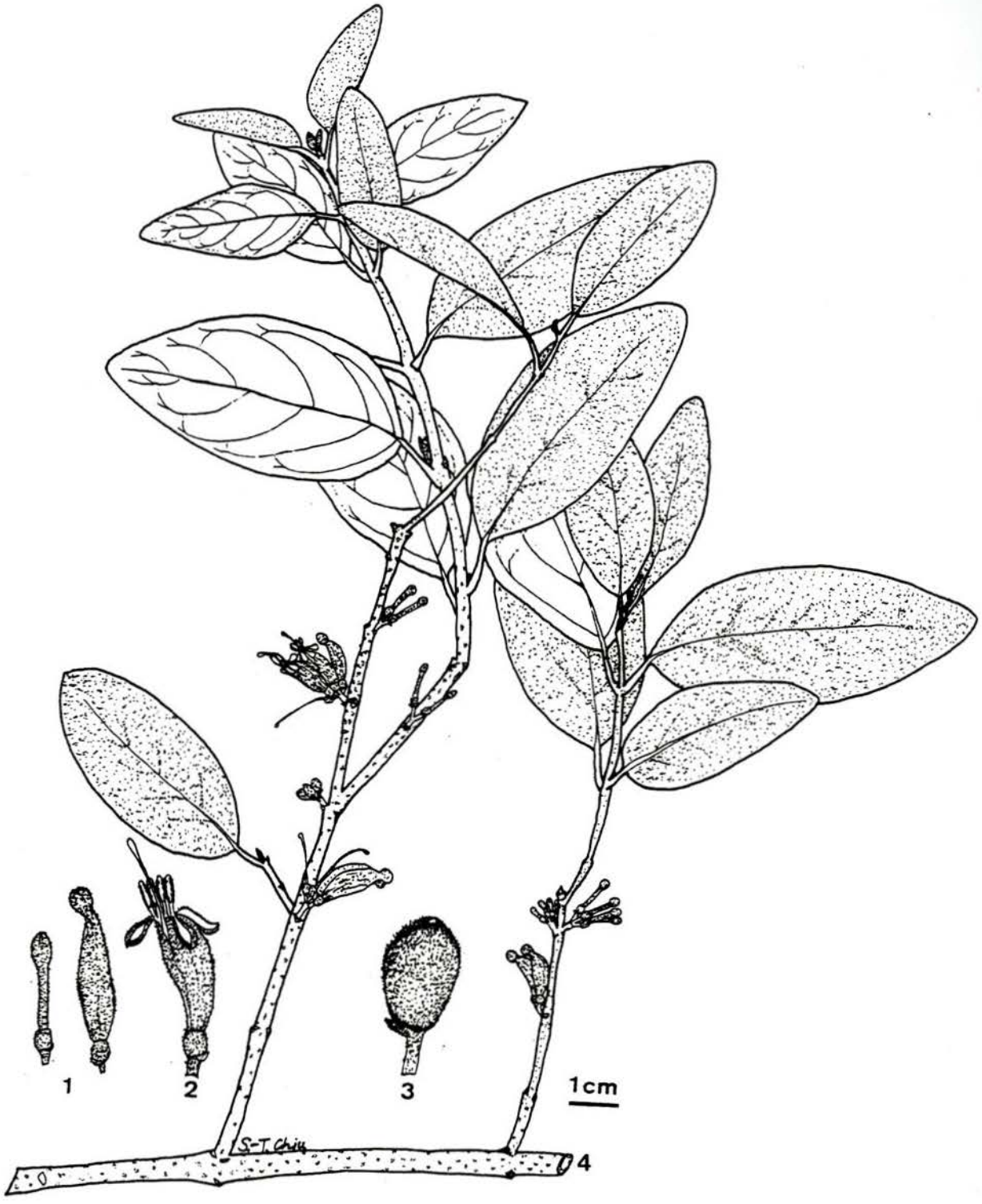

Fig. 1. **Taxillus lonicerifolius** (Hayata) Chiu var. **lonicerifolius** Chiu. 1. flower bud; 2. flower; 3. fruit; 4. habit.

3b. var. **longifolius** Chiu, *var. nov.* 大花忍冬葉桑寄生 Fig. 2

A typo longifloribus et longifolis differt. Corolla tuba crassa oblongo-spathulata, 17-23 mm. longa, 4 mm. lata.

This variety has the similar leaf and flower form but in very large size, compared to the *var. lonicerifolius.* The flower bud apex is conspicuous pointedly ball-shaped. Compared to

an isotype of the typical phase, the Taiwan plants have the same leaf form but large flowers. The flower bud apex is conspicuously globose and pointed.

Leaves coriaceous, elliptical-oblong, 4.5-8 cm long, 2-3 cm broad, apex obtuse, base rounded, upper surface tomentose, lower surface brownish tomentose; petioles 8 mm long. Flowers short pedunculate or sessile, fascicled on lateral branches; bracts thick, triangular, tomentose; calyx tube densely tomentose, 2-2.5 mm long, margins denticulate; corolla tube thick, 1.7-2.3cm long, 4 mm in diameter, lobes spathulate, 3.5 mm long, 1.5 mm broad, greenish and glabrous inside, reflexed; anthers 2-2.5 mm long; style 2.5-3 mm long, glabrous, ovary and fruit reddish brown tomentose.

Endemic. Parasitic on *Castanea mollissima* Blume, *Beilschmiedia erythrophloria* Hayata etc.

NANTOU: Hsitou, *Chiu et al. 3158* (Holotype & isotype, NMNS; isotype, HAST); Sunlinhsea, *Wang s. n. 1992*. CHIAYI: Alishan, *Chiu & Lin 3128*.

4. Taxillus matsudai (Hayata) Danser in Verh. Kon. Akad. Wetensch. Amsterd. Afd. Natuurk. Tweede Sect. 29, **6:** 124. 1933; Li, Woody Fl. Taiwan 147. *f. 52*. 1963. 松寄生

Loranthus matsudai Hayata, Icon. Pl. Form. **10:** 30. 1921.

Leaves subopposite, coriaceous, spathulate, 2-2.5 cm long, 5-10 mm broad, apex rounded, base attenuate, margins entire; petioles 2-3 mm long. Inflorescence an umbel, 2-5-flowered; peduncles 3 mm long; pedicels 3 mm long, bracteate at base and with 2 or 3 connate bracteoles at apex; calyx urceolate, limb 4-partite, segments linear, 5 mm long, reflexed; style filiform, exserted; Fruits berry-like.

Endemic. Parasitic on *Pinus taiwanensis* Hayata, *Pinus morrisonicola* Hayata and *Tsuga chinensis* (Franchet) Pritz. *ex* Diels var. *formosana* (Hayata) Li & Keng, at median to high elevations in the central mountains.

ILAN: Taipingshan, *Suzuki 907*. TAICHUNG: Pahsienshan, *Sasaki 8658, Suzuki s. n.* 1938; Lishan, *Mutada 8654* (Isotype, TAIF). NANTOU: Meiyuen, *Suzuki s. n.* 1927 (Isotype, TAIF); Tsuiluan, *Chiu 3133;* Salisiensi, *Hsu 2402;* Wushunkeng, *Kanehira & Sasaki s. n.* 1918; Wushe, *Matsuda 8653*. TAITUNG: Wentzetzushe, *Kawakami & Mori 8659*. HUALIAN: Piluchi, *Chiu et al. 2879*.

This is the only species in the Loranthaceae of Taiwan that restricted only to conifers.

5. Taxillus parasiticus. (L.) Chiu, *comb. nov.* 桑寄生

Scurrula parasiticus L., Sp. Pl. 110. 1753.

Young branchlets terete, densely light reddish to brownish tomentose, greyish and glabrous at maturity. Leaves thick chartaceous, ovate to ovate-oblong, 5-8 cm long, 3-4 cm broad, apex obtuse, base obtuse to rounded; petioles 7-10 mm long, glabrous. Pedicels and bracts densely ferruginous-tomentose. Calyx obconical, tomentose; corolla tube cylindrical, lobes 4, linear, 7 mm long, 1 mm broad, concave, reflexed at apex; anthers 1.2 mm long, ovary glabrous, styles filiform, 1.8 mm long.

Fig. 2. **Taxillus lonicerifolius** (Hayata) Chiu var. **longifolius** Chiu. 1. flower bud; 2. flower; 3. fruit; 4. habit.

Southern China and the Philippines. Taiwan, in the southern part of the island. Parasitic on *Rhododendron morii* Hayata, *Cycloblanopsis morii* (Hayata) Schottky, *Camellia brevistyla* (Hayata) Cohen-Stuart and *Euryo* sp.

PINGTUNG: Tahanlintao, *Ou et al. 7717*. TAITUNG: Yenpinlintao, *Ou et al. 8956*.

6. Taxillus pseudochinensis (Yamamoto) Danser in Verhand. Kon. Akad. Wetensch. Amsterdam. Afd. Natuurk. Sect. 2, **29**(6): 125. 1933. 恆春桑寄生 Fig. 3

Fig. 3. **Taxillus pseudochinensis** (Yamamoto) Danser. 1. flower bud; 2. flower; 3. fruit; 4. habit.

Loranthus chineNsis DC. var. *formasanus* Lecomte in Sarg. Pl. Wilson. **3:** 318. 1916.
Loranthus pseudochinensis Yamamoto, Suppl. Icon. Pl. Form. **3:** 19. *f. 8*. 1927.
Scurrula parasiticus acut. non L., Danser in Bull. Jard. Buit. III **10:** 352. 1929; Chao in Fl. Taiwan **2:** 247. 1976, p.p.

Young branchlets terete, densely light brownish tomentose, grayish and glabrous at maturity. Leaves deciduous, thin coriaceous, ovate to ovate-oblong, 2-4 cm long, 1.5-2.5 cm broad, apex obtuse, base obtuse to rounded; petioles 5-10 mm long, glabrous. Flowers in

umbel, pedicels 2mm, bracts ovate, densely tomentose. Calyx obconical, tomentose; corolla tube cylindrical, 1.8 cm, lobes 4, linear or lanceolate, 7 mm long, 1 mm broad, concave, reflexed at apex; anthers 2.5 mm long, ovary glabrous, styles filiform, 2 cm long. Fruits ellipsoid.

Endemic. Parasitic on *Rhododendron formosanum* Hemsl., *Daphniphyllum sp.* and Symplocaceae species in southern Taiwan.

PINGTUNG: Nanjenshan, *Chen et al. 10138*, *Chao s. n.* 1996. TAITUNG: Chokakuraishe, *Yamamoto s. n.* 1927 (Type of *Loranthus pseudochinensis* Yamamoto, TAI).

7. Taxillus rhododendricolus (Hayata) Chiu, *comb. nov.* 杜鵑桑寄生 Fig. 4

Fig. 4. **Taxillus rhododendricolus** (Hayata) Chiu. 1. pollen grain; 2. flower bud; 3. flower; 4. fruit; 5. stellate hairs and tomentose leaf surface; 6. habit.

Loranthus rhododendricolus Hayata, Icon. Pl. Form. **5:** 184. 1915.
Loranthus seraggodostemon Hayata, Icon. Pl. Form. **5:** 185. 1915.
Scurrula rhododendricolus (Hayata) Danser in Bull. Jard. Bot. Buit. III. **10:** 353. 1929.
Scurrula seraggodostemon (Hayata) Danser in Bull. Jard. Bot. Buit. III. **10:** 353. 1929.

Leaves coriaceous, ovate-oblong, variable in size, approximately 4.5-5 cm long, 2-2.5 cm broad, the apex obtuse, base rounded, upper surface tomentose, lower surface brownish or reddish tomentose; petioles 8 mm long. Flowers variable in size, short pedunculate or sessile, fascicled on lateral branches; bracts thick, triangular, tomentose; calyx tube densely tomentose, 2-2.5 mm long, margins denticulate; corolla tube thick, 2.2-3 cm long, lobes linear-lanceolate, glabrous inside, reflexed; anthers 3-4 mm long; ovary glabrous, style 2-2.5 mm long, glabrous.

Endemic. Parasitic on *Chamaecyparis sp., Rhododendron morii* Hayata, *Rhododendron formosanum* Hemsl., *Litsea morrisonensis* Hayata, *Alnus formosana* (Burk.) Makino, *Castanea mollissina, Viburnum odoratissimum* Ker., *Rubus pirifolius* Sm. and *Idesia polycarpa* Maxim., etc. In median and high mountain areas throughout the island.

TAIPEI: Mururoahu, *Suzuki 7271*; Sendanshan, *Suzuki s. n.* 1925. ILAN: Taipingshan, *Suzuki s. n. 1925, 1929, 1938;* Chiliting, *Hsu 6073*; Anmahsan, *Liu et al. 204.* MIAOLI: Talu, *Wang & Yang 4876*; Sishihshan, Kuo 8552. TAICHUNG: Lishan, *Feung & Kao 5004, 5084.* NANTOU: Yuchu, *Feung & Kao 5089*; Sun Moon Lake, *Kudo & Sasaki 15081, Sasaki s. n.* 1929; Wushe, *Masamune & Nakamura 2433, Kanehira & Sasaki 8640*; Tunyuan, *Shimada s. n.* 1918; Nengkao, *Sasaki 8666*; Shouchengtashan, *Kawakami & Mori 8642*; Luantashan, *Konishi & Nakai s. n. 1909-8* (Isotype of *Loranthus seraggodostemon* Hayata, *8665* TAIF). CHIAYI: Alishan, *Ou 5078, Suzuki 19361, Kanehira & Sasaki 8663, Hayata & Kanehira 8661* (Merotype of *Loranthus phoebe-formosanae* Hayata, TAIF); Mt. Morrison, *Mori 374.* TAITUNG: Chinshuiying, *Simizu 3884.* HUALIEN: Yuli, *Suzuki 19426*; Tailuko, *Suzuki 8723*; Panpien, *Sasaki s. n.* 1929, *Suzuki 1684.*

This species flowering in summer and early fall and is widespread throughout the mountain areas of the island. Compared to isotypes of the typical phase, the leaves of the Taiwan plants vary as in *L. rhododendricolus* and *L. seraggodostemon* in size and form. Certain populations may be conspecific with *Taxillus sutchuensis* (Lecomte) Danser in mainland China.

8. Taxillus ritozanensis (Hayata) Chiu, *comb. nov.* 李棟山桑寄生

Loranthus ritozanensis Hayata, Icon. Pl. Form. **5:** 184. 1915.
Scurrula ritozanensis (Hayata) Danser in Bull. Jard. Bot. Buit. III. **10:** 353. 1929.

Leaves subopposite, coriaceous, ovate to obovate-oblong, 4.5-5 cm long, 2-2.5 cm borad; the apex obtuse to rounded, the base cuneate; petioles 3 mm long. Flowers in dense pedunculate or sessile fascicles; bracts triangular, 1.6 mm long, 1 mm broad; calyx tube 2 mm long; corolla tube 2 mm long, thinly pubescent outside; anthers 4 mm long; style filiform.

Endemic. Parasitic on *Mallotus paniculatus* (Lam.) Muell.-Arg.

HSINCHU: Litungshan, *Kawakami 8664* (Merotype, TAIF). CHANGHUA: Pakuashan, *Takayanagi s. n.* 1932. PINGTUNG: Mutanwan, *Kudo & Mori 2539*; Suchungchi, *Sasaki 8671* (Isotype of *Loranthus theifer* Hayata, TAIF), *Hurukawa 8672, Morimoto 790.* PINTUNG; Chuyunshan, *Liao et al. 10303.*

The anthers of isotype are less than 4 mm long which is in conflict with the original description. This may cause the confuse with *T. theifer*. However, the population in Litungshan and Chuyunshan is not only larger than *T. theifer* in leaves, flowers and fruits but also with ferruginous-tomentose vegetative buds.

9. Taxillus theifer (Hayata) H. S. Kiu in Act. Phytotax. Sin. **21:** 179. 1983. 埔姜桑寄生

Loranthus theifer Hayata, Icon. Pl. Form. **5:** 186. 1915.
Scurrula ritozanensis acut. non Danser; Liu, Ill. Nat. Intr. Lign. Pl. Taiwan **2**: 818. *f. 666.* 1962. p.p.; Li, Woody Fl. Taiwan 147. 1963. p.p.; Chao in Fl. Taiwan **2:** 248. *pl. 285.* 1976. p.p.

Leaves subopposite, coriaceous, ovate to obovate-oblong, 4.5-5 cm long, 2-2.5 cm borad; apex obtuse to rounded, base cuneate; petioles 3 mm long. Flowers in dense pedunculate or sessile fascicles; bracts triangular, 1.6 mm long, 1 mm broad; calyx-tube 2 mm long; corolla tube 2 mm long, thinly pubescent outside; anthers 4 mm long; style filiform.

Endemic. Parasitic on *Acer kawakamii* Koidz., *Aleurites fordii* Hemsl., *Aphananthe aspera* Planch., *Pistacia chinensis* Bunge, *Pyrus serotina* Rehder, *Prunus mume* Sieb.& Zucc., *Sapindus mukorossi* Gaertn. and *Vitex negundo* L. throughout the island at 500-800 m.

TAICHUNG: Takeng, *Chen et al. 8507*. NANTOU: Huisun, *Chiu 2634*; Huanghsiang, *Chiu 3244*. CHANGHUA: Pakuashan, *Takayanagi s. n.* 1932. CHIAYI: Tefuyeh, *Chiu 3114*. KAOHSIUNG: Tengchih, *Liao et al. 9370*. PINGTUNG: Paoli, *Ou et al. 9397*; Mutanwan, *Kudo & Mori 2539*; Suchungchi, *Sasaki 8671* (Isotype of *Loranthus theifer* Hayata, TAIF), *Hurukawa 8672, Morimoto 790*. HUALIEN: Wenshan, *Huang & Huang 9878.*

The outstanding characteristic of this species is in the leaves having rounded apex.

10. Taxillus tsaii Chiu, *sp. nov.* 蓮華池桑寄生 Fig. 5

Haec species Taxillo pseudochinensi similis sed a folis cariarico; floribus longioribus (1.8-2.4 neque 1.3 cm) et antheris longioribus (2.5-3.5 neque 2.5 mm) differt.

Frutex parasius rami juniores teres tomentosi aurantiacis decidis. Folia flavovirens coriacea ovata ad ovto-oblong 5-6cm longa 3-4 lata apice obtuso basi otbusa ad rotunda petiolus 7-10 mm longus stellato-pilosus unicoloratus. Flores tomentosa ruber apice virentibus. Calyx obeonicus omentosus. Corollae tubus cylindrico-spathulatus medium ad basion inflatus lobio 4, lineari, 4-6 mm longo, 1 mm lata, cancavo apice reflexo; anthera multiloculata, 2.5-3.5 mm longa; ovarium obconicum glabum; stylus filiformis 2.6 cm longus. Fructus cylindricus apice truncato.

This species is characterized by its yellowish green, ovate to ovate-oblong leaves, nearly concolorous at maturity; corolla nearly glabrous, anthers multiloculate in two rows; fruits cylindrical with apex truncate; long flowering seasons from early spring to mid summer.

Young branchlets terete, densely light orange-tomentose, the stellate hairs sparsely deciduous at maturity. Leaves yellowish green, coriaceous, ovate to ovate-oblong, 5-6 cm long, 3-4 cm broad, apex obtuse, base obtuse to rounded; petioles 7-10 mm long, stellate

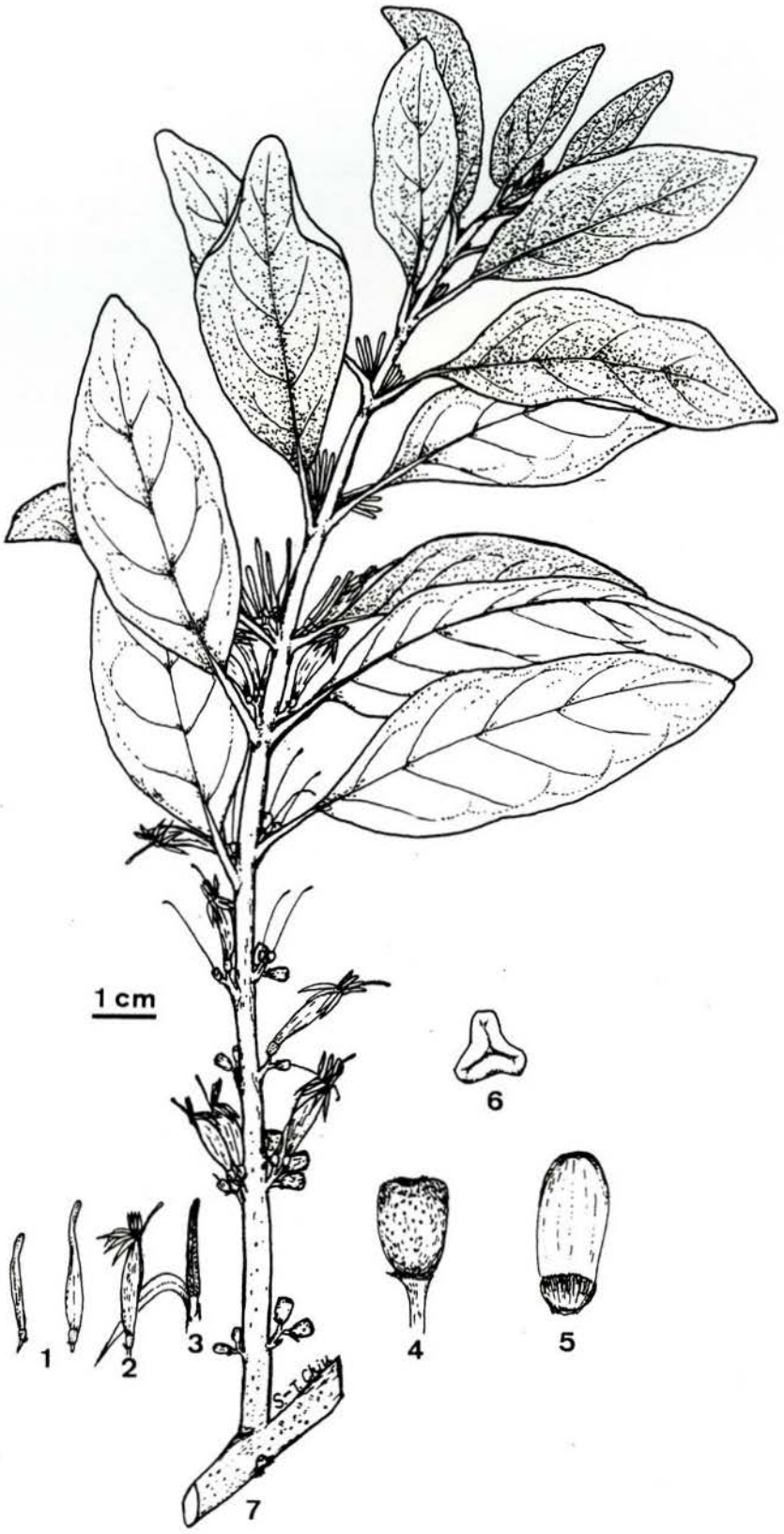

Fig. 5. **Taxillus tsaii** Chiu. 1. flower bud; 2. flower; 3. stamen adnate to petal; 4. fruit; 5. seed; 6. pollen grain; 7. habit.

hairs sparsely deciduous, nearly concolorous at maturity. Flowers tomentose, red with green apex. Calyx obconical, tomentose; corolla tube cylindric-spathulate swollen from middle to the base, 1.6-2.2 cm long, lobes 4, linear, 4-6 mm long, 1 mm broad, concave, reflexed at apex; anthers multilocular in two rows, 2.5-3.5 mm long, ovary obconical, glabrous; styles

filiform, 2.6 mm long; Fruits cylindrical, apex truncate; long flowering season from early spring to mid summer.

Endemic. Parasitic on *Camellia oleifera* Abel., *Machilus zuihoensis* Hayata, *Prunus mume* Sieb. & Zucc., *Symplocos cochinchinensis* (Lour.) Moore subsp. *laurina* (Retz.) Noot. etc. in warm areas as low altitude and southern Taiwan. It was first found in a large population on the plantation of *Camellia oleifera* Abel. at the Lien-Hua-Chi branch of Taiwan Forestry Research Institute.

NANTOU: Liehhuachih, *Chiu et al. 2554* (Holotype & isotype, NMNS; isotype, HAST), *2086, 2859; Sun s. n. 1993.* KAOHSIUNG: Takuanshn, *Chiu et al. 1373.* TAITUNG: Liyuan, *Chiu et al. 2713.*

This new species is in honor to Dr. Su-Hwa Chiang-Tsai, Emeritus Professor of the Botany Department, National Taiwan University.

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台灣鈍果桑寄生屬（桑寄生科）之小誌

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摘　　要

台灣或亞洲的桑寄生屬（*Loranthus* Jacq.）、梨果桑寄生（舊稱桑寄生）屬（*Scurrula* L.）及鈍果桑寄生（舊稱松寄生）屬（*Taxillus* Van Tiegh.）的分類處理混淆是淵源於早期的文獻對於這群植物的變異及親源了解不多，本研究提出鈍果桑寄生屬的新分類處理，包括新合成屬的描述、屬內台灣十種的分類檢索表、一新紀錄種、一新種及兩變種。

關鍵詞：鈍果桑寄生屬，訂正，台灣，分類學。

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