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## Two New Species of *Spiradiclis* (Rubiaceae) from China

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**ABSTRACT.** Two new species, *Spiradiclis loana* R. J. Wang and *S. chuniana* R. J. Wang, from Guangxi, China, are newly described and illustrated. *Spiradiclis loana* is perhaps related to *S. spathalata* X. X. Chen & C. C. Huang by its oblanceolate, elliptic, or obovate and rosette-like leaves, but distinguished by its long petioles, fewer secondary veins, and white coronas. *Spiradiclis chuniana* is probably related to *S. tomentosa* D. Fang & D. H. Qin by its hairy leaves but distinguished by its truncate leaf bases, long internodes and bracts, short pedicels, and a ring of hair inside the middle of long-styled flowers.

**Key words:** China, Rubiaceae, *Spiradiclis*.

The genus *Spiradiclis* Blumea (Rubiaceae–Hedyotideae) comprises 31 annual or perennial herbaceous species native to southern and southwestern China and northern India (Lo, 1999; Deb & Rout, 1989) and mainly grows in mountainous, especially limestone, areas. It is characterized by a cinnannus cyme, heterostylous and 5-merous flowers, and globose, ovoid or linear-oblong dehiscent capsules with four twisted or untwisted valves. Two subgenera, subgenus *Sinospiradiclis*, characterized by subglobose capsules and untwisted valves when matured, and subgenus *Spiradiclis*, characterized by ovate or linear-oblong and twisted valves, were recommended (Lo, 1998). An expedition searching for the *Spiradiclis* species in the Guangxi limestone area was held in 2000 in order to discover more about its biodiversity.

In the tribe Hedyotideae, the genus *Spiradiclis* is very similar and closely related to such Chinese genera as *Hedyotis* L. (s.l.) and *Ophiorrhiza* L. in morphological characters, but differs from the former by its 5-merous heterostylous not 4-merous homostylous flowers, and from the latter by its subglobose not obcordate or obconical capsules.

***Spiradiclis loana*** R. J. Wang, sp. nov. TYPE: China. Guangxi: Nonggang Nature Reserve, alt. 280 m, 15 Aug. 2000 (fl & fr), R. J. Wang 390 (holotype, IBSC; isotype, MO). Figure 1.

Species affinis *S. spathalatae* X. X. Chen & C. C.

Huang, sed petiolis 1–4.5 cm longis, nervis secundariis utrinque ca. 10 paribus, corollarum tubis ca. 5 mm longis, albis differt.

Herbs to 15 cm in height; stems erect, simple, stout, pubescent. Leaves rosette-like, petiolate, the blade 6–12 × 1.2–3 cm, oblanceolate, elliptic or obovate, acute at apex, narrowed at base, spiny pilose adaxially, glaucous abaxially; secondary veins ca. 10 pairs, slender, alternate or subopposite, conspicuous beneath; petiole 1–4.5 cm long, slender, pubescent; stipules persistent, interpetiolar, 1–2 mm wide at base, bilobed or not at apex, lobes linear, 0.5–1 cm long, pubescent; internodes ca. 2 mm long. Inflorescence a terminal cyme; peduncle 6–10 cm long, pubescent; bracts ca. 1 mm long, pubescent. Flowers heterostylous, corollas white; long-styled flowers: calyx tubes ca. 1 mm long, obconic, pubescent, calyx lobes ± as long as the tube, triangular, acute, pubescent; corolla tubes 5–10 mm long, enlarged a little at middle, puberulous outside, glabrous inside except with a pubescent ring of long hairs at the middle and sparse simple hairs above; lobes ca. 1 mm long, acute, pubescent adaxially; stamens ca. 3.5 mm long, adnate a little higher than the base of the corolla; anthers ca. 1.2 mm long, linear, situated near the ring of hairs; ovaries ca. 0.6 mm long, bilocular; styles slender, ca. 7 mm long; stigmas 2-lobed, ca. 0.8 mm; short-styled flowers: calyxes as in long-styled flower; corolla tubes ca. 5.5 mm long, pubescent inside but without a ring of long hairs, lobes ca. 1.2 mm long; stamens adnate near the middle of the tube, ca. 2.5 mm long, anthers situated near the throat of the tube; styles ca. 3 mm long. Capsules subglobose, ca. 2 mm diam., septicidal and loculicidal dehiscence when mature. Seeds ca. 25, angled cylindrical, ca. 0.6 mm long, brown.

This species belongs to *Spiradiclis* subg. *Sinospiradiclis* Lo because it has globose capsules and four untwisted valves when the capsules mature. Its oblanceolate, elliptic, or obovate and rosette-like leaves make it look like *S. spathalata* X. X. Chen & C. C. Huang, which has 5–8 mm long petioles, 15–25 secondary veins, and purplish red coronas, but it differs from *S. spathalata* by its 1–4.5 cm

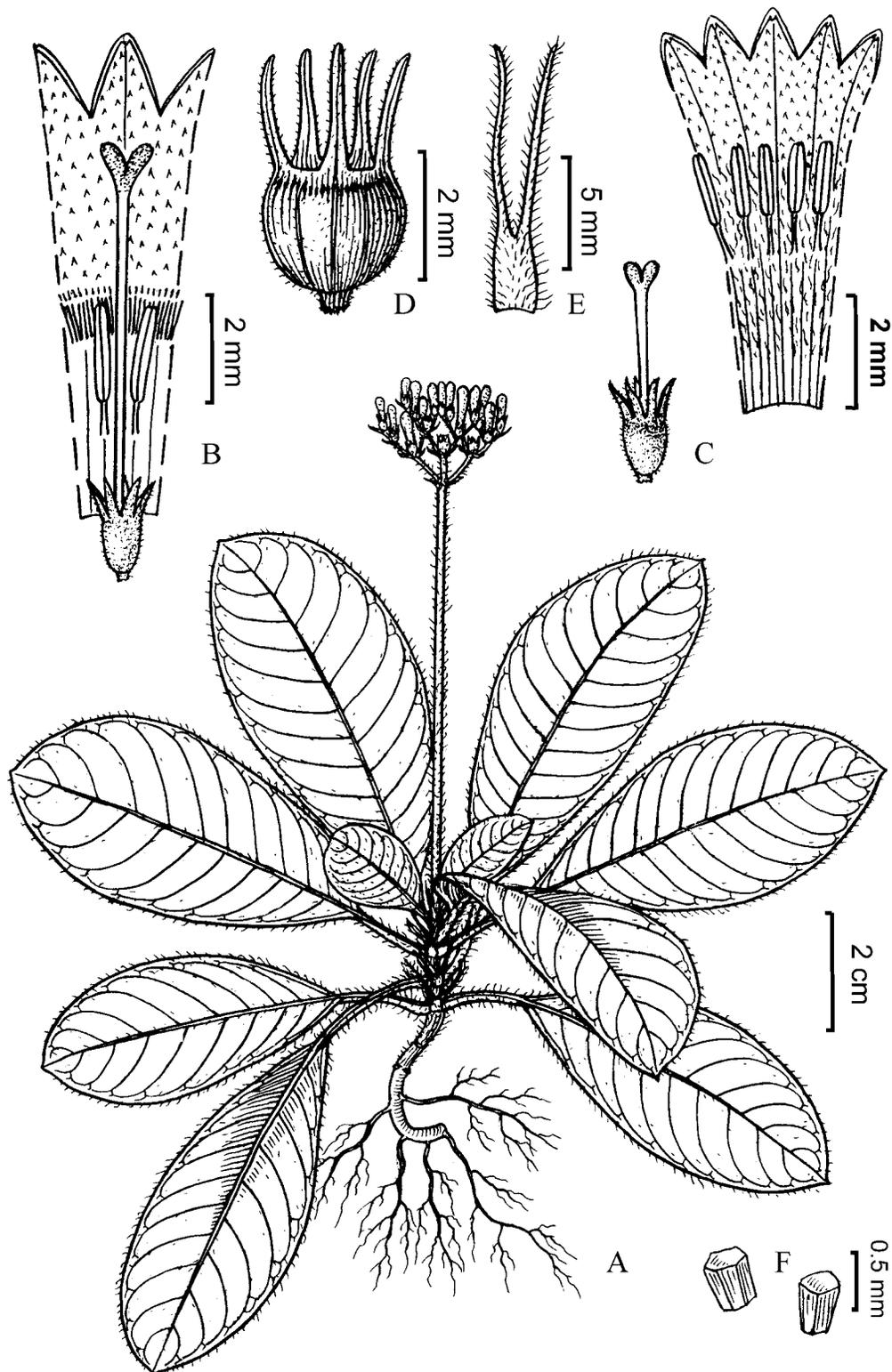


Figure 1. *Spiradiclis loana* R. J. Wang. —A. Habit. —B. Long-styled flower split and opened to show floral parts. —C. Short-styled flower split to show floral parts. —D. Capsule. —E. Stipule. —F. Seeds. (Drawn from the type.)

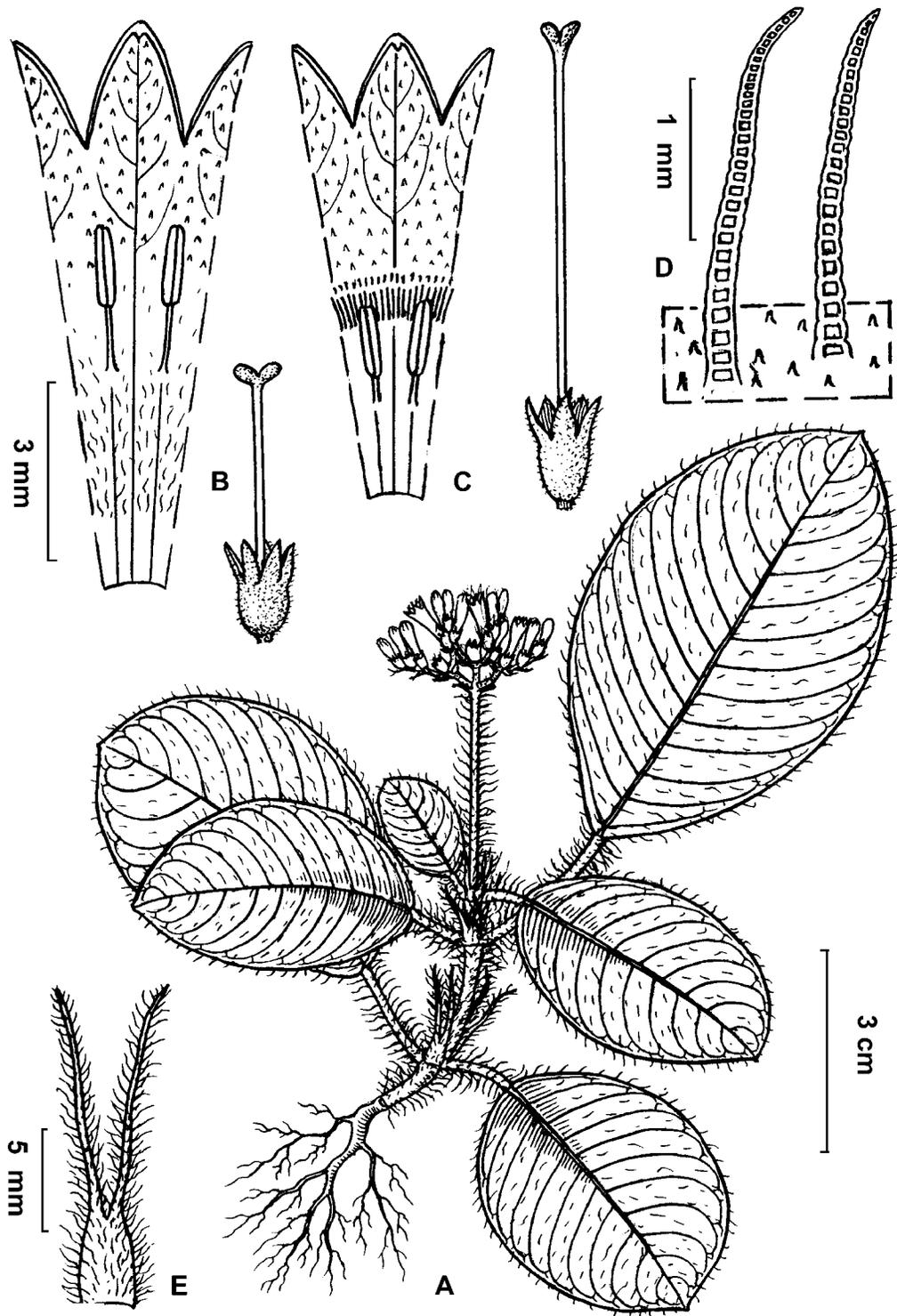


Figure 2. *Spiradiclis chuniana* R. J. Wang. —A. Habit. —B. Short-styled flower opened to show floral parts. —C. Long-styled flower split to show floral parts. —D. Articulated hairs on the surface of the leaf. —E. Stipule. (Drawn from the type.)

long petioles, 10 secondary veins, and white coronas.

*Distribution and ecology.* This species, collected from Nonggang Nature Reserve, Guangxi, China, grows under the secondary limestone forests at an altitude of 200–280 m, where it is very common. At the time it was found, the plant bore both white flowers and green fruits. Therefore, the flowering season might be from late July or early August to the end of August or early September, and the fruiting season might be half a month later.

*Notes.* This species is named after Lo Hsien-shui (IBSC), a Chinese taxonomist studying the Rubiaceae family.

*Paratype.* CHINA. **Guangxi:** Minqiangshe village, Shanglong Xiang, Longzhou county, in densely mountainous forest, on stone, alt. 200 m, 4 Sep. 1958, *Zhao-Qian Zhang 11831* (IBSC).

***Spiradiclis chuniana*** R. J. Wang, sp. nov. TYPE: China. Guangxi: Nonggang Nature Reserve, alt. 390 m, 15 Aug. 2000 (fl & young fr), *R. J. Wang 392* (holotype, IBSC; isotype, MO). Figure 2.

Species nova *S. tomentosae* D. Fang & D. H. Qin, similis, sed foliis ovatis, basi truncatis, bracteis brevioribus 1.2–2 mm longis, inflorescentiis densioribus, tubo corollae floris longistylosi intus ad medium annulo piloso instructo differt.

Annual herbs to 8 cm in height; stems simple, stout, pubescent. Leaves ovate, 3–6.5 × 1.6–3 cm, mucronate at apex, truncate at base, oblique, sparsely covered with articulate villose hairs abaxially and adaxially, secondary veins 10 to 12 pairs, distinct abaxially; petiole 1–3 cm long, pubescent; stipules persistent, interpetiolar, 2- to 5-lobed, lobes linear, 0.5–1 cm long, pubescent; internodes 1–1.5 cm long. Inflorescence a terminal cyme; peduncle 2.5–6 cm long, pubescent; pedicel 0–5 mm long; bracts 1.2–2 mm long. Flowers heterostylous, corollas white; long-styled flowers: calyx tubes ca. 1 mm, obconic, pubescent; calyx lobes ± as long as the tube, acute, pubescent; corolla tubes ca. 7.5 mm long, enlarged a little at the middle, puberulous outside, glabrous inside except bearing a ring of ca. 1 mm long white hairs at the middle and sparsely pubescent above; lobes ca. 1.5 mm long, pubescent inside; stamens ca. 3 mm long, adnate a little higher than the base of the corollas; anthers ca. 1.2 mm long, linear, situated adjacent to the

ring of hairs; ovaries bilocular; styles ca. 5 mm long, slender; stigmas bilobed. Short-styled flowers: calyx tubes as in long-styled flowers; corolla tubes pubescent inside but without a ring of long hairs; stamens ca. 4 mm long, adnate nearly at the middle of the tube, anthers situated lower than the throat; styles ca. 2.5 mm long. Capsules immature.

This species might belong to *Spiradiclis* subg. *Sinospiradiclis* Lo because its immature capsules look subglobose. Only after the capsules mature can its position be assigned properly. In its habit and leaf indument it is closely related to *S. tomentosa* D. Fang & D. H. Qin, which has obovate or oblanceolate leaves with an attenuate base, ca. 2 mm long internodes, 3–7 mm long bracts, and a sparse inflorescence with distinct pedicels; the new species is distinguished from the latter by its truncate leaf bases, 1–1.5 cm long internodes, 1.2–2 mm long bracts, the crowded inflorescence with indistinct pedicels, and the corolla tube in long-styled flowers bearing a hairy ring at the middle inside. It differs from *S. loana* by its ovate leaves with a truncate base and bearing articulate villose hairs abaxially and adaxially.

*Distribution and ecology.* This species, collected from Nonggang Nature Reserve, Guangxi, China, grows in the shade of rocky and humid slopes under secondary limestone forests at ca. 390 m altitude, where it is apparently restricted. Based on field observations, its flowering and fruiting season is mainly from August to September.

*Notes.* This species is named after Chun Woon-young, a former Academician of the Chinese Academy of Sciences (CAS) and one of the pioneers of plant taxonomy in China.

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