

**New Taxa and Nomenclatural Actions**

Edited by Yin-Zheng WANG, Xiang-Yun ZHU, and Zhen-Yu LI

***Callicarpa hainanensis*: A new species of *Callicarpa* from Hainan, China**<sup>1,2</sup>Zhong-Hui MA <sup>1</sup>Dian-Xiang ZHANG\*<sup>1</sup>(Key Laboratory of Plant Resources Conservation and Sustainable Utilization, South China Botanical Garden, Chinese Academy of Sciences, Guangzhou 510650, China)<sup>2</sup>(Graduate University of the Chinese Academy of Sciences, Beijing 100049, China)***Callicarpa hainanensis*** Z. H. Ma & D. X. Zhang, sp. nov.

海南紫珠 (S1-5. Fig. 1, S1-8. Fig. 4)

**Type: China. Hainan:** Jianfengling Mountain, at the edge of a secondary forest, alt. 650 m, 2010-05-26, *Z. H. Ma 079* (holotype, IBSC; isotypes, IBSC).Latin diagnosis: Haec species *Callicarpa lingii* Merr. similis, sed foliis obovato-lanceolatis, lobis calycis triangulatis, corollis albis, fructibus globosis differt.

Morphological description: Shrubs, ca. 1.5–2.0 m tall. Branchlets terete, with small linear lenticels, sparsely stellate pubescent when young, becoming grayish brown and glabrous later. Leaves subsessile; obovate-lanceolate 15–20 × 3–5 cm, subcoriaceous, apex acuminate, base subcordate or auriculate-semiamplexicaul, margin serrulate along apical part; leaf blade glabrous, slightly yellow glandular on the upper surface, sparsely grayish stellate pubescent on mid-veins, densely small yellow glandular on the lower surface; secondary veins 11–13 pairs. Cymes slender, ca. 3 cm across, 3–4-branched, yellowish brown stellate pubescent, peduncle 3–5 mm long, purple, bracts linear-lanceolate, 2–3 mm long; pedicels glabrous, ca. 2 mm long. Flowers 15–20 per cyme; calyx long-cup-shaped or subtubular, ca. 4.5 mm long, calyx 4-lobed, lobes sharply triangular, ca. 2 mm, tube sparsely stellate pubescent, yellow glandular, dehisced as fruits mature; corolla white, ca. 5 mm long, glabrous, densely small yellow glandular; stamens 4; filaments slightly shorter than corolla; anthers ca. 2 mm, oblong, opening by an apical pore; style longer than stamens by 2 mm; ovary globose, glabrous but densely yellow glandular, 2-locular; ovules 2 per locule. Fruit globular, ca. 4 mm in diameter, glabrous, yellow glandular. Flowering and fruiting from May to November.

Distribution and conservation status: *Callicarpa hainanensis* is extremely rare with only a few populations found at the edge of a secondary forest at an altitude of ca. 650 m, growing together with *Polygonum chinense* L., *Rubus lambertianus* Ser., *Ficus*

*hirta* Vahl., *Wendlandia uvariifolia* Hance, and several grasses and ferns.

Etymology: The specific epithet is derived from the name of its type locality.

Notes: Except for *C. lingii*, *C. hainanensis* is somewhat similar to *C. brevipes* var. *obovata* H. T. Chang. However, *C. hainanensis* can be distinguished by its obovate-lanceolate leaf blade, long-cup-shaped or subtubular calyx which dehisces as fruits mature, and sharply triangular calyx lobes (Fang, 1982; Merrill, 1927).

**Additional specimens examined:**

**China. Hainan:** Ledong County, Jianfengling Mountain, at the edge of a secondary forest, alt. 500–700 m, 2010-06-01, *Z. H. Ma 090* (IBSC); on a mountain slope, alt. 520–650 m, 2010-09-15, *Z. H. Ma 113* (IBSC).

**Online supplementary data:****S1-1. Doc. 1.** Material and methods of pollen observation.**S1-2. Doc. 2.** Material and methods of chromosome observation.**S1-3. Table 1.** Morphological comparison of *Callicarpa hainanensis* Z. H. Ma & D. X. Zhang and *C. lingii* Merr.**S1-4. Table 2.** Comparison of pollen morphology between *Callicarpa hainanensis* Z. H. Ma & D. X. Zhang and *C. lingii* Merr.**S1-5. Fig. 1.** *Callicarpa hainanensis* Z. H. Ma & D. X. Zhang and *C. lingii* Merr.**S1-6. Fig. 2.** Pollen morphology of *Callicarpa hainanensis* Z. H. Ma & D. X. Zhang and *C. lingii* Merr.**S1-7. Fig. 3.** Somatic chromosome of *Callicarpa hainanensis* Z. H. Ma & D. X. Zhang.**S1-8. Fig. 4.** *Callicarpa hainanensis* Z. H. Ma & D. X. Zhang.**S1-9. Fig. 5.** Distribution map of *Callicarpa hainanensis* Z. H. Ma & D. X. Zhang.**S1-10. Doc. 3.** Additional references.

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\* Author for correspondence. E-mail: dx-zhang@scbg.ac.cn. Tel./Fax: 86-20-37252543.

## Five new species of *Elatostema* (Urticaceae) from China

Wen-Tsai WANG\*

(State Key Laboratory of Systematic and Evolutionary Botany, Chinese Academy of Sciences, Beijing 100093, China)

### *Elatostema wugangense* W. T. Wang, sp. nov.

武冈楼梯草 (S2-1. Fig. 1)

(Sect. *Weddellia* (H. Schörter) W. T. Wang ser. *Parva* W. T. Wang)

Type: **China. Hunan:** Wugang (武冈), Zhaomianshan (照面山), alt. 1300 m, by stream in valley, 1987-08-08, *Wugang Tree Farm 1112* (holotype, PE).

Latin diagnosis: Species nova haec est arcte affinis *E. sinensi* H. Schörter, quod foliorum laminis subtus ad nervos puberulis, cystolithis majoribus usque ad 0.5 mm longis, bracteis staminatis saepe corniculatis haud costatis, bracteolis staminatis oblongis vel linearibus haud navicularibus, flore staminato 5-mero differt.

Morphological description: Perennial herbs. Stems flaccid, ca. 30 cm tall, below 2 mm thick, near apex retrorse, brown, hirtellous, simple. Leaves short-petiolate or sessile; blades thin-papery, obliquely elliptic, 1.6–7 × 1–3 cm, apex acuminate, rarely acute, base at leaf narrow side cuneate and at broad side subauriculate or rounded, margin dentate; surfaces adaxially sparsely strigose, abaxially glabrous; venation semi-triplinerved or subpenninerved, with 4–5 pairs of secondary nerves; cystoliths slightly dense, bacilliform, 0.1–0.3 mm long; petioles up to 3 mm long, glabrous; stipules membranous, white, lanceolate-linear, 3–4 × 0.6–1 mm, glabrous. Reduced leaves small, lanceolate-linear or elliptic, 2–4.5 × 0.8–1 mm, entire, or narrow-obovate, 4 × 2.2 mm, 3-lobulate, glabrous. Staminate capitula in pairs, axillary, (3–)5 mm in diam.; peduncle ca. 1.8 mm long, glabrous; receptacle inconspicuous; bracts 6, white, unequal in size, broad-ovate or rectangular, 2–2.6 × 1.2–2.2 mm, in larger ones, abaxially above 1–3-green-ribbed, subglabrous; bracteoles dense, membranous, navicular, 2–3 × 1.5–2 mm, abaxially on midrib puberulent or subglabrous. Staminate flower buds short-pedicellate, globose, ca. 0.8 mm in diam., glabrous, apex 4-corniculate. Pistillate capitula unknown.

This species is closely related to *Elatostema sinense* H. Schörter but differs in its glabrous abaxial surface of leaf blade, smaller cystoliths, not corniculate but often ribbed staminate bracts, navicular staminate bracteoles, and 4-merous staminate flower. In *E. sinense*, the abaxial surface of leaf blade is puberulent on nerves, the cystoliths are larger, up to 0.5 mm long, the staminate bracts often corniculate and not ribbed, the staminate bracteoles are oblong or linear, not navicular, and the staminate flower is 5-merous (Wang, 1995).

### *Elatostema tenuibracteatum* W. T. Wang, sp. nov.

薄苞楼梯草 (S2-2. Fig. 2: A–D)

(Sect. *Weddellia* (H. Schörter) W. T. Wang ser. *Crenata* W. T. Wang)

Type: **China. Yunnan:** Funing (富宁), Ban-lun (板仑), alt. 700 m, foot of rocky hill, feeble herb, locally abundant, 1940-04-11, *C. W. Wang 88328* (holotype, PE).

Latin diagnosis: Species nova haec est affinis *E. crenato* W. T. Wang, quod caulibus glabris, foliorum laminis majoribus usque ad

18 cm longis et 7.5 cm latis margine crenatis glabris, earum nervis secundariis 9–10-jugis, stipulis majoribus 10–12 mm longis glabris, bracteis staminatis glabris 2 externis majoribus apice corniculatis recedit.

Morphological description: Perennial herbs. Stems ca. 20 cm tall, simple, villous, with hairs 0.5–2 mm long. Leaves short-petiolate or sessile; blades papery, obliquely long elliptic, oblong or elliptic, (1–3-)5.5–10.5 × (0.5–1.5-)2.5–3.5 cm, apex long acuminate or acuminate, base obliquely cuneate or at leaf broad side rounded or subauriculate, margin densely dentate; surfaces adaxially sparsely strigose, abaxially on nerves villous; venation penninerved, with 4–6 pairs of secondary nerves; cystoliths obscure or conspicuous, dense, bacilliform or punctiform, 0.1–0.5 mm long; petioles up to 2 mm long; stipules narrow-ovate or linear-lanceolate, 1–1.3 × 0.6–0.7 mm, above appressed-ciliate, white, with green midribs. Staminate capitula singly axillary; peduncle ca. 4.5 mm long, pubescent; receptacle inconspicuous; bracts 6, 2-seriate, 2 outer ones opposite, larger, thin-papery, white-greenish, semi-orbicular, ca. 4 × 7 mm, abaxially pubescent and below apex 1-corniculate, with green horn-like projections 1.5–2.2 mm long, 4 inner ones smaller, membranous, white, deltoid-ovate, ca. 5 × 4.5 mm, densely ciliate, apex thin-caudate, abaxially on one stria pubescent; bracteoles semihyaline, white, cuneate-linear, ca. 4 × 0.8 mm, glabrous, apex truncate. Staminate flower buds pedicellate, globose, ca. 1 mm in diameter, glabrous, apex with 4 subulate projections. Pistillate capitula unknown.

This species is related to *Elatostema crenatum* W. T. Wang, but differs in its villous stems, smaller and hairy leaf blades with dentate margins and 4–6 pairs of secondary nerves, smaller and ciliate stipules, and its pubescent staminate bracts, the two larger outer ones of which are 1-corniculate abaxially below the apex. In *E. crenatum*, the stems are glabrous, the leaf blades are larger, up to 18 cm long and 7.5 cm broad, with crenate margins and 9–10 pairs of secondary nerves, the stipules are larger, 10–12 mm long and glabrous, and the staminate bracts are glabrous, and the two outer larger ones of them are 1-corniculate at the apex (Wang, 1995).

### *Elatostema tricostatum* W. T. Wang, sp. nov.

三肋楼梯草 (S2-2. Fig. 2: E–J)

(Sect. *Elatostema* ser. *Cuspidata* W. T. Wang)

Type: **China. Yunnan:** Luchun (绿春), hydrological station (水文站), alt. 1600–1700 m, in evergreen broad-leaved forest on slope, 2006-02-18, *Y. M. Shui, W. H. Chen et al. 70007* (holotype, PE).

Latin diagnosis: Species nova haec est arcte affinis *E. balansae* Gagnep., quod folii nervis secundariis paucioribus 3–4-jugis, stipulis minoribus 5–10 mm longis, bracteis staminatis internis dorso haud costatis, bracteolis staminatis linearibus omnibus haud corniculatis distinguitur.

Morphological description: Perennial herbs. Stems ca. 44 cm tall, below 4 mm thick, glabrous, simple, with very dense small cystoliths 0.05–0.1 mm long. Leaves short-petiolate or sessile; blades papery, obliquely long elliptic, ca. 13 × 3.5–5 cm, apex long acuminate or caudate-acuminate (acumen margin denticulate), base obliquely cuneate; surfaces adaxially sparsely strigose, abaxially glabrous; venation trinerved or semi-triplinerved, with 7–8 pairs of secondary

\* Author for correspondence. E-mail: xiaobao@ibcas.ac.cn. Tel.: 86-10-62836109. Fax: 86-10-62590843.

nerves; cystoliths slightly conspicuous, very dense, bacilliform or punctiform, 0.05–0.5 mm long; petioles up to 4 mm long, glabrous; stipules narrow-lanceolate, 12–14 × 2–2.5 mm, glabrous, greenish-white, below with dense small cystoliths. Young staminate capitula singly axillary; peduncle ca. 2.5 mm long, sparsely puberulent; receptacle rectangular, ca. 4 × 2.5 mm, subglabrous; bracts 6, 2-seriate, 2 outer ones opposite, larger, appressed-ovate, ca. 1 × 3 mm, abaxially 1-ribbed, with rib apex projecting into horn-like projection 1 mm long, 4 inner ones slightly smaller, also appressed-ovate, ca. 1 × 2.5 mm, abaxially puberulent and longitudinally 3-ribbed, with the central rib's apex projecting into horn-like projection ca. 0.8 mm long; bracteoles numerous, dense, membranous, broadly obovate, ca. 1.5 mm long, abaxially puberulent and often shortly 1-corniculate below cucullate apex. Staminate flowers not developed yet. Pistillate capitula unknown.

This species is closely related to *Elatostema balansae* Gagnep., but differs in its leaf with 7–8 pairs of secondary nerves, larger stipules, 3-ribbed inner staminate bracts, and obovate, often 1-corniculate staminate bracteoles. In *E. balansae*, the leaf has 3–5 pairs of secondary nerves, the stipules are smaller, 5–10 mm long, the inner staminate bracts are not ribbed, and the staminate bracteoles are linear in outline, and not corniculate (Wang, 1995).

***Elatostema actinodromum*** W. T. Wang, sp. nov.

辐射楼梯草 (S2-3. Fig. 3)

(Sect. *Elatostema* ser. *Procridioida* W. T. Wang, Wang, 2012)

Type: **China. Yunnan:** Jinping (金平), He-tou (河头), Feng-shui-ling (风水岭), alt. 2200 m, in dense forest, 1996-10-16, S. K. Wu, L. H. Liu, Y. M. Shui, Y. P. Yang, J. Murata, S. Akiyama 4310 (♂, holotype, PE); same locality, from Ma-an-di (马鞍底) to Wutaishan (五台山), alt. 2500 m, under dense forest, 1996-09-30, S. K. Wu, L. H. Liu, Y. M. Shui, Y. P. Yang, J. Murata, S. Akiyama 3694 (♀, PE).

Latin diagnosis: Species nova haec est affinis *E. jinpingensi* W. T. Wang, quod caulibus glabris, foliorum laminis minoribus usque ad 6 cm longis, pedunculo staminato longiore 9.2–12 cm longo glabro, receptaculo staminato glabro nervis aliquot ex apice pedunculi radiatim abientibus carente, bracteis staminatis omnibus haud corniculatis facile differt.

Morphological description: Perennial herbs, dioecious. Stems ca. 40 cm tall, simple, toward apex densely spreading-puberulent, with hairs 0.2–0.25 mm long. Leaves short-petiolate or sessile; blades papery, obliquely elliptic or oblong, 7–12 × 2.6–5 cm, apex acuminate, base at leaf broad side rounded or subauriculate, margin dentate; surfaces adaxially glabrous or sparsely strigose, abaxially on nerves puberulent; venation semi-triplinerved, with 3–4 pairs of secondary nerves; cystoliths inconspicuous, dense or sparse, bacilliform, 0.1–0.2(–0.4) mm long; petioles up to 3 mm long; stipules membranous, lanceolate or linear-lanceolate, 2–8 × 0.7–2 mm broad, glabrous, white, 1–2-green-nerved, with cystoliths. Staminate capitula singly axillary; peduncle 1.5–4 cm long, puberulent, with spreading hairs 0.1–0.2 mm long; receptacle oblong-elliptic, ca. 9 × 6 mm, puberulent, with several nerves radiately spreading out from the peduncle apex; bracts ca. 18, two opposite ones strongly reduced themselves, but obviously 1-corniculate at apex with green horn-like projections 1.2–1.5 mm long, the other bracts deltoid or triangular, 0.3–1 mm long, above thickened, subglabrous; bracteoles obtrapeziform, ca. 2 × 1–1.5 mm, apex obliquely truncate, inconspicuously 2-lobulate, glabrous. Staminate flower buds subglobose, ca. 1.2 mm in diam., glabrous, with 3 apical triangular projections. Pistillate capitula singly axillary; peduncle ca. 3.5 mm long, glabrous; receptacle oblong-elliptic, ca. 5 × 4 mm, glabrous; bracts ca. 30, membranous, deltoid, glabrous or ciliolate, 1-corniculate at apex, 2-seriate, outer ones ca. 16, slightly larger, 0.6–0.8 × 0.7–1.2 mm, with horn-like projections 1–1.8 mm long, inner ones ca. 14, ca. 0.6 × 0.6 mm,

with horn-like projections 0.8–1 mm long; bracteoles membranous, semi-hyaline, cuneate-linear, ca. 1.2 mm long, apex densely ciliate. Achenes dark-purple, long ovoid, ca. 1 × 0.3 mm, longitudinally 8-ribbed.

In having semi-triplinerved leaves, discoid staminate receptacle and long staminate peduncle, this species is related to *Elatostema jinpingense* W. T. Wang, also an endemic species of Jinping County, southeastern Yunnan Province. However, it differs in its puberulent stems, larger leaf blades, shorter and puberulent staminate peduncle, puberulent staminate receptacle with radiate nerves, and its two larger 1-corniculate staminate bracts. In *E. jinpingense*, the stems are glabrous, the leaf blades are smaller, up to 6 cm long, the staminate peduncles are longer, 9.2–12 cm long, and glabrous, the staminate receptacles are glabrous and lack radiate nerves, and the staminate bracts are all not corniculate (Wang, 1995).

***Elatostema pseudooblongifolium*** W. T. Wang, sp. nov.

拟长圆楼梯草 (S2-4. Fig. 4)

(Sect. *Elatostema* ser. *Nanchuanensia* W. T. Wang)

Type: **China. Guangxi Zhuang Autonomous Region:** Ningming (宁明), Longrui (龙瑞), alt. 180 m, in forest in valley of a limestone hill, 2003-09-14, Y. M. Shui & W. H. Chen B2003-031 (♂, holotype, PE); Longzhou (龙州), Jinlong (金龙), Gaoshan (高山), 2005-05-11, Y. M. Shui, W. H. Chen, M. D. Zhang B2005-202 (♀, PE).

Latin diagnosis: Ob folia penninervia et inflorescentias staminatas capitatas receptaculis discoideis praeditas species nova haec ad Sect. *Elatostematem* ser. *Nanchuanensia* W. T. Wang pertinet, et in serie hac est fortasse affinis *E. pseudoficoidi* W. T. Wang, quod foliis supra strigosis, eorum nervis secundariis 9–11-jugis, involucri staminati bene evoluto 4-bracteato, floribus staminatis 5-meris differt; etiam habitu et structura capitalium pistillarum simillima *E. oblongifolio* Fu ex W. T. Wang (Sect. *Pellionioides* W. T. Wang), fortasse ex eo evoluta est, et ab eo foliorum cystolithis majoribus 0.2–0.4 mm longis, inflorescentiis staminatis capitatis receptaculis discoideis praeditis, et acheniis costatis et tuberculatis valde recedit.

Morphological description: Perennial herbs, dioecious. Stems 30–42 cm tall, near base ca. 3 mm thick, glabrous, simple. Leaves shortly petiolate or sessile, glabrous; blades papery, obliquely oblong, narrow-obovate or elliptic, 5–20 × 2–6 cm, apex long acuminate or subcaudate, base obliquely cuneate or rounded at leaf broad side, margin dentate; venation penninerved, with 5–7 pairs of secondary nerves; cystoliths conspicuous, very dense, bacilliform, 0.2–0.4 mm long; petioles 1–5 mm long; stipules caducous; Staminate capitula singly axillary; peduncle ca. 4 mm long, glabrous; receptacle rectangular, ca. 8 × 5 mm, glabrous; bract 1, lunulate, ca. 1 × 2.5 mm, glabrous; bracteoles numerous, dense, membranous, semihyaline, narrow-obovate, ca. 1 mm in diam., glabrous, near apex 4-corniculate. Infructescences in pairs, axillary, subsessile; receptacle subrectangular, 2.5–4 × 1.5–3 mm, 4-partite, glabrous; bracts 20–40, white, narrow-triangular or broad-linear, 0.5–0.8 × 0.2–0.35 mm, sparsely ciliolate; bracteoles dense, white, narrow-oblongeolate or linear, 0.7–1 mm, above sparsely ciliolate. Achenes brownish, narrow-ovoid, ca. 0.7 × 0.4 mm, longitudinally thinly 6-ribbed and sparsely tuberculate between each pair of ribs.

In having penninerved leaves and capitate staminate inflorescences with discoid receptacles, this species should belong to Sect. *Elatostema* ser. *Nanchuanensia* W. T. Wang in the genus *Elatostema*, and in this series, it may be related to *E. pseudoficoides* W. T. Wang. It differs in its glabrous leaves with 5–7 pairs of secondary nerves, poorly developed 1-bracteate staminate involucre, and 4-merous staminate flowers. In *E. pseudoficoides*, the leaves are adaxially strigose and have 9–11 pairs of secondary nerves, the staminate involucre are well developed and 4-bracteate, and the staminate flowers are 5-merous (Wang, 1995). In terms of habit and

structure of pistillate capitula, this species has strong resemblance to *E. oblongifolium* Fu ex W. T. Wang (Sect. *Pellionioides* W. T. Wang), and might be derived from the latter. It obviously differs in its larger cystoliths of leaves, capitate staminate inflorescences with discoid receptacles, and ribbed and tuberculate achenes. In *E. oblongifolium*, the cystoliths of leaves are smaller, 0.1–0.2 mm long, the staminate inflorescences are cymose and lack receptacles, and the achenes are only ribbed, not tuberculate (Wang, 1995).

**Online supplementary data:**

S2-1. Fig. 1. *Elatostema wugangense* W. T. Wang.

S2-2. Fig. 2. *Elatostema tenuibracteatum* W. T. Wang and *E. tricostatum* W. T. Wang.

S2-3. Fig. 3. *Elatostema actinodromum* W. T. Wang.

S2-4. Fig. 4. *Elatostema pseudooblongifolium* W. T. Wang.

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## A new species of *Microchirita* (Gesneriaceae) from Yunnan, China

†Jia-Mei LI\* †Zhi XIA

(Henan Agricultural University, Zhengzhou 450002, China)

**Microchirita prostrata** J. M. Li & Z. Xia, sp. nov.

匍匐钩序苣苔 (S3-2. Fig. 1, S3-3. Figs. 2–5)

Type: **China. Yunnan:** Hekou, Qiaotou, Yao Village, alt. ca. 200 m, along a streamlet or at the basal slope of an almost vertical cliff in a limestone hill, 2005-07-29, *Jia-Mei Li 057291* (holotype, PE).

Latin diagnosis: Affinis *Microchiritae lavandulaceae* (Stapf.) Y. Z. Wang. A que similis foliis basi cordatis vel late cuneatis, albo-pubescentibus, cymis ebracteatis, antheris apice connatis, sed caulibus prostratis ad nodos radicanibus, foliis alternis, integris, dense puberulis, capsulis 2.6–3 cm longis, dense puberulis differt.

Morphological description: Stems procumbent, adventitiously rooting at stem. Leaves alternate; lamina, narrowly to broadly ovate, 3–5 × 3–4 cm, base cordate or broadly cuneate, entire, densely covered with hairs on both surfaces; petiole 0.1–0.3 cm, densely hairy. Inflorescence axillary, peduncle fused to the petiole. Flowers 1–3; bracts absent; pedicels 0.8–1.6 cm, densely hairy; calyx 5-sect divided to the base, 1–1.2 × 0.15–0.2 cm, densely hairy outside; corolla white with slightly suffused purplish red, 2.8–3.8 cm long, sparsely hairy outside, glabrous inside; tube nearly tubular, pouched, adaxial lobes two, 0.7 cm long, abaxial lobes three, 0.9 cm long; filaments 0.9 cm, inserted 1.4 cm from the base of the corolla, geniculate at the middle part; anthers 0.15–0.18 mm long, fused by projections on stout connectives, bearded around the anterior and lower margins; staminodes 3, the lateral two ca. 0.5 cm long, inserted 1 cm from the base of the corolla, sparsely hairy, central one ca. 0.2 cm long, inserted 1.1 cm from the base; ovary ca. 2.8–3.2 cm long, densely covered with whitish glandular hairs. Capsule elongate, 2.6–3 cm

long, 0.2 cm wide, densely hairy; calyx persistent. Flowering from July to September.

Notes: *Chirita* sect. *Microchirita* has been recently raised to an independent genus *Microchirita* (C. B. Clarke) Y. Z. Wang (Wang et al., 2011). *Microchirita prostrata* J. M. Li & Z. Xia belongs to the new genus and grows on steep earthbanks along streamlets or at the basal slope of almost vertical cliffs (S3-3. Fig. 2).

**Additional specimens examined:**

**China. Yunnan:** Hekou, Qiaotou, steep earthbanks along streamlets or roadside of Zhuqing village, 2006-06-06, *J. F. Smith, Yin-Zheng Wang, Jia-Mei Li 0666* (PE); roadsides on hillsides of Pingzhizhai, 22°48'04.6"N, 104°03'00.0"E, 2007-07-15, *Yu-Min Shui, Wen-Hong Chen, Zhi-Dan Wei, Rong-Mei Zhang, Hou-Tao Zhao 71742* (KUN).

**Online supplementary data:**

S3-1. Doc. 1. Additional statements.

S3-2. Fig. 1. *Microchirita prostrata* J. M. Li & Z. Xia, sp. nov. (from the holotype).

S3-3. Figs. 2–5. *Microchirita prostrata* J. M. Li & Z. Xia, sp. nov. (photographed by J. F. Smith and F. Wen).

S3-4. Doc. 2. Additional references.

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\* Author for correspondence. E-mail: jmli@ibcas.ac.cn. Tel.: 86-371-63555319. Fax: 86-371-63555790.

† These authors contributed equally to this work.

## A new species of *Liparis* (Malaxideae: Orchidaceae) from Guangdong, China, based on morphological and molecular evidence

<sup>1</sup>Huai-Zhen TIAN\* <sup>2</sup>Chie TSUTSUMI <sup>3</sup>Fu-Wu XING\*

<sup>1</sup>(School of Life Science, East China Normal University, Shanghai 200241, China)

<sup>2</sup>(Department of Botany, National Museum of Nature and Science, Tsukuba 305-0005, Japan)

<sup>3</sup>(South China Botanical Garden, Chinese Academy of Sciences, Guangzhou 510650, China)

***Liparis nanlingensis*** H. Z. Tian & F. W. Xing, sp. nov.

南岭羊耳蒜 (S4-2, Fig. 1)

Type: **China, Guangdong:** Jigongkeng, Ruyuan, Nanling National Nature Reserve, on the trunk of *Castanopsis lamontii* Hance, alt. 1480 m, 2006-04-17. *H. Z. Tian 517* (holotype, IBSC).

Latin diagnosis: Species *L. krameri* Franch. & Sav., *L. sasakii* Hayata, *L. truncatae* F. Maek. ex T. Hashim. affinis, sed labiis valde longitudinalibus concavis, purpureo-rubris praeter bases in utroque latere virides, striis rubro-violaceis absentibus, callis quadratis, caudis minoribus differt.

Morphological description: Epiphyte. Pseudobulb ovoid, ca. 5 mm in diam., enclosed by white membranous sheaths. Leaves 2, blade ovate, ca. 1.5–2.5 × 1–1.5 cm, acute, margin entire, lateral veins obvious on surface, base contracted and narrowed into the petiole; petiole ca. 1–1.2 × 0.4 cm, edge pale, enclosed by 2–3 sheaths. Inflorescence 4–6 cm long, winged, 6–25-flowered, floral bract lanceolate, ca. 1 mm long. Flowers purplish red; pedicel and ovary purplish, pedicel ca. 3.5 mm long; dorsal sepal linear-lanceolate, 6 × 2 mm, apex acute, margin revolute; lateral sepals falcate, 5 × 1.5 mm, basal margin revolute; petals filiform, 5 × 0.5 mm, obtuse; lip broad oblong, 5 × 3 mm, reflexed and narrowed in the basal part, purplish red, green sides at the base, longitudinal concave in the middle, apex papillose and cuspidate with a tail ca. 0.2 mm long, basal quadrate callus ca. 1 mm long. Column terete, slightly arcuate, purplish red, ca. 2.2 mm long, slightly winged on each side; anther cap green or purplish, ca. 0.6 mm long; pollinia 4 in two pairs, yellow, waxy, ovoid, ca. 0.5 mm

long. Capsule subglobose, ca. 5 mm long. Flowering, April; fruiting, August.

Distribution: The new species was found at only one site on the trunk of *Castanopsis lamontii* Hance. Less than 100 individuals were found during the past 6 years' investigation of orchids in the reserve. According to the IUCN (2008), the new species should be treated as "Critically Endangered".

Notes: Morphological studies indicated that *Liparis nanlingensis* is distinct from other *Liparis* species in flower morphology (S4-1). Results of the internal transcribed spacer regions of 18S-26S nuclear ribosomal DNA (ITS) and *trnL* with *trnL-trnF* spacer in plastid DNA suggest the new species is close to but distinct from *L. krameri* Franch. & Sav. and *L. truncatae* F. Maek. ex T. Hashim.

### Additional specimens examined:

**China, Guangdong:** Jigongkeng, Ruyuan, Nanling National Nature Reserve, on the trunk of *Castanopsis lamontii* Hance, alt. 1480 m, 2009-09-19, *H. Z. Tian 1004* (HSNU).

### Online supplementary data:

**S4-1. Doc. 1.** Additional statements.

**S4-2. Fig. 1.** *Liparis nanlingensis* H. Z. Tian & F. W. Xing (drawn by Ms. Yun-Xiao LIU).

**S4-3. Fig. 2.** Bayesian consensus tree based on nuclear ITS region (844 bp).

**S4-4. Fig. 3.** Bayesian consensus tree based on chloroplast *trnL* with *trnL-trnF* spacer (1266 bp).

**S4-5. Doc. 2.** Materials, methods and results with phylogenetic analyses.

**S4-6. Doc. 3.** Additional references.

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\* Authors for correspondence. HZ Tian, E-mail: thz0102@126.com. Tel.: 86-13917056169. Fax: 86-21-62233754. FW Xing, E-mail: xinfw@scib.ac.cn. Tel.: 86-13500002170. Fax: 86-20-37252557.

## A new *Arisaema* species from Guangxi and first report of *A. austroyunnanense* from Hainan, China

<sup>1</sup>Guang-Wan HU <sup>1</sup>Heng LI <sup>2</sup>Yan LIU <sup>1</sup>Ying TAN <sup>1</sup>Chun-Lin LONG\*

<sup>1</sup>(Key Laboratory of Economic Plants and Biotechnology, Kunming Institute of Botany, Chinese Academy of Sciences, Kunming 650201, China)

<sup>2</sup>(Guangxi Institute of Botany, Guangxi Zhuang Autonomous Region and Chinese Academy of Sciences, Guilin 541006, China)

***Arisaema guangxiense*** G. W. Hu & H. Li, sp. nov.

广西南星 (S5-1, Fig. 1, S5-2, Fig. 2)

\* Author for correspondence. E-mail: long@mail.kib.ac.cn or chunlinlong@hotmail.com. Tel.: 86-871-5223318. Fax: 86-871-5223318.

(Section *Fimbriata* (Engler) H. Li)

Type: **China, Guangxi Zhuang Autonomous Region:** Jingxi County, Renzhuang, rock crevices on limestone hill, in shrubs, alt. 650 m (the collected plants of HGW-Z-00826 were cultivated in Kunming Botanical Garden), 2011-07-26,

*G. W. Hu & Y. Tan HGW-00778* (holotype, KUN!; isotype, KUN!).

Latin diagnosis: Haec species *A. austroyunnanensi* H. Li similis, sed planta nana, alt. ca. 20 cm, pseudocaudice petiolo pedunculo et tubo spathae punctis atropurpureis, limbo spathae ad basem piece frustro albo transverso, floribus neutis ad appendicem spadiceis terminalibus 3–6 mm longis differt.

Morphological description: Deciduous herb to 20 cm tall. Tuber subglobose, 0.5–2 cm in diameter. Cataphylls dark purple, mottled with snakeskin pattern. Pseudostem 6.5–7.5 cm long. Leaf 1, petiole 15–16 cm long, similar to cataphyll in color, free part 8–10 cm; leaf blade 3-foliolate, central leaflet ovate-oblong to rhombic-elliptic, 6–8.5 × 3–5.5 cm, base attenuate, apex acuminate, with a 1–3 mm arista at tip, lateral leaflets similar to central one, but asymmetrical at base, 5.5–9.5 × 2.5–3.5 cm. Peduncle approximately as long as petiole; spathe ca. 5 cm long, tube funnel-shaped, ca. 2 cm long, 7 mm thick, greenish longitudinally purple-dotted, base white, mouth-margins obliquely truncate, limb ovate, apex acuminate, 2.5–3.5 × 1.1 cm, green, with a white traverse patch at base, spadix male only seen, ca. 1 cm long; male flowers sparse, synandria of (1)–2(–3) stamens, shortly stipitate to subsessile, thecae whitish with purple top, dehiscent by a rounded pore, pollen white; spadix-appendix sessile, 2–2.5 cm long, basal 3/5 part dark purple, with scattered, ca. 2 mm long, subulate neuters, upper 2/5 part exerted out of the spathe tube, yellow-green, covered with 3–6 mm long, filiform, bristly projections.

Distribution and ecology: *Arisaema guangxiense* is found in southwestern Guangxi Zhuang Autonomous Region at Jingxi and Longan counties, growing in groups in humus soil in rock crevices on limestone hills at altitudes from 300 to 720 m. Sometimes two shoots grow up from one big tuber and become two individuals in the coming year.

Chromosome number:  $2n = 26$  (S5-2. Fig. 2).

Notes: *Arisaema guangxiense* belongs to *Arisaema* section *Fimbriata*. It resembles *A. austroyunnanense*, but obviously differs by its shorter plant height, only to 20 cm tall; pseudostem, petiole

dark purple mottled with snakeskin pattern; spathe tube greenish longitudinally dotted dark purple; projections on the upper part of spadix-appendix filiform, 3–6 mm long.

**Additional specimens examined:**

**China. Guangxi Zhuang Autonomous Region:** Longan County, in crevices on limestone hill, in sparse forest, alt. 300 m, 2008-05-13, *Joint Expedition on Plants in Guangxi of CAS 0332* (PE); Jingxi County, Baonian Valley, on hill top, alt. 720 m, 2008-05-16, *Joint Expedition on Plants in Guangxi of CAS 0663* (IBK).

***Arisaema austroyunnanense*** H. Li, *Acta Phytotax. Sin.* 15 (2): 105. 1977 (“*austro-yunnanense*”).

(S5-3. Fig. 3)

(Section *Fimbriata* (Engler) H. Li)

Type: **China. Yunnan:** Jinghong, Xiaomengyang, alt. 780 m, 1958-05-22, *Yunnan University 1420* (holotype, YUKU!).

Distribution: South Yunnan (Jinghong, Simao), Vietnam. First report in Hainan.

Notes: We observed an abscission layer between pseudostem and tuber in *Arisaema austroyunnanense* H. Li from Hainan (S5-3. Fig. 3: H) and separated its overground part from the tuber very easily. This phenomenon disclosed why most specimens of this species lack tuber (Gusman & Gusman, 2002; Li et al., 1977, 2010).

**Additional specimens examined:**

**China. Hainan:** Ledong County, Jianfengling, under rainforest, alt. 900 m, 2009-05-28. *G. W. Hu 24593* (KUN).

**Online supplementary data:**

**S5-1. Fig. 1.** *Arisaema guangxiense* G. W. Hu & H. Li.

**S5-2. Fig. 2.** Somatic chromosome of *Arisaema guangxiense* G. W. Hu & H. Li.

**S5-3. Fig. 3.** *Arisaema austroyunnanense* H. Li from Hainan.

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## *Elsholtzia lamprophylla* (Lamiaceae): A new species from Sichuan, southwest China

Chun-Lei XIANG En-De LIU\*

(Key Laboratory of Biodiversity and Biogeography, Kunming Institute of Botany, Chinese Academy of Sciences, Kunming 650201, China)

***Elsholtzia lamprophylla*** C. L. Xiang & E. D. Liu, sp. nov.

亮叶香薷 (S6-1. Fig. 1, S6-2. Fig. 2)

(Series *Fruticosae* C. Y. Wu & S. C. Huang)

Type: **China. Sichuan:** Xiangcheng County, Ranwu, Xiaranwu Village, 28°46′02″N, 99°52′11″E, riverside, in thickets, alt. 2819 m, 2010-08-03, *E. D. Liu, C. L. Xiang & X. Nong 2697* (holotype, KUN!; isotypes, K!, KUN!, MO!, PE!).

Latin diagnosis: Species affinis *E. glabrae*, sed foliis ovalibus 0.8–2.0 cm longis, 0.3–0.9 cm latis, basi anguste cuneatis, venis lateralibus 3–5 jugatis, floribus flavis extus floccosis differt; in *E.*

*glabra* foliis rhombico-lanceolatis (6–15 cm longis, 2–4.6 cm latis), basi cuneato-decurrentibus, venis lateralibus 7–8 jugatis et floribus albis pubescentibus.

Morphological description: Shrubs, 0.8–1.0 m tall. Stems 3–7 mm in diam., glabrous, bark peeling off longitudinally; branchlets puberulent, purplish red when young, getting brown when old. Leaves aromatic when kneaded; petiole 0.8–1.5 mm long, puberulent; blades oval, 0.8–2.0 × 0.3–0.9 cm, adaxially sparsely golden glandular and simple-haired, abaxially densely golden-glandular, base narrowly cuneate, margin dentate with small teeth, apex acute, midrib prominent abaxially, lateral veins 3–5 pairs. Spikes terminal, 2–9 cm long, puberulent and sparsely dotted with golden glands. Verticillasters 3–6-flowered, gray puberulent, densely golden-glandular. Bractlets lanceolate to linear-lanceolate, 0.2–0.3 cm long, puberulent, sparsely golden-glandular. Peduncle and pedicel inconspicuous, ca. 0.5 mm

\* Author for correspondence. E-mail: liuende@mail.kib.ac.cn. Tel./Fax: 86-871-5213916.

long. Calyx campanulate, 0.2–0.3 cm long, outside mixed with golden glands and eglandular trichomes, inside grayish tomentose; teeth narrowly lanceolate, equal, ca. 0.7–1.1 mm long. Corolla yellowish to white, 0.5–0.9 cm long, floccose and golden glandular outside, apex emarginate; middle lobe of lower lip circular, margin erose; lateral lobes semicircular. Stamens exerted from corolla, 2 anterior stamens much longer, ca. 4.5–5.3 mm long; filaments filiform, glabrous. Style 6–8 mm long, apex equally two-cleft. Nutlets brown, oblong, ca. 1.5 mm long (S6-3. Fig. 3, S6-4. Fig. 4).

Distribution: Currently known only from the type locality (S6-5. Fig. 5). The new species grows in thickets along a dry-warm valley, with altitude ranging from 2800 to 2900 m.

Etymology: The specific epithet *Lampros* comes from the Greek root for bright, shiny, lustrous; hence shiny leaves. *Elsholtzia lamprophylla* is so named because when observed in an open field and exposed to direct sunlight, the leaves are demonstrably bright green, and the golden glands are sparkling.

Conservation status: Less than 100 individuals were found in the only population and the habitat is easily influenced by human activities. Therefore, this species should be regarded as critically endangered according to the IUCN threat categories (IUCN, 2008).

**Online supplementary data:**

S6-1. Fig. 1. *Elsholtzia lamprophylla* C. L. Xiang & E. D. Liu. Drawn from holotype, E. D. Liu, C. L. Xiang & X. Nong 2697 (KUN).

S6-2. Fig. 2. Photographs of *Elsholtzia lamprophylla* C. L. Xiang & E. D. Liu.

S6-3. Fig. 3. Scanning electron micrographs of hairs, flower, calyx, pollen, and fruit morphology of *Elsholtzia lamprophylla* C. L. Xiang & E. D. Liu.

S6-4. Fig. 4. Type specimens of taxa within *Elsholtzia* ser. *Fruticosae* (with the exception of *E. stauntonii* Benth.).

S6-5. Fig. 5. Geographical distribution of *Elsholtzia lamprophylla* C. L. Xiang & E. D. Liu (solid circle) in southwest Sichuan, China.

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