

云南东南部赤车属和楼梯草属研究随记

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摘 要 描述了云南东南部荨麻科楼梯草属 5 个新种和 3 个新变种 ,报导了赤车属 1 个种和楼梯草属 3 个种在云南的新分布。

关键词 赤车属 ;楼梯草属 ;荨麻科 ;新分类群 ;新分布 ;云南东南部

Notes on *Pellionia* and *Elatostema* (*Urticaceae*) in Southeastern Yunnan

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Abstract Five species and three varieties of *Elatostema* from southeastern Yunnan are described as new , and one species of *Pellionia* and three specie of *Elatostema* are reported from Yunnan for the first time.

Key words *Pellionia* ; *Elatostema* ; *Urticaceae* ; new taxa ; new distribution ; southeastern Yunnan

云南东南部石灰山区拥有丰富的荨麻科赤车属(*Pellionia*)和楼梯草属(*Elatostema*)植物 ,前者有 14 种 ,后者有 49 种 ,7 变种^[1~7]。最近 ,中国科学院昆明植物研究所税玉民博士又将一批采自云南东南部的上述二属植物标本寄来托我鉴定 ,从这批标本中我发现了赤车属的 1 云南新记录种 ,楼梯草属 3 云南新记录种 ,以及 5 新种和 3 新变种 ,这样 ,使云南东南部的赤车属的种数增加到 15 种 ,楼梯属的种数增加到 55 种 ,10 变种。现在将这些新发现在本文中发表。

1 赤车属 *Pellionia* Gaudich.

1.1 光果赤车

Pellionia leiocarpa W. T. Wang in Guihaia 2 (3) :115 , pl. 1 :1 - 4. 1982 ; in Fl. Reip. Pop. Sin. 23(2) :183 , pl. 42 :1 - 4. 1995 ; et in Fl. Guangxi 2 847. 2005 ; Q. Lin et al. in Fl. China 5 : 127. 2003.

广西 :那坡 ,1 100 m ,方鼎等 25142(holotype ,

GXMI)。云南 :麻栗坡 ,金厂 ,1 400 m ,2003 - 10 - 06 税玉民 陈文红 盛家舒 32781(♂ ,KUN)。

分布 :广西(那坡) ,在云南首次记录。

本种在赤车属中较独特 ,其叶交互对生 ,同一对叶很不等大 ,具羽状脉 ,雌花被片无或有短角状突起 ,瘦果平滑。在赤车属 ,多数种的叶互生 ,具半离基三出脉 ,雌花被片有长角状突起 ,瘦果有小瘤状突起。

2 楼梯草属 *Elatostema* Forst.

2.1 小叶楼梯草组 Sect. *Weddellia* (H. Schröter) W. T. Wang

2.1.1 多枝楼梯草

Elatostema ramosum W. T. Wang in Bull. Bot. Lab. N. - E. Forest. Inst. 7 :33 , photo 2. 1980 ; et in Fl. Reip. Pop. Sin. 23(2) 225 , pl. 45 , fig. 7. 1995 ; S. S. Chang et al. in Fl. Guizhou. 4 47. 1989 ; Q. Lin et al. in Fl. China 5 : 137. 2003.

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贵州:册亨, 1 500 m, 曹子余 507(holotype, PE)。云南:马关, 古林箐, 热带雨林中, 2002 - 10 - 02, 税玉民, 陈文红, 盛家舒 30074(KUN); 同地, 500 m, 2005 - 07 - 23, 税玉民, 陈文红, 张美德, 魏志丹 44289(KUN); 河口, 南溪镇, 300 ~ 500 m, 2001 - 10 - 30, 税玉民等 15303(KUN)。

分布:贵州(册亨), 在云南首次记录。

本种为多年生草本, 茎多分枝, 因此被放在亚灌木、多分枝的渐尖楼梯草(*E. acuminatum* (Poir.) Brongn.) 群中。其叶斜长圆形, 稍镰状弯曲, 边缘中部之上有少数牙齿, 却与多年生草本, 茎不分枝的小叶楼梯草(*E. parum* (Bl.) Miq.) 群中的疏晶楼梯草(*E. hookerianum* Wedd.) 相似。

2.1.2 七花楼梯草

***Elatostema septemflorum* W. T. Wang, sp. nov.** 图 1:1 ~ 4

Affins *C. xichouensi* W. T. Wang, quoad caulibus et foliorum laminis piliferis, stipulis majoribus late lanceolatis 3 mm longis uninervibus ad nervos strigulosos facile differt.

Herba perennis, dioica. Caules ca. 10 caespitosi, 11 - 22 cm alti, supra basin ca. 1 mm crassi, glabri, simplices, superne 5 - 9 - foliati. Folia alternata, sessilia, papyracea, oblique elliptico-oblonga, infima minora, anguste obovata, 1.5 - 5.5 cm longa, 0.8 - 1.6 cm lata, apice longe acuminata vel acuminata, basi latere angustiore cuneata, eo latiore auriculata, auriculis 1 - 3 mm longis, margine supra medium crenata vel denticulata, utrinque glabra, cystolithis densis conspicuis bacilliformibus 0.25 - 0.7 mm longis, semitriplinervia, nervis lateralibus 3-jugis obscuris planis; stipulae virides, lineari-lanceolatae vel subulato-lanceolatae, 0.8 - 2 mm longae, 0.1 - 0.2 mm latae, glabrae, enerves. Inflorescentiae staminatae axillares, breviter pedunculatae, 7-florae; pedunculi ca. 0.8 mm longi, glabri; receptacula minuta, inconspicua; bracteae 2, oppositae, ovatae, 3 mm longae, 2 mm latae, apice breviter caudatae, margine integrae, glabrae, cystolithis bacilliformibus nonnullis notatis; bracteolae ca. 4, oblique lanceolatae, ca. 3 mm longae, glabrae, margine semihyalinae. Flos staminatus; pedicellus ca. 1.8 mm longus, glaber; tepala 5, elliptica, ca. 1.8 mm longa, basi connata, apice plerumque acuta, unum apice corni-

ulatum, cornu 0.9 mm longo, extus prope apicem pilosa; stamina 5, antheris 0.8 mm longis; pistillodium indistinctum. Inflorescentiae pistillatae et flores pistillati ignoti.

Yunnan (云南): Funing(富宁), Banlun(板伦), alt. 1 450 m, at the entrance of a cave, 2004 - 02 - 04, Shui Yu-min & Chen Wen-hong(税玉民, 陈文红) B2004 - 54(♂, holotype, KUN).

本种在亲缘关系上与西畴楼梯草(*E. xichouense* W. T. Wang) 相近, 但茎和叶无毛, 托叶较小, 条状披针形, 长 0.8 ~ 2 mm, 无毛, 无脉而不同。在西畴楼梯草, 茎和叶均被毛, 托叶较大, 宽披针形, 长 3 mm, 有 1 条脉, 脉上被短糙毛。

2.1.3 桂林楼梯草

***Elatostema guilinense* W. T. Wang in Bull. Bot. Lab. N. - E. Forest. Inst. 7 50, pl. 2; fig. 1 - 2. 1980; in Fl. Reip. Pop. Sin. 23(2): 248, pl. 50, fig. 5 - 6. 1995; et in Fl. Guangxi 2 356. 2005; Q. Lin et al. in Fl. China 5: 144. 2003.**

Ad descriptionem originalem addenda, inflorescentiis pistillatis et flore pistillato adhuc ignoto: Inflorescentiae pistillatae brevissime pedunculatae, ca. 2.5 mm diam., multiflorae; pedunculi ca. 0.3 mm longi, glabri; receptacula suborbicularia, 0.8 mm diam.; bracteae ca. 7, lineari-lanceolatae, 0.8 - 1 mm longae, prope apicem pilosae; bracteolae numerosae, densae, lineari-lanceolatae vel lineares, 0.5 - 1 mm longae, prope apicem pilosae. Flos pistillatus: tepala inconspicua; ovarium ellipsoideum, ca. 0.5 mm longum; stigma penicillatum, ovario subaequilongum.

广西:桂林, 灵州, 七分山, 500 m, 梁畴芬 30594(holotype, IBK)。云南:马关, 古林箐, 1 500 ~ 1 600 m, 2000 - 11 - 20, 税玉民等 14524(KUN); 同地, 2002 - 10, 税玉民, 陈文红, 盛家舒 30072, 31198, 31446(KUN); 同地, 2004 - 12 - 18, 税玉民, 陈文红, 张美德, 魏志丹 43649(KUN)。

分布:广西(桂林), 在云南首次记录。

本种是根据梁畴芬 30594 一号雄株标本描述的, 至今, 其雌花序和雌花尚不被了解。上述采自云南马关的三号标本均为本种的雌株, 根据这些标本写出了上面的雌花序和雌花描述。另外, 梁畴芬 30594 标本的叶宽侧基部呈楔形, 而上述马关标本的叶宽侧基部呈短耳形, 存在区别。因此,

今后还需在桂林采到本种的雌株标本、在马关采到本种的雄株标本,以观察叶宽侧基部形态的变异情况。

2.1.4 拟渐狭楼梯草

Elatostema attenuatoides W. T. Wang , sp. nov. 图 1 5 ~ 9

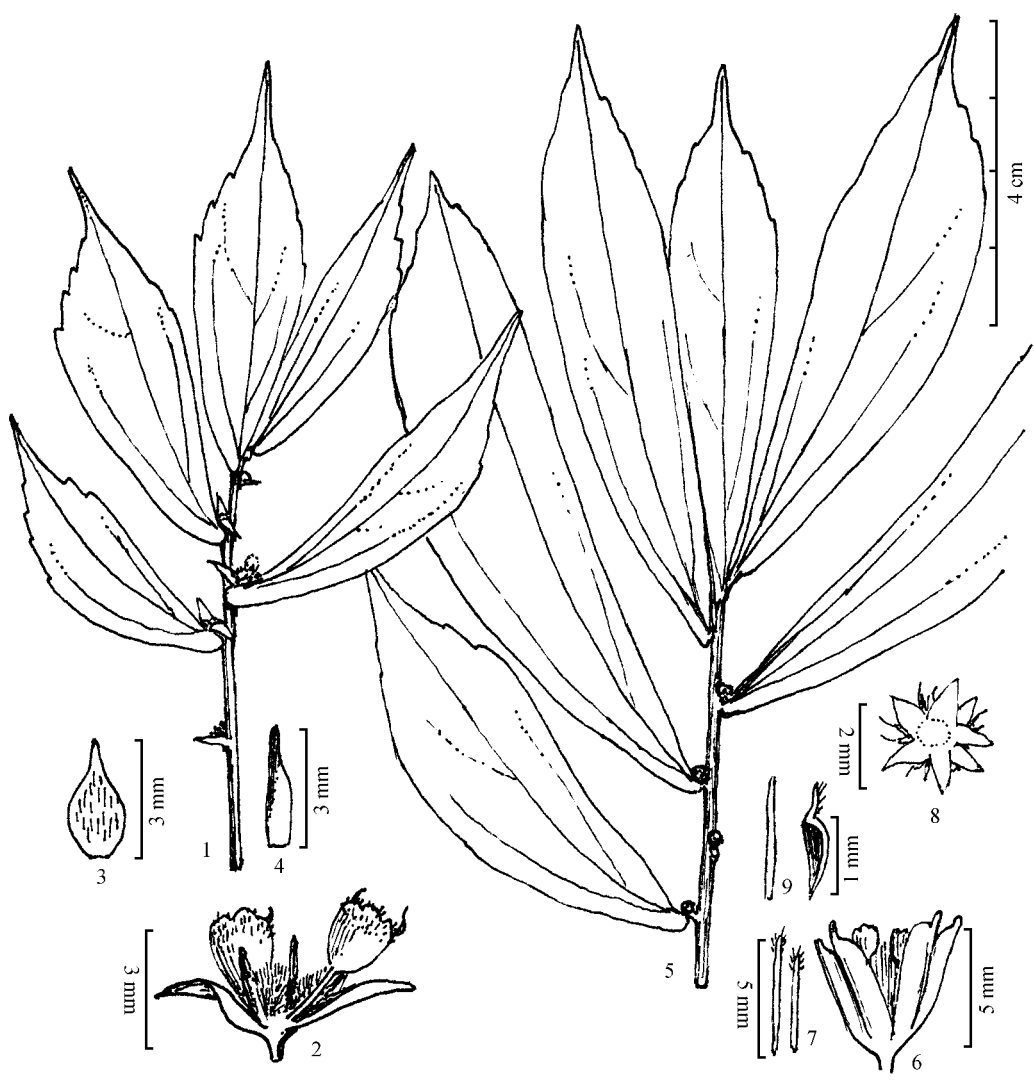


图 1 1~4. 七花楼梯草 ; 5~9. 拟渐狭楼梯草

1. 雄株上部 ; 2. 雄花序 ; 3. 苞片 ; 4. 小苞片 ; 5. 雌株上部 ; 6. 雄花序 ; 7. 小苞片 ; 8. 雌花序 (下面观) ; 9. 小苞片

Fig. 1 1~4. *Elatostema septemflorum* ; 5~9. *E. attenuatoides*

1. Upper part of a staminate plant ; 2. Staminate inflorescence ; 3. Bract ; 4. Bracteole ; 5. Upper part of a pistillate plant ; 6. Staminate inflorescence ; 7. Bracteoles ; 8. Pistillate inflorescence (seen from lower surface) ; 9. Bracteoles

Habitu *C. attenuato* W. T. Wang simillimum , sed caulibus ramosis apice saepe sparse pubescentibus , foliis basi latere latiore rotundato-obtusis margine prope apicem interdum pauce denticulatis subtus ad nervos basales villosis recedit.

Herba perennis , dioica. Caules ascendentes , 25 - 45 cm alti , supra basin longe ramosi , prope apicem

sparse pubescentes vel subglabri. Folia alternata , sessilia vel subsessilia , papyracea , oblanceolata 5 - 11.8 cm longa , 0.8 - 2.4 cm lata , apice acuminata , basi longe attenuata , sed latere latiore basi ipsa rotundato-obtusata , margine integra vel prope apicem 1 - 4-denticulata vel 1 - 4-crenata , supra glabra , subtus ad nervos basales planos villosa vel glabra , cystolithis

densis conspicuis bacilliformibus 0.4 – 0.8 mm longis, semitriplinervia, nervis lateralibus latere angustiore unicus eo latiore 2 – 3 utrinque planis; stipulae semihyalinae, lanceolatae, 5 – 13 mm longae, 1.2 – 1.5 mm latae, glabrae, uninerves, cystolithis sparsis notatis. Inflorescentiae staminatae axillares, brevissime pedunculatae, ca. 5-florae; pedunculi 1 mm longi, glabri; receptacula inconspicua; bracteae ca. 5, oblongae, 5.5 mm longae, apice breviter corniculatae, cornibus 0.5 mm longis pilosis exceptis glabrae, uni-viridi-nerves; bracteolae ca. 10, anguste lineares, 3 – 4 mm longae, apice pilosae. Flos staminatus: pedicellus 3.5 mm longus, glaber; tepala 5, elliptica, 1.8 mm longa, basi connata, apice breviter corniculata, extus prope apicem pilosa; stamina 5, antheris ca. 0.8 mm longis; pistillodium 0.3 mm longum. Inflorescentiae pistillatae subsessiles, ca. 3.5 mm diam., multiflorae; receptacula ca. 1.2 mm diam., glabra; bracteae ca. 7, ovatae vel triangulares, 1.6 mm longae, apice acutae, glabrae; bracteolae numerosae, obovato-nabicales, 1.2 mm longae, apice cucullatae et corniculatae, cornibus 0.5 mm longis pilosis exceptis glabrae, nonnullae anguste lineares, 1.8 mm longae, glabrae. Achenia anguste ellipsoidea, ca. 0.6 mm longa, 5-costata.

Yunnan(云南): Hekou(河口), Manhao(曼耗), Qingshui River(清水河) alt. 250 m, in tropical forest in valley, 2004 – 05 – 01, Shui Yu-min, Chen Wen-hong & Zhang Mei-de(税玉民, 陈文红, 张美德) 40779 (♂, ♀, holotype, KUN); same locality, Nanxi(南溪), Huayudong(花渔洞), alt. 200 m, in monsoon forest on steep limestone slope, 1994 – 02 – 28, Wu Su-kung(武素功), Y. P. Yang, J. Murata & T. Kawahara 831(♂).

本种在体态上逼似渐狭楼梯草(*E. attenuatum* W. T. Wang), 但茎分枝顶端常疏被柔毛, 叶宽侧基部圆钝, 边缘近顶端有时有少数小齿, 下面基出脉上被长柔毛而不同。在渐狭楼梯草, 茎不分枝, 无毛, 叶基部两侧均长渐狭, 边缘全缘, 两面均无毛。

2.1.5 褐脉楼梯草

Elatostema brunneinerve W. T. Wang in Bull. Bot. Res. Harbin 3(3) 64, fig. 5 – 6. 1983; in Fl. Reip. Pop. Sin. 23(2) 255, pl. 52, fig. 4 – 5.

1995; et in Fl. Guangxi 2: 856. 2005; Q. Lin et al. in Fl. China 5: 146. 2003.

(a) var. **brunneinerve**

广西: 那坡, 百都, 1300 m, 方鼎等 25347(♂, holotype, PE). 云南: 麻栗坡, 金厂, 燕子洞, 1400 m 2003 – 10 – 06, 税玉民, 陈久红, 盛家舒 32782(KUN).

分布: 广西(那坡), 在云南首次记录。

本种特征为叶具半离基三脉, 钟乳体小, 长 0.05 ~ 0.1 mm, 托叶较大, 宽披针形, 长达 20 mm, 膜质, 雄花序苞片外面有 4 ~ 5 条纵肋, 有小钟乳体。上引麻栗坡标本无花序和花, 茎大部铺地, 上部渐升, 叶较小, 长达 4.5 cm, 托叶也较小, 长达 9 mm。

(b) 乳突褐脉楼梯草 图 2: 1 ~ 5

var. **papillosum** W. T. Wang, var. nov.

A var. *brunneinervi* differt inflorescentia staminata bracteis 2 apice 1-corniculatas extus puberulas inferne dense inaequaliter papillosas projecturis basalibus carentes ferente.

Inflorescentiae pistillatae axillares, sessiles, ca. 4 mm diam., multiflorae; receptacula minuta; bracteae ca. 7, anguste ovatae, 2.8 – 3 mm longae, apice acutae vel breviter corniculatae, subglabrae; bracteolae numerosae, densae, anguste obovatae, 2 – 3.5 mm longae, apice corniculatae, cornibus 0.4 – 0.8 mm longis, superne ciliolatae. Flos pistillatus: tepala obscura; ovarium ellipsoideum, 0.4 mm longum; stigma minutum.

本变种的雄花序有 2 苞片, 苞片顶端有 1 角状突起, 外面无毛, 下部有密集且不等大的乳头状突起, 无基部突起, 而与模式变种 var. *brunneinerve* 不同。在后者, 雄花序有 6 苞片, 外方 2 苞片较大, 顶端有 1 ~ 4 个角状突起, 基部有 2 ~ 3 个狭三角形突起, 外面无乳头状突起。

Yunnan(云南): Malipo(麻栗坡), Huoshaliangzi Shan(火烧梁子山), Xiajinchang(下金厂), alt. 1700 m, in broadleaved forest on slope, 1999 – 07 – 08, Peng Ching-i, Shui Yu-min & Zhong Guo-fang(彭镜毅, 税玉民, 钟国芳) 17490(♀, holotype, KUN).

Elatostema brunneinerve W. T. Wang 的采自广西那坡的主模式标本为一雄株, 所以在原始描述中未有雌花序和雌花的形态特征。本变种采自麻栗

坡的主模式标本为一雌雄同株植株,茎近顶部叶腋生雌花序,其下生雄花序。因为过去雌花序形态不

了解,这里将雌花序和雌花的描述写出。

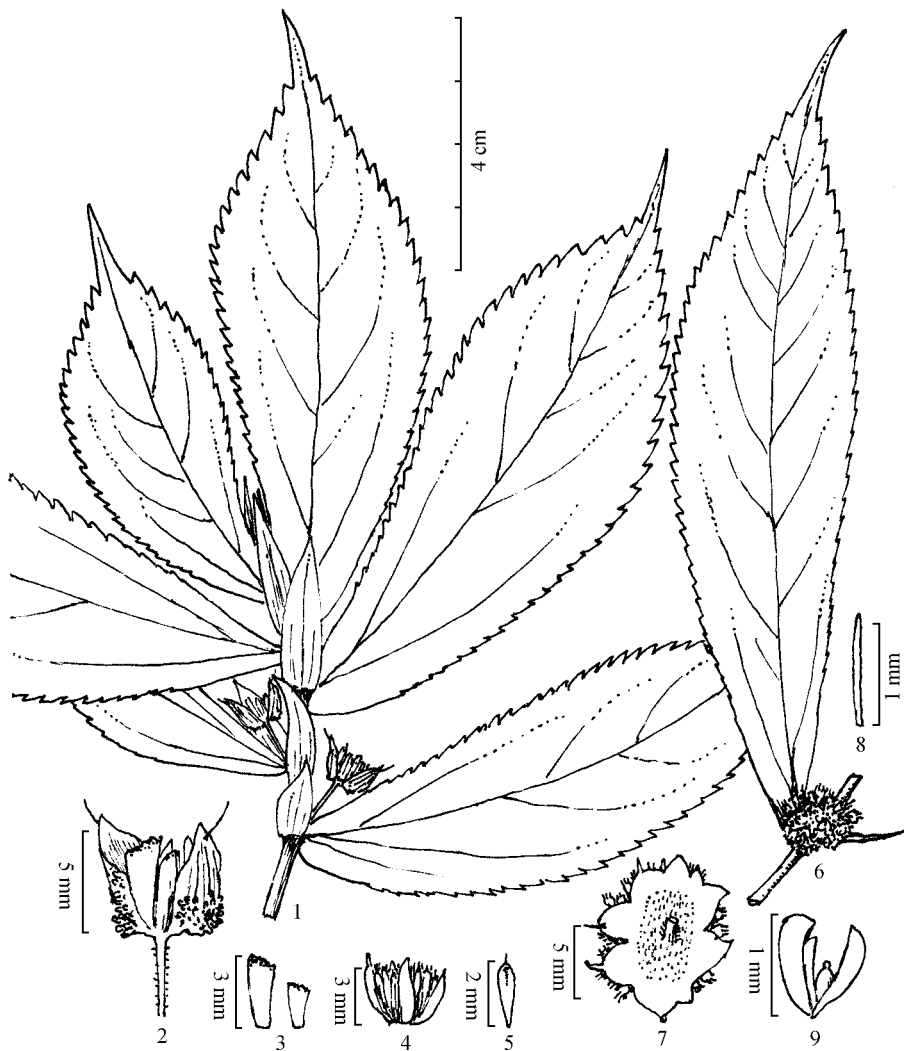


图2 1~5. 乳突褐脉楼梯草;6~9. 黑叶楼梯草
1. 雌雄同株植株的上部 2. 雄花序 3. 小苞片 4. 雌花序 5. 小苞片 6. 叶和雄花序 7. 雄花序(下面观) 8. 小苞片 9. 雌花序小苞片和雌花

Fig.2 1~5. *Elatostema brunneinerve* var. *papillosum*; 6~9. *E. melanophyllum*
1. Upper part of a monoecious plant ;2. Staminate inflorescence ;3. Bracteoles ;4. Pistillate inflorescence ;5. Bracteole ;6. Leaf and staminate inflorescence ;7. Staminate inflorescence(seen from lower surface) ;8. Bracteole ;9. Bracteoles of pistillate inflorescence and pistillate flower.

2.1.6 盘托托叶楼梯草 图3

Elatostema nasutum Hook. f. var. **discophorum** W. T. Wang , var. nov.

A var. *nasuto* differt inflorescentiis staminatis receptaculis conspicuis disciformibus oblongo-ellipticis late oblongis vel suborbicularibus 6 – 18 mm longis 2.5 – 14 mm latis praeditis ca. 9-bracteatis , bracteis

ovatis vel triangularibus apice acutis haud corniculatis vel nonnullis apice crasse corniculatis.

本变种与模式变种 var. *nasutum* 的区别 :雄花序有明显的盘状花序托(呈长圆状椭圆形,宽长圆形或近圆形,长6~18 mm,宽2.5~14 mm),后者周围有大约9枚苞片,苞片呈卵形或三角形,不呈船形,顶端急尖,不具角状突起,或一些苞片顶端具

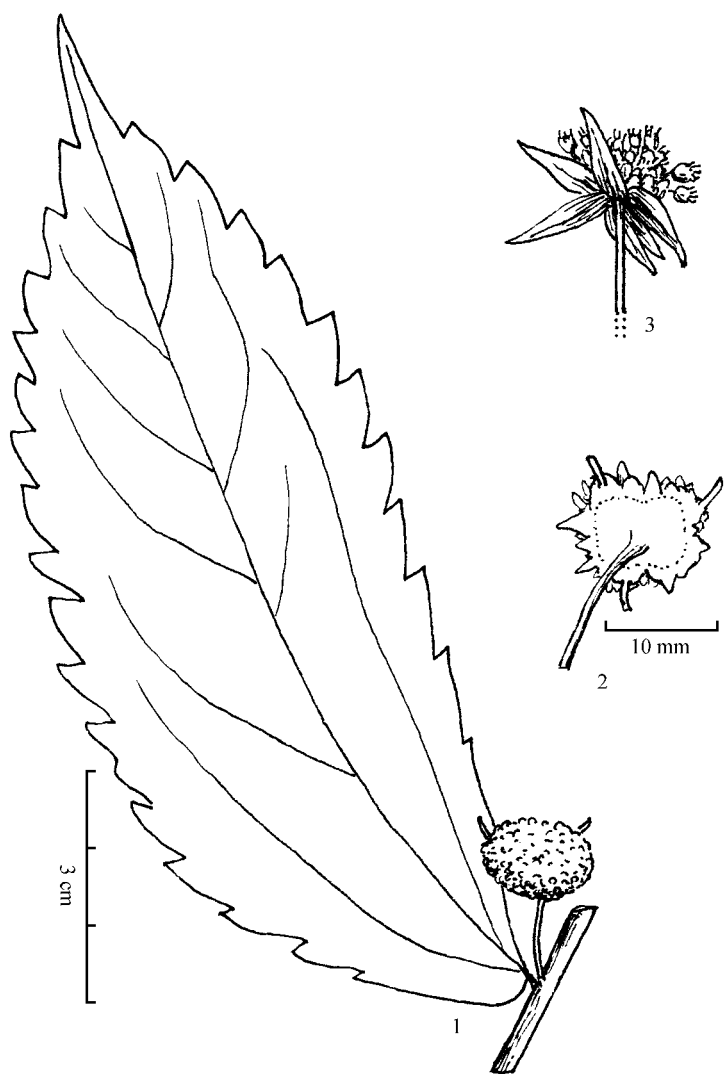


图3 1 2. 盘托托叶楼梯草;3. 托叶楼梯草 1. 叶和雄花序;2. 雄花序(下面观);3. 雄花序(仿王文采,1995)

Fig.3 1 2. *Elatostema nasutum* var. *discophorum* ;3. *E. nasutum* var. *nasutum*

1. Leaf and staminate inflorescence ;2. Staminate inflorescence(seen from lower surface);3. Staminate inflorescence(after Wang ,1995)

粗角状突起。

Yunnan(云南): Luchun(绿春), Huanglian Shan(黄连山), Hydrographic station(水文站), alt. 1 650 m , in forest , 2005 - 07 - 29 , Shui Yu-min & Chen Wen-hong(税玉民 , 陈文红) 44408(♂ , holotype , KUN); same locality , Niubo reservoir(牛波水库), alt. 1 800 m , on Amomum tsao-ko land , 2003 - 09 - 06 , Shiu Yu-min & Chen Wen-hong 32415 (♂ , KUN); same locality , Badong(巴东), alt. 1 650 m , 1994 - 08 - 01 , Wu Su-kong(武素功), Cheng Xiao(成晓), Y. P. Yang , K. Iwatsuki , J. Murata & H. Nagamasu 1007(♂ , KUN). Xizang(西藏) : Medog(墨脱), Beibeng(背崩), alt. 1 900

m , in forest by river , 1983 - 04 - 27 , Li Bo-sheng & Cheng Shu-zhi(李渤生 , 程树志) 4345(♂ , PE).

托叶楼梯草(*Elatostema nasutum* Hook. f.)过去了解的特征为 : 雄花序有细长花序梗 , 花序托小 , 不明显 , 不呈盘状 , 周围有约 6 枚苞片 , 苞片船状狭卵形 , 顶端有短而细的角状突起(图 3 3); 雌花序托明显 ; 叶具三出脉 , 边缘有牙齿。原知有二变种 : 模式变种(var. *nasutum*) 茎及雄花序梗均无毛) 广布于我国江西西部、广东及广西北部、湖南、湖北西南、四川西部、贵州、云南东南部、中部及西北部、西藏东南部 , 以及尼泊尔、不丹 ; 另一变种 , 短毛托叶楼梯草(var. *puberulum* (W. T. Wang) W. T. Wang) 茎上部和雄花序梗均被短柔毛) 分布于我

国江西西部、广东西部、广西北部 and 云南南部。

在楼梯草属 雄花序托从无到有 ,从小到大 ,显现出一条明显的演化趋势 ,其原始群 疏伞楼梯草组(Sect. *Pellioniioides* W. T. Wang) 的雄花序为分枝的聚伞花序 ,无花序托和总苞 ,在稍进化的群 小叶楼梯草组(Sect. *Weddelia*(H. Schröter)W. T. Wang) ,在雄花序 ,由花序分枝合生形成的平扁花序托出现了 ,其周围有二至数苞片形成的总苞 ,但是花序托小 ,不明显 ,到了更为进化的群 骤尖楼梯草组 Sect. *Elatostema* 雄花序托增大 ,呈明显的盘状 ,边缘周围具总苞 ,而与菊科的头状花序甚为相似 ,再进一步到了本属最进化的群 梨序楼梯草组(Sect. *Androsyce* Wedd.) 雄花序托直上方向增大呈坛状 ,而与桑科榕属 *Ficus* 的隐头花序(*hypanthodium*)相似。按照上述情况 ,托叶楼梯草应隶属小叶楼梯草组托叶楼梯草系(Sect. *Weddelia* ser. *Stipulosa* W. T. Wang)^[1,2]。但是 ,在这次鉴定税玉民博士寄来的标本过程中 ,我发现采自云南绿春的三号属于 *Elatostema nasutum* 的雄株标本 ,其雄花序与上述 var. *nasutum* 和 var. *puberum* 的雄花序不同 ,其花序托明显 ,呈盘状 ,总苞的苞片较多 ,不呈船状 ,少数苞片顶端有粗角状突起。此后 ,我又将中科院植物研究所标本馆(PE)收藏的 *E. nasutum* 全部标本观察一遍 ,发现上列的一号西藏墨脱标本的雄花序也有类似情况。上述云南绿春和西藏墨脱标本的茎和雄花序均与 var. *nasutum* 的相同 ,均无毛。这种情况说明在 *E. nasutum* 分布区的南部和西部 ,var. *nasutum* 的某些居群(population)曾经不约而同的发生了雄花序托增大的情况 ,结果形成了此种的一个新分类群 ,在本文中命名为 var. *discophorum*。小叶楼梯草组(Sect. *Weddelia*)在我国约 68 种 ,其中只有 *E. nasutum* 一个种的雄花序发生了雄花序托从小、不明显 ,演变到大、呈盘状的现象 ,这种情况打破了 Sect. *Weddelia* 和 Sect. *Elatostem* 两个群原知的分类界限 ,并给楼梯草属的分类造成了一个例外情况。

2.2 骤尖楼梯草组 Sect. *Elatostema*

2.2.1 硬毛华南楼梯草

Elatostema balansae Gagnep. var. *hispidum* W. T. Wang , var. nov.

A var. *balansae* differt foliis subtus ad nervos hispidis , stipulis anguste lineari-lanceolatis hispidociliatis cystolithis carentibus.

本变种与模式变种 var. *balansae* 的区别 :叶下

面基出脉上被糙硬毛 ,托叶狭条状披针形 ,被糙硬缘毛 ,无钟乳体。在模式变种 ,叶下面脉上有短柔毛 ,托叶条形 ,无毛 ,有密钟乳体。

Yunnan(云南) :Malipo(麻栗坡) , from Tianbao(天宝) to Nandong(南洞) , on cliff of a limestone cave , 2002 - 11 - 19 , Shui Yu-min & Wang Deng-gao(税玉民 ,王登高) 21815 (♂ ,holotype , KUN).

2.2.2 马关楼梯草 图 4 5 ~ 10

Elatostema maguanense W. T. Wang , sp. nov.

Species nova affinis *E. tenuifolio* W. T. Wang , quod foliis tenuioribus membranaceis oblique oblongis , eorum nervis lateralibus 5 - 6-jugis , stipulis minoribus 4 mm longis linearibus distinguitur.

Herba perennis , monoica vel dioica. Caules 32 - 38 mm alti , superne dense adpresseque hirtelli , simplices , ca. 10-foliati. Folia alternata , breviter petiolata ; laminae papyraceae , oblique obovatae 9 - 12.5 cm longae , 3 - 5.2 cm latae , apice acuminatae , basi oblique cuneatae , margine supra basin dense denticulatae , supra sparsissime adpresseque strigulosae vel glabrae , subtus ad nervos dense strigulosae , cystolithis densis conspicuis bacilliformibus 0.15 - 0.3 mm longis , penninerves , nervis lateralibus 7 - 9-jugis subtus leviter prominentibus ; petioli 3 - 10 mm longi ; stipulae viridulae , oblique lanceolatae , 10 - 14 mm longae , ca. 3 mm latae , glabrae , uni- raro binerves , secus nervos cystolithis densis 0.1 - 0.2 mm longis notatis. Inflorescentiae staminatae axillares , infra eas pistillatas , brevissime pedunculatae , multiflorae , siccitate nigrescentes ; pedunculi robusti , 2 mm longi , puberuli ; receptacula subquadrata , ca. 8 mm longa , 7 mm lata , puberula ; bracteae ca. 8 , depresso deltoideae vel triangulares 2.5 mm longae , 3 - 5 mm latae , apice plerumque crasse corniculatae , puberulae , cornibus 2 - 3.2 mm longis ; bracteolae numerosae , densae , majores obovato-naviculares , apice cucullatae , ceterae oblanceolatae vel lineares , 3 - 4 mm longae , 0.3 - 1.8 mm latae , glabrae , apice interdum incrassatae et brunneae. Flos staminatus glaber ; pedicellus 4 mm longus , tepala 5 , anguste elliptica , 2 mm longa , basi connata , apice corniculata , cornibus 1 mm longis ; stamina 5 , antheris 0.6 mm longis. Inflorescen-

tiae pistillatae axillares ,sessiles ,depressa globosae ,7 mm diam. ,multiflorae ,siccitate nigrescentes ;receptacula ca. 4.5 mm diam. ;bracteae ca. 5 ,lineares 4 mm longae ,1 mm latae ,sparse ciliolatae ;bracteolae

numerosae ,densae ,anguste lineares vel lineari-lanceolatae ,dense ciliolatae. Flores pistillati perjuveniles ,haud visi.

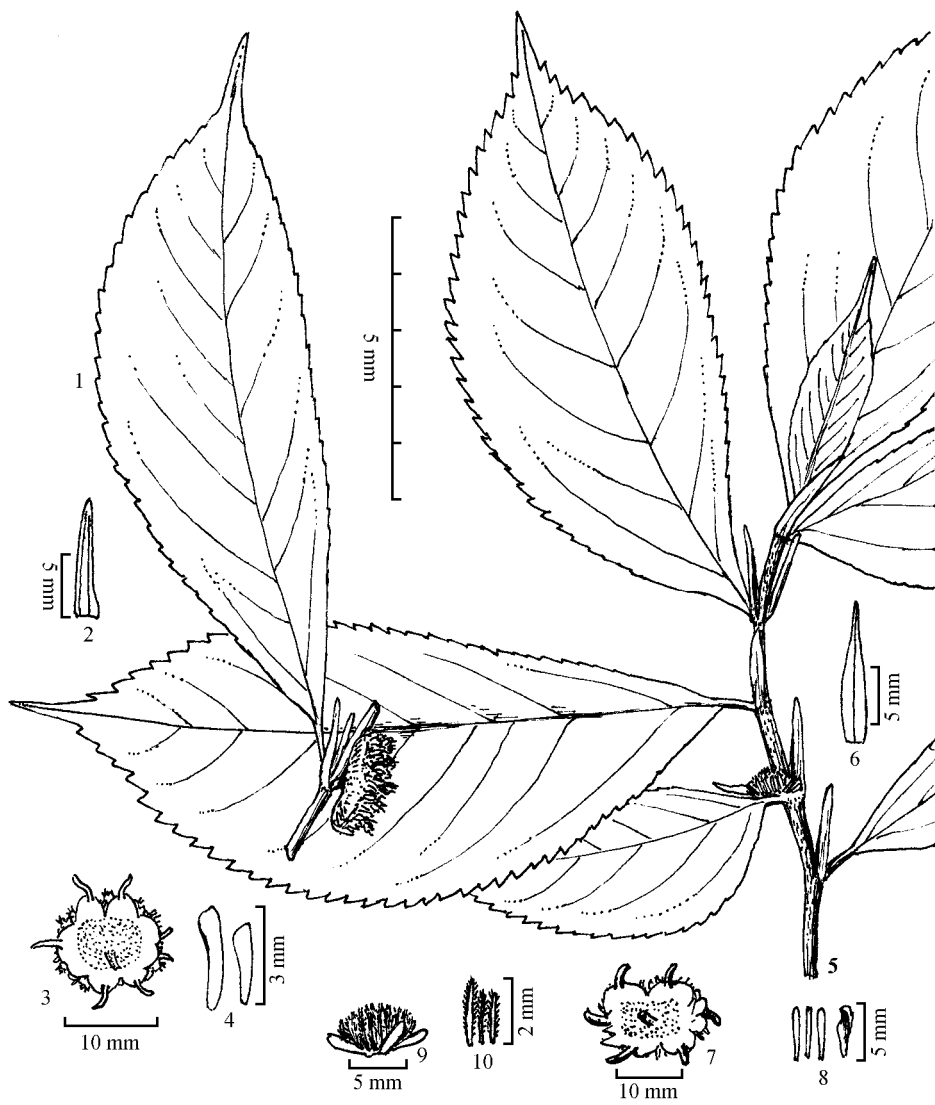


图4 1~4. 二脉楼梯草 5~10. 马关楼梯草

1. 叶和雄花序 2. 托叶 3. 雄花序(下面观) 4. 小苞片 5. 雌雄同株植株上部 6. 托叶 7. 雄花序(下面观) 8. 小苞片 9. 雌花序 10. 小苞片

Fig. 4 1~4. *Elatostema binerve* 5~10. *E. maguanense*

1. Leaf and staminate inflorescence 2. Stipule 3. Staminate inflorescence (seen from lower surface) 4. Bracteoles 5. Upper part of a monoecious plant 6. Stipule 7. Staminate inflorescence(seen from lower surface) 8. Bracteoles 9. Pistillate inflorescence 10. Bracteoles

Yunnan(云南) :Maguan(马关) ,Gulinging(古林箐) ,Timber check station(木材检查站) ,alt. 500 m ,2005 - 07 - 23 ,Shui Yu-min ,Chen Wen-hong , Zhang Mei-de & Wei Zhi-dar(税玉民 陈文红 张美德 魏志丹) 44299(♀ holotype ,KUN).

本种在亲缘关系上与薄叶楼梯草(*E. tenuifolium* W. T. Wang)接近 ,但叶较厚 ,呈纸质 ,斜倒卵形 ,有 7~9 对侧脉 ,托叶较大 ,斜坡针形 ,长 10~14mm 而可区别 ,在薄叶楼梯草 ,叶较薄 ,呈膜质 ,斜长圆形 ,有 5~6 对侧脉 ,托叶较小 ,条形 ,长 4 mm。

2.2.3 二脉楼梯草 图 4 :1 ~4

Elatostema binerve W. T. Wang , sp. nov.

Species nova haec *E. maguanensi* W. T. Wang arcte affinis, sed caulibus altioribus, foliis anguste obovatis vel late oblanceolatis, nervis lateralibus paucioribus 6-7-jugis, stipulis omnibus binervibus cystolithis sparsis praeditis differt.

Herba perennis, dioica. Caules ca. 55 cm alti, superne adpresse hirtelli, inferne glabrati, simplices vel 1-ramosi. Folia alternata, breviter petiolata; laminae papyraceae anguste obovatae vel late oblanceolatae 7.5-14 cm longae, 2.5-4.2 cm latae, apice acuminatae, basi oblique cuneatae, margine latere angustiore inferne integrae, superne denticulatae, eolatiore supra basin dense denticulatae, supra glabrae, subtus ad nervos strigulosae, cystolithis densis conspicuis bacilliformibus 0.2-0.5 mm longis, penninerves, nervis lateralibus 6-7-jugis subtus levissime prominentibus, petioli 3-5 mm longi, stipulae viridulae anguste lanceolatae vel lineari-lanceolatae, 10-12 mm longae, 1-3 mm latae, glabrae, binerves, cystolithis sparsis 0.1 mm longis notatis. Inflorescentiae staminatae axillares, breviter pedunculatae, multiflorae; pedunculi 1-2 mm longi, puberuli; receptacula suborbicularia, ca. 7 mm diam., adpresse puberula; bracteae ca. 7, late ovatae 2.5 mm longae, 3-4 mm latae, apice plerumque crasse corniculatae, cornibus 2-3 mm longis, extus minute puberulae; bracteolae numerosae, densae, oblique obovato-lineares, 3-4 mm longae, apice saepe cucullatae, semihyalinae glabrae. Flos staminatus glaber; pedicellus ca. 1.5 mm longus, tepala 5 elliptica, 1.6 mm longa, basi connata, apice corniculata, cornibus 0.5 mm longis, stamina 5, antheris oblongis 0.8 mm longis, pistillodium 0.3 mm longum. Inflorescentiae pistillatae et flores pistillati ignoti.

Yunnan(云南): Maguan(马关), Gulining(吉林箐), Timber check station(木材检查站) alt. 500 m, 2005-07-23, Shui Yu-min, Chen Wen-hong, Zhang Mei-de & Wei Zhi-dan 44294(♂, holotype, KUN).

本种在亲缘关系上极为接近前一种, 马关楼梯草, 与后者的区别特征为: 茎较高, 高 55 cm, 叶狭倒卵形或宽倒披针形, 侧脉较少, 为 6~7 对, 托叶

均具二条脉, 具有少数稀疏的钟乳体。马关楼梯草的茎高 32~38 cm, 叶呈斜倒卵形, 有 7~9 对侧脉, 托叶通常有一条脉, 沿脉密布小钟乳体, 可与本种区别。这二种形态区别不大, 有很相近的亲缘关系, 并生长在同一地点, 可能是由同一祖先衍生出的一对姊妹群。

2.2.4 黑叶楼梯草 图 2 :6 ~9

Elatostema melanophyllum W. T. Wang sp. nov.

Ob plantas totas siccitate nigrescentes et folia anguste oblonga pilifera penninervia species nova haec simillima *E. nanchuanensi* W. T. Wang, quod foliis subtus ad nervos strigulosis cystolithis densis conspicuis praeditis, nervis lateralibus 10-12-jugis differt.

Herba perennis, dioica, siccitate tota nigrescens. Caules 20-50 cm alti, simplices vel paucae ramosi, hirtelli. Folia alternata, sessilia vel brevissime petiolata; laminae herbaceae, oblanceolatae vel anguste oblongae, saepe foliorum infimorum minores anguste obovatae (4-7-16.5-18) cm longae (1.5-2-3.5 cm latae, apice longe acuminatae vel caudato-acuminatae, basi oblique cuneatae, margine supra basin dense denticulatae, ciliolatae, supra sparsissime strigulosae vel glabrae, subtus ad nervos pilis patentibus hirtellae, cystolithis haud densis inconspicuis bacilliformibus 0.1-0.25 mm longis, penninerves, nervis lateralibus (5-6-7-jugis; petioli nulli vel praesentes 0.5-2 mm longi; stipulae anguste triangulares vel lineari-lanceolatae 5.5-12 mm longae, 1-2.2 mm latae, apice subulato-caudatae, subglabrae, indistincte uninerves. Inflorescentiae staminatae axillares, brevissime pedunculatae, multiflorae; pedunculi robusti, ca. 2 mm longi; receptacula late oblonga, ca. 6.5 mm longa, 4 mm lata, puberula; bracteae ca. 8, depresso orbiculari-ovatae, ca. 2.2 mm longae, 3-4 mm latae, apice plerumque corniculatae, cornibus 0.5-1.5 mm longis, glabrae; bracteolae numerosae, lineares 0.8-1.2 mm longae, glabrae. Flos staminatus, alabastrum ca. 1 mm diam., 5-corniculatum glabrum. Inflorescentiae pistillatae axillares, sessiles, ca. 3 mm diam., multiflorae; receptacula minuta, inaequaliter 2-secta; bracteae ca. 5, anguste ovatae, 0.5 mm longae, glabrae; bracteolae numerosae, densae, naviculares 0.8-1 mm longae, apice saepe cucullatae, semihyalinae glabrae. Flos pistillatus, tepala obscura;

ovarium ellipsoideum. 0. 4 mm longum ; stigma 0. 1 mm longum.

Yunnan(云南) ;**Maguan**(马关) ,**Gulinqing**(吉林箐) ,**Mage**(马革) ,alt. 220 m ,in valley ,2004 - 01 - 16 ,**Shui Yu-min** & **Chen Wen-hong**(税玉民 ,陈文红)41060(♂ ,holotype ,KUN) ;same locality ,alt , 200 m ,at forest edge ,2004 - 12 - 19 ,**Shui Yu-min** , **Chen Wen-hong** ,**Zhang Mei-de** & **Wei Zhi-dan**(税玉民 ,陈文红 ,张美德 ,魏志丹)43713(with very young infl. ,KUN) ;same locality ,in rain forest in valley , 2002 - 10 - 18 ,**Shui Yu-min** ,**Chen Wen-hong** & **Sheng Jia-shu**(税玉民 ,陈文红 ,盛家舒)31686(with very young infl. ,KUN) ;**Hekou**(河口) ,**Xinjie** ,**Yao-maiji** alt. 1400 m ,by ditch under forest ,2000 - 04 - 13 ,**Shui Yu-min** et al. 12887(♀ ,KUN) ;**Hekou**(河口) ,**Shijiacao** ,alt. 1850 m ,in forest ,1999 - 09 - 08 ,**Shui Yu-min** et al. 10618(with very young infl. , KUN).

本种的植株在变干后全部变为黑色 ,叶呈狭长圆形 ,被毛 ,具羽状脉 ,在这些特征方面与南川楼梯草(*E. nanchuanense* W. T. Wang)极为相似 ,可能有亲缘关系 ,但叶下面被开展的微硬毛 ,有不密集、不明显的钟乳体 ,侧脉较少 ,为(5 -)6 - 7 对而与南川楼梯相区别。在南川楼梯草 ,叶下面脉上被短糙

伏毛 ,具密集、明显的钟乳体 ,侧脉较多 ,10 ~ 12 对。

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