doi：10.16473/j.cnki.xblykx1972.2019.03.021

中国云南西北部地区楼梯草属一新异名*

郭世伟[1,2]，陈文红[1,3]，税玉民[1,3]
（1. 中国科学院昆明植物研究所东亚植物多样性与生物地理学重点实验室，云南 昆明 650201；2. 中国科学院大学，北京 100049；
3. 云南省喀斯特地区生物多样性保护研究会，云南 昆明 650201）

摘要：在对泛喜马拉雅地区楼梯草属（*Elatostema* J. R. Forster & G. Forster）植物进行研究时，通过野外考察和检视标本，发现尖牙楼梯草（*E. oxyodontum* W. T. Wang）是拟托叶楼梯草（*E. pseudonasutum* W. T. Wang）的异名，在此予以报道。

关键词：中国；楼梯草属；伊洛瓦底；新异名；荨麻科
中图分类号：S 664.1 **文献标识码**：A **文章编号**：1672-8246（2019）03-0133-04

A Synonym of *Elatostema* J. R. Forster & G. Forster (Urticaceae) from Northwest Yunnan, China

GUO Shi-wei[1,2], CHEN Wen-hong[1,3], SHUI Yu-min[1,3]
(1. CAS Key Laboratory for Plant Diversity and Biogeography of East Asia, Kunming Institute of Botany, Chinese Academy of Sciences, Kunming Yunnan 650201, P. R. China; 2. University of Chinese Academy of Sciences, Beijing 100049, P. R. China;
3. Karst Conservation Initiative of Yunnan, Kunming Yunnan 650201, P. R. China)

Abstract: During the study on the genus *Elatostema* J. R. Forster & G. Forster (Urticaceae) of Pan-Himalaya regions, the authors conducted some field surveys, examined the specimens from herbaria, and confirmed that *Elatostema oxyodontum* W. T. Wang is a synonym of *E. pseudonasutum* W. T. Wang.

Key words: China; *Elatostema* J. R. Forster & G. Forster; Irrawaddy; Synonym; Urticaceae

1 Introduction

Elatostema J. R. Forster & G. Forster consists of ca. 500 species and is distributed in tropical and subtropical regions of Africa, Asia, and Oceania[1]. *Elatostema* J. R. Forster & G. Forster is closely related to the genera *Pellionia* Gaudichaud-Beaupré and *Procris* P. Commerson & A. L. Jussieu in Urticaceae[2-3]. Some researchers regarded *Elatostema* J. R. Forster & G. Forster, *Procris* P. Commerson & A. L. Jussieu and *Pellionia* Gaudichaud-Beaupré as three distinct genera[4-7], others considered *Pellionia* Gaudichaud-Beaupré as a subgenus of *Elatostema* J. R. Forster & G. Forster, and treated *Procris* P. Commerson & A. L. Jussieu as a distinct genus[8-10], Hallier[11] recognized *Procris* P. Commerson & A. L. Jussieu and *Pellionia* Gaudichaud-Beaupré as two subgenera of *Elatostema* J. R. Forster & G. Forster. According to the

* 收稿日期：2018-12-22
Foundation items: National Natural Science Foundation of China (Grant No. 31770251, 31620103902 and 31370228), Science and Technology Basic Work (S & T Basic Work) (2013FY112100), International Partnership Program of Chinese Academy of Sciences (Grant No. 151111KYSB20170021) and Key Project for the Development of State Facilities and Information Infrastructure for Science and Technology: National Specimen Information Infrastructure (2005DKA21400).
Biography: GUO Shi-wei (1992-), Master candidate, focus on *Elatostema* of Pan-Himalaya. E-mail: guoshiwei@mail.kib.ac.cn
Corresponding author: SHUI Yu-min (1966-), Professor, focus on Begoniaceae. E-mail: ymshui@mail.kib.ac.cn

phylogeny constructed by Wu *et al.* [12], the genus *Procris* P. Commerson & A. L. Jussieu should be recognized, and *Pellionia repens* (Lour.) Merr. may represent a distinct genus, meanwhile, the remaining members of *Pellionia* Gaudichaud-Beaupré are partly nested into *Elatostema* J. R. Forster & G. Forster.

It is difficult to distinguish the species of *Elatostema* J. R. Forster & G. Forster because of its tiny flowers and relatively fewer available characters for species delimitation[13]. In addition, due to the dioecious flowers of some species of the genus, specimens of the same species with only male flowers or female flowers were often identified as different taxa[14]. In the genus, leaf (base, apex and margin), vein pattern, nanophyll, cystolith, stipule, inflorescence type, receptacle, bracts and achene are usually important characters for species delimitation[1,2,15-16]. It is common that different researchers have different opinions for intraspecific delimitation. For example, Lin *et al.* [7] regarded *E. ebracteatum* W. T. Wang, *E. edule* C. B. Robinson and *E. platyphylloides* B. L. Shih & Yuen P. Yang as synonyms of *E. platyphyllum* Weddell, while Wang[1] accepted the later three species. Y. H. Tseng & J. M. Hu accepted *E. edule* C. B. Robinson and treated *E. platyphylloides* B. L. Shih & Yuen P. Yang as a synonym of *E. platyphyllum* Weddell based on morphological and molecular evidence[17].

The above case happens to the taxa of the Pan-Himalaya Regions including Himalaya mountains and its neighboring regions. Among its 17 subdivisions of the regions[18], Dulongjiang Valley lies in Northwest Yunnan (China) and Northeast Myanmar, and belongs to Upper Irrawaddy. At Dulongjiang valley, there are twelve endemic species of *Elatostema* J. R. Forster & G. Forster, among which two new species, *E. pseudonasutum* W. T. Wang and *E. oxyodontum* W. T. Wang were described by W. T. Wang in 2010[1,7,19-23]. In 2017, we conducted the field work in their type localities and adjacent areas of the two species, and carried out their detailed observations in the field. Afterwards, we carefully examined the type specimens of the two species in the herbaria, PE and KUN. We found that their diagnostic characteristics of stem, leaf blade, stipule, male involucre were almost the same. Thus, we propose the following taxonomic treatment.

2 Taxonomic treatment

Elatostema pseudonasutum W. T. Wang, Guihaia **30** (6): 723, fig 6: D - H. 2010. Type: *Dulongjiang Exped.* 3823 (holotype, PE!, 00161390; isotype, KUN!, 0162479).

—*Elatostema oxyodontum* W. T. Wang, Guihaia **30** (6): 724, fig 6: A - C. 2010. ***syn. nov.*** Type: *Dulongjiang Exped.* 3558 (holotype, PE!, 00161391; isotype, KUN!, 0162480).

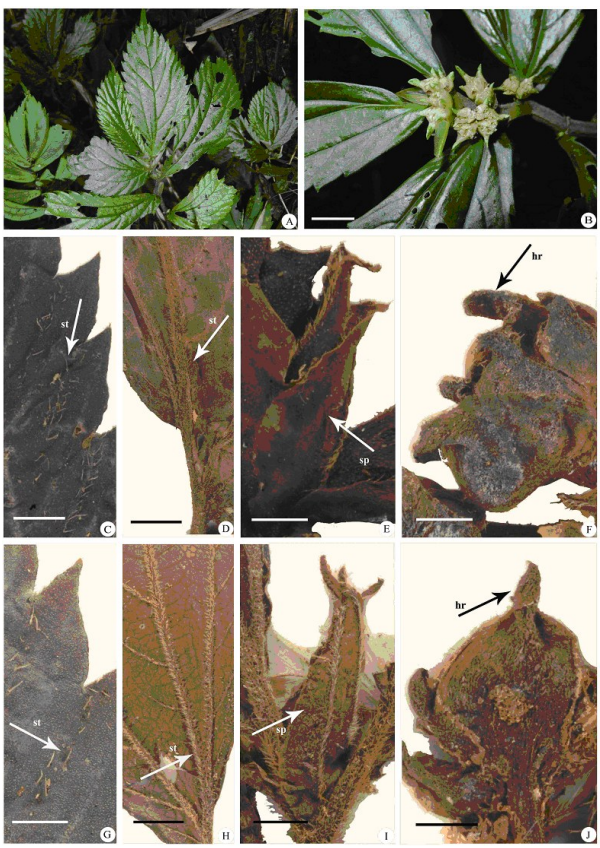
Herbs perennial, 30 - 40cm tall. Stems ascending or erect, simple, strigose. Stipule membranaceous, oblique triangle, 10 - 12mm × 4 - 6mm, 1or 2 strigose veined. Leaves sessile or subsessile, leaf blade obliquely elliptic, 5 - 14cm × 2 - 5cm, papyraceous, black when dried, semitriplinerved, adaxial surface sparsely strigillose, abaxial surface strigillose along veins, base with broader half auriculata, stenosis half cuneate, apex acuminate, margin dentate. Cystoliths brev-bacilliform ca. 0. 1mm. Male inflorescences solitary, simple, peduncle ca. 4mm, receptacle 6mm × 3mm, glabrous. Bracts 6, outer bracts 2, cymbiform-ovate, 4 - 7mm × 3 - 6mm, apex corniculate with horn 2 - 3mm long, inner bracts 4, ovate or triangular, 3 - 5mm × 3 - 4mm, apex corniculate with horn ca. 1mm. Bracteoles dense, triangular or linear, ca. 3mm × 2mm, apex acute, with or without minute horn. Female inflorescences unknown. Fl. Jan.

Additional examined specimens: Yunnan, Gongshan, Dulongjiang, Maku. *S. W. Guo B*2017-045 (KUN!).

3 Discussion

The field surveys and the specimen examination revealed the conspecific state of *Elatostema pseudonasutum* W. T. Wang and *E. oxyodontum* W. T. Wang. Their holotypes were collected almost from the same locality, viz, Telawang River (a small branch of Dulongjiang) valley. Wang[1,21] distinguished *E. pseudonasutum* W. T. Wang from *E. nasutum* Hook. f. by their hispid stems, leaf blade adaxially strigose (Fig. 1: C), abaxially strigose along the veins (Fig. 1: D), cystolith short ca. 0. 1mm, stipule 1 or 2-veined strigose (Fig. 1: E),

male involucre with short horn(Fig. 1:F), and also distinguished *E. oxyodontum* W. T. Wang from *E. cuspidatum* Wight by their hispid stems, leaf blade adaxially strigose(Fig. 1:G), abaxially strigose along the veins (Fig. 1:H), cystolith short 0.1–0.15mm long, stipule 1 or 2-veined(Fig. 1:I). When we compared the two species *E. pseudonasutum* W. T. Wang and *E. oxyodontum* W. T. Wang, their diagnostic characteristics, viz, indumentum of stem and leaf, stipule and inflorescence were almost same; moreover, both of their specimens became black after drying.



A: Whole plant; B: Male inflorescence; C: Leaf adaxially strigillose; D: Leaf abaxially strigillose; E: Stipule strigillose viened; F: Male inflorescence with horn; G: Leaf adaxially strigillose; H: Leaf abaxially strigillose; I: Stipule strigillose viened; J: Male inflorescence with horn. (st: Strigillose; hr: Horn; sp: Stipule; scale bar: B = 1cm; C, G, I = 0.3mm; D, H = 0.5mm; E, F, J = 0.2mm). C – F from *Dulongjiang Exped.* 3823 (KUN) isotype of *E. pseudonasutum* W. T. Wang; G-J from *Dulongjiang Exped.* 3558 (KUN) isotype of *E. oxyodontum* W. T. Wang.

Fig. 1　Morphology of *Elatostema pseudonasutum* W. T. Wang

Both *E. pseudonasutum* W. T. Wang and *E. nasutum* Hook. f. have the heteromorphic stipule, a unique character needing more attention in the future. For most species in the genus *Elatostema* J. R. Forster & G. Forster, one leaf of a pair is completely reduced, except for the stipules[24]. So, there are two stipules at each node, one for the normal leaf, the other for the reduced leaf. In *E. pseudonasutum* W. T. Wang, the normal leaf's stipule is 2 strigose veined, while the reduced leaf's stipule is 1 strigose veined, the same characteristic also occurs to *E. nasutum* Hook. f.. The heteromorphic stipule may be of systematic significance and needs to be studied in the future.

Acknowledgement: We would like to thank Mrs Wang Jing-hua of Herbarium in Kunming Institute of Botany, CAS(KUN) for helping us check the type specimen. We thank Dr. Zhang Liang for his help in the field work and Mr. Chen Li for making the figure. Thanks to Stephen Maciejewski and Michael Lo-Furno, the USA for editorial assistance. This work was supported by National Natural Science Foundation of China (Grant No. 31770251, 31620103902 and 31370228), Science and Technology Basic Work(S & T Basic Work)(2013FY112100), International Partnership Program of Chinese Academy of Sciences (Grant No. 151111KYSB20170021) and Key Project for the Development of State Facilities and Information Infrastructure for Science and Technology: National Specimen Information Infrastructure(2005DKA21400).

References:

[1] Wang W T. *Elatostema* (Urticaceae) in China[M]. Qingdao: Qingdao Publishing House, 2014: 1–393.

[2] Wang W T. Classificatio specierum sinicarum Elatostematis(Uriticaceae)[J]. Bull Bot Lab N. E. Forest Inst, 1980, 7(2): 1–96.

[3] Hadlah J T, Quinn C J, Conn B J. Phylogeny of *Elatostema* (Urticaceae) using chloroplast DNA data[J]. Telopea, 2003, 10(1): 235–246.

[4] Weddell H A. Urticacées[M]// Candolle A D. Prodromus Systematis Naturalis Regni Vegetabilis. Paris: Victoris Masson et Filii, 1869: 32–235.

[5] Hooker J D. Urticaceae. Flora of British India Vol. 5[M]. London: L. Reeve, 1888: 477–594.

[6] Wang W T. *Elatostema*[M]// WANG W T, CHEN J R. Flora Reipublicae Popularis Sinicae Vol. 23. Beijing: Science Press, 1995: 187–317.

[7] Lin Q, Friis I, Wilmot-dear C M. *Elatostema* (Urticaceae)[M]// WU Z Y, RAVEN P H. Flora of China Vol. 5. Beijing: Science Press & St. Louis: Missouri Botanical Garden Press, 2003: 127-162.

[8] Scheroter H, Winkler H. Monographie der Gattung *Elatostema* s. l[J]. Repert Spec Nov Regni Veg Beih, 1935, 83(1): 1-56.

[9] Schroter H, Winkler H. Monographie der Gattung *Elatostema* s. l[J]. Repert Spec Nov Regni Veg Beih, 1936, 83(2): 1-174.

[10] Schroter H. Monographie der Gattung *Procris*. I [J]. Repert Spec Nov Regni Veg Beih, 1938, 45(8-16): 179-192.

[11] Hallier H. Neue und bemerkenswerte Pflanzen aus dem Malaiischpapuanischen inselmeer[J]. Ann Jard Bot Buitenzorg, 1896, 13: 276-326.

[12] Wu Z Y, Monro A K, Milne R I, *et al*. Molecular phylogeny of the nettle family (Urticaceae) inferred from multiple loci of three genomes and extensive generic sampling[J]. Mol Phylogenet Evol, 2013, 69(3): 814-827.

[13] Fu L F, Van T D, Wen F, *et al*. *Elatostema arcuatobracteatum* (Urticaceae), a new species from Vietnam[J]. Phytotaxa, 2014, 174(2): 111-115.

[14] Duan L D, Lin Q, Shao Q. Two new synonyms of *Elatostema* (Urticaceae) in Hunan, China [J]. Acta Phytotaxon Sin, 2006, 44(4): 474-476.

[15] Wang W T. Morphology of the bracts of *Elatostema* (Urticaceae) and the evolutionary trends in them[J]. Guihaia, 2010, 30(5): 571-583.

[16] Hadlah J T, Conn B J. Usefulness of morphological characters for infrageneric classification of *Elatostema* (Urticaceae)[J]. Blumea, 2009, 54(54): 181-191.

[17] Tseng Y H, Hu J M. Taxonomic revision of *Elatostema* J. R. Forst. & G. Forst. (Urticaceae) in Taiwan[J]. Taiwania, 2015, 60(1): 23-32.

[18] Sa R, Hong D Y. A brief introduction to flora of Pan-Himalayas project[J]. Bull of Biol, 2014, 49(1): 1-3.

[19] Wang W T. Taxa nova Elatostematise Yunnan[J]. Bull Bot Res, 1989, 9(2): 67-77.

[20] Wang W T. New taxa of genus *Elatostema* (Urticaceae) from Dulongjiang[J]. Acta Bot Yunnan, 1992, 14(S5): 1-6.

[21] Wang W T. Notes on the genus *Elatostema* (Urticaceae)[J]. Guihaia, 2010, 30(6): 713-727.

[22] Wang W T. Six new species of *Elatostema* (Urticaceae) from Gaoligongshan, Yunnan[J]. Pl Divers Resour, 2011, 33(2): 145-156.

[23] Wang W T. Four new species and one variety of *Elatostema* (Urticaceae) from China[J]. Pl Divers Resour, 2012, 34(2): 137-144.

[24] Friis I. Urticaceae [M]// Kubizkik, Rohwer J G, Bitrich V. The families and genera of vascular plants Vol. 2. Berlin: Springer-verlag, 1993: 612-630.

(编辑：胡光辉)