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紫草科新分类群

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摘要: 描述了中国横断山区紫草科滇紫草属一新种和一新变型, 附地菜属一新种和一新变种, 微孔草属 2 新种和齿缘草属 1 新种。

关键词: 紫草科, 滇紫草属, 附地菜属, 微孔草属, 齿缘草属, 新分类群, 中国

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New taxa of Boraginaceae from China

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Abstract: On the basis of specimens collected from the Hengduan Mountains in Southwest China one species and one form of *Onosma*, *O. xiangchengense* and *O. waddellii* Duthie f. *latifolium*, one species and one variety of *Trigonotis*, *T. zhuokejiensis* and *T. muliensis* W.T.Wang var. *strigosa*, two species of *Microula*, *M. leucantha* and *M. filicaulis*, and one species of *Eritrichium*, *E. serxuense*, are described as new.

Key words: Boraginaceae, *Onosma*, *Trigonotis*, *Microula*, *Eritrichium*, new taxa, China

哈佛大学植物学家 D. E. Boufford 博士在近十余年来与中国科学院昆明植物研究所合作, 对我国横断山区一带植物区系进行了深入的考察, 并采集到大量植物标本, 继去年寄来毛茛科植物标本之后, 于今年 3 月, 他又寄来紫草科植物标本托我鉴定, 在结束鉴定工作后, 发现了该科滇紫草属、附地菜属、微孔草属和齿缘草属的 5 新种, 1 新变种和 1 新变型, 现在本文发表。

Ob floris structuram et folia uninervia species nova haec *O. conferto* W. W. Smith arcte affinis est, a quo caulibus humilioribus usque ad 29 cm altis, foliis basalibus majoribus usque ad 29 cm longis 2.3 cm latis, drepaniis singulis vel binis terminalibus 3.5-5 cm longis dense 4-8-floris, corolla intus glabra statim distat.

Herba perennis. Radix apice circ. 2 cm crassa. Caules circ. 2 fasciculati, 20-29 cm alti, hispidi, simpliciter, 3-5-foliati. Folia basalia circ. 10, sessilia, herbacea, lanceolato-lineariter vel lineariter, 6-29 cm longa, 0.6-2.3 cm lata, apice acuta, basi attenuata, integra, supra viridia, subtus viridula, utrinque longe strigosa, uninervia; folia caulina minora, sessilia, lanceolato-lineariter vel anguste lanceolata, 3-9.5 cm longa, 0.5-1.1 cm lata, apice

1 滇紫草属 *Onosma* L.

1.1 乡城滇紫草 图 1: A-C

Onosma xiangchengense W. T. Wang, sp. nov.

Fig. 1: A-C

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图 1 A-C. 乡城滇紫草 A. 植株全形; B. 花萼和雌蕊, 2 萼片被除去; C. 花冠打开。

D-E. 宽叶丛茎滇紫草 D. 开花茎上部; E. 花冠打开, 以及雌蕊。

Fig. 1 A-C. *Onosma xiangchengense* W. T. Wang A. Habit; B. Calyx and pistil, with two sepals removed; C. Corolla cut open and spread out. D-E. *O. waddellii* Duthie f. *latifolium* W. T. Wang D. Upper part of flowering stem; E. Corolla cut open and spread out, and pistil. (from holotype)

attenuata, basi late cuneata. Drepania singula vel bina, terminalia, 3.5–5 cm longa, dense 4–8-flora; bracteae anguste lanceolatae vel anguste lineari-lanceolatae, 1.1–3.3 cm longae, 1–6 mm latae, hirsutae; pedicelli 1–10

mm longi, hirsuti. Sepala 5, anguste lineari-lanceolata, 1.5–1.6 cm longa, 1.5–2 mm lata, utriusque hirsuta; corolla rubra (ex collectoribus), tubularis, 1.7–1.8 cm longa, ore 6 mm in diam., 5-lobata, lobis depresso lateque ova-

tis circ. 1 mm longis 3 mm latis, tubo circ. 1.6 cm longo, extus supra medium strigosa, intus glabra; stamina 5, inclusa, atropurpurea, glabra, filamentis 6 mm longis leviter infra medium tubi corollae et 7 mm supra basin corollae insertis basi leviter decurrentibus, antheris 8 mm longis lateribus inter sese cohaerentibus et stylum cigentibus; pistillum corollae fere aequilongum, glabrum, ovario 0.8 mm longo, stylo 1.8 cm longo, stigmatibus 2 minutis 0.1 mm longis.

多年生草本。根顶端粗约 2 cm。茎约 2 条丛生,高 20~29 cm,被硬毛,不分枝,有 3~5 叶。基生叶约 10,无柄,草质,披针状条形或条形,长 6~29 cm,宽 0.6~2.3 cm,顶端急尖,基部渐狭,全缘,上面绿色,下面浅绿色,两面被长糙伏毛,具 1 脉;茎生叶较小,无柄,披针状条形或狭披针形,长 3~9.5 cm,宽 0.5~1.1 cm,顶端渐狭,基部宽楔形。镰状聚散花序单个或成对顶生,长 3.5~5 cm,有密集的 4~8 花;苞片狭披针形或狭条状披针形,长 1.1~3.3 cm,宽 1~6 mm,被长硬毛;花梗长 1~10 mm,被长硬毛。萼片 5,狭条状披针形,长 1.5~1.6 cm,宽 1.5~2 mm,两面被长硬毛;花冠红色,筒状,长 1.7~1.8 cm,口部直径 6 mm,5 浅裂,外面中部之上被糙伏毛,内面无毛,裂片扁宽卵形,长约 1 mm,宽 3 mm,筒长约 1.6 mm;雄蕊 5,内藏,暗紫色,无毛,花丝长 6 mm,着生于花冠筒中部稍下、距花冠基部之上 7 mm 处,花药长 8 mm,互相以侧面连着并包围花柱;雌蕊与花冠近等长,无毛,子房长 0.8 mm,花柱长 1.8 cm,柱头 2,小,长 0.1 mm。

Sichuan (四川): Xiangcheng Xian (乡城县), Vicinity of the town of Reda (热打). Rizhao Shen Shan from gorge behind Silong Village. 29°6'9" N, 99°40'15" E; 3 600–3 850 m. Open meadows with seepages surrounded by forests, moist areas along small streamlets within and outside of forest, and *Quercus guyavifolia*-*Picea likiangensis* forests. Limestone gorge near stream. Corolla red. 16 July 2004. D. E. Boufford, J. H. Chen, S. L. Kelley, J. Li, R. H. Ree, H. Sun, J. R. Yue & Y. H. Zhang no. 30767 (holotype, PE; isotype, GH, not seen).

本种的花构造与密花滇紫草 (*O. confertum* W. W. Smith) 的相似,二者的叶均具 1 脉,因此本种在亲缘关系上与密花滇紫草甚为接近,但茎较低矮,高达 29 cm,基生叶较大,长达 29 cm,宽达 2.3 cm,镰状聚伞花序单个或成对顶生,长达 3.5~5 cm,有密

集的 4~8 花,花冠内面无毛而与后者相区别。在密花滇紫草,茎高达 70 cm,基生叶较小,长达 12 cm,宽达 1 cm,镰状聚伞花序 10 个或更多组成长达 30 cm 的顶生、具多数花的聚伞圆锥花序,花冠裂片内面有 1 列伏毛 (Johnston, 1951; 刘玉兰, 1989)。

1.2 宽叶丛茎滇紫草 (变型) 图 1: D-E

Onosma waddellii Duthie f. **latifolium** W. T. Wang, f. nov. Fig. 1: D-E

A f. *waddellii* differt caulibus robustis usque ad 40–46 cm altis, foliis majoribus usque ad 10 mm latis.

从茎滇紫草 (*O. waddellii* Duthie) 特产我国西藏拉萨以东雅鲁藏布江流域一带山地,向东达昌都,最近在昌都之东的江达金沙江西岸发现了一个具宽叶的变型 f. *latifolium*, 此变型与丛茎滇紫草的区别在于茎粗壮,高达 40~46 cm,叶较大,宽达 10 mm。在丛茎滇紫草,茎较细弱,高达 25~30 cm,叶较小,宽达 6~7 mm (Johnston, 1951; 刘玉兰, 1989)。

Xizang (Tibet 西藏): Jiangda Xian (江达县), Narrow valley on W side of Jinsha Jiang (Upper Chang Jiang) opposite the town of Luoxu. 32°25'59" N, 98°0'18" E; 3 400 m. Dry slopes with scrubby vegetation and narrow meadows along small tributary of Jinshan Jiang. Dry slope. 30 July 2005. D. E. Boufford, J. H. Chen, K. Fujikawa, S. L. Kelley, R. H. Ree, H. Sun, J. P. Yue, D. C. Zhang & Y. H. Zhang no. 33855 (holotype, PE; isotype, GH, not seen); same locality (同地), 32°26'49" N, 48°0'33" E; 3 440 m. Dry slope partly facing Jinshan Jiang. Xeric scrub community with many thorny shrubs. Dry, stony slope. Corolla purple or pink; anthers purple. 30 July 2005. The same collectors as mentioned above, no. 33794 (PE; GH, not seen).

2 附地菜属 *Trigonotis* Stev.

2.1 卓克基附地菜 图 2: A-E

Trigonotis zhuokejiensis W. T. Wang, sp. nov. (sect. *Trigonotis*) Fig. 2: A-E

Species nova haec *T. gracilipedi* Johnst. affinis est, a qua caule patule puberulo, foliis ovatis vel late ovatis, drepaniis inferne 3–6-bracteatis, sepalis lineari-lanceolatis, corolla alba fauce lutea, nucula haud stipitata glabra facile differt.

Herba annua. Caulis suberecutus, circ. 45 cm al-

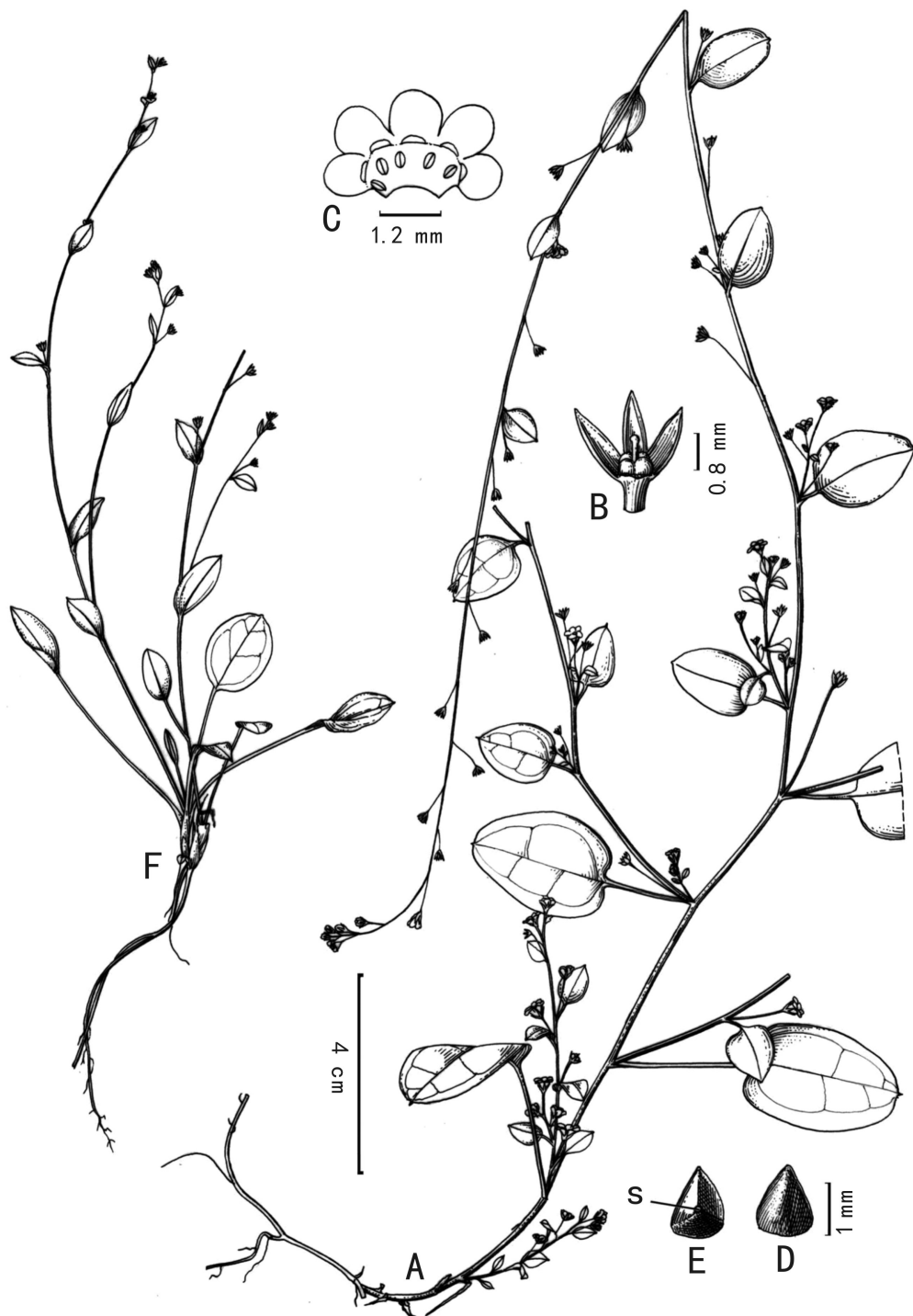


图 2 A-E. 卓克基附地菜 A. 植株全形; B. 花萼和雌蕊, 2 萼片被除去; C. 花冠打开; D. 小坚果, 背面观; E. 同 D, 腹面观。F. 冕宁附地菜植株全形。s, 着生面。

Fig. 2 A-E. *Trigonotis zhuokejiensis* W.T.Wang A. Habit; B. Calyx and pistil, with two sepals removed; C. Corolla cut open and spread out; D. Nutlet, dorsal view; E. The same as D, ventral view. F. *T. muliensis* W.T.Wang var. *strigosa* W.T.Wang habit. (from holotype) s, Scar.

tus, inferne 1.8 mm crassus, flaccidus, supra basin longe ramosus, patule puberulus. Folia omania caulina, infera longiuscule petiolata, supera minora breviter petiolata;

laminae tenues, membranaceae, ovatae vel late ovatae, 1.1–2.9 cm longae, 0.6–2.1 cm latae, apice rotundatae, obtusae vel acutiusculae, basi cordato-truncatae vel ro-

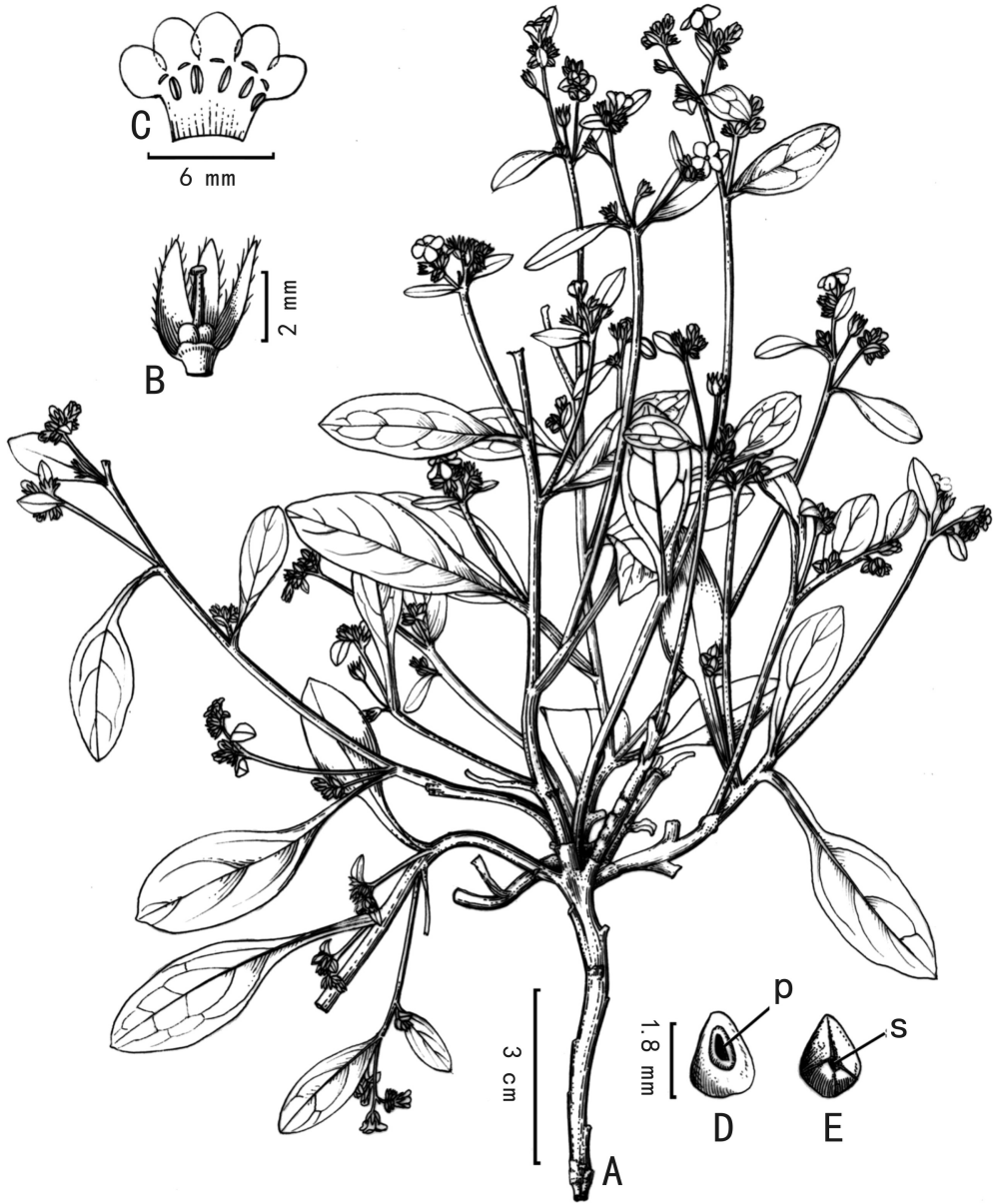


图3 白花微孔草 A. 植株全形; B. 花萼和雌蕊, 2萼片被除去; C. 花冠打开; D. 小坚果, 背面观; E. 同D, 腹面观。p, 背孔; s, 着生面。

Fig. 3 *Microula leucantha* W. T. Wang A. Habit; B. Calyx and pistil, with two sepals removed; C. Corolla cut open and spread out; D. Nutlet, dorsal view; E. The same as D, ventral view. (from holotype) p, Dorsal pit; s, Scar.

tundatae, integrae, utriusque strigulosae, nervis lateralibus 2-3-jugis inconspicuis; petioli 0.3-3 cm longi, sparse puberuli. Drepania axillaria et terminalia, (1-)3-24 cm longa, inferne 3-6-bracteata, 5-19-flora; rhachis sparsissime puberulae vel glabrae; bracteae foliaceae, late ovatae vel ovatae, 0.7-1.6 cm longae; pedicelli graciles, 1.5-10 mm longi, subglabri vel sparse puberuli. Sepala 5, lineari-lanceolata, 1-1.2 mm longa, circ. 0.7 mm lata, extus depresso puberula, intus glabra; corolla alba, fauce

lutea (ex collectoribus), glabra, limbo 5.5 mm in diam. 5-lobato, lobis orbiculari-obovatis 1.8 mm in diam., appendicibus 5 lunatis 0.6 mm longis, tubo 1.2 mm longo; pistillum 0.8 mm longum. Nucula tetrahedralis, laevis, glabra, haud stipitata, facie dorsali deltoideo-ovata 1.3 mm longa 1 mm lata, faciebus ventralibus tribus angulos tres acutos formantibus.

一年生草本。茎近直立, 高约 45 cm, 下部粗 1.8 mm, 柔弱, 基部之上分枝, 被开展短柔毛。叶全

部茎生,下部者具较长柄,上部者较小,具短柄;叶片薄,膜质,卵形或宽卵形,长 1.1~2.9 cm,宽 0.6~2.1 cm,顶端圆形、钝或微尖,基部心状截形或圆形,全缘,两面被糙伏毛,侧脉 2~3 对,不明显;叶柄长 0.3~3 cm,疏被短柔毛。镰状聚伞花序腋生并顶生,长(1~)3~24 cm,下部具 3~6 枚苞片,有 5~19 花;轴有极疏短毛或无毛;苞片叶状,宽卵形或卵形,长 0.7~1.6 cm;花梗细,长 1.5~10 mm,几无毛或疏被短柔毛。萼片 5,条状披针形,长 1~1.2 mm,宽约 0.7 mm,外面被贴伏短柔毛,内面无毛;花冠白色,喉部黄色,檐部直径 5.5 mm,5 裂,裂片圆倒卵形,直径 1.8 mm,附属物 5,新月形,长 0.6 mm,筒长 1.2 mm;雌蕊长 0.8 mm。小坚果四面体形,光滑,无毛,无柄,背面正三角状卵形,长 1.3 mm,宽 1 mm,腹面 3 个形成 3 条锐棱。

Sichuan (四川): Barkam Xian (马尔康县), Zhuoke-ji Zhen (卓克基镇), Lazhu Cun, N side of Mengbi Shan on highway 210 (road between Barkam and Xiaojin). 31°44'8" N, 102°15'25" E; 3 350 m. Mixed forest with *Picea*, *Salix*, *Betula*, *Populus* along stream and adjacent meadows. In deep shade of *Prunus*. Corolla white with yellow center. 14 August 2007. D. E. Boufford, K. Fujikawa, S. L. Kelley, R. H. Ree, B. Xu, J. W. Zhang, T. C. Zhang & W. D. Zhu no. 39586 (**holotype**, PE; isotype, GH, not seen)。

本种与细梗附地菜 (*T. gracilipes* Johnst.) 在亲缘关系上相近,但茎被开展短柔毛,叶卵形或宽卵形,镰状聚伞花序下部有 3~6 枚苞片,萼片条状披针形,花冠白色,喉部黄色,小坚果无柄,无毛而不同。在细梗附地菜,茎被糙伏毛,叶椭圆形或狭卵形,镰状聚伞花序无苞片,萼片卵形,花冠淡蓝色,小坚果具短柄,被短柔毛(王庆瑞, 1989)。

2.2 冕宁附地菜 (变种) 图 2: F

Trigonotis muliensis W. T. Wang var. **strigosa** W. T. Wang, var. nov. (sect. *Trigonotis*) Fig. 2: F

A var. *muliensi* differt caulibus sparse strigosis, drepaniis omnibus a basi ad apicem bracteatis, nucula hauds tipitata glabra.

本变种的茎疏被糙伏毛,所有镰状花序均自基部到顶端具苞片,小坚果无柄,无毛,而与木里附地菜相区别。在木里附地菜,茎被开展短硬毛,镰状花序有的自基部至顶端具苞片,有的无苞片,小坚果有不明短柄,疏被短柔毛(王文采, 1986)。

Sichuan (四川): Mianning Xian (冕宁县), Lamagetou Nature Reserve. Niuchang, upstream from Yele Dam [Yela Xiang (冶勒乡), above Liziping Xiang]. 28°57'36" N, 102°6'13" E; 3 800–4 000 m. Thickets and forest of mixed shrubs (*Salix*, *Lonicera*) in ravine and interspersed meadow-shrub clearings. Ravine in shade. Corolla blue of pink. 9 July 2005. D. E. Boufford, J. H. Chen, K. Fujikawa, S. L. Kelley, R. H. Ree, H. Sun, J. P. Yue, D. C. Zhang & Y. H. Zhang no. 32717 (**holotype**, PE; isotype, GH, not seen)。

3 微孔草属 *Microula* Benth.

3.1 白花微孔草 图 3

Microula leucantha W. T. Wang, sp. nov. [sect. *Schistocaryum* (Franch) W. T. Wang] Fig. 3

Species nova haec arcte affinis *M. sikkimensis* (Clarke) Hemsl. est, a qua caulibus haud setosis, foliis basi cuneatis haud setosis, corolla alba distinguitur.

Herba biennis. Radix 3.5–5.5 cm longa, apice 3–5 mm crassa. Caulis 8–13 cm altus, a basi longe ramosus, ramis basi 2.5–3.5 mm crassis sparse hispidulis. Folia omnia caulina, infera petiolata, supera breviter petiolata vel sessilia; laminae papyraceae, anguste ovatae vel oblongo-ellipticae, 1.2–3.4 cm longae, 0.3–1.5 cm latae, apice acutae vel obtusae, basi cuneatae vel late cuneatae, integrae, utrinque strigulosae, nervis lateralibus 1–2-jugis inconspicuis; petioli usque ad 2 cm longi. Monochasia composita terminalia vel axillaria, dense 8–20-flora; bractae foliaceae, obovatae vel longe ellipticae, 0.5–2 cm longae; pedicelli breves, usque ad 2 mm longi, superne sparse puberuli. Sepala 5, lanceolato-linear-ia, 1.4–2.2 mm longa, 0.5–0.8 mm lata, extus depresso puberula, margine dense albo-ciliata, intus glabra; corolla alba, glabra, limbo 7–8 mm in diam. 5-lobato, lobis suborbicularibus circ. 1.8 mm in diam., appendicibus 5 lunatis 0.6 mm longis, tubo 2.8 mm longo; stamina 5, supra medium tubi corollae inserta, glabra, antheris anguste oblongis 1 mm longis; discus annularis, circ. 0.2 mm altus, margine undulatus; pistillum 2 mm longum. Nucula (non satis matura) triangulari-ovoidea, circ. 1.8 mm longa, 1.7 mm lata, rugosa et sparse tuberculata, dorso supra medium foveola suboblonga circ. 0.6 mm

longa ornata, ventre leviter infra medium cicatrice parva praedita.

二年生草本。根长 3.5~5.5 cm, 顶端粗 3~5 mm。茎高 8~13 cm, 自基部分出长分枝, 枝基部粗 2.5~3.5 mm, 疏被短硬毛。叶均茎生, 下部叶具柄, 上部叶具短柄或无柄; 叶片纸质, 狭卵形或长圆状椭圆形, 长 1.2~3.4 cm, 宽 0.3~1.5 cm, 顶端急尖或钝, 基部楔形或宽楔形, 全缘, 两面被短糙伏毛, 侧脉 1~2 对, 不明显; 叶柄长达 2 cm。复单歧聚伞花序顶生或腋生, 密集, 有 8~20 花; 苞片叶状, 倒卵形或长椭圆形, 长 0.5~2 cm; 花梗短, 长达 2 mm, 上部疏被短柔毛。萼片 5, 披针状条形, 长 1.4~2.2 mm, 宽 0.5~0.8 mm, 外面被贴伏短柔毛, 边缘密被白色缘毛, 内面无毛; 花冠白色, 无毛, 檐部直径 7~8 mm, 5 裂, 裂片近圆形, 直径 1.8 mm, 附属物 5, 新月形, 长 0.6 mm, 筒长 2.8 mm; 雄蕊 5, 着生于花冠筒中部之上, 无毛, 花药狭长圆形, 长 1 mm; 花盘环状, 高约 0.2 mm, 边缘波状; 雌蕊长 2 mm。小坚果(未完全成熟)三角状卵球形, 长约 2 mm, 宽 1.7 mm, 有皱纹和稀疏瘤状突起, 背孔位于背面中部之上, 近长圆形, 长约 0.6 mm, 着生面小, 位于腹面中部之下方。

Xizang (Tibet 西藏): Jiangda Xian (江达县), Ca. 15 km W. of Qingnidong (Qunyido) on road to Changdu (Chamdo) (highway 317). 31°18'10" N, 97°57'34" E; 3 925 m. Meadow. Corolla white. 1 August 2004. D.E. Boufford, J.H. Chen, S.L. Kelley, J. Li, R.H. Ree, H. Sun, J.P. Yue & Y.H. Zhang no. 31518 (**holotype**, PE; **i**-sotype, GH, not seen).

本种在亲缘关系上与微孔草 [*M. sikkimensis* (Clarke) Hemsl.] 甚为接近, 但茎不被刚毛, 叶基部楔形, 无刚毛, 花冠白色而不同。在微孔草, 茎和叶的两面均被刚毛, 叶基部圆形, 花冠紫蓝色(王文采, 1989)。

3.2 细茎微孔草 图 4

Microula filicaulis W. T. Wang, sp. nov. (sect. *Omphalocarpa* W. T. Wang) Fig. 4

Ob nuculam dorso foveola magna nuculae saepe fere aequilonga ornatam, ventre prope apicem cicatrice praeditam species nova haec ad sect. *Omphalocarpam* W. T. Wang pertinet, et a specie unico hujus sectionis, *M. trichocarpa* (Maxim.) Johnst., caulibus decumbentibus brevioribus gracillimis 0.3~0.5 mm crassis glabris, foliis minoribus vulgo glabris, monochasiis 1~3-floris, nucula glabra praeclare differt.

Herba biennis, parva. Radix 2~6 cm longa, apice 2~4 mm crassa. Caules 2~10, decumbentes, 3~12 cm longi, gracillimi, 0.3~0.5 mm crassi, glabri, ramosi. Folia omnia caulina, infera petiolata vel sessilia, laminis papyraceis linearibus-oblongatis obovato-linearibus spathulatis vel anguste oblongis 0.6~1.4 cm longis 1~4 (-6) mm latis apice obtusis vel acutiusculis basi cuneatis integris glabris, petiolis usque ad 7 mm longis glabris raro sparse ciliolatis, folia supera sessilia, laminis late linearibus obovato-oblongis vel ellipticis 3~7 mm longis 1.2~3 mm latis apice acutiusculis integris glabris raro subtus sparsissime strigulosis. Monochasia terminalia et axillaria, 1~3-flora, glabra; pedunculi gracillimi, filiformes, 0.6~2.2 cm longi; bractae longe ellipticae vel ellipticae, 3~5 mm longae; pedicelli 1~14 mm longi. Sepala 5, lineari-lanceolata, circ. 2 mm longa, 0.6 mm lata, utrinque glabra, apice pilis circ. duobus brevibus tecta; corolla dilute caerulea, fauce lutea (ex collectoribus), glabra, limbo 4 mm in diam. 5-lobato, lobis orbiculari-obovatis 1.2~1.4 mm in diam., appendicibus 5 lunatis 0.5 mm longis, tubo 1.8 mm longo; stamina 5, supra medium tubi corollae inserta, glabra, antheris oblongis 0.5 mm longis; pistillum 1 mm longum. Nucula ovoidea, 2~2.5 mm longa, circ. 1.6 mm lata, rugosa, dorso foveola magna anguste oblonga saepe nuculae fere aequilonga, 1.2~2 mm longa ornata, ventre sparse tuberculata, prope apicem cicatrice minuta triangulari praedita; sepala persistentia 5, oblongo-lanceolata, 1.5~2.5 mm longa, 0.7~1 mm lata, glabra, apice pungentia.

二年生草本。根长 2~6 cm, 顶端粗 2~4 mm。茎 2~10 条, 外倾, 长 3~12 cm, 极细, 粗 0.3~0.5 mm, 无毛, 分枝。叶均基生, 下部叶具柄; 叶片纸质, 条状倒披针形, 倒卵状条形, 匙形或狭长圆形, 长 0.6~1.4 cm, 宽 1~4 (~6) mm, 顶端钝或稍尖, 基部楔形, 全缘, 无毛, 叶柄长达 7 mm, 无毛, 偶尔疏被短缘毛; 上部叶无柄; 叶片宽条形, 倒卵状长圆形或椭圆形, 长 3~7 mm, 宽 1.2~3 mm, 顶端稍尖, 全缘, 无毛, 稀下面被少数短糙伏毛。单歧聚伞花序顶生或腋生, 有 1~3 花, 无毛; 花序梗极细, 丝形, 长 0.6~2.2 cm; 苞片长椭圆形, 长 3~5 mm; 花梗长 1~14 mm。萼片 5, 条状披针形, 长约 2 mm, 宽 0.6 mm, 两面无毛, 顶端有约 2 条短毛; 花冠淡蓝色, 喉部黄色, 无毛, 檐部直径 4 mm, 附属物 5, 新月形, 长 0.5 mm,

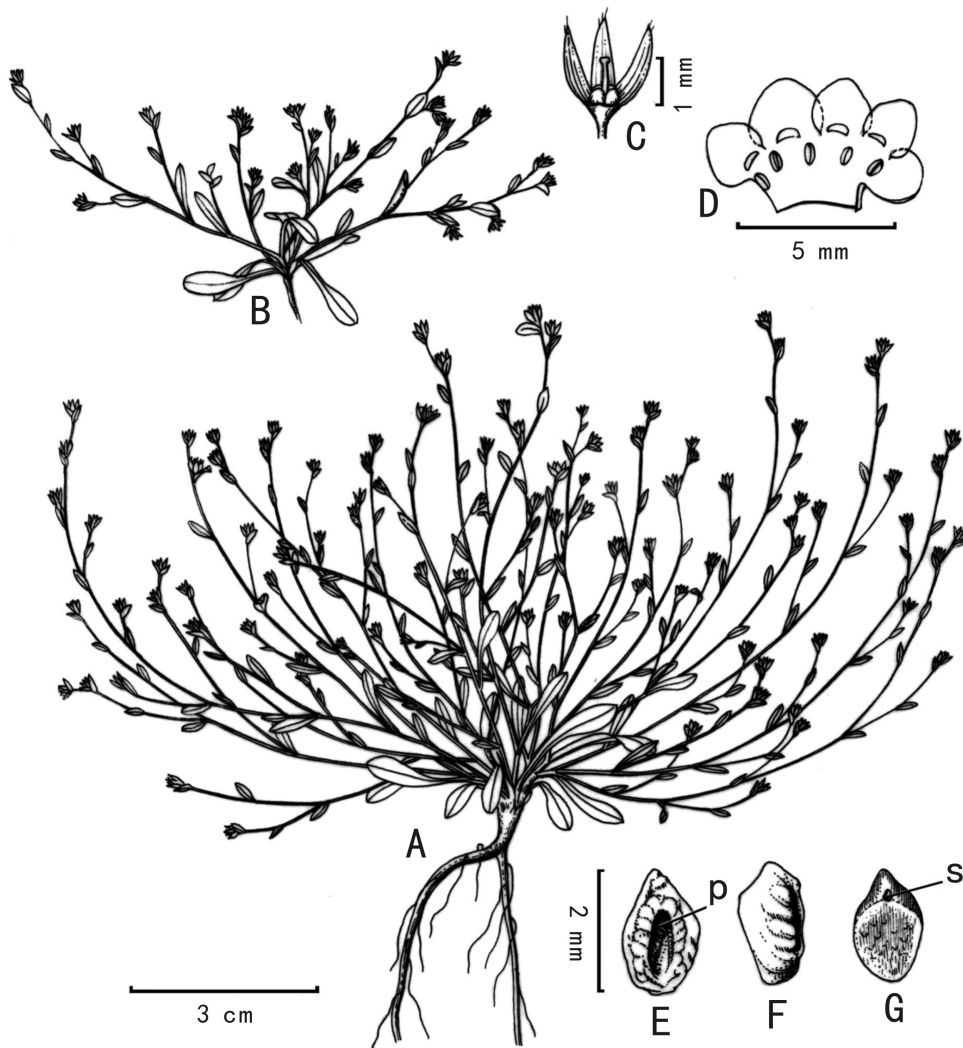


图 4 细茎微孔草 A, B. 二植株全形; C. 花萼和雌蕊, 2 萼片被除去; D. 花冠打开; E. 小坚果, 背面观; F. 同 E, 侧面观; G. 同 E, 腹面观。p, 背孔; s, 着生面。

Fig. 4 *Microula filicaulis* W.T.Wang A, B. Habits of two individuals; C. Calyx and pistil, with two sepals removed; D. Corolla cut open and spread out; E. Nutlet, dorsal view; F. The same as E, lateral view; G. The same as E, ventral view. (from holotype) p, Dorsal pit; s, Scar.

筒长 1.8 mm; 雄蕊 5, 着生于花冠筒中部之上, 无毛, 花药长圆形, 长 0.5 mm; 雌蕊长 1 mm。小坚果卵球形, 长 2~2.5 mm, 宽约 1.6 mm, 有皱纹, 背孔大, 狭长圆形, 常几与小坚果等长, 长 1.2~2 mm, 腹面有稀疏瘤状突起, 着生面小, 三角形, 位于腹面近顶端处; 宿存萼片 5, 长圆状披针形, 长 1.5~2.5 mm, 宽 0.7~1 mm, 无毛, 顶端锐尖。

Sichuan(四川): Hongyuan Xian(红原县), Aba-Maerkang road (highway 302) between kilometer marker 204 and 205, E of junction with highway 209 (road to Hongyuan) and just E of the Chang Jiang Huang He

drainage divide, Chazhen Liangzi. 32° 19' 54" N, 102° 26' 58" E; 3 730-3 760 m. Moist stony slope with shrub thickets and open areas. Open stony slope. Corolla light blue with yellow eye. 20 August 2007. D. E. Boufford, K. Fujikawa, S. L. Kelley, R. H. Ree, H. Sun, B. Xu, J. W. Zhang, T. C. Zhang & W. D. Zhu no. 40060 (**holotype**, PE; isotype, GH, not seen).

本种由于其小坚果的背孔较大, 常与小坚果近等长, 着生面位于腹面近顶端处, 当是长叶微孔草组 (sect. *Omphalocarpa* W. T. Wang) 的成员, 在该组中, 本种以茎外倾, 较短, 极细, 无毛, 叶较小, 通常无

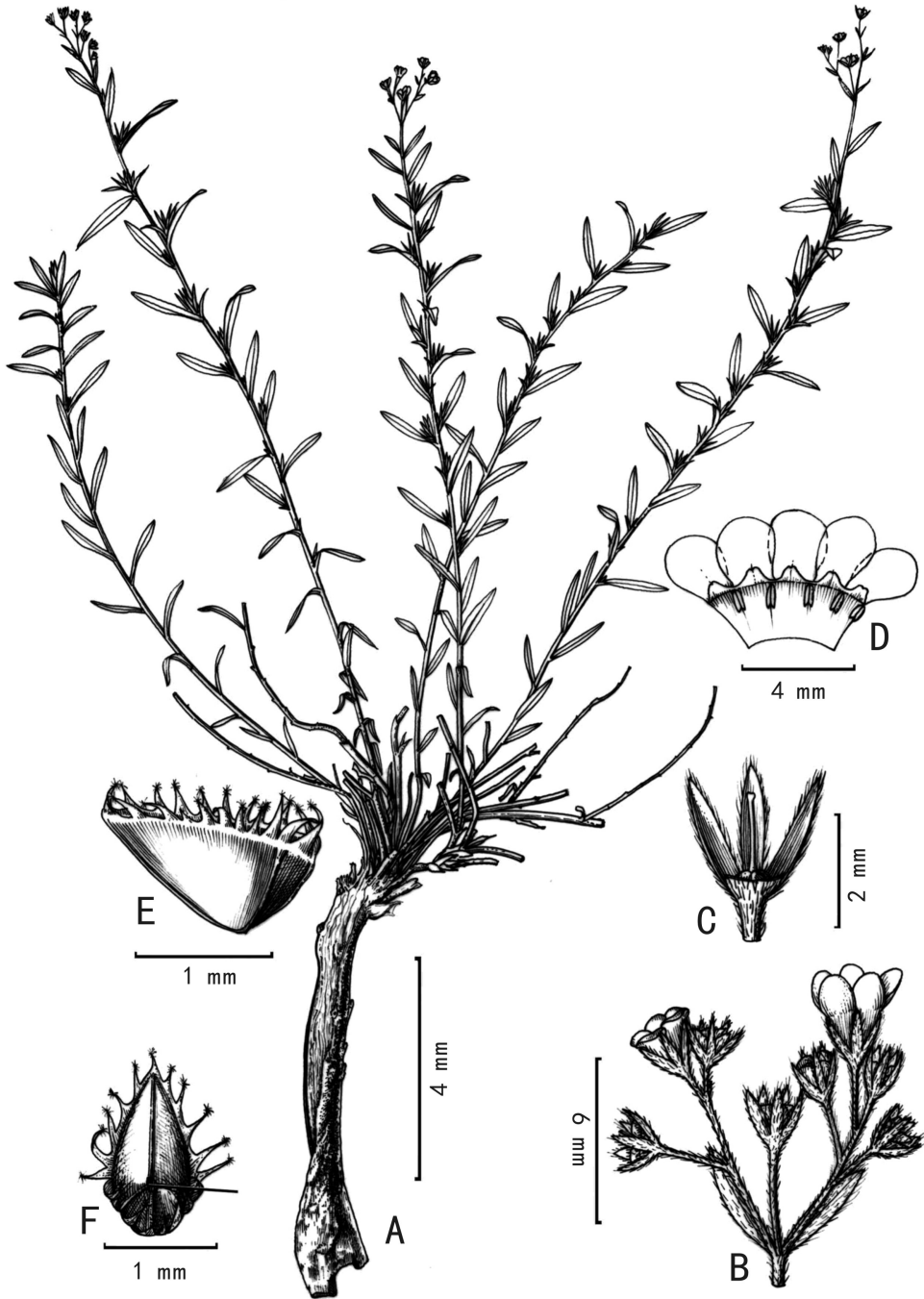


图5 石渠齿缘草 A. 植株全形; B. 二歧聚伞花序; C. 花萼和雌蕊, 2萼片被除去; D. 花冠打开; E. 小坚果, 侧面观; F. 同E, 腹面观。

Fig. 5 *Eritrichium serxuense* W. T. Wang A. Habit; B. Dichasium; C. Calyx and pistil, with two sepals removed; D. Corolla cut open and spread out; E. Nutlet, lateral view; F. The same as E, ventral view (from holotype). s, Scar.

毛, 单歧聚伞花序具1~3花, 小坚果无毛等特征与该组的唯一一种, 长叶微孔草 *M. trichocarpa* (Maxim.) Johnst. 明显区别。在长叶微孔草, 茎直立, 高15~46 cm, 粗1~2 mm, 被刚毛和硬毛, 叶较大, 长达9 cm, 两面被糙毛, 复单歧聚伞花序具密集的多数花, 小坚果有短毛(王文采, 1989)。

4 齿缘草属 *Eritrichium* Schrad.

4.1 石渠齿缘草 图5

Eritrichium serxuense W. T. Wang, sp. nov.
(sect. *Eritrichiastrum* Brand) Fig. 5

Habitu species nova haec *E. gracili* W. T. Wang similis est, a qua caulibus superne breviter ramosis, foliis omnibus caulinis haud basalibus, floribus in dichasium dispositis, nucula dorsiventraliter compressa margine spinis acicularibus majoribus apice glochidiatis ornata valde recedit.

Herba perennis. Radix verticalis, circ. 8 cm longa, 8 mm crassa. Caudex 1.5–2 cm longus. Caules 5–8 fasciculati, 11–17 cm alti, inferne 0.8–1 mm crassi, dense cinereo-viridi-strigulosi, supra medium breviter ramosi. Folia sessilia, linearia, 0.7–1.9 cm longa, 1–2.8 mm lata, apice obtusiuscula, basi cuneata, intergra, utrinque dense cinereo-viridi-strigulosa. Inflorescentiae dichasiales terminales, 6–10 mm longae et latae, 6–9-florae; pedunduli graciles, 5–12 mm longi; bractae lineares, 0.8–5 mm longae; pedicelli 0.5–3 mm longi. Sepala 5, linearia, circ. 2.2 mm longa, 0.4 mm lata, extus strigulosa, intus glabra; corolla caerulea, fauce alba (ex collectoribus), glabra, limbo 5 mm in diam. 5-lobato, lobis late obovatis 2–2.5 mm latis, appendicibus 5 humile trapezoideis 0.5 mm altis, tubo 1.8 mm longo; stamina 5, supra medium tubi corollae inserta, glabra, antheris oblongis 0.5 mm longis; pistillum 2 mm longum. Nucula dorsiventraliter compressa, anguste ovata, circ. 2 mm longa, 1 mm lata, margine utrinsecus 12-spinosa, spinis distinctis acicularibus 0.2–0.3 mm longis majoribus apice minute glochidiatis, ventre infra medium cicatrice praedita.

多年生草本。根垂直, 长约 8 cm, 粗 8 mm。茎基长 1.5–2 cm。茎 5~8 条簇生, 高 11~17 cm, 下部粗 0.8~1 mm, 密被灰绿色短糙伏毛, 中部之上有短分枝。叶无柄, 条形, 长 0.7~1.9 cm, 宽 1~2.8 mm, 顶端微钝, 基部楔形, 全缘, 两面密被灰绿色糙伏毛。二歧聚伞花序顶生, 长和宽均为 6~10 mm, 有 6~9 花; 花序梗细, 长 5~12 mm; 苞片条形, 长 0.8~5 mm; 花梗长 0.5~3 mm。萼片 5, 条形, 长约 2.2 mm, 宽 0.4 mm, 外面被短糙伏毛, 内面无毛; 花冠蓝色, 喉部白色, 无毛, 檐部直径 5 mm, 5 裂, 裂片宽倒卵形, 宽 2~2.5 mm, 附属物 5, 低梯形, 高 0.5 mm, 筒长 1.8 mm; 雄蕊 5, 着生于花冠筒中部之上, 无毛, 花药长圆形, 长 0.5 mm; 雌蕊长 2 mm。小坚果背腹扁, 狭卵形, 长约 2 mm, 宽 1 mm, 边缘每侧有 12 条刺, 刺分生, 针形, 长 0.2~0.3 mm, 较大者顶端有小锚状刺, 着生面位于小坚果腹面中部之下。

Sichuan(四川): Serxu Xian (石渠县), N of the town of Luoxu on road to Shiqu (Serxu), S of Shengbuka pass. 32°28'47" N, 98°1'19" E; 3 380 m. Dry slopes with xerophytic shrubs and thickets along river; rocky soil. Dry slope. Corolla blue, white in center. 30 July 2005. D. E. Boufford, J. H. Chen, K. Fujikawa, S. L. Kelley, R. H. Ree, H. Sun, J. P. Yue, D. C. Zhang & Y. H. Zhang no. 33760 (**holotype**, PE; isotype, GH, not seen)。

本种在体态上与条叶齿缘草 (*E. gracile* W. T. Wang) 相似, 但茎上部有短分枝, 叶全部茎生, 不基生, 花组成二歧聚伞花序, 小坚果背腹扁, 边缘的刺针形, 较大者顶端有锚状刺而不同。在条叶齿缘草, 茎不分枝, 叶基生并茎生, 花组成镰状聚伞花序, 小坚果陀螺状, 不背腹扁, 边缘的刺披针状三角形, 无锚状刺 (廉永善和王镜泉, 1989)。

齿缘草属的花序为镰状聚伞花序 (Bentham & Hooker, 1876; Popov, 1953; 廉永善和王镜泉, 1989), 我国此属 39 种植物 (Zhu et al., 1995) 均具镰状聚伞花序。本种的花序为二歧聚伞花序, 这在齿缘草属系首次报道, 在形态特征方面应是比镰状聚伞花序原始的特征。

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