



Rubus neohunanensis, a new name for a bramble taxon misidentified as *R. hunanensis* in previous Chinese taxonomic literature

XIAN-HUA XIONG¹ & XIN-FEN GAO^{2*}

¹ College of Life Science and Biotechnology, Mianyang Teachers' College, Mianyang, Sichuan 621000, China

✉ xianhua007@126.com; <https://orcid.org/0000-0001-7795-4863>

² CAS Key Laboratory of Mountain Ecological Restoration and Bioresource Utilization, Chengdu Institute of Biology, Chinese Academy of Sciences, Chengdu, Sichuan 610041, China

✉ xfgao@cib.ac.cn; <https://orcid.org/0000-0002-5703-1639>

*Author for correspondence: ✉ xfgao@cib.ac.cn

Rubus buergeri Miquel var. *viridifolius* Handel-Mazzetti and *R. hunanensis* Handel-Mazzetti are actually two distinct taxa. In light of the situation that *R. buergeri* Miquel var. *viridifolius* Handel-Mazzetti has been chronically treated as a synonym and the related plant to which this synonym refers has been considered as a species instead of a variety, and *R. buergeri* var. *viridifolius* and *R. buergeri* are not closely related based on previous molecular study, it might be more appropriate to upgrade *R. buergeri* Miquel var. *viridifolius* Handel-Mazzetti to the specific rank as *R. viridifolius*. However, there is an earlier *R. viridifolius* Piotrowski ex Kulesza. Therefore, a new name, *R. neohunanensis*, is proposed herein.

Introduction

Rubus Linnaeus (1753: 492), a large and taxonomically complex genus, a monophyletic taxon (Wang *et al.* 2016, Carter *et al.* 2019), comprises between 250 and 700 species (Alice *et al.* 2014) distributed in all continents except Antarctica (Alice & Campbell 1999, Alice *et al.* 2014). The plants of this genus are economically significant as fruit crops and ornamentals (Thompson 1997, Alice & Campbell 1999). In China, this genus is represented by about 208 species (139 endemic) classified into eight sections (Lu & Yu 1985, Lu & Boufford 2003).

Rubus hunanensis, the specific epithet of which denoting the type location, Hunan, one of the provinces in central China, was published by Handel-Mazzetti (1933: 497) based on the collection *Handel-Mazzetti 12644*. *Rubus buergeri* Miquel (1867: 36) var. *viridifolius* Handel-Mazzetti (1933: 497) was published based on the collection *Handel-Mazzetti 12289* from southwestern Hunan and *Ching 6061* from northern Guangxi, China. Lu & Yu (1985) and Lu & Boufford (2003) merged *R. hunanensis* with *R. buergeri* var. *viridifolius* and treated it as a species (*R. hunanensis*), and called it “hunan xuan gou zi” in Chinese. However, actually they are two distinct taxa, distinguishing *R. hunanensis* (Fig. 1: A) from *R. buergeri* var. *viridifolius* (Fig. 1: B) in its having leaf blade abaxially pilose or glabrous (vs. abaxially densely tomentose and intermixed thinly pubescent when young, then hairs gradually deciduous), inflorescences with thinly pubescent (and glandular hairs), margin of inner sepals abaxially gray tomentose (vs. inflorescences and abaxial surface of calyx with tomentose-villous hairs), and entire sepals (vs. margin of outer sepals pinnately lacinate, inner sepals usually undivided). The name *R. hunanensis* has been improperly and frequently used in a great number of taxonomic works since the taxonomic treatment of Lu & Yu (1985), such as Zhang (1985), Li & Ye (1989), Zheng (1993), Thompson (1995), Chen (2000), Lu (2003), Nie (2004), Yu *et al.* (2005), Xiong & Yang (2009), Li (2010), Wang *et al.* (2016), Kikuchi *et al.* (2022), Yu *et al.* (2022). Careful examinations and precise comparisons of the type specimens, some other specimens at hand and the protologue show that *R. hunanensis* should be merged with *Rubus lambertianus* Seringe (1825: 567) (Fig. 1: C).

Phylogenetic analyses (Wang *et al.* 2016) indicated that *R. buergeri* var. *viridifolius* (misidentified as *R. hunanensis*) and *R. buergeri* are not closely related, and *R. buergeri* var. *viridifolius* is more closely allied to *R. setchuenensis* Bureau & Franchet (1891: 46) based on the chloroplast phylogeny.

In light of the situation that *R. buergeri* var. *viridifolius* has been chronically treated as a synonym and the related plant to which this synonym refers has been considered as a species instead of a variety, it might be more appropriate to upgrade *R. buergeri* var. *viridifolius* to the specific rank as *R. viridifolius*. Unfortunately, the name *R. viridifolius* was previously published by Kulesza (1930: 123) for a European species. Thus, a new name, *R. neohunanensis*, is proposed herein.

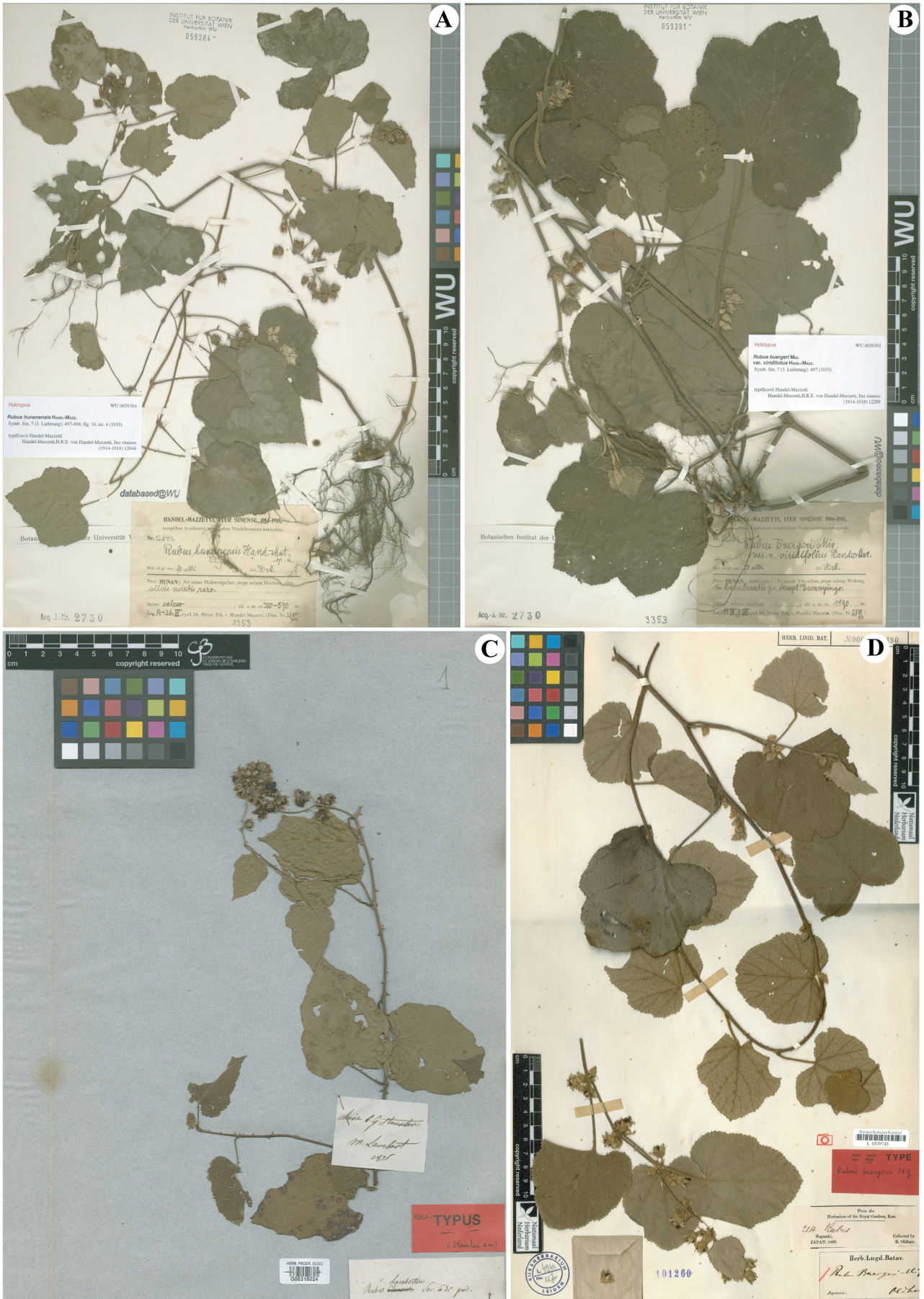


FIGURE 1. Type specimens of the four *Rubus* species. A. *R. hunanensis* (holotype); B. *R. neohunanensis* (holotype); C. *R. lambertianus* (holotype); D. *R. buergeri* (lectotype).

Taxonomic treatment

Rubus neohunanensis X. H. Xiong & X. F. Gao, *nom. nov.* (Fig. 1: B)

≡ *R. buergeri* Miquel (1867: 36) var. *viridifolius* Handel-Mazzetti (1933: 497). Type:—CHINA. Hunan: Wukang [Wugang], Yunshan [Yunshan], Tempel Gwanyin-go [Guanyin Temple], 1190 m, 13 July 1918, *Handel-Mazzetti 12289* (holotype WU!; isotypes A!, E!).

—*R. hunanensis* auct. non Handel-Mazzetti (1933: 497): Lu & Yu (1985: 171), Lu & Boufford (2003: 258).

Etymology:—The specific epithet is derived from the prefix *neo-*, meaning new, and *hunanensis*, the epithet of Handel-Mazzetti (1933), meaning Hunan Province of China.

Distribution:—The species is endemic to China, occurring in Chongqing, Guizhou, Guangxi, Guangdong, Hunan, Hubei, Jiangxi, Fujian, Zhejiang. It was observed to grow in montane valleys, forests and grasslands at elevations from 300 m to 2500 m.

Notes:—*Rubus neohunanensis* is morphologically similar to *R. buergeri* Miquel (1867: 36) (Fig. 1: D) in shrubs low, climbing or prostrate, leaves abaxially tomentose and gradually deciduous. However, *R. neohunanensis* can be distinguished from *R. buergeri* by the following morphological characters: branchlets, petioles and inflorescences thinly pubescent (vs. tomentose-villous); sepals broadly ovate (vs. lanceolate or ovate-lanceolate); outer sepals pinnate-laciniate on margin (vs. only apically lobed); leaf blade relatively larger, 8–15 cm in diam. (vs. 4–11 cm).

Additional specimens examined:—CHINA. Chongqing: Wulong, *C. L. Li et al. 0461* (PE). Guizhou: Qingzhen, *S. W. Teng 1419* (IBSC). Guangxi: Binlong, Miu Shan, *R. C. Ching 6061* (PE). Damiaoshan, *S. Q. Chen 14437* (IBK). Guangdong: Lechang, *Nanling Exped. 4128* (IBSC). Ruyuan, *Z. Huang 44050* (IBSC). Hunan: Sangzhi, *L. Q. Li 128* (PE). Wugang, *Y. F. Deng 0034* (PE). Hubei: Xuan'en, *Y. M. Wang 4807* (PE). Jiangxi: Jiujiang, Mt. Lushan, *X. H. Xiong 1595* (CDBI). Fujian: Taining, *X. L. Hou 90928* (AU). Wuyishan, *Wuyi Exped. 00093* (PE). Zhejiang: Qingyuan, *X. H. Xiong 1955* (CDBI). Wencheng, *X. H. Xiong 1833* (CDBI).

Rubus lambertianus Seringe (1825: 567) (Fig. 1: C)

Type:—CHINA. Without precise locality, *G. L. Staunton s. n.* (holotype G!).

—*R. hunanensis* Handel-Mazzetti (1933: 497), *syn. nov.* Type:—CHINA. Hunan: in Mischwaldern der str. St. um Hsikwangshan [Xikuangshan] bei Hsinhua [Xinhua] Kalk, 350–570 m, 14–26 September 1918, *Handel-Mazzetti 12644* (holotype WU!).

Acknowledgements

This work was funded by the National Natural Science Foundation of China (Grant Nos. 31670192, 31620103902). The authors are grateful to the curators of the following herbaria for providing collections for examination: A, AU, CDBI, E, G, IBK, IBSC, PE, WU.

References

- Alice, L.A. & Campbell, C.S. (1999) Phylogeny of *Rubus* (Rosaceae) based on nuclear ribosomal DNA internal transcribed spacer region sequences. *American Journal of Botany* 86 (1): 81–97.
<https://doi.org/10.2307/2656957>
- Alice, L.A., Goldman, D.H., Macklin, J.A. & Moore, G. (2014) *Rubus* Linnaeus. In: *Flora of North America* Editorial Committee (eds.) *Flora of North America North of Mexico*, vol. 9. Oxford University Press, New York and Oxford, pp. 28–56.
- Bureau, L.E. & Franchet, A.R. (1891) Plantes nouvelles du Thibet et de la Chine occidentale. *Journal de Botanique* 5: 45–51.
- Carter, K.A., Liston, A., Bassil, N.V., Alice, L.A., Bushakra, J.M., Sutherland, B.L., Mockler, T.C., Bryant, D.W. & Hummer, K.E. (2019) Target capture sequencing unravels *Rubus* evolution. *Frontiers in Plant Science* 10: 1615.
<https://doi.org/10.3389/fpls.2019.01615>
- Chen, W.Q. (2000) *Rubus* Linnaeus. In: Wu, D.L. (Ed.) *Flora of Guangdong*, vol. 4. Guangdong Science and Technology Publishing House, Guangzhou, pp. 194–215.
- Handel-Mazzetti, H.R.E. (1933) *Symbolae Sinicae* 7 (3). Julius Springer, Wien, 282 pp.
- Kikuchi, S., Mimura, M., Naruhashi, N., Setsuko, S. & Suzuki, W. (2022) Phylogenetic inferences using nuclear ribosomal ITS and chloroplast sequences provide insights into the biogeographic origins, diversification timescales and trait evolution of *Rubus* in the Japanese Archipelago. *Plant Systematics and Evolution* 308: 20.
<https://doi.org/10.1007/s00606-022-01810-6>

- Kulesza, W. (1930) Krytyczny przegląd jeżyn w zielniku K. Piotrowskiego z r. 1895-96 [Conspectus ruborum regionibus Opatów, Sandomierz et Lwów oriundorum, qui in herbario Casimiri Piotrowski continentur]. *Acta Societatis Botanicorum Poloniae* 7 (2): 115–125.
<https://doi.org/10.5586/asbp.1930.012>
- Li, B.G. (2010) *Rubus* Linnaeus. In: Li, B.G. & Liu, L.H. (Eds.) *Flora of Hunan*, vol. 3. Hunan Science and Technology Press, Changsha, pp. 481–521.
- Li, S.J. & Ye, N.G. (1989) *Rubus* Linnaeus. In: Ye, N.G. (Ed.) *Flora of Guizhou*, vol. 7. Sichuan Ethnic Publishing House, Chengdu, pp. 155–211.
- Linnaeus, C. (1753) *Species Plantarum* 1. Holmiae, Sweden, 560 pp.
- Lu, L.T. (2003) *Rubus* Linnaeus. In: Fu, L.K. & Hong, T. (Eds.) *Higher Plants of China*, vol. 6. Qingdao Publishing House, Qingdao, pp. 582–646.
- Lu, L.T. & Boufford, D.E. (2003) *Rubus* Linnaeus. In: Wu, Z.Y., Raven, P.H. & Hong, D.Y. (Eds.) *Flora of China*, vol. 9. Science Press, Beijing & Missouri Botanical Garden Press, St. Louis, pp. 195–285.
- Lu, L.T. & Yu, T.T. (1985) *Rubus* Linnaeus. In: Yu, T.T. (Ed.) *Flora Reipublicae Popularis Sinicae*, vol. 37. Science Press, Beijing, pp. 10–218.
- Miquel, F.A.W. (1867) Prolusio Florae Japonicae. *Annales Musei Botanici Lugduno-Batavi* 3 (1): 1–66.
- Nie, M.X. (2004) *Rubus* Linnaeus. In: Lai, S.S. & Shan, H.R. (Eds.) *Flora of Jiangxi*, vol. 2. China Science and Technology Press, Beijing, pp. 975–1003.
- Seringe, N.C. (1825) *Rubus* Linnaeus. In: Candolle, A.P. de (Ed.) *Prodromus Systematis Naturalis Regni Vegetabilis*, pars II. Sumptibus Sociorum Treuttel et Würtz, Parisii, pp. 556–568.
- Thompson, M.M. (1995) Chromosome numbers of *Rubus* species at the National Clonal Germplasm Repository. *Hortscience* 30 (7): 1447–1452.
<https://doi.org/10.21273/HORTSCI.30.7.1447>
- Thompson, M.M. (1997) Survey of chromosome numbers in *Rubus* (Rosaceae: Rosoideae). *Annals of the Missouri Botanic Garden* 84: 128–164.
<https://doi.org/10.2307/2399958>
- Wang, Y., Chen, Q., Chen, T., Tang, H.R., Liu, L. & Wang, X.R. (2016) Phylogenetic insights into Chinese *Rubus* (Rosaceae) from multiple chloroplast and nuclear DNAs. *Frontiers in Plant Science* 7: 968.
<https://doi.org/10.3389/fpls.2016.00968>
- Xiong, J.H. & Yang, C.X. (2009) *Rubus* Linnaeus. In: Yang, C.X., Xiong, J.H., Zhong, S.L., Wang, H.Y. & Li, X.Y. (Eds.) *Keys to the Vascular Plants of Chongqing*. Sichuan Science and Technology Publishing House, Chengdu, pp. 313–319.
- Yu, J.J., Fu, J., Fang, Y.P., Xiang, J. & Dong, H.J. (2022) Complete chloroplast genomes of *Rubus* species (Rosaceae) and comparative analysis within the genus. *BMC Genomics* 23: 32.
<https://doi.org/10.1186/s12864-021-08225-6>
- Yu, T.T., Lu, L.T. & Ku, T.C. (2005) *Rubus* Linnaeus. In: Li, S.G. (Ed.) *Flora of Guangxi*, vol. 2. Guangxi Science and Technology Publishing House, Nanning, pp. 356–381.
- Zhang, Y.T. (1985) *Rubus* Linnaeus. In: Lin, L.G. (Ed.) *Flora Fujianica*, vol. 2. Fujian Science and Technology Publishing House, Fuzhou, pp. 293–311.
- Zheng, C.Z. (1993) *Rubus* Linnaeus. In: Wei, Z. & He, Y.Q. (Eds.) *Flora of Zhejiang*, vol. 3. Zhejiang Science and Technology Publishing House, Hangzhou, pp. 192–215.