



Validation of *Ctenitis jinfoshanensis* (Dryopteridaceae) and *Lepisorus simulans* (Polypodiaceae) for fern flora of China

YI-FAN DUAN¹ & LI-BING ZHANG^{2*}

¹ Co-Innovation Center for Sustainable Forestry in Southern China, Nanjing Forestry University and International Cultivar Registration Center for Osmanthus, College of Biology and the Environment, Nanjing Forestry University, Nanjing, Jiangsu 210037, P. R. China.

² Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166-0299, U.S.A. and Chengdu Institute of Biology, Chinese Academy of Sciences, P.O. Box 416, Chengdu, Sichuan 610041, P. R. China.

* Author for correspondence: Libing.Zhang@mobot.org

As the largest finished floristic project, the *Flora of China* documents 31,362 species of vascular plants, of which 2,129 species are ferns and lycophytes (Lin *et al.* 2013, Wu *et al.* 2013, Zhang & Gilbert 2015). While working on a revision of the fern genus *Ctenitis* C.Christensen (Dryopteridaceae; Smith *et al.* 2006, Liu *et al.* 2007, Zhang *et al.* 2013) in the Old World, we happened to find that two unrelated names published in a same article by Ching & Liu (1984), *Ctenitis jinfoshanensis* Ching & Z.Y. Liu and *Lepisorus simulans* Ching & Z.Y. Liu (Polypodiaceae), were not validly published, because two gatherings were designated as types for each name (Art. 40.2; McNeill *et al.* 2012). In fact, the type designations of each name were conducted twice in Latin and Chinese by the authors, respectively, and each time a different gathering was designated as type. Here we validate the two names by choosing one gathering as the type for each name.

Taxonomic Treatment

1. *Ctenitis jinfoshanensis* Ching & Z.Y. Liu, *sp. nov.*

Type:—CHINA. Chongqin, Nanchuan, Jinfoshan, by streamside under forest, 750 m, 28 Apr. 1983, Z. Y. Liu & J. L. Zhang 4049 (holotype PE-00044714!).

Paratype:—CHINA. Chongqin, Nanchuan, Sanquan, Chasha, 750 m, 21 Mar. 1983, Z. Y. Liu & J. L. Zhang 3901 (PE-01863859!).

Two gatherings, Z. Y. Liu & J. L. Zhang 4049 and Z. Y. Liu *et al.* 3901, were designated as “type” in Latin and Chinese, respectively, in the protologue (Ching & Liu 1984). The validating description and diagnosis were previously published by Ching & Liu (1984: 14–15). This species was originally described from Jinfoshan, Nanchuan, belonging to Sichuan before but to Chongqin now. Dong & Christenhusz (2013) recognized it as one of 10 species native to China.

2. *Lepisorus simulans* Ching & Z.Y. Liu, *sp. nov.*

Type:—CHINA. Chongqin, Nanchuan, Jinfoshan, on tree trunks, 1650 m, 12 May 1983, Z.Y. Liu 4096 (holotype PE-00044874!).

Paratype:—CHINA. Chongqin, Nanchuan, Jinfoshan, Z.Y. Liu 4038 (PE, not seen).

Two gatherings, Z. Y. Liu 4096 and Z.Y. Liu 4038, were designated as “type” in Latin and Chinese, respectively, in the protologue (Ching & Liu 1984). Here we designate the former as the holotype. The validating description and diagnosis were previously published by Ching & Liu (1984: 23–24). Qi *et al.* (2013) treated it as a heterotypic synonym of *Lepisorus thunbergianus* (Kaulfuss) Ching.

Acknowledgements

We are grateful to Fred R. Barrie and Ihsan A. Al-Shehbaz for their kind suggestions. We thank a postdoctoral fellowship from the Missouri Botanical Garden and a fellowship from the Priority Academic Program Development of Jiangsu High Education Institutions, Jiangsu Province, China (PAPD) to Y-F D.

References

- Ching, R.-C. & Liu, Z.-Y. (1984) New ferns from Jinfoshan Nanchuan, Sichuan (III). *Bulletin of Botanical Research* 4: 1–35. [Harbin]
- Christensen, C. (1938) Filicinae. In: Verdoorn, F. (Ed.) *Manual of Pteridology*. Nijhoff, The Hague, pp. 522–550.
http://dx.doi.org/10.1007/978-94-017-6111-6_20
- Dong, S.-Y. & Christenhusz, M.J.M. (2013) *Ctenitis*. In: Wu, Z.-Y., Raven, P.H. & Hong, D.-Y. (Eds.) *Flora of China*. Vol. 2–3. Science Press, Beijing & Missouri Botanical Garden Press, St. Louis, pp. 558–561.
- Lin, Y.-X., Zhang, L.-B., Zhang, X.-C., He, Z.-R., Wang, Z.-R., Lu, S.-G., Wu, S.-G., Xing, F.-W., Zhang, G.-M., Liao, W.-B., Xiang, J.-Y., Wang, F.-G., Qi, X.-P., Yan, Y.-H., Ding, M.-Y., Liu, J.-X., Dong, S.-Y., He, H., Zhang, Q.-Y., Moore, S.-J., Wu, Z.-H., Li, Z.-Y., Jin, X.-F., Ding, B.-Y., Liu, Q.-R., Shi, L., Barrington, D.S., Kato, M., Iwatsuki, K., Gilbert, M.G., Hovenkamp, P.H., Nooteboom, H.P., Prado, J., Viane, R., Christenhusz, M.J.M., Yatskievych, G., Ebihara, A., Serizawa, S., Parris, B.S., Ranker, T.A., Sahashi, N., Hooper, E.A., Barcelona, J., Shmakov, A., Nishida, H., Lin, S.-J., Smith, A.R., Funston, A.M., Haufler, C., Turland, N.J., Hanks, J.G., Mickel, J.T., Kadokawa, Y., Pryer, K.M., Taylor, W.C., Johnson, D.M., Alverson, E.R., Metzgar, J.S. & Masuyama, S. (2013) Pteridophytes. In: Wu, Z.-Y., Raven, P.H. & Hong, D.-Y. (Eds.) *Flora of China*. Vol. 2–3. Science Press, Beijing & Missouri Botanical Garden Press, St. Louis, 959 pp.
- Liu, H.-M., Zhang, X.-C., Wang, W., Qiu, Y.-L., & Chen, Z.-D. (2007) Molecular phylogeny of the fern family Dryopteridaceae inferred from chloroplast *rbcL* and *atpB* Genes. *International Journal of Plant Sciences* 168: 1311–1323.
<http://dx.doi.org/10.1086/521710>
- McNeill, J., Barrie, F.R., Buck, W.R., Demoulin, V., Greuter, W., Hawksworth, D.L., Herendeen, P.S., Knapp, S., Marhold, K., Prado, J., Prud'homme van Reine, W.F., Smith, G.F., Wiersema, J.H. & Turland, N.J. (Eds.) (2012) International Code of Nomenclature for algae, fungi, and plants (Melbourne Code): Adopted by the eighteenth International Botanical Congress Melbourne, Australia, July 2011. *Regnum Vegetabile* 154: 1–274. [Koeltz Scientific Books, Königstein]
- Qi, X.-P., Zhang, X.-C., Lin, Y.-X., Gilbert, M.G. & Hovenkamp, P.H. (2013) *Lepisorus*. In: Wu, Z.-Y., Raven, P.H. & Hong, D.-Y. (Eds.) *Flora of China*. Vol. 2–3. Science Press, Beijing & Missouri Botanical Garden Press, St. Louis, pp. 808–824.
- Smith, A.R., Pryer, K.M., Schuettpelz, E., Korall, P., Schneider, H. & Wolf, P.G. (2006) A Classification for Extant Ferns. *Taxon* 55: 705–731.
<http://dx.doi.org/10.2307/25065646>
- Wu, C.-Y., Raven, P.H. & Hong, D.-Y. (Eds.) (2013) *Flora of China*. Vol. 1. Science Press, Beijing & Missouri Botanical Garden Press, St. Louis, 254 pp.
- Zhang, L.-B. & Gilbert, M.G. (2015) Comparison of classifications of vascular plants of China. *Taxon* 64: 17–26.
<http://dx.doi.org/10.12705/641.23>
- Zhang, L.-B., Wu, S.-G., Xiang, J.-Y., Xing, F.-W., He, H., Wang, F.-G., Lu, S.-G., Dong, S.-Y., Barrington, D., Iwatsuki, K., Christenhusz, M.J.M., Mickel, J.T., Kato, M. & Gilbert, M.G. (2013) Dryopteridaceae. In: Wu, Z.-Y., Raven, P.H. & Hong, D.-Y. (Eds.) *Flora of China*. Vol. 2–3. Science Press, Beijing & Missouri Botanical Garden Press, St. Louis, pp. 542–724.