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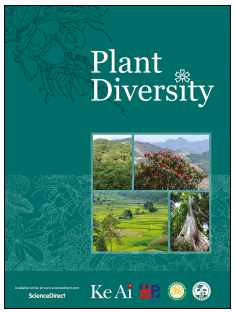

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PII: S2468-2659(17)30001-X

DOI: 10.1016/j.pld.2017.07.001

Reference: PLD 73

To appear in: *Plant Diversity*

Received Date: 8 January 2017

Revised Date: 5 July 2017

Accepted Date: 12 July 2017

Please cite this article as: Ning, H., Yu, J., Gong, X., Bidirectional natural hybridization between sympatric *Ligularia vellerea* and *L. subspicata*, *Plant Diversity* (2017), doi: 10.1016/j.pld.2017.07.001.

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ACCEPTED MANUSCRIPT

Bidirectional natural hybridization between sympatric *Ligularia vellerea* and *L. subspicata*

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Declaration of authorship: Xun Gong conceived and designed the research. Jiaojun Yu collected the experimental materials and analyzed the data. Huai Ning conducted the experiment, analyzed the data and wrote the manuscript. And all authors contributed to writing and approved the manuscript.

Abstract: Natural hybridization has been regarded as a crucial pathway of speciation and provides the raw materials for the evolution of biodiversity. The interspecific natural hybridization of the genus *Ligularia* Cass. is universal and has been considered to be an important factor driving the high diversity of *Ligularia* species in the Hengduan Mountains, China. Although the natural hybridization between *L. vellerea* and *L. subspicata* was reported previously, the direction of hybridization was uncertain due to the limitation of sampling. Thus, in this study, we sampled more individuals and increased two fragments of chloroplast DNA on the basis of the previous study to further verify the natural hybridization between *L. vellerea* and *L. subspicata* and confirm the direction of hybridization. Based on DNA sequences (*atp*B-*rbc*L, *trn*L-*rpl*32, *trn*Q-5'*rps*16, and nuclear ribosomal internal transcribed spacer region) data, we concluded that putative hybrids were primary products of hybridization between *L. vellerea* and *L. subspicata* and the hybridization was bidirectional. Moreover, sympatric *L.*

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