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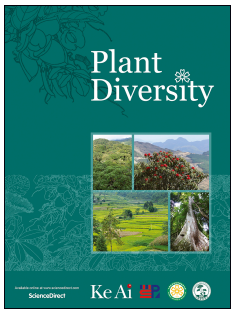

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PII: S2468-2659(17)30027-6

DOI: 10.1016/j.pld.2017.05.002

Reference: PLD 63

To appear in: *Plant Diversity*

Received Date: 11 February 2017

Revised Date: 21 April 2017

Accepted Date: 8 May 2017

Please cite this article as: Xinhui, L., Lin, L., Xu, G., Jianying, X., Heavy collecting induces smaller and deeper Fritillariae Cirrhosae Bulbus in the wild, *Plant Diversity* (2017), doi: 10.1016/j.pld.2017.05.002.

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Heavy collecting induces smaller and deeper Fritillariae Cirrhosae Bulbus in the wild

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Abstract

Fritillariae Cirrhosae Bulbus is a well-known traditional Chine medicinal herb. However, the demand for this herb is leading to over-collection and its decline in the wild. This study aims to investigate the ecological conditions of *Fritillaria cirrhosa* under the influence of human disturbance, biotic species interactions and climatic conditions. We established a total of 78 plots at 14 sites of *F. cirrhosa* in its distribution center, the Hengduan Mountains area. At each site, we estimated the abundance of *F. cirrhosa* at different distances from roads. The diameter and height of *F. cirrhosa* fruit and bulbs were measured and compared to underground bulb depth. We then analyzed the effects of environmental conditions and human disturbance on the abundance of *F. cirrhosa* using variance partitioning. We found that (1) abundance of *F. cirrhosa* and their underground bulb depth showed a significant linear increase with the distance from the main road; (2) the diameter / height of fruits and the

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