

Reviewer Report

Title: The chromosome-scale genome of *Magnolia sinica* (Magnoliaceae) provides insights into the conservation of plant species with extremely small populations (PSESP)

Version: Original Submission **Date: 4/20/2023**

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Reviewer Comments to Author:

In this paper, authors reported the first genome of a critically endangered species *Magnolia sinica*. This large tree is widely known as "giant pandas in plants" due to its extremely rare individuals in wild, thus is under the first-class state protection in China. Here, authors obtained a high-quality chromosome-level genome assembly via combining Illumina, PacBio and Hi-C sequencing data. Authors mainly focus on the population resequencing, showing a high genetic diversity of *M. sinica* population but a low genetic differentiation among subpopulations. Authors provide some explanations for each result. I wonder if author can discuss the potential connections between these two observed phenomena. In addition, authors detected many deleterious mutations which were mostly related to lipids. Authors didn't mention this result in the DISCUSSION part. Are these deleterious mutations related to lipids results of or reasons for the endangered status of this species? Authors may provide further discussions or even conclusive evidences to clearly elucidate point of view this issue.

Minor concerns:

1. Introduction part: authors should point out what's the major limitations of the current protection of Huagaimu. And how a reference genome helps to overcome such limitations.
2. *Magnolia sinica* was first occurred in Line 79 in the main text and it should be written as *M. sinica* afterwards.
3. Line 206: "integrated annotated protein" should be "integrated annotated proteins".
4. Line 222-224: References were needed here.
5. Line 253: "Ŵ" should be "ŵ".
6. Fig. 2c, there shouldn't be a "_" within species name. And, bootstrap values should be indicated in the phylogenetic tree. In addition, Fig. 2 contained different results with no obvious connections. I do recommend to layout the content of this figure, focusing on one particular theme.
7. No title was found in Fig. 3. Authors should give a strong title that reflects the major finding of this figure.

Methods

Are the methods appropriate to the aims of the study, are they well described, and are necessary controls included? Choose an item.

Conclusions

Are the conclusions adequately supported by the data shown? Choose an item.

Reporting Standards

Does the manuscript adhere to the journal's guidelines on [minimum standards of reporting?](#) Choose an item.

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Statistics

Are you able to assess all statistics in the manuscript, including the appropriateness of statistical tests used? Choose an item.

Quality of Written English

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Declaration of Competing Interests

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