



I had the pleasure of reviewing the thesis, which provides an extensive taxonomic revision of various sections of the *Aspergillus* genus. This revision employs modern species delimitation methods, notably the Multispecies coalescent model and multilocus datasets. The fact that most of the data acquired by the author have been published simplified my task as the evaluator, leaving no doubt that the thesis is well-suited for a successful defense.

The thesis is structured into several chapters, each corresponding to different taxonomic groups as they appear in their respective papers. It uses modern species delimitation methods to provide a more nuanced understanding of *Aspergillus* taxonomy. Based on extensive sampling across various *Aspergillus* sections, the thesis also has clear practical implications. Its findings have significant implications in areas such as medical mycology, food safety, and biotechnology. The thesis challenges traditional taxonomic classifications and introduces new perspectives, particularly regarding interspecific variability and hybridization.

I appreciated the holistic approach taken in the thesis, which involves the integration of genetic, phenotypic, and environmental data to enhance the robustness of taxonomic classifications. The thesis also emphasizes the utility of phylogenetic methods in enhancing taxonomic stability and advocates for an exploratory, multi-method approach in taxonomy.

However, there are several aspects I found missing or insufficiently elaborated and would like to hear more about during the PhD defense:

1. **Species Concepts:** I would like to see a deeper insight into the applicability of various species concepts. After reading the introduction and the Results & Discussion section, I was left wondering about the extent to which the author considers the debate about the real existence of species important, or whether a purely taxonomical view prevails.
2. **Species-Delimitation Methods:** While I appreciate the use of multiple species-delimitation methods, I am curious about the author's opinion on the usage and applicability of various methods, given their assumptions. The fundamentals of these methods are closely linked to the biological properties of the investigated species. For instance, some rely on the assumption of recombination and hence assume sexual reproduction. Others are based on coalescent processes versus interspecific branching processes, which have mathematically tractable differences in distributions of nodes on phylogenetic trees. The author advocated the usage of multiple such methods, but these aspects have not been debated to a sufficient extent. I would like to hear a more complex opinion about them from the author.

3. **Reproduction and Its Impact on Phylogenies:** The assumption of whether sexual or asexual reproduction prevails in any given group is crucial for the application of these methods. As I am not an expert on fungi, I would like the author to provide more extensive information about the types of reproduction in the taxon and how the putatively different levels of sexual vs. asexual reproduction affect the multilocus phylogenies within the group. The role of recombination, as discussed by Jean Francois Flot and in the paper "Biological Species Are Universal across Life's Domains" by Bobay & Ochman (GBE 2017), is notably relevant but not sufficiently addressed in the thesis. This issue has important biological consequences and should be more profoundly debated, especially regarding the author's interpretation of "recombination" and its potential conflict among loci.

Overall, I consider this thesis successful and recommend it for defense, provided that the author addresses and clarifies the aforementioned topics

Best regards,

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