

Opponent review for bachelor thesis entitled "Exploring the relationship between species richness and intraspecific trait variability" by Hana Dvořáková

The submitted thesis consists of a literature review on biodiversity research with an emphasis on the recently acknowledged importance of intraspecific variability. This review forms background for a classical biodiversity–functioning experiment. Besides the traditionally measured and calculated explaining variables (mean values of functional traits, number of species in the mixture and biodiversity effects), both inter- and intra-specific variability in measured traits were calculated. The main findings include support for niche theory of species co-existence, as the observed relationship between the ratio of intraspecific variability to total variability and number of species in a community was negative. This indicates narrowing of individual species' niches in response to increased competition for resources.

In the introductory section, the author provides thorough review on biodiversity–ecosystem functioning research, development of functional trait concept and theories of species co-existence and finally on intraspecific trait variability. It is a nice piece of work, the text is comprehensible and fluent and this part is of overall very good quality.

My only concern here is that in some parts there are lacking appropriate citations. E.g. on p. 3 about the Jena experiment: there is more than half a page summarizing results of several studies based in Jena and not a single citation (there is one at the very end of the whole part about the Jena experiment). It is a good practice to put citation after every single study you mention. Also it is better to put a citation at the beginning of a paragraph, when you start talking about something, rather than put a citation at the end of a long paragraph (e.g. when mentioning the diversity effects and their calculation).

Concerning the Methods section, I have a few questions.

Were the pots weeded to reach the target density or you just used the germination ratio and did not check the actual density?

How many pots were eventually sampled? Did I understand correctly that you used all 2 – 4 species mixtures and reduced the number of 5 and 6 species mixtures only?

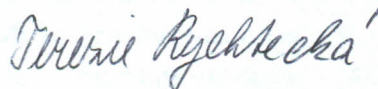
The Results section is clear and well structured; also Tables with statistical summaries and graphical outputs are convenient. In the last Discussion section, results are put in context with ecological theory and published studies and several explanations for observed trend are suggested. I have just one question.

With respect to few significant results using intraspecific trait variability, the author suggests that this may be caused by the choice of a single seed supplier. Could you think of another possibilities causing low intraspecific trait variability in your experimental species? And another question (from someone who has actually not worked with trait variability): in my view, the fact that regressions using intraspecific variability were not significant does not have to necessarily mean that the variability *per se* is low, but that it is constant in all communities? (the actual values of variabilities are not presented anywhere in the thesis, always as ratios, so I was just wondering about this...)

I also have to say that the first two points in Conclusions are wrong (they say just the opposite to your results and discussion).

In general, the whole thesis is of outstanding quality and it shows the ability of the author to manage quite extensive experiment, process the results (in cooperation with colleagues) and write her results in the form of a high quality report/ thesis. I also appreciate the good level of English (considering the fact this is a bachelor thesis). In short, Hana in many respects exceeded the requirements for bachelor thesis at our faculty and I would like to congratulate her for a good job. I suggest evaluating her thesis as excellent (výborně in Czech).

Terezie Rychtecká



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Notes:

Anotation: correctly should be „experiment held in glasshouse“

Introduction: throughout: the word “problematic” should be used as an adjective only, it does not mean the Czech noun „problematika“ as which you are using it several times, perhaps “issue” would be better

throughout the whole thesis: biodiversity–ecosystem functioning and similar structures, use a dash (–) not a hyphen (-), for native speakers it really makes a difference

Fig.10 Y axis should read selection effect (not selectivity effect)