

## Comments on Jan Roleček's habilitation theses

I have been following the academic work of Jan Roleček (hereafter Candidate) for a long time due to our overlapping interests. I have read many of his publications in highly ranked international scientific journals. Overall, he is an internationally recognised researcher in his field.

The submitted habilitation theses have proved to be high quality and interesting reading for me. The publications mentioned above provide excellent evidence of the credibility and international acceptance of the results. On the basis of this work, I consider that Candidate meets all the requirements (which I unfortunately know little about) and is suitable for habilitation.

In what follows, I will try to evaluate the work I have read in more detail and from my own point of view. First, a subjective comment. The Hungarian occurrences of the studied peri-Carpathian forest-steppe meadows are rather understudied. Hungarian vegetation research tends to perceive grasslands with a combination of steppe, meadow, forest and woodland species as "atypical" or „transitional” and is currently lacking in their proper description. As a consequence, I have learned from the work of the Candidate many interesting new aspects for understanding the vegetation evolution of my own country.

The description of the spatial variations and subtypes of the vegetation type studied is correct. For me, who has seen it only a few times and places, it turned out to be really informative. That said, I think it's a bit lengthy if it's published as a book, it needs some shortening.

The attached literature list will be a very valuable resource for me in the future, providing me with reading material on forest-steppe topics for a long time. I have enjoyed reading the detailed and careful literature summaries that have been compiled for me. It was instructive to observe how researchers from different backgrounds came to different conclusions about the same phenomenon at different times. I believe that the continued presence of grasslands and woody habitats with open crown layer during the Holocene in the region can be considered proven by now.

With regard to the factors causing the extreme species richness of the grasslands studied, the reviewed literature sources are essentially in agreement, and the Candidate's research supports them. Primarily biogeographical and historical arguments are presented. It would be interesting to me how homogeneous individual stands are in terms of species richness within a region, and if there are differences, what might cause them. (abiotic patterns, long term history or fine scale disturbance patterns). It would be instructive to separate the effects of regional species pool determined by bedrock, climate and species distribution, local edaphic factors, and disturbance systems, how top-down and bottom-up regulation affects the species richness patterns.

If the ratio of the number or abundance of disturbance-tolerant species were plotted in forest-steppe meadow releves as a function of the total number of species in the releves, can we expect a positive or negative correlation? Does the colonization of disturbance tolerant species simply increase the total number of species or decrease it due to the simultaneous decline of low-disturbance species?

Another interesting question is the effect of biogeographical scale spatial and temporal propagation capacity of species and the speed of local, intra-landscape and short-term propagation on the pattern of species richness. In the case of species with a disjunct distribution, is the limited propagation capacity or the impenetrability of the surrounding landscape decisive?

I would like to raise the role of regional continuity of forests. In the drier interior areas of the Carpathian basin, many species occurring in the peri-Carpathian grasslands behave more or less as obligate forest species. So, in the drier and warmer periods, the remaining patches of forest could be a refuge for them.

With my comments above, I do not want to question the indisputable values of the thesis, because it is not possible, but rather to use the opportunity to raise the questions that arise in my mind while reading. At least 10 locations in Pannonia came to mind, the history of which I would like to talk to the Candidate.

Overall, congratulations on the valuable and thought-provoking theses and wish you every success in continuing your research.

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