

Evaluation of the Ph.D. thesis of Mgr. Karel Boublik “Vegetation of fir- and calcicolous beech forests of the Czech Republic”

Overall assessment of the thesis

The four presented papers contribute to the knowledge of insufficiently understood forest vegetation types. Primary field data collected by the author was combined with already existing data from the National Phytosociological Database to present for the first time a comprehensive data set for fir and calcicolous beech forests in the Czech Republic. For the composition of the fir forests, small-scale studies at the regional level provided the necessary pre-condition for a synthesis at the national level. The classification of the relevés at the regional level was carried out subjectively and non-formalized. However the national vegetation classification based on the Cocktail method was performed formalized, and supervised by the researcher (combination of sociological groups using logical operators; dominance of formative trees included). These results are replicable, correctable and expandable. The main environmental gradients for the floristic variability of the examined communities were revealed (both for the field research and for the ecological indicator values for species). The several statistical tests incorporated the latest methodology and deliver scientifically valuable results as an important contribution to the vegetation survey of the Czech Republic in a European context. Due to these measurable achievements of filling apparent gaps, I consider that the thesis is appropriate for defense and that it reaches the level sufficient for the Ph.D. degree.

Questions to the defendant

1. The crucial features of characteristic species combination (CSC; e.g., a minimum number or minimum proportion of specific *Piceion-/Piceetalia* species in the field and moss layer) for the delimitation of *Abietetum* vegetation types are not explicitly denoted. Rather the proportion of fir in the tree layer is quantified. This seems quite surprising because the CSC is much more decisive for the identification of *Abietetum* types than the proportion of fir. This conifer has a wide ecological amplitude and a broad sociological dispersion (far beyond *Abietetum* forests), the tree layer might have been modified by utilization, and a stable threshold value for the dominance of a main tree species obviously can not be defined universally (see item 3). So the question is: Why is the “shaky” dominance of fir emphasized as a criterion for data set selection rather than describing an explicit quotient for species groups that represent niches specifically within fir forests?
2. The diagnostically relevant species groups for the typus delimitation among the four different *Abietetum* associations are presented in table 1 of BOUBLIK (2007) and in table 2 of BOUBLIK (submitted to Biologia). Unfortunately the highlighted groups differ considerably and the named diagnostic species of *Luzulo-Abietetum* deviate completely. So shouldn't it be possible and, in fact, necessary to declare local, regional/supraregional diagnostic species (species or varieties that are specific to certain geographies or ecological regions) and to present all decisive identification features or “fingerprints” of the syntaxa (e.g., sociological groups, individual CSC, characteristic ecological species groups) in the tables?
3. A further conspicuous amendment between the abovementioned studies (and following BOUBLIK & ZELENY 2007 as well) concerns the increase in fir cover in the tree layer from 25% to 30% to 50% as the basic criterion for selection of *Abietetum* forests over other forest vegetation types. What was the objective reason for the doubling of the starting value?
4. In view of the strong decline of fir at the national and Central European level (BOUBLIK & ZELENY 2007), it would have been very valuable to identify actual spruce and pine stands (largely without fir) that are replacing potentially natural fir forests. Restoration of *Abietetum* primary stands on unstable slopes prone to erosion as well as on gleys or histosols should be a crucial silvicultural task in times of climate change. Site ecological data and species indicator groups should provide suitable foundation for making restoration decisions. Is it possible that the applied data set selection, particularly the emphasis on fir dominance, has directed attention away from this key issue to a side issue (“*Abietetum* stands on non-waterlogged soils are of semi-natural origin; fir can sometimes appear as a pioneer”)?

Further technical comments

The dissertation would be improved by including the following:

- A systematically presented analysis of the altitudinal and geographical variability of the associations within their range in the Czech Republic based on sociological and chorological groups
- A discussion of the difficulties of clearly distinguishing the fir forests from similar forest communities (only discussed for the calcicolous beech forests)
- A discussion of the conservation status and future prospects of both natural stands and secondary stands



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