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*"Changing Gradients in Vegetation  
and the Environment"*

**ABSTRACT**



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However, recent studies have attempted in reconciling both theories. In this study, we aim at evaluating the respective importance of niche partitioning and neutrality in patterning species assemblages along a chronosequence of forest patches within a metacommunity framework. We recorded the presence-absence of vascular plant species in 355 forest patches, distributed among 4 age classes and 9 metacommunities of increasing fragmentation intensity. For each age class, we compared species richness, species density, species-area curves, beta diversity indices and rank-frequency curves for all species and for forest herb species separately. The results were interpreted using correlations between these diversity metrics and local, landscape, historical and spatial variables. We found that dispersal limitation was influential mainly in recent forest patches, whilst niche partitioning was more important in old patches. We conclude that both neutral and niche processes occurred along the chronosequence, but that the latter tended to overcome the former as the forest succession proceeds. However, forest management-associated disturbances can relax niche processes and make neutral processes more important.



ID 1836

Janecek, S., V. Lantia, J. Klimesova, and J. Dolezal. "Effect of abandonment and plant classification on carbohydrate reserves of meadow plants." [Janecek will present; Institute of Botany, Trebon, 37982, Czech Republic; tel +420721678651, janecek@butbn.cas.cz].

We studied the effect of cessation of management on carbohydrate reserves of herbs in meadow of different environmental conditions and plant composition. We reported storage carbohydrates and seasonal changes for 40 plant species. We asked whether there are differences in responses of carbohydrate reserves in forbs versus graminoids and in plants storing starch versus plants storing osmotic active carbohydrates. We analysed below-ground organs before the meadows were mown and at the end of the vegetation season in mown versus recently abandoned plots. Whereas starch and fructans were widely distributed, raffinose family oligosaccharides were the main carbohydrate reserves of the Lamiaceae family and *Plantago lanceolata*. Properties of carbohydrate reserves differed between forbs and graminoids but no difference was found between plants storing starch versus osmotic active carbohydrates. Graminoids had lower carbohydrate concentrations than forbs. We observed a positive effect of mowing on carbohydrate concentrations of graminoids in the dry calcium-rich meadow and their higher seasonal fluctuations in the acid wet meadow suggesting that local factors and/or species pool affect carbohydrate reserves. Despite local conditions graminoids represent a distinct functional group in meadows from the point of view of their storage economy. We suggest that except growth also storage processes should be considered for understanding the functioning of meadow plant communities.



ID 1777

Janišová M., K. Hegedúšová, and I. Škodová. "Patterns of grassland diversity in relation to environmental gradients and management". [Janišová will present; Institute of Botany, Slovak Academy of Sciences, Dúbravská cesta 9, 845 23 Bratislava, Slovak Republic; [monika.janisova@savba.sk](mailto:monika.janisova@savba.sk)].

In most semi-natural grasslands the main environmental gradients responsible for the vegetation variation coincide with moisture, content of nutrients and soil reaction. In our contribution, species richness and  $\beta$ -diversity were studied along these gradients using data sets originating from four distinct regions of Slovakia (Biele Karpaty Mts., Poľana Mts., Starohorské vrchy Mts. and Borská nížina Lowland) differing in their geographical location, altitudinal range, geological bedrock and variety of semi-natural grassland types. The environmental conditions of individual relevés were expressed by Ellenberg indicator values. In two of the studied regions management practices applied were recorded during the phytosociological sampling. The main aim was to identify regional patterns of grassland diversity by answering the following questions: i) Do most diverse grassland communities occur at the same position on all moisture, nutrient and soil reaction gradients irrespectively from the region? ii) What management practices support high species diversity in the studied grasslands? iii) Is the relation between species richness and  $\beta$ -diversity the same in all studied regions? Concerning species richness, the most diverse were semi-dry grasslands on base-rich soils with lower nutrient supply. The species richness decreased toward wet, nutrient-rich and acidic habitat conditions. The patterns of species richness were similar for all studied regions with only slight shift in position of individual peaks. Biele Karpaty Mts. had the highest and Borská nížina Lowland the lowest species richness at any position along all studied gradients. Concerning  $\beta$ -diversity, the differences between the regions were more pronounced, so that only restricted general traits could be indicated: grasslands at intermediate position on the moisture gradient and those on base-poor soils showed the lowest values. Mowing was in general the most important factor increasing species richness. The positive effect of grazing on species richness was more pronounced in the Poľana Mts. than in the Biele Karpaty Mts.  $\beta$ -diversity seemed to be inversely related to species richness: it was the highest in the region with the lowest species richness and the lowest in the region with most species-rich grasslands.



ID 2152

Jardel-Peláez, E.-J., E. Ezcurra, R. Cuevas-Guzmán, A.L. Santiago-Pérez, S. Vargas-Jaramillo, C. Cortés-Montaño, F. Castillo-Navarro, P. Llamas-Casillas, and J.E. Morfín-Ríos. "Landscape patterns and dynamics of subtropical montane forests along soil-landform and disturbance gradients in the Sierra de Manantlán, Western Mexico". [Jardel will present; Instituto Manantlán de Ecología y Conservación de la Biodiversidad, Universidad de Guadalaajara-CUCSUR, Autlán, Jalisco, México; tel 317-3825010 ext 7168, [ejardel@cucsur.udg.mx](mailto:ejardel@cucsur.udg.mx)].