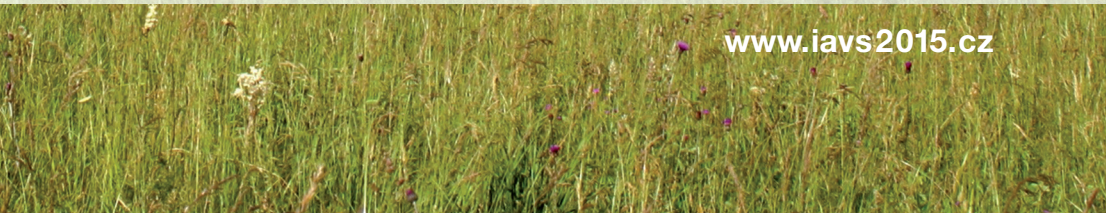
58th Annual Symposium of the International Association for Vegetation Science:

Understanding broad-scale vegetation patterns

19 – 24 July 2015, Brno, Czech Republic

Abstracts



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Edited by
Milan Chytrý, David Zelený & Eva Hettenbergerová

Masaryk University, Brno, 2015

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Dedicated to the memory of J. Bastow Wilson (1944–2015)

Venanzoni R.

Poster D-39

The SUN LIFE+ Project: a strategy for monitoring N2000 plant species and habitats in Umbria (Central Italy)

Session: Vegetation science serving nature conservation

Daniela Gigante [1], Fabio Maneli [1], Paolo Papa [2], Raoul Segatori [2] & Roberto Venanzoni [1,*]

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The SUN LIFE 13 NAT/IT/000371 Project is an emblematic example in Europe of the possibility of using public funds for nature management and conservation, while fulfilling obligations from N2000 EU legislation. Its area of application is Umbria Region (Central Italy, 845,600 ha), where N2000 is represented by 102 sites (135,000 ha), hosting 41 Annex I Habitats and 8 Annex II-IV-V plant species from the 92/43/EEC Directive. In 2007 the Region developed Management Plans for all its N2000 Sites, including maps of species and habitats (scale 1:10,000). This huge data set, together with the georeferenced phytosociological relevés stored in the national DB VegItaly, represents the starting point for developing a strategy to manage N2000 in Umbria and for implementing a monitoring plan for species and habitats. The project is currently ongoing and will end in 2017. A suitable set of indicators is under construction, aimed at evaluating the "favourable conservation state" of species (S) and habitats (H). A preliminary draft has been developed, formed by two main groups of indicators: quantitative (H1 – habitat's surface, based on phytosociological mapping; H2 – habitat's fragmentation, based on GIS processing tools; S1 – species' surface, based on floristic mapping; S2 – population's demography) and qualitative (S3 – presence of alien taxa; H3 – plant community's floristic coherence with the reference habitats; H4 – habitat's structure/physiognomy; H5 – dynamic stage, based on specific diagnostic species with reference to the Vegetation Series). Potential and actual pressures and threats will be tackled at the regional and site-scale, to properly focus on the actual trends. The methodological protocol will be tested on a group of S and H, prioritized on the base of the occurrence of (i) fast dynamic processes, (ii) strong environmental changes, (iii) very restricted/fragmented distribution. One of the most important targets of the SUN LIFE Project is to address the regional policy and to help implementing a Prioritized Action Framework based on the peculiar conservation priorities at the regional level, in order to orient other financial tools (e.g. the Rural Development Funds). The added value of the project is represented by the challenge to profit from the available funding opportunities to conserve and manage biodiversity inside N2000, and to integrate these with complementary national and regional resources, assuring the good functioning of the N2000 network.

Vetaas O.R.

Oral presentation

Phylogenetic niche continuum: an intercontinental comparison of woody genera along temperature gradients

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Phylogenetic niche conservatism predicts that closely related species will have similar distributions along important environmental gradients, including temperature gradients. We test the conjecture that woody-plant genera have temperature optima (i.e. maximum congeneric species) towards the centre of the temperature range of a genus. Then we test if these genera have a similar order along temperature gradients from Andes (Peru), Himalaya (Nepal), and China, which is consistent with phylogenetic niche conservatism, whereas strong differences among regions indicates niche divergence and significant plasticity of species and genera. Elevation and temperature range data of all species belonging to 15 monophyletic genera of woody plants common to all three study regions were compiled. Variation in numbers of congeneric species along the temperature gradient represents a comparative generic order. This order along the temperature gradient was established by means of ordination and temperature average (weighted on number of species in the genera) within each region. We compared this order among regions by simple correlations, scatterplots of ordination scores and optima temperature based on weighted average temperature. Most genera respond in a bell-shaped or curvilinear pattern with the maximum number of congeneric species in the centre of the temperature interval, which resembles the variation of species abundance along extensive gradients. Some curvilinear responses and monotonic increases were found in the Andes, but clear bi-modal or flat uniform responses were absent. The orders of generic optima along the temperature gradient in each region were highly correlated ($r > 0.8$), verified for both ordination scores and weighted average of optima temperature. The analyses verify the conjecture that maximum numbers of congeneric species are found towards the centre of the temperature range of the genus. This may be due to inherent temperature tolerances and that newly evolving species do not disperse far away from their ancestors, but the consistency of the order of disjunct genera along temperature gradients between continents must relate to inherent phylogenetically conserved traits. Hence temperature tolerances within a clade are conserved over time and space. This demonstrates that continuum theory in combination with niche conservatism applies to higher taxonomic levels, such as genera, and may represent a macro-ecological tool.

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