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Interactions between animals, plant species and vegetation – editorial

PHYTOCOENOLOGIA, the International Journal of Vegetation Ecology and one of the publication organs of the International Association of Vegetation Science (IAVS), presents here a selection of contributions from the 44th IAVS Congress in Freising-Weihenstephan, from July 29 to August 4, 2001. The main topic of the meeting was "Vegetation and Ecosystem Functions", including sections dealing with interactions between animals, plant species and vegetation. All participants who contributed to these sections with a plenary lecture, an oral presentation or a poster were invited to submit their papers for publication here.

This research area incorporates a broad range of different approaches (methodological, theoretical, experimental and applied) and an enormous diversity of animal species and their interactions with plant species and vegetation. For this reason, and owing to the great heterogeneity of subjects presented in the various sections, it was clearly impossible to focus this subject in the single direction that might have been preferred. Hence three main topics can be differentiated:

1. Interactions between animals and plant species in single habitats

Three contributions deal with grazing or disturbance impact with direct or indirect effects on plant individuals and populations in single habitats.

Considering single plant individuals, C. F. DORMANN presents field experiments with *Salix polaris* in Spitsbergen, a high-arctic dwarf shrub, with regard to simulated herbivory and the influence of light and nitrogen on the anti-herbivore defence mechanism against grazing pressure by wild reindeer (*Rangifer tarandus*). The data set is used to test a competition model with which to assess optimal defence allocation under different grazing intensities.

The contribution of A. KRATOCHWIL, S. FOCK, D. REMY and A. SCHWABE deals with the responses of flower phenology and seed production of selected plant species and their populations under cattle grazing impact in sandy grasslands of Germany. Gap dynamics, patch dynamics of faeces microsites and seed bank processes guarantee the generative regeneration of the grazed grassland species.

A. JENTSCH, S. FRIEDRICH, W. BEYSCHLAG and W. NEZADAL analyse disturbance processes on the population level, especially the significance of ant and rabbit disturbances for seedling establishment in dry acidic grasslands of Germany. The main themes are temporal patterns of disturbances in correlation with the establishment of selected plant species.

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2. Restoration approaches

A. Bisigato, J. Ares and M. Bertiler present a long-term study of the influence of sheep grazing in the Argentinian Monte and discuss the modelling of successional traits as a basis for restoration projects. Data for areas from which sheep have been exclosed during the last 1–3 decades and a simulation model of plant growth and competition-facilitation processes allow estimations of main vegetation traits under pre-domestic-herbivore conditions.

In the same context M. Stroh, C. Storm, A. Zehm and A. Schwabe study the restoration of sand grassland target communities in Germany. Directed succession after diaspore inoculation and sheep and donkey grazing in comparison with spontaneous succession processes are analysed for a period of three years, considering seed bank and seed rain as well. Special attention is given to grazing effects.

3. Interactions of plant and animal species on landscape level

T. Heinken, H. Hanspach, D. Raudnitschka and F. Schaumann deal with the phenomenon of zoochory (epi- and endozoochory) in deciduous forests by wild mammals (roe deer, *Capreolus capreolus*; hare, *Lepus europaeus*; wild boar, *Sus scrofa*; martens, *Martes martes*) in Germany and their importance for long-distance dispersal of plants. The authors come to the conclusion that many herbaceous plants of mesophilous deciduous forests have only low dispersal potentials.

In the contribution of H. Culmsee the significance of single plants (taxon, life form), plant communities (species composition, dominance, density), and vegetation pattern is analysed on the landscape level for the desert locust *Schistocerca gregaria* in Mauretania (West Africa). Main themes are spatiotemporal movements, protection, moulting, feeding in correlation with habitat factors.

The contribution of T. Kondo and N. Nakagoshi closes the subject of this special issue. Their paper deals with the effects of forest structure and forest connectivity on the distribution of bird species in a Japanese riparian landscape.

We hope that this special issue will find interest in the complex and attractive field of animal, plant-species and vegetation interaction phenomena.

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