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Succession, restoration, and management of dry grasslands – Special Feature with contributions from the 7th European Dry Grassland Meeting 2010 in Smolenice

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Abstract

We first report from the 7th European Dry Grassland Meeting held 27 May to 1 June 2010 in Smolenice, Slovakia, devoted to the main topic "Succession, restoration and management of dry grasslands". Apart from the scientific programme and the excursions, we also summarise the outcomes of the General Assembly of the EDGG and present the Smolenice Grassland Declaration. Then we take stock of the dynamic development of the *European Dry Grassland Group* (EDGG), report on its activities during the past year, and announce its future plans.

Finally, we give a short introduction to the four articles of this Special Feature, which deal with biodiversity patterns, vegetation classification, and dynamics of dry grassland habitats. One presents a detailed phytosociological study of the xeric and mesic grasslands of the Slovak part of the Biele Karpaty Mts. The second provides a new numeric approach to the assignment of relevés to syntaxa and exemplifies this in a case study for the delimitation of the classes *Festuco-Brometea* against *Trifolio-Geranietea sanguinei* in Austria. The third article investigates the septennial impact of mouflon grazing and weather on dry grassland plant communities in dry grassland patches of the Czech Republic. The fourth article deals with long-term abandonment of grasslands in Central Slovakia and shows the importance of vegetation structure, ecological stability, and low-disturbance regime for specific ant assemblages.

Zusammenfassung: Sukzession, Renaturierung und Management von Trockenrasen – Vorwort zum Sonderteil mit Artikeln vom 7. *European Dry Grassland Meeting* in Smolenice

Zunächst berichten wir vom 7. *European Dry Grassland Meeting*, das vom 27. Mai bis 1. Juni 2010 in Smolenice in der Slowakei stattfand und unter dem Motto „Sukzession, Renaturierung und Management von Trockenrasen" stand. Neben Kurzberichten vom wissenschaftlichen Programm und von den Exkursionen fassen wir die Ergebnisse der Mitgliederversammlung zusammen und stellen die *Smolenice Grassland Declaration* vor. Dann berichten wir über die dynamische Entwicklung der *European Dry Grassland Group* (EDGG) während des vergangenen Jahres und geben einen Ausblick auf die kommenden Aktivitäten.

Abschließend führen wir in die vier Artikel des folgenden Sonderteiles ein, die sich mit Biodiversitätsmustern, Vegetationsklassifikation und Vegetationsdynamik in Trockenrasenlebensräumen beschäftigen. Der erste Beitrag ist eine pflanzensoziologische Bearbeitung der Trockenrasen und mesischen Grünlandgesellschaften des slowakischen Teils der Weißen Karpaten. Der zweite Artikel präsentiert ein neues numerisches Verfahren der Zuordnung von Vegetationsaufnahmen zu Syntaxa und testet dieses anhand der Klassenabgrenzung der *Festuco-Brometea* gegen die *Trifolio-Geranietea sanguinei* in Österreich. Im dritten Artikel untersuchen die Autoren anhand einer siebenjährigen Zeitreihe, wie sich Mufflon-Beweidung und Witterungsverlauf auf Trockenraseninseln in Tschechien auswirkt. Der letzte Beitrag beschäftigt sich mit dem Effekt lang andauernder Brache auf Rasengesellschaften der Zentralslowakei und demonstriert die Bedeutung von Vegetationsstruktur, ökologischer Stabilität und geringer Störintensität für habitatspezifische Ameisengesellschaften.

Keywords: ant, conference report, conservation, Central Europe, European Dry Grassland Group (EDGG), *Festuco-Brometea*, *Koelerio-Corynephoretea*, *Molinio-Arrhenatheretea*, phytosociology, Smolenice Grassland Declaration, *Trifolio-Geranietea sanguinei*, vegetation classification.

1. European Dry Grassland Meeting in Smolenice 2010

The 7th European Dry Grassland Meeting was held from 27 May to 1 June 2010 at the Smolenice castle, belonging to the Slovak Academy of Sciences. This is the second conference organised by the *European Dry Grassland Group* (EDGG) after the meeting in Halle

(Saale) in 2009 (see JANDT et al. 2010), while the previous five Dry Grassland Meetings had been organised by the German *Arbeitsgruppe Trockenrasen*, the last one 2009 in Kiel (see DOLNIK et al. 2009). One hundred participants from 20 different countries participated in the conference (Fig. 1), which focused on "Succession, restoration, and management of dry grasslands" (for a detailed report, see JANIŠOVÁ et al. 2010c).

1.1. Conference contributions

The conference was devoted to succession, management, and restoration of dry grasslands as these topics have recently become increasingly important across the whole of Europe. The profound land-use changes during the 20th century resulted in land abandonment and subsequent secondary succession in most grassland ecosystems, contributing significantly to degradation of dry grassland ecosystems (POSCHLOD & SCHUMACHER 1998, POSCHLOD & WALLIS DE VRIES 2002, WALLIS DE VRIES et al. 2002, JANIŠOVÁ et al. 2010a). Most dry grasslands habitats became fragmented, and populations of numerous xero- and thermophilous species became threatened by extinction or inbreeding depression due to a decline in the mutual ecological relations between their increasingly isolated populations (FISCHER & STÖCKLIN 1997). Proper management and restoration activities can help to maintain the diversity of dry grassland ecosystems, which belong to the species-richest and most endangered European habitats (WILLEMS et al. 1993, DENGLER 2005).

The conference was devoted to the memory of Pavel Deván, one of the best Slovak experts in zoology of invertebrates and important nature conservationist (DERKA et al. 2010). He devoted his life to the conservation and practical management of grasslands in the Biele Karpaty Mts., where he also lived with his wife Katarína and three children, who attended the meeting, too.

During the conference, 39 oral presentations and 43 posters were introduced within six sessions focussing on the following topics: introduction to the meeting and regional biodiversity; conservation of grassland species, communities, and habitats; methodological issues; processes in succession and management effects; restoration of dry grasslands. Apart from the scientific programme, a guided tour through the Smolenice castle was organised, and the "grassland party" took place in the castle courtyard. Here, the results of the competition for the best oral and poster contributions were announced. The pdf versions of those talks and poster presentations whose authors agreed to the online publication are available at http://www.edgg.org/edgg_meeting.html. The conference proceedings (JANIŠOVÁ et al. 2010a) and a photo gallery from the meeting are also available on this web page.

1.2. Excursions

During the three excursions, the conference participants visited dry and semi-dry grassland sites in the Tematínske vrchy Mts. (the first excursion guided by L. Mucina, M. Janišová, K. Rajcová, and S. Mertanová), the Biele/Bílé Karpaty Mts. (the second excursion guided by I. Škodová, K. Devánová, S. Mertanová, I. Jongepierová, and K. Fajmon), and the Malé Karpaty Mts. (the third excursion guided by K. Hegedüšová and V. Feráková). The Tematínske vrchy Mts. represent one of the western-most outposts of the Western Carpathian Mts. built by calcareous bedrock (JANIŠOVÁ at al. 2010b). Thanks to its extraordinary natural values, the area was included into the national list of Areas of European Importance. Along with precious xerothermophilous plant communities, restoration activities of the local NGO *Pre Prírodu* were introduced to the conference participants. Within the Biele/Bílé Karpaty Mts., several important sites were visited on both the Slovak and the Czech territories (protected areas Žalostiná, Štefanová, Bučkova jama, and Machová; FAJMON 2010, ŠKODOVÁ & MERTANOVÁ 2010). All local grassland types of high nature value are dependent on the maintenance of traditional management by mowing, which is recently performed by state conservation organisations supported by volunteers during summer camps. The sustainability of this system was discussed during the excursion. The third excursion was held in the protected areas Devínska Kobyla and Sandberg, localities well-



Fig. 1: Group photo of the conference participants at the Smolenice castle (Photo: J. Smatanová).
Abb. 1: Gruppenfoto der Tagungsteilner im Schloss von Smolenice (Foto: J. Smatanová).



Fig. 2: Prof. Laco Mucina (centre) explains flora and vegetation of the Tematínske vrchy Mts. during the first excursion (Photo: J. Dengler, JD102130).
Abb. 2: Prof. Dr. Laco Mucina (Bildmitte) erklärt Flora und Vegetation auf den Bergen von Tematínske vrchy während der ersten Exkursion (Foto: J. Dengler, JD102130).

known from both botanical and geological points of view (HEGEDÜŠOVÁ et al. 2010). Recently the precious dry grassland communities of both localities are seriously endangered by succession and invasion of non-native species, and management and restoration actions are urgently needed.

1.3. General Assembly of the EDGG

The EDGG General Assembly took place after the first day's oral presentations, and the special report devoted to this event was published by VRAHNAKIS (2010). A positive development of EDGG membership, subgroup formation, and relationships with other organisations was reported. Along with the publication-related issues, improvements of the EDGG homepage and governance issues, potential venues for the next EDGG conferences and research expeditions were discussed.

1.4. Smolenice Grassland Declaration

During the conference, the text of the Smolenice Grassland Declaration was formulated. Together with the list of signatories, it is available on the conference homepage at http://www.edgg.org/edgg_meeting.html. By now, 244 scientists, representatives of NGOs, ministries, politicians, farmers, and other persons interested in nature conservation from 35 countries have signed the declaration:

Europe supports a huge variety of grassland ecosystems, both natural and those made or managed by man, spanning the coasts and high mountain regions and ranging from tundra in the North to the Mediterranean in the South and from the Azores in the West to the Ural Mountains in the East. These grassland ecosystems provide many goods and services such as food/forage, climate regulation, securing water and nutrient cycling, medicine and energy – all related to human health, prosperity and well-being in general.

Furthermore, grasslands are home to both wildlife and domestic livestock. For several groups of plants and animals, grassland ecosystems are characterized by remarkably high biodiversity. Many parts of Europe landscapes with pastures, meadows and/or natural grasslands contain regional biodiversity hotspots and support high proportion of native and rare species.

In spite of European states' commitment to the Convention on Biological Diversity objective of halting biodiversity loss by 2010, and in spite of the global importance of European pastures and meadows, the area covered by grasslands continues to decline dramatically, in particular due to conversion to cropland or abandonment; the remaining grasslands are often impacted by changes of management and accompanied by eutrophication, causing the regional extinction and the high global extinction risk of many species.

We note that while many European countries have water and forest legislation and strategies which promote a coherent vision and an integrated policy approach, grasslands lack such a framework and the effects are clear to see.

We therefore call for a strong and comprehensive Convention on Grassland Conservation in Europe within the framework of the Pan-European Landscape and Biodiversity Strategy, to secure the future of grasslands which provide vital ecosystem services to human society, are home to biodiversity, sources of natural beauty and cultural values.

2. News from the European Dry Grassland Group (EDGG)

Founded only in autumn 2008, EDGG meanwhile has more than 623 members from 49 countries (as of 28 March 2011). EDGG became an official Working Group of the International Association for Vegetation Science (IAVS) in autumn 2009, and it has presently four regional subgroups: Arbeitsgruppe Trockenrasen (192 members), Working Group on Dry Grasslands in the Nordic and Baltic Region (75 members), South-East European Dry Grassland Group (SEEDGG: 166 members), and Mediterranean Dry Grasslands (Med-DG: 147 members). Presently, EDGG is co-ordinated by an Executive Committee consisting of five persons: Jürgen Dengler (Germany), Monika Janišová (Slovakia), Solvita Rūsiņa (Latvia),

Stephen Venn (Finland), and Michael Vrahnakis (Greece). EDGG is a network of researchers and conservationists from all disciplines, who are interested in collaboration and information exchange beyond national and disciplinary borders. Everybody can become member of EDGG and its subgroups free of charge, simply by sending an e-mail to the membership administrator J. Dengler (dengler@botanik.uni-hamburg.de).
EDGG supports the dry grassland community mainly through the following activities:

- Organisation of the European Dry Grassland Meetings on an annual basis.
- Organisation of international research expeditions into undersampled dry grassland regions of Europe. In the past two years, such expeditions were carried out in Transylvania, Romania, (see DENGLER et al. 2009) and in Central Podilia, Ukraine, (see DENGLER et al. 2010).
- Publication of the quarterly *Bulletin of the European Dry Grassland Group* (ISSN 1868-2456; freely available at http://www.edgg.org/publications.htm).
- EDGG homepage (http://www.edgg.org).
- Activities in the science-policy interface, for example regarding the effect of the common agricultural policy of the European Union on grassland conservation.

The next major EDGG events are:

- 8th European Dry Grassland Meeting, 13–17 June 2011, in Uman', Ukraine, with the main topic "Dry grasslands of Europe: biodiversity, classification, conservation, and management" (see http://www.edgg.org/edgg_meeting_2011.html)
- 3rd EDGG Research Expedition, 14–24 August 2011, in western Bulgaria (see http://www.edgg.org).
- 9th European Dry Grassland Meeting, planned for June 2012 in the Prespa region of Greece.

3. Introduction to the Special Feature

This Special Feature is the fifth series of dry grassland-related articles in *Tuexenia*, guest-edited by members of the EDGG or its predecessor *AG Trockenrasen* (see JANDT et al. 2010). The past and the present contributions are all freely downloadable from the EDGG homepage at http://www.edgg.org/edgg_publications.htm.

This year, it consists of four papers of supra-regional relevance based on contributions at the conference in Smolenice. The selected contributions reflect the wide topical coverage of the conference. They originate from Slovakia (ŠKODOVÁ et al. 2011, WIEZIK et al. 2011), Czechia (PETŘÍK et al. 2011), and Austria (WILLNER 2011). All articles deal with biodiversity patterns, classification and/or dynamics of dry grassland habitats in the landscape context.

ŠKODOVÁ et al. (2011) present a classic phytosociological study on the dry and mesic grasslands of the Slovak part of the Biele Karpaty Mts., based on a very extensive data set sampled with high methodological standards (e.g. uniform plot size and inclusion of bryophytes). The most prominent association in their study area is the *Brachypodio pinnati-Molinietum arundinaceae*, a semi-dry basiphilous grassland, several stands of which have been visited during the second excursion of the conference. The stands of this association on the Czech side of the border have already been well studied and documented in the past and are known to be world record holders in vascular plant species richness at several small scales, e.g. with up to 103 species on 24 m² (KLIMEŠ 1997). With a mean of 61 and a maximum of 83 species per 25 m², the Slovakian stands of the association are not as rich, but still exceptional from a larger-scale perspective.

The second phytosociological contribution, by WILLNER (2011), deals with a fundamental methodological issue of vegetation classification, using an exemplary data set with relevés from the classes *Festuco-Brometea* and *Trifolio-Geranietea sanguinei*. With the newly proposed "summarised percentage cover approach", he presents a numerical solution that allows the unequivocal assignment of each relevé to one of several vegetation types, where other recent methods, such as the "species group method" always only assign a rather low proportion of relevés.

In the third contribution, PETŘÍK et al. (2011) analyse the effects of muflon grazing and weather conditions on the vegetation composition of dry grasslands. The authors stress the importance of a balanced conservation strategy that considers effects of both shrub encroachment and litter accumulation in the absence of hoofed game grazing and increased eutrophication at high game densities. Along with game grazing, interannual weather variability was shown to affect the vegetation cover and composition.

Finally, WIEZIK et al. (2011) go beyond traditional disciplinary borders and analyse how ant and plant communities are differently affected by long-term grassland abandonment. They conclude that, compared to wet and mesic grasslands of the class *Molinio-Arrhenatheretea*, abandoned dry grasslands of the class *Festuco-Brometea* harbour species-rich and specialised ant communities, which are supported by the specific structure of dry grassland vegetation, long-term ecological stability, and low management-related disturbance.

Further contributions from the European Dry Grassland Meetings 2009 (Halle) and 2010 (Smolenice) are in the editorial process and will probably follow in a similar Special Feature in volume 32 of *Tuexenia*. For the first time, a companion Special Feature will be published in the Italian journal *Plant Biosystems*, which is listed in the *Web of Science*. It is guest-edited by S. Bartha, J. Dengler, M. Janišová, and K. Kiehl. It will comprise approximately 10 articles and appear in autumn 2011. Presently, three contributions are already accepted: HENKIN & SELIGMAN (2011), analysing the effect of management on the vegetation of burned Mediterranean dwarf shrub communities in Israel, SUDNIK WÓJCIKOWSKA et al. (2011), dealing with the protection of dry grasslands on ancient burial mounds in Ukraine, and KALIGARIČ et al. (2011), studying allelopathic effects of umbellifers during dry grassland succession in Slovenia. Finally, one contribution from the European Dry Grassland Meeting 2009 on an invasive species in Baltic dune grasslands (Halle) has been published elsewhere (DOLNIK et al. 2011).

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