Tuexenia 35: 321–328. Göttingen 2015.
doi: 10.14471/2015.35.018, available online at www.tuexenia.de

# Dry grasslands of Central-Eastern and South-Eastern Europe shaped by environmental heterogeneity and human land use– Editorial to the 10th Dry Grassland Special Feature

## Trockenrasen im östlichen Mitteleuropa und in Südost-Europa unter Umwelt- und Landnutzungseinflüssen – Vorwort zum 10. Trockenrasen-Sonderteil

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**Zusammenfassung**

Der diesjährige 10. Trockenrasen-Sonderteil von Tuexenia beginnt mit einem Bericht über die aktuellen Aktivitäten der European Dry Grassland Group (EDGG). Zunächst geben wir einen Überblick über die Entwicklung der Mitgliederzahl. Dann berichten wir vom letzten European Dry Grassland Meeting in Tula (Russland, 2014) und vom letzten European Dry Grassland Field Workshop in Navarra (Spanien, 2014) und informieren über künftige Veranstaltungen der EDGG. Anschließend erläutern wir die Publikationsaktivitäten der EDGG. Im zweiten Teil des Editorials geben wir eine Einführung zu den fünf Artikeln des diesjährigen Trockenrasen-Sonderteils. Zwei Artikel beschäftigen sich mit der Syntaxonomie von Trockenrasen in Ost- bzw. Südosteuropa: der eine präsentiert erstmalig eine Gesamtklassifikation der Trockenrasengesellschaften Serbiens und des Kosovo während der andere Originalaufnahmen sub-montaner Graslandgesellschaften aus den bislang kaum untersuchten ukrainischen Ostkarpaten analysiert. Zwei weitere Artikel behandeln Trockenrasen-Feuchtwiesen-Komplexe im ungarischen Tiefland: Der eine behandelt den Einfluss der Landnutzung auf die Phytodiversität von Steppen und Feuchtwiesen, der andere den Einfluss von Niederschlagsschwankungen in einem Zeitraum von drei Jahren auf die Ausbildung salzbeeinflusster Steppen-Feuchtwiesen-Komplexe. Der fünfte Artikel analysiert landnutzungsbedingte Veränderungen des Graslands des Tsentralen-Balkan-Nationalparks in Bulgarien über einen Zeitraum von 65 Jahren.

Manuscript received 06 July 2015, accepted 07 July 2015

## 1. Introduction

This Special Feature is the tenth in a series devoted to dry grasslands and edited by members of the European Dry Grassland Group (EDGG; http://www.edgg.org) or its predecessor *Arbeitsgruppe Trockenrasen* that have been published in Tuexenia since 2005 (GALVÁNEK et al. 2012). With this issue we celebrate our tenth anniversary of the Tuexenia Dry Grassland Special Features!

The EDGG is a network of researchers and conservationists, including both botanists and zoologists, working with European dry grasslands and Palaearctic steppes. EDGG became a Working Group of the International Association for Vegetation Science (IAVS; http://www.iavs.org) in 2009 (for a detailed background, see VRAHNAKIS et al. 2013). Since the term of duty of the current EDGG Executive Committee ended, we would like to thank Jürgen Dengler (DE), Monika Janišová (SK), Solvita Rūsiņa (LV), Péter Török (HU), Stephen Venn (FI), and Michael Vrahnakis (GR) for their work during the past two years. Elections for the new Executive Committee of the EDGG ended on 8th May, and the new elected Executive Committee members of the EDGG are: Didem Ambarli (TR), Idoia Biurrun (ES), Jürgen Dengler (DE), Monika Janišová (SK), Anna Kuzemko (UA), Péter Török (HU), Stephen Venn (FI), and Michael Vrahnakis (GR). We wish them a rewarding and inspiring term of office over the next two years, and we hope they will continue to increase the visibility and attractiveness of the group and the success of its yearly meetings, other events and publications.

With this Editorial we would like to give an overview of the recent EDGG activities and introduce the papers in this Special Feature dealing with various grassland types from Central-Eastern and South-Eastern Europe.

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

### 2.1 Members and organisation of the EDGG

As usual, we take the opportunity of writing this editorial to summarize the recent activities within our organisation, the European Dry Grassland Group. Since the last report in Tuexenia, the number of EDGG members has slightly increased and reached 1049 members from 62 countries as of 24 April 2015. Membership in EDGG is still free of charge and can be activated by sending an e-mail to Idoia Biurrun (idoia.biurrun@ehu.es) or Stephen Venn (stephen.venn@helsinki.fi).

### 2.2 European Dry Grassland Meetings and other EDGG events

The annual meeting of the EDGG, the 11th European Dry Grassland Meeting, took place in Kulikovo Pole, District of Tula (Russia) from the 5th–15th June 2014. The meeting was organized by Elena Volkova (The State Museum of Military History and Natural Reserve Kulikovo Pole, Russia) and supported by the UNDP/GEF/MNRE RF project "Improving the Coverage and Management Efficiency of Protected Areas in the Steppe Biome of Russia" and several Russian scientific organisations. The main focus on steppes, their ecology, management and restoration attracted 55 participants from 10 countries (Austria, Finland, Germany, Greece, Hungary, Iran, Kazakhstan, Russia, Turkey and Ukraine) to take part in this event (VOLKOVA 2014) (Fig. 1). In total, 29 talks and 18 posters were presented during the

**Fig. 1.** Participants of the 7th European Dry Grassland Meeting in Tula, Russia, 2014.

**Abb. 1.** Teilnehmer der 7. European Dry Grassland Meeting in Tula, Russland, 2014.

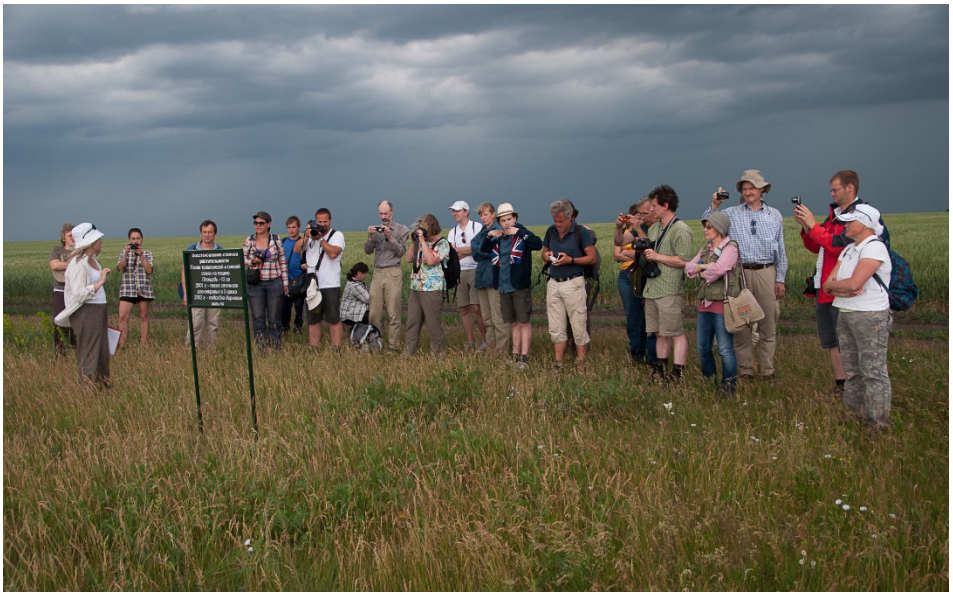

**Fig. 2.** Visit to the steppe regeneration sites with different treatments on former arable fields in Kulikovo Pole during the post-conference excursion of the 7th European Dry Grassland Meeting in Tula, Russia (Photo: J. Dengler, 2014).

**Abb. 2.** Besuch der Steppen-Regenerationsflächen mit verschiedenen Behandlungen auf ehemaligen Ackerflächen in Kulikovo Pole während der Nachexkursion des 7. European Dry Grassland Meeting 2014 in Tula, Russland (Foto: J. Dengler, 2014).

sessions. Participants also visited the protected areas Srednyi Dubik and Tatinki, and experimental fields of steppe restoration. During the post-conference excursion, the participants visited dry grassland sites in the Kursk and Rostov regions (Fig. 2).

The 7th EDGG Field Workshop took place in Navarre, Spain, from 15th–24th June 2014. It was organized by Idoia Biurrun and Itziar Garcia-Mijangos (University of the Basque Country, Bilbao, Spain), and Asun Berastegi (Gestión Ambiental de Navarra, Pamplona, Spain). The group of 16 participants from 10 countries (Bulgaria, France, Germany, Italy, Norway, Poland, Slovakia, Spain, Turkey and Ukraine) consisted of experienced senior scientists, young post docs and PhD students (Fig. 3). In addition to joint field sampling with advanced sampling methods of the previous Research Expeditions (Fig. 4), the new concept of Field Workshops includes oral presentations and related methodological discussions (see BIURRUN et al. 2014 for details). In total, 12 oral presentations on various topics related to the grassland research were given by the participants. During the workshop, 119 relevés (including 35 nested-plot series) with vascular plants and cryptogams, were recorded. In addition to the vegetation, also one group of invertebrates (spiders) were sampled on the same plots by Nina Polchaninova.

Two further EDGG events, the 8th EDGG Field Workshop, 13th–23th June 2015, Poland, and the 12th European Dry Grassland Meeting, 22nd–27th May 2015, Mainz, Germany, will be introduced in the next Dry Grasslands Special Feature of Tuexenia. A future EDGG event is the 13th European Dry Grassland Meeting in 2016 in Sighişoara, Romania.

**Fig. 3.** Participants of the 7th EDGG Field Workshop 2014 in Navarre, Spain (Photo: D. Vynokurov, 2014).

**Abb. 3.** Teilnehmer des 7. EDGG-Field Workshops 2014 in Navarra, Spanien (Foto: D. Vynokurov, 2014).

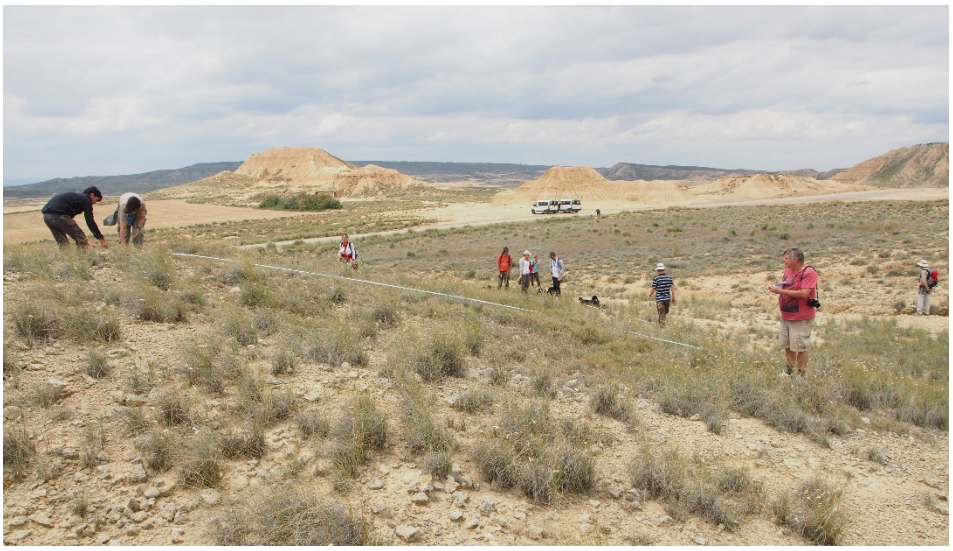

**Fig. 4.** Fieldwork during the 7th EDGG Field Workshop 2014 in Navarre, Spain (Photo: M. Janišová, 2014).

**Abb. 4.** Geländearbeit während des 7. EDGG-Field Workshops 2014 in Navarra, Spanien (Foto: M. Janišová, 2014).

### 2.3 Publication activities of the EDGG

The EDGG has continued its long-standing tradition of Special Issues/Features in international journals over the past year. Along with this Dry Grassland Special Feature in *Tuexenia* 2015, Special Issues are currently being prepared in the following journals: *Applied Vegetation Science* (topic: Classification of European grasslands), *Hacquetia* (topic: Biodiversity and conservation of Europe's semi-natural open habitats), *Biodiversity and Conservation* (topic: Ecology, biodiversity and conservation of Palaearctic steppes) and *Phytocoenologia* (topic: Classification of Palaearctic grasslands). Along with the mentioned Special Issues, EDGG has published three issues of its own electronic journal, the *Bulletin of the European Dry Grassland Group* (freely available from http://www.edgg.org/ publications.htm) over the last year.

## 3. Introduction to the 2015 Special Feature

In this Special Feature we present five papers about various grassland types from alkali grasslands and steppe-wetland mosaics to sub-montane grasslands. In contrast to former Special Features, the geographic range of this issue is limited to Central- and South-Eastern Europe, regions that have so far been underrepresented in dry grassland studies. The authors of the papers are from seven countries: Bulgaria, Germany, Hungary (13 authors), Serbia, Slovak Republic, Slovenia and Ukraine.

In their paper entitled "Classification, ecology and biodiversity of Central Balkan dry grasslands", AĆIĆ et al. (2015) present the first comprehensive and sound classification of Central Balkan (Serbia and Kosovo) dry grasslands based on numeric methods. The paper originated from earlier work on the topic (AĆIĆ et al. 2014). In the Balkans, the *Festuco-*

*Brometea* class is highly diverse, containing nine alliances and five orders (*Brachypodietalia pinnati*, *Festucetalia valesiacae*, *Stipo pulcherrimae-Festucetalia pallentis*, *Astragalo-Potentilletalia*, *Halacsyetalia sendtneri*). In addition, Balkan dry grasslands are extraordinary species rich, as indicated by the 1,323 plant species found in the in 1,897 relevés surveyed in the study. This paper makes an important contribution to the knowledge of both Balkan and European dry grasslands, and may allow synchronization of Serbian plant communities with the European syntaxonomical system and thus assignment of their legal conservation status.

The paper by ŠKODOVÁ et al. (2015) analyzes sub-montane semi-natural grassland communities in the Eastern Carpathians (Ukraine) based on 46 phytosociological relevés collected during 2010–2011. Besides a phytosociological classification, the authors analyzed which environmental factors (e.g. soil parameters, management, altitude, inclination, cover of litter and of open soil) explain species composition and richness of vascular plants and bryophytes. Based on the syntaxonomical classification of relevés, five well-delimited grassland types were distinguished belonging to three classes and four alliances: *Campanulo rotundifoliae-Dianthetum deltoidis*, *Campanulo abietinae-Nardetum strictae*, *Poo-Trisetetum flavescentis*, *Lolio perennis-Cynosuretum cristati*, *Scabioso ochroleucae-Brachypodietum pinnati*, detailed descriptions of which can be found in the paper. Authors demonstrated that besides environmental factors, land use had a huge influence on the species composition and diversity of analyzed grassland communities. They emphasize that increasing abandonment of traditional land use (see also KRICSFALUSY 2013), the spread of *Pteridium aquilinum* and overgrazing represent major threats to the biodiversity of sub-montane grasslands in the Ukrainian Carpathians. Since this area belongs to the few European regions with a large proportion of high nature value grasslands, adequate manegement is indispensable for their future conservation.

The paper LUKÁCS et al. (2015) studied short-term vegetation dynamics across three years in alkali grasslands in the Hortobágy National Park in Eastern Hungary, a priority habitat of the Natura 2000 directive (*Pannonic salt steppes and salt marshes*). These grasslands show a high micro-topographic heterogeneity with small scale gradients in moisture and salinity, resulting in various vegetation types along a vertical elevation gradient of only few decimetres (e.g. DEÁK et al. 2015). Moisture and salinity is directly affected by the groundwater level, which depends on the dynamic relation of precipitation and evaporation. To analyse the effects of precipitation fluctuations across the three study years on vegetation composition, the authors used Self-Organizing Map neural networks (SOM; KOHONEN 2001), a promising alternative tool instead of traditional multivariate analyses, which has only very rarely been used in vegetation ecology. It differs from traditional ordination methods by its higher robustness and the possibility of analysing large sample sizes. With this method, the authors visualised the quick shifts in species composition and plant functional groups in the investigated vegetation types related to the importance of environmental factors.

TÖLGYESI et al. (2015) investigated the effects of different grazing and mowing regimes on the vascular plant diversity of steppe-wetland mosaic vegetation in Hungary, producing not only interesting results, but also practical management recommendations. Wet meadows with ridges supporting native steppe vegetation are important habitat complexes, especially given the widespread destruction of steppe vegetation and the ongoing land use changes in the region. They found that a combination of grazing and mowing supports higher species-richness than either of the management types alone, but that steppe vegetation was particu-

larly sensitive to intensive grazing. They thus propose that this habitat mosaic is not grazed uniformly. Instead, the best conservation outcome would be achieved if electric fences are used to increase the grazing pressure in the wet meadow areas and reduce it on the steppe areas.

Finally, the paper by PEDASHENKO et al. (2015) deals with historical land use change and its effect on landscape transformations between 1949 and 2012 in the Balkan Mountains, Bulgaria. The authors analyzed the cover of three main land cover classes – shrubland, grassland and shrub-grassland mosaic – using aerial imagery, and linked observed proportional changes of these land cover classes to socio-economic changes. The authors correlate these changes to the most important socio-economic events during the analyzed period: nationalization of private sheep herds (1957) and a consequent livestock farming reform (1958), privatization of land and livestock after democratic changes in the country (1989) and declaration of the study area as part of a National Park (1991). The detected shifts between land cover types over the analyzed period are considered to be influenced by these socio-economic events, probably through changes in grazing pressure. The topic of this contribution is interesting and challenging, especially as such studies are scarce from this region.

## Acknowledgements

We are grateful to the authors of papers in the current Special Feature for contributing interesting articles and to our reviewers (included in the list of all reviewers after the table of contents of this Tuexenia volume) for improving the manuscripts. We thank FlorSoz for supporting the Special Feature financially, which enabled us to provide professional linguistic editing for young authors with low income. We further thank the editor Thilo Heinken for always supporting this Special Feature.

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