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Dry Grasslands in a Changing Environment – Special Feature with contributions from the 5th Dry Grassland Meeting 2008 in Kiel

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Abstract

We first report from the 5th Dry Grassland Meeting held from 28th to 30st of August 2008 in Kiel, Germany. Then we take stock of the achievements of the German *Arbeitsgruppe Trockenrasen* and the international *Working Group on Dry Grasslands in the Nordic and Baltic Region* towards establishment of vegetation databases of dry grasslands in these study regions. At the conference, the *European Dry Grassland Group* (EDGG) was founded as an international platform of dry grassland researchers and conservationists. As networking tools it provides a homepage on the internet, publishes a quarterly electronical bulletin, and will organise the future *European Dry Grassland Meetings*. In the last part of this contribution, we give a short introduction to the five articles of this Special Feature. Four of them make a major contribution to supra-national classification of *Koelerio-Corynephoretea* and *Festuco-Brometea* communities, respectively, by providing syntaxonomic overviews based on comprehensive data from eastern European countries for which only few data have been available until now. The other major focus of the Feature papers is on degradation and restoration of various types of dry grasslands.

Zusammenfassung: Trockenrasen im Wandel – Sammelbeitrag mit Artikeln von der 5. Trockenrasentagung 2008 in Kiel

Zunächst berichten wir von der 5. Trockenrasentagung vom 28.–30. August 2008 in Kiel. Dann fassen wir zusammen, was die deutsche *Arbeitsgruppe Trockenrasen* und die internationale *Working Group on Dry Grasslands in the Nordic and Baltic Region* hinsichtlich der Errichtung von Datenbanken mit Vegetationsaufnahmen von Trockenrasen aus den jeweiligen Untersuchungsgebieten bislang erreicht haben. Während der Tagung wurde die *European Dry Grassland Group* (EDGG) als internationale Plattform für Trockenrasenforscher und -schützer gegründet. Sie will zum Informationsaustausch zwischen diesen beitragen, indem sie eine Homepage im Internet betreibt, ein vierteljährliches elektronisches Bulletin publiziert und die künftigen *European Dry Grassland Meetings* organisiert. Im letzten Teil führen wir kurz in die fünf Artikel dieses Sammelbeitrages ein. Vier davon stellen einen wesentlichen Beitrag zur großräumigen Klassifikation der *Koelerio-Corynephoretea* bzw. *Festuco-Brometea* dar, indem sie syntaxonomische Übersichten basierend auf umfangreichem Aufnahmematerial aus osteuropäischen Ländern präsentieren, für die bisher kaum pflanzensoziologische Daten verfügbar waren. Der zweite Themenschwerpunkt in den Artikeln ist die Degradierung und Wiederherstellung von verschiedenen Trockenrasentypen.

Keywords: Arbeitsgruppe Trockenrasen, conference report, conservation, eastern Europe, European Dry Grassland Group, *Festuco-Brometea*, *Koelerio-Corynephoretea*, phytosociology, vegetation classification, vegetation database.

1. Dry Grassland Meeting in Kiel 2008

The 5th annual meeting of the *AG Trockenrasen* (German Working Group on Dry Grasslands) and the 1st meeting of the *Working Group on Dry Grasslands in the Nordic and Baltic Region* were jointly held from 28th to 30th of August 2008 at the Ecology Centre of the University of Kiel. As during former meetings of the *AG Trockenrasen* the number of participants from outside Germany had increased steadily, the meeting in Kiel was held mainly in English for the first time in order to promote international exchange of knowledge and experience. Fourty-four participants from ten countries joined the meeting in Kiel, which focused on different aspects of European dry grasslands under the topic "Dry Grasslands in a Changing Environment"

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1.1. Conference contributions

Ten oral and 15 poster contributions presented recent results on classification, conservation and management of dry grasslands in cultural landscapes as well as on problems with invasive species. Some of the contributions are available in pdf format at www.edgg.org/past_meet.htm.

In the opening keynote lecture, Jürgen Dengler (Hamburg) summarized current knowledge about approaches, problems and solutions in large scale classifications of dry grasslands. His lecture was followed by several poster contributions about vegetation classification. Barbara Juśkiewicz-Swaczyna (Olsztyn) gave a comprehensive overview of the *Corynephorus*-dominated grasslands in the Masurian Lakeland (Poland), focusing on a broad concept of the *Corniculario-Corynephoretum* and its successional stages (JUŚKIEWICZ-SWACZYNA 2009, this volume). Brigita Laime and Didzis Tjarve (Riga) presented a classification of different dry grassland communities on coastal grey dunes in Latvia, including a wide range of subtypes of the *Festucetum polesicae* (LAIME & TJARVE 2009, this volume). Anna Kuzemko (Uman) gave a syntaxonomical overview of the lowland dry grasslands on sandy soils of Ukraine (KUZEMKO 2009, this volume), which was followed by a review of halophytic vegetation of the Russian Wolga basin by Tatyana Lysenko (Togliatti and Stuttgart).

The second part of the conference dealt with conservation and management issues and was introduced by a keynote lecture by Kathrin Kiehl (Osnabrück) about ecological restoration of dry grasslands in Europe (KIEHL 2009, SCHWABE & KRATOCHWIL 2009). Some contributions focused on the population development of single species, e. g. *Campanula glomerata* (Monika Partzsch, Halle) as an endangered species in *Festuca rupicola*- and *Poa angustufolia*-dominated semi-natural dry grasslands in central Germany, or on population management of the rare *Pulsatilla pratensis* in Schleswig-Holstein (Björn-Henning Rickert & Hauke Drews, Kiel; RICKERT & DREWS 2009). Wojciech J. Bąba (Krakow) presented results on long-term changes of *Seseli libanotis* populations in dry calcareous grasslands in southern Poland.

The invasion of *Calamagrostis epigejos* in dry grasslands of the German Elbe valley was analysed by Oliver Schmacher and Jürgen Dengler (Hamburg), highlighting the threats to species richness of vascular plants and grasshoppers. Maike Isermann (Bremen) analysed the impact of the invasive *Rosa rugosa*, which was formerly introduced for coastal dune protection and now invades coastal dry grasslands and dunes (ISERMANN 2008a, 2008b). Julien Piqueray and colleagues (Gembloux) provided insights into the spreading of the horticultural species *Cotoneaster horizontalis* on calcareous grasslands in Belgium and its tremendous effects on species diversity (PIQUERAY et al. 2008). A presentation by Daniel Lauterbach (Berlin) analysed whether species traits can be used to predict rareness of dry grassland plant species at different scales.

More general aspects of conservation and management of dry grasslands were discussed in the contribution of Eszter Ruprecht (Cluj Napoca) about long-term effects of abandonment of grazing and afforestation on species-rich steppe-like grasslands in Romania (RUPRECHT et al. 2009, this volume). Doris Jansen (Kiel) presented the impact of succession and changing management on calcareous dry grasslands in the Franconian Jura (SCHRAUTZER et al. 2009, this volume), and Petr Karlik (Praha and Regensburg) characterized the suggested nature reserve Týnčanský kras, a species-rich limestone area in the Central Bohemian Karst. Solvita Rūsiņa (Riga) showed her analyses on the influence of topographic and edaphic factors in calcareous dry grasslands in Latvia.

Coastal dunes are one of the few habitats with primary dry grasslands in central Europe. Nevertheless, areas with such pioneer vegetation are strongly affected by coastal protection measures and traditional land use. Practical aspects of restoration and improvement of dry grasslands in Schleswig-Holstein implemented by the Stiftung Naturschutz Schleswig-Holstein were presented by Hauke Drews (Molfsee), whereas Heiko Grell (Kiel) showed interesting examples of semi-open pasture management from large-scale projects in Schleswig-Holstein.

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Ancient semi-natural heathlands in the more Atlantic parts of Europe show a mosaic of dwarf shrub and dry grassland communities. Changes in land use and different management practices were discussed by Julien Taymans (Gembloux) for heathlands near Brussels, by Martin Lindner (Kiel) for the Nature Reserve Lütjenholmer Heidedünen, and by Sascha Nickel for the Löwenstedter Sandberge, two inland heathland areas in northern Germany. Alarming results about the climate change-induced decline in species richness of carabid beetles in Australian natural dry grasslands dominated by species from such familiar genera as *Stipa* and *Danthonia* were presented by Anett Richter (Canberra).

1.2. Excursions

Although the north of Germany is not specifically known for species-rich dry grasslands, there are extensive natural dry grassland areas along the North and Baltic Sea coasts as well as interesting dry grasslands on nutrient poor and sandy soils on inland dunes. Nice and sunny weather on the Saturday excursions ensured an excellent final of the meeting.

One excursion visited coastal dry grasslands and salt marshes on the Oehe-Schleimünde spit on the Baltic Sea coast. The coastal sand barrier of Oehe-Schleimünde is an important breeding and resting area for coastal birds (BURKHARD 2007) and has been under protection since 1927. The 362 ha reserve includes various successional stages of coastal dry grasslands, small dunes and saltmarsh vegetation. Species of young sand barriers include *Eryngium maritimum, Honckenya peploides, Sedum acre* and *Plantago coronopus*, while older stages host *Festuca ovina, Jasione montana, Viola tricolor, Rumex acetosella, Galium verum, Aira praecox, Viola canina, Taraxacum scanicum,* the bryophytes *Tortula ruraliformis, Brachythecium albicans* and *Hypnum cupressiforme* var. *lacunosum*, the lichens *Cladonia rangiformis, C. ciliata, C. portentosa, C. pyxidata, C. humilis*, *Peltigera rufescens* and several crustose species on stone pebbles. The area is of national importance for the protection of the coastal bryophytes *Bryum marratii* and *Tortella flavovirens*. In former times, such coastal areas were moderately grazed by cattle or sheep, but traditional land use has been abandoned long ago. Since 2007, grazing with robust cattle breeds, such as Galloways, has been re-established in order to maintain pioneer vegetation and to reduce the increasingly dense and species-poor stands in the salt marshes, dominated by *Festuca rubra, Bolboschoenus maritimus* and *Phragmites communis*, as well as *Carex arenaria* stands in older dry grasslands. Additionally, this management type is intended for enhancement of breeding places for birds. We had the chance to discuss management options with the manager of the nature reserve, Benjamin Burkhard, and the conservation manager of the regional conservation foundation "Stiftung Naturschutz", Antje Walter.

The other excursion was guided by Katrin Romahn and visited the former military training area „Kremper und Nordoer Heide" (i.e. heathland of Krempe and Nordoe), south of the town of Itzehoe. It is a large, 395 ha inland dune area with acidic soils (podzols and regosols) and has been used as military training area for more than one hundred years. As a consequence, no mineral fertilizer has been applied, and the soils remained comparatively nutrient-poor. Military training activities kept large parts of the area open and created several successional stages of dry grasslands and heathlands. After cessation of military activities, the area became a priority area for nature conservation within the Natura 2000 network. Future conservation management of the area is important to maintain the mosaic of species-rich pioneer vegetation of acidic soils. In dry grassland and heathland vegetation, species such as *Nardus stricta, Botrychium lunaria, Helichrysum arenarium, Spergularia morisonii, Polygala vulgaris, Arnica montana, Genista pilosa, Antennaria dioica* and *Dianthus deltoides* occur, on wet sites also *Gentiana pneumonanthe, Anagallis minima, Radiola linoides* and *Drosera intermedia* (ROMAHN 1998). Perspectives for the future management of the area are under development and have been discussed during the excursion.

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2. News from the dry grassland working groups

2.1. The regional dry grassland groups and their databases

Founded in 2004, the German-speaking *Arbeitsgruppe Trockenrasen* aims at establishing a comprehensive national vegetation database of dry grasslands and related communities (*Festuco-Brometea*, *Koelerio-Corynephoretea*, *Trifolio-Geranietea sanguinei*, *Violetea calaminariae*, *Elyno-Seslerietea*) and at using this to develop a consistent classification scheme of these vegetation types. As all work is done voluntarily and because the expected high number of relevés necessitates professional solutions, the progress towards such a joint database was rather slow during the last years. However, with the publication of the electronic taxonomic reference list GermanSL in (JANSEN & DENGLER 2008), one major prerequisit for database set-up is now available.

The other focus of the *Arbeitsgruppe Trockenrasen* was on the organisation of annual meetings, of which the one in Kiel was already the fourth (meeting no. 3 had been cancelled). From Lüneburg 2004 (DENGLER & JANDT 2005) via Münster 2005 (BÜLTMANN et al. 2006) and Freising 2007 (KIEHL et al. 2008) to Kiel 2008, the meetings became more and more attractive, as is reflected by the increasing numbers of participants, particularly from abroad. Further information on the group is available on the homepage at www.biologie.uni-hamburg.de/bzf/syst/ag_trockenrasen/ag_trockenrasen.htm.

Founded one year later, the *Working Group on Dry Grasslands in the Nordic and Baltic Region* focuses on establishing and analysing a comprehensive vegetation database of dry grasslands and related communities of the Nordic and Baltic region. This region is defined as Denmark, Norway, Sweden, Finland, NW Russia, Estonia, Latvia, Lithuania, N Poland and NE Germany. As most of these countries do not have a particular tradition in vegetation classification, relevé data are relatively scarce, and often, local to regional, highly idiosyncratic and incompatible classifications are available at best. Of an estimated total of 20,000 existing relevés from the focal classes, some 7,000 have already been included in the database of the *Working Group* (as of 15th of March 2009), and some 5,000 additional relevés exist in digital format and wait for inclusion. DENGLER et al. (2006) published a first preliminary analysis of the data that were then available. Further information on the group is available on the homepage at www.biologie.uni-hamburg.de/bzf/syst/wg_dry_grasslands_nordic/wg_dgnb1_eng.htm.

2.2. European Dry Grassland Group (EDGG)

The international atmosphere of the Kiel meeting was generally appreciated by the participants and gave rise to the idea to create a permant international platform for dry grassland researchers and conservationists throughout Europe. Thus, it was agreed during the final session to found the *European Dry Grassland Group* (EDGG), for which Jürgen Dengler (Germany), Monika Janišová (Slovakia) and Solvita Rūsiņa (Latvia) volunteered to serve as chairs. One idea behind this establishment of an umbrella organisation was that it should take over the network function and the organisation of the annual meetings from the *Arbeitsgemeinschaft Trockenrasen* and the *Working Group* to allow these to focus on their vegetation databases.

Starting with the combined members of the two groups, EDGG showed a strong development since autumn 2008 and now has 272 members from 35 countries (as of 15th of March 2009). For communication among the members, a full-colour quarterly newsletter was started in December 2008, the *Bulletin of the European Dry Grassland Group* (ISSN 1868-2456; managing editor: M. Janišová, monika.janisova@savba.sk; available at: www.edgg.org/publications.htm). An informative homepage at www.edgg.org (managing editor: S. Rūsiņa, rusina@lu.lv) provides a multitude of information for members and non-members. Finally, EDGG uses an e-mail newsletter to inform its members on urgent topics. Everybody can become member of EDGG without any obligation (membership administrator: J. Dengler, dengler@botanik.uni-hamburg.de).

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2.3. European Dry Grassland Meetings

The former annual meetings of the *Arbeitsgruppe Trockenrasen* will be continued as European Dry Grassland Meetings under the auspices of EDGG in various locations throughout Europe.

The 6th European Dry Grassland Meeting will be hosted by the Institute of Biology/Geobotany and Botanical Garden of the Martin Luther University Halle-Wittenberg in Halle/Saale (Germany) from Monday, 31st of August until Wednesday, 2nd of September 2009. The motto is *Dry grasslands – species interactions and distribution*. The organizers, Monika Partzsch and Ute Jandt, cordially invite interested persons to participate in the conference and to present contributions (talks or posters), preferably referring to the main topic.

In continuation of the previous workshops, the 2009 conference is planned to comprise a half-day workshop on syntaxonomical aspects and classification of dry grasslands, one day devoted to talks and poster contributions relating to the main topic, and one excursion day, on which different types of dry grasslands in the surroundings of Halle will be visited. Further details are offered on the conference homepage at www.botanik.uni-halle.de/mitarbeiterinnen_mitarbeiter/ute_jandt/trockenrasentagung/.

In 2010, Monika Janišová (Institute of Botany, Slovak Academy of Sciences) invites to the 7th European Dry Grassland Meeting in Slovakia from 28th to 31st of May (see www.edgg.org/events.htm).

3. Introduction to the Special Feature

The following Special Feature consists of five supra-regionally relevant papers based on oral and poster contributions at the meeting in Kiel. Further contributions will follow in a similar Special Feature in the next volume of *Tuexenia.*

The selected contributions deal with both of the two major dry grassland classes, the *Koelerio-Corynephoretea* (JUŚKIEWICZ-SWACZYNA 2009, KUZEMKO 2009, LAIME & TJARVE 2009) and the *Festuco-Brometea* (RUPRECHT et al. 2009, SCHRAUTZER et al. 2009, partly also KUZEMKO 2009). Four of them present syntaxonomic classifications of dry grasslands in eastern European countries, for which hardly any modern phytosociological overviews have been available in international journals so far (Poland: JUŚKIEWICZ-SWACZYNA 2009; Latvia: LAIME & TJARVE 2009; Romania: RUPRECHT et al. 2009; Ukraine: KUZEMKO 2009). They thus are valuable contributions to an update of the latest syntaxonomic overview of Europe by RODWELL et al. (2002).

Apart from large-scale classification, the second major focus of the Feature papers is on degradation and restoration of dry grassland communities. While RUPRECHT et al. (2009) demonstrate the adverse effects of afforestation on the conservation value of steppe grasslands, SCHRAUTZER et al. (2009) show that clear-cutting of previously afforested dry grasslands in southern Germany was an effective conservation measure. Also, JUŚKIEWICZ-SWACZYNA (2009) and LAIME & TJARVE (2009) show how conflicting land uses, but also the cessation of traditional land uses, have led to a decrease in area and quality of dry grasslands in their study areas during the last decades.

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