

## of the European Dry Grassland Group



*For autumn and winter 2014, we have prepared a double issue of our Bulletin for you. The core topic of this issue is the field workshops, which are getting more and more popular among the EDGG members, as they combine interesting fieldwork, efficient knowledge acquisition and the pleasant company of an international team of naturalists. An extensive report on the last Field Workshop, organized in June 2014 in Navarre, Spain, is followed by an invitation to the Field Workshop in Poland, planned for June 2015. Hopefully, you will appreciate also the report on the research visit of 7 EDGG members to Bavaria, the updated information on our editorial activities (special issues in international journals), book review, and various smaller items in the bulletin's regular sections. As this issue is the last for the year 2014, we would like to express our thanks to the many of you who contributed to the organization of, and participation in, the events and activities of the EDGG. We would also like to thank those of you who helped to make our Bulletin interesting by providing news, information or pictures. We wish all of you a peaceful Christmas time and good luck for the coming year 2015.*

*The Editors*

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*Castildetierra in Bardenas Reales, Navarre, Spain. Photo: Monika Janišová*

November 2014

EDGG homepage: [www.edgg.org](http://www.edgg.org)

# European Dry Grassland Group

The European Dry Grassland Group (EDGG) is a network of specialists for European dry grassland and Palaearctic steppes. EDGG is a Working Group of the International Association for Vegetation Science (IAVS).

## The basic aims of the EDGG are:

♠ to compile and to distribute information on research and conservation in dry grasslands beyond national borders;

♠ to stimulate active cooperation among dry grassland scientists (exchanging data, common data standards, joint projects).

To achieve its aims, EDGG provides seven media for the exchange of information between dry grassland researchers and conservationists:

♠ the **Bulletin of the EDGG** (published quarterly);

♠ the **EDGG homepage** ([www.edgg.org](http://www.edgg.org));

♠ e-mails via our **mailing list** on urgent issues;

♠ the **European Dry Grassland Meetings** - organized annually at different locations throughout Europe;

♠ **EDGG research expeditions and field workshops** to sample baseline data of underrepresented regions of Europe;

## ♠ EDGG vegetation databases;

♠ **Special Features** on dry grassland-related topics in various peer-reviewed journals.

**The EDGG covers all aspects related to dry grasslands, in particular:** plants - animals - fungi - microbia - soils - taxonomy - phylogeography - ecophysiology - population biology - species' interactions - vegetation ecology - syntaxonomy - landscape ecology - biodiversity - land use history - agriculture - nature conservation - restoration - environmental legislation - environmental education.

Anyone can join the EDGG without any fee or other obligation. To become a member of the European Dry Grassland Group or its subordinate units, please, send an e-mail to Jürgen Dengler, including your name and complete address, and specify any of the groups you wish to join. More detailed information can be found at: [http://www.edgg.org/about\\_us.htm](http://www.edgg.org/about_us.htm).

As of 8 November 2014 EDGG had 1034 members from 60 countries all over the world.

## EDGG Subgroups

EDGG members are automatically assigned to the Regional Subgroup of the region in which they reside. If you additionally wish to join other Subgroups or the new Grassland Conservation and Restoration Subgroup, just send an e-mail to the Membership Administrator ([juergen.dengler@uni-bayreuth.de](mailto:juergen.dengler@uni-bayreuth.de)).

**Arbeitsgruppe Trockenrasen** (Germany) (contact: Thomas Becker - [beckerth@uni-trier.de](mailto:beckerth@uni-trier.de)), Ute Jandt - [jandt@botanik.uni-halle.de](mailto:jandt@botanik.uni-halle.de) : 237 members

**Working Group on Dry Grasslands in the Nordic and Baltic Region** (contact: Jürgen Dengler - [juergen.dengler@uni-bayreuth.de](mailto:juergen.dengler@uni-bayreuth.de)): 90 members

**South-East European Dry Grasslands (SEEDGG)** (contact: Iva Apostolova - [iva@bio.bas.bg](mailto:iva@bio.bas.bg)): 267 members

**Mediterranean Dry Grasslands (Med-DG)** (contact: Michael Vrahnakis - [mvrhna@teilar.gr](mailto:mvrhna@teilar.gr)): 315 members

**Topical Subgroup Grassland Conservation and Restoration** (contact: Péter Török - [molinia@gmail.com](mailto:molinia@gmail.com)): 68 members

## EDGG Executive Committee and responsibilities of its members

**Jürgen Dengler:** Membership Administrator, Coordinator for Special Features, Coordinator for EDGG Expeditions, Book Review Editor, Deputy Contact Officer to other organisations. [juergen.dengler@uni-bayreuth.de](mailto:juergen.dengler@uni-bayreuth.de)

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## Tuexenia now with Impact Factor

In July 2014, *Tuexenia*, our long-term publishing partner, in which EDGG and its predecessor AG Trockenrasen published Special Features since 2005 has received its first Impact Factor from Thomson-Reuters. With an **Impact Factor of 1.516**, *Tuexenia* compares well in the category “Plant Sciences” and will be an even more attractive publication outlet in the future. By the way: the well-cited papers in the EDGG-edited Dry Grassland Special Features of *Tuexenia* contributed disproportionately to this success!

Tuexenia is open access, now has DOIs (digital object identifiers) and can be accessed at:

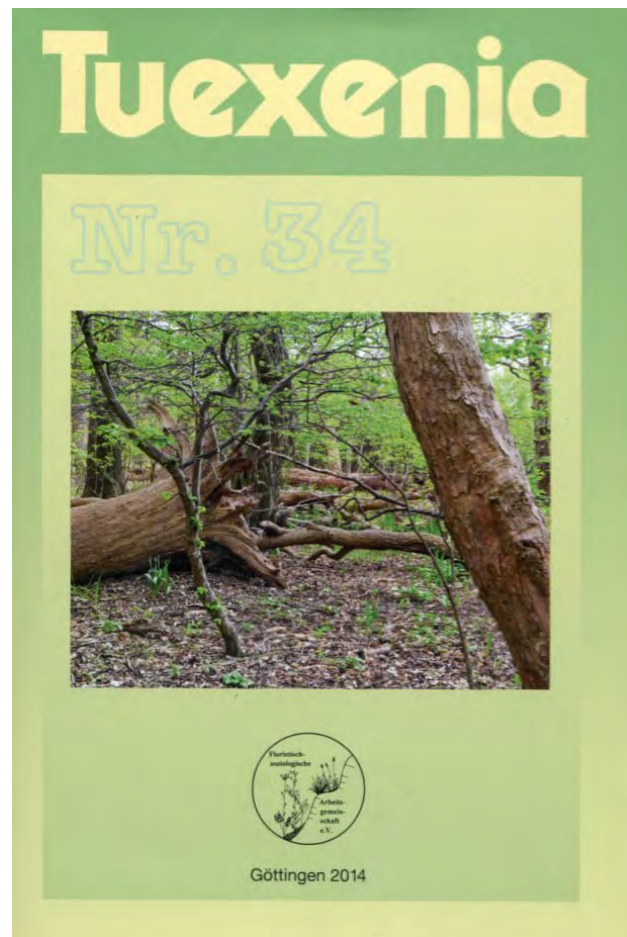
[http://www.tuexenia.de/index.php?id=14&no\\_cache=1&L=4](http://www.tuexenia.de/index.php?id=14&no_cache=1&L=4)

## Forthcoming EDGG Special Features

The **Special Issue of *Hacquetia* 2015/1 on “Biodiversity and conservation of Europe’s semi-natural open habitats”** (Eds. Péter Török, Idoia Biurrun, Marta Carboni, Jürgen Dengler, Jasmin Mantilla-Contreras, Michal Zmihorski & Stephen Venn) is making good progress. A total of 14 papers have been submitted, of which the first have already been accepted and will soon appear early online. Print publication of the complete issue is expected for March 2015.

The extended deadline for submission of abstracts to the **four forthcoming Special Issues/Features of EDGG** in international journals was 20 October 2014. Once again we were overwhelmed by the huge number of paper proposals we received. This is the main reason why the evaluation of the abstracts is not yet finished and we have to ask the authors for some additional patience before they hear from us about possible invitation of a full paper:

♣ The Special Issue of ***Biodiversity and Conservation on “Ecology, biodiversity and conservation of Palaeartic steppes”*** (Eds. Jürgen Dengler, Didem Ambarli, Nikolai Ermakov, Johannes Kamp, Péter Török, Karsten Wesche & Michal Zmihorski) attracted 38 abstracts. These are certainly many more papers than we can publish so the editors will have to be selective and propose to those papers that are marginal or outside the scope of the SI or too regional to be transferred to one of our Special Features in *Tuexenia* or *Hacquetia* (if the authors agree).



♣ The Special Issue of ***Phytocoenologia* on “Classification of Palaeartic grasslands”** (Eds. Jürgen Dengler, Nikolai Ermakov, Monika Janišová & Wolfgang Willner) attracted 16 abstracts.

♣ For our “classical” **Dry Grassland Special Feature in *Tuexenia*** (Eds. Thomas Becker, Steffen Boch, Monika Janišová & Laura Sutcliffe) there are presently 5 papers in consideration (transfers from the last year and new proposals), but it might become more when the attractive impact factor of that journal (see above) becomes generally known.

♣ A Special Feature is being prepared for publication in ***Hacquetia* in 2016** (Eds. Stephen Venn, Iva Apostolova, Idoia Biurrun, Rocco Labadessa, Solvita Rusina, Orsolya Valko and Michael Vrahnakis). The topic will be **Ecology and Conservation of Steppes and Semi-Natural Dry Grasslands**. Papers are not strictly limited to the fields of ecology and conservation, though some connection to the topic should be evident. If you would like to publish a paper in this Special Feature, then please submit an abstract of the proposed paper to the Guest Editor, Stephen Venn [stephen.venn@helsinki.fi](mailto:stephen.venn@helsinki.fi). The deadline for submission of abstracts has now been extended until the **31 December 2014**. Invited papers then can be submitted until approx. July 2015. Contributions will be selected on the basis of proposal abstracts. Please feel free to contact me for advice about possible submissions.

# Diversity of dry grasslands in Navarre (Spain)

## Experiences from the 7<sup>th</sup> EDGG Field Workshop, 15-24 June 2014

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**Abstract:** *The 7<sup>th</sup> EDGG Field Workshop took place in Navarre, Spain, in June 2014. It was attended by 16 participants from 10 European countries. During the workshop, 35 nested-plot series ("biodiversity plots") and 49 additional normal plots, resulting in a total of 119 full relevés with vascular plants, bryophytes and lichens, were recorded. The surveyed areas included the Mediterranean, the Atlantic and the Alpine Regions. The most species-rich grasslands were recorded in the Sub-Mediterranean dry grasslands of the Calamintho-Seselietum montani in the Atlantic Region near the village Ihabar. During the workshop, 12 oral presentations on various topics in the field of grassland research were given by the participants. This article provides details of the organization and sampling methods used during the fieldwork as well as first results and an outlook. Comparisons with the previous EDGG expeditions and an illustrated diary are also included.*

**Keywords:** biodiversity; bryophyte; grassland; lichen; nested plot; vascular plant; vegetation classification; vegetation-plot database.

### Introduction

The pioneer first research expedition of the EDGG was conducted in Transylvania (Dengler et al. 2009), it was followed by expeditions to Central Podolia, in Ukraine (Dengler et al. 2010), NW Bulgaria (Apostolova et al. 2011, Pedashenko et al. 2013), Sicily (Guarino et al. 2012), NW Greece (Dengler & Demina 2012) and Khakassia, in Russia (Janišová et al. 2013). The most recent expedition, the so-called 7<sup>th</sup> EDGG Field Workshop, was conducted for the first time in Western Europe. Our

destination was the Region of Navarre, in the northern part of the Iberian Peninsula, a small region with strong climatic gradients leading to high beta diversity. The new concept of Field Workshop includes, in addition to joint field sampling with advanced sampling methods of the previous Research Expeditions, oral presentations and related methodological discussions (Biurrun et al. 2013). These discussions were always an implicit part of previous EDGG expeditions, but the new title and new programme structure make this philosophy more explicit.

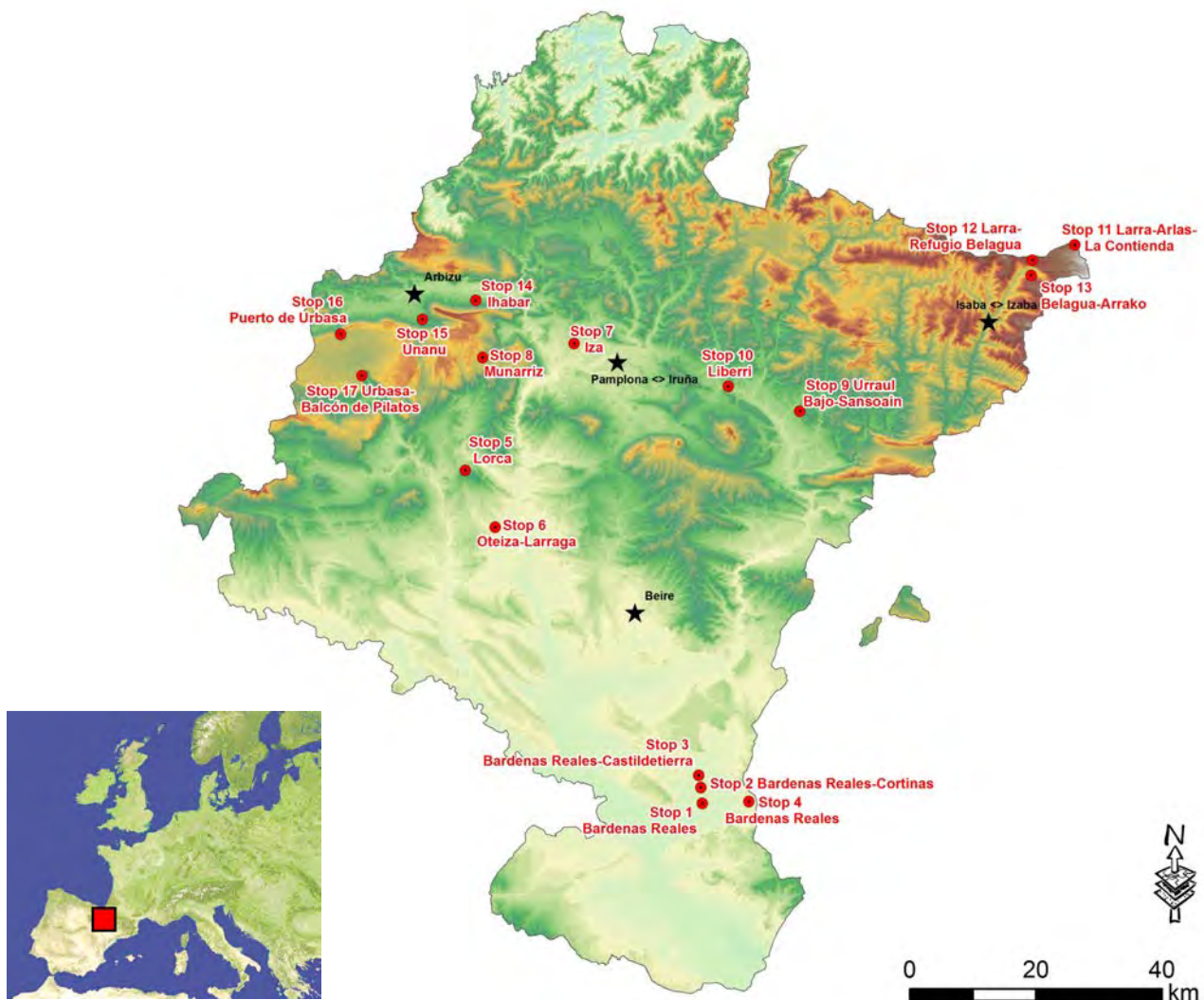


Fig. 1. Map of Navarre with location of the capital city, Pamplona, sampling sites and accomodation places.

In total, 16 scientists from 10 countries (Spain, Ukraine, Germany, Poland, Bulgaria, France, Italy, Norway, Slovakia and Turkey) participated in the eight days of fieldwork, 11 of them were partially supported by an IAVS grant. The group combined experienced senior scientist, young postdocs and PhD students. Jürgen Dengler, Monika Janišová, Hristo Pedashenko, Anna Kuzemko, Iwona Dembiczy, Zygmunt Kački, Itziar García-Mijangos, Idoia Biurrun, Renaud Jaunatre and Goffredo Filibeck had already participated in previous expeditions, while Ute Jandt, Denys Vynokurov, Nina Polchaninova, Jörn Erik Björdalen, Asun Berastegi and Didem Ambarli were newcomers. As usually, standardised sampling methods were used to allow many different analyses, both at the regional scale (e.g. Dengler et al. 2012a, Turtureanu et al. 2014) and contributions to interesting large-scale comparisons and meta-analyses. The core part of the sampling are the so-called “biodiversity plots”, following ideas of Dengler (2009). Basically, they consist of nested sampled areas from 0.0001, 0.001, 0.01, 0.1, 1, 10 and 100 m<sup>2</sup>, with the smaller ones always replicated twice within the big 100-m<sup>2</sup> plot. For each plot size, all vascular plants, bryophytes

and lichens that are superficially present (shoot presence or any-part system: Williamson 2003, Dengler 2008) are recorded. Additionally for the 10-m<sup>2</sup> plots, percentage cover per species and structural data of the vegetation are estimated and a set of environmental parameters related to topography and soil are determined. In each individual study region, the biodiversity plots are placed in homogeneous stands of different types with the aim to cover the full gradient of locally present grassland types. To complement this time-consuming sampling, we additionally survey “normal” plots, which have exactly the same parameters as the 10-m<sup>2</sup> corners of the biodiversity plots and can thus easily be combined with these for joint analyses.

This contribution starts with an introduction to the study area, followed by some preliminary results, conclusions and an outlook. After the reference section, an appendix with an illustrated diary follows.

### Study area

The Spanish region of Navarre is located in central-northern Iberian Peninsula, 42° N and 1° W, in the border

with France, at the western end of the Pyrenees. The northern part almost reaches the Bay of Biscay (9 km from the nearest point), in the Atlantic Ocean. The region covers 10,391 km<sup>2</sup> with 644,477 inhabitants and a population density of 62 persons per km<sup>2</sup>. Nevertheless, more than 50% of the population is concentrated in the metropolitan area of the capital city, Pamplona (Fig. 1). The Basque Mountains and the Pyrenees in the north and north-east have temperate climate, which becomes more continental towards the eastern part of the Pyrenees. In the southern part, the Ebro valley has a typical Mediterranean climate. Transitional areas in the central fringe show temperate sub-Mediterranean climate, with moderate summer drought. This latitudinal climatic gradient, which concerns especially to summer drought and continentality, is combined with the altitudinal gradient, very notable in the Basque Mountains and, in particular, in the Pyrenees, where the alpine or cryotemperate belt is reached. As a result, mean annual temperature varies from less than 8 °C in the higher mountains to more than 14 °C in the Cantabrian valleys and Ebro depression, and mean annual precipitation from less than 400 mm in many parts of the Ebro depression to more than 2500 mm in some mountains facing the Atlantic Ocean. Due to this strong precipitation gradient, combined with the thermic changes, semiarid, dry, sub-humid, humid, hyper-humid and ultra-hyper-humid ombrotypes can be recognized (Peralta et al. 2014).

Although some Palaeozoic outcrops that have emerged during Hercynian orogeny (slates, quartzite, schist, limestone and granite) can be found in northern Navarre, most of the region is covered by younger, mainly Secondary and Tertiary sediments. The Pyrenees and the Basque Mountains are the main geological structures in the northern half, while the southern half belongs to the Ebro depression. Sandstone, clay, limestone and gypsum form the Tertiary sediments in the Ebro depression. The Basque Mountains are mainly constituted by Triassic sandstone (in the northernmost mountains) and limestone and marl from the Cretaceous and the Eocene (Loidi et al. 2011).

Regarding the potential vegetation, deciduous forests such as *Quercus robur* and *Fagus sylvatica* forests are dominant in the northern part, in the most humid areas of Atlantic (*Q. robur* and *F. sylvatica*) and Alpine (*F. sylvatica*) regions. The Ebro valley hosts potential sclerophyllous *Quercus rotundifolia* woodlands in dry areas and *Quercus coccifera* maquis in semiarid places. The central fringe with mostly temperate sub-Mediterranean climate corresponds to forests dominated by marcescent trees: *Quercus pubescens* and *Q. faginea* on limestone and marl (the former in the Atlantic and Alpine region, the latter in the Mediterranean region) and *Quercus pyrenaica* on sandstones. More detailed description of Navarran vegetation can be found in Biurrun et al. (2013) and Loidi & Bascónes (2006).

Our sampling was entirely conducted in the Ebro watershed, thus Cantabrian valleys with streams flowing into the Bay of Biscay were not visited, as they are mostly hyper-humid and dry grasslands occur here only on steep sandstone slopes (Darquistade et al. 2004). Therefore, the Atlantic influence has only been touched in the Basque Mountains (Urbasa and Andia ranges) and

surrounding valleys (Ihabar, Unanu, Iza), which belong to the Atlantic Region. The rest of sampling was made in the Alpine Region (Pyrenees) and the Mediterranean Region (Ebro depression).

### Dry grasslands in Navarre

Semi-natural (secondary) dry grasslands were sampled, except of some azonal grassland on rocky places, especially in the subalpine belt (like in Larra). Regarding dry grasslands in the southern part (Bardenas-Reales), although theoretically they are secondary grasslands in areas originally dominated by sclerophyllous shrubs (*Quercus coccifera*), it is in fact quite difficult to imagine this succession, especially in the clayey areas. Almost all sampled grasslands are maintained by grazing, except for some mown grasslands in the Pyrenees and Urbasa that were apparently crop fields not so long time ago. Nevertheless, shrub encroachment is a growing process due to the changing land use. The sampled grasslands belong to the following phytosociological units, according to Berastegi (2013) and Rivas-Martínez et al. (2011):

***Festuco-Brometea***: Dry grasslands and natural steppes of the sub-meridional to hemi-boreal zone occurring on deep, base-rich and loamy soils. In Navarre the most common ones belong to the association *Calamintho acini-Seselieta montani* (*Potentillo montanae-Brachypodium rupestris*), in the temperate sub-Mediterranean area, and *Carduncello mitissimi-Brachypodium phoenicoidis* and *Elytrigio campestris-Brachypodium phoenicoidis* (*Brachypodium phoenicoidis*), in more Mediterranean areas.



Plot ES28 *Calamintho-Seselieta*, Ihabar. Photo: I. García

***Festuco hystricis-Ononidetea striatae***: Dry, basiphilous grasslands rich in hemicryptophytes and chamaephytes growing on cryoturbated soils in sub-Mediterranean areas of Southwest Europe. We have sampled Pyrenean subalpine dry grasslands growing in exposed rocky places: *Oxytropido pyrenaicae-Festucetum scopariae* and *Astragalo teresiani-Thymelaeetum nivalis* (*Festucion scopariae*) and Basque-Cantabrian scrubby grasslands of the alliance *Genistion occidentalis*: *Helianthemo incanikoelerietum vallesianae* (Urbasa mountain range), *Helictotricho cantabrici-Seslerietum hispanicae* (foothills of Urbasa) and *Thymelaeo ruizii-Aphyllanthesetum monspeliensis* (sub-Mediterranean valleys). The alliance

*Plantago discoloris-Thymion mastigophori* was also sampled in wind exposed cryoturbated places in the southern face of Urbasa range (*Jurineo humilis-Festucetum hystricis*).



*Jurineo humilis-Festucetum hystricis*. Balcón de Pilatos.  
Photo: J. A. Campos

**Lygeo-Stipetea:** Mediterranean pseudo-steppes and related perennial xerophitic grasslands. We sampled both tall grasslands dominated by *Lygeum spartum* growing on deep clayey flat soils (*Stipo parviflorae-Lygeetum sparti*, *Agropyro pectinatae-Lygeion sparti*) and short grasslands dominated by *Brachypodium retusum* growing on calcareous soils often with a stony or gravel upper layer (*Ruto angustifoliae-Brachypodietum retusi*, *Thero-Brachypodium retusi*).



*Stipo-Lygeetum sparti*, Bardenas Reales. Photo: D. Ambarli

**Kobresio myosuroidis-Seslerietea caeruleae:** Subalpine and alpine calcareous grasslands growing on moderated or long snow cover soils in Alpine region. In northern Iberian Peninsula it extends to Cantabrian Mountains, often in the upper supratemperate (altimontane) belt. For example, in the Basque Mountains of Navarre we sampled grasslands of the association *Aquilegio pyrenaicae-Seslerietum caeruleae* (*Salicion pyrenaicae*), but most of grasslands of this unit occur in the Pyrenees, where we sampled grasslands of *Dryado-Salicetum pyrenaicae* (*Salicion pyrenaicae*) and *Primulo intricatae-Horminietum pyrenaici* (*Primulion intricatae*).

**Tuberarietea guttatae:** Mediterranean low-grown swards dominated by annual grasses and herbs. These therophyte communities grow in the open areas of dry perennial



Plot ES18, *Primulo-Horminietum*, Larra. Photo: M. Janišová

grasslands and scrubs, and consequently they have been sampled especially in the smallest sampling scales. Basiphilous annual grasslands of the alliance *Brachypodium distachyi* were sampled: *Saxifrago tridactylitae-Hornungietum petraeae* in the Ebro depression, *Minuartio hybridae-Saxifragetum tridactylitae* in submediterranean areas and *Bupleuro baldensis-Arenarietum ciliaris* in cryoturbated places of the southern face of Urbasa mountain.

**Rosmarinetea:** Secondary dwarf scrub species-rich communities growing on eroded stony soils in Western Mediterranean. In the Ebro depression we have sampled open scrubs of *Salvio lavandulifoliae-Ononidetum fruticosae* (Oteiza-Larraga) and *Rosmarino officinalis-Linetum suffruticosi* (Bardenas).

**Nardetea strictae:** Secondary intensive grasslands and high mountain natural grasslands growing in summer moist deep and acid soils in Alpine and Atlantic Regions. In Navarre they occur both in the Pyrenees (*Nardion strictae*) and the Basque Mountains (*Violion caninae*), but we have only sampled those from Pyrenees.

**Molinio-Arrhenatheretea:** Include mesic to wet often mowed meadows and pastures maintained by grazing and mowing but with Eurasian origin. We sampled montane mown grasslands of the association *Rhinantho mediterranei-Trisetetum flavescens* (*Arrhenatherion*) in the Pyrenean valley of Belagua and in Urbasa foothills.

**Sedo-Scleranthetea:** Perennial succulent *Crassulaceae* communities rich in therophytes growing on rocky places. In Navarra, both silicolous and basiphilous communities occur, but we have only sampled basiphilous ones with *Sedum album*, *S. acre* and *S. amplexicaule*.



*Arrhenatherion* in Belagua. In the slopes, plot ES25, *Calamintho-Seselieta*, *Cynosurion*. Photo: M. Janišová

***Sarcocornietea fruticosae***: coastal and inland Mediterranean and Cantabrian-Atlantic salt-marshes and salt-pan communities. We have sampled temporary wet high saline *Limonium*-rich tall grasses formed by *Lygeum spartum* from the semiarid Ebro depression (*Limonium catalaunico-viciosoi*): *Limonio viciosoi-Lygeetum sparti*.

#### Nature conservation

Most of the surveyed grasslands are considered habitats of European importance and, in addition, they host rare plants included in several catalogues and Red Lists of endangered flora (Peralta et al. 2014), such as *Limonium ruizii* and *Senecio auricula* in halophilous grasslands of the association *Limonio viciosoi-Lygeetum sparti*, of priority interest (1510\*), *Astragalus clusianus*, *Sideritis spinulosa* and *Thymus loscosii* in mediterranean scrubs of *Rosmarinetaea* (4090), *Narcissus asturiensis* subsp. *jacetanus* and *Orchis papilionacea* in submediterranean scrubs of *Thymelaeo ruizii-Aphyllanthesetum monspeliensis* (4090), *Ziziphora hispanica* subsp. *aragonensis* in annual basiphilous grasslands of *Brachypodium distachyi* (6220\*), *Astragalus clusianus*, *Medicago secundiflora*, *Narcissus asturiensis* subsp. *jacetanus*, *Narcissus triandrus* subsp. *pallidulus*, *Orchis papilionacea* and *Ziziphora hispanica* subsp. *aragonensis* in mediterranean dry grasslands of *Ruto-Brachypodietum retusi* (6220\*), *Dactylorhiza insularis* and *Narcissus asturiensis* subsp. *brevicoronatus* and subsp. *jacetanus* in temperate submediterranean dry grasslands of *Calamintho-Seselieta montani* (6210\*), *Helianthemo incani-Koelerietum vallesianae* (6210) and *Helictotricho cantabrici-Seslerietum hispanicae* (6210), *Narcissus pallidiflorus* and *Narcissus poeticus* in mown grasslands of *Arrhenatherion* (6510), *Narcissus pallidiflorus* and *Nigritella gabasiana* in Pyrenean subalpine *Nardus* grasslands (6230\*), *Arenaria vitoriana*, *Armeria cantabrica* subsp. *vasconica*, *Centaurea lagascana*, *Erodium daucoides*, *Lomelosia graminifolia* and *Narcissus asturiensis*

subsp. *jacetanus* and subsp. *brevicoronatus* in wind-exposed grasslands of *Jurineo humilis-Festucetum hystricis* (6170), *Festuca altopyrenaica*, *Lathyrus bauhini* and *Minuartia cerastiifolia* in subalpine dry grasslands of *Festucion scopariae* (6170), *Adonis pyrenaica*, *Arctostaphylos alpinus*, *Buglossoides gastonii*, *Lathyrus vivanii*, *Leucanthemum maximum*, *Nigritella gabasiana* and *Pulsatilla alpina* subsp. *fontqueri* in subalpine grasslands of *Kobresio-Seslerietea* (6170).

#### Plant determination during the expedition

We were very lucky because Asun Berastegi, who recently finished her PhD on grassland vegetation in Navarre, was participating in the Field Workshop and helped a lot with plant identification. Every participant had a copy of her PhD dissertation with the floristic catalogue and relevé tables (Berastegi 2013). We used Claves ilustradas de la Flora del País Vasco y territorios limítrofes (Aizpuru et al. 1999) as reference flora, which was complemented by the Exkursionflora (Jäger & Werner 2007) and the Flora Vegetativa (Eggenberg & Möhl 2007), both very useful for non-flowering specimens.

#### First results

We surveyed 35 biodiversity plots and 49 additional normal plots, resulting in a total of 119 full relevés, 117 of them with soil samples. These results were obtained during effective eight day sampling, from 16 to 23 June. The same period was also partially devoted to oral presentations and transfer among sampling sites. Table 1 shows the results of the FW in Navarre in comparison with the previous expeditions.

Twelve biodiversity plots and 17 additional normal plots were sampled in the Mediterranean Region (Bardenas Reales, Lorca, Oteiza-Larraga, Sansoain, Liberrri), 13 + 18 in the Atlantic Region (Iza, Munarriz, Ihabar, Unanu, Urbasa) and 10 + 14 in the Alpine Region (Larra, Belagua). Overall, this is a good number of replicates and a relatively balanced design, which should allow for powerful statistical analyses. In addition to the vegetation, during this 7th Field Workshop also one group of invertebrates (spiders) were sampled on the same plots by Nina Polchaninova.

While we are still busy with determining some remaining plant samples and digitising the data, it is already clear where the regional phytodiversity hotspot at small grain sizes is located: The Sub-Mediterranean (semi)-dry grasslands (association *Calamintho-Seselieta montani*)

Table 1. Data on the seven EDGG Expeditions and Field Workshops

No.	Period	Research area	Altitude (m a.s.l.)	Participants	Countries	Nested-plot series	10-m <sup>2</sup> plots
1	14-26 July 2009	Transylvania (Romania)	321-670	6	3	20	63
2	10-25 July 2010	Central Podolia (Ukraine)	73-251	18	8	21	226
3	14-24 August 2011	NW Bulgarian mountains	633-1460	9	5	15	98
4	29 March - 5 April 2012	Sicily (Italy)	4-1200	14	5	21	67
5	15-23 May 2012	N Greece	1-1465	16	6	14	31
6	22 July - 1 August 2013	Khakassia (Russia)	300-700	14	7	39	133
7	15-24 June 2014	Navarre (Spain)	295-1970	16	10	35	119



in the Atlantic Region (Ihobar) were the richest of the expedition at various scales. Here we found up to 44 (36) species on 0.1 m<sup>2</sup>, 65 (52) on 1 m<sup>2</sup>, 95 (74) on 10 m<sup>2</sup> and 129 (103) on 100 m<sup>2</sup>. These data include vascular plants, bryophytes and lichens, while values in brackets are for vascular plants only, and they might slightly change when the determination of samples is finished. Vascular plant richness at the 0.1- and 10-m<sup>2</sup> scale is thus only about 20% below the known global maxima (Wilson et al. 2012). When considering total phytodiversity, among the EDGG Expeditions, only the one in Transylvania found higher maxima (e.g. 101 species on 10 m<sup>2</sup>: Dengler et al. 2012a), while the highest 10-m<sup>2</sup> values in Ukraine (67 species: Kuzemko et al. 2014), Bulgaria (62 species: Pedashenko et al. 2013), Sicily (70 species: I. Dembicz et al. unpubl.) and Khakassia (75 species: Janišová et al. 2013) were clearly below those in Ihobar.



*The evening work in Isaba. Photo: J. Dengler*

### Oral presentations

There were four keynote-lectures by the organizers of the Field Workshop: Jürgen Dengler gave us his lecture on the EDGG expedition methodology in the field, before starting our first biodiversity plot. Idoia Biurrun, Asun Berastegi and Itziar García-Mijangos introduced the participants into the general features of the study area: climatic gradients and main vegetation patterns (Idoia), grassland typology (Asun) and order *Brachypodietalia phoenicoidis* (Itziar). These three keynotes about Navarre were given at the beginning of the Field Workshop, in our first accommodation in Beire.

Other participants in the Field Workshop also contributed with presentations about results of similar studies and concepts/methods of emerging studies at early stages:

Anna Kuzemko: *Grassland vegetation of Forest and Forest-Steppe zones of Ukraine*

Zygmunt Kački: *Statistical determination of diagnostic, constant and dominant species of the higher vegetation units of Poland using the Cocktail method*

Monika Janišová: *Grassland diversity in the Ukrainian Carpathians – aims, methods and preliminary results*

Denys Vynokurov: *Syntaxonomical differentiation of the Festuco-Brometea class in the Steppe zone of Ukraine*

Didem Ambarli: *Steppe Communities of Central Anatolia under various land use*

Nina Y. Polchaninova: *Some methods of collecting invertebrates in biodiversity research. A case study of animal and plant communities under grazing pressure in steppe sites of eastern Ukraine*

Hristo Pedashenko: *Dry grasslands of NW Bulgarian mountains*

Iwona Dembicz: *Chosen functional traits as indicators of vascular plant diversity response to habitat isolation in the Pontic steppe zone (southern Ukraine)*

In total, there were 12 presentations followed by intensive discussions. Every participant supported by the IAVS grant made an oral presentation.

### Conclusions and outlook

Our plan is to have the data ready for analysis in the next few months. Still there is some work to do with vascular plants, as many small pieces were collected for further determination. Bryophytes and lichens have been sent for determination to specialists, and soils samples are going to be analyzed by a Turkish colleague. Data entry is on progress, and a preliminary paper on classification and richness patterns of dry grasslands in Navarre has already been designed and the abstract sent for evaluation to the editorial board of a special issue of *Phytocoenologia*. In this paper we will try to clarify the classification of sub-Mediterranean grasslands, as some associations described to gather them, such as *Thymelaeo-Aphyllanthesum*, are rather heterogeneous and are included in different classes (*Rosmarinetea* and *Festuco-Ononidetea*) by different authors (Berastegi 2013, Berastegi et al. 2005, Peralta & Olano 2001). Afterwards, it will be interesting to compare the biodiversity patterns and species-area relationships with those of the previous EDGG expeditions and similar datasets. We will also use the 10 m<sup>2</sup> data together with data from other geographical areas to contribute for a consistent classification of European grasslands (Dengler et al. 2013). In particular, we will try to clarify some syntaxonomical issues, such as the arrangement of the class *Festuco-Brometea* at order and alliance level and the delimitation of the class *Festuco hystricis-Ononidetea striatae* and some of the grasslands it contains. Last but not least, we assume that our dataset of scale- and taxon-dependent richness patterns in grasslands will contribute to solving two major ecological riddles that are closely related: Why are many grasslands very rich at small spatial scales, but few of them exceptionally so (Dengler et al. 2014a)? How can so many species co-exist in one plot (Wilson et al. 2012)?

As for previous EDGG Research Expeditions, the sampled data will become part of the Database Species-Area Relationships in Palaearctic Grasslands (Dengler et al. 2012b; GIVD ID EU-00-003) and additionally of the Vegetation-Plot Database of the University of the Basque Country BIOVEG (GIVD ID EU-00-011), both registered in the Global Index of Vegetation-Plot Databases (GIVD; <http://www.givd.info>; see Dengler et al. 2011). After our initial publications, they will become freely available for use by other researchers. Moreover, through BIOVEG, they will also become part of the European Vegetation Archive (EVA; Chytrý et al. 2014) and of the global plot database sPlot (Dengler et al. 2014b).



*Didem Ambarli, Denys Vynokurov, Iwona Dembicz, Hristo Pedashenko and Nina Polchaninova (pictures above) giving lectures to the audience (picture below). Photos: M. Janišová and J. Dengler*



After seven successful expeditions, the EDGG will continue its field research programme. Next year the 8th EDGG Field Workshop will take place in Poland, as it is announced in this issue of bulletin. For the years 2016-2019 we have already four offers to host the field workshop: Southern France/French Alps, Central Apennine, Anatolia and Kazakhstan. Persons interested in organising future EDGG Expeditions are encouraged to contact the EDGG Expeditions Coordinator (Jürgen Dengler).

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Plant determination in Bardenas Reales. Photo: J. Dengler



Sampling in Belagua, Pyrenees. Photo: J. Dengler

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*The famous Ukrainian singers, Anna and Denys with their manager Zygmunt, made our journey very pleasant. Photo: M. Janišová*



15 June 2014

After arrival of the expedition participants to Bilbao airport we travelled by two small buses driven by Itziar and Idoia to our first accommodation place in the Ebro valley, the village of Beire. Itziar was the first to arrive at Beire with the earliest people (Iwona, Didem, Ute, Monika, Goffredo and Denys), and on her way to Beire she picked Asun up in her town, Arbizu, our last accommodation place at the end of the field workshop. When the first group had already had dinner in our Hotel Beitu, the bus driven by Idoia, who picked up the latest participants, arrived with Jörn, Jürgen, Anna, Zygmund and Hristo. Still there were two people missing, Renaud and Nina, that arrived very late at the airport but managed to join us the next day.



16 June 2014

After a more or less relaxing sleep only disturbed by the church's bells, that were playing every hour (!), we took our buses and travelled southwards to Bardenas Reales natural park. This really amazing place is a big unpopulated area grazed by big sheep herds during the autumn, winter and early spring; there are also wheat crops. The climate is very dry, mainly semi-arid, hot in summer and quite cold in winter, and clayey hills with sandstone cover outstand in the landscape. In humid places Tamarix bushes and salt pans are common. In this special place we sampled our first biodiversity plot, altogether, after Jürgen introduced us in the sampling methodology.

The first plots take always longer, and by the time we started the second one it was midday and Asun and Idoia went to the nearby city of Tudela to pick Nina and Renaud up, which had managed to travel by bus from Bilbao with a stop in Pamplona. So by lunch time, normally quite late in the Spanish timetable, all participants were together and ready to go back to the sampling in Bardenas Reales, that continued until light went down in the evening. We sampled, in an altitudinal range of 295-340 m a.s.l., four biodiversity and four normal plots in Mediterranean perennial grasslands of *Brachypodium retusum* and *Lygeum spartum*, as well as annual grasslands of *Brachypodium distachyi* developing in the clearings of the perennial grasslands and *Rosmarinus* scrubs. Back in Beire we had a delicious dinner and went to our working place to work with the samples.





This is the richest 0.1 m<sup>2</sup> plot with 44 species





17 June 2014

The second expedition day was also dedicated to Mediterranean dry grasslands, but more to the north, and so in not so dry places. We travelled northeast towards the historical town of Estella. On the way, we visited Santa Maria de Eunate, a Romanic church from the year 1170 in the St. Jaques way. There we took our first group picture. Eunate means "a hundred doors" in Basque language, and that has probably something to do with the structure with many arcs that surrounds the church.

After this short break we continued until our first stop near the village of Lorca, in the limit between dry and sub-humid ombrotypes, with *Quercus rotundifolia* and *Q. faginea* forests as potential vegetation. There we made eight biodiversity and eight normal plots in grasslands dominated by *Brachypodium retusum* and *Brachypodium phoenicooides*, at different altitudes (510-35 m a.s.l.) and soil depths. We spent almost all day in Lorca, but on our way back to Beire we had still time for another stop in some marly hills between the villages of Oteiza and Larraga, in a landscape dominated by wheat crops under dry ombrotype, potentially covered by *Quercus rotundifolia* woodlands. There we made three normal plots in dry grasslands of *Ruto-Brachypodietum retusi*. We arrived late in the evening at Beire, but we had still time to have our first oral presentation after dinner, with Idoia introducing the general features of Navarre regarding climate and vegetation.



18 June 2014

During our third sampling day we went further to the north, to sub-Mediterranean valleys in the transition between Atlantic and Mediterranean regions. But before leaving Itziar and Asun gave their keynote-lectures about grasslands in Navarre during the breakfast. Our first stop was in Iza (427-450 m a.s.l.), a village near Pamplona with temperate sub-Mediterranean climate where we sampled one biodiversity and six normal plots with dry grasslands of the alliance *Brachypodium phoenicoidis*. After finishing we moved to the village of Munarriz in the southern slopes of Andia mountain range, once again in the limit of two regions, but still in the Atlantic one, with potential vegetation of *Quercus pubescens*, and *Fagus sylvatica* on the top. There we had lunch and surveyed three biodiversity plots and three normal plots in grasslands of *Calamintho-Seselietum montanae* (950-980 m a.s.l.), and, on the top of a cliff (1030 m a.s.l.), communities with *Sedum album* and *S. amplexicaule*. On our way back to Beire, the bus driven by Idoia was full of beautiful Ukrainian songs: Anna and Denys started to sing and they would not stop until the field workshop finished! It was really fantastic. That was our last night in Beire so after dinner, once again late, we picked up the working room so that the next day we could leave quickly.



19 June 2014

The day did not start very well, as when we were ready to put all stuff in the buses and leave Beire someone realized that one of the buses had a flat tire. But every problem brings an opportunity and while Idoia and Itziar went to the nearby town of Olite to get the tire repaired, the rest of the group was listening to the oral presentations of Anna, Monika and Zygmunt. After leaving Beire we drove north towards the Pyrenees. We stopped in two places, once again in the limit between the Atlantic and the Mediterranean regions, but more continental than those of the previous day. First we sampled near the village of Sansoain, in a hilly place at 560-580 m a.s.l. very encroached with *Buxus sempervirens*. Two biodiversity and two normal plots of *Thymelaeo-Aphyllanthesetum* and *Carduncello-Brachypodietum* were sampled. This was the hottest day during the field workshop, and for lunch we looked for shelter in the old monastery of Santa Fe. After lunch we continued sampling near the village of Liberrí, more to the west, at 500-520 m a.s.l., where we also sampled grasslands of *Thymelaeo-Aphyllanthesetum* and *Carduncello-Brachypodietum*. It was a long and productive day, if we take into account that in addition to four biodiversity and four normal plots we had oral presentations, flat tire, and travel from the Ebro valley to Pyrenean valleys. And still we had time to stop and visit Foz de Arbayun, an impressive gorge that the Pyrenean Salazar river has formed on its way southwards to Ebro valley.







20 June 2014

This night and next two ones we slept in Isaba hotel, in the village of Isaba, the highest one in the Pyrenean Roncal valley. We spent the whole day in the subalpine belt, in Larra massif, where we sampled five biodiversity and eight normal plots in grasslands of *Festucion scopariae*, *Primulion intricatae*, *Salicion pyrenaicae* and *Nardion strictae*, in an altitudinal range of 1725-1970 m a.s.l.. All these grasslands form a mosaic of azonal and successional communities according to slope, orientation, snow cover and soil depth. Potential vegetation in the area is a *Pinus uncinata*-woodland.



21 June 2014

The sixth sampling day we also worked in the Pyrenees, but we stayed in the montane belt, in the valley of Belagua, where we stopped in two places, with an altitudinal range of 935-1560 m a.s.l., both potential beech forests. In the morning we surveyed three biodiversity and three normal plots of *Nardion*, *Sedo-Scleranthetalia* and *Potentillo-Brachypodion rupestris* grasslands near the mountain refuge of Belagua, on the southern slopes of Lakora mountain. After having lunch surrounded by Pyrenean cattle, we went down to the valley, where we sampled two biodiversity and three normal plots in *Calamintho-Seselietum* (*Potentillo-Brachypodion*), *Rhinantho-Trisetetum flavescens* (*Arrhenatherion*) and some kind of mixture of *Calamintho-Seselietum*, *Cynosurion* and *Violion caninae* in slopes. On this day, we finished our sampling earlier than the others and so back in Isaba we were able to have our last presentation session. Didem, Denys, Hristo, Iwona and Nina showed us the results of their research and presented us new projects. There was an interesting discussion after each presentation.

22 June 2014

This journey we travelled from the Pyrenean Region to the Atlantic Region, thus, from our accommodation place in Isaba to Arbizu, the village of our guide, Asun. We made two stops in Sakana valley (570-610 m a.s.l.), drained by Arakil river, tributary of Ebro river. Thus, although we were in the Atlantic region we were in the Mediterranean watershed, with some influence of Mediterranean climate. In fact, temperate sub-Mediterranean climate is very common in these areas of the Atlantic region belonging to Ebro basin. First stop was near the village of Ithabar, where we sampled grasslands of *Calamintho acini-Seselietum montani* dominated by the hybrid between *Brachypodium rupestre* and *B. phoenicoides*. These were very rich grasslands and sampling took quite a long time, therefore we only managed three biodiversity and two normal plots, but what plots! After a quite late lunch, we moved to our second sampling site, near the village of Unanu. There we could do two biodiversity and one normal plot before it started raining. Fortunately we were very close to our accommodation place in Arbizu, where we slept in a camping site under the impressive Beriain mountain.







23 June 2014

During our last sampling journey we also stayed in the Atlantic region, but we climbed from the valley up to Urbasa mountain. Our first stop was still in the valley, at the bottom of Urbasa mountain pass, at 600-615 m a.s.l., where our colleagues from the University of the Basque Country Javier Loidi, Mercedes Herrera and Juan Antonio Campos joined us to participate and help in the last plots. In this first stop we sampled five normal plots in grasslands of *Helictotricho-Seslerietum hispanicae* and *Arrhenatherion*. Afterwards we went up to the top of the mountain (900-950 m a.s.l.), where we stayed the rest of the journey. This is a big area with beech forests and a mosaic of grasslands of *Calamintho-Seslerietum*, *Helianthemo-Koelerietum* and *Jasiono-Danthonietum* (violion) grazed by cattle, sheep and horses. We first did four biodiversity and one normal plot just on the top of the mountain pass, in the mentioned grasslands and also in grasslands of *Primulion intricatae* in north facing steep slopes. Finally, we moved southwards to reach the place called Balcón de Pilatos, an impressive cliff on the southern extreme of Urbasa range, with a dramatic depth of 900 m a.s.l. over the Amescoas valley, already in the Mediterranean region. There we did our last sampling, two normal plots in the association *Jurineo humilis-Festucetum hystrioides*. The field workshop ended quite dramatically, as storm was coming fast while we were working in the last plots. When we were writing the last plant coverages, the first drops started to fall and next seconds we were running to the buses because the sky was falling over our heads. Fortunately, we had our last group picture before sampling, and now we can show that image.

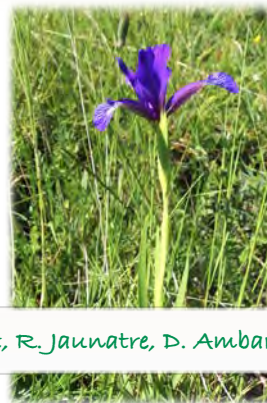
The way back to the valley across Urbasa mountain was a nice experience: storm was very strong, all was dark and thunders and rays did not stop. Our colleagues from Bilbao left us and took Zygmunt with them. During the day Jörn and Asun had also left, so we only rested 13 people. When we arrived to the camping site it was really difficult to move from our bungalows to the working place and the restaurant, because all the paths were flooded and muddy. We could manage and after dinner we organized samples (soils and plants) and had a short meeting to talk about the organization of plant determination, data entry and soil analysis and future field workshop venues.





24 June 2014

We got up early and travelled directly to Bilbao airport because some participants had to be at the airport quite early. Before leaving Navarre we left the Ukrainian group, Anna, Nina and Denys on the bus to Pamplona. They continued the travel through Navarre, but the rest of people said goodbye to this beautiful and diverse region.



Photos for the diary were provided by M. Janišová, J. Dengler, U. Jandt, R. Jaunatre, D. Ambarli and G. Filibeck

# BAYHOST 2014

## Report from research stays of EDGG members in Bayreuth

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Bulletin of the European Grassland Group 24/25 (2014): 22-25

**Abstract:** *Seven researchers from Bulgaria, Hungary, Poland and Ukraine participated in a research visit program financed by The Bavarian Academic Center for Central, Eastern and Southeastern Europe (BAYHOST). The guests spent from one to three weeks at University of Bayreuth, where they worked on the preparation of databases and scientific papers for international journals under the supervision and with the invaluable help of Jürgen Dengler. Besides the pure scientific work, participants had the possibility to visit protected areas and experience several cultural and historical landmarks of Upper Franconia.*

**Keywords:** EDGG Research Expedition, Ukraine, Bulgaria, Poland, Hungary, Sicily, phytosociological databases, SIGNAL.



*BAYHOST program participants in the campus of University of Bayreuth. Photo: J. Dengler*

## Introduction

From 10 October to 2 November 2014, seven researchers from Bulgaria, Hungary, Poland and Ukraine participated in an academic exchange at the Research group of Disturbance Ecology (Prof. Dr. Anke Jentsch) of the University of Bayreuth, financed by the Bavarian Academic Center for Central, Eastern and Southeastern Europe (BAYHOST). The time spent in Bayreuth by each participant ranged from one to three weeks. The grants covered the travel, accommodation and other basic maintenance costs.

The main aims of the program were:

- (1) Planning the paper and conducting the analyses on scale-dependent phytodiversity patterns and their drivers in Central Podolian dry grasslands; starting of writing up the manuscript (Anna Kuzemko).
- (2) Analyses of the data from 4<sup>th</sup> EDGG Research Expedition to Sicily and preparation of the paper on diversity patterns of Sicilian dry grasslands (Iwona Dembicz)
- (3) Working on three databases - Balkan Dry Grassland, Balkan Vegetation and Romanian National Grassland databases; planning methods of analysis of Balkan dry grassland vegetation. (Kiril Vassilev)
- (4) Planning the paper and combining data sets from the Nordic-Baltic Dry Grassland Database and the Polish National Vegetation Database for the purpose of analysis of diversity patterns and large scale classification of dry grasslands (*Festuco-Brometea* and the *Koelerio-Corynephoretea*) (Zygmunt Kącki and Grzegorz Swacha)
- (5) Analyses of the effects of different sampling methods on the species richness and species area relationships on the data of SIGNAL Assembly add-on experiment; planning the paper and writing the manuscript (Zita Zimmermann and Gábor Szabó)

## Working process

The data from EDGG Expeditions (Kuzemko et al. 2014, Guarino et al. 2012) were analyzed using R scripts for different R packages (e.g. MuMin) by Anna Kuzemko and Iwona Dembicz under the supervision of Jürgen Dengler. The preliminary results of statistical analyses allowed the identification of the main drivers of grasslands biodiversity within the studied regions. The results will be compared with each other and with the results from dry grasslands of Transylvania (Turtureanu et al. 2014) in the near future.

As a result of Kiril Vassilev's checking procedure of three databases (Balkan Dry Grasslands Database (Vassilev et al. 2012), Balkan Vegetation Database and Romanian National Grassland Database, which are still not registered in GIVD), the quality of their data was improved and sent to European Vegetation Archive (EVA). A great step was done for organizing of Romanian National Grassland databases, where popup lists were organized as well. Together with Jürgen Dengler, data property and governance rules for same databases were created, which will be suggested to all contributors.

Zygmunt Kącki and Grzegorz Swacha joined the Working Group on Dry Grasslands in the Nordic and Baltic

Region (Dengler & Růsiņa 2012), the main goal of which is to create consistent large-scale classification of dry grasslands in the Nordic-Baltic region. During the stay in Bayreuth deputies of the Nordic-Baltic Dry Grassland Database and the Polish National Vegetation Database (Kącki & Śliwiński 2012) prepared a joint data set in TURBOVEG format for classification of Nordic-Baltic dry grasslands. This required unification of nomenclature and standardization of header data. A total of ca. 12,000 relevés was exported to the JUICE software package for analysis. The joint time in Bayreuth resulted in discussing and accepting methods of data analysis.

Zita Zimmermann and Gábor Szabó worked with the data collected in the framework of the SIGNAL project under the leadership of Jürgen Dengler. Differences between the species richness values obtained by different sampling methods (rooted and any-part system) were calculated with linear mixed models in R. The effect of the sampling schemes on the shape of the species-area relationship (SAR) curves was also investigated using STATISTICA program. Based on the results, a manuscript is being prepared.

During the academic exchange all participants presented seminars on the aim of the stay, as well as on their scientific background and interests on the forum of Disturbance Ecology and Biogeography Departments of University of Bayreuth. They attended also training course on the use of R software and statistics in ecological studies conducted by Manuel Steinbauer from Department of Biogeography, as well as two paper writing seminars involving researchers from both above mentioned departments. The second paper writing seminar was focused on the manuscript "Diversity patterns of vascular plants, bryophytes and lichens in dry grasslands of Sicily (Italy) in relation to environment and scale" prepared by Iwona Dembicz during her stay in Bayreuth. Apart from valuable comments for the authors of the manuscript the involvement in paper-writing seminars was very interesting for the rest of participants. Such a form of seminars was previously unknown for the majority of the guests. Some of them are planning now to introduce such a fruitful form of meetings also within working groups at their home universities.

The participants had also a possibility to gain new experiences and knowledge during visit in the Ecological Botanical Gardens of the University of Bayreuth and its famous greenhouses, assisting the field research on experimental sites incorporated in the project SIGNAL and reading the extensive scientific literature delivered by Jürgen Dengler

## Combining work with pleasure

In addition to purely scientific work, we were able to see the attractions of the medieval town Bayreuth, the capital of Upper Franconia. Jürgen Dengler organized also two very interesting trips. During the first excursion – to Franconian Switzerland, participants visited several dry grasslands sites with vegetation typical for the *Festuco-Brometea* class (*Seslerio-Festucion* & *Bromion erecti* alliances), spruce and beech forests, as well as had possibility to meet with the culture and traditions of the Upper Franconia. During the second trip they visited the city of Bamberg (UNESCO World Heritage) with its



Working process – Grzegorz, Zygmunt and Iwona. Photo: J. Dengler



Excursion to Franconian Switzerland. Photo: J. Ransijn



Working process – Kiril, Zita and Gabor. Photo: J. Dengler



Iwona and Jürgen at the experimental sites of the University of Bayreuth. Photo: A. Kuzemko



Working process – Anna. Photo: I. Dembicz



The main square of Bayreuth. Photo: A. Kuzemko



Initial presentation - Iwona Dembicz and Anke Jentsch. Photo: A. Kuzemko



In Bamberg. Photo: J. Dengler



outstanding medieval old town rich in surviving secular and ecclesiastical buildings, including the most impressive romanesque Cathedral Church of St Peter and St George.

At the invitation of Jürgen Dengler, Polish-Ukrainian and Bulgarian-Hungarian evenings were carried out in his home with traditional food and slideshows with photos from Jürgen's collection made during expeditions and other events of the EDGG in these countries.

### Acknowledgements

We are extremely grateful to the Bavarian Academic Center for Central, Eastern and Southeastern Europe (BAYHOST) for the financial support and personally to head of the Department Prof. Anke Jentsch and staff of the Disturbance Ecology and Biogeography Departments for their hospitality and help. Special thanks to Jürgen Dengler for organization, management and administration of the BAYHOST program.

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*Polish-Ukrainian evening. Photo: J. Dengler*



*Polish-Ukrainian evening. Photo: A. Kuzemko*



*Bulgarian-Hungarian evening. Photo: J. Dengler*



*Bulgarian-Hungarian evening. Photo: J. Dengler*

# Invitation to the 8<sup>th</sup> EDGG Field Workshop, Poland, June 2015

*Theme: Fine-scale diversity patterns of dry grasslands in Poland along edaphic and climatic gradients*



*Lower Silesia, Krowiarki Mts. Photo: Z. Kącki*



*Nada Basin, traditional landscape. Photo: Z. Kącki*



*Lublin region, dry grassland near Gliniska.  
Photo: I. Dembicz*

## General information

Although the idea of EDGG Field Workshops appeared relatively recently (the first was organized in 2014 in Navarre, Spain; see information in the present issue of Bulletin), in fact joint research field sampling projects of EDGG members (titled before as “Research Expeditions”) have a longer, six-year-old tradition. In 2009, the first EDGG Research Expedition was conducted in Transylvania, Romania (Dengler et al. 2009, 2012a). The second expedition in 2010 went to Central Podolia, Ukraine (see Bulletin 8: 15–16), the third in 2011 to the Western Bulgarian Mts. (see Bulletin 12: 10–14). In 2012, there were two such expeditions, one to Sicily, Italy (Guarino et al. 2012), and one to Northern Greece (see Bulletin 16: 18–20). In 2013, the expeditions reached Central Asia, in the Altai Mountain foreland (Janišová et al. 2013), while the last expedition took place in Spain in Navarre (see current Bulletin, pp. 4–21).

The direct goal of these international expeditions was to sample high quality data on species composition and diversity of dry grasslands (and related communities) in parallel with environmental factors (soil, topography etc.) in under-studied regions of the Palaearctic. Besides of field sampling, there were always the other overall aims: to use obtained data for joint high-ranking publications in international journals and to exchange knowledge (about species determination, field sampling, analytical methods) among participants with different backgrounds. In contrary to the former label of “Research Expeditions”, the concept of the “Field Workshops” gives greater emphasis to the latter. Changing the concept turned out to be very fruitful, as it could be seen during the Field Workshop in Navarre (see the present issue of the Bulletin, pp. 4–21). Thanks to the concise presentations prepared by participants, exchange of knowledge and information has become more structured and allowed not only more productive discussions on larger forum, but also to know more about the scientific interest of particular participants.

As the most important achievements of the previous expeditions, two published ISI papers from the first expedition (Dengler et al. 2012, Turtureanu et al. 2014) and one on the third (Pedashenko et al. 2013) should be mentioned. Several other papers from various expeditions are in preparation. Moreover, some of the plots sampled during the EDGG Research Expedition in Transylvania carry the world records of vascular plant species richness, which was highlighted very prominently by Wilson et al. (2012).

## Philosophy of the EDGG Field Workshops

The general philosophy of the EDGG Field Workshops is similar to that of summer schools and workshops held by

other scientific organizations. However, while summer schools are normally restricted to MSc and or PhD students, EDGG Field Workshops are open to EDGG members at any academic level who either want to deepen their methodological knowledge or contribute to an advancement of methodological approaches by discussion with other colleagues interested in similar topics. Particularly welcome are PhD students and young Postdocs who plan to do field sampling of grassland vegetation and wish to discuss their sampling ideas before they start.

The EDGG Field Workshops are very intensive events of typically 7–12 days duration, restricted to a small group of highly motivated participants. They contain a mixture of oral presentations, methodological discussions, and joint field sampling with advanced sampling methods. The core aims of the EDGG Field Workshops are knowledge exchange and capacity building among scientists from various countries regarding planning of observational studies on biodiversity patterns, species determination, field/statistical techniques, vegetation classification approaches and scientific writing. There are three types of oral presentations: (1) key note lectures by the Workshop organizers on the study area and on sampling methodology; (2) presentations by participants about results from similar studies (10 min presentation + 5 min discussion); (3) presentations about concepts/methods of emerging studies (e.g. PhD projects) at early stages (10 min presentation + 15 min discussion). Presentations of methodological approaches in the field are also welcome.

The field data collected will subsequently be used for joint publications by the participants, which will be planned during the Field Workshop. Later they will be contributed to publically accessible vegetation-plot databases (Database Species-Area Relationships in Palaeartic Grasslands; GIVD ID EU-00-003; Dengler et al. 2012b; Polish Vegetation Database; GIVD ID EU-PL-001; Kaćki & Śliwiński 2012).

The sampling design will be identical to that of the seven former EDGG Research Expeditions/Field Workshops (and several other studies) to allow large-scale comparisons. Its core points have been proposed by Dengler (2009). We use on the one hand intensive nested-plot sampling covering plot sizes of 0.0001, 0.001, 0.01, 0.1, 1, 10 and 100 m<sup>2</sup> and on the other hand supplementary 10-m<sup>2</sup> relevés (for details, see Dengler et al. 2012a). In both cases, all terricolous vascular plants, bryophytes and lichens are recorded, and for the 10-m<sup>2</sup> (sub-) plots also percentage cover of species and environmental data (slope, aspect, microrelief, soil depth + a mixed soil sample to be analysed in the lab).

Suggestions from participants regarding additional data collection and fieldwork that could be incorporated into the workshop programme are welcome and can be discussed with the organizers (such as biomass or trait measurements) or sample further taxa on the same plots (e.g. snails, grasshoppers, etc.).

### 8<sup>th</sup> EDGG Field Workshop

The 8<sup>th</sup> EDGG Field Workshop will take place in Poland (south and southeast part of the country) from 13 to 23 of June 2015. This event is organized by Zygmunt Kaćki (University of Wrocław), Iwona Dembicz (University of Warsaw) and scientific experts from particular regions and in cooperation with Jürgen Dengler (EDGG Executive Committee, University of Bayreuth & German Centre for Integrative Biodiversity Research).

There are 13 places for EDGG members to join this expedition (in addition to the three organizers). Participants from any country and any academic level (BSc student to professor) are welcome. In order to ease the subsequent analytical work, we particularly appreciate the participation of people experienced in any of the following fields: good knowledge in bryophytes/lichens/critical vascular plants; experience in high-quality field sampling or advanced analytical methods of biodiversity patterns.



*Dry grasslands on Bug river valley slopes - Lublin region. Photo: Z. Kaćki*

Approximate costs are 450–550 €, including transport, meals and accommodation from arrival in Wrocław (via train, bus, car or plane) until departure from the same place. The exact cost will be confirmed later. It is also possible to apply for financial support for participation (travel grants, see below), though this requires membership of the IAVS (joining is possible at <http://www.iavs.org/MembershipRenew.aspx>). Membership rates are generally low and further reduced for students. Persons from low-income countries can apply for free membership (<http://www.iavs.org/AwardsFinancial.aspx>). Moreover, the organisers will apply for general project funding that can reduce the per-capita costs significantly.

### Preliminary schedule

First day (13 June): Arrival in Wrocław, south-west of Poland. If flights arrive late in the afternoon, night in Wrocław and then in the early morning of the next day transfer to Kłodzko.

Second day (14 June): fieldwork in the Krowiarki Mountain: high diversity grasslands with *Bromus erectus* and *Koeleria pyramidata*, orchids or *Gentiana* species.

Third day (15 June): fieldwork in Kraków-Częstochowa Upland: vegetation of *Koelerio-Coryneporetea* class and galman grasslands temporally classified to *Violetea calaminariae* class.

Fourth to sixth day (16 June - 18 June): fieldwork in Pińczów region (Nida Basin): different types of vegetation of *Festuco-Brometea*, *Koelerio-Coryneporetea*, *Trifolio-Geranietae* classes and thermophile meadows of *Molinio-Arrhenatheretea* class.

Seventh to ninth day (19 June - 21 June): fieldwork in Lublin region: different type of east European *Festuco-Brometea* grasslands and species-rich meadows from *Arrhenatheretalia* order.



*Cypripedium calceolus*. Photo: Z. Kącki

Tenth day (22 June): fieldwork in north Bug valley region (Drohiczyn, Janki, Wyszaków): dry grasslands from *Trifolio-Geranietae* class and *Koelerion glaucae*, *Violion caninae* and *Armerion elongatae* alliances.

Eleventh day (23 June): Back in Wrocław (5 hour from Warsaw to the airport, arrival in Wrocław about 12 a.m.).

The lecture & discussion blocks will be held during the evenings or during spells of bad weather that prevent fieldwork.

### How to register

Applications to participate should be sent not later than **31 January 2015** to both of the following contact persons (this applies also to all your subsequent e-mails):

Zygmunt Kącki ([zygmunt.kacki@uni.wroc.pl](mailto:zygmunt.kacki@uni.wroc.pl))

Jürgen Dengler ([juergen.dengler@uni-bayreuth.de](mailto:juergen.dengler@uni-bayreuth.de))

Please give as subject of your e-mail “EDGG Field Workshop 2015” and provide your name, surname, affiliation, address, e-mail, academic degree/position and age. For persons participating the first time in an EDGG



Dry grasslands on sandy soils in Podlachia region. Photo: I. Dembicz

Field Workshop, we need a short statement of interest and competences (approx. 10 lines), in which you should explain why you wish to participate in the Workshop, what you would contribute to its success (including any subsequent publications, e. g. knowledge of Central European flora, of bryophyte and lichens or of analytical methods or additional ideas for field sampling) and what you would like to gain from your participation. Please also indicate in your application if you have special dietary requirements.

If you wish to give an oral presentation, please attach, in a separate Word document, a half-page abstract and indicate whether this presentation belongs to category 1, 2 or 3 (see details above).

If you wish to apply for travel grants from the IAVS Global Sponsorship Committee, you need to send your complete application in cc: also to the IAVS Administrator, Stefan Bradham ([sbradham@faseb.org](mailto:sbradham@faseb.org)).

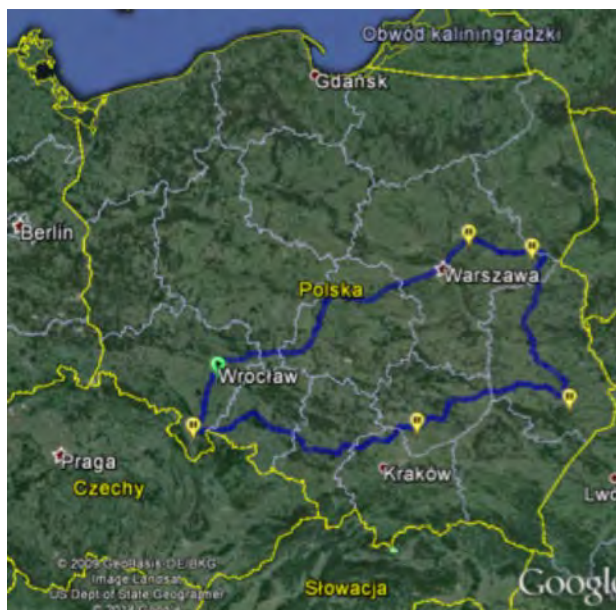
Be aware that such an application is only possible if you are IAVS member in the year 2015 and you give an oral presentation during the Field Workshop. Additional information needed for such travel grant applications are:

- specification that you are IAVS member in 2015;
- estimated costs of travel to and from Wrocław;
- information whether you receive other funding;
- indication whether your participation is only possible with financial support;
- indication whether you are also applying for financial support to attend the European Dry Grassland Meeting in Mainz (you can receive financial support for only one of these meetings and therefore have to indicate your preference).

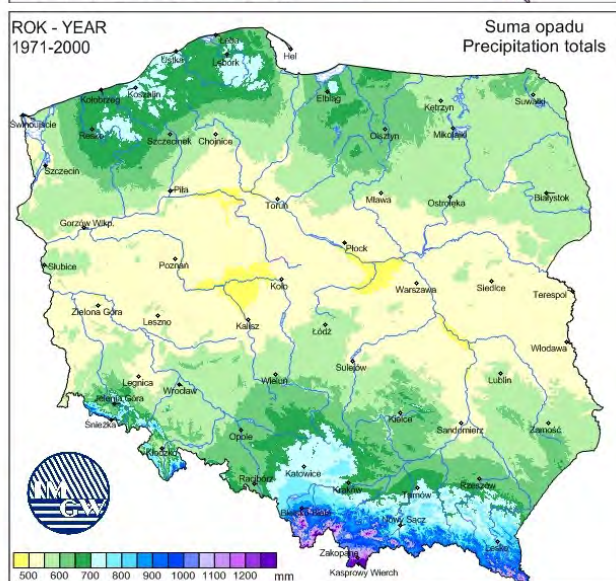
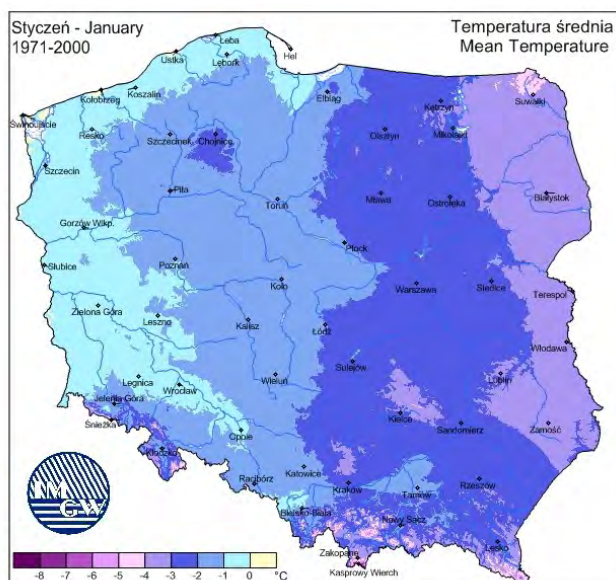
If there are more applications for participation than available places, the organizers will make a selection based on the information provided by you. Notification of acceptance (or otherwise) will be sent by 3rd March 2015. The decision on potential travel grants and the amount of money awarded to each of the scholars will be made by the EDGG Executive Committee in consultation with the IAVS Global Sponsorship Committee.

### The study area

Poland is one of the biggest countries in Europe, and is also the location of Europe's geographical centre (according to one official declaration in 1775 it is Suchowola near Białystok). The landscape of Poland is very diverse, ranging from the Baltic Sea coast in the north, to lowlands with wide river valleys in central Poland up to highlands and high mountains (Sudety and Karpaty) in the south. The west and northwest parts of Poland are under the influence of subatlantic climate, while the east and northeast are characterized by continental climate. The location of Poland in the transitional zone between the oceanic and continental climate plays an important role in shaping the diversity and ranges of plant communities. Here, *Fagus sylvatica*, which is one of the most important forest-forming trees, reaches the northern and eastern range of distribution. In the same group are *Abies alba* with its northern border of



Preliminary route in the FW research area



Important features of the climate in Poland: mean January temperature and total annual precipitation



*Koelerion glaucae* in Podlachia region. Photo. I. Dembicz



*Sesleria uliginosa* grassland in Nida Basin. Photo: Z. Kąckj



*Festuco-Brometea* grassland. Photo. I. Dembicz



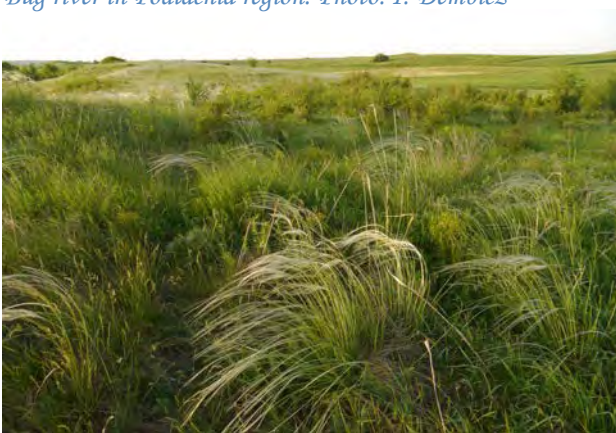
Dry grassland with *Anemone sylvestris*. Photo. I. Dembicz



Bug river in Podlachia region. Photo. I. Dembicz



*Inuletum ensifoliae* grassland Photo. I. Dembicz



*Stipa joannis* grassland in Nida Basin. Photo. I. Dembicz



Dry grassland with *Juniperus communis*. Photo. I. Dembicz

distribution and *Acer pseudoplatanus* with its eastern border of distribution. There are also numerous plants with southern and southeastern distributions, the ranges of which end in western Poland. Pannonian elements of the flora include *Inula ensifolia*, *Cirsium pannonicum*, *Linum flavum*, *Linum hirsutum* and *Carlina onopordiifolia*. Endemism of Polish flora is rather low, especially for lowland areas where no geographical barriers exist, neither in the west nor in the east. Endemic species for lowlands are *Galium cracoviense*, *Cochlearia polonica* and probably *Potentilla silesiaca*.

The highest level of endemism is indicated for mountain ranges, however, only small number of species from the Carpathians and the Sudetes are found exclusively on the Polish side. These are *Erysimum pieninicum*, *Taraxacum pieninicum* from Pieniny Mts. and *Saxifraga moschata* subsp. *basaltica* growing in Karkonosze Mts. Regarding the potential vegetation of Poland, deciduous forests are the dominant vegetation type. The mesic sites should be dominated by beech and oak-hornbeam forests while in the river valleys the potential vegetation includes alder carrs and willow riparian forests. In the northeastern part of Poland, which remains under the influence of boreal climate, we can still observe a well-preserved primeval deciduous forest (Białowieża Forest). In the northeastern part of Poland, many deciduous types of forests are characterized by natural admixture of spruce.

In Poland, dry grasslands developed and are maintained by human activities – deforestation and introduction of grazing management to the most marginal, dry, rocky or sandy sites. Their state of development and preservation perspectives depend largely on the continuity of land use and type of agriculture. In regions with intensive agriculture (e.g. Lower Silesia and some regions of Lublin area) dry grasslands are preserved only in very small enclaves, and are often protected as nature reserves. In regions with very fragmented parcels (Nida Basin, Podlachia) typical extensive agriculture survived until recently and therefore small patches of grasslands are still scattered in the landscape.

The southern part of Poland, in which the Field Workshop will take place, is very diverse geographically and geologically. The western part (Lower Silesia) is affected by oceanic air masses with an average temperature of the coldest month (January) at about  $-0.5^{\circ}\text{C}$  (Pawlak 1997). The southern parts of Lower Silesia are covered by mountains (Western and Central Sudetes), with typical altitudinal vegetation zonation and numerous glacial relicts like *Saxifraga nivalis* and *Pedicularis sudetica*. Sudety Mts. are dominated by acidic and poorly soluble rocks. Only few regions are composed of limestone bedrock (in a crystalline form) and these areas are main locations of xerothermic vegetation from the alliance *Bromion erecti*. An exception is the xerothermic grasslands with *Avenula pratensis* growing on serpentinite. During the Field Workshop we will collect samples from dry grasslands and thermophilous meadows growing on serpentine sites in Słęża Massif and Krowiarki ridge in Sudety Mts. These grasslands occur at elevation of 400-500 m a.s.l. in areas where rainfall is approx. 650 mm. The peculiarity of this region is the presence of numerous thermophilous species in mountainous areas (Szeląg 2000).



*Chamaecytisus albus*. Photo: Z. Kącki



*Adonis vernalis*. Photo: Z. Kącki



*Ophrys insectifera*. Photo: Z. Kącki



*Cochlearia polonica*. Photo: Z. Kącki

The oceanic influence reaches the western slopes of Kraków-Częstochowa Upland (known as the Polish Jurassic Highland or Polish Jura), the highest points of which are above 500 m a.s.l. Ranging from the south to the north, this highland forms a barrier against the western, humid winds so its western slopes receive more than 800 mm of precipitation per year (the wettest place in Poland outside the mountains) (Kruczała 2000). The hills of Jura are built from resistant to weathering reef limestone forming characteristic monadocks.

Along the western edge of the highland, Triassic dolomites penetrated by hydrothermal waters containing heavy metals reach the surface. The area has been important for lead and zinc mining and smelting area since the Middle Ages. The soils on post-mining areas containing heavy metals are the area where specific vegetation from the class *Violetea calaminariae* develops (Grodzińska & Szarek-Lukaszewska 2010). Large depressions between the hills are filled with thick Pleistocene sands where one of the largest areas of open sands in central Europe, the so called "Błędowska desert", has developed as a result of human activities. Nowadays, active conservation measures help to keep it dominated by initial vegetation from the *Koelerio-Corynephoretea* class.

The Nida Basin is characterised by unique vegetation features. The above mentioned area forms a depression ranging from 200 to 350 m a.s.l. sheltered from the north and the west by high lying areas of Świętokrzyskie Mountains and Jura. Thus the climate of the area is dry (precipitation of around 550 mm) and warm (mean yearly temperature of about 8°C and the temperature of the coldest month of about -2.5°C) (Stopa-Boryczka & Boryczka 2005).

The Nida Basin is the biodiversity hotspot of Poland especially regarding the presence of many thermophilic and continental species. The bedrock of the Nida Basin was formed in Tertiary (Miocene) below a shallow, warm sea and consists of sedimentary calcareous rocks such as limestones and marls as well as evaporitic gypsum. Different types of dry grasslands can be found here. The most common are dry grasslands from *Festuco-Brometea* classified to the alliances *Cirsio-Barchypodion*, *Festucion valesiacae* and *Koelerio-Phleion phleoidis*. In the Nida river valley there are also grasslands from the order *Corynephoralia* (e.g. *Corynephorion canescentis* and *Armerion elongatae*).

Among many floristic peculiarities, two species draw a special attention: first the subendemic *Carlina onopordifolia* and second *Lathyrus pannonicus*, with only one site in Poland (the closest site is 300 km to the south).

The Nida Basin is also the area of occurrence of submediterranean species like *Reseda phyteuma*, *Dictamnus albus* and *Lathyrus latifolius*. *Rosa gallica* and *Cimicifuga europaea* occur here at the border of their distribution range. Grasslands and meadows with *Sesleria uliginosa* are a unique type of vegetation here. This species builds a specific, probably endemic xerothermic vegetation type *Seslerio uliginosae-Scorzoneretum purpureae* (Towpasz & Stachurska-Swakoń 2012). It is also a main component of *Molinia* meadows and vegetation of calcareous fens form the order *Caricetalia davalliane* (Babczyńska-Sendek & Barć 2009).

During the Workshop we will also visit the Lublin and Volhynian-Podolian Uplands and the eastern borders of Poland. This south-eastern part of the country is influenced by continental climate with average July temperature of 17.5°C, average January temperature of -3.5°C (the annual amplitude 21°C). The annual precipitation varies from 550 to 600 mm (Stopa-Boryczka & Boryczka 2005). Through this area runs the physiographic boundary between Central and Eastern Europe defined by a beech and fir range limits (Kondradzki 2002). The undulating landscape is dominated by intensively managed cereal fields and orchards, where high productivity is ensured by the presence of very fertile soils - chernozems and brown soils formed on a loess cover. The thickness of the loess layer reaches up to 20-30 meters in the south of the area and decreases towards the north (Kondradzki 2002). In some places, however, the outcrops of older, Cretaceous rocks, mainly limestone, marl and dolomite are also present. Patches of dry grasslands vegetation from *Festuco-Brometea* class occur both on the loess substrate, as well as on the calcareous outcrops.

The loess supports grasslands representing *Thalictro-Salvietum*, *Sisymbrio-Stipetum capillatae* and *Koelerio-Festucetum rupicolae* associations. On the rocks, very initial patches of *Inuletum ensifoliae* can be found. The grasslands of Lublin region are distinguished by the presence of a group of eastern species found in Poland only or predominantly in this region like *Astragalus onobrychis*, *Chamaecytisus albus*, *Festuca macutrensis*, *Echium russicum*, *Senecio macrophyllus*, *Veratrum nigrum*, *Verbascum phoeniceum*. Most of the dry grasslands in the Lublin region are currently maintained thanks to the efforts of active protection as the traditional use is no longer cultivated.

The last destination of our Field Workshop is the eastern part of the central Polish lowlands (the South Podlachia Lowland and the Middle Mazovian Lowland). The average annual precipitation in these areas is approx. 530 mm, and the average temperatures in January range from -2.7 to -3.7°C. The entire area is covered with Quaternary sediments of glacial origin: mainly sand, gravel and glacial till. The monotonous and flat landscape of the region is dominated by forests and extensively used



*Oxytropis pilosa*. Photo. I. Dembicz



agricultural areas. The size of grasslands and their richness differ from those found in upland regions (there are no typical *Festuco-Brometea* grasslands), however, we can find here very interesting sandy grassland vegetation, which is very rich in bryophytes and lichens. One of the most important sites of dry grasslands occurrence are valleys of big rivers. For example, in the Bug river valley there are many extensively grazed grasslands from the alliances *Corynephorion canescentis*, *Koelerion glaucae* and *Armerion elongatae*, as well as *Nardus stricta* grasslands (*Violion caninae*).

Polish dry grasslands have been studied by many authors during the last century (e.g. Ceynowa 1968, Głazek 1968, Głowacki 1988, Filipek 1974, Czyżewska 1992, Brzeg 2005, Babczyńska-Sendek 2005). Any synthetic study showing diversity along environmental and spatial gradient have not been published so far, despite the fact there are about 4000 relevés collected from dry grasslands in the Polish Vegetation Database (Kącki & Śliwiński 2012). The first attempt of such study is a monograph on diagnostic, constant and dominant species of higher vegetation units in Poland by Kącki et al. (2013). During the Field Workshop we will study the variation of dry grasslands along increasing gradient of continentality. We will also focus on factors determining richness at different spatial scales (Dengler 2009). Additionally we will also try to check which bryophytes and lichens occur in various types of grasslands, as they have been proven to be important elements of dry grasslands (Berg & Dengler 2005; Löbel & Dengler 2008). Such a complex study has not been performed in Poland so far.

Our field survey will be carried out in the following syntaxa (system according to Kącki et al. 2013):

**KOELERIO-CORYNEPHORETEA** Klika in Klika et Novák 1941

*Corynephorretalia* Klika 1934

*Corynephorion canescentis* Klika 1931

*Armerion elongatae* Passarge 1964

*Sedo-Scleranthetalia* Br.-Bl. 1955

*Koelerion glaucae* Volk 1931

**FESTUCO-BROMETEAE** Br.-Bl. et Tüxen ex Soó 1947

*Festucetalia valesiaca* Br.-Bl. et Tüxen ex Br.-Bl. 1949

*Festucion valesiaca* Klika 1931

*Koelerio-Phleion phleoidis* Korneck 1974

*Brometalia erecti* Koch 1926

*Cirsio-Brachypodium pinnati* Hadač et Klika ex Klika 1951

*Bromion erecti* Koch 1926

*Origanetalia vulgaris* Müller 1962

*Geranion sanguinei* Tüxen in Müller 1962

*Trifolion medii* Müller 1962

**VIOLETEAE CALAMINARIAE** Br.-Bl. et Tüxen 1943

*Violetalia calaminariae* Br.-Bl. et R.Tx. 1943

*Armerion halleri* Ernst 1965

**MOLINIO-ARRHENATHERETEA** Tüxen 1937

*Arrhenatheretalia* Tüxen 1931

*Arrhenatherion elatioris* Luquet 1926

*Cynosurion cristati* Tüxen 1947

*Molinietalia* Koch 1926

*Molinion caeruleae* Koch 1926

**CALLUNO-ULICETEA** Br.-Bl. et Tüxen ex Klika et Hadač 1944

*Nardetalia strictae* Oberdorfer ex Preising 1949

*Nardo strictae-Agrostion tenuis* Sillinger 1933

*Violion caninae* Schwickerath 1944

*Nardo strictae-Juncion squarrosi* (Oberdorfer 1957) Passarge 1964

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*Orchis pallens*. Photo: Z. Kącki

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Zygmunt Kącki, Iwona Dembicz, Łukasz Kozub,  
Grzegorz Swacha & Jürgen Dengler

# Session on grazing impact at EGU-2015 Vienna

More than 25% of world's land surface is grazed by domestic animals, which represents a surface area more than twice of that used for cultivation and almost the same area occupied by forests or other land uses. Mismanagement of livestock grazing, mainly in form of unbalanced animal numbers, is considered by many authors the most important cause of land degradation, outstripping even deforestation, industrialization or soil tillage. Nonetheless, the effects of overgrazing/undergrazing are not equally severe in all environments, with overgrazing being much more intense in areas where water is a limiting factor.



*Overgrazed kermes oak (Quercus coccifera) shrubland on Skyros island, Greece. Photo: M. Vrahnakis*

In Mediterranean land-systems such as dehesas in Spain or montados in Portugal and dry grasslands of Greece and Italy, overgrazing leads to sheet erosion and soil compaction as well as to the lack of plant regeneration, among other degradation processes. In the United States, for example, many studies have demonstrated that overgrazing can provoke a decrease in pasture production and fodder quality. Australian rangelands have also been affected by overgrazing in different climatic areas throughout the country. However, there are many other grazing systems that are scarcely known worldwide such as Brazilian faxinal, where open fields of small shrubs grazed mainly by cattle are the dominant landscape. On the other hand, undergrazing and land abandonment are the cause of major concerns for proper land management in many areas of the globe.

The Terrestrial Biosciences section of European Geosciences Union is organising an international meeting

**“The impact of grazing on soil landforms, water and biota resources”**

to run under its General Assembly in Vienna, 12-17 April 2015. Please see details in

URL: <http://meetingorganizer.copernicus.org/EGU2015/session/17770>

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Contributions dealing with the occurrence of land degradation processes such as soil erosion and compaction, the importance of landform elements, the hydrological impact of grazing and the effects on pasture yield and fodder quality in grazing areas worldwide as well as those focused on finding optimum animal stocking rates under different scenarios are welcome. We hope that many of you will consider submitting an abstract to this session, and attending the EGU next April. Please note that **the abstract deadline is 7 January 2015 (13:00 CET)**. We strongly encourage early career researchers and Ph.D. students to apply (a limited amount of financial support is available through the EGU), but note that **the deadline for applying for travel and attendance support is 28 November 2014**.

If you have any questions about the session please do not hesitate to contact us.

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# Book reviews

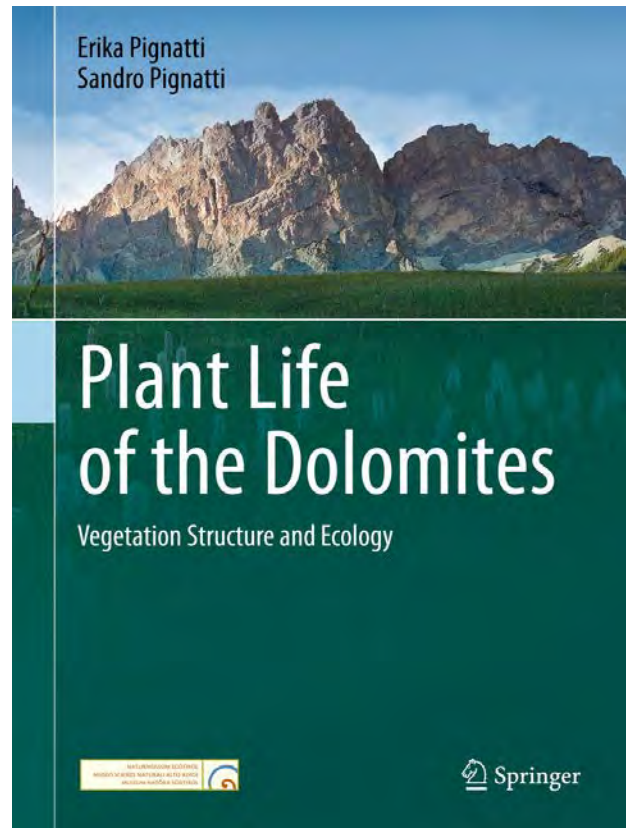
Here we present recently published books that might be relevant for grassland scientists and conservationists, both specific grassland titles as well as faunas, floras, or general books on ecology and conservation biology. If you (as an author, editor or publisher) would like to propose a certain title for review, or if you (as an EDGG member) would like to write a review (or reviews in general), please contact the Book Review Editor ([dengler@botanik.uni-hamburg.de](mailto:dengler@botanik.uni-hamburg.de)).

**Pignatti, E., Pignatti, S. (2014): Plant life of the Dolomites: Vegetation structure and ecology [Publication of the Museum of Nature South Tyrol 8]. XXXVII+769 pp., Springer, Heidelberg. ISBN 978-3-642-31042-3. Price: 160.45 € (e-book: 124.94 €).**

The Dolomites are a part of the southern limestone Alps in NE Italy, comprising approximately 16,000 km<sup>2</sup>. With this impressive, heavyweight volume, Erika and Sandro Pignatti, two of the most famous Italian phytosociologists, share their experiences from half a century of research in this beautiful landscape with its rich flora and vegetation. According to the cover text, two companion volumes are planned in the series *Plant life of the Dolomites*, (2) *Vegetation tables* and (3) *Atlas of flora*.

The present volume starts with a general introduction on the organisation and methodological background of the series, followed by a brief outline of the abiotic and biotic “setting” of the Dolomites. After that comes the core of the volume, more than 500 pages, organised in 12 chapters devoted to the main vegetation types and arranged in six parts (I – The human habitat; II – Natural forests and meadows in the montane zone; III – The subalpine habitat; IV – Alpine vegetation on acidic bedrock; V – Carboniferous screes; VI – Alpine vegetation on carboniferous bedrock). This part of the book was clearly inspired by the vegetation overviews of the Netherlands (Schaminée et al. 1995 et seq.), Mecklenburg-Vorpommern (Berg et al. 2004) and the Czech Republic (Chytrý 2007 et seq.) and adopts many ideas from there. Each chapter is subdivided in an introductory part and the data sheets of in total 106 phytosociological associations. The Introduction regularly comprises the sections Habitat, Ecogram, Ecology and Structure and Classification, but often has additional treatises only relevant for a certain vegetation type, e.g. on biogeography or evolution. It ends with a synoptic table that makes the associations (or subassociations) of the chapter comparable by percentage constancy columns – arguably the most valuable parts of the book.

The following association descriptions also follow a standardised structure, which makes it easy to find specific information. The sequence of categories is: synonyms, superior syntaxonomic units (i.e. class, order and alliance), “Definition”, Indicator species, Code, Habitat, Geology, Distribution in the Climax Belts (as a two-dimensional ecogram), Structure, Physical-Chemical Parameters, Floristic Composition and Structure, Biological Parameters (contains a set of biodiversity measures), Subassociations and Variants, Regional Distribution (always including a grid-based distribution map, which should closely reflect the real distribution due to the high sampling intensity of the authors),



Taxonomic and Syntaxonomic Notes, Origins and Tendencies, Conservation and Management, Risk of Alteration and Heritage Values (this is a table adopting the conservation assessment of plant community types proposed by Berg et al. 2014), and finally a Bibliography. Chapter 4 deals with the Arid and Steppe Grasslands, i.e. the classes *Festuco-Brometea* (orders *Scorzonero-Chrysopogonetalia* and *Festucetalia valesiaca*), *Koelerio-Coryneporetea* and *Trifolio-Geranietea*. In total only nine associations are accepted in this chapter, pointing to a rather wide association concept applied in the book.

The final parts of book, VII –Synthesis and VIII – Conclusions, together more than 200 pages, are a real novelty, not existing in comparable depth in any of above-mentioned regional or national vegetation monographs. Here one finds detailed descriptions of the soils, measurements of microclimate in the stands and how the plant communities make up the landscapes of the Dolomites. Moreover, there are many comparative analyses of the described associations in terms of diversity (alpha and gamma), Ellenberg indicator values, life forms or chorological types. Although the presented analyses are statistically rather simple and illustrated by

“default graphics” from Excel, they still provide many meaningful insights.

Overall, the book represents an extraordinary wealth of information. The layout with numerous beautiful colour photographs, instructive tables, maps, diagrams and flow charts (e.g. for successional pathways) is not only nice but also makes the information easily accessible and comparable. It is great that the authors, in contrast to their “predecessors” (Schaminée et al. 1995 et seq., Berg et al. 2004, Chytrý 2007), decided for a publication completely in English, which should help to give the book a much wider distribution than if it were in Italian or German. There are only a few shortcomings to be mentioned: In the first part it would have been good to provide some more details on the physico-geographical setting in form of maps with the names of the major features (towns, rivers, mountains), the climate and the bedrock. The delimitation of both associations and higher syntaxa has not been subject to numerical analysis and statistical determination of diagnostic species despite the fact that the large vegetation dataset would have perfectly allowed for that. In consequence, sometimes species are listed as character species for one unit although the tables show that they are more frequent elsewhere. Syntaxonomy is not in the focus of the book, therefore the reader should not expect that deviating ideas from neighbouring regions are discussed in detail. Sometime even invalid (*Festuco-Brometea* “Br.-Bl. 1943”) or misspelled syntaxon names (*Pimpinellidi-Seslerietum* instead of correctly *Pimpinello-Seslerietum*) are given as the accepted ones. However, compared to the overall achievement of this book, all these points are only minor.

In conclusion, one has to congratulate the authors for their *opus magnum* and wish that their age and health permit them to finish also the second and third volume of the series. The book is the first comprehensive modern vegetation overview of a larger region, both within Italy and for the Alps in general, and hopefully will inspire others to follow this pioneer work. Finally, it would be wonderful if the more than 2,000 relevés, most of them previously unpublished, that underlie the synoptic tables, would be secured for science and made available in public vegetation-plot databases, such as VegItaly (Landucci et al. 2012) and EVA (Chytrý et al. 2014).

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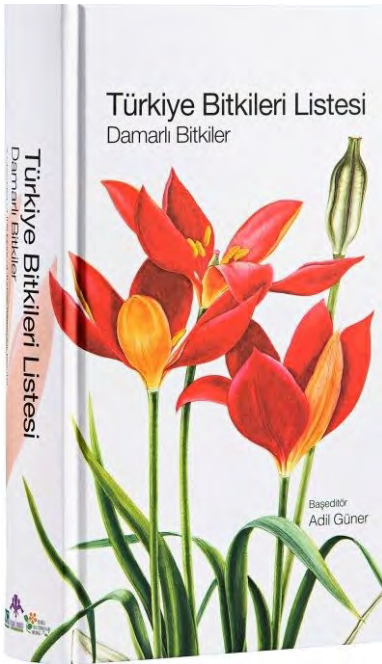
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# Two important books for the flora of Turkey

We have two items of good news for those interested in flora of Turkey: As botanists in Turkey were interested in revising the Flora for some time, they got the support they needed from 11th president of Turkey and produced the **Checklist of Plants of Turkey (Vascular Plants)** as the first publication. It was prepared by Adil Güner (chief editor) together with four other editors Serdar Arslan, Tuna Ekim, Mecit Vural and Mehmet Tekin Babaç, and 98 authors. The work is dedicated to all botanists raised in Turkey.



The work is built on 11 volumes of the Flora of Turkey and East Mediterranean Islands, additional checklists and publications, especially taxonomic revision works. It is a “national” list, not covering East Mediterranean islands. It is based on families in the Angiosperm Phylogenetic Group. The author team made use of various databases and indices of plant lists such as Euro+Med PlantBase, Index Nominum Genericorum (Plantarum), Index Nominum Supranenericorum Plantarum Vascularium, World Checklist of Plant Families, the Plant List and the International Plant Names Index. The list is composed of 9996 species, 1989 subspecies and 867 varieties. For each taxa, the book provides information about synonymy, Turkish names, distribution by regions and some additional notes. In addition, it has a long list of references. It also provides description of 12 new taxa in English language.

The reference for the book is given as: Güner A., Arslan, S., Ekim, T., Vural, M., Babaç, M.T. (eds). (2012). Türkiye Bitkileri Listesi (Damarlı Bitkiler). Nezahat Gökyiğit Botanik Bahçesi ve Flora Araştırmaları Derneği Yayını. İstanbul.

The language of the book is Turkish. The book can be purchased by getting in contact with Elif Arıcı from Nezahat Gökyiğit Botanical Park (Nezahat Gökyiğit Botanik Bahçesi): [elifarici@ngbb.org.tr](mailto:elifarici@ngbb.org.tr)

The first volume of revised Flora of Turkey was published by Flora Araştırmaları Derneği (Floristic Research Society) and Türkiye İş Bankası Kültür Yayınları (İsbank Publications) with the title: Resimli Türkiye Florası: 1 Cilt. This first volume provides comprehensive summaries of the environmental conditions (geography - paleogeography, geology, soil, climate and bioclimate) and vegetation of in Turkey. Furthermore it gives historical information about studies on major plant groups (algae, mosses, ferns etc), botanical research history in general, ethnobotany, taxonomy and floristic research. For each of those subjects, it also provides the most comprehensive list of references. Among the useful information for EDGG members, is a good summary about all vegetation types including list of alliances. Finally it provides information about terminology used in the Flora and old location names used in the first version edited by P.H.Davis. The revised flora covers the national boundaries of Turkey and it is in Turkish. The second volume will hopefully appear soon with detailed floristic information on plant families together with beautiful illustrations of the plants as the name “resimli” indicates.



The reference is given as: Güner, A. and Ekim, T. (eds). (2014) Resimli Türkiye Florası, cilt 1. NGBB Yayınları Flora Dizisi 2, Flora Araştırmaları Derneği ve Türkiye İş Bankası Kültür Yayınları, İstanbul.

The book can be purchased from websites of booksellers (in Turkish): <http://alisveris.iskulturyayinlari.com.tr/tanim.asp?sid=WWGCVBH8XT1TM9HPZZ6S>

<http://www.idefix.com/kitap/resimli-turkiye-florasi-cilt-1-kolektif/tanim.asp?sid=WWGCVBH8XT1TM9HPZZ6S>

<http://www.dr.com.tr/kitap/resimli-turkiye-florasi-cilt-1-kolektif/prestij-kitaplari/doga-prestij/urunno=000000611001>

<http://www.dr.com.tr/kitap/resimli-turkiye-florasi-cilt-1-kolektif/prestij-kitaplari/doga-prestij/urunno=000000611001>

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# Recent publications of our members

With this section, the contents of which will also be made available via our homepage, we want to facilitate an overview of **dry grassland-related publications** throughout Europe and to improve their accessibility. You are invited to send lists of such papers from the last three years following the style below to [monika.janisova@gmail.com](mailto:monika.janisova@gmail.com) and [rusina@lu.lv](mailto:rusina@lu.lv). We will include your e-mail address so that readers can request a pdf. For authors who own full copy-right, we can also post a pdf on the EDGG homepage. As we plan to publish a book about the European dry grasslands at some point in the future, under the auspices of the EDGG, we would appreciate if you could send a pdf (or offprint) of each of your dry grassland publications to [juergen.dengler@uni-bayreuth.de](mailto:juergen.dengler@uni-bayreuth.de).

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**Pipehbaer, N.**, Mason, N.W.H. (2014): Floristic and functional diversity of meadows from two neighboring biogeographic regions. Annales. Ser. hist. nat. 24: 49-60.

**Venn, S.** & Kotze, D.J. (2014) Benign neglect enhances urban habitat heterogeneity: Responses of vegetation and carabid beetles (Coleoptera: Carabidae) to the cessation of mowing of park lawns European Journal of Entomology 111(5) ISSN 1210-5759 (print) 1802-8829 (online). DOI 10.14411/eje.2014.089

**Venn, S.**, Schulman, H., Törrönen, S., Salla, A., Pajunen, T., Kerppola, S., Paukkunen, J., Nieminen, M., Vilisics, F. & Karjalainen, S. (In press) Helsinki in J. Kelsey (ed.) Vertebrates and Invertebrates of European Cities, Springer Verlag, New York. Due: January 14, 2015.

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# Forum

*Announcements from members to members*

## Data request: Mowing effects on phytodiversity

It is generally acknowledged that **mowing frequency, mowing time and mowing height** affect biodiversity of grasslands. However, a general understanding under which conditions mowing is positive and when it is negative for biodiversity is missing. Such knowledge would be urgently needed to improve conservation management and inform agricultural policy makers.

Within the **BiodivERsA project SIGNAL** (European gradients of resilience in the face of climate extremes; <http://www.bayceer.uni-bayreuth.de/signal/>) an international team of authors led by Dr. Catherine Picon-Cochard (INRA, Clermont-Ferrand, France) is presently conducting a **review and meta-analysis of how mowing affects phytodiversity**. We have retrieved already nearly 100 publications with relevant information via search in the Web of Science. However, sometimes the papers on the topic do not contain the relevant information needed for a meta-analysis. Moreover, we are convinced that more published and unpublished studies exist than those that we found by our search strings.

We are sure that among the more than 1,000 EDGG members many have collected own observational or experimental data on the effect of mowing on vascular plant diversity or are aware of such studies that we might have overlooked. In order to make our review and meta-analyses as comprehensive and meaningful as possible, we therefore invite you to send us your papers and/or data on that topic. We can use any study that compares at least two mowing treatments, e.g. abandonment vs. mowing, mowing once vs. mowing multiple times, mowing early vs. late or cutting height 3 cm vs. 10 cm. For the meta-analysis, we require the following information:

- ♣ Reference (either a pdf or, in case of non-published data, information how you would like to be cited)
- ♣ Location, geographic coordinates, altitude
- ♣ Observational or experimental study
- ♣ Type of grassland (e.g. wet, dry), if possible information on soil, previous land use, etc.
- ♣ Specification of each of the two or more treatments as precise as possible (how often, when, at which height the grasslands are cut, how long are they abandoned)
- ♣ Plot area [m<sup>2</sup>]
- ♣ Biodiversity parameters per treatment:

- (a) We always need mean value, standard error (SE) or standard deviation (SD) and number of replicates (n) [as an alternative you can also provide the individual measurements]
- (b) In addition to total species richness (S), we are interested also in further biodiversity parameters, e.g. Shannon index, Shannon evenness, biomass, total cover, as well as richness and cover for the three main functional groups (graminoids, legumes, non-legume forbs)

**If you wish to contribute to this highly conservation-relevant study, please submit your papers and data to me by 10 December 2014.** All data used in the meta-analysis will be fully acknowledged in an electronic supplement, while core papers cited in the review will be included in the printed reference list.

*Jürgen Dengler (juergen.dengler@uni-bayreuth.de)*

## Data request: How to combat *Calamagrostis epigejos*?

The native Eurasian tall grass *Calamagrostis epigejos* has tremendously spread in various types of grasslands of high conservation value (e.g. sandy grasslands, calcareous grasslands, alluvial grasslands, dune grasslands) during recent decades, but the exact reasons for this phenomenon are still poorly understood. Invasion of *Calamagrostis* typically leads to a tremendous decrease in species diversity. Various management strategies have been proposed to reduce or eradicate *Calamagrostis* after invasion, but success rates of such measures are often low. Unfortunately, experiences with different management techniques are often known only to local conservationists but not published in international scientific literature and thus hardly accessible to managers elsewhere. Within a DBU project on the effect of *Calamagrostis epigejos* on biodiversity and effectiveness of conservation measures, conducted in sandy dry grasslands of the Biosphere Reserve “River Landscape Elbe” (Schuhmacher & Dengler 2013) and the subsequent presentation of the results at various conferences, we realised that much local knowledge exists but is not accessible for conservation elsewhere.

In the context of preparing an international publication on the results of our study, we therefore additionally aim at reviewing the existing knowledge on that topic as comprehensively as possible. Therefore we ask those EDGG members who have **experience with *Calamagrostis* expansion and management measures against that to share their publications and**



**experiences** with us. We would like to know particularly:

- ♣ Which management measures did you apply and for how long? (be as precise as possible, in case of grazing e.g. provide species and breed of grazer, grazing period(s) and stocking rates)
- ♣ Which among these measures did reduce *Calamagrostis* and how much, and which did not achieve this?
- ♣ How was the effect of the measures on plant and animal diversity?
- ♣ Do you have any data on spread of expansion of *Calamagrostis* or have you ever observed that stands of this species disappear by themselves?

Note that we are not only seeking elaborate scientific studies, but also observations and circumstantial evidence. If you wish to contribute to this highly conservation-relevant study, please submit your papers and data to me until end of 2014.

#### Reference

Schuhmacher, O., Dengler, J. (2013): Das Land-Reitgras als Problemart auf Trockenrasen. Handlungsempfehlungen zur Reduktion von *Calamagrostis epigejos*. Ergebnisse aus einem Praxisversuch. – 16 pp., NABU Hamburg, Hamburg. [pdf available from [http://www.biodiversity-plants.de/downloads/JD176\\_Schuhmacher\\_Dengler\\_2013\\_Calamagrostis.pdf](http://www.biodiversity-plants.de/downloads/JD176_Schuhmacher_Dengler_2013_Calamagrostis.pdf)]

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*Calamagrostis epigejos*. Photo: J. Dengler



## Suggestion to meet at the conferences in Dijon and Lille

Dear all, I will attend the soil biodiversity conference in Dijon on 2-5 December 2014, and the BES-SFE conference in Lille (9-12 December 2014). I will present some material from my work in the Swiss Jura dry grasslands (soil function), and would be **interested to meet other members** who might attend, and discuss informally or over a beer.

All the best!

Rob Mills, WSL Lausanne ([robert.mills@wsl.ch](mailto:robert.mills@wsl.ch))



# Forthcoming events

## 7<sup>th</sup> Biennial Meeting of the International Biogeography Society (IBS)

9–12 January 2015, Bayreuth, Germany  
<http://biogeography.blogspot.de/2013/07/call-for-symposia-and-workshop.html>

## 14<sup>th</sup> Workshop on Vegetation databases

*Vegetation databases and inference of ecological processes*

4–6 March 2015, Oldenburg, Germany  
Contact: Vanessa Minden [vanessa.minden@uni-oldenburg.de](mailto:vanessa.minden@uni-oldenburg.de) & Cord Peppler- Lisbach [cord.peppler.lisbach@uni-oldenburg.de](mailto:cord.peppler.lisbach@uni-oldenburg.de)

## 24<sup>th</sup> European Vegetation Survey Meeting

*Topic 1: Typology and process as two complementary facets of vegetation survey and mapping*  
*Topic 2: Vegetation in coastal and inland dunes and cliffs*  
4–8 May 2015, Rennes, France  
<https://evs2015.univ-rennes1.fr/>

## 12<sup>th</sup> European Dry Grassland Meeting of the EDGG

*From population biology to community ecology*  
22–27 May 2015, Mainz, Germany  
<http://www.efncp.org/news/news20140814.php>

## 8<sup>th</sup> EDGG Field Workshop

13–23 June 2014, Poland  
Contact: [zygmunt.kacki@uni.wroc.pl](mailto:zygmunt.kacki@uni.wroc.pl)

## 58<sup>th</sup> Symposium of the International Association for Vegetation Science (IAVS)

*Understanding broad-scale vegetation patterns*  
19–24 July 2015, Brno, Czech Republic  
With pre- and postsymposium software workshops and excursions  
<http://www.iavs2015.cz/>

## The 4<sup>th</sup> European Congress for Conservation Biology and 27<sup>th</sup> International Congress for Conservation Biology

*Mission Biodiversity: Choosing new paths for conservation*  
3–6 August 2015, Montpellier, France  
<http://www.iccb-eccb2015.org/ECCB>

## 45<sup>th</sup> Annual Conference of the Ecological Society of Germany, Austria and Switzerland (GfÖ)

31 August - 4 September 2015, Göttingen, Germany  
<http://www.gfoe.org/>

## 59<sup>th</sup> Symposium of the I. Association for Vegetation Science (IAVS)

30 May–3 June, Pirenópolis 2016, Brazil

## The European Carabidologists' Meeting XVII

20–25 September 2016, Croatia

## The First Information Letter

The Steppe Institute of the Ural Branch of the Russian Academy of Sciences (IS UB RAS), along with the other stakeholders, is holding the Seventh International Symposium on '*Steppes of Northern Eurasia*'.

The Symposium will take place in Orenburg in the last decade of **May 2015**. Thematic sections, round tables, outdoor sessions and excursions to steppe field research stations of the Orenburg Oblast will be organized. More information will be provided before the symposium starts.





*Participants of the Field Workshop in Navarre, Spain, sampling dry grasslands on Balcón de Pilatos (Urbasa). Photo: R. Jaumatre*

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***Editors:*** *Monika Janišová (Editor-in-Chief, [monika.janisova@gmail.com](mailto:monika.janisova@gmail.com), Banská Bystrica, Slovak Republic), Jürgen Dengler (Bayreuth, Germany), Solvita Rūsiņa (Riga, Latvia), Laura Sutcliffe (Göttingen, Germany), Péter Török (Debrecen, Hungary), Stephen Venn (Helsinki, Finland), Michael Vrahnakis (Karditsa, Greece).*

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***Important dates:*** *The deadline for Bulletin 26 is 15 February 2015*

*Bulletin 26 to appear: March 2015*

*Bulletin 27 to appear: June 2015*