

Editorial to the 17th EDGG Special Feature in *Tuexenia*

Vorwort zum 17. EDGG-Sonderteil in *Tuexenia*

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Abstract

Members of the *Eurasian Dry Grassland Group* (EDGG) and its predecessor organizations have been publishing grassland Special Features in *Tuexenia* since 2005. This year's Special Feature includes five articles highlighting different aspects of grassland research: Riedel et al. (2024) compared cover- and biomass-based methods for recording the abundance of plant species in permanent plots, with regard to the comparability of re-surveys in grasslands. Schindler et al. (2024) investigated the effects of sprinkler irrigation on the diversity, species composition and site conditions of grasslands in inner-alpine dry valleys such as the Valais (Switzerland). Marcenó et al. (2024) present a syntaxonomic revision of the dry grassland alliances *Plantaginion cupanii*, *Cerastio-Astragalion nebrodensis* and *Armerion nebrodensis* of northern Sicily, describing the two new associations *Androsaco breistrofferi-Potentilletum calabrae* and *Helianthemo tomentosii-Festucetum crassifoliae*. Willner et al. (2024) present a syntaxonomic revision of the dry grassland orders *Festucetalia valesiaca*, *Stipo-Festucetalia pallentis* and *Brachypodietalia* of the Eastern Alps. Borovyk et al. (2024) provide an overview of records of plant species richness in Ukrainian steppes. The study emphasizes the importance of steppes as global biodiversity hotspots and draws attention to their conservation in the context of land-use changes and the consequences of the war in Ukraine.

Zusammenfassung

Mitglieder der *Eurasian Dry Grassland Group* (EDGG) und deren Vorgängerorganisationen geben seit 2005 Grasland-Sonderausgaben (Special Features) in *Tuexenia* heraus. Das diesjährige Special Feature umfasst fünf Artikel, die verschiedene Aspekte der Graslandforschung beleuchten: Riedel et al. (2024) verglichen deckungs- und biomassebasierte Methoden zum Erfassen der Abundanz von Pflanzenarten in Daueruntersuchungsflächen, im Hinblick auf die Vergleichbarkeit von wiederholten

Erhebungen in Grasländern. Schindler et al. (2024) untersuchten die Auswirkungen von Sprinkler-Beregnung auf die Diversität, die Artenzusammensetzung und Standortbedingungen von Grasländern in inneralpinen Trockentälern wie dem Wallis (Schweiz). Marcenó et al. (2024) präsentieren eine syntaxonomische Revision der Trockenrasen-Verbände *Plantaginion cupanii*, *Cerastio-Astragalion nebrodensis* und *Armerion nebrodensis* Nord-Siziliens, und beschrieben dabei die beiden neuen Gesellschaften *Androsaco breistrofferi-Potentilletum calabrae* und *Helianthemo tomentosi-Festucetum crassifoliae*. Willner et al. (2024) präsentieren eine syntaxonomische Revision der Trockenrasen-Ordnungen *Festucetalia valesiaca*, *Stipo-Festucetalia pallentis* und *Brachypodietalia* der Ostalpen. Borovyk et al. (2024) geben einen Überblick über Rekorde des Pflanzenartenreichtums in ukrainischen Steppen. Die Studie hebt die Bedeutung der Steppen als globale Hotspots der biologischen Vielfalt hervor und lenkt die Aufmerksamkeit auf ihren Schutz im Zusammenhang mit Landnutzungsänderungen und den Folgen des Krieges in der Ukraine.

1. Introduction – 20 years of EDGG

The Eurasian Dry Grassland Group (EDGG; www.edgg.org) is a network of researchers and conservationists interested in the biodiversity, ecology, conservation and restoration of Palaearctic natural and semi-natural grasslands (Dengler et al. 2021a). With 1533 members from 66 countries, the EDGG is one of the largest working groups of the International Association for Vegetation Science (IAVS; www.iavs.org). It has its roots in the German “Arbeitsgruppe Trockenrasen”, founded 20 years ago in 2004 (Dengler & Jandt 2005). While EDGG kept its historically acronym, standing for “Eurasian Dry Grassland Group”, the scope of the working group now covers the entire Palaearctic biogeographic realm with all types of natural and semi-natural grasslands, ranging from dry grasslands, over mesic, wet and saline to alpine grasslands. The main aims of the EDGG are to facilitate research and scientific discussions on any aspect of Palaearctic grasslands by organising conferences and field workshops, to support the publication of grassland research, to establish grassland vegetation-plot databases (e.g. GrassPlot; Dengler et al. 2018, Biurrun et al. 2019, 2021), and to promote policies and legislation towards the protection, adequate management and restoration of Palaearctic grasslands. The elected Executive Committee of EDGG for 2023–2025 consists of seven persons: Idoia Biurrun (Spain), Jürgen Dengler (Switzerland), Ellen de Vrieze (Belgium), Rocco Labadessa (Italy), Alireza Naqinezhad (United Kingdom and Iran), Stephen Venn (Poland and Finland) and Denys Vynokurov (Germany and Ukraine).

The EDGG Special Feature in *Tuexenia* continues a long tradition of grassland-related paper collections. The number “17” indicates that EDGG published a Special Feature nearly every year since 2005. In fact, these Special Features have contributed significantly to the journal development, with six out of the ten most-cited *Tuexenia* articles of all times according to the Web of Science (as of 12 November 2024) being published there. Among these, Dengler et al. (2012) on dry grasslands in Transylvania collected already 80 citations, Gilhaus et al. (2017) on effects of grassland management on biodiversity in Germany 46 citations and Willner et al. (2011) on the differentiation of the classes *Festuco-Brometea* and *Trifolio-Geranietea* 34 citations. There are also EDGG-edited Special Features in various other international journals (e.g. Dengler et al. 2014, Valkó et al. 2021, Nowak et al. 2022), as well as reference books (e.g. Dengler & Tischew 2018, Török & Dengler 2018, Boch et al. 2020, Dengler et al. 2020a), that aim to disseminate results of grassland research to scientists and practitioners by highlighting the importance of biodiversity and appropriate

land use for ecosystem functioning and human well-being. By releasing these Special Features, EDGG also aims to facilitate the implementation of scientific findings in grassland conservation and policy.

However, since the last 16th EDGG Special Feature in 2021 (Boch et al. 2021), we had a lack of article submissions during the years 2022 and 2023 and were not able to produce a Special Feature despite *Tuexenia* being a diamond open access, peer-reviewed journal with obvious advantages for authors. In each of the last two years only one paper was submitted and accepted (Shyriaieva 2022, Vynokurov et al. 2023), both on grassland vegetation in Ukraine. These were then published in the main issue of *Tuexenia*.

As is the case for *Tuexenia* in general, the geographic and syntaxonomic scope of the EDGG Special Feature considers contributions from the whole nemoral zonobiome (also called temperate midlatitudes) in Europe, including its transitions to neighbouring zono-biomes, such as submediterranean, hemiboreal and forest-steppe zono-ecotones. Thus, the geographic scope ranges from Galicia in the west to the Urals in the east. However, contributions from the boreal, arctic, mediterranean or continental (steppic) zonobiomes are also potentially considered after prior consultation with the Editors, and if a connection to Central Europe is made. In addition, the syntaxonomic scope of the Special Feature has been broadened and, like EDGG, now considers all types of natural and semi-natural grasslands (mesic, wet, dry, saline, sandy, rocky, alpine), as well as vegetation types dominated by bryophytes, lichens, forbs and dwarf shrubs (e.g. tall forb communities and heathlands).

In this Editorial, we introduce the 5 papers of this year's EDGG Special Feature, written by 46 authors from 8 countries.

2. EDGG activities from January 2023 to October 2024

The main events of EDGG are the **Eurasian Grassland Conferences (EGCs)**. During the reporting period, the 18th EGC took place from 25–28 September 2023 in Szarvas in the Körös-Maros National Park, Hungary (Deák et al. 2023). It was organized by the 'Lendület' Seed Ecology Research Group (Centre for Ecological Research) and the Körös-Maros National Park Directorate. The topic of the conference was '*Conservation and management of grasslands in transforming landscapes*'. The conference was attended by 98 participants from 20 countries. The theme of the 19th EGC was 'Grasslands as biodiversity hotspots'. It was organised by the Institute for Alpine Environment of Eurac Research and took place at the Eurac Research headquarters from 26th August to 1st September in Bolzano, South Tyrol, Italy (Fig. 1). This conference was attended by 75 participants from 16 countries. The 20th EGC will take place in early July 2025, in Oulu, Finland. Apart from the conferences, since a couple of years, EDGG also organises series of online keynote talks by renowned grassland scientists in the winter term (Talk Grasslands!). We had three such talks in the winters 2022/23 and 2023/24 each, and we are planning a new series for 2024/25.

Since 2009, the other main event of EDGG is the regularly organised research expeditions, called "**Field Workshops**". In these events researchers from various countries and carrier stages meet to collect standardised vegetation-plot data of grasslands and other open habitats in the Palaearctic biogeographic realm. The sampling focusses on high-quality data of standard plot sizes (10 m² "normal plots", nested-plot series of 0.0001–100 [1000] m²), including terricolous bryophytes and lichens as well as soil samples (Dengler et al. 2016, 2021b). If specialists are available, the multi-taxon approach is sometimes expanded to orthopterans, spiders or leaf hoppers, sampled in the same plots or their direct surroundings.



Fig. 1. Winners of the Young Investigator Prizes at the 19th Eurasian Grassland Conference in Bolzano, August 2024 (Photo: J. Dengler).



Fig. 2. Participants of the 18th EDGG Field Workshop in Vnà, Aosta Valley, Italy, June 2024 (Photo: Anonymous).

The Field Workshops in 2023 and 2024 completed the series of expeditions studying the dry grasslands (*Festuco-Brometea*, *Koelerio-Corynephoretea*, *Sedo-Scleranthetea*) in the valleys of the Alps – on the trails of the seminal book by Braun-Blanquet (1961). The first two such Field Workshops went to the Austrian inneralpine valleys (2018; Magnes et al. 2021) and the Swiss inneralpine valleys (2019; Bergauer et al. 2022). Then the 17th Field Workshop was devoted to the continental valleys of the SE Alps (Vinschgau/Val Venosta and adjacent valleys in Italy and Switzerland; 2023), the 18th to those of the SW Alps (France and Italy; 2024; Fig. 2) and a small 19th Field Workshop to the Canton of Ticino in Switzerland (2024). While some critical species from these three last Field Workshops are still being determined and soil samples analysed, it is already clear that the 18th Field Workshop discovered or rediscovered four vascular plant taxa new for two Italian regions (Guarino et al. 2024), while the 19th Field Workshop recorded for the first time *Corynephorus canescens* from Switzerland (Dengler et al. 2024). During the reporting time, two scientific papers based on previous Field Workshops were published (Apennines: Cancellieri et al. 2024; Armenia: Vynokurov et al. 2024). For 2025, two Field Workshops are planned, one to the Maritime Alps in Italy and one to the Finnish Archipelago in the Baltic Sea.

The data derived from the Field Workshops form the backbone of EDGG's database of high-quality, multi-scale plot data from Palaeartic grasslands and other non-forest vegetation types, called **GrassPlot** (Dengler et al. 2018, Biurrun et al. 2019, see <https://edgg.org/databases/GrassPlot>). GrassPlot is a self-governed consortium and also other data meeting our quality standards are welcome (see Dengler & Biurrun 2024). Meanwhile, GrassPlot has more than 200,000 plot records of different grain sizes, from 68,368 independent plots and 52 countries. Its speciality are the 7,949 nested-plot series currently contained. That way, GrassPlot nicely complements the much larger European Vegetation Archive (EVA; Chytrý et al. 2016), which collects any type of plots without quality assessment. Accordingly, GrassPlot gives rise to an increasing number of scientific studies, taking advantage of the special qualities of the data, e.g. on species-area relationships (Dengler et al. 2020b), beta diversity (Dembicz et al. 2021) and distance decay (Graco-Roza et al. 2022). GrassPlot also has an online dashboard that provides benchmarks of species richness for different Palaeartic open vegetation types, regions, grain sizes and taxonomic groups (<https://edgg.org/databases/GrasslandDiversityExplorer>; see Biurrun et al. 2021). Apart from GrassPlot, EDGG has also initiated several regional all-purpose vegetation databases for open habitats in regions where there was a data deficit in EVA, among others GrassVeg.DE from Germany (Pätsch & Dengler 2022) and NBGVD from the Nordic and Baltic region (Skobel et al. 2024). An overview of EDGG-associated regional databases is available at <https://edgg.org/databases/Regional-databases>: Data contributions to GrassPlot and these regional databases are highly welcome.

EDGG mainly publishes its own journal *Palaeartic Grasslands*, which occurs with 3–4 issues per year (<https://edgg.org/publications/pg-journal>). Like *Tuexenia*, is a diamond open-access online-only journal. It offers a unique combination of a “newsletter” on EDGG activities, a “photo magazine” with elements such as Photo Stories and Photo Competitions and peer-reviewed scientific journal, particularly suitable for publication of regional studies based on small datasets. In the reporting period, the issues 56–62 were published and sent to all members. Beyond *Palaeartic Grasslands*, EDGG is also regularly organising **grassland-related special features** in journals that are indexed in the Web of Science. More than 20 such special features have meanwhile appeared. Apart from our regular special features in *Tuexenia*, there are two others currently ongoing. A Special Collection of *Vegetation*

Classification and Survey on “Grasslands of Asia” together with the IAVS Regional Section for Asia is almost completed, including, among others, the first phytosociological classification of grasslands in Armenia (Vynokurov et al. 2024). In a newly started Special Feature “Conservation of Palaearctic steppes and semi-natural grasslands: challenges and solutions” in *Biological Conservation*, a first paper on the traditional land use-practices in species-rich grasslands of the Serbian Carpathians has just been published (Janišová et al. 2024).

Plenty of further information on EDGG activities can be found on our website at <http://www.edgg.org>. You can become a member for free via email to idoia.biurrun@ehu.es. If you would like to host a future Eurasian Grassland Conference or an EDGG Field Workshop, we appreciate if you contact the Executive Committee.

3. Contributions to the 17th EDGG Special Feature

The contributions in this year’s EDGG Special Feature highlight different aspects of grassland research. The articles focus on biodiversity patterns across different study organisms, as well as across spatial and temporal scales, including topics related to grassland restoration, plant–plant or plant–animal interactions, and vegetation resurveys.

Riedel et al. (2024) compared cover-based and biomass-based methods for assessing plant abundance in plots from Swiss grasslands, aiming to address issues in resurvey studies with mixed sampling methods. Historic grassland plots of 0.09 m² were originally surveyed via biomass harvest, which was too time-intensive for current needs, so percentage cover estimates were used instead. For testing the differences between the two methods, 40 plots were sampled using both methods, revealing that biomass sampling detected 0.9 more species (4.6%) per plot, especially among graminoids, which were three times more often overlooked in cover-based surveys. An allometric power-law function with an exponent of 0.6 reliably related fractional cover to biomass. Results indicate that cover-based estimates with small plots may minimize species overlooking, and the derived functions allow reliable conversions between biomass and cover in temperate European grasslands. The authors suggest developing similar functions for other ecosystems to facilitate data standardization.

Schindler et al. (2024) investigated the effects of sprinkler irrigation on semi-natural grasslands in Valais (Switzerland), an increasingly applied method in inneralpine dry valleys, replacing traditional irrigation methods by water channels. The authors conducted a resurvey of 8 sprinkler-irrigated permanent plots that were established in 1988, complemented by 20 newly established pairs of irrigated and unirrigated plots in the same area. They found a strong decline of species richness and a decrease of rare and specialist species in the resurveyed plots after over 30 years of sprinkler irrigation. Within the plot pairs, irrigated plots showed much lower species richness and showed, according to their mean ecological indicator values, cooler and more humid conditions with more acidic, nutrient-rich, and humus-rich soils than unirrigated ones. The authors proposed that the lower species richness observed for the irrigated plots may be the result of nutrient enrichment and the exclusion of specialist dry grassland species. The authors highlighted the need for further studies investigating the long-term risks to grassland biodiversity by sprinkler irrigation.

Marcenó et al. (2024) studied the syntaxonomy of grassland alliances in northern Sicily, namely the *Plantaginion cupanii*, *Cerastio-Astragalion nebrodensis*, and *Armerion nebrodensis* alliances. This study fills a knowledge gap about the vegetation in the highest elevations of the Madonie Mountains, extending the classification of oromediterranean

grasslands and identifying two new associations. Two newly described associations *Androsaco breistrofferi-Potentilletum calabrae* and *Helianthemo tomentosii-Festucetum crassifoliae* occupy the highest elevations with distinct preferences in temperature and water potential. *Androsaco breistrofferi-Potentilletum calabrae* can be found in sinkholes (karst dolines) with long-lasting snow cover and extended water availability, while *Helianthemo tomentosii-Festucetum crassifoliae* withstands fluctuations in temperature and water availability on windy ridges.






Willner et al. (2024) present a syntaxonomic revision of the dry grasslands of the Eastern Alps. The xeric dry grasslands of the orders *Festucetalia valesiacae* and *Stipo-Festucetalia pallentis* and the meso-xeric dry grasslands of the order *Brachypodietalia* were separated at the highest level of classification analysis. Within the xeric dry grasslands, however, the authors could not identify orders because the diagnostic species of the *Festucetalia valesiacae* and *Stipo-Festucetalia pallentis*, obtained from analyses in eastern Central Europe, were strongly mixed in the stands. Therefore, the syntaxonomic position of the three again clearly identified alliances *Stipo-Poion xerophilae* incl. *Diplachnion serotinae*, *Seslerio-Festucion pallentis* and *Festucion valesiacae* remains unclear, leaving the syntaxonomic system of the xeric dry grasslands of the Eastern Alps at its high level open and indicating the need for further research. Possible syntaxonomic consequences of the results are discussed. The study is a first step in a larger analysis of the dry grasslands of the Alps by the EDGG in the footsteps of J. Braun-Blanquet.

Borovyk et al. (2024) provide an overview of vascular plant species richness records in the steppe zone of Ukraine. They collected data from various sources, offering detailed information on species-rich grassland plots, including site descriptions, plot characteristics, coordinates, and species lists. Most of the small-scale records (up to 0.1 m²) were found in mesic grasslands in southern Ukraine with a high abundance of annual grasses and forbs, while most of the records at larger scales were found in the northern forb-rich and forb-grass steppes. A clear trend of decreasing mean species richness was observed from northern forb-rich steppes to southern desert steppes at larger scales (1 to 100 m²), while small-scale richness showed little variation between the different steppe subzones. The identified grasslands were meso-xeric and, on smaller scales, mesic, characterized by neutral to slightly alkaline substrates and low-intensity management. Most records were found in protected areas with a long history of stable land use. These characteristics are consistent with the patterns previously evidenced from the other regions. The authors conclude that local topography, landscape heterogeneity, and low-intensity management provide the basis for the existence of species-rich grasslands in the steppe zone. This inventory offers baseline knowledge for further studies on steppe biodiversity and emphasizes the importance of protecting steppe grasslands as global biodiversity hotspots, especially in the light of land-use changes and the ongoing war in Ukraine.

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