

*Eurasian Grassland Conference
2023*

*'Conservation and management of
grasslands in transforming
landscapes'*

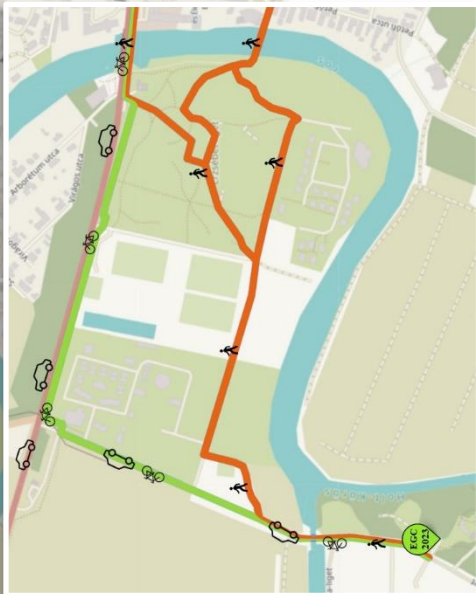
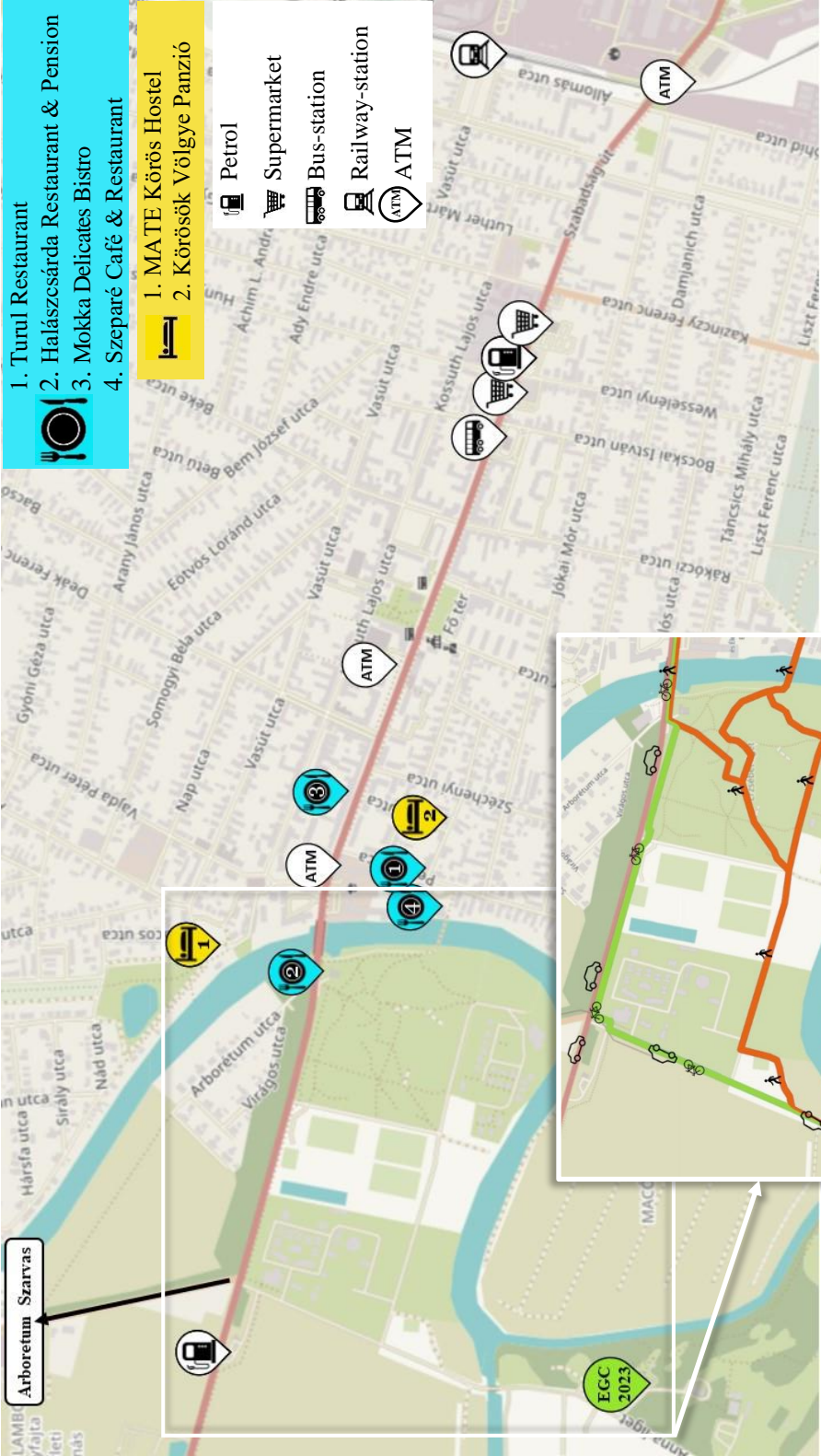


Szarvas, Hungary, 25-28 September 2023

- 1. Tunul Restaurant
- 2. Halászsárda Restaurant & Pension
- 3. Mokka Delicates Bistro
- 4. Szeperé Café & Restaurant

- 1. MATE Körös Hostel
- 2. Körösök Völgye Panzió

- Petrol
- Supermarket
- Bus-station
- Railway-station
- ATM



EGC
2023

[N 46° 51' 29.39"](#)
[E 20° 31' 31.57"](#)

- With bike
- Walking
- With car

Welcome to the 18th Eurasian Grassland Conference!

The topic of the 18th Eurasian Grassland Conference (EGC) is 'Conservation and management of grasslands in transforming landscapes'. The conference aims to improve our knowledge on the flora, fauna, diversity, management, and restoration of Palearctic grasslands in changing landscapes. This year's conference offers four keynote talks, an optional workshop and an optional post-conference excursion, in addition to the talk and poster sessions, mid-conference excursion and grassland party. On 25th September, participants have the opportunity to participate in a workshop 'Introduction to grassland-related spiders', led by Róbert Gallé, Nikolett Gallé-Szpisjak and Tomás Hamrik. We welcome Corrado Marcenó, Denys Vynokurov, Szabolcs Lengyel, and András Kelemen as our keynote speakers. The mid-conference excursion takes us to the famous Hungarian 'puszta' in the Körös-Maros National Park, and a three-day optional post-conference excursion takes place in the diverse and spectacular grasslands of the Kiskunság National Park (29th September – 1st October). Both excursions are guided by botanist and zoologist experts and we will have the possibility to observe unique geomorphological features, endemic and rare plants and animals, best practices and challenges for conservation and restoration as well as field experimental sites.

Organizers



Local Organising Committee

Balázs Deák
Orsolya Valkó
András Kelemen

Péter Bánfi
Rita Engel
Réka Fekete
Laura Godó
Judit Kapocsi
Orsolya Kiss

Réka Kiss
Eszter Korom
Krisztina Körömi
Judit, Lestyan-Goda
Katalin Lukács
Ábel Molnár

Supporters



General information

Venue



The **Visitor Centre of the Körös-Maros National Park** ([N 46° 51'29.39"](#); [E 20° 31' 31.57"](#)) host all main events of the conference (registration, welcome party, talks and poster sessions, grassland party). Talks take place in the Conference room of the Visitor Centre. Posters are displayed in the exhibition area of the Visitor Centre and are shown also in an electronic format. Buses for the mid- and post-conference excursions depart from the parking lot of the Visitor Centre.



Talks and Posters

Oral presentation should be no longer than 15 minutes (12 min talk + 3 min questions). Posters are displayed in the exhibition area of the Visitor Centre. Posters are also presented in three minutes 'fast talks' (3 min talk + 1 min questions) in the Conference room.

Please make sure to bring your oral-presentation and poster-presentation in Office 2013 compatible format (ppt, pptx) and run a virus scan on them before uploading it.

Internet access

Wireless internet access is available in the Conference room. Network and password can be found at registration table. The internet access is limited, please use it considerately.

Dining

Lunch in the days of talks and poster sessions is served in a separate building near the Visitor Centre. We kindly ask to take vegetarian food (or other food for those with special diets) only if you ordered it.

The „Tölgy Büfé” (Oak Buffet, <https://www.kmnp.hu/hu/tolgy-bufe>), located behind the Conference room, is open on Monday, Tuesday and Thursday from 8 a.m. to 5 p.m. The buffet sells coffee, drinks, sandwiches and other snacks, as well as local delicacies.

You can choose to have breakfast and/or dinner in one of the following restaurants:

Turul Restaurant
(Turul Kisvendéglő)
www.turulgasztro.hu/english-restaurant-in-szarvas/
Address:
5540 Szarvas, Petőfi utca 10/1
Open: 7:00–23:00

Halászcserda Restaurant & Pension
(Halászcserda Vendéglő és Panzió)
<https://www.halaszcsarda-szarvas.hu/etlap/>
Address:
5540 Szarvas I. ker. 6.
Open: 9:00–20:00

Mokka Delicates Bistro
<http://www.mokkaetterem.hu/etlap.html>
Address:
5540 Szarvas, Szabadság út 16/2.
Open: 8:00–22:00

Szeparé Café & Restaurant
(Szeparé Kávészó és Étterem)
<https://szepareszarvas.hu/etlap-2/>
Address:
5540 Szarvas, Petőfi utca 7.
Open: 10:00–21:00

Auction

In line with the traditions of EDGG, participants can take local grassland related products from their home countries for the auction. The income from the auction will be spent for future EDGG related activities. The items will be collected at the Registration Table.

Post-conference excursion

The post-conference excursion is available for those who have already registered for it. It departs from Szarvas on 29th September, early in the morning, and we finish at the railway station at Kecskemét on the afternoon of 1st October. From Kecskemét, there is a direct train connection to Budapest Airport. Direct buses from Kecskemét to Szarvas are available Sunday at 17:35 (No. [1087](#)) and 19:35 (No. [1085](#)) and in hourly intervals starting from 07:35 (No. [1085](#), No. [5208](#)) in Monday. Direct buses and trains to Budapest are also available (for more information visit <https://menetrendek.hu/>). For those departing on Monday, we recommend booking an accommodation in Kecskemét for Sunday night as it is a very nice city worth exploring.

The town of Szarvas



During your stay in Szarvas it is worth to take a short walk and look around in the town. The town has a long history dating back to the Bronz Age, and it has been continuously inhabited by many cultures. The settlement of that period was destroyed and inhabited again only in 1722. Until the turn of the 18th to 19th century it functioned as a small market town, later, thanks to the Lutheran priest Samuel Tessedik, the town blossomed. Samuel Tessedik here founded the first School of Economics in Europe, and introduced modern farming

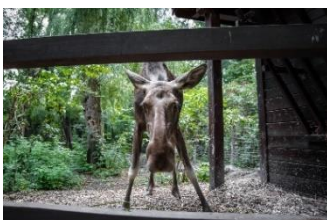
techniques to the region. He built a spectacular school building (now functioning as a museum) and the Evangelical Old Church. He had a great role in transforming the cityscape, replacing the former irregular streets with a conscientiously designed, regular chessboard street network. After him, during the 19th century the Count Bolza family played a determinative role in the life of Szarvas. The family-built mansions, a dry mill and the “Anna Park” on the banks of the Körös River. Also, thanks to them in the present we can enjoy the Szarvas Arboretum, also called the Pepi-garden (<https://pepikert.hu/>), the most beautiful and most famous attraction of Szarvas.



During the conference, the Visitor Centre is freely accessible for the participants. It is worth to visit the exhibition area (not only for the displayed posters), as the exhibition provides a nice introduction of the habitats and conservation activities of the National Park.



During breaks participants of the conference can also visit the zoo at the Venue, which is accessible all day long. A guided tour to the zoo is organized on Monday.



Conference Program

25 September (Monday)

- Registration
- Workshop: '*Introduction to grassland related spiders*' (Róbert Gallé, Nikolett Gallé-Szpisjak, Tomás Hamrík)
The workshop provides an overview on the most important spider taxa related to grasslands, their main functional groups, and an introduction to sampling methodology. The program includes a brief (indoor) lecture about the theoretical background, and also an outdoor part when the participants get a practical guide about the basic sampling methods (in the grassland that is just next to the venue).
- Guided tour in the zoo of the National Park (Krisztina Körömi)
- Keynote lecture by András Kelemen
- Welcome reception

26 September (Tuesday)

- Talks & Poster session

27 September (Wednesday)

- Mid-conference excursion (Ábel Molnár, Péter Bánfi, Judit Kapocsi).
In the mid-conference excursion, we plan a unique 'puszta' experience: we will have an easy half-day walk in the endless grasslands in the 'Csanád puszták' protected area. We visit several types of pristine Pannonian alkali habitats in the Körös-Maros National Park. We have the opportunity to see the vertical vegetation gradient typical of alkali open landscapes. The gradient involves loess steppes (6250 Pannonic loess steppic grasslands) on the highest and alkali steppes and marshes on lower elevations (1530 Pannonic salt steppes and salt marshes). Due to the continental forest-steppe climate, during our excursion in autumn, hopefully we will be able to see many flowering grassland specialist plants typical to open alkali mud surfaces (*Heliotropium supinum*), alkali steppes (*Limonium gmelinii* subsp. *hungaricum* and *Prospero autumnale*) and loess steppes (*Sternbergia colchiciflora*). During the excursion we show you one of the most spectacular kurgans in the region, the Bekai-halom mound. This impressive man-made structure was built millennia ago for burial purposes and today it preserves the last remnants of the forest steppe vegetation in the region. We also visit the White Lake ('Fehér-tó') in Kardoskút, which is one

of the most beautiful white-water alkaline lakes of the Great Plain. In the basin of the lake, we can walk through the stands of *Suaeda pannonica*, *Puccinellia distans* subsp. *limosa* and *Tripolium pannonicum*.

- Grassland Party
- Auction

28 September (Thursday)

- Talks & Poster session
- EDGG General Assembly and closing ceremony

29 September – 1 October (Friday-Sunday)

- Post-conference excursion (András Kelemen, Orsolya Kiss)
 - 29 September 08:00: Departure from Szarvas.
 - 1 October 17:00: Arrival at Kecskemét railway station.The three-day-long post-conference excursion will take place in the diverse and spectacular grasslands of the Kiskunság National Park.

Detailed Program

25 September (Monday) Workshop, registration, keynote lecture

09:00 – 19:00	Registration
10:00 – 12:00	Workshop: Introduction to grassland related spiders (indoor presentations) (Róbert Gallé, Tomas Hamrík, and Nikolett Gallé-Szpisjak)
12:00 – 13:00	Lunch break (for the participants of the workshop)
13:00 – 15:00	Workshop: Introduction to grassland related spiders (outdoor program)
15:00 – 17:30	Guided tour in the zoo of the National Park
17:45 – 18:30	Keynote lecture by András Kelemen: New challenges of nature conservation in the light of landscape-level changes in the Great Hungarian Plain
18:30 – 21:00	Welcome reception

26 September (Tuesday) Talks and poster session

08:00 – 12:00	Registration
09:00 – 09:15	Opening ceremony
09:15 – 10:00	Plenary talk by Corrado Marcenò: Data collected by amateur botanists: coupling an old tradition and citizen science offers new opportunities for habitat monitoring and conservation
10:00 – 11:00	Talks
10:00 – 10:15	Melinda Halassy: Reducing the establishment of invasive alien species by sowing high density or competitive native species
10:15 – 10:30	♣ Boglárka Berki: Impact of four years of mechanical treatment of the invasive plant <i>Asclepias syriaca</i> L. on other plants species in secondary grasslands

10:30 – 10:45	♣ Judit Sonkoly: Commercial potting substrates as an overlooked way of the long-distance dispersal of plants
10:45 – 11:00	♣ Patricia Elizabeth Diaz Cando: Establishment of <i>Sporobolus cryptandrus</i> (Torr.) A. Grey (Poaceae) - a new invasive species in Hungary
11:00 – 11:30	Coffee break
11:30 – 13:30	Talks
11:30 – 11:45	Martin Magnes: Forest steppes on serpentinite outcrops in Austria: a distinctive habitat or just a mosaic?
11:45 – 12:00	♣ Svenja Wanke: Elevational patterns in calcareous grassland community diversity and flower colour spectra in the European Alps
12:00 – 12:15	♣ Lara Mołoniewicz: Plant diversity patterns in an endangered semi-open forest in central Poland – the example of Krzemionki Nature Reserve
12:15 – 12:30	♣ Szymon Czyżewski: Niche of plant species native to the temperate forest biome in Europe matches a heterogenous natural vegetation shaped by megaherbivores
12:30 – 12:45	Rocco Labadessa: Ancient stone burial mounds as refuges against grassland degradation
12:45 – 13:00	Balázs Deák: Environmental heterogeneity driven plant diversity on ancient burial mounds in Hungary and Bulgaria
13:00 – 13:15	György Kröel-Dulay: The importance of extreme drought and chronic change in precipitation in a grassland field experiment
13:15 – 13:30	Marianne Stoessel: Where do reindeer graze? A study about the interplay between landscape features and grazing on plant communities in the warming tundra
13:30 – 15:00	Lunch break
15:00 – 15:45	Plenary talk by Denys Vynokurov: New insights on the broad-scale classification of European dry grasslands and scrub vegetation
15:45 – 17:15	Talks
15:45 – 16:00	Jürgen Dengler: Classification of the high-rank syntaxa of the Balkan dry grasslands with a new hierarchical expert system approach: now finished
16:00 – 16:15	Piotr Chmielewski: Dry grasslands in the alkaline fens near the city of Chełm (Lublin province, SE Poland)

16:15 – 16:30	Hallie Seiler: Effects of irrigation on dry grasslands in Valais (Switzerland)
16:30 – 16:45	Stefan Widmer: Epochal changes in grassland diversity in Switzerland
16:45 – 17:00	♣ Rozália Kapás: The role of livestock grazing and connectivity in recovery of grassland communities following restoration
17:00 – 17:15	Benito Schöpke: Plant species response at the interface of crop fields to protected grasslands – impact of farm practices
17:15 – 17:45	Coffee break
17:45 – 19:00	Poster session

1. Iwona Dembicz: Drivers of plant diversity in grasslands on mineral islands surrounded by peatlands (Biebrza valley, NE Poland)
2. ♣ Olena Shchepeleva: Ancient defensive earthworks as refuges for steppe flora in Southern Ukraine
3. ♣ Nadiia Skobel: Old cemeteries of the Right-Bank Cereal Step as refuge of steppe flora
4. Santiago Ordonez: A call to join the study of *Salvia nemorosa* L. demography on kurgans
5. ♣ Vivien Szász: The effect of kurgan area and isolation on *Salvia nemorosa* L. in fragmented dry grasslands
6. ♣ Laura Godó: Vegetation of mound-building mouse mounds in two different habitat types
7. Rita Engel: Ancient burial mounds provide ecosystem services by preserving medicinal plants from grasslands
8. Iryna Rabyk: Study of the peculiarities of the bryophyte cover of the dry meadows of south-eastern Alps
9. ♣ Viktória Törő-Szijgyártó: The relationship between seed size, shape and persistence in the Hungarian flora
10. Liubov Borsukevych: Vegetation dynamics on riverine sand dunes in the Dnieper River basin
11. Andrea McIntosh-Buday: Biomass-species richness relationship along an elevation stress gradient at an alkaline-loess habitat complex
12. Sonja Škornik: Functional traits of transient plant species in two semi-natural dry grassland communities
13. ♣ Ágnes Tóth: Vertical distribution of soil seed bank and the ecological importance of deeply buried seeds in alkaline grasslands
14. ♣ Katalin Lukács: A new aspect of seed dispersal: Human-dispersed diaspores can survive and disperse after laundry washing

15. Anikó Csecserits: Sign of stability or very slow changes? No difference in the level of invasion after a decade neither on primary sandy grasslands nor on old-fields
16. József Geml: Ectomycorrhizal fungi in a Pannonian sandy forest steppe landscape: a comparison of open and closed grasslands and poplar woodlands
17. Meso Odongo: Decreasing provenance differentiation in the second generation of *Festuca vaginata* supports flexible seed sourcing for restoration in Hungary
18. Orsolya Kiss: Using species distribution modelling to design conservation strategies for the European roller
19. Inge Paulini: Impact of mowing abandonment and grazing on very species-rich meadow steppes in Transylvania (Romania)

27 September (Wednesday) Mid-conference excursion, Grassland Party and Auction

8:00 – 8:30	Presentations about the habitats and species of the Körös-Maros National Park (Péter Bánfi, Ábel Molnár)
08:30 –	Departure from Szarvas, from the Visitor Centre
8:30 – 18:30	Mid-conference excursion (Ábel Molnár, Péter Bánfi, Judit Sallainé Kapocsi)
18:30 – 22:00	Grassland party and auction at the visitor centre

28 September (Thursday) Talks and poster session

09:00 – 10:30	Talks
09:00 – 09:15	Janine Ruffer: Restoration of dry and sandy habitats in Brandenburg, Germany by LIFE projects
09:15 – 09:30	Gwyn Jones: How many livestock are needed to maintain EU priority habitats?
09:30 – 09:45	Markus Wagner: Mob grazing: A new approach to grazing management on British farms producing pasture-fed livestock
09:45 – 10:00	♣ Szabolcs Balogh: Grassland management experiences of Hortobágy National Park Directorate in the context of LIFE IP GRASSLAND-HU project
10:00 – 10:15	Maija Medne: “Blooming Meadows”: Implementation of Result Based Conservation Scheme in Latvia
10:15 – 10:30	Katalin Török: How three decades of grassland restoration can develop to a long-term international research network?

10:30 – 11:00	Coffee break
11:00 – 11:45	Plenary talk by Szabolcs Lengyel: Grassland restoration and management: a focus on animals
11:45 – 13:15	Talks
11:45 – 12:00	Leonardo Ancillotto: The night shift: bioacoustics at night disclose ecological relationships in Mediterranean dry grasslands
12:00 – 12:15	Márton Szabolcs: Habitat selection and breeding success of tree-nesting forest steppe birds in a restored grassland ecosystem
12:15 – 12:30	Stephen Venn: The effects of management on plant and carabid diversity of sub-arctic riparian flood meadows in northwestern Finland
12:30 – 12:45	Mylene Martinez: Spiders in the Estonian coastal grasslands during the era of Anthropocene
12:45 – 13:00	♣ Edvárd Mizsei: Enhancing habitat occupancy of the endangered Hungarian meadow viper (<i>Vipera ursinii rakosiensis</i>) through restoration of plant diversity of secondary grasslands on abandoned ploughfields
13:00 – 13:15	Orsolya Valkó: Burrowing rodents as ecosystem engineers in Eurasian grasslands – case studies from Kazakhstan and Hungary
13:15 – 14:45	Lunch break
14:45 – 15:45	Talks
14:45 – 15:00	♣ Gantuya Batgelder: Traditional ecological and herding knowledge in the forest steppe region in Mongolia
15:00 – 15:15	Marianna Biró: Oral history reveals driver interactions behind land-use legacies in a transforming cultural landscape
15:15 – 15:30	♣ Ábel Péter Molnár: The Flora Continuity Hypothesis: massive potential survival of the flora since before the Last Glacial Maximum in the Carpatho-Pannonian region
15:30 – 15:45	Attila Molnár: Could hundreds of species have disappeared from loess grasslands as they were ploughed up? Undocumented loss and extinction debt in the Hungarian Great Plain

20. Kalina Pachedjieva: Communities with high abundance of the Balkan subendemic *Satureja pilosa* in Bulgaria
21. Anna Cwener: The small-scale geographic diversity of dry grasslands of the Lubelskie region (Lublin province, SE Poland)
22. Lyubov Felbaba-Klushyna: Syntaxonomy of subalpine meadows of the Borzhava mountain massif (Ukrainian Carpathians)
23. Oksana Tyshchenko: Monitoring polygons of steppes and Azov-type spits: application of remote sensing data for assessing the status of vegetation cover
24. Svitlana Iemeljanova: AveWetlands – a new project to assess the annual vegetation diversity of European wetlands
25. Hrvoje Kutnjak: Comprehensive approach to restoration of dry Mediterranean grasslands on Dinara with the aim of preserving Natura 2000 target bird species
26. Sandra Dullau: Seed-based grassland establishment in solar parks - combining renewable energy production with ecosystem services associated with pollinator
27. Roman Hamerský: Degradation and re-gradation of meadow's plant species diversity under different management pressure at the unique *Adenophora liliifolia* locality
28. ♣ Réka Fekete: Restoration and managements of urban grasslands – a global review
29. ♣ Réka Kiss: Effect of climatic parameters on the population dynamics of *Bulbocodium vernum*
30. ♣ Sándor Borza: Hitchhiking seeds – The role of off-road vehicles in seed dispersal in protected areas
31. Domas Uogintas: What impact does grassland abandonment have on forage quality compared to mowing?
32. ♣ Dariia Borovyk: The impact of low-intensity, regular-intensity mowing and mowing abandonment on a diversity of semi-natural grasslands in South Moravia (Czech Republic)
33. Viktor Shapoval: Vegetation management of the Budzhatskyi steppes (Odesa region, Ukraine)
34. ♣ Gergő Rák: Effects of Grazing Pressure and Phytomass Productivity on the Density of the Hungarian Meadow Viper (*Vipera ursinii rakosiensis*) in Kiskunság
35. ♣ Gergely Kovacsics-Vári: Effect of increasing intensity of sheep grazing on the biomass composition of acidic sand grasslands

17:00 – 17:30 Coffee break

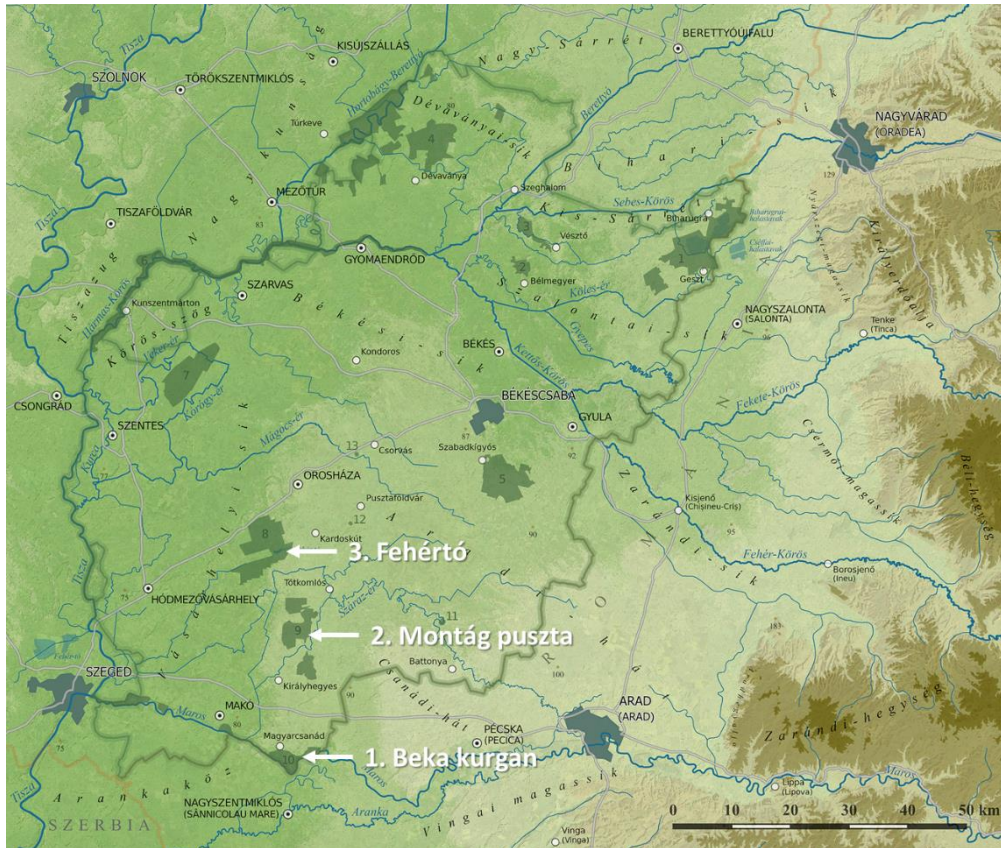
17:30 – 19:00 EDGG General Assembly and closing ceremony

29 September – 1 October (Friday-Sunday) Post-conference excursion

29 September 08:00 Departure from Szarvas

1 October 17:00 Arrival at Kecskemét

Program and details of the mid-conference excursion



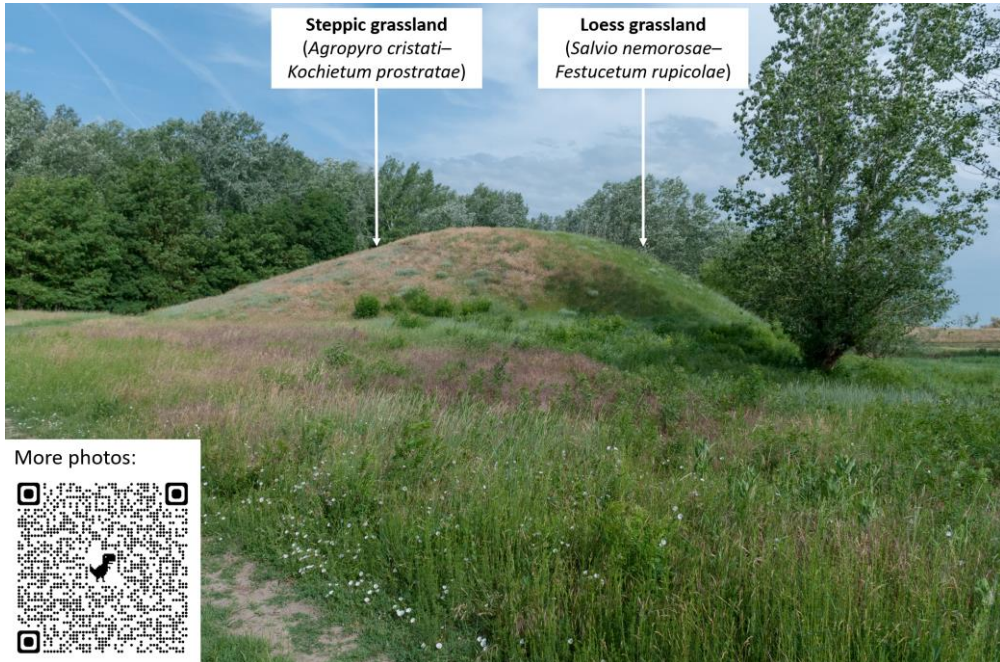
Sites of the mid-conference excursion

1. The ‘Beka kurgán’ and the floodplain of the Maros river

The Beka mound that was built by the Yamnaya culture during the Bronze Age, preserved a small but valuable forest steppe grassland fragment. This grassland fragment is one of the most species-rich grasslands of the neighbouring lowland landscapes (86 metres a.s.l). Despite its small area, the mound provides safe haven for several species typical of the loess grasslands of Central European forest steppes. The mound also has a high landscape value as (due to its height of 8.5 metres) it is one of the largest mounds in the region.

Although present days the kurgan is located in the floodplain of the Maros river, in the Bronze Age this area was predominantly characterised by dry grassland habitats. The reason for this is that the river changed its position (the original riverbed was 10 kilometres to the south) approximately 1600 years before that resulted in the relocation of the floodplain as well.

In the past centuries the vegetation of the floodplain was considerably affected by river regulation projects and forest plantation actions. In this site we can see a variety of mesophilous floodplain vegetation typical of the Maros river and dry grassland vegetation of the higher elevated areas.



The site is characterised by semi-natural grassland vegetation in a good conservation status, that in a certain extent was affected by the invasion of exotic woody species such as *Amorpha fruticosa*, *Acer negundo* and *Fraxinus pennsylvanica*. In order to suppress these noxious species in the mesophilous grasslands, the sites are managed by mowing during the summer, that can be an effective method especially in the case of *Amorpha*.

Species checklist

- *Agropyron cristatum* (*A. pectinatum*)
- *Alopecurus pratensis*
- *Amorpha fruticosa*
- *Arenaria serpyllifolia*
- *Arrhenatherum elatius*
- *Bassia prostrata* (*Kochia prostrata*)
- *Bromus arvensis*
- *Bromus hordeaceus* (*Bromus mollis*)
- *Bromus inermis*
- *Bromus sterilis*
- *Bromus tectorum*
- *Calepina irregularis*
- *Capsella bursa-pastoris*
- *Carduus acanthoides*
- *Carex melanostachya*

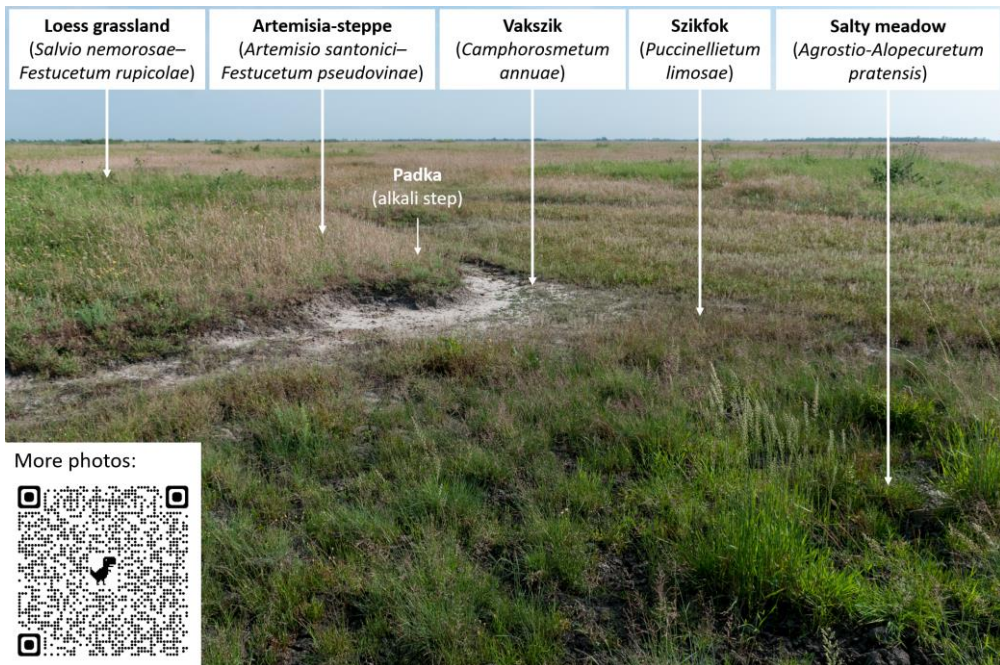
- *Carex praecox*
- *Carthamus lanatus*
- *Cerastium brachypetalum*
- *Cerastium glutinosum*
- *Chenopodium vulvaria*
- *Clematis integrifolia*
- *Convolvulus arvensis*
- *Cynodon dactylon*
- *Digitaria sanguinalis*
- *Dipsacus laciniatus*
- *Elymus hispidus*
- *Elymus repens*
- *Erigeron annuus*
- *Erigeron canadensis* (*Conyza canadensis*)
- *Erodium cicutarium*
- *Euphorbia cyparissias*
- *Euphorbia helioscopia*
- *Falcaria vulgaris*
- *Fallopia convolvulus*
- *Festuca rupicola*
- *Galium spurium*
- *Galium verum*
- *Geranium dissectum*
- *Geranium pusillum*
- *Hypericum elegans*
- *Hypericum perforatum*
- *Lactuca serriola*
- *Lamium amplexicaule*
- *Lamium purpureum*
- *Lathyrus tuberosus*
- *Lepidium draba* (*Cardaria draba*)
- *Marrubium peregrinum*
- *Medicago minima*
- *Medicago monspeliaca*
- *Myosotis arvensis*
- *Onopordum acanthium*
- *Papaver dubium*
- *Papaver hybridum*
- *Phlomis tuberosa*
- *Poa angustifolia*
- *Ranunculus polyanthemus*
- *Salvia nemorosa*
- *Securigera varia* (*Coronilla varia*)
- *Senecio vernalis*
- *Sonchus oleraceus*
- *Stellaria media*
- *Stipa capillata*
- *Taraxacum officinale*
- *Thalictrum minus*
- *Valerianella locusta*
- *Verbascum blattaria*
- *Verbascum phlomoides*
- *Veronica arvensis*
- *Veronica polita*
- *Vicia sativa* subsp. *nigra* (*V. angustifolia*)
- *Vicia tetrasperma*
- *Viola arvensis*
- *Viola hirta*

Notes:

2. Pannonic salt vegetation of 'Montág puszta'

The Montág puszta is one of the most characteristic primary ancient salt steppes in the South Trans-Tisza region. The south-eastern part of the puszta is characterised by a nice vertical vegetation zonation, that follows the micro-patterns of the geomorphology. At the highest elevated points of the area loess grasslands (*Salvio nemorosae-Festucetum rupicolae*) are situated. At bit lower elevations *Artemisio santonici-Festucetum pseudovinae* grasslands are typical, followed by a special vegetation formation bound to the microformations called „szikpadka’ (alkali step). Bellow the alkali steps barely vegetated patches of the 'vakszik' (blind szik) (*Camphorosmetum annuae*) are situated characterised by the most saline soils. The deepest elevated depressions are generally covered by salt meadows (*Agrostio-Alopecuretum pratensis*). In areas that are frequently inundated during spring and characterised by a salty soil stands of *Puccinellietum limosae* are present.

Montág puszta



The area is managed by the national park, typically grazed by cattle during springtime in a traditional way (low grazing pressure, organised by local herders with an extensive local knowledge on alkali plant communities).

Species checklist

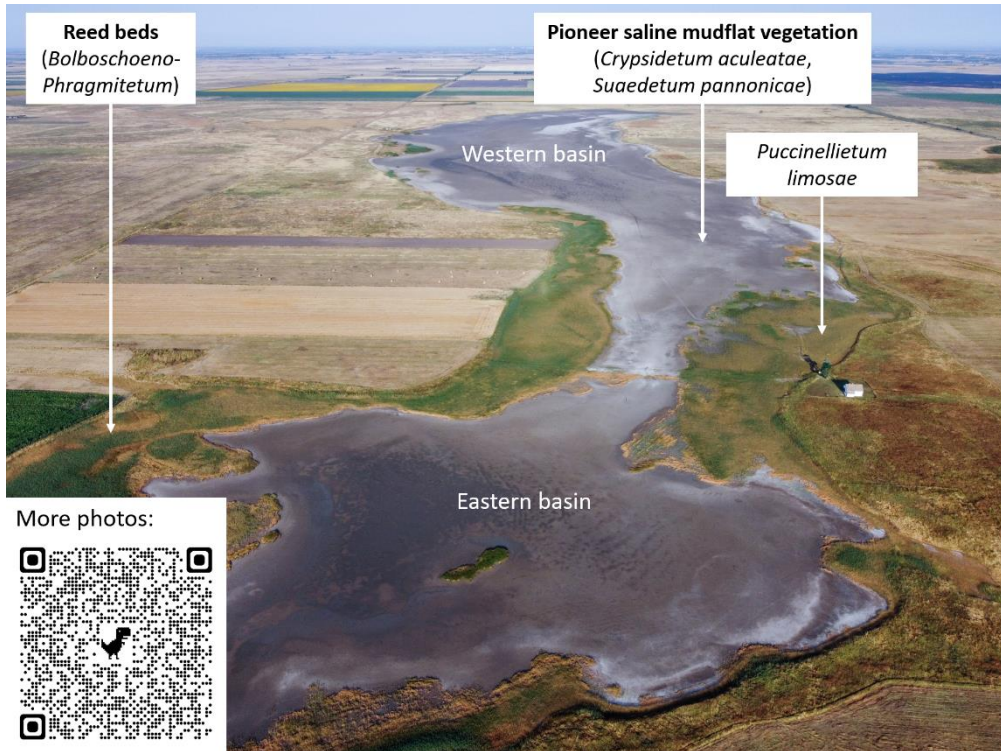
- *Achillea setacea*
- *Allium vineale*
- *Alopecurus pratensis*
- *Artemisia santonicum*
- *Atriplex littoralis*
- *Atriplex prostrata*
- *Atriplex tatarica*
- *Beckmannia eruciformis*
- *Bolboschoenus maritimus*
- *Bromus hordeaceus* (*Bromus mollis*)
- *Bupleurum tenuissimum*
- *Camphorosma annua*
- *Capsella bursa-pastoris*
- *Carduus acanthoides*
- *Carduus nutans*
- *Carthamus lanatus*
- *Convolvulus arvensis*
- *Cynodon dactylon*
- *Cynoglossum officinale*
- *Elymus repens*
- *Eryngium campestre*
- *Euphorbia cyparissias*
- *Festuca pseudovina*
- *Festuca rupicola*
- *Filipendula vulgaris*
- *Fragaria viridis*
- *Galium verum*
- *Gypsophila muralis*
- *Hordeum marinum* subsp. *gussoneanum* (*H. hystrix*)
- *Hyoscyamus niger*
- *Hypericum perforatum*
- *Juncus compressus*
- *Kochia prostrata*
- *Lactuca serriola*
- *Lamium purpureum*
- *Lathyrus tuberosus*
- *Lepidium coronopus* (*Coronopus squamatus*)
- *Lepidium perfoliatum*
- *Lepidium ruderae*
- *Limonium hungaricum* (*L. gmelini* subsp. *hungaricum*)
- *Matricaria chamomilla*
- *Mentha pulegium*
- *Myosurus minimus*
- *Oenanthe silaifolia*
- *Onopordum acanthium*
- *Pentanema britannica* (*Inula britannica*)
- *Phlomis tuberosa*
- *Pholiurus pannonicus*
- *Poa angustifolia*
- *Poa bulbosa*
- *Polygonum aviculare*
- *Polygonum bellardii*
- *Potentilla arenaria*
- *Potentilla argentea*
- *Potentilla reptans*
- *Prospero autumnale* (*Scilla autumnalis*)
- *Puccinellia limosa*
- *Ranunculus lateriflorus*
- *Ranunculus trichophyllus*
- *Rumex crispus*
- *Salvia austriaca*
- *Salvia nemorosa*
- *Schoenoplectus lacustris*
- *Scorzonera cana* (*Podospermum canum*)
- *Sedum cespitosum*
- *Sternbergia colchiciflora*
- *Thalictrum minus*
- *Thymus serpyllum serpyllum* (*T. glabrescens*)

- *Trifolium angulatum*
- *Trifolium campestre*
- *Trifolium retusum*
- *Trifolium striatum*
- *Trifolium strictum*
- *Verbascum phoeniceum*
- *Veronica arvensis*
- *Vicia sativa subsp. nigra* (*V. angustifolia*)

Notes:**3. 'Fehértó' (White Lake) in Kardoskút**

The 'Fehér-tó' is probably the most famous alkali lakes in the Carpathian basin. The lake was formed during the Ice Age (about 27,000) in the riverbed of the Paleo-Maros river. At that time, it was a fresh water lake, then gradually became saline by the beginning of the Holocene. The source of the salts is from salty deep-water outcrops (although in its eastern basin there are also freshwater springs - formerly providing habitats for the stands of *Triglochin palustris*). The lake fortunately has never been drained, but its functions were considerably affected by the regional desiccation that negatively affects the activity of the springs.

The lake is divided into two basins. The western basin is covered by large, saline mudflats with pioneer plant communities (*Crypsidetum aculeatae*, *Suaedetum pannonicae*, *Puccinellietum limosae* and *Bolboschoenetum maritimi*). The eastern basin is characterised by narrow saline reed beds (*Bolboschoeno-Phragmitetum*). The two basins have a physical connection, and if the weather is windy and the lake has a high water level, the salty water can flow from the western basin to the eastern one (formerly there was a dam isolating the two basins, but it was removed by the national park to facilitate the natural water flows). The Fehér tó is a typical steppe alkali lake, which gets dry till the beginning of the summer, then temporarily becomes covered with water due to summer rains, which quickly evaporate. It is permanently filled by autumn rains, and covered by water during winter and spring.



The grasslands adjacent to the lake, and also the shore of the lake are managed by extensive sheep grazing. Many of the adjacent grasslands unfortunately were ploughed for a while in the past, that is why although they represent some species of the typical alkali landscapes in many cases they are quite species poor. The national park applies mowing and extensive grazing for the management and restoration of these habitats.

Species checklist

- *Adonis aestivalis*
- *Agrostis stolonifera*
- *Atriplex littoralis*
- *Atriplex prostrata*
- *Bolboschoenus maritimus*
- *Bromus inermis*
- *Calystegia sepium*
- *Camphorosma annua*
- *Carduus* × *orthocephalus*
- *Carduus acanthoides*
- *Carduus nutans*
- *Cirsium vulgare*
- *Cynodon dactylon*
- *Elymus repens*
- *Festuca pseudovina*
- *Festuca rupicola*
- *Fragaria viridis*
- *Lepidium draba* (*Cardaria draba*)
- *Lepidium perfoliatum*
- *Onopordum acanthium*
- *Phlomis tuberosa* (planted)

- *Phragmites australis*
- *Poa angustifolia*
- *Puccinellia limosa*
- *Salsola soda*
- *Salvia austriaca*
- *Salvia nemorosa*
- *Sideritis montana*
- *Silene latifolia* subsp. *alba*
(*Melandrium album*)
- *Solanum dulcamara*
- *Sporobolus aculeatus* (*Crypsis aculeata*)
- *Suaeda pannonica*
- *Thinopyrum obtusiflorum* cv. 'Szarvasi-1' (energy grass, invasive)
- *Trigonella procumbens*
- *Tripolium pannonicum* (*Aster tripolium*)

Notes: