



Ministry of the Environment  
of the Czech Republic



Challenges and initiatives for protection of inland salt habitats (1530\*),  
Illmitz 26.-27.9.2024



## Ecological restoration of salt marshes in Moravian Pannonia: problems and opportunities

LIFE22-NAT-CZ-LIFE-in-Salt-Marshes/101113725 (2023-2029)

Dr. Marie Kotasová Adámková

ENVIROP, Masaryk University, Czech Republic  
kotasova.adamkova@sci.muni.cz



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## Inland salt marshes: brief introduction

- ✓ unique habitat with a specific origin:
  - presence of salts in the geological subsoil
  - evaporation prevailing over precipitation for at least a part of the year
  - an impermeable layer in the subsoil helping the accumulation of salts
- ✓ in drier times of the year, the salts reach the surface with rising water
  - ➔ complication for water intake in plants
  - ↓
  - need for adaptation to the very specific conditions
  - ↓
  - open character of habitat = suitable for amphibians



↳ *Salicornia*



↳ *Glaux maritima*

# Inland salt marshes are very threatened...



## ✓ many factors of degradation (also in Czech Republic):

- absence of management -> **overgrowth** (incl. plant invasion)
- high **euthrophication** (nitrogen, phosphorus)
- **bad water regime**
- **no cooperation** with stakeholders
- **insufficient work** with the public

**insufficient protection,  
loss of biodiversity,  
bad ecosystem services,**

...



## ✓ european important habitat 1340\* under Habitats Directive (92/43/EHS)

EU biogeographical assessments																														
MS/EU28	Region	Surface	Status Range	Trend	FRR	Min	Max	Best value			Status Area	Trend	FRA	Good	Not good	Not known	Status Str. & funct.	Trend	Range prosp.	Area prosp.	S & f prosp.	Status Future prosp.	Curr. CS	Curr. CS trend	2012 CS	2012 CS trend	Status Nat. of ch.	CS trend Nat. of ch.	2001-06 status with backcasting	Target 1
EU28	ALP	200.10	1	-	≈ 200.10	0.07	0.07	0.07			1	-	> 0.07	0.01   0.01   0.01	0.004   0.004   0.004	0.054   0.054   0.054	2XA	x	bad	bad	good	0EQ	MTX	-	U2	=	nc	nong	U2	C
EU28	ATL	3352	1	-	>> 3352	0.16	0.16	0.16			1	-	>> 0.16	0.13   0.13   0.13	0.025   0.025   0.025	0   0   0	2XA	=	bad	bad	poor	0EQ	MTX	-	U1	-	gen	nc	U1	C
EU28	CON	20627	1	=	> 20627	33.59	34.43	34.23			1	=	> 34.23	7.19   11.6   9.40	4.55   8.81   6.68	18.06   18.22   18.14	2XA	-	poor	poor	unk	2XA	MTX	-	U2	=	nong	nong	U2	C
EU28	PAN	2730.14	1	=	> 2730.14	3.04	3.04	3.04			0EQ	=	>> 3.04	2.39   2.39   2.39	0.19   0.19   0.19	0.45   0.45   0.45	2XA	x	poor	bad	poor	2XA	MTX	=	U2	+	nc	nong	U2	D

# Our sites:

The general locations



Germany

Poland

Prague

*Anas querquedula*

*Bombina bombina*

*Cirsium brachycephalum*

*Tringa totanus*

*Rana arvalis*

Austria

Slovakia

*Triturus dobrogicus*

0 25 50 km



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## Project goals:

- ✓ **To restore** at least 20 hectares of Inland Salt Meadows (sensu stricto) within a larger 506-hectare wetland area.
- ✓ **To improve biodiversity**, with a target of increasing overall biodiversity by 35%, boosting populations of key species by 15-30%, and reducing the overgrowth of invasive species by 70%.
- ✓ **To enhance water quality and climate resilience**, aiming for a 25% reduction in water pollution and a 75% decrease in climate vulnerability within these ecosystems.
- ✓ **To engage and educate** local communities, including over 1,300 participants, through different educational events.
- ✓ **To create sustainable habitat management practices** that will ensure the restored wetlands remain ecologically stable and require significantly fewer resources for post-project care.



# What are main problems of our project sites?



none, insufficient or bad management



drying (targeted)



eutrophication (municipal wastewater)



plant invasions



bad morphology and inappropriate pool construction (steep shores)

# What are main problems of our project sites?



intensive grazing  
of homogeneous herds of livestock



unsuitable grazing management



industrial pollution (vegetable cannery)



intensive agriculture



waste deposition



expanding nutrias

# What are main problems of our project sites?



**What connects  
all of these problems?**



**They are somehow  
connected to stakeholders.**



many interests in our project area



misunderstanding of the meaning of measures  
to protect nature and species by the public



controversial revitalization from  
The Operational Program Environment (OPE)



unnatural dynamics of water  
due to irrigation of agricultural fields



# What about opportunities of our project?



restoration of ecosystem services

engaging local farmers and landowners

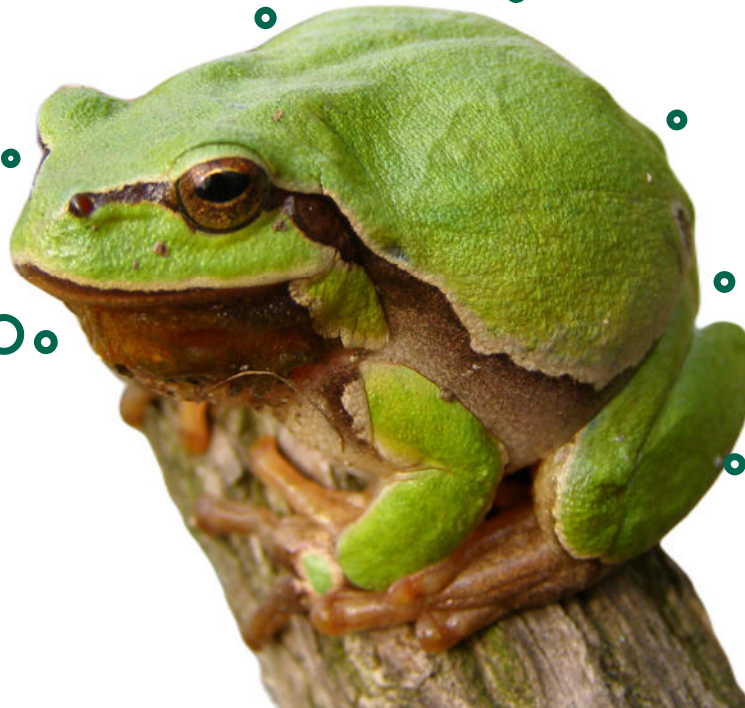
boost to biodiversity

public engagement

chance for overall management

buffer against climate change

science, education, networking



## How?

- ✓ management based on real initial state – detailed monitoring (biodiversity, initial pollution, extent of areas with invasive species, etc.)
- ✓ involvement of all relevant stakeholders in all stages of the project
- ✓ restoration using traditional management, and also new management approaches:



grazing



earthwork



mowing



hemi-parasitic plants



regional seed



bio-filters

+ work with public  
and volunteers

## How to work with public and volunteers?

### ✓ site preparation for recovery management:

- mowing, removal of biomass and pruning trees
- construction of fences for future pastures
- installation of microhabitats for snakes and beetles

### ✓ routine management:

- regular maintenance of pastures
- burning biomass into biochar
- garbage collection

### ✓ awareness and education:

- monitoring using citizen science
- training of "local guides"
- activities for children



## How to work with stakeholders?



### ✓ a gradual change in the perception of nature protection

- „doing nothing“ **is not nature conservation**
- the importance of heterogeneity
- the scientist **is not the enemy**



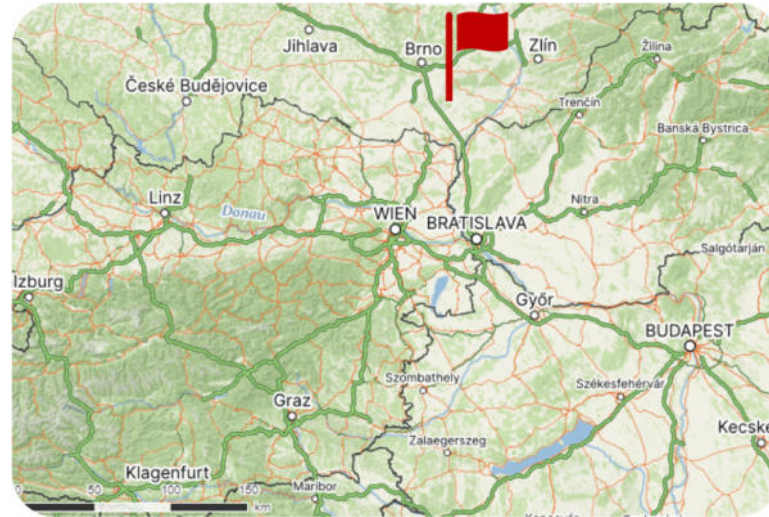
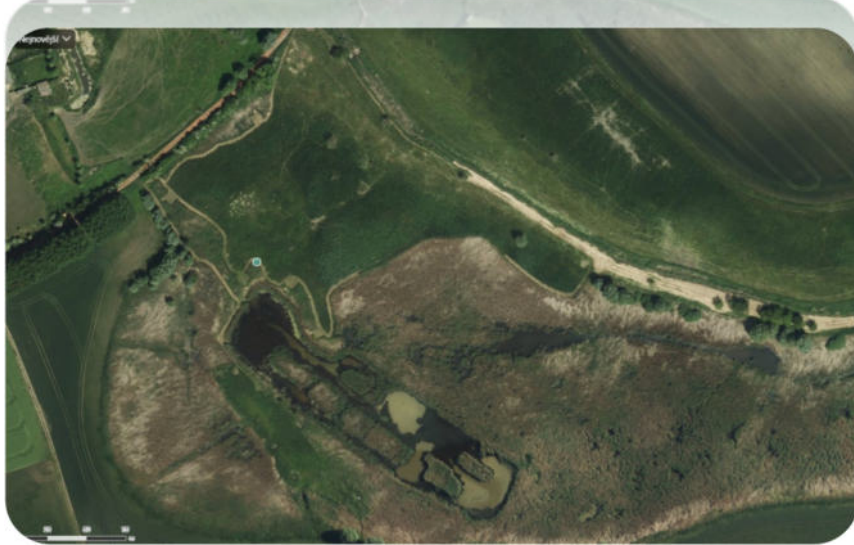
### ✓ participation in management:

- new role of hunters
- the return of personal keeping of livestock
- harmonizing nature conservation with agriculture

### ✓ awareness and education:

- livestock belongs to the landscape
- livestock **is not dangerous IF you have respect!**
- deworm with care, try using herbs

## Example of good practice: floodplain of Spálený stream



✓ historically salt marsh - municipal pasture

✓ since the 1970s strong changes:

- drainage of the area
- plowing and agricultural management
- in wetter years, increasingly rapid overgrowth

## Example of good practice: floodplain of Spálený stream



- 2020 start of management: grazing, mowing  
→ **positive effect on the both plant and animal communities**



→ frequently mowed and trampled places → restoration of valuable remnants of **salt-loving meadows and pastures!**

Distant sedge (*Carex distans*)

Saltmarsh rush (*Juncus gerardii*)

Narrowleaf trefoil (*Lotus tenuis*)

Strawberry clover (*Trifolium fragiferum*)

Water Speedwell (*Veronica catenata*)

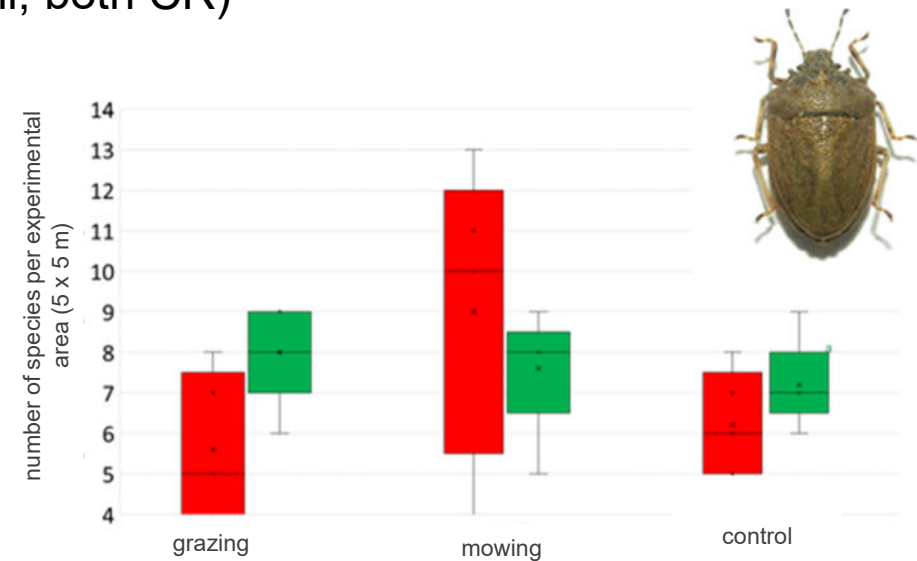
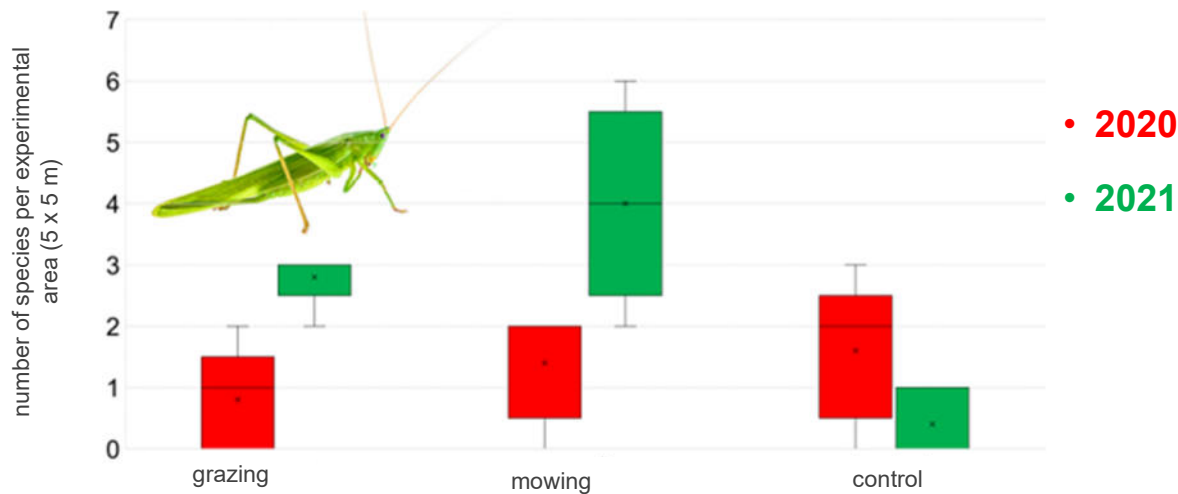
Lesser centaury (*Centaureum pulchellum*)



## Example of good practice: floodplain of Spálený stream



- positive effect also on arthropods (abundance, species richness and composition)
  - ✓ Coleoptera: Carabidae (*Elaphrus uliginosus*, NT; *Onthophagus illyricus*, VU)
  - ✓ Heteroptera (*Podops curvidens*, CR)
  - ✓ Orthoptera (*Ruspolia nitidula*, CR)
  - ✓ Auchenorrhyncha (*Delphax pulchellus*, CR)
  - ✓ Araneida (*Clubiona juvenis*, *Mendoza canestrinii*, both CR)



## Key messages:



meet and talk with stakeholders



connect experts, land owners, officials, farmers, schools, ...



work with **local people and other entities, involve them;**  
otherwise, you will be an **unwelcome competitor**



think about **long-term sustainability**



**don't tell people why they can't farm their land,**  
but tell them **how they can farm it better**



show **real examples of good practice**



if the old solutions don't work, abandon them and don't stick with them just because  
**"that's the way it's been done before"**



be inspired by what **worked well before**, as well as **innovations that have potential**





# We work together! It is important!

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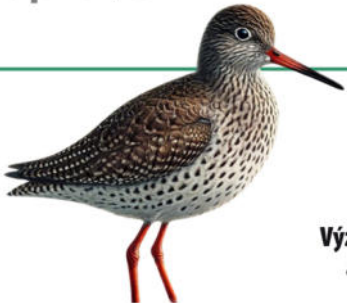
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Thank you  
for your attention !



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