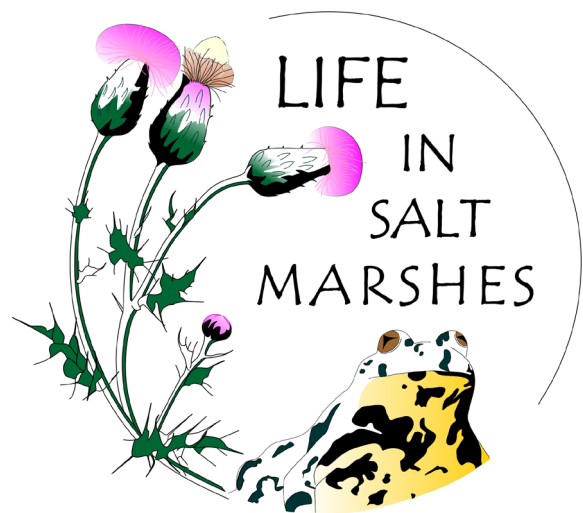




Ministry of the Environment
of the Czech Republic



ARC Meeting, Santander / Working Group 3 – ARC and Land Management



LIFE in Salt Marshes, LIFE for amphibians: **Complex ecological restoration of degraded and disappearing salt marshes in Moravian Pannonia**



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

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<https://life.envirop.cz/en>
<https://www.envirop.cz/en>

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:

- 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)

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

Brno

Austria

Slovakia

© Jiří Bohdal

© Martin Pelánek

© Lubomír Hlášek

Rana arvalis

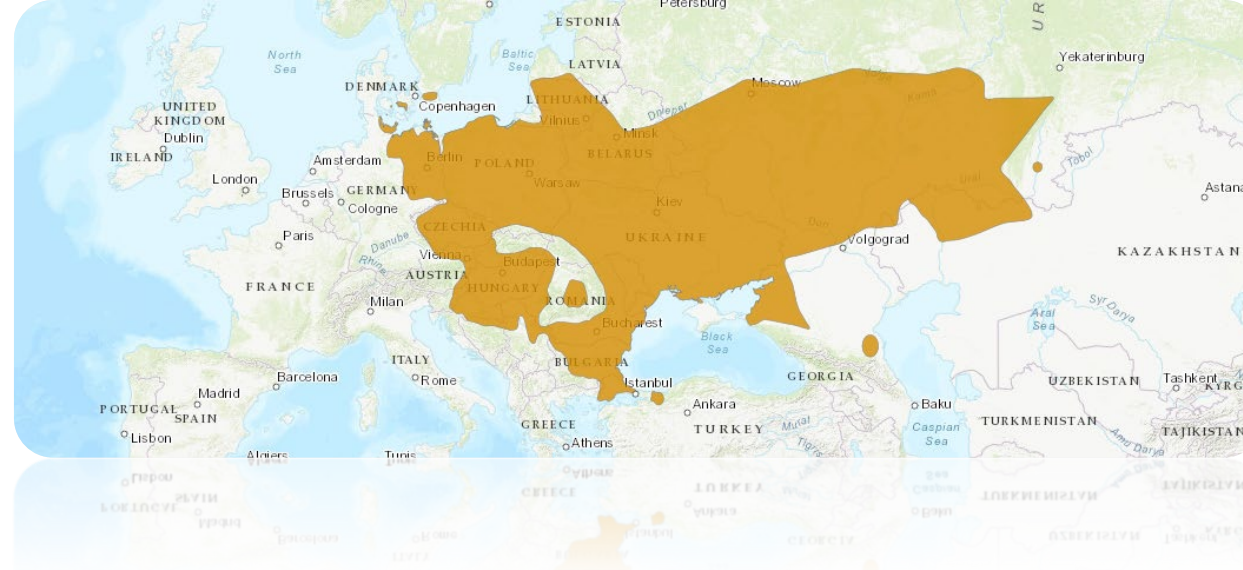
Bombina bombina

Triturus dobrogicus

0 25 50 km

Bombina bombina

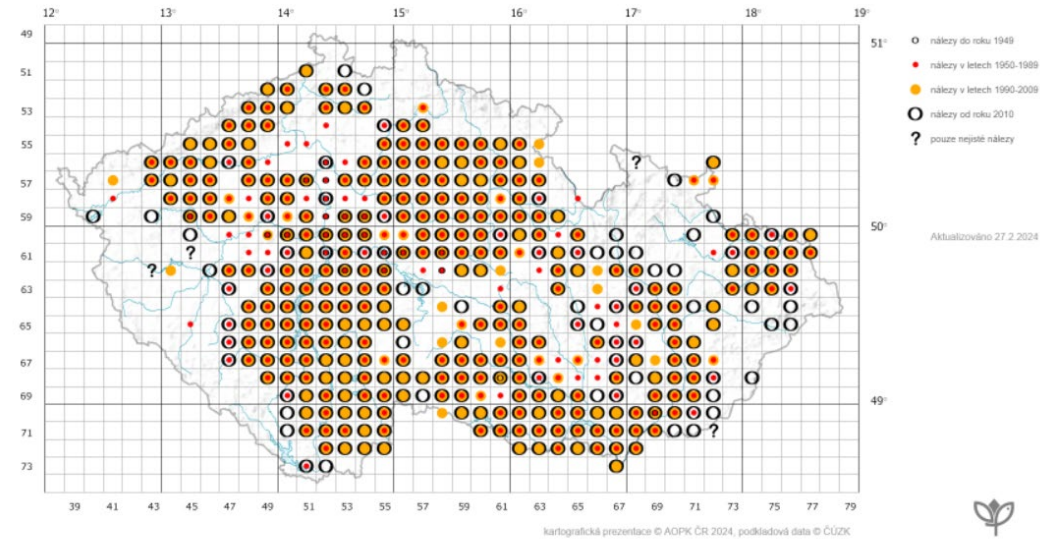
European fire-bellied toad



- ✓ needs open areas (pools, shallow water bodies, field / meadow spills) with rich submerged vegetation
- ✓ requires management – endangered by habitat loss due to overgrowth, lack of management, pollution is also problematic



© Martin Pelánek



What amphibians need in general?



secure
terrestrial habitats

plenty of sunlight

enough food

water bodies with
good morphology
(inc. littoral zone)

water without fish
(predators, competition)

clean water
(no pesticides, no eutrophication,
oxygen, ...)



Are amphibians happy at our sites?



lack of water



drying



eutrophication

They are definitely not, at most of them... ☹️



no management



insufficient management - overgrowth



bad management - mulching

Are amphibians happy at our sites?



bad morphology of pools – very steep shores

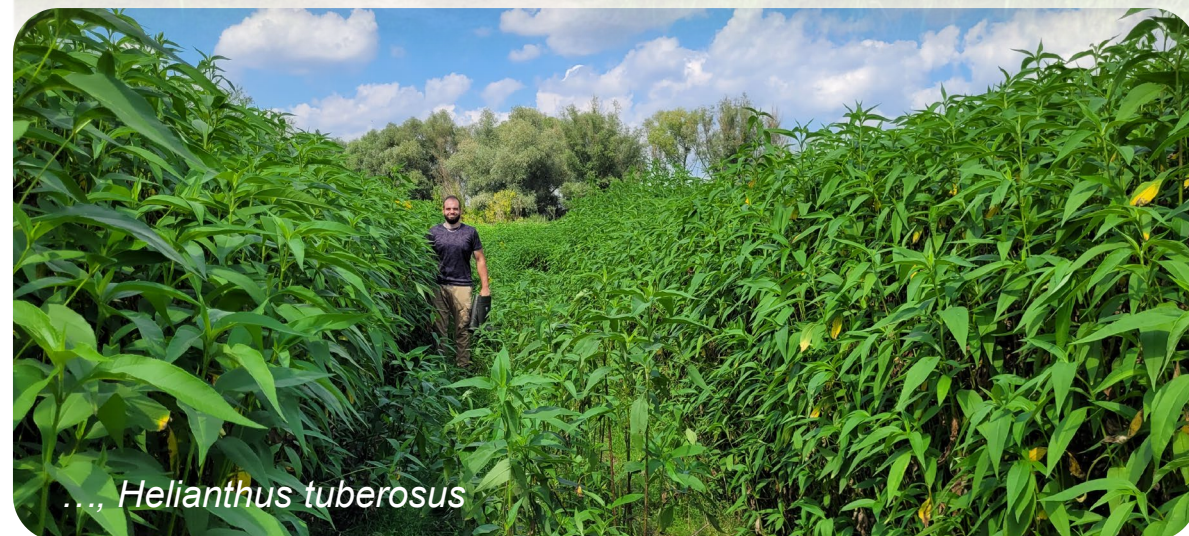


inappropriate pool construction

They are definitely not, at most of them... ☹️



plant invasions – *Solidago*, *Symphyotrichum*, ...



..., *Helianthus tuberosus*

... some other animals are not happy either, because of ...



intensive grazing
of homogeneous herds of livestock



unsuitable grazing management



industrial pollution (vegetable cannery)



intensive agriculture



waste deposition



expanding nutrias

And we are not happy, because of ...



many interests in our project area



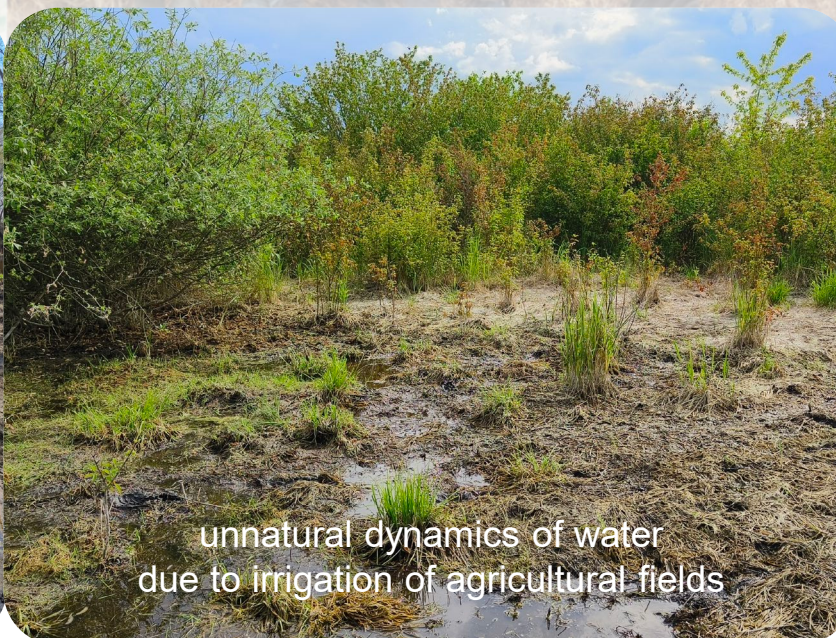
controversial effect of projects planned by third parties on objects of N2000 protection



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

**Ecological restoration
is a challenge!**



What to do with it?



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



grazing



earthwork



mowing



hemi-parasitic plants



regional seed



bio-filters

Mowing and grazing are essential:



Hungarian steppe cattle



Exmoor pony



Polish horse



Waterbuffalo



Cooperation 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



Cooperation 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**

Our philosophy that (at the moment) works:



Shall we restore wetlands, including salt marshes, together?

YES! It has many benefits for nature and the environment,
and also for municipalities and the general public.

a healthy landscape

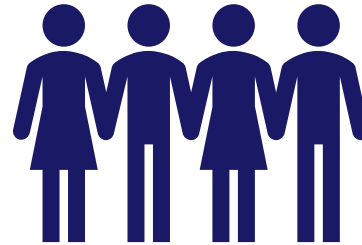
ecosystem services

supporting of biodiversity

science, research, innovation

examples of good practice
with international scope

opportunity for local agricultural
and other entities



promotion of municipalities

promotion of tourism and leisure
activities

educational programs and
excursions for schools

public education

cooperation with non-profit
organisations

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!

Ministerstvo životního prostředí

jihomoravský kraj



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Thank you for your attention !

And what are your experiences?



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