Alkaline fens (Natura 2000 habitat 7230) resources in Poland

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Alkaline fens as a Natura 2000 habitat (7230) in Interpretation Manual of European Union Habitats are defined as wetlands covered largely by sedge-moss plant communities, capable of peat, travertines or calcareous tufa accumulation, with stable high level of ground water, the mirror of which oscillates at the height of the land surface. They are soligenous, meso and meso-oligotrophic weakly acidic, neutral and alkaline fens fed by alkaline and calcareous groundwater which flows underground. In Poland they concentrate in southern, mountainous part of Poland and in those lowlands regions, where calcareous rock occurs (op. cit., fig. 1). We can distinguish: 'mountain flushes' (7230-1), upland basiphilous mires of southern Polanad (7230-2) and spring and percolating mires of northern Poland (7230-3). Their vegetation is created by communities belonging to the alliances *Caricion davallianae, Sphagno warnstorfiani-Tomenthypnion* and also *Caricion nigrae* and *Caricion lasiocarpae* (Wolejko et al. 2005). They can be of natural or human activity related background. Nowadays, as a result of human activity or abandonment of traditional management practices, a lot of them is threatened.

Extreme endangerment of alkaline fens has been confirmed by the results of a field inventory of the 7230 habitat run by the Naturalists' Club in 2008-2011 within the framework of the project: 'Management plans for alkaline fens (habitat 7230) and the related endangered species: *Saxifraga hirculus*, *Liparis loeselii*, *Herminium monorchis* and *Stellaria crassifolia*'. Several earlier studies (2005-2007) estimated the total surface area of alkaline fens in Poland from over a 12.000 to about 35.000 ha, but the results of current inventory clearly confirmed that their present area amounts to ca. 15.000 ha. Of that about 7-8 thousand ha are still covered with characteristic rich fen vegetation.

Currently, out of about 1.000 fens of different size that have been inventoried, only 9% remain in a favourable conservation status (FV). The majority remain in an unsatisfactory state of preservation (U1) or is strongly degraded (U2; tab.1, 2). Activities associated with active protection of alkaline fens are implemented in the currently ongoing two LIFE+ projects.

Fig. 1 Distribution of alkaline fens in Poland against the regional division of the country (from the north: young-glacial lowlands of northern Poland, old-glacial lowlands, uplands, the Sudety Mountains and the Carpathian Mountains). Results of an inventory performed in the years 2008-2011.

Table 1. Condition of habitat 7230 in different regions of Poland

Parameter	Assessment							
	FV		U1		U2		XX	
	No.	%	No.	%	No.	%	No.	%
Natural range	85	10	292	34,2	264	30,9	212	24,9
Specific structure and functions	136	15,9	328	38,5	384	45,0	5	0,6
Conservation status	168	19,7	460	53,9	213	25	12	1,4

Table 2. Evaluation of ecological quality parameters of alkaline fens in Poland

Region	Conservation status						Summary
	FV		U1		U2		
	No.	%	No.	%	No.	%	
Young-glacial landscape	40	9	184	43	205	48	**429**
Old-glacial landscape	2	1	88	55	70	44	**160**
Highlands	5	9	30	55	20	36	**55**
Mountains	32	15	104	50	73	35	**209**
Summary	**79**	**9**	**406**	**48**	**368**	**43**	**853**

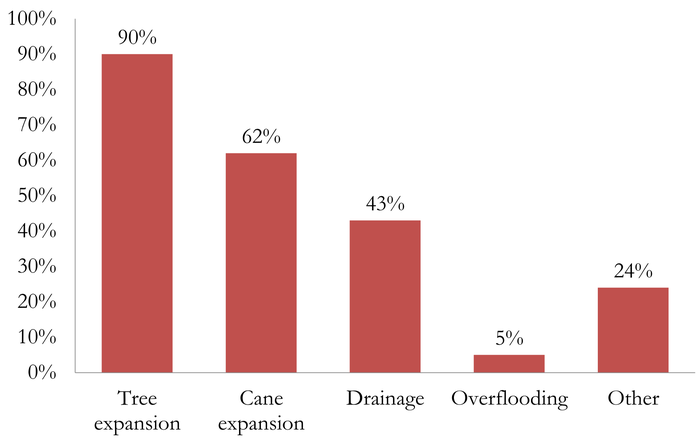

Fig. 2. Identified threats to habitat 7230

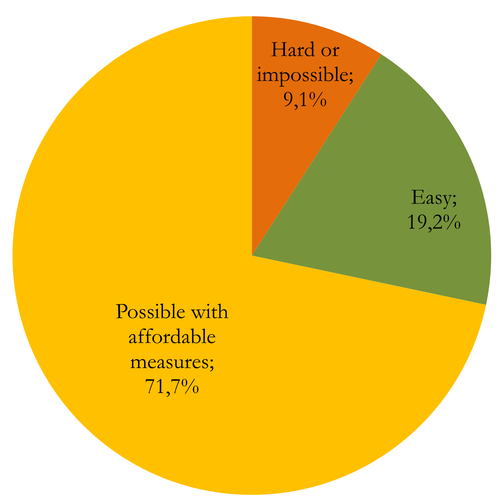

Fig. 3. Possibilities of renaturisation

THREATS, PROBLEMS AND CONSERVATION MEASURES:

The inventory has identified impaired water conditions (drainage works carried out in the past, mainly for agricultural purposes) which promotes expansion of trees, shrubs, cane and eutrophic sedges as a major threat. Even now drainage is performed in order to use mowing machines instead of manual mowing, which causes conservation problems. On the other hand, overflooding by surface waters leads to habitat loss due to drastic change of water chemistry.

The majority of Polish rich fens require active protection but only app. 20% of them are easy to recover. The proposed measures include mainly:

- the improvement of hydrologic conditions (increasing groundwater levels and inhibiting the excessive outflow),
- halting the expansion of trees and shrubs,
- restoring extensive farming (on a substantial area of fens), i.e. extensive mowing within CAP policy,
- implementing a dynamic monitoring of the habitat in Poland.

Implementing those conservation measures meets substantial problems – mainly as a result of the fact that fens conservationists are unable to respond to threats in a satisfactory manner. This is due to fact that the knowledge about fens is insufficient which leads to implementing conservation measures inadequate to issues faced (i.e. institutions responsible for agrienvironmental schemes focus on formal aspects of such schemes, leaving out any scientific control or monitoring based on merits which also leads to habitat loss).

Fens are a highly sensible habitat so every change in the groundwater basin conditions, even minimal or distant in the past, leads to fast alternations. It is important to note that fens, even if similar in terms of hydrology and phytosociology, are highly differentiated when it comes to measures suitable for conservation and restoration.

Rospuda river valley, photo by F. Jarzombkowski

Kruszynek nature reserve, photo by R. Stańko

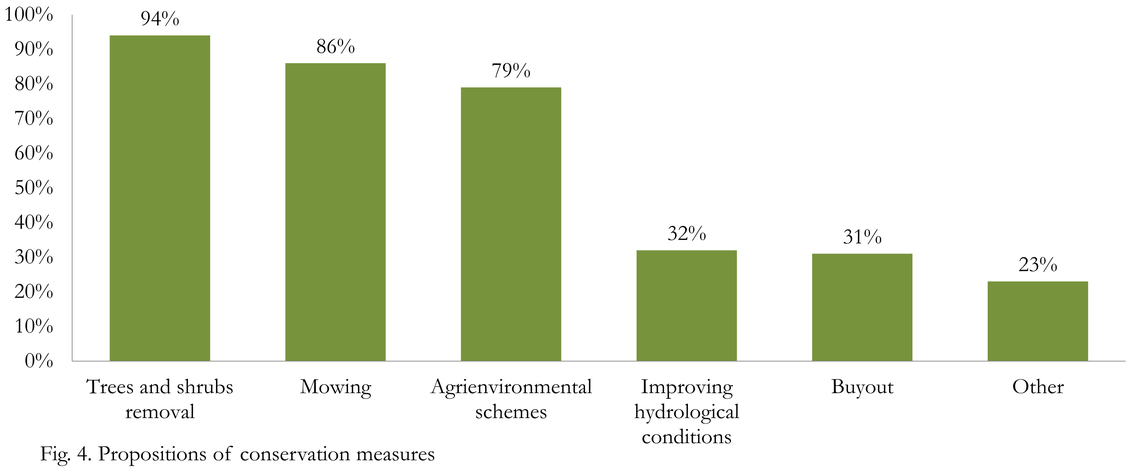

Fig. 4. Propositions of conservation measures

ALKALINE FENS CONSERVATION TWO LIFE+ PROJECTS

Two LIFE+ projects run currently by the Naturalists' Club (years 2012 – 2017 and 2014 - 2018) assume improvement or maintenance of condition of alkaline fens in northern and southern Poland. Near 180 selected fens are situated within 52 Natura 2000 sites. The list of selected areas includes the most precious and best preserved alkaline fens of Poland. In particular, projects aim to:

- reduce the excessive outflow and increase the level of ground water in alkaline fens – by blocking the ditches present on the fens and their surroundings,
- hinder the process of mineralization and eutrophication of the surface layer, slow down the process of decreasing of biological diversity, caused by expansion of species associated with habitats of lower humidity – by restoring the extensive mowing,
- dissemination of knowledge about proper methods of conservation of alkaline fens based on good management plans prepared on the basis of solid scientific grounds, with special emphasis of hydro-ecological aspects and establishing of a group of persons interested in the conservation of alkaline fens in the future and taking actions which will strengthen the effects achieved through the project – by series of local workshops, knowledge exchange and encouraging people to join agrienvironmental schemes,
- buyout of the most valuable and at the same time endangered fragments of alkaline fens – and creating nature reserves on purchased land with operating management plans.

With such a construction, the project creates an opportunity to maintain a favourable conservation status or improve the condition of the most valuable areas of habitat 7230, constituting app. 80% of surface resources.

Find out more at: www.kp.org.pl and www.alkfens.kp.org.pl