

The role of agri-environmental policy in the current trajectories of semi-natural grassland management in Latvia

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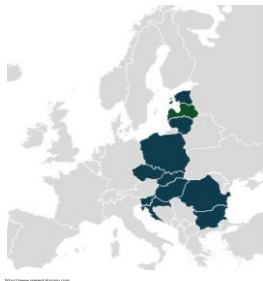
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BACKGROUND

Post-socialist European Union countries



- High importance of High Nature Value (HNV) farmland for biodiversity of Europe is established
- Agri-environment schemes (AES): new approach and little scientific evidence
- Increasing intensification of agri-culture after joining EU threatens HNV grasslands
- Pressures and threats of European importance grassland habitat conservation are habitat-specific

AIMS OF THE STUDY

- What is the relationship between the agri-ecological potential for agricultural intensification and distribution of HNV grasslands in Latvia?
- Is management intensity of agricultural land a habitat-specific driver of EU importance grassland habitat uptake in AES?

METHODS

- Analysis conducted at a country scale with a study unit of 5 km × 5 km grid cells
- Two groups of habitats: rare unproductive (6120*, 6210, 6230*, 6410), and common productive (6270*, 6510, 6450)
- Two sets of Tweedie compound Poisson generalized linear models (TCPGLM) incorporating a spatial autocovariate:
 - agri-ecological potential → grassland area
 - management variables, e.g. share of arable land, grassland, organic farming → grassland area under AES

RESULTS

- Common habitats: area was twice as high in regions with low and intermediate agri-ecological potential than in other regions (Fig.1).
- Rare habitats: no significant difference among regions (except the region with the high agri-ecological potential), suggesting that factors other than agricultural intensity might be responsible for the current pattern of rare habitat distribution.

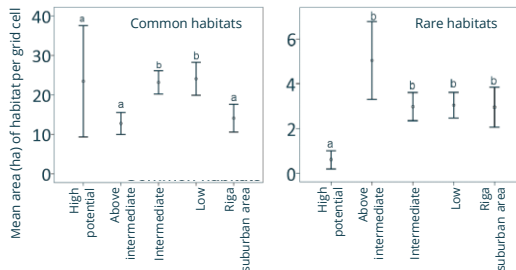


Fig. 1. Average area of EU grassland habitats per grid cell by regions of agri-ecological potential. Letters (a, b) for a pair of regions indicate significant differences ($p < 0.05$) between those regions according to TCPGLM.

- Management intensity is a habitat-specific driver of EU importance grassland habitat uptake in AES (Table 1):

- common habitats: significantly positive relationship between uptake in AES and (1) a share of extensive management of agricultural land, and (2) ploughed-up area of EU grasslands;
- rare habitats: extensive management had minor positive impact on uptake in AES, and ploughing of EU grasslands had negative impact.

Table 1. Tweedie compound Poisson GLM estimated coefficients for Model II that explain the effect of management intensity of agricultural land on the uptake of common and rare EU grassland habitats in AES.

	Estimate	t value	P	Estimate	t value	P
	Common habitats			Rare habitats		
Intercept	0.98	2.97	0.003**	-1.19	-1.41	0.16
Factors of extensive management						
Area of EU grassland habitats	0.01	6.32	<0.001***	0.01	0.24	<0.001***
Area of managed grassland	0.0001	2.72	0.006**	0.0002	0.40	0.68
Area of EU grasslands under AES	0.04	2.35	0.02*	-0.006	-1.38	0.16
Area under organic farming	0.0001	2.69	0.007**	0.0002	0.23	0.81
Area in Natura 2000 network	-0.05	-0.47	0.63	0.24	1.14	0.25
Factors of intensive management						
Land quality	0.10	0.74	0.46	0.08	0.24	0.81
Area of ploughed EU grasslands	0.006	2.05	0.04*	-0.025	-2.09	0.04*
Area of arable land	-0.0001	-1.38	0.17	0.0002	-0.64	0.52
Spatial autocovariate	13.70	6.58	<0.001***	0.016	6.51	<0.001***

CONCLUSIONS

- Under the current agri-environment policy, conservation of HNV grasslands is viable only if common habitats are considered, although at the expense of some of their area
- A regional and habitat-specific approach to AES designation is urgently needed to stop the deterioration of rare habitats.
- Specific result-oriented AES should be designated for rare habitats throughout the country. They are similarly rare in all regions of agri-ecological potential, and there is no indication of any positive influence of either intensive or extensive agriculture on rare habitat uptake in action-based AES.