The grazing selectivity of Konik horses on grasslands located in Biebrza National Park

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INTRODUCTION

Northeastern European wetlands require proper management tools in order to protect and maintain grassland biodiversity. Especially primitive breeds, such as Polish primitive horses (Koniks), descendents of tarpan - well-suited for difficult environmental conditions, are very useful in extensive grazing. Free-ranging horses are faced with spatial and temporal heterogeneity during the vegetative season. Therefore the aim of the study was to evaluate grazing preferences of Polish primitive horses (Koniks) grazing on peatlands in Biebrza National Park in Northeastern Poland

MATERIALS and METHODS

Place
Middle Basin of Biebrza National Park in north-eastern Poland

Methods

Direct visual observations of grazing horses:
Å carried out every two months for three periods: April, late June and the end of August
Å in each period:
- observation of Koniks during six days in two three-hour time ranges
- noting the place of grazing and number of eating horse at 5-minute intervals

Characterization of grazing plant community:
Å visual estimation of botanical composition and sward cover
Å measuring the area by GPS (Garmin e*Trex Venture HC)*

Calculation:
The average percentage of grazing horses *was calculated for* each period of observation taking into consideration the number of grazing horses and time of making observation
Comparative grazing intensity unit (CGI) according to Hunter (Rogalski 1982 cit. in Griffiths 1970)

$$CGI = \frac{\textit{average percent of grazing horses x 100}}{\textit{percentage of grazing community area with reference to the whole refuge}}$$

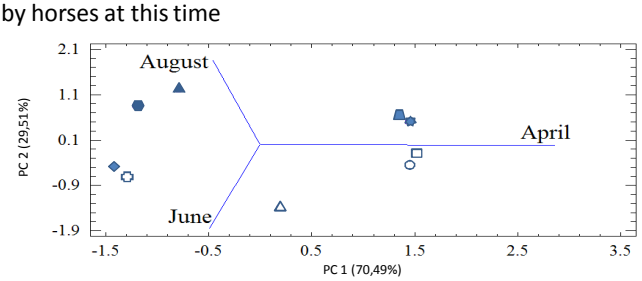
Statistical methods:
Principal Component Analysis (PCA)

RESULTS

Table 1. Average percent of grazing horses in different communities and comparative grazing intensity unit (CGI) for communities
*Area of the community references to the whole refuge
** Abstract number; the highest of CGI shows the more preferred community

Plant communities	Area* (%)	Grazing horses (%)				CGI**			
		April	June	August	Average	April	June	August	Average
sedges *Carex nigra*	7.45	37.37	25.43	31.03	31.28	501	341	416	419
willow-birch thicket	13.29	13.47	11.88	11.10	12.15	101	89	83	91
Filipendulia ulmaria, Cirsium arvensis	0.15	0.00	0.37	11.77	4.05	0	243	7631	2625
Agrostis canina	1.61	2.37	17.52	12.11	10.67	146	1086	750	661
Molinia caerulea	0.27	12.58	2.02	0.23	4.94	4602	739	83	1808
Carex nigra, Molinia caerula, Potenilla erecta	2.58	0.00	23.70	11.30	11.67	0	919	438	452
midforest grasslands	0.14	0.00	1.85	4.67	2.17	0	1362	3444	1602
Potentilla anserina	0.77	8.25	10.80	4.25	7.77	1072	1405	553	1010
Forest and others	73.74	25.98	6.42	13.53	15.31	35	8	18	20

Figure 1. Principal component analysis (PCA) biplot for CGI unit for three phonological period
The communities that are father along the positive direction of vector (month) tend to be more selected by horses at this time



- sedges *Carex nigra*
- willow-birch thicket
- *Filipendulia ulmaria, Cirsium arvensis*
- *Agrostis canina*
- *Molinia caerulea*
- *Carex nigra, Molinia caerulea, Potentilla erecta*
- midforest grasslands
- *Potentilla anserina*
- forest and other

CONCLUSIONS

✓ **Koniks change their grazing preference during the vegetative season, and they choose even small communities provided that they contain preferred species**
✓ **Further research, including digestibility of species, is needed in order to verify if Koniks have significant influence on grassland situated in the refuge and if their feeding needs are fulfilled**