



BEHAVIOUR OF BEEF CATTLE HERD ON FREE RANGE OF NATIONAL PARK „WARTA MOUTH” IN RELATION TO WEATHER PATTERN¹

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INTRODUCTION:

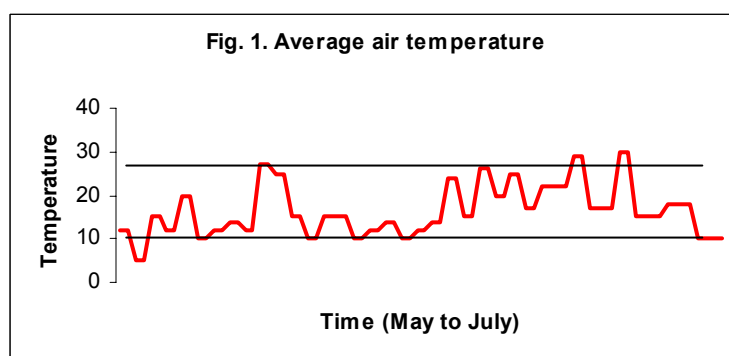
The Warta Mouth National Park (total area ca 8 thousand ha) is dominated by open wet grasslands, cut across by many channels. Thanks to long-term cattle and horse grazing and mowing grass, the present bird habitat came into being. Existence of agriculture activity based on herbivores free range grazing is the mainstay of the proper vegetation cover for bird habitat - protecting it not to be overgrown by invading shrubs and weeds. Cattle is kept undisturbed in social bonds in this environment and data about cattle innate behaviour unbiased by human driven technologies are valuable sources of information as the background for welfare considerations



AIM OF RESEARCH:

Description of area preferences and activities of large cattle herd grazing open grasslands in regard to weather conditions and time of the day.

MATERIALS AND METHODS: Beef cattle herd consisting of 725 animals, including cows with calves (340 couples dam-offspring), single cows and heifers (27 animals) and bulls (18) were kept all year round on pastures. Purebred animals such as Hereford, Limousine, Simmental, Charolaise, Salers and crossbreeds were kept as one herd. Research was performed in May, June, July of 2005 3 times a day: for 3 hours in the morning after sunrise, for 3 hours in midday (from 11.00 to 14.00) and for 3 hours in the evening (before sunset). There were 150 observation sessions performed, where type of weather (fine, variable, rainy), region of pasture occupation (open pasture, next to water-course, next to trees and shrubs) and forms of behavioural activity (grazing, laying, standing, moving, drinking and staying next to water-course) were recorded.



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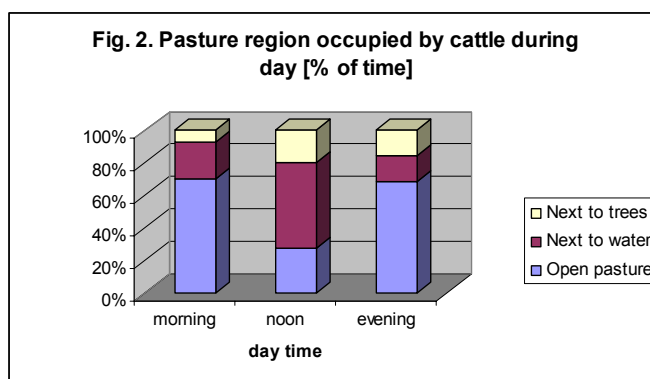
RESULTS: Cattle the longest time spent on open pasture while it was raining (405,0 min. = 75,0% of total time) and especially in the morning and evening times. When weather was variable, with rainy patches, herd stayed on open pasture a little more than half of total time (301,2 min = 55,8%). During fine - sunny weather the herd spent on open pasture 45,6 % of total time of observation during the day (246,2 minutes). At this type of weather cattle preferred to stay next to watering sites of watercourse (42,4% of total time of observations = 229,0 minutes). It was related with higher demand for watering and cooling as well as resting (drinking, standing and lying). It was significantly longer stay next to watercourse during fine weather when compared to time spent there during variable weather conditions (150,1 minutes = 27,8%) and rainy weather (67,5 minutes = 12,5% of time). Similar times cattle used to stay next to trees and shrubs during fine and rainy weather (consequently 64,8 minutes = 12,0% and 67,5 minutes = 12,5% of total time) while during variable weather this stay was longer (88,8 minutes = 16,4%).



Tab. 1. Region of pasture occupied by cattle (in minutes) due to effect of weather ($\bar{x} \pm \text{sd}$)

Weather	n	Region of pasture					
		Open pasture		Next to water-course		Next to trees and shrubs	
Fine	64	246,1 C	45,6%	229,1 A	42,4%	64,8 b	12,0%
		$\pm 18,19$		$\pm 11,40$		$\pm 14,44$	
Variable	76	301,2 B	55,8%	150,0 B	27,8%	88,8 a	16,4%
		$\pm 37,65$		$\pm 20,67$		$\pm 22,83$	
Rainy	10	405,0 A	75,0%	67,5 C	12,5%	67,5 b	12,5%
		$\pm 103,92$		$\pm 17,32$		$\pm 17,32$	

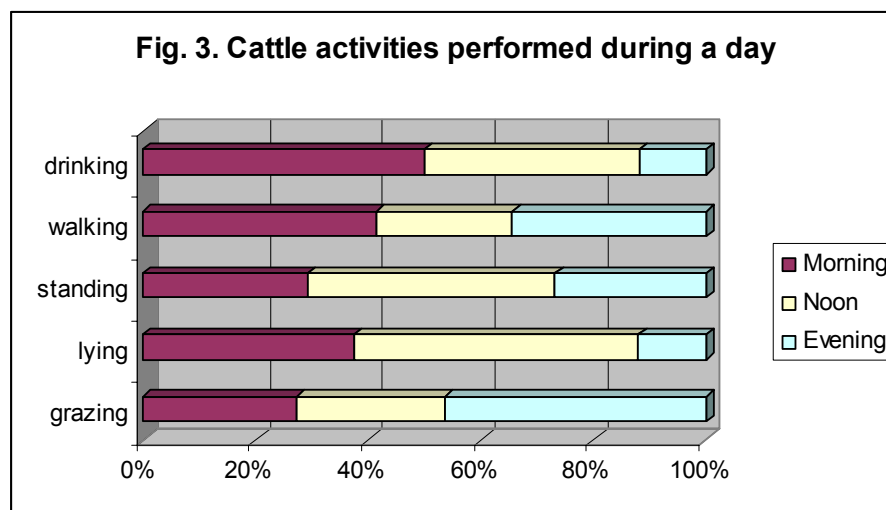
Average values in columns denoted with various letters differ significantly:
Capitals $P \leq 0.01$; small letters $P \leq 0.05$



Tab. 2. Activity of cattle (in minutes) due to effect of weather ($\bar{x} \pm \text{sd}$)

Weather	n	grazing		lying		standing		walking		drinking	
Fine	64	81,2 A	45,1%	38,2 A	21,3%	28,1	15,6%	27,5 B	15,2%	5,0 A	2,8%
		$\pm 20,88$		$\pm 11,11$		$\pm 10,03$		$\pm 12,45$		$\pm 1,96$	
Variable	76	76,2 A	42,3%	39,6 A	22,1%	40,0	22,2%	23,0 B	12,7%	1,2 B	0,7%
		$\pm 30,75$		$\pm 12,32$		$\pm 19,75$		$\pm 10,30$		$\pm 0,33$	
Rainy	10	43,7 B	24,2%	3,6 B	2,0%	33,9	18,9%	98,8 A	54,9%	0,0	0,0%
		$\pm 25,40$		$\pm 1,15$		$\pm 24,03$		$\pm 51,94$		$\pm 0,00$	

Average values in columns denoted with various letters differ significantly:
Capitals $P \leq 0.01$; small letters $P \leq 0.05$



Tab. 3. Activity of cattle due to effect of day time [time %]

Day time	n	grazing	lying	standing	walking	drinking
Morning	48	29,6%	18,2%	17,3%	33,2%	1,7%
Noon	43	28,8%	24,5%	26,0%	19,4%	1,3%
Evening	59	50,4%	5,8%	15,8%	27,6%	0,4%

Average values in columns denoted with various letters differ significantly:
 Capitals $P \leq 0.01$; small letters $P \leq 0.05$

CONCLUSION: Weather conditions significantly influenced behavior of cattle in free-range conditions in temperate climate. The effect of rainy weather significantly shortened grazing time and lying while walking activity lasted significantly longer than during fine and variable weather. Time of the day significantly influenced performed activity of cattle on pasture. Grazing lasted significantly longer in the evening time on the expense of lying. Walking activities prevailed in the morning and evening time while drinking was mostly pronounced in the mornings.

