Session code: M13.10
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DISPERSION OF LARGE BEEF CATTLE HERD IN FREERANGE SYSTEM OF GRAZING IN THE NATIONAL PARK „WARTA MOUTH"[1]

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EAAP Antalya, TURKEY'2006

INTRODUCTION:

The Warta Mouth National Park, situated in the Warta's marginal stream valley, is dominated by open wet grasslands cut across by many channels and an old river bed – total area ca 8 thousand ha. Wetlands and widespread meadows are the most important mainstays for water and shore birds – there are over 250 bird species recorded (of which 170 nesting). Existence of agriculture activity based on herbivores grazing is the mainstay of the proper vegetation cover for bird habitat - protecting it not to be overgrown by invading shrubs of willows (*Salix ssp*) and weeds such as *Xanthium albinum*. Cattle is kept undisturbed in social bonds through the generations in this environment and data about cattle innate behaviour and social bonds unbiased by human driven technologies are valuable sources of information as the background for welfare considerations.

AIM OF RESEARCH:

Description of dispersion and grouping of large social herd of cattle during different daily activities when grazing open grasslands of "Warta Mouth" National Park.

MATERIALS AND METHODS: Beef cattle herd consisting of 725 animals, including cows (**C**) with calves (**Cf**) - 340 couples dam-offspring, 27 heifers (**H**) and 18 bulls (**B**) were kept all year round on

[1] *) The study was financed by Ministry of Science and Information Society Technologies; research project no 2 P06Z 063 26

grasslands. Purebred animals such as Hereford, Limousine, Simental, Charolaise, Salers and crossbreeds were kept as one herd.

Tab. 1. Area per animal at different activities within the subgroup

Activity	Observations		Area per 1 AU (m²)		
	n= 174	%	x	sd	min - max
Approaching water and **drinking** (from the river bank)	**4**	2,3	**342,5**	388,2	47,1 - 879,2
Grazing	**79**	45,4	**1283,3**	1363,8	44,9 - 6280,0
Standing	**22**	12,6	**1331,5**	1669,2	44,9 - 5995,0
Walking (moving)	**18**	10,4	**921,0**	1277,9	41,8 - 5383,0
Lying	**51**	29,3	**858,6**	861,6	31,4 - 3140,0

Tab. 2. Effect of daytime on cattle grouping

Observations		Structure		AU per group	
Day time	Σ=150	*Social groups*	(%)	x	(sd)
Morning	**48**	**C + Cf**	12,5	**40,4**	35,4
		C + Cf + H	20,8	**44,8**	24,1
		C + Cf + B	37,5	**46,3**	30,0
		C + Cf + H + B	29,2	**87,9**	40,2
Noon	**43**	**C + Cf**	16,3	**22,2**	17,5
		C + Cf + H	23,3	**62,7**	38,6
		C + Cf + B	39,5	**48,5**	25,5
		C + Cf + H + B	20,9	**107,7**	36,5
Evening	**59**	**C + Cf**	30,5	**36,5**	27,9
		C + Cf + H	22,0	**45,8**	17,6
		C + Cf + B	18,7	**39,5**	21,3
		C + Cf + H + B	28,8	**82,3**	28,8

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). Grasslands with the dominance of *Agrostis stolonifera* characterized with lush growth – the height of sward and herbage mass per ha in places not grazed averaged consequently 12,7 cm and 3000 kg DM while in places after grazing consequently: 8,7 cm and 1900 kg DM. The subgroup structure, distances between animals were estimated and area occupied per 1 animal (animal unit = **AU**) was calculated.

RESULTS: Animals grazed within the sub-group in distances less than 50 m apart, while distances between subgroups exceeded 200 m. The four social categories of subgroups were distinguished: **C + Cf** (average number of AU: 34,0 ± 27,5), **C + Cf + H** (50,6 ± 35,9 AU), **C + Cf + B** (45,5 ± 26,2 AU) and **C + Cf + H + B** (90,0 ± 35,4 AU). Dispersion of animals was related to the functional region of pasture: the largest was connected with open pasture (grazing – 1.283 m^2/AU; standing – 1.332 m^2), the moderate dispersions were observed during movements (921 m^2/AU) and lying (859 m^2/AU) while the lowest next to watering places (343 m^2/AU).

CONCLUSIONS: The structure and number of animals in subgroups were not stable estimates, they were changing in time. The clearest picture of dispersion and sub-grouping was observed on open pasture while next to watering places it was the least clear.

Animals had tendency to keep minimal distance between each other not less than 3,1 m while lying and 3,8 m during other daily activities. The most numerous subgroups observed on summer pasture had full social structure (C + Cf + H + B) – they used to unite ca 2 times more animals than other less socially complete subgroups. Subgroups with bulls were observed more frequently in the morning and noon (respectively: 66,7 and 60,4 % of total number of subgroups) than in the evening time (47,5 %).