

Tactics of harem stallions of Przewalski's horses in a growing population (*Equus ferus przewalskii*)

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Introduction

Captive born Przewalski's horses founded the free ranging population in the 24 km² large semi-reserve of the Hortobágy Nationalpark. After release they were organised in clearly separated harems and bachelor groups living in home ranges with minor overlap (1). With the growing number of horses born in the reserve, the spatial organisation changed.

Additional to the single harems a larger herd-like structure formed comprised of several harems. This becomes particular obvious in summer, when several groups are resting together at distances of < 20 m (2). The formation of this supra-structure was unexpected in particular when considering the aggressiveness observed between adult stallions of separately kept bachelor groups (3).

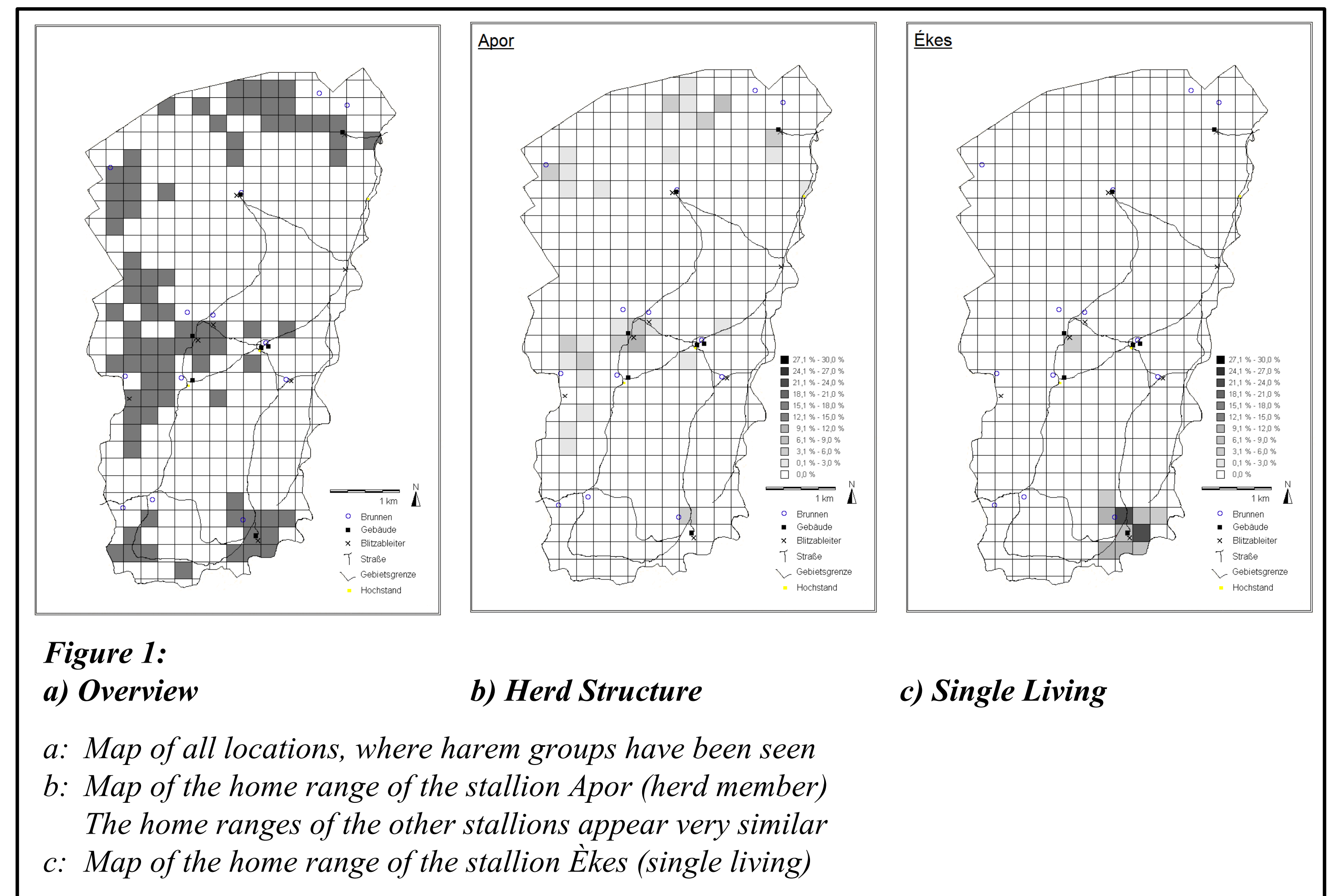


Figure 1:
a) Overview
b) Herd Structure
c) Single Living
a: Map of all locations, where harem groups have been seen
b: Map of the home range of the stallion Apor (herd member)
The home ranges of the other stallions appear very similar
c: Map of the home range of the stallion Ékes (single living)

Methods

Social and agonistic interactions, mate securing behaviour and range data were determined for all 10 harem stallions during the breeding season 2008. The behaviour was recorded during 15 minute periods over a total of 102 hours. Location and proximity to other harems and bachelors were sampled during 410 scans.

Discussion

The occurrence of greater herd-like structures is reported from other equidae (4, 6, 10, 11). Single living stallions may change to a herd living tactic. The direction of movement is mostly determined by the mares (1, 5, 7, 10) and they also seek the closeness to each other (8). Stallions may herd the mares and force them away from other harem groups. The reasons could be multifaceted. The risk of extra harem copulations should be mentioned. Such behaviour was observed in confusing situations, e.g. whilst fights between stallions. It is not yet clarified whether the use of several tactics have an effect on male reproductive success. In other studies it could be found that 15 – 30 % of the offspring was not related to the actual harem stallions during the time of conception (9, 11).

Data of this study suggest that bachelors are subdominant towards harem stallions and therefore avoid highly aggressive fights.

Herd living stallions are habituated to each other. Low agonistic behaviour (used as communication) is displayed only by not habituated stallions (Fig. 2a), while it occurs in low frequency by habituated animals.

Serious fights rarely occur and are restricted mostly to crowded situations in the herd, single living stallions have even less opportunity for fights (Fig. 2b).

Table 1:

Neighbourships within a distance of 100 m between the harem groups. The red highlighted focal stallions formed the herd structure.

The stallion in gray fonts formed his harem later.

Next neighbour	Apor	Bendegúz	Deli	Délibáb	Egyed	F. Soos	Gus	Csongor	Ékes	Félix	Σ
Apor	20	25	40	42	30	14	8	1	3	3	183
Bendegúz	19	17	19	18	19	10	7	1	1	1	111
Deli	23	15	21	23	18	10	9	1	3	3	123
Délibáb	37	18	23	34	34	10	9	2	3	3	170
Egyed	39	17	21	36	31	11	9	2	2	2	168
F. Soos	30	16	17	33	30	10	9	2	4	4	151
Gus	13	11	12	15	13	13	6	1	1	1	85
Csongor	8	6	6	8	9	8	5	0	2	2	52
Ékes	2	2	2	3	3	3	1	0	0	0	16
Felix	4	1	3	2	3	3	2	1	0	0	19
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Results

Harem stallions have two tactics. Seven harems and the bachelor groups formed a loose herd. They shared their big home range with major overlap (Fig. 1b). These harem stallions tended to tolerate the other stallions on average within a distance of < 100 m (Tab. 1). Highly aggressive behaviour (chasing, bite, kick, fight) occurred significantly more often in this herd than between single living harem stallions and the other males (Fig. 2b). Severe and frequent aggressiveness was not observed against bachelors.

The three single living harems had smaller home ranges, which varied only slightly. Home range overlap was low (Fig. 1c). These harem stallions show significantly more low agonistic (head threat, bite threat, kick threat), protective, and alert behaviour, when other stallions are present (Fig. 2a). The different stallion tactics did not have an obvious effect on harem size or numbers of offspring per harem.

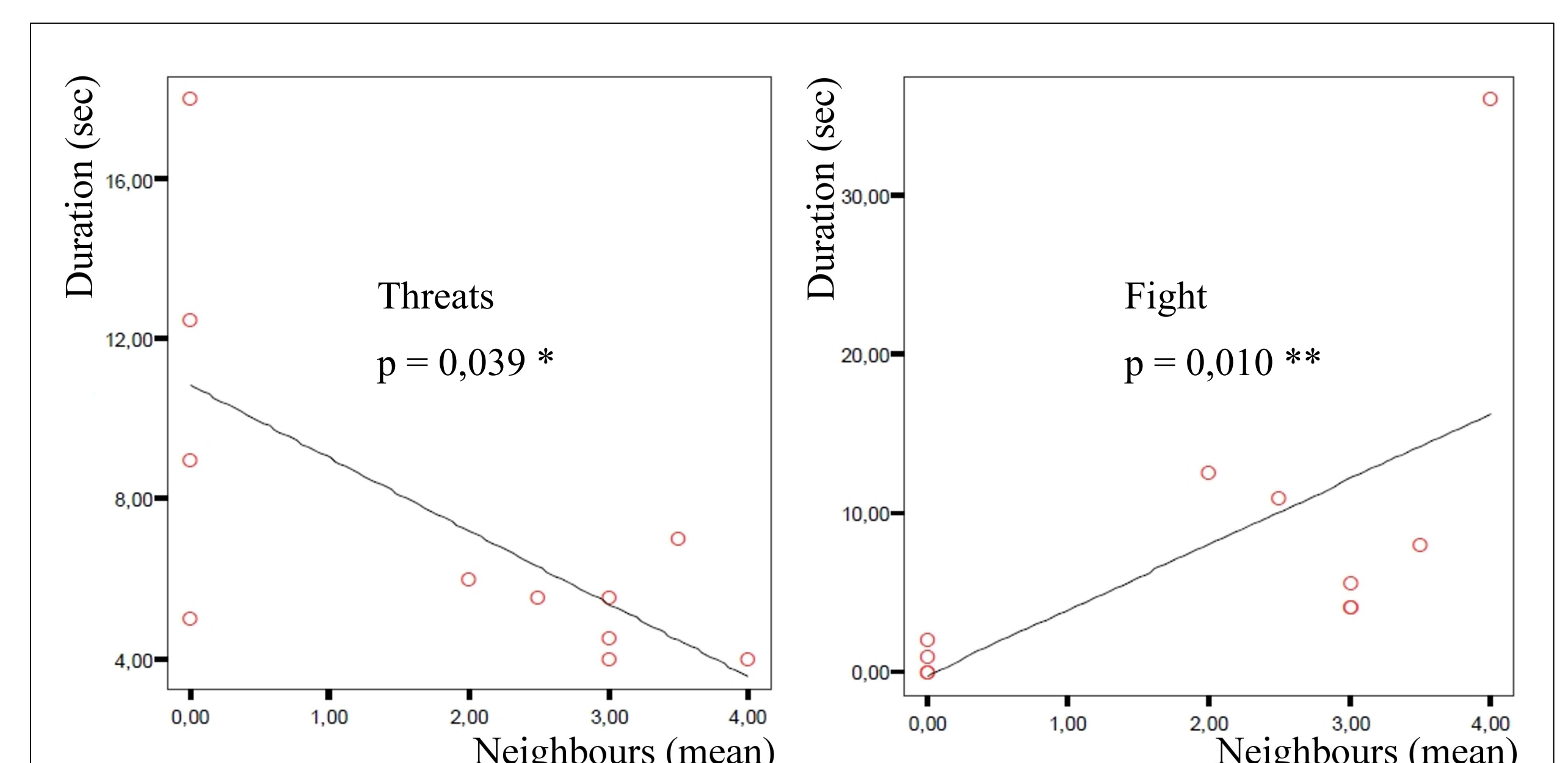


Figure 2:
a) Low agonistic behaviour
b) High agonistic behaviour

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(2009): Tactics of harem stallions of Przewalski's horses (*Equus ferus przewalskii*) in a growing population. In: Sommer, S.; Kretzschmar, P.; Seet, S. & Hofer, H. (ed.): 7th International Conference on Behaviour, Physiology and Genetics of Wildlife. 21th - 24th September, Berlin, Germany: Institut für Zoo- und Wildtierforschung: 171

Key words: Habitat use; stallion; Przewalski's horse; tactic; herde

Abstract:

Przewalski's horses only survived in captivity. Captive born Przewalski's horses founded the free ranging population in the 24 km² large semi-reserve of the Hortobágy Nationalpark. After release they were organised in clearly separated harems and bachelor groups living in home ranges with minor overlap. With the growing number of horses born in the reserve, the spatial Organisation changed. Additional to the single harems a larger herd-like structure formed comprised of several harems. This becomes particular obvious in summer, when several groups are resting together at distances of less than 20 m. The formation of this supra-structure was unexpected in particular when considering the aggressiveness observed between adult stallions of separately kept bachelor groups. In order to get first insight into the spatial distribution and male-male relationships, social interactions, mate securing behaviour and range data were determined for all harem stallions during the breeding season 2008. Agonistic and sexual interactions as well as alertness behaviour of 11 focal stallions were recorded during 15 minute periods over a total of 102 hours. Location and proximity to other harems and bachelors were sampled during 410 scans at the start of each 15 minute period. It could be shown that harem-stallions have several tactics. Seven harems joined and formed with the bachelor-groups a loose herd, which share their big home range with major overlap. The harem stallions of this herd tend to tolerate the other stallions an average within a distance of 100 m. Nevertheless, highly aggressive behaviour occurred significantly more often between neighbouring harem stallions than between single-living harem stallions and the other males. Severe and frequent aggressiveness was not observed against bachelors. It could be assumed that bachelors are sub-dominant towards harem stallions and therefore avoid highlyaggressive fights. The 4 single-living harems had muck smaller home ranges, which varied only slightly during the observations. Home range overlap was low. These harem stallions Show significantly higher agonistic (but not highly aggressive behaviour, such as serious fights), protective and alert behaviour, when other stallions are around. The different stallion tactics did not have an obvious effect on harem size or numbers of offspring per harem.