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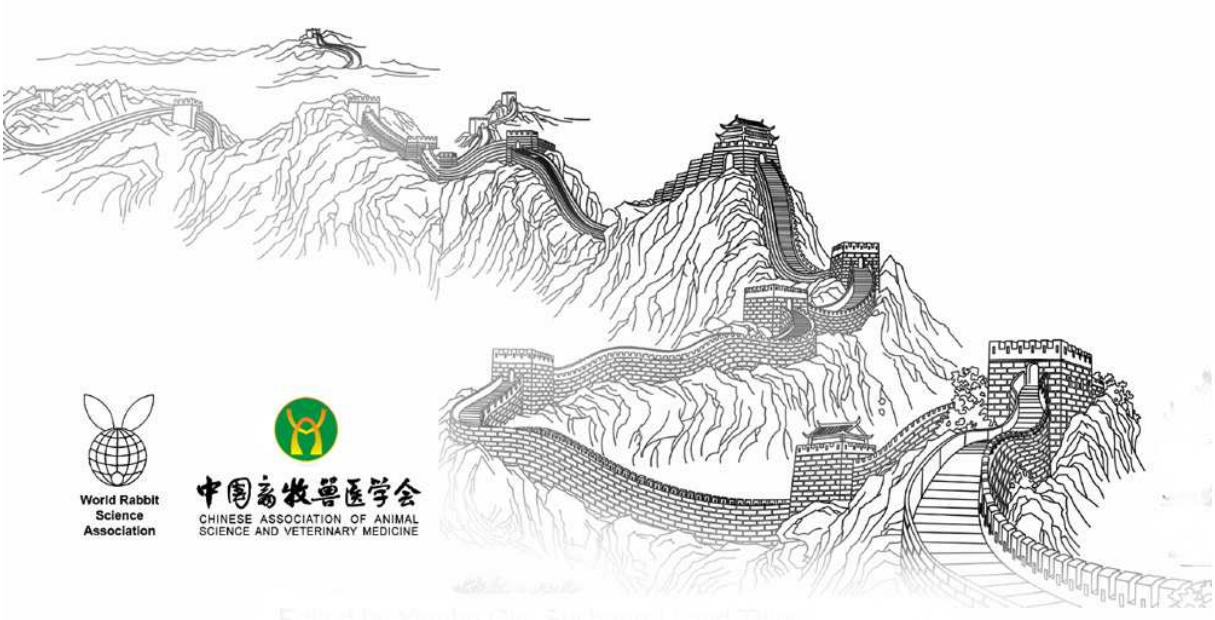

MATING BEHAVIOUR OF RABBIT DOES AND BUCKS IN GROUPS (PRELIMINARY RESULTS)

Gerencsér Zs. [1*], Kustos K.[2], Szabó R.T.[2], Mikó A.[1], Odermatt M.[3], Radnai I.[1], Matics Zs. [1], Szendrő Zs.[1]

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ABSTRACT

In this experiment the mating behaviour of group-housed rabbit bucks and does was monitored. Four does and one buck were placed to pens with a basic area of 7.7 m^2. Within each pen, one part of the floor (2.8 x 1.5 m) was covered with straw, and the other part consisted of plastic-mesh. Based on the age of does two different groups were formed: homogenous or heterogeneous. In the homogenous group (HOM) all does were 17 weeks of age at the time of grouping them. In the heterogeneous group (HET) one doe was one year old and the others were 17 weeks old. Using infrared cameras, 24-hour recordings were performed throughout the experiment. The mating behaviour of four does and a buck was observed during the month after the group was established. The buck attempted mating with does 206 times in HOM group and 56 times in HET group in total during one month. In the HOM group the number of successful matings was 59 with two peaks: 1 and 20 days after grouping. In the HET group the mating was successful 6 and 5 times on day 1 and 19, respectively (a total of 11 times). In the HOM group daily peak of mounting of buck was observed around the beginning of dark period, 25 and 28 times at 20 and 21 h, respectively. The most frequent mounting activity between does was in the light period (at 7 and 10h, 14 and 14 times). In the HET group the male mated with does most frequently between 10 and 11h. Mating behaviour between does reached its maximum at about 10h and 15h (21 and 11 times, respectively). Based on the results of mating behaviour it can be concluded that the buck mated the preferred does more frequently than the others, meantime other does mated each other which could be the reason of pseudo-pregnancy. Two mating peaks of activity of bucks were observed at the day of grouping, and at the end of the period of pseudo-pregnancy.

Key words: Rabbit does, Mating behaviour, Group housing

INTRODUCTION

The ancestor of domestic rabbit, the European wild rabbit (*Oryctolagus cuniculus*) lives in territorial breeding groups, which is consisted of about 2 to 9 does, 2 to 3 bucks and their kits (Surridge *et al*., 1999). Based on this, in a few European countries group housing system of rabbit does is suggested. The main purpose of the group-housing system is to provide nature-like conditions for rabbit does.

Rabbits have several social behaviour patterns, like the natural mating and the maternal behaviour, which is not restricted (EFSA, 2005). In these housing systems where does are housed together with a buck, pseudo-pregnancy and unfavourable productive traits of rabbit does are the main problems. In group-housing system Andrist *et al.* (2011) and Szendrő and McNitt (2012) observed low kindling rate and besides even Rommers *et al.* (2006) found high rate (23 %) of pseudo-pregnant does.

The main reason of the pseudo-pregnancy is the mating event between two leading eventually to a provoked ovulation. In the present experiment the mating behaviour of group-housed rabbit does and bucks was monitored.

MATERIAL AND METHODS

Animals and experimental design

The does were housed according to the recommendation of an animal protection group, called Four Paws (Vier Pfoten). Four does and one buck were placed to the pens with a basic area of 7.7 m^2. Within each pen, half of the floor was covered with straw, and the other part consisted of plastic-mesh. Based on the age of does two different groups were formed:

- in the homogenous group (**HOM**) at the time of grouping all does were 17 weeks of age;
- in the heterogeneous group (**HET**) one doe was one year old and the others were 17 weeks old.

The room was illuminated by natural light through the windows, which was extended artificially to reach 16L (from 5 am to 9 pm). The rabbits received commercial pellet *ad libitum*, furthermore rabbits could also consume hay. Water was available *ad libitum* from nipple drinkers.

Video recording

Using infrared cameras, 24-hour recordings were performed throughout the experiment. The mating behaviour of the does and bucks (mating between buck and doe or between two does) was observed during a month after the group was established. The mating was considered successful when the buck fell off the does after mounting. The rabbits were marked with different spots to indentify them within the group. In this paper the results of one HOM and one HET group are published.

RESULTS AND DISCUSSION

The buck attempted to mate the does 206 times in HOM group and 56 times in HET group in total during a month (Figure 1). In the HOM group the number of successful mating was 59 with two peaks during the observed period (day 1 and 20 after grouping, Figure 1). In the HET group the mating was successful a total of 11 times (6 and 5 times at day 1 and 19, respectively). Beyer and Rivaud (1969) observed a second peak of mounting in the last trimester of the pregnancy of rabbit does. Similarly to this in our experiment there was also a second peak in each group at about 20-21day after grouping which could be close to the end of period of pseudo-pregnancy. Following Lebas *et al.* (1997), it takes on average 15-18 days.

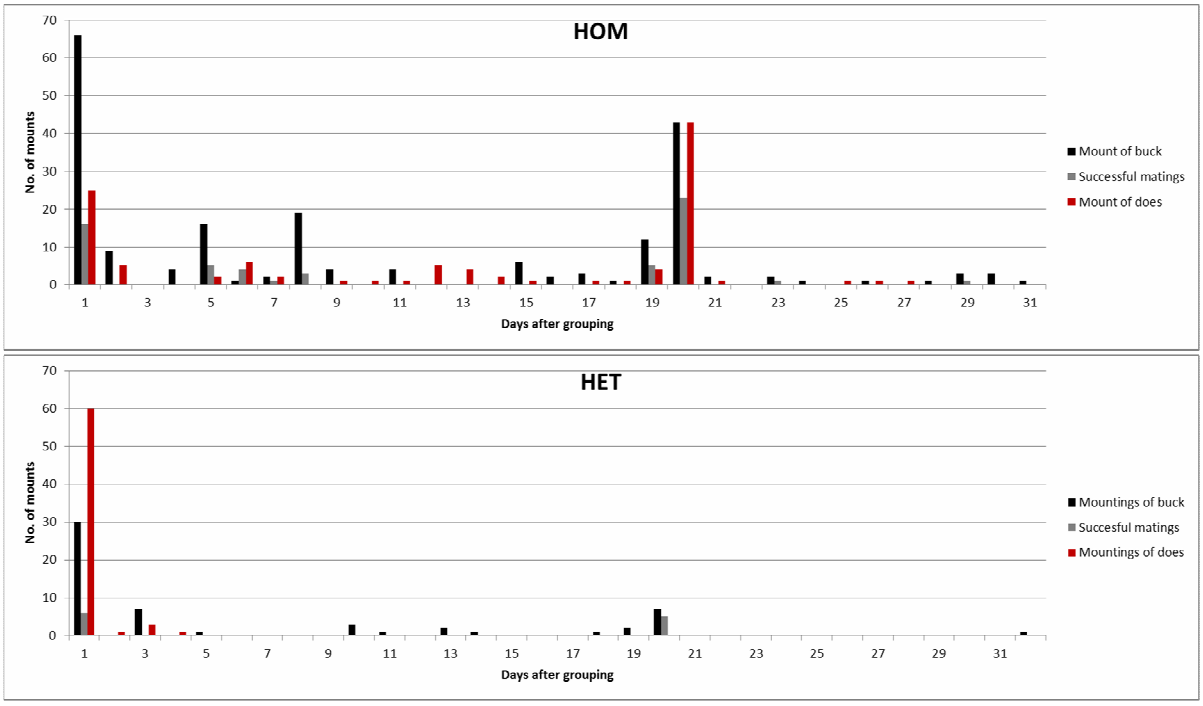

Figure 1: Mounting activity of buck and does and number of successful matings at each day of observed time in HOM and HET group, respectively.

In the HOM group the daily peak of mounting of buck was observed around the beginning of dark period (25 and 28 times at 8 and 9 pm, respectively). In case of mounting between two does two peaks could be seen in the light period (14 and 14 times at 7 and 10 am; Figure 2). In the HET group the male mated with does most frequently between 10 and 11h. The mating between does reached its maximum at about 10 am and 3 pm (21 and 11 times, respectively).
In spite of the rabbits are nocturnal or dusk active animals we observed peaks of mounting around the dark period only in HOM group. In the other cases the peak of mounting activity was observed in the light period.

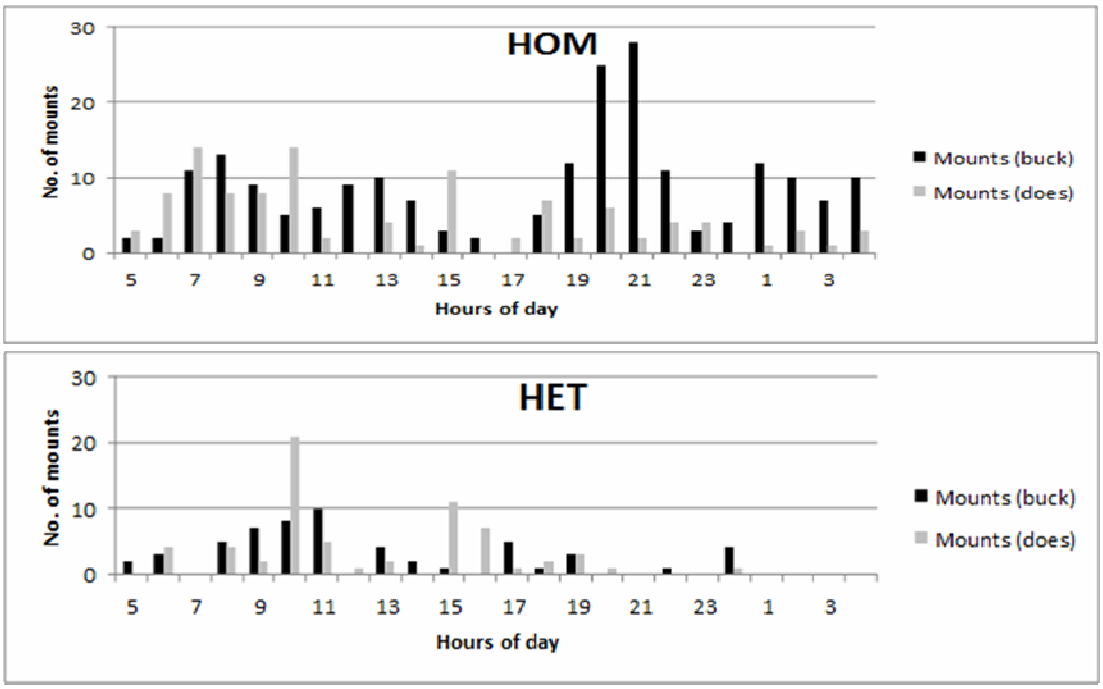

Figure 2: Daily mounting activity of buck and does in the HOM and HET group, respectively.

The bucks mounted all the females in both groups (Table 1). In HOM group the number of mating attempts and the number of successful matings were higher than in the HET group (Table 1). In case of Doe4 in HOM group the frequencies of this behaviour were extremely high: 153 and 45. Moreover, we observed the highest sexual activity between Doe1 and 4. Only two of successfully mated does (Doe1 and 4) kindled in the first reproductive cycle. In HET group the highest number of successful mating was observed with Doe2 (Table 1). She was mounted the most frequently (31 times) by the buck. Similarly to HOM group, there were only two does (Doe2 and 3) which had litters in the first reproductive cycle.

Table 1: Matrix of mounting activity of rabbits (Animals listed in the row mounted the animals in the column).

	HOM Group						HET Group				
	Buck[1]	Doe1	Doe2	Doe3	Doe4		Buck	Doe1	Doe2	Doe3	Doe4
Buck		1	0	3	26	Buck		9	4	0	0
Doe1	22/1		0	2	15	Doe1	10/4		1	0	1
Doe2	13/4	2		2	1	**Doe2**	31/6	7		4	2
Doe3	18/9	4	0		0	**Doe3**	9/1	2	14		0
Doe4	153/45	47	0	5		Doe4	6/0	8	11	2	

[1]The first numbers show the total and the second numbers show the successful matings. **Bold letters** show the kindled does.

Similarly to our results Rommers *et al.* (2006) published low kindling rate in group-housed does. These results could be explained by the higher progesterone concentration in this group which could cause pseudo-pregnancy (Lebas *et al.*, 1997). But, the concentration of progesterone was not studied in the investigation.

CONCLUSION

In group-housing of rabbit does, a high number of sexual events between does was observed, which may cause pseudo-pregnancy. Two peaks of mounting activity of bucks were observed: after grouping and at the end of period of pseudo-pregnancy. Based on our preliminary results of mating behaviour it can be concluded that the natural mating in group-housing system is not effective. Because only one round was evaluated in both groups further evaluation is needed.

ACKNOWLEDGEMENTS

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AIM

In the experiment the mating behaviour of group-housed rabbit does and bucks was monitored in two different groups (homogenous and heterogeneous).

MATERIAL AND METHODS

Four does and one buck were placed to the pens with a basic area of 7.7 m^2.
Half of the floor was covered with straw, and the other part was consisted of plastic-mesh.

Based on the age of does two different groups were formed:

- in the homogenous group (**HOM**) at the time of grouping each does were 17 weeks of age;
- in the heterogeneous group (**HET**) one doe was one year old and the others were 17 weeks old.

Using infrared cameras, 24-hour recordings were performed throughout the experiment.

RESULTS

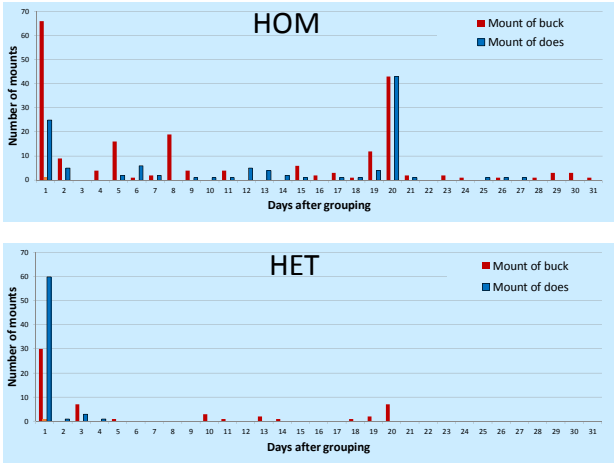

Figure 1: Mounting activity of buck and sexual events between does at each day of observed time in HOM and HET groups, respectively.

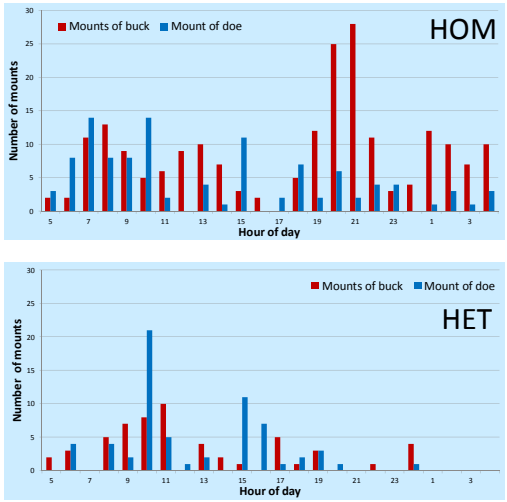

Figure 2: Daily mounting activity of buck and sexual event between does in the HOM and HET groups, respectively.

CONCLUSION

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