Rhinoceros in captivity. The results will hopefully shine some light on which behaviours are of most importance for the interaction between mother and calf to be successful and ensure the survival of the calf.

All 5 surviving species of Rhinoceros are faced with high threat of extinction due to illegal hunting for their horns. It is therefore of high interest for conservation of these species that captive breeding programs are successful. One of the steeps in successful breeding is the post-partum period where strong bonds are formed between mother and infant. Failure of this bond formation can lead to rejection of offspring or in some circumstances infanticide by the mother. Knowledge of the behaviour between mother and infant in all Rhinoceros species could revile new clues and guidelines for successful breeding. This study investigated the behaviour pattern of a White Rhinoceros (*Ceratotherium simum simum*) female named Bertha and her newborn calf born in February 2008 in Knuthenborg Park and Safari in Denmark, and this mother's improvement to her second birth in December 2009. A weak comparing of this data to other first time mothers from Givskud Zoo in Denmark and Dublin Zoo in Ireland are conducted by behaviour analysis of video recordings of the events. The results show that Bertha's behaviour towards her calf is different to other first time mothers and that she only improve very little from the first birth to the second birth. The study does leave hope for improvement of Bertha's behaviour and suggest monitoring of early signs like licking and checking behaviour by the mother, and presence of aggressive behaviours towards the calf at any stage. The movement behaviour of the infant also needs close monitoring to identify early signs of the calf's likelihood of successful nursing and health issues. This study urge for more research on this field to unravel risks of behavioural coursed mortality of the infant.

INTER- AND INTRASPECIFIC INTERACTIONS AND SPACE UTILISATION OF WHITE RHINOCEROSES (*CERATOTHERIUM SIMUM*) IN A MIXED-SPECIES EXHIBIT WITH OTHER AFRICAN MAKROHERBIVORES

GUDRUN MALEK, DIPLOMA TESIS, UNIVERSITY OF BOCHUM, 2009, MAIL@FUSELHUHN.DE

Exhibits of mixed species with the same environmental needs are found in many zoological facilities but do not always meet the expectations of living peacefully side-by-side. In this study the utilisation of space and the interspecific interactions were observed for all the mammalian species of the exhibit, namely white rhinoceroses, Grant's zebras, elands, greater kudus, sable antelopes and springboks. Furthermore the activity patterns and intraspecific interactions of the subadult rhinos were part of the investigation.

This study took place in the 'ZOOM Erlebniswelt Gelsenkirchen', Germany, from July to October 2008. The enclosure 'Grassavanne' spans 23 000 m² whereof 5 000 m² are separated through a wall with little passages for all animals except the rhinos. Data was collected over 291 hours of observation by scan-, focal-animal- and behaviour-sampling.

Evaluation of the space utilisation showed that the enclosure was used completely by the inhabitants. The rhino-area and the northern part of the exhibit were visited less frequent and the proximity of the visitors was mostly avoided. In the morning nearly all species went to the forage places, at bad weather they seeked shelter in the entrances of the stables.

The acitivity patterns of the three subadult rhinos showed the same distribution as other zoo-kept rhinos. They were eating in the morning followed by a resting period. The remaining time outside was filled with different activities which were intermitted by several resting periods. Altogether they spent half of the time on the exhibit resting.

Intraspecific interactions of the rhinos were mainly made up of horn fights which are typical for subadult rhinoceroses. They mostly took place between the bull and one of the two cows. There was a pronounced hierarchy with one female on the top and the bull as the clearly inferior part. Interspecific interactions only made up a small part of the observations and took mainly place at the feeding sites where mostly the rhino cows fought with the adult eland bull. Besides the zebras showed spontaneous aggressiveness towards the calves of the antelopes. Apart from that there were only a few interspecific interactions and a clear interspecific hierarchy, which was constant over time, could be observed. Herds of mixed species were only observed at the feeding places and in the cover of the trees at the entrance of the stables. In the remaining time the species kept to themselves.

This enclosure is an example for a successful mixed-species exhibit of makroherbivores which live together without serious agonistic interactions and use the whole surface according to their specific requirements.

STRATEGIES OF HAREM STALLIONS OF PRZEWALSKI'S HORSES (*EQUUS FERUS PRZEWALSKII*)

PHILIP SCHMITZ, FELDHOF 9, 40699 ERKRATH, SCHMITZ.PHILIP@GOOGLEMAIL.COM, DIPLOMA THESIS

Field observations were conducted on a population of przewalski's horses (*Equus ferus przewalskii*) in the Hungarian Hortobágy national park to determine the strategies of harem stallions while taking into account the behaviour of infanticidal stallions. 410 scan samples and just as many focal samplings were carried out. Altogether the observation of eleven focal animals lasted 102.5 h. All the area's harem stallions were chosen as focal animals and behaviour patterns relevant to the "alert", "agonistical" and "sexual" functional behaviour systems were recorded. Either the frequency or duration of such occurrences was noted – as was the partner and the behavioural pattern's intensity.

Seven questions guided that work:

Question 1: How do the harem groups use the area?

Harem groups do possess home ranges which may overlap in parts. Some groups have joined into a larger herd. The coherence of that herd is less stable. The home ranges of these harem stallions are more spacious and ambiguously drawn than those of predominantly lone stallions. The home ranges observed shift from time to time.

Question 2: Do harem stallions avoid the proximity of other harem groups and does the presence of other harem groups influence their behaviour?

The harem stallions of the great herd are habituated to the proximity of many animals including other harem stallions and do tolerate their presence. Only those animals normally secluded from other harem stallions exhibit a significant increase in agonistic, protective or alert behaviour while in their vicinity. Highly aggressive behaviour between harem stallions is more frequent within the herd, due to the common occurrence of numerous harem stallions.

Question 3: Do harem stallions avoid the proximity of bachelors and does the presence of bachelors influence their behaviour?

A part of the focal animals is often in the company of bachelors and seems to be habituated accordingly. Focal animals with on average fewer neighbours show stronger reactions if they are close to bachelors. No significant relation was found for highly aggressive behavioural patterns. Bachelors are probably subdominant to harem stallions and in general avoid serious fights with them.

Question 4: Do harem stallions that have committed infanticide or are suspected to have done so exhibit aggressive behaviour different from other harem stallions?

Infanticidal focal animals were grouped and statistically compared to the other harem stallions. Few differences could be found. Infanticidal harem stallions do display a behavioural pattern of "inspection rounds" with a higher frequency. Agonistic behavioural patterns were exhibited less. The core frequency of behavioural patterns does not differ from group to group.