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Do urinary scent marks influence behaviour of male and female white rhinoceros (*Ceratotherium simum simum*)?

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Do urinary scent marks influence behaviour of male and female white rhinoceros (Ceratotherium simum simum)?

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Scent marks are a very common form of signalling by male mammals. They can potentially give information to receivers in the absence of the signaller. A variety of mammals discriminate among individuals on the basis of olfaction. In white rhinoceros urine is used for territorial marking. It is therefore likely that it carries information about the individual as well as its status and age. Females could use marking sites to assess potential mates. The urine could also advance female puberty, induce oestrus and abortions as it has been shown in other mammals. White rhinos don't breed well in captivity. The stimulation of sexual behaviour by imported urinary scent marks could be extremely valuable for captive breeding programs of white rhinoceros. Aim of the study was therefore to establish the role of olfactory stimuli in stimulating sexual behaviour in male and female white rhinoceros.

The study was carried out with a group of eight females and two males in the Safari-Park Beekse Bergen. Urine samples of 5 males of different age and from different locations (Arnhem, Münster and Berlin) as well as artificially manipulated urine samples were introduced to the males and females. It was established whether females showed particular interest in certain urine samples and whether the reaction of adult males differed depending on the presence of urine marks from other males. Urine samples were placed along a trail and it was observed whether the animals followed the trail. The behaviour of the animals, such as duration of sniffing and flehmen was recorded by all occurrence animal sampling.

Females showed a higher reaction after introduction of urine marks from old males compared to younger ones. This suggests that females could well discriminate between scent marks of different age classes and different rank, as an increase in age is usually correlated with an increase in rank. Females of different reproductive state differed in the interest in the introduced urine marks. Females in oestrus showed more interest in the introduced scent marks compared to others. Adult males showed a specific behaviour after introduction of scent marks which is known as "overmarking". With this behaviour they replace scent marks that do not match their own odour. An increase in marking frequency could not be observed.

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