

# Not so solitary? White rhinos seek company when relaxed

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## Introduction

White rhinoceros (*Ceratotherium simum simum*) have been classified as “semi-social” as they often form groups or temporary aggregations of two to six individuals (Owen-Smith 1975; Patton et al. 2016; Pienaar 1994; Shrader and Owen-Smith 2002). Social behaviours such as grazing, and/or walking together and lying side by side, rubbing their head and body (sides) on another rhino and making panting contact calls, have been described in other studies (Owen-Smith 1975; Jenikejew et al. 2020). Playful behaviour such as horn wrestling has also been observed before in white rhinos (Owen-Smith 1975; Cinková and Bičík 2013).

Our field research in Botswana supports findings about the sociability of white rhinos and adds the observation of a calf suckling from a female that was not her biological mother, to the spectrum of social interactions between rhinos.

We observed one to three adult rhinos per day over a period of 60 days between March and May 2020. During the observation, we focused on one individual, hereafter called the “focal rhino”, and videorecorded it for 30 minutes. We identified the rhinos through their individual ear notches and observed them in semi-randomized order at different times of the day. For each observation, we noted the number of individuals in a group at the same location. There was potential for more than eight adults to meet in the reserve (the total numbers of individuals are withheld for security reasons). Furthermore, the rhinos were dehorned after 30 days, and we were able to monitor whether dehorning had an effect on the group sizes.

## Results

The focal rhinos often moved together with other rhinos, and we observed groups of two to four adults at the same place (Table 1). The number of individuals at the same location did not depend on the time of the day (Fig. 1).

All adult females had calves (younger than two years) and were often found grazing in the vicinity with other mothers while the calves played together (Fig. 2 and 3).

The adult bulls often joined females to socialize. Whether the females were in oestrus or not was not noted for this study. For example, there was a bull resting for several hours together with two mothers and their calves in the morning (Fig. 4). On other occasions, the bulls played with the calves or tried to mate with the females.

We observed a calf suckling from the mother of another calf after they had played together on at least one occasion. Due to the position of the rhinos to the research vehicle and related poor visibility, this cannot be confirmed for all observations, but it is clearly visible on one video recording (Fig. 5).

Over the last year of monitoring in the reserve, there had also been an observation of a six-month-old calf that had been separated from its mother. The reason for the separation was most likely caused by a bull chasing the calf away to mate with the female. The calf accompanied another female and her calf for about two days until its own mother found it again (Fig. 6).

To avert poaching, all rhinos were dehorned after one month of our field research in a two-day-operation. We surmise that the operation was stressful for the rhinos because they were chased with vehicles before being darted and anaesthetized. We observed only single rhinos or mother-calf pairs for six days after the operation concluded (Fig. 7). From the eighth day on,

Table 1. Number of observations of maximum group sizes of adult individuals (calves not counted) during a period of 60 days

Maximum group size (adult rhinos observed at the same location)	Number of observations
1	10
2	20
3	7
4	5

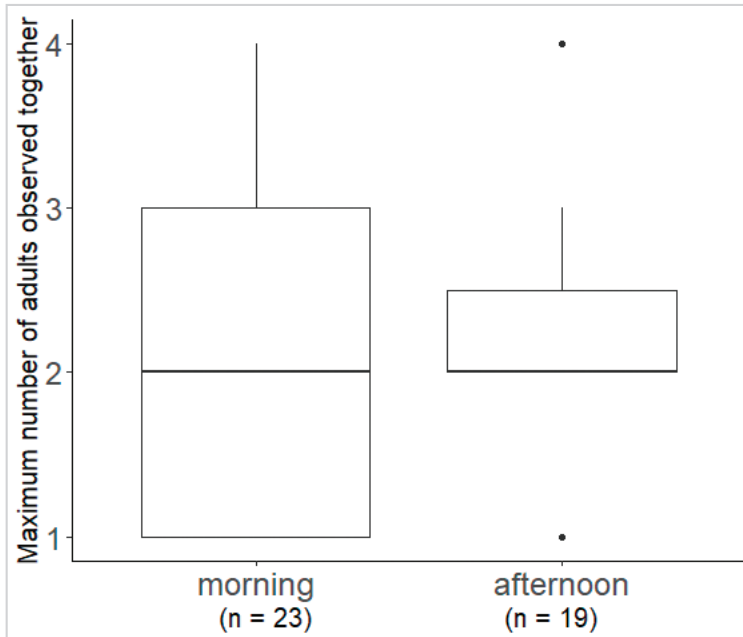


Figure 1. Boxplots of group sizes of adult rhinos comparing morning and afternoon observations. The thick middle line represents the median; thin lines of the boxes are upper and lower quartiles; points and whiskers show observations outside the quartiles, n indicates the number of observations.



Figure 2. Observation of two adult female white rhinos at the same location and their male and female calves playing. Photo: V. Pfannerstill.



Figure 3. Two adult females and their female calves at the same location playing together; the females had also shown playful horn wrestling without aggressive vocalizations. Photo: V. Pfannerstill.



Figure 4. One adult male, two adult females and their calves resting together at the same location in the morning. Photo: V. Pfannerstill.



Figure 5. From left to right: male calf, his mother, female calf, her mother. The female calf lying on the ground had been drinking from the female on the left, although her biological mother is the rhino on the right. The male calf had at this time been playing with the female on the right, but then came up to his mother and started to whine loudly to be able to suckle as well. Photo: V. Pfannerstill.



Figure 6. The calf on the right had been separated from its mother and stayed with the female on the left and her calf (middle) for about two days. Photo: OS. Maboga.

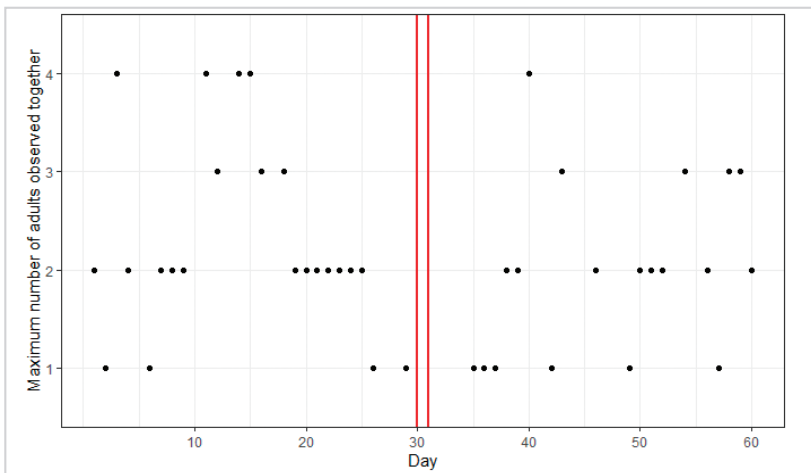


Figure 7. Maximum number of adult rhinos observed in a group at the same location per day over a period of 60 days. Red lines indicate the dehorning event on day 30 and 31.



Figure 8. Group of four adults and three calves observed together at the same location nine days after dehorning. Photo: V. Pfannerstill.

we observed pairing again and on the tenth day a group of four adults congregated at the same place (seven individuals altogether including the calves, Fig. 8).

These observations suggest that when rhinos are stressed, they flee on their own, perhaps even hiding and remaining solitary until the danger has passed; and they came together in groups when they feel safe and are relaxed. Groupings of different individuals every day seem to show that all rhinos in the reserve know each other well and enjoy the company of other rhinos. We encourage further study on social pattern changes caused by darting/dehorning operations and on dispersal triggers.

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