

Acknowledgements

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Feeding Enrichment for Greater One-Horned Indian Rhinos (*Rhinoceros unicornis*) in Zoos

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Zoo feeding for Greater One-Horned Indian Rhinos (*Rhinoceros unicornis*) differs from the ecological conditions found in the wild. Although there is a substantial variety of food offered in the zoos, feeding times and feeding places are usually the same each day. In an attempt to enrich the rhino's life pieces of fruit are distributed and hidden in the outdoor exhibit.

The objective of this study is to investigate how feeding enrichment affects the behavior of six Greater One-Horned Indian Rhinos in two zoological parks, the 'Zoologischer Garten' in Basel (Switzerland) and the 'Tierpark Hellabrunn' in Munich (Germany).

The observation period is divided into three parts, each consisting of 11 days. In the first part the rhino's behavior prior to the enrichment experiment is studied. In the second part

the behavior during feeding enrichment is recorded. The third part is a control section in which the behavior is again observed without enrichment to exclude influences other than the feeding enrichment.

The main techniques used are focus-animal-sampling (elements of behavior) and scan-sampling (use of enclosure); ad-libitum-data adds additional information to the overall view. The duration and the frequency of the complete behavioral repertoire of the rhinos are noted, first in a three hour observation period in the morning and then in a two-and-a-half hour period in the afternoon (with three rhinos in each zoo). Only elements of the behavioral baseline (which includes all locomotions; standing and laying down; no matter if it is in water or on land), the feeding and sniffing behavior, and the stereotypies get interpreted.

The results show very clearly that all six rhinos utilize the feeding enrichment. There are significant noted changes in at least one element of the behavioral baseline in five of the six rhinos. Observed changes in behavior may not, however, exclusively be traced back to the new feeding situation caused by enrichment. Other aspects such as seasonal changes seem to have more influence on the rhinos' behavior than the small quantity of fruit (compared to the principle meal of the day) used for enrichment. Changes in feeding behavior can only be proven statistically for one rhino;

but there are clear tendencies in all the rhinos to increase the frequency of food intake with enrichment. Sniffing also appears more often in three of the six rhinos during the enrichment period (and afterwards). Stereotypies, found only in three rhinos, at times decrease with feeding enrichment and other times increase significantly.

In conclusion it is apparent that this particular design of feeding enrichment is not sufficient to cause a basic change in the rhino's behavior. The differences between enriched and non-enriched parts of the study, if existing at all, are either too small or cannot be connected directly with the enrichment effort. On the other hand all rhinos used the extra food source, so a new attempt at enrichment to ecologically better adapt feeding conditions for Greater One-Horned Indian Rhinos in zoos seems to be very worthwhile.

Zoo animals that are in good physical and mental health show their natural behavior and therefore act as credible ambassadors of their species. They afford us - human kind - an insight into the imagination and admirable diversity of nature.

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