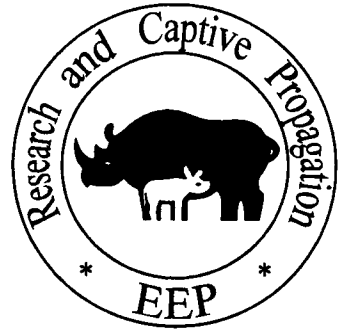


# Research Group Newsletter

## 5<sup>th</sup> Issue, February 1998



Dear Reader,

this issue is a good mixture of different research topics. Since we still want to increase the variety of topics, and the chance and number of co-operations between zoos and universities, please send us reports of your own work, research proposals, offers and needs for research co-operations, remarks on co-operations that were "initiated" by the Newsletter etc.. And also invite other scientists to contribute to the Newsletter!

Nevertheless, we have to point out that re-writing of manuscripts - if we do not get discs - costs a lot of time. So please - send IBM-fitting 3,5" discs with your files in ASCII- or Word-format and a paper copy of good quality, in case that the disc / file is damaged! If you want to publish in the next issue, please send us your article until December 1998!

Since we want to re-organize the system of distribution for the Newsletter, please pay attention to the last pages of this issue for further information.

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# RESEARCH PROJECTS

## Offers & Needs of Co-operation



### **Behavioural and medical aspects relating to husbandry of the greater one-horned rhinoceros (*Rhinoceros unicornis*) in zoological collections**

Friederike v. Houwald, c/o University of Erlangen, Dept. of Zoology I, Staudtstr.5, D-51058 Erlangen

Greater one-horned rhinoceroses (*Rhinoceros unicornis*), although commonly known animals are rarely exhibited in zoological collection. According to the studbook of 1996 (Wirz-Hlavacek, Studer & Steck 1997), 127 animals live in zoological collections world-wide. In the wild, a major bottleneck situation in the 60ies pushed the numbers of these animals close to extinction, but very well organised conservation strategies in their native habitat, southern Nepal and northern India, lead to a population of about 2000 animals nowadays. The situation in the captive population also looks promising, despite a few facts which hinder a successful breeding and neonatal survival rate in zoological collection. The reasons are not entirely known why some zoological collections are successful in breeding this species and others not (Fouraker & Wagener 1996). The same can be said for a relatively high neonatal mortality rate (Kock & Garnier 1993). Despite its popularity in the zoo world this species, when compared to the other members of the family Rhinocerotidae has received little attention in the world of research. A very detailed study exist about behavioural aspects of the wild population in Chitwan, Nepal (Laurie 1982) and a few case reports about health problems in captivity. Since the black rhinoceros (*Diceros bicornis*) faces major health problems in captivity (Munson 1993) most research

projects focus on this species. In a recent study, which picked up thoughts already commented on by Seidel and Strauß (1982) as well as Göltenboth (1986), showed that the feet of the greater one-horned rhinoceros are often affected by chronic cracks in the sole. The reason why only this species is faced with this very distinct problem has not been entirely evaluated. But the investigation showed that the occurrence of this problem is quite high in the captive population, especially in the male population (von Houwald & Flach 1997). Despite this study little information exist about the greater one-horned 'normal' biology, behaviour and physiology (Fouraker & Wagener 1996).

This project is intended in co-operation with the EEP co-ordinator for greater one-horned rhinos and the zoos which keep this species. The main aim of this study is to investigate behavioural aspects and physiological criteria and to try to find answers to some problems which occur in zoological collection. The combination of biological and veterinarian aspects was thought of importance for this study as many behavioural changes – which can but must not become obvious – can lead to a change of physiological parameter and can cause health problems. In how far the environment, the food, the constitution or other factors influence the well-being of this species in

zoological collection are not known. In combining biology and veterinarian science this study tries to find an approach to husbandry problems of rhinos.

The study will cover four main research points:

Cinematic and motion studies of the rhinoceros body, with special regards to their constitution, the ground on which they walk and the way the animals use their feet (with regard to clinical and non-clinical changes).

Behavioural studies, with regard to the use of the exhibition ground (and the type of exhibition) as well as the possible company, availability of a pond, etc..

Those animals which undergo a training process will also be observed in how rhinos learn and in how these methods may be of use for husbandry procedures etc..

A thorough health check is attempted for each animal which will be part of this study. This will include physiological parameter such as heart rate, breathing frequency, as well as blood samples for the analysis of red and white blood cells and chemical compounds. The feet will be closely studied to check for signs of foot problems. The health status will be closely linked

with # 1. Furthermore it will be of interest to investigate whether or not there is a connection between behavioural changes and a change in physiological parameters. The last point will deal with methods to estimate the weight and the body condition score of these animals and to try to find a link between the weight - the health status - and the food obtained.

An analysis of food, especially in comparison to the plants the animals feed on in the wild will also be attempted in order to see if the animals receive an adequate diet according to their age, behaviour, and breeding status.

This project is supported by the EEP co-ordinator for the greater one-horned rhinoceros. It will depend on the co-operation of those zoos which keep greater one-horned rhinoceroses and we are aware that some points will be difficult to carry out. Our aim is that not only those institutions which keep this species but also the animal itself will profit from the results of this project in the end.

## Investigations on mixed species exhibits in zoos - Barbary sheep (*Ammotragus lervia*) & Magot (*Macaca sylvana*)

by G. Hammer, Ladau 52, A- 5322 Hof bei Salzburg

Two years ago, the zoological garden of Vienna started a mixed exhibit of Barbary sheep (*Ammotragus lervia*) and Magots (*Macaca sylvana*). The enclosure of the Barbary sheep was therefore adapted and modified: The former border of the outdoor enclosure, a deer fence was replaced by a 3m high chain-link fence, which is topped by horizontal trellis, whith electric wires and the rocky terrain was structured by climbing trees. Some preliminary studies revealed that the timid Barbary sheeps preferred the higher reaches of the enclosure until the monkeys were introduced. After introduction

the adult Magots often started to chase the Barbary sheep and occupied the higher reaches for themselves. Since then the Barbary sheep aggregate in the centre of the lower enclosure. Agonistic conflicts seem to be carried out only by the dominant individuals, while some friendly interactions only started by young individuals which are born in the common enclosure. Now it is of interest, whether this combination will be successful in the future too. Additionally the rate of actions of both species will