CONTACT CALLS OF THE NORTHERN AND SOUTHERN WHITE RHINOCEROS: SOURCE OF INFORMATION ON INDIVIDUAL IDENTITY AND SPECIES OF THE CALLER?

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Communication of the northern (*Ceratotherium cottoni)* and southern white rhinoceros (*Ceratotherium simum)* has, until now, been studied very little. The rhinos have poor eyesight and vocal and olfactory signals are the most important for their communication. The vocal repertoire of some rhinoceros species has recently been described, however, information the rhinos are able to transmit and perceive through their vocalizations remains unknown as studies reporting any information encoded in rhino calls are completely missing. White rhinos are the most social of all rhinoceros species and a well-developed communication system might therefore be especially useful to them. We studied the contact call 'pant' of the northern and southern white rhinos, which is formed by a series of inhalations and exhalations and is somewhat unique to the white rhinoceros. We investigated if pant calls contain information on individual identity, species and sex-age class of the caller. Such ability, in addition to olfactory cues, would allow rhinos to communicate with highly increased accuracy.

We recorded and analysed pant calls of northern and southern white rhinos in several zoological gardens and South African wildlife reserves and also conducted playback experiments with pant calls on wild southern white rhino bulls in South Africa. We analysed 385 pant calls of six northern and 14 southern white rhinos for individuality and species differences. Discriminate analysis assigned a high percentage of pant calls to the correct animal. Calls of individuals clustered into apparently separate groups according to the species, and species differed significantly in call duration and in several frequency parameters of their calls. We also tested pant calls of 33 southern white rhinos for differences among the sex-age classes (females, sub-adult males, adult males in visual isolation from other rhinos, adult males when approaching a female) and a discriminant analysis classified the calls with a high accuracy. Playback experiments with pant calls were conducted on nine wild territorial bulls and we investigated if they react differently to the pant calls of females and adult territorial males. The bulls reacted significantly more intensively to the female than male contact calls. The bulls

also spent more time walking and running and they showed a shorter latency to mark the territory after the playback of female compared to male pant calls.

White rhino pant calls have complex structure and can also potentially encode other information. Therefore, they might represent a more sophisticated communication system than what is currently known in rhinos. Better knowledge of vocal communication of northern and southern white rhinos and how it stimulates social and reproductive behaviour might be extremely valuable for improving their management in zoological gardens and wildlife reserves.