

Wild southern white rhinos (*Ceratotherium simum*) are able to recognise information about familiarity and sex in the dung of their conspecifics

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Recognition of conspecifics may be important mainly in social species and might allow a creation of network of social relationships through recognition of familiar from unfamiliar animals, particular individuals, relatives, group members or neighbours. White rhinos are known for their sociality; the bulls are territorial while females, subadults and calves live in groups. They have weak eyesight and communicate by means of a wide range of vocal repertoire and by scent messages conveyed by dung and urine. White rhinos defecate at common dungheaps and the dung may provide them with the information about the movements of their conspecifics. The knowledge of processes of olfactory communication in rhinos might have an important use in rhino management and conservation; however, studies on the olfactory communication of free-ranging white rhinos have been until now only descriptive.

We experimentally studied olfactory investigation of dung by wild southern white rhinos in Welgevonden Game Reserve and Lapalala Wilderness in South Africa and examined their reactions (number of sniffing events, duration of sniffing and latency of vigilance posture) to the dung of familiar and unfamiliar adult females and males. The experimental dung was placed near already established dungheaps, where no other fresh dung was present and the experiment started when an animal approached the dung and started sniffing it. The reaction of the animals was video recorded for five minutes. We included the reactions of animals of all sex-age classes including calves older than six months. The rhinos sniffed the dung of unfamiliar animals longer and more often. We did not find any differences in the number of sniffing events or duration of sniffing between the female and male dung. Nevertheless, the rhinos showed shorter latency of vigilance posture to familiar dung of males than that of females while to unfamiliar dung they showed shorter latency of vigilance posture to female than male dung. Information about familiarity and sex contained in the dung of white rhinos might therefore be important for their social behaviour and spatial organisation as the dung can inform the animals about the movements of their conspecifics even in their absence. White rhinos in zoological gardens have a very low reproductive rate and better understanding to their olfactory communication might be extremely helpful in their management.