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SHORT NOTES

3850

Cleaning symbiosis involving pied crows and white rhino
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The pied crow *Corvus albus* has been recorded in feeding associations with large mammals (Brooke & Grobler, 1973). Hitchins (1962) recorded a pied crow perching on the back of a black rhino *Diceros bicornis* while feeding on ectoparasites, while Owen-Smith (1973) mentioned that pied crows 'commonly' settled on white rhino *Ceratotherium simum* in Umfolozi Game Reserve, picking off food morsels. None of these observations however, give quantitative data on the occurrence of this cleaning symbiosis. Remains of ectoparasites were not found in pellets analysed by Siegfried & Grindley (1967) and Brooke & Grobler (1973).

In a 33-day study period during May and June 1977 in the Hluhluwe-Umfolozi Game Reserve complex, four instances of feeding associations were observed between pied crows and white rhino from a total of 197 white rhino observed over a counting distance of 2,097 km. In all four cases the rhino were lying down in open areas. Two feeding strategies were observed i.e. walking on the back of the animal to probe in the ears and around the anus and walking on the ground around the animal and probing between the hind legs and around the anus. Their actions suggested that they were removing ticks but this could not be positively confirmed even with the aid of 7 x 50 binoculars. The mean time spent on the animals was 12.5 min (range 8-17 min). No intolerance was shown towards the attentions of the crows. The crows seemed to have problems balancing themselves while standing on the back of the animal and probing in the ear or around the anus. This is probably due to the fact that crows are not adapted to exploit this niche to the same extent as oxpeckers (Buphaginae) in the sense of having curved claws.

On two occasions the crows settled on a rhino with associating redbilled oxpeckers *Buphagus erythrorhynchus*. The oxpeckers immediately gave the alarm call and flew away. These observations suggest possible interspecific competition between crows and oxpeckers in the Complex. However, during the same count a total of 89 oxpeckers were associating with the 197 white rhino observed. The proportion is therefore 0.452 oxpeckers/rhino compared to a very low association of 0.036 crows/rhino. These results suggest that ectoparasites are not a very important food source for the pied crow.

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Lion kills crocodile

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During August 1977 a 2.5 m long Nile crocodile *Crocodylus niloticus* was found dead on exposed sand in the Black Umfolozi river, Natal, with the fresh remains of an adult warthog *Phacochoerus aethiopicus* 15 m from it. On closer inspection of both carcasses and the fresh spoor of both lion *Panthera leo* and crocodile it became evident that lions had killed both the warthog