Proceedings, 2nd Congress Vet. Assoc. Malaysia (1990)

SOME ASPECTS ON THE BEHAVIOUR OF THE SUMATRAN RHINOCEROS(*Dicerorhinus sumatrensis*)

Richard, K.M.[1*], Zainal Zahari, Z.[2], Vidyadaran, M.K.[1], and Mohd.Tajjuddin, A.[2]

[1]Faculty of Veterinary Medicine and Animal Science,Universiti Pertanian Malaysia,43400 U.P.M. Serdang, Selangor Darul Ehsan and [2]Zoo Melaka, Jabatan Perlindungan Hidupan Liar dan Taman Negara,Negeri Melaka, 75450 Air Keroh, Melaka.

SUMMARY The Sumatran rhinoceros (*Dicerorhinus sumatrensis*) is considered to be a highly endangered species of wild animal.Captive breeding for multiplication has been undertaken by the Wildlife Department and National Parks in an effort to conserve the animal. However, the lack of knowledge on the behaviour and management has resulted in a number of problems. In the present study,observations of the feeding, wallowing, sleeping, defecation, urination and'holding its ground'behaviours are reported.

INTRODUCTION There are five species of rhinoceros in the world which are the Black rhinoceros (*Diceros hincornis*), White rhinoceros (*Ceratotherium simun*), both found in the African continent, and three Asian species, namely, the Indian rhinoceros(*Rhinoceros unicornis*) found in the northern region of India, the Javan rhinoceros(*Rhinoceros sondaicus*) found in Java,and the Sumatran rhinoceros(*Dicerorhinus sumatrensis*) which in widely scattered throughout Malaysia, Borneo, Sumatra, Thailand,Burma and Indo-China.(Peacock,1944-45,Grzimeck,1968)

The Sumatran rhinoceros(*Dicerorhinus sumatrensis*) is probably the most endangered species of rhinoceros. It is estimated that there are only 100 Sumatran rhinoceros scattered in 26 localities in Peninsular Malaysia. Of this population 47% is found in Taman Negara and Endau-Rompin state Parks,while the remaining 53% is found in the unprotected areas. In 1985 the Department of Wildlife and National Parks initiated a captive breeding programme in Peninsular Malaysia.Presently a total of seven rhinoceros are kept in Zoo Melaka for breeding and multiplication purposes(DZM, 1990). Captive breeding of the Sumatran rhinoceros has suffered due to high mortality and lack of knowledge of husbandry and management of this animal.

There is very little information available on the behaviour of the Sumatran rhinoceros particularly in capitivity.This study was carried out in the hope that the information gathered would help those involved in the management and the breeding of the Sumatran rhinoceros.

MATERIALS AND METHODS The study was carried out at Zoo Melaka for a duration of 3 weeks (between 04.11.89-06.12.89).A male and a female rhinoceros, each 3-4 years old were observed daily from 7 a.m-6 p.m. Their main daily activites like feeding,wallowing,sleeping,defecation, urination,and'holding its ground'were studied in detail.

RESULTS AND DISCUSSION Feeding The rhinoceros is a herbivore and feeds mainly on leaves, young shoots and fruits(Crandall, 1964). It is considered to be a browser, the lips being the main prehensile organ. An average sized rhinoceros (600 kg) consumes about 30 kg of feed daily. At Zoo Melaka feed is provided twice daily, consisting mainly of leaves of daun nangka (*Artocarpus rigidus*) and supplemented with banana, sweet-potato and pig-starter mash. It was observed to adopt a peculiar posture when reaching out for leaves of trees in the paddock. It exended its hindlimbs, lowered its back, streched its neck and head to feed on the tips of the branches

Wallowing Wallowing usually occurs between 11.00 am -3.00 pm and the frequency of wallowing increased during hot weather. Usually the rhinoceros wallows for periods lasting between 3-4 minutes. However, it is not uncommon for them to wallow for 45 minutes or more during hot weather. Sometimes it even sleeps during such long periods of wallowing. The most frequent sleeping position adopted while wallowing was 'sitting on its tummy', however, at other times, it slept on its side in lateral recumbency or'sitting on hind quarters position'(Fig.1.(c)) as was observed in the tapir by Grzimeks, (1968). Mud wallow is prefered to water wallow. The rhinoceros wallowed up to five hours on rainny days when a mud wallow formed in the yard.

Sleeping Sleeping takes place on land or while wallowing. On land, cement floors are the prefered areas, although it is not uncommon for rhinoceros to sleep under the shade. The sleeping position is either 'sitting on its tummy' or lateral recumbency. They were observed to sleep for about three hours during the day. During long sleeping

periods (above 3 hours) the rhinoceros was observed to break its sleeping pattern by standing up (5-10 minutes)and returning to sleep. The frequency of standing increased as the weather became colder or during rain. The male rhinoceros sometimes slept in the sun during the late morning between 10.30-11.30 am for about 30 minutes, although females rhinos were seldom observed to 'sun bath'.

Fig.1.(a)Shows the rhinoceros defecating in water.Note the raised tail and squating position (b) Shows the rhinoceros before attacking. Note the erected ears and 'holding on its ground' posture. (c) Shows the rhinoceros wallowing in water. Note in this case 'sitting on hind quaters' position

Defecation The rhinoceros defecates 3-4 times daily . It frequently defecates in water or in damp areas. Both the male and female were observed to stamp its hind feet a couple of times and raise its tail before defecation. (Fig.1.(a))Generally, both the male and female defecates large quantites of feaces. However the female sometimes was observed to defecate small amounts of feaces on the ground. After defecation the

female rhinoceros scrapes its hindlimbs spreading its dung over the ground probably for marking and to ward off intruders.

Urination Male and female rhinoceros were observed to adopt two positions while urinating. Normal urination is by directing the urine towards the ground, once daily, lasting 1-2 minutes. The other position adopted is to spray the urine upwards. This is frequently adopted by the male if an intruder approaches the animal. In the wild the spraying of urine action is perhaps for marking purposes and to ward off other males (Hubback, 1939). The female was also observed to spray urine as was observed by Anderson, (1872). This usually occured when the female was on heat or in stress. Urine spraying was also observed in the female soon after the animal gave birth .

'Holding its ground' This behaviour can be described by a sequence of events. The animal is alert,holds its ears erect, faces the intruder, moves forwards, stays stationary and then moves forward. (Fig.1.(b)) It was observed to snort at every forward movement. This sequence is repeated 2-3 times before the animal lowers its head and charges at the intruder. When an intruder entered its territory, the animal became extremely aggresive, scaped the ground with its hindlimb and sprayed its urine upwards.

ACKNOWLEDGEMENT The authors thank the staff of Universiti Pertanian Malaysia, Serdang and Zoo Melaka, Ayer Keroh for their cooperation.

REFERENCE (1) Anderson,J.(1872) Notes on Rhinoceros sumatrensis Carvier Proc.Zool.Soc.Lond.p 129-132, (2) Grzimeck's (1968) Animal Life Encyclopedia (Mammals IV). (3) Director of Zoo Melaka, personal communication 1990, (4) Hubback, T.R. (1939) Two horned Asiatic Rhinoceros (*Dicheroses sumatrensis*) J.Bombay.Nat. His.Soc.40:594-617, (5) Lee.S.Crandall. (1964) The Management of Wild Mammals in Captivity, (6) Peacock, R.F (1944-45) Some cranial and dental characters of the existing species of Asiatic Rhinoceros. Proc.Zool.Soc.Lond.144:437-58