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Daily activity cycle of Great Indian one horned rhinoceros at Gorumara and Jaldapara Wildlife Sanctuaries, West Bengal, India.

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Abstract

A field study of the Great Indian one horned rhinoceros was carried out at Gorumara and Jaldapara Wildlife Sanctuaries from May 1980. Both the Sanctuaries consist of riverine grass land, forest and reedy swamps which are suitable rhino habitat. Data were obtained for 6 hours periods in each day for a 24 hours daily cycle in 4 consecutive days in each month. Most observations were carried out from tree top 'machans' or from elephant back.

Feeding appeared to be mostly a nocturnal activity with more feeding in the early (62%) than in the late part (77%) of the night. Wallowing was a diurnal activity. In the late part (0-6 hours) the frequency of resting increased. Wallowing was highest (37.10%) in the hot season and lowest (11.33%) in the cool season. Other activity was highest in the wet season due to higher percentage of movement.

Introduction

An ecological and ethological study on Great Indian one horned rhinoceros (*R. unicornis* L.) was started from May 1980 at Gorumara and Jaldapara Wildlife sanctuaries in northern West Bengal. Rhinos were mostly inactive during the day and spent a major portion of their time in wallowing and resting particularly in the hot hours (Gee 1964). Their activities gradually increased after dusk. They spent most of the night in feeding. They exhibited considerable movement during early dawn and late dusk period. Laurie (1978) and Goddard (1967) extensively worked on Indian and African black rhinos respectively. This paper a part of

a broader field study on rhinos presents data on the daily activity pattern and seasonal variation of activities.

Study site

Jaldapara (89° 30' E 26° 40' N) and Gorumara (89° 00' E 26° 40' N) Wildlife Sanctuaries extend over an area of 115 km² and 8.63km² respectively. The sanctuaries lie at the foothills of the eastern Himalayan region close to Bhutan, in the district of Jalpaiguri. Jaldapara is located in the moist tropical zone (Spillet, 1967) and in the flood plains of the river Torsa and Malangi. Gorumara 80 kms west of Jaldapara lies at the junction of Jaldhaka and Murti rivers. Both the sanctuaries consist of at least three habitats such as riverine grasslands, reedy swamps and riverine forest where a large number of animals including rhinos inhabit. Sal forest is dominant at Gorumara whereas it is completely absent at Jaldapara except in an isolated pocket at Salkumar beat.

Study schedule and technique :

Four consecutive days in the first week of each month were selected for observation on the daily activity pattern of rhino. On each of the four days observations were taken for a period of 6 hours ; so that data were obtained for a 24 hours daily cycle. Longer times were spent in the places where the probability of observations were better. Brief glimpses were also recorded as number of sightings. Duration of observations varied from brief glimpses of a few seconds upto over an hour. Observations were aided by the use of a 8 × 30 binoculars and the pictures were taken by an Asahi Pentax ME (lens 1:1.4) camera. Most observations were made from tree top 'Machans' or from elephant back. In case of wallowing the fresh mud cover on the body, foot prints and body impressions on the mud, besides direct observations were considered as an index of wallowing. The number of animals sighted and times spent by the animals in various activities at the four 6 hour periods of a day were collected.

Results :

Altogether 2281 minutes (38 rhino hours) of actual observation were made over a period of about 300 hours. Seven hundred

four individuals were sighted during this period. For convenience four general categories of activities such as feeding, wallowing, resting and others were considered. Activities included in the 4th category were, standing, moving, salt licking, alert and interaction with conspecifics and other mammals. These activities were observed less frequently. The behaviour patterns are described below.

1. *Feeding* : It includes a very short period of investigation for selection of fodder followed by actual plucking and subsequently chewing.
2. *Wallowing* : Resting in muddy wallows in sitting, standing and lying postures.
3. *Resting* : Lying on sternum or sides on short grassland, dry sand, soil etc.
 - i) *Moving* : Includes walking, strolling, running and galloping.
 - ii) *Alert posture* : Involves raising the head and ears and orienting towards any stimulus.
 - iii) *Interaction with conspecifics and mammals* : Rhino's behaviour towards any conspecific or other mammals.
 - iv) *Investigation* : Standing motionless orienting towards the direction of its movement in a raised head posture.

Figure 1 : Shows percent time spent in different activities in each of the four 6 hour periods of the day. A total of 653, 473, 447 and 708 minutes of observations were made in the 1st, 2nd, 3rd and 4th 6 hour periods of the day respectively. Feeding appeared to be mostly a nocturnal activity with more feeding in the early than in the late part of the night. Laurie (1978) obtained maximum feeding in the early morning, i. e., 4—8 hours. In the late part (i. e. 0—6) of the night the frequency of resting increased. Wallowing increased from 35% in 6—12 hour to 70% in the 12—18 hour periods. Other activities were higher in the early morning and late afternoon mostly due to higher frequency of movement during those periods. In contrast to our observations Goddard (1967) obtained maximum activity during 14 to 19 hours in African Black Rhinoceros.

Table I shows that percent time spent on feeding and resting were higher in the cool season. Wallowing was highest in the hot and lowest in the cool season and appears to be directly correlated with temperature. Other activity was maximum in the wet season due to higher percentage of movement, probably as a consequence of availability of preferred food plants over larger areas.

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Table—1.

Seasonal variation in Percent time spent on major activities.

Seasons	Observation in minutes	Feeding	Wallowing	Resting	Others
Hot	911	47.20	37.10	5.81	9.87
Wet	620	47.58	21.45	9.51	21.46
Cool	750	59.73	11.33	15.86	13.08

Legends to figures and plates

Fig. 1 : 24 hour activity pattern as shown by percent time spent by rhinos.

Plate 1 : An adult female rhino feeding on Dhadda (*Saccharum spontanenm*) at Gorumara. The amputed tail identified the animal individually.

Plate 2 : An adult bull just emerged from a wallow at the site of the Garati river at Gorumara.



