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GRAZING HABITS OF ONE HORNED RHINOCEROS (*RHINOCEROS UNICORNIS*) IN POBITORA WILDLIFE SANCTUARY OF ASSAM

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ABSTRACT

In order to successful translocation and *in-situ* conservation of one horned rhinoceros *(Rhinoceros unicornis),* some baseline studies in natural condition are highly essential. The objective of this study was to understand the grazing habits and the preference of fodder of rhinos in natural condition. The data were collected from Pobitora Wildlife Sanctuary of Assam by scan sampling methods with the help of an ethogram. The results showed that grazing both in grassland and wetland (30% and 22% of total observations) were the primary activities of rhinos during 24 hours. There was seasonal variation in grazing habit. Animals spent maximum time in grazing both in grass (45.68%) and wet land (40.74%) during post monsoon season in comparison to the other seasons. About 11 species of grasses were identified as preferred fodder of rhinos of Pobitora Wildlife Sanctuary. The proximate composition of these grasses revealed that they contain 80-85% moisture, 6-15% crude protein and 10-15% ash.

Key Words : *Rhinoceros unicornis,* Sanctuary, Grazing, Ethogram.

Pobitora Wildlife Sanctuary in Assam is located about 30 km east of Guwahati, the capital of Assam. The area of the sanctuary falls between $26^0$12'N to $26^0$15' N and $92^0$2' to $92^0$5'E. and elevated at an average 15-25 m above MSL. The climate of the sanctuary can be treated as sub-tropical type. Pobitora was declared a reserved forest in 1971 and a wildlife sanctuary in 1987. Though the total notified area of the park is 38.80 square kilometers, only 16 square kilometers is the effective rhino habitat. Besides rhinoceros, the other animals are leopard, wild boar, Barking deer, wild buffalo etc. It is also home to more than 2000 migratory birds and various reptiles. Pobitora Wildlife Sanctuary is famous for the dense population of one horned Indian rhinoceros. There are now around 93 rhinos, a ten per cent increase over the last six years. These 93 rhinos are surviving on merely 16 square kilometer area of the park. It has exceeded its rhino-bearing capacity and is overpopulated. Under Indian Rhino Vision 2020, the joint venture programme of the department of environment and forest, Govt. of Assam, WWF India, the International Rhino Foundation and the US fish and wildlife service, six rhinos were translocated from Pobitora and introduced into Manas National Park of Assam. Under such situation, some baseline study on grazing habits and preferences of rhinos for the various fodders are highly essential for successful translocation and *in-situ* conservation.

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The study was conducted in Pobitora Wildlife Sanctuary which is located in the flood plains of the river Brahmaputra of Morigaon district of Assam. The study on grazing habit was made by scan sampling methods with the help of an ethogram as per the methods describe by previous worker [2, 4, 8]. The ethogram was constructed after making a reconnaissance survey in the sanctuary. Three observations were made for each hour in every month for a period of one year. The observations in day time were done covering the period between 6 am to 6 pm and in the night time these were made up to 11 pm. Scan sampling method was made from the road, watch tower and tongi. Rhinos were also observed on foot, from elephant and tree top to record their different activities. Binoculars, electronic torch and stop watch were used as auxiliary means during recording the data. The grazing habit on short and long grasses and in different seasons was recorded. The types of grasses or plants from the natural pasture consumed by the rhinos were observed by following a rhino on tract. Grasses or plants fed by rhino were collected from the places where they spent more than 10 minutes of time and those which sowed the presence of saliva or torn condition in top portion. The grasses were identified with the help of taxonomist and proximate analysis was done as per standard methods [1].

The present study revealed that grazing simultaneously both in grass land and wet land were the prime activities of rhinos in Pobitora Wildlife Sanctuary. They spent about 30% and 22% of total day time in grazing on grass land and wet land respectively. They preferred to graze more time on grass land during morning hours up to 8.00 hours and during afternoon from 12.00 to 15.00 hours where as preferred to graze on wet land during late afternoon from 15.00 to 18.00 hours. They grazed very slowly in the grass land. During night, they grazed more time on wet land during 18.00 to 20.00 hours. As the area of the habitat is very much restricted, it was observed that the animals grazed simultaneously in grass and wet land during the day. Similar observations on grazing habit of rhinos were also reported by earlier workers [3, 5] in Kaziranga National Park.

Rhinoceros unicornis were observed to be top grazer. They liked to take leafy and tender portion of the grass leaving the stem portion. They used their prehensile upper lip to crush the grass. Grazing habit in short and long grasses indicated that the number of pickup per minute for short grasses were 48-54 with continuous grazing of 1.03 to 8.55 minute and 40-48 with continuous grazing of 2 to 5.39 minute respectively. During grazing, the rhinos maintained a peaceful relationship with other species of animal namely wild buffalo, domestic cattle unless they were disturbed. They also did not show any aggressive behaviour among them except for the cases when two adult male rhinos come nearer. The earlier worker [3] revealed that sub adult animals and female rhinos show a cordial relationship.

Animals spent maximum time in grazing both in grass (45.68%) and wet land (40.74%) during post monsoon season in comparison to the other seasons as green fodder was sufficiently available during this season. During monsoon season most of the low lying area of the sanctuary was inundated with water.

Due to the highest population density, the sanctuary may not be sufficient to provide food to its occupant. As a result, rhinos from the sanctuary used to visit the nearby crop field in search of food in the night. During the study period, it was observed that during the lean months i.e. October to March, 2-4 rhinos often enter the nearby cultivated land at night in between 21.00 hours to 23.00 hours. During February to April, 8-10 and April to May 4-6 rhinos stray out the sanctuary. The rhinos consumed paddy, wheat seedling, Ghunsa plants during raiding the cultivated field. To protect the paddy field, the villagers sat out some bamboo plat form at the height of 6 to 8 feet on their field for night

patrolling. The villagers or the forest guard used to drive back the rhinos by waving light torch or by some hard sound. Once they were undetected they raided the crop up to 4.00 hours in the morning and came back to the sanctuary. This crop depredation behaviour of rhino may causes human- rhino conflict and may lead to killing of rhino in near future. Therefore, the sanctuary authority should take care towards crop predation within the fringe village.

The forages in Pobitora Wildlife Sanctuary are grasses, shrubs, tree leaves, aquatic plants and fruits. Twenty two species of plants were identified which were consumed by the rhinos. Green grasses and plants comprise the major part of the total plants eaten. About 11 species of grasses were recorded to be the most preferred food sources of the Indian Rhino. Short grasses identified were *Hemerthia compressa, Leersia hexandra, Andropogon spp*., *Cynodon dactylon and Hogol.* Long grasses *identified were Vetivera zizanoides, Saccharum spontaneum, Pharagmitis karka, Selerostachya fusca, Hymenachane amplexicaolis* and *Imperata cylindrical.* They also consumed aquatic plants like *Eichhomia crassipes ,Ipomea reptans ,Enhydra flucluans* and tree saplings like *Ricinus communis, Ficus hirta.* Similar observations were also reported by previous worker [3, 6] in Kaziranga National Park of Assam. The most preferred grasses contain 80-85% moisture, 6-15% crude protein and 10-15% ash. However, the earlier worker [7] reported higher per cent of moisture, crude protein and ash in these grasses. These variations might be due to soil type and other ecological factors.

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