

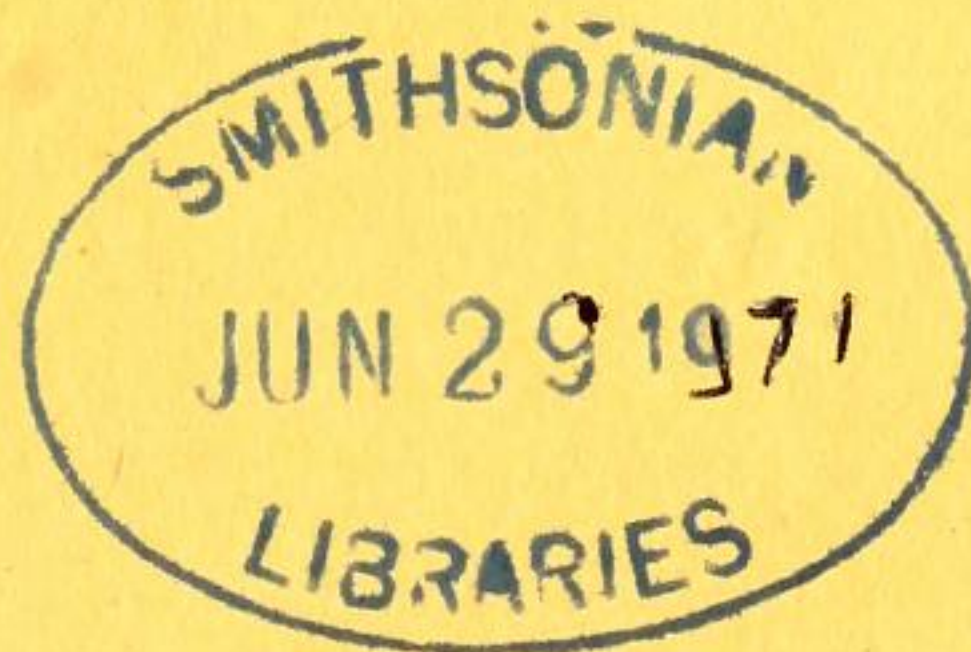
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competition are eliminated in the case of a laboratory reared rat, other artificial conditions like restriction of their movements inside a cage and a probable physiological fatigue resulting from captivity conditions and an artificial diet have to be considered.

VIRUS RESEARCH CENTRE,
POONA-1,
April 24, 1970.

P. K. RAJAGOPALAN

5. AN ATTEMPT TO DETERMINE THE FOOD HABITS OF THE INDIAN RHINOCEROS

The great Indian one-horned rhinoceros, *Rhinoceros unicornis* has been noted to feed chiefly on grass but no exact record is available. It was therefore attempted to actually observe the grass species nibbled by rhino at Jaldapara National Park, North Bengal and to identify the remains of vegetable material in the dung with the help of microscope slides, a technique proposed by Drs. Skoog and Gogan¹ at Serengeti for studying zebra.

Our study was carried out during a fortnight in the pre-monsoon season (last part of May) in 1970.

It was very difficult to approach the rhino and observe exactly what it was eating. The small number of animals and the nature of the vegetation at Jaldapara render direct observation difficult. Much of the forest area even in this season was covered by 10-20 feet tall grass. However, it was at last possible to observe two rhinos at different places while actually feeding on *Polytoca digitata*, locally known as Bhutta (maize) grass. Both tender (thin stemmed) and bigger, thick stemmed (diameter 6-7 mm. when dried) plants were eaten. Moreover, following the regular tracks of rhinos, spots were found where the animals had extensively grazed. On one or two occasions we reached spots apparently immediately after the rhino had passed by, for the cropped grasses lying about were very fresh. The absence of other grazers such as deer, gaur, buffalo etc. in the vicinity renders it almost certain that these feedings were by the rhino. It was also likewise evident that the rhino does not feed on fern. Twelve undigested stems from 4 different dung heaps of rhino were collected. The length of these was in the range 2.5-4.8 cm. When brought to the laboratory, 8 of these were in a stage permitting sectioning after a 24 hour treatment with NaOH. These sections stained with saffranin were compared with similar sections of grass samples collected. The most important result of the whole study is

the discovery that this method is quite workable and as such it should be extremely useful to collect a large number of such undigested stems. This is indeed a simple matter in the field because dung heaps are easily reached and hundreds of samples may be collected from a single heap.

Of the 8 stems studied microscopically, two were *Polytoca* and 5 were identical, (a dicotyledonous species) while one was not very clearly recognizable. It is most interesting that a substantial part of the remains point at a non-grass species. In the Calcutta Zoo, however, the rhinos are frequently given *Ficus religiosa* and *F. bengalensis* and other leaves which the animals consume. Some of the local people at Jaldapara maintain that occasionally the rhinos eat non-grass species. The following table sums up the findings.

FOOD PLANTS OF THE INDIAN RHINOCEROS

| Sample | Observed actual feeding | Observed traces of feeding | Microscopic examination of remains of dung | Alleged by local people |
|---------------------------------|-------------------------|----------------------------|--|-------------------------|
| <i>Polytoca digitata</i> | + | | + | |
| <i>Digitaria granularis</i> | | + | | |
| <i>Imperata cylindrica</i> | | + | | + |
| <i>Setaria pallide-fusca</i> | | + | | |
| <i>Fimbristylis junciformis</i> | | + | | |
| Unidentified | | + | | + |
| Unidentified Dicot species | | | + | |
| <i>Mychenia</i> | | | | + |
| <i>Dalbergia sissoo</i> | | | | + |

Polytoca digitata and *Imperata cylindrica* are found in extensive areas of the Jaldapara. The former has been recorded as a fodder grass², while *Imperata cylindrica* (Locally known as 'Ulu' or 'ilu') is very well known as thatch grass and also as a common fodder grass and very extensive, though indirect, evidence for feeding on this by rhino were available. *Digitaria granularis* is a very short grass which generally does not grow in dense forest or in taller grasses³. Within this limited growth area (as we also verified) it was extensively consumed. (A related species *D. criantha* imported from S. Africa contains HCN when drying up and may form a source of danger

for the browser). The other species mentioned were also of minor importance because of their limited distribution. Of these *Setaria pallide-fusca* is known to make good pastures near Bombay³. *F. junci-formis* (*Bindi Muthi* in Santali language⁴) is a non-grass (*Cyperaceae*) though monocot sample.

The most interesting finding is the occurrence of a dicot or non-grass species in the dung. This might be identified by sectioning the common flora samples of the area such as *Dalbergia* which were not collected in this study.

In conclusion, it has been proved that our attempt, especially the microscopic identification of faecal remains, was in the right direction and a second, more comprehensive attempt covering Kaziranga, the great stronghold of the Indian Rhino is likely to enable us to learn the food habits of this endangered species.

Another phase of work will be the estimation of protein contents and certain other chemical tests of the important food sample.

Now that the Baradabari area of the former National Park has been taken over by the Military, the sanctuary should be compensated by acquiring another block of equivalent area to be chosen after a survey of the ecological needs, such as the requisite vegetation for food and shelter. The effect of fire on vegetation should be carefully studied. Stringent measures should be taken to check poaching.

There also arises the question of competition with other species for food. The tame elephants were observed to feed on *Polytoca* and *Setaria* but there is no sizeable resident herd of wild elephant. *Imperata* or thatch grass is likely to be a coveted item for the various herbivores including domestic buffalo in adjacent villages. *Mychenia* was observed to be eaten by local deer species. The number of domestic buffalo and deer in the area observed by us did not seem to us to be a potential source of danger as competitors for a limited food supply.

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CALCUTTA,
August 11, 1970.

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