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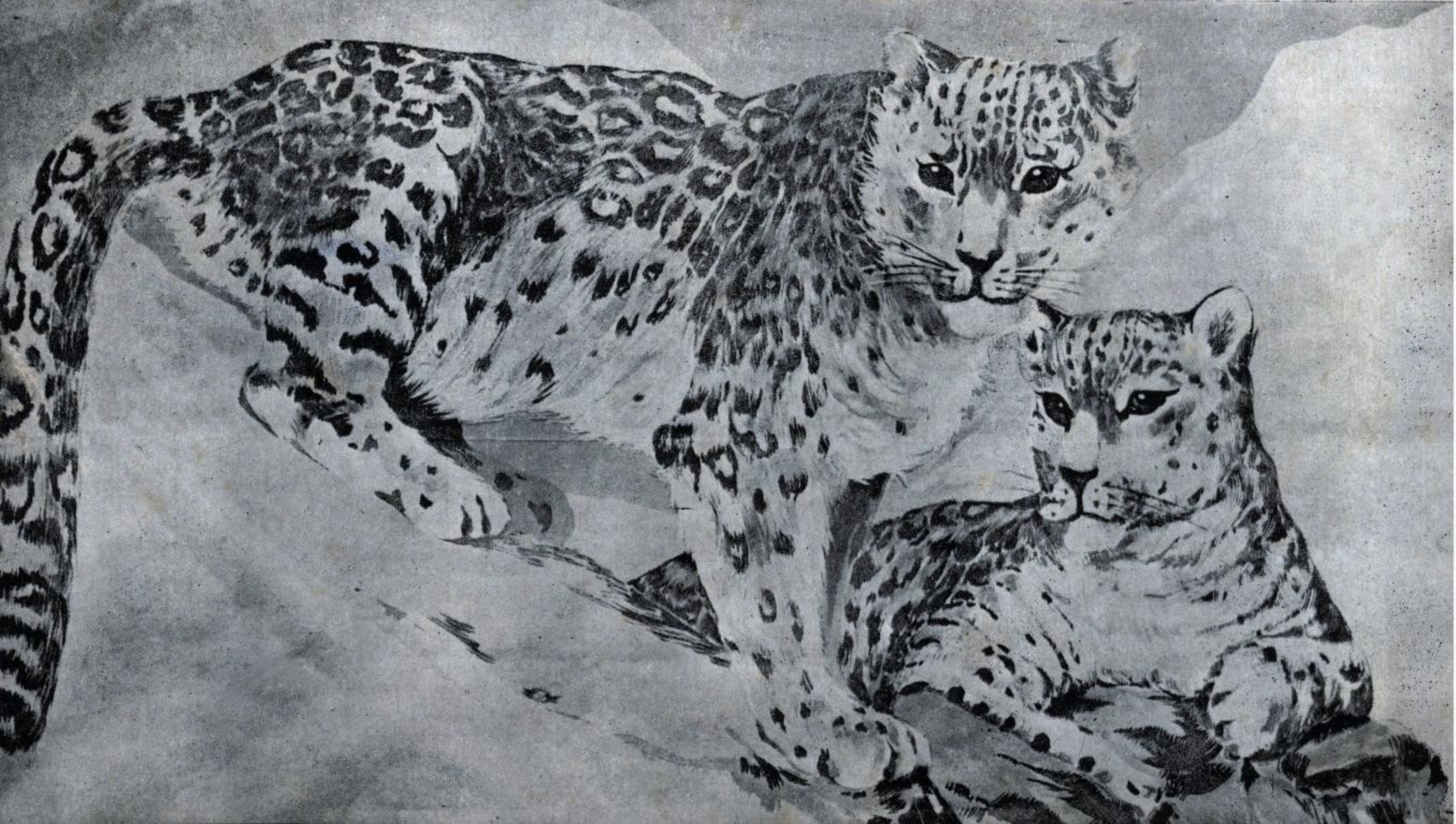
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Concerning the Great Indian One-Horned Rhinoceros

By

J. JUAN SPILLETT

Historically the range of the Great Indian One-horned Rhinoceros extended along the base of the Himalayas from Assam to central Uttar Pradesh. Included in this range were northern Bengal, Bihar, and south-central Nepal. Today the Indian rhino is restricted to a number of locations along the Brahmaputra or its tributaries in Assam and northern West Bengal and the Rapti River Valley in Nepal.

An ecological survey to determine the status of the Indian rhino in its present range was conducted between January 21 and June 25, 1966. This survey was officially sponsored by the World Wildlife Fund, Morges, Switzerland and was also assisted by The Johns Hopkins University Center for Medical Research and Training, Calcutta-Baltimore, Maryland (U.S.A.). The co-operation and assistance of the Forest Departments in these areas was particularly important and made it possible to accurately assess the status of this valuable wild life species.* The number of rhino in each of these areas, as determined by this survey, was reported by Mr. E.P. Gee in the October issue of "Cheetal". In some cases it was found that the number of rhino exceeded previous estimates.

The approximately 160-square-mile Kaziranga Wild Life Sanctuary in Assam was censused on March 18 and 19, 1966. As a result, it was determined that over 400 rhino inhabit this outstanding sanctuary. This is over half of the Great Indian One-horned Rhinoceros in existence. Concern has been expressed that the monsoonal floods, which annually inundate most of the sanctuary, pose a threat to the rhino and that Kaziranga is similar to "keeping all of one's eggs (rhino) in one basket". Thus, two major proposals have been presented. One, whereby a bund would be constructed along the north-eastern boundary of Kaziranga to prevent the Brahmaputra from flooding the sanctuary. Another, in which rhino from Kaziranga would be introduced or re-introduced into other parts of India. It is apparently felt that such measures would help to insure that the Indian rhino would be protected from threatened extinction.

*Special thanks go to Messrs. P. Barua (Chief Conservator of Forests), A.C. Gohain (State Wild Life Warden), H.K. Nath (Sibsagar Divisional Forest Officer), C.L. Chakravarty (Kaziranga Range Officer), and P.C. Gogoi (Nowgong Divisional Forest Officer) in Assam; Messrs. K. L. Lahiri (Chief Conservator of Forest), J. N. Bhadury (Cooch Behar Divisional Forest Officer) S.S. Sanyal (Assistant Cooch Behar Divisional Forest Officer) and N. P. Talukder (Jaldapara Range Officer) in West Bengal; Messrs. R.G.M. Willan (Chief Conservator of Forests) and Kirti M. Tamang (Forest Inventory Specialist) in Nepal. These men and their departments are to be commended for the work they have done in helping to preserve the Great Indian One-horned Rhinoceros as a part of their nations' wild life heritage. Mr. E. P. Gee, a noted authority on the Indian rhino and a member of the Indian Board for Wild Life, also made the necessary arrangements with the Central and State Governments, as well as the Forest Departments concerned.

I revisited Kaziranga from June 9 through 14 in order to observe both the sanctuary and its rhino under monsoonal conditions and thereby assess the situation. Several days were spent in a dug-out canoe and on elephant back inside the sanctuary during one of the peak floods of the season. Rhino were observed to graze contentedly in waters over 4 feet deep. They were also observed to swim considerable distances with apparent ease and appeared to go wherever they desired. In short, rather than being imperilled by the annual flooding, as surmised by some people, the rhino appeared to be little hindered or affected by the flood waters of the Brahmaputra.

Approximately 15 square miles have been eroded from the north-eastern boundary of Kaziranga by the Brahmaputra river. However, at the same time the river has deposited or built up rather extensive islands or "chapories" along the western end of the sanctuary. These should rightfully be considered a part of Kaziranga. Although the losses to erosion are a major problem, the other effects of the yearly floods have not posed a serious threat to Kaziranga's rhino. Actually, in-so-far as rhino are concerned the overall effects of flooding are probably beneficial.

Most of the streams and lakes or "bils" in Kaziranga have been invaded during recent years by water hyacinth (*Eichhorinia crassipes*). The use of herbicides or other means for removing this undesirable weed do not appear feasible. Burning the dried up plants in the ephemeral "bils" also appears to be of little, if any, value in checking reinfestation. Floods presently are the only means by which these areas are temporarily cleared. Without floods they would shortly become solid green masses of vegetation. Flooding also replenishes the water supply of the sanctuary's numerous "bils" and essentially irrigates the savannah-like grasslands. Optimum habitat for rhino is in reality maintained by the annual floods and without them Kaziranga would probably be unable to even maintain its present rhino population.

The Embankment and Drainage Department proposed the construction of a "bund" for flood control along the Brahmaputra in the north-eastern part of Kaziranga. Preliminary surveys for the construction of this "bund" were initiated in 1965, but were discontinued upon the insistence of the Forest Department. This issue is presently a controversy between the two departments. The aforementioned beneficial effects of flooding would be eliminated if such a "bund" were constructed. In addition, there would be the possibility that such a "bund" would be breached during peak floods. If this happened, the sudden rush or convergence of flood waters upon the sanctuary would undoubtedly result in devastating effects both on the animals and their habitat. Therefore, in my opinion the Forest Department was wise in taking the stand which it did. However, measures should be taken to check Kaziranga's losses to erosion. This would include the removal of domestic livestock grazing along the banks of the Brahmaputra inside the sanctuary. And extensive planting

of trees and shrubs in affected areas, as is being done in experimental plots by the Forest Department, would probably be of value in halting erosion.

The major threat to the Indian rhino is habitat destruction—both through overgrazing by domestic livestock and by human encroachment upon its few remaining haunts. Poaching is also a problem, but to a lesser extent in most rhino areas.

The presence of domestic livestock presents a triple threat to wild life when the two inhabit the same area. This is particularly true with rhino. First, there is direct competition for forage. The Indian rhino is a huge beast and requires large amounts of readily available forage. When an area is extensively grazed, the rhino may have to spend all of their time and energy just to acquire their basic food requirements. These basic requirements may not even be met if the area is overgrazed, as is all too often the case where domestic livestock is present in India. This was dramatically demonstrated by the results of the Kaziranga wild life census. Compartment four in the Kaziranga Block was formerly noted as one of the sanctuary's outstanding rhino areas. However, due to political expediency, domestic livestock grazing was initiated in part of this 5 square mile compartment in 1950. As a result, only 8 rhino were reported during the census for the entire compartment. Further, not a single rhino was observed in the 2 square mile area within the compartment which was grazed by domestic livestock.

Second, the presence of domestic livestock presents the possibility of introducing diseases and parasites, which may prove fatal to wild life populations. Occasionally rhino are found in Kaziranga which have died of unknown causes. The horns of two such animals were recovered during the 1966 census. It might be that these animals have died from diseases or parasites introduced by domestic livestock. There is also the possibility that the sanctuary's wild buffalo population is presently being controlled by diseases and/or parasites.

Finally, livestock grazing results in disturbances to wild life both by the domestic animals and the inevitable presence of humans associated with them. The rhino is probably unique among mammals in its mating behaviour. The male, as well as the female, come into heat prior to mating. It seems extraordinary even for a male and female to come together when both are in the necessary physiological state. Even then, if they are continually disturbed, it is not likely that they will successfully mate. Twice, while observing the mating behaviour of rhino in the Jaldapara Wild Life Sanctuary and in spite of our precautions to remain inconspicuous, the rhino became aware of our presence and ceased their "love making".

Numerous related incidents of rhino wandering great distances through populated areas lead one to believe they were probably seeking a place of refuge from human disturbances, as well as perhaps a mate. Except when making forays upon crops, which usually takes

place at night, evidence indicates that most rhino tend to avoid areas inhabited by humans. Generally speaking, rhino do not thrive when in close association with man. Man's activities in the areas inhabited by him likewise result in the destruction or elimination of optimum habitat conditions for rhino. Thus, the preservation of the Indian rhino requires that certain areas be maintained as much as possible in their natural state.

Supposed aphrodisiac qualities of Indian rhino horn has resulted in extremely high prices for this commodity on the black market. This in turn has resulted in an enticement for unscrupulous people to enter into this illicit trade. There are reports of rhino horn, which is not true horn but cornified tissue much like a human's fingernails, selling for as much as Rs. 6,000 per kg. However, it appears that the extent of rhino poaching is exaggerated for most of the rhino sanctuaries in India. Nevertheless, the export of rhino horn should be strictly controlled. Also, a sustained effort should be exerted to protect the rhino wherever it is found. This can best be done with a well-trained and adequately paid staff, which has sufficient authority both to apprehend and to bring to justice those committing violations of this nature. Within this framework a system of rewards for those maintaining and sustaining the law, as well as an effective system of punishment for those violating it, is imperative.

One of the major deterrents to the introduction or re-introduction of the Indian rhino into other parts of India is the expense involved. This money could be much better utilized in the protection and preservation of the rhino in the areas which it presently inhabits. I too would advocate the re-introduction of the Indian rhino elsewhere *if* all of the rhino in India were restricted to the Kaziranga Wild Life Sanctuary. But this is not the case. The Forest Department of West Bengal has established Jaldapara as a notable rhino sanctuary. Laokhowa, Manas, and Orang in Assam also have sufficiently large numbers of rhino to comprise reproductive entities. With sufficient protection, as well as habitat restoration and maintenance measures in some cases, these could likewise become notable rhino sanctuaries.

The importance and value of the Great Indian One-horned Rhinoceros as a national asset is at present little realized. Thousands of people, both from India and abroad, would spend enormous sums of money for the experience of seeing the Indian rhino in its natural habitat. However, before the rhino can fulfil its potential as an important tourist attraction and a major source of revenue, the basic amenities for visitors, such as transportation, food, lodging and so forth, must first be provided. This entails the provision of suitable numbers of good quality accommodations within the vicinity of rhino sanctuaries. These also must be effectively advertized so that the potential visitor is aware of the available facilities and their cost. In addition, there is already a market for surplus rhino from these areas. Reputable zoos throughout the world will pay as much as Rs. 50,000 in foreign exchange for a single Indian rhino at its place of capture.

Mr. E.P. Gee ably presented reasons for not "transplanting" the rhino elsewhere in the October 1966 issue of "Cheetal". However, one important factor appears to have been overlooked thus far. There is not a single zoo in India with a breeding pair of Indian rhino. In fact, in-so-far as I am aware, none of the Indian zoos presently have a pair of Indian rhino. The Indian rhino has been successfully bred in a number of the European zoos. Why not in India? Or, why don't at least some of the Indian zoos have a pair of one of the most remarkable mammals in the world—the Indian rhino? For those who advocate the introduction or re-introduction of the Indian rhino into other areas in India, I would suggest that their money and efforts be expended in protecting the rhino in its present range and also in providing additional rhino for the reputable zoos of this country. The possibilities of rhino successfully reproducing in a zoo would be better than if a few individuals were introduced into an extensive area where they may never come in contact. At the same time they could be seen and appreciated by far greater numbers of people.

The Society Library

In the past few years, the society library has been much improved, and is proving popular with members. To further improve it, we request members to donate old books which are now out-of-print or other books which may help us to serve the members better with a fuller library. All donations of books are acknowledged by the Honorary Secretary.