

A BRIEF REPORT ON THE SOCIO-ECONOMIC PROBLEMS AND VETERINARY ASPECTS OF LIVESTOCK INSIDE THE PABITARA WILDLIFE SANCTUARY

Imran Ahmed Khan

Abstract

Pabitara Wildlife Sanctuary, located in the flood plains of river Brahmaputra, has the dubious distinction of possessing the highest density of rhinoceros. This sanctuary has been selected for the introduction of sangai, owing to the similarity of its habitat with the original home of this deer at Keibul Lamjao National Park, Manipur. This sanctuary will take its place in the IUCN introduction and re-introduction list of donors and acceptors as it has already donated rhinos in connection with the re-introduction programme at Dudhwa N.P., U.P. Before being given the status of sanctuary, Pabitara was a reserved forest from where the people were fulfilling their basic needs. The sanctuary is under constant threat from livestock as well as human encroachments. The growing population of rhinos in the area demands intensive conservation measures. Moreover, since the sanctuary will be harbouring introduced sangai deer and that too highly inbred, it becomes necessary to look into the socio-economic problems as well as disease aspects of livestock in this area which have free entry into the sanctuary. Suggestions are also made to raise the living standards of local inhabitants in order to reduce the pressures on the sanctuary.

Introduction

Pabitara Wildlife Sanctuary is located just 3 km away from the river Brahmaputra

which flows on the north-western side of this sanctuary. The river takes refuge in the grass land and wood land of this sanctuary during the peak monsoon period in the form of spill-over floods.

This sanctuary has the unique distinction of possessing the highest density of Asiatic One-Horned Rhinoceros (*Rhinoceros unicornis*); about 65 individuals in an area of 16 sq. km. (forest department records). The sanctuary has an interesting history of its existence.

The local people of Mayang revenue circle in 1964, jointly organised a meeting and desired that a reserved forest should be created in the area from where they can fulfill their basic need of Khair, firewood, fish and grazing lands for their cattle and also prevent the entry of intruders from outside. In 1971, it was given the status of a reserved forest. This status was raised to that of a sanctuary in 1987 since the area possessed a rapidly growing population of rhinoceros (Forest dept. records).

Initially, an area of 1584.76 ha was constituted into the sanctuary but with the growing population of rhinoceros it was decided to include within it the Rajamayang hill reserved forest, which is located just a km away from the western boundary of the sanctuary. The proposed area has an extent of about 1191.86 ha which will make the sanctuary 3383 ha in area. There is also a proposal for

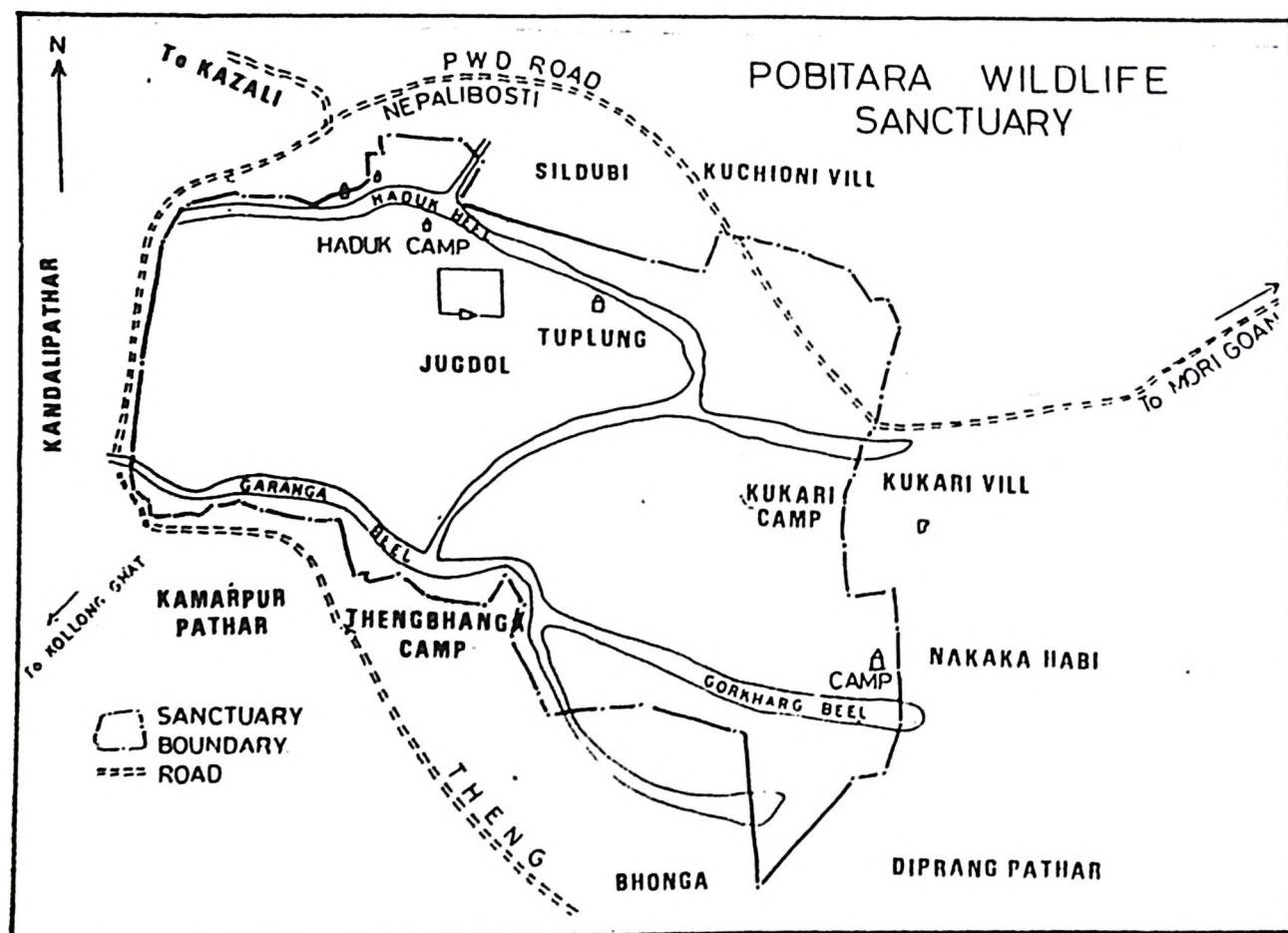
establishing a corridor link of about 1106.38 ha in between these two forests. This corridor will mainly constitute the area under Government and periodic patta land (Forest dept. report).

The entire area (actual and proposed) falls under the flood plains of Brahmaputra and consists of open grass land with few isolated patches of wood land dominated by *Albizia procera*. The area has tropical type of climate with abundant rainfall during June and July. The vegetation grows on moist alluvial soils having light texture.

This sanctuary has been selected for the proposed alternate home of Manipur-brow antlered deer as the climate as well as vegetation structure and composition of this sanctuary are more or less similar to the original habitat of this deer at Keibul Lamjao National Park, Manipur (Prasad S.N. & Mathur P.K.- zoo's print, Vol. IV. No.8, Jan-88). Owing to the prevailing threats to the Keibul Lamjao

National Park, Manipur where this deer is struggling hard in what is the last refuge of the species consisting largely of a floating mass of vegetation known as phumdi, it was decided to look for an alternative home. Subsequently, the Pabitara Sanctuary, Assam provided the best alternative where the climate and vegetation closely match with that of Keibul Lamjao. Moreover, this sanctuary is free from big cats (predators) which could create problems for the introduced deer in the beginning.

Pabitara sanctuary is surrounded by a number of villages with a large population of livestock. This livestock has free entry into the sanctuary for grazing. The local people who live on the fringes of the sanctuary depend largely on the sanctuary for their daily requirements like fish and thatch. Until 1987 people were freely using the resources of the sanctuary and their livestock were grazing alongside the rhinos. But in 1987 when the administra-



tive control of the sanctuary was transferred to the western Assam wildlife division, Tezpur from the Nagaon territorial division, the sanctuary rules were enforced and the people were prohibited from entering and from grazing their livestock in the sanctuary.

This resulted in a situation where the sanctuary came in direct conflict with the peoples' interests.

Previously, villagers used to collect thatch, fire wood, fish, ekra etc. from the sanctuary. And although rhinos were taking a heavy toll of their paddy fields, it was a sort of give-and-take arrangement and the loss was compensated by the benefits. However, now that the villagers have been denied use of the sanctuary, rhinos continue to damage agricultural crops and the pressure is increasing because of steady increase in the population of rhinos. This has further complicated the problem and villagers are reported to harbour poachers for getting themselves relieved of this problem.

Another problem is the grazing by a large number of livestock which deprives rhinos to some extent, of their natural food. These cattle may bring diseases with them and spread them among the wild animals. Moreover, the sangai which will be introduced from the zoos belong to a highly inbred population and will be susceptible to all kinds of diseases spread by livestock.

Poaching of rhino is a regular practice and the poachers approach the villagers with a handsome amount of money for shooting the rhino and giving them the coveted horn. If the forest department were to take the local people into confidence and provide them with their

basic needs then this problem can be brought down considerably and villagers may play the role of active informers and help the forest department in apprehending the culprits.

Taking these pressures into consideration, it was decided to carry out a survey of all the surrounding villages making records of human and cattle populations, basic requirements and needs of the people, problems faced by the people, disease occurrence among the livestock and so on.

Findings

Pabitara wildlife sanctuary is surrounded by 11 villages on its eastern, northern and southern sides. On the western side flows the river Brahmaputra and in



between the river and the sanctuary lies the Rajamayang hill reserved forest and the proposed corridor forest.

On the northern side of the sanctuary boundary there are 5 villages namely; Mooraburi, Rajamayang, Bardia, Sildubi and Kucheoni. Details about each village are given in Table-I.

The chief occupation of people in these 5 villages is cultivation. They mostly grow paddy and harvest two crops in a year. Some villagers also grow wheat and jute. Earlier, They used to grow mustard and sugarcane but they have given it up owing to the lack of time as these crops require intensive care and attention. Besides cultivation people also sell milk to the local agents or contractors for Rs.4.50 per kg only

(average). These contractors take the milk to Guwahati and sell it at Rs.8 per kg. The average yield of milk/cattle in these villages is only 1 kg/day.

The average yield of paddy per bigha is 15 maunds only (6 quintals) (7.5 bighas = 1 hectare). the value of rice varies from Rs.80/- to Rs.100/-per maund (In 40 kg of paddy, the actual grain comes out to be 20-25 kg and the rest constitutes straw).

Another source of income for the people is selling khair and thatch. Every villages has its own revenue land on which people carry out cultivation as well as grow khair or thatch. But the area under thatch cultivation is very little as compared to paddy cultivation and the people either have to buy thatch from

Table - I

S.No.	Villages	Mooraburi	Rajamayang	Bardia	Sildubi	Kucheoni
1.	Total population	250	3000	400	355	305
2.	No. of families	35	250	65	34	35
3.	No. of Cattle	150,X,X	100,X,200	150,X,20	350,10,50	350,25,30
4.	Grazing fields of	Sanctuary	Mostly in the sanctuary	Partially in the sanctuary usually in the revenue lands	Revenue lands but during floods they go to the sanctuary	Sanctuary
5.	Requirements of thatches (Every year)	1500 bundle/family 1 bundle = 3 kg	2000 bundle/family 1 bundle = 1.5 kg	4000 bundle/family 1 bundle = 1 kg	10,000 bundle/family 1 bundle = 200 gm	5000 bundle/famil 1 bundle = 500 gm
6.	Place of collection of thatches	Sanctuary	Sanctuary as well as revenue villages	Mostly revenue villages but also from sanctuary	Mostly from sanctuary also revenue villages	Sanctuary

outside (at a cost of Rs.1000/- to meet requirement of one family) or have to be dependent on the sanctuary for thatch collection.

Khair and thatch is required every year by the people as these areas are highly prone to floods and every year their huts are damaged, needing these materials for reconstruction.

On average 40% people depend on the sanctuary for their requirements of thatch and other grasses while 60% harvest it from the revenue lands.

Out of these 5 villages on the northern side, Mooraburi and Kucheoni are totally dependent on the sanctuary for their livestock and thatch while the rest of the villages are partially dependent on the sanctuary for these products.

The principal requirements of people from the sanctuary are Khair (*Imperata arundinaceae*), Ekra (*Erianthus revennae*), firewood, fish and free entry of their cattle for grazing.

Out of these five villages, crops of village Sildubi and Kucheoni suffer greatly from rhinos damage which may be as high as 30% according to the villagers.

On the southern side of the sanctuary there exist 3 villages namely; Kamarpur, Diprang and Thengbhunga. These villages occur adjacent to the sanctuary boundary and are comparatively larger than the 5 villages, on the northern side, discussed earlier. Details about these villages are given in Table-II.

In the southern villages there is considerable variation in the yield of crop/bigha. The chief occupation of the people is cultivation and the main crop is paddy. The total yield of paddy/bigha varies from 12-20 maunds. In Kamarpur,

people claim that poor irrigation facilities and lack of fertilizer causes low productivity and moreover, the quality of their paddy is poorer than that of the other two villages. The people of Kamarpur get only Rs.75 per maund while those of Diprang and Thengbhunga get Rs.100 per maund, though the yield of paddy per bigha in Diprang is same as that of Kamarpur.

There is a general tendency among the people that when they have low source of income from cultivation then they rear large number of cattle and as a result in Kamarpur the number of cattle exceeds human-beings. In Kamarpur the yield of milk/cattle is comparatively lower than that of the other two villages. Here a cattle produces 0.5 litres of milk/day in contrast to 1.5 litres of milk produced by cows in Diprang and Thengbhunga. The people of Kamarpur also earn money by selling khair which they take only from the sanctuary. The revenue land under the possession of Kamarpur is used mainly for paddy cultivation and very small area is used for khair cultivation which is insufficient to meet their needs. Another source of income of people in these villages is from selling milk to local contractors at the rate of Rs.5/kg.

Out of these three villages Kamarpur may be put under the category of totally dependent on the sanctuary while Diprang and Thengbhunga are partially dependent on it.

Like other villages, these 3 villages also extract firewood, khair, ekra, fish etc. from the sanctuary and also graze their cattle inside it. In these villages, about 40% of paddy crops are damaged by rhinos.

The amount of thatch, as shown in the tables reflects the size of the house a family needs as well as the status of that

Table - II

S.No.	Villages	Kamarpur	Diprang	Thengbhunga
1.	Total Population	781	1000	6000
2.	Number of families	65	150	1000
3.	Number of cattle			
	cows,	950	250	5000
	buffalo,	30	6	18
	goats	155	50	40
4.	Grazing fields of the cattle	Mostly in the sanctuary sometimes in the revenue lands	Sometimes in the sanctuary but mostly in the revenue lands	Some graze in the sanctuary and some in the revenue lands
5.	Requirements of Thatches (every year)	1000 bundles/ family 1 bundle = 1 kg	3000 bundles/ family 1 bundle = 1.5 kg	1500 bundles/ family 1 bundle = 4 kg
6.	Place of collection of Thatches	From the sanctuary as well as from their own revenue lands	From some other source but not from the sanctuary	40% from the sanctuary and the rest from outside

family. A rich farmer with a big family would require more thatch as compared to a poor farmer with almost the same size of family.

On the eastern side of the sanctuary there are 3 villages namely; Khulabhuyan, Kukari and Nakera. Data regarding the composition of these is shown in Table-III. These villages are situated just a few metres away from the sanctuary boundary. The people of these villages have been actively involved in poaching of rhinos. The inhabitants of these villages are mostly Bengali muslims who are locally known as 'Mians'.

These villages may be put under partially dependent category, but more towards the totally dependent range. In these vilages the yield of milk/cattle is more as

compared to all the villages discussed above. Likewise the yeild of paddy/bigha is quite encouraging. On an average a cattle produces about 2 kg of milk/day while the yield of paddy/bigha is about 25 maunds. These villages sell the milk at the rate of Rs.5 per kg to local contractors which is more than the earlier discussed villages. Besides paddy, people here grow jute, mustard, wheat etc. while in other villages these crops are now not in vogue.

People in these villages do not believe in selling khair and they take the khair, either from the sanctuary or their own revenue lands, for their domestic use.

These villages are again susceptible to crop damage by rhinos, and when damage takes place then the yield is 15

Table-III

S.No.	Villages	Khulabhuyan	Kukari	Nakera
1.	Total population	2,500	3,000	550
2.	Number of families	312	300	52
3.	Number of cattle			
	cows,	1,500	2,000	2,000
	buffalo,	40	X	50
	goats	200	X	30
4.	Grazing fields of cattle	Mostly in the sanctuary, also in the revenue lands	Mostly in the sanctuary, also in the revenue lands	Mostly in the sanctuary, also in the revenue lands
5.	Requirements of Thatches (every year)	5,000 bundles/ family 1 bundle = 1.5 kg	6,000 bundles/ family 1 bundle = 2.5 kg	4,000 bundles/ family 1 bundle = 2.5 kg
6.	Place of collection of Thatches	Sanctuary as well as revenue lands	Sanctuary as well as revenue lands	Sanctuary as well as revenue lands

maunds/bigha as against 25 maunds/bigha, which is a substantial loss of agricultural productivity. These villages again look forward to taking thatch (*Imperata arundinaceae*), ekra (*Erianthus revenna*), firewood, fish and grazing facilities for their livestock from the sanctuary (the grass ekra is used for making mats)

Discussion

Conservation programmes should involve both professionals as well as the local people. Without the support of the locals it is impossible to think of achieving conservation goals.

In India almost all the protected areas are under heavy use pressures, from local people and their livestock. Pabitara is no exception in this regard. The difference lies only in the size of the protected areas. As Pabitara offers only 16 sq km to a rapidly increasing popula-

tion of rhinos, the situation is more serious and complex. This may have serious repercussions on the reproductive biology of rhinos too. It is a well known fact that a rhino requires from 2 sq km to 4 sq km area for roaming which is not at all available here as the population has already risen to more than 60 individuals.

The very first point to discuss could be to enhance the area of the sanctuary, atleast, to the extent of including Rajamayang hill reserved forest and established the corridor link between the two forests. If the area is not increased then there is a possibility of genetic viability of the local rhino population getting disturbed which may have serious repercussions (Soule and Wilcox - The Conservation Biology).

The problem of rhinos moving out of the sanctuary and raiding crops is not due to

shortage of food in the sanctuary or because the population has exceeded the carrying capacity of the habitat. Previously, there were huge number of cattle grazing inside the sanctuary than at present. Under these circumstances the steady increase in the number of rhinos clearly indicates that the food has never been the limiting factor for rhinos. Shortage of space or movement cover may be contributing towards the raiding of crops and moving out of their natural habitat.

Though the rhino is a coarse feeder and prefers coarse grasses, the calves in the initial stages depend on soft food. Moreover, the calving period of rhino coincides with the sowing of paddy which attracts the mother to take their young to the paddy fields which offer softer food for the calves.

The entire area is prone to floods and every year the poor peasants have to suffer from this devastating natural calamity. As a result they require khair or thatches every year to repair their damaged huts but in their own revenue lands the production of thatch is insufficient to fulfill the demand and then they use the sanctuary for collection of thatch which leads to conflicts between the Department and the locals. If the Government helps these people by providing durable tin sheets or asbestos sheets which may last for more number of years then this problem can be solved to some extent. Moreover, every year a family has to spend about Rs.1000/- to get their huts repaired with khair. If this cost is calculated on a long term basis then it would exceed the price of durable sheets which will also not require frequent replacement.

The people of these areas are still

sowing old varieties of rice and using obsolete agricultural practices which make the yields considerably low. If they are helped by giving good varieties of seeds, fertilizer, pesticides and other facilities at the right time then they can earn more than what they have been getting now. This will increase their income. There are varieties of paddy which can be harvested twice a year and with double the yield than the ones they grow now.

It is useless to say that these people have poor quality cattle and that they should be exchanged with the Jerseys or other high milk yielding varieties. These cattle have evolved to survive in these peculiar conditions. If new techniques like 'embryo transfer' are applied to these cattle also, we can increase the production of milk. Subsequently, people may be encouraged to reduce the number of cattle, to the extent, that they get the same amount of milk or more than what they were getting from large number of cattle. This will considerably control the grazing problem of cattle inside the sanctuary.

The villagers of this area sell the milk to local contractors or agents at a very low price and these contractors make big money out of the same milk in Guwahati. If a milk cooperative society is formed among the villagers and a milk van is provided to them, the people should themselves be able to sell the milk and earn more money. There are numerous unemployed youth in these villages, who do not take part in agriculture and they can take up this duty very well. Every village should have a small centre where people can bring their milk and store it, subsequently the van should pickup the milk from these centres and take it to Guwahati where it

can be sold at higher prices than what the people get now.

As regard the fish requirement of the people they are not allowed to collect fish inside the sanctuary as this is against the existing rules. If the people are advised to create small ponds in their own revenue lands and protect them, then the sanctuary may provide them fish fry or seedlings for fish farming. This will result in a regular supply of fish throughout the year. This aspect requires a in-depth feasibility study before consideration.

Veterinary Aspects of Livestock

Since this sanctuary has been selected for the introduction programme of sangai, it has become necessary to evaluate the disease aspects of livestock which have free access to the sanctuary and to the enclosure meant for sangai. After interviewing villagers it was evident that the domestic livestock frequently suffer from various diseases which take a heavy toll every year.

There are 3 veterinary subcentres in the area covering the entire population of livestock surrounding the sanctuary and other areas. Rajamayang veterinary subcentre looks into the well being of cattle of the villages located on the northern sides of sanctuary boundary. Boha veterinary subcentre covers the population of cattle of southern side villages, and Jagaon veterinary subcentre treats the cattle on the eastern side of the sanctuary boundary. A visit to Rajamayang veterinary subcentre revealed that Govt. provides enough medicines to look after the well being of cattle in this area.

Cattle mostly acquire the diseases in monsoon and during floods. The peak months are August to December. So far

there has been no epidemic or large scale mortality caused by any disease.

These cattle are periodically inoculated for Tuberculosis, Rinderpest, Haemorrhagic septicemia, Black Quarter, Anthrax and Foot and Mouth Disease (Crosspit only). Inoculation is not a regular practice and depends on the supply of drugs for vaccination. The commonest disease in these cattle is *Fasciolosis*, caused by liver fluke (*Fasciola gigantica* and *Amphistome* Sp.), and foot and mouth disease. Haemorrhagic septicemia mostly occurs in males after prolonged fights with other bulls.

Since the population of captive bred sangai is highly inbred and the animals for release will be selected from this population, it should be ensured that these should not come in contact with the livestock as they would be highly prone to any disease carried by cattle. Moreover, it is suggested that the animals to be released should be thoroughly screened for T.B. and inoculated against all the diseases carried by the livestock. Regular vaccination of cattle should also be practiced and especially the cattle which graze very near to the enclosure are to be given extra attention. A periodic examination of pellets of cattle as well as rhino dung could disclose the extent of parasitic load. It is also suggested that proper veterinary care should also be taken up on a regular basis of the introduced sangai.

This aspect of the report is in no way complete as the other two veterinary centres could not be visited and data regarding the diseases of cattle under their control was not available. The most important aspect would be the regular analysis of faeces of cattle in order to be abreast with the disease condition.