

STATUS REPORT ON KAZIRANGA NATIONAL PARK

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FOREWORD

The scope of wildlife conservation and management is very vast and yet to be explored fully. Though much has been achieved in the preservation of the wildlife heritage in Kaziranga over the decades, of which the saving of Indian Rhinoceros from the very brink of extinction remains a striking example of whole-hearted dedication, there is no scope for complacency.

The first Status Report on Kaziranga National Park was compiled by Sri S. K. Sen, IFS in 1993 on the occasion of PHVA Workshop on Indian/Nepali Rhino at Jaldapara and subsequently updated in 1995. The present Status Report, 1998 is basically a revised and updated version of the earlier reports and endeavors to reflect the state of affairs prevailing in Kaziranga National Park vis-a-vis conservation of the flagship species of Rhinoceros, in spite of sheer magnitude of difficulties and problems confronted by the staff in performance of their regular patrolling activities.

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CONSERVATION STORY

The entire area from near Bokakhat in the East up to Jakhalabandha on the West was covered with continuous belt of forests extending from the Brahmaputra River up to the hills and the integrated habitat of hills and plains was the ideal habitat for a rich and varied population of wildlife during the major part of the nineteenth century. But with the advent of the present century, ruthless destruction of forests was carried out in the higher terraces for establishing tea gardens and the low lying stretches were opened out for paddy cultivation and incidental habitations. The wild animals were gradually forced out and restricted to the flood plains which now forms the Kaziranga National Park.

The extinction and decline of the Great Indian One-horned Rhinoceros right from the vast stretches of the Indo-Gangetic plains to the Brahmaputra plains was due to ruthless destruction of habitat, persecution in the name of sports and superstition about the magical properties of its horn. The decline in the population of the species was very rapid and it was believed that not more than a dozen surviving Rhinos were left in the Kaziranga area at the beginning of the present century. Realization dawned on the Government of Assam that concrete protective measures were called for and an area of 22,617 Hectares (approx.) was constituted into Kaziranga Reserved Forest in January, 1908 and that was the D-Day for conservation of Great Indian One-horned Rhinoceros. From that day till now, the population is progressively increasing and census carried out in April 1993, in the presence of N.G.Os, and media persons, indicated that the population of Rhinoceros in the National Park was 1164 ±136.

SITUATION

Kaziranga National Park lies between 26°30' and 26°45' N latitudes and 93°40' E to 93°50' E longitude and spreads over in parts of civil districts of Golaghat and Nagaon in the State of Assam, having the River Brahmaputra as a boundary on the North, artificial lines and part of the river course on the East, Moridiflo river, foothills of Karbi Anglong District, Deopani Nallah, National Highway 37 on the South and artificial lines and part of the river course on the West.

EXTENT OF AREA

The reservation process started during 1908 and exclusion and addition to the Kaziranga Reserved Forests continued up to 1967 and details of exclusion and additions were:

Reservation vide Notification	No. 37 F, Dt. 3.1.1908	22,617 Ha
Exclusion vide Notification	No.2069F, Dt.18.4.1911	(-) 577 Ha.
		22,040 Ha.
Addition vide Notification	No. A/95, Dt. 4.6.1911	356 Ha.
-do- -do-	No. 295 R, Dt. 28.1.1913	5,403 Ha.
-do- -do-	No. 3560 R, Dt. 26.7.1917	15,012 Ha.
-do- -do-	No. FOR/WL/512/66/17 Dt. 7.4.1967	60 Ha.
	Total	42,871 Ha (i.e. 428.71 km ²)

Annual flooding and erosion along the northern boundary of the Park and accretion of chapories on the river bed is an annual phenomenon from the inception of the Park. On the north-eastern side, large

areas have been lost due to erosion (1997). At present, the Park has an area of 407.90 km². which is constantly changing due to erosion caused by the Brahmaputra River. The stable chapories (river island) so formed due to erosion of the North Bank are the extended habitat of the wildlife, mostly rhinos and wild buffaloes.

LEGAL STATUS

Immediately after constitution of the area into Reserved Forest in 1908, hunting/shooting/trapping and fishing inside the Reserved Forests were banned. In November 1916, the area was declared as a "Game Sanctuary" and subsequently the nomenclature was changed to "Wildlife Sanctuary" with effect from 1950. After enactment of the State Act on National Park (Assam National Park Act of 1968), Kaziranga Wildlife Sanctuary was proposed for upgrading into a National Park vide Notification No. FOR/WL/722/69/45, Dt. 23.9.69 and it was declared as National Park vide Notification No. FOR/WL/722/68, Dt. 11.2.74. with effect from 1.1.74. With the subsequent adoption of the Wildlife (Protection) Act of 1972 by the Assam State, Kaziranga attained the status of a National Park under the relevant provisions of the said Act.

EXTENSION OF AREAS

The habitat of Kaziranga National Park extended up to the foothills of Karbi Anglong district in the past. But with the establishment of tea gardens, human habitations and agricultural activities on the periphery of the southern boundary of the Park, it has now become difficult for the wild animals to move through certain corridors to the hills during high flood and the animals become easy prey to the poachers. On the other hand, due to constant erosion of the northern boundary and accretion of chapories, the animals move to chapories as these areas are an extended habitat of wildlife. Moreover, there are number of villages on the edge of the southern boundary of the Park which occasionally harbours poachers. At the same time, the annual increment percent of the animal population mainly rhinos is gradually declining which indicates urgent necessity for extension of habitat for rhinos in the National Park. With these backgrounds, the following proposals for extension of areas of Kaziranga National Park were initiated but the proposals were not finalised due to various reasons, such as legal, administrative and financial reasons.

1. 1 st addition (Burapahar)	43.79 km ²
Rs. 38,83,318/- has already been deposited with the Deputy Commissioner, Nagaon as acquisition cost. Final Notification issued Vide FRS/253/90/198, dt. 28.5.97.	
2. 2 nd addition (Sildubi)	6.47 km ²
payment of Rs. 12,13,611 has already been made to the Deputy Commissioner, Golaghat. Acquisition delayed due to High Court case.	
3. 3 rd addition (Panbari)	0.69 km ²
Payment of Rs. 13,27,746 made to the Deputy Commissioner, Golaghat.	
4. 4 th addition Kanchanjuri	0.89 km ²
Final notification has been published but subjudice in the High Court due to a case filed by a tea estate.	

5. 5 th addition (Haldibari)	1.15 km ²
Payment of Rs.13,91,357 has already been made as compensation for land to the Deputy Commissioner, Golaghat.	
6. 6 th addition	376.50 km ²
(Part of Brahmaputra River between Dhansirimukh & Kolia Bhomora Bridge including the chapories and Panpur R.F.). Delayed due to High Court case. Area handed over to Park authorities during December, 1997.	
Total	429.49 km²
	33.00 km ²

An area of 33 sq.km of Karbi Anglong District for which preliminary notification vide No. 16 of 30.7.75 issued and payment of Rs. 4,71,000 had been made in 1979 to the Karbi Anglong District Council Authorities. The KAAC has refunded the amount to Kaziranga National Park during 1996 and has initiated move to declare the area as a Wildlife Sanctuary.

VEGETATION

Three broad categories of vegetation can readily be recognized in the Park.

- a) Aquatic plants in or near the water bodies.
- b) Eastern wet alluvial savanna or grass land, and
- c) Woodland or tree forests.

The water bodies occupy about 6% of the total area of the Park. The predominant species amongst the aquatic vegetation are the Water hyacinth (*Eichhornia crassipes*), floating and straggling grasses like Dal (*Andropogon* spp.), Erali (*Andropogon* spp.) and other species like Kalmou (*Ipomea reptans*), Helonchi (*Enhydra fluctuans*), Borpuni (*Pistia stratiotes*), Harupuni (*Lomma panicostals*), Water Lilies (*Nymphaea* spp.), Lotus (*Nelumba* spp.), etc. make up the aquatic vegetation.

Savanna formation or grass lands cover accretions along with Jhau (*Tamarix dioica*), grasses like *Saccharum spontaneum*, *Imperata cylindrica*, *Erianthus ravennae*, *Narenga porphyrocome*, *Neyrandia reyaundiana*, *Cyminpopogon pendulus* etc. come up in the established extensive grass lands. The most common and widely distributed species of grass in the Park are Ekora (*Erianthus ravennae*). Other associated grasses are Barata kher (*Saccharum elephantinus*) and Ulu kher (*Imperata cylindrica*). Moist low lying locations show presence of species like Khagori (*Phragmites karka*) and Nal (*Arundo donax*). *Microstegium ciliatum* occur as ground cover under the tree canopies in comparatively higher ground. Around the edges of the beds and in marshy areas, short succulent grasses like *Cynodondactylon*, *Chrysopogon aciculatus*, *Andropogon* spp., *Panisetum* spp., *Eragrostis* spp., occur and all these grasses attract the herbivores.

Woodlands are represented by a variety of subtype in different stages of succession and edaphic variations, like riparian fringing forests, different stages of moist mixed deciduous forests, seasonal swamp forests and moist tropical semi-evergreen formation. Cane brakes are a definite edaphic variation. The description and composition of each sub-type will be rather voluminous and hence not attempted here. Woodlands occupy about 28% of the Park.

ECOLOGICAL STATUS

Two important external factors - one man made and the other natural - have influenced the flora and fauna of the Kaziranga National Park since its inception, or even earlier. Large parts of the savanna or grasslands are subjected to annual controlled burning during the winter months (December to February). Such burnings help in arresting further progress of vegetational succession towards woodlands in higher patches of grasslands and retaining its present form as an ideal habitat for terrestrial fauna particularly larger mammals. Sufficient care is taken for preventing fires from creeping into areas with nesting colonies of birds. The low-lying areas, moist pockets, semi-evergreen formations etc. are naturally immune from the fires. Vegetational regrowth being phenomenally fast in the prevailing conditions, no serious deterioration of the habitat occurs and the status-quo of the grassland is maintained. The ash, burnt up stems, roots and emerging shoots attract the herbivores and immediately after burning large congregations of animals are observed in such burnt patches. Since burning is most effective in areas containing tall grasses, which are usually shunned by the animals, the effect of burning is better dispersal of the animals and relieving of the pressure in heavily grazed short-grass locations.

Annual submergence of large areas of the Park, due to high flood level of the Brahmaputra River, coupled with spells of heavy showers in the southern Karbi Anglong Hills, is a regular feature. The floods play an important role in maintaining ecological status of the grassland formations and flush out the growth of water hyacinth which acts as an inhibitor to the water birds from the water ways.

Moreover, the various waterways and *beels* of the Park serve the purpose of breeding grounds and nursery for large fish populations and the annual floods help in replenishing the stock of the fish in the Brahmaputra River.

The submergence is not uniform throughout the Park, the earliest to be flooded being the southern and western parts of the park and the last to be affected being the central part. In the earlier period, there were escape routes for the animals in the shape of inter-connecting corridors of vegetation leading to the southern high hills but with more and more areas being opened up and subjected to habitation and cultivation in the areas adjacent to the southern parts of the Park both in the plains and hills, such escape routes have vanished. During the annual floods, some mortality amongst the animal population, particularly the deer, have been noticed in recent years and the weak and young ones are the most adversely affected. Since there has not been any decline in total population, the loss due to floods probably indirectly helps in maintaining a healthy stock of population. All the herbivores suffer due to paucity of food during and immediately after the floods. There appear to be some changes in the behaviour of the animals, particularly breeding patterns, due to the influence of the floods.

WILDLIFE

The important animals of the Park are Rhinoceros (*Rhinoceros unicornis*), Wild Buffalo (*Bubalus bubalus*), Swamp Deer (*Cervus duvaucelli*), Hog Deer (*Axis porcinus*) and Elephant (*Elephas maximus*). Besides these, Sambar (*Cervus unicolor*), Wild Boar (*Sus scrofa*), Tiger (*Panthera tigris*) and Leopard (*Panthera pardus*) are other animals found in the Park. Host of other animals and birds such as Bengal Florican are noticed in the Park. A check list of animals and birds [Not included here - editors] has been annexed as appendices.

HABITAT EVALUATION

Proper habitat evaluation for all types of animals available in the Park had not been done till today. However, habits and habitat needs of various animals in the Park was studied (Lahon and Sonowal, 1973) and on the basis of this study, evaluation has been done for five animals, viz. Rhinoceros, Wild Buffalo, Swamp Deer, Hog Deer and Elephants (Parihar. et al, 1986). The area of the Park has been divided into one minute by one minute grids for the purpose of habitat evaluation and the total land

area of the Park covers three broad types as described earlier such as woodland, grassland and water bodies. The marshy areas around the *beels* are under short grasses. The larger part of the Park is under cover of tall grasses and woodlands are mostly confined to the high grounds along river and stream banks.

HABITAT SUITABILITY

The whole park area has been divided into 138 grids of one minute by one minute and the overall evaluation of the area indicates that out of 138 grids, 37 have high suitability for rhino and wild buffalo, another 94 grids are found to have moderate suitability and only 7 grids have low suitability.

The assessment of the area for Swamp Deer and Hog Deer also indicates good suitability for the animals as 44 units are found to be highly suitable and 78 as moderate suitable. Only 16 grids have low suitability. The best suitability of the area is found to be for elephants as 81 grids fall under high suitable category and 57 grids have moderate suitability.

The Park has an overall good suitability for all the five animals studied so far, i.e. Rhinos, Wild Buffalo, Swamp Deer, Hog Deer and Elephants. However, the tall grasses occupy a large portion of the habitat which has low fodder value due to its height. Annual burning of these grasses generally add to its food value.

The Park has the largest area of high suitability for elephants. According to the last Elephant census conducted in 1997 the Park has 945 elephants but the number fluctuate from time to time. The management of the Park is Rhinoceros-oriented and as such extension of rhino habitat areas is essential with the growth of the population. Therefore, habitat manipulation through constant controlled burning and de-siltation of water bodies and removal of water hyacinth are essential factors which will make room for short grasses and suitable fodder for rhinos (Parihar, et,al, 1986).

ANIMAL CENSUS

The first scientific animal census in Kaziranga National Park was carried out during 1966 and thereafter the process was repeated every sixth year. The census operation could not be carried out during 1990 due to poor visibility and the same was conducted during 1991. Though during 1991, also the visibility was not conducive for proper count but the population of rhino was found to the extent of 1129. Even though there was serious apprehension amongst the enumerators regarding undercounting, there had been lot of adverse opinion regarding the population of rhinos and census methodology from the conservationist. The matter was raised in the Assurance Committee of the parliament and assurance was given to the Committee that a fresh census will be carried out in presence of the outsider in due course. In pursuance to the commitment given to the Assurance Committee, a special census for the rhinos was carried out during April/1993. But due to intermittent rains during the last part of 1992, and the beginning of 1993, the tall grasses of the park could not be burnt properly and the ideal condition of direct count could not be achieved. There was deep concern and apprehension of under counting remained. The census was carried out in presence of media persons and Non-Governmental Organizations and everybody opined of under-counting of rhinos.

The census in respect of the elephant and the tiger were also carried out in Kaziranga National Park during 1993 and 1997. The census for the other animals were not carried out independently but whatever the numbers of other animals were sighted during census of rhino in Kaziranga National Park were recorded.

Species	1966	1972	1978	1984	1991	1993
1. Rhino	366	658	939	1080	1129(1069)	1164 ±136
2. Elephant	349	422	773	523	515(498)	1094
3. Wild Buffalo	471	555	610	677	1090(1008)	1034
4. Gaur	1	18	23	30	5	-
5. Swamp Deer	213	516	697	756	635(559)	427
6. Sambar	120	105	215	358	55(51)	34
7. Hog Deer	1311	4551	6855	987	2911(2332)	2048
8. Wild Boar	155	522	733	1645	555(447)	140
9. Tiger	20	30	40	52	50	72
10. Bear	-	-	-	-	-	2
11. Capped langur	-	-	-	-	-	21
12. Hoolock Gibbon	-	-	-	-	-	8

N.B.: 1. Figure () means animals sighted during census within the Park area and the balance within the extended habitat.

2. During 1993, the standard deviation calculated was 12%.

Besides, population estimation exercise for particular species were undertaken in 1993, 1997 and 1998 and the results obtained were as follows:

	1993	1997	1998
Tiger	72	80	-
Elephant	1094	945	-
Swamp Deer	-	-	526

MORTALITY

The total number of death of rhinos both poaching and natural death from 1980 onwards is as detailed below:

Year	Poaching			Total poaching	Natural death	Total mortality
	Pit	Gun	Electrocution			
1980	11	-	-	11	58	69
1981	22	2	-	24	39	63
1982	19	6	-	25	48	73
1983	31	6	-	37	46	83
1984	14	14	-	28	50	78
1985	23	21	-	44	37	81
1986	18	27	-	45	38	83
1987	6	17	-	23	41	64
1988	7	17	-	24	105	129
1989	12	29	3	44	54	98
1990	4	29	2	35	57	92
1991	4	18	1	23	79	102

Year	Poaching			Total poaching	Natural death	Total mortality
	Pit	Gun	Electrocution			
1992	2	44	2	48	67	115
1993	2	38	-	40	58	98
1994	3	11	-	14	37	51
1995	6	21	-	27	53	80
1996	1	25	-	26	52	78
1997	6	6	-	12	48	60
1998	4	4	-	8	87	95

TREND OF POACHING

The trend of poaching has taken a dramatic change from pit poaching to shooting. The use of carbines and silencers by the poachers has increased the problem for the untrained staff. The reasons for increased poaching are manifold. The prime reason is the high value of the horn in the international market coupled with socio-economic conditions of the villagers (who act as field men) residing around the Kaziranga National Park. Moreover, easy availability and free movement of sophisticated arms, coupled with militant activities in the North-east has aggravated the problem of poaching. The vulnerability to poaching due to the situation of the Park with no natural barrier and having villages all along the southern boundary and the Brahmaputra River on the North is a constant cause of concern for the Park authorities. The fishery *mahals* and *khuties* in the *chapories* (Accretions) harbours poachers from the North. Having no natural barrier and the tall grasses, makes it difficult to locate the presence of poachers inside the Park once the poachers sneak into the Park. However, with the handing over of the Sixth Addition areas along the northern boundary to the Park authorities, the leases for the fishery *mahals* have been canceled recently but the lessees approached the High Court for restoration of fishing rights.

ANTI POACHING STRATEGY

The anti-poaching strategy now being adopted by maintaining 130 camps situated all over the Park areas is not at all a foolproof method. Moreover, constant patrolling on the southern boundary and the placing of two stationary vessels on the Brahmaputra River and patrolling on river routes are the main anti-poaching activities of the Park. The strategy of having a number of anti-poaching camps inside the Park and patrolling thereof had yielded very good results initially and any counter firing from the camp had proved quite productive as the poachers either used to leave the Park without poaching or without removal of horns after killing of rhinos. But now-a-days, the poachers are using sophisticated arms and taking full advantage of staff, who are not trained for combat fighting. Therefore, the strategy needs changes but due to lack of infrastructures, it is not readily possible to change the present strategy and to move for complete sealing of Northern and Southern Boundaries wherefrom poachers make entry into the Park. Direct encounters between the poachers and the staff of the Park are common but this definitely involves risks. As a result of number of encounters and the raids inside the Park, the following number of poachers were killed, arrested, horn recovered and different kinds of arms and ammunition were recovered from 1985 to 1998 :

Year	No. of poachers		Total arms recovered	Total ammunition recovered	Horn recovered
	Killed	Arrested			
1985	2	10	3	11	11
1986	2	43	5	-	9
1987	3	29	3	-	2
1988	3	13	1	7	1
1989	2	18	1	-	1
1990	3	49	11	104	6
1991	4	51	4	7	9
1992	2	58	9	96	9
1993	8	67	19	43	4
1994	12	46	9	60	1
1995	4	29	4	25	2
1996	9	19	7	71	2
1997	6	18	8	57	2
1998	3	2	2	435	1

Comparative statement of poaching of rhinos month-wise for the years 1985 to 1998 till date is shown below:

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
1985	5	2	7	2	5	2	1	3	1	8	2	6	44
1986	6	2	5	5	3	1	4	-	3	6	6	4	45
1987	1	3	1	1	-	3	2	-	1	5	4	2	23
1988	3	-	3	-	2	1	3	-	1	2	1	8	24
1989	1	3	3	5	3	5	1	2	2	4	6	9	44
1990	11	4	3	3	2	-	1	1	1	2	5	2	35
1991	2	3	2	4	2	1	1	2	-	1	1	4	23
1992	4	3	7	5	3	3	3	3	1	5	4	7	48
1993	5	11	3	7	5	1	-	-	1	4	3	-	40
1994	1	-	-	-	-	3	-	2	-	4	-	4	14
1995	2	1	4	1	2	3	2	4	1	1	1	5	27
1996	1	2	4	-	3	5	1	3	2	1	4	-	26
1997	-	-	1	6	1	3	-	-	-	-	-	1	12
1998	1	-	-	-	-	-	1	1	-	3	-	2	08

It has been observed and experienced that the intensity of poaching is on the rise mainly due to escalating high value of the horn in clandestine market consequent to ban on its trade. The last sale of rhino horn in Assam took place during 1978 and during 1980 tenders were called but the sale was stopped. This was the beginning of increased intensity of poaching in Kaziranga National Park as well as other rhino bearing areas. The fact can be established from the figures given below. However, during the past two years number of poaching cases decreased considerably, probably due to acquisition of new rifles and augmentation of wireless network for protection of the Park.

Year	No. of Rhinos killed by poachers	Year	No. of Rhinos killed by poachers
1974	3	1986	45
1975	5	1987	23
1976	1	1988	24
1977	-	1989	44
1978	3	1990	35
1979	2	1991	23
1980	11	1992	48
1981	24	1993	40
1982	25	1994	14
1983	37	1995	27
1984	28	1996	26
1985	44	1997	12
		1998	08

POPULATION STRUCTURE OF RHINOS IN KAZIRANGA NATIONAL PARK

The first scientific census operation started from 1966 in Kaziranga National Park and carried out every 6th year. Classification of rhino's age counted during each Census are given below:

Year	Adult		Young	Non-sexed	Total
	Male	Female			
1966	67	83	44	172	366
1972	203	188	148	119	658
1978	331	322	243	43	939
1984	316	329	301	134	1080
1991	338	357	190	184(+60)	1069(+60)
1993	387	379	176	222	1164

ANNUAL INCREMENT IN RHINO POPULATION IN KAZIRANGA

Year	Population	Poaching cases		Death		Total death	Increment rate
		No	%	No	%		
1966	366	5	1.37	11	3.00	16	
1967	414	12	2.92	27	6.52	39	13.11%
1968	462	10	2.16	23	4.98	33	11.60%
1969	510	8	1.57	15	2.94	23	10.39%
1970	558	2	0.36	26	4.66	28	9.41%
1971	608	8	1.32	20	3.29	28	8.96%
1972	658	-	-	20	3.04	20	8.22%
1973	704	3	0.43	59	8.38	62	7.00%
1974	752	3	0.39	20	2.66	23	6.81%
1975	798	5	0.63	34	4.26	39	6.12%
1976	846	2	0.24	20	2.36	22	6.02%
1977	892	-	-	37	4.15	37	5.44%
1978	939	5	0.53	25	2.66	30	5.27%
1979	962	2	0.20	19	1.97	21	2.44%
1980	986	11	1.11	58	5.88	69	2.49%
1981	1009	24	2.37	39	3.86	63	2.33%
1982	1033	26	2.51	47	4.54	73	2.37%
1983	1056	37	3.50	46	4.35	83	2.22%
1984	1080	28	2.59	50	4.62	78	2.27%
1985	1087	44	4.04	37	3.40	81	0.64%
1986	1094	45	4.11	38	3.47	83	0.64%
1987	1101	23	2.08	41	3.72	64	0.64%
1988	1108	24	2.16	105	9.47	129	0.63%
1989	1115	43	3.85	55	4.93	98	0.61%
1990	1122	35	3.11	57	5.08	92	0.63%
1991	1129	23	2.03	79	6.99	102	0.62%
1992	1146	48	4.18	67	5.84	115	1.50%
1993	1164	40	3.43	58	4.98	98	1.57%
1994	-	14	-	37	-	51	-
1995	-	27	-	53	-	80	-
1996	-	26	-	52	-	78	-
1997	-	12	-	48	-	60	-
1998	-	08	-	87	-	95	-

The age/sex classification of Rhinos against poaching and natural death are shown in table "A" and "B" respectively.

AGE/SEX CLASSIFICATION OF RHINOS AGAINST POACHING - TABLE A

Year	Adult			Sub-adult			Calf			? Sex & age	Total
	M	F	?	M	F	?	M	F	?		
1980	3	1	5	-	-	-	-	-	-	2	11
1981	2	-	10	-	-	6	-	-	1	5	24
1982	7	4	3	3	2	3	-	1	1	2	26
1983	5	5	7	6	5	4	-	-	5	-	37
1984	13	8	2	-	-	5	-	1	1	-	30
1985	22	10	4	1	5	-	-	1	1	-	44
1986	17	11	5	3	5	1	2	1	-	-	45
1987	8	11	2	-	-	-	1	-	1	-	23
1988	6	10	5	-	2	-	-	-	1	-	24
1989	18	20	1	1	1	1	-	1	1	-	44
1990	13	11	-	3	5	1	-	1	1	-	35
1991	8	8	2	-	3	1	-	1	-	-	23
1992	19	17	3	4	3	1	-	1	-	1	48
1993	16	16	3	-	-	1	1	2	-	1	40
1994	3	8	1	-	-	1	1	-	-	-	14
1995	15	7	4	1	-	-	-	-	-	-	27
1996	12	10	2	-	-	1	1	-	-	-	26
1997	6	4	2	-	-	-	-	-	-	-	12
1998	3	2	2	-	-	-	-	-	1	-	8

AGE/SEX CLASSIFICATION OF RHINOS AGAINST NATURAL DEATH - TABLE B

Year	Adult			Sub-adult			Calf			? Sex & age	Total
	M	F	?	M	F	?	M	F	?		
1980	24	14	2	-	-	-	5	5	8	-	58
1981	10	8	2	-	-	-	6	3	7	3	39
1982	-	-	30	-	-	-	1	1	14	3	48
1983	13	8	6	-	-	1	6	3	3	6	46
1984	19	13	1	1	-	-	5	7	2	2	50
1985	11	5	7	-	-	-	4	2	7	1	37
1986	13	8	-	-	-	-	6	3	5	3	38
1987	14	11	-	-	-	-	8	1	3	4	41
1988	28	24	7	1	2	-	16	16	9	2	105
1989	18	14	2	1	1	-	8	8	2	1	55
1990	19	10	3	1	-	-	7	6	2	9	57
1991	28	20	3	1	1	-	11	10	5	-	79
1992	21	12	8	2	2	-	7	5	8	1	66
1993	14	16	3	-	1	1	5	8	9	1	58
1994	6	10	3	1	-	1	5	8	3	-	37
1995	16	14	2	-	2	-	-	6	6	5	53
1996	20	14	1	1	1	-	5	2	8	-	52
1997	15	16	2	-	-	-	8	5	2	-	48
1998	28	19	3	2	4	1	7	13	10	-	87

INFRASTRUCTURE AVAILABLE FOR ANTI- POACHING ACTIVITIES

The total area of the Park has been divided into four segments and each segment is under direct control of a Forest Ranger. There are number of camps in each segment in vulnerable places (mostly near *beels*) and the total number of such camps at present is 135 (this number is not fixed). In each camp at least 3(three) number of staff are posted, including daily wage workers. The total strength of staff of different categories under different schemes engaged for anti-poaching works as on March 1998 are as follows:

The Home Guards engaged for the protection of the Park had to be discharged for acute scarcity of funds during 1997. The total number of daily wage workers deployed for the protection of the Park is 165.

S1. No.	Category of post	Sanctioned Strength	Man in position	Actual Requirement
1.	D. C. F.	1	1	1
2.	F.V.O.	1	1	1
3.	W. L. R. O.	1	1	1
4.	A. C. F.	2	2	2
5.	Forest Ranger	7	7	10
6.	Dy. Ranger	9	3	12
7.	Forester - 1	43	36	60
8.	Forester - 11	19	3	20
9.	Head Gamewatcher	5	4	6
10.	Forest Guard	204	180	300
11.	Game Watcher	56	42	100
12.	Boat Man	57	57	100
13.	Driver	16	11	20
14.	M.L. Driver	5	3	6
15.	Mahut	34	27	45
16.	Grass Cutter	34	32	45
17.	Chowkider/Gateman	11	7	11
18.	Office Peon/Duk Runner	7	5	7
19.	Mali	3	2	5
20.	Khansarna	2	1	3
21.	Electrician	1	1	1
22.	Radio Technician	1	1	1
23.	Sweeper	3	1	9
24.	Head Asstt.	1	1	1
25.	U.D. Asstt.	3	3	5
26.	L.D.A./R.A.	7	7	10
27.	Statistical Asstt.	1	1	1
28.	Record Keeper	1	1	1
29.	Paniwalla	1	1	5
30.	Head Mahut	1	1	1
31.	R.C.I.A.	1	1	1
32.	Vety. Asstt.	1	1	4
33.	Handyman	1	1	4
34.	Accountant	1	1	1
	TOTAL	541	445	800

WIRELESS

The position of wireless network and sets available with different Ranges and Headquarters are as follows.

Nature of Sets	Stock in hand at the end of Dec/98			Remarks
	Serviceable	Un-serviceable	Total	
i) J.B.S. Fixed station	9	-	9	
ii) LTS Mobile station	9	-	9	
iii) SXA Portophone	87	18	105	
iv) SBS Repeater	2	-	2	Remain unused
v) VHF Transreceiver	8	-	8	

ARMS AND AMMUNITION

The position of arms and ammunition provided to the staff for anti-poaching activities are as follows.

Nature of Arms	Stock in hand at the end of Dec/98				Remarks
	Serviceable	Un-serviceable	Seized	Total	
i) .315 Rifles	289	14	3	306	
ii) American make Rifle	10	-	-	10	Remained unused due to non availability of standard bullet.
iii) .423 Rifle	-	1	-	1	
iv) .470 DBBL Rifle	1	-	-	1	
v) DBBL Gun	18	8	1	27	
vi) SBBL Gun	32	1	-	33	
vii) Revolver	5	-	-	5	

Ammunition:	Present stock (1.1.99)
i) Bullets of .315 Rifle	8050 Nos.(Divn. H.Q.)
ii) Cartridges of .12 bore gun	1570 (-do-)

INTELLIGENCE NETWORK

There is no particular intelligence network available with the Park authorities. However, a few local people are being engaged for collection of information regarding movement of poachers, illegal trade on wildlife articles, etc. On the basis of information furnished by the informers, good results had been achieved during raids outside the Park. Poachers were also killed during encounters inside the Park, arms and ammunition recovered. On successful raids and encounters, the informers were rewarded.

The information so provided by the informers if found productive after raids and encounters, the informers were

Year	Expenditure
1990-91	Rs. 4,000.00
1991-92	Rs. 7,250.00
1992-93	Rs. 24,617.00
1993-94	Rs. 65,965.00
1994-95	Rs. 37,100.00
1995-96	Rs. 3,000.00
1996-97	-
1997-98	Rs. 75,000.00 (N.G.O)

paid cash as incentive. The expenditures incurred for payment of incentives from 1990-91 to 1997-98 are shown above.

On the basis of such information, the raids were conducted outside the Park and positive results obtained. The result of the same positive raids and encounters are mentioned below:

RAID AND ENCOUNTERS

- 02/02/91 - A rhino was shot by poachers in Dafiong area. Immediately encountered by the patrolling staff. Horn recovered.
- 17/02/91 - A rhino was shot by poachers at Bherbheri area. In the encounter, horn could be recovered and the poachers fled away.
- 05/03/91 - At Borakata, encounter took place with poachers who had shot a rhino. The horn was recovered.
- 10/04/91 - Near Bandarkhal, encounter took place with poachers, who had fled away leaving the rhino horn. Subsequently raid was conducted and 4(four) persons were arrested.
- 23/04/91 - Poachers shot at rhino at Sahabduba and encounter took place. Consequently 2(two) of the Naga poachers got killed whose bodies were recovered on 24 and 25 April 1991.
- 24/04/91 - Two poachers were apprehended in raids conducted at Da-gaon.
- 03/05/91 - An encounter took place with poachers. Consequently a rhino poacher was killed. One rifle and ammunition were recovered.
- 20/05/91 - Raid was conducted at Bohikhowa Village and apprehended poachers.
- 31/5.91 - Encounter took place at Haldibarl with poacher. No casualties reported.
- 17/08/91 - Two rounds of gun shot were heard in Maloni area. The patrolling staff immediately encountered. No rhino could be killed by poachers and fled away.
- 28/08/91 - While patrolling encounter with armed poachers at Kanchanjuri took place. Consequently one poacher succumbed to injuries and another fled away with heavy injury. One DBBL .470 Rifle and one DBBL Gun with ammunitions were recovered. No casualty to staff and rhinos.
- 28/10/91 - Patrolling staff encountered miscreants and apprehended 3(three) persons and others fled away under Naste Camp. Apprehended persons handed over to the Police. A rhino carcass without horn was detected subsequently.
- 14/01/92 - In encounter two poachers were killed by staff of Difaloomukh Beat near Sesonimukh under Western Range. Ammunition recovered.
- 26/06/92 - One poacher Zhakugha Zhemo(Naga) was killed near Tiohtoli Beel under Kaziranga Range by the Range Head Quarter Staff.
- 20/07/92 - Shri Bakul Konwar, Ex-Home Guard, who was entangled with a poaching case was apprehended at his home at Amguri, Sibsagar and on way to Kaziranga to show the place of occurrence of rhino poaching, tried to flee by snatching a Rifle and fired at the Forest Staff. The staff also responded and Konwar was injured in the counter fire and subsequently succumbed.
- 20/08/92 - Two poachers were killed by the staff of Gerakati and Murphulani Camp under Western Range near Gerakati Kathoni. Arms and ammunitions were recovered.
- 26/08/92 - Encounter took place in between the staff of Baghmari Camp under Western Range at the West of Rowmari Nalah. No casualty to staff or rhino occurred. One poacher sustained bullet injuries and hospitalized. Police investigation is going on.
- 14/09/92 - Encounter took place with armed poachers by the staff of Murkhowa Camp under Western Range. One rhino horn could be recovered.
- 01/10/92 - The Staff of Range Head Quarter, Agoratoli apprehended three rhino poachers at Mohkhuti Beel near Kailash Dubi. The accused were handed over to the Police of Bokakhat.
- 23/02/93 - A raid was conducted at Barbheta Gaon near Bokakhat and 2(two) persons, one of them Naga, were arrested with recovery of .303 rifle and 14 rounds of live bullets.
- 26/03/93 - An encounter with patrolling staff took place at Tinibeel Tinali under Eastern Range and 1 (one) notorious poacher was killed. In the raid operation 3(three) persons were arrested with recovery of 25 rounds of live bullets of .303 rifle and Rs. 13,000/- in cash.
- 08/05/93 - An encounter with patrolling staff took place at west of Gotonga under Burapahar Beat and recovered .303 rifle with bullets 1 No. .303 rifle E/S 1 No. and Carbine E/I 1 No.
- 30/05/93 - A raid was conducted at Bokakhat, 3 (three) persons were arrested.
- 22/06/93 - A raid was conducted at Bengenakhua, Golaghat 3(three) persons were arrested with recovery of 1 (one) SBBL Gun with live 2 rounds of cartridges, hand made cartridges 3 Nos., & empty Cartridges 2 Nos. and .303 bullets 7 Nos. and .315 bullet 1 No.

- 31/08/93 - An Encounter with patrolling staff took place at Burapahar Malani area and 2(two) persons were killed and 1 (one) .470 DBBL Gun with 1 bullet and a .500 bore bullet were recovered.
- 03/10/93 - A raid was conducted at Geleki Karbi Gaon under Kaziranga Range and 3 persons were arrested with recovery of 1 .303 rifle, 2 Khaja Guns. and 11 .303 bullets.
- 22/10/93 - A raid was conducted at Kaziranga and 2 persons were arrested with recovery of 1 .303 rifle, 1 silencer and 6 live cartridge.
- 27/10/93 - A raid was conducted at Teliabari Gaon under Eastern Range and recovered 1 hand-made pistol.
- 28/12/93 - Encounter took place between joint patrolling party of Debeswari, Erasuti and Ahotguri camps with poachers in Hatichora Kheroni Tapu and two poachers were killed.
- 20/05/94 - A raid was conducted at Bohikhowa village by Forest and Police Deptt. and one person was arrested.
- 06/06/94 - A raid was conducted at Solung under Nagaon District and three persons were arrested.
- 26/07/94 - A raid was conducted at Bokakhat and one poacher was arrested.
- 30/07/94 - A raid was conducted at Bohikhowa Miching village and one person was arrested.
- 03/09/94 - The Forest Staff with the co-operation of local people of Balijan Amtenga village apprehended one notorious poacher and subsequently the police arrested six more poachers on the basis of clues provided by the arrested person.
- 03/10/94 - A raid was carried out in the house of one Sri Putu Das, a rhino horn smuggler at Moral gaon, Biswanath Chariali by Forest and Police Deptt. The villagers attacked the raid party and the smuggler and his associates managed to flee after grievously injuring an informer.
- 16/10/94 - A raid operation was carried out in Nagaon town and six suspected poachers were arrested.
- 13/11/94 - Encounter took place between staff and poachers in Malani Hill area under western Range, consequent to which 4 poachers were found dead. 1 .3.15 rifle, 1 musket with 8 .303 (live) cartridges were recovered. A raid operation was conducted at Jakhlabandha with the help of police personnel and one poacher was arrested.
- 16/11/94 - A raid operation was carried out in Khotiakholi under Bokakhat P.S. and two persons with ammunition for .303 rifle were arrested.
- 17/11/94 - A raid operation was conducted by Forest and Police in Amguri village under Jakhlabandha P.S. and 4 poachers were arrested, 1 .303 rifle with 20 live bullets and 1 .315 rifle with 7 live bullets were also recovered.
- 21/11/94 - A raid operation was jointly organised by Forest and Police in Balijan Miching Gaon where two notorious poachers were arrested along with ammunition.
- 27/11/94 - In a raid operation conducted by Forest and Police Department at Kandhulimari village under Bokakhat P.S. One Sunil Garh of Naojan was arrested and 1 SLR with magazine and 20 live bullets were recovered.
- 07/12/94 - The patrolling staff apprehended 5 persons in between Joke Tapu and Debeswari inside the Park.
- 08/12/94 - The night patrolling party foiled an attempt for electrocution of rhino behind National Park High School at Kohora and recovered approximately 150 mtrs. Of electric wire hooked to 33,000 volt high tension transmission line.
- 28/12/94 - A raid was conducted by the Forest and Police officials in Difaloo Rubber plantation near Difaloo River and 4 pit poachers were apprehended along with pit-digging implements.
- 29/12/94 - Forest staff conducted raid in the house of one Rarn Bahadur Subba and arrested him for illegal possession of 2 country made guns.
- 30/03/95 - A raid operation was conducted by Forest and Police officials in Tarnulipathar Kamargaon and 1 DBBL Gun was recovered from the house of one Bhubeneswar Gogoi.
- 25/10/95 - An encounter took place between Forest Staff and poachers near Laudubi Camp and the poachers managed to flee, leaving behind 1 American Carbine with 22 rounds of ammunition, which were recovered subsequently.
- 03/02/96 - An encounter took place in 1 Harmoti area under Western Range at 5.25 A.M. consequently one poacher was killed. Six rounds of .303 bullets and 4(four) rounds of spent bullets were also recovered.
- 22/02/96 - An encounter took place between poachers and patrolling staff in Rifletika area under Kaziranga Range. One poacher killed and 2 bullets of .303 and 2 Rounds of carbine bullets recovered.
- 21/06/96 - An encounter took place between staff and poachers in Bidhoba Kathoni Nallah of Murphuloni camp under Western Range. One dead poacher was recovered with five rounds of ammunition.
- 26/06/96 - An encounter took place between staff and poachers in Solmora camp area under Kaziranga Range. 3(three) unidentified dead body were recovered with a rifle, one USA

carbine along with 5 rounds of rifle bullets and 9 rounds of carbine bullets.

- 09/11/96 - An encounter took place between patrolling staff and poachers in the evening of 9 November, 1996 at 5.35 P.M. at Arimora and Naste area, 2(two) bodies of poachers were recovered.
- 22/11/96 - An encounter took place between staff and poachers near Borbeel area under Kaziranga Range on 22 November/96 at 7.25 A.M. One dead poacher was recovered.
- 06/04/97 - An encounter took place with the poachers in Boralimora area of Eastern Range on the Northern Boundary of the Park. One body was recovered along with one Gun and one .315 Rifle (stolen from the Deptt.) with 10 rounds.
- 17/04/97 - An encounter took place in Baruntika area of Kaziranga Range with a pit poaching party. On searching the side of encounter and nearby areas, a body and a half dug pit were detected along with a spade and two baskets near the pit.
- 03/07/97 - A raid was conducted by A.C.F.(H.Q) and staff of Burapahar Range at Phuloguri and Amguri village and 2 persons were arrested.
- 04/07/97 - A raid operation was carried out by the Range Officer, Western Range and staff with the help of Dwar Baguri Police in Timung Gaon of Karbi Anglong District outside the Park area and arrested 7 (seven) poachers, 2 .303 rifles along with 2 (two) rhino horns were also recovered.
- 22/07/97 - An encounter took place between staff and poachers inside Karasing Kathoni under Kaziranga Range. On searching a dead unidentified poacher, 2 rubber tubes were recovered.
- 04/12/97 - An encounter took place in Gorolmari area under Western Range between the Staff of Donga camp and the poachers. The poachers managed to escape.
- 21/12/97 - An encounter took place in Laodubi area under Kaziranga, Range between patrolling staff and rhino poachers. On searching the area, 3

(three) bodies of unidentified poachers were recovered with a .303 Rifle with 17 bullets and 4 spent bullets.

- 07/02/98 - The Range officer, Kaziranga Range along with Range Head Quarter staff with the S.D.P.O. and S.D.00 of Dhansiri Sub Division, Sarupathar jointly conducted a raid operation at the house of Sri Manik Talukdar of Bongaon, Naojan village under Sarupathar Police Station. During search operation 5 (five) bullets (AK-47) from a bundle of cloth and a plastic bag with .303 rifle bullets numbering 429 kept hidden in a pit were recovered.
- 13/06/98 - An encounter between Forest staff of Daflong camp and a gang of intruders comprising of three persons, occurred at about 12.15 A.M. near Bogoriati. The following morning, i.e 13/06/98, the body of a person along with a boat was recovered by the police personnel of Duwar Baguri outpost from Bandardubi village located on the Southern boundary of Kaziranga National Park. Another body of a person, involved in the encounter on 13/06/98 was recovered on 16/06 98 on the East of Daflong beel.
- 18/06/98 - An encounter took place in Sarunalani beel under Kathpara camp of Western Range between the poachers and patrolling guards where one country boat and a fishing net with 2(two) torch lights have been recovered from the poachers.
- 14/09/98 - An encounter between Forest Staff and a poacher occurred on 14/09/98 at 1.55 A.M. at Maloni area near pipeline inside National Park. One body and 4 empty shells of .303 rifle and 1 (one) bullet of .303 rifle were recovered.
- 18/12/98 - An encounter took place near Difaloo river under Murphuloni camp between Forest staff and poachers where one .303 rifle and one live cartridge and two spent bullets were recovered.

DEATH OF RHINOS DUE TO FLOOD

Flood is an annual phenomenon for the Kaziranga National Park. Some of the animals of the Park migrate during the high floods to the hills through certain corridors but most of the animals remain inside the Park. Animals take shelter in the of high lands constructed inside the Park area. Even then, there is mortality of animals during the flood and year-wise and age-wise statement of rhino death due to flood from 1980 onwards is tabulated on the right:

Year	Adult	Sub-Adult	Calf	Total
1980	6	1	6	13
1981	2	-	1	3
1982	1	-	-	1
1983	-	-	-	-
1984	-	-	-	1
1985	-	-	1	1
1986	1	-	-	1
1987	1	-	2	3
1988	9	10	19	38
1989	1	-	-	1
1990	-	-	1	1
1991	3	-	3	6
1992	-	-	-	-
1993	1	-	3	3
1994	-	-	2	2
1995	3	-	2	5
1996	1	-	1	2
1997	-	-	1	1
1998	18	5	16	39

DEATH OF RHINOS DUE TO PREDATION

Predation by tiger/leopard of mostly the rhino calves is a common phenomenon in the Park. The number of deaths of rhino calves due to tiger/leopard predation from 1980 onwards is tabulated below:

Year	No	Year	No	Year	No	Year	No
1980	8	1985	13	1990	13	1995	13
1981	14	1986	14	1991	21	1996	11
1982	14	1987	9	1992	16	1997	9
1983	13	1988	19	1993	18	1998	10

CONSTRAINTS OF ANTI-POACHING

With no natural barriers to protect the perimeters, keeping a look out for intruders is a Herculean task for the staff of Kaziranga National Park. Possession and movement of illegal arms and ammunition in areas surrounding the Park need to be eliminated. The Army operation code name 'Rhino and Bajarang' in the State of Assam during 1991 and under unified command structure since 1997 resulted in restriction in movements of illegal arms and activities of all types of anti-social elements including poachers as reflected by reduced number of poaching cases.

The lack of deterrents to neutralize the activities of habitual offenders, harbor of poacher in nearby villages, advantages taken of the weakness and loopholes in the judicial process by persons engaged in poaching activities as well as their accomplices are the chronic disadvantages. Lack of information

on the planning process, execution, financing illegal traffic and trade in rhino horn to meet international demand continues to be a hurdle. The main constraints are:

- i) Lack of information and intelligence system.
- ii) Delayed finalisation of 6 (six) proposed additions.
- iii) Absence of Eco-development programmes.
- iv) Possession and movement of illegal arms and ammunition.
- v) Lack of trained staff in combat fighting.
- vi) Lack of appropriate system of awarding incentive to the staff and informers for commendable works for conservation of rhinos.

RESEARCH

To ensure proper and scientific management of the Park, more research on the available resources and proper planning is a must. The sound management of the Park depends upon a sound research background. It is very important for the authority to know the viability of rhino population with the existing habitat of the Park and, for this purpose, it is essential to take up systematic research work on habit, habitat and reproductive growth rate of rhinos in relation to other animals in the Park.

There is only one study on habit and habitat (Lahan and Sonowal, 1973) of Kaziranga National Park and the other study of habitat suitability made by Shri Parihar (Parihar et al, 1986) are only the research work available till now. There is no work done on the morphology of rhinos in Kaziranga National Park. Habitat suitability needs further study since there are number of herbivores available inside the Park and depend upon the same types of vegetation.

Research on grassland ecology is one of the most important ones and on which the viability of rhinos in Kaziranga National Park depends. Another study on succession of vegetation inside the Park can be taken up. Further study on invasion and control of exotic climbers which is posing a problem in maintenance of tall grasses inside the Park needs attention of researchers.

TOURISTS AND REVENUE

Tourism is mainly dealt by the Tourism Department of Government of Assam. However, for elephant ride and visit to the Park by vehicle, fees are being realized for the Forest Department. The entry fee and other charges which are being realized from the tourists have been furnished in the Annexure 'A.' However, a table showing the number of Indian and foreign tourists visited the Park and revenue collected thereof are shown below:

Year	Visitors			Revenue Collected
	Foreign	Indian	Total	
1984-85	24	46,244	46,268	Rs. 1,68,832.00
1985-86	204	50,632	50,836	Rs. 2,21,015.00
1986-87	403	61,207	61,610	Rs. 2,24,493.00
1987-88	614	65,273	65,887	Rs. 3,03,914.00
1988-89	841	52,160	53,001	Rs. 2,85,686.00
1989-90	454	50,021	50,475	Rs. 2,75,381.00
1990-91	463	22,704	23,167	Rs. 3,10,298.00
1991-92	526	26,827	27,553	Rs. 6,13,811.00
1992-93	659	27,943	28,602	Rs. 8,49,428.00

Year	Visitors			Revenue Collected
	Foreign	Indian	Total	
1993-94	892	55,560	56,452	Rs. 7,99,583.00
1994-95	1,392	53,243	54,635	Rs. 8,46,936.00
1995-96	3,191	24,897	28,088	Rs. 8,80,951.00
1996-97	1,677	16,715	18,382	Rs. 19,70,062.00
1997-98	2,408	17,117	19,523	Rs. 21,97,068.00

FUNDING

The expenditure for maintenance of the Park and anti-poaching works are being funded from Non-Plan and State Plan Budget to a limited extent. During the VIII Five Year Plan, the Government of India through a 100% assisted scheme named "Rhino Conservation" had provided the main stay and backbone for management and conservation of the National Park. The infrastructure including entertainment of staff, construction of buildings, high lands, roads and bridges etc. were taken up during the period. Land acquisition cost for expansion of the Park area was provided within the framework of the scheme. But the transfer of the scheme to the State Plan from the VIII Five year Plan without ensuring the State's capability of taking the extra burden resulted in drying of financial source and the development of the Park has come almost to a standstill on all fronts. The marginal increase in the State budget provision has been wiped off by the enhancement of salary and wage component of the staff resulting in no room for undertaking any development works except meeting the demands for maintenance.

No external funding has so far been made available for conservation and protection of rhinos in Kaziranga National Park. A project proposal was submitted for external funding under UNESCO and IUCN and an amount of \$ 50,000 has been sanctioned. Incentive to the staff, who work at par with the paramilitary forces could not be provided due to acute shortages of fund. The year-wise expenditure under Non-Plan, State Plan and Centrally Sponsored Schemes are furnished in the Annexure- 'II' & 'III'. However, a statement showing the total expenditure incurred combining all the schemes (State Plan, Non Plan and Centrally Sponsored Schemes) from 1986-87 to 1997-98 are tabulated above.

1986-87	Rs. 67,21,661.00	1992-93	Rs. 76,46,597.00
	Rs. 62,37,846.00		Rs. 83,64,135.00
	Rs. 1,29,59,507.00		Rs. 1,60,10,732.00
1987-88	Rs. 50,54,588.00	1993-94	Rs. 90,57,808.00
	Rs. 78,35,145.00		Rs. 91,87,909.00
	Rs. 1,28,89,733.00		Rs. 1,82,45,717.00
1988-89	Rs. 94,46,558.00	1994-95	Rs. 1,11,27,731.00
	Rs. 79,64,090.00		Rs. 97,61,075.00
	Rs. 1,74,10,648.00		Rs. 2,08,88,806.00
1989-90	Rs. 71,63,963.00	1995-96	Rs. 1,21,38,241.00
	Rs. 62,90,161.00		Rs. 93,14,375.00
	Rs. 1,34,54,124.00		Rs. 2,14,52,616.00
1990-91	Rs. 89,32,829.00	1996-97	Rs. 1,69,35,393.00
	Rs. 68,84,713.00		Rs. 1,42,67,230.00
	Rs. 1,57,17,542.00		Rs. 3,12,02,623.00
1991-92	Rs. 88,15,379.00	1997-98	Rs. 1,45,44,637.00
	Rs. 73,97,191.00		Rs. 1,36,30,073.00
	Rs. 1,62,12,570.00		Rs. 2,81,74,710.00
Line 1=State Plan: Line 2=Non Plan: Line 3=Centrally Sponsored Schemes			

A FEW SALIENT FEATURES OF ANTI POACHING SUPPORT SYSTEM ARTIFICIAL HIGHLANDS

Location	No. of High Land	Length in meters
Eastern Range	1	1,650
Western Range	2	1,000
Eastern Range	2	350
Eastern Range	9	200
Kaziranga and Eastern Range	22	100
Kaziranga and Western Range	29	30
Eastern Range	3	25
Total	68	9,295

After devastating flood of 1987-88 when casualty of maximum number animals took place, about 68 highlands were constructed inside the Park to provide shelter for the marooned animals during the floods, which is shown on the left.

Fourteen highlands were reconstructed and extended under "Flood Damage Restoration" scheme during 1997-98.

The Indian Army had contributed by constructing additional 10 artificial highlands in the 1st addition to Kaziranga National Park.

FLOATING CAMPS

There are 2 Floating Camps, viz. Hawk Float and Samrat in the Brahmaputra River to prevent intrusion of poachers from northern side of the National Park. Both these vessels are in deplorable condition and requires repairing urgently.

COUNTRY BOATS

To facilitate the anti-poaching activities as well as to supply rations and other logistic support to the staff at different camps situated in the interior part, the country boats are the only means of transport during the rainy seasons. There are 105 Nos. of country boats in the Park of which 35 are out of order. Every year, the boats require repair or replacement.

SPEED BOATS

There are four boats fitted with Outboat motors which are operational in the Park but very frequently require repairing. As such, better quality O.B.Ms are necessary for anti-poaching measures during the rainy days. Besides, three mechanized boats have also been procured to facilitate anti-poaching patrolling in Sixth Addition Area.

DEPARTMENTAL ELEPHANTS

There are at present 49 Departmental Elephants in the Park, out of which 29 are adult, 9 sub-adult and the rest (11) are calves. 8 elephants are generally engaged for tourists visits during the tourists season and the rest are meant for anti-poaching measures.

DEPARTMENTAL VEHICLES

The position of vehicles, at present are mentioned below:

No. of Vehicles	Serviceable	Unserviceable	Total
Truck	2	-	2
Pick Up Van	-	1	1
Jeep	3	5	8
Gypsy	3	1	4
Trax	-	1	1
Tractor	-	1	1
Van	-	2	1
Standard 20	-	1	2
Motor Cycle	2	4	6
Ambulance	1	-	1
Mini Truck	1	-	1
Mini Bulldozer	1	-	1
Car	1	-	-
Total	14	16	30

Eight unserviceable vehicles have been condemned and four of these were disposed of as scrap material.

FACILITIES FOR THE WILD-LIFE STAFF

It has been indicated in the earlier paragraphs that the job of the staff engaged for anti-poaching works inside and outside the Park are most arduous in nature and extremely risky yet they are not granted any due reciprocate consideration. It has also been indicated earlier that the job of the staff of the Park should be considered at par with Paramilitary Forces and they should be provided with all facilities which are being provided to the

Paramilitary Forces, such as special allowance, compulsory one month's leave, free ration and full uniform etc. At present, the low paid Forest Guards and Foresters are maintaining double establishments and are away from their families for months at a time. The morale of the staff can only be boosted by providing facilities which are actually due to them.

PEOPLE'S AWARENESS

The intensity of man-animal conflict is on the rise commensurate with increase of rhino as well as human population within a well defined and confined area. This is more so since the villagers are already under stress of various socio-economic pressures.

It is no doubt a fact that the general public are quite aware about the need for conservation and protection of animals, particularly the rhinos of the Park but active and constructive awareness is confined only to limited number of person. The large scale depredation and damages of crops and proper-ties for which poor villagers are not getting adequate compensation coupled with socio-economic condition of the villagers have created a barrier of understanding between the Park authorities and the villagers. The villagers, who co-operated with ready information regarding poachers earlier are slowly distancing themselves from the same being afraid of retaliation by the poachers and consequently there is decline in interactions between Park staff and the villagers. To narrow down this gap, massive eco-development programmes in the villages surrounding the Park is the call of the day.

ANNEXURE I - MAMMALS COMMONLY FOUND IN KAZIRANGA NATIONAL PARK

No.	English Name	Scientific Name	Local Name (Assamese)
1	Great Indian One-horned Rhinoceros	<i>Rhinoceros unicornis</i>	Gorh
2	Wild Buffalo	<i>Bubalus bubalis</i>	Bonoria Moh
3	Indian Elephant	<i>Elephas maximus</i>	Hati
4	Royal Bengal Tiger	<i>Panthera tigris</i>	Dhekiapatia Bagh
5	Indian Wild Boar	<i>Sus scrofa</i>	Bonoria Gahori
6	Indian Gaur	<i>Bos gaurus</i>	Gaur
7	Swamp Deer	<i>Cervus duvauceli</i>	DolHorina
8	Sambar	<i>Cervus unicolor</i>	HorPahu
9	Barking Deer	<i>Muntiacus muntjak</i>	HugoriPahu
10	Hoolock or White Browed Gibbon	<i>Hylobates hoolock</i>	HalouBandar
11	Hog Deer	<i>Axis porcinus</i>	Khotia Pahu
12	Capped Langur or Leaf Monkey	<i>Presbytis pileatus</i>	Tupipindha Hanuman Bandar
13	Rhesus Macaque	<i>Macaca mulatta</i>	Molua Bandar
14	Assamese Macaque	<i>Macaca assamensis</i>	Jati Bandar
15	Leopard	<i>Panthera pardus</i>	NabarphutukiBagh
16	Sloth Bear	<i>Melursus ursinus</i>	Mati Bhaluk
17	Indian Porcupine	<i>Hystrix indica</i>	Ketela Pahu
18	Fishing Cat	<i>Felis viverrina</i>	Masuoï Mekuri
19	Jungle Cat	<i>Felis chaus</i>	Ban Mekuri
20	Large Indian Civet	<i>Viverra zibetha</i>	Joharnal
21	Small Indian Civet	<i>Viverricula indica</i>	HaruJohamal
22	Common Mongoose	<i>Herpestes edwardsi</i>	Neul
23	Small Indian Mongoose	<i>Herpestes auropunctatus</i>	Haru Neul
24	Indian Fox	<i>Vulpes bengalensis</i>	Ram Hial
25	Jackal	<i>Canis aureus</i>	Hial
26	Common Otter	<i>Lutra lutra</i>	Ud
27	Chinese Ferret Badger	<i>Melogale moschata</i>	-
28	Hog Badger	<i>Arctonyx collaris</i>	-
29	Eastern Mole	<i>Talpa micrura</i>	Utonua
30	Pangolin	<i>Manis crassicaudata</i>	Bon Row
31	Gangetic Dolphin	<i>Platanista gangetica</i>	Hihu
32	Squirrel	<i>Dremnomys lokriah</i>	Kerketua
33	Himalayan Bear	<i>Selenarctos thibetanus</i>	Kolabhaluk
34	Bat	Various Spp	Baduli

ANNEXURE II - PARK ENTRY FEES

Elephant Charges	Indian	Foreigner
	Adult- Rs. 100/-	Rs. 525/-
	Child- @50% of adult	
View Fees	Indian	Foreigner
	Rs. 10/-	Rs. 175/-

***Duration of the ride is approximately one hour.

Vehicle charges inside the Park	Indian	Foreigner
Jeep/ Car	Rs. 150/-	Rs. 150/-
Camera Charges	Indian	Foreigner
Still without tele-lens	Rs. 10/-	Rs. 175/-
Still with tele-lens	Rs. 50/-	Rs. 210/-
Movie(8mm)	Rs. 100/-	Rs. 280/-
Movie(16mm)	Rs. 200/-	Rs. 350/-
Video Camera	Rs. 500/-	Rs. 525/-
For professional photographers:	Indian	Foreigner
Still camera	Rs. 150/-	Rs. 350/-
Movie(8&16mm)	Rs.750/-	Rs 3500/-
Movie(35mm)	Rs. 1500/-	Rs.7000/-
Video Camera(35mm)	Rs. 1500/-	Rs.7000/-

*** Special concession for all types of visitors who make visits continuously for 3 or more days, 25% rebate on all items.

ANNEXURE III - STATEMENT SHOWING EXPENDITURE INCURRED UNDER PLAN SCHEME FROM 1986-87 TO 1997-98 UNDER EASTERN ASSAM WILDLIFE DIVISION

Year	Salary/TA (Rs.)	Wages (Rs.)	Works (Rs.)	Total (Rs.)
1986-87	5,37,822	5,47,000	51,53,024	62,37,946
1987-88	7,41,586	5,50,000	37,63,002	50,54,588
1988-89	7,43,376	7,59,000	79,44,182	94,46,558
1989-90	15,28,323	7,59,240	48,75,700	71,63,963
1990-91	17,79,751	7,16,072	64,37,006	89,32,829
1991-92	42,05,002	7,19,164	38,91,213	88,15,379
1992-93	47,36,756	7,58,510	21,59,331	76,46,597
1993-94	45,70,683	10,56,831	34,30,224	90,57,808
1994-95	68,68,509	11,04,094	31,55,128	111,27,731
1995-96	83,37,107	13,35,311	24,65,823	121,38,241
1996-97	80,05,421	14,81,100	74,48,872	169,35,393
1997-98	99,10,987	7,29,799	39,03,851	145,44,637

ANNEXURE IV - STATEMENT SHOWING EXPENDITURE INCURRED UNDER NON-PLAN SCHEME FROM 1986-87 TO 1997-98 UNDER EASTERN ASSAM WILDLIFE DIVISION

Year	Salary/TA (Rs.)	Wages (Rs.)	Works (Rs.)	Total (Rs.)
1986-87	48,84,324	6,30,123	12,07,214	67,21,661
1987-88	45,97,036	7,06,276	15,31,833	78,35,145
1988-89	49,75,097	7,56,242	22,32,751	79,64,090
1989-90	48,19,216	-	14,70,245	62,90,161
1990-91	49,19,900	-	19,64,813	68,84,713
1991-92	59,76,168	-	14,21,023	73,97,191
1992-93	61,97,611	4,07,945	17,58,579	83,64,135
1993-94	61,97,715	2,00,514	19,89,680	91,87,909
1994-95	80,51,861	1,29,591	15,79,623	97,61,075
1995-96	80,60,268	8,55,615	5,45,758	93,14,375
1996-97	117,50,118	13,13,248	12,03,864	142,67,230
1997-98	1,11,53,957	14,64,337	10,11,779	136,30,073

