

STATUS REPORT

ON

KAZIRANGA NATIONAL PARK



ASSAM FOREST DEPARTMENT

CONSERVATION STORY

The entire area from near about Bokakhat in the east upto Jakhlabanda on the west was covered with continuous belt of forests extending from the Brahmaputra river upto 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 Nineteenth century. But with the advent of 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 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. Realisation dawned on the Government of Assam that concrete protective measures were called for and an area of 22,617 Hectares (approx.) were 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 the result of last census carried out in April, 1993 in presence of N.G.Os, and media persons stands at 1,164 ± 136.

SITUATION :

Kaziranga National Park lies between 26°30 and 26°45 N latitudes and 93°40 E to 93°50 E longitude and spreadover in parts of civil districts of Golaghat, Nagaon and Sonitpur in the State of Assam having boundary the River Brahmaputra on the North, artificial lines and part of the river course on the east, Moridifloo 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 upto 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. 2069 F. 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 -	60 Ha.
Dt. 7.4.1967	<u>Z</u>
Total --	42,870 Ha.
	i.e. -- <u>428.70 Sq.Km.</u>

Annual flooding and erosion of the northern boundary of the Park and accretion of chapories on the river bed is the annual phenomenon from the inception of the Park. On the north-eastern side, large area has been lost due to erosion (1986). At present, the Park has an area of 378'22 Sq. Km. which is constantly changing due to erosion caused by the river Brahmaputra (Lahon and Sonowal, 1973). The stable chapories (river island) so formed due to erosion of 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 changed its nomenclature 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 declaration 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 the subsequent adoption of the Wildlife (Protection) Act of 1972 by the Assam State and 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 was extended upto 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 seasons 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 are extended habitat of wildlife. Moreover, there are number of villages on the edge of southern boundary of the Park which are the harbour of the poachers. At the sametime, the 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 all these backgrounds, the following prpposals for extension of areas of Kaziranga National Park were proposed but the proposals were not finalised due to various reasons, such as legal, administrative and financial reasons.

1. 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 already been made till 1979 to the Karbi Anglong District Council authorities. 33.00 Sq. Km.
2. 1st addition (Burapahar) -- Rs. 23,79, 530/- has already been deposited with the Deputy Commissioner, Nagaon and payment of the balance amount of Rs. 15,03,788/- against the final assessment is yet to be made to the Deputy Commissioner, Nagaon. 43.79 Sq. Km.
3. 2nd addition (Sildubi)- Payment of Rs. 58,953/- has already been made and payment of the balance amount of Rs. 11,54, 658/- is yet to be made to the Deputy Commissioner, Golaghat. 6.47 Sq. Km.
4. 3rd addition (Panbari) Payment of Rs. 13,27,746/- is to be made to the Deputy Commissioner, Golaghat. 0.69. Sq. Km.

5.	4th addition Kanchanjuri - Final notification has been notified but subjudice in the high Court due to a case filled by a Tea Estate.	0.89 Sq. Km.
6.	5th addition (Haldibari)- Payment of Rs. 4,00,000.00 has already been made and the balance amount of Rs. 9,91,357.00 against land compensation is to be made to the Deputy Commisisoner, Golaghat.	1.15 Sq. Km.
7.	6th addition (Chapories of Brahmaputra river right from Dhansirimukh to Kolia Bhomora Bridge including Panpur R.F.). Delayed due to High Court case.	401.50 Sq. Km.
	Total	487.49. Sq. Km.

VEGETATION :

Three board categories of vegetation can readily be recognised in the Park.

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

The water bodies occupy about 6% of the total area of the Park. The predominant species amongst the aquatic vegetation is the Water hyacinth (**Eichhornia crassipes**), Floating and Straggling grasses like Dal (**Andropogon spp.**), Erali (**Andropogon spp.**) and other species like Kalmu (**Ipomea reptans**), Helonchi (**Enhydra fluctuans**), Borpuni (**Pistia stratiotes**), Harupuni (**Lomium panicostals**), Water Lilies (**Nymphaea spp.**), Lotus (**Nelumbo spp.**), etc. make up the aquatic vegetation. Savanna formation or grass lands cover nearly accretions alongwith Jhau (**Tamarix dioca**), grasses like Saccharum spontaneum, Imperata cylindrica, Erianthus fillifolius, Narenga porphyrocome, Neyrandia reyaundiana, Cymipogon pendulus, etc. come in the established extensive grass lands. The most common and widely distributed species of grass in the Park are Ekora (**Erianthus ravaniao**). 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 *Cynodon dactylon*, *Chrysopogon aciculatus*, *Andropogon* spp., *Panicum* spp., *Eragrostis* spp. occur and all these grasses attract the herbivores.

Woodlands are represented by a variety of subtype of 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 area 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 part 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 of the higher patches of grasslands and in retaining its present form of an ideal habitat for terrestrial fauna particularly the 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 occur and the status-quo of the grassland are maintained. The ash, burnt up stems, roots, and emerging shoots attract the herbivores and immediately after burning large congregation 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 disposal 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 some of the grass land formations and flush out the water ways of the growth of the water hyacinth which acts as an inhibitor to the water birds.

Moreover, the various waterways and beels of the Park serve the purpose of breeding grounds and nursery of enormous fish population 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 the recent years and the weak and young ones are the most adversely affected. Since there have not been any decline in total population figures, 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 the flood season. There appear to be some changes in the behaviour of the animals, particularly breeding pattern due to the influence of floods.

WILDLIFE :

The important animals of the Park are Rhinoceros (**Rhinoceros unicornis**), Wild Buffalo (*Bubalis bubalis*), Swamp Deer (**Cervus duvaucelli**), Hog Deer (**Axis porcinus**) and Elephant (**Elephas maximus**). Besides these, Sambar (**Curvus unicornis**), Wild Boar (**Sus serofa**), 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 available in the Park. A Check list of animals and birds has been annexed herewith.

HABITAT EVALUATION :

Proper habitat evaluation for all types of animal available in the Park had not been done till to-day. 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 minutes by one

minute grids for the purpose of habitat evaluation by the author 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 (Parihar et-al, 1986) :

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 last Elephant census, the Park has got 1,094 Nos. of 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 population. Therefore, habitat manipulation through constant control burning and desiltation of water bodies and removal of water hyacinth are essential factors which will make room for short grasses and favourable fodder for rhinos.

ANIMAL CENSUS

The first scientific animal census in Kaziranga National Park was carried out during 1966 and thereafter the process was repeated every 6th

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 conclusive for exact count but the population of Rhnio was 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 conser-
 vationist. 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 persuance 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 organisations 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 March/1993 and November/1993 respectively. 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. Bison	1	18	23	30	5	--
5. Swamp Deep	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. Gibbon	--	--	--	--	--	-- 8

N.B. :

1. Figure under () means animals sighted during census within the Park area and the balance within the extended habitat.
2. During 1993, the s.d. calculated 12%.

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
1992	2	44	2	48	67	115
1993	2	38	--	40	58	98
1994	3	11	--	14	37	51
1995	6	15	--	21	47	68

(upto 15/11/95)

TREND OF PROCHING :

The trend of poaching has taken a dramatic change from pit poaching to electrocution. The use Carbine and Silencer by the poachers has increased problem to the untrained staff. The reason 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 man) 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 poachings. The vulnerability of poaching due to its situation is having no natural barrier having villages all along the southern boundary and river Brahmaputra on the north is a constant headache for the Park authorities. The fishery mahals and Khuties in the Chapories (Accretions) are the harbour of poachers from the north. Having no natural barrier and having tall grasses, once the poachers sneak into the Park makes it difficult to locate the presence of poachers inside the Park.

ANTI-POACHING STRATEGY :

The anti-poaching strategy now being adopted by maintaining 115 Nos. of camps situated all over the Park areas is not at all full proof method. Moreover, constant patrolling on the southern boundary and placing of two stationary vessels on the river Brahmaputra and patrolling on river routes are the main anti-poaching activities of the Park. The Strategy of having number of anti-poaching camps inside the Park and patrolling thereof had resulted initially very good 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. It is also not the fact that there were no direct encounter with the poachers and the staff of the Park 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 ammunitions were recovered from 1985 till date :

Year	No. of poachers		Total of arms recovered	Total amm- unition 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	--	11
1990	3	49	11	104	6
1991	4	25	4	7	9
1992	9	58	9	96	9
1993	8	67	19	43	4
1994	12	46	9	60	1
1995	4	3	1	22	2

upto 15/11/95

Comparative statement of poaching of Rhinos monthwise for the years 1985 to 1993 till date is shown below

Year	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	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	-	-	21

(upto 15.11.95)

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 :

Year	No. of Rhinos killed by poachers
1974	3
1975	5
1976	1
1977	-
1978	3
1979	2
1980	11
1981	24
1982	25
1983	37
1984	28

Year	No. of Rhinos killed by poachers
1985	44
1986	45
1987	23
1988	24
1989	44
1990	35
1991	23
1992	48
1993	40
1994	14
1995	21

(Upto 15.11.95)

**POPULATION STRUCTURE OF RHINOS IN
KAZIRANGA NATIONAL PARK**

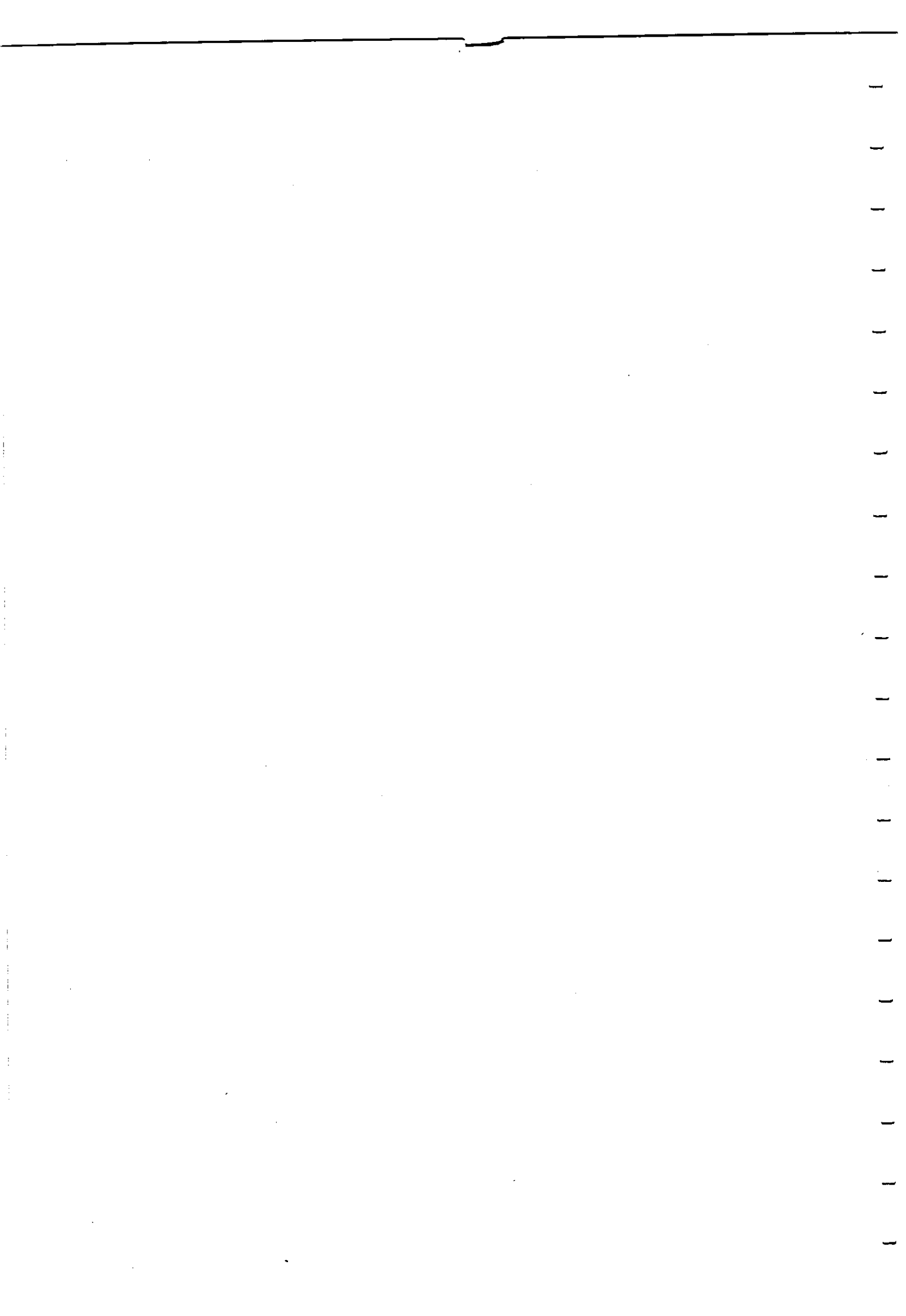
The first scientific census operation started from 1966 in Kaziranga National Park and carried out every 6th year. The mid year population has been calculated by extrapolation from the graph.

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

Year	Population	Poaching cases		Death		Total death	Increment rate
		No.	% age	No.	% age		
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	941	2	0.21	19	2.02	21	0.21%
1980	942	11	1.17	58	6.16	69	0.11%
1981	943	24	2.55	39	4.14	63	0.11%
1982	944	26	2.75	47	4.98	73	0.11%
1983	945	37	3.92	46	4.87	83	0.11%
1984	946	30	3.17	48	5.07	78	0.11%
1985	966	44	4.55	37	3.83	81	2.11%
1986	982	45	4.58	58	3.87	103	1.66%
1987	1001	23	2.30	41	4.10	64	1.93%
1988	1018	24	2.36	105	10.31	129	1.70%
1989	1036	43	4.15	55	5.31	98	1.77%
1990	1053	35	3.32	57	5.41	92	1.64%
1991	1069	23	2.15	78	7.30	101	1.52%
1992	1116	48	4.30	67	6.00	115	4.40%
1993	1164	40	3.43	58	4.98	98	4.30%
1994	1210	14	1.15	37	3.05	51	3.96%
1995	1290	21	1.62	47	3.64	64	6.61%

(Upto 15.11.95)

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



**AGE/SEX CLASSIFICATION OF RHINOS AGAINST POACHING
(TABLE-A)**

Year	Adult			Sub- Adult			Calf			Unknown sex and age	Total
	Male	Female	Unknown	Male	Female	Unknown	Male	Female	Unknown		
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	48
1993	16	16	3	-	-	1	1	2	-	1	40
1994	3	8	1	-	-	1	1	-	-	-	14
1995	12	4	4	1	-	-	-	-	-	-	21

(Up to 15.11.95)

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

Year	Adult			Sub- Adult			Calf			Unknown sex and age	Total
	Male	Female	Unknown	Male	Female	Unknown	Male	Female	Unknown		
1980	24	14	2	-	-	-	5	5	8	-	58
1981	10	8	2	-	-	-	6	3	7	3	39
1982	-	-	30	-	-	-	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	11	17	2	-	2	-	4	6	5	-	47

(Up to 15.11.95)

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 115 Nos. (this number is not fixed). In each camp at least 3 (three) number of staff are posted including Homeguards and casual labourers. The total strength of staff of different categories under different schemes engaged for anti-poaching works are as follows :

Category	Non-Plan	Rhino Conservation (C.S.S.)	Protected Area (State Plan)	Total
Forest Ranger	6	1	--	7
Deputy Ranger	2	4	--	6
Game Keeper	2	--	--	2
Forester -I	13	27	3	43
Forester - II	1	18	--	19
Head Game Watcher	4	--	--	4
Mahut	26	--	8	34
Game Watcher	56	--	--	56
Forest Guard	65	133	6	204
Boat Man	40	20	--	60
Total	215	203	17	435

In addition to this, the strength of Homeguards and casual labourer are 66 and 87 numbers respectively.

WIRELESS :

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

	Servicable	uncerviceble	Total
1. Fixed Status	9	--	9
2. Mobile	8	1	9
3. Bolopore	30	5	35
Grand Total			53

ARMS AND AMMUNITION :

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

	315	SBBL	DBBL	Revolver	Other
Total Stock	179	33	27	6	10
Serviceable	170	23	24	5	--

There are 12 Nos. of Rifles having 423 and 470 bores unserviceable due to non-availability of standard bullets.

INTELLIGENCE NETWORK :

There are no particular intelligence network available with the Park authorities. However, a few local pople are being engaged for collection of information regarding movement of poachers, illegal trade, etc. On the basis of information furnished by the informers, good results had been acheived during raids outside the Park. Even Poachers were killed during encounters, arms and ammunitions 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 paid cash as incentive. The expenditure incurred for payment of incentive during 1990-91 and 1994-95 are as follows :

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

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

RAID AND ENCOUNTERS

- 23.2.93: 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.
- 26.3.93: Encounter with patrolling staff took place at Tinibel Tinali under Eastern Range and 1(one) known notorious poacher got killed.
- 24.4.93: 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.
- 8.5.93: 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.
- 30.5.93: A raid was conducted at Bokakhat, 3(three) persons were arrested.
- 22.6.93: 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., E/C Cartridges 2 Nos. and '303 bullets 7 Nos. and '315 bullet 1 No.
- 31.8.93: Encounter with patrolling staff took place at Burapahar Malani area and 2(two) persons got killed and 1(one) '470 DBBL Gun with 1 bullet and '500 bore bullet 1 No. were recovered.
- 3.10.93: A raid was conducted at Geleki Karbi Gaon under Kaziranga Range and 3 persons were arrested with recovery of 1 No. '303 rifle, Khaja Gun-2 Nos. and 11 Nos. of '303 bullets.
- 22.10.93: A raid was conducted at Kaziranga and 2 persons were arrested with recovery of 1 No. '303 rifle, Silencer 1 No. and live cartridges 6 Nos.
- 27.10.93: A raid was conducted at Teliabari gaon under Eastern Range and recovered 1 No. of hand made pistol.
- 28.12.93: Encounter took place between joint patrolling party of party of Debeswari, Erasuti and Ahotguri camps with poachers in Hatichora Kheroni Tapu and two poachers were killed.

- 20.5.95: A raid was conducted at Bohikhowa village under Forest and Police Deptt. and one person was arrested.
- 6.6.94: A raid was conducted at Solung under Nagaon District and three persons were arrested.
- 26.7.94: A raid was conducted at Bokakhat and one poacher was arrested.
- 30.7.94: A raid was conducted at Bohikhowa Miching village and one person was arrested.
- 3.9.94: 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 clue provided by the arrested person.
- 3.10.94: A raid was carried out in the house of one Sri Putu Das, a Rhino horn smugler at Moral gaon, Biswanath Chariali by Forest and Police Depptt. The villagers attacked the raid party and the smugler and his associated manage to flee after grevously injuring an informer.
- 16.10.94: A raid operation was carried out in Nagaon twon 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 Nos. of poachers were found dead. 1 No. of '315 rifle 1 No. of Musket with 8 Nos. of '303 (live) cartridges were recovered.
A raid operation was conducted at Jakhalabandha 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 ammunitions for '303 rifle were arrested.
- 17.11.94: A raid operation was conducted by Forest and police in Amguri village under Jakhalabandha P.S. and 4 Nos. of poachers were arrested 1 No. of '303 rifle with 20 Nos. of live bullets and 1No '315 rifle with 7 Nos. of live bullets were also recovered.

- 21.11.94: A raid operation jointly organised by Forest and police in Baliyan Miching gaon two notorious poachers were arrested along with ammunitions.
- 27.11.94: In a raid operation conducted by Forest and Police Deptt. at Kandhulimari village under Bokakhat P.S. one Sunil Garh of Naojan was arrested and recovered 1 No. SLR with magazine and 20 Nos. of live bullets.
- 7.12.94: The patrolling staff apprehended 5 persons inbetween Joke Tapu and Debeswari inside the Park.
- 8.12.94 : 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 operation was conducted by the Forest and police officials in Diffaloo Rubber plantation near Diffaloo river and 4 Nos. of pit poachers were apprehended alongwith pit digging implements.
- 29.12.94: Conducted raid in the house of one Ram Bhadur Chubba and arrested him for illegal possession of 2 Nos. of Khaja Guns.
- 30.3.95 : A raid operation was conducted by Forest and Police officials in Tamulipathar Kamargaon and 1 No. of DBBL Gun was recovered from the house of one Bhubeneswar Gogoi.
- 25.10.95: Encounter, took place between Forest staff and poachers near Laudubi Camp and the poachers managed to flee leaving behind 1 No. of American Carbine with 22 Nos. of ammunitions which were recovered subsequently.

DEATH OF RHINOS DUE TO FLOOD :

Flood is an annual phenonmenon 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 number of high lands constructed inside the Park area. Even then there is mortality of animals during the flood and yearwise and agewise statement of Rhino death due to flood from 1980 onwards is tabulated below :

Year	Adult	Sub-Adult	Calf	Total
1980	6	1	6	13
1981	2	-	1	3
1982	1	-	-	1
1983	-	-	-	-
1984	-	1	-	1
1985	-	-	1	1
1986	1	-	-	1
1987	1	-	2	3
1988	19	10	19	48
1989	1	-	-	1
1990	-	-	1	1
1991	4	-	3	7
1992	-	-	-	-
1993	-	-	4	5
1994	-	-	2	2
1995	3	-	2	5
Total	39	12	41	92

DEATH OF RHINOS DUE TO PREDATION :

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

1980	8 Nos.
1981	14 Nos.
1982	14 Nos.
1983	13 Nos.
1984	9 Nos.
1985	13 Nos.
1986	14 Nos.
1987	9 Nos.
1988	19 Nos.
1989	14 Nos.
1990	13 Nos.
1991	21 Nos.
1992	16 Nos.

1993	17 Nos.
1994	12 Nos.
1995	10 Nos.
Total	216 Nos.

CONSTRAINTS OF ANTI-POACHING :

With no natural barriers to protect the perimeters, keeping a look for intruders become a herculean task for the staff of Kaziranga National Park. Possession and movement of illegal arms and ammunitions in areas surrounding the Park need to be eliminated. The Army Operation code name 'Rhino and Bajrang' in the State of Assam during 1991 resulted in restriction of movements of illegal arms and activities of all types of anti-social Elements including poachers reflected by reduced number of poaching cases.

The lack of deterrents to neutralise the activities of habitual offenders, harbourer 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 informations 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 intelligence system.
- ii) Delayed finalisation of proposed additions (7 Nos.).
- iii) Absence of eco-development programmes.
- iv) Possession and movement of illegal arms and ammunitions.
- v) Lack of infrastructures and incentives to the staff.
- vi) Lack of trained staff in combat fighting.
- vii) Lack of system of awarding rewards to the staff and informers for commendable works for cnservation of Rhinos.

RESEARCH :

To have more 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 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-el, 1986) are only the research work available till now. There is no work done on the morphologyon Rhinos of Kaziranga National Park. Habitat suitability needs further study since there are number of herbivoures available inside the Park and depend upon the same types of vegetations.

Research on Grassland ecology is one of the most important one 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, a nominal fee is being realised. The entry fee and other charges which are being realised from the tourists has been furnished in the Annexure 'A'. However, a table showing the number of India and Foreign tourists visited the Park and revenue collected thereof are shown below :

Year	Visitors		Total	Revenue Collected
	Foreign	Indian		
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. 2.75381.00
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
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

FUNDING :

The expenditure for maintenance of the Park and antipoaching works are being funded from Non-Plan and State Plan Budget to a limited extent. During the VIIIth Five Year Plan, the Government of India through a 100% assisted scheme named "Rhino Conservation" had provided the main stay and back bone 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 frame work of the scheme. The salary component of the scheme is Rs. 67,03,925.00. But the transfer of the scheme to the State Plan from the VIIIth Five 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 stand still in 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 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 UNEP but the project has not yet been sanctioned.

Incentive to the staff, who works at par with the paramilitary forces could not be provided due to acute shortages of fund.

The yearwise expenditure under Non-Plan, State Plan and Centrally Sponsored Schemes are furnished in the Annexure- 'B'. However, statement showing the total expenditure incurred combining all the schemes (State Plan, Non-Plan and Centrally Sponsored Schemes) from 1986-87 to 1994-95 is tabulated below :

1986-87-	Rs. 67,21,661.00	1988-89 -	Rs. 94,46,558.00
	Rs. 62,37,846.00		Rs. 19,64,090.00
	Rs. 129,59,507.00		Rs. 1,64,10,648.00
1987-88-	Rs. 50,54,588.00	1989-90-	Rs. 71,63,963.00
	Rs. 78,35,145.00		Rs. 62,90,161.00
	Rs. 1,28,89,733.00		Rs. 1,13,45,124.00

1990-91-	Rs. 89,32,829.00	1993-94-	Rs. 90,57,808.00
	Rs. 68,84,713.00		Rs. 91,87,909.00
	Rs. 157,17,542.00		Rs. 182,45,717.00
1991-92-	Rs. 88,15,379.00	1994-95-	Rs. 111,27,731.00
	Rs. 73,97,191.00		Rs. 97,61,075.00
	Rs. 162,12,570.00	Total	Rs. 208,88,806.00
1992-93-	Rs. 76,46,597.00		
	Rs. 83,64,135.00		
	Rs. 160,10,732.00		

A FEW SALIENT FEATURES OF ANTI-POACHING SUPPORT SYSTEM

ARTIFICIAL HIGH LANDS :

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

Location	No. of High land	Length in Meter
Eastern Range	1	1,650 Meters.
Western Range	2	1,000 Meters.
Eastern Range	2	350 Meters
Eastern Range	9	200 Meters
Kaziranga and Eastern Ranges	22	100 Meters
Kaziranga and Western Range	29	30 Meters
Eastern Range	3	25 Meters
Total	68 Nos.	

FLOATING CAMPS :

There are 2 Nos. of Floating camps, viz Hawk and Samrat in the Brahmaputra River to prevent intrusion of poachers from northern side of the National Park.

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 boat are the only means of transport during the rainy seasons. There are 110 Nos. of country boats in the Park of which 27 Nos are out of order. Every year 10% of the boats require repair or replacement.

SPEED BOATS :

There are 12 boats fitted with Out Board Motors in the Park but very frequently requires repairing. As such, better quality O.B.Ms will be necessary for anti-poaching measures during the rainy days.

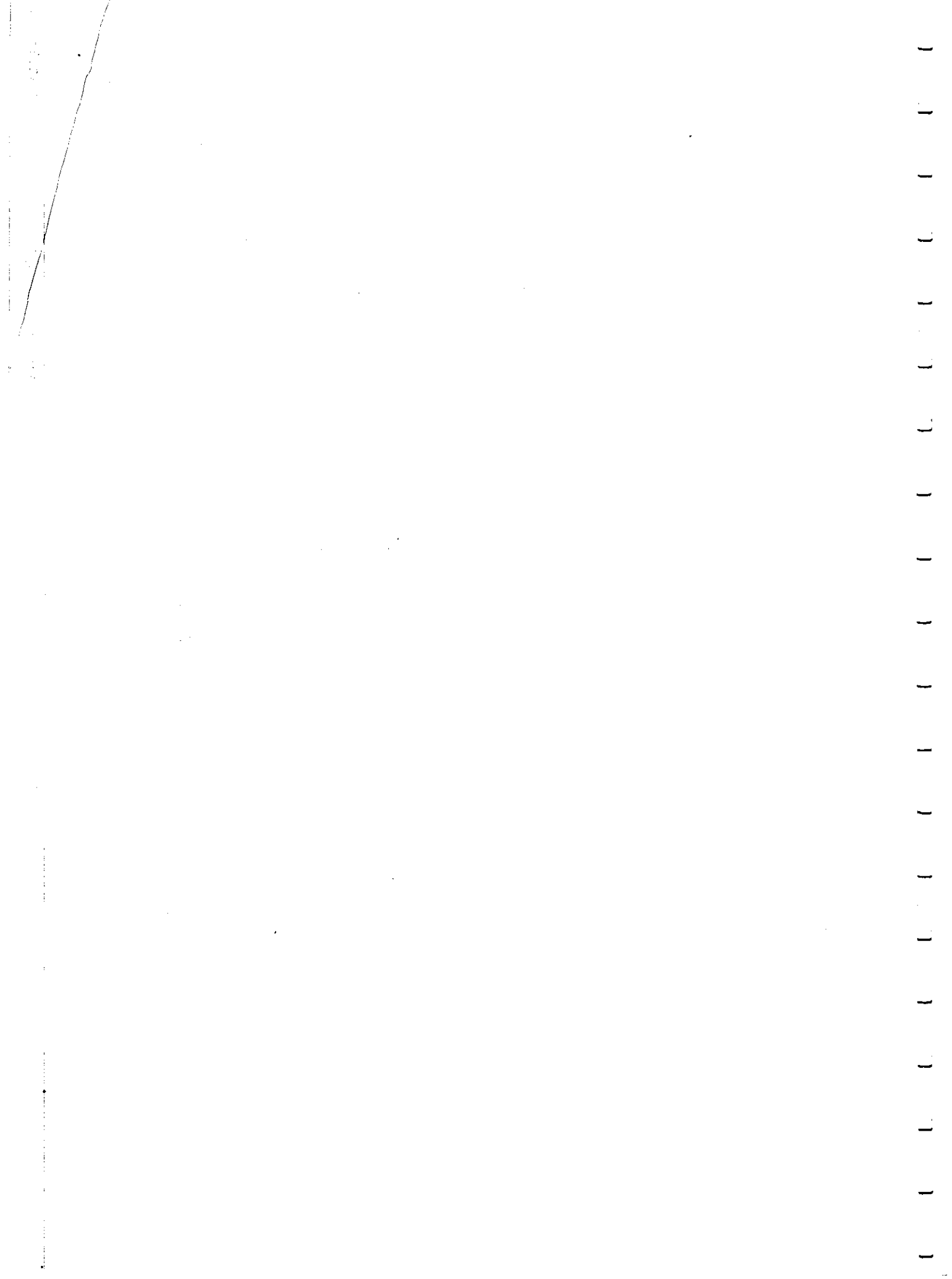
DEPARTMENTAL ELEPHANTS :

There are at present 39 Nos. of Departmental Elephants in the Park, out of which 28 are adult, 5 sub-adult and rest 6 are calves. 15 Nos. of elephants are generally engaged for Tourists' visits during the tourists season and the rest are meant for anti-poaching measures. 6 Nos of adult elephants died during 1994 and 1995 due to various diseases.

DEPARTMENTAL VEHICLES

The position of vehicles, at present are mentioned below :-

	Serviceable	Unserviceable	Total
Truck	2	-	2
Pick up van	-	1	1
Jeep	5	3	8
Gypsy	1	-	1
Trax	1	-	1
Tractor	1	-	1
Van	-	1	1
Standard 20	-	2	2
Motor cycle	5	1	6
	15	8	23



FACILITY FOR THE WILDLIFE 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 together. The morale of the staff can only be boosted up 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 persons. The large scale depredations and damages of crops and properties for which poor villagers are not getting adequate compensation coupled with socio-economic conditions 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 erosion of interactions between Park staff and the villagers. To narrow down this gap, massive of 'Eco-Development' programmes in the villages surrounding the Park is the call of the day.

ANNEXURE - A

PARK ENTRY FEES :-

- (1) Fees for entering into K.N. Park Per day per person - Rs. 5.00
Per child (below 12 years and student) - Rs. 1.00
- (2) Road toll for Vehicles :-
Per day per trip means a journey covering the period from entry to exist
in any one round.
Car/Jeep per vehicles - Rs. 50.00
- (3) Fees for photography per day by amateur photographers per camera.
Still camera without tele lens - @ Rs. 5.00
Still camera with tele lens - @ Rs. 25.00
Movie camera - 8 mm - @ Rs. 50.00
Movie camera - 16 mm - @ Rs. 150.00
Video camera - @ Rs. 250.00
- (4) Fees for photography per day by professional photographer.
Per still camera - @ Rs. 100.00
" Movie camera 8 mm - @ Rs. 500.00
" - do - 16 mm - @ Rs. 1000.00
" - do - 35 mm - @ Rs. 1000.00
" Video camera - @ Rs. 1000.00
- (5) Fees for hiring elephant per trip -
when one elephant is hired exclusively by one person per elephant
@ Rs. 1000.00
Hire charge per seat per person @ Rs. 50.00

ANNEXURE - B

STATEMENT SHOWING EXPENDITURE INCURRED UNDER NON PLAN SCHEME FROM 1986-87 TO 1994-95
UNDER EASTERN ASSAM WILDLIFE DIVISION :-

YEAR	SALARY/TA (Rs.)	WAGES (Rs.)	WORKS (Rs.)	TOTAL (Rs.)
1986-87	48.84,324.00	6,30,123.00	12,07,214.00	67,21,661.00
1987-88	45,97,036.00	7,06,276.00	15,31,833.00	78,35,145.00
1988-89	49,75,097.00	7,56,242.00	22,32,751.00	79,64,090.00
1989-90	48,19,216.00	-	14,70,245.00	62,90,161.00
1990-91	49,19,900.00	-	19,64,813.00	68,84,713.00
1991-92	59,76,168.00	-	14,21,023.00	73,97,191.00
1992-93	61,97,611.00	4,07,945.00	17,58,579.00	83,64,131.00
1993-94	69,97,715.00	2,00,514.00	19,89,680.00	91,87,909.00
1994-95	80,51,861.00	1,29,591.00	15,79,623.00	97,61,075.00

ANNEXURE - B

STATEMENT SHOWING EXPENDITURE INCURRED UNDER PLAN SCHEME FROM 1986-87 TO 1994-95

YEAR	SALARY (Rs.)	WAGES (Rs.)	WORKS (Rs.)	TOTAL (Rs.)
1986-87	5,37,822.00	5,47,000.00	51,53,024.00	62,37,846.00
1987-88	7,41,586.00	5,50,000.00	37,63,002.00	50,54,588.00
1988-89	7,43,376.00	7,59,000.00	79,44,182.00	94,46,558.00
1989-90	15,28,323.00	7,59,240.00	48,75,700.00	71,63,963.00
1990-91	17,79,751.00	7,16,072.00	64,37,006.00	89,32,829.00
1991-92	42,05,002.00	7,19,164.00	38,91,213.00	88,15,379.00
1992-93	47,36,756.00	7,58,510.00	21,51,331.00	76,46,597.00
1993-94	45,70,683.00	10,56,831.00	34,30,224.00	90,57,808.00
1994-95	68,68,509.00	11,04,094.00	31,55,128.00	1,11,27,731.00

APPENDIX - 1

LIST OF MAMMALS COMMONLY FOUND IN KAZIRANGA NATIONAL PARK

Sl. 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>	Methon
7.	Swamp Deer	<i>Cervus duvauceli</i>	Dol Horina
8.	Sambar	<i>Cervus unicolor</i>	Hor pahu
9.	Barking Deer	<i>Muntiacus muntiac</i>	Hugori Pahu
10.	Hoolock or White browned gibbon	<i>Hylobates hoolock</i>	Halou Bandar
11.	Hog Deer	<i>Axis porcinus</i>	Khotia Pahu
12.	Capped langur of Leaf langur	<i>Presbytis pileatua</i>	Tupipindha Hanuman bandar
13.	Common Langur	<i>Presbytis entellus</i>	Hanuman Bandar
14.	Rhesus monkey	<i>Macaca mulatto</i>	Molua Bandar
15.	Assamese Monkey	<i>Macca assamensis</i>	Jati bandar
16.	Leopard	<i>Panthera pardus</i>	Naharphutuki Bagh
17.	Sloth Bear	<i>Melursus ursinus</i>	Mati Bhaluk
18.	Indian Porcupine	<i>Hystrix Indica</i>	Ketela Pahu
19.	Fishing cat	<i>Felis viverrine</i>	Masuoï Mekuri
20.	Jungle cat	<i>Felis chaus</i>	Ban Mekuri
21.	Large Indian Civet	<i>Viverra jibetha</i>	Johamal
22.	Small Indian Civet	<i>Viverricula indica</i>	Haru Johamal
23.	Common Mongoose	<i>Herpestes edoardsi</i>	Neul
24.	Small Indian Mongoose	<i>Herpestes auropunctatus</i>	Haru Neul
25.	Indian Fox	<i>Vulpes bengalensis</i>	Ram Hial
26.	Jackal	<i>Canis aurens</i>	Hial
27.	Common Otter	<i>Lutra lutra</i>	Ud
28.	Chinese Ferret Badger	<i>Melogale moschata</i>	-
29.	Hog Badger	<i>Arctonys callaris</i>	Nalgahori

30. Eastern Mole	Talpa micrura	Utonua
31. Pangolin	Manis crassicaudata	Bun Row
32. Gangetic Dolphin	Platanista gangetica	Hihu
33. Squirrel	Dremnomys lokriah	Kerketua
34. Himalayan Bear	Scalenactos thibetanus	Kolabhaluk
35. Bat	Various Spp.	Baduli

APPENDIX - 2

LIST OF FISHES RECORDED IN KAZIANGA NATIONAL PARK :-

Sl. No.	Scientific Name	Local name (Assamse)
1.	Ambly/Pharyngodon mala	Banhpati
2.	Amphipnous cuchia	Kuchia
3.	Bagarius bagarius	Garua
4.	Belone cancila	Kokila
5.	Catla catla	Bahu
6.	Chanda nama	Chanda
7.	Channa amphibious	Chenga
8.	Channa cachua	Chengeli
9.	Channa maraulius	Sal
10.	Channa punctatus	Goroi
11.	Channa striatus	Sol
12.	Cirrhinus mrigala	Mirika
13.	Clarius batrachus	Magur
14.	Calisa chuna	Bhecheli
15.	Calisa fasciatus	Khalihona
16.	Entropiichtys vacha	Bocha
17.	Gadusia chapra	Koroti
18.	Glossogo bius giuris	Patimutura
19.	Heteropheoustes hossilis	Singi
20.	Laleo bata	Bhangon
21.	Labeo calbasu	Mali
22.	Labeo rohita	Row
23.	Lebeo nandina	Nadani
24.	Labe goniis	Kurhi
25.	Mastacembelus armatus	Bami
26.	Mystus bleekari	Bhotia singora

27.	<i>Mystus cavastua</i>	Borsingora
28.	<i>Mystus menoda</i>	Gagol
29.	<i>Mytus seenghala</i>	Ari
30.	<i>Mystus vittatus</i>	Singora
31.	<i>Nandus</i>	Vedvedi
32.	<i>Notopterus</i>	Chitol
33.	<i>Notopterus notopterus</i>	Kandhuli
34.	<i>Ompak pabo</i>	Pabho
35.	<i>Oxygaster bacaila</i>	Chelkona
36.	<i>Puntius stricto</i>	Kanjouthi
37.	<i>Puntius sarana</i>	Cheniputhi
38.	<i>Rasbora daniconius</i>	Dorikona
39.	<i>Rasbora eleng</i>	Eleng
40.	<i>Tetradon cuteutic</i>	Gongatup
41.	<i>Wallago attu</i>	Borali

APPENDIX 3
BIRDS OF KAZIRANGA NATIONAL PARK
(RECORDED AND IDENTIFIED BY SHRI R.N. SONOWAL)

English Name	Scientific Name	Local Name
1. Spotted bill or Grey Pelican	<i>Pelicanus phillippensis</i>	Dhela
2. Large cormorant	<i>Phalacrocorax carbo</i>	Doikola
3. Little coromorant	- do - iger Panikauri	
4. Piigmy cormorant	- do - pygmaeus	
5. Indian shag	- do - fuscicollia	
6. Darter or snake bird	<i>Anhinga rufa</i>	Moniori

HERONS AND BITTERNs

7. Grey heron	<i>Ardes cinerea</i>	
8. Purple heron	- do - purpurea	Ajan
9. Little green heron	<i>Butorides striatus</i>	
10. Pond heron	<i>Ardeola grayii</i>	Konamuchori
11. Night heron	<i>Nycticorox nycticorax</i>	
12. Chestnut bittern	<i>Ixobrychus cinnamomeus</i>	
13. Yellow bittern	- do - sirtensis	
14. Black bittern	<i>Depetor flavicellis</i>	

EGRETES

15. Little egret	<i>Egretta garzetta</i>	
16. Median egret	- do - <i>intermedia</i>	
17. Large egret	- do - <i>alba</i>	Bogoli
18. Cattle egret	<i>Bubulcus ibis</i>	

STORKS

19. Open bill stork	<i>Anostonus oscitamus</i>	
20. White necked stork	<i>Ciconia episcopus</i>	
21. Black necked stork	<i>Xenorhynchus asiaticus</i>	Teliasarang
22. Black stork	<i>Ciconia nigra</i>	
23. Greater adjutant stork	<i>Dubius</i>	Bortukula
24. Lesser adjutant stork	<i>Dubius javanicus</i>	

GOOSE AND DUCKS

25. Bar headed goose	<i>Anser indicus</i>	Dhritaraj
26. Lesser whistlinged	<i>Debdrocynga javanica</i>	Sarali hansh
27. Common teal	<i>Ahus crecca</i>	Ghila hansh
28. Cotton teal	<i>Nettapus coromandelianus</i>	Pani hansh
29. Ruddy sheldrake (Dr. Duck)	<i>Tadorna ferruginea</i>	Sakai chakua
30. Pintail duck	<i>Anus acuta</i>	
31. Mallard duck	<i>Anus platyrlynchos</i>	
32. Spot bill duck	<i>Anus pecilorhyncaa</i>	
33. Gadwall duck	<i>Anus stepera</i>	
34. Wigion duck	<i>Anus penolope</i>	
35. Gorgany (Blue winged teal)	<i>Anus querquedula</i>	
36. Shoveller	<i>Anus clypeata</i>	
37. Common pochard	<i>Aythya terina</i>	
38. White eyed pochard	<i>Aythya niyroca</i>	
39. Tufted pochard	<i>Aythya fuligula</i>	
40. Grayleng goose	<i>Anser anser</i>	

EAGLES AND KITES

41. Pallas fishing eagle		
or		
Ringtailed fishing eagle	<i>Haliaeetus leucorvphus</i>	
42. Bonelli's Hawk eagle	- do - <i>fasciatus</i>	Kurua
43. Grey headed fishing eagle	<i>Ichthyophaga ichthyaetus</i>	

44. Crested serpent eagle	<i>Spilornis cheela</i>	
45. Short toed eagle	<i>Circetus gallicus</i>	
46. Black winged kite	<i>Elanus caeruleus</i>	
47. Brahminy kite	<i>Haliastur indus</i>	Siloni
48. Black kite	<i>Milvus migrants</i>	
49. Black crested baze	<i>Aviceda leuphotes</i>	
50. Shikra	<i>Accipiter badius</i>	
51. Osprey	<i>Pandion halietus</i>	
52. Eurasian kestrel	<i>Falco tinnun culus</i>	

HARRIERS

53. Marsh harrier	<i>Circus aeruginesus</i>	
54. Pale harrier	- do - <i>macrourus</i>	
55. Pied harrier	- do - <i>melanoleucūs</i>	

VULTURES

56. Black or King vulture	<i>Torgos calvus</i>	Raja Sagun
57. Cinerous vulture	<i>Aegypius monachus</i>	
58. Indian griffon vulture	<i>Gyps fulvus</i>	
59. Indian Longbilled vulture	<i>Gyps indicus</i>	
60. White backed vulture or Bengal vulture	<i>Gyps bengalensis</i>	Sagun

PATRIDGE, PHEASANTS AND FOWLS

61. Kalij pheasant	<i>Lephura leucomelana</i>	Darik
62. Common crow pheasant	<i>Centropus sinensis</i>	
63. Median - do -	- do - <i>intermedus</i>	
64. Lesser - do -	- do - <i>loulou</i>	
65. Swamp partridge	<i>Froncolinus gularis</i>	Hoikoli
66. Red jungled fowl	<i>Gallus gallus</i>	Bonoria kukura

CRAKES, MOORHENS, FLORICANS, JACANAS, ETC.

67. Branded crane	<i>Rallinn ourizonoides</i>	
68. Brown crane	<i>Amauronis akool</i>	
69. Ruddy crane	- do - <i>fuscus</i>	
70. White breasted waterhen	- do - <i>phoenicurus</i>	Dauk
71. Water cock	<i>Galliicrex cinera</i>	Korya chorai
72. Indian moorhen	<i>Gellinula chloropus</i>	
73. Purple moorhen	<i>Porphyrip</i>	Kamchorai
74. Bengal florican	<i>Eupodotic bengalensis</i>	Uumora

75. Bronze winged jacana	Metopidius indicule	
76. Pheasant tailed jacana	Hydrophasianus chirgus	

PLOVERS, LAPWINGS, SHANKS, SAND PIPERS, ETC.

77. Lapwing or green plover	Vanellus vanellus	
78. Sociable lapwing	- do - gregarius	
79. Grey headed lapwing	- do - cinereus	
80. Red wattled -do-	-do- indicus	Balighora
81. Spur winged -do-	-do- spinosus	
82. Little ringed plover	Charadrius dubius	
83. Spotted redshank	Tringa erythropus	
84. Green shank	Tringa nebularia	
85. Marsh sandpiper	-do- stagnatitoides	
86. Green Sandpiper	-do- Ochropus	
87. Common Sandpiper	-do- hypoleucos	

SNIPES, STINTS, GULLS AND TERNS, ETC.

88. Fantail snipe	Capella gallinaya	
89. Temminck's stint	Colidris temminckii	
90. Brown headed gull	Larus brunnicephalus	Ram paro
91. Indian whiskered tern	Chlidropias hybrids	
92. Indian river tern	Sterna aurantia	Gonga chiloni
93. Black bellied tern	Sterna acuticauda	

PIGEONS AND DOVES

94. Orange breasted green	Treron oicincta pigeon	Haitha
95. Bengal green pigeon	-do- Phoenicoptera	
96. Impereal green pigeon	Bucula aenea	Parghuma
97. Rufous furtle dove	Streptopelia prorientalis	
98. Ring dove	-do- decoocto Kapou	
99. Red turtle dove	--do- trnquabarica	
100. Spotted dove	-do- chinensis	
101. Emaralad dove	Chalcophaps indica Hilkopou	

PARAKEETS

102. Large India parakeet	Psittacula supatria	
103. Roseringed parakeet	-do- krameri	
104. Red breasted parakeet	-do- alexandri	

CUCKOOS, KOELS, ETC.

105. Indian cuckoo	<i>Cuculus micropterus</i>	Keteki
106. Indian plaintive cuckoo	<i>Cacomantis merulinus</i>	
107. Common hawk cuckoo	<i>Cuculus varius</i>	
108. Indian koel	<i>Rudynamus scolepacea</i>	Kuli
109. Large green billed malkoha	<i>Rhopodytes tristis</i>	

OWLS, OWLETS AND NIGHTJARS

110. Indian great Horned owl	<i>Bubobubo bengalensis</i>	
111. Brown fish owl	<i>Bubo zeylonensis</i>	
112. Barred jungle owlet	<i>Glaucidium radiatum</i>	
113. Spotted owlet <i>Athene brama</i>		
114. Long tailed nightjar	<i>Caprimulgus macrurus</i>	
115. Indian little nightjar	-do- <i>asiaticus</i>	Dinkona
116. Indian edible nest swiftlet	<i>Callalia unicobur</i>	
117. Indian house swift	<i>Apus affinis</i>	
118. Red headed trayon	<i>Harpactes erythrocephalus</i>	

KING FISHERS

119. Pied king fisher	<i>Ceryle rudis</i>	
120. Small blue king fisher	<i>Alcedo atthis</i>	Masluruka
121. Blue eared king fisher	<i>alcedo mentinting</i>	
122. Stork billed king fisher	<i>Pelargopais capensis</i>	
123. White breasted king fisher.	<i>Helcyon smyrnensis</i>	

BEE EATERS

124. Chestnut headed bee eater.	<i>Merons leschenaulti</i>	Moupia
125. Blue tailed bee eater	-do- <i>pilleppinus</i>	"
126. Small green bee eater	-do- <i>orientelis</i>	"
127. Blue bearded bee eater	<i>Nyctyornis athertoni</i>	"

ROLLERS

128. Indian roller or bluejay	<i>Caracian bengalensis</i>	Kau chorai
129. Broad billed roller	<i>Eurystomus orientalis</i>	
130. Hoopoe	<i>Upupa epops</i>	Barhoituka

HORNSBILLS, BARBETS AND PICULETS

131. Indian pied hornbill	<i>Anthracoceros malabaricus</i>	Dhonesh
132. Great pied hornbill	<i>Buceros bicornis</i>	Hetekteki

133. Lineated barbet	Megalomia lineata	Heteluka
134. Blue throated barbet	Megalmia asiatica	
135. Blue eared barbat	Megalomia eustralis	
136. Wryneck	Fynx torquilla	
137. Speckled piculet	Picumnus innominatus	
138. Rufous piculet	Sasia ochracen	

WOOD PECKERS

139. Little scalybellied wood Packer	Ficus xanthopygaeus	Kathluruka
140. Black naped green wood pecker	ficus canus	"
141. Fulvous breasted wood Pecker	Oendroscopos macei	"
142. Grey crowned pigmy wood pecker	Picoides canicapillas	"
143. Burmese scale bellied wood pecker	Picus viridanus	
144. Golden backed threetoed wood pecker	Dinopium shortii	
145. Large golden backed wood pecker	Chrysocoloptes lucius	

PITTAS AND LARKS ETC

146. Blue naped pitta	Pitta nipalensis
147. Rusty naped pitta	Pitta eatesi
148. Assam bush lark	Mirafra assamiaca
149. Red winged bush lark	Mirafra acrythroptera
150. Ganges sand lark	Galandrella raytal

MARTINS AND SWALLOWS

151. Plain sand martin or Grey throated sand martin	Riparia paludicola
152. Common swallow	Hirundo rustica
153. Red rumped Swallow	Hirundo dsurica

SHRIKES

154. Black headed shrike	Lanius schach
155. Grey backed shrike	Lanius phropotus

156. Common wood shrike	Tophrodonis-pondicerianus
158. Large cuckoo Strike	Coracina novacho-uandiae
159. Dark grey cuckoo shrike	Coracine melaschistos

DRONGOS

160. Black drongo	Dicrurus adsimilis	Phesu
161. Crow billed drongo	-do- annectans	"
162. Bronze drongo	-do- aeneus	"
163. Hair crested drongo	-do- hottentotus	"
164. Lesser racket tailed drongo	-do- remifer	Bhimraj

MYNAS

165. Grey headed myna	Sturnus malabaricus	
166. Pied myna	-do- centra	Kankurika
167. Common myna	Acridotheras tristis	Chor Salika
168. Jungle myna	-do- fuscus	Sutia Salika
169. Bank myna	-do- ginginianus	
170. Hill myna	Gracula raligiosa	Moina

STARE, MAGPIE, PIE AND ORIOLE

171. Short Winged stare	Saraglossa spiloptera	
172. Green magpie	Cissa chinensis	
173. Tree pie	Dendrocitta bagabunda	Chekcheki
174. Black headed oriole	Oriolus antherus	Sakhioti

CROW, MINIVET AND CHLOROPSES

175. House Crow	Corvus splendens	Patikauri
176. Jungle crow	Corvus macrorhynchos	Dhora Kauri
177. Scarlet minivet	Pericrocotus flammeus	
178. Shortbilled minivet	Pericrocotus brevirostis	
179. Small minivet	-do- cinnamomeus	
180. Gold mantled chloropsis	Chloropsis cochinchinensis	
181. Gold fronted chloropsis	-do- surifrous	
182. Common iora	Aegithina tiphia	

BULBULS

183. Black headed yellow bulbul	Pycnonotus malanictrus	Phesuluka
184. Red whiskered bulbul	-do- jocosus	"
185. Red vented bulbul	-do- cafer	"
186. White throated bulbul	Criniger flaveolus	"
187. Black bulbul	Hypsipetes madagascariensis	

BABLERS

188. Spotted babbler	Pellorneum ruficeps	
189. Red fronted babbler	Stachgris rufifrous	
190. Red capped babbler	Timalia pileata	

191. Black throated babbler	Stachyris nigriceps
192. Yellow breasted babbler	Macronous cularis
193. Yellow eyed babbler	Chrysomma sineuse
194. Striated babbler	Turdoides sarlei
195. Jungle babbler	Turdoides striatus.

THRUSH

196. Necklaced laughing thrush	Garrulax manileger	
197. Rufous necked laughing thrush	-do- ruficollis	
198. White crested laughing thrush	-do-	leucolophus
199. Blue rock thrush	Monticola nolitarius	
200. Himalayan whistling thrush	Myiophonous caeruleus	

FLY CATCHERS

201. Red breasted fly catcher	Muscicana narva
202. Varditter -do-	-do- thalassina
203. Little pied fly catcher	Muscicapa westermanni
204. Slaty blue -do-	-do- leucomelanura
205. Grey headed -do-	Culicicana coylonensis
206. White browed fantail fly catcher	Rhipodura anveola
207. Yellow bellied fantail fly catcher	-do- hypoxantha
208. Paradise fly catcher	Ternsiphone paradisi

WARBLERS

209. Yellow browed ground warbler	Tesia cyaniventer
210. Streaked fantail warbler	Cisticela juncidis
211. Large grass -do-	Graminicola bengalensis
212. Striated marsh -do-	Magalurus palustris
213. Paddy field -do-	Acrocephalus agricola
214. Blyth's reed -do-	-do- dumetorum
215. Black browed flycatcher warbler	Scicercus burkii
216. Yellow bellied -do- -do-	Abroecopus supersiliaris

ROBIN, SHAMA, BUSH CHAT, ETC.

217. Tailor bird	Urthotomus sutorius	Pathis
218. Blue throat	Erithacus savecius	
219. Ruby throat	Erithacus pactoralis	
220. Magpie robin	Copsychus saularis	Dohikotora
221. Shama	-do- malabaricus	
222. Black redstart	Phoenicurus ochruros	

223. Daurian redstart	-do- aureus
224. Collared bush chat	Saxicola torquata
225. Jerden -do-	-do- gerdoni
226. Grey tit	Parus major
227. Hodgson's tree pipit	Anthus hodgsoni
228. Paddy field pipit	Anthus novaeselandiae

WAGTAILS

229. Pled wagtail	Motacilla alba alboides Balimahi
230. Yellow wagtail	-do fleva "
231. Yellow headed wagtail	-do- citreola "
232. Grey wagtail	-do- caspica "
233. White wagtail	-do- alba dulehunensis "
234. Large pied wagtail	-do maderaspatenis

FLOWER PECKER, SUNBIRD, ETC.

235. Fire breasted flower pecker	Dicaeus ignipectug
236. Scarlet back -do-	-do- cruentatum
237. Purple sunbird	Nectarinia asiatica
238. Yellow backed sunbird	Acthopyga stparaja.
239. Little spider hunter	Arachnothere longirostris
240. Streaked spider hunter	-do- magna
241. Ruby check	Anthreptes singalensis
242. White eye	Zosterops palpebrosa

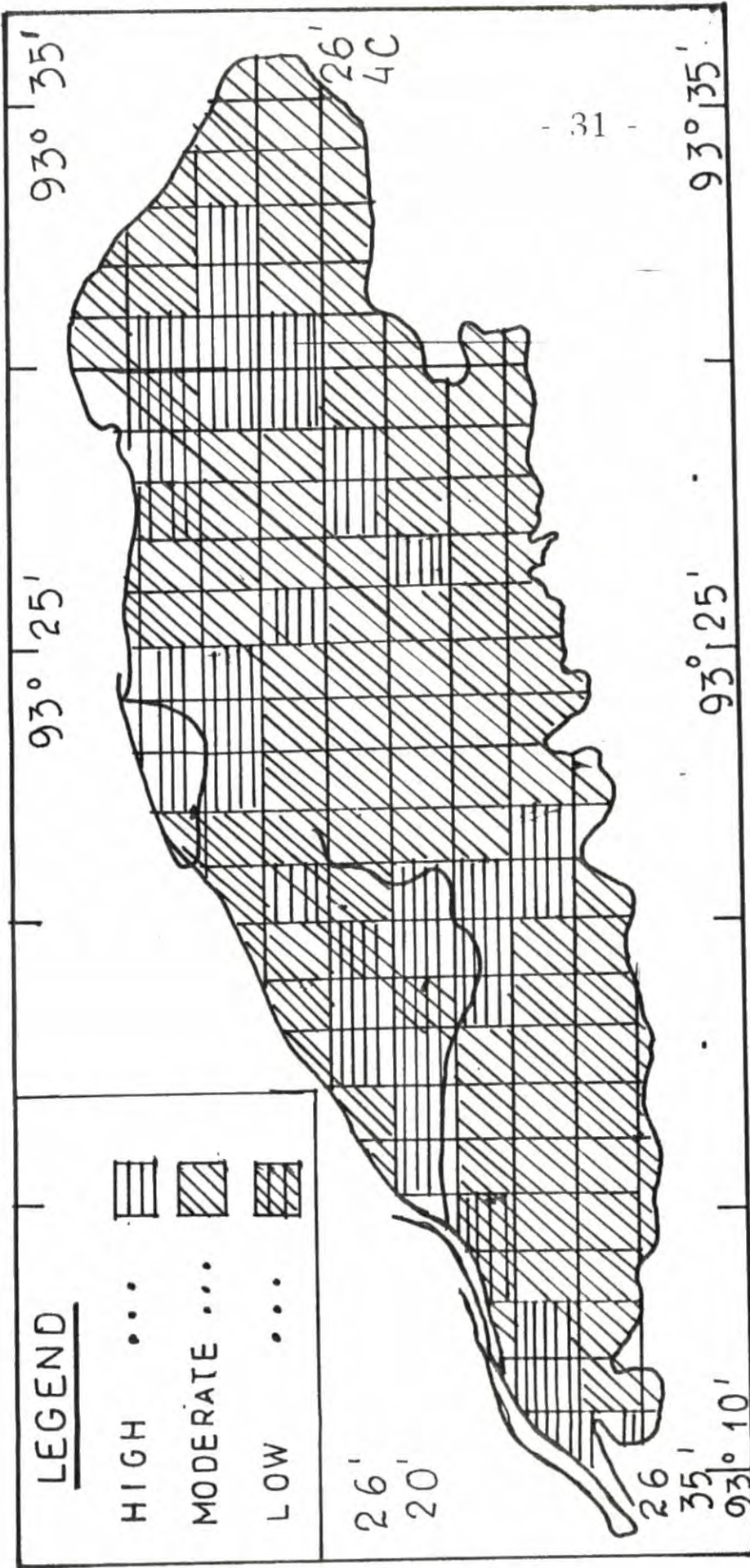
SPARROWS AND WEAVER BIRDS.

243. House sparrow	Passer domesticus	Ghor Chirika
244. Tree sparrow	-do- montanus	
245. Baya weaver bird	Ploceus phillippinus	Tukura chorai
246. Black throated bird	-do- bengalensis	
247. Streaked weaver bird	-do- manyar	

MUNIAS AND BUNTINGS

248. White backed munia	Lonchura striata
249. Spotted -do-	-do- punctulata
250. Black headed munia	Lonchura malacen
251. White throated munia	-do- malabarica
252. Redfaced hunting	Estrilda amandava
253. Black faced hunting	Emboriza spondocephalus
254. Little hunting	-do- pusilla.

KAZIRANGA NATIONAL PARK



HABITAT SUITABILITY FOR RHINOCEROS

(2)

LAND COVER MAP OF KAZIRANGA NATIONAL PARK

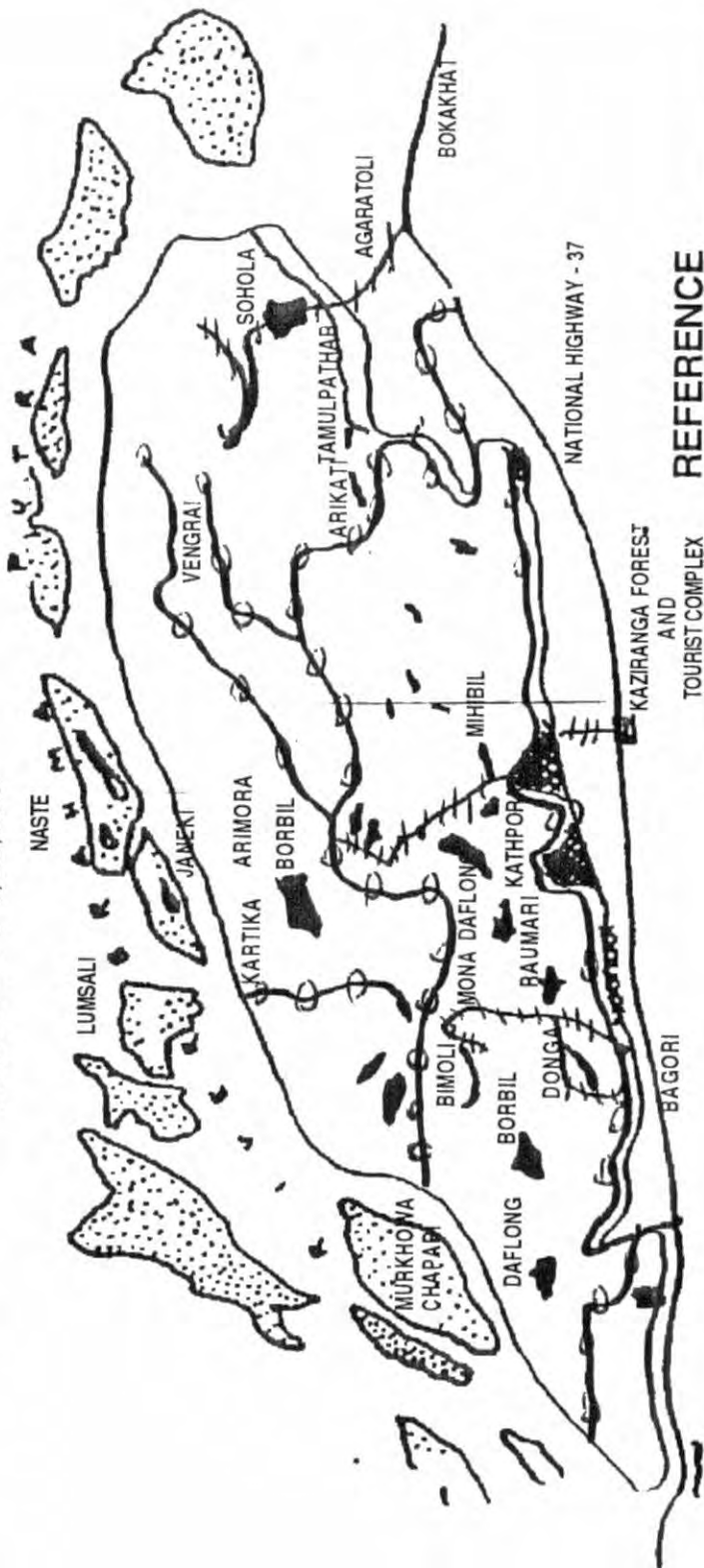
LEGEND

- FOREST [diagonal hatching]
- GRASS [downward arrows]
- TALL [upward arrows]
- SHORT [V-shaped symbols]
- WATERBODIES [wavy lines]
- SAND [stippled pattern]



A MAP OF KAZIRANGA NATIONAL PARK

SCALE : 1 : 1,00,000



REFERENCE

NATIONAL PARK BOUNDARY :	
TOURISM ROAD :	
RIVER :	
BHEEL :	