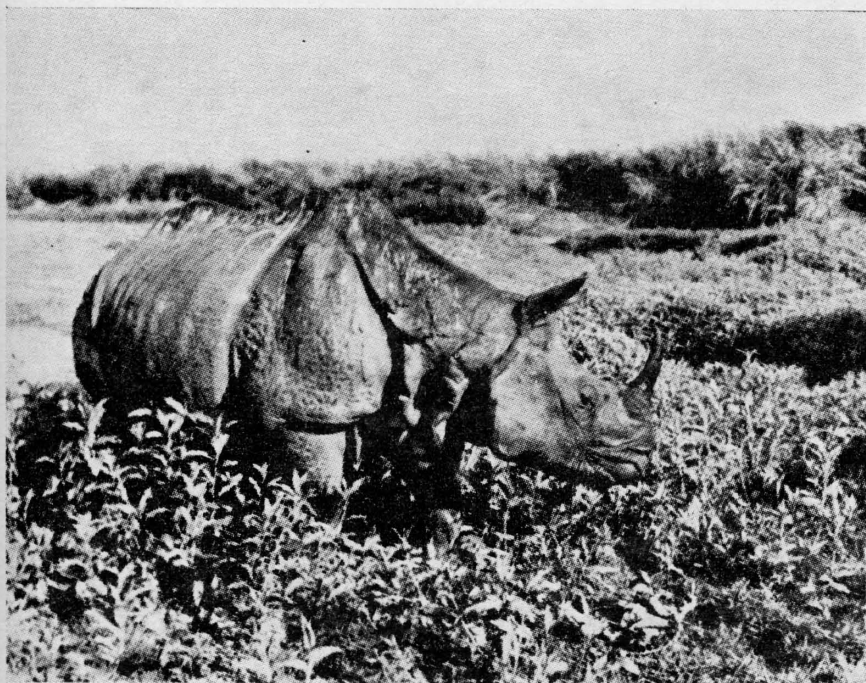


# **WILD LIFE IN INDIA**

## **ITS CONSERVATION AND CONTROL**

BY

P. D. STRACEY, I.F.S.



Rhinoceros unicornis, Kaziranga Sanctuary—Assam

**MINISTRY OF FOOD, AGRICULTURE, C.D. & CO-OP.**  
**DEPARTMENT OF AGRICULTURE**  
**GOVERNMENT OF INDIA, NEW DELHI**

**WILD LIFE IN INDIA**  
**ITS CONSERVATION**  
**AND**  
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*The Rhinoceros.* The Great Indian Rhinoceros is found in the Nepal terai, particularly in the valleys of the Rapti and Sapt Gandak which lie north of the U.P. district of Gorakhpur and also further east in the valley of the Kosi, in two small pockets in north Bengal and in several isolated pockets in Assam where it is most plentiful in the Kaziranga Sanctuary. It was once found extensively in the Brahmaputra and Indo-Gangetic plains right up to what is now West Pakistan but its habitat has been greatly restricted by the clearance of the moist grasslands, which are its natural habitat, for cultivation of rice and jute.

The rhinoceros is a harmless animal but it visits the fields when the paddy is growing in the months of August and September in Assam. Protection can be provided by a similar type of ditch and fence as described for the elephant. Should it be necessary to destroy a rogue rhinoceros, any powerful rifle with a steel-nosed bullet may be used and the brain-shot taken.

The objects of management are to encourage the multiplication of this rare animal while preserving the remnants from destruction. Its numbers probably do not now exceed five to six hundred in Nepal, Bengal and Assam put together. In the past it has been severely depleted for the sake of its horn which is in great demand as a supposed aphrodisiac, China being the main market. Poaching was at one time rampant and is far from being eradicated, particularly in Nepal where 20 to 30 animals are killed each year. The rhinoceros is completely protected but in Nepal limited shooting is permitted at the royal shoots.

Poachers usually take advantage of the animal's curious habit of depositing its dung in the same place until a large mound is formed. Such dung-heaps appear to be communal in character. In Assam elephants are used for poaching the animal while the concentrations of rhinos during the flood season make it an easy prey. Rhinoceroses sometimes wander far from sanctuaries and require to be driven back with blank-fire.

The ecological management of rhino habitat necessitates the maintenance of sufficient areas of swampy grass land for its existence. The use of fire to hold the ecological succession at the grass stage is obligatory and early or 'cold' burning is necessary. Where pools dry up in the winter they may be deepened and channels cut to bring in water in the dry season—this is of importance in the Himalayan sub-montane zone where in the bhabar areas water courses dry up. When animals tend to wander from sanctuaries they should be driven back by firing blank cartridges from elephant back. In Kaziranga the forest department elephants are often sent out long distances to bring back straying rhinos to the sanctuary. The growing of paddy in suitable places to keep rhinos from straying may be worth trying, particularly in small sanctuaries. Any such efforts to keep these valuable animals within a protected area are very worth while, as once they stray outside they are liable to be butchered by the surrounding population.

Prohibition of grazing in sanctuaries and national parks containing rhinoceroses is most important in order to guard against such highly contagious and lethal diseases like Anthrax and Haemorrhagic septicaemia, which can wipe out whole herds of animals. Some ten years ago the carcasses of no less than thirteen rhinoceroses which had died through one of these diseases were found in the Kaziranga Sanctuary of Assam, so the severity of the outbreak can well be imagined. In addition to prevention of grazing,

systematic prophylactic inoculation and vaccination of the domestic cattle, in the surrounds of sanctuaries and national parks containing rhinos, buffaloes, bison, elephants and deer, against cattle-borne diseases should be regularly carried out. In the cold weather of 1952-53 the whole of the cattle and buffalo population surrounding the Kaziranga Sanctuary in Assam, numbering nearly 30,000 head, were inoculated against rinderpest and this measure undoubtedly reduced the severity of an outbreak of this disease which took place the next year, only a few wild buffaloes and domestic cattle grazing within the sanctuary being affected. Such preventive inoculations on a 3-year cycle should be a regular feature in areas where domestic cattle and wild ungulates graze side by side.

Rhinoceroses in Assam have been successfully trapped for export in recent years. The animals are captured in pits and are kept in a small stockade for about a month before being despatched in strong, wooden travelling cages. The treatment of wounds and abrasions received in the course of capture is as for elephants.

*The Bison.* The Gaur or Indian Bison is on the decline in the sub-Himalayan zone. It is not found west of Nepal and towards the east, in the forests along the Himalayan foot-hills, the animal was once much more plentiful than now. Once plentifully found in Assam in the hilly areas on both banks of the Brahmaputra, it is now confined to the interior of some reserves only. The large herds which once inhabited the North Cachar hills of Assam have been decimated by successive epidemics of some cattle-borne disease, the last being in 1948. In Palamau district of Bihar the animal is reported to be recovering after a long period of closure of the area as a sanctuary. In Madhya Pradesh bison are fairly numerous in Bastar and in Chanda district, where they damage teak plantations. But it is only in Mysore and certain of the hilly tracts of south India including the Western Ghats, extending from Kerala up to Kanara district of Bombay, that the animal may be said to be adequately represented. It is particularly numerous in the Bandipur Sanctuary of Mysore.

Like other cloven-hoofed ruminants, this bovine is highly susceptible to rinderpest and food-and-mouth disease and the best protection that can be afforded to it is to eliminate grazing within the forests where it is found and to periodically inoculate the cattle of the surrounding areas as a prophylactic measure.

*The Indian Buffalo.* Once found extensively over the grassy areas in the Gangetic-Brahmaputra basin the wild buffalo is now confined to parts of the Nepal terai, Assam, Orissa, the Bastar area of Madhya Pradesh and the upper reaches of the Godavari river in Andhra Pradesh.

In the matter of protection the remarks regarding the bison largely apply here. In Assam, solitary male buffaloes are in the habit of coming out of the sanctuaries and reserves to consort with the cows of domestic buffaloes which generally graze in the same localities and their superior strength renders it impossible to maintain tame male buffaloes in the grazing herds. Nor do the graziers appreciate the off-spring of a wild bull and a domestic cow buffalo, as it is generally much larger and more difficult to control and gives a smaller milk yield. The cow buffalo is often unable to give birth to the large calf and dies. However, opinions in Assam differ as to the benefits to be derived from this admixture of wild blood in the domestic breed of

A lion and two lionesses were transported from Saurashtra and released into a fenced enclosure inside the sanctuary, which itself was fenced off with barbed wire up to a height of 7' to 8'. The lions soon broke out of the small enclosure and eventually wandered outside the sanctuary, in spite of regular feeding with buffalo baits. One of the lionesses gave birth to a cub which died. She has herself since disappeared and is supposed to have been killed by wild dogs. The second lioness has also given birth to two cubs since then. Latest reports indicate that the U.P. Government have given up the experiment, as the lions have taken to lifting cattle and the intention is to re-capture them and confine them in the Lucknow zoo.

The lion in the Gir has recently had to face a new threat to its existence. The maldaries, whose cattle and buffaloes they prey upon, are spraying their kills with insecticides and poisoning them. In the times of the Nawab of Junagadh the maldaries were compensated for animals killed and it is felt that unless this custom is resumed by the Government the lion will not be safe.

2. *The rhinoceros (Genda) : R. unicornis.* The Great Indian Rhinoceros which once existed throughout the Indo-Gangetic plain, almost up to Peshawar, in the sixteenth century has been on the retreat with the progressive opening up of the grasslands for cultivation in the last one hundred years. This animal is now confined to the Chitawan area and the Kosi valley of the Nepal terai, north Bengal in two small areas in the terai, further along in the sub-Himalayan zone of Assam and three places on the banks of the Brahmaputra river, notably in Kaziranga. This animal was once domesticated and is supposed to have been used for battle and by the people of Assam for ploughing. This is not unbelievable as its reputation for ferocity is very much exaggerated and even a full grown male rhino becomes docile within a fortnight after capture. The greatest number of rhinoceroses are found in Kaziranga Sanctuary in Assam, where there are believed to be about 150 out of the total of some 300 that exist in that State. With Nepal having about 300 rhinos and Bengal about 50, there are not likely to be more than 600 animals in the whole of the Indian sub-continent. No accurate census of this animal so possible however and all estimates of its numbers are to be treated with caution.

The other and equally important cause of the reduction in numbers of this one-horned rhinoceros, the largest of the various species of the genus Rhinoceros, is the great demand for its horn which consists of a mass of compacted, agglutinated hair attached to the skin on the nose of the animal. This is believed to have aphrodisiacal qualities and is in great demand in China. As the result of severe poaching the numbers dwindled in Bengal and Assam to a mere handful, but through the determined efforts over the past forty years of the forest departments of these States the species has been rescued and is safe, for this generation at least. In Nepal, where poaching is rampant, the losses are conservatively estimated to be twenty to thirty annually.

3. *The Cheetah : Actinonyx jubatus.* The cheetah or hunting-leopard of India was once plentiful in the Deccan, where its principal food was the black buck, chinkara and four-horned antelope, but the spread of cultivation combined with uncontrolled shooting has led to the disappearance of this species of deer over large tracts and the cheetah has virtually become extinct. The last recorded observation of this animal is from Chittoor district in Madras State, in 1952. The cheetah is easily tamed and used to be

permit this to be the case. It cannot be over-emphasised that the undisturbed viewing of wild life depends very largely on the degree of protection and freedom from disturbance it enjoys. In addition, such added attractions as water, shade and even food in the shape of cereal crops or palatable grasses and the provision of salt-licks, have to be provided in suitable spots. It is the greatest mistake to imagine that sanctuaries or national parks can be left to look after themselves, for only constant observation, study and experimentation can provide the basis of correct wild life management. The putting down of artificial salt-licks in a sanctuary is a valuable aid in attracting and keeping animals and is practised in Burma.

By proper preservation of suitable conditions of fodder and water, animals can be prevented from migrating from areas in the unfavourable seasons and by such means it is possible to attract and retain animals in a sanctuary or park, provided the area is large enough. For instance, in the dry season animals tend to migrate from the Bandipur Sanctuary in Mysore to the adjoining Madumalai Sanctuary in Madras due to shortage of water and it may be possible to halt this migration by the provision of water-supplies in the former area.

The 'inner sanctuary' or Abhayaranya should in all cases be large enough for animals to remain completely undisturbed and if it is not possible to ensure complete immunity from exploitation for the sanctuary itself, which is the ideal, the forest management can be so arranged as to give rest to areas in rotation or for long periods at a time.

Viewing of wild animals is best done on elephant back, in the early hours of the morning or late in the evening and it is recommended that elephants equipped for riding by visitors be maintained in all sanctuaries where the configuration of the ground lends itself to this. Motor roads and motor cars have their own value in certain cases where visibility is good but for the visitor there is nothing to equal the thrill of riding out on an elephant in the dewy coolness of an Indian morning to see animals unafraid and at close quarters.

Finally and last but not least, sanctuaries require special, permanent and well-paid protective staff for enforcement of the rules and particularly to guard against poaching. Unless this is provided the area will only become a happy hunting ground for poachers, in the absence particularly of the legitimate sportsman who is the best guardian of the wild life in a forest.

The knowledge of and the ability, to recognise some of the diseases common to domestic and wild animals and birds, is essential for those dealing with management of wild life sanctuaries and national parks. Of the cattle-borne diseases the most common are *rinderpest* and *foot-and-mouth disease*, both of which mainly attack cloven-hoofed animals like deer, bison, pig and buffalo; the rhinoceros is apparently immune to these diseases but there are reports of elephants suffering from the latter. *Anthrax* attacks bovine animals as well as elephants and rhinoceroses and is easily the most fatal of all diseases, though happily it is not very common. *Haemorrhagic septicaemia* is very similar to anthrax in symptoms and is a fatal disease which attacks rhinoceroses, elephants and cloven-hoofed animals alike. The Indian Veterinary Research Institute has invented a vaccine which gives immunity from the disease for two years.

In *foot-and-mouth disease* or 'aphthous fever' the mouth becomes sore, frothy and ulcerated, grazing becomes difficult, the feet suppurate and swarm

with maggots, the hooves becoming loosened and even drop off. The disease is very hard to eradicate and in England and America immediate destruction of cattle infected with it is the rule. Prophylactic vaccination of cattle assists in minimising epidemics and sulpha drugs are used to heal the lesions, while isolation, disinfection of standing grounds, antiseptic washing of the feet and application of Stockholm tar, antiseptic washing of mouth and udder and removal of calves from the dams, are done. Sulphamezathine may be tried.

*Rinderpest* or 'cattle-plague' is a highly fatal and contagious disease transmitted by a filterable virus. The symptoms are high temperature, violent purging, the evacuations being mixed with bloody mucus, much running of nose and mouth, excessive thirst, flies on mouth, eyes and ears, rapid weakness and staggering, resulting in death within 2-4 days. Ninety per cent of attacked cattle die. Sulphamezathine may be tried on infected animals. In all cases quarantine of infected animals and preventive vaccination with goat-tissue virus, *i.e.*, attenuated strains of the disease prepared on goat-tissue by the scarification method, is useful in minimising epidemics. The use of freeze-dried rinderpest vaccine assures an immunity of fourteen years. Non-infected cattle should be removed from the areas immediately if there is an outbreak of rinderpest.

*Anthrax* is a bacterial disease which is highly contagious and fatal, the mortality being up to seventy to ninety per cent. The symptoms, which are most difficult of detection, are rise of temperature, staggering, blood from nostrils and in urine, swelling of neck and breast. In elephants violent shivering, prostration, colic pains, dark blood-stained evacuation, paralysis and tottering gait are seen. Blood must be taken from freshly dead animals for diagnosis. Sudden death after acute illness is a suspicious feature. Prompt inoculation with a potent serum is done immediately in field outbreaks. Penicillin, auremycin, terramycin and streptomycin can be tried. The use of spore vaccine for prophylactic treatment is helpful, provided the season is correct. There are two types of vaccine prepared, the equine and bovine and the dose in each case is 1.00 c.c. Equine vaccine is less severe in its reactions and is given to elephants that have not been previously inoculated or inoculated within the last two years, to young or old. Pregnant females, young calves, debilitated animals and animals with a temperature must not be inoculated.

Carcases of diseased animals should be disposed of by blocking all external orifices and burying in a deep pit, with quick lime if available. The ground where the animal died should be disinfected by burning. Burials and post-mortems should not be conducted near streams and other places where healthy animals may be exposed to infection.

*Haemorrhagic septicaemia* is an infectious disease transmitted by a micro-organism called *Pasteurella bovisepitica*. It attacks horses, cattle, buffaloes, pigs, poultry and even dogs and cats. Among wild animals deer are commonly attacked but bison and buffalo are also attacked. The symptoms are sudden high fever, swelling of neck and throat, salivation, constipation followed by bloody diarrhoea, red mucous membrane, swollen and purple tongue. Duration 12-24 hours and mortality is high. Sulphamezathine and terramycin are used in acute cases and composite vaccines before the rains as a prophylactic measure.



12. <i>Rhinoceros unicornis</i>	Ht. at shoulder	6' 5 $\frac{1}{4}$ in.	Tom Briscoe, Assam.
	Length of horn	24 $\frac{1}{2}$ in.	
	Circumference of horn	24 $\frac{3}{4}$ in.	British Museum.
13. <i>The Great Pamir Sheep (Ovis poli)</i>	Length	75 in.	Lord Roberts.
14. <i>The Great Tibetan Sheep (Ovis Hodgsoni)</i>	Length	48 in.	Officers Mess, 45 Rattray's Sikhs.
15. <i>Kashmir Ibex</i>	Length	59 $\frac{1}{2}$ in.	P. F. Hadow. Kashmir.
		58 in.	Prater.
16. <i>Bharal</i>	Length	33 $\frac{1}{4}$ in.	H. H. Hayden.
		32 $\frac{1}{2}$ in.	Indian Museum, Calcutta.
		31 $\frac{1}{2}$ in.	J. Campbell, Ladakh
17. <i>Urrial or Shapu</i>	Length	39 $\frac{1}{2}$ in.	Officers Mess, 53rd Sikhs.
		39 in.	General Lord Rawlinson.
18. <i>Markhor</i>	Length	60 $\frac{3}{4}$ in.	Capt. H. Barstow, Kashmir.
		65 in.	Col. A. B. Souter, Kashmir.
19. <i>Himalayan Thar</i>	Length	16 $\frac{1}{2}$ in.	Wilson.
20. <i>Nilgiri Thar</i>	Length	17 $\frac{1}{2}$ in.	Prater.
21. <i>Serow</i>	Length	13.5 in.	—
		12 $\frac{7}{8}$ in.	Lt. Col. Swettenham, Mussoorie.
22. <i>Ghoral</i>	Length	9 $\frac{3}{4}$ in.	Asian Magazine, 1882.
		8 $\frac{7}{8}$ in.	Capt. Cropper, Simla.
23. <i>Nilgai</i>	Length	11 $\frac{3}{4}$ in.	British Museum.
			A. O. Hume.
24. <i>Sambar</i>	Length	50 $\frac{1}{8}$ in.	} Nawab of Bhopal, Bhopal.
	Span	24 in.	
25. <i>Cheetal (Spotted deer)</i>	Length	41 $\frac{1}{2}$ in.	B. N. H. S.
	Length	40 in.	J. V. Collier, Kumaon terai.
	Length	59 $\frac{1}{4}$ in.	} Lady Elliot, Dehra Dun.
	Span	25 in.	

APPENDIX I—contd.

THE WILD BIRDS AND ANIMALS PROTECTION ACT, 1912

State, Act and Area of application	Species, trophy etc.	Protection and Prohibition	REMARKS
II. The Wild Birds and Animals Protection Act, 1912.	<i>Species to which the Act is applicable.</i>		
The whole of India.	<p>(1) Bustards, ducks, floricans, jungle fowl, partridges, pea-fowl, pheasants, pigeons, quail, sand-grouse painted snipe, spur-fowl, wood-cock, herons, egrets, rollers and king-fishers.</p> <p>(2) Antelopes, asses, bison, buffaloes, deer, gazelles, goats, hares, oxen, rhinoceroses and sheep.</p>	<p>The State Governments may be notification declare the whole or part of the year as close seasons throughout the whole or part of their territories, for any wild bird or animal to which this Act applies, or for females or immature birds or animals of the species in question.</p>	<p>(1) Subject to the provisions of the Act it shall be unlawful, during the close seasons, to:—</p> <p>(a) Capture or kill any such bird or animal.</p> <p>(b) to sell or buy or possess any such bird or animal.</p> <p>(c) to sell or buy or possess plumage from any such bird.</p> <p>(2) The penalty is a fine which may extend to Rs. 50, and on subsequent conviction imprisonment for one month, or fine of Rs. 100, or both. In addition, confiscation of the bird or animal may be ordered.</p> <p>(3) It shall not be an offence to capture or kill a wild animal in defence of person or of a wild bird or animal in bonafides defence of property.</p>
III. The Elephants Preservation Act, 1879.	<p>Wild Elephants.</p> <p>NOTE : Every elephant captured and the tusks of every wild elephant killed by any person not licensed under the Act, shall be the property of Government.</p>	<p>Killing, injuring or capturing, or the attempting to do so, of any wild elephant except in defence of person or when found damaging houses or cultivation, or upon, or in the immediate vicinity of any main public road or any railway or canal, or under license granted under the Act, is prohibited.</p>	<p>The Collector or Deputy Commissioner of a District may grant licenses to kill and/or capture wild elephants. Provided that no such license shall authorise entrance upon any land without the consent of the owner or occupier.</p> <p><i>Penalties</i></p> <p>(1) Fine up to Rs. 500 per elephant for killing, injuring or capturing.</p> <p>(2) Fine up to Rs. 500 for breach of a condition of the license and on second offence punishment with imprisonment for six months, or fine, or both. Wilful refusal or inability to produce a license will be punishable with fine up to Rs. 100 in addition to others punishment, if any.</p>

APPENDIX I—contd.

State, Act and Area of application	Species, trophy etc.	Protection and Prohibition	REMARKS
<p>The Bengal Rhinoceros Preservation Act, 1932. Whole of Bengal.</p>	<p>Rhinoceros.</p> <p>NOTE : Every rhinoceros killed or captured otherwise than with the permission of the Govt. and all parts of such rhinoceros, shall be the property of Govt.</p>	<p>Killing, injuring or capturing a rhinoceros, except in defence of person or under a license issued by the State Government, is prohibited.</p>	<p><i>Penalties</i></p> <p>(1) For killing and capturing a rhinoceros; imprisonment up to one month or fine up to Rs. 1000 or both.</p> <p>(2) For sale or purchase of any part of a rhinoceros fine up to Rs. 1000 and on second conviction fine up to Rs. 2000.</p> <p>(3) Failure to report within three days the killing, injuring or capturing of a rhinoceros : fine up to Rs. 500.</p>
<p>The Assam Rhinoceros Preservation Act, 1954. Whole of Assam.</p>	<p>Rhinoceros.</p>	<p>Killing, injuring or capturing a rhinoceros or attempting to do so without a license or an order under the act is prohibited.</p> <p>Provided killing or injuring a rhinoceros is permitted in defence of person.</p> <p>The onus of proving the right of such private defence shall lie with the person claiming it.</p>	<p>(1) <i>Penalty</i> : Fine of Rs. 1000 and imprisonment up to one year. Breach of condition of license: fine up to Rs. 1000. In addition the weapon will be confiscated.</p> <p>(2) Power to arrest without warrant and seize weapon is given to police officers not below the rank of an Asstt. Sub-Inspector and forest officers not below the rank of an Asstt. Forester.</p> <p>(3) Power to search with a warrant any building or enclosed place and to seize weapons etc.; connected with a suspected offence under the act is given to forest officers not below the rank of an Asstt. Forester.</p>

APPENDIX I—contd.

State, Act and Area of application	Species, trophy etc.	Protection and Prohibition	REMARKS																																																																	
<b>ASSAM</b>																																																																				
I. Assam Forest Regulation VII of 1891 Sec. 25(g) and 72. Reserved Forests.	<b>BIRDS</b>	<b>Close seasons</b>																																																																		
	Pigeon. Partridges. Jungle fowl and pheasants. Quail. White winged wood-duck.† Spot-bill duck. Whistling teal and Cotton teal. Peacock.  Pink-headed duck and other birds except the birds listed above and certain other birds.§	1st March—5th June.* 1st March—31st Aug. 1st March—30th Sept. 1st April—30th Sept.  } 1st April—15th Sept.  Whole year.‡  } Whole year.	* Except in Darrang and N.L. Sub-divisions where the closed season shall be from 1st Feb.—15th May.  † White-winged wood duck has been declared a protected bird by the Indian Board for Wild Life.  ‡ Except in Goalpara where the closed season is from 1st March to 30th Sept. § Geese, duck (other than the duck shown in Col. 2), snipe, wood-cock, plover, hawks, crows and magpies. These can be shot the whole year.																																																																	
	<b>ANIMALS</b>																																																																			
	Goat, antelopes (Serow, Takin, Goral). Bull bison.** Bull Buffalo. † † Full grown male deer. Hares. Females and immature males of the above species, harmless deer and deer in velvet. Swamp and spotted deer in the Goalpara, Darrang and Kamrup Distt. Rhinoceros. Elephants (except under spl. license and under elephant control license). Gibbon or hoolok monkeys. Pigmy-hog. Pangdin.	1st June—31st Oct.          } Whole year.	**In North Cachar Hills and Garo Hills bison are protected the whole year. † † In Darrang, N.C. Hills, Garo Hills and N. Lakhimpur buffaloes are protected the whole year.																																																																	
			<b>RULES UNDER ASSAM FOREST REGULATION</b>																																																																	
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Sambar	15	15	30	Do.																																																																
Swamp deer	100	100	200	Do.																																																																
Spotted deer	35	35	—	—																																																																
Barking deer	2 free	—	5	10 Do.																																																																
Hog deer	2 free	—	5	10 Do.																																																																
thereafter	Rs. 10 each																																																																			
Tigers	2 free	—	30 eac																																																																	
thereafter	Rs. 25 each																																																																			
Leopard & Pig.	Unlimited.		Unlimited.																																																																	

REPTILES  
Monitor lizard.  
Python.

} The whole year.

- (2) *Maxima that may be shot in Reserved Forests under License.*  
Two buffaloes, two bison, four sambar, two swamp deer, one spotted deer.
- (3) No shooting license required in non-reserve areas.
- (4) Shooting season—Up to 31st May.
- (5) *Fees.* For Form "A" license for Cl. II Reserves: Rs. 20.  
For Form "A" license holders in Cl. I Shooting Block.  
2 guns—Rs. 30 each.  
3 guns—Rs. 25 each.  
4 guns—Rs. 20 each.
- (6) *Exempted Persons*  
The Governor.  
Ministers.  
Officers I/C Districts.  
Gazetted Forest Officers in their own jurisdictions.  
Hony. Forest Officer.  
Inspector General of Forests.
- (7) *Prohibited bores, ammunition etc.*  
For Big Game : below .300 bore.  
For Elephants : below .400 bore, H.V.  
In Reserves : buck-shot (shot larger than 4 and smaller than ball).

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II. Assam Rhinoceros Act, 1954 Rhinoceros (all species).

Whole year and everywhere (may be captured or killed with permission of the State Government).

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III. Wild Birds and Animals Protection Act VIII of 1912.  
All areas. The species and closed seasons are the same as those for reserved forests.

In addition, prohibition of netting of birds in the close seasons is provided for the non-reserved areas.

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IV. Rules under the Arms Act. The closed seasons, protected species and prohibited sexes are the same and are shown on the back of gun-licenses.

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APPENDIX I—contd.

State, Act and Area of application	Species, trophy etc.	Protection and Prohibition	REMARKS					
<b>BENGAL</b>								
	<b>BIRDS</b>	<b>Close seasons</b>						
I. Indian Forest Act. Reserved and Protected Forests.	Laughing thrush, babbler, whistling thrush, nuthatch, drongo, creeper, wren, warbler, shrike, minivet, oriole, grackle, starling, myna, fly catcher, chat, robin and redstart thrush, black bird and ouzel, martin and swallow, wagtail, pipit, lark (except ortolan), sunbird, pitta, wood pecker, bee-eaters hoopoe, swift, cuckoo, owl, floricane, adjutant, white-winged wood duck and pink-headed duck.	Close seasons	(1) <i>Permits in Class B forests to approved sportsmen :</i>					
Rules under relevant Sections.		Whole year.	<table style="width: 100%; border: none;"> <tr> <td style="text-align: right;">Non residents of Bengal</td> <td style="text-align: right;">Rs. 50</td> </tr> <tr> <td style="text-align: right;">Residents of Bengal</td> <td style="text-align: right;">30</td> </tr> <tr> <td style="text-align: right;">Residents of the District</td> <td style="text-align: right;">20</td> </tr> </table>	Non residents of Bengal	Rs. 50	Residents of Bengal	30	Residents of the District
Non residents of Bengal	Rs. 50							
Residents of Bengal	30							
Residents of the District	20							
	King-fisher.	1st Jan.—31st May.	(2) <i>In Sundarbans :</i> —Half the above fees for one trip of 10 days.					
	Pigeon (except rock pigeon).	1st March—30th Sept.	(3) <i>In Darjeeling and Jalpaiguri :</i> —No fees from members of clubs holding leases on payment of annual rents, who will be issued with free passes by their clubs.					
	Pea-fowl.	Do.	(4) <i>Exempted persons :</i> —					
	Jungle fowl, partridge and pheasant.	15th March—31st Aug.	Heads of Departments.					
	Ortolan.	1st April—31st Aug.	D.F.Os and S.D.Ms within their jurisdiction.					
	Spot-bill whistling teal and cotton teal.	1st April—15th Sept.	All gazetted forest officers.					
	Quail.	1st April—30th Sept.	Forest Rangers within their divisions.					
	Wild duck (except white-winged wood-duck and pink-headed duck).	1st May—30th Sept.	Gazetted Police Officers within their districts.					
	Little egret and cattle egret.	1st July—31st Aug.	(5) <i>Additional Fees :</i>					
			Rs. 10 for first bison.					
			Rs. 20 for each subsequent bison.					
			(6) Beaters, armed with firearms or bows and arrows may not be employed.					
			(7) Shooting from cars and with artificial light, or near water holes and salt licks, prohibited except for carnivora but pig, jungle fowl and hare may be shot from a motor vehicle.					
			(8) Permits may be issued free of charge for hunting, shooting.					

ANIMALS	
Rhinoceros, buffalo, female bison, pigmy hog, gazelle, pangolin, swamp-deer, female deer, male deer when hornless or in velvet, male bison in Jalpaiguri and Darjeeling.	} Whole year.
Sambar, barking deer, stag with horns not in velvet, serow, goral and hare.	} 1st April—30th Sept.
Hog deer	} 1st May—30th Sept.
Cheetal or spotted deer.	} 1st Oct.—28th Feb.
REPTILES	
Water-lizard, black-lizard, yellow-lizard, grey-lizard, python (in Bholka Range of Jalpaiguri).	} Whole year.

II. Wild Birds and Animals

Protection Act of 1912.  
(Bengal).

Notification under Sec. 2,  
of additional species to  
which the Act will apply.  
Whole State.

ANIMALS	
Female buffaloes, female bison, rhinoceros, male bison in Jalpaiguri and Darjeeling, female deer, female antelopes, swamp deer, male deer when hornless or in velvet, gazelles, lizards.	} Whole year.
BIRDS	
All ducks other than white-winged wood-ducks.	} 1st May—30th Sept.
Jungle fowl, partridge, pheasants.	} 15th March—30th Sept.
All pigeons (except rock-pigeons).	} 1st March—31st Aug.
Pea-fowl.	} 1st March—30th Sept.
Ortolans.	} 1st April—31st Aug.
Little egrets and cattle egrets.	} 1st July—31st Aug.
King-fishers.	} 1st Jan.—31st May.
ANIMALS	
Male bison (other than in Darjeeling and Jalpaiguri).	} 1st May—31st Aug.
Barking deer, stags with horns not in velvet.	} 1st April—30th Sept.
Cheetal stags with horns not in velvet.	} 1st Oct.—28th Feb.
Sambar with horns not in velvet.	} 1st April—30th Sept.
Male antelope.	} 1st May—30th Sept.
Hares.	} 1st April—30th Sept.
Serow and goral.	} Do.
Lizards.	} 1st July—31st Dec.

Penalty for capturing, killing, selling, buying and possessing birds (or their plumage) or animals in the close season: Fine Rs. 50.  
Second conviction imprisonment for one month or fine of Rs. 50 or both.

BIHAR

Close seasons

BIRDS

I. Indian Forest Act, 1927. Rules under Sec. 26(i) and (j).	Purple wood pigeons, herons, rollers, king-fishers, hoopoes, orioles.	} Whole year.
(Bihar and Orissa Shooting Rules 1930).	Ducks, florican, jungle-fowl, ortolans, pea-fowl, sand-grouse, painted snipe and spur-fowl.	} 14th April to 30th September.
Reserved Forests.	Partridges.	} 15th March—30th Sept.
	Pigeons.	} 1st Feb.—31st July.

ANIMALS

Rhinoceros, bison, deer, cow, buffaloes, deer, gazelles, antelope (except nilgai in trans-Gangetic districts) and male deer when hornless or with horns in velvet.	} Whole year.
Hares, nilgai, does, males of deer, gazelle and antelopes (except nilgai in trans- Gangetic districts).	} 1st May — 30th Sept.
Cheetal stags.	} 1st May—30th Sept.

II. Protected Forests of Chota Nagpur and Santal Parganas.	Partridges.	} 15th March—30th Sept.
Rules under Section 32(j) of Indian Forest Act.	Pea-fowl, jungle-fowl, florican, pheasant, grouse.	} 1st April—30th Sept.

- (1) *Permits and Fees:*  
GENERAL PERMITS (FORM A).  
Rs.  
For 10 days { 10 District residents.  
15 State subjects.  
20 Outsiders.  
For 1 month { 20 District residents.  
30 State subjects.  
40 Outsiders.  
SPECIAL PERMITS (FORM B).  
Fishing { 10 days—Rs. 2, 3 and 5.  
or  
Game { 1 month—Rs. 4, 6 and 10.  
Carni- { 10 days—Rs. 35, 7 and 10.  
vora & {  
Bear { 1 month—Rs. 10, 15 and 25.

- (2) In addition to the usual prohibitions, no person shall shoot between sunset and sunrise by the aid of artificial light, any animal other than carnivora or animals prescribed as dangerous; wild dog, bear and pig may, however, be so shot provided the light is not attached to or thrown from a motor car or other vehicle.  
(3) Shooting of bison with rifle of less than .400 bore is prohibited and not more than 2 bison may be shot in any one year.  
(4) Other rules as for Orissa.  
(1) License to shoot, fish, hung etc; in Form "A" in the name of the headman or leading villager for the whole village subject to the close seasons and the prohibition of use of poison, explosives etc., in fishing.



## APPENDIX III

### SANCTUARIES AND NATIONAL PARKS IN INDIA

#### ANDHRA PRADESH

1. *The Pocharam Sanctuary* in Medak division is situated on the P.W.D. road from Medak to Yellaeddy, 12 miles from Jedak, the nearest railway station being Akkanapet on the Hyderabad-Manmad line. The area is 46 square miles. There is a well equipped I.B. at Pocharam. Tiger, panther, bear, sambar, cheetal, etc. comprise the fauna.

2. *The Pakhal Sanctuary* in Warangal forest division has an area of 339 square miles. The nearest railway stations are Warangal and Nekonda on the Central Railway and there is a rest house at Pakhal. Tiger, panther, bison, bear, cheetal, sambar, four-horned antelope, blue-bull, chinkara, wild pig, crocodile etc., comprise the fauna.

3. *The Eturnagaram Sanctuary* in Warangal forest division has an area of 314 square miles. The nearest railway station is Warangal. There is a rest house at Eturnagaram. The fauna is similar as for Pakhal sanctuary.

4. *Shri Venkateshwara Sanctuary* is situated in the Chittoor and Cuddapah districts. It is 184 square miles in area and contains tiger, panther, bear, sambar, potted deer, black-buck, pig, etc.

5. *Nagarjunasagar Sanctuary* also called Ikshawaka, is in Nalgenda and Guntur districts. It is 227.5 square miles in area and contains tiger, panther, cheetah (now extinct) sambar, barking deer, blue bull, black-buck, chausingha and the giant squirrel.

6. *The Qawal Sanctuary* is in Adilabad district. It is 500 square miles in area and contains tiger, panther, bear, bison, pig, spotted deer, barking deer, sambar, blue-bull, black-buck etc.

NOTE.—Sanctuaries are exploited in Andhra Pradesh.

#### ASSAM

1. *The Kaziranga Sanctuary* in the Sibsagar division is 166 square miles in area. It is situated on the south bank of the Brahmaputra and is bounded by the Mikir Hills on the south and by the Brahmaputra on the north. This sanctuary is the show-place of north-east India and possesses all facilities for visitors. It is easily accessible by air from Calcutta and thence by road, 60 miles from Jorhat and 130 miles from Gauhati airfields respectively. A government car is available. The nearest railway station is Jakhlabanda via Nowgong. Kaziranga is the stronghold in Assam of the Great Indian Rhinoceros and it is estimated that the total number of these rare animals in the sanctuary is some 150 Rhinos can be viewed from elephant-back at close range and several elephants are kept for visitors. The sanctuary also contains several hundred buffalo, about 60—80 elephants, and a few swamp deer, besides hog deer, barking deer, pig and tiger. Abundant water-fowl can be seen on the many bheels in the sanctuary.

For the accommodation of visitors there is a large guest house with accommodation for a dozen people situated at mile 136 on the Assam Trunk Road. Arrangements for food, bedding etc., exist and the bungalow is fitted with sanitation and electricity. All arrangements are made by the Divisional Forest Officer, Jorhat.

2. *The North Kamrup or Manas Sanctuary* in Kamrup district is 105 square miles in area. Located on the north bank of the Brahmaputra, this sanctuary is in some respects a greater attraction than Kaziranga being situated at the foot of the Bhutan Hills (Himalayas) and having on one side the beautiful Manas River which provides good camping site and fishing. This sanctuary contains elephant, buffalo, bison, rhinoceros and swamp deer as well as tiger, bear, pig, sambar, hog deer, barking deer etc. The nearest railway station is Barpeta Road from which there is a motorable road to the sanctuary boundary from where a cold weather forest road goes up to Mothaguri, a camping spot at the foot of the hills. The nearest air-port is Gauhati (Berjar) from where the sanctuary is about 110 miles including a ferry crossing over the Brahmaputra. Transport can be arranged and will cost about Rs. 10 per diem excluding petrol and oil. Two elephants are provided for visitors. Forest Rest Houses are available at Banshari and Mothaguri and grass huts can be built for visitors. The Divisional Forest Officer, Gauhati, should be contacted for arrangements.

NOTE:—Exploitation of forest produce has been restricted in Mudumalai.

2. *Vedanthangal Bird Sanctuary* is a lake set in the midst of cultivated area in Chinglepet district.

3. *The Guindy National Park*. This is 300 acres in extent and is the residual area of the original Government House, Madras, grounds. It contains a herd of black-buck and some other deer. It is situated a few-miles out of Madras.

#### MYSORE

1. *The Venugopal Wild Life Park* is an area of 310·34 square miles, with a 'sanctum sanctorum' of 22 square miles within the park known as the Bandipur sanctuary. The area adjoins the Mudumalai sanctuary of Madras State. Accommodation in the shape of a forest lodge and a P.W.D. bungalow is available. Elephants and a motor-truck are provided for viewing game and motoring is allowed on the 80-mile network of roads in the area. Machans are also provided for viewing game.

Bison and spotted deer are most commonly seen, being unafraid of motor vehicles. Elephants are plentiful, the other animals in the sanctuary being tiger, panther, bear, pig etc. Water scarcity exists in the dry weather and animals are found to move to the adjoining Mudumalai Sanctuary in Madras territory.

2. *The Jogar Valley Sanctuary* in Chikmagalur district is 35 square miles in area. It contains bison, sambar, spotted deer, barking deer, mouse deer, tiger, panther, bear and pig.

3. *The Dhandeli Sanctuary* comprises the two forest ranges of Virnoli and Kulgi, totaling approximately an area of 80 square miles and including 23 villages. There are 60 miles of roads within the sanctuary and three rest houses. The railway station is Alnawar (22 miles) and Belgaum airport is 70 miles away.

The fauna consists of tiger, panther, sloth bear, elephant, bison, sambar, barking deer, cheetal, mouse-deer, pig and jungle fowl. The area is heavily exploited for timber, bamboo etc.

NOTE:—Exploitation of forest produce is permitted.

4. *The Nagarhole Sanctuary* in Coorg district is 111 square miles in area. It contains tiger, panther, bear, elephant, bison, sambar, spotted deer, barking deer, pig, etc.

NOTE:—No exploitation is permitted in the (sanctum sanctorum, known as the Bandipur Sanctuary.

#### N.E.F.A.

The National Frontier Park (proposed) covers an area of 802 square miles in the Noa-Dihing valley of the Lakhimpur Frontier Tract of Assam in the extreme corner of Assam bordering Burma. The nearest railway station is Ledo, which is 35 miles by fair weather road to Miao, beyond which the park is another 10 miles by foot-path. The park skirts the Manabhum and Daphabhum mountain range and contains a species of rhinoceros which because of the hilly nature of the terrain is suspected to be the 2-horned *Rhinoceros sumatrensis*. There are also bison, elephant, tiger, leopard, clouded leopard, sambar, barking-deer, taking, goral etc. The country is covered with dense jungle and is sparsely inhabited.

NOTE:—The area is not exploited for forest produce, being too inaccessible.

#### ORISSA

1. *The Raigoda Wild Life Sanctuary* in Dhenkanal District is nearly 17 sq. miles in area. The area is hilly and forms part of the Angul Forest Division. It is approached by road from Angul and is 23 miles south of Angul Town. The nearest rail head is Meramandali which is 123 miles from Sambalpur. Bhubaneswar is the nearest air-port. Applications should be made to the D.F.O., Angul Division, P. O. Angul. Guides are available from the Range Officer, Raigoda.

The animals found in the sanctuary are elephant, bison, sambar, spotted deer, bear, nilgai, barking deer, tiger, panther, jungle fowl and pea-fowl. There is a net work of roads in the sanctuary as well as a forest department elephant for tourists. There are forest rest houses at Raigoda, Labangi and Tulka. It is proposed to extend the sanctuary to include the picturesque Satkosia gorge of Mahanadi.

Wild life found in the area are tiger, leopard, gond, bear, sambar, cheetal, para, kakar, pig, pea-fowl, pheasant, jungle fowl, partridge, dove and pigeons.

9. *The Maldhan Sanctuary* is situated in the Terai and Bhabar Division, Naini Tal and has an area of 7.2 square miles. It can be approached from Ramnagar (NER) about 15 miles (10 miles of which is the Kashipur road). One has to make one's own transport arrangement. Accommodation : Phanton Forest Rest House, 4.5 miles away, application for the accommodation has to be made to the Divisional Forest Officer, Ramnagar Forest Division, Naini Tal. The best time to visit the sanctuary is January to May.

Wild life found in the sanctuary are, tiger, leopard, gond, bear, sambar, cheetal, para, kakar, pig, pea-fowl, pheasant, jungle fowl, partridge, dove and pigeons.

10. *Tanda Sanctuary* has an area of 4.7 square miles and is located in the Terai and Bhabar Division, Naini Tal. The nearest place to the sanctuary is Lalkua one mile from Lalkua (N.E.R.) by forest road. Transportation is not available and one has to arrange one's own. Accommodation is available in the shape of a forest rest house and permission for staying can be obtained from the Divisional Forest Officer, Terai and Bhabar. The best time to visit the sanctuary is January to May.

Wild life inhabiting the sanctuary are: tiger, leopard, gond, bear, sambar, cheetal, para, kakar, pig, pea-fowl, pheasant, jungle fowl, partridge, dove and pigeons.

11. *The Sonaripur Gond Sanctuary* is located in the North Kheri Forest Division Lakhimpur-Kheri District and has an area of 24.63 square miles. It is accessible from Sonaripur (NER). Transport facilities are not available. Accommodation in the shape of the Sonaripur Forest Rest House is available and permission to stay there can be obtained from the Divisional Forest Officer, North Kheri. The best time to visit the sanctuary is January to May. Wild life inhabiting the sanctuary are tiger, gond, leopard, sambar, cheetal, para, kakar, pea-fowl, jungle fowl and partridges.

In addition to the above, there are four bird sanctuaries in the Eastern Circle.

NOTE. --Exploitation and grazing are permitted in the sanctuaries of the Uttar Pradesh

#### WEST BENGAL

1. *The Senchal Sanctuary* is situated in the Senchal and Takdah ranges of Darjeeling division. The area is 15.27 square miles and the altitude is 5000'—8000'. The forest consists of oaks, maples, michelias, laurels and *Cryptomeria japonica*.

Barking deer, bear and birds are commonly seen. There is a rest house at Rambi and the Senchal lake is within the area, also Tiger Hill from where a fine view of Mount Everest is obtained.

2. *The Gorumara Sanctuary* is situated in the Lataguri sub-division of Jalpaiguri, 7 miles from Chalsa and Lataguri railway stations. The area is about  $3\frac{1}{2}$  square miles, and the forest is riverain in nature. In addition to a few rhinoceros there are some elephant, bison, sambar, hog-deer, barking deer, pig, pea-fowl, pigeon, etc.

A good rest house is available at Gorumara with a look-out platform on the steep bank of the Indong river with a view along a 100 ft. wide strip of forest which is kept clear from the Indong to the Moortee rivers for viewing game.

3. *The Chapramari Sanctuary* is situated within the Upper Tondou Range of the Jalpaiguri division, between Chalsa and Nagrakata railway stations. The area is a little over 3 square miles and the forest consists mainly of sal. The fauna consists of elephant, bison, sambar, barking deer, hog-deer, bear and pig, but the main attraction is the bird life of Chapramari beel.

An inspection bungalow is available and is 6 miles from Nagrakata railway station. The bungalow is provided with an elephant-proof ditch fitted with a draw-bridge.

4. *The Jaldapara Sanctuary* is situated in the Nilpara range of Cooch Behar division, about a mile from Hasimara station to the east and a similar distance from Madarihata station in the west. The area is 36 square miles. The forests are of a riverain type and the sanctuary is meant mainly for rhinoceros which are estimated to be some 30 in number. Sambar, hog-deer, barking deer, elephant, pig, cheetal, swamp deer, jungle fowl and pea-fowl are also found.

## APPENDIX IV—contd.

Sl. No.	English name	Scientific name	Hindi/Local name	Distribution	REMARKS
124.	The Great One-horned Rhinoceros.	<i>Rhinoceros unicornis</i>	Gainda	Restricted to Assam, parts of North Bengal, Nepal.	The distribution has been in the process of reduction, in the nineteenth century the animal extended along the Terai to Nepal and Sikkim and in the sixteenth century ranged even to Peshawar, according to Emperor Babar, who was an excellent practical naturalist.
125.	The Smaller One-horned or Javan Rhinoceros.	<i>Rhinoceros sondaicus</i>	Gainda	Occurred in Bengal (Sundarbans). Its presence now requires verification.	
126.	The Sumatran Two-horned Rhinoceros.	<i>Rhinoceros sumatrensis</i>	Gainda	Occurred in Assam, now practically exterminated.	
WILD OXEN AND BUFFALO					
127.	The Wild Ox or Zebu	<i>Bos indicus</i>	Gai	Mostly domesticated, has become "feral" in Oudh, Rohilkhand, Surat, Mysore, Nellore, Char Sidhi, the mouth of Megna etc.	
128.	The Wild Buffalo	<i>Bubalus bubalis</i>	Arna (male) Arni (female)	The grass jungle of the Terai in Assam and Bengal and the plains of Brahmaputra in Assam. A few herds survive in parts of Orissa and the adjoining Raipur district of Madhya Pradesh and Bastar State.	
129.	The Gaur	<i>Bibos gaurus</i>	Gaur, Gam-gai	The hill forests of India in the East and South; does not ascend Himalayas.	
130.	The Banting or Tsine	<i>Bibos banteng birmanicus</i>	—	It is said to be found in the hills of Manipur but whether any herds exist in these hills at present is not known.	