

The large Mammals of the Keoladeo Ghana Sanctuary,
 Rajasthan

BY

J. JUAN SPILLETT, JOEL E. COHEN, AND RAMES C. DE

I. INTRODUCTION	..	..	..	..	..	602
II. RESULTS	..	..	..	..	..	603
III. CONSERVATION PROBLEMS	..	..	..	..	..	604
Domestic Livestock	..	..	..	..	..	604
Predation	..	..	..	..	..	605
General Human Disturbances	..	..	..	..	..	605
IV. RECOMMENDATIONS	..	..	..	..	..	606

TABLE

The number of wild ungulates in the Keoladeo Ghana Sanctuary, Rajasthan	604
--	----	----	----	----	----	-----

I. INTRODUCTION

Keoladeo Ghana is known as one of the finest waterbird sanctuaries in India. However, it is not generally appreciated that this reserve also harbours such typically Indian 'big game' species as the blackbuck, nilgai, and chital, in addition to sambar, hog deer, leopard, and others. Schaller and Spillett conducted a census of the large mammals in the Keoladeo Ghana Sanctuary at Bharatpur in February 1965¹. Spillett revisited the sanctuary for three days in November 1965. Although he did not attempt a census then, he spent over 20 hours walking throughout the sanctuary area and made several attempts to count all of the blackbuck. A deterioration in the abundance of the large mammals since the preceding February was apparent during this short visit and suggested the need for a thorough re-census of their populations. In order to determine exactly what changes had occurred, the authors spent six days, January 23 through 30, 1966, conducting a census of the sanctuary on foot. We repeated the census methods of Schaller and Spillett: in brief, walking three abreast and spaced so as to be able just to see each other.

¹ The Status of the Big Game Species in the Keoladeo Ghana Sanctuary, Rajasthan. *Cheetal*, Jour. Wild Life Preservation Soc. India, 8 (2): 12-16.

we covered the entire land area of the sanctuary. The sanctuary includes 7000 acres of which about half is marsh.

II. RESULTS

Our estimates of the total population of each species, compared to the estimates of February 1965, are presented in Table. Chital, still the most abundant wild ungulate in the sanctuary, noticeably declined in numbers during the year. Though we counted only 200 individuals, we are willing to accept a generous estimate of the total population at 300 to 325 because of the extreme shyness of the animals encountered and the difficulty in observing them. Even with this allowance the population declined during the year by not less than 20%. The largest group encountered numbered 44, whereas groups of this size, or larger, were commonly observed the previous year. The animals' shyness made it impossible to collect data on sex ratios and age classes. All but a few males had antlers in velvet (later stages of development). Very few small fawns were observed.

The total number of nilgai increased markedly, by about 25%, to 152. This may be attributed to the fact that they commonly have twins. These animals were easily counted because they are large, are usually found in open areas, and were not much disturbed by our presence; hence we believe our count to be quite accurate. We were also able to classify them according to sex and age. Of the classified adults, some 46% were males; of these 57% were bluish and hence older, while the remainder were brownish and hence younger. Most of the males were encountered in bachelor groups of 3 to 11. The ratio of adult females to young was 1.6 to 1. The females were generally found in small groups of females and young, or in predominantly female groups which also contained one to three adult males.

Most of the blackbuck were congregated in one large herd at the time of the 1965 census and were therefore readily tallied. On the other hand, in 1966, the blackbuck were scattered in small groups in several parts of the sanctuary, which was probably due to greater disturbance. Though an accurate count was difficult, an overall decline in the population was obvious. We counted not more than 54 individuals and, though a few may have been overlooked, we believe there were less than 60 in the sanctuary. If the six or seven fawns one to three months old in the 1966 count are ignored, then approximately 30% of the population counted the previous year disappeared. About 40% of the classified adults were males; of these 32% were black-backed and hence older and the remainder brown-backed and hence younger. The female-young ratio was greater than 3 to 1. However, some very young fawns may have been overlooked and the fawning season may not have been completed.

TABLE

THE NUMBER OF WILD UNGULATES IN THE KEOLADEO GHANA SANCTUARY,
RAJASTHAN

Common Name	Scientific Name	Estimates of Numbers		Per cent. Difference (Approx.)
		February 1965	January 1966	
Chital or Spotted Deer	<i>Axis axis</i>	375-400	300-325	20-
Hog Deer	<i>Axis porcinus</i>	fewer than 20	fewer than 20	none
Sambar	<i>Cervus unicornis</i>	fewer than 20	fewer than 20	none
Blackbuck or Indian Antelope	<i>Antelope cervicapra</i>	70	fewer than 60	30-
Nilgai or Bluebull	<i>Boselaphus tragocamelus</i>	110-120	150-160	25+
Wild Pig	<i>Sus scrofa</i>	fewer than 40	fewer than 80	100+

We saw 13 different sambar : 2 males, 6 females, 4 young, and one adult not identified as to sex. We hazard no guess as to whether this species increased or decreased in abundance during the year. We still consider it unlikely that there are more than 20 in the sanctuary.

We saw only one male hog deer.

Of wild pigs, we counted 37 : a sounder of 18 (apparently two females with young), a female with 8 young, two groups of 3 adults and one of 3, and a solitary adult male. Thus the pig population increased. Because we undoubtedly missed others, we guess that the total population may number as high as 80.

We found no evidence of leopards in the sanctuary and doubt that more than one or two survive in the area. Jackal, fox, mongoose, jungle cat, hare, and other smaller mammals were seen. Indirect evidence suggested the presence of hyena, porcupine, and otter.

III. CONSERVATION PROBLEMS

Domestic Livestock

Overgrazing by domestic livestock continued unabated during the year. In addition, even the water plants from the marshy areas were being gathered as fodder, since there was obviously not enough grass. There are approximately 7000 head of cattle and buffalo descending on the sanctuary from the surrounding villages each morning and returning each afternoon. Much of the sanctuary has been trampled to bare ground or dust, thus aggravating the shortage of fodder. The most severely abused parts of the sanctuary, in the north and east, have been

reduced to near-desert. Besides cattle and buffalo, approximately 100 sheep and goats, officially prohibited from the sanctuary, were observed defoliating one area. If the present numbers of livestock are permitted to remain, much of the sanctuary will become desert within a very few years. And, very likely, the numbers of wild animals will not increase until the competition from livestock has been substantially reduced.

Since the 1965 census, the Rajasthan Forest Department has wisely fenced off a small area just north of the Rest House, and was fencing off another to the south at the time of the 1966 census. Some cattle still entered the fenced area and wild life tended to congregate there. However, even such partial protection for less than one year remarkably improved the condition and abundance of the forage within the fence.

Predation

Natural predation of the large mammals appears very slight. But the smaller carnivores, particularly mongooses, probably destroy many birds' eggs, nestlings, and smaller mammals.

Overall, the most effective predators in the area are men. In November Spillett found the head of a young chital stag and splotches of blood and hair in two areas. He also saw a female blackbuck with a broken hind leg. In January we saw a blackbuck male with a broken hind leg. Both injuries were probably caused by gun shots. In January we also found partial carcasses of five nilgai. One young animal was evidently poached, and four adults which may, or may not, have been shot.

Of the ungulates, chital are probably poached most frequently and blackbuck less. The young nilgai somewhat resemble deer and may be occasionally poached, but the adults, perhaps because of their resemblance to cattle which are protected for religious reasons, seem to be rarely shot.

The Maharaja of Bharatpur and his guests have shooting rights within the sanctuary. Although he was absent during the 1966 census, there was hardly an hour during the three-day visit in November 1965, from before daylight to well after dark, that shooting could not be heard somewhere in the sanctuary. Although the Maharaja's parties generally shot waterfowl, they took some big game as well.

Poachers took advantage of the disturbance caused by this legal hunting: shooting was also frequently heard in November from areas where the Maharaja or his guests were not hunting. During the 1966 census, we frequently heard shooting, and often saw men with guns openly travelling on bicycles along the main road through the sanctuary.

General human Disturbances

Human activity within the sanctuary was even more excessive than in the previous year. In addition to tending livestock and poaching,

villagers were gathering berries, cutting and removing grass, collecting and drying water plants for livestock feed, collecting firewood, making charcoal, and so forth. Whereas a year ago wood collectors were observed breaking limbs from growing trees, this year many of them had axes which they used to cut living branches and trees illegally to produce dead wood from live. We saw whole trees felled.

Almost invariably, when the people in the sanctuary saw wild animals, they attempted to frighten them by clapping their hands and shouting. As a result, the wild life was constantly disturbed.

IV. RECOMMENDATIONS

Our recommendations differ only slightly from those of Schaller and Spillett. They are :

1. That the number of cattle and buffalo be reduced immediately to a maximum of 1200 head. Each village should be given a definite grazing quota and assigned to specific grazing areas. Periodic checks should be made to ensure that these quotas are not exceeded and that animals are kept in the areas assigned. Because the villagers are charged almost three rupees per head of adult livestock per year for grazing rights in the sanctuary, this recommendation entails a substantial loss of income to the Forest Department. This loss could be converted to a large gain by enacting the following recommendation, No. 2.

2. That the Forest Department contact the central Tourist Department and arrange to include Bharatpur in the regular Delhi-Agra-Jaipur tours for visitors ; and that an entrance fee be charged all non-local visitors to the sanctuary. The increased abundance of wild life that would follow a reduction in overgrazing would attract and ensure a steady flow of tourists. The combination of these two recommendations would shift the Forest Department's source of income from the already-taxed villagers to more wealthy visitors.

3. That certain parts of the sanctuary be exclusively reserved for wild life and remain closed to all livestock. Perhaps this can best be done by fencing off certain areas, as the Forest Department has already begun to do.

4. That experimental preservation plots, including at least five acres each, be fenced-off in various parts of the sanctuary. The fences should exclude both domestic livestock and wild ungulates. Such enclosures would demonstrate what the vegetation would be like if protected or properly managed.

5. That a good fence be completed and maintained around the entire perimeter of the 11-square-mile sanctuary ; and that the number of livestock entrances be reduced. At present, livestock pass through 14 legal gates and many more illegal ones, while many farmers in the surrounding

cultivated areas maintain fences or barriers to protect their crops from wandering wild animals. A secure and well-maintained fence would eliminate these problems for both the sanctuary and the farmers.

6. That Forest Department personnel patrol the sanctuary on foot at least once daily to eliminate poaching and other illegal activities.

7. That livestock in transit within the sanctuary be restricted to the main roads to reduce trampling.

8. That all so-called 'crop protection' guns be withdrawn during non-crop seasons from the villages bordering the sanctuary; and that no one (other than the Maharaja of Bharatpur and his guests) be permitted to carry a gun, along the main road or elsewhere, within the sanctuary.

9. That no villager be permitted to leave the main road in the sanctuary unless licensed for a particular task such as herding cattle or collecting firewood; and that firewood collecting be strictly supervised to prevent damage to growing trees.

If strong action along the lines we have suggested is taken as soon as possible, Keoladeo Ghana Sanctuary could become a very valuable economic asset to India. It is close to other major tourist attractions; it already offers good accommodations and could easily offer more without disturbing the wild life; it already offers a great, but threatened, variety of wild animals and could easily offer these in fantastic numbers as well.

In addition, the Keoladeo Ghana Sanctuary could become a very valuable site for scientific studies. Besides its avifauna, which is enormous in size and complexity, the sanctuary offers three species of ungulates not found outside the Indian sub-continent and a fourth not found outside Asia. These species are living together under nearly ideal conditions for observation, in an easily accessible area of manageable size, with a potentially well-defined boundary. An ecologist could, for instance, investigate how species which differ in social systems relate to their different ecological niches, and how the social units of the different species interact. The possibilities are endless and, given the sanctuary's good living accommodations and weather, attractive.

Those who control the future of the Keoladeo Ghana Sanctuary must choose between a small income from the sanctuary, one which is sure now and equally sure to disappear soon, and a potentially much larger and assuredly long-term income from the sanctuary; an income from those who want to enjoy it and from those who want to study it.

The choice will soon disappear if the sanctuary is left to continue as it is and the better alternative can be realized only if effective action is taken very soon.