

presence of pugmarks. Plaster casts were lifted from the prints whenever located and are now in the State Forest Department office at Gangtok. Usually the reports were of only one animal which probably came in from adjacent West Bengal or Bhutan to occupy suitable territory.

Today we have probably lost the tiger in Sikkim. The lush jungle routes traversed by the tiger are either no longer in existence or under

heavy military occupation. Occasional reports of tiger from Melli, south Sikkim usually turn out to be leopard (*Panthera pardus*) kills.

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#### 4. EARTHWORM IN THE DIET OF LEOPARD *PANTHERA PARDUS*

The panther will kill and eat anything. It can overpower with safety, cattle, deer and monkeys, the smaller beasts of prey and large rodents like the porcupine. Its bill of fare is extended to include birds, reptiles and crabs (Prater, 1965; THE BOOK OF INDIAN ANIMALS). A leopard has a great tendency to digest each type of flesh including some cartilaginous parts but is unable to digest hair, hooves and bones which are left as such in its droppings.

A general study of scats was carried out wherever they were found, in Chail Wildlife Sanctuary and the University Campus (Nauni). Undigested bone, hair, hooves and even green parts (leaves) were found in droppings at Chail. But the most interesting finding in the scats of leopard is of the earthworm\* which was collected from the University Campus near the dairy farm in December, 1996.

Earthworms are cold blooded annelids and nocturnal in habit, living in burrows during the day but coming out at night in search of food. Numerous earthworms were seen in the morning hours along the roadside from the University Library to the dairy farm in winter before snowfall (mainly Nov.-Dec.). Still, we could not get a satisfactory reason for the consumption of earthworms by leopard. It is known that a leopard can devour and digest each type of flesh but it is a mystery why earthworms were not digested by the leopard.

\*Photograph — not of printable quality — Ed.

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#### 5. WILD WATER BUFFALO *BUBALUS BUBALIS ARNEE* IN DIBANG VALLEY DISTRICT OF ARUNACHAL PRADESH

(With one text-figure)

The Asiatic wild water buffalo *Bubalus bubalis* Linn. *arnee* Kerr, is among the globally threatened species. The bulk of the known population occurs in India. An account of its status in northeast India, the only stronghold of the species, is given in Choudhury (1994). In the report, occurrence of a small and scattered population in Dibang Reserved

Forest (RF) of Arunachal Pradesh has been mentioned.

Here I report the past and present status of the species in the entire Dibang Valley dist. of Arunachal Pradesh, as ascertained during field visits between 1992 and 1994.

Till the early 1970s, wild buffalo was widespread all over the lower areas of Dibang



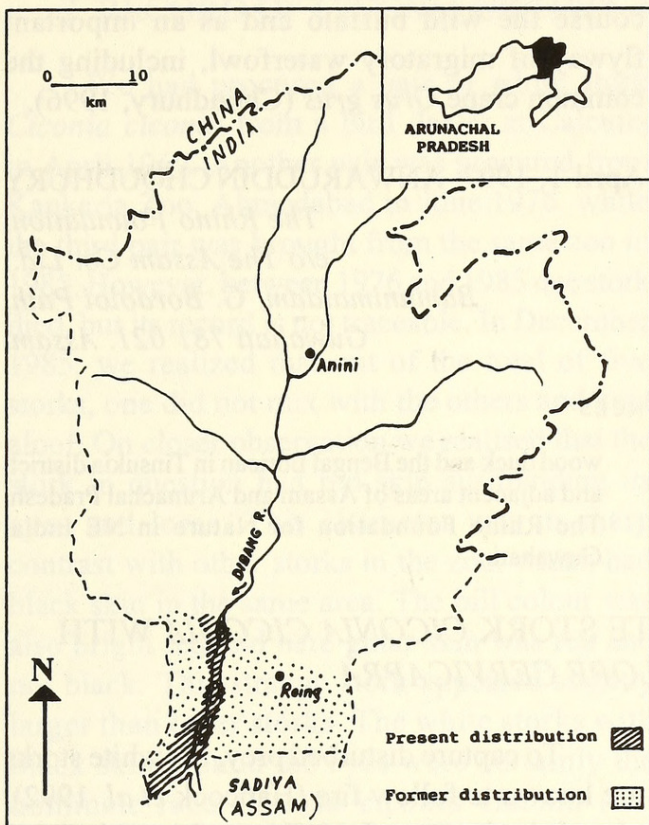


Fig. 1. Map of Dibang Valley district of Arunachal Pradesh showing the past and present distribution of wild water buffalo

Valley district beginning from near Nizamghat to the inter-state border with Assam, mostly in the *chaporis* (riverine tracts) of the Dibang, Deopani and the Sesseri rivers. From the late 1970s, new settlements began coming up in many of the plains areas especially between Roing and Santipur and in Bomjir and Bijari. Gradually the number of *khutis* (= cattle camps, mostly run by Nepalis and Biharis) also increased on the *chaporis* of the Dibang river. These factors along with growth of population have resulted in degradation and alteration of habitat. Availability of firearms has resulted in an increase in poaching for meat as the local tribes, both Adis and Idu Mishmis relish it. The buffalo population declined drastically before being surveyed properly. The Idu Mishmis call it *Maji kara*.

In March 1993, I found a few solitary bulls near Nizamghat (200m elevation), where the Dibang river devouches onto the plains (at

28°15' N, the northernmost site in the distribution range of the species). There were no *khutis* in the vicinity and the possibility of any feral animals in the area was remote. The area is in Sirkee proposed RF. Then I examined six horns, of 4 males and 2 females, at Bomjir (190m elevation), all these were shot by the local tribal hunters during the last half-a-decade from the *chaporis* of the Dibang river. They also shot 2 feral animals which deserted the *khutis*.

It is difficult to make an accurate population estimate as the animals are extremely shy due to regular persecution and are rather thinly distributed. However, after we visited all the known and potential areas and interviewed local hunters, graziers of the *khutis* and other tribal villagers, it can be safely assessed that there are less than 10 animals in Sirkee proposed RF and adjacent areas of Deopani RF. They affect the grasslands on the Dibang and Deopani rivers and only occasionally wander into the nearby woodlands including the southwestern edge of Mehao Sanctuary. In Dibang RF including the adjacent Kerim RF, a larger population of 40 to 60 occurs, as the habitat is still fairly large and contiguous with some of the buffalo-bearing areas of East Siang dist. and Tinsukia dist. (Assam). In the *chaporis* of Sesseri river, only an occasional stray individual is encountered. The total habitat available for wild buffalo in the district is about 120 sq. km (Fig. 1).

Presence of domestic buffaloes in the *khutis*, especially in the lower reaches of the Dibang river, poses a permanent problem to the small wild population because of the potential danger of diseases like anthrax, foot-and-mouth and rinderpest. However, contamination of wild stock due to interbreeding is a remote possibility, as domestic males are usually not kept in the *khutis*. Domestic animals going feral are immediately brought back because they are too valuable to their owners. In case of failure, the local tribals track and shoot them, as they find feral animals easier to shoot than the pure wild.

While habitat destruction continues to be



a threat, poaching is taking its toll and unless conservation measures are implemented the future of these animals is bleak. Parts of Dibang RF, Kerim RF and Sirkee proposed RF (totalling 202 sq. km) I have been recommended for a national park for its importance as the habitat of Bengal florican *Eupodotis bengalensis*, white-winged wood duck *Cairina scutulata*, tiger *Panthera tigris*, elephant *Elephas maximus*, of

course the wild buffalo and as an important flyway of migratory waterfowl, including the common crane *Grus grus* (Choudhury, 1996).

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wood duck and the Bengal florican in Tinsukia district, and adjacent areas of Assam and Arunachal Pradesh. The Rhino Foundation for Nature in NE India, Guwahati.

### 6. FORAGING ASSOCIATION OF WHITE STORK *CICONIA CICONIA* WITH BLACKBUCK *ANTILOPE CERVICAPRA*

We visited Velavadar Blackbuck Sanctuary and National Park (Bhavnagar dist. Gujarat) on November 5, 1988. At 0830 hrs, there were 500 blackbuck *Antelope cervicapra* scattered in small groups around the guest house. Though at a close range, the blackbucks were camouflaged against almost dried grass whereas more than 50 white storks *Ciconia ciconia*, which were either foraging in the grass or flying across a short distance, were quite conspicuous. We saw at least 6 storks walking behind the blackbuck within 2 m distance and capturing disturbed prey. Since the storks were attending separate groups of blackbucks, this foraging association was not easily noticeable. The storks frequently changed the feeding site, pursuing one group of blackbuck after another. This foraging association was exactly the same as that of cattle egret *Bubulcus ibis* following cattle.

To capture disturbed prey, the white storks are known to follow fire (Hancock *et al.* 1992), plough in the crop field (Pinowski *et al.* 1991) and other mammals (Hancock *et al.* 1992, Dean and MacDonald 1981). In Africa, white storks are known to associate with Cape buffalo, white rhinoceros, blue wildebeest, impala and domestic cattle (Dean and MacDonald 1981). However, in India, white storks are not reported to associate with any wild or domestic mammals and hence this is the first such report.

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