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Status of Tibet red deer

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Reports of the Tibet red deer, a subspecies of Cervus elaphus, *have been so few in recent years that there were fears that the animal was extinct. A survey in a mountainous region of south-east Tibet in October 1995 found evidence that a few deer survive in one small area and possibly two others in high-altitude valleys of the tributaries of the Subansiri River. The most exciting finding of the survey, however, was an estimated 200-strong population of this deer in high rolling hills near the village of Zhenqi, north of the Yarlung Tsangpo River. This is the only known viable population of the deer and, although some hunting occurs, including by professional poachers from outside Tibet, the fact that it survives is an indication of the tolerance of the local people. The Tibet Forest Bureau has agreed to fund guards and to establish a reserve for the deer in co-operation with local people.*

Introduction

The Tibet red deer, also named shou or Sikkim stag, is known only from Bhutan and the southern part of the Tibet Autonomous Region, China. The deer is considered to be a subspecies of *Cervus elaphus,* either *C. e. wallichi* or the probable synonym *C. e. affinis* (Ohtaishi and Gao, 1990). Literature on the deer consists of a few sightings (Bailey, 1911; Ludlow, 1959), notes on general distribution (Caughley, 1970; Feng *et al.*, 1986), and descriptions of trophy stags (Pocock, 1942). The last reliable published record of the animal in the wild is from the mid-1940s (Ludlow, 1959). Since then so little has been heard of the deer that Thornback (1978) thought it 'probably extinct', and Dolan and Killmar (1988) considered it 'almost as a mythical animal'. It is currently listed as Endangered (Groombridge, 1993). There were four stags in a Lhasa menagerie in the late 1980s, an indication that the deer probably persisted in the wild (Dolan and Killmar, 1988); we also saw these stags, but all had died by the early 1990s.

In October 1995 we surveyed wildlife in a part of south-east Tibet, including areas that in the past were known to harbour Tibet red deer. Our survey area encompassed about 40,000 sq km from the Lhasa Valley south to the Bhutan and Indian borders, and west to east from about 90° 30' to 93° 20'E (Figure 1); within it we travelled about 4000 km to visit most parts. The entire region is mountainous, its terrain varying from rolling uplands to glaciated ranges and deep canyons. A few valleys lie below 3500 m and even 3000 m, but much of the area is above 4300 m in elevation. Tucked in the rain shadow of the Himalaya, the landscape is generally arid with grass steppe and xeric shrubs covering the slopes, except at high elevations where alpine meadows are found. Average annual precipitation is less than 500 mm, generally too low to support forests. However, some moist northern exposures have thickets of *Salix, Rhododendron, Potentilla* and other shrubs about 1–2 m tall. The south-west monsoon penetrates a few valleys near the Bhutan and Indian borders, as near eastern Bhutan, south of Cona, and the upper drainage of the Subansiri River (see Figure 1), and these have stands of mixed coniferous and broadleafed forests.

We interviewed officials, pastoralists, hunters and others about Tibet red deer and searched suitable sites on foot or horseback. Tibet red deer and white-lipped deer *Cervus albirostris* are potentially sympatric north of

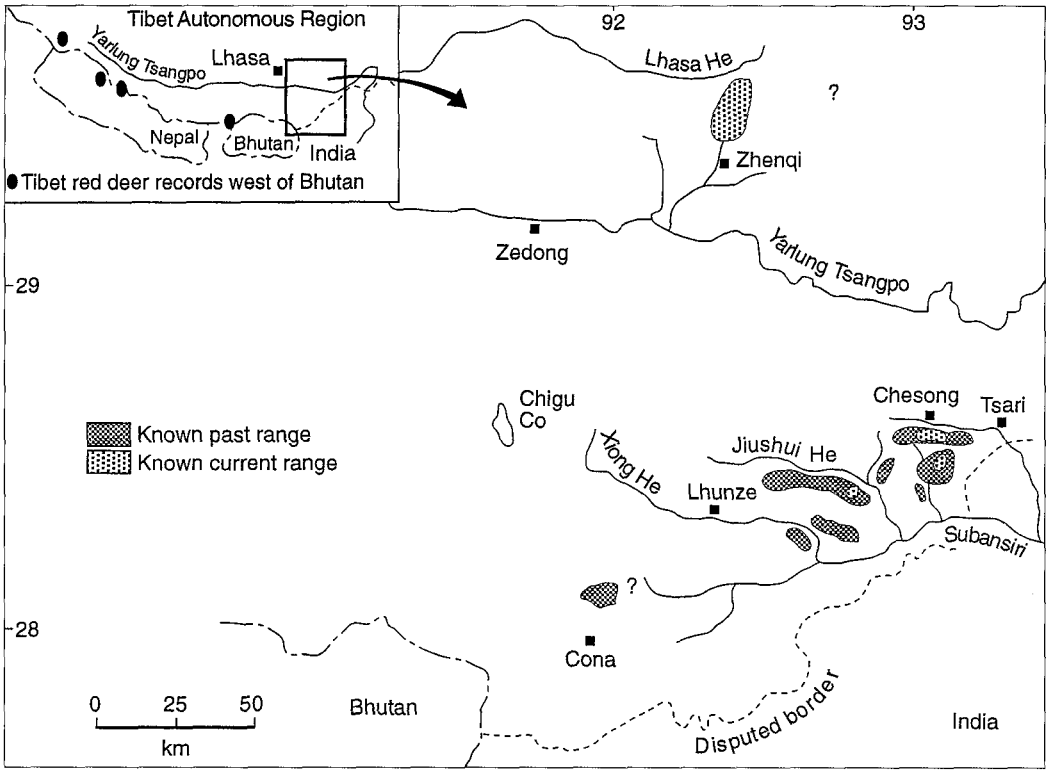

Figure 1. Known past and present distribution of Tibet red deer in the Tibet Autonomous Region, China.

the Yarlung Tsangpo Valley. Tibetans use the name *sha* to designate both species. Although the two species differ markedly in colour and antler conformation, the descriptions of deer by our informants were often so confusing that we tried to confirm reports by examining antlers and hides in villages. The survey provided information on the past and present status of Tibet red deer. These data will, we hope, make the animal less of a myth and provide impetus for its conservation.

Distribution

The Tibet red deer once occurred in parts of north-west Bhutan, particularly in the Ha Valley. It is generally believed to be extinct in the country (Anon., 1976), but there are occasional unverified reports of its continued existence (Gee, 1964; Anon., 1982).

In southern Tibet, the deer was in the past found along the upper Yarlung Tsangpo Valley. The type description by Cuvier in 1825 was based on animals captured somewhere in that area, and a stag at the London Zoological Society apparently came from near Mansarowar Lake (Mapam Yumco) close to the north-west corner of Nepal (Pocock, 1912). Schaller (1977) saw old red deer antlers at Shey Gompa in the Dolpo district of Nepal and was told that they originated just to the north in Tibet; Caughley (1970) received similar information about antlers he observed in Mustang, Nepal (Figure 1). Pocock (1942) considered these western red deer (*wallichi*) distinct from the eastern ones (*affinis*), but the antler and pelage characters he used to distinguish them are so variable that they are of dubious taxonomic value (Dolan and Killmar, 1988). There is no evidence that the deer survives in Tibet west of Bhutan.

Adult male and female Tibet red deer, October 1995 *(G. Schaller)*.

The Chumbi Valley, as it was once called, projects south between the Sikkim part of India and Bhutan. Tibet red deer once occurred on the eastern side of the valley bordering Bhutan. Waddell (1905) noted that the animals were present in 'considerable numbers' above 3000 m in the 'open forest of birch, rhododendron, juniper, and pine, broken at intervals by stretches of grassy downs'. Bailey (1911) found them 'very scarce' there, and in 1925 (Ludlow, 1959) saw three deer and thought that the valley contained only 'a few'. One of us (W.L.) surveyed wildlife in the Chumbi Valley in 1988 and was told that the last red deer were seen during the 1960s.

The major tributaries to India's Subansiri River have their headwaters in Tibet (Figure 1). The Tibet red deer was found along these headwaters, but it was 'very local in its range' (Bailey, 1915). Bailey (1914) shot a stag upstream of Tsari in an area that was 'considered sacred, and no crops may be grown and no animals killed'. Ludlow (1959) travelled widely in that region during 1946–47 and noted the deer only in the Tsari district where they were found 'in fair numbers'. In the past, they may also have occurred in 'the high bare country' north of Cona (Bailey, 1915). We investigated three main tributaries to the Subansiri, the Xiong He, Jiushui He and Tsari Chu. Informants in all three valleys told us that red deer had been common until the 1960s and into the 1970s but that they had been hunted almost to extinction during this period. The animals had particularly favoured north-facing slopes with a mosaic of alpine meadow, rhododendron, stunted birch *Betula*, junipers *Sabina*, spruce *Picea*, and other conifers. We obtained evidence that a few deer survive in one small area and possibly in two others (Figure 1). The slopes near Chesong in Lhunze county, where Bailey (1914) hunted, have a fine belt of fir *Abies*, above which alpine meadows and rhododendron thickets extend up toward glacier peaks. At 4700 m fresh droppings and tracks of at least two deer

were observed. One deer had been killed there early in 1995. A hunter in the Jiushui Valley informed us that deer had been seen in a small tributary valley, the Sangou, as recently as 1994. A remnant population is also said to persist at Umei, in a valley across the range south of Chesong.

North of the Yarlung Tsangpo, near the village of Zhenqi in Sangri county, we found a population of Tibet red deer among high rolling hills covered mainly with alpine meadow and patches of willow, rhododendron, *Berberis*, and other shrubs (Figure 1). Most animals were on and around one large hill at an elevation of 4300–4900 m. Local people told us that the deer gather there in autumn and winter and move into the nearby mountains during summer, some as far north as the edge of the Lhasa Valley at one point (29°40′N, 92°30′E). A count in early October revealed a concentration of at least 110–125 deer, most of them females and young at a ratio of 42 young to 100 females; stags were rare. In late October only about 75 deer were in the same area, but more stags had arrived, raising the ratio of stags to females from 8 : 100 to 29 : 100. The total number of deer in this population may not exceed 200. No other red deer were found in the mountains between the Lhasa and Yarlung Tsangpo valleys, in contrast with white-lipped deer, which were widespread although local in distribution. A population of white-lipped deer was in a valley only 15–20 km south-east of the red deer, the two sites within view of each other, but there appeared to be no overlap between the two species at that season.

Tibet red deer distribution has for many years been highly disjunct. Remnants possibly survive outside the area we checked. A few may persist in a valley just east of the Zhenqi population, according to local people. Bailey (1915) gave second-hand information about a Tibet red deer locality 125 km north-east of Zhenqi; and Ludlow (1959) was told that the animals occur at the Reting monastery about 100 km north of Lhasa. However, these records might be of white-lipped deer, or in the latter case, even Sichuan red deer *C. e. macneilli* whose range extends across north-east Tibet into Sichuan and Qinghai. At present the only known viable population of Tibet red deer is the one near Zhenqi.

Herd size and composition

Between 3 and 5 October, 16 herds in the Zhenqi area were counted and individuals classified by sex and age. Most herds were small, comprising 2–9 animals, usually females with young. But two herds had 23–24 members and one had 55, the last containing 3 adult males, 2 yearling males, 34 females and 16 young. No rutting behaviour was observed. When we returned to the area 24–27 October, a number of stags had joined, and their roars indicated that the animals were in rut. Opposite our camp was a hillside where deer came to forage at night. Counts of deer were made at dawn on three mornings. Of 23 herds tallied, including six solitary individuals, mean herd size was 3.5 (range 1–12). Only three (13 per cent) herds contained an adult stag, which at that time of day tended to roam alone. In mid to late morning, after many deer were at rest, 15 herds were observed with a mean herd size of 6.5 (range 1–20). Nine (60 per cent) of the herds contained at least one adult stag.

Description of animals

Because published descriptions of Tibet red deer are confined to adult stags (Pocock, 1912; Dolan and Killmar, 1988), we report briefly on the pelage colour of the animals near Zhenqi as observed during October when they were in winter coat. Adult stags stand about 130 cm high at the shoulder (Pocock, 1942). Their pelage is grey–brown with reddish overtones, the flanks paler than the back; grey tends to be more prominent than brown on face, neck, and shoulders. The belly is dark-brown, almost black. The rump patch is white, divided by a dark median line, which extends to the root of the white tail and occasionally on to its dorsal surface. A margin of brown borders the rump patch, often just the lower part. The

inside of the large ears are either grey or white.

Unlike Pocock (1912), we did not notice 'a small mane' on the neck, but in October the animals may not yet have grown their full winter coat. Their antlers are massive, often over 1 m long, and with up to five tines each. The distal part typically bends abruptly inward; in a five-tined antler this bend occurs at the third (trez) tine.

Antlers of animals from south-west Tibet curve more evenly. As Pocock (1942) noted, 'the variation in the antlers in the Shou is greater than in any species of deer I can at present recall'. The brow tine grows within 1 cm above the burr and projects out over the face. Only one stag at Zhenqi was five-tined, the other being four- and three-tined; there were also several yearling males whose antlers were spikes.

Females and young stags are paler grey–brown than adult stags. The ventral surface from chin to belly, as well as the insides of the legs, are light grey to white, which, together with the white rump patch, makes them conspicuous at a distance. The hide of a fawn, said to have died in July, was coloured like a female in winter coat except that it had white spots and a faint dark dorsal line from neck to rump. Young in October were a darker grey–brown than the females.

Tibet and Sichuan red deer resemble each other enough to cause confusion, especially because their antlers are similar (see Allen, 1939; Dolan, 1988). The *macneilli* in winter coats observed by us in Qinghai during October and in the Shanghai zoo in early November were darker than *wallichi*. Adult stags were dark-brown and females rather uniformly grey–brown to grey except for the white rump patch and inside of the thighs. A mid-dorsal stripe was prominent in *macneilli* females, whereas it was barely discernible or not evident in *wallichi* females at that season.

Conservation

Human population density in much of the survey area does not exceed five people/sq km and less than 1 per cent of the land area is under cultivation. Yet human presence is pervasive. Valleys are cultivated up to an elevation of 4300 m and livestock is grazed to the limit of vegetation at 5300 m. Thus, there are no areas to which red deer can retreat without coming at least seasonally into contact with humans and livestock. Yet there is ample alpine meadow and shrub habitat of the kind favoured by the deer. The reason for the disappearance of the deer in the western part of its range is unknown. But in the eastern part uncontrolled hunting in recent decades has almost exterminated the animals. The Tibet Wildlife Act was passed in 1991. Since then the Tibet Forest Bureau, which is responsible for wildlife conservation, has made a major effort to reduce hunting of protected species such as red deer. Enforcement of regulations is difficult, in part because wildlife is killed not only by local people but also by professional poachers who enter Tibet from Sichuan and Qinghai and even from Bhutan and India.

The Tibet red deer of Zhenqi represent the last known population of moderate size. These deer occupy rangelands heavily used by pastoralists, and several large villages are within a few kilometres of their principal winter habitat. Local people occasionally hunt the animals, as do officials from nearby towns. But, unlike the scattered remnants in the south, conservation measures for these deer can be readily implemented. That the animals have survived there is an indication of local tolerance and goodwill. Lengthy discussions were held with village and county officials concerning the conservation of this population. The Tibet Forest Bureau agreed to fund guards and to establish a reserve for the deer in co-operation with the local people whose traditional lives will not be affected.

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