

such crashes hunting on corsacs in the former Soviet Union was banned. For example, hunting of corsacs was stopped within the entire Kazakhstan territory from 1928 to 1938. Current population status, and the nature of major threats, is unknown in most regions. The western part of the range populations are recovering and their range expanding. In Kalmikiya large desert areas are changing into grass steppes, less suitable for corsacs. In Middle Asia and Kazakhstan a dramatic decrease of livestock during the last decade influenced many ecosystems and wildlife populations. However, the exact influence of this process on corsac populations remains unknown.

Commercial use Corsac pelts have been intensively traded. In general, over much of Russia during the 19th century, as many as 40,000–50,000 corsac pelts were traded in some years. For the time being, corsac pelts are not as highly appreciated as red fox pelts, and corsacs are usually trapped only incidentally.

Occurrence in protected areas Corsacs are protected in the following strict nature reserves (the highest protection status for the territory) (Z) and in national parks (NP):

- *China*: Chernyi Irtish (Z), Ksilingsolskiy (Z), Bogdedskiy (Z), Dalainurskiy (Z);
- *Russia*: Chernie Zemli Kalmikiy (Black Soils of Kalmik) (Z), Rostovskiy (Z), Orenburgskiy (Z), Altaiskiy (Z), Ubsunurskaya Kotlovina (Z), Daurskiy (Z);
- *Kazakhstan*: Alma-Atinskii (Z), Kurgaldzhiyskiy (Z), Naurzumskiy (Z), Barsa-Kelmes (Z), Bayanouskiy (NP);
- *Turkmenistan*: Krasnovodskiy (Z), Repetekskiy (Z), Syunt-Khasardagskiy (Z), Kaplankirskiy (Z), Badkhiz (Z);
- *Uzbekistan*: Arnasaiskiy (Z), Karakulskiy (Z), Kizilkumskiy (Z), Nuratinskii (Z), Chatkalskiy (Z), Uzbekskiy (NP);
- *Tadjikistan*: Tigrovaya Balka (Z), Dashti-Djumskiy (Z);
- *Mongolia*: Oton-Tengerekskiy (Z), Nemgerekskiy (Z), Great Goby Biosphere Reserve (Z), Malyi Gobyiskiy (Z), Malyi Gobyiskiy (Z), Eastern Mongolian Mongol-Daurskiy (Z), Ubsu-Nur (Z), Khorgo (NP), Gurvan-Saikhanskiy (NP).

Protection status CITES – not listed.

Listed in some regional Red books in Russia: Bashkir (Volga tribute) and Buryat (Transbaikalia region) with category III status (species with declining populations).

Current legal protection Hunting of corsacs is regulated by special national legislation, in which the species is considered a fur-bearer species (Russia, Kazakhstan, Turkmenistan, Uzbekistan, Mongolia). Trapping/hunting is allowed only from November through March in Russia,

Kazakhstan, and Turkmenistan. Certain methods of hunting are prohibited, such as digging or smoking animals out of dens, den flooding, and poisoning.

Conservation measures taken No special conservation programmes have been carried out. Outside of protected areas, the corsac has the status of game species.

Occurrence in captivity

Corsacs breed well in captivity, and there are some 29 animals currently listed in ISIS. In Moscow Zoo during 1960s one pair of corsacs produced six litters during the time that they remained together. Corsacs are easily habituated to humans.

Current or planned research projects

None known.

Gaps in knowledge

There are several aspects of this species' biology that require investigation, including social organisation and behaviour, population structure, current distribution and population status in different regions, current levels of trapping/hunting impact, and other threats to the species.

Core literature

Chirkova 1952; Sludskiy and Lazarev 1966; Geptner *et al.* 1967; Kadyrbaev and Sludskii 1981; Ognev 1931, 1935; Scherbina 1995; Sidorov and Botvinkin 1987; Sidorov and Poleschuk 2002.

Reviewer: Nikolay A. Poyarkov. **Editors:** Claudio Sillero-Zubiri, Deborah Randall, Michael Hoffmann.

5.6 Tibetan fox ***Vulpes ferrilata* (Hodgson, 1842)** **Least Concern (2004)**

G.B. Schaller and J.R. Ginsberg

Other names

English: Tibetan sand fox, sand fox; **Chinese:** shahuli(li), caohu(li); **French:** renard sable du Thibet; **German:** Tibetfuchs; **Tibetan:** wa, wamo.

Taxonomy

Vulpes ferrilatus Hodgson, 1842. J. Asiatic Soc. Bengal 11:278. Type locality: near Lhasa, Tibet.

Chromosome number $2n = 36$ (Xu and Gao 1986).

Description

The Tibetan fox is small and seemingly compact with a soft, dense coat, a conspicuously narrow muzzle and a bushy tail (Table 5.6.1). It is tan to rufous-coloured on the

Table 5.6.1. Body measurements for the Tibetan fox.

	China (Feng <i>et al.</i> 1986; Gao <i>et al.</i> 1987).	South-central Tibet (G. Schaller, unpubl.).
HB male	587mm (560–650) n=7	515mm n=1
HB female	554mm (490–610) n=8	
T male	279mm (260–290) n=7	270mm n=1
T female	239mm (220–260) n=8	
HF male	131mm (125–140) n=7	140mm n=1
HF female	120mm (110–124) n=8	
E male	57mm (52–61) n=7	60mm n=7
E female	60mm (55–63) n=8	
WT male	4.1kg (3.8–4.6) n=7	3.25kg n=1
WT female	3.5kg (3.0–4.1) n=5	

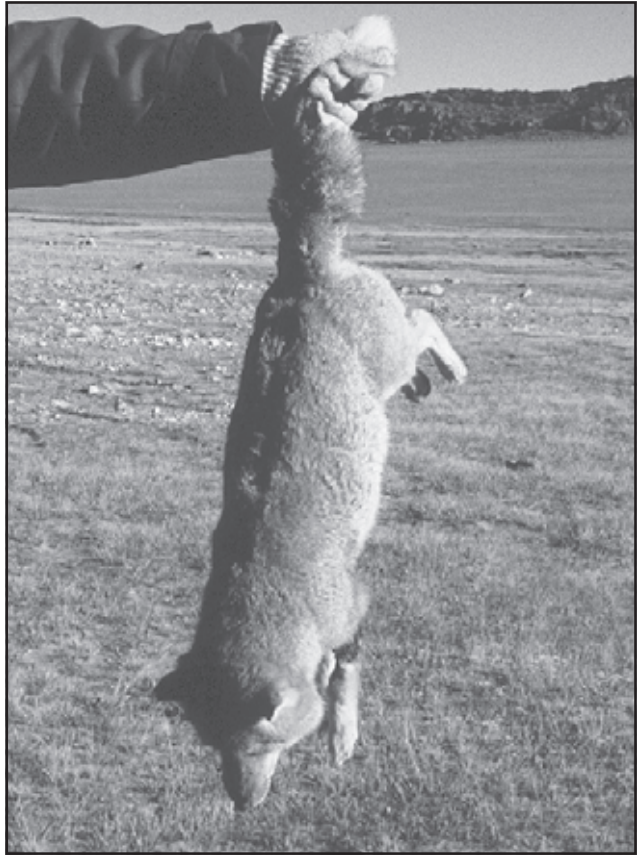
muzzle, crown, neck, back, and lower legs. The cheeks, sides, upper legs and rump are grey; the tail is also grey except for a white tip. The back of the relatively short ears is tan to greyish-tan and the inside is white. The undersides are whitish to light grey.

Subspecies No subspecies have been described.

Similar species The corsac (*Vulpes corsac*) is similar in size, but has relatively longer legs and conspicuously large ears. Its pelage is reddish grey with white underparts.

Current distribution

Widespread in the steppes and semi-deserts of the Tibetan Plateau from the Ladakh area of India, east across China including parts of the Xinjiang, Gansu, Qinghai, and Sichuan provinces and all of the Tibet Autonomous Region. Also present in Nepal north of the Himalaya, known specifically from the Mustang area (Figure 5.6.1).



George Schaller

Dead Tibetan fox, age and sex unknown, held by hunter.

Range countries China, India, Nepal (Schaller 1998; Nowak 1999).

Relative abundance

In general, fox density appears to be low. Its abundance depends partly on prey availability and partly on human

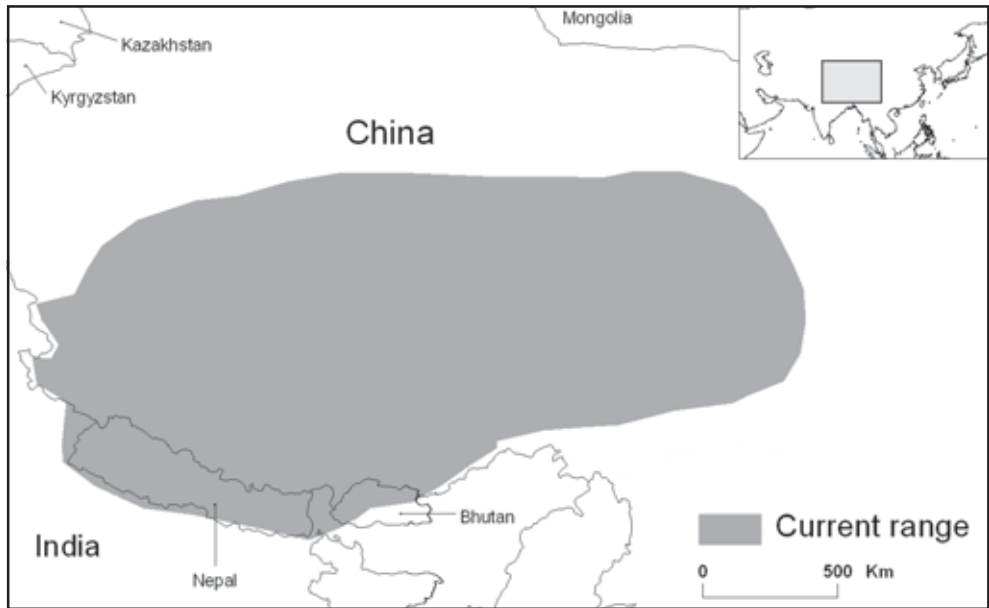


Figure 5.6.1. Current distribution of the Tibetan fox.

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hunting pressure. In north-west Tibet, in a remote region of desert steppe with little prey, only five foxes were seen in 1,848km of driving. In south-west Qinghai in a benign environment with much prey, 15 foxes were tallied in 367km (Schaller 1998). In Serxu county, north-west Sichuan Province, an area with abundant with black lipped pika (*Ochotona curzoniae*) eight Tibetan foxes were sighted along 11km country road during a night count in 2001 (Anon., 2000b), and 27 sightings (at least 12 individuals) were recorded along line transects in the same area in August 2003 (Wang Xiaoming and Wang Zhenghuan, pers. obs.).

Estimated populations/relative abundance and population trends A survey of 43 counties of Tibet's autonomous region estimated around 37,000 Tibetan foxes (Piao 1989).

Habitat

The species is found in upland plains and hills from about 2,500–5,200m a.s.l. Much of its habitat consists of alpine meadow, alpine steppe, and desert steppe, all treeless vegetation types. The climate is harsh with temperatures reaching 30°C in summer and dropping to -40°C in winter. Most of the fox's range lies in semi-arid to arid environments with average annual precipitation of 100–500mm, most of it falling in summer.

Food and foraging behaviour

Food The principal diet of the Tibetan fox consists of pikas (*Ochotona* spp.) and rodents. An analysis of 113 droppings from north-west Tibet revealed a content of 95% pika (*O. curzoniae*) and small rodents (*Pitymus*, *Alticola*, *Cricetulus*). Another 2.7% was Tibetan antelope (*Pantholops hodgsoni*) probably scavenged, and the remainder insects, feathers, and vegetation, including *Ephedra* berries (Schaller 1998). Feng *et al.* (1986) also list Tibetan woolly hare (*Lepus oiostolus*) and a lizard species (*Phrynocephalus* sp.) as prey items, and Zheng (1985) further noted the remains of marmot (*Marmota himalayana*), musk deer (*Moschus* sp.), blue sheep (*Pseudois nayaur*) and livestock in 58 droppings collected in eastern Qinghai Province.

Foraging behaviour Since pikas are diurnal, foxes often hunt in daytime, trotting through or stalking in pika colonies. Of 90 foxes observed, all but six pairs were solitary, suggesting that they mainly hunt alone (G. Schaller pers. obs.).

Damage to livestock or game No quantitative data are available other than occurrence of livestock in diet.

Adaptations

Little is known about this generic small fox.

Social behaviour

Tibetan foxes have never been studied and all aspects of their reproductive and social behaviour remain unknown. As noted, they are usually seen alone or in pairs consisting of a male and female, although one family was observed in 2001, comprised by three adults and two juveniles (Wu Wei *et al.* 2002). Burrows are found at the base of boulders, along old beach lines, low on slopes, and other such sites. There may be one to four entrances to a den, the entrance about 25–35cm in diameter (Schaller 1998).

Reproduction and denning behaviour

Nowak (1999) suggests mating occurs in February with 2–5 young born in May, but the source of these data is not given. Wang Zhenghuan *et al.* (2003a) studied the main habitat factors associated to the location of summer dens in 2001 (n=54 den holes); these were, in order of importance: water distance, slope degree, position along the slope, small mammal den numbers, and vegetation type. Most dens were located in grasslands (96.3%) with moderate slope (68.52% between 5–25°).

Competition

The geographic ranges of red fox (*Vulpes vulpes*) and Tibetan fox overlap, though the former favours mountains, including forested ones, and the latter open steppes. The two species have a similar diet. Indeed, pikas, the principal prey in their region of overlap, are also a staple of brown bear (*Ursus arctos*), polecat (*Mustela eversmannii*), manul (*Felis manul*) and various raptors, as well as on occasion the grey wolf (*Canis lupus*).

Mortality and pathogens

Natural sources of mortality Unknown.

Pathogens The infection rate of *Echinococcus* spp. in Tibetan foxes in Serxu county Sichuan province is high, estimated by Qiu *et al.* (1995) at 59.1%. Recent evidence from western Sichuan, China, indicates that Tibetan foxes are definitive hosts of Alveolar Hydatid Disease (AHD), a rare but serious zoonosis caused by *Echinococcus* spp. (Wang *et al.* 2003b).

Hunting and trapping for fur The Tibetan sand fox is hunted for its pelt, which is made into hats, but red fox is preferred as such adornment. Feng *et al.* (1986) reported of high hunting pressures in the whole Tibetan plateau since the 1960s and the Tibetan fox population in Serxu is under heavy human hunting pressure (Wang Zhenghuan *et al.*, 2003a). Over 300 foxes have been killed per year since the 1990s in Shiqu County, Sichuan Province, China (Wang Xiaoming, unpubl.). Hunting methods include shooting and traps laid at the entrance of den holes, the latter been the main method as guns in the area have been restricted in the recent years.

Road kills No data available.

Longevity Unknown.

Historical perspective

The fox is used to make hats by local people. No explicit conservation measures undertaken to date.

Conservation status

Threats Unknown, but the species is not under threat.

Commercial use No data available.

Occurrence in protected areas Present in the Arjin Shan (45,000km²), Xianza (40,000km²), Chang Tang (c.334,000km²), and Hoh Xil (c.45,000km²). Likely to occur in other protected areas throughout the species' range, but no reliable information available.

Protection status CITES – not listed.

Current legal protection Species legally protected in several large Chinese reserves (see above), but actual protection remains minimal. The species lacks special protection outside reserves.

Conservation measures taken No information available, although it is unlikely that any proactive measures have been taken by any of the range countries.

Specific actions being undertaken or completed

None.

Occurrence in captivity

No records in Western zoos; occurrence in Chinese and Russian zoos unknown.

Current or planned research projects

Recently Wang Xiaoming (East China Normal University, Shanghai, China) began a study of the species in Sichuan.

Gaps of knowledge All aspects of the fox's natural history need study.

Core literature

Piao 1989; Schaller 1998; Wang Zhenghuan *et al.* 2003a; Zheng 1985.

Reviewers: Andrew T. Smith, Wang Xiaoming. **Editor:** Claudio Sillero-Zubiri.