

## A PRELIMINARY OVERVIEW OF THE SUBSPECIES OF RED FOX AND TIBETAN SAND FOX IN THE HIMALAYA, INDIA

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We conducted extensive surveys for the Red Fox *Vulpes vulpes* and Tibetan Sand Fox *V. ferrilata* in the Greater and Trans-Himalaya of north and north-east India between 2008 and 2013, with opportunistic camera trapping done in Kargil, Jammu & Kashmir. In this paper, we provide an update on the distribution of *V. v. griffithii* in the Himalaya, discuss our observations on *V. v. montana*, and support the claim of the occurrence of *V. ferrilata* in India. We also discuss the distribution overlap of *V. v. montana* with *V. v. griffithii* in the Western Himalaya; *V. v. montana* with *V. ferrilata* in the Eastern Himalaya; and *V. v. montana* with Indian Fox *V. bengalensis* in the foothills of the Himalaya.

**Key words:** *Vulpes*, Himalaya, Red Fox, Tibetan Sand Fox, Indian Fox, distribution

### INTRODUCTION

Historically, four species of foxes were recognised from the Indian subcontinent, namely Indian Fox *Vulpes bengalensis*; Red Fox *V. vulpes* (with three subspecies: *V. v. montana*, *V. v. griffithii* and *V. v. pusilla*); Tibetan Sand Fox *V. ferrilata*; and Blanford's Fox *V. cana* (Pocock 1936, 1941; Kumara and Singh 2012). Many of the accounts indicate the occurrence of only two or three species. Prater (2005) documented Indian Fox and all the three subspecies of Red Fox in India. Gurung and Singh (1996) mentioned the occurrence of only two species, namely Indian Fox and Red Fox without any reference to the subspecies of the latter. Menon (2014) listed three species: Indian Fox, Red Fox with three subspecies (*V. v. montana*, *V. v. griffithii*, and *V. v. pusilla*), and Blanford's Fox. The IUCN Canid Action Plan recognises the presence of Indian Fox, Red Fox (with a single subspecies *V. v. montana*), and Tibetan Sand Fox in India (Sillero-Zubiri *et al.* 2004). However, Alfred *et al.* (2002) and recent documentation by Pradhan and Talmale (2012) include all the four species, with two subspecies for Red Fox excluding *V. v. griffithii*. The sighting of Tibetan Sand Fox by Namgail *et al.* (2005) and Chanchani *et al.* (2010) in Ladakh region, Jammu & Kashmir, and Sikkim areas of India support the earlier views of its occurrence within Indian limits.

CITES places *V. bengalensis*, *V. v. montana*, *V. v. griffithii* and *V. v. pusilla* in Appendix III. IUCN listed them as species of Least Concern in the Red List of Threatened Species.

In this paper, we update the distribution of *V. v. griffithii* in India by providing evidence of its occurrence within Indian limits; support the claim of Chanchani *et al.* (2010) of the presence of *V. ferrilata* in India; and present data on *V. v. montana*. The distribution maps of these species are also provided.

### METHODS

The assertions in the present paper are based on surveys and preliminary results of camera trapping. The surveys were carried out as part of an ecological study on Snow Leopard *Panthera uncia*, and the areas surveyed were the Great and Trans-Himalaya of north and north-east India, which were covered from 2008 to 2013. Owing to the topography and remoteness of the area, fieldwork was done during camping expeditions in the different areas for periods of 5–25 days each. More than 3,000 km was traversed on foot in five states of India, namely Jammu & Kashmir (from 2009 to 2013), Himachal Pradesh (2008), Uttarakhand (2008), Sikkim (2012 and 2013), and Arunachal Pradesh (2011 and 2012) covering an altitudinal zone of 2,100 to 5,200 m. Opportunistic camera trapping was done in Kargil, Ladakh in Jammu & Kashmir from 2010 to 2012.

### RESULTS AND DISCUSSION

#### **Red Fox *V. v. griffithii***

During the photo trapping sessions, *V. v. griffithii* was camera trapped six times from an area in Kargil close to the

border with Pakistan (Figs 1a, b). Additionally, it was sighted on two occasions during the surveys in Kargil. The species was not recorded in areas of the Himalaya of other states covered during the survey. The distribution of *V. v. griffithii* in Jammu & Kashmir, based on the surveys and camera trapping, is given in Fig. 2.



Figs 1a and b: Camera trap photographs of *V. v. griffithii* from Kargil, Jammu & Kashmir in February 2012

Roberts (1997) describes *V. v. griffithii* in Pakistan to be smaller than *V. v. montana*, with a thick and luxuriant winter coat. The backs of ears are always jet black and the longer hairs in the dorsal region are banded with white and rusty-orange, giving the fur a very handsome appearance. The inside of the ears are thickly fringed with white hair. The throat and chest region varies from dark grey to black and the dorsal part of the tail has an admixture of black guard hair. The outer fur of the limbs is generally dark grey.

***V. v. montana***

A total of 109 sightings of *V. v. montana* were obtained during the surveys (Fig. 3). The distribution of *V. v. montana* in the Himalaya, based on the surveys, is given in Fig. 4. Menon (2014) states *V. v. montana* to be the common fox of Ladakh and Himalaya, and describes it as foxy-red in colour, with thick luxuriant under fur during the winters. Ears are



Fig. 3: Camera trap photograph of *V. v. montana* from Kargil, Jammu & Kashmir, in October 2010

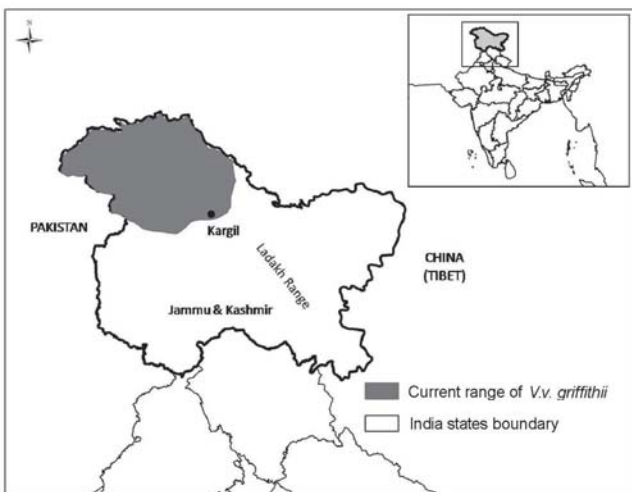


Fig. 2: Distribution of *V. v. griffithii* in Jammu & Kashmir, India (Himalaya)

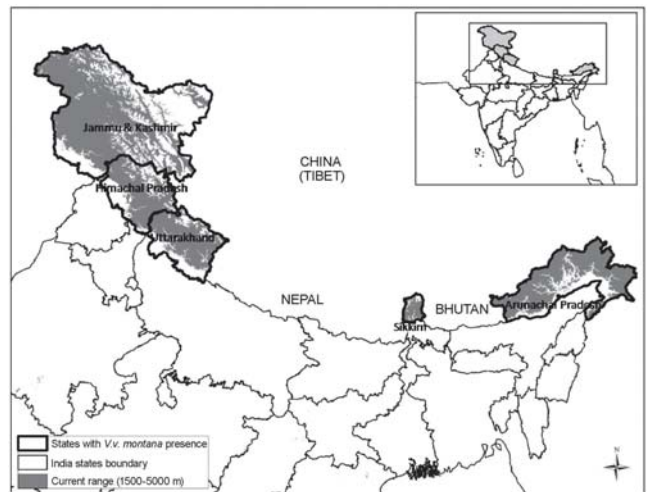


Fig. 4: Distribution of *V. v. montana* in the Himalaya



Fig. 5: Tibetan Sand Fox *V. ferrilata* photographed in Tso Lhamo Plateau, Sikkim, in August 2013

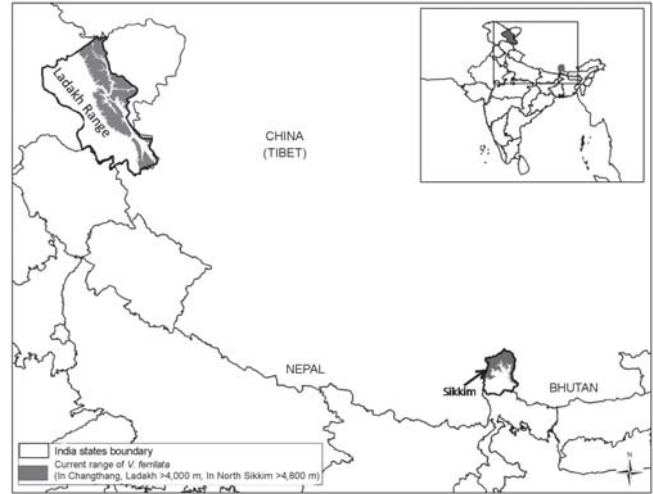


Fig. 6: Distribution of *V. ferrilata* in Jammu & Kashmir and Sikkim

large and fringed with white hair. The chest, belly, muzzle, and cheeks have white fur mixed with red.

As both the subspecies (*V. v. montana* and *V. v. griffithii*) overlap and share the same habitats in Kargil, misidentification is quite possible but there are some very prominent characters to distinguish them, which was evident from the camera trap images and sightings obtained of the two species during our study. These are: the winter coat of *V. v. griffithii* is paler than that of *V. v. montana* (Figs 1a, 3); white patches from cheeks to throat are quite prominent in *V. v. montana* compared to *V. v. griffithii* (Figs 1a, 3); and tail is relatively thicker and more bushy in *V. v. montana* than in *V. v. griffithii* (Figs 1b, 3).

### Tibetan Sand Fox *Vulpes ferrilata*

We sighted the Tibetan Sand Fox on four occasions in the Tso Lhamo Plateau, North Sikkim (Fig. 5). Chanchani *et al.* (2010) reported it from the same area of Sikkim. Namgail *et al.* (2005) reported it from Changthang, Ladakh, Jammu & Kashmir. We recorded it excavating Pika (*Ochotona*) burrows, as reported by Chanchani *et al.* (2010) in the Tso Lhamo Plateau, and by Schaller and Ginsberg (2004) in the Tibetan Plateau. The distribution of the Tibetan Sand Fox in the Himalaya, based on the surveys, is given in Fig. 6.

### Distribution Overlap

We recorded the distribution of *V. v. montana* to overlap with *V. v. griffithii* in Kargil in the Western Himalaya. In the Eastern Himalaya, we sighted *V. ferrilata* in North Sikkim sharing the habitat with *V. v. montana*. Recently, *V. v. montana* has been camera trapped from an elevation as low as 505 m in the foothills of the Western Himalaya (WWF unpubl.), which indicates overlap with the Indian Fox also.

### Future Studies

The Red Fox is a well-studied species across the world (Macdonald and Reynolds 2004), but information regarding its distribution, ecology, and subspecies remains rather limited in India. The species in India, which is relatively better studied among the fox species, is the Indian Fox (Home 2005; Johnsingh 1978; Kumara and Singh 2012; Manakadan and Rahmani 2002; Maurya *et al.* 2012; Vanak 2005). There is, therefore, an urgent need to gather baseline information on the status, distribution, and ecology of the other fox species (and subspecies) in India, which is crucial in developing conservation management strategies.

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