Distribution and observations of Red Pandas *Ailurus fulgens fulgens* in Dhorpatan Hunting Reserve, Nepal

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Abstract

We documented the presence of Red Pandas *Ailurus fulgens fulgens* during March–May 2007 in three hunting blocks (Surtibang, Barse and Fagune) of Dhorpatan Hunting Reserve, Nepal. Based on faecal pellet groups, Red Pandas occurred from 3,000 to 3,600 m elevation, with abundance of pellets increasing to 3,500 m and declining sharply at higher elevations. No evidence of Red Pandas was observed or reported at elevations >3,730 m. Four Red Pandas were observed in the study area at elevations ranging from 3,220 to 3,610 m. Observed elevational distribution of Red Pandas in Dhorpatan Hunting Reserve was similar to elevational distributions reported in the literature. Vegetation in areas of highest Red Panda activity were dominated by *Abies spectabilis, Rhododendron campanulatum, Betula utilis, Juniperus indicus* and *Arundinaria* sp(p)., which have been documented previously as important food and cover species.

Keywords: conservation, elevation use, habitat use, transect sampling

Introduction

The two subspecies of Red Panda, *Ailurus fulgens fulgens* and *A. f. styani*, are geographically separated by the Nujiang River: the nominate subspecies inhabits the bamboo-dominated temperate forests of Nepal, India, Bhutan, Myanmar and parts of China, while the latter occurs in southwestern China in Sichuan and Yunnan provinces (Roberts & Gittleman 1984, Glatston 1994). In Nepal, Red Pandas have been confirmed in eight protected areas: Khangchenjunga Conservation Area, Manaslu Conservation Area, Makalu Barun National Park, Sagarmatha National Park, Langtang National Park, Annapurna Conservation Area, Dhorpatan Hunting Reserve and Rara National Park (Yonzon 1989, Jackson 1990, Yonzon *et al.* 1991, Yonzon & Hunter 1991a, 1991b, Karki 1999, Karki & Jendrzejewski 2000, Shrestha & Ale 2001, Mahato 2003, 2004, Sharma & Kandel 2007, Sharma 2008). The Red Panda has also been reported from community-managed and national forest land in the villages of Jamuna and Mabu of Ilam in eastern Nepal (Williams 2004).

The Red Panda is categorised as Vulnerable, with a declining population (IUCN 2008). It is protected by the Government of Nepal's National Parks and Wildlife Protection Act of 1973. Any person who kills or tries to kill a Red Panda could be fined up to NRs. 40,000, jailed for 1–10 years, or both. The Himalayan National Park Regulation 2037 allows local people their traditional right to use forest products such as collecting dead and dying twigs (as firewood), grazing cattle, and use of timber with special permits.

Previous studies (e.g. Johnson *et al*. 1988, Yonzon & Hunter 1991a, Pradhan 1999) demonstrated that Red Pandas use temperate and sub-alpine forests at elevations ranging from 2,500 to 4,000 m. However, information on elevation distribution of Red Pandas at Dhorpatan Hunting Reserve (DHR) is lacking. Our objective was to describe the elevational distribution of Red Pandas in DHR, Nepal. We also report on observations of Red Pandas recorded during this study.

Study area

Dhorpatan Hunting Reserve (DHR) is a 1,325 km² protected area in western Nepal (28°27′30″–28°50′N, 82°50′–83°15′E) with elevations ranging from 2,850 to 7,000 m. Villages bound DHR on all sides except the northern border which is delineated by high mountain peaks including Gurja, Putha and Churen. The southern border extends to the Surtibang and Uttarganga rivers (Wilson 1981). Dhorkhani, Jhalke and Lamakyang mountain ranges border the eastern part of DHR and Kharibanh khola, Pelma khola, Kulta, Bhanjyang and Jangla comprise the western border. The DHR adjoins Rukum, Myagdi and Baglung districts of the Dhaulagiri mountain range.

Dhorpatan Hunting Reserve is the only hunting reserve in Nepal where Blue Sheep *Pseudois nayaur,* Eurasian Wild Pig *Sus scrofa* and Red Muntjac *Muntiacus muntjak* are legally hunted. Although trophy hunting of Blue Sheep has occurred in DHR since the early 1970s (Austegard & Haugland 1993), it was gazetted (i.e., officially declared a hunting reserve) in 1987. Sport hunting for Blue Sheep is managed by allocating harvest among seven subdivisions (blocks): Sundaha (145 km²), Seng (138 km²), Dogadi (199 km²), Ghustung (201 km²), Fagune (327 km²), Barse (167 km²) and Surtibang (148 km²).

Methods

A reconnaissance survey in DHR was conducted during March 2007 to assess presence of Red Pandas. After confirmation of Red Panda presence, three blocks of DHR were selected and line-transects were established to estimate distribution of faecal pellet groups (hereafter pellet groups) at elevations ranging from 3,000 to 4,000 m. Eighteen 1–km transects (horizontal distance) were delineated, seven in Barse, five in Fagune and six in Surtibang blocks. The transects in Surtibang block ranged to 4,000 m elevation, while transects in Barse and Fagune reached 3,845 m and 3,720 m, respectively. All transects were of approximately similar slope. The number, elevation and location of pellet groups within 5 m to both sides of each transect were counted and recorded, as were observations of Red Pandas. Natural demarcations including springs, ridges and valleys were used as reference in orienting along transect lines. At each pellet group or Red Panda observation, information including altitude, latitude, longitude, aspect and slope were recorded. Woody plant species including stumps, dead standing trees and fallen logs were identified using Polunin & Stainton (1986).

Results and Discussion

Overall, Red Panda pellet groups were observed from 3,000 to 3,600 m (Fig. 1). Frequency of pellet groups increased markedly from 3,000 to 3,500 m then declined sharply at higher elevations. No pellet groups were observed at elevations greater than 3,600 m. Although elevations >3,720 m were surveyed less intensively than lower elevations, elevations from 3,500 to 3,720 were not, suggesting the decline in pellet groups observed at elevations >3,500 was not an artefact of sampling effort. Distribution of pellet groups appeared positively associated with the abundance of bamboos *Arundinaria* sp(p). and available water resources. Bamboos are the dominant forage species of Red Pandas throughout their geographic range (Reid *et al.*1991, Yonzon & Hunter 1991a, Pradhan *et al*. 2001). Because Red Pandas generally defecate at feeding sites (Wei *et al.* 2000), we presumed they were foraging primarily on *Arundinaria* sp(p). in DHR.

During March–May 2007, four Red Pandas were sighted. Two were observed in Barse block; one at 3,220 m elevation on 30 April (28°29′12″N, 83°9′45″E) and another at 3,300 m elevation on 10 May (28°30′59″N, 83°06′5″E). The first was observed on a northeast facing slope on Ratmata Hill. The Panda was excavating when first observed at a distance of 200 m. It immediately climbed up to the crown of a fir *Abies*. It was alert to the presence of observers but its movement was relatively slow. It climbed approximately 2 meters in 10 minutes from one branch to another. During this movement the Red Panda looked toward the observers on five occasions and frequently licked its upper lip. When the Panda reached the higher branch it ceased climbing but did turn frequently toward the observers and blinked its eyes often. This Red Panda was observed for about 90 minutes (15h30–17h00). The second observation (Fig. 2) occurred at Phedi, which lies above the Chhantung, at a point was dominated by *Abies spectabilis* with understorey bamboo, and 50 m distant from any water source. This Red Panda was observed briefly on a south-facing slope.

In September 2004 two Red Pandas were encountered at Ratmata (Barse block) by herders at about 18h00. They thought that they were Red Foxes *Vulpes vulpes* (which are locally believed to kill livestock) and pelted stones at them after which the Red Pandas left. A hunter (Chak Bahadur Malla) had also seen Red Pandas at Ratmata and Simpani of Barse block. According to park staff, one Red Panda was found dead in a foot-hold trap at Dharkharka (28°30′50″N, 83°11′05″E; 3,730 m elevation; he took us to this location and we measured the elevation) in 2004 (Jung B. Adai verbally, 15 May 2007). Trapping is illegal in DHR, and we did not observe evidence of Red Pandas in this location during our survey.

In Surtibang block a Red Panda was observed at an elevation of 3,400 m on 15 May 2007 (28°28′19″N, 83°01′29″E). This Panda was observed at a range of about 250 m for 30 minutes (17h25–17h55) before departing. The panda rolled over a branch of *Betula utilis* and escaped toward a large fir *Abies* sp. The tail was almost straight during this movement. The Panda climbed onto a large branch of the fir, where it opened its mouth for some time. It may have vocalised but we could not be certain because of the distance.

Similarly, another Red Panda was observed climbing a fir at the Garpa in Fagune block at an elevation of 3,610 m on 19 May 2007 (28°31′11″N, 83°03′49″E). The Panda turned toward

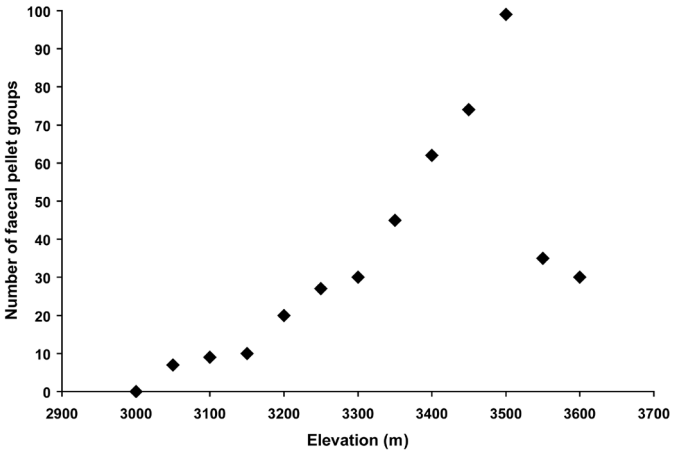

Fig. 1. Elevational distribution of Red Panda faecal pellet groups, Dhorpatan Hunting Reserve, Nepal, March–May 2007.

Fig. 2. Red Panda in fir Abies *sp., Phedi of Barse block, Dhorpatan Hunting Reserve, Nepal, 10 May 2007.*

the observers, fixing fore and hind limbs on the bark of the tree. The bark of the tree seemed to rupture and the Panda appeared to begin falling but adjusted its body and climbed slowly up the tree. We later observed it eating bamboo leaves, using fallen trees as feeding platforms. Pradhan *et al.* (2001) indicated the importance bamboo leaves for panda diet. Additionally, fresh pellets were located 100 m from this site.

Recorded elevations of Red Pandas and their pellet groups in DHR were similar to elevational records reported in other studies (Johnson *et al*. 1988, Yonzon & Hunter 1991a, Pradhan 1999), and appears linked to the distribution of bamboo. Similar to observations reported by Pradhan (1999), Red Pandas did not generally attempt to flee when initially encountered by observers, but rather maintained alert behaviour towards observer presence and stayed in their initial location or moved off slowly.

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