

Gaurishankar Conservation Area - A Prime Habitat for Red Panda (*Ailurus fulgens*) in Central Nepal

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Abstract:

Globally threatened Red Panda is found in isolated high mountain's bamboo-forest patches in Nepal, India, Bhutan, China and Burma. This study was focused in Gaurishankar Conservation Area, one of the newly declared protected areas of Nepal, with aim to glean baseline information regarding existence of Red Panda, its habitat status and conservation issues. Methods like altitudinal line intercept, key informant survey and consultation (with local people, herders, conservation stakeholder) were used to address the objectives. Marbu, Kalinchok, Gaurishankar (Dolkha District), Chuchure, Gumdel (Ramechhap District) and Fulpingkatti (Sindupalchok District) area were surveyed in first phase of study and presence of Red Panda distribution was recorded from Marbu, Kalinchok, Chuchure and Fulpingkatti forests areas through sign evidence (fecal pellets). A total of 24 transects were established randomly in the whole area and only 16 transects were worked effectively because of topographical barrier. Distribution of Red Panda was found as clumped pattern (). Among these sites, frequent sign encounter was recorded in Marbu (5.45/km) area followed by Fulpingkatti (5.06/km), Kalinchok (3.73/km) and Chuchre (1.67/km). Like in other areas, conservation issues like habitat destruction, livestock pressure, fire wood collection and illegal poaching were rampant in Gaurishankar also. This study recommended for detail survey on population status and conservation activities should be elaborated in current identified habitat as well as further survey should be focused on other possible habitats within conservation area.

Key Words: Distribution, Fecal pellets, Gaurishankar Conservaton Area, Red Panda, Transect

Introduction

Nepal's high priority in biodiversity conservation is reflected in the increasing number of protected areas which covers more than 20% of the total area of the country. In fact, such creation process plays significant role in biodiversity, results in protection and conservation

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of endangered and rare species. Recently, Government of Nepal proclaimed Gaurishankar Conservation Area (GCA) as new conservation area, that appended a protected area in Sacred Himalayan Landscap (SHL) and extends in three districts comprising six VDCs (Gumba, Tatopani, Listikot, Fulpingkatti, Marming, and Ghorthali) of Sindhupalchok district, fourteen VDCs (Kalinchok, Bigu, Alampu, Chilankha, Lambagar, Orang, Bulung, Laduk, Gaurishankar, Khare, Marbu, Chankhu, Suri, and Syama) of Dolakha district and Chuchure and Gumdel VDCs of Ramechhap district with an area of about 2179 km². It lies between the Langtang National Park in the West and the Sagarmatha National Park in the east and thus act as biological corridor for large home range high altitude's fauna.

The Red Panda (*Ailurus fulgens*) is recorded in isolated pockets of high mountain ranges in western China (Sichuan, Yunnan and Tibet provinces) and the Himalayan mountain chain of Nepal, India, Bhutan and Burma, with a separate population on the Meghalaya Plateau in north-eastern India (Roberts and Gittleman, 1984; Glatston, 1994; Wei *et. al.*, 1999; Yonzon, 1989; Reid *et al.*, 1991 and Pradhan *et al.*, 2001). The global population of the Red Panda is estimated at 16 000 to 20 000 individuals based on ecological density (Choudhary, 2001). Now its population is estimated at 10,000 in wild (IUCN, 2008). Nepal hosts about 1.9 % of the total global population of the Red Panda and estimated 314 individuals based on habitat suitability (Yonzon *et al.*, 1997). Population of Red Panda is declining day by day from its viable habitat of the world and IUCN has mandated it as endangered species since 1996 but now it is listed under Vulnerable category (IUCN, 2008) and also legally protected by Government of Nepal under Schedule I (section 10) of National Parks and Wildlife Conservation Act 2029 (1973). PAs network of Nepal cover about 20% of the total area, but more than 62% of the Red Panda potential habitat remains outside the protected areas which may have higher risk due to human pressure (Yonzon *et al.*, 1997), still research works are concentrated within protected areas only (Yonzon, 1989; Mahato, 2004; Sharma, 2008; Thapa, 2009 and Kandel, 2009). This study aimed to glean base line information of Red Panda; its distribution and conservation issues.

Material and Methods

Study Area

Newly designed Gaurishankar Conservation Area ($85^{\circ}47.4'$ and $86^{\circ}34.8'$ East longitude and $27^{\circ}34.2'$ and $28^{\circ}10'$ North Latitude) was gazette in July 19, 2010 that fall under Sacred Himalayan landscape. GCA harbor rich floral and faunal diversity along with cultural significance. Varied physiography and climatic condition provides the

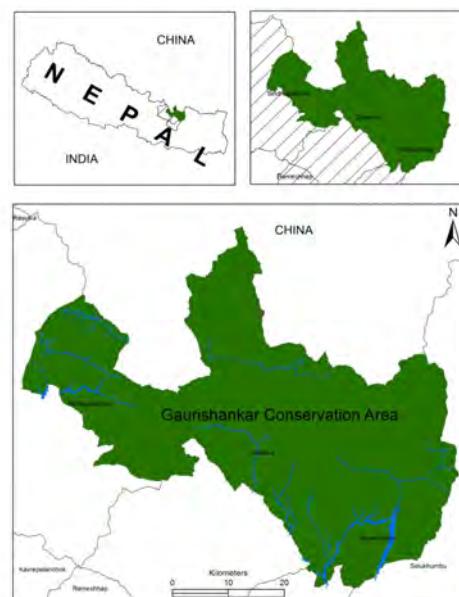


Figure 1: Map of Study area

existence of diversified vegetation composition viz. subtropical forest (Pine forest, *Schima-Castanopsis* forest etc.) to alpine shrub land. In addition, agricultural lands, human settlements, cliffs and aquatic habitats are also present. This conservation area act as refuge for more than 34 mammals species including globally concern species like Red Panda, Snow leopard along with other bird, herpeto-fauna and fishes (NTNC, 2009).

Methods



Figure 2: Fecal pellet of Red Panda in three branches

Field survey was carried out in the months of July, 2011. During this period, altitudinal line intercept method was used for sign (fecal pellet, pugmark) survey. As well as other potential Red Panda habitats and conservation issues were identified from the secondary sources, literatures, semi structural questionnaires and informal interviews with local villagers, herders, conservation hotel staffs near the study areas. Fecal pellet is an effective indicator for sign survey

of Red Panda due to their shy nature. The recognized probable habitat of animal in conservation area was surveyed following Williams (2004), Mahato (2004) and Kandel (2009). Horizontal transects were laid in each block along contour lines between elevations of 2600 m and 3600 m with an altitudinal spacing by 200m. In transects, signs encountered were recorded keeping limitation on transect lengths due to varied topography (cliff, steep, rocky, river etc) and distribution pattern of animal was carried following the Odum (1971).

Results and Discussion

This Field survey was carried out in 2011 that validated the presence of Red Panda in newly declared Gaurishankar Conservation Area. Based on sign survey (fecal pellet/ droppings) presence of Red Panda was recorded in Marbu and Kalinchok (Dolkha), Chuchure (Ramechhap) and Fupingkatti (Sindupalchok).

Similarly, study was carried in Sema Village of Garurishankar VDC and Gumdel areas of Ramechhap, where sign was not recorded in the survey transects; however vegetation of habitat as well as key information survey (local voice) support the high possibility in existence of Red Panda. Results of key information survey (KIS) and consultation with local level conservation

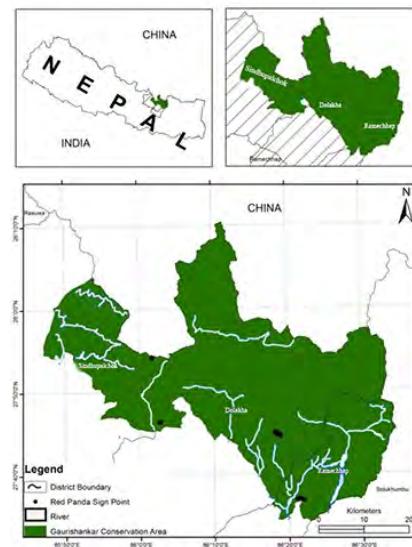


Figure 3: Distribution of Red Panda presence in GCA

stakeholder also urge other areas like Tatopani, Bigu and Ghorthali for Red Panda presence. There wasn't any record of Red Panda signs in elevation below 3000 m in four confirmed areas. Fecal pellets were encounter above 3000m in Marbu and Fulpingkatti; whereas it was recorded around 3200m elevation in Fulpingkatti and Chuchure areas. There was no visual encounter of animal during transects survey. Current study showed that distribution of Red Panda varies within range between 3000m to 3600m. This study indicated the clumped pattern of distribution ($S^2/\bar{X} = 3.06 > 1, \chi^2 = 0.445, P < 0.05$)

$S^2/\bar{X} = 3.06 > 1, \chi^2 = 0.445, P < 0.05$ in GCA that supported the study carried from Illam (Kandel 2009), Dhorpatan Hunting Reserve (Subedi 2009 and Kandel 2009). Though study carried in Buffer Zone of Sagarmatha National park found distribution of Red Panda in patches separated by steep terrains (Mahato 2004). In nature, clumped pattern of distribution is more frequent in comparison to other types of distribution ie. random and uniform.

Threats and Conservation issues

Threats to the Red Panda were determined by considering the livestock and human pressure. In the intensive study area, livestock was dominated by *Chauri* and grazing was prevalent in all sites. Seasonally, large herds of livestock were grazed in different pastures near all four study sites where livestock spend about six to seven months that possesses higher pressure to the Red Panda. Along with this, livestock and herder, dogs used to visit Red Panda habitat frequently which has chances of killing Red Panda. In Marbu, average cattle dung encounter is high compared to other areas that disturb Red Panda habitat. About 16 cattle sheds (Goths) were counted in Marbu with average 18 *Chauri* per shed. There are cheese processing unit (government/private), that encouraged herders to increase their livestock number by providing them soft loan and reasonable price for milk. This activates also support for high grazing stress.

Along with grazing; fire collection, fodder collection, malingo and shoots of malingo (bamboo shoot) collection were issues of threats to the animal. Interviews suggested that local people used bamboo and shoots for various purposes such as for making basket and rooftop, as fodder, and fencing and bamboo shoots were used as vegetables and pickle.

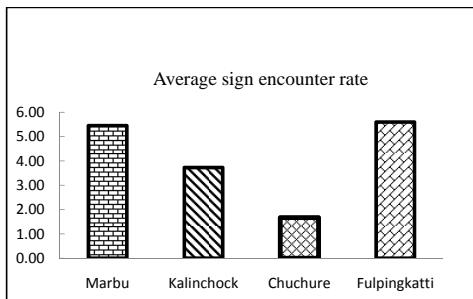


Figure 4: Average sign encounter rate in sites

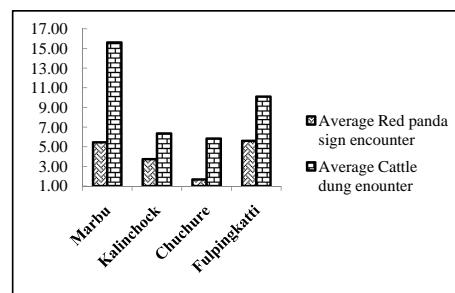


Figure 5: Average Red Panda sign encounter and average cattle dung encounter in the four areas

They also used these shoots to feed their livestock as cattle feed. Hunting doesn't appear to be a serious threat as habitat loss, overgrazing and fire wood collection. During the study period, hunting evidences was found in cattle sheds in the Marbu area but was not recorded from other study sites.

Conclusion

Presence of Red Panda was confirmed in Gaurishankar Conservation Area (GCA) and showed the patchy distribution. Sign evidence (droppings) indicated existence of Red Panda from four areas; Marbu and Kalinchok (Dolkha), Chuchure (Ramechhap) and Fulpingkatti (Sindupalchok). Signs of Red Panda were encountered at the elevation of 3000m from surveyed areas and gradually scared at elevation 3600m. This study indicated the clumped pattern of distribution ($S^2/\bar{X} = 3.06 > 1, x^2 = 0.445, P < 0.05$ $S^2/\bar{X} = 3.06 > 1, x^2 = 0.445, P < 0.05$) in GCA. A total of 24 transect were laid, among them 16 transect were effective for Red Panda sign encounter. Marbu showed the highest sign encounter rate followed by Fulpingkatti, Kalinchock and Chuchure. Particularly, the droppings were found in tree and ground.

The Red Panda in study area is facing problems of habitat destruction, livestock pressure, fire wood collection, fodder collection as well as illegal poaching. Likewise, grazing of cattle in the Panda habitat and use of bamboos as vegetables, roofing materials and as other raw materials for domestic utensils are also the indirect threats to Red Pandas.

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