

Report on

**Strengthening Community Participatory Red Panda Conservation and Monitoring  
Program in Gaurishankar Conservation Area, Central Nepal**

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## **Executive summary**

In order to **Strengthen Community Participatory Red Panda Conservation and Monitoring Program in Gaurishankar Conservation Area, Central Nepal**, we drafted a red panda monitoring protocol in Nepali version. We conducted field training and established transects in a single block in the Kalinchock forest in Gaurishankar Conservation Area. Nine local people from the Kalinchock Village Development Committee were selected for field based training. Field based training was conducted for two weeks, comprised both the theoretical and practical classes. They learnt about general red panda ecology, significance of biodiversity conservation and got practical skill in handling of field equipment (GPS, compass, diameter tape etc.). Additionally, they were capable and built their confidence in identifying red panda signs (fecal pellets) and recording data on predefined field data sheet in Nepali language. Using drafted monitoring protocol, trained local citizen scientists were used to establish a transect at single block Kanlinchok, where the presence of red panda was confirmed through previous project outcomes. Based on monitoring protocol, each block should have established seven horizontal transect within the elevation of 2600 m-3800 m. However, sign based survey suggested that the panda's presence was confirmed above 3000m in the Kalinchock forest. Thus, six horizontal transects were established between 3000 m to 3450 m with 200 m elevation gap. In each altitude two horizontal transects were set up with varying length (0.5-1 km) due to topographic ruggedness and natural disturbances. During field work, there was no record of direct animal encounter, but indirect sign (fecal pellet) was taken as an indicator of animal presence in the site. Red panda signs were recorded in 3000 m and 3450 m with very few and encounter rate was also too low. Despite this, red panda conservation committee was formed for regular monitoring of red panda with involvement of trained local citizen scientists.

Finally, community based red panda monitoring was established in Garuishankar Conservation Area. Furthermore, trained local people were capacitated as local citizen scientists (LCS), and started regular monitoring of red panda in Kalinchock forest, Gaurishankar Conservation Area.

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## 1. Introduction

### 1.1. Red panda *Ailurus fulgens*

Globally threatened red panda occurs in the isolated high mountain's bamboo- forest patches in Nepal, India, Bhutan, China, and Burma (Yonzon, 1989, Yonzon et al. 1997, Choudhury 2001, Pradhan et al. 2001). Both published/unpublished reports support that the presence of red panda is confirmed in eight mountainous protected areas of Nepal which covers 38% of total potential red panda habitat. In Nepal red panda population is estimated between 317-528 individuals and split across 11 sub-populations (Jnawali et al. 2012). Approximately 1.9 percent of the total global population of red panda is present in Nepal, an estimation based on habitat suitability of index model, whereas Kanchenjunga Conservation Area shares 24.33 % of the Nepal's red panda population (Yonzon et al 1997).

At present, it is believed that there are less than 10,000 mature individual red pandas (*Ailurus fulgens fulgens*) left in the wild (IUCN 2015). Existing wild populations of red panda are expected to additional decline because of continuing habitat loss, illegal trade along with the pressure of anthropocentric activities. Also, patchily distributed population and the high infant mortality rate could influence its increasing population decline trend. As a result, the Convention on International Trade in Endangered Species of Wild Fauna and Flora has listed the red panda as a species vulnerable C1 with extinction (i.e., an Appendix I species) and listed as protected species nationally. Despite significant threats to its persistence, its high degree of taxonomic uniqueness, and its designation as an indicator species, very little is known about red panda, including the population status of red panda throughout its geographic range (Choudury 2001, and Pradhan et al. 2001). Through the creation of the "Sacred Himalayan Landscape" (SHL), a program created to ensure long-term conservation of the Eastern Himalaya, the Government of Nepal has demonstrated its commitment to long-term, landscape-level conservation of two-thirds of the Eastern Himalaya. The red panda is a focal landscape species for conservation efforts in the Sacred Himalayan Landscape (SHL).

Communities in remote areas may subsist since long time in relative harmony with the environment and the red panda in their surroundings. There is substantial impact on nature because of rapid population growth, political and cultural changes, and high demand for natural resources extraction. All these can disrupt the balance of these relationships. For long term sustainability, conservation organizations should work with local people and help them

to manage their natural resources through participatory approaches and provide ownership of resources.

## 1.2. Community based Monitoring and Conservation in Nepal

The long- term conservation of wildlife depends upon the support of local communities and a collective approach among communities, governmental and non-governmental organizations. There is a need to improve security for wildlife and enhance livelihoods for rural people who share their land with wildlife. Community-based conservation models focus basically on the benefits of the community through conservation of wildlife. Ideally, most of the funds generated through conservation initiatives should support for social development.

Illegal trade of wild flora and fauna is ongoing in mountainous protected areas as well as from the lowland area in Nepal. Smuggler use Nepal as a transit route for illicit trafficking of wildlife parts of endangered animals. Community based monitoring tool could work effectively for conservation of natural resources when local people could understand the value of resources properly. Earlier, community participatory wildlife conservation programs were started with emphasis to conserve threatened fauna inside and outside protected areas in Nepal. Realizing that Snow Leopards are the most important member of a healthy Himalayan ecosystem, their presence indicates healthy wild ecosystem which are valuable for ecotourism and many other interlinking ecosystem services. However, increasing threats like prey reduction, retaliatory killings, illegal trade, decrease in snow leopard prey, and livestock etc are increasing. To minimize such following forward process, Community-based Snow Leopard Conservation and monitoring was initiated with piloting through livestock insurance scheme in the KCA. Additionally, trained local citizen scientists' monitored regular established permanent transects and census of prey status. Due to its positive messages, the community participatory monitoring mechanism was further extended and established in Annapurna Conservation Area and other protected area of the country (WWF-Nepal 2012).

Similarly, Community-based Tiger Monitoring was instigated in Tarai and local citizens were recruited and trained as bagh heralu ("tiger watchers") that contribute in information collection on the distribution of tiger. The main goal of the bagh heralu program was to map the current meta-population of tigers in Nepal and to determine the extent of breeding outside protected areas. The bagh heralu approach was useful not only because it facilitated data collection but also because it enhanced conservation efforts in multiple ways. Outcomes of

the five years of the program, bagh heralu became knowledgeable about basic tiger biology and they became recognized in their communities as local tiger experts (Allendorf et al. 2010).

Red panda, Punde Kundo project imputed to establish an integrated community-based conservation program of a landscape species, red panda, and its habitat in Eastern Nepal. The overarching goal of the Project Punde Kundo is to create sustainable landscape-level conservation of red panda and the ecoregion. Red Panda Network (RPN) initiated an innovative approach to monitor red panda in the community forests and adjoining national forest in Illam, Panchthar and Taplejung. First phase work was launched in six forest in four VDCs – Maimajhuwa and Mabu in Illam; Prangburng and Siddin in Panchthar district (Mahato et al. 20 11). Similarly, Red panda Network extended their work, in partnership with local conservation organizations conducted survey and started long-term monitoring of red panda population in the community forests of three VDCs in Taplejung district in the Eastern part of Nepal (Williams et al. 2011).

### 1.3. Harmony of Local Communities and Red Panda in Himalaya

Communities in rural areas may have been living since long time in relative harmony with the environment and the red panda in their surroundings. Rapid population growth, political and cultural changes, and high demand for natural resources extraction can disrupt the balance of these relationships, thus resulting in communities to lose interest in conservation issues. For long term sustainability, conservation organizations should work with local people and help them to manage their natural resources. Communities are heart of any conservation who can understand and act responsibly for nature conservation. Community based monitoring could benefit with tourism promotion, which is another useful tool for conservation; and tourism provides opportunity for jobsans also promotes local handicrafts. With an eyeball of such opportunity, red panda based tourism was started in the eastern part (Hayangthan-Choyatar Community Forests), red panda eco-trail was built in Red panda Conservation Area in Langtang National Park. However, tourism needes to be managed in a way that it cares for the people and provides them a future.

Gaurishankar Conservation Area is a prime habitat of red panda in central part of the country (Thapa et al. 2013), which consists of more than nine separate red panda habitat patches ([http://www.rufford.org/rsg/projects/arjun\\_thapa](http://www.rufford.org/rsg/projects/arjun_thapa)). These human induced activities pose great

challenge to red panda conservation. The major primary bottleneck in the conservation and management of red panda is the limited ground based conservation work, that might be due to animal's crepuscular and shy behavior, habitats in steep terrain, remoteness and not easily accessible. However, animals of these areas facing threats mostly from livestock grazing and other human induced activities such as collection fuel wood, timber, and NTFPs (Thapa 2013). Realizing this, harmonizing community people in conservation is the best solution, thus establishing community-based red panda monitoring system is crucial as an effort to draw attention to the conservation problems confronting this highly endangered but very interesting species. This would be a cost effective way to get substantial, reliable data while also ensuring local ownership of the project.

## **2. Objectives**

The goal of this project is to strengthen the community participatory red panda monitoring system through direct involvement of trained local citizen scientists for long term survival of the red panda and its habitats.

The specific objectives of the project were to:

- a. Develop and draft community's user friendly red panda monitoring protocol
- b. Train and capacitate local people as Local Citizen Scientist
- c. Establish monitoring transects in Kalinchok forest of GCA

### 3. Material and Methods

#### 3.1. Study Area

Newly designed Gaurishankar Conservation Area (85047.4' and 86034.8' East longitude and 27034.2' and 28010' North Latitude) was gazetted in July 19, 2010 that fall under Sacred Himalayan Landscape. It extends in three districts; 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 km<sup>2</sup>.

In GCA, 16 vegetation types are categorized based on 35 forest types that represent sub-tropical to alpine bio-climate zone. These vegetation types comprises: *Pinus roxburghii* forest, *Schima-Castanopsis* forest, *Alnus* forest, *Pinus wallichiana* forest, *Pinus patula* forest, Rhododendron forest, *Quercus lanata* forest, Lower temperate oak forest (*Quercus semicarpifolia* forest), Lower temperate mixed broad leaved forest, Abies forest, Upper temperate mixed forest (*Birch-rhododendron* forest), Temperate mountain oak forest, East Himalayan Oak forest, *Juniperus* forest, Shrubland (Rhododendron anthopogon bushes) and moist alpine scrubs (NTNC 2009).

This conservation area act as refuge for more than 34 species of mammals, 16 species of fishes, 10 species of amphibians, 8 species of lizards, 14 species of snakes, 235 species of birds are (NTNC 2009). This area is an important habitat of globally threatened species such as: Snow leopard (*Uncia uncia*), Clouded leopard (*Neofelis nebulosa*), Musk deer (*Moschus chrysogaster*) and Red panda (*Ailurus fulgens*). Prey species, such as the Himalayan tahr (*Hemitragus jemlahicus*), Himalayan marmot (*Marmota himalayan*), Pika (*Ochotona* sp.), Ghoral (*Nemorhaedas goral*) are also found here. The park is also well known for other animals such as, Redfox (*Vulpes vulpes*), common leopard (*Panthera Pardus*), wolf (*Canis lupus*), Himalayan yellow throated marten (*Martes flavigula*), Himalayan black bear (*Selenarctos thibetanus*), large Indian civet (*Viverra zibetha*), Red giant flying squirrel (*Petaurista petaurista*), Rhesus Monkey (*Macaca mulatta*) Barking deer (*Muntiacus muntjac*) etc.

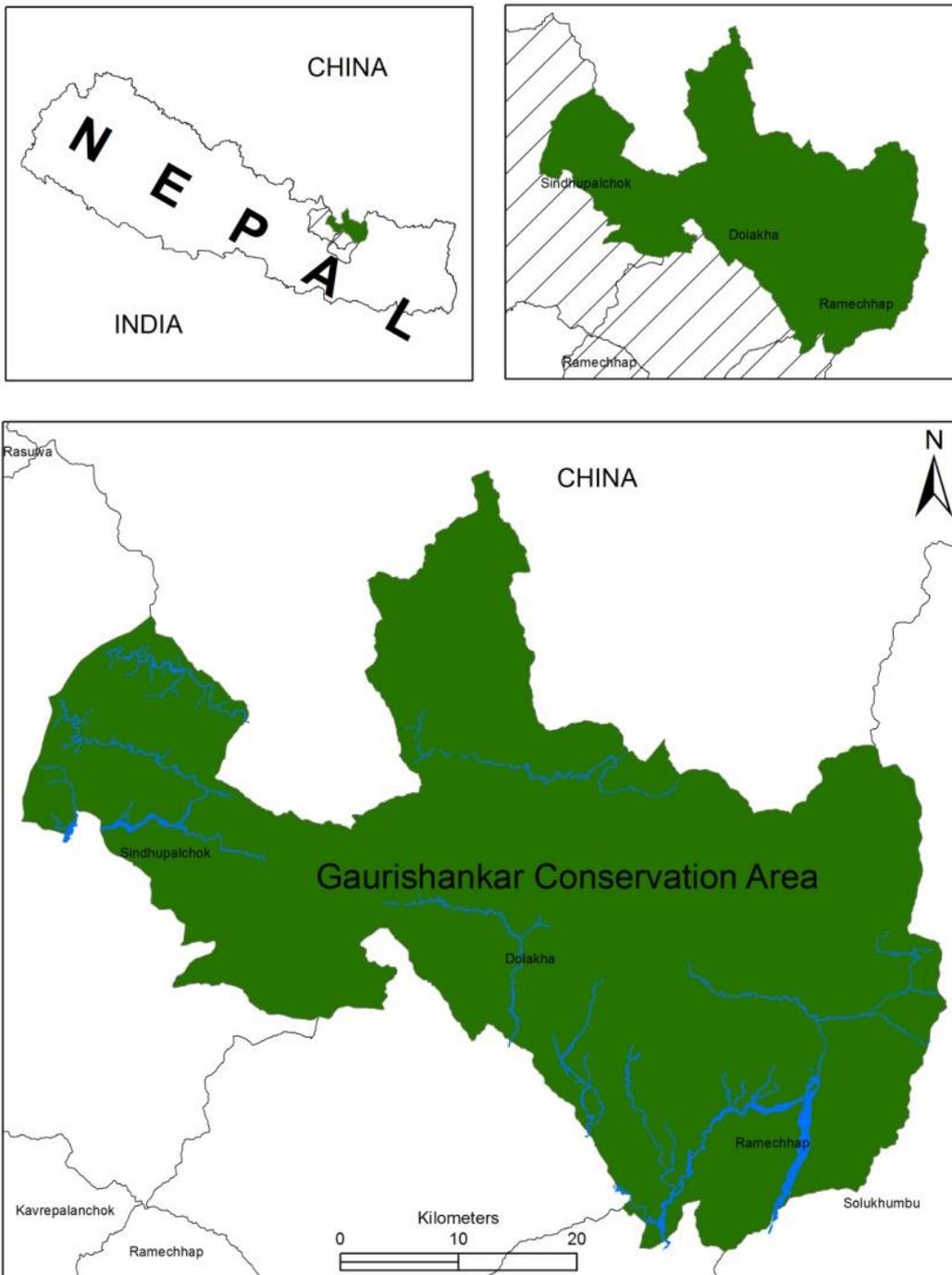


Figure 1. Guarishakar Conservation Area

### **3.1. Methods**

#### **3.1.1. Desktop Review and Export/local stakeholder Consultation**

Several published and unpublished literatures related to red panda were thoroughly reviewed to assess the status (both global and national), determine current and historical red panda distribution in Nepal, summarize ecological information on the red panda, examine threats and to evaluate conservation measures taken for red panda by the Government of Nepal and other supporting organizations.

Community-based red panda monitoring protocol (CBRPM) was drafted in a Nepali version based on review of literatures, and further suggestions and feedbacks were gleaned through a national level consultation workshop organized on the occasion of "International Red Panda Day". Attendees in the workshop were representatives from protected areas governing body, local communities, conservation concern non-governmental, wildlife biologist, and professors and university graduate students. Local stakeholder meeting was conducted with representatives of Kalinchok VDC, GCAP authority, RDTA-Dholka, foresters and school teachers, and mother groups. Moreover, 15 local people attended the meeting and selection of local citizen scientists for training was done through this meeting. Most of the participants were positive in conserving red panda and they allocated 9 people for intensive training and field work, to recognize as Location Citizen Scientist in monitoring red panda. The draft protocol consists of four chapters; with brief ecological information about red panda, survey technique and monitoring methodology, data collection and analysis technique, sustainable monitoring mechanism flowchart, format of data collection sheets, relevant photographs. During discussion, major comments from key persons were discussed and noted and addressed in the protocol.

#### **3.2.2. Field based Training and Transect Establishment**

Field based training was organized for a total of nine people, from confirmed Red Panda presence sites, to capacitate them as citizen scientist for regular monitoring of the animal. Training comprised both lectures and practical sessions, which dealt with sharing information on ecology of red panda, habitats, major threats, conservation challenges, and local communities' responsibility in biodiversity conservation, and equipment handling/ recoding.

Besides, practical session also included survey techniques of red panda (line transect and quadrat sampling), and they were trained on handling equipment (GPS, compass, measuring tape), and recording field data collection). Out of nine, six LCSs were directly involved in establishment of the permanent transect based on drafted protocol. All LCSs were capable to handle equipment, identify animal sign, and record information in predesigned field data sheet.

Based on preliminary survey and prior research outcomes, Kalinchok forest was selected for detail Red Panda monitoring block in Gaurishankar Conservation Area. We lay transect based on drafted monitoring protocol. Six horizontal transects (5 km total length) in between elevation of 3000 m-3450 m and which were varied in length (0.5 k-1 km) were established. The transect length were varied due to rigorous topographic features (steepness, rocky). Analysis of sign datasheet shows, high faeces (n=6) was recorded at elevation 3400 m; whereas other transect consist very few faecal record (less than 3). Beside faeces, we also recorded panda's pugmark in snow covered habitat.

#### **4. Outcomes**

##### **4.1 Monitoring protocol**

Community-based red panda monitoring protocol (CBRPM) was drafted in a Nepali version based on review of literatures and consultation with key persons (eg. biologist, conservationist, park officer, researchers). For feedback collection on draft protocol, a national level discussion was carried out. Draft protocol consists of four chapters; with brief ecological information, survey technique and monitoring methodology, data collection and analysis technique, format of data collection sheet, relevant photographs.

##### **4.2. Training on field equipment handling and monitoring techniques**

Field based training was conducted in Kalinchok VDC, which is a prime habitat of red panda in Gaurishankar Conservation Area. Nine local people were selected and participated in the training session. During training, both theory and practical classes were conducted simultaneously. Theory classes were continued for a day that consists lecture on motivation of biodiversity conservation, general ecological information of red panda, and role and responsibility of local people on wildlife conservation. In addition, participants were trained on equipment (GPS, compass, clinometer, diameter tape etc.) handling and data recording

skill. Participants invested most of their time in practical classes. After lectures class, trainees were splited into different groups and were moved them in nearby area for field demonstration to cross check their confident in the field. At meantime, participants were taught about survey technique (eg. transect walk, quadrat sampling) and monitoring protocol. Also, they were instructed how to fill field data sheets, data compilation and general analysis. (Table.1)

#### 4.3. Transect Established and sign survey

Six horizontal transect were established in between 3000 m and 3450 m. These transects varied in length, which ranges from 0.5 km to 1 km. Each elevation consists of a two transect within interval of 200 m.

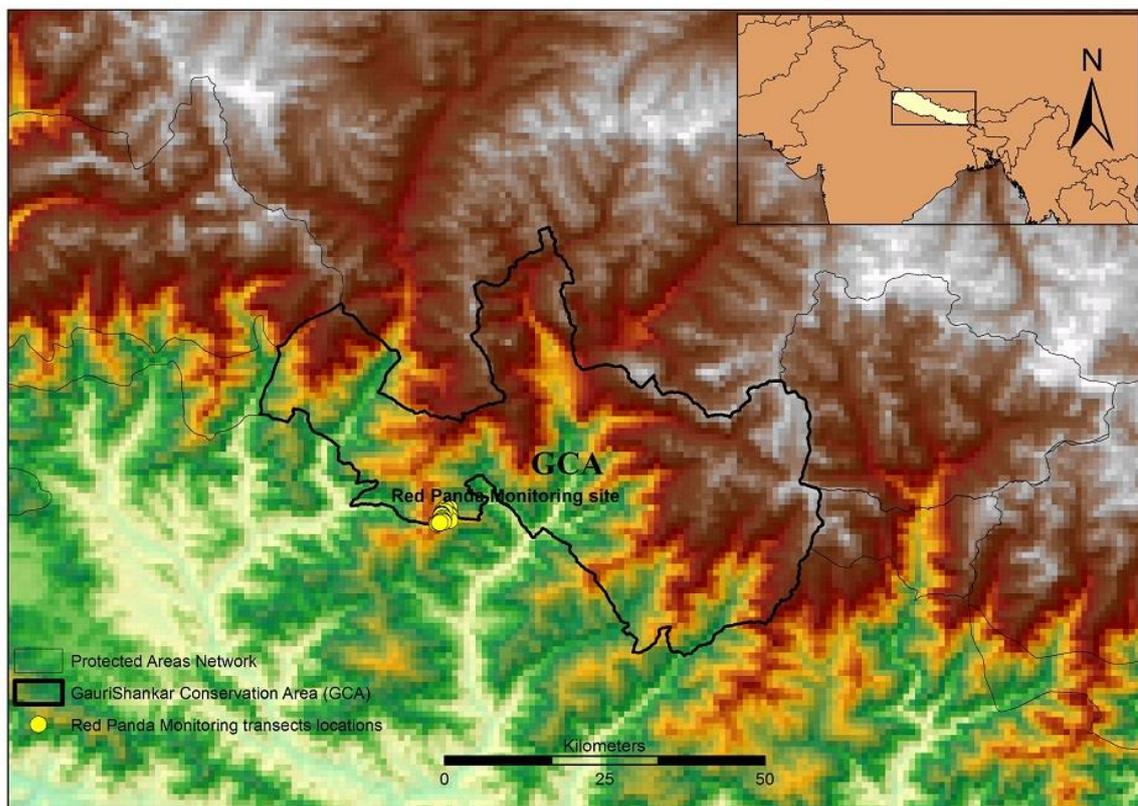


Figure 2. Location of Community Participatory Red panda Monitoring in Gaurishankar Conservation Area

Table 1. Sign (fecal pellets) recorded in transects

| Transect No. | Elevation    |            | Coordinates  |         |            |          | Transect length (km) | No. Fecal pellets |
|--------------|--------------|------------|--------------|---------|------------|----------|----------------------|-------------------|
|              | <i>Start</i> | <i>End</i> | <i>Start</i> |         | <i>End</i> |          |                      |                   |
| <b>A1</b>    | 3000         | 3012       | 27.77        | 86.050  | 27.77      | 86.050   | 0.5                  | 0                 |
| <b>AA1</b>   | 3020         | 3050       | 27.77        | 86.0453 | 27.773     | 86.0418  | 0.5                  | 0                 |
| <b>B2</b>    | 3213         | 3220       | 27.76        | 86.0518 | 27.76      | 86.050   | 1                    | 2                 |
| <b>BB2</b>   | 3226         | 3249       | 27.76        | 86.042  | 27.759     | 86.0511  | 1                    | 2                 |
| <b>C1</b>    | 3425         | 3431       | 27.757       | 86.0372 | 27.7616    | 86.0401  | 1                    | 1                 |
| <b>CC1</b>   | 3430         | 3415       | 27.757       | 86.039  | 27.7572    | 86.03713 | 1                    | 5                 |

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Trainee learning to Identify animal's sign from reference book



Participants in training and local discussion



Local Citizen Scientist learning handling GPS



LCS learning quadrat sampling



LCS identify red panda feces in field



Fecal pellets recorded in field

## समुदायमा आधारित हाब्रेको सर्वेक्षण तथा अनुगमन विधि



**लेखन तथा संकलन**

**अर्जुन थापा**

**संस्थाको नाम: साना स्तनधारी संरक्षण तथा अनुसन्धान फउण्डेसन, नयाँबानेश्वर, काठमाडौं, नेपाल**

## भूमिका

सन्तुलित पारिस्थितिक प्रणालीको सूचक मानिने हाब्रे वैज्ञानिक अध्ययनको दृष्टिकोणले अतिनै महत्वपूर्ण बोकेको एक स्तनधारी जनावार हो । अतिनै लजालु तथा मनमोहन स्वभावको यो जनावर विहान र बेलुकीको समयमा धेरै चहल पहल गर्ने गर्दछ । यो प्राणीको भौगोलिक वितरण नेपालको मुगु जिल्लाको रारा राष्ट्रिय निकुञ्जदेखि पूर्वको कञ्चनजङ्गाका उच्च पहाडी क्षेत्रमा अवस्थित संरक्षित क्षेत्र, सामुदायिक र राष्ट्रिय जंगलहरूमा पाईएको छ । नेपाल लगायत पूर्वीउत्तर भारत, भुटान, चीन र म्यानमारका उच्च हिमाली भेकका जंगलहरूमा मुख्य बासस्थान रहेको छ । समुन्द्र सतहबाट १५०० मिटरदेखि ४००० मिटरको उचाईसम्म घुमफिर गर्ने यो प्राणी मालिङ्गो रहेको गोब्रे सल्ला, भोजपत्र, लाली गुराँस आदि मिश्रित जंगलहरूमा बस्न मन पराउँछ । मालिङ्गोको टुसा र कलिलो पातलाई आफ्नो मुख्य खानाको रूपमा लिनुको साथै अन्य खानाहरु जस्तै च्याउ, बेरी, आदि मन पराउँछ । ऐलुरस फल्जेन्स वैज्ञानिक नामले परिचित यो जनावरको दुई उप-प्रजाती छन् - ऐलुरस फल्जेन्स फल्जेन्स (*Ailurus fulgens fulgens*) जसमध्ये नेपालमा पाईने ऐलुरस फल्जेन्स फल्जेन्स उप प्रजाती हो । साधारणतया दुवै उपप्रजातीलाई हाब्रे तथा हाब्रे भनेर चिनिन्छ ।

नेपाल सरकारको वन तथा भू-संरक्षण मन्त्रालयबाट स्वीकृत हाब्रे संरक्षणका लागि ५ उद्देश्य सहित ३८ कार्यक्रम समाहित गरी हाब्रे संरक्षण पञ्च वर्षीय कार्ययोजना लाङ्गटाङ्ग राष्ट्रिय निकुञ्जका लागि "हाब्रे संरक्षण कार्ययोजना २०१० देखि २०१४" तयार गरी प्रकाशित गरिएको छ साथै राष्ट्रिय स्तरमा हाब्रे संरक्षणका लागि हाब्रे संरक्षण राष्ट्रिय कार्ययोजना पनि प्रकाशित हुने तयारीमा छ । एकिलएको बासस्थान, अत्याधिक बच्चाको मृत्युदर साथै दिन प्रतिदिन मानिसबाट हुने क्रियाकलापहरूको बास स्थानप्रतिको चापले यस सुन्दर प्राणिको अस्तित्व संकटाभिमुख Vulnerable अवस्थामा पुऱ्याएको छ । विभिन्न मानवीय तथा प्राकृतिक प्रकोपका कारण यस जनावरको बासस्थानको विनास तथा खण्डीकरण (मालिङ्गो र ठूला रुखहरूको जथाभावी कटान तथा फण्डानी), अव्यवस्थित चरीचरनको चाप, जथाभावी जडीबुटी संकलन, पासो तथा धराप थाप्ने क्रियाकलाप, घर पालुवा कुकुरहरूको आक्रमण, बासस्थानमा डडेलो लाग्नु/लगाउनु, विकास निर्माण कार्यहरू आदि क्रियाकलापले यस सुन्दर र लज्जालु प्राणिको अस्तित्व माथि नै प्रतिकूल असर परिरहेको छ । जसको प्रत्यक्ष असर प्राकृतिक अवस्थामा रहेको हाब्रेको संख्या दिनानुदिन घट्दै गएको छ । त्यसकारण संकटाभिमुख यस प्राणि र बासस्थानको संरक्षण गर्न नितान्त आवश्यक छ । यस जनावरको बास्थानको सेरोफेरोमा बस्ने स्थानीय वासीलाई यस जनावरको अवस्था बारेमा धेरै जानकारी हुने हुँदा हाब्रेको र त्यसको संरक्षणको महत्वबारे उनीहरूबीच प्रकाशमा ल्याउनुको साथै संरक्षणले दिगो जिविकार्पाजनमा टेवा पुऱ्याउँछ । तसर्थ: स्थानीय स्तरबाट नै संरक्षणको

पहल धेरै महत्वपूर्ण मानिएको छ । जसका लागि स्थानीय वैज्ञानिकको विकास गरी यस अनुगमन निर्देशिकाको सहयोगबाट स्थानीयवासीको सहकार्यमा हात्रे र त्यसको बासस्थान अनुगमन गर्ने उद्देश्यले यो पुस्तिका प्रकाशन गरिएको छ । स्थानीय वैज्ञानिक साथै साधारण व्यक्तिले पढ्न र बुझ्न सक्नु भनी यो पुस्तिकाको भाषा सकेसम्म सरल बनाउन खोजिएको छ ।

यो अनुगमन निर्देशिका पुस्तिकालाई वातावरण तथा जैविक विविधता संरक्षण गर्न लागि परेका संघ-संस्था तथा व्यक्तिहरु, राष्ट्रिय निकुञ्ज तथा संरक्षण क्षेत्रका कर्मचारीहरु, हात्रे हुने क्षेत्रका सामुदायिक वन उपभोक्ता समूहहरु र सामाजिक कार्यकर्ताहरुले पनि उपभोग गर्नेछन् ।

अन्तमा, यो पुस्तिका तयार गर्न सहयोग गर्नुहुने तल उल्लेखित संघ-संस्था, सम्बन्धित क्षेत्रका विज्ञ तथा अन्य व्यक्तिहरुलाई आभार प्रकट गर्दछौं ।

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- Small Mammals Conservation Research Foundation