CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA

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Species trade and conservation

Periodic Review of species included in Appendices I and II [Resolution Conf. 14.8 (Rev. CoP16)]

RESEARCH PROPOSAL ON STATUS AND DISTRIBUTION OF GRAY LANGUR *SEMNOPITHECUS SCHISTACEUS* IN BHUTAN

The attached information document has been submitted by Bhutan in relation to agenda item 20.1.*

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Research Proposal on

Status and distribution of gray langur *Semnopithecus schistaceus* (Hodgson) in Bhutan

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Total Amount requested:	**US Dollar 20,153.80**
Project duration:	**9 months (August 2015 to April 2016)**

Research Proposal:

Status and distribution of gray langur *Semnopithecus schistaceus* (Hodgson) in Bhutan

1. Introduction

Bhutan has six primate species: three of langur (golden langur *Trachypithecus geei*; capped langur *Trachypithecus pileatus*; and gray langur *Semnopithecus schistaceus*), two of macaque (Assamese macaque *Macaca assamensis*, and rhesus macaque *Macaca mulata*), and the slow loris *Nycticebus bengalensis* (Wangchuk et al. 2003; Wangchuk et al. 2004; Choudhury 2008).

The gray langur is also commonly called Hanuman langur or Himalayan langur. Before it was formerly considered as a subspecies of *Semnopithecus entellus* (Pocock 1928; Sugiyama 1976), but Blanford (1988) considered the group of Hanuman langurs which are distributed throughout the Himalayas from Kashmir to Bhutan as Himalayan langur (*Semnopithecus schistaceus*). The International Union for Conservation of Nature (IUCN) Red List also recognized this species as independent from *S. entellus* following the classification by Hodgson, 1840. This species is native to Bhutan, China, India, Nepal, and Pakistan. Currently, the IUCN Red List has categorized this species as "Least Concern", but the population trend is recorded as decreasing. Nevertheless, the species is listed under Appendix I of the Convention on International Trade in Endangered Species of Flora and Fauna (CITES; Kumar et al. 2008).

There are enough photographic and other evidences of the presence of gray langur in Bhutan. Indeed, it has been regarded as an agricultural pest in some parts of Bhutan (*Pers. Comm. Tshewang Norbu RDC Yusipang*). In Bhutan, the gray langur is called *Chaka* in *Dzongkha* (national dialect) and Roksha in *Sharchop* (eastern Bhutanese dialect) and *Khengkha* (central Bhutanese dialect). However, there is no detailed study on its population abundance, density, habitat selection, and distribution pattern. Although, Wangchuk et al. (2003) has shown the distribution map of all langur species in Bhutan based on anecdotal information, there is yet to conduct a detailed survey of the occurrence of this species in Bhutan and to scientifically estimate its population abundance and density. Nothing much is also known about how this primate species interacts with humans, including crop depredation and damage on human properties. Further, there is no information on whether the species is being illegally hunted and traded in Bhutan. In absence of such information, it has scientifically not been possible to evaluate the conservation status and to draw any realistic conservation plan for this species in Bhutan.

Therefore, this study is direly needed to document many basic information about gray langur in Bhutan and to build up the baseline data of this species on its demographic, ecological, and conservation aspects.

2. Research Objectives

The objectives of study are to:

a) understand the distribution pattern of gray langur in Bhutan:
b) reliably estimate the population density and abundance of gray langur in Bhutan; and
c) understand threats to conservation of gray langur in Bhutan.
d) Appropriately recommend the listing or delisting of gray langur in Appendix I of CITES.

3. Methods

3.1. Data collection

a) Understanding distribution pattern

First, a questionnaire survey (Annexure I) will be conducted among the field foresters, particularly the forestry extension officers who are fielded in each of the *geog* (sub-district) in the country, basically to confirm the presence of gray langur in their areas of jurisdiction. Color printed pictures of the langur will be provided for ease of identification. Based on their response, a rough presence map of gray langur in the country will be made. Subsequent field visits and sign surveys will then be conducted in the areas which are reported to have the langur species to empirically confirm its presence in an area. Results from this analysis will help in mapping the distribution pattern in the country.

b) Estimating population density and abundance

The double-observer method of population abundance estimation developed by Forsyth and Hickling (1997) and later refined by Suryawanshi et al. (2012) for gregarious animals such as blue sheep (*Pseudois nayaur*) will be employed to estimate the abundance and density of gray langur. This method enables a researcher estimate not only the abundance, but also detection probability of the target species.

The survey will be conducted in dry season, especially in November and December of 2015, as these post-monsoon months coincide with the mating season (Kankane 1988; Koenig et al. 1997) during which the probability of sighting langurs may be high.

Based on the distribution map (as described above in section 3.1. a), all areas with gray langur will be divided into several survey blocks bounded by physical barriers to movement such as large rivers, mountain passes, and local information. The locations of langur groups in a particular locality will be identified using local people's knowledge and prior familiarity of field foresters, and the estimated locations will be geo-referenced on contour maps.

There will be a survey team composed of field foresters who will be adequately trained to identify gray langur and its individuals by sex, age, and unique features. We will consider three age groups for our classification of the group members: *infant* (less than 2 years old), *juvenile* (between 2 to 4 years, which has head-body length between that of the infant and the fully grown adults), and *adult* (above 4 years with fully grown head-body length). The survey

crew will be divided into two observation teams. Each team will traverse through all accessible trails present in a survey block. The second observation team shall begin the survey on the same trail exactly one hour after the first team has begun.

Upon observation of a group/troupe in a survey block, each survey team will record all group members according to sex and age. Unique members of the group, such as injured, disabled, and those with unique body features and marks, will also be recorded in the observation sheet. Each langur group will be assigned a unique indication number based on the group composition and unique features to avoid double counting in the adjacent block. The GPS coordinates, time of observation, habitat type, activity of the group, name of locality, landuse type, and other ancillary information associated with each langur group will be recorded in an observation sheet (Annexure II). The findings of each survey team shall be compared at the base camp after each day of survey to check if both the survey teams have encountered entirely new group or the same group. This is also to check if a team has missed any members of the group or an entirely new group.

Once the block survey is completed, all survey team members will share the langur group IDs and their unique identification points to unmistakably identify each langur group. All the group observations with corresponding group size will be plotted on the survey map, and the abundance and density will be computed accordingly.

c) Understanding conservation threats to gray langur

A comprehensive semi-structure questionnaire survey (Annexure III) will be conducted to understand local people's perception, conservation threats, and conflicts with gray langur. For this, the detailed information of the people residing in the study area will be collected from the geog centers, and more than 30% of the people in each geog will be selected for interview. All respondents shall be above the age of 20 years, and shall have resided in the village more than 200 days in a year. This is to make sure that the local opinions are credible.

3.2. Data analysis

The population abundance data will be analyzed using the formula provided by Suryawanshi et al. (2012). The questionnaire survey data will be analyzed using the program SPSS (Statistical Package for Social Science).

4. Expected results

Through this study, the reliable estimates of density and abundance of gray langur will be obtained, distribution pattern of the species will be determined and mapped, conservation threats will be listed, and appropriate recommendations for species management will be submitted to Bhutan Government. Eventually, appropriate recommendations will be made to CITES office to either retain or delist the species from Appendix I.

5. Detailed work plan

The detailed work plan with specific time period for each activity are provided as follows:

Activity	Months of year 2015					Months of year 2016			
	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Questionnaire survey with forestry extension officers									
Identification of survey blocks									
Field survey of gray langur									
Questionnaire survey with local people									
Data compilation and analysis									
Report writing and submission									

6. Implementation arrangement

This project and/or research will be coordinated by Wildlife Conservation Division at the Department of Forest and Parks Services. And field works will be coordinated by Wildlife Conservation Division with the relevant field protected areas and territorial divisions. Field staff from relevant parks and division will be assisting the conduct of actual field work and their expenses will also be met from this project. Field works will be lead by the two investigators and supported by staff from division and protected areas.

7. Budgetary requirement

The survey is estimated to cost Nu. 1.3 million (or US Dollar 20,153.80). Major chunk of the budget will be required for paying travel and transportation allowance to the survey team and enumerators.

Particulars	Rate (Nu.)	Days	Qty	Amount
A. Transportation costs				
1. Hiring or fuelling of vehicles	150,000		1	150000
2. Transportation of survey materials	150,000		lumpsum	150,000
B. Payment of Daily travel allowance for surveyors and enumerators				
1. Daily travel allowance	1000	90	6 heads	540000
2. Porter and pony allowance	750	50	6 heads	225000
C. Inception and dissemination				
1. Public meetings	50,000		lumpsum	50,000
2. Training of enumerators	30,000		lumpsum	30,000
3. National seminar	50,000		lumpsum	50,000

D. Printing and publication				
1. Printing of survey forms	15,000		lumpsum	15,000
2. Printing of reports	100,000		lumpsum	100,000
Grand Total (Ngulturm)				**1,31,0000**
Total in US Dollar (@ or 1 US $ = Nu. 65)				**20,153.8**

8. Project monitoring, evaluation and reporting

Wildlife Conservation Division will oversee the management of this project, timely monitor progress in field works and evaluate the project. Further the division will submit the final report/paper (technical and financial) of this research to the donors.

Key References

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Annexure I: Format for preliminary assessment of the presence of gray langur in Bhutan

Name of Forestry Extension Agent: _____

Name of Geog: _____ **Name of Dzongkhag:** _____

Name of Chiwog	Name of village	Presence of gray langur*	Evidence of presence**

NOTES:

Chiwog = Sub-block Dzongkhag = District Geog = Sub-district

* **Presence or absence**:

P = Present A = Absent

** **Evidences of presence**:

S = Sighting CD = Crop damage V = Vocalization

Annexure II: Format for observation of gray langur groups and their compositions along a transect in a survey grid and a block

Observer number: _____ **Block no:** _____ **Grid no:**_____ **Name of place/village of observation:** _____

Name of observer: _____ **Observation Date:** _____

Transect no: _____ **Start time:** _____ **End time:**_____

Transect location: **Start location:** **Lat (ddmmss):** _____ **Long (ddmmss):** _____

(WGS 84) **End location:** **Lat (ddmmss):** _____ **Long (ddmmss):** _____

Group no.	Group composition (1)					Unique ID marks of the grp members (2)	Vegetation type of observation (3)	Activity of the group (4)	Time of observation	Weather pattern (5)	Elevation (m)	Remarks
	AM (a)	AF (b)	JM (c)	JF (d)	Infant (e)							

NOTE:

(1): **Group composition** - Record the no. of individuals observed in each category

(a) AM = Adult male (> 4 years) (c) JM = Juvenile male (2-4 years) (e) Infant = < 2 yrs

(b) AF = Adult female (>4 years) (d) JF = Juvenile female (2-4 years)

(2): **Unique ID marks of the group members**

Torn ear, missing limbs, wounded, deformed, etc.

(3): **Vegetation type**

WBL = Warm broad leaved forest; CBL = Cool broad leaved forest; MC = Mixed Coniferous forest (mixture of coniferous trees);

MBC = Mixed broad leaved & conifer (mixture of coniferous and broad leaved trees); BF = Blue pine forest; CF = Chirpine forest

FF = Fir forest; HF = Hemlock forest; AL = Agricultural land

(4): **Activity of the group - include more than one activity**

Fe = Feeding; Gr = Grooming; Mo = Moving; Re= Resting; Ma = Mating;

(5): **Weather pattern**

CL = Cloudy; Ra = Rainny; Su = Sunny; Wi = Windy

Annexure III: Questionnaire for recording local perceptions towards and threats to conservation of gray langur in Bhutan

A. Details of the survey enumerator

Enumerator's name:_____ Enumerator's contact #:_____

B. Details of the respondents

Age: _____years **Gender**: Male ☐ Female ☐

Village:_____ **Geog**:_____ **Dzongkhag**:_____

Education level: None ☐ NFE ☐ Primary ☐ High school ☐ College

Annual income level: less than Nu. 100,000 ☐ Nu. 100,000 - Nu. 300,000 ☐
Nu. 300,000 - Nu. 1 million ☐ Nu. 1 million - Nu. 10 million

C. Local perception towards gray langur

C1. Have you seen a gray langur?

Yes ☐
No ☐

C2. In your opinion, do you think the population of gray langur is increasing or decreasing in the last 5 years?

Increasing ☐
Decreasing ☐
Same ☐

C3. Provide the reason for your response in C2.

_____

_____

_____

_____

_____

C4. Do you like to see around gray langur?

Yes ☐
No ☐

C5. If "yes" in C4, what are the reasons?

Tick the ones as indicated below. Provide a rank of 1 for the most influential reason.

Cute and cuddly	☐	_ _ _ _
It helps us and we need it to conserve our environment	☐	_ _ _ _
I just like to see it around, it beautifies our surrounding	☐	_ _ _ _
It is very rare and precious	☐	_ _ _ _
It has high economic value	☐	_ _ _ _
Has religious significance	☐	_ _ _ _
Out of compassion/affection (*Nyingjey*)	☐	_ _ _ _
Others like it and I like it too	☐	_ _ _ _
Don't know but I like it somehow	☐	_ _ _ _
Others _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ (Please specify)	☐	_ _ _ _

C6. If "No" in C4, what are the reasons?

Tick the ones as indicated below. Provide a rank of 1 for the most influential reason.

Looks ugly and cruel	☐	_ _ _ _
Looks fearful and dangerous	☐	_ _ _ _
Destructive to humans (e.g. loss of crop)	☐	_ _ _ _
Doesn't beautify our surrounding	☐	_ _ _ _
No/low economic value	☐	_ _ _ _
No religious significance	☐	_ _ _ _
I haven't seen it	☐	_ _ _ _
Others don't like it and so do I	☐	_ _ _ _
Don't know but I don't like it somehow	☐	_ _ _ _
Others _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ (Please specify)	☐	_ _ _ _

C7. Do you have any local belief or myths associated with gray langur in your locality?

Yes ☐
No ☐

If yes, could you briefly explain about it?

_____

_____

_____

_____

D. Wild animals that depredate agricultural crops and fruits

D1. What are the wild animals that depredate on your agricultural crops? Rank the problem animal in terms of their intensity of crop damage. Provide a rank of 1 for the most destructive animal and so on to the rest.

Mammal Species	*Tick*	*Rank*
Wild pig	☐	_ _ _ _
Barking deer	☐	_ _ _ _
Sambar deer	☐	_ _ _ _
Gray langur	☐	_ _ _ _
Macaque/Monkey	☐	_ _ _ _
Asiatic bear	☐	_ _ _ _
Porcupine	☐	_ _ _ _
Others ……	☐	_ _ _ _

E. Threats to conservation of gray langur

E1. Did you see other people kill gray langur in your area?

Yes ☐
No ☐

E2. If yes in E1, what are the reasons?

Vengeance against crop damage	☐	_ _ _ _
Vengeance against attack on humans//children	☐	_ _ _ _
Vengeance against damage on personal property	☐	_ _ _ _
For trade of fur or meat	☐	_ _ _ _
Accidental killing(e.g. trap set for other animals)	☐	_ _ _ _
Recreational killing	☐	_ _ _ _

E3: Did you see any gray langur killed or chased by domestic dogs?

Yes ☐
No ☐

E4: Did you see any gray langur dying in your locality due to disease outbreak?

Yes ☐
No ☐

E5: If "yes" in E4, do you have rough idea of when it occurred?

Provide the year _____

E6: Have you seen humans feeding gray langur in your locality?

Yes ☐
No ☐

E7: If "yes" in E6, what kind of food are fed to gray langur?

E8. Have you seen anyone in your locality engaging in the trade of gray langur body parts or as live animals?

Yes ☐
No ☐

E9: If "yes" in E8, do you have any idea which body parts are being traded and where?

_____

_____

_____

_____

***Note to the enumerator*:**

1. Please write down any developmental activities happening in the locality that affects gray langur and its habitats

_____

_____

_____

_____

2. First explain the difference between gray langur and Assamese macaque to the people before asking any question. Showing photographs would be helpful. Gray langur is called *Chaka* in Dzongkha (National dialect) and Roksha in *Sharchop* (eastern Bhutanese dialect) and *Khengkha* (central Bhutan dialect).