François' Langur Conservation Monitoring Plan Lam Binh Watershed Protection Forest, Tuyen Quang province: 2013 - 2017

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Acronyms

BNLFC	Ba Be / Na Hang Limestone Forest Complex
CEPF	Critical Ecosystems Partnership Fund
CHZs	Critical Habitat Zones
FPD	Forest Protection Department
LBWPF	Lam Binh Watershed Protection Forest
NHLPC	Northern Highlands Limestone Priority Corridor
NTFPs	Non-Timber Forest Products
PARC	Protected Areas for Resource Conservation using Landscape Ecology
PRCF	People Resources and Conservation Foundation
SCAP	Species Conservation Action Plan
SLFA	Sinh Long Forest Area

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1. Introduction

1.1. Background to the conservation monitoring plan

The Lam Binh Watershed Protection Forest (LBW) in Tuyen Quang province has been the center of recent conservation initiatives by People Resources and Conservation Foundation (PRCF). Funding for conservation work has been provided by Twycross Zoo, Critical Ecosystems Partnership Fund (CEPF), Save our Species (SOS), and The McKnight Foundation. Project activities have included François' Langur surveys, community-based species conservation action planning (SCAP), participatory forest land use planning (three dimensional mapping), awareness raising activities in secondary schools and local commune-level youth unions, and more recently community-based monitoring of Francois' Langur groups.

Under the survey initiatives, PRCF identified three main François' Langur Critical Habitat Zones (CHZs). These incorporated multiple sleeping caves and adjacent forests at: Nhoi, The Chuot and Chu valleys (Khuon Ha commune); Nghiu Lai forest (Khuon Ha commune); and Na Phuong (Thuong Lam commune). The survey confirmed 38 langurs through direct observation and a provisional count of between 68 – 78 individuals based on local key informant reports. Survey results are significant in that they represent the first confirmation of several langur groups, since 2003 when the PARC1 project identified the area as holding the largest remaining known population of François' Langur in Vietnam, numbering about 70 individuals.

This monitoring plan is intended to complement two other planning initiatives for the endangered François' Langur within the Lam Binh landscape including:

1) Community-based Species Conservation Action Plan

The conservation action plan was developed to engage local community stakeholders in conservation of the François' Langur within the watershed protection forest. The document serves as a framework that acknowledges the

[1] Creating Protected Areas for Resource Conservation using Landscape Ecology

presence of local community stakeholders as a central component to ensure sustainability of conservation measures. The participatory species conservation action plan (SCAP) summarizes key information about the species, identifies site relevant threats, and defines conservation interventions to address threats through local people's knowledge and their future involvement in conservation solutions.

2) Conservation status and needs of the François' Langur in Vietnam

The conservation status document provides a comprehensive status review of the species within the Northern Highlands Limestone Priority Corridor (Vietnam), defines specific threats to the species, and provides recommendations for future conservation actions. Prescriptions within the document will be hopefully linked in the near future to a similar strategic document for the François' Langur populations in southern China.

1.2. Goals

The immediate goal of this conservation monitoring plan is to provide guidance for conservation management of François' Langur groups identified within critical habitat zones of the Lam Binh watershed forest over a period of five years.

The long-term goal is to stabilize and ultimately increase the population of François' Langur the wild through proper conservation management involving local communities in partnership with provincial authorities.

1.3. Objectives

Objectives of this plan are in support of its immediate goal, and include four main aspects:

1) Identify and list threats, and land and resource-use management issues in the vicinity of defined langur family groups and their associated habitat
2) Define conservation and monitoring priorities and information needs to support conservation management of the species
3) Define roles and responsibilities of relevant and local stakeholders who will participate in future conservation and monitoring activities

4) Monitor conservation interventions to assist PRCF and other partners achieve the conservation goal at the site, and contribute to adaptive management over time

2. Morphology, ecology, and behavior

2.1. Taxonomy, Morphology, and Geographic Range

2.1.1. Taxonomy

Trachypithecus francoisi was first described in 1898 by Poursargues in southern Guangxi province, China. Its historical distribution extended throughout much of the karst landscapes of southern China and northern Vietnam. Within the genus *Trachypithecus*, it belongs to a group of closely-related limestone obligate species, sometimes referred to as the *francoisi* group (Nadler *et al.*, 2003) or limestone langurs, most of which are found in Vietnam, with arguably only two taxa found outside Vietnam.

The taxonomy is not entirely clear within the group, despite having the largest range of any other taxon within it, *Trachypithecus francoisi* is widely recognized as a species (Brandon-Jones *et al.*, 2004) and no sub-populations considered to be genetically distinct on the sub-species level have been identified, although it is suggested that they should be recognized as distinct conservation units (C. Roos, pers. comms.).

This species is most closely related to the Cat Ba Langur *Trachypithecus poliocephalus*, which is only found on Cat Ba Island off the coast of northern Vietnam and the White-headed Langur *Trachypithecus leucocephalus poliocephalus*, which is only found in a restricted area of Guangxi province, China.

The taxonomy of François' Langur (Groove, 2001) is:

Kingdom	*Animalia*
Phylum	*Chordata*
Order	*Primates*
Family	*Cercopithecidae*
Subfamily	*Colobinae*
Genus	*Trachypithecus*
Species	*Trachypithecus francoisi* (Poursargues, 1898)

2.1.2. Morphology

All the *Francoisi* group species are slender monkeys with a long tail that exceeds body length and a tall pointed crest on the crown of the head. Their bodies are covered in glossy predominantly black fur with patches of light color, usually white, on parts of the body, mostly around the head (Groves, 2001). For the François' Langur, the only area, that is not black, is a narrow strand of slightly elongated white hair running from the corner of the mouth along the side of the face to the upper edge of the ear pinna. A de-pigmented pubic patch with white to yellowish hair is designated as a female diagnostic trait (Nadler *et al.,* 2003). As with all *Trachypithecus* infants they are born a bright golden color (**Error! Reference source not found.**).

Figure 1. François' Langur *Trachypithecus francoisi*

2.1.3. Geographic Range

Trachypithecus francoisi is endemic to karst limestone forest in southern China and northern Vietnam. In southern China the range of the species is more extensive than in Vietnam, from Guangxi province on the border of Vietnam, through Guizhou province and up to southern areas of Chongqing Municipality (Sichuan province) and in the provinces of Tuyen Quang, Bac Kan, Thai Nguyen Ha Giang and Cao Bang in Vietnam (Insua-Cao *et al.*, 2012). The historical distribution of *Trachypithecus francoisi* in Vietnam may include the provinces of Ha Giang, Cao Bang, Lang Son, Bac Kan, Thai Nguyen, Tuyen Quang and the eastern parts of two north-western provinces of Lao Cai and Yen Bai.

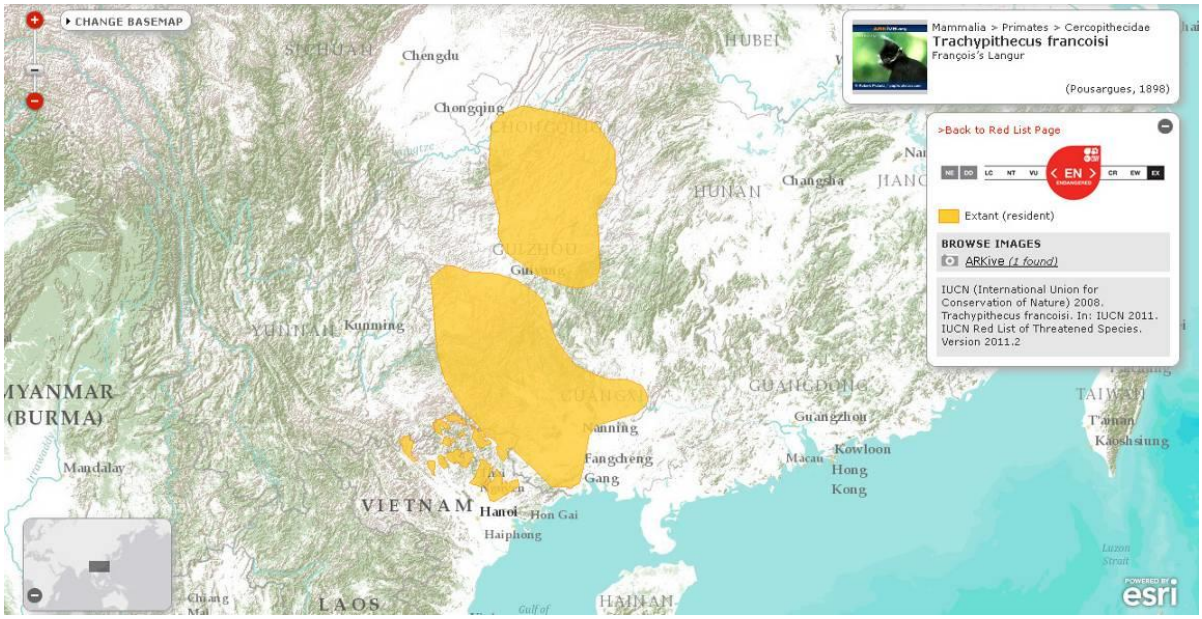

Figure 2: Global distribution of the François' Langur (Map source: www.iucnredlist.org)

2.2. Ecology and behavior

2.2.1. Ecology

François' langurs, appear to be specialists in living in moist tropical and sub-tropical forest on karst limestone mountains at elevations up to 1,500 m. Karst limestone

mountains are characterized by their dramatic form with steep sides, riddled with crevices and caves, resulting from the chemical erosion of the carbonate rock by water.

François' Langur groups are usually polygynous, with one adult male, several adult females, and their immature offspring. Solitary males are common, although they sometimes form loose associations (Noel Rowe, 1996). Males and females reach sexual maturity in five and four years, respectively. Litter size is usually one, and birth intervals for this species are recorded at about 20 months. Young babies of François' Langur are seen from March to July indicating this time as the breeding season in Vietnam (Pham Nhat, 2002). The species is mostly folivorous, with the remainder of diet consisting of shoots, fruits, flowers, and bark. Like related Colobines they have specially adapted stomachs and metabolism to digest leaves. Observed preference for leaves over other plant parts varies between about 53% (Qihai Zhou *et al.*, 2006) and 90% (Huang C. *et al.*, 2008) of total diet with a preference for young leaves. The species feeds selectively on preferred species and not just on the most abundant plant species available. Preferred plant families include: Moraceae, Ephorbiaceae, Arecaceae of which they consume a large amount of fruits and leaves (Pham Nhat, 2002).

According to research on diet and food selection by Qihai Zhou *et al.* (2006), François' langurs at Nong-gang Nature Reserve (Guangxi province, China) consumed 90 different plant species from August 2003 to July 2004. This included 52.8 % leaves (38.9% young and 13.9% mature leaves), 17.2% fruit, 14.2% seed, 7.5% flowers and 7.4% other items e.g. petioles, stems, roots, and bark.

2.2.2. Behavior

François' langurs are diurnal and select ledges of cliffs and caves as sleeping sites, mainly as a means of protection against predators, particularly selecting locations with an open view of the surrounding area for rapid identification of threats (Qihai Zhou *et al.*, 2009a; Huang Chengming *et al.* 2009; Shuangling Wang *et al.*, 2011).

They regularly change sleeping sites within their range, perhaps as a part of their defensive strategy. In Mayanghe Nature Reserve it was observed that six to ten sleeping sites were used per group with six nights, with the longest stay at any one location averaging two nights (Shuangling Wang *et al.*, 2011). At Nong-gang Nature Reserve a maximum of four nights spent at any one sleeping site was observed (Qihai Zhou *et al.*, 2009a).

Other factors determining selection of sleeping sites has been identified as a) close proximity to foraging locations, typically the first or last feeding sites of the day, (Qihai Zhou *et al.* 2009a, Shuangling Wang *et al.* 2011); b) proximity to locations where food resources are more limited and c) avoidance of disturbed habitat. Proximity to feeding areas appears to take highest priority (Shuangling Wang *et al.*, 2011).

François' langurs are territorial and range within an area with several sleeping sites. Observations in Fusui Nature Reserve by Qihai Zhou *et al.* (2007b) estimated the home range of one group to be about 19 ha. Most of their movement (52%) occurred within a small area (22%) of their home range, and in or near areas containing their sleeping sites, which may reduce the time and energetic cost of travel.

The monthly mean daily path lengths has been observed to vary from 341 to 577 m, with longer path lengths observed in the dry season, perhaps due to a scarcity of food resources (Qihai Zhou *et al.*, 2004). By comparison the home range of the François' Langur at Mayanghe Nature Reserve was observed to vary between 56 ha and 119 ha (Shuangling Wang *et al.*, 2011) and at Nong-gang Nature Reserve of 69.3 ha (Qihai Zhou *et al.*, 2009).

The langurs are reported to travel mainly between 7 am and 10 am and between 3 and 4 pm, with most of the time spent resting (69.1%), feeding (13.8%), and travelling (11.7%) (Rowe, N, 1996). According to Qihai Zhou *et. al.* (2007a), the diurnal activity pattern of Francois's langurs shows morning and afternoon feeding

peaks, with a midday resting peak. During the dry season the study group spent a greater proportion of its time feeding and less time on resting and grooming than in the rainy season.

Correlations between time budgets and food items or food availability indicate that the langur might adopt an energy-maximizing strategy when preferred foods are scarce in the dry season.

3. Conservation status of François' langurs

3.1. Global conservation classification

3.1.1. IUCN Red List

The species' wild population has declined by at least 50% over the past 36 years, due primarily to habitat loss and hunting (Bleisch *et al.*, 2008). Particularly in Vietnam, remaining animals are found in small, highly fragmented, and largely genetically unlinked sub-populations. François' Langur is categorized as a globally Endangered A2cd (ver 3.1) species under the IUCN Red List (2012). The allocated criteria of A2cd refers to the populations as follows:

A. Reduction in population size based on any of the following:

1. An observed, estimated, inferred or suspected population size reduction of ≥ 70% over the last ten years, where the causes of the reduction are clearly reversible, and understood, based on:

   (a) direct observation

   (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat

   (d) actual or potential levels of exploitation.

2. An observed, estimated, inferred or suspected population size reduction of ≥ 50% over the last ten, where the reduction or its causes may not have ceased, or may not be understood, or may not be reversible, based on any of (a) to (e) under A1.

C. Population size estimated to number fewer than 2500 mature individuals and either:

1. An estimated continuing decline of at least 20% within five years or two generations, whichever is longer, (up to a maximum of 100 years into the future) or
2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals and at least one of the following:

(a) Population structure in the form of one of the following:

(i) no subpopulation estimated to contain more than 250 mature individuals, or
(ii) at least 95% of mature individuals in one subpopulation.

D. Population size estimated to number fewer than 250 mature individuals.

3.1.2. Convention on international trade of endangered species of fauna and flora

François' Langur is listed in Appendix II of the CITES convention, it has been listed in a category under the convention where:

(a) all species which although not necessarily now threatened with extinction may become so unless trade in specimens of such species is subject to strict regulation in order to avoid utilization incompatible with their survival; and

(b) other species which must be subject to regulation in order that trade in specimens of certain species referred to in sub-paragraph (a) of this paragraph may be brought under effective control.

3.2. Vietnam Conservation Classification

The species is listed in Part 1: Animals within the Vietnam Red Data Book as Critically Endangered (MoST and VAST, 2008). Under Decree 32/2006/ND-CP (Management of Endangered, Precious, and rare Species of Wild Plants and Animals) the species is protected (listed) as a 1B Wild Animal Species (Govt. of Vietnam, 2006).

4. Population Distribution in Vietnam

In a review conducted by Insua-Cao *et al.* (2012) only nine groups of François' Langur (comprising 47 to 56 individuals) were observed in the wild by surveyors at three sites between 2009 and 2011. The locations included: Lam Binh watershed forest (five groups), Ba Be National Park (two groups), and Than Xa-Phuong Hoang Nature Reserve (two groups). Local reports suggest there are more at each location, most significantly at Lam Binh with possibly ten to twelve groups and Than Xa-Phuong Hoang with possibly four or five groups. Compiling all recent realistic local reports and confirmed groups, optimistically there could be 25 to 31 groups of François' langurs in Vietnam (not including reports of solo individuals) and very roughly 160 to 190 individuals. In 2003, Nadler *et al.* reported less than 300, drawing mainly from interview data and gave a range of 97 to 294 individuals.

Error! Reference source not found., below, documents the most recently identified and likely known François' Langur records in Vietnam

Table 1: Recent Records of Francois' Langur in Vietnam

Location	Records	Reference
Lam Binh Watershed Protection Forest, Tuyen Quang province	Five groups of 28-38 individuals observed in 2010/11 and reports of up to 22 in one group. Local reports of ten to twelve groups	Thach Mai Hoang (2011a)

Location	Records	Reference
Than Xa-Phuong Hoang Nature Reserve, Thai Nguyen province	Two groups observed of five and seven individuals and at least four groups reported between 2010 and 2012.	Le Dinh Duy (2010)
Ba Be National Park, Bac Kan province	Three to four in two or three sub-populations. Two groups observed (2009).	Dong Thanh Hai (2009)
Bat Dai Son Nature Reserve, Ha Giang province	Interviews in 2011 suggested the presence of two groups of five to seven individuals each.	Le Khac Quyet (2007)
Du Gia Nature Reserve, Ha Giang province	Interviews in 2001 suggested the presence of four to six groups. In 2010, interviews suggested they are still there, but no observations.	May Si Luan (2009)
Bac Me Nature Reserve, Ha Giang province	One group observed in 2012	Trinh Viet Cuong *et al.,* (2012)
Sinh Long Forest, Tuyen Quang province	Three or four groups reported, including one group of seven langurs reported in August 2011, but no observations.	Thach Mai Hoang (2011a)
Na Hang Nature Reserve (Tat Ke sector), Tuyen Quang province	Interviews in 2010 reported one group of 17-20 individuals and another solo individual.	Thach Mai Hoang (2011b)
Trung Khanh district, Cao Bang province	One or two groups reported, close to Gulongshan Nature Reserve in China, so possibly part of a large population	Nguyen The Cuong & Nguyen Van Truong (2011)
Kim Hy Nature Reserve, Bac Kan province	One vocalization record from 2009, however, evidence of severe pressures throughout the nature reserve.	Geissmann *et al.* (2009)

The range of the remaining sub-populations of François' Langur habitat extends across a large geographical area intersected by rural agricultural land and urban settlements. This translates to a grave level of habitat fragmentation and genetic isolation of many sub-populations. There is a high likelihood, therefore, that many of the smaller sub-populations with no genetic links to other populations; coupled with high threat pressures, will become extirpated within the next one to two decades if effective conservation measures are not enacted (FFI, 2010).

5. Description of the Lam Binh watershed protection forest

5.1. Location

The Lam Binh watershed extends across the boundaries of the Khuon Ha and Thuong Lam of Lam Binh district in northern Tuyen Quang province. The watershed communes are located to the west of the Gam River (and Na Hang Dam impoundment) and those that fall on the eastern side are located in Na Hang district (Sinh Long commune).

The LBWPF falls roughly within the following coordinates:

North to South: UTM 48Q 2496650 2483000
West to East: UTM 48Q 527300 539000

For the purposes of François' Langur conservation, the watershed landscape has been classified by PRCF into three distinct regions (Figure 3), each corresponding to a specific Critical Habitat Zone (CHZ) and discussed in more detail in Section 6:

- Nhoi, The Chuot and Chu Valleys (Khuon Ha commune) – CHZ 1
- Nghiu Lai Forest / Khong Quan Forest (Khuon Ha commune) – CHZ 2
- Ban Cai and Na Phuong / Khau Dao (Thuong Lam commune) – CHZ 3

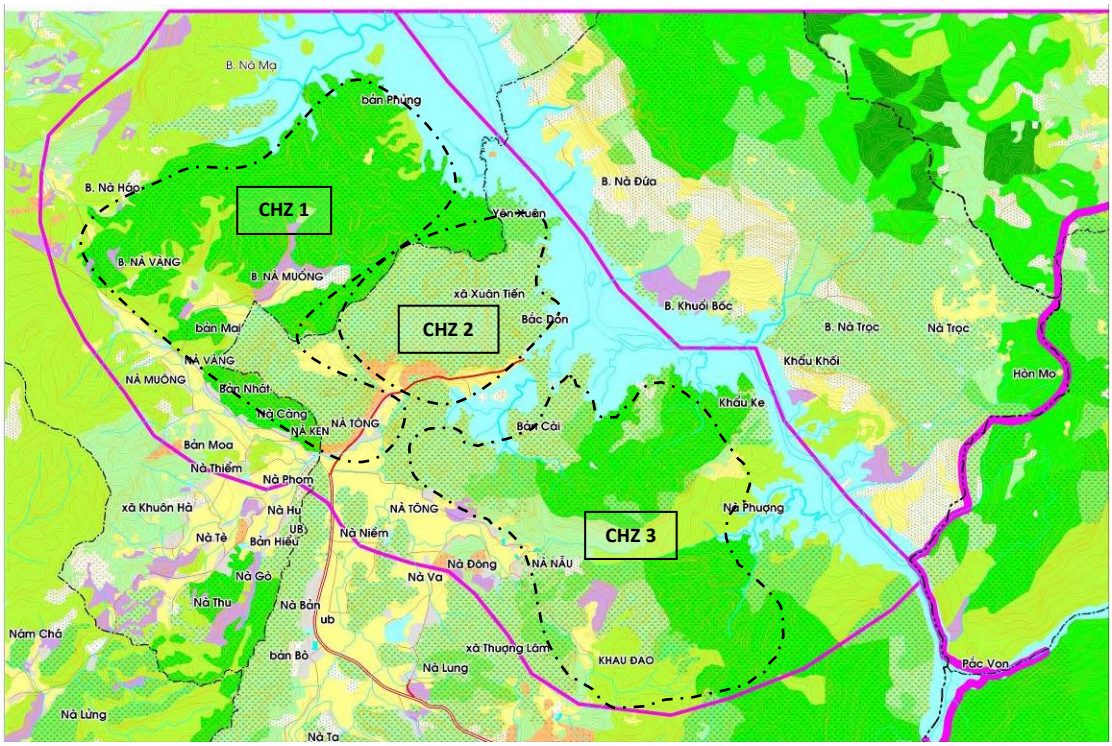

Figure 3: Location of the three PRCF defined Critical habitat Zones within the LBPWF

The Lam Binh watershed and the Sinh Long Forest Area (SLFA), on the eastern side of the Gam River contained within Sinh Long commune, was proposed as a François' Langur Species and Habitat Conservation Area of approximately 15,350 ha in 2004 by the PARC project to the Tuyen Quang People's Committee. However, since completion of the project in 2004, the area still remains outside Vietnam's protected area network.

From 2002 to 2007, the Gam Hydropower Project constructed a large dam across the Gam River, creating a 81 km2 reservoir. Prior to the construction of this large infrastructure, the LBWPF/SLFAs formed a contiguously linked forest block. Now that the dam is full, these areas are separated by the impounded dam water, which also flooded areas of key François' Langur habitat.

5.2. Climate

The Lam Binh watershed is located within the sub-tropical region of northern Vietnam. This region is characterized by a distinct seasonality, consisting of a "wet summer season" (April to September) and a "dry winter season" (November to February), with less distinct spring and autumn periods. Based on meteorological data from Cho Don district in Bac Kan province (20 km south-east of the site), mean regional temperatures range from 13.50C (January-February) to 270C (June-July), with an annual mean temperature of 210C. Minimum and maximum recorded temperatures in the region are 200C and 390C respectively. Total annual rainfall in the Na Hang Nature Reserve in 1993 was 15,389mm, with minimum rainfall from December-January and maximum rainfall from June-July. Annual regional mean humidity is 82% (range 79-88%) (Boonratana & Le Xuan Canh, 1998).

5.3. Topography, geology, and soils

The watershed is largely located at low elevations ranging from 130 – 400m asl, although some areas extend to 878 m asl (Nhoi Valley). The topography is characterized by highly dissected (forming numerous and discrete 'pinnacles') steep sloping limestone karst hills and mountains interspersed in some places by narrow flat valleys (Bezuijen *et al.*, 2004; Le Trong Trai *et al.,* 2004). Sheer limestone cliffs that abut flat, cultivated valleys define the southern border of the watershed.

Soils throughout the area have not been surveyed, however informal observations by Bezuijen *et al.* (2004), suggest they include a range of thin, humus-dominated clays and loams on higher slopes, red-yellow clays on cultivated lower slopes, and grey alluvial soils near the Gam River.

5.4. Hydrology

Regional hydrology is dominated by the Gam River, which flows west to east and marks the northern border of the LBWPF. The flow of the Gam River was significantly altered due to construction of a dam above the Na Hang Town in 2005. A sizable impoundment has now formed upstream from the dam resulting in the permanent

inundation of lowlands in the northern section of the LBWPF (IUCN 2002; *Pers. Observation* authors, 2011).

The hydrological landscape is characterized by relatively few permanent and small seasonal streams through the site (Le Trong Trai *et al.,* 2004; Bezuijen *et al.*, 2004). Waterways flow out from the LBFA into the Gam River. No detailed studies on groundwater flow have been conducted in the area (Bezuijen *et al.*, 2004).

5.5. Vegetation Assemblages

The LBWPF is located within the "Northern Indochina Subtropical Moist Forests Ecoregion of the Indo-Pacific Region" (Le Trong Trai *et al.,* 2001, 2004a), and is partly located within a restricted-range confluence of three biogeographic sub-regions, the "South-east Chinese Mountains", "Sino-Himalayan Mountain Forest" and Indo-Malayan Tropical Dry Zone" (BirdLife International, 2003).

At a regional level, the area forms part of the 'Ba Be / Na Hang Limestone Conservation Complex,' a system of about 94,000 ha of partly connected limestone forest ecosystems extending between Tuyen Quang and Bac Kan provinces (Le Trong Trai *et al.* 2004; PRCF, 2010).

The area supports a mosaic of land-use types, including fragmented primary forest patches, secondary forests and permanent cultivation. Relatively undisturbed limestone forest still grows on ridges and upper slopes, whilst degraded forests and scrub occurs on lower slopes. Most valley floors were historically cleared of native vegetation over 100 years ago and support agricultural lands (Le Trong Trai *et al.* 2004).

The Lam Binh watershed supports two primary forest communities (Le Trong Trai *et al.* 2004 & Bezuijen *et al.*, 2004):

Tropical monsoon broadleaf evergreen forest

This vegetation may be observed on limestone slopes from 130 – 600 m asl. It is characterized by drought resistant hardwood species with slight variations in species composition occurring from the bases to peaks of limestone mountains. The forest supports five distinct strata including: upper, lower and under canopies, and shrub and herbaceous layers. Lianas are abundant on a poor in species composition.

Sub-tropical broadleaf evergreen forest

Large areas of this vegetation community still occur above 600m asl. (difficult areas to access) on mountain tops (low montane slopes). Stratum structure, tree height and size is not very different from those of tropical monsoon broadleaf evergreen forest. However, species composition is very distinct with the presence of a range of coniferous species. Woody lianas are largely rare or absent with only small lianas from the Asclepiadaceae and Convolvulaceae Families present.

The watershed holds three main secondary vegetation forests (Bezuijen *et al.*, 2004):

Secondary forests after timber exploitation

This is a successional community that has developed since continuous logging/burning of the broad-leaf evergreen forests, and within the site is generally located <600 m a.s.l. Community structure is simplified (four strata) with many large trees of economic value logged from the upper, lower and under canopy). As a result, the forest canopy is open, and light-loving tree species dominate. Liana flora is well developed and often forms a thick layer (ground cover up to 80-90%).

Secondary forests after cultivation

A successional community derived from original primary forests. This is the most abundant vegetation community observed in the LBFA. The forest structure is simplified (four strata) with a missing canopy layer (due to removal by logging etc.). The number of remaining large trees of species of economic value is low.

Scrublands after cultivation

This community develops in old agricultural lands left fallow for 3-13 years. Dominant species are usually fast growing, small pioneer shrub and small tree species.

6. Francois' Langur population status and yhreats

6.1. Population Size within the three Critical Habitat Zones

During the two field surveys conducted in December 2010 and May 2011 (Thach Mai Hoang, 2011a) the following information on François' Langur groups and numbers were recorded for each of the three CHZs in Table 2.

Table 2: Table of information for each site: Reported, estimated, and observed

Locality	Reported	Estimated	Sighted	No. of groups
KHUON HA COMMUNE				
Critical Habitat Zone 1				
Chu Valley and Tham Pjoong	11	0	0	1
Nhoi Valley (Nhoi, Bo Noc, Tham Co Hung, Dan Long Phien, and Phe Luong)	06	16	14	3
THUONG LAM COMMUNE				
Critical Habitat Zone 2				
Chuot Valley	6	0	0	1
Khong Quan	>10	10	06	1
Nghieu Lai	>10	12	08	1
Critical Habitat Zone 3				
Ban Cai	2	0	0	1
Na Phuong	17	0	0	1
Khau Dau	unknown	0	0	1
Total	**> 62**	**38**	**28**	**10**

6.2. Assessment of current threats to identified groups and associated habitat

For a detailed explanation of the threats to langur groups within the LBWPF, the reader should refer to the LBWPF François' Langur Species Conservation Action Plan[2]. However, the most significant threats to the population at the LBWPF is hunting with firearms followed by habitat loss and habitat degradation. Table 3 provides an overview of the main threats to langurs at each of the three CHZs.

Table 3: Overview of the threats observed at the three LBWPF CHZs (based upon Thach Main Hoang, 2011a)

No.	Threat	CHZ 1	CHZ 2	CHZ 3
Direct Threats				
1.	Hunting - firearms	✓	✓	✓
2.	Hunting – traps	✓	✓	✓
3.	Habitat loss – agricultural encroachment	✓	✓	
4.	Habitat degradation – logging	✓	✓	✓
5.	Habitat degradation – fuel wood collection	✓	✓	✓
6.	Harvesting "monkey blood"		✓	✓
Indirect Threats				
7.	Harvesting NTFPs	✓	✓	✓
8.	Farming in the forest	✓		
9.	Livestock grazing	✓	✓	✓

During the surveys conducted by PRCF in 2010 and 2011 villagers reported that during these years at least eight langurs were killed. In June 2012, four langurs at the Chu Valley were confirmed by PRCF and the Lam Binh Forest Protection Department to have been killed (four people were arrested in possession of langur body parts). It is also likely that a further three animals known at the location were also hunted

[2] Species Conservation Action Plan: Local-based conservation of Francois' Langur (*Trachypithecus francoisi*) at the Lam Binh Forest Area, Tuyen Quang province, Vietnam.

because these animals have not been observed since. If hunting continues at that rate, the species will be extirpated from the LBWPF within a few years.

Clearance of entire areas for cultivation leads to fragmentation of the habitat and isolates langur groups from each other. This reduces the possibilities for groups to interbreed and thereby reduces the prospect for the species' long-term survival at this site. Logging of high economic value species throughout the LBWPF is a widespread and significant threat to langurs. Not only does the action degrade habitat for the langur (opens canopy cover and reduces food resources), but also increases the hunting pressure from loggers seek to supplement their food through opportunistic hunting.

7. Conservation Actions

A key to the conservation effort is how to engage the community and key stakeholders in addressing the management of the species, its habitat and threats, in combination with activities that aim to raise awareness/educate and influence community behavioral change. This is then linked with conservation initiatives that have direct economic benefits. The conservation actions below are the principal activities PRCF will seek to implement over the next five years.

7.1. Law Enforcement

Action 1: Strengthen patrolling of forest

Forest protection forces need to intensify their patrol presence and regulatory enforcement activities with the active participation of local communities. Local communities desire to be involved in legally conducting local protection patrols (with a government provided benefit sharing mechanism).

Action 2: Develop an informant network and improve forest crime reporting

Forest crimes result in a net loss of community owned natural resources. Law enforcement stakeholders must actively engage local community in reporting forest

crimes and see a tangible benefit from these reports. An informant network should be established in each village with local inhabitants understanding the procedure to report incidents from non-village infringers.

Crimes by village inhabitants would be managed in relation to commitments to village regulations (with associated village defined penalties). Reporting crimes by fellow villagers is challenging. So to avoid vengeful retaliation, reports could be made using two methods: (a) anonymously at designated mailboxes in villages, communes and district offices; and (b) using a reporting hotline to the designated law enforcement agency.

Action 3: Protect and monitor Francois' Langur

Within each neighboring village, authority should be allocated to village protection teams to patrol and protect both François' Langur and their habitat (sleeping caves and adjacent forest areas). These groups would be sanctioned to detect and act upon violations of forest protection law with the support of district FPD rangers. In addition, these groups would monitor the status of langur groups and assist the forest protection department to manage the species. An appropriate benefit sharing mechanism would need to be developed to ensure long-term sustainability of the activity.

Action 4: Strict and clear prosecution of violators

It is essential that village people and forest law violators alike are aware that enforcement of forest, wildlife and watershed protection laws occurs. Highly visible publicity of crimes, penalties / punishment and naming of law infringers at village, commune, district and province levels on public mass media information channels is required to raise awareness of crimes and to promote compliance with the law.

Action 5: Control and limit possession of chainsaws

The local government and district forest protection department need to issue a policy to manage and limit chainsaws within forest adjacent villages and seasonally cultivated agricultural areas within the Lam Binh forest landscape. All chainsaws used

in these areas should be registered with the forest protection department and valley management committees.

Action 6: Control of firearms

All laws on firearm possession should be implemented and illegal firearms confiscated. A local ban on the sale of gun production materials and ammunition e.g. gunpowder and bullets should also be made. Firearms buy-back or swap for in-kind scheme (food or other items) may be a useful incentive to reduce local hunting.

Action 7: Control restaurants selling wildlife

Regular inspection of restaurants known or suspected to offer wildlife should be conducted. Particular emphasis should be placed on raising awareness of restaurants on the species' status.

Action 8: Develop and publicize village regulations

Village regulations should be prepared by both the Thuong Lam and Khuon Ha communes in conjunction with target villages to clarify natural resource use within the LBWPF. Strong emphasis should be placed upon inclusion of specific rules on forest management and biodiversity conservation. Each village should also define a suitable locally enforceable infringement and punishment system.

7.2. Forest Management

Action 9: Establish a multi-stakeholder management group

A multi-stakeholder group should be established in order to discuss, advise, approve, implement and oversee forest management measures for the entire watershed protection forest. The group would include members from a wide variety of stakeholders including village using agricultural land within the forest and in neighboring villages (eight). The group should meet on a regular basis every three months and consist of no more than 20 members.

Action 10: Establish valley management committees

A number of the target villages seasonally cultivate agricultural land within the LBWPF. These areas are located in close proximity to known groups of langurs, have a significant impact upon langur habitat (e.g. fuel wood collection, hunting, illegal logging and livestock grazing), and are often used as bases for hunting. Hence, there is a necessity to manage these areas for conservation with the active participation of the community through valley management committees who will coordinate sustainable management. Further, the formation of these committees (also act as self-help groups) offers opportunities for them to prepare livelihood/environmental management action plans that may be linked to small grants and revolving funds, and government programs for their management and implementation.

Action 11: Boundary demarcation of target villages and seasonal cultivation valleys

Households in most target villages hold a mix of official and customary land tenure rights including areas within the seasonal cultivation valleys. Clarification of boundaries in these areas and where they stand in relation to watershed protection forest boundaries is also essential prior to the commencement of conservation and watershed environmental services management activities.

Action 12: Conduct participatory resource use planning

After demarcation of target village and seasonal cultivation valley boundaries participatory resource (also land) use planning (PRUP) activities should be conducted with each village. Such an activity will assist villages to develop appropriate plans to improve their livelihood options and also act as an official means of verification for future official land allocation activities. Information provided by participants would need to be confirmed with physical surveys.

Action 13: Allocation of forest and agricultural cultivation land to villages, households and valley management committees

Once boundaries are demarcated, official land tenure and land use rights allocation should proceed. This is particularly important if payments are to be made to environmental service providers because without land tenure and access rights, they

cannot be considered officially as service providers and be eligible for service protection remuneration.

Watershed Protection Forest Land:

- Allocate specific areas of forest land for villages to manage under protection contracts

Agricultural land:

- Households should be allocated the agricultural cultivation land they use within the forest watershed

Action 14: Prepare conservation agreements linked to land tenure

Conservation agreements with village, households and valley management committees will be linked directly to land tenure and conditional based upon official land tenure/right allocations, village regulations and linked to specific performance indicators under a benefit sharing mechanism for each village. Workshops with target villages and households will negotiate permitted land uses with forest management authorities, forest protection department and commune authorities on the basis of the land tenure classification. Based upon these negotiations, binding agreements will be prepared with villages and individuals where relevant, and officially added as conditional requirements for land use. Monitoring parameters will also be prepared that can be linked to environmental service protection performance opening the way for third party auditing and compliance verification.

Action 15: Grazing management

Unregulated free grazing of livestock throughout the LBWPF will be managed through participatory mapping of grazing zones at strategic locations adjacent to target villages and in seasonally cultivated valleys. Identified zones must comply with NHWPF Regulations on forest and landscape protection. Plans to manage these areas such as access, seasonal grazing, rotation, carry capacity and trade-offs will be prepared for implementation.

7.3. Awareness raising

Action 16: Raise awareness on the François' langurs and their conservation needs

An education program should be used to raise awareness on the François' Langur and the value in its conservation potential, for example through ecotourism. Raising awareness of the negative impacts of deforestation on the environment should be carried out. Awareness should be raised on the negative impact of the clearance of the watershed protection forest, pollution of water sources and on the values and benefits of these forests to local communities. A traditional culture of not consuming langur meat should be promoted.

Action 17: Raise awareness on wildlife consumption

Awareness should be raised on the negative impacts of wildlife consumption and agreements should be signed with households and restaurants to not sell or consume wildlife particularly François' langurs. Awareness on alternatives to wildlife medicines, especially "monkey blood" and monkey balm, should be raised.

Action 18: Raise awareness on forest protection laws and penalties

Information on forest, wildlife and watershed protection laws and penalties should be publicized through the media and village meetings. Particular emphasis should be placed upon sharing information on Decree No. 47/1996/ND-CP (prohibiting use of firearms) and Decree No.32/2006/ND-CP. Posters should be printed stating prohibited actions, potential penalties and signboards set up at forest protection department offices.

7.4. Livelihoods Development

Action 19: Establish fuel wood efficient stoves

Provide participating villages with suggested plans and materials for the construction of fuel-efficient stoves.

Action 20: Improve livestock husbandry methods

Assistance should be offered to improve livestock husbandry methods including technical support for husbandry, nutrition, vaccinations, introduction of alternative feed/fodder activities, animal shelters etc. These activities may be implemented as a trade-off incentive system to support conditional use of land.

Action 21: Introduce and Improve efficiency of cultivation techniques

Through participatory resource use planning activities, identified bare lands in villages will be used to increase the amount of arable agricultural land. New techniques for increasing agricultural productivity and introduction of new species, particularly cash crops, should be explored to diversify livelihood options. Planting of non-timber forest products in cultivation areas and household gardens should also be explored.

Action 22: Develop alternative livelihood and income sources

Alternative livelihood and income sources such as breeding of frogs, keeping of bees should be investigated jointly with local villagers. Trials should be conducted to assess the feasibility of introducing new income sources at a large scale. If activities appear successful they should be scale up. Priority should be given to households identified as hunters of wildlife.

Action 23: Develop village interest groups

Linked to the valley management committees, self-help groups will be supported in villages to self-define and implement livelihood options on village land. Once the plan is defined, each self-help group will access and manage a small grant and/or a revolving fund scheme or tap into existing government programs to assist deliver upon the actions outlined in their plans.

Action 24: Develop a small grants program

Village development grants and a microcredit system should be implemented to encourage activities to improve local livelihoods. Distribution of grants and microcredit should be dependent on compliance with village regulations and there should be trade-offs for good environmental management. The valley management committee or the Women's Union could manage grants.

6.5. Conservation studies: François' Langur biology / ecology and behavior

Note: these activities have been included as part of a process to a) establish a baseline; b) define population trends; and c) contribute to development of conservation activities.

Action 25: Establish and monitor population size

When François' Langur population size increases, it indicates that more infants are born and and/or conservation activities are successful. The change in François' Langur population size reflects the outcome of habitat conservation and protection endeavors. Population size is the first indicator represented for the reproductive health of population and its viability.

Action 26: Home range and critical habitat

Home range of François' Langur includes all daily path length of individuals living in protected area. Home range indicates principles of ranging distribution inside habitat. By monitoring the home range of langurs, conservationists can define critical habitat. The determination of critical habitat is crucial for targeting specific areas to concentrate in-situ patrol protection effort.

Action 27: Group dynamics and behavioral ecology

The status of the langur population and understanding of their behavioral ecology will provide information on how to habituate some groups to human interaction especially if future primate watching tour / programs can be developed.

8. Conservation / Monitoring Actions

Action	Indicator	Means of Verification
1. Law Enforcement		
Action 1: Strengthen patrolling of forest	1. Terms of reference (TOR) and selection criteria defined for joint community/ Forest protection department patrolling activities 2. Four patrolling teams recruited, equipped and trained 3. Reporting system developed using MIST for monthly reporting 4. Training for MIST operators (one initial and one follow-up) 5. Monthly patrolling activities commence on a rotating roster	• TOR and selection criteria defined • Patrol teams recruited • Number of training courses for patrol teams completed • Equipment purchased • MIST system developed • Number of training courses for MIST officers completed • Number of monthly MIST data prepared and submitted to authorities • Number of monthly patrolling activities completed
Action 2: Develop an informant network and improve forest crime reporting	1. Action plan for informant network defined 2. Reporting mechanism defined with local authorities and village people 3. Mailboxes and hotlines installed in each of nine target villages 4. Awareness raising materials prepared to advertise informant network and disseminated in target villages 5. Meetings to introduce informant network held in nine villages 6. Annual meetings in nine villages organized over four years	• Action plan prepared • Reporting mechanism defined • Number of mailboxes and hotlines installed • Number of villages and households where awareness raising materials are disseminated • Number of introductory village meetings for network held • Number of village meetings held annually

Action	Indicator	Means of Verification
Action 3: Protect and monitor François' Langur	1. Three patrolling teams increased in number of personnel (to 15) and time spent in the forest (six days per person/month) 2. Reporting system upgraded to use MIST for monthly reporting 3. Monthly patrolling activities commence on a rotating roster 4. Location of groups regularly logged with GPS (each monitoring patrol) 5. Annual update of maps locating langur groups 6. Sustainable funding mechanism for activity defined 7. At least one long-term donor identified and commence funding support	• Number of monitoring team members increased • Number of days spent per person increase • MIST system applied with monthly reporting • Number of monthly monitoring rosters prepared • Annual maps prepared locating langur groups • Sustainable funding mechanism defined • Number of long-term donors provide funding support
Action 4: Strict and clear prosecution of violators	1. Memorandum of Agreement with mass media at commune /district / provincial levels of government to publicize crimes 2. Court system & FPD supply prosecution information to mass media elements in Tuyen Quang province 3. Monthly broadcast reports on all available mass media channels (radio, TV, print media and public address system)	• Memorandum of Agreement signed • Number of instances annually where information is supplied to mass media channels • Number of monthly broadcast reports on radio, TV, print media and public address system recorded

Action	Indicator	Means of Verification
Action 5: Control and limit possession of chainsaws	1. Thuong Lam and Khuon Ha CPCs supported by the Lam Binh DPC prepare chainsaw use and registration policy 2. Thuong Lam and Khuon Ha CPCs supported by the Lam Binh DPC proclamation policy and official decision through local mass media channels 3. Authority allocated to valley management committees to manage and receive chainsaw management fees	• Chainsaw use and registration policy defined • Policy and official decision disseminated to public • Number of valley management committees appointed to manage chainsaw use and registration in their areas of authority
Action 6: Control of firearms	1. district People's Committee issue official decision banning sale of gun production and ammunition materials within the Lam Binh district 2. Awareness raising campaign strategy on firearms laws and restrictions defined 3. Awareness raising campaign activities implemented in nine target villages and at commune and district markets 4. Strategy for firearms buy-back / swap scheme defined 5. Firearms buy-back / swap scheme implemented in nine target villages	• Official district decision issued • Awareness raising materials prepared • Number of target villages and markets where awareness raising activities implemented • Firearms buy-back / swap scheme strategy completed • Number of villages where firearms buy-back / swap scheme implemented • Number of firearms bought back
Action 7: Control restaurants selling wildlife	1. PRCF seeks official support from FPD to conduct regular spot inspections 2. Regular spot inspection visits conducted by FPD and local Youth Union 3. Infringements broadcast on mass media channels in accordance with **Action 4**.	• Annual re-pledging of support by FPD for spot inspection activities • Number of spot inspections conducted by Youth Union and FPD annually • Number of infringements shared with mass media channels annually

Action	Indicator	Means of Verification
Action 8: Develop and publicize village regulations	1. Nine village regulations defined and endorsed by local CPCs 2. Each regulation contains specific clauses relating to forest management and biodiversity conservation 3. Nine village punishment systems defined for regulation infringements and endorsed by CPCs	• Number of village regulations defined and endorsed • Number of specific forest and biodiversity management clauses contained in each village's regulation • Number of village punishment systems defined and endorsed by CPC
2.Forest Management		
Action 9: Establish a multi-stakeholder management group	1. Stakeholder analysis completed 2. Regular quarterly meetings convened 3. Benefit sharing mechanism developed and implemented	• Stakeholder analysis completed • Mission Statement and TOR • Chair and members appointed • Number of quarterly meetings/annum • Benefit sharing mechanism defined and benefits disbursed
Action 10: Establish valley management committees	1. Six VMCs formed after at least one village meeting per village 2. CPCs endorse formation of the six VMCs 3. Monthly meetings of VMCs held 4. Six VMC activity work plans defined 5. Six valley management regulations defined	• Number of VMCs formed and number of village meetings • TOR and VMC mission mandate defined • Number of VMCs endorsed by CPCs • Number of VMC meetings held annually • Number of VMC work plans defined • Number of valley management regulations defined

Action	Indicator	Means of Verification
Action 11: Boundary demarcation of target villages and seasonal cultivation valleys	1. Nine boundary demarcation meetings held between villages and Na Hang Watershed Protection Forest Management Board (NHWPFMB) staff 2. All claims of boundaries documented for future investigation 3. Participatory field surveys conducted at nine villages and six agricultural cultivation valleys 4. Boundaries logged with GPS and mapped for nine villages and six agricultural cultivation valleys 5. Boundary markers installed	• Number of meetings held between villages and Na Hang Watershed Protection Forest staff • Boundary claims document ready for field verification • Number of villages involved in participatory field surveys • Number of maps produced defining village/LBWPF boundaries • Number of boundary markers installed
Action 12: Conduct participatory resource use planning	1. PRUP activities organized for nine villages 2. PRUP results documented for nine villages 3. Nine land-use maps drawn for each village inclusive of defining village / LBWPF land boundary interfaces 4. Six land-use maps drawn for each agricultural cultivation valley located inside the LBWPF	• Number of PRUP data collection workshops completed • Number of villages where PRUP activities documented • Number of land-use maps prepared • Boundaries defined by villages for each valley and each agricultural cultivation valley
Action 13: Allocation of forest and agricultural cultivation land to villages, households and valley management committees	1. All land within agricultural cultivation valleys and surrounding LBWPF forest (green books) allocated to households 2. All forest land adjacent to nine target villages within the LBWPF allocated to households with green books	• Total area and number of households allocated agricultural and forest land for management • Total area and number of households allocated forest land for management adjacent to target villages

Action	Indicator	Means of Verification
Action 14: Prepare Conservation Agreements linked to land tenure	1. Draft sample conservation agreements in consultation with NHWPFMB and other relevant agencies prepared 2. Conservation and sustainable forest management performance indicators developed for allocated agricultural and forest lands completed in **Action 13** 3. At least five conservation agreements developed in conjunction with allocated forest and agricultural cultivation land at locations within the LBWPF	• Draft sample conservation agreement prepared • Number of performance indicators developed • Number of conservation agreements signed and ratified
Action 15: Grazing management	1. Participatory mapping of grazing zones implemented at nine target villages and in each of the six agricultural cultivation valleys 2. Nine village and six agricultural cultivation valley management plans developed 3. Boundaries marked for each zone identified with each of the nine village and six agricultural cultivation valleys 4. Trade-offs identified through participatory meetings in nine village and six agricultural cultivation valleys (linked to activities in Section 4 below on livelihoods development) 5. Trade-off system developed and implemented in at least five villages	• Number of areas identified and mapped • Number of plans developed • Number of zones marker with zone boundary markers • Number of trade-of development meetings conducted • Number of trade-off activities defined • Trade-off system defined • Number of villages where trade-off system implemented

Action	Indicator	Means of Verification
3.Awareness Raising		
Action 16: Raise awareness on the François' langurs and their conservation needs	1. Community awareness raising strategy with accompanying action plan defined 2. Memorandum of agreement (MOA) with key government and non-government organization partners developed and signed 3. Awareness raising materials prepared 4. Activities implemented in nine target villages and in communes	• Strategy and action plan prepared • MOA defined • Number of villages and households where awareness raising materials were disseminated • Number of villages and commune locations where awareness raising activities implemented
Action 17: Raise awareness on wildlife consumption	1. Campaign plan defined targeting commonly held "myths" on wild medicines 2. Partnership formed with key government and NGO partners 3. At least two activities in plan implemented	• Campaign defined • Partnership with key partners defined • Number of activities from plan implemented
Action 18: Raise awareness on forest protection laws and penalties	1. Campaign strategy and plan defined 2. MOA with key government and NGO partners developed and signed 3. Awareness raising materials prepared 4. At least two training courses on facilitation of meetings and teaching methods with FPD 5. Activities implemented in nine target villages and in communes 6. One series of annual refresher meetings conducted in nine target villages over a five year timeframe	• Campaign strategy and plan defined • MOA signed • Number of types of awareness raising materials developed • Number of training courses • Number of meetings implemented • Number of annual refresher workshops implemented

Action	Indicator	Means of Verification
4.Livelihood Development		
Action 19: Establish fuel wood efficient stoves	1. Action plan for activities defined 2. Cooperation agreement with Women's Union prepared 3. Conduct assessment of current levels of fuel wood consumption and locally available alternative materials in at least five villages 4. Participatory fuel wood efficient stove design competition implemented in at least five target villages 5. Fuel wood efficient stove trial implemented in at least five target villages based upon competition designs 6. Participatory assessment of the most effective and culturally appropriate fuel wood efficient stove by women from target villages 7. Finalized fuel wood efficient stove designs expanded in at least five target villages with at least 10 households per village	• Action plan prepared • Cooperation agreement signed with Women's Union • Number of villages assessed • Results of assessment survey documented • Number of villages where efficient fuel wood design competition conducted • Number of designs selected for trial • Number of households and number of villages participating in trial • Participatory assessment completed and designs finalized • Number of villages where stoves expanded to • Number of households / village participating

Action	Indicator	Means of Verification
Action 20: Improve livestock husbandry methods	1. Assessment of current livestock husbandry techniques practiced in nine target villages 2. Consultation process completed in at least four villages to discuss and select trial activities 3. Technical training materials prepared for at least three livestock husbandry and alternative fodder activities 4. Prepare plan to implement trial activities in at least four villages 5. At least one training course implemented for each technique in at least four villages 6. At least one study tour organized for village participants to view activities trialed elsewhere 7. Trial activities assessed by village people and documented 8. Intra-village study tours conducted at nine villages to view results of activities 9. Activities scaled up to all nine villages with at least 20 households / village participating	• Field assessment survey completed • Field assessment survey documented • Number of villages consulted to discuss and select trial activities • Number of technical training materials prepared • Number of materials of each type disseminated • Plan to implement trial activities prepared • Number of training courses organised • Number of participants in training courses • Number of study tours to other locations conducted • Trial activities assessed and results documented • Number of intra-village study tours conducted • Number of households employing new techniques

Action	Indicator	Means of Verification
Action 21: Introduce and Improve efficiency of cultivation techniques	1. Assessment of current cultivar varieties planted and techniques practiced in nine target villages 2. Consultation process completed in at least four villages to discuss and select trial activities 3. Technical training materials prepared for at least three new or improved agricultural cultivar techniques 4. Prepare plan to implement trial activities in at least four villages 5. At least one training course implemented for each technique in at least four villages 6. Trial activities assessed by village people and documented 7. Intra-village study tours conducted at nine villages to view results of activities 8. Activities scaled up to all nine villages with at least 15 households / village participating	• Field assessment survey completed • Field assessment survey documented • Number of villages consulted to discuss and select trial activities • Number of technical training materials prepared • Number of materials of each type disseminated • Plan to implement trial activities prepared • Number of training courses organized • Number of participants in training courses • Trial activities assessed and results documented • Number of intra-village study tours conducted • Number of households employing new techniques

Action	Indicator	Means of Verification
Action 22: Develop alternative livelihood and income sources	1. Consultation process completed in at least four villages to determine selection criteria for trial activities 2. Desktop assessment conducted to identify suitable livelihood activities in alignment with village defined criteria 3. Technical training materials prepared for at least five alternative livelihood activities 4. Prepare plan to implement trial activities in at least four villages 5. At least one training course implemented for each technique in at least four villages 6. At least one study tour organized for village participants to view activities trialed elsewhere 7. Trial activities assessed by village people and documented 8. Intra-village study tours conducted at nine villages to view results of activities 9. Activities scaled up to all nine villages with at least 20 households / village participating	• Number of villages consulted • Criteria defined • Desktop assessment completed • Number of technical training materials prepared • Number of materials of each type disseminated • Plan to implement trial activities prepared • Number of training courses organized • Number of participants in training courses • Number of study tours to other locations conducted • Trial activities assessed and results documented • Number of intra-village study tours conducted • Number of households employing new techniques

Action	Indicator	Means of Verification
Action 23: Develop village interest groups (VIG)	1. Village meetings held to identify prioritized areas to focus VIG activities in at least five villages 2. Regulations for VIG defined 3. At least five plans identified linking **Actions 20, 21, 22 and 24** 4. Regular monthly or quarterly meetings held of VIGs in at least 5 villages	• Number of introductory village meeting held to establish interest groups • Number of VIGs formed • Number of regulations defined for VIG operation • Number of VIG plans defined • Number of regular VIG meetings held annually
Action 24: Develop a small grants program	1. At least one long-term donor identified and commence funding support 2. At least US$5,000/village raised 3. Sign cooperation agreement with Women's Union and/or valley management committees 4. Develop mechanism and criteria TOR for program 5. At least five villages consulted in meetings to establish program 6. Disbursement of small grants program funds 7. Annual review of mechanism and fund disbursement	• Number of donors contributing • Target of money per village raised • Cooperation agreement signed • Mechanism and criteria TOR defined • Number of villages consulted • Amount of money disbursed totally and per village • Annual review workshop completed

Action	Indicator	Means of Verification
5.Conservation studies François' Langur biology / ecology and behavior		
Action 25: Establish and monitor population size	1. Monitoring program strategy and action plan defined (linked to **Action 3**) 2. MOA signed with a tertiary research institution to conduct monitoring / research activities 3. Each group of langur within each CHZ identified and logged with a GPS 4. Location of each group mapped with GPS waypoints 5. Number of animals identified in each group 6. Threats to each group identified 7. At least one monitoring visit / month with a minimum of 5 days / month	• Monitoring strategy and action plan defined • MOA signed • Number of langur groups identified • Map prepared with GPS waypoints for each group included as a GIS layer • Number of animals identified per group per CHZ • Number of monitoring visits per month • Number of days observing langur groups / month
Action 26: Home range and critical habitat	1. All observations for each identified langur group logged with a GPS 2. All active and potential sleeping caves identified and logged with a GPS 3. Home range for each group defined on a map	• Number of observations for each identified group logged with GPS • Number of active and potential sleeping caves identified • Number of groups where home range is mapped

Action	Indicator	Means of Verification
Action 27: Group dynamics and behavioral ecology	1. Demographic information on each group defined including male to female and females to infant ratios, birth rates, age etc. 2. Seasonal movements of langurs within home range documented and mapped for each group 3. Responses to threats identified and documented 4. Daily movement patterns documented for each group 5. Data on feeding ecology documented for each group	• Demographic information documented and published in at least 2 peer review journals • Number of groups where home range is documented and mapped • Threats to each group documented and group responses recorded • Number of groups where daily movement patterns are documented • Number of food species identified • Seasonal feeding trends identified

9. Five Year Activity Work Plan

Activity	Year of Implementation				
	2013	2014	2015	2016	2017
Action 1: Strengthen patrolling of forest					
Action 2: Develop an informant network and forest crime reporting					
Action 3: Protect and monitor François' Langur					
Action 4: Strict and clear prosecution of violators					
Action 5: Control and limit possession of chainsaws					
Action 6: Control of firearms					
Action 7: Control restaurants selling wildlife					
Action 8: Develop and publicize village regulations					
Action 9: Establish a multi-stakeholder management group					
Action 10: Establish valley management committees					
Action 11: Boundary demarcation of target villages and seasonal cultivation valleys					
Action 12: Conduct participatory resource use planning					
Action 13: Allocation of forest and agricultural cultivation land to villages, households and valley management committees					
Action 14: Prepare Conservation Agreements linked to land tenure					
Action 15: Grazing management					
Action 16: Raise awareness on the François' langurs and their conservation needs					
Action 17: Raise awareness on wildlife consumption					
Action 18: Raise awareness on forest protection laws and penalties					

Action 19: Establish fuel wood efficient stoves					
Action 20: Improve livestock husbandry methods	**Trials**				
Action 21: Introduce and Improve efficiency of cultivation techniques	**Trials**				
Action 22: Develop alternative livelihood and income sources	**Trials**				
Action 23: Develop village interest groups					
Action 24: Develop a small grants program					
Action 25: Establish and monitor population size	**Locate groups**				
Action 26: Home range and critical habitat					
Action 27: Group Dynamics and Behavioral Ecology					

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