POPULATION STATUS OF FRANCOIS' LANGUR (*Trachypithecus francoisi*) AT BA BE NATIONAL PARK

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SUMMARY

The Francois' Langur (*Trachypithecus francoisi*) is an endangered primate belonging to subfamily Colobinae. The species was historically widespread in seven northern provinces of Viet Nam. Ba Be National Park is located in Vietnam's northern mountains, and is a home to several small groups of *T. francoisi*. The objective of these surveys is to reveal distribution, group size and threats to species and its habitats. Results gathered will be use for making long term management and conservation of the species. Two Status Surveys were undertaken with a total of 21 field survey days between 13 - 26 February and 16 - 22 November 2009 at Ba Be National Park. Sighting of *T. francoisi* was rare in the surveyed areas, with only two groups of two and four individuals respectively detected in Pac Ngoi. Hunting and habitat destruction are main threats to the *T. francoisi* species and its habitat. Illegal logging poses a serious threat to the critical habitat of the leaf monkey, while shotguns and traps were identified as the main methods for hunting in the area. Immediate actions need to be conducted to conserve the remaining small populations of *T. francoisi*.

Keywords: Distribution, group size, threats, *Trachypithecus francoisi.*

I. INTRODUCTION

The Francois' Langur (*Trachypithecus francoisi*) is an endangered primate (IUCN, 2008) belonging to subfamily Colobinae. The species is protected under Viet Nam Decree 32/2006/ND-CP and is classified as "Endangered" in IUCN Red List and Vietnam Red Book (IUCN, 2010; MOST, 2007).

The leaf monkey ranges from the Red River in Vietnam across the Chinese border to as far as the Daming Hills in Guangxi and Xingyi in Guizhou, it is restricted to habitats characterized by karst topography with plentiful cliffs (Groves, 2001). It occurs in south China and northern Vietnam. The species was historically widespread in seven northern provinces of Viet Nam (Lang Son, Cao Bang, Thai Nguyen, Bac Kan, Ha Giang, Tuyen Quang and Lao Cai Provinces) (Pham Nhat, 2002). Due to intensive habitat loss and hunting for food and commercial sale, populations now only occur in four provinces (Lang Son, Ha Giang, Bac Kan and Tuyen Quang Provinces) (Pham Nhat, 2002; Nadler *et al,*. 2003). All remaining populations are small (<50 individuals), isolated, and vulnerable to extinction (Nadler *et al.,* 2003). *T. francoisi* population estimates for China are of about 1,400 to 1,650 individuals (IUCN, 2008), whereas the remaining population in Vietnam is estimated as less than 300 individuals (Nadler *et al.,* 2003). Main threats to the Langur are hunting and habitat destruction (Hu *et al.,* 2004; Li *et al.,* 2007; Nadler *et al.,* 2003).

Ba Be National Park is located in Vietnam's northern mountains, and is a home to several small groups of *T. francoisi*. According to previous reports, the maximum number of individuals in a group recorded in Ba Be National Park did not exceed six individuals (Nadler *et al.,* 2003). However, verbal reports from local communities indicated the existence of about 13 individuals in the Đầu Đẳng karst massif (Potess, pers. Comm., 2009). A survey on the population status of *T. francoisi* in Ba Be aims to determine population status of *T. francoisi* at Ba Be National Park and identify current threats to the species and its habitats. Results collected will help provide adequate data to develop a Conservation Action Plan for the species at site, and to design a long term

monitoring program for adaptive conservation management.

II. METHODS

2.1. Description of survey area

Ba Be National Park is located in Ba Be District, Bac Kan Province (Figure 1). The Park covers an area of 7,608 ha, with about 85% under forests. The National Park is divided into three functional zones, comprising a strict protection area of 3,226 ha, a forest rehabilitation area of 4,082 ha, and administration area of 300 ha (Committee, 2001; Định, 2003). Steep limestone hills and valleys characterise the topography of the National Park. The elevation ranges between 150 and 1,121 m asl, with the highest peak Cang Lo at 1,121 m asl. Many limestone caves are found along the steep cliffs, with Puong cave at 300 m in length being the largest one. There are mainly three types of forest in Ba Be National Park: forests associated with limestone hills and mountains, evergreen forests, and bamboo forests. Limestone forests occupy most parts of the park and feature thick vegetative cover, while evergreen forests are distributed on low earthen hills covered with a thicker soil layer. The fauna of the Ba Be National Park is composed of 65 mammals, 214 birds, 46 reptiles and amphibians, and 87 fish species (Định, 2003; Pham, 2003). Among the list, 55 species have been recorded in the Vietnam Red Book, especially the presence of endangered primates: Francois' Langur (*Trachypithecus francoisi*), has given the park greater importance as a national and international conservation area.

Figure 1. Position map of Ba Be National Park

2.2. Data collection

The survey was carried out in Ba Be National Park. The focus was on the four possible occurrence areas of the *T. francoisi*: Đầu Đẳng area (Khau Qua, Nậm Dài, and Khau Củm), Kéo Cạp (Tàng Tẳng, Nà Diển,

and Khau Củm), Pac Ngoi (Chộc Thép, Nà Phoon, and Lùng Quang), and Tà Han. I surveyed for 216 hours and the total area covered were 47 km^2.

2.3. Interviews

A diverse number of local people ranging from villagers, hunters, rangers to National Park staff were interviewed before surveys commenced. Key informants were determined by who had seen the *T. Francoisi* in recent times. The purpose of the interviews was to collect general information on family groups and population of the species, diet, habitat preferences and on current and past distribution in the area surveyed (number and location observed and frequency of sighting).

2.4. Species Presence/absence Surveys

Existing trails, transects, and reported sleeping sites were used to survey the presence/absence of family groups of *T. francoisi* at Ba Be National Park. The presence/absence of the species was determined from both direct and indirect evidence and utilising the methods documented in Ross & reeve (2003) below:

- Direct observation of live animals;
- Indirect observation of characteristic signs (tracks, faeces, feeding signs, vocalizations, etc.);
- Observation of animal captured or killed (care should be taken to ascertain where the animals were obtained);
- Reports from local communities.

2.5. Group size and composition

Given the small populations of *T. francoisi* at Ba Be National Park, opportunistic census was used to count the total number of animals in groups encountered. More effort was paid to the sleeping sites early in the morning and late in the afternoon, since this allowed observers to have good visible count of a whole group of monkeys, and to determine their age, sex, and composition of the Langur group.

2.6. Sleeping site surveys

Local reports, indirect and direct evidences, as well as full-day follow were used to determine current sleeping sites of *T. francoisi* at Ba Be National Park. Attempts were also made to search for caves on the middle or tops of the cliffs and brown deposits of langur excrement just below the caves (Huang, Wei, Li, Li, & Sun, 2002; Zhou, Huang, Li, & Cai, 2007). GPS and topographic maps were used to get locations and mark sleeping sites of the species on the map.

2.7. Threats

Information on the presence of traps/ snares, guns/ crossbows, camps, hunting dogs, forest clearance, timber-cutting, huts, non-timber forest product collection, and livestock grazing were recorded during daily surveys to assess the human impact on Francois' Langur and its habitat, as well as on wildlife as a whole.

III. RESULT AND DISCUSSION

3.1. Distribution and group size of *Trachypithecus francoisi*

Sighting of *T. francoisi* in areas surveyed were rare. Most information on distribution and group sizes were based on local reports. Details of local people's observation of the *T. Francoisi* during the survey, as well as their location and group size, are presented in Table 1.1 and locations depicted on the map in Figure 1.

T. francoisi were sighted twice in the Pac Ngoi area during the surveys. A group of four *T. Francoisi* individuals was observed on 22nd February 2009 at a location (0564901 E /2476206 N) close to the Pac Ngoi cliff. The group included one adult male, one adult female, one juvenile, and one infant. Another group of two adult–size *T. francoisi* were also

seen in Pac Ngoi area (0565280E/2475689N) on 20th November 2009 during resting, however observers were unable to determine the composition of the group because observation duration was too short. The actual group size of these groups is likely to be larger, since the observers might have missed some animals hidden in the dense foliage.

Based on local reports, there seems to be another small group of six to eleven animals residing in Pac Ngoi area. Old faeces of *T. francoisi* were observed at Na Phoon cliff (0563623E/2476201N) where according to Mr. Hoang Phuc Thanh from Nam Cuong Village, a group of 6 animals including 2 juveniles spent approximately 10 days in September 2009.

No signs of *T. Francoisi* were observed in other surveyed areas (Dau Dang, Keo Cap, Pac Ngoi Ta Han). However, groups of two to six animals have been recently seen by local people in these areas (table 1). In Ta Han area, one adult-size animal of *T. francoisi* was seen in Ta Han cliff (0561043E/2477336N) in April of 2009. The solitary animal spent two days in this area, emitted loud vocalizations and then disappeared (Hoang Van Khoanh, Pers. Com., 2009).

3.2. Sleeping sites

No sleeping sites of the *T. francoisi* were determined during the survey, though efforts were made at dawn and dusk to search for possible sleeping sites. For instance, search was carried out at caves at middle or top of the cliffs near deep brown deposits of Langur excrement in Dau Dang and Pac Ngoi cliffs. Two possible sleeping caves are located at Nà Phoòn cliff (0563623E/2476201N and 0563541 E /2475872 N), where both local people and a forest ranger saw Langurs entering the cave last year (Tam, Thanh, pers. Com., 2009). Furthermore, old faeces were also seen on the ground below the former cave. However, it is believed the Langurs may have abandoned the later sleeping cave due to the construction since 2008 of an ecotourism road to Na Phoon cave. This observation was confirmed by local owners of cornfields close to the cave, who admitted they had not seen the Langurs since the road work started.

Table 1. Locations and group sizes of *T. francoisi* at Dau Dang and Pac Ngoi areas

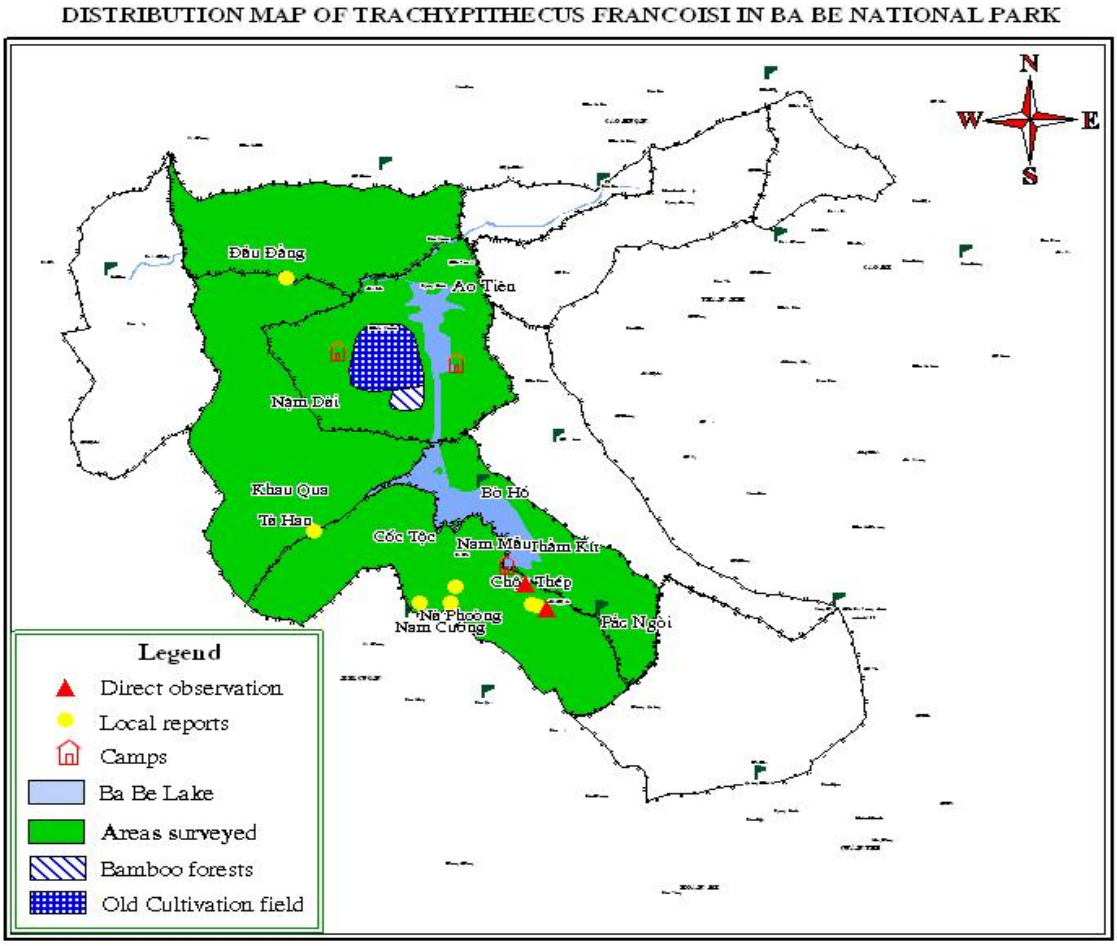
(Information collected from both direct observations and local reports)

No.	Date	Sites	Locations (WGS84)	Group sizes	Evidence	References
1	Dec 2008	Na Phoon	0563541E/2475872N	4-6	Sighting	Hoàng Phúc Thành, Nam Cường Village
2	Jun 2008	Na Phoon	0563541E/2475872N	11	Sighting	Nguyễn Văn Tám, Na Bản ranger station
3	10 Jan 2008	Dau Dang	0560543E/2482765N	1 (4)	Sighting, vocalization	Đồng Văn Cừ, Đầu Đẳng Village
4	12 Jan 2008	Dau Dang	0560543E/2482765N	4-6	Sighting, vocalization	Nông Thị Mợi, Đầu Đẳng Village
5	22 Feb 2009	Pac Ngoi-Choc Thep	0564901E/2476206N	4	Sighting	This survey
6	Apr 2009	Ta Han	0561043E/2477336N	1	Sighting, vocalization	Hoàng Văn Khoanh, Cốc Tộc Village
7	Aug 2009	Dau Dang	0560543E/2482765N	2	Sighting	Đồng Văn Cừ, Đầu Đẳng Village

8	Sep 2009	Na Phoon	0563623E/2476201N	6	Faeces, Sighting	Hoàng Phúc Thành, Nam Cường Village
9	20 Sep 2009	Pac Ngoi	0565280E/2475689N	2	Sighting	This survey

(?) Information need to be confirmed since the observation duration was short

Figure 2. Distribution map of *Trachypithecus francoisi* at Ba Be National Park



3.3. Threats to T. francoisi

Information on the presence of human activity in the forests was also recorded during the *T. francoisi* and other wildlife surveys. Signs of human activity can generally be grouped into two main categories: hunting (hunters encountered, gunshots heard, dogs, and campsites for hunting) and habitat destruction (illegal logging, stacked timber, campsites for logging, fire wood and bamboo shoot collection, livestock grazing and cutting trees for grazing). A detailed threat assessment to the Langurs and other wildlife are given below.

3.3.1. Hunting

Hunting activities appeared to remain in some parts of the areas surveyed. The team encountered hunters in Pac Ngoi area. Gunshots were heard several times during the first few days of each survey mission in all areas surveyed, and appeared to reduce during the proceeding days probably due to the presence of the surveyors and Park Rangers in the forest. The use of guns for hunting seemed

to be more prevalent and extensive in Dau Dang, Keo Cap and Ta Han areas than at Pac Ngoi. Old hunting campsites were observed in all survey areas. Hunting campsites were recognized by team members due to the presence of physical evidence of animal parts such as feathers and fur which were scattered around the camp area.

Hunting signs were generally found in the more remote and difficult (terrain wise) areas, that hold better quality forest habitat, are more remote from established Ranger Stations and are less regularly visited by Park Rangers.

Direct evidence of killed *T. francoisi* were not found during the survey. Local people reported that they once used to kill these monkeys to consume their meat and to make a medicine from their bones, called "cao". The latter product can be used for domestic family medicinal purposes, sold in locals markets and to traders. The purposes of hunting the monkey may have changed from the past, as the whole animal can be sold for VND 200.000 per kilogram (ca. USD 13.00/kg). It is also believed that *T. Francois'* gall bladders are of higher quality than those of bears for customary medicinal purposes. This may create a demand for hunting *T. Francoisi* and hence, decrease the population in Ba Be National Park.

3.3.2. Habitat Destruction

Habitat destruction was observed in some parts of the forests surveyed and had an impact on the forest integrity and was as critical habitat for *T. Francoisi*. Evidence of habitat destruction observed included trees cut for timber, stacked timber boards, campsites for logging, well used trails for transporting logs, non-timber forest product collection, livestock grazing and cutting trees for grazing fodder.

Trees cut for timber and stacked timber boards were encountered along existing trails in the forest, despite this activity being illegal within the Park. Much of the felling was undertaken with the use of chainsaws rather than with traditional pit sawing methods. The use of chainsaws allows users to harvest timber more quickly and with less manpower, reducing the potential of attracting the attention of Park Rangers. Further, illegal logging often takes place at night or early morning and is very difficult to control since only a small number of Park Rangers are available on site. Consequently, there was evidence of illegal timber extraction in the forests surveyed. The trees cut are often large and valuable timber species such as Tong Du (*Toona sinensis*), Nghien (*Burretiodendron hsienmu*) and are of interest to loggers since they are valuable house building materials.

Livestock grazing and cutting trees for grazing are also having an impact on the habitat of *T. francoisi* and wildlife in general. It is clear that this activity is far less widespread than hunting and illegal logging. Livestock grazing often takes place at abandoned cultivations and lower elevation sites in the forest. In most cases, the tree cut for grazing is often *Streblus brenieri*.

Bamboo shoot collection by local people occurs between June and September in the Kéo Cạp area where there are several patches of bamboo forests. This activity is also illegal in the Park and is having a detrimental impact on the forest integrity in this area. Collectors harvested fresh bamboo shoots and often dried the vast majority of product inside the forest. Dried bamboo shoot products are then transported out of the forest and sold to traders or in local markets, attracting a local value of VND 70-80.000/kg (Hai, H.D., Per., Comm., 2009). According to Park Rangers, people from villages surrounding the Park seasonally converge upon the Kéo Cạp area to harvest the

resource due to its high market value and in turn disturbing both the wildlife and it's habitat.

Firewood collection activities are also traditional and cultural customs of ethnic minority groups in Ba Be National Park. This activity is often carried out by women who collect fuel for family consumption. The survey team encountered several times groups of three to six people harvesting firewood in the known Langur habitat in the Pac Ngoi area.

3.4. Discussion

3.4.1. Distribution and group size

My results indicate that distribution of *T. francoisi* is now restricted to just three areas: Đầu Đẳng, Pac Ngoi, and Tà Han. Group size and density of *T. francoisi* in survey areas also appear to be extremely low compared with those in previous reports in survey site and China. Historically, *T. francoisi* were found in a number of areas within the Ba Be National Park and group sizes were larger (Table 1.2). The mean group size of *T. francoisi* in China is seven (Li, Huang, Ding, Tang, & Wood, 2007) and mean densities are 0.6 - 1.2 individuals/km² (Hu, Dong, Wei, Zhu, & Duan, 2004). A possible explanation for these differences is the degree of pressure from threats (especially hunting) *T. francoisi* between sites. Encounter rates of signs of human impacts in areas surveyed are high (see detailed discussion below). Hunting can cause rapid and inevitable decrease in size of primates. Local extinction may be inevitable for small populations even in ceased hunting areas (Colishaw & Dunbar, 2000).

Table 2. Historical records of population size and distribution of *Trachypithecus francoisi* at Ba Be National Park

Year	Sites	No. of groups	Group size	References
1989	Dan Dang	?	?	Ratajszczak*et al.* (1990)
1994	Puong Grotto	?	?	Kemp *et al.,* (1994) cited as Nadler, et al., (2003)
1996	Nam Dai	1	4 - 5	Hill *et al.* (1996)
2000	Pac Ngoi	1	6	Dien, T.N., pers.comm. 2000 cites as Nadler, *et al.,* (2003)
2004	Dau Dang	1	13	Potess, F., pers. comm.2009
2009	Dau Dang	1	4 - 6	Moi, T.N., Pers.comm.2009
	Pac Ngoi	1	4	Hai, 2009
	Pac Ngoi	1	2	Hai, 2009
	Ta Han	1	1	Khoanh, V. H., Pers.comm.2009

? unspecified

3.4.2. Threats to T. francoisi

My results show that hunting and habitat destruction were identified as the main threats to the species. Hunting has long been recognized as a threat to primate populations (Mittermeier, 1987). Hunting *T. francoisi* for meat and traditional medicine has been recorded in previous reports (Dang, Nghia, & Lam, 2006; Li, Huang, Ding, Tang, & Wood, 2007; Nadler, Momberg, Nguyen, & Lormee, 2003). These may be true for *T. francoisi* at Ba Be National Park. Although there was no direct evidence of hunting *T. francoisi* during the survey, however according to local reports the species used to be hunted for food and traditional medicine purposes.

Like other primates, *T. francoisi* is usually shot or trapped (Cowlishaw & Dunbar, 2000;

Hu, Dong, Wei, Zhu, & Duan, 2004; Li, Huang, Ding, Tang, & Wood, 2007). Information supplied by local people indicate that shotguns have been and perhaps continue to be used to shoot *T. francoisi* in survey areas, despite it being an illegal practice in the National Park. Traps of *T. francoisi* have not previously been reported in the National Park, however, reports from local sources indicate that one individual was trapped last year in the Pac Ngoi area. If this is indeed the case, hunting poses a serious threat to the remaining population. Li *et al.* (2007) claimed that an entire family group of *T. francoisi* was caught by blocking the entrance to their sleeping caves, so careful attention must be focused upon restricting access to these areas and managing for this potential threat.

Hunting poses a serious risk of extinction for a considerable number of the world's primate populations (Colishaw & Dunbar, 2000; Mittermeier, 1987; Mittermeier & Cheney, 1987) and may be the key threat for rare species restricted to small areas of protected habitat (Bleisch & Zhang, 2004). The population of *T. francoisi* within the survey areas is not exceptional. No sightings of Langurs at Đầu Đẳng area and only a small group of four animals was seen in Pac Ngoi. This may be considered as evidence of population decline. Hunting also can influence population size, population structure and the behavior of individuals within populations (Cowlishaw & Dunbar, 2000). Densities of primates tend to be lowest where hunting intensity is greatest. Hunting intensity is frequently co-varied with the human accessibility to forests. This may offer us some clues to develop future conservation initiatives in survey areas with *T. francoisi*, especially in areas where forests can be easily accessed.

Habitat destruction is also an important factor contributing to the decline in Vietnam primates (Bleisch & Zhang, 2004), and the world's primate populations as a whole (Mittermeier & Cheney, 1987). Habitat destruction generally takes the form of logging, subsistence farming, grazing, firewood collection and non-timber forest product collection (Mittermeier & Cheney, 1987). It is documented that habitat destruction can lead to forest loss, fragmentation, and modification, therefore influencing primate population viability (Cowlishaw & Dunbar, 2000; Kirkpatrick, 1995), home ranges and species extinction risk (Cowlishaw & Dunbar, 2000).

Habitat destruction in surveyed areas mainly occurs as a result of illegal logging and livestock grazing. Although the survey team was not able to assess the long-term impact of these activities on *T. francoisi* during the short survey, it is evident that disturbance and openings are created in the surveyed forests. Logging is also known to alter activity patterns and thus densities of primates, as documented by Johns (1986) and Plumptre, Cox, & Mugume (2003). The density of chimpanzees in logged forest is often lower than in mature forest (Plumptre & Reynolds, 1994). Studies of *Hylobates lar* and *Presbytis melalophos* have observed alterations in activity budgets following logging where they spend more time resting and less time feeding and travelling. These changes may be attributable to the reduction in the availability of their preferred, more nutritious foods (Johns, 1986).

IV. CONCLUSIONS

The distribution of *T. francoisi* appeared to be restricted to three locations within Ba Be National Park: Đầu Đẳng, Pac Ngoi and Tà Han areas. Sightings of *T. francoisi* is rare. Two groups of two and four animals were

detected during this survey in the Pac Ngoi area. Group size seems to be lower than that in China. These surveys appear to suggest a downward trend of population numbers of *T. francoisi* in surveyed areas.

Like other primate populations, hunting and habitat destruction are the main threats to species and it's habitat. Illegal logging poses a serious threat to the critical habitat of *T. francoisi*, while shotguns and traps are identified as the main methods used for hunting. Both activities were often observed in remote and difficult areas where the influence and presence of Park Rangers is irregular due to limited number of staff available.

Actions required to address the threats observed during the *T. francoisi* survey are presented within this document. These recommendations will be used as guidelines for developing a conservation action plan for Francois' Langur at the Ba Be site. The Conservation Action Plan will be developed using a log frame approach with goals, objectives, activities, outcomes and an associated monitoring program with an aim to be as specific as possible, stating where and when actions will take place and who will implement it.

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TÌNH TRẠNG QUẦN THỂ VOỌC ĐEN MÁ TRẮNG (*Trachypithecus francoisi*) TẠI VƯỜN QUỐC GIA BA BỂ

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TÓM TẮT

Voọc đen má trắng (*Trachypithecus francoisi*) thuộc Họ phụ voọc (Colobinae) là loài Linh trưởng nguy cấp. Phân bố của loài trước đây trải rộng trên 7 tỉnh miền Bắc Việt Nam. Vườn Quốc gia Ba Bể thuộc vùng núi phía Bắc Việt Nam và là nơi sinh sống của quần thể Voọc đen má trắng. Tuy nhiên, tình trạng, phân bố cũng như các mối đe dọa đến loài còn đang thiếu. Mục tiêu của điều tra này là làm rõ phân bố, kích thước quần thể và các mối đe dọa đến loài và sinh cảnh. Kết quả thu thập được sẽ là cơ sở đề xuất các giải pháp quản lý và bảo tồn lâu dài loài Voọc đen má trắng. Phương pháp phỏng vấn, điều tra theo tuyến, điểm được sử dụng để thu thập các số liệu ngoài thực địa. Kết quả thu thập được cho thấy việc quan sát việc quan sát trực tiếp loài Voọc đen má trắng là rất hiếm tại khu vực điều tra. Chỉ có 2 đàn với số lượng từ 2 - 4 cá thể được ghi nhận tại khu vực Pắc Ngòi. Săn bắt và mất sinh cảnh là các mối đe dọa chính đến loài Voọc đen má trắng và sinh cảnh của chúng. Vườn Quốc gia cần có những giải pháp kịp thời để bảo tồn quần thể Voọc đen má trắng.

Từ khóa: Kích thước đàn, mối đe dọa, phân bố, *Trachypithecus francoisi*.

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