Vietnamese Journal of Primatology (2021) vol. 3(3), 157-170

The illegal trade of the douc langurs (*Pygathrix* sp.) in Vietnam – January 2010 to December 2020

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Key words: illegal trade, douc langur, *Pygathrix*, Vietnam

Summary

All three species of douc langur existing in Vietnam, the red-shanked, the grey-shanked, and the black shanked douc langur (*Pygathrix nemaeus*, *P. cinerea* and *P. nigripes*) are categorized as 'Critically Endangered' in the IUCN Red List of Threatened Species. All populations in Vietnam are relatively small and fragmented. Nevertheless, the illegal trade of these species is occurring at an alarming rate despite their protection under Vietnamese laws.

The case files about douc langur seizures collected and logged on the Education for Nature's Wildlife Crime Incident Tracking System (ENV) from January 2010 to December 2020 provide background for analysis. During this period, a total of 684 douc langurs were seized in 80 cases. Black-shanked douc langurs were seized in 46 cases with a total of 560 animals, representing 82% of the confiscated douc langurs. Grey-shanked douc langurs were seized in 10 cases with 69 animals (10%), red-shanked douc langurs were seized in 20 cases with 50 animals (7%), and in 5 cases a total of 5 unidentified (1%) douc langurs were confiscated.

The main trade route commences from the southern and central provinces of Vietnam, nearby the main distribution areas of the species. The trading route then moves northwards to the Chinese border to cross the border, where the animals are sold for higher profit than they would fetch in Vietnam. One of the main identified trade centers is Binh Phuoc Province in South Vietnam which borders Cambodia not far from the Seima Biodiversity Conservation Area. This protected area harbors one of the largest known populations of black-shanked douc langurs and provides the primary source for hunting and illegal transboundary trade of douc langurs. However, Vietnamese populations of that species suffer as well from hunting and trading.

In Central Vietnam, Kon Tum and Gia Lai Provinces are among the main trading hotspots for all three species of douc langurs. Here, red-shanked douc langurs are mainly sourced from nearby Nakai-Nam Theun National Protected Area in eastern Laos and probably also from Phong Nha-Ke Bang National Park in Central Vietnam. Grey shanked doucs are most liked extracted from Vietnam's central highlands. In Northern Vietnam, the capital city Hanoi forms a trade corridor towards the north through to Bac Kan and Cao Bang Provinces, where the trade moves across the border to China.

Urgent measures and activities with focus on the key provinces of the trade are necessary to reduce the illegal trade with these 'Critically Endangered' species.

Hoạt động buôn bán bất hợp pháp các loài voọc chà vá (*Pygathrix* sp.) ở Việt Nam – tháng 1/2010 – tháng 12/2020

Tóm tắt

Cả ba loài voọc chà vá hiện có ở Việt Nam gồm: chà vá chân nâu, chà vá chân xám và voọc chà vá chân đen (*Pygathrix nemaeus*, *P. cinerea* và *P. nigripes*) đều được xếp vào loại 'Cực kỳ nguy cấp' trong Danh lục Đỏ của IUCN. Tất cả các quần thể voọc chà vá ở Việt Nam tương đối nhỏ và bị chia cắt. Tuy nhiên, hoạt động buôn bán bất hợp pháp các loài này vẫn diễn ra ở mức báo động mặc dù đã được pháp luật Việt Nam hết sức bảo vệ.

Hồ sơ vụ án về các vụ bắt giữ voọc chà vá được thu thập và ghi lại trên hệ thống theo dõi sự cố về tội phạm động vật hoang dã của Tổ chức Giáo dục cho Thiên nhiên (ENV) từ tháng 1 năm 2010 đến tháng 12 năm 2020 được phân tích. Kết quả cho thấy, tổng số 684 cá thể voọc chà vá đã bị bắt giữ trong 80 vụ. Voọc chà vá chân đen bị bắt giữ 46 vụ với tổng số 560 con, chiếm 82% số voọc bị tịch thu. Voọc chà vá chân xám bị bắt giữ 10 vụ với 69 con (10%), voọc chà vá chân nâu bị bắt giữ 20 vụ với 50 con (7%), 5 vụ có tổng số 5 con voọc không xác định (1%).

Con đường buôn bán bất hợp pháp chính khởi nguồn từ các tỉnh miền Nam và miền Trung Việt Nam, gần các khu vực phân bố chính của các loài này. Con đường buôn bán hướng về phía bắc đến biên giới Trung Quốc để qua biên giới, nơi những con vật được bán với lợi nhuận cao hơn so với giá trị khi chúng được đưa vào Việt Nam. Một trong những trung tâm mua bán chính là tỉnh Bình Phước, miền Nam Việt Nam, giáp Campuchia, cách Khu Bảo tồn Đa dạng Sinh học Seima không xa. Khu bảo tồn này có một trong những quần thể voọc chà vá chân đen lớn nhất được biết đến. Đây cũng là nơi hoạt động săn bắt và buôn bán trái phép voọc chà vá chân đen diễn ra. Đồng thời, các quần thể loài này ở Việt Nam cũng bị ảnh hưởng bởi nạn săn bắn và buôn bán.

Ở miền Trung Việt Nam, các tỉnh Kon Tum và Gia Lai là một trong những điểm nóng buôn bán chính của cả ba loài voọc chà vá. Ở đây, voọc chà vá chân nâu chủ yếu có nguồn gốc từ Khu bảo tồn quốc gia Nakai-Nam Theun phía đông Lào và Vườn quốc gia Phong Nha-Kẻ Bàng ở miền Trung Việt Nam. Voọc chà vá chân xám được săn bắn từ Tây Nguyên của Việt Nam. Ở miền Bắc Việt Nam, thủ đô Hà Nội tạo thành một hành lang thương mại qua các tỉnh Bắc Kạn và Cao Bằng, và điểm đến là biên giới với Trung Quốc.

Các biện pháp khẩn cấp và các hoạt động tập trung vào các tỉnh trọng điểm của hoạt động buôn bán bất hợp pháp là cần thiết nhằm giảm việc buôn bán bất hợp pháp các loài 'Cực kỳ nguy cấp' này.

Introduction

Southeast Asia supports an illicit illegal wildlife trading market, and Vietnam's position within the Indo-Burma biodiversity hotspot (Myers et al. 2000) places it at the heart of the trade. Vietnam is a 'cross-bridge' for international wildlife trafficking from Indochina to China, Korea, and Japan (Nguyen Thanh Cao 2016; Krishnasamy & Zavagli 2020). The range of wild animal species illegally traded in the region is vast and the impetus towards species extermination is reaching a critical threshold. The past decade has seen a surge in efforts to combat the illegal trade of several iconic endangered taxa, which includes several primate taxa. Primates are hunted for food, traditional medicine, and the pet trade. In traditional medicine, the use of body parts is a particularly severe factor affecting population decline (Beyle et al. 2014; Nadler 2014; Estrada et al. 2017; Nadler & Roos 2017).

Twenty-two of Vietnam's 25 primate taxa are threatened with extinction and 11 taxa are listed as 'Critically Endangered' (IUCN Red List of Threatened Species 2021). The pressure of hunting for the illegal trade has pushed the douc langur species to the brink of extinction: all three species of douc langurs are now listed as 'Critically Endangered' (Coudrat et al. 2020; Ha Thang Long et al. 2020; Hoang Minh Duc et al. 2021). The red-shanked douc langur (*P. nemaeus*) and the black-

shanked douc langur (*P. nigripes*) were classified as 'Endangered' in 1988 and 2000 respectively and were elevated to 'Critically Endangered' in 2020. The grey-shanked douc langur (*P. cinerea*) was classified as 'Endangered' in 2003 and eventually listed as 'Critically Endangered' in 2008. In the present study, the case files collected and logged on Education for Nature Vietnam's (ENV) Wildlife Crime Incident Tracking System related to trading seizures involving douc langurs are analyzed across a time span of 11 years, from January 2010 to December 2020. The analysis contributes to our understanding of the illegal trade by describing its nature, identifying trading hotspots, and outlining the implications of this analysis for regulatory strategies.

Protection status of douc langurs in Vietnam

The douc langur species have been protected in Vietnam since the first animal protection law was enacted in 1992 (No. 18 HDBT). Currently, the species are protected on the highest level with Decree 06/2019 ND-CP-Group IB. Hunting, trading, advertising, and possessing of individuals are illegal and are punishable under the Penal Code Decree 35/2019/ND-CP and the Penal Code (No. 100/2015/QH13, amended by No. 12/2017/QH14) sections 234 and 244. International trade is restricted by the *Convention on International Trade in Endangered Species of Wild Fauna and Flora* (CITES). All three douc species are listed in the CITES Appendix I, a list comprising highly endangered species. Trade of species under this list require special permits for transboundary transport of body parts (e.g. samples for scientific research) or alive individuals (e.g. for captive breeding purposes for conservation).

Distribution of the douc langur species

The three douc langur species occur in nonoverlapping geographic areas and are therefore defined as widely allopatric distributed. The ranges of the three species are aligned from North to South in the following order: red-, grey- and black-shanked douc langurs. However, in Quang Nam Province, there is a small sympatric population, most probably also consisting of a hybridization between red- and grey-shanked douc langurs (Bui Van Tuan et al. 2019). Another contact between these species exists in Northeast Cambodia with evidence of hybridization (Rawson & Roos 2008).

Red shanked-douc langur

The species occurs in northern and central Vietnam and East-central Laos reaching along the Annamite Mountain Chain southwards to the Northeast corner of Cambodia, from about 19°40' to 14°20' N (Nadler et al. 2003; Rawson & Roos 2008; Nadler & Brockman 2014). The largest population, representing the stronghold of the species, is found in Central Laos within the Nakai-Nam Theun National Protected Area (Coudrat 2013; Coudrat et al. 2013; Coudrat et al. 2020). The population in this area was estimated to comprise about 4,400 groups, which makes with an estimated average of 13 individuals/group (Coudrat et al. 2013) a population of about 57,000 individuals. Populations in Vietnam are small and highly fragmented (Nadler et al. 2003; Nadler & Brockman 2014). The largest populations in Vietnam exist probably in Phong Nha-Ke Bang National Park, Quang Binh Province, with a maximum of 2,000 Individuals (Haus et al. 2009), and on Son Tra Peninsula, Danang with 1,000 to 1,600 individuals (Bui et al. 2018). For several protected areas with smaller populations there are no reliable population numbers available.

Grey-shanked douc langur

The grey-shanked douc langur is the last discovered douc langur species with the scientific description in 1997 (Nadler 1997). The species occurs in fragmented and partly in very small populations between 16° to 14° N, in Vietnam from Quang Nam Province southwards to the Gia Lai Province (Nadler et al. 2003; Nadler & Brockman 2014; Ha Thang Long et al. 2020). The global population is unknown but comprises likely less than 2,000 individuals. The entire population estimated for Vietnam is about 1,450-1,700 individuals (Ha Thang Long et al. 2020). There are 14 isolated subpopulations currently confirmed. Kon Ka Kinh National Park holds the largest subpopulation with about 250 individuals. Four larger subpopulations are located in protected areas

(Kon Ka Kinh National Park, Kon Chu Rang Nature Reserve, Ngoc Linh National Park, and Song Thanh Nature Reserve) with a total of about 560-600 individuals (Ha Thang Long et al. 2020). Small populations exist across the border of Vietnam in the Southeast corner of Laos and the Northeast corner of Cambodia (Rawson & Roos 2008).

Black-shanked douc langur

Black-shanked douc langurs occur in southern Vietnam and in northeastern Cambodia in the Ratanakiri and Mondulkiri Provinces between 11° to 13°N. The largest population probably exists in Seima Biodiversity Conservation Area, Cambodia, with an estimate of more than 40,000 individuals (Pollard et al. 2007; Clements et al. 2008). In Vietnam there are several populations in isolated areas. The largest known population in Vietnam occurs in Bu Gia Map National Park, Binh Phuoc Province, with an estimated population between 1,300 and 2,400 individuals. Other strongholds for the species are recorded in Nui Chua National Park, Ninh Thuan Province, where it is estimated that there are 500-700 individuals (Hoang Minh Duc 2007; Hoang Minh Duc & Ly Ngoc Sam 2008), in Chu Prong Nature Reserve, Gia Lai Province with about 200 to 250 individuals (Nadler 2010), and in Cat Tien National Park with about 200 to 400 individuals (Cat Tien National Park 2019).

Methods

ENV case files are created in response to a trigger event, such as identification of a Facebook post involving wildlife trafficking, phone calls via the toll-free wildlife crime hotline or notifications by the media and information from police and forest protection authorities. Files contain information from a range of sources including media reports, notes from conversations with law enforcement officers and officers of the courts, and notes drawn from documentation received from the courts.

The case files differentiate between hunting and trading cases. Hunting cases relate to circumstances in which a person is apprehended 'red-handed' with hunted animals. In trading cases, live animals or carcasses are seized after they have been transferred from the hunter to the trader. Hunting cases, of course, occur only within or nearby the area of occurrence of one of the species. Hunted animals can be used by local people, though also provide a source for the trade. Unfortunately, there are not enough data available to ascertain the percentage of hunted individuals used locally compared to those supplied for the trade. Therefore, is not possible to present accurate information about local use.

Case file selection

The sample involved seizures made from January 2010 to December 2020. A total of 80 douc langur related cases are included in the study. A wildlife crime study conducted by Wildlife Conservation Society - Vietnam reported 1,504 wildlife-related cases detected and registered between 2013 and 2017. Approximately 120 cases (8%) involved primates (Wildlife Conservation Society Vietnam Program 2018). This high number of primate cases also includes other primate species and did not focus on douc langurs.

Case file analysis

Vietnam has 63 provinces and provinces are Vietnam's basic jurisdictional units. Cases recorded the province in which the seizure occurred, and this was an important variable for understanding the trade. The cases were organized into three regional clusters: northern, central, and southern (Fig. 1). The 'northern cluster' encompassed seizures made in Cao Bang, Bac Kan, Lang Son, Hanoi and Thanh Hoa. The 'central cluster' encompassed seizures made in Nghe An, Ha Tinh, Quang Binh, Quang Tri, Thua Thien-Hue, Danang, Quang Nam, Kon Tum, Quang Ngai, Binh Ding and Gia Lai. The 'southern cluster' encompassed seizures made in Dak Lak, Binh Phuoc, Dak Nong, Lam Dong, Khan Hoan, Ninh Thuan, Dong Nai, Binh Duong and Ho Chi Minh City.

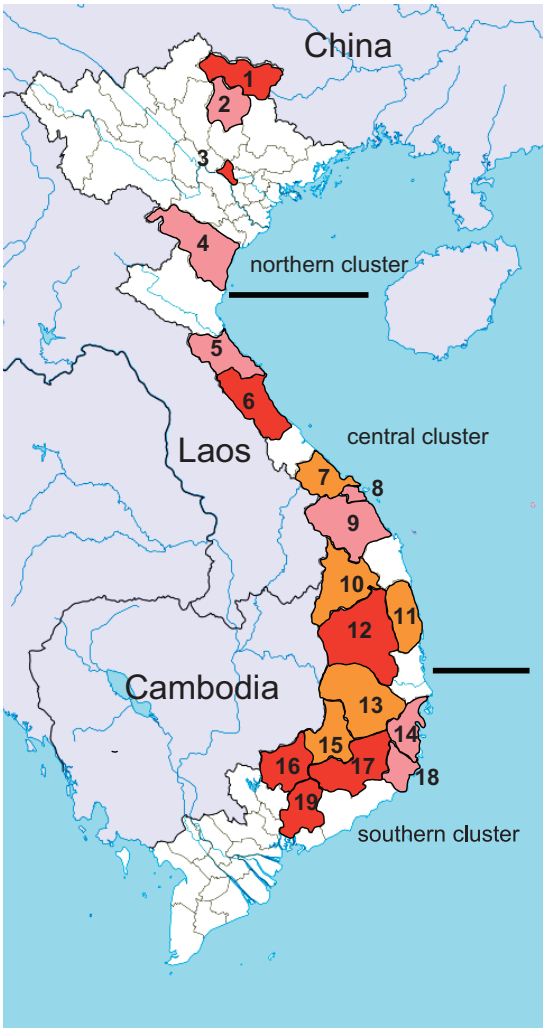

Fig.1. Confiscations of douc langurs in Vietnamese provinces.
Provinces in pink color: 2 and 3 confiscations. Provinces in orange color 3 and 4 confiscations. Provinces in red color more than 4 confiscations. Provinces in the northern cluster: 1- Cao Bang; 2- Bac Kan; 3- Hanoi; 4- Than Hoa. Provinces in the central cluster: 5- Nghe An; 6- Quang Binh; 7- Thu Thien-Hue; 8- Danang; 9- Quang Nam; 10-Kon Tum; 11- Binh Dinh; 12- Gia Lai. Provinces in the southern cluster: 13- Dak Lak; 14- Khanh Hoa; 15- Dak Nong; 16- Binh Phuoc; 17- Lam Dong; 18- Ninh Thuan; 19- Dong Nai.

Results

Number of douc langurs seized and species composition

Within the study period, 684 douc langurs were seized in 80 cases (Table 1). Black-shanked douc langurs were seized in 46 cases with a total of 560 animals, representing 82% of the confiscated douc langurs. Grey-shanked douc langurs were seized in 10 cases with 69 animals (10%) and red-shanked douc langurs seized in 20 cases with 50 animals (7%). In 5 cases 5 animals (1%) were not identified on species level.

By combining the province of seizure and the species, it is possible to identify the approximate origin of each douc langur. Qualitative data within the files often provided further details regarding the trade route. Geographical distribution of the species and province formed the basis of analysis, which developed a portrayal of the illegal trade and use of douc langurs both within Vietnam and across its borders.

Table 1. Douc langur seizures between January 2010 and December 2020 sorted by provinces.

Province	Species	No. of douc langurs seized
Northern Cluster		
Cao Bang	Grey-shanked	20
	Red-shanked	1
	Black-shanked	4
	Black-shanked	10
	Black-shanked	13
	Black-shanked	25
	Black-shanked	29
	Black-shanked	40
	Black-shanked	18
	Black-shanked	16
Bac Kan	Black-shanked	16
	Black-shanked	42
Lang Son	Black-shanked	21
Hanoi	Red-shanked	10
	Grey-shanked	5
	Black-shanked	5
	Black-shanked	20
	Black-shanked	2
	Red-shanked	2
Thanh Hoa	Black-shanked	6
	Red-shanked	2
Central Cluster		
Nghe An	Red-shanked	1
Ha Tinh	Red-shanked	1
	Red-shanked	2
Quang Binh	Red-shanked	1
	Black-shanked	10
	Red-shanked	3
	Red-shanked	1
Quang Tri	Red-shanked	1
Thua Thien-Hue	Black-shanked	1
	Red-shanked	3
	Red-shanked	1
Danang	Red-shanked	2
	Red-shanked	1
Quang Nam	Red-shanked	13
	unidentified	1
	Grey-shanked	2
Kon Tum	Grey-shanked	30
	Grey-shanked	3

	Red-shanked	2
Quang Ngai	Grey-shanked	1
Binh Dinh	Red-shanked	1
	Red-shanked	1
	Grey-shanked	2
Gia Lai	Grey-shanked	4
	unidentified	2
	Black-shanked	108
	Grey-shanked	1
Southern Cluster		
Dak Lak	Black-shanked	13
	Black-shanked	1
	Black-shanked	14
Binh Phuoc	Black-shanked	5
	Black-shanked	3
	Black-shanked	3
	Black-shanked	18
	Black-shanked	4
	Black-shanked	8
Dak Nong	Black-shanked	6
	Black-shanked	14
	Black-shanked	1
Lam Dong	Black-shanked	8
	Black-shanked	7
	Black-shanked	1
	Black-shanked	3
	Black-shanked	2
Khanh Hoa	Black-shanked	9
	Black-shanked	1
Ninh Thuan	Black-shanked	5
	Black-shanked	15
Dong Nai	Black-shanked	3
	Black-shanked	4
	Black-shanked	2
	Black-shanked	1
	Black-shanked	1
	unidentified	1
	unidentified	1
	Black-shanked	21
	Black-shanked	1
Binh Duong	Grey-shanked	1
Ho Chi Minh City	Red-shanked	1

Results according to regional cluster

Seizures occurred in 23 provinces and additional one in Hanoi and Ho Chi Minh City each. The largest number of seizures occurred in the southern cluster with 32 cases, followed by the central cluster with 27 cases and the northern cluster with 21 cases (Fig. 1).

Northern Cluster

The movement of the trade within the northern cluster was northwards. All seizures in this area were destined for China. Eight of the 10 seizures in Cao Bang Province, close to the Chinese border, comprised 155 black-shanked douc langurs. Twenty grey-shanked douc langurs had been purchased in Kon Tum Province and the subject had travelled from Kon Tum to Cao Bang. Six seizures were made in Hanoi, with a total of 44 douc langurs in transit to Cao Bang Province. Cao Bang Province is clearly a hotspot for the illegal trade to China.

Central Cluster

The central cluster cases bring supply across the border from Laos and Cambodia into the douc langur trading market. Kon Tum and Gia Lai Provinces were identified as douc langur trading hotspots and transit points. In Nghe An Province, the northernmost province in the central cluster, the trade was moving northwards. Traders from the North bought douc langurs in central provinces, which originated mostly from Laos and Cambodia. The composition of the confiscated animals in the central provinces of Vietnam show a high number of red-shanked douc langurs which originated in a large portion from the largest known population in Nakai-Nam Theun National Protected Area, Laos. The 'central cluster' is the distribution area of red- and grey-shanked douc langurs which is reflected in the species composition of the seizures. In 15 cases 34 red-shanked doucs were confiscated, in 7 cases 43 grey-shanked doucs and in 3 cases 144 black-shanked doucs, including the absolute largest seizure with 108 carcasses. Numerous cases document the use of douc langur for the preparation of "bone glue" as a traditional medicine.

For illustrative purposes, the text box summarizes the largest seizure of black shanked douc carcasses.

Largest trading case seizure

On 20th March 2013 one person bought 26 frozen black-shanked douc langurs and 82 skeletons of black-shanked douc langurs in the Dak Mil District, Dak Nong Province and in Buon Ma Thuot City, Dak Lak Province for 5 million VND per carcass with the intention to sell it in Kon Tum Province. He hired a car to transport the carcasses but was caught by police when he passed through Gia Lai Province.

Southern Cluster

All seizures in the southern cluster cases comprised black-shanked doucs. Multiple cases involve evidence of crossing the border into Cambodia for hunting to bring douc langurs from Cambodia into Vietnam. Binh Phuoc Province is where the most significant crossover of black shanked douc langur occurs, as it shares a border with Cambodia and is close to Seima Biodiversity Conservation area in Cambodia. This protected area contains the largest recorded population of black-shanked douc langurs. Dak Lak was the reported purchase location for the douc langur and is a place of interest with regards to understanding the douc langur trade. In total, 30 cases were recorded with 174 black-shanked doucs and 2 unidentified carcasses, but most probably also belonging to this species. Interesting is the seizure of one grey-shanked douc in Binh Duong Province and one red-shanked douc in Ho Chi Minh City as the doucs were being transported southwards from central Vietnam.

Development of the douc langur trade over the examined period

The confiscation of douc langurs across a period of 11 years does not demonstrate a clear trend (Fig. 2). The extremely high numbers in 2012 and 2013 reflect the confiscation of very large single shipments. It is does exclude that other large single shipments occurred during the years that were not detected. The detected and confiscated douc langurs during the last decade – with the exception of large single shipments - were between 30 and 50 individuals. This is roughly supported by confiscations figures for live animals, most of which end up at the Endangered Primate Rescue Center in Cuc Phuong National Park and are published yearly in the *Vietnamese Journal of Primatology*. During the eleven years period the center received 40 confiscated douc langurs, 17 red-shanked doucs, 20 grey-shanked doucs and 3 black-shanked doucs. Included are 24 juveniles which are still dependent on female care. It means the females of these juveniles were killed. However, despite the observed fluctuations, comparison with the data presented by Beyle et al. (2014) shows there has been an increase of the douc langur trade since 2008.

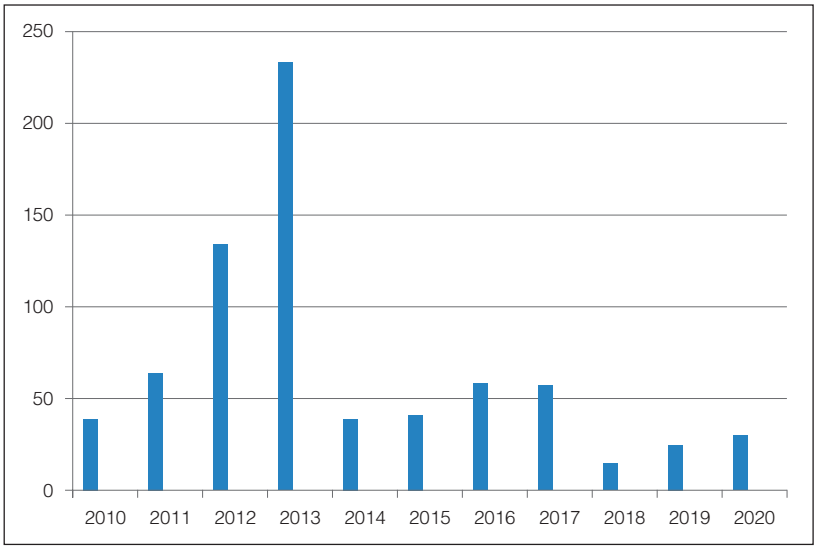

Fig.2. Number of seized douc langurs per year. The largest number in 2012 and 2013 is resulted in very large single seizures. In 2012 three seizures with more than 20 individuals and in March 2013 the largest seizure ever with 108 black-shanked douc langur carcasses.

Discussion

The black-shanked douc langur population in Vietnam is fragmented and relatively small compared to the population in Cambodia. The analysis of the 46 cases including black-shanked douc langurs shows the origin from southern Vietnam and eastern Cambodia. The fact that an estimated population in the Seima Biodiversity Conservation Area, Cambodia comprises about 40,000 individuals, strongly suggests entry points into southern Vietnam as trafficking hotspots. Seizures of black-shanked douc langurs in the northern provinces, especially Cao Bang, indicate traffickers are transiting the entire length of the country. There is evidence that black-shanked douc langurs are transported from Cambodia into Vietnam, and then moved north to Cao Bang Province towards China.

The northern central provinces of Vietnam are the distribution area for red-shanked douc langurs and are also close to the largest population of the species in Nakai-Nam Theun National Protected Area, Laos which provides a considerable number of animals to the trade. The findings related to a total of 69 grey-shanked douc langurs seized is also noteworthy. The largest seizure with 30 carcasses occurred in Kon Tum Province. Grey-shanked douc langurs also made an appearance in one Hanoi case and one case in Cao Bang.

The data analysis supports the conclusion that there are four hotspots in Vietnam. First - Binh Phuoc Province is the beginning of a trade route. Second - Kon Tum and Gia Lai Provinces operates as a trading centre for the southern provinces. These findings are based on the distribution of the seizures, and by case file data indicating the direction the subjects were heading to and/or statements made by the subjects involved. Third - the central provinces Ha Thinh, Quang Binh and Quang Tri are the main providers for red-shanked doucs to the illegal trade. Fourth - Hanoi, Bac Kan and Cao Bang form a trading corridor to China (Fig. 3).

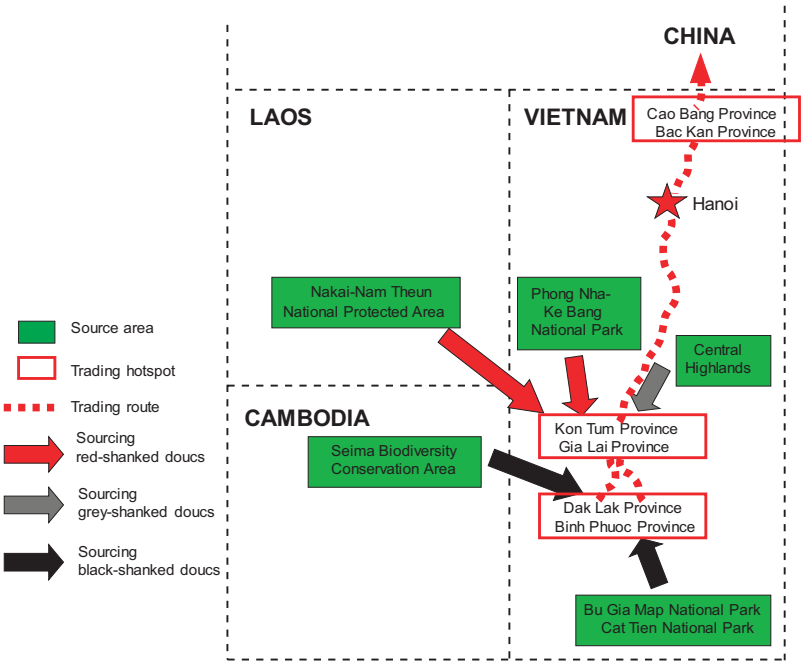

Fig.3. Schematic diagram about the douc langur sources and the main trade routes.

The appearance of confiscated douc langurs and its planned use

ENV trading case files include details regarding the form langurs were in at the point of seizure, expressed in the cases in the following terms:

- live animals
- dried and smoked langurs
- bones and skeletons
- frozen animals

Live animals are normally confiscated as single individuals (Fig. 4). A relatively high number are infants which are still dependent on female care. If a female with an infant is shot, the hunters or traders will typically try to sell the young one alive. The chance of survival for these infants is nonexistent, unless the young animal ends up at the Endangered Primate Rescue Center in Cuc Phuong National Park or at the Endangered Primate Species Centre in Cat Tien National Park (Fig. 5).

Fig.4. Adult male grey-shanked douc langur (*Pygathrix cinerea*) confiscated on the illegal trade. Photo: Voice of Vietnam.

Fig.5. Red-shanked douc langur infant before confiscation. Animals in this age don't have a chance to survive without very special food and care. Photo: Tilo Nadler.

All forms of douc langur carcasses in the trade – dried, smoked, frozen or the animal's bones – are used solely for the preparation of traditional medicine, especially to produce 'bone glue' (Fig.6). However, 'bone glue' is not prepared locally for distribution. Instead, the body parts are transported and distributed before they are processed. The reason for this practice is mistrust on the part of traders and end point consumers that bones from species of animals other than rare douc langurs may be substituted. Hence, 'bone glue' will only be accepted where there is faith in the product's authenticity. The price for 'bone glue' is about 4 to 5 million VND/kg (170 to 220 USD).

Fig.6. Confiscated red-shanked douc langur (*Pygathrix nemaeus*) hunted in Bach Ma National Park, Thua Thien-Hue Province. Photo: Bach Ma National Park.

The cases also provided evidence that douc langurs are used for taxidermy. One case involved illegal taxidermy and the seizure involved 13 stuffed animals and one black-shanked douc langur skin. There is an increasing demand of stuffed animals, despite the poor quality of the taxidermic work (Fig. 7).

Fig.7. Two stuffed grey-shanked douc langurs (*Pygathrix cinerea*) as decoration in a local restaurant. Photo: Tilo Nadler.

Recommendations

The present case study highlights that urgent actions are required to prevent the imminent extinction of all three critically endangered douc langur species. We urge implementation of the following broad strategies:

- Coordinated and collaborative enforcement activities between border police and enforcement authorities to detect and prevent hunting and trade, especially in:
  - o border areas close to Cambodia's Seima Biodiversity Conservation area (e.g. in Binh Phuoc Province) and close to the Laos Nakai-Nam Theun National Protected Area in central Vietnam.

  - trading hotspots Binh Phuoc, Gia Lai, Kon Tum, and Cao Bang Provinces in Vietnam.

- Community awareness and educational programs aiming at behavioral change, with priority in the identified trading hotspots and border areas.
- Clear elucidation about the laws and the heavy penalties for violations of the wildlife protection laws, given that the illegal wildlife trade is still broadly considered as a relatively low-risk, high-profit activity.
- The involvement of traditional medicine practitioners to support law enforcement as well as the expungement of widespread beliefs and customs associated with the purported benefits of traditional medicine derived from wild animals.

Conclusions

The hunting and trading of all three 'Critically Endangered' douc langur species is occurring at an alarming rate. It is reasonable to assume that the real number of douc langurs in the illegal trade is many times higher than the confiscations demonstrate. This is dramatic pressure on the existing populations, even for larger populations like the black-shanked douc langurs in Seima Biodiversity Conservation Area, Cambodia and the red-shanked douc langur population in Nakai-Nam Theun National Protected Area, Laos. The trend and continuously high level of confiscations also show that the current measures and activities are not sufficient to combat this illegal trade.

The methods developed and applied within this case file analysis may have utility in comparable research relating to other endangered species of fauna traded and consumed in Vietnam and across its borders.

Acknowledgements

The first author acknowledges and thanks Education for Nature Vietnam staff for their support and for sharing their expertise so generously. Sincere thanks and appreciation also go to Nguyen Thi Thùy Dung and Reem Lascelles for their excellent research assistance. A major part of this paper is based on a project funded by a Central Queensland University New Staff Funding Grant: grant number RSH4949 to which Education for Nature Vietnam made in kind contributions. Ethics approval number 0000021633.

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