



BirdLife International Vietnam Programme  
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## **The illegal wildlife and timber trade network around Chu Yang Sin National Park, Dak Lak Province, Vietnam**



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**The illegal wildlife and timber trade network around Chu Yang Sin National Park, Dak  
Lak Province, Vietnam**

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Dried Black-shanked Douc *Pygathrix nigripes* confiscated by Chu Yang Sin National Park rangers. Le Trong Trai. Chu Yang Sin National Park.

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## **Conventions Used**

Plant names, and species limits follow Tran Phoung Anh *et al.* (2007). Mammal names (common) follow Duckworth and Pine (2003) and (scientific) IUCN (2007), sequence follow Duckworth and Pine (2003) and species limits follow IUCN (2007), with scientific names given in Appendix 2. Bird names (common and scientific), sequence and species limits follow BirdLife International (2008), with scientific names given in Appendix 2. Reptile and amphibian names, sequence and species limits follow Nguyen Van Sang and Ho Thu Cuc (1996), with scientific names given in Appendix 2. Diacritical marks are omitted from Vietnamese names due to typographical limitations and the restricted understanding of international readers.

## **Glossary of Terms**

Endemic Bird Area (EBA) refers to an area supporting at least two restricted-range bird species. A restricted range bird species is one with a global breeding range of less than 50,000 km<sup>2</sup>. Globally threatened species refers to a species assigned a category of threat in the IUCN Red Lists of Threatened Animals and Plants (IUCN 2007); the term excludes species listed as Near Threatened or Data Deficient. Indochina refers to the biogeographic region of Cambodia, Laos and Vietnam.

## **Abbreviations and Acronyms Used**

CYSNP – Chu Yang Sin National Park  
FPD – Forest Protection Department  
MARD – Ministry of Agriculture and Rural Development  
IWBm – Integrating Watershed and Biodiversity Management  
EBA – Endemic Bird Area  
CR – Critically Endangered  
EN – Endangered  
VU – Vulnerable  
NT – Near Threatened  
DD – Data Deficient

## Executive Summary

Chu Yang Sin National Park, located 60 km from Dak Lak's provincial capital, Buon Me Thuot, is of global importance for conservation due to the species and habitats it protects. The National Park encompasses 59,278 ha of broadleaved evergreen forest at middle and upper altitudes. It supports all eight of the restricted-range species that define the Da Lat Plateau Endemic Bird Area (EBA), including two globally Endangered species with worldwide ranges confined to the Da Lat Plateau (Tordoff 2002). Due to its relatively remote setting, large size and difficult topography, Chu Yang Sin National Park still supports globally important populations of Black-shanked Douc (*Pygathrix nigripes*) and Yellow-cheeked Crested Gibbon (*Nomascus gabriellae*).

Unsustainable levels of hunting to supply the trade in wildlife is playing a major role in the extinction crisis and is perhaps the greatest threat to wildlife across the tropics (Robinson and Bennett 2000; Bennett *et al.* 2002; Milner-Gulland *et al.* 2003). The rate and scale of illegal exploitation of wildlife and timber has increased rapidly in Indochina in recent years, due to increasing demand from an expanding rich middle class, facilitated by a rapidly modernizing communication and transportation infrastructure throughout the region. Due to its location, Chu Yang Sin National Park has until recently, been exposed to relatively little hunting for commercial purposes and no illegal logging. However, throughout the last decade, increasing immigration of Kinh and H'mong ethnic minority groups into the Chu Yang Sin National Park area, has led to land shortages and increased competition for resources with Ede and M'ngong indigenous ethnic minority groups. In combination with the increase in demand, the presence of skilled hunters and many people with little land and low income has resulted in the extension of the commercial wildlife trade network to Chu Yang Sin National Park.

An efficient wildlife and timber trade network is currently in place employing at least 500 people in the buffer zone of Chu Yang Sin National Park, driven by the demand for wildlife and timber products in often distant urban centres. There is at least one small-scale wildlife and timber trader in each commune and village to whom local hunters rapidly sell animals and their parts. In turn, there is one large-scale trader in each district, whom together with the owners of the largest wildlife meat restaurants, buy from the small-scale traders and arrange the export of live animals and their parts to elsewhere in the province and as far away as Ho Chi Minh City. As well as these individuals, a significant number of other stakeholders currently make all or part of their income from the transport or processing of illegal wildlife and timber. This is placing considerable pressure on animal populations in the national park, for instance, each cao<sup>1</sup> maker in the buffer zone of Chu Yang Sin National Park uses approximately 350 kg of primates annually.

Despite a high level of awareness of the scale of the problem among the national park staff, the rates of hunting and deforestation appear to be increasing. Several recommendations are put forward in this report to reduce the illegal trade activities now threatening the biological integrity of Chu Yang Sin National Park. These include: improving law enforcement inside the park to combat illegal hunting and logging, capacity building of key park staff, increased co-ordination with other law enforcement agencies, and public awareness campaigns. For these

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<sup>1</sup> Cao is a glue-like substance produced by boiling down the bones of animals over a number of days until they form a gelatinous paste. It is used for medicinal purposes.



measures to be effective, district and provincial level law enforcement efforts must target the large-scale traders and restaurant owners in an attempt to disrupt the trade network that is driving the rapid loss of mammals and high-value timber from the national park.

## Executive Summary in Vietnamese

Vườn quốc gia Chu Yang Sin cách trung tâm Thành Phố Buôn Ma Thuột khoảng 60 km. Đây là khu vực có giá trị bảo tồn mang tầm quốc tế về các loài và sinh cảnh rừng. Vườn quốc gia có diện tích 59.278ha, phần lớn là rừng lá rộng thường xanh trên núi cao và núi trung bình. Vườn quốc gia là một phần của Vùng Chim Đặc Hữu của Cao Nguyên Đà Lạt (EBA), có tới 8 loài là những loài có vùng phân bố hẹp, trong đó có hai loài đang bị đe dọa toàn cầu ở mức Nguy cấp đã tìm thấy ở đây (Tordoff 2002). Hơn thế nữa, CYS với diện tích rừng rộng lớn, địa hình phức tạp tại đây đang tồn tại những quần thể của hai loài linh trưởng có ý nghĩa bảo tồn trên toàn cầu là Chà vá chân đen (*Pygathrix nigripes*) và Vượn má hung (*Nomascus gabriellae*).

Mức độ săn bắn và buôn bán động vật hoang dã đang đóng vai trò quan trọng đến sự diệt chủng và có lẽ là mối đe dọa lớn nhất đối với các loài động vật hoang dã trên phạm vi các nước nhiệt đới (Robinson and Bennett 2000; Bennett *et al.* 2002; Milner-Gulland *et al.* 2003). Trong những năm gần đây, mức độ và phạm vi khai thác bất hợp pháp động vật hoang dã và gỗ đã tăng lên nhanh chóng ở Đông Dương, lý do là nhu cầu sử dụng gia tăng của lớp người giàu có ngày càng nhiều, điều kiện thông tin liên lạc hiện đại cũng như cơ sở hạ tầng giao thông thuận lợi trên toàn vùng. Hơn thế nữa Vườn Quốc Gia Chu Yang Sin mới được thành lập, săn bắn với mục đích thương mại còn nhỏ lẻ và chưa thấy có hiện tượng khai thác gỗ bất hợp pháp. Tuy nhiên trong suốt thập kỷ qua, sự di dân ồ ạt của người Kinh, người H'Mông tới khu vực vùng đệm của VQG CYS, điều này đã dẫn đến sự thiếu hụt về đất đai cũng như cạnh tranh về chia sẻ nguồn tài nguyên với hai nhóm người dân tộc bản địa là Ê Đê và M'Nông. Thêm vào đó là tăng nhu cầu sử dụng, xuất hiện nhiều thợ săn giỏi/chuyên nghiệp và nhiều người thiếu đất sản xuất, thu nhập thấp, tất cả điều đó là kết quả dẫn đến mạng lưới buôn bán động vật hoang dã ở CYS ngày một mở rộng.

Hiện tại có khoảng 500 người trong vùng đệm của VQG CYS có liên quan đến mạng lưới buôn bán động vật hoang dã và gỗ, để đáp ứng nhu cầu về sản phẩm gỗ và động vật hoang dã cho những nơi tập trung đông người như thị thành. Ít nhất có một cơ sở buôn bán động vật hoang dã hoặc gỗ trong mỗi xã hoặc thôn bản, đây là nơi thợ săn địa phương bán các loài động vật hoang dã săn được hoặc các bộ phận của chúng. Theo đó, mỗi huyện có một cơ sở buôn bán lớn, cùng với họ là các chủ nhà hàng ăn uống phục vụ thịt động vật hoang dã, họ mua hàng từ những người buôn bán nhỏ và sau đó xuất đi những loài động vật còn sống cùng với nhiều bộ phận của động vật hoang dã cho các nơi trong tỉnh và thậm chí đi cả Thành phố Hồ Chí Minh. Ngoài ra một số lượng đáng kể những người khác đã kiếm được toàn bộ hoặc một phần thu nhập từ việc vận chuyển hoặc chế biến bất hợp pháp gỗ và động vật hoang dã. Điều này đã và đang đe dọa tới quần thể của các loài động vật ở vườn quốc gia, ví dụ những người nấu cao động vật hoang dã ở vùng đệm đã dùng tới khoảng 350 kg linh trưởng mỗi năm.

Mặc dù, mức độ nhận thức cao về mối nguy hại của vấn đề này trong đội ngũ cán bộ của vườn nhưng mức độ săn bắn và mất mát tài nguyên gỗ vẫn gia tăng. Báo cáo đã đưa ra nhiều đề xuất nhằm giảm thiểu các hoạt động săn bắn và buôn bán tài nguyên rừng đang đe dọa đến tính toàn

vện về đa dạng sinh học của VQGCHS. Các đề xuất này bao gồm: tăng cường công tác thi hành luật pháp trong vườn quốc gia để chống lại nạn săn bắn và khai thác gỗ bất hợp pháp, nâng cao năng lực cho một số cán bộ của vườn, tăng cường công tác phối hợp với các cơ quan thi hành luật ở địa phương, và chiến dịch truyền thông nhận thức cho công đồng. Để những đề xuất có hiệu quả, nỗ lực thực thi pháp luật ở cấp huyện và tỉnh phải hướng tới những người buôn bán lớn và những ông chủ nhà hàng bán thịt thú rừng nhằm phá vỡ một mắt xích quan trọng trong mạng lưới, và đây là nguyên nhân dẫn đến các loài thú và gỗ quý hiếm của vườn quốc gia giảm đi nhanh chóng.

## 1. Introduction

### 1.1 Conservation in Vietnam

The Socialist Republic of Vietnam is a relatively narrow strip running north-south along the eastern coast of the Indochinese Peninsula. The population of Vietnam is approximately 85 million people (CIA Sourcebook 2008). The country is currently undergoing an economic transition towards a more market-oriented economy. Vietnam's annual per capita gross national product (GNP) has been growing rapidly for the past decade. Economic growth, infrastructure development, population growth, protracted wars, and the development of agriculture, forestry and fishing industries, have resulted in over-exploitation of Vietnam's natural resources. The environment in Vietnam has largely been compromised: gross deforestation has been accompanied by degradation of arable land, soil erosion, destruction of water catchments, diminished groundwater sources, siltation and ecological degradation of coastal and submerged areas and a loss of overall biodiversity within Vietnam.

Due to a rapidly expanding population and an economic growth rate which has now reached over 8%, there is increasing pressure on land and resources in Vietnam. The national conservation movement now faces its greatest challenge yet: conserving biodiversity in the face of these mounting pressures. Forest is being lost due to the agricultural needs of the rural poor, whilst high value timber trees are now targeted wherever they occur, to manufacture high quality furniture for the expanding rich middle class. A concurrent trend has been the equally rapid commercialisation and expansion of wildlife trade, facilitated by an increasingly efficient transport and communications network and driven by new found wealth and a growing demand for wildlife products (WCS/FPD 2008).

Vietnam has rapidly become a key country in the Southeast Asian wildlife trade network, sourcing wildlife throughout the region as well as from Vietnam's remaining forests, to supply a growing domestic and international demand for wildlife (Compton and Le Hai Quang 1998; Nooren and Claridge 2001; Bell *et al.* 2004; Lin 2005). In Vietnam the main uses of wildlife include traditional medicine, pets, decoration, and souvenirs (Compton and Le Hai Quang 1998; Nguyen Van Song 2003; Bell *et al.* 2004). However, the primary demand is from urban wild meat restaurants associated with increasingly affluent populations, found in urban centres throughout the country (Robertson and Bell in prep.). Despite significant national and international policy controls and interventions, the wildlife trade is largely uncontrolled and unsustainable (WCS/FPD 2008).

The government of Vietnam recognised the need for conserving and rehabilitating the natural environment at the end of the 1970s, however it was not until the 1990s that the conservation emphasis moved towards protecting endangered habitats and species. Vietnam's forests are divided into three categories, of which national parks fall under the designation Special-use Forests (protected areas) and are managed by the Ministry of Agriculture and Rural Development (MARD). A countrywide analysis of protected area coverage conducted by the BirdLife International Vietnam Programme and the Forest Inventory and Planning Institute of MARD was published in 2001, and a second edition published in 2004. These analyses highlighted the global importance of Chu Yang Sin for biodiversity on a global scale.

## **1.2 The Da Lat Plateau Endemic Bird Area**

Initial surveys conducted by BirdLife International identified 218 centres of bird endemism world-wide, termed Endemic Bird Areas (ICBP 1992, Stattersfield et al. 1998). Endemic Bird Areas are areas which support at least two restricted-range bird species (species with a global range of less than 50,000 km<sup>2</sup>), and are considered to be priority areas for conservation (Stattersfield et al. 1998). Three Endemic Bird Areas were identified in Vietnam: the Southern Vietnamese Lowlands, the Da Lat Plateau, and the Annamese Lowlands.

The Da Lat Plateau is a mountainous region in the northern part of the Southern Annamite Mountains, it lies entirely within Lam Dong and adjacent Dak Lak and (probably) Ninh Tuan provinces. It is characterised by a number of mountains over 2,000 m, the highest being Chu Yang Sin at 2,442 m. The Da Lat Plateau is geographically isolated from other high altitude areas in Vietnam and as such supports a number of unique plant and animal taxa at the species and subspecies level. It is currently defined by the ranges of eight bird species and 25 sub-species, although the taxonomic status of a number of these is in a state of flux. These figures suggest that the area is a centre of active speciation. Evidence of congruence in endemism is generally deficient for other vertebrates, but in the case of the Da Lat Plateau, is shown by several species of tree and orchid.

The natural vegetation types of the Da Lat Plateau are mixed broad-leaf evergreen forest and coniferous forest. Most widespread is the coniferous forest, which is dominated by *Pinus kesiya*. However, it is the mixed broadleaved evergreen forest which supports the highest levels of endemism and species diversity. Moreover, the pine species endemic to the plateau (*Pinus dalatensis* and *Pinus krempfii*) are found in the mixed broad-leaf evergreen forest. Chu Yang Sin was identified as a priority protected area because it captures the greatest possible intact altitudinal gradient (600 - 2,440 m elevation) and the best examples of mixed broadleaved forest in the Da Lat Plateau bio-unit. An adjacent and equally large (72,573 ha) protected area (Bi Doup-Nui Ba National Park) located in Lam Dong Province to the south, was identified to represent the conifer forest type. There are no other significant areas of montane broad-leaf evergreen forest in the Da Lat Plateau bio-unit.

The Da Lat Plateau Endemic Bird Area lies immediately adjacent to the northern part of the South Vietnamese lowlands Endemic Bird Area, the birds of this Endemic Bird Area occur mainly at lower altitudes, in lowland semi-evergreen forest on the flanks of the mountains. The lower parts of Chu Yang Sin National Park support forest representative of this habitat type.

### **1.3 Chu Yang Sin National Park**

Chu Yang Sin National Park is located in Krong Bong and Lak Districts, 60 km southeast of Buon Me Thuot Town in Dak Lak Province, Vietnam. These districts encompass transitional landscapes between two macro-scale geomorphologies. These are the Dak Lak lowland plain and the central highlands. The national park consists of 59,278 ha of hill and montane forest with an altitudinal gradient of 600-2,442 m elevation. Chu Yang Sin was designated as a nature reserve by statute of the Government of Vietnam in 1986, following the first review of Protected Areas in the Indo-Malayan Realm. Although the Reserve was decreed by law in 1986, an actual Management Board (in Vietnam the term ‘board’ refers to the staff) for Chu Yang Sin S was not formed until 1998. On 31 July 2002, the Government of Vietnam upgraded Chu Yang Sin from nature reserve to national park status.

Chu Yang Sin National Park protects a substantial part of the largest remaining forest block in the upper catchment of the Srepok River, which is a major tributary of the Mekong River. Based on current knowledge, Chu Yang Sin is biologically the richest mountain in the Da Lat Plateau Endemic Bird Area; Chu Yang Sin National Park supports all eight restricted-range species that define the Da Lat Plateau Endemic Bird Area as well as two of the three species that define the South Vietnamese Lowlands EBA. Chu Yang Sin National Park qualifies as an Important Bird Area and is also of global importance, due to the size of Yellow-cheeked Crested Gibbon and Black-shanked Douc populations it supports.

#### **Landscape context**

Chu Yang Sin National Park covers a range of deeply folded hills embedded in a larger forested landscape. The transition between these highlands and the lowland plain to the northwest, is a complex of rolling hills, narrow tablelands, and flat-bottomed valleys. Lak District is a large, enclosed flat valley, while Krong Bong District is a complex of the three landscape units at smaller scales. The mountain range is a primary forest landscape. The lowland plain is an anthropogenic landscape dominated by plantation agriculture, notably coffee. The transitional landscapes of Krong Bong and Lak Districts appear to have been derivative natural landscapes up until the late 1970s. These are now anthropogenic landscapes, characterised by a mix of irrigated wet rice and diverse upland cropping.

The landscapes of Krong Bong and Lak Districts have undergone major changes since the end of the American War in 1975. Extensive dipterocarp forest and abundant big game (e.g. deer, Asian Elephant, Gaur, and Tiger) populations previously characterised the lower hill slopes and valleys. Indigenous M’ning and Ede people inhabited the area, subsisting on rain-fed rice in the valley floor and swidden agriculture on higher ground and hillsides. Their impact on forests and wildlife was limited because they lacked saws and guns. After the American War there was a general movement of people down from the hills into the valleys. Irrigated wet rice and animal husbandry was introduced to the region by the government, and as part of this process, Kinh (ethnic-Vietnamese) from central provinces, and Thai, Nung and Tay people from the northern provinces moved into the region. Commercial-scale logging of the dipterocarp forest started in 1978 and continued until 1994. Cropping activities were further concentrated following the 1993 land law, which banned shifting cultivation and granted land-use certificates (red books) to villagers, based on a 50-year lease. Consequently, hillside swiddens have been abandoned and farmers are adapting to sedentary lowland farming. In many areas of Krong Bong District, a

homogeneous band of bamboo re-growth now separates the forest of the Chu Yang Sin hills from agricultural areas.

### **Socio-economic context**

The social composition of the park buffer zone is in flux. A traditional subsistence society of M'ngong and Ede ethnic groups is rapidly transforming into a multi-ethnic and market-driven agricultural society. The human population of the buffer zone communes is close to 63,500 with approximately 12,150 households living in 13 communes and 99 villages comprising 37% M'ngong, 36% Kinh, 11% Ede and 11% H'mong. The remaining 5 percent is made up of other ethnic groups who have immigrated from the northern part of the country.

Most M'ngong and Ede village communities have made a recent transition from lowland and swidden cropping of rice and vegetables, to sedentary cropping of rice, vegetables and plantation crops, notably, coffee and cashew. However, many people are finding adoption of the more sophisticated sedentary agricultural techniques difficult and the communal decision-making structures associated with swidden systems are breaking down, due to sedentary agriculture being household-bound.

In the last ten years, agricultural productivity and incomes have generally moved beyond subsistence levels. For example, fewer people now suffer food shortages, tiled-roof houses are increasingly common, and hundreds of hand tractors are sold in the districts each year, compared with an average of ten just three years ago. Road access is also currently being upgraded; for example, the roads in Lak District, which is located along a national highway between Da Lat and Buon Me Thuot, were recently improved with a hard asphalt surface. The secondary road to Krong Bong is partially hard-surfaced as far as the town of Krong Bong; beyond this is a dirt road that is difficult to pass in the rainy season.

Since 1995, nearly six thousand spontaneous immigrants of H'mong ethnicity from northern Vietnam have settled in Krong Bong District. The H'mong migrated into northern Vietnam from China in the 19th century and have become one of the largest and most under-privileged ethnic groups in Vietnam. They practice swidden agriculture and are skilled hunters. The H'mong have a reputation for unsustainable exploitation of natural resources, although this may be in part because they originally settled marginal land in densely populated northern Vietnam. In Krong Bong District, this immigration event has increased demand for the already-limited land resources and has disrupted existing means for allocating and controlling land use.

### **1.4 The Integrating Watershed and Biodiversity Management project**

The Integrating Watershed and Biodiversity Management project begun in June 2005 with financial assistance from the Global Environment Facility. The overall aim of this project is to conserve the biodiversity attributes of Chu Yang Sin National Park in the long term, and to develop integrated watershed and biodiversity management at a broader scale. The project's purpose is to establish public support and effective management for Chu Yang Sin National Park, by stabilising an interface between natural and agricultural landscapes, protecting the integrity of key biodiversity attributes, promoting integrated approaches to watershed and protected area management in the wider forest block, and elaborating realistic and sustainable development options for the park. As part of an effort to increase the availability of information

required for effective adaptive management, the project has commissioned a series of reports, of which this is the first.

### **1.5 Purpose of investigation**

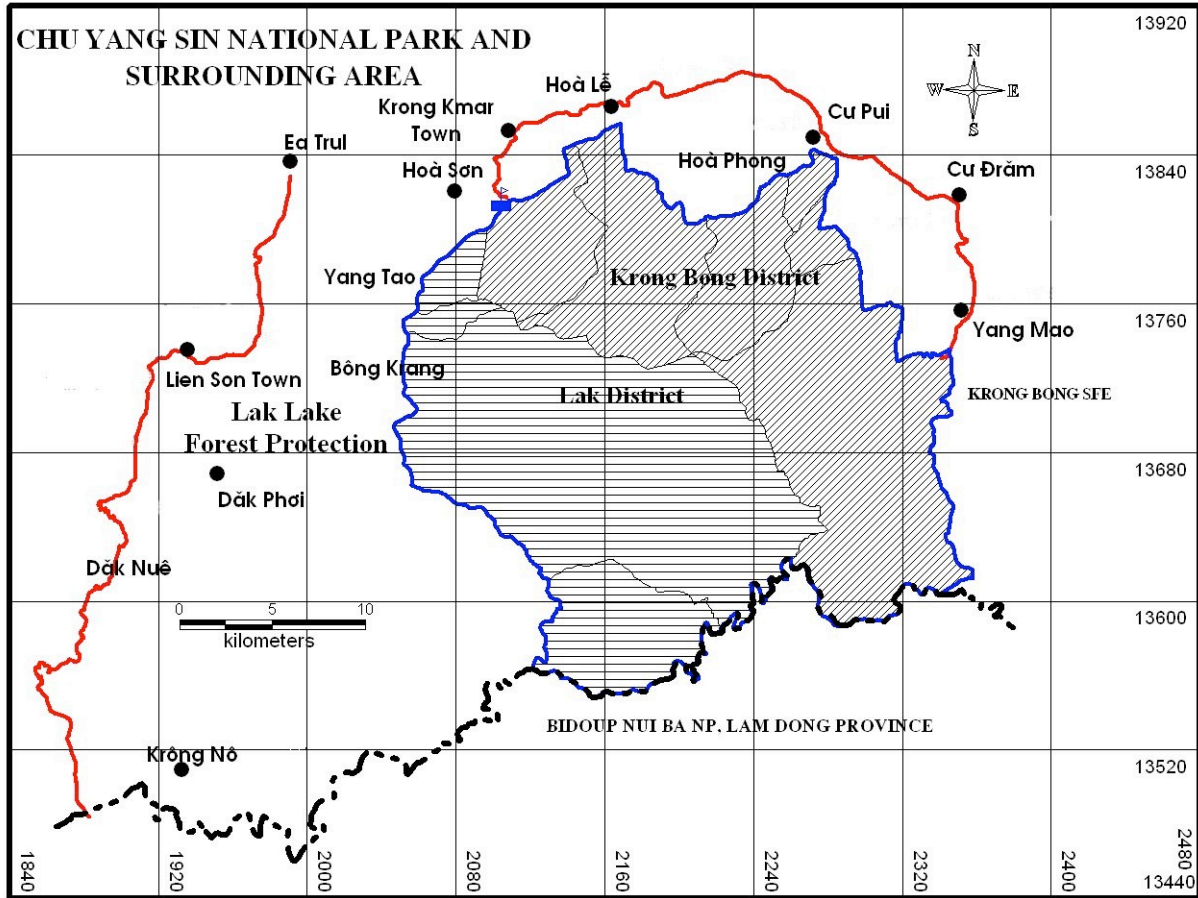
Illegal logging and hunting have been identified as two of the three main threats to the biological integrity of Chu Yang Sin National Park. Since successful conservation action relies on accurate and up-to-date information and as part of an ongoing effort to provide the data necessary for adaptive management of Chu Yang Sin National Park, this study was commissioned. This study aims to assess and document the extent of the illegal wildlife and timber trade in Chu Yang Sin National Park and the buffer zone communes. It therefore provides an invaluable tool for effective management of the national park and law enforcement in the surrounding area.

The study focuses on the stakeholders and processes employed in the wildlife and timber trade. Nonetheless, the species and quantities of wildlife detected during the survey, though only a snapshot, provide an indication of the volume and extent of illegal trade in the Chu Yang Sin National Park area. In this report, emphasis has been placed on the components and drivers of the wildlife trade. Recommendations for stopping the wildlife and timber trade in the Chu Yang Sin National Park area are proposed.

## **2. Investigation methodology**

The survey was conducted from 14 January to 5 February 2007, by a team comprising of a BirdLife Technical Support Officer, a field project officer and a number of national park staff.

Data were collected from two towns, eight communes, 12 villages, 15 restaurants and eight guard stations in the buffer zone of Chu Yang Sin National Park, covering a wide range of stakeholders involved in the wildlife and timber trade (Map 1). Due to time constraints it was not possible to specifically investigate consumers of wildlife and illegal timber. Survey effort was concentrated on people involved in hunting and trading; 142 people were interviewed, most on more than occasion (Table 1).



**Map 1. Location of towns and villages relevant to the study**

Data on trade, exploitation and consumption of wildlife, timber and other forest resources in the buffer zone of Chu Yang Sin National Park, were gathered through informal interviews. Due to the sensitive nature of the wildlife and illegal timber trade, data were collected in an undercover manner. Surveyors used one of a number of pre-arranged and rehearsed cover stories, in which members of the survey team assumed different roles. A pocket digital recorder was covertly used during conversations with hunters and traders, to avoid taking written notes. The following cover stories were used:

- A research team from Tay Nguyen University, including a teacher and one or two students. The survey team explained that data were required for a thesis or feasibility study on “development of wildlife farming or captive breeding, to provide wildlife meat for market consumption”;
- Consumers looking for wildlife meat for food and medicinal purposes;
- Traders from outside the local area or province in search of potential source areas and new networks for the wildlife trade;
- Students and teachers from Tay Nguyen University looking for timber for house construction or upgrading of the furniture in their houses.

In addition, some interviews were conducted with no cover story, through meetings with local people from buffer zone villages. These interviews were conducted by the rangers and organised through the leaders of communes and villages. The exploitation and consumption of

forest resources from Chu Yang Sin National Park were discussed, with specific attention given to assessing the number of species in trade, the volume and source of resources, harvesting practices, and economic values.

All of the information collected from interviews and meetings was then cross-checked and its validity assessed by rangers and ‘community satellites’ or ‘informants’ - local people who have made a commitment with rangers to provide information on violations in the area. A number of secondary data sources were also analysed:

- Data from forest patrols by park rangers;
- Forest protection law enforcement data from the survey area, provided by park rangers;
- Monthly and quarterly reports from the biodiversity monitoring programme, conducted by park rangers;
- Reports on law enforcement both by district Forest Protection Departments in Lak and Krong Bong Districts, and by Krong Bong State Forest Enterprises.

**Table 1. Number of people interviewed in the Chu Yang Sin National Park buffer zone during the survey period**

Location	Villagers (general)	Hunters	Small scale traders	Large scale traders	Restaurant owners	Cao makers	CYSNP rangers	managersLeaders and	Timber traders	Totals
<b>Krong Bong District</b>										
CYSNP							20			20
Yang Mao	15		3		2			2		22
Cu Dram	12	1	2		2			3	1	21
Cu Pui	9	3	2			1		1		16
Hoa Le	11			1	1				1	14
Krong Bong town	5				3					8
Hoa Son	5	1								6
<b>Lak District</b>										
Yang Tao	7		1		1				1	10
Lien Son Town			2	1	5				1	9
Dak Phoi	12		2							14
Yang Re			1		1					2
<b>Total</b>	<b>76</b>	<b>5</b>	<b>13</b>	<b>2</b>	<b>15</b>	<b>1</b>	<b>20</b>	<b>6</b>	<b>4</b>	<b>142</b>



### 3. The wildlife trade at Chu Yang Sin National Park

The wildlife trade network surrounding Chu Yang Sin National Park is complex and efficient. It allows rapid transfer of wildlife products and live animals from hunters to the final consumers through a series of traders and middlemen.

#### 3.1 Structure of the wildlife trade network

The wildlife trade network surrounding Chu Yang Sin National Park extends from buffer zone villages beyond Krong Bong and Lak Districts, to Buon Me Thuot, coastal towns like Nha Trang and even to Ho Chi Minh City (Figure 1). As such it is not just a local problem, but rather a national and probably even international issue.

In general, each village has a number of hunters and at least one small-scale wildlife trader. Each district has one large-scale wildlife trader. A similar structure is evident in the illegal timber trade. Appendix 1 lists the known stakeholders in the illegal wildlife and timber trade from each village in the buffer zone of Chu Yang Sin National Park.

This spatial arrangement means that trade chains usually begin with people situated closest to the national park and fan out towards larger and more distant centres of human population, where the greatest demand for timber and wildlife products originates. Therefore, in Chu Yang Sin National Park most hunters and trappers come from the buffer zone communes, in the villages closest to the national park in Krong Bong District. However, there are anomalies and some hunters are known to come from much further away. For instance, hunters from Hoa Thanh Commune, 20 km from the park, and H'mong hunters from Eachang Commune, MaDrak District, have been arrested by rangers in Chu Yang Sin National Park. Additionally, hunters from K'No village, Lam Dong Province, are also known to have hunted in Chu Yang Sin National Park.

Typical simple trade chains for wildlife meat and live animals in the Chu Yang Sin National Park area are shown below:

**Wildlife meat:** Hunters → Small-scale traders in villages in buffer zone communes → Restaurants in central commune towns and elsewhere in the district;

**Live animals:** Hunters → Small-scale traders in villages in buffer zone communes → Large-scale traders in district towns → Buon Me Thuot.



### 3.2 Wildlife products and their use

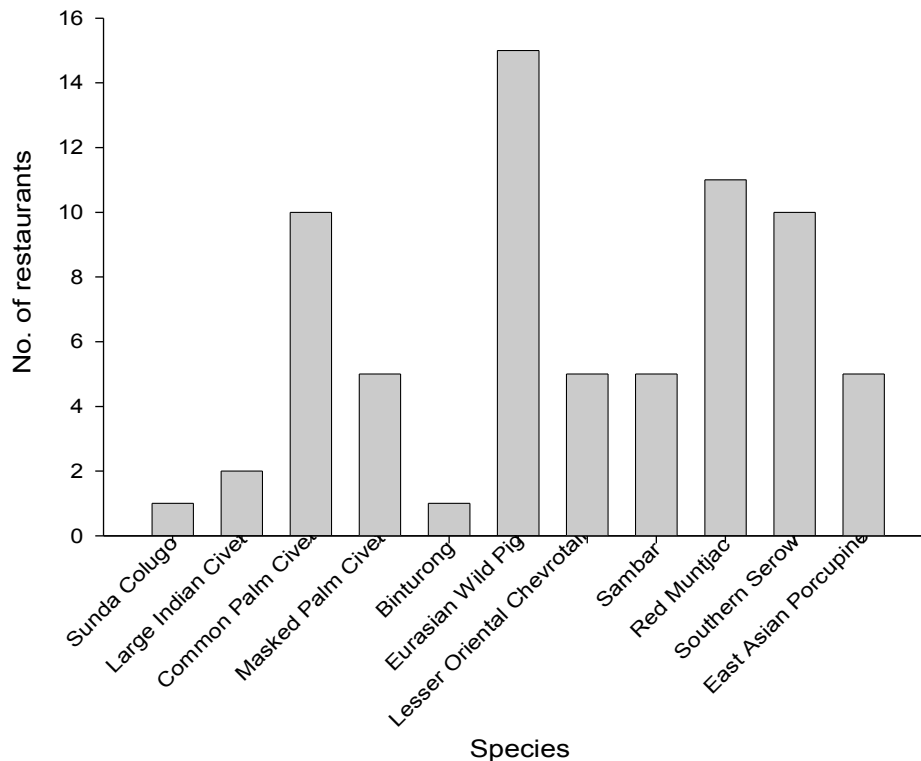
During the survey, 38 species were detected in the wildlife trade, including 21 mammals, nine birds and eight reptiles (Appendix 2). However the survey was not intended to be a comprehensive study of which species were traded, instead, this is merely a snapshot of some of the animals which were found in the trade during the four-week survey. It is likely that almost all of the 67 mammals (excluding bats), recorded from the national park are hunted and traded to some extent. Almost all vertebrate species are of some commercial value, whether for meat, trophies or perceived medicinal properties.

#### 3.2.1 Wildlife meat

The main use of hunted wildlife is for food. However, although there is some subsistence consumption, due to the high value of wildlife meat, most is traded for commercial consumption. The wildlife meats most often recorded in restaurants were Common Palm Civet (*Paradoxurus hermaphroditus*), Eurasian Wild Pig (*Sus scrofa*), Red Muntjac (*Muntiacus muntjak*) and Southern Serow (*Naemohedus sumatraensis*) (Figure 2). Wildlife meat dishes in restaurants in the study area were consistently higher priced (30-50,000 VND/dish) than domestic alternatives, as such they are luxury items and not essential for human health and well being. In addition to the species found as meat in the restaurants, the following species were recorded as live animals, destined either for wild meat farms or restaurants:

- Bear Macaque – two individuals
- Common Palm Civet - two individuals
- Eurasian Wild Pig - 30 live individuals of 8-15 kg weight sold to trader from Binh Phuoc Province, one individual confiscated by Chu Yang Sin National Park rangers
- East Asian Porcupine - five individuals
- Asian Brush-tailed Porcupine – two individuals
- Bamboo Rat - three individuals

Wildlife meat is most commonly consumed by small groups of 2-5 people. However, wildlife meals are also very popular with large parties where they are consumed as a show of status. End of year parties for most government departments at district level often feature wild meats. For instance, the District Education Department end of year celebration in 2006 had Eurasian Wild Pig on the menu and rangers reported that a wedding party in Krong Bong town around the same time also had a dish of wild pig meat for each table. Additionally, during the survey a policeman was observed buying wildlife meat at a restaurant for his trip to Buon Me Thuot.



**Figure 2. The abundance of wild meats in restaurants in the buffer zone of Chu Yang Sin National Park during the survey**

### 3.2.2 Wildlife in medicinal balm (cao) and alcohol

Parts of animals or less commonly, whole bodies, are used to produce medicinal animal bone glue known as cao. Cao is believed to effectively treat diseases and strengthen health. A cao makers' income is derived largely from making traditional alcohol (rice or cassava wine), both with and without wildlife. Cao is consumed locally and is traded outside of the village or commune where it was produced.

Cao makers produce two kinds of wildlife cao: *cao toan tinh*, which is produced from the meat and bones of animals, and *cao xuong*, which is made only from bones. Animals that are used in the production of cao xuong include primates, Southern Serow, pythons, bears and large cats. *Cao toan tinh* is primarily produced from primates such as macaques, doucs, and gibbons, as well as pythons and occasionally Southern Serow. Typically, approximately 30 kg of primates produce one batch of cao. During the survey, 44 dried Black-shanked Doucs totaling 120 kg in weight which were destined to be made into cao, were confiscated by Chu Yang Sin National Park rangers.

Many different animals but snakes in particular, are pickled in alcohol for sale in restaurants. Bottles containing wildlife or animal parts in alcohol were seen in all restaurants visited during the survey, indicating the magnitude of the demand for wildlife for medicinal purposes. The following species were recorded pickled in alcohol during the survey:

- Asian Black Bear - eight paws in four 10 litre bottles of alcohol;
- Sambar - one foetus in alcohol;
- Southern Serow - one foetus in alcohol;
- Greater Coucal – five individuals in five bottles of alcohol;
- Tokay Gecko - over 100 individuals in three bottles of alcohol;
- King Cobra - three individuals in three bottles of alcohol;
- Indian Cobra - 11 individuals in 11 bottles of alcohol;
- Radiated Rat Snake - five individuals in five bottles of alcohol;
- Indochinese Rat Snake - three individuals in three bottles of alcohol;
- Banded Krait - five individuals in five bottles of alcohol.

### **Profile of a Cao maker**

**Address:** Phung village, Cu Pui Commune, Krong Bong District

**Source of Income:** Making cao since 1980, some small-scale trading

**Method:** In the last two years, from July to February, he produced 1-3 batches of cao per month, each batch taking about five days to produce. Each batch contains about 30 kg of primates, equating to 4-6 individuals.

**Species used:** Bear Macaque, Long-tailed Macaque, Black-shanked Douc, Yellow-cheeked Crested Gibbon, Southern Serow, Sun Bear, Clouded Leopard and pythons.

**Source of animals:** Local hunters, including E'De living nearby and H'mong in Cu Pui, Yang Mao and Yang Hanh communes, Krong Bong District.

#### **Price of products:**

Cao produced from primates: 30-35,000 VND per 100 g;

Cao produced from Southern Serow: 50-80,000 VND per 100 g;

Cao produced from pythons: 70-100,000 VND per 100 g.

**Example of trading activities:** On one occasion he bought a pangolin of 5.2 kg in weight for 3.2 million VND and then sold it on to a trader in Buon Me Thuot.

### **3.2.3 Wildlife as trophies and status symbols**

During the survey, several bird species and one mammal species were found in captivity as pets. Gibbons are kept caged as pets, by their captors, or sold on to live animal traders for the novelty pet trade. If they die during capture or transport they are sold on for use in traditional medicines. The bird species kept as pets are generally well renowned for their beautiful songs. The following species were recorded as pets:

- Yellow-cheeked Crested Gibbon - three individuals;
- Spotted Dove – 15 individuals;

- White-rumped Shama – three individuals;
- Red-whiskered Bulbul – 20 individuals;
- Black-throated Laughingthrush – five individuals;
- Hill Myna – one individual;
- Crested Myna – one individual.

Stuffed animals and parts of animals, especially horns and frontlets with antlers, were seen displayed as decorations or status symbols in restaurants and houses. The following species were recorded as trophies or status symbols:

- Sunda Colugo - one skull;
- Large Indian Civet - three tails at houses of buffer zone residents;
- Binturong - two tails at a restaurant;
- Eurasian Wild Pig - three skulls at houses of buffer zone residents;
- Sambar - 16 trophies;
- Gaur – three trophies;
- Southern Serow – 11 trophies;
- Crested Argus - feathers seen at houses of buffer zone residents;
- Silver Pheasant - tail feathers and feet seen at houses of buffer zone residents;
- Water monitor - three stuffed specimens.

### 3.3 The economic value of wildlife products

At all levels in the wildlife trade network, wildlife is traded in exchange for money. There is considerable variation in price both between species, and within species and between living and dead specimens. Furthermore, for some species, different parts of an animal have different monetary values depending on perceived medicinal properties or their value as a status symbol. Table 2 presents prices of different species and their parts, as assigned by traders based on prices in Buon Me Thuot at the time of the survey. Prices of animals and their parts fluctuate, primarily in relation to the season, which affects the ease of catching animals. In general, prices during the dry season are higher than during the rainy season.

Prices of animals increase rapidly with distance from the source. Informants told of a Kinh trader in Yang Mao who during Tet 2005 bought a bear *sp.* for 2 million VND from an E'De hunter, and then sold it on to a trader in Buon Me Thuot for 26 million VND.

**Table 2: Prices for living animals, their meat and parts in early 2007 in Buon Me Thuot, based on data collected from traders in the buffer zone of Chu Yang Sin National Park**

Species/part of species	Price of meat and parts	Price of live animals
Pangolin <i>sp.</i>		700-900,000 VND/kg
Slow Loris		30-40,000 VND/kg
Macaque <i>sp.</i>		20-30,000 VND/kg
Macaque <i>sp.</i>	30,000 VND/bile	
Yellow-cheeked Crested		3.5 million VND for a

Species/part of species	Price of meat and parts	Price of live animals
Gibbon		tamed individual
Yellow-cheeked Crested Gibbon	150,000 VND one individual's bile	
Bear sp.	15 million VND/100 grams of bile	
Common Palm Civet		160-280,000 VND/kg
Eurasian Wild Pig	100,000 VND/kg (meat)	100,000 VND/kg
Lesser Oriental Chevrotain	60,000 VND/kg	
Sambar	80-100,000 VND/kg (meat)	
Sambar	7-8 million VND for a set of antlers (trophy)	
Red Muntjac	80-100,000 VND/kg (meat)	
Southern Serow	100,000 VND/kg (meat)	
Southern Serow	1 million VND for a set of four legs, bile and testicles	
Southern Serow	30,000 VND/kg (dried bone)	
Southern Serow	400,000 VND one individual's bile	
Southern Serow	100-150,000 VND head and neck	
Porcupine sp.	120-140,000 VND/kg	130-140,000 VND/kg
Black-throated Laughingthrush		50,000 VND each
Hill Myna		200-300,000 VND each
Black-collared Starling		150,000 VND each
White-rumped Shama		20,000 VND each

## 4. Stakeholders in the wildlife trade

Three main groups of people, totaling 346 individuals (listed in Appendix 1), have been identified by rangers as stakeholders in the illegal trade in wildlife, in the buffer zone of Chu Yang Sin National Park (see Table 3).

**Table 3: Summary of stakeholders in the wildlife trade**

Group	Stakeholders
Hunters	Full-time hunters who derive all of their income from hunting Part-time hunters who supplement their income by hunting Opportunistic hunters and trappers
Wildlife traders	Large-scale traders Small-scale traders Cao (medicine) producers
Restaurant owners	Restaurant owners (most also act as wildlife traders)

## **4.1 Hunters**

Hunters provide the animals for the wildlife trade. In terms of time investment in hunting, they can be divided into three categories: full-time, part-time and opportunistic, although there is little difference between full-time and part-time hunters in methods or motivation. Hunting and trapping are carried out year-round, but activities intensify from May to February. This was reflected by the number of hunters encountered and arrested during patrols by the park's rangers. Although most hunters do not specialise in any particular species or species group, a minority obtain all or most of their living from a few species. For instance, traders report that there is one man who has specialised in hunting otters in remote areas of Chu Yang Sin National Park, catching otters of 10-15 kg in weight and selling each skin for 10 million VND.

### **4.1.1 Full-time hunters**

Law enforcement data indicates that professional full-time hunters are the primary threat to the wildlife of Chu Yang Sin National Park. These hunters hunt for commercial purposes, to supply animals, meat and their parts for the wildlife trade. Almost all of the known full-time hunters are H'mong, and of H'mong hunters, most are full-time. The H'mong people who live around Chu Yang Sin National Park are concentrated in three villages: Yang Hanh in Yang Hanh Commune, Eablang and Eaba in Cu Pui Commune. A number of others inhabit Eachang Commune, MaDrak District. In Cu Pui and Cu Dram communes there are thought to be 15 groups of H'mong hunters, totaling 88 individuals, which comprise 35% of the 251 known hunters in the area. There are also six groups of H'mong hunters in Yang Hanh Commune and two full time hunters in Yang Mao and Cu Dram villages.

Although hunting and trapping activities provide the main source of income for full-time hunters, some will spend a small proportion of their time undertaking farm work, since they consider money earned from hunting insufficient to meet their needs. However, with the exception of two hunters in Yang Mao and Cu Dram, H'mong hunters have no farmland for agriculture or additional income (Chu Yang Sin National Park 2007).

Full-time hunters usually hunt in groups of three to six and often use dogs to increase their efficiency. For instance, six H'mong hunters accompanied by six dogs were recorded by a survey team in the Dak Gui area of Chu Yang Sin National Park, in June 2006 (Le Trong Trai and Chu Yang Sin National Park 2006). They hunt primarily in the core zone and remote areas of Chu Yang Sin National Park, where they are very familiar with the forest and the locations of animals at different times of the year.

### **4.1.2 Part-time hunters**

Two-thirds of the hunters in the Chu Yang Sin National Park area are part-time. Unlike full-time hunters, part-time hunters still rely on farming as their main source of income. Most part-time hunters belong to native ethnic minorities (M'ngong and Ede), although a few are from other ethnic minority groups which have moved into the area since the American War, such as the Tay, Nung, Muong and Thai. These people usually live on marginal land close to forested areas such as Chu Yang Sin National Park, Krong Bong and Lak State Forest Enterprises, Lak



Landscape Protection Forest Area, as well as in the buffer zone of Bi Doup Nui Ba National Park in Lam Dong Province.

Traditionally, these people obtained supplementary resources from the forest for subsistence purposes and would trap animals such as wild pigs, macaques, and porcupines around their fields, in an effort to protect their crops and for food. Now however, they actively hunt, both to provide their families with meat (e.g. of Sambar, Red Muntjac or Eurasian Wild Pig) and for the live animal trade (e.g. pangolins, pythons and other snakes). Dead or injured animals caught to supply the live animal trade are usually sold to restaurants, with the exception of injured or dead macaques, Black-shanked Doucs and Yellow-cheeked Crested Gibbons, which are dried and usually sold tocao makers in nearby villages. E'de ethnic minority people are known to be particularly expert hunters of bears, which are then traded to small and large-scale traders.

Hunting and trapping activities of this group are concentrated in the wet season, from July to February. During the hunting season and when they have free time after the harvests, groups of two to four men hunt in the forest for four to seven days at a time. The amount of time spent in the forest depends on the number of traps that have been set and the distance between trapping locations.

As with professional hunters, part-time hunters are very familiar with the forest and the locations of certain animals at particular times of the year. They therefore plan their hunting trips around this experience and knowledge.

#### **4.1.3 Opportunistic hunters**

People from this category live in every village and commune both inside and outside the Chu Yang Sin National Park buffer zone. These individuals do not enter the forest specifically to hunt wildlife. However, when they find tracks of animals in agricultural areas, most villagers will set traps or snares to catch them, to provide supplementary food for their families and neighbours. The species most commonly hunted by this group are Eurasian Wild Pig, Red Muntjac and Bear Macaque.

**Profile of a full-time hunter TC "Appendix 1:" \f C \l "1"**

**Address:** Cu Dram village, Krong Bong District

**Source of income:** Hunting in Chu Yang Sin National Park

**History:** Arrested on more than one occasion by Chu Yang Sin National Park rangers

**Hunting locations:** forest in the south-west of Chu Yang Sin National Park and adjacent to the Krong Bong River in compartments 1243, 1238, 1239, 1233 and 1233.

**Hunting season:** Year-round with guns and snare trapping in the rainy season.

**Hunting methods:** No more than 2-3 days are spent in the village between hunting trips. Trips are undertaken with two other men and typically last 7-10 days if many new traps need to be set. Otherwise, no more than 2-3 days are spent in the forest on a single trip for checking traps. Live animals and meat are sold to small-scale traders.

**Hunted animals:**

From June 2006 to January 2007 he hunted or trapped the following species:

Burmese python *Python molurus*: one individual weighing 8 kg, sold to rattan collectors in the forest at a price of 15,000 VND/ kg;

Southern Serow *Naemorhedus sumatraensis*: two individuals and one skeleton collected in the forest (the skeleton was found in an old trap);

Wild Pig *Sus scrofa*: five individuals;

Common Palm Civet *Paradoxurus hermaphroditus*: five individuals;

Muntjac *Muntiacus muntjak*: four individuals;

Bear Macaque *Macaca arctoides*: five individuals;

Black-shanked Douc *Pygathrix nigripes*: seven individuals.



**Photo 1: Confiscated dried Black-shanked Doucs**

## **4.2 Traders**

Hunters rely on a network of traders to provide a market for the animals, meat and animal parts they obtain. Traders act as middlemen to arrange the buying, selling and transport of wildlife. These traders can be separated according to the spatial scale at which they operate: small-scale and large-scale traders. Small-scale traders buy wildlife or wildlife parts directly from hunters and operate at the village and commune level. Large-scale traders usually buy from small-scale traders and operate at the district level. Both communicate and arrange transfers by fixed telephones (land lines) and mobile phones. Based on law enforcement data, it appears that most transport of wildlife and wildlife products is by individuals specifically contracted by hunters or traders. On very rare occasions, small-scale traders or hunters transport wildlife directly to restaurants or to large-scale traders. In contrast to restaurateurs, cao makers buy animals directly from hunters, who either bring wildlife to the cao makers or sell it from their homes.

### **4.2.1 Small-scale traders**

At least 75 individuals who could be considered small-scale traders are involved in the illegal wildlife trade, in the buffer zone of Chu Yang Sin National Park. The survey identified 68 traders in Krong Bong District and seven in Lak District, although survey effort was higher in Krong Bong District. In Krong Bong District there is at least one small-scale trader operating in each village in the buffer zone (Appendix 1). Only 10% of these traders are H'mong, the rest are from indigenous ethnic minorities. Small-scale traders buy wild animals and wildlife meat from hunters, to supply restaurants in the central commune or district town. In addition, more than one trader is active in the centre of each commune or district town, often a restaurateur. Most live animals are sold on to large-scale traders in Buon Me Thuot City.

During the survey, 13 small-scale traders were interviewed. Traders in villages, central communes and towns were very familiar with all aspects of the wildlife trade and willing to discuss it. They freely gave information on prices of different species, stakeholders of the trade, and consumer requirements and preferences. For most of the small-scale traders interviewed, live animals (mainly civets, pangolins, primates and snakes) and wildlife meat are their main business. Most wild meat traded comes from Eurasian Wild Pig, Sambar, Red Muntjac and Southern Serow, with smaller quantities of Lesser Oriental Chevrotain and porcupines.

### **4.2.2 Large-scale traders**

There are two individuals who could be considered large-scale wildlife traders in the buffer zone of Chu Yang Sin National Park, each operating in one district of the buffer zone. One operates out of Lak town and the other operates from Krong Bong District. In the 1990s, they were small-scale traders who bought and sold wild animals to other traders in Buon Me Thuot. However, in the last ten years, their business has increased and they have become the key familiar agents for many small-scale traders and hunters in the area. Live animals and wildlife meat from these large-scale traders are supplied to local restaurants, traders, and restaurants in Buon Me Thuot. On some occasions, traders in central Lak District have extended their networks to Da Lat City and Ho Chi Minh City. For instance, in July 2006, a trader from Binh Phuoc Province bought 30 live wild pigs of 5-15 kg at 100,000 VND/kg, to start a wildlife farm near Ho Chi Minh City.

Of the large-scale traders interviewed, both wives and husbands are involved in the business. They reported that their business has become less profitable and more difficult over the last two to three years. They attribute this decline to a number of factors, although they consider that the most important are the shrinking populations of wildlife in the forest which lead to less successful hunting and trapping, and increasing law enforcement by Chu Yang Sin National Park rangers, especially in the period immediately before and after Tet (Lunar New Year), from December to March.

### **Profile of a restaurateur and wildlife trader TC "Appendix 2:" \f C \l "1"**

**Address:** Village No: 9, Hoa Le Commune, Krong Bong District

**Source of income:** Restaurant and trading in wildlife

**History:** Prior to 2004 he organised the trade of wildlife between Krong Bong and Buon Me Thuot. He was arrested by Chu Yang Sin National Park rangers many times and appeared in court, where he was sentenced to a few years' probation. He is now a large-scale trader within Krong Bong District; he buys live animals and wildlife meat from local hunters and small-scale traders in the buffer zone of Chu Yang Sin National Park. He supplies wildlife to restaurants across the district and he is currently expanding his business again by supplying wildlife to restaurants in Buon Me Thuot.

At the time of the visit by the survey team there was a variety of wildlife meat in the freezer at his restaurant:

- 3 kg of meat of Small Palm Civet;
- 2 kg of meat of Southern Serow;
- 2 kg of meat of Eurasian Wild Pig;
- 2 kg of meat of porcupine;
- 1.5 kg of meat of Binturong.

The selling price of his wildlife dishes is 45-50,000 VND per dish (about 0.2-0.3 kg of meat). The price for some species is as follows:

Eurasian Wild pig (fresh meat):	100,000VND per kg
Eurasian Wild pig (dried meat):	120,000VND per kg
Muntjac (fresh meat):	80,000 VND per kg
Southern Serow (fresh meat):	90-100,000 VND per kg
Sambar (fresh meat):	80,000 VND per kg
Porcupine (fresh meat):	60-70,000 VND per kg
Southern Serow bones:	30,000 VND per kg (for medicinal use)

**Example of trading activities:** In November 2006, he sold four wild pigs of 8-15 kg each to a trader from Binh Phuoc Province at 100,000 VND per kg. He said that these could have been sold for 300,000 VND per kg in Ho Chi Minh City.

#### **4.2.3 Restaurateurs**

Most live animals and wildlife meat are supplied by local hunters or small-scale traders to restaurants. Live animals are killed to be served as food in restaurants or sold live to traders in Buon Me Thuot City. Many restaurateurs are therefore traders themselves, and in common with traders they usually contract other people to bring wildlife to them, although on occasion, they will buy and transport wildlife themselves. Communication between restaurateurs and local hunters or traders occurs through fixed telephones (land lines) and mobile phones. In what is likely to have been a typical exchange, during the survey a conversation was heard between a hunter and a restaurant owner in Krong Bong town. The hunter had a civet which he wanted to sell to the owner of the restaurant, but was afraid to deliver the animal. Finally, an appointment was made at a cafe for the sale. However the outcome of the transfer was never determined since the interview ended before it took place and the survey team left the location.

In the buffer zone of the park, a total of 16 restaurants are known which serve wildlife meat or alcohol containing or made from wildlife products. At least one restaurant that serves wildlife meat is located in the centre of each commune and more restaurants are found in the two district towns: five in Krong K'Mar (Krong Bong District) and four in Lien Son (Lak District). Four of the restaurants in Krong Bong District town are large, they are: Gio Nui (near the headquarters of Chu Yang Sin National Park and Krong K'Mar waterfall), Phuong Restaurant (whose owner is a district government officer), Tuyen Restaurant (in the centre of the district) and May Hong Restaurant. Buyers can either purchase dishes made of wildlife meat or take away uncooked wildlife meat, for between 90,000 and 120,000 VND/kg.

It is important to note that agreements on not selling wildlife meat were present in all restaurants visited, signed between restaurant owners and the District Forest Protection Department. The agreements were usually displayed on the wall in clear view of the cashier, but this is only a formality, because the Forest Protection Department has never checked any of the restaurants for wildlife products.

#### **4.2.4 Cao (medicinal balm) producers**

Significant quantities of animals, particularly primates, are traded to cao makers. Animals either pass directly from hunters to cao makers, or they pass through small-scale traders first. The amount of cao a cao maker will produce depends on the level of hunting activity in the area. A cao maker in Cu Pui Commune interviewed during the study reported that he produced more cao in the rainy season than the dry season, because it corresponds with the hunting season. As such, July to February is probably the time at which cao makers are most active.

## **5. Methods of hunting and trading**

### **5.1 Hunting and trapping equipment**

Hunters use both traps and guns to catch wildlife. Typically a hunter will have at least one gun and a large number of snares and box traps set in the forest.

#### **5.1.1 Traps**

Hunters use two main kinds of trap: iron or steel wire snare traps and wooden box traps. All hunters use steel wire traps, which are invariably constructed out of bicycle brake cable. Snares are therefore inexpensive, and many traps can be set in the forest on one hunting trip, with very little monetary investment. More than one piece of cable can be linked together, so snare traps can be made with a range of diameters to target either small or large animals. Hunters construct trap lines consisting of snares placed in gaps in low drift fencing, which is roughly constructed from cut brush and shrubs. The trap line is often more than 1 kilometre in length. Animals encounter the brush fence and perceiving it as a barrier, follow it to find a gap. Upon finding a gap they attempt to pass through and instead get caught in a snare. Once constructed a trap line will last for many months with limited maintenance. Hunters return to check the traps every two to three days. Wire traps cause injuries to animals' necks and feet, causing captured animals to die in the trap over two or three days. The animals most commonly caught using snare traps include galliformes, ungulates and civets. Chu Yang Sin National Park rangers report that snare traps are usually found along hill ridges and during the dry season, near water sources.

Hunters also construct box traps to catch small carnivores such as civets. Box traps are made of wood; they are usually 1-1.2 m long and 40-50 cm wide. In common with snares, they are usually placed along ridgelines.



**Photo 2: Wire snare trap**

### **5.1.2 Guns**

Each full-time and part-time hunter has at least one gun of some kind and most are home-made. A variety of firearms are utilised though, including ex-army guns, shotguns (single and double barreled) and sports guns. Home-made guns are known as H'mong guns, since the methods of their construction were first introduced to the area by H'mong immigrants. Half of the 251 hunters interviewed own more than two guns. The price of home-made guns is as little as VND 80,000.

### **5.2 Timing of hunting and trapping**

Although hunting and trapping activities in the core and buffer zone of Chu Yang Sin National Park occur year-round, there is significant seasonal variation in hunting effort. This was reflected both in the interviews with hunters and in the data on the number of law infringements recorded and confiscations made, by national park staff. From February to May, hunting activities reduce as footprints of animals become harder to find. The main hunting period is the rainy season, from June to January. These wet months are not only the favored hunting time for professional hunters, but also for part-time hunters, because this time of year is also the low season for agricultural activity. Hunters are unanimous in their opinion that this is the best period for hunting, but they state a number of subtly different reasons.

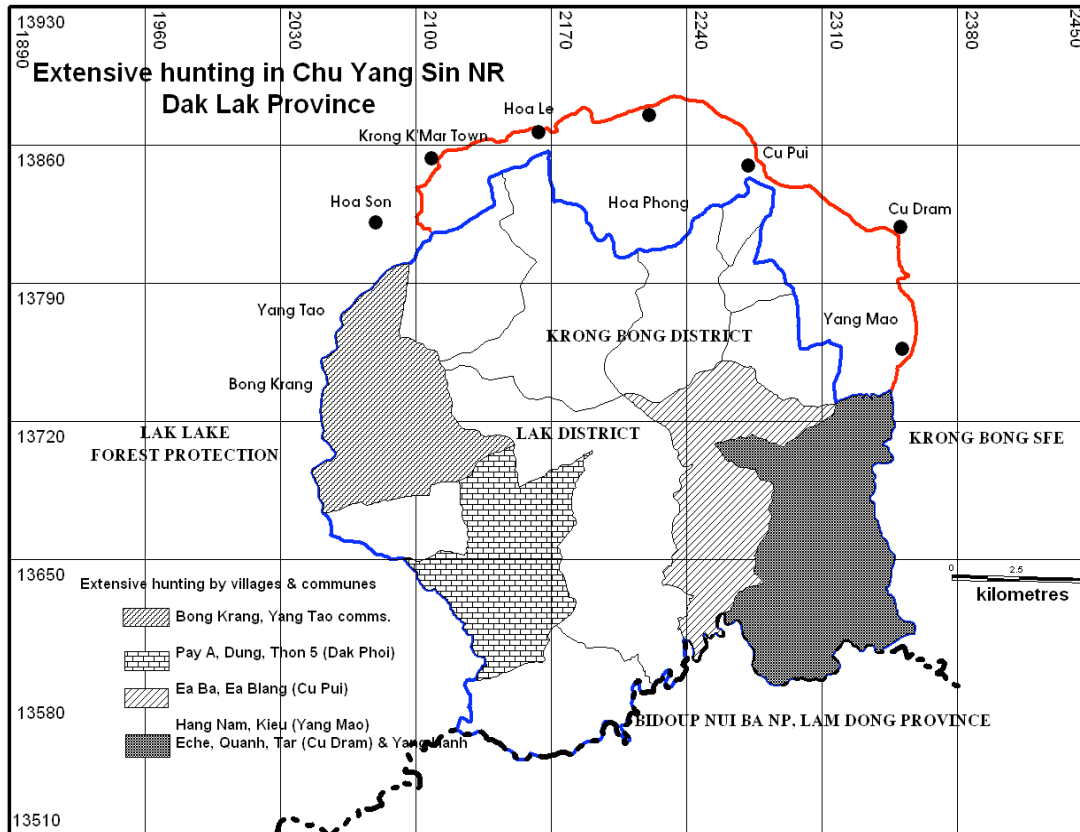
Most hunters enthused that during the rainy season, and especially from July to November, ungulates such as Sambar, Red Muntjac, Giant Muntjac, Eurasian Wild Pig and Lesser Oriental Chevrotain are easier to hunt, because their footprints are easy to find and identify. Some hunters said that in the rainy season it is common to encounter turtles feeding on the forest floor, although they note that these are not as common as they used to be. Hunters and cao makers reported that primates, particularly Black-shanked Douc and Yellow-cheeked Crested Gibbon, are easy to hunt from December to February (the end of the wet season and the beginning of the dry season). Two professional hunters from Yang Mao and Cu Dram stated that the rainy season is the best hunting season, not only because footprints are easy to find but because at this time many animals are actively feeding to build up reserves of energy for winter. These two hunters reported that during winter and early spring, bears are easy to find and hunt because at this time of year they are actively feeding and busy with their cubs.

### **5.3 Spatial distribution of hunting and trapping**

Hunters primarily exploit the areas of the park closest to where they live (Map 2.). However, on longer hunting trips, they seek out remote areas of the national park where wildlife densities are highest. Hunters have been recorded in all compartments of the national park.

Two full-time hunters from Yang Mao and Cu Dram villages and hunters from Hang Nam, Kieu, Eache, Quanh, Tar and Yang Hanh villages, concentrate their hunting activities in areas of the upper Krong Bong River. These areas cover a number of forest compartments (1226, 1227, 1233, 1234, 1238, 1239 and 1243). Hunters from Eaba and Eablang and H'mong hunters from Cu Pui and Cui Dram communes, select hunting locations in remote areas such as the Dak Gui and Dak Me streams (tributaries of the Krong No River), or areas located in forest compartments 1220, 1221, 1230, 1383 and 1398. Hunters in village No 5, Pay A and Dung villages, Dak Phoi Commune and hunters in Bong Krang Commune, Lak District, concentrate their hunting activities on forest compartment 1395 in the drainage basin of Dak Kao stream in the south of the park. Mount Chu Yang Lak and Chu Banak are hunting areas for people from Bong Krang and Yang Tao communes, in the south of the park. According to law enforcement data, H'mong hunters also come from MaDrak District to hunt and trap wildlife inside Chu Yang Sin National Park.





**Map 2. Hunting activity in Chu Yang Sin National Park**

## 5.4 Processing of hunted wildlife

Captured animals are processed in a number of ways before being traded. Trapped animals such as civets, macaques and turtles that remain alive, although usually injured, are kept in cages near to hunting camps prior to transport out of the forest. Primates are usually smoked and dried in the forest before being sold for medicinal purposes. The meat of ungulates is sometimes preserved using salt in ceramic or plastic jars, or more usually carried out of the forest still fresh to sell to traders. Salted meats are most commonly used by the families of hunters. A small proportion of animals killed in traps are consumed by hunters in the forest.

## 5.5 Transportation of hunted wildlife

Transportation of hunted animals from Chu Yang Sin National Park to buffer zone villages is most often undertaken during daylight hours. Some hunters reported that they wait until dark (often hiding somewhere in the forest) to take the animals home, or go directly to small-scale traders to sell them. On several occasions, Chu Yang Sin National Park rangers have arrested hunters with live or dead wild animals between 7-9 pm. Transportation of illegal wildlife around the buffer zone is usually performed later at night, but rangers have also arrested violators during the day.

Four means of transportation of wildlife around the buffer zone have been detected by rangers, namely: trucks, small farm vehicles, motorbikes and bicycles. Motorbikes are the most common means of transportation of illegally hunted animals. Meat and live animals from Yang Mao



Commune are often supplied to restaurants in Krong Bong district town, hidden in trucks carrying rattan, beer or soft drinks.

Transportation of wildlife is often undertaken by high ranking individuals. Chu Yang Sin National Park rangers report that government officers, including policemen and district officials, are involved in the transportation of wildlife for restaurant owners. For instance, during the survey a teacher with two civets and one pangolin was arrested and the animals confiscated by rangers of guard station no. 2.

## **6. Illegal logging and the timber trade**

### **6.1 The timber trade network**

Illegally logged timber from Chu Yang Sin National Park passes through small and large-scale traders, before being delivered to carpenters and other wood processors both locally and in Buon Me Thuot. Illegal timber follows the same trade routes and is traded by the same people as legally logged timber, making detection of illegal logging difficult.

Timber is transported between the buffer zone and Buon Me Thuot, or elsewhere in Dak Lak Province using trucks, farm vehicles, and motorbikes. Illegal timber transportation between the buffer zone and Buon Me Thuot City is undertaken during the night, whilst illegal trade in timber within the buffer zone often takes place in daylight hours, using farm vehicles. Chu Yang Sin National Park rangers report that large-scale traders often use trucks for transportation of large amounts of wood. On some occasions, large convoys of trucks full of illegally logged timber have been given police escorts, creating serious difficulties for rangers trying to stop illegal activities.

### **6.2 Timber products and their economic value**

High quality timber is used for construction and furniture making. There are eight known locations for wood processing and trade in the central communes and district towns of the buffer zone; seven in Krong Bong District and one in Lak District. Timber of various tree species was observed in these factories during the survey, including *Michelia* spp. (Gioi), *Plerocarpus macrocarpus* (Huong), *Abzelia xylocarpa* (Cate), *Syzygium* spp. (Tram do) and *Hopea* spp. (Kien Kien).

Prices of timber fluctuate depending on the species, quality of wood and time of year. *Fokienia hodginsii* is the highest value timber in the Chu Yang Sin National Park area and is used primarily for making high quality furniture pieces. Price is also dependent upon the dimensions (length, width and depth) of the piece, with larger pieces being more valuable (Table 4).



**Photo 3: Illegal logging of *Fokienia hodginsii* in Chu Yang Sin National Park**

**Table 4. Prices of selected timber products at the time of the survey**

<b>Timber product</b>	<b>Price</b>
Planks of <i>Fokienia hodginsii</i>	7-8 million VND/m <sup>3</sup>
Log of <i>Fokienia hodginsii</i> 50 cm diameter, 1.7m long	3 million VND
Bed made of two planks of <i>Fokienia hodginsii</i> each 0.8 m wide and 2.7 m long	23-24 million VND
Bed made of two planks of <i>Fokienia hodginsii</i> each 0.7 m wide and 2.3 m long	14-15 million VND
Bed (1.6 m wide and 1.9 m long) made of planks of <i>Fokienia hodginsii</i>	4 million VND per bed
Planks of <i>Michelia</i> spp.	2-2.3 million VND/m <sup>3</sup>
Planks of <i>Plerocarpus macrocarpus</i> (3 m long)	5 million VND/m <sup>3</sup>
Planks of <i>Plerocarpus macrocarpus</i> (2-2.5 m long)	3.5 million VND/m <sup>3</sup>
Planks of <i>Fagraea</i> spp	2.5-3 million VND/m <sup>3</sup>
Planks of <i>Shorea</i> spp.	6 million VND/m <sup>3</sup>
Planks of <i>Syzygium</i> spp.	1.5 million VND/m <sup>3</sup>
Planks of <i>Hopea</i> spp.	2 million VND/m <sup>3</sup>

### **6.3 Stakeholders in the timber trade**

There are three groups of people involved in illegal logging and timber trading in the buffer zone of Chu Yang Sin National Park, namely: large-scale loggers and traders, small-scale loggers and traders, and businessmen involved in wood processing and trade. There are thought to be 157 small-scale traders, two large-scale traders and 8 wood processors in the buffer zone. During the survey, four people involved in the timber trade in Krong Bong and Lak districts were interviewed about logging and the timber trade.

### **6.3.1 Loggers**

Illegal loggers are generally poor farmers contracted by small-scale traders to fell trees; they earn an average of 30-40,000 VND per day from this activity. All known illegal loggers are native indigenous M'ngong people from Tang Yang village, Yang Tao Commune and Sarong village, Brong Krang Commune, who have lived in the area close to the park since before it was established.

To fell trees they usually work in groups of up to 30 men and use a variety of tools including chainsaws (for large trees), handsaws, axes and machetes. Trees are cut into rough blocks or planks in the forest, and then transported out using domestic buffalos. However, there have been cases whereby illegal loggers used rivers and large streams, such as Krong Bong and Krong No rivers, for transporting timber.

### **6.3.2 Small-scale traders**

Most of the small-scale traders are farmers or local people who live in the buffer zone. All activities of the small-scale traders are illegal. They contract loggers to cut trees and then sell timber locally to large-scale traders, workers constructing houses, furniture makers, and other manufacturers. Although they are active year-round, they are most busy during a period of three months before Tet, from December to February.

### **6.3.3 Large-scale traders**

There is one large-scale trader in Krong-Bong District and one in Lak District in the buffer zone of Chu Yang Sin National Park. Their primary income is from the trade in timber, both legal and illegal. They trade large quantities of wood through their contacts in the trade network, from small-scale traders to other large-scale traders outside 'their' area. Based on their external contacts, they also contract small-scale illegal loggers and traders to gather timber to order. In addition, they buy timber from District Forest Protection Department and State Forest Enterprises. The legality of actions and transactions by large-scale traders and timber trade businessmen depends upon whether specific timber consignments have come from legal or illegal sources.

## Profile of an illegal timber trader TC "Appendix 4:" \f C \ "1"

**Address:** Yang Tao commune, Lak District

**Source of income:** Organiser of illegal logging and trade in timber, contract carpenter

**History:** Timber trader and carpenter since 2000

**Species logged and traded:** *Fokienia hodginsii* (Po Mu), *Pterocarpus macrocarpus* (Huong) and *Shorea falcate* (Chai). *Fokienia hodginsii* only occurs in the core zone of Chu Yang Sin National Park, the two other species are also found in the buffer zone.

**Business methods:** Contracts for timber are received from consumers from the two main villages of Yang Tao and Bong Krang communes, Lak District in the buffer zone of Chu Yang Sin National Park and from large-scale traders in Buon Me Thuot City. Due to his good relationship with leaders at commune and district levels, his business is successful and operates without risk. Since he has started his business, rangers have never confiscated anything from him.

### Recent contracts:

**1. The Sap** Recently, his main product has been a high quality bed made of *Fokienia hodginsii*, called a 'Sap', which is made from just two planks of wood. He makes two sizes of sap, one comprised of two planks 2.7m long, 0.8m wide and 0.2m thick, and a smaller one comprised of two planks 2.3m long, 0.7m wide and 0.2m thick. These beds are sold to customers both within Dak Lak Province and in other provinces in the coastal region, such as Nha Trang.

**2. Timber for wooden jars** At the time of interview, he was under contract from a policeman in Buon Me Thuot to log *Fokienia hodginsii* for making wooden jars. Two *Fokienia hodginsii* logs were in his house, each was 0.5m diameter and 1.7m long. He was also under contract to supply *Pterocarpus macrocarpus* and *Shorea falcate* for house construction and making furniture.

## 6.4 Spatial distribution of illegal logging activities

Illegal logging occurs in three main areas in and around Chu Yang Sin National Park:

1. Core zone of Chu Yang Sin National Park;
2. Buffer zone of Chu Yang Sin National Park where forest areas have been allocated to local stakeholders, including local communities and groups of households in the buffer zone, following Government Decision 178;
3. Lak and Krong Bong State Forest Enterprises and Lak Landscape Protection Area.

### 6.4.1 Illegal logging inside Chu Yang Sin National Park core zone

In the last few years, illegal logging of *Fokienia hodginsii* (Po mu) has begun in the core zone of Chu Yang Sin National Park. Logging effort depends upon market demand; it is currently increasing due to greater demand from traders in Lak District. Local informants indicate that traders from Quang Nam Province have visited the buffer zone and contracted local illegal loggers to look for *Dalbergia tonkinensis* (Huynh dan), another species with high commercial

value. Although quantities are not known, it appears that timber of this species has been logged and transported out of Chu Yang Sin National Park in recent years.

#### **6.4.2 Illegal logging in the buffer zone of Chu Yang Sin National Park**

Illegal logging in the buffer zone of Chu Yang Sin National Park is widespread, predominantly taking place in forest areas allocated to local households, under forest protection contracts. This indicates problems with the interpretation or enforcement of the forest protection contracts. Local people from Hoa Son and Eatrul communes, who are not eligible for contracts, have entered areas allocated to other households and illegally felled *Michelia* spp. (Gioi). This practice was particularly intense in January and February 2007, during which time Chu Yang Sin National Park rangers encountered a group of 25 men from Hoa Son, cutting timber illegally in the buffer zone. Timber from the buffer zone is sold locally and to other districts such as Krong Ana (near Krong Bong and Buon Me Thuot City).

#### **6.4.3 Illegal logging in State Forest Enterprises and Lak Lake Landscape Protection Area**

One incidence of illegal harvesting of *Fokienia hodginsii* by people from Cu Dram and Yang Mao communes was recorded in Krong Bong State Forest Enterprise in January 2007. A total of 30 trees were cut, totaling 60 cubic metres of wood. Local enforcement authorities suspected that someone with political power had supported this illegal activity. Several trees in the other forest management units have also been illegally felled, for local consumption and commercial purposes by people from buffer zone communes, such as Bong Krang, Yang Tao and Dak Phoi.

### **7. Non-Timber Forest Products (NTFPs)**

Two main non-timber forest products are collected and traded in the area; medicinal plants and rattan. Since this survey concentrated on the illegal wildlife and timber trade, information gathered on their collection and trade was limited.

#### **7.1 Medicinal plants**

Residents of the buffer zone reported that all medicinal plants used locally are collected in Chu Yang Sin National Park. Additionally, medicinal plants are collected by local people for sale to traders in central Cu Dram Commune. Due to the timing of the survey there was no opportunity to interview these traders, who only visit the commune occasionally.

#### **7.2 Rattan**

Rattan collection and trade is considered a legal activity because local people have been issued licenses to conduct these practices, by the Provincial Department of Agriculture and Rural Development (DARD). However, local people collect rattan throughout the Chu Yang Sin National Park P buffer and core zones, including in the strictly protected zone where according to national protected area legislation, it is illegal to collect any non-timber forest products.

Records show that in Krong Bong District, 24 tons of rattan of three species, (*Calamus tetradactylus*, *C. poilanei* and *Calamus* sp.) were collected in 2006-2007. Of this,:

- 50% was Song bot, priced at 1,000 VND/kg;
- 30% was May tat, priced at 1,300 VND/kg;
- 20% was Song nuoc, priced at 5,000 VND/kg.

According to one rattan trader, a consignment of rattan was transported to Nha Trang, Khanh Hoa Province, at an average selling price of 5,000 VND/kg. About 30% of this rattan was collected inside the Chu Yang Sin National Park core zone, with the remaining amount collected from Krong Bong SFE and the Chu Yang Sin National Park buffer zone. Rattan from the Chu Yang Sin National Park area is also known to be sold to Buon Me Thuot and Ho Chi Minh City.

## **8. Impacts of the wildlife and timber trade on the integrity of Chu Yang Sin National Park**

The commercial trade in wildlife and timber from Chu Yang Sin National Park is unlikely to have been significant before the late 1980's. Therefore, at the time of the first BirdLife surveys of Chu Yang Sin National Park, the park had a relatively intact fauna and ridges supported many large *Fokienia hodginsii*. As such, Chu Yang Sin National Park was considered a stronghold of globally Endangered species such as Black-shanked Douc and perhaps the most important site in Vietnam for Yellow-cheeked Crested Gibbon (Nadler et al 2002). The effect of the illegal trade in wildlife and timber, on the populations of key animal and tree species in Chu Yang Sin National Park, is the subject of ongoing monitoring by rangers, supported by Integrating Watershed and Biodiversity Management project staff. Trends in species abundance are not yet clear due to the limited scale and duration of the monitoring effort. However, given the quantities of wildlife and timber detected in the trade by ranger staff, many species are likely to be in decline and to exist in reduced populations.

### **8.1 Effects of the wildlife trade on the biodiversity of Chu Yang Sin National Park**

During the survey, 38 animal species were recorded in the trade (Appendix 2); 21 mammals, nine birds and eight reptiles. Six live species of mammal (47 individuals), six live birds (45 individuals), and one live reptile were recorded. The remaining animals were dead, either whole or in pieces, for food or trophies. Of these species, 10 are classified as Threatened or Near Threatened globally and 19 are classified as Threatened or Near Threatened at a national level (Table 5) (IUCN 2007). In addition, 16 receive legal protection in Vietnam, which prohibits their hunting or trade (Dang Huy Huynh 2007).

Currently, the scale and duration of ongoing monitoring in Chu Yang Sin National Park is not yet sufficient to detect trends in the populations of indicator mammal species in the national park. However, the fact that hunters penetrate to even the most remote areas of the national park and the sheer numbers of some species confiscated indicates that many species, particularly threatened primates such as Black-shanked Douc and Yellow-cheeked Crested Gibbon, are likely to be in decline. For instance, rangers detected two large consignments of dried Black-shanked Doucs being taken out of the park in just two months: in December 2006 60 kg (approximately 30 individuals) were confiscated and in January 2007, 44 individuals were confiscated.

**Table 5. Threatened and protected species recorded in the wildlife trade during the survey**

Species	Scientific name	Threat category		Protected
		IUCN	National	
<b>Mammals</b>				
Sunda Colugo	<i>Cynocephalus variegatus</i>		EN	Yes
Long-tailed Macaque	<i>Macaca fascicularis</i>	NT	NT	Yes
Bear Macaque	<i>Macaca arctoides</i>	VU	VU	Yes
Black-shanked Douc	<i>Pygathrix nigripes</i>	EN	EN	Yes
Yellow-cheeked Crested Gibbon	<i>Hylobates gabriellae</i>	VU	EN	Yes
Asian Black Bear	<i>Ursus thibetanus</i>	VU	EN	Yes
Sun Bear	<i>Helarctos malayanus</i>	DD	EN	Yes
Binturong	<i>Arctictis binturong</i>		EN	Yes
Lesser Oriental Chevrotain	<i>Tragulus javanicus</i>	NT	VU	Yes
Sambar	<i>Cervus unicolor</i>		VU	No
Gaur	<i>Bos frontalis</i>	VU	EN	Yes
Southern Serow	<i>Capricornis sumatraensis</i>	VU	EN	Yes
East Asian Porcupine	<i>Hystrix brachyura</i>	VU		No
<b>Birds</b>				
Crested Argus	<i>Rheinardia ocellata</i>	NT	VU	Yes
<b>Reptiles</b>				
Tokay Gecko	<i>Gekko gekko</i>		VU	No
King Cobra	<i>Ophiophagus hannah</i>		CR	Yes
Indian Cobra	<i>Naja naja</i>		EN	Yes
Indochinese Rat Snake	<i>Ptyas korros</i>		EN	No
Banded Krait	<i>Bungarus fasciatus</i>		EN	Yes
Indian Python	<i>Python molurus</i>		CR	Yes

Note: Species marked as “Yes” are those covered by Decree 32/2006/ND-CP, a list of rare and precious forest animals and plants and regulations for their management and protection which superseded Decree 18-HDBT and Decree 48/2003/ND-CP.

Local suppliers of wildlife products, such as cao makers, report that the number of animals (such as macaques, Yellow-cheeked Crested Gibbons and Black-shanked Doucs) brought to them are increasing. It is therefore probable that declines in populations are accelerating. According to the results of Chu Yang Sin National Park law enforcement operations, hunting levels in the national park have been increasing year on year for the last few years. There are thought to be two main reasons for this; the ongoing immigration of H’mong people to Krong Bong District, resulting in a growing population and corresponding numbers of hunters, and an increasing demand for wildlife products, both in the local area and throughout Dak Lak Province.

## 8.2 Effects of the illegal timber trade on Chu Yang Sin National Park

Data from permanent plots set up to monitor illegal logging of *Fokienia hodginsii* in Chu Yang Sin National Park have shown clear trends; almost all monitored trees over 30 cm diameter at breast height were logged in the two years since the plots were established. According to data from law enforcement reports, the number of detected cases of illegal logging is increasing annually. For example, there were seven detected cases of illegal logging which resulted in confiscations of timber in 2005 and 15 in 2006.

Exploitation of *Fokienia hodginsii* appears to be increasing rapidly in Chu Yang Sin National Park; five cases were detected in 2006 alone. The following are some of the cases which were detected in 2006 and early 2007:

- Villagers from Sarong village felled approximately 40-50 cubic metres of *Fokienia hodginsii*.
- 15-30 men from Yang Tao and Bong Krang communes logged 25 trees with an average diameter at breast height of 1.3 m, around Mount Chu Yang Lak (forest compartment no. 1203).
- An estimated 40 cubic metres of *Fokienia hodginsii* was logged in compartment no. 1359, including eight trees felled during January 2007.
- Three trucks leaving Lak District with *Fokienia hodginsii* planks from Chu Yang Sin National Park were confiscated by rangers.

Chu Yang Sin National Park rangers estimate that villagers are also beginning to exploit other commercially valuable species in Chu Yang Sin National Park. For instance, of 100 cubic metres of timber illegally felled recently in Hoa Son Commune, a high proportion was *Michelia* spp (Gioi) and *Syzygium* spp. (Tram do).

The systematic removal of these majestic trees (*Fokienia hodginsii*) will undoubtedly have adverse effects on ecosystem function and on the survival of other species which share its small geographic range.

**Outcomes of law enforcement activity by Chu Yang Sin National Park staff from January to February 2007**

- 60 kg of dried Black-shanked Doucs confiscated from H'mong hunters (about 30 animals)
- Four Black-shanked Doucs and one shot gun confiscated from a H'mong hunter
- Five men arrested and the wildlife meat and living animals they possessed were confiscated. The haul included 31 kg of muntjac meat, 27 kg of wild pig meat, two civets, and a single live Pangolin and wild pig
- Torso of a Sambar confiscated
- Five H'mong hunters arrested and 40 dried Black-shanked Doucs confiscated

## **9. Evaluation of mitigation of the wildlife and timber trade by Chu Yang Sin National Park**

### **9.1 Current mitigation activities**

Chu Yang Sin National Park staff are trying to stop the illegal wildlife and timber trade and preserve the biological integrity of the national park in four main ways:

- Direct law enforcement;
- Joint patrols;
- Awareness-raising in buffer zone communities;
- Forest protection contracts.



### **9.1.1 Direct law enforcement**

There are a plethora of laws which, although imperfect, prohibit the capture and trade in protected wildlife and timber species. For instance, Instruction 12/2003/CT-TTg gives the Chairmen of the Provincial People's Committee power to "...revoke business licenses of those illegally trading wood and stalls and restaurants preparing dishes out of rare and precious animals...". The Law of Environmental Protection (2005), Article 7 prohibits "Exploitation, trade, consumption, or use of wild animal and plant species listed in protected species lists issued by the governmental or competent agencies.". Finally, Decision 186/2006/QĐ-TTg reiterates and strengthens previous legislation on hunting, by stating in Article 12 that "All acts of hunting, trapping or catching wild animals in special-use forest, being national parks or nature conservation zones, are prohibited." (Pilgrim and Nguyen Duc Tu 2007).

These laws are directly enforced by Chu Yang Sin National Park rangers, through a mobile unit and nine guard stations. The main activities are as follows:

- **Patrolling in the core zone**

An average of two patrols are conducted each month by each of the nine guard stations. Patrols average over two days in length and are planned in advance and mapped. During patrols, rangers collect information on signs of hunting, trapping and logging and the number of hunters and loggers encountered. Traps and hunting camps are destroyed or removed by rangers. In addition, rangers collect data for a biodiversity monitoring programme which has been developed by the Integrating Watershed and Biodiversity Management project. In 2006, Chu Yang Sin National Park rangers conducted 397 patrols, arrested 35 law breakers, removed 4,328 snares and box traps and confiscated 35 home-made guns, 28 hunted animals, 49 kg of wildlife meat, and a chainsaw.

- **Patrolling in the buffer zone**

Currently, this activity is only undertaken on receiving usable information from "community satellites" about law infringements. Upon receiving such information, offenders are arrested and confiscations made.

- **Information networks**

To strengthen the effectiveness of law enforcement, rangers of Chu Yang Sin National Park have established a network of informants or "community satellites". The members of this network are buffer zone residents who have committed to provide information regarding illegal activities, to rangers of the mobile unit and guard stations in the buffer zone. This network is proving to be useful and effective; the park rangers are very familiar with the illegal activities of buffer zone residents. For example, they can list and locate the hunters, traders, illegal loggers and wildlife restaurants in the buffer zone.

### **9.1.2 Joint patrols**

Joint forest patrols are undertaken with the participation of police, soldiers and commune authorities. Through these patrols arrests are made in situations which Chu Yang Sin National Park staff lack the jurisdiction, firepower or manpower to deal with alone. In these cases, offenders have to be sent to district level for punishment, in accordance with national laws and

regulations. At present, these patrols have been successful in Krong Bong District but are much more difficult to organise in Lak District. The management board of Chu Yang Sin National Park participates in monthly meetings with police, soldiers, commune authorities and other relevant stakeholders at a district level. These meetings are an opportunity to share information on forest protection with relevant stakeholders and to plan more rigorous and frequent patrols. At commune level, rangers also participate in meetings with village and commune authorities, to obtain information which may lead to more successful law enforcement.

### **9.1.3 Awareness-raising among local communities**

At present, the awareness-raising activities regarding Chu Yang Sin National Park and laws relating to wildlife and timber exploitation are negligible, because the park has no budget allocation from the government for such activities. However, during the law enforcement and forest protection programme, rangers delivered information to local people on laws and regulations relating to protected areas. As part of the Integrating Watershed and Biodiversity Management project, awareness-raising activities are being developed with the cooperation of Chu Yang Sin National Park; staff are being trained in suitable awareness-raising techniques and a public awareness programme will be initiated in the communities of the park's buffer zone.

### **9.1.4 Forest protection contracts**

Between 2004 and 2006, Provincial Department of Agriculture and Rural Development requested Chu Yang Sin National Park to allocate forest in the buffer zone to local communities, following Decision 178 of the Government. The aim of this programme was to encourage buffer zone residents to protect the forest through allowing them to benefit from certain forest resources.

In order to further involve communities from the buffer zone in forest protection, Chu Yang Sin National Park is implementing the 661 programme. This allows management of forest plots in the buffer zone by local residents, through the issuing of forest protection contracts with local households in selected villages. Thus far, 16,000 hectares of forest have been allocated to 609 households within seven communes (Hoa Son, Khue Ngoc Dien, Hoa Le, Hoa Phong, Cu Pui and Yang Mao communes in Krong Bong District and Bong Krang Commune in Lak District). The contracted households were formed into groups to take on forest protection contracts. This involves undertaking joint patrols with rangers, as planned and scheduled by village leaders and heads of guard stations. Each member has also been encouraged to and has committed to provide information relating to illegal activities in their area.

## **9.2 Factors limiting the effectiveness of actions of Chu Yang Sin National Park to reduce the illegal wildlife and timber trade**

Rangers have made considerable progress in many areas related to stopping the illegal wildlife and timber trade. For instance, they have seized large quantities of wildlife or timber on a number of occasions, and have identified over 500 buffer zone residents who are part of the wildlife and timber trade network. However, despite their efforts to detect and prosecute those involved in the illegal wildlife and timber trade, evidence suggests that rate of wildlife and timber extraction from Chu Yang Sin National Park is increasing. A number of factors are

thought to limit the effectiveness of conservation actions by Chu Yang Sin National Park, namely:

- Law enforcement by relevant local authorities is inadequate;
- Local authorities, especially the police who are responsible for law enforcement, sometimes encourage or support the illegal wildlife and timber trade;
- Law enforcement coordination mechanisms between Chu Yang Sin National Park and local authorities are still weak and have not yet been fully developed and formalised;
- Local communities have little knowledge of the designation “national park”, or the relevant laws and regulations;
- Habits are changing - demand for wildlife and timber products is increasing within Dak Lak Province, due to growing economic development, increasing demand for status symbols such as furniture products made of Po Mu and other high value woods and wildlife meat;
- Forest resources, including timber and wildlife products from Chu Yang Sin National Park, are of increasing value to local traders;
- Forest clearance outside the national park puts increasing pressure on timber and wildlife resources inside the park;
- The human population of the buffer zone is increasing annually, particularly due to H'mong immigration from northern provinces;
- Buffer zone communities and local and regional decision makers are not fully aware of the national and international significance of Chu Yang Sin National Park for biodiversity;
- Chu Yang Sin National Park lacks resources (budget and staff capacity) to carry out sufficient activities to reduce the wildlife and timber trade, such as public awareness campaigns, confiscation of guns and investment in projects in the buffer zone;
- The current network of “community satellites” works effectively but is too small in scale and there are insufficient budget means to expand this community network;
- Limited funding from the 661 programme only allows the involvement of a small number of local communities;
- Budget constraints mean that monitoring of the wildlife trade has not yet been conducted in all restaurants and villages in the buffer zone.

### **9.3. Recommended activities for reduction of wildlife exploitation and trade**

#### **9.3.1 Activities for district and provincial level staff**

Most successful arrests by park staff concern relatively small cases and focus on the hunters at the start of the trade chain. To end or significantly reduce the wildlife and timber trade in the Chu Yang Sin National Park area, a number of higher profile measures are required, following the laws and regulations of Vietnam, impacting stakeholders higher up the trade chain. These should be conducted in collaboration with high-ranking law enforcement officials and should be covered by the media as examples of the local police and government's commitment to cooperate with the national park and fight wildlife crime. They should target individuals where evidence suggests that they are breaking laws and regulations relevant to wildlife and timber trading. Initial activities should include:

- Monitor and investigate the two individuals for whom evidence suggests they may be involved in large-scale trading activities in Krong Bong and Lak Districts;
- Investigate to determine if restaurants in the buffer zone which display the agreement with the Forest Protection Department not to sell wildlife meat are abiding by those agreements; followed by appropriate law enforcement actions against any restaurants found to be breaking those agreements;
- Investigate the role of some district level government staff in the wildlife trade, to be followed by appropriate law enforcement action, if required;
- Investigate the activities of the people suspected as being full-time cao makers in the buffer zone, if any of them are found to be breaking relevant wildlife protection laws then appropriate law enforcement actions should be taken.

### 9.3.2 Activities for Chu Yang Sin National Park staff

High profile wildlife crime prevention activities should be complemented by ongoing patrol and law enforcement by Chu Yang Sin National Park staff. Four key areas have been identified in which action of Chu Yang Sin National Park staff could lead to a reduction in wildlife and timber exploitation and trade. Following discussion with the Chu Yang Sin National Park Management Board, rangers, local authorities and local communities, a number of activities were recommended (Table 6). Several of these are already ongoing but they need to be expanded and continued to ensure they are successful.



**Photo 4: Chu Yang Sin National Park rangers taking part in a joint patrol**

**Table 6. Activities recommended for the reduction of wildlife exploitation and trade**

Activities	Responsible	Actions for mitigation		Local community roles
		Short term	Long term	
<b>1. Law enforcement – to combat hunting, logging and trade in wildlife and timber</b>				
Patrols in the core zone	Rangers of Chu Yang Sin National Park, locals who have signed forest protection contracts, support from Integrating Watershed and Biodiversity Management project	<ul style="list-style-type: none"> <li>- Identify key areas where hunting, wildlife trade, logging, and trade in timber occur;</li> <li>- Strengthen patrolling efforts in hunting season from June to January;</li> <li>- Expand the ‘community satellite’ initiative;</li> <li>- Ensure 50% of households sign forest protection contracts and join patrols with park rangers.</li> </ul>	<ul style="list-style-type: none"> <li>- Maintain patrolling efforts in key hunting and logging areas within the park;</li> <li>- Ensure ‘Community satellites’ work effectively;</li> <li>- Ensure 100% of households sign forest protection contracts and join patrols with park rangers.</li> </ul>	Accompany and support park rangers on patrol and to take on the role of rangers with regard to gathering information relating to the wildlife trade.
Patrols in the buffer zone	Rangers of Chu Yang Sin National Park and the network of ‘community satellites’	<ul style="list-style-type: none"> <li>- Make a list of hunters, loggers and traders for each village;</li> <li>- Monitor hunting activity through ‘community satellites’ during hunting season;</li> <li>- Make random checks on listed traders (wildlife and timber), in co-operation with District FPD, police and local authorities.</li> </ul>	<ul style="list-style-type: none"> <li>- Develop agreements on stopping hunting, trapping and logging, between Chu Yang Sin National Park, local authorities and hunters and loggers;</li> <li>- Encourage local hunters to join patrols with park rangers;</li> <li>- Recruit hunters that cease illegal activities as members of awareness-raising teams;</li> <li>- Sign agreements to stop illegal activities</li> </ul>	<p>Provide information on illegal activities to park rangers.</p> <p>Assist in the creation of, and to sign agreements regarding, the cessation of illegal hunting and logging.</p>

			with all illegal hunters and loggers.	
Confiscation of guns	Rangers, district and commune police and local authorities	<ul style="list-style-type: none"> <li>- Begin discussion with district authorities to develop legal documents for confiscating guns in the buffer zone;</li> <li>- Meet with local communities to deliver and explain legal documents about confiscation of guns at village level;</li> <li>- Mobilise a campaign of gun confiscation.</li> </ul>	<ul style="list-style-type: none"> <li>- Collect 100% of guns through an amnesty or confiscation;</li> <li>- Obtain an agreement to end the manufacture of guns by local people (notably H'mong people).</li> </ul>	Participate in this campaign at all levels of development and implementation.
Monitoring trapping materials	Rangers, local authorities and police.	<ul style="list-style-type: none"> <li>- List all shops that sell trapping materials;</li> <li>- Develop, and ensure shopkeepers sign agreements not to sell trapping materials;</li> <li>- Conduct inspections to ensure implementation of the agreement.</li> </ul>	<ul style="list-style-type: none"> <li>- Regularly review implementation of the agreement.</li> </ul>	Detect and provide information to rangers on illegal trapping or sale of trapping materials.
Wildlife trade monitoring at village and commune levels	Rangers, Krong Bong and Lak Forest Protection Departments and local authorities.	<ul style="list-style-type: none"> <li>- List locations of wildlife trade;</li> <li>- Focus public awareness on wildlife trade among local communities;</li> <li>- Ensure local people sign agreements not to trade in wildlife, and enforce agreements.</li> </ul>	<ul style="list-style-type: none"> <li>- Continue to sign agreements with traders;</li> <li>- Regularly review implementation of the agreement.</li> </ul>	Detect and provide information on illegal trade to rangers.
Inspection of wildlife meat restaurants	Rangers, Krong Bong and Lak Forest Protection Departments and local authorities	<ul style="list-style-type: none"> <li>- Make a list of wildlife meat restaurants;</li> <li>- Conduct a meeting to review inspection of signed agreements</li> </ul>	<ul style="list-style-type: none"> <li>- Periodic inspection of implementation of agreements by joint team of park rangers, district Forest</li> </ul>	Detect and provide information to rangers on the sale of wildlife meat to and by restaurants.

		between District Protection Departments Forest and owners of restaurants in Lak and Krong Bong districts; - Enforce laws concerning sale and trade in wildlife meat.	Protection Departments, police and local authorities; - Integrate wildlife protection and hunting and trading bans into awareness-raising activities among local communities.	
<b>2. Capacity building</b>				
Training needs assessment and training	Chu Yang Sin National Park Management Board, Integrating Watershed and Biodiversity Management project.	- Conduct a Training Needs Assessment; - Provide training for rangers in law enforcement and patrols; - Provide training in awareness-raising for park staff.	- Continue training courses for park staff; - Train senior park staff in conservation management.	
<b>3. Co-ordination with local stakeholders</b>				
Joint patrols in cases of emergency	At the planning level: Chu Yang Sin National Park Management Board and local stakeholders. At the implementation level: rangers, signatories to forest protection contracts, police and local army (districts).	- Develop a co-ordination mechanism; - Conduct joint patrols in emergency situations.	- Maintain an effective co-ordination mechanism; - Conduct regular joint patrols.	Signatories to forest protection contracts join patrols with park rangers.
Co-ordination in control of guns and trapping materials	Park rangers and local authorities.	- Ensure local authorities support plans to confiscate guns and stop the sale of trapping materials in the buffer zone.		
<b>4. Public awareness</b>			-	

	<p>Chu Yang Sin National Park, Departments of Culture and Information in two districts, television and radio in two districts, guard stations and villagers.</p>	<ul style="list-style-type: none"> <li>- Asses knowledge and attitudes towards Chu Yang Sin National Park and conservation;</li> <li>- Develop a public awareness strategy;</li> <li>- Design and publish awareness materials;</li> <li>- Establish a communication team;</li> <li>- Train communication staff and local volunteers.</li> </ul>	<ul style="list-style-type: none"> <li>- Implement a public awareness strategy;</li> <li>- Monitor and evaluate impacts of the awareness strategy;</li> <li>- Review the programme if necessary.</li> </ul>	<p>Volunteers for the public awareness programme.</p>
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## 10. References

- Anon (2008) *CIA World Factbook* <https://www.cia.gov/library/publications/the-world-factbook/print/vn.html>
- Bell, D.J., Robertson, S.I., and Hunter, P.R. (2004). *Animal origins of SARS coronavirus: possible links with the international trade in small carnivores*. Philosophical Transactions of the Royal Society of London. 359, 1107-1114.
- Bennett, E.L., Eves, H.E., Robinson, J.G., Wilkie, D.S. (2002). *Why is eating bushmeat a biodiversity crisis?* Conservation in Practice. 3: 28-29.
- BirdLife International (2008) *The BirdLife checklist of the birds of the world, with conservation status and taxonomic sources. Version 1*. Downloaded from [http://www.birdlife.org/datazone/species/downloads/BirdLife\\_Checklist\\_Version\\_1.zip](http://www.birdlife.org/datazone/species/downloads/BirdLife_Checklist_Version_1.zip)
- BirdLife International and the Forest Inventory and Planning Institute (2001) *Sourcebook of Existing and Proposed Protected Areas in Vietnam*. Hanoi, Vietnam: BirdLife International Vietnam Programme and the Forest Inventory and Planning Institute.
- Compton, J and Le Hai Quang. (1998). *Borderline: An assessment of the wildlife trade in Vietnam*. Hanoi, Vietnam WWF Indochina Programme
- Chu Yang Sin National Park (2007) *Bao cao tong ket nam 2006 Report of the year 2006* submitted to Provincial Department of Agriculture and Rural Development.
- Dang Huy Huynh (2007) *Vietnam Red Data Book. Part 1. Animals*. Ministry of Science and Technology and the Vietnamese Academy of Science and Technology.
- Dang Ngoc Can, Ha Van Tue, Le Manh Hung, Nguyen Truong Son, Nguyen Huu Duc, Monastyrskii, A., Do Anh Tuan and Nguyen Duc Tu (2006) *First biodiversity report for Chu Yang Sin National Park, Dak Lak Province, Vietnam*. Unpublished report to the BirdLife International-Vietnam Programme, Hanoi.
- Duckworth, J. W., Pine, R. H. (2003) *English names for a world list of mammals, exemplified by species of Indochina*. Mammal Review 33: 151-173
- IUCN (2007) *2007 IUCN Red List of Threatened Species*. <[www.iucnredlist.org](http://www.iucnredlist.org)>. Downloaded on 19 June 2008.
- Le Trong Trai and Chu Yang Sin National Park (2006) *Biodiversity Monitoring Programme*. Unpublished report to the BirdLife International-Vietnam Programme, Hanoi.
- Lin, J. (2005). *Tackling Southeast Asia's illegal wildlife trade*. Singapore Year Book of International Law (SYBIL). 9:191-208.

Milner-Gulland, E.J., Bennett, E.L. and the SCB 2002 Annual Meeting wild meat group. (2003). *Wild meat: the bigger picture*. Trends in Ecology and Evolution. 18: 351-357.

Nadler, T., Momberg, F., Nguyen, Xuan Dang and Lormee, N. (2003). *Vietnam Primate Conservation Status Review 2002. Part I: Gibbons*. Fauna and Flora International-Vietnam Program and Frankfurt Zoological Society, Hanoi, Vietnam.

Nooren, H. and Claridge, G. (2001). *Wildlife trade in Laos: the end of the game*. Netherlands Committee for IUCN, Amsterdam.

Nguyen Van Song. (2003). *Wildlife trading in Vietnam: Why it flourishes*. Research report. Economy and environment program for Southeast Asia. Singapore and International Development Research Centre, Canada.

Nguyen Van Sang, Ho Thu Cuc (1996) *Danh luc Bo sat, Ech nhai Vietnam*. Nxb Khoa hoc Ky thuat, Ha Noi, 264 pages.

Pilgrim, J. D. and Nguyen Duc Tu (2007) *Threatened and alien species in Vietnam and recommendations for the content of the national Biodiversity Law*. Report to the Department of the Environment, Ministry of Natural Resources and Environment. Hanoi, BirdLife International Vietnam Programme.

Roberton, S.I and Bell, D.B. (in prep). *The urban wild meat trade and consumption in Vietnam: A case study from Central Vietnam*

Robinson, J.G. and Bennett, E.L. (Eds.) (2000). *Hunting for sustainability in tropical forests*. Columbia University Press, New York

Tordoff, A. W. ed. (2002) *Directory of important bird areas in Vietnam: key sites for conservation*. Hanoi: BirdLife International in Indochina and the Institute of Ecology and Biological Resources.

Tordoff, A. W., Tran Quoc Bao, Nguyen Duc Tu and Le Manh Hung eds. (2004) *Sourcebook of existing and proposed protected areas in Vietnam. Second edition*. Hanoi: BirdLife International in Indochina and the Ministry of Agriculture and Rural Development.

Tran Phoung Anh (2007) *Vietnam Red Data Book Part 2. Plants*. Ministry of Science and Technology and Vietnamese Academy of Science and Technology.

WCS/FPD. (2008). *Commercial wildlife farms in Vietnam: A problem or solution for conservation?* Wildlife Conservation Society and Vietnam Forest Protection Department. Hanoi, Vietnam

Worldbank (2005) Operational Manual Indigenous Peoples, OP 4.10 July 2005

## Appendix 1. Stakeholders in wildlife and timber exploitation and trade in the buffer zone of Chu Yang Sin National Park.

Location	Hunters	Small-scale wildlife traders	Large-scale wildlife traders	Cao makers	Restaurant owners	Small-scale timber traders and loggers	Large-scale timber traders	Timber processors
<b>Yang Mao Commune</b>	<b>61</b>	<b>13</b>				<b>3</b>		
Buon Hang Nam	15	4						
Buon Kieu	15	1						
Ea Che	6	1						
Buon Quanh	2	2				1		
Buon Tar	6							
Buon Khi	8	2				1		
Buon Nang Don	5	2						
Buon Tul	4	1				1		
<b>Cu Dram Commune</b>	<b>12</b>	<b>9</b>		<b>1</b>	<b>2</b>	<b>16</b>		<b>2</b>
Tang Nang	1	1						
Thon 1 (Kinh)						6		
Cham A	6	5			2	4		2
Cham B	2	1				4		
Buon Cu Dram	3	2		1		2		
<b>Yang Hanh Commune</b>	<b>30</b>	<b>5</b>				<b>6</b>		
Yang Hanh (H'Mông)	30	5				6		
<b>Cu Pui Commune</b>	<b>73</b>	<b>17</b>	<b>1</b>	<b>1</b>		<b>18</b>		
Buon Khoa		1				2		
Buon EaBa (H'Mông)	18	2				7		
Eablang (H'Mông)	40	3				6		
Buon Khanh		3	1					
Dien Tan		2				1		
Buon Lan	7	2						
Buon Phung 1	4	2		1		2		
Buon Phung 2	4	2						
<b>Hoa Phong Commune</b>	<b>29</b>	<b>7</b>			<b>2</b>	<b>5</b>		
Thon 1	3					1		

Location	Hunters	Small-scale wildlife traders	Large-scale wildlife traders	Cao makers	Restaurant owners	Small-scale timber traders and loggers	Large-scale timber traders	Timber processors
Na Prong	15	2				1		
Thon 6		1						
Chi Pheng	3				2			
Ngo A	8	2						
Ba Phuong		2				3		
<b>Hoa Le Commune</b>	<b>4</b>	<b>5</b>				<b>6</b>		
Thon 12		1				2		
Thon 9		1				1		
Thon 8		3				4		
Thon 3	2							
Thon 2	2							
<b>Khue Ngoc Dien and Krong Bong towns</b>	<b>3</b>	<b>6</b>			<b>4</b>			<b>5</b>
<b>Hoa Son Commune</b>	<b>9</b>	<b>6</b>				<b>38</b>		
Buon Ya	3	1						
Thon 6	3	1				2		
Thon 4	3	2						
Thon 3		1				30		
Thon 2						4		
Thon 1		1				2		
<b>Eatrul Commune</b>	<b>10</b>					<b>4</b>		
Buon Krong	6							
Thon 3	2					3		
Buon Plun	2					1		
<b>Yang Re Commune</b>					<b>2</b>			
<b>Yang Tao Commune</b>		<b>1</b>			<b>1</b>	<b>60</b>	<b>1</b>	<b>1</b>
<b>Dak Phoi Commune</b>	<b>15</b>	<b>2</b>						
<b>Lien Son town</b>		2	1		5		1	
<b>Krong No Commune</b>	<b>5</b>	<b>2</b>						
<b>Total</b>	<b>251</b>	<b>75</b>	<b>2</b>	<b>2</b>	<b>16</b>	<b>157</b>	<b>2</b>	<b>8</b>

*Note: Data and information provided by rangers of Chu Yang Sin National Park and local authorities in the buffer zone.*

## Appendix 2. Species recorded in the wildlife trade during the survey

Species	Scientific name	Data source
<b>Mammals</b>		
Sunda Colugo	<i>Cynocephalus variegatus</i>	O
Long-tailed Macaque	<i>Macaca fascicularis</i>	I
Bear Macaque	<i>Macaca arctoides</i>	O
Black-shanked Douc	<i>Pygathrix nigripes</i>	O
Yellow-cheeked Crested Gibbon	<i>Hylobates gabriellae</i>	O
Asiatic Black Bear	<i>Ursus thibetanus</i>	O
Sun Bear	<i>Ursus malayanus</i>	I
Large Indian Civet	<i>Viverra zibetha</i>	O
Common Palm Civet	<i>Paradoxurus hermaphroditus</i>	O
Masked Palm Civet	<i>Paguma larvata</i>	O
Binturong	<i>Arctictis binturong</i>	O
Eurasian Wild Pig	<i>Sus scrofa</i>	O, I
Lesser Oriental Chevrotain	<i>Tragulus javanicus</i>	O
Sambar	<i>Cervus unicolor</i>	O
Red Muntjac	<i>Muntiacus muntjak</i>	O
Gaur	<i>Bos gaurus</i>	O
Southern Serow	<i>Naemohedus sumatraensis</i>	O
East Asian Porcupine	<i>Hystrix brachyura</i>	O
Asian Brush-tailed Porcupine	<i>Atherurus macrourus</i>	O
Siamese Hare	<i>Lepus peguensis</i>	I
Bamboo Rat	<i>Rhizomys pruinosus</i>	O
<b>Birds</b>		
Crested Argus	<i>Rheinardia ocellata</i>	O
Silver Pheasant	<i>Lophura nycthemera</i>	O
Spotted Dove	<i>Streptopelia chinensis</i>	O
Greater Coucal	<i>Centropus sinensis</i>	O
Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	O
Black-throated Laughingthrush	<i>Garrulax chinensis</i>	O
Hill Myna	<i>Gracula religiosa</i>	O
Crested Myna	<i>Acridotheres cristatellus</i>	O
White-rumped Shama	<i>Copsychus malabaricus</i>	O
<b>Reptiles</b>		
Water Monitor	<i>Varanus salvator</i>	O
Tokay Gecko	<i>Gekko gekko</i>	O
King Cobra	<i>Ophiophagus hannah</i>	O
Indian Cobra	<i>Naja naja</i>	O
Radiated Rat Snake	<i>Elaphe radiata</i>	O
Indochinese Rat Snake	<i>Ptyas korros</i>	O
Banded Krait	<i>Bungarus fasciatus</i>	O
Indian Python	<i>Python molurus</i>	O

In Data Source column, O = Observed during the study, I = reported as traded by interviewees.

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### **BirdLife International**

BirdLife International is a global conservation network of non-governmental organisations (NGOs) present in more than 100 countries, with more than 60 autonomous Partner organizations. Together BirdLife is the leading authority on the status of birds and their habitats. Over ten million people now support the BirdLife Partnership. Partners work together on shared priorities, programmes and policies, learning from each other to achieve real conservation results. The BirdLife Partnership is coordinated by a decentralised international secretariat, which supports the partnership to achieve the aims and objectives of BirdLife International. BirdLife International initiated its Vietnam Programme in 1988, which is an office of the secretariat based in Hanoi.

In Vietnam, BirdLife works with a variety of government and non-government organisations to:

- Support improved conservation planning and management of important habitats, sites and species;
- Advocate new ideas for integrating biodiversity conservation into planning and policy;
- Stimulate greater public interest in birds and biodiversity, and awareness of the need for biodiversity conservation;
- Develop capacity for improved management of important habitats, sites and species among local communities and government institutions responsible for conservation in Vietnam; and
- Provide information on biodiversity and protected areas to planners, policy makers and other interest groups.

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