

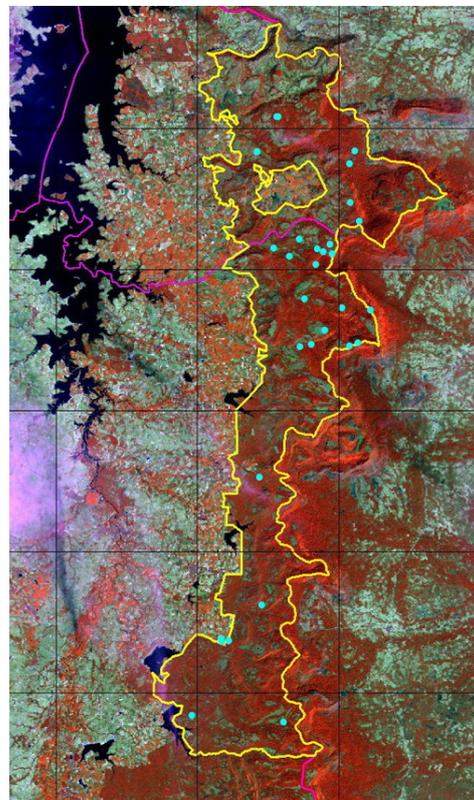


**International Tropical Timber Organization  
ITTO**



**The Royal Forest Department  
RFD**

# **WILDLIFE RESOURCES IN THE EMERALD TRIANGLE PROTECTED FOREST COMPLEX BETWEEN THAILAND & LAO PDR**



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# **ITTO Project PD577/10 Rev.1 (F)**

**Management of the Emerald Triangle Protected Forests Complex to  
Promote Cooperation for Trans-boundary Biodiversity Conservation  
between Thailand, Cambodia and Laos (Phase III)**

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**THE GOVERNMENT OF THAILAND**

**Executing Agency**

**THE ROYAL FOREST DEPARTMENT OF THAILAND**

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## ABBREVIATIONS

<b>CITES</b>	<b>Convention on International Trade in Endangered Species of Wild Flora and Fauna</b>
<b>CU</b>	<b>Champrasak University</b>
<b>DKPF</b>	<b>Dong Khanthung Protected Forest</b>
<b>DNP</b>	<b>Department of National Park Wildlife &amp; Plant Conservation</b>
<b>ETPFC</b>	<b>Emerald Triangle Protected Forest Complex</b>
<b>GPS</b>	<b>Global Positioning System</b>
<b>GIS</b>	<b>Geographical Information System</b>
<b>HEC</b>	<b>Human-elephant Conflicts</b>
<b>IBA</b>	<b>International Bird Area</b>
<b>ITTO</b>	<b>International Tropical Timber Organization</b>
<b>IUCN</b>	<b>International Union for Conservation of Nature and Natural Resources</b>
<b>KU</b>	<b>Kasetsart University</b>
<b>KUFF</b>	<b>Kasetsart University's Faculty of Forestry</b>
<b>Lao PDR</b>	<b>Lao's People Democratic Republic</b>
<b>LWS</b>	<b>Landscape Wildlife Species</b>
<b>NBCA</b>	<b>National Biodiversity Conservation Area</b>
<b>NP</b>	<b>National Park</b>
<b>PF</b>	<b>Protected Forest</b>
<b>PPFC</b>	<b>Pha Taem Protected Forest Complex</b>
<b>PVPF</b>	<b>Preah Vihear Protected Forest</b>
<b>PXNBCA</b>	<b>Phou Xiangthong National Biodiversity Conservation Area</b>
<b>RFD</b>	<b>Royal Forest Department</b>
<b>TORs</b>	<b>Term of References</b>
<b>WS</b>	<b>Wildlife Sanctuary</b>

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## Executive Summary

The Emerald Triangle Protected Forest Complex (ETPFC) is a Trans-boundary reserves project that works for cooperation and understanding between the three countries – Thailand, Cambodia and Lao PDR. The Tri-countries ETPFC has found a very rich source of Indochinese unique key species of one extinct species, Kouprey (*Bos sauveli*), 50 endangered and 10 critical endangered wildlife of IUCN's Global Red List, roaming between the Tri-countries trans-boundary areas, e.g. Wild elephant (*Elephas maximus*), Gaur (*Bos gaurus*), Banteng (*Bos javanicus*), Siamese Eld's deer (*Rucervus eldii siamensis*), Chinese serow (*Capriconis milneedwardsii*), Pileated gibbon (*Hylobates pileatus*), Tiger (*Panthera tigris*), Clouded leopard (*Neofelis nebulosa*), three species of vultures, Sarus crane (*Sus antigone*), Giant ibis (*Pseudibis gigantea*), Greater adjutant (*Leptoptilos dubius*), Lesser adjutant (*Leptoptilos javanicus*), Woolly-necked stork (*Ciconia episcopus*), Green peafowl (*Pavo muticus*), Siamese fireback (*Lophura diardi*), Siamese or Fresh-water crocodile (*Crocodylus siamensis*) and several others. The total area cover of 6,536 km<sup>2</sup> is large enough to guarantee the long-term survival of biodiversity and unique wildlife species in the **Indo-Burmese Subregion** of the Tri-nations, and thereby serving science aspects as well as their local peoples' livelihood.

From previous studies in Thailand's Pha Taem Protected Forest Complex (PPFC) during 2003 to 2004, we found that Wild Elephant, Banteng, Sambar deer and tiger can be observed in Bun Thrik – Yot Mon WS near the Thai-Lao boarder (Bhumpakphan, 2004). Wild Elephant herds, Banteng herd and single tiger move between forest and agricultural areas in both Thailand PPFC reserves and Laos Dong Khanthung Protected Forest (DKPF).

Recently, in 2014, studies have been conducted in the ETPFC, both in Thailand's PPFC by Kasetsart University's Faculty of Forestry Team and in Laos DKPF by Champhasak University Wildlife Study Team in order to survey existing wildlife diversity as well as study the Key Landscape wildlife species, composed of 17 species for PPFC and 18 for DKPF. The wildlife study and survey in the ETPFC provided the present data of existing wildlife species diversity and the new knowledge of Ecology and Distribution of the Landscape Wildlife will be very helpful for support of GIS Wildlife Habitat Modeling and Management of the Wildlife of the Tri-countries ETPFC.

As Wildlife Consultant for the International Tropical Timber Organization (ITTO) project, I formed a Thai Wildlife Study Team and established the contact to Champhasak University to organize a Lao Wildlife Study Team to survey wildlife and to identify threats in the reserves.

Our Study Teams used direct sighting, camera trap setting in focal study sites, interviews, and also from literature reviews, show that at least 596 vertebrate species, composed of 96 mammals, 288 birds, 81 reptiles, 30 amphibians and 101 freshwater fish are scattered over and inhabit these Trans-boundary reserves. The wildlife species diversity from our studies and data obtained from available references, are listed in the following table:

## Wildlife Species Diversity in the Emerald Triangle Protected Forest Complex

Faunal Type	Total	Thailand					Lao PDR	
		Pha Taem	Kaeng Tana	Bun Thrik	Phu Jong	Yot Dom	Phou Xiang	Dong Kanth
Mammal	<b>96</b>	32	51	45	78	85	30	24
Bird	<b>288</b>	72	131	113	180	259	23	32
Reptile	<b>81</b>	34	56	38	72	71	15	22
Amphibian	<b>30</b>	15	22	16	21	28	7	8
Fish	<b>101</b>	52	70	24	55	73	52	37
Total	<b>596</b>	205	330	236	407	516	127	123

Wildlife Ecology knowledge and materials (guide books, pictures, maps, GPS-receiver, infrared camera, data sheets) supporting the Training and Meeting Workshop in GIS Application and Wildlife Studies were made available to Thai, Lao and Cambodian participants in the six different meeting workshops, which were organized and joined by the ITTO Phataem Field Office. Two interesting projects, *e.g.* 1) Mitigation of Human-Elephant conflicts Project and 2) Recovery of Siamese crocodile (*Crocodylus siamensis*) Project have been set as priority projects in the PPFC reserves. Network grouping, via internet (LINES) and cellphones between Thailand PPFC reserves as organized in order to share wildlife information data and working close together.

Lastly, some recommendations for future research and management activities were mentioned for Thailand's Pha Taem Protected Forest Complex and Lao PDR's Phou Xianthong National Biodiversity Conservation Area and Dong Khanthung Provincial Protected Forest.

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## 1. Introduction

The Emerald Triangle Protected Forests Complex (ETPFC) between the Tri-countries contains 5 reserves in Pha Taem Protected Forest Complex (PPFC) in Thailand, a large single reserve in Cambodia and 2 large reserves in Laos (Dong Khanthung Protected Forest (DKPF) and Phou Xiangthong National Biodiversity Conservation Area (PXNBCA). The Tri-countries ETPFC has found a very rich occurrence of Indochinese unique key species of 50 endangered and 10 critical endangered wildlife of IUCN's Global Red List, roaming between the Tri-countries trans-boundary areas, *e.g.* Wild elephant, Gaur, Banteng, Eld's deer, Chinese serow, Pileated gibbon, leopard, three species of vultures, Sarus crane, Giant ibis, Greater adjutant, Siamese crocodile etc. With the total area cover of 6,536 km<sup>2</sup>, the area is large enough to guarantee the long-term survival of biodiversity and wildlife in the **Indo-Burmese Subregion** for Tri-countries as well as serving science aspects and local people's livelihood.

It is the first time that three nations are willing to work close together to protect and to reserve Biodiversity and valuable wildlife resources in the Project of Management of the Emerald Triangle Protected Forests Complex in order to promote cooperation for Trans-boundary biodiversity conservation between Thailand, Cambodia and Lao PDR. Many large wildlife species and large storks are landscape species because they are roaming across political boundaries. Wildlife diversity, their existing data and up to date distribution information of the Key Wildlife Landscape Species in the Tri-countries are all helpful in providing good scientific information on ecological aspects towards management and conservation of them in a Tri-nations cooperation.

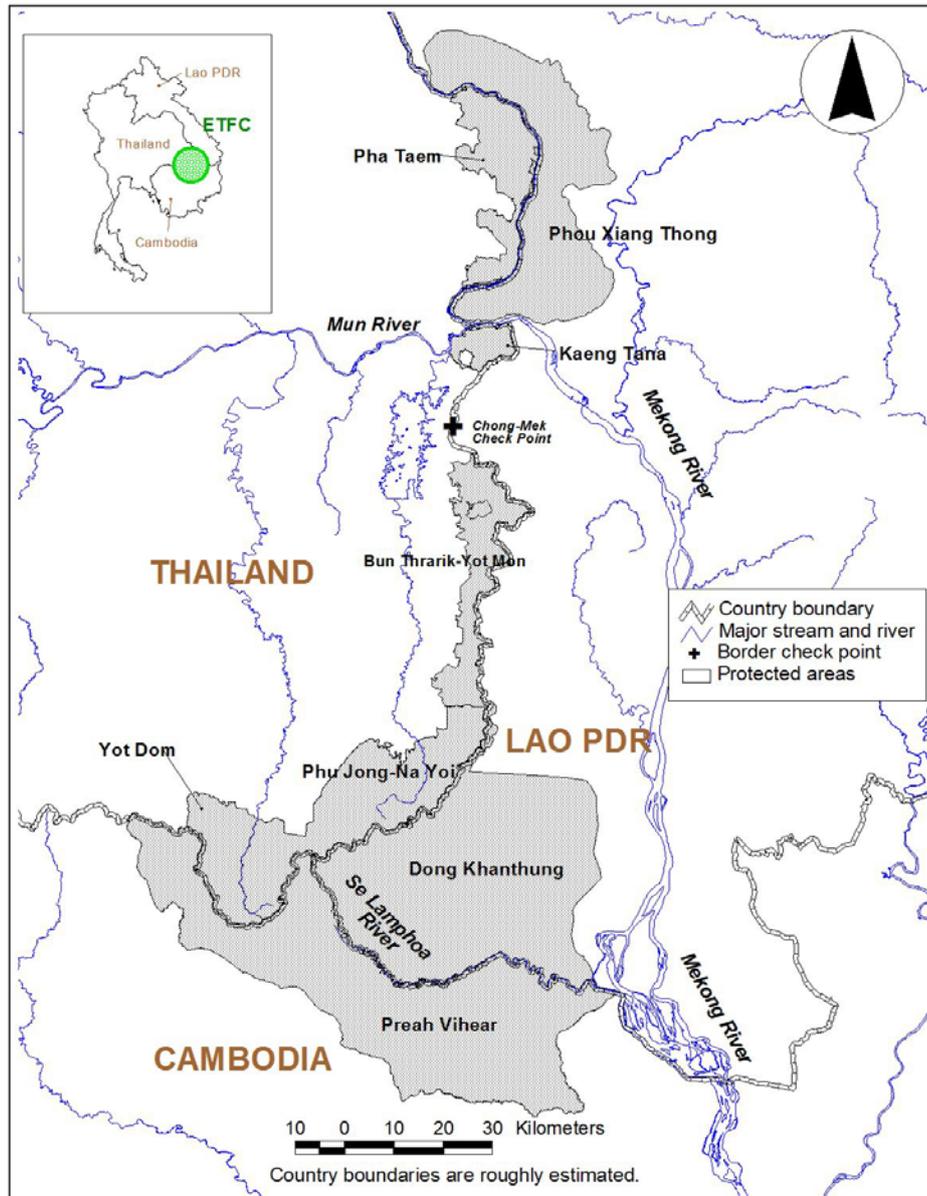
In previous studies in PPFC during 2003 to 2004, we found Wild Elephant, Banteng, Sambar deer, tiger in Bun Thrik - Yot Mon WS near Thai-Lao border (Bhumpakphan, 2004) and observed that Wild elephant, Banteng, tiger move between forest and agriculture in both Thailand reserves and Laos DKPF.

In our recently studies in the Emerald Triangle Protected Forests Complex (ETPFC) of both Thailand's PhaTaem Protected Forest Complex (PPFC) and Laos DKPF, we surveyed on existing wildlife diversity as well as studies on the Key Landscape wildlife species which were composed of 17 species for PPFC and 18 for DKPF. Wildlife study and survey in the ETPFC provided up to date data of existing wildlife species diversity, as well as new knowledge of Ecology and Distribution of the Landscape Wildlife. This data will be very helpful for support of GIS Wildlife Habitat Modeling and for Management of the Wildlife of ETPFC in a cooperative between Tri-nations in the future.

## 2. Study Areas

### Background Information

The teams were assigned to work and to collect data within five reserve areas of Pha Taem Protected Forest Complex (PPFC) in Thailand (see Fig 1.) and two reserve areas in the Southern Part of Lao PDR.



**Fig 1.** Location of the Emerald Triangle Protected Forest Complex.

Source: Trisurat 2015.

### Pha Taem Protected Forests Complex (PPFC)

The **PPFC** covers totally 1736.95 km<sup>2</sup> in Ubon Ratchathani Province and contains Pha Taem National Park (NP), Kaeng Tana NP, Bun Thrik - Yot Mon Wildlife Sanctuary (WS), Phu Jong - Na Yoi NP and Yot Dom WS (Trisurat, 2004).

According to the study reported by Bhumpakphan (2004) at least 247 species of wildlife are found in this complex. For details see table 1.

**Table 1.** Wildlife Species known to exist in Pha Taem Protected Forest Complex

Faunal Type	Total	Pha Taem	Kaeng Tana	Bun Thrik	Phu Jong	Yot Dom
Mammal	<b>51</b>	20	12	28	34	29
Bird	<b>148</b>	62	48	98	101	103
Reptile	<b>34</b>	22	18	22	24	21
Amphibian	<b>14</b>	8	7	9	9	6
Total	<b>247</b>	112	85	157	168	159

Large mammals in the **PPFC** are composed of Wild elephant, Chinese serow (*Capricornis milneedwardsii*), Banteng (*Bos javanicus*), Sambar deer (*Rusa unicolor*), Northern Pig-tailed macaque (*Macaca leonina*), and Pileated gibbon (*Hylobates pileatus*). Some interesting birds are Green peafowl (*Pavo muticus*), Siamese fireback (*Lophura diardi*), Red jungle fowl (*Gallus gallus*), White-winged duck (*Cairinia scutata*) and Lesser adjutant (*Leptoptilos javanicus*).

Pha Taem NP is close to Phou Xiangthong NBCA, while Bun Thrik - Yot Mon WS and Phu Jong - Na Yoi NP connect to Preah Vihear Protected Forest (1900 km<sup>2</sup>) in Cambodia and Dong Kanthung PF in Lao PDR. It has been known that Bun Thrik - Yot Mon WS and Phu Jong - Na Yoi NP are the two reserves in Thailand, where large mammals can be found.

### Phou Xiangthong NBCA (PXNBCA)

PXNBCA, with the total cover area of 718 km<sup>2</sup>, was established as NBCA by PM Decree 164, 29 October 1993. It is located in Salavanh and Champasak Provinces, between Latitude 15° 19' - 15° 52' N and Longitude 105° 23.5' - 105° 47' E. It borders the eastern riverbank of the Mekong River and on the western opposite side of the river is connected to Pha Taem NP in Thailand. Vegetative covers are composed of the predominant Mixed deciduous forest and Bamboo (40%) distributed in patches. Dry dipterocarp forest (20%) and Semi-dry evergreen forest (20%), respectively. The topography of PXNBCA incorporates the Lao side of the Mekong River and the adjoining hills eastwards. To the east, its boundary is well defined by a steeply rising escarpment up to a low sandstone plateau. There are 69 villages surrounding this NBCA and 6 villages are found inside the NBCA with 25,000 people (Salavanh Department of Natural Resources and Environment, in letter 2014).

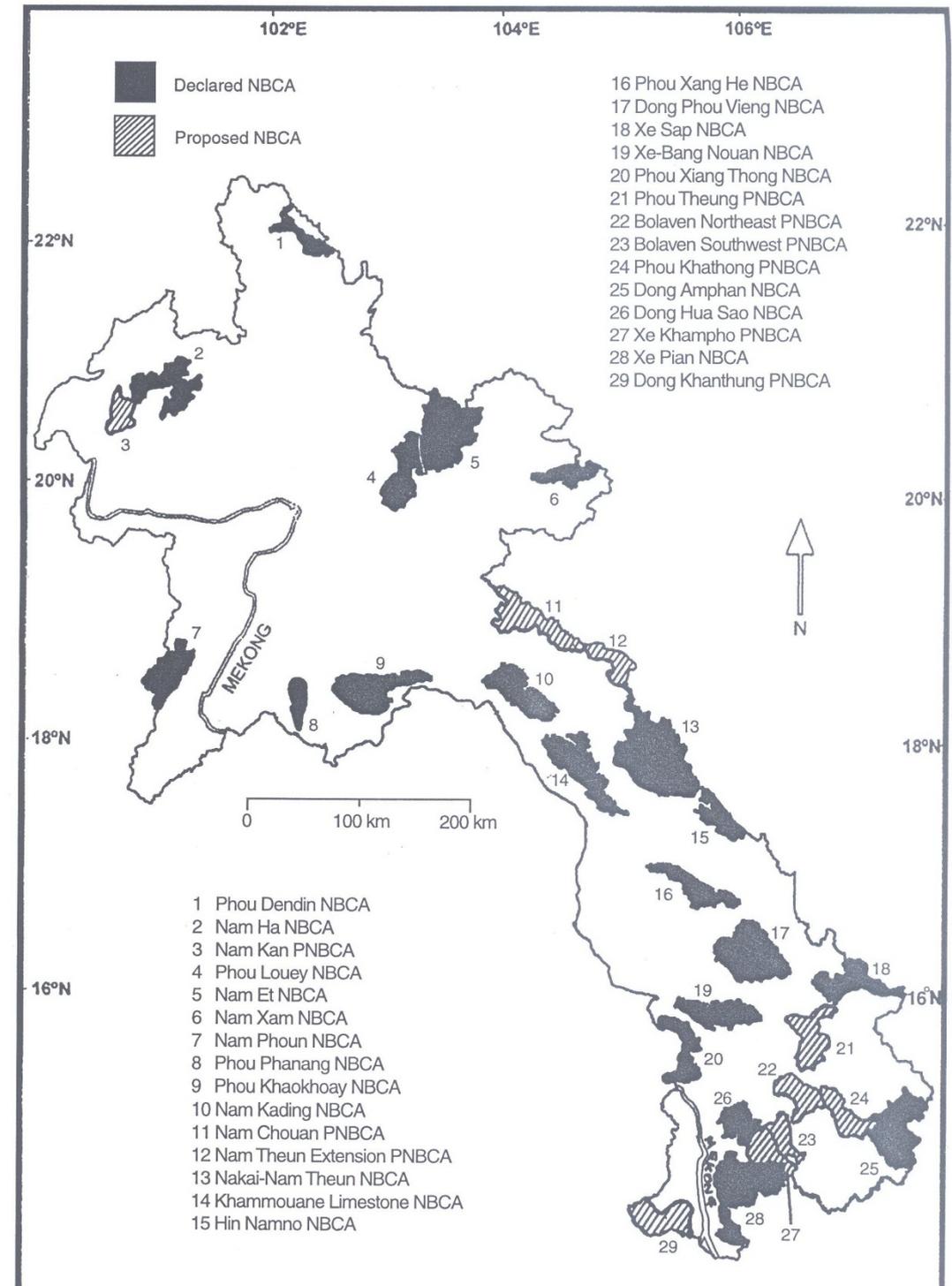
There are some interesting species of wildlife in the reserve, e.g. Pa Kha or Irrawaddy dolphin (*Orcaella brevirostris*) in the Mekong river, Wild elephant (*Elephas maximus*), Banteng (*Bos javanicus*), Sambar deer (*Rusa unicolor*), Chinese serow (*Capricornis milneedwardsii*), Northern Pig-tailed macaque (*Macaca leonena*), Long-tailed macaque (*Macaca fascicularis*), Yellow-cheeked crested gibbon (*Nomascus gabriellae*) and tiger (*Panthera tigris*) (Duckworth *et al.*, 1999; Fransis, 2008).

The Mekong River passes through PXNBCA in the upper section of the International Bird Area (IBA) nice supports small numbers of Small pratincoles (*Glareola lacteal*), moderate numbers of River lapwings (*Vanellus duvaucelii*) and high numbers of Wire-tailed swallows (*Hirundo smithii*) (Evans *et al.* 2000). The lower section from PXNBCA to the southern most Veunkham, which has a high proportion of sandbars, supports large numbers of Small pratincoles, and smaller numbers of other sandbar-nesting birds, including River lapwings, River terns (*Sterna aurantia*) and the last known nesting Little terns (*S. albifrons*) in Lao PDR. The recently described Mekong wagtail (*Motacilla samveasnae*) from Khongchiam District in Ubon Ratchathani has been confirmed to occur in the lower section of the IBA and provisionally recorded in the upper section (Duckworth *et al.* 2001; Nabhitabatta *et al.* 2007).

It is known that, in between the two reserves. Phou Xiangthong and Pha Taem (see Fig 2), some migratory movements of mammals such as Wild elephant, Sambar deer, Common barking deer (*Muntiacus muntjak*) and Common wild boar (*Sus scrofa*) across the river during the dry season in the past few decades (Bhumpakphan, 2004). There are Thai and Lao settlement villages along both sides of the Mekong Riverbanks, and the villages have grown up with rapid changes in development. Thus, several artificial constructions are thought to block the movement of the above mentioned large mammals between the two reserve areas. Recent records of Chinese serow, Barking deer and Wild boar crossing the Mekong River have been reported and confirmed by local Thai people at Kanta Kwien Village in Khong Chiam District.



**Fig 2.** Pha Taem and Phu Xiangthong on opposite sites of the Mekong River.



**Fig 3.** Location of the 29 Protected Areas in Lao PDR. Two reserves, No 20 and No 29, are assigned as part of the Tri-border Protected Area. Source: Duckworth *et al.* 1999.



**Fig 4.** Phu Jong - Na Yoi NP connects to the lowland of Dong Khanthung PF.

#### **Dong Khanthung Protected Forest (DKPF)**

The current status of this reserve area is the Provincial Protected Forest of Champasak Province. It is located in Mounlapamok Subdistrict Champasak, between Latitude 14° 07' - 14° 32' N and Longitude 105° 12' - 105° 45' E at the south-west corner border between Laos and Thailand. The most southern part of its area is the Xe Lamphao River which is also the border line between Lao PDR and Preah Vihear Protected Forest of Cambodia. The vegetative covers are dominated by Dry evergreen forest, Mixed deciduous forest and small patches Dry deciduous dipterocarp forest.

Many key wildlife species are reported existing in the reserve, such as Giant ibis (*Pseudibis gigantean*), Lesser adjutant (*Leptoptilos javanicus*), Spot-billed pelican (*Pelecanus philippensis*), Green peafowl (*Pavo muticus*), White-winged duck (*Cairinia scutata*), Wild elephant, Gaur (*Bos gaurus*), Banteng (*Bos javanicus*), “Ong” or Siamese Eld’s deer (*Rucervus eldii siamensis*), Pileated gibbon (*Hylobates pileatus*) and Silvered langur (*Trachypithecus cristatus*) (Round, 1998; Duckworth *et al.*, 1999; Nooren and Claridge, 2001). In addition, the “Ta Lung” Lao name for Silvered langur - subspecies of Indochina, is now changed and reclassified as Indochinese Lutong (*Trachypithecus germaini*) by some authors (*i.e.* Groves, 2001; Nadler, 2010).

A diversity of wild flora and fauna in DKPF are harvested by local people. There are ten villages inside the reserve. Regarding threats to wildlife in South Lao PDR, it is known that a number of the Key Species of mammals, *e.g.* Sambar deer, Indochinese silvered langur, large birds and reptiles, such as the Reticulated python, King cobra, and both monitor lizards – tree monitor and water monitor, thriving in habitats moderately altered by people, so habitat loss is here considered slightly less threatening (Round, 1998). A Siamese crocodile (*Crocodylus siamensis*) from Xe Lamphao River was shot by a Lao person. This was reported by a local Cambodian soldier guard at Triangle boarder pass (Lieutenant Tong Tang, personal communication, 2003).

### 3. Wildlife Studies

#### 3.1 Methodology Approaches

The methodology for wildlife study in the Emerald Triangle Protected Forests Complex between Thailand PPFC and Laos DKPF includes for various techniques to obtain wildlife data and covers five topics which are as follows:

##### 3.1.1 Literature Reviews

The available information of the wildlife species lists (*i.e.* Key wildlife species, Landscape species, Wildlife Research, Wildlife Ecology) of the Protected Forests of this ITTO focal study sites Phase III was reviewed. We searched many available sources in Thai, Lao and English language from journals, books and from Internet Websites.

##### 3.1.2 Diversity of wildlife in Thailand and Laos Boarder Reserves

It is important to know the composition of species diversity of the wildlife existing in the reserves in order to plan protecting them for their survival. The survey and update of data of Wildlife species diversity in the Emerald Triangle Protected Forests Complex between Thailand and Lao PDR in regards to the three main activities were as follows:

1) We carried out surveys in Pha Taem Protected Forest Complex (PPFC) in Thailand in 5 reserves; 2) We did field survey on wildlife data in Dong Khanthung Protected Forest (DKPF) in Lao PDR; and 3) We conducted literature reviews on wildlife data to update the list of Phou Xiang Thong NBCA of Lao PDR.

The data verification for **PPFC** and **DKPF**, as mentioned above from activities 1) and 2) of this study obtained from: a) Direct survey in the study sites; b) Interview of the park rangers and forester staff and local people who live around the PPFC; c) Local market surveys for bush meat, wildlife used as pet animals and animal parts used as materials for medicinal purposes; and d) Identification of species was based on texts and guide books, *i.e.* Lekagul and McNeely (1988), Lekagul and Round (1991), Robson (2002), Francis (2008), Das (2010), Vidthayanon *et al.* (1997) and some Lao guide books, *etc.* (see Fig 5).

We conducted field wildlife survey in Thailand's **PPFC** in order to update wildlife data. Direct counts method, track and signs identification, infra-red camera trapping in the study sites were applied in the field survey.

The species composition review of Wildlife in the study area of Lao PDR's reserves was carrying out as surveys of species diversity, done by a Lao Wildlife Study Team in collaboration between Lao foresters and university staff. All activities in Lao PDR were led by Dr. Phonsavanh Thepphasoulithone (Vice Rector of Champasak University) and under advisory support from Dr. Bounmy Phonsavanh, Vice Rector of Champasak University. It also, included carrying out a secondary wildlife data collection from available literature reviews for Phou Xiangthong NBCA (according to TORs from the Royal Forest Department).

### 3.1.3 Threats to wildlife and their habitats

During our wildlife study and survey in PPFC in Thailand and DKPF in Lao PDR, we also considered the threats and factors related to wildlife and their habitats. Habitat loss, habitat destruction, illegal logging, wildlife poaching, and hunting subsistence hunting were observed and noted. All known problems were added in the suggestions on how to manage and to mitigate the threats in PPFC and DKPF.

According to our last study in Phase I, we found some remarkable warning signs of land mines along the Thailand, Cambodia and Lao Border Areas. We were kindly informed by the Rector of Champasak University on issues regarding the safety for working in such sensitive forested area of DKPF near the border with Thailand and Cambodia. When working in DKPF, we would thus avoid such areas for security reasons.

### 3.1.4 Wildlife Present-day status

The lists of wildlife known from the study areas in Thailand and Lao PDR were considered based on the Global current status which again is based on IUCN Red Data Book, and CITES Appendices I and II (CITES 1993).

### 3.1.5 Wide-ranging species

#### a) Consideration and selection for wide-ranging landscape species

The previous wildlife studied in the Emerald Triangle Trans-boundary Protected Forest: are based on 1) The Wildlife list in Preah Vihear from Chheng (2004) and Forestry Administration (2010); 2) The Wildlife in Dong Khanthung PF, obtained from some available references from Round (1998) and Duckworth *et al.* (1999); 3) The Wildlife list of Pha Taem Protected Forest Complex (PPFC) obtained from Bhumpakphan (2004). We considered and selected species that represent wide-ranging species existing in the Emerald Triangle Trans-boundary between Thailand, Cambodia and Laos. The review of wildlife habitat uses, topography, slope (%) and current status was taken from available references; *e.g.* Lekagul and McNeely (1988), Sukmasuang (2000). We have compared them in Table 2.

#### b) Target for wide-ranging landscape species

**The wide-range species or landscape species**, that relate to the large habitat areas of the Emerald Triangle Protected Forest Complex, are composed of Wild elephant, gaur, banteng, sambar deer (*Rusa unicolor*), Siamese Eld's deer (*Rucervus eldii siamensis*), tiger and leopard. Sarus crane, Lesser adjutant stork, vultures and Siamese crocodile were also included in this focal group. Some basic details of the key species for this study are as follows:

Elephant and other large mammal populations are roaming freely between large habitat areas of the tri-country border, *i.e.* Bun Trik - Yot Mon Wildlife Sanctuary, Dong Khanthung Protected Forest and Preah Vihear Protected Forest. Their recent movements between Thailand and Lao PDR are confirmed by local peoples of the two countries who

also confirmed wild elephant do crop raids in rice paddy fields and other types of agricultural land (Ronglarp Sukmasuang, personnel communication 2013).

Sambar deer and wild bovids can be found in this Tri-border area. Herds of banteng from Laos sometimes come to an area adjoining Bun Trik - Yot Mon WS in Thailand. Individual Gaur also moves to Phanom Dongrek Range in Thailand during the rainy season. In the past, sighting of Kouprey or Nguw Ba (*Bos sauveli*) was reported and it was observed, that they sometimes moved up for foraging on the Dongrek Range during the rainy season and later on returned to lower habitats in Cambodia (Lekakul and McNeely, 1988; Duckworth *et al.*, 1999; Komolchai Boonchai, personal communication).

Siamese Eld's deer or "Ong" (*in Lao language*) can be found scatter in Dong Kanthung Protected Forest (DKPF), but the large populations are reported in Preah Vihear PF or Chhep PF (Sovanna, 2004). The Ban Khem villagers in Moulapamok District informed that "Ong" formerly inhabited, but had been extirpated from the open dry dipterocarp woodlands in the vicinity of Ban Khem and Ban Po (Round, 1998).

Large bird species such as Sarus crane (*Grus antigone*), Lesser adjutant (*Leptoptilos javanicus*), Giant ibis (*Pseudibis gigantea*), Red-headed vulture (*Sarcogyps calvus*), White-backed vulture (*Gyps bengalensis*) and Slender-billed vulture (*Gyps tenuirostris*) prefer the open habitat of dry deciduous forest (Robson, 2002) in Preah Vihear of the Northern Plain in Cambodia (Dany Chheng, personal communication)

One large reptile, the Siamese or Fresh-water crocodile (*Crocodylus siamensis*) is on the top of the Pyramid of the wetland ecosystem of the Mekong River and is classified as an endangered species. The species is scattered and would be very interesting to survey for its present existence in Emerald Triangle Protected Forest Complex of the three countries.

All the species mentioned are significant International Key species that need high level of strong and intensive protection for successful conservation. The selected species are composed of 8 mammals, 6 large birds and one reptile. Further details relating to habitat, topography and country records of existence are shown in Table 2 and 3.

### **c) Habitat utilization, Transition and Barrier**

Wildlife species cannot be separated from their habitat and their welfare factors – food, water, cover and living spaces. The review results show that there are three major factors that influence the distribution of each wildlife species, namely 1) Biological factors (species, food, vegetative covers or forest types); 2) Physical factors (topography, slope, aspect, water source); and 3) Anthropogenic factors (artificial construction, road, village, livestock raising and all of human disturbances). All the three major factors are commonly used for determining habitat suitability and distribution for large mammals, *e.g.* Wild elephant, Banteng, Gaur and Sambar deer (Bhumpakphan, 1997; Trisurat, 2004; Trisurat *et al.*, 2012).

Biological and physical factors include land use/land cover, accessibility to permanent water, elevation and slope. Forest type is a significant factor for providing hiding cover and forage for herbivore species, while water is a resource necessary for animals to survive, especially in the dry season, and to reproduce (Patton, 1992). In addition, elevation and slope are physical barriers to wildlife migration because most

species prefer to inhabit lowland area rather than rugged terrain. Human factors (both positive and negative) identified were distance to road, distance to ranger station, distance to village, livestock and poaching camps.

We did habit at classification of the study areas of PFFC and DKPF and planned to conduct surveys in various habitat types where Banteng, Gaur, Wild elephant, tiger and large birds, *i.e.* Sarus crane and Lesser adjutant were found.

#### ***d) Field survey for wide-ranging species***

For activities related to the wide-range species study in the study areas of Phataem Protected Forest Complex, we used 1: 50,000 scale Topographic Map from (Royal Thai Survey Department. 2002) (see Figure 6) and Dong Khanthung PF (Figure 5). In this Inception Report, we firstly proposed 15 Key species which are composed of 8 mammals, 6 large birds and one reptile, as shown in Table 2. The target species are Asian elephant, Gaur, Banteng, Sambar deer, Eld's deer, tiger, leopard and large birds, *i.e.* Sarus crane, Giant ibis, Lesser adjutant, White-backed vulture, Red-headed vulture and Siamese or Fresh-water crocodile. Within our wildlife survey, their known location were clarified, marked and were put into a Data table with information on site, date, species and their GPS locations. All Data tables were verified and stored in Microsoft Excel before sending them to GIS consultant (Prof. Dr. Yongyut Trisurat).



**Fig 5.** Guide books and some useful equipment used in this study.



**Fig 6.** CU Wildlife Study Team surveyed and set the camera trap in Dong Khanthung PF, Lao PDR.

## 3.2 Selection for Landscape Wildlife Species

### 3.2.1 Preparing data and materials

Selected Landscape Wildlife Species (LWS) for the 5 reserves of the Pha Taem Protected Complex and Dong Khanthung PF in Champasak Province, Lao PDR were studied and considered. Handouts of all lecture notes were given to participants for their more detailed study. One article entitled “*Human and the survival of landscape wildlife groups*” was written and handed to staff from the five reserves and to all Thai and Lao participants. We also provide some ecological information, distribution and Global IUCN status of the key wildlife species in the Emerald Triangle Protected Forests Complex for better understanding.

### 3.2.2 Literature Reviews of LWS

The proposed 15 Key Wildlife Landscape species (Bhumpakphan, 2013) are composed of 8 mammals, 6 large birds and one reptile. We worked on the details of those key species. Available information for those 15 Key Landscape Wildlife Species were, with our wildlife pictures were sent to ITTO’s Field Office in order to create Posters of Introduction to Landscape Wildlife of the Emerald Triangle Protected Forest Complex, see Table 2.

**Table 2.** Selected Key Landscape Wildlife of Thailand PPFC and Laos DKPF

Species	Habitat uses <sup>1/</sup>					Slope (%)			IUCN status <sup>2/</sup>	Distribution <sup>3/</sup>		
	DE	MD	DD	AL	WL	<10	10-20	>30		T	L	C
Elephant	x	x	x	x	x	x			EN	x	x	x
Gaur	x	x	x			x	x		VU	x	x	x
Banteng		x	x			x			EN	x	x	x
Sambar	x	x	x	x	x	x	x		VU	x	x	x
Eld's deer		x	x			x			EN		x	x
Tiger	x	x	x			x	x		EN	x	x	x
Leopard	x	x	x			x	x		NT	x	x	x
Pileated gibbon	x	x				x	x	x	EN	x	x	x
Sarus crane			x	x	x	x			VU		x	x
Lesser Adjutant stork			x		x	x			EN	?	x	x
Giant ibis			x		x	x			CR		x	x
White-backed vulture			x			x			CR		?	x
King vulture			x			x			CR		?	x
Long-billed vulture			x		x	x			CR		?	x
Siamese crocodile					x	x			CR	x	x	x
	Subtotal for Landscape (# species)									9	12	

**Notes:** Habitats DE = Dry Evergreen Forest; MD = Mixed Deciduous Forest;  
DD = Dry Deciduous Dipterocarp Forest; AL = Agriculture Land  
WL = Wetland, Water system

Status EN = Endangered species; CR = Critical Endangered species;  
VU = Vulnerable species; LC = Less Concern species;  
NT = Not Threatened species

Distribution in Tri-border areas:

T = Thailand; C = Cambodia; L = Lao PDR.

x = existing; ? = need to be confirmed;  = Selected species

### 3.2.3 New proposal for interesting Key LWS

After our discussion on Landscape Wildlife species with Mr. Dany Chheang from Cambodia's Forest Administration Office in a meeting of December 2013, we agreed to add 5 more species. They are composed of Serow, White-winged duck, Greater Adjutant, Black-necked stork and Green peafowl. During the training workshop in Champasak in December 2013, I discussed with and suggested to the Lao Wildlife Study Team to added 2 new species, namely Hog deer and Pa-kha or Irrawaddy dolphin. It is thought to be important to work for their dispersals in Dong Khanthung Protected Forest (DKPF) and Phu Xiangthong NBCA (PXNBCA) in Lao PDR. Irrawaddy dolphin in the Mekong River is known to be distributed further north to PXNBCA (Duckworth *et al.*, 1999) while Hog deer is suspected to be in DKPF.

At the meeting on GIS Training Workshop at Tbeng Meanchey City in Cambodia during 11<sup>th</sup> -15<sup>th</sup> March, 2014, the new Focal Wildlife Landscape Species for Thailand PPFC and Laos DKPF were added as shown in Table 3.

**Table 3.** New proposed Landscape Wildlife of Thailand PPFC and Laos DKPF

Species	Habitat uses <sup>1/</sup>					Slope (%)			IUCN status <sup>2/</sup>	Distribution <sup>3/</sup>		
	DE	MD	DD	AL	WL	<10	10-20	>30		T	L	C
Serow	x	x	x				x	x	LC	x	x	x
Hog deer			x		x	x			EN		?	
Jackal		x	x	x		x			-	x	x	x
Wild boar	x	x	x	x	x	x	x	x	-	x	x	x
Irrawaddy dolphin		x	x			x			EN	x	x	?
White-winged duck	x				x	x	x		-	x	x	x
Greater adjutant		x	x		x	x			EN	?	x	x
Black-necked stork		x	x	x		x			NT		x	x
Siamese fireback	x	x				x			EN	x	x	x
Green peafowl		x	x	x	x	x			EN	x	x	x
	Subtotal for Table 3.									8	6	
	Subtotal for Table 2.									9	12	
	Total Landscape Wildlife (# species)									17	18	

**Notes:** Habitats DE = Dry Evergreen Forest; MD = Mixed Deciduous Forest;  
DD = Dry Deciduous Dipterocarp Forest; AL = Agriculture Land  
WL = Wetland, Water system

Status EN = Endangered species; CR = Critical Endangered species;  
VU = Vulnerable species; LC = Less Concern species;  
NT = Not Threatened species

Distribution in Tri-border areas: T = Thailand; C = Cambodia; L = Lao PDR  
x= existing; ? = need to be confirmed;  = Selected species.

### 3.2.4 Collecting & Gathering LWS spatial data

Landscape wildlife species was the main target of the study. The outcome was to see distribution ranges in the large landscape of the Tri-countries areas. Information for GPS-locations (UTM coordination) of the 22 Key species (from Table 2 and Table 3) were obtained from our field visits and some data were obtained from park rangers patrolling in the study areas of the 5 reserves of **PPFC** in Thailand and in Dong Khanthung PF in Lao PDR by Champasak University Wildlife Study Team. In addition, wildlife spatial data from available reference sources of the target reserves have been obtained and used in analyzes of wildlife habitat modeling in October, 2014 (in Dr. Yongyut Trisurat's Training workshop).

### 3.2.5 Supply of Information for LWS Posters

The supply of the first proposed 15 Key Landscape Wildlife species, basic information (*i.e.* their pictures, ecology and present status) has been very helpful for forestry staff, park rangers and participants. Mr. Thaneth Boukaew from ITTO's Field Office supported the activities by creating the six posters of Key Landscape Wildlife Species. One set with six posters were created and handed to Dr. Phonesavanh Thepphasoulithone, the Leader of Champasak University Wildlife Study Team.



Management of the Emerald Triangle Protected Forests Complex  
to Promote Cooperation for Trans-boundary Biodiversity Conservation  
between Thailand, Cambodia and Laos (Phase III)  
ITTO Project PD 577/10 Rev.1 (F)



## สัตว์ป่าที่สำคัญในพื้นที่

### โครงการจัดการผืนป่าอนุรักษ์สามเหลี่ยมมรกตฯ






**กระทิง**

ชื่อสามัญ : Gaur  
ชื่อวิทยาศาสตร์ : *Bos gaurus*  
รูปร่างลักษณะ : เป็นวัวป่าขนาดใหญ่ มีน้ำหนักเกือบ 1,000 กิโลกรัม มีหนอกคอสูงเห็นเป็นสันชัดเจนแล้วตกลงตรงกลางหลัง มีเขาทั้งสองเพศ ขนาดโตเต็มที่โผล่สูงจากพื้น 1.8 เมตร สีลำตัวสีน้ำตาลหรือสีน้ำตาลแกมดำ หน้าผากมีขนสีขาวเทาหรือสีเหลือง เรียกว่า หน้าโพ ส่วนขาทั้งสี่ตั้งระดับหัวเข่าลงไปถึงกับสีขาวเช่นเดียวกับหน้าผาก ตูดคล้ายสมอถุงเท้าสีขาว ส่วนรูนของเขาสีน้ำตาลไหม้ ตอนกลางสีเหลืองและปลายเขาสีออกดำ  
อุปนิสัย : ออกหากินสลับไปกับการพักผ่อนตลอดวัน โดยกลางวันจะหากินในป่ากึ่งที่และกลางคืนหากินในป่าโปร่งและทุ่งหญ้า อยู่รวมกันเป็นฝูง 8-12 ตัว มีตัวผู้ที่มีขนาดใหญ่ทำหน้าที่เป็นจ่าฝูง  
อาหาร หญ้า ไม้พุ่ม ไม้เถา และใบไม้  
การสืบพันธุ์ : ผสมพันธุ์ในเดือนพฤศจิกายนถึงเดือนมกราคม ตกลูกครั้งละ 1 ตัว  
ถิ่นอาศัย : อยู่ในป่าแทบทุกประเภท แต่ชอบป่าที่มีความชื้นมาก ๆ  
การแพร่กระจาย : แพร่กระจายอยู่ในประเทศอินเดีย เนปาล ชูนาน พม่า อินโดจีน และแหลมมลายู  
สถานภาพทางการอนุรักษ์ : มีสถานภาพมีแนวโน้มถูกคุกคาม (Vulnerable: VU) ตาม IUCN (2013)

**วัวแดง**

ชื่อสามัญ : Banteng  
ชื่อวิทยาศาสตร์ : *Bos javanicus*  
รูปร่างลักษณะ : ลักษณะทั่วไปคล้ายวัวบ้าน เขาสั้นโค้งเป็นวง เขาของตัวเมียจะเล็กกว่าและเป็นวงแคบกว่า ปลายเขาชี้เข้าหากัน ส่วนเขาของตัวผู้ใหญ่กว่าและปลายเขาชี้ขึ้น มีหนอกสูงบริเวณหลังเหนือหัวไหล่หนัก 600-800 กิโลกรัม เขายาวได้ถึง 75 เซนติเมตร ความยาวลำตัว 190-225 เซนติเมตร ความสูงที่หัวไหล่ 160 เซนติเมตร หางยาว 65-70 เซนติเมตร สี ตามลำตัวสีน้ำตาลแดง ขาทั้งสี่มีสีขาวดูเหมือนสวมถุงเท้า ก้นสีขาว ปากสีขาว และมีจุดสีขาวเหนือลูกตา สีลำตัวของตัวผู้จะเข้มขึ้นตามอายุ  
อุปนิสัย : พบออกหากินทั้งกลางวันและกลางคืน แต่ในพื้นที่ที่มีการรบกวนจากมนุษย์จะมีแนวโน้มหากินกลางคืนมากกว่า หากินตามป่าโปร่ง พักผ่อนและหลบภัยในป่าทึบหากินเป็นฝูง ๆ หนึ่งมีสมาชิกตั้งแต่ 2-30 ตัว และมีตัวผู้เป็นจ่าฝูงหนึ่งตัว วัวแดงตัวผู้ที่ไม่ได้เป็นจ่าฝูงอาศัยตัวเดียวหรือรวมฝูงกับตัวผู้ที่อยู่ในสถานะเดียวกันเป็นสัตว์ที่ขี้อายมาก มักเลี้ยงคน ในฤดูน้ำหลากวัวแดงอาจย้ายถิ่นหากินขึ้นไปอยู่บนที่สูง พอถึงฤดูแล้งค่อยย้ายกลับลงมาหากินในป่าเปิดระดับต่ำอีกครั้ง ลูกวัวหย่านมได้เมื่ออายุได้ 6-9 เดือน  
อาหาร : กินหญ้า ไม้ ผลไม้ ใบไม้และยอดอ่อนเป็นอาหาร  
การสืบพันธุ์ : วัวแดงในประเทศไทยมีฤดูผสมพันธุ์อยู่ในช่วงเดือนพฤษภาคมถึงเดือนมิถุนายน ตั้งท้องนาน 285 วัน เข้าสู่วัยเจริญพันธุ์เมื่ออายุได้ 2-3 ปี ตกลูกครั้งละตัว  
ถิ่นอาศัย : ทุ่งหญ้าโล่งในป่าเบญจพรรณและป่าเต็งรัง พบหากินในพื้นที่ที่มีความสูงต่ำกว่า 900 เมตรจากระดับน้ำทะเลลงมา  
การแพร่กระจาย : พบในพม่า ไทย กัมพูชา ลาว เวียดนาม บอร์เนียว ชวา และบาหลี  
สถานภาพทางการอนุรักษ์ : Critically endangered (CR) ตาม IUCN (2013)

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**Fig 7.** Guar and Banteng Poster from one of the six Posters providing - Ecology and present status information of Landscape species.

## 4. Study Results

### 4.1 Wildlife Diversity

**Pha Taem Protected Forest Complex (PPFC):** Based on the past survey in the five reserves of Pha Taem Protected Forest Complex (PPFC), the known species there were Siamese fireback, Green Peafowl, Brahminy kite and many birds. Some of them have never reported before in Bhumpakphan (2004).

**Phu Xiangthong National Biodiversity Conservation Area (PXNBCA) and Dong Kanthung Protected Forest (DKPF):** In our preliminary survey in DKPF conducted in December 2013, near Nong Nga Village and Pail Village, we found very few species of wildlife. Later on in 2014, Champasak University Wildlife Study Team surveyed in DKPF, and they found some interesting wildlife and obtained some pictures of wildlife, *e.g.* Woolly-necked stork, Lesser mouse deer, Asiatic jackal, Common barking deer, Sambar deer, Gaur, Banteng and Wild elephant.

**Details of Our Studies:** We have conducted field wildlife surveys in order to update data of Thailand PPFC in 5 reserves, namely Pha Taem NP, Kaeng Tana NP, Bun Thrik - Yot Mon WS, Phu Jong - Na Yoi NP and Yot Dom WS, while CU's Wildlife Study Team surveyed in Dong Khanthung PF.

Direct counts method, Wildlife track and signs identification, Infra-red camera trapping in the study sites, have been applied for field wildlife survey. Threats to wildlife and their habitat were observed by this study. Also, some secondary data were obtained from interview of forestry official staff, rangers and local people, who live inside and around the reserves. Details of species existing in the Emerald Triangle Protected Forest Complex (ETPFC) between the two nations, are showed in Table 4. Details of wildlife species diversity from Thailand and Lao PDR were as follows:

**Table 4.** Wildlife Species existing in ETPFC between Thailand and Lao PDR

Faunal Type	Total	Thailand					Lao PDR	
		Pha Taem	Kaeng Tana	Bun Thrik	Phu Jong	Yot Dom	Phou Xiang	Dong Kanth
Mammal	<b>96</b>	32	51	45	78	85	30	24
Bird	<b>288</b>	72	131	113	180	259	23	32
Reptile	<b>81</b>	34	56	38	72	71	15	22
Amphibian	<b>30</b>	15	22	16	21	28	7	8
Fish	<b>101</b>	52	70	24	55	73	52	37
Total	<b>596</b>	205	330	236	407	516	127	123

#### 4.1.1 Wildlife in PPFC

**Mammals** Species diversities were composed of 32 species in Pha Taem; 51 species in Khaeng Tana; 45 species in Bun Thrik; 78 species in Phu Jong; and 85 species in Yot Dom. All the found species lists are reported in Annex 1.

The interesting mammals were Wild Elephant (*Elephas maximus*) which were commonly seen in Bun Thrik – Yot Mon WS (Fig 8), while Asiatic jackal (*Canis aureus*) and Wild boar (*Sus scrofa*) were found in all the reserves. Some large mammals known from camera trap were Wild Elephant, Banteng (*Bos javanicus*), Asiatic Jackal and Wild boar. In addition, Large Indian civet (*Zibetha indica*), Common barking deer (*Muntiacus muntjak*) and Chinese serow (*Capricornis milneedwardsii*) were known from poaching cases in Yot Dom of PPFC. Also, Rhesus macaque (*Macaca mulatta*) was found at Dong Natam in Pha Taem NP. It was caught from the wild and was kept as pet (Thanet Baukaew, personal communication). Pha Taem NP should be the southernmost limit of this monkey in its eastern range.



**Fig 8.** Wild Elephant herd found in Bun Thrik – Yot Mon WS.

**Birds** The diversity of birds found in PPFC during our survey, was composed of 72 species in Pha Taem; 131 species in Kaeng Tana; 113 species in Bun Thrik; 180 in Phu Jong and 259 species in Yot Dom. Some interesting birds were Mekong wagtail (*Motacilla samveasnae*), Red jungle fowl (*Gallus gallus*), Green peafowl (*Pavo muticus*), Siamese fireback (*Lophura diardi*) and some migratory birds such as Red-throated flycatcher (*Ficedura parva*) (see Fig 9-10). Complete data of the bird list are shown in Annex 2.

**Reptiles** The Reptile Fauna in PPFC, was composed of 34 species in Pha Taem; 56 species in Kaeng Tana; 38 species in Bun Thrik; 72 species in Phu Jong; and 71 species in Yot Dom, see Annex 3. Tree monitor (*Varanus bengalensis*), Water monitor

(*Varanus salvator*) and Siamese crocodile (*Crocodylus siamensis*) were seen in Yot Dom WS. Examples of interesting species were Sandstone gecko (*Gecko petricolus*), Siamese leaf-toed gecko (*Dixoneus siamensis*) and Indochinese water lizard (*Physignathus cocincinus*). From the survey of Bun Thrik WS staff, one interesting Blue-tailed skink (*Plestiodon* sp.) was found and it looked very similar to *Plestiodon quadrilineatus*. Anyhow it is thought to be a new species by Dr. Yotchai Suai-Ngen from Khon Khaeng University's Faculty of Science (see Fig 11-13).

**Amphibians** The species diversities for this type of fauna were composed of 15 species in Pha Taem; 22 species in Kaeng Tana; 16 species in Bun Thrik; 22 species in Phu Jong; and 28 species in Yot Dom. We came across some frogs; *e.g.* Asiatic toad (*Bufo melanostictus*), Stripe-backed frog (*Rana macrodactyla*) and E-mo Hin or Sandstone frog (*Fajarvarya triora*). Sandstone frog is a new species of frog described by Stuart *et al.* (2006), can be found in Pha Taem NP and Phu Jong - Na Yoi NP as shown in Fig 14. It should be noted that E-mo Hin was identified in the previous Bhumpakphan (2004) report as Aquatic frog (*Rana khulii*). All the found species are reported in Annex 4.



**Fig 9.** Green peafowl flew over the tree top in Pha Taem NP.



**Fig 10.** Siamese fireback and Red-throated flycatcher.



**Fig 11.** Blue-tail skink (*Plestiodon* sp.)



**Fig 12.** Slim-leg skink and Indochinese water lizard lives near stream-side habitat.



**Fig 13.** Sandstone gecko and Siamese leaf-toed gecko.



**Fig 14.** E-mo hin or Sandstone frog (*Fajarvarya tritora*) and Stripe-backed frog (*Rana macrodactyla*) found in Pha Taem NP.

**Fish** The Mekong and Mun River systems can support a varied diversity of fish species. Based on known species from references and local market survey fish species are composed of 52 species in Pha Taem; 70 species in Khaeng Tana; 24 species in Bun Thrik; 55 species in Phu Jong; and 73 species in Yot Dom. Local markets near reserves were the good sites provide fish information. Some interesting fish species were Mekong giant catfish (*Pangasianodon gigas*), Pao catfish (*Pangasius conchophilus*), Asian red-tailed catfish (*Hemibagrus wyckioides*), Royal featherback (*Chitala blanci*), Greater back shark (*Morulius chrysophekadion*), Hampala barb (*Hampala dispar*) etc.

Four Mekong giant catfishs, each weighing 150 kg, were caught by local Thai fishermen in Mun River at Khongchiam District, Ubon Ratchathani on the 15<sup>th</sup> October 2014. Local fishermen received 78,000 baht from selling those fish.

#### 4.1.2 Wildlife in PXNBCA and DKPF

Wildlife lists in PXNBCA have been produced from reviewing reliable references. Detailed information on the species is shown together with the Anex on wildlife in Dong Kanthung PF. Based on the field work in DKPF by Champasak University Wildlife Study Team, the results reported from direct sighting, track-sign identification and from camera trap were as follows:

**Mammals** There were at least 30 known mammals in PXNBCA and 24 species DKPF. Note that PXNBCA is a large mountainous reserve supporting Primates and large mammals, e.g. Sambar deer (*Rusa unicolor*), Banteng (*Bos javanicus*) and Gaur (*Bos gaurus*). Only one elephant had been living in PXNBCA and it died four years ago, ca. 2010 (Mr. Inpaeng Daungvongsa, personal communication).

Based on the survey in DKPF, Wild elephant (*Elephas maximus*), wild boar (*Sus scrofa*), Common barking deer (*Muntiacus muntjak*), Lesser mouse deer (*Tragulus javanicus*) and Asiatic jackal (*Canis aureus*) are found in most parts of reserve. Some rare and interesting mammals found, are Sambar deer (*Rusa unicolor*), Banteng (*Bos javanicus*) and Gaur (*Bos gaurus*). Most of the wildlife pictures are obtained from camera set traps at a forest pond near Ban Khem Village in Dong Khanthung PF (shown in Fig 15-16 and Annex 1).

**Birds** There were 23 bird species known from PXNBCA and at least 32 species of birds seen in DKPF. They were composed of Red jungle fowl (*Gallus gallus*), Garganey (*Anus querquedula*), Greater coucal (*Centropus sinensis*) and Brahminy kite (*Haliastur indus*). Some rare and interesting birds were Grey-headed fish-eagle (*Ichthyophaga ichthyaetus*), Giant ibis (*Pseudibis gigantea*), Woolly-necked stork (*Ciconia episcopus*), see Fig 15 and Annex 2 for the species list.



**Fig 15.** Woolly-necked storks and Gaur found at a forest pond near Ban Khem Village in Dong Khanthung PF.



**Fig 16.** Common barking deer and a couple of Sambar deer in Dong Khanthung PF

**Reptiles** It has been known that they are very elusive and several attempts, specific spaces and proper timing is needed to survey them. There were at least 15 reptile species known from PXNBCA; and 22 species existing in Dong Khanthung PF, e.g. Indochinese rat snake (*Ptyas korros*), Tree monitor (*Varanus bengalensis*), Water monitor (*Varanus salvator*), Malayan snail eating turtle (*Malayemys subtrijuga*) and Indochinese box turtle (*Cuora galbinifrons*), Siamese crocodile (*Crocodylus siamensis*), see Annex 3.

**Amphibians** There were 7 species of frogs known from PXNBCA and 8 species from our survey in DKPF. Some examples were Marsh frog (*Fejervarya limnocharis*), Dark-sided froglet (*Microhyla heymonsi*), Bunt-headed burrowing frog (*Glyphoglossus molossus*) and House treefrog (*Polypedates leucomystex*), see Annex 4.

**Fish** Both Phou Xiangthong NBCA and DKPF are located along the Mekong River and its river system - Xe Lamphao River. There were at least 52 species of fish found in PXNBCA and 37 species in DKPF. They were composed of Pla buk or Mekong giant catfish (*Pangasianodon gigas*), Pla Mark phang (*Tenualosa thibaudeaui*), Pla Nam ngeuan (*Micronema bleekeri*), Pla Kha yaeng hin (*Leiocassis* sp.) and Pla Cha do (*Channa micropeltes*). Anyhow, the whole list can be seen in Annex 5.

## 4.2 Landscape Wildlife Species: LWS

**Proposed Landscape species in Thailand PPFC & Laos DKPF** In the Meeting of the GIS training workshop at Preah Vihear Forest Cantonment in Tabeng Meanchey Cambodia, 11<sup>th</sup> -14<sup>th</sup> March 2014, seventeen 17 species were proposed for Thailand PPFC and 18 species for Laos DKPF, (see Table 2-3). Details of the species, distribution and their presence are as follows:

### 4.2.1 Landscape Wildlife in Thailand's PPFC

**Mammals:** There are 8 species to follow up for their presence in PPFC (see Table 3). The most popular landscape species of PPFC was Wild elephant (*Elephas maximus*). They were found commonly in Bun Thrik – Yot Mon WS and agricultural areas surrounding the wildlife sanctuary. There were eleven individuals of them that travelled to Huai Duan Ha stream in the northern area of Phu Jong - Na Yoi NP for short time visits.

A record of sighting footprints of a wild Bovid herd was reported from Phu Jong - Na Yoi NP in November 2013. Track and signs of these Bovids, around 6-7 animals, with a calf in the herd, firstly thought to be Gaur (*Bos gaurus*), were found at Palan Foi Lom in Phu Jong - Na Yoi NP. After Mr. Bounmee Chanthasit, the park ranger, went back to take pictures of the footprints, they were, according to their shape and spoor of the footprints from pictures, identified and confirmed to be Banteng (*Bos javanicus*) by Naris Bhumpakphan. A solitary Gaur bull (*B. gaurus*) from DKPF in Lao PDR moves up to Phu Khao Wong near Phu Hin Dang every year (Threerayut Wongpaisert, personal comm. 2014). The same as young adult Gaur from PXNBCA crossed the Mekong River to Pha Taem NP in November 2014. Chinese Serow (*Capricornis milneedwardsii*) could be found along steep and high mountains in Lao PDR and Cambodia cliff. They were not directly detected by our survey in PPFC. But one carcass was found at Din Dam stream in Yot Dom WS (Yot Dom WS, 2014). Wild boar (*Sus scrofa*) is common in all 5 reserves of the PPFC.

Regarding Pileated gibbon (*Hylobates pileatus*), there has been questions that they might be extirpated from Bun Thrik - Yot Mon WS as there was no hearing of their morning vocalization while we were in Phu Jong - Na Yoi NP where is supposed to us, the last site for this gibbon. There have been some records of hearing this gibbon calls along the border with Dong Khanthung PF of Lao PDR between Chong Mak Mong to Phu Hin Hak Hill. In Yot Dom WS, we could not specify any recent sighting of this gibbon.

Asiatic jackals (*Canis aureus*) are commonly found in Pa Taem NP, Phu Jong - Na Yoi NP and Yot Dom WS. Our Thai Wildlife Study Team did not come across track and signs of leopard and tiger in PPFC. While there were two records of tiger information: 1) Chief of Phu Jong - Na Yoi NP mentioned that a tiger killed and ate livestock at Phu Hin Dang in 2011; and 2) Chief of Bun Trik - Yot Mon WS said that tiger footprint was found near the border with Lao PDR by local Thai people during the rainy season in 2014. Anyhow, it needs to be confirmed by evidence. It is suggested that the above tiger came from the forests in DKPF of Lao PDR.

**Birds** The birds lists is composed of 5 landscape bird species (see Table 2-3), *i.e.* Green peafowl (*Pavo muticus*), seen at Dong Natam in Pha Taem NP. Siamese fireback (*Lophura diardi*), common in PPFC, while White-winged duck (*Cairinas cutulata*) was sometimes found at Huai Duan Ha creek and at the reservoir Palan Sue Tonbon in Phu Jong - Na Yoi NP. The Lesser adjutant (*Leptoptilos javanicus*) and the three species of vultures were not found during the survey.

**Reptile** Siamese crocodile (*Crocodylus siamensis*) was found in Xe Lamphao River and proposed as Landscape reptile wildlife. The significance of crocodile is that it is the top of Pyramid of the wetland ecosystem of the Mekong River System. It is also classified as a critical endangered species. They are few and scattered and they are designated as the magnificence landscape species for follow up and surveying of their presence in Thailand PPFC. Based on the survey by staff of Yot Dom WS, track and signs of Siamese crocodile were found in Lamdom Yai River in 2013. They were detected again during the last survey along Lam Dom Yai on 17-21 February, 2014 (Pramot Ratre, personal communication; Yot Dom WS, 2014).

#### 4.2.2 Landscape Wildlife in Laos DKPF

**Mammals** In DKPF, Champasak University Wildlife Study Team surveyed and interviewed local residents for presence of 11 landscape mammals, their details were as followed:

Wild elephant (*Elephas maximus*) footprints and dung were found at the vicinity of Ban Nong-nga, Ban Pel and Ban Khem Villages with the confirmed number of 3 individuals existing. The Team was informed by local people that a single tiger (*Panthera tigris*) existed around Huai Xai stream in the reserve. But there was not any evident to supporting this e.g. track and pugmarks.

Banteng (*Bos javanicus*) were found in the form of old footprints in a forest near Ban Khem Village while herds of Gaur (*Bos gaurus*) and Sambar deer (*Rusa unicolor*) were obtained from Camera Trap setting at Ban Khem area in **DKPF** by Champasak University Wildlife Study Team (Fig 14-15). In addition, one young adult gaur was caught by local people while it was trapped in the flooding water at Ban Don Tan Village, Khong District on the border of Moulapamok District in Champasak Province (Fig 21). It escaped from village later on (Inpaeng Duangvongsa, Personal communication 2014).

“Ong” in Lao language or Siamese Eld’s deer (*Rucervus eldii siamensis*) could be found scattered in **Nong Ta-ngok Production Forest** in the northern part of Dong Kanthung Protected PF where is covered with Dry deciduous dipterocarp forest. According to information of local Lao people, “Ong” were seen and hunted in the area between two villages called Ban Kadan and Ban Kadian in Moulapamok District of Champasak Province. Ban Khem villagers in Moulapamok Subdistrict, informed that “Ong” formerly inhabited, but had been extirpated from, the open Dry dipterocarp forests in the vicinity of Ban Khem and Ban Po (Round, 1998). Again, few individuals of Eld’s deer were seen by Lao Mahot, Mr Lee Simaung, in November 2010. But large populations are reported near the Laos border in Preah Vihear PF, or formerly called Chhep PF, of Cambodia (Sovanna, 2004; Forest Administration, 2010).

Regarding “Xai” in Lao or Hog deer (*Axis porcinus*) it was, from the surveys by the CU’s Wildlife Study Team, found that there was no further information of sighting (Ong and Xai or Hog deer) in **DKPF**. The last report of Hog deer in Lao PDR was that it is known to be extinct from Xe Pian NBCA (Duckworth *et al.*, 1999).

Pileated gibbon was known to exist along forest cover on high slope mountains in **DKPF** near the border with Thailand. Detailed and intensive survey were carried out by Paiapalath and Saisavanh (2010), they reported 7 family locations of this species were detected in **DKPF**.

“Pa Kha” in Lao or Irrawaddy dolphin (*Orcaella brevirostris*) was not seen by the Team. According to our survey, they did not move further up the Mekong River between Pha Team NP and Phou Xiangthong NBCA. Also, from interviews with local Lao people, we learnt that they used to enter the Lower Xe Lamphao River in **DKPF**, but not right now due to less water. Recently, the existing populations have been found along the International Mekhong River at Veunkham in Khong District - the southernmost of Lao PDR close to Cambodia (Fig 16). The most common sites for schools of Irrawaddy dolphin were reported from the Lower Mekong River in Cambodia.



**Fig 17.** Two Pa Kha or Irrawaddy dolphins in the Mekong River at Veunkham, Khong District in Champasak.

**Birds** The bird list was composed of 6 species for **DKPF** (see Table 2 and 3). The survey details reported from Champasak University Wildlife Study Team were as follows:

Green peafowl (*Pavo muticus*) From our interview and information obtained from local residents, it was confirmed that Green peafowls are present at Thahin area in **DKPF**. Its feathers were found at Thahin. Their distribution was known from GPS-locations obtained from the intensive survey by Vongkhamheng *et al.* (2012). White-winged duck (*Cairinas cutulata*) was seen at Ban Pel Village by Champasak University Wildlife Study Team.

Lesser adjutant (*Leptoptilos javanicus*) and Giant ibis (*Pseudoibis gigantea*) were not seen directly during the survey in **DKPF** but they still have been seen by residents in **DKPF**. One Sarus crane (*Grus antigone*) was caught by local people at Nong Kiet Pond.

Nok Kho-kan or Woolly-necked stork (*Ciconia episcopus*) were seen in **DKPF**. Good pictures of pairing birds were obtained from camera trap. A large group with twenty individuals were seen flying over Ban Khem Village.

It is remarkable that other large birds - Black-necked stork (*Ephippiorhynchus asiaticus*), the three species of vultures, *e.g.* White-rumped vulture (*Gyps bengalensis*), Slender-billed vulture (*Gyps tenuirostris*) and Red-headed vulture (*Sarcogyps calvus*) have not seen in this reserve for many years *i.e.* since 2006.

**Reptile** The largest reptile known, as Siamese or Fresh-water crocodile (*Crocodylus siamensis*) is the top of Pyramid of wetland ecosystem of the Mekong River System. It is classified as an endangered species. They are few and scattered and they are designated as the magnificent landscape species for follow up and for survey of their present existence in the Emerald Triangle Protected Forest Complex of the three countries. Based on interview with local Lao people, there was no recent sighting information of Siamese crocodile. The last found was in Xe Lamphao River during 2006 to 2007. Even there was even a record of a shooting Siamese crocodile in the head waters of Xe Lamphao River. This river is the southern-most river, at the south-west corner of Lao PDR, and is flowing down to Mekong River at Maung Khong District in Champasak.

### 4.3 Threats to wildlife and habitats

Our surveys in both PPFC Thailand and in DKPF of South Lao PDR, found that there were forest land encroachments for agricultural crops and Para-rubber tree plantation. Illegal log cutting of Cochinchina or Siamese Rosewood (*Dalbergia cochinchinensis*) along the border between Thailand, Laos and Cambodia is also a serious problem to PPFC reserves.

Wildlife poaching and trapping are the main issues in the PPFC as this might lead to decrease of the small populations of large mammals and to bovids and deer extirpation. During our survey in both Thailand and Lao sides, our teams found poaching cases of birds, Monkeys (*Macaca* spp.), Sambar (*Rusa unicolor*), Barking deer (*Muntiacus muntjak*), Common palm civet (*Paradoxurus hermaphroditus*), Ubon Variebled squirrel (*Callosciurus finlaysoni annellatus*), other squirrels (include flying squirrels) and Hnu Khom or Lesser white-toothed rat (*Berylmys berdmorei*) (Fig 18-19). Poaching cases with arrested were reported from Bun Thrik – Yot Mon WS, Phu Jong - Na Yoi NP and Yot Dom WS. Both legal and illegal wildlife trading can be found at the border outside Thailand, *i.e.* Chong Ta-U market in Laos and Chong Arn-Ma market in Preah Vihear Province of Cambodia.

Human disturbances were found in the reserves with some activities of livestock raising and collecting minor forest products, *i.e.* mushrooms, bamboo shoots, edible insects, wild fruits, seeds and medicinal plants. Lastly, hidden land mines along the border areas between Phu Jong - Na Yoi NP and Yot Dom WS between Thailand, Lao PDR and Cambodia borders are still dangerous and sensitive issues.

Local market and local village surveys were used in this study to see how wild plants and animals are used by local people in Thailand. A local market showed selling some edible wild plants, rats and frogs (Fig 20). Wildlife species from observations and interviews were recorded. Wildlife trades, outside Thailand were also reported at Chong Mek and Chong Ta-U markets in Lao PDR, where Common palm civet and barking deer, porcupine and tree monitor were on sale (Fig 20). At Chong Arn-Ma market in Preah Vihear Province of Cambodia we observed and noted. Remarkable, high supply of bush meat and parts of wildlife carcasses known. This trade was also from local markets nearby **the Emerald Triangle Protected Forest Complex (ETPFC)**. This might affect wildlife conservation and protection in the region. These issues need to be solved by close cooperation between the Tri-nations. Local Thai, Lao and Cambodian people also

trap and/or hunt some wildlife from the **ETPFC** areas and other places. Some wildlife species were raised in resorts in Champasak, *e.g.* Sambar fawn, porcupine, bear cubs, Lesser adjutant and many other bird species were found (Fig 22). This issue should also be followed up and investigated in order to mitigate and protect those existing wildlife resources of the **ETPFC** for our next generations.



**Fig 18.** Trapping equipment and bird cage with traps found near Kaeng Tana NP.



**Fig 19.** Common barking deer was caught by local people at Ban Nongnga Village and Sambar deer trophy found in Dong Khanthung PF.



**Fig 20.** Bush meat at Chong Ta-U market in Laos & a local market near Pha Taem NP.



**Fig 21.** A Gaur was caught from river during the rainy season 2014.



**Fig 22.** A Lesser adjutant with broken wing found at a resort in Pakxe, Champasak.

**How to mitigate those threats?** Regarding mitigation of the threats to wildlife and their habitats in Thailand PPFC and Laos DKPF patrolling and protection should be strengthened. An Education Program with focus on targeting local communities nearby and inside the reserves should be considered and be implemented. Raising the consciousness of people regarding forest and wildlife conservation is very important issue. Increased Wildlife Conservation in PPFC and DKPF is broadly needed. It should be carried out through collaboration between the Tri-countries (Thailand, Cambodia and Lao PDR), forestry officials and other organizations.

A future wildlife ecological research and population monitoring Program for some Landscape Wildlife Species of both Thailand's PPFC and Lao DKPF as well as PXNBCA needs to be carried out.

## 5. Training & Meeting Workshops

I joined and supported the three GIS training workshops and I managed two short courses of training workshop for forestry staff, Champasak University faculty members and students from both Laos and Thailand. Also, one meeting workshop was at Bunthrik – Yot Mon Wildlife Sanctuary was supported. Further details are as follows:

### 5.1 First GIS training workshop by Prof. Dr. Yongyut Trisurat

It was organized at ITTO's Field Office at Pha Taem National Park on the 28<sup>th</sup> to 29<sup>th</sup> November, 2013. I supported the course with one lecture on the topic: "Landscape Wildlife of Pha Taem Protected Forest Complex" and my lecture handout was presented to the 29 Thai participants.

### 5.2 Second GIS Landuse training workshop by Prof. Dr. Yongyut

The workshop was organized at Preah Vihear Forest Administration Cantonment in Tbeng Meanchey City of Cambodia on the 11<sup>th</sup> to 14<sup>th</sup> March, 2014. I supported the course with one lecture on the topic "Landscape Wildlife Species of the Emerald Triangle Protected Forests: Focal Key Species for Thailand". I also provided and shared knowledge and information on Landscape Wildlife to Lao and Cambodian participants.

### 5.3 Third GIS Wildlife habitat model training workshop by Prof. Dr. Yongyut

It was held at ITTO's Field Office at Pha Taem National Park on the 21<sup>st</sup> to 24<sup>th</sup> October 2014. I presented one topic on Landscape Wildlife and supported with our survey data of some Landscape Wildlife species to the workshop. The results and distribution modeling of all Landscape wildlife in ETPFC can be found in report of Trisurat (2015).

### 5.4 First Training workshop on "Ecology & Landscape Wildlife"

The workshop was organized for Lao Champasak University students and forestry official at Pakxe in Champasak, Lao PDR during the 13<sup>th</sup> to 15<sup>th</sup> December 2013. For details on the training workshop program see **Appendix I** in report from Bhumpakphan (2014). Twenty participants from Lao PDR and three participants from Kasetsart University (KU's Faculty of Forestry Graduate students) were attending this training workshop.

A field excursion to the site survey area in Dong Khanthung Protected Forest in Mounlapamok District, Champasak Province was carried out on the 14<sup>th</sup> December 2013. We observed forest cover areas, land-uses, local people and some wildlife from Ban Kadan to Ban Nong Nga and further down south and stopped at Ban Pail on the way to Ban Po and Ban Khem near the border between Cambodia and Thailand.

The vegetative covers and land-uses along the dust forest road from Mounlapamok District to Ban Pail were observed. In general, good Dry dipterocarp

forest, Dry evergreen forest, Mixed tropical pine (*Pinus kesiya*) in dry evergreen forest, old clearings, rice paddy fields and human settlement sites are found in Dong Khangthung Protected Forest.

We did not see many wildlife species during the short visit in Dong Khanthung PF due to the limited time available (Fig 23-25). A wildlife species list has been noted containing: White-crested laughing thrush, Rufous treepie, Common myna, Large-billed crow, Cattle egret, Little egret, Purple heron, Hill myna and several others. Wrapping up the course and presenting certificates were carried out at Champasak University on the 15<sup>th</sup> December 2013.



**Fig 23.** ITTO meeting and Training workshop on “Ecology & Landscape Wildlife”.



**Fig 24.** Using GPS-receiver and wildlife survey in Dong Khanthung PF.



**Fig 25.** Eld's deer habitat - Dry deciduous dipterocarp forest at Ban Kadan village.

### 5.5 Second training workshop on “Wildlife Diversity & Landscape Species”

The workshop was organized at ITTO’s Field Office at Pha Taem National Park during 5<sup>th</sup> to 6<sup>th</sup> February 2014. For details of the training workshop program see **Appendix II** from report of Bhumpakphan (2014). Twenty participants from five reserves of Pha Taem Forest Complex attended this workshop. The main objectives were to provide the knowledge and techniques on how to identify wildlife from four faunal types – Mammal, Bird, Reptile and Amphibian. Some basic techniques in wildlife survey and population study were lectured. Two field exercises were conducted as follows: 1) Morning Bird survey were carried out; and 2) Night Wildlife spotlight survey in Hong Pala creek in Pha Taem NP (see Fig 26).



**Fig 26.** Training in Lecture room and Wildlife spotting in Pha Taem NP.



**Fig 27.** Training in how to identify frogs & reptiles was conducted and *Polypedates mutus* was identified.

### 5.6 Meeting Workshop on Mitigation of Human-elephant Conflicts

Bun Thrik - Yot Mon WS and ITTO Field Office successfully organized the Meeting Workshop on Mitigation on Human-elephant Conflicts (HEC) on the 16<sup>th</sup> January 2015. There were 50 Village Leaders and Forestry Officials who attended and shared updated information and experience in brainstorming on mitigation of the conflict issues (Fig 28). I presented and shared some study cases on HEC mitigation experience known from Thailand and other Elephant range countries. Field excursion to the conflict sites at and surrounding Ban Pa Ya-kha areas was conducted during the 16-17<sup>th</sup> January 2015.



**Fig 28.** Participants of the Meeting Workshop on Mitigation of Human-elephant Conflicts at Head Office of Bun Thrik - Yot Mon WS.



**Fig 29.** Elephant herd found at Pa Yaa-kha area.

## 6. Technical Advise

### 6.1 Provide consultation to Pha Taem Forest Complex

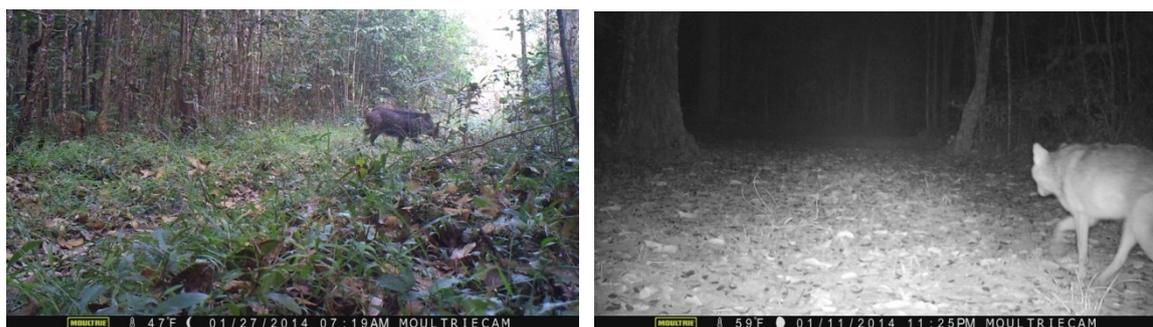
Training in Wildlife surveying techniques, camera trap equipment, and identification guide for wildlife track and signs were given to forestry staff from Bun Thrik - Yot Mon WS, Phu Jong - Na Yoi NP and Yot Dom WS. Our team supported with knowledge and techniques to help them in working with identification of data and pictures from ranger patrolling jobs and some information were given from wildlife poaching cases including arrest of poachers in their areas.

Infrared Camera sets were demonstrated for the Chief of Yot Dom and Chief of Bun Thrik - Yot Mon Wildlife Sanctuaries and their forestry staff including on how to use them in wildlife surveys (Fig 6). From November 2013 to February 2014, camera set traps were applied for wildlife survey in wildlife habitat sites of three reserves, namely Bun Thrik - Yot Mon WS, Yot Dome WS and Pha Taem NP. Finally, the results from camera trapping came out with some wildlife pictures from the three reserves: 1) Some pictures of Wild elephant (*Elephas maximus*) - individuals and herds were obtained from Bun Thrik - Yot Mon WS (see Fig 7); 2) Photos of two species of wildlife *i.e.* Common wild boar (*Sus scrofra*) and Asiatic jackal (*Canis aureus*) were obtained from Yot Dom WS, (see Fig 7); and 3) Asiatic jackal was also photographed in Pha Taem NP (Thaneth Boukaew, personal communication).

In order to indentify the need of Yot Dom WS in issues of conservation of the Siamese or Fresh-water crocodile (*Crocodylus siamensis*), we contacted Dr. Panya Yangprapakorn, crocodile expert from Panya Wildlife Farm, to support “the Project on Siamese crocodile Conservation and Recovery”. A Training workshop on Crocodile Conservation was organized by Panya Wildlife Farm, Kamphaengsaen in Nakorn Pathom, Chief and staff of Yot Dom WS were invited to attend this workshop conducted on the 24<sup>th</sup> to 25<sup>th</sup> January, 2014. New knowledge gains have thus been supported directly to the Crocodile Recovery Project in the focal area.



**Fig 30.** Camera set traps were demonstrated to Chiefs of Yot Dom & Bun Thrik WS.



**Fig 31.** Obtained pictures of Wild boar and Asiatic jackal from Yot Dom.

## 6.2 Provide consultation to Champasak University Wildlife Study Team

Wildlife Science is quite new to the Faculty members from Champasak University in Lao PDR. There are thus no courses related to forestry and wildlife subjects being taught at the Faculty of Agriculture and Forestry in their university. Kasetsart University and Champasak University have developed a MOU of working close together in terms of Academic aspects. Kasetsart University's Faculty of Forestry has thus during February 2011 organized the Training Workshop on Wildlife Ecology for Lao lecturers and students in Champasak University with a field excursion to Xe Pian NBCA.

For the collecting of Wildlife Data of the ITTO's Emerald Triangle Project site in Lao PDR, training and knowledge transfer are very important to Champasak University Wildlife Study Team. The knowledge and techniques in wildlife identification and survey were taught via a training workshop both in lecture room and on a field excursion to Dong Kanthung Protected Forest carried out three days in mid December 2013.

Champasak University Wildlife Study Team was lead by Dr. Phonesavanh Theppasulithorn, Vice President, and colleagues - Mr. Inpaeng Duangvongsa, Mr. Bounthavy Vongkhamchanh, Mr. Angkham Bouthdala and several others. The tusks of wildlife studies in Dong Kanthung PF and work on literature review for Dong Kanthung PF and Phu Xiangthong NBCA were carried out.

Some advise and suggestions on how to get started with working in Dong Khanthung PF were provided to Lao Wildlife Study Team. Three sets of infrared cameras and GPS-receivers borrowed from Royal Forest Department were later on provided to Lao Team for use in wildlife surveys at Dong Khanthung PF. Also, some wildlife textbooks, wildlife guide books and Technical Reports from Pha Taem Protected Forest Complex were provided to the University library and to Lao Wildlife Study Team from Champasak University, Lao PDR.

## 6.3 Network Group

Advice on wildlife study and survey tasks for Pha Taem Protected Forest Complex in Thailand and Champasak University were given. We keep good contact and work closely with ITTO's Field Office and the forestry staff from five reserves of Pha Taem Protected Forest Complex in Thailand, as well as staff of Lao Wildlife Study Team led by Dr. Phonesavanh Theppasoulithone from Champasak University. Information,

PDF papers, data, maps and pictures are sent and exchanged via cell-phone and the Internet system.

#### 6.4 Provide advise on Issues of People & Wild Elephant Conflicts

**People-elephant conflicts** Wild elephant herds exist and are roaming in Bun Thrik – Yot Mon Wildlife Sanctuary and its surrounding area. Many villages have their crops and properties are disturbed by wild elephants, *e.g.* Ban Nongsaeng, Ban Kaoklang, Ban Patae, Ban Bok, and Ban Kaeng Sikot. They are found moving in between Thailand and also in Champasak Province of Lao PDR. They move to eat rice and crops in Champasak and return to Bun Thrik – Yot Mon WS. It has become a serious problem for Bun Thrik – Yot Mon WS. Crop raids, damage of local people’s property, damage to and even killing people are recorded by staff of Bun Thrik – Yot Mon WS. Right now their populations are dispersed from Bun Thrik - Yot Mon WS down south to the northern part of Phu Jong – Na Yoi NP. One elephant herd with 11 individuals has been seen (Theerayut Wongpaisert, personal communication 2013).

Discussion and suggestions on the mitigation of people-elephant conflicts in Bun Thrik – Yot Mon WS were arranged. One copy of the Kasetsart University’s Plans for Conservation and Resolving Problems of Elephants in Thailand (Faculty of Forestry, 2013) was given to Mr. Somsak Khonthon, the Chief of Bun Thrik – Yot Mon WS.



**Fig 30.** Elephants roaming outside reserve and destroying people’s properties.

The Emerald Triangle Protected Forest Complex (ETPTC) between Thailand, Lao PDR and Cambodia can now support at least **45-50 Wild Asian Elephant (*Elephas maximus*)** and their populations might be increasing in numbers based on the last sightings of herds in Bun Thrik – Yot Mon WS of Thailand where also many juveniles and new calves were observed.

Some of them were roaming and foraging in Bun Thrik – Yot Mon WS and the surrounding agriculture and plantation areas are the habitats of Elephant. The total population is approximately 40 individuals (Somsak Khonthon, personal communication), this number includes a few elephant herds with 10-11 individuals found roaming further

south towards to Phu Hin Dang Mountains in the Northern part of Phu Jong – Na Yoi NP during the year 2013 up to present time (Theerayut Wongpaisert, personal communication).

Around 10 individuals are found roaming in between Champasak agricultural area and the border of Thailand and in parts of Bun Thrik – Yot Mon WS. Wild elephants also did crop raiding in rice paddy fields in Champasak during November to December 2010. After finishing eating, they moved back to Thailand (Mr. Li Simuang and Mr. Chom, personal communication, 2011). Only 3 individuals permanently exist in the southern part of Dong Khanthung PF. Recently, five individuals are confirmed existing in Preah Vihear Protected Forest in Cambodia (Chheang Dany and Settha Tan, personal communication, 2014).

**Mitigation on people and elephant conflicts** Recent problems of this issues were reported for Bun Thrik – Yot Mon WS where crop raids by elephants causing injury to local people were mentioned with a case of one person killed in 2004. The populations were continuously increasing includeing expansion of their enlargements of their movements to agriculture lands, local villages and to Thailand Timber Industry Oganization’s Piboon Mangsahan Forest Plantation. This happens during the dry season. During the rainy season they remained foraging in the Sanctuary.

Mitigation activities on these conflicts were planned and conducted by Sanctuary staff with 4 activity directions: 1) Meeting with local people in Human-elephant conflict villages with the effect that right now the WS receives good support from local people surrounding the WS; 2) Habitat Manipulation by creating artificial water ponds and artificial saltlicks for elephants since 2013; 3) Fencing by planting Thorned bamboo (*Bambos arandinacea*) along the WS boundary; and 4) Monitoring the movement of wild elephants. Compensation for crop raids was paid to local people by using the budgets from DNP’s “Elephant Food Fund”. Plans have been designed and carried out for WS staff to work with local people from communities surrounding the WS in activities to keep watch for Wild Elephant movement and to protect against crop raids (Somsak Khonthon, personal communication). We do suggest that future research should include monitoring their population, their movement and that a habitat model should be the next step for this Sanctuary.

## 6.5 Support to Siamese Crocodile Recovery Project

Siamese or Fresh-water crocodile (*Crocodylus siamensis*) are known to be found in the Lam Dom Yai and small creek in Lam Dom Noi River systems (Somsak Khonthon, personal communication). Their status in the wild is also known by the three countries – they are found in Yot Dom WS and Pu Jong - Na Yoi NP in Thailand as well as in Xe Lamphao River systems in both Lao PDR and Cambodia. They are very rare and are faced with extinction. Cambodia, has a Recovery Project to maintain the Siamese crocodile in Preah Vihear PF by capturing and translocating young wild Siamese crocodiles from the rivers in Phnom Aural Wildlife Sanctuary and plan to release them in Preah Vihear PF (Cheang Dany, personal communication 2014)

A recovery program for Siamese crocodile was designed and submitted to Wildlife Conservation Office of Department of National Park, Wildlife and Plant Conservation (DNP) for approval. The Chief of Yot Dom WS, Mr. Pramot Ratee,

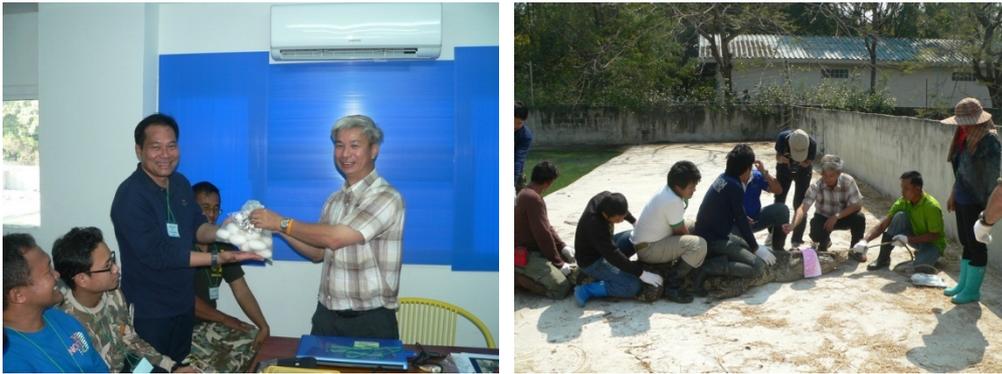
supplied a plan with the submitted proposal to DNP for approval. I brought and introduced this project to find support from Dr. Panya Yangprapakorn of the Private sector. After all, Panya Wildlife Farm at Kampaengsaen in Nakorn Pathom Province agreed to support and the Farm has already donated 10 adult Siamese crocodiles to support the Recovery Project. A Training Workshop on Crocodile Ecology and other relate matters were organized by Panya Wildlife Farm in February, 2014. Chief of Yot Dom WS and his colleagues had chances to select and to practice catching 10 selected Siamese crocodiles in the farm and move them to a separat pool. After the project approval by DNP in December 2014, these 10 crocodiles have been transported to Yot Dom WS and waiting for the process of moving to the releasal sites, 15 km upstream from Yot Dom Head Office and villages (Fig 31).

Right now, Lam Dom Yai River is one of the target sites for the National Crocodile Conservation Plan by Department of Fishery. The Conservation Plan includes Establishment of a Committee and drafting of implementation crocodile projects with the aim of achieving the goals of protection and recovery of the wild Siamese crocodile in the wild in Thailand.

According to site surveys by staff of Yot Dom WS, many good water bodies along the Lam Dom Yai River are suitable for crocodile releasing. The Upper Palan Sue Reservoir (Fig. 32) a remote site, would be surveyed for its feasibility to be selected for releasal site. It should be proposed as a new proposal to Department of National Park Wildlife and Plant Conservation (DNP) by Phu Jong – Nayoi NP. Due to its remote topography with good water sources, it will be well suited to serve some Siamese crocodiles in order to achieve the goals of increasing crocodile population in the future. It is hope that eggs and young individuals from this site also will be helpful to support other reserves.

Education and Public hearing Programs for local villages near Yot Dom WS was organized for the possibility for Siamese Crocodile Recovery Project. The nearest village also agreed to the Recovery Project. The meeting of this Recovery Project held at DNP's Wildlife Conservation Office in Bangkok, agreed to plan for releasing crocodiles to the wild on the Thailand's National Wildlife Day of 26<sup>th</sup> December, 2014. Later on, the plan of releasing crocodiles was delay due to other villages of the lower Lam Dom Yai afred of crocodile.

The project will for 3 years term be supported by DNP and the private sector. The budget with amount to 0.2 million baht from DNP and the another 0.2 million baht from the private sector, *i.e.* Panya Wildlife Farm in Nakorn Pathom. The budget from DNP was changed target to support a Crocodile Education Program for local people.



**Fig 31.** Cheif of Yot Dom and his staff being trained at Panya Wildlife Farm.



**Fig 32.** Palan Sue Tonbon or Upper Palan Sue Reservoir in Phu Jong NP.

## 7. Role of Wildlife Consultant and Work Plan

Basic activities were conducted for selecting suitable Key Landscape species of wide ranging species in the Emerald Triangle Trans-boundary area. Literature reviews were done and planning of surveys in study areas in Thailand and in Lao PDR. Activities were as these follows:

- Conduct activities for selecting the wide-range species of the Emerald Triangle Protected Forests
- Review factors influencing their ecology, habitat use and the Present status of the Key Landscape Wildlife or wide-ranging species
- Define wildlife habitat types in the Emerald Triangle Protected Forests based on existing species in Thailand, Cambodia and Lao PDR) for planning and conducting survey of wide-range species
- Design techniques, data tables and surveying techniques for direct counts, track and signs identification. We applied camera trapping to support our surveys of wide-range species
- Data collecting for the spatial GPS-locations of each of the 16 key Landscape Wildlife species in the study sites of PPFC in Thailand and support to **Champasak University Wildlife Study Team** in Dong Khanthung PF
- Provide information for Ecological distribution modeling of the wide ranging species with **Prof. Dr. Yongyut Trisurat, GIS consultant** during on the 21-23 October 2014, at Toh Sang Resort, Khong Chiam District in Ubon Ratchathani.

The duration of the project is for 15 months from October 1, 2013 to December 31, 2014 or as agreed between the RFD and the Forestry Research Center of the Faculty of Forestry. The Forestry Research Center (Wildlife Consultant) delivered all the out puts according to the following schedules:

**Table 5.** Final work plan for the deliver of the outputs

Item	2013			2014												2015	
	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F
Working Period																	
Inception Report																	
Progress Report																	
Draft Final Technical Report																	
Final Technical Report																	
Payment-Installment		1	2							3	4						
<b>Training Workshop on Wildlife for Lao staff in Pakxe</b>																	
<b>Training Workshop on Wildlife for Thai staff at ITTO Phataem Field Office</b>																	
<b>Meeting Workshop on Mitigation of Human-elephant Conflicts at Bun Thrik HQ</b>																	
Meeting with Thai forestry staff & Champasak U. Wildlife Study Team																	
A 1.5 - 1 x 2 days Land Use Change Modeling																	
A 1.6 - 1 x 2 days Wildlife Distribution Modeling																	

## 8. Conclusions

The Emerald Triangle Protected Forests Complex between Thailand and Lao PDR consists of Pha Taem Protected Forests Complex (PPFC) with 5 reserves in Thailand. They all are located westwards in parallel with Phou Xiangthong NBCA and Dong Khanthung Provincial Protected Forest of Lao PDR which are in the eastern part of the PPFC.

The studies by Thai Wildlife Study Team and Champasak University's Wildlife Study Team used direct sighting, camera trap setting in focal study sites, interviews, and also from literature reviews, show that at least 596 vertebrate species, composed of 96 mammals, 288 birds, 81 reptiles, 30 amphibians and 101 fish are scattered over and inhabit these Trans-boundary reserves. Their species lists and present status are found in Annex 1-5. The most important species are Wild elephant (*Elephas maximus*), guar (*Bos gaurus*), banteng (*Bos javanicus*), Chinese serow (*Capricornis milneedwardsii*) and Pileated gibbon (*Hylobates pileatus*). Their seasonal movements were found along trans-boundary border reserves between Thailand and Lao PDR. Green peafowl (*Pavo muticus*), Siamese fireback (*Lophura diardi*) and Siamese crocodile (*Crocodylus siamesis*) are resident species in the reserves of both countries.

Seventeen Wildlife Landscape species were selected and tracked for their existence and distribution in Thailand PPFC and another 18 species were selected in Lao's Phou Xiang Thong NBCA and Dong Khanthung PF. The focal species were the same as mentioned above. For better understanding of their Ecology, we worked on posters and articles and distributed to Thai Forestry staff of PPFC reserves and to Lao Forestry officials and the Champasak University Wildlife Study Team. We found threats to wildlife and the reserves, *i.e.* wildlife poaching, illegal Rose wood cutting, and forest land encroachments in PPFC and DKPF. Recommendation on mitigation threats in Thailand, Lao PDR and Cambodia and on future surveys, research on Landscape wildlife and collaboration between Tri-nations are made in the report.

Regarding services - We organized two training workshops: the first workshop for Lao Forestry officials and Champasak University Wildlife Study Team; and the second workshop for Thai Forestry staff of the five reserves, *i.e.* Pha Taem, Kaeng Tana, Bun Thrik - Yot Mon, Phu Jong - Na Yoi and Yot Dom. Wildlife surveying and identification techniques were the main topics being presented to participants in those workshops. Also, consultation on Wildlife issues were carried out including advice on ongoing of Siamese crocodile Recovery Projects of PPFC, which has been carried out by Yot Dom WS since 2013. Knowledge on mitigation of Human-elephant conflicts in Bun Thrik - Yot Mon WS was provided through discussions and a document on Elephant Conservation and Management Planning was supplied to this reserve.

## 9. Recommendations

Based on our surveys and work in PPFC and Dong Khanthung PF, we would like to suggest priorities for future training, future surveys or research and activities for protecting and for mitigation the found threats and gaps in the mentioned study sites.

### 9.1 Survey and Research

In our latest survey and review of Wildlife in PPFC, Phou Xiangthong NBCA and Dong Khanthung PF, we found that the species diversity of wildlife is different from past surveys (see Table 4). Right now, the species data of reserves are not dependent on whether reserve sizes are large or small, but are dependent on the frequency of surveying and reporting. There are group of wildlife that researchers are more interested in or focus on or research for. Birds and large mammals are specific groups that many people are looking for while data on Herptiles (reptile and amphibian groups) and fish rather limited. Thus, the last two groups should have more focus on surveys in order to fill the big gap. We found and suggestion to this area. We found that Phou Xianthong NBCA is lacking a good species lists and suggest this area need to be the target of more detailed survey for wildlife.

It is suggested for the Landscape species - large mammals and large birds mentioned in this report, that their movements in between the three countries should be the focal point of research and sharing data between Thailand, Lao PDR and Cambodia.

### 9.2 Reserve staff Training

More training and support of good knowledge of Wildlife Ecology and Reserve Management for Forestry Staff from reserves of both Thailand's PPFC and Lao PXNBCA and DKPF should be considered and practised. Knowledge and skill will be helpful for staff to survey, and monitor wildlife and to manage their reserves, thereby serving the goals of conservation of wildlife resources and protection their habitats.

### 9.3 Education Program

Nature and Wildlife Conservation Education Program for local people in target areas of villages inside and nearby reserves of both Thailand's PPFC and Lao's DKPF and PXNBCA should be considered including finding budgets from outside sources. Right now, the villages surrounding PPFC are assisted and supported by ITTO Phase III Project while DKPF and PXNBCA lack of such the programs and budgets supporting them.

### 9.4 Reserve Patrolling

In the National Parks and Wildlife Sanctuaries in Thailand, ranger staff have been trained and been practising the Smart Patrol System. Law enforcement and effective

patrolling systems will support the reserves. At present, Dong Khanthung is like a paper reserve without any the activities mentioned in the suggestions.

### 9.5 Ecological Wildlife Corridor

According to the evidence and data from our field survey, we found large mammals, such as wild elephant, banteng and gaur. Male gaur (*Bos gaurus*) was found at Dong Na village north of Pha Taem NP and is thought to be moving from Phu Xiangthong NBCA (Fig. 33). Those big three mammals are roaming the forest habitats between Thailand, Lao PDR and Cambodia to complete their seasonal movement and get enough forage and water. The travel routes crossing the narrow Mekong River between Pha Team NP and Phou Xiangthong NBCA (again see Fig 2); and the lower altitudinal slope between Bun Thrik WS and Dong Khanthung Protected Forest should be considered for the first priority protection and for minimize human activities (*i.e.* legal and illegal Para Rubber Plantations, field huts and domestic dogs).

In addition, riparian habitats of the Xe Lamphao River are unique for many wildlife species as habitat and escape cover (Fig 34). Wildlife movements cross Xe Lumphao River, which is the International border between Lao's DKPF and Cambodia's Preah Vihear PF, are reported from local Lao people. To maintain and to support for protection of the riparian habitats should be the cooperation target for activity between Lao and Cambodian foresters.



**Fig 33.** Male gaur found at Dong Na Village near Pha Taem National Park



**Fig 34.** Xe Lamphao River border between Dong Khanthung PF and Preah Vihear PF in Cambodia (right side).

## 9.6 Strategic planning for Landscape species

After survey and collection of GPS-locations of 17 Landscape species for Thailand and 18 Landscape species for Lao PDR, a good data set of the Landscape species from Cambodia should also be compiled. Hope that results from GIS Training Workshop for habitat modeling of Landscape species will provide some ideas of their distribution and for managing and protecting them together. We strongly suggest to organize a meeting workshop focusing on creating such **Strategic Planning for Conservation of Landscape Wildlife Species in ETPFC** between the Tri-nations hosted by ITTO Cambodia Component.

## 9.7 Wildlife Recovery Program

Wildlife existing along the Tri-boarder of the three nations - Thailand, Laos and Cambodia are the focal points of protecting and working close together. How to supporting for seasonal movement of Landscape wildlife species, available habitat corridor and possible travel routes for them, *i.e.* Wild elephant, wild bovids, deer, Primates should be surveyed and planed for specific manipulation activities. Lowland forest and Wetland sites for large birds and Siamese crocodile should be strongly protection to stop land encroachment. There will be significantly in manipulation for some rare or extirpation species to PFFC and Dong Khanthung PF. Protection and patrolling against wildlife poaching and trapping should be stronger if need to conserve valuable wildlife

resources for our future generations. Meeting and planning together between Academic staff and Forestry Officials who have responsibility to the Emerald Triangle Protected Forests Complex from tri-nations.

### **9.8 Up-listing for Dong Khanthung PF as NBCA**

Our study in Dong Khanthung Protected Forest by Champasak University Wildlife Study Team and other previously conducted surveys and research by Rounds (1998), Paiapalath and Saisavanh (2010), Vongkhamheng (2012) and others have shown that Dong Khanthung has a high potential of supporting high biodiversity and lots of endangered and critically endangered species of wildlife, *e.g.* Banteng (*Bos javanicus*), Gaur (*Bos gaurus*), Wild elephant (*Elephas maximus*), Pileated gibbon (*Hylobates pileatus*), Indochinese tiger (*Panthera tigris corbetti*), Siamese crocodile (*Crocodylus siamensis*), Sarus crane (*Grus antigone*), Giant ibis (*Pseudibis gigantea*), Woolly-necked stork (*Ciconia episcopus*), Lesser adjutant (*Leptoptilos javanicus*), *etc.* in this Provincial Protected Forest.

Dong Khanthung Provincial Protected Forest and some parts of Nong Ta-Ngok Production Forest (mainly Dry deciduous dipterocarp forest - habitats for Eld's deer and Banteng) should be uplisted to be a National Biodiversity Conservation Area. Benefits from good protection and law enforcement would help in preserving for significant wildlife species and their natural habitats of Lao PDR for benefit of next generation.

## 10. Annexes

**Annex 1.** List of Mammals known from the Emerald Triangle Protected Forests Complex between Thailand and Lao PDR

No.	Native Name	Common Name	Zoological Name	Thailand					Laos		Present Status	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
<b>Order</b>	<b>Scandentia</b>											
Family	Tupaiaidae											
1	Kratae nue	Northern treeshrew	<i>Tupaia belangeri</i>	x	x	x	x	x			LC	II
<b>Order</b>	<b>Insectivora</b>											
Family	Soricidae											
2	Nu phi pa khonkrien	Horsfield's shrew	<i>Crocidura horsfieldii</i>	x	x		x	x				
3	Nu phi na	Southeast Asian shrew	<i>Crocidura fuliginosa</i>		x		x	x			LC	
4	Nu phi ban	House shrew	<i>Suncus murinus</i>		x		x	x			LC	
<b>Order</b>	<b>Chiroptera</b>											
Family	Pteropodidae											
5	Khangkhao khob hu kao khlang	Lesser dog-faced fruit bat	<i>Cynopterus bruchyolus</i>				x	x			LC	
6	Khangkhao khob hu dam	Tailless fruit bat	<i>Megaerops ecaudatus</i>		x			x			LC	
7	Khangkhao leb kud	Dawn bat, Cave fruit Bat	<i>Eonycteris spelaea</i>				x	x			LC	
8	Khangkhao na yao yai	Hill long-tongued fruit bat	<i>Macroglossus sobrinus</i>				x	x			LC	
Family	Emballonuridae											
9	Khangkhao pik thung tom khang	Long-winged tomb bat	<i>Taphozous longimanus</i>				x	x			LC	
10	Khangkhao pik thung yai	Theobald's bat	<i>Taphozous theobaldi</i>				x	x			LC	
11	Khangkhao pik thung khao dam	Black-bearded tomb bat	<i>Taphozous melanopogon</i>	x	x			x			LC	
Family	Megadermatidae											
12	Khangkhao vampire plang lek	Lesser false vampire bat	<i>Megaderma spasma</i>	x	x		x	x			LC	
Family	Rhinolophidae											
13	Khangkhao mongkut yai	Wooly Horseshoe bat	<i>Rhinolophus luctus</i>				x	x			LC	

No.	Native Name	Common Name	Zoological Name	Thailand					Laos		Present Status	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
14	Khangkhao mongkut plom lek	Croslet horseshoe bat	<i>Rhinolophus coelophyllus</i>				x	x			LC	
15	Khangkhao mongkut plom yai	Shamel's horseshoe bat	<i>Rhinolophus shameli</i>				x	x			LC	
16	Khangkhao mongkut thao daeng	Intermediate horseshoe bat	<i>Rhinotophus affinis</i>	x	x	x	x	x			LC	
17	Khangkhao mongkut malayu	Malayan horseshoe bat	<i>Rhinotophus malayanus</i>	x	x			x			LC	
18	Khangkhao mongkut lek	Least horseshoe bat	<i>Rhinotophus pusillus</i>		x			x			LC	
Family	Hipposideridae											
19	Khangkhao na yak song si	Bicoloured leaf-nosed bat	<i>Hipposideros bicolor</i>	x	x						LC	
20	Khangkhao na yak thotsakan	Himalayan leaf-nosed bat	<i>Hipposideros armiger</i>	x	x	x		x			LC	
21	Khangkhao na yak leub	Intermediate leaf-nosed bat	<i>Hipposideros lavatus</i>	x	x	x		x			LC	
22	Khangkhao na yak mon khlang	Diadem Horseshoe-bat	<i>Hipposideros diaderma</i>			x					LC	
Family	Vespertilionidae											
23	Khangkhao yot kluai pik sai	Hardwicke's forest bat	<i>Kerivoula hardwickei</i>		x		x	x			LC	
24	Khangkhao yot khuai phi suea	Painted bat	<i>Kerivoula picta</i>		x		x	x			LC	
25	Khangkhao jamook lod hu san	Round-eared tube-nosed bat	<i>Murina cyclotis</i>				x	x			LC	
26	Khangkhao phi hua ban lek	Lesser flat-headed bat	<i>Tylonycteris pachypus</i>				x	x			LC	
27	Khangkhao phi hua ban yai	Greater flat-headed bat	<i>Tylonycteris robustula</i>				x	x			LC	
28	Khangkhao pik phap yai	Schreiber's long-fingered bat	<i>Miniopterus schreibersii</i>	x	x		x	x			NT	
<b>Order</b>	<b>ERINACEOMORPHA</b>											
Family	Erinaceidae											
29	Nu phi hang moo	Short-tailed gymnure	<i>Hylomys suillus</i>				x	x			LC	
<b>Order</b>	<b>Pholidota</b>											
Family	Manidae											
30	Lin	Sunda pangolin	<i>Manis javanica</i>	x	x	x	x	x	x	x	CR	II
<b>Order</b>	<b>Primates</b>											
Family	Loridae											
31	Nang-ai , Ling lom	Greater slow loris	<i>Nycticebus coucang</i>		x	x	x	x	x	x	VU	II
Family	Cercopithecidae											

No.	Native Name	Common Name	Zoological Name	Thailand					Laos		Present Status	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
32	Ling kang	Pig-tailed macaque	<i>Macaca lionena</i>		x		x	x	x	x	VU	II
33	Ling sen, Kamuk	Stump-tailed macaque	<i>Macaca arctoides</i>				x	x			VU	II
34	Ling wok	Rhesus macaque	<i>Macaca mullatta</i>	x								
35	Ling samae	Long-tailed macaque	<i>Macaca fascicularis</i>	x	x		x	x	x	x	LC	II
36	Talung, Khang tao	Indochinese silver langur	<i>Trachypithecus germaini</i>			x	x	x	x	x	NT	II
37	Chanee kaem lauang	Yellow-cheeked gibbon	<i>Nomascus gabriellae</i>						x		EN	I
38	Chanee mongkut	Pileated gibbon	<i>Hylobates piteatus</i>			x	x	x		x	EN	I
<b>Order</b>	<b>Lagomorpha</b>											
Family	Leporidae											
39	Kratai pa	Burneses hare	<i>Lepus peguensis</i>	x	x	x	x	x	x	x	LC	
<b>Order</b>	<b>Rodentia</b>											
Family	Hystriidae											
40	Men yai	Malayan porcupine	<i>Hystrix brachyuran</i>			x	x	x	x	x	LC	
41	Hone, Men hang paung	Brush-tailed porcupine	<i>Atherurus macrourus</i>		x	x	x	x	x		LC	
Family	Sciuridae											
42	Krarok lak si	Variable squirrel	<i>Callosciurus finlaysoni</i>	x		x	x	x	x	x	LC	
43	Krarok khon plai hu yao	Cambodian striped squirrel	<i>Tamiops rodolphii</i>		x	x	x	x			LC	
44	Kra chon	Indochinese ground squirrel	<i>Menetes berdmorei</i>	x	x	x	x	x			LC	
45	Krarok din kam daeng	Red-checked squirrel	<i>Dremomys rufigenis</i>			x	x		x		LC	
46	Praya krarok dam	Black giant squirrel	<i>Ratufa bicolor</i>				x	x	x	x	NT	II
Family	Pteromyidae											
47	Krarok bin kam khao	Phayre's flying squirrel	<i>Hylopetes phayrei</i>	x	x	x	x	x			LC	
48	Krarok bin lek khao soong	Particolored flying squirrel	<i>Hylopetes alboniger</i>		x		x	x			LC	
49	Krarok bin kam si daeng	Red-checked flying squirrel	<i>Hylopetes lepidus</i>	x	x	x	x	x			DD	
50	Phaya krarok bin hu daeng	Red giant flying squirrel	<i>Petaurista petaurista</i>				x	x	x		LC	
Family	Muridae											
51	Nu pook yai	Greater bandicoot rat	<i>Bandicota indica</i>		x	x	x	x			LC	

No.	Native Name	Common Name	Zoological Name	Thailand					Laos		Present Status	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
52	Nu pook lek	Savile's bandicoot rat	<i>Bandicota savilei</i>		x	x	x	x			LC	
53	Nu fun khao lek	Lesser white-toothed rat	<i>Berylmys berdmorei</i>	x							LC	
54	Nu ring mai hang poo	Pencil-tailed tree mouse	<i>Chiropodomys gliroides</i>		x		x	x			LC	
55	Nu ring na hang yao	Ryukyu mouse	<i>Mus caroli</i>		x		x	x			LC	
56	Nu ring na hang san	Fawn-colored mouse	<i>Mus cervicolor</i>		x		x	x			LC	
57	Nu ring ban	House mouse	<i>Mus musculus</i>		x		x	x			LC	
58	Nu khon sian doi	Indochinese mt. Niviventer	<i>Niviventer tenaster</i>				x	x			LC	
59	Nu fan lueang	Indomalayan Maxomys	<i>Maxomys surifer</i>				x	x			LC	
60	Nu mue ling	Indomalayan Vandeleuria	<i>Vandeleuria oleracea</i>				x	x			LC	
61	Nu pai leb mueban	Greater marmoset-rat	<i>Hapalomys longicaudatus</i>			x					EN	
62	Nu fan khao lek, Nu khom	Lasser white-toothed rat	<i>Rattus berdmorei</i>	x								
63	Nu thong khao	Roof rat, House rat, Ship rat	<i>Rattus rattus</i>	x	x	x	x	x	x	x	LC	
64	Nu jeed	Polynesian rat	<i>Rattus exulans</i>		x		x	x			LC	
65	Nu wai	Noisy rat	<i>Leopoldamys sabanus</i>		x	x	x	x	x		LC	
<b>Order</b>	<b>Canivora</b>											
Family	Canidae											
66	Ma chingchok	Golden jackal	<i>Canis aureus</i>	x	x	x	x	x		x	LC	III
67	Ma nai	Dhole	<i>Cuon alpines</i>			x	x	x			EN	II
Family	Ursidae											
68	Mi khwai	Asiatic black bear	<i>Ursus thibetanus</i>		x	x	x	x	x		VU	I
69	Mi khon, Mimaa	Sun bear	<i>Helarctos malayanus</i>		?	x	x	x	x		VU	I
Family	Mustelidae											
70	Mu ring	Hog-badger	<i>Arctonyx collaris</i>	x		x	x	x			NT	
71	Ma ring	Large-toothed ferret-badger	<i>Melogale personate</i>	x			x	x			DD	
72	Ma mai	Yellow-throated marten	<i>Martes flavigula</i>		x		x	x			LC	III
Family	Viverridae											
73	Chamot chet	Small Indian civet	<i>Viverricula indica</i>	x	x	x	x	x			LC	III

No.	Native Name	Common Name	Zoological Name	Thailand					Laos		Present Status	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
74	Chamot phang hong plong	Large Indian civet	<i>Viverra zibetha</i>	x	x	x	x	x	x	x	NT	III (India)
75	I-hen hang kan	Large spotted civet	<i>Viverrna megaspila</i>						x	x	VU	
76	I-hen khang lai	Common palm civet	<i>Paradoxurus hermaphrodites</i>	x		x	x	x	x	x	LC	III
77	I-hen hu dang	Small-toothed palm civet	<i>Arctogalidia trivirgata</i>		x	x	x	x	x	x	LC	
78	I-hen kluea	Masked palm civet	<i>Paguma larvata</i>		x	x	x	x			LC	III (India)
79	Binturong	Binturong	<i>Arctictis binturong</i>			x	x	x			VU	III
80	Phangphon thamada	Small Asian mongoose	<i>Herpestes javanicus</i>	x	x	x	x	x	x	x	LC	III
81	Phangphon kin pu	Crab-cattling mongoose	<i>Herpestes urva</i>	x	x		x	x		x	LC	III
Family	Felidae											
82	Maeo dao, Suea kluea	Leopard cat	<i>Prionaiturus bengalensis</i>	x	x	x	x	x		x	LC	I
83	Suea pla	Fishing cat	<i>Prionailurus viverrinus</i>		x			x			EN	II
84	Suea fai	Asian golden cat	<i>Catopuma temminckii</i>					x			NT	I
85	Suea lai mek	Clouded leopard	<i>Neofelis nebulosa</i>			x		x			VU	I
86	Suea dao	Leopard	<i>Panthera pardus</i>				x	x			NT	I
87	Suea khrong	Tiger	<i>Panthera tigris</i>			x	x		x	x	EN	I
<b>Order</b>	<b>Proboscidea</b>											
Family	Elephantidae											
88	Chang pa	Asian elephant	<i>Elephas maximus</i>			x	x		-	x	EN	I
<b>Order</b>	<b>Artiodactyla</b>											
Family	Suidae											
89	Mu pa	Wild boar	<i>Sus scrofa</i>	x	x	x	x	x	x	x	LC	
Family	Tragulidae											
90	Krachong lek	Lesser Malay mouse-deer	<i>Tragulus javanicus</i>	x		x	x	x	x	x	DD	
Family	Cervidae											
91	Keng, Fan	Common barking deer	<i>Muntiacus muntjac</i>	x	x	x	x	x	x	x	LC	
92	Kwang pa	Sambar	<i>Rusa unicolor</i>		?	x	x	x	x	x	VU	
93	Lamang or Ong	Siamese Eld's deer	<i>Rucervus eldii siamensis</i>							?	EN	I

No.	Native Name	Common Name	Zoological Name	Thailand					Laos		Present Status	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
Family	Bovidae											
94	Wua daeng	Banteng	<i>Bos javanicus</i>			x	x		x	x	EN	
95	Krathing, Moei	Gaur	<i>Bos gaurus</i>	x			x		x	x	VU	I
96	Liang pha, Yueang	Chinese serow	<i>Capricornis milneedwardsii</i>			x	x	x	x	x	VU	I

Annex 1. Cont'd

Note: 1/ Reverse

PT	: Pha Taem National Park
KN	: Kaeng Tana National Park
BM	: Bun Thrik – Yot Mon Wildlife Sanctuary
PJ	: Phu Jong – Na Yoi National Park
YD	: Yot Dom Wildlife Sanctuary
PX	: Phou Xiangthong National Biodiversity Conservation Area
DK	: Dong Khanthung Protected Forest

2/ Present Status

IUCN	CR	: Critically endangered species
	EN	: Endangered species
	VU	: Vulnerable species
	NT	: Non – threatened
	LR	: Lower risk
	DD	: Data insufficiently known
CITES	I	: Endanger species
	II	: Vulnerable species
	III	: Species requested to be protected

3/ IUCN	: International Union of Conservation of Nature and Natural Resources
CITES	: Convention on International Trade in Endangered Species of Wild Fanna and Flora

**Annex 2.** List of birds known from the Emerald Triangle Protected Forests Complex between Thailand and Lao PDR

No.	Native Name	Common Name 1/	Zoological Name	Thailand					Laos		Present Status 2/	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
<b>Order Galliformes</b>												
Family Phasianidae												
1	Nok khatha thung	Chinese francolin	<i>Fracolinus pintadeanus</i>	x	x	x	x	x				
2	Kai pa	Red junglefowl	<i>Gallus gallus</i>	x	x	x	x	x	X		LC	
3	Kai fa phaya lo	Siamese fireback	<i>Lophura diardi</i>	x		x	x	x	X		LC	II
4	Nok yung	Green peafowl	<i>Pavo muticus</i>	x		x	x	x	X		EN	
5	Nok kratha dong kheang khieo	Scaly-breasted partridge	<i>Arborophila chloropus</i>	x	x	x	x	x			LC	
6	Nok kum si	Blue-breasted quail	<i>Excalfactoria chinensis</i>		x		x	x				
<b>Order Anseriformes</b>												
Family Anatidae												
7	Nok ped daeng	lesser whistling-duck	<i>Dendrocygna javanica</i>			x	x	x		x	LC	
8	Ped ka	White-winged duck	<i>Cairina scutulata</i>				x	x			EN	I
<b>Order Podicipediformes</b>												
Family Podicipedidae												
9	Pet phi lek	Little grebe	<i>Tachybaptus ruficollis</i>				x	x			LC	
<b>Order Ciconiiformes</b>												
Family Ciconiidae												
10	Nok kab boua	Painted stork	<i>Mycteria leucocephala</i>							x	NT	
11	Nok pak hang	Asian openbill	<i>Anastomus oscitans</i>							x	LC	
12	Nok khor Kane	Asian woollyneck	<i>Ciconia episcopus</i>							x	VU	
13	Nok kra sa kho dam	Black-necked stork	<i>Ephippiorhynchus asiaticus</i>							x	NT	
14	Nok ta krum	Lesser adjutant	<i>Leptoptilos javanicus</i>				x	x			VU	
<b>Order Pelecaniformes</b>												
Family Threskiomithidae												
15	Nok oum loua	Giant ibis	<i>Thaumatibis gigantean</i>							x	CR	

No.	Native Name	Common Name 1/	Zoological Name	Thailand					Laos		Present Status 2/		
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES	
16	Nok xon hoi houa dam	Black-headed ibis	<i>Threskiornis melanocephalus</i>							x		NT	
Family Ardeidae													
17	Nok kra sa dang	Purple heron	<i>Ardea purpurea</i>				x	x				LC	
18	Nok kra sa nuan	Gray heron	<i>Ardea cinerea</i>			x	x	x				LC	
19	Nok yang tone yai	Eastern great egret	<i>Ardea modesta</i>		x			x					III(Gana)
20	Nok yang yoi soua	Malaysian night heron	<i>Gorsachius melanolophus</i>					x				LC	
21	Nok yang dam	Black bittern	<i>Dupetor flavicollis</i>					x				LC	
22	Nok yang pai hou dam	Yellow bittern	<i>Ixobrychus sinensis</i>					x					
23	Nok yang pia	Little egret	<i>Egretta garzetta</i>			x	x	x				LC	III
24	Nok yang khwai	Cattle egret	<i>Bubulcus ibis</i>					x				LC	III
25	Nok yang krok phan chin	Javan pond-heron	<i>Ardeola speciosa</i>		x	x	x	x		x		LC	
26	Nok yang khiao	Little heron	<i>Butorides striatus</i>				x	x					
27	Nok yang fai thamada	Cinnamon bittern	<i>Ixobrychus cinnamoneus</i>				x	x				LC	
Family Pelecanidae													
28	Nok Kra thung	Spot-billed pelican	<i>Pelecanus philippensis</i>							x		NT	
<b>Order Suliformes</b>													
Family Phalacrocoracidae													
29	Nok kanam lek	Little cormorant	<i>Phalacrocorax niger</i>				x	x				LC	
30	Nok kanam pak yao	Indian cormorant	<i>Phalacrocorax fuscicollis</i>					x				LC	
Family Anhingidae													
31	Nok khor ngou	Oriental darter	<i>Anhinga melanogaster</i>					x		x		NT	
<b>Order Accipitriformes</b>													
Family Pandionidae													
32	Yiao osprey	Western osprey	<i>Pandion haliaetus</i>					x				LC	
Family Acciptridae													
33	Yiao ku kingka si dam	Black baza	<i>Aviceda leuphotes</i>			x	x	x				LC	II
34	Yiao khao	Black-shouldered kite	<i>Elanus caeruleus</i>		x	x		x				LC	II

No.	Native Name	Common Name 1/	Zoological Name	Thailand					Laos		Present Status 2/	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
35	Yiao daeng	Brahminy kite	<i>Haliastur Indus</i>	x	x	x	x	x	x	x	LC	II
36	Yiao rung	Crested serpent-eagle	<i>Spilornis cheela</i>	x	x		x	x			LC	II
37	Yiao thung thap nuea	Northern harrier	<i>Circus cyaneus</i>				x				LC	II
38	Yiao tang si	Changeable hawk-eagle	<i>Spizaetus cirrhatus</i>				x					II
39	Leo pa Noi	Imperial eagle	<i>Aquila heliacal</i>							x	VU	
40	Leo pa Houa Mon	Grey-headed fish eagle	<i>Ichthyophaga ichthyaetus</i>							x	NT	
41	Leo peek Daeng	Rufous -winged buzzard	<i>Butastur liventer</i>			x	x	x	X		LC	
42	Yiao nok khao chikra	Shikra	<i>Accipiter badius</i>	x	x	x	x	x			LC	II
43	Yiao nok khao pan yipoon	Japanese sparrowhawk	<i>Accipiter gularis</i>		x			x			LC	
44	Yiao nok khao pan chin	Chinese sparrowhawk	<i>Accipiter soloensis</i>		x			x			LC	
45	Yiao nok khao hon	Crested goshawk	<i>Accipiter trivirgatus</i>				x	x			LC	
46	Yiao nok krajok lek	Besra	<i>Accipiter virgatus</i>		x			x			LC	
47	Yiao tong dang	Rufous-bellied eagle	<i>Lophotriorchis kienerii</i>				x	x			LC	
48	Inzee peek lai	Greater spotted eagle	<i>Lophaetus clangus</i>		x			x				
49	Inzee dam	Black eagle	<i>Lophaetus malayensis</i>				x	x				
50	Yiao dam	Black kite	<i>Milvus migrans</i>		x		x	x			LC	
51	Yiao pheung	Oriental honey-buzzard	<i>Pernis ptilorhynchus</i>					x			LC	
52	Yiao phu khao	Mountain hawk eagle	<i>Nisaetus nipalensis</i>		x		x	x			LC	
<b>Order Falconiformes</b>												
Family Falconidae												
53	Yiao lek tapok khao	White-rumped falcon	<i>Polihierax insignis</i>					x			NT	II
<b>Order Gruiformes</b>												
Family Rallidae												
54	Nok kwak	White-breasted waterhen	<i>Amauornis phoenicurus</i>				x	x			LC	
55	Nok i-kong	Purple swamphen	<i>Porphyrio porphyrio</i>				x	x			LC	
56	Nok i-lam	Common moorhen	<i>Gallinula chloropus</i>				x	x			LC	
57	Nok i-lum	Watercock	<i>Gallixrex cinerea</i>		x			x				

No.	Native Name	Common Name 1/	Zoological Name	Thailand					Laos		Present Status 2/	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
<b>Order Charadriiformes</b>												
Family Turnicidae												
58	Nok khum ok lai	Barred buttonquail	<i>Turnix suscitator</i>		x	x	x	x				LC
59	Nok khum eud yai	Yellow-legged buttonquail	<i>Turnix tanki</i>		x	x	x	x				LC
Family Charadriidae												
60	Nok houa to kha dam	Kentish plover	<i>Charadrius alexandrinus</i>					x				LC
61	Nok houa lek kha leung	Little ringed plover	<i>Charadrius dubius</i>		x			x				LC
62	Nok kratai houa tao	Grey-headed lapwing	<i>Vanellus cinereus</i>					x				LC
63	Nok kratai tae waed	Red-wattled lapwing	<i>Vanellus indicus</i>	x	x	x	x	x		x		LC
Family Glareolidae												
64	Nok an tung yai	Oriental pratincole	<i>Glareola maldivarum</i>					x				LC
65	Nok an tung lek	Small pratincole	<i>Glareola lacteal</i>							x		LC
Family Jacanidae												
66	Nok e-jeo	Pheasant-tailed jacana	<i>Hydrophasianus chirurgus</i>					x				LC
Family Scolopacidae												
67	Nok dao din	Common sandpiper	<i>Actitis hypoleucos</i>					x				LC
68	Nok dak som hang pad	Common snipe	<i>Gallinago gallinago</i>					x				LC
69	Nok pak som hang khem	Pintail snipe	<i>Gallinago stenura</i>					x				LC
70	Nok chai lan khiao	Green sandpiper	<i>Tringa ochropus</i>		x		x	x				LC
71	Nok chai lan beng	Marsh sandpiper	<i>Tringa stagnatilis</i>		x		x	x				LC
Family Laridae												
72	Nok nang naun krab thamada	Common tern	<i>Sterna hirundo</i>					x				LC
Family Rostratulidae												
73	Nok pong wid	Greater painted-snipe	<i>Rostratula benghalensis</i>					x				LC
<b>Order Culumbiformes</b>												
Family Columbidae												
74	Nok lum poo daeng	Pale-capped pigeon	<i>Columba punicea</i>							x	x	VU

No.	Native Name	Common Name 1/	Zoological Name	Thailand					Laos		Present Status 2/	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
75	Nok philap pa	Rock pigeon	<i>Columba livia</i>		x	x	x	x			LC	II
76	Nok khao yai	Spotted dove	<i>Streptopelia chinensis</i>	x	x	x	x	x	x	x		
77	Nok khao fai	Red turtle-dove	<i>Streptopelia tranquebarica</i>				x	x		x	LC	
78	Nok khao khieo	Emerald love	<i>Chalcophaps indica</i>			x	x	x			LC	
79	Nok khao chawa	Zebra dove	<i>Geopelia striata</i>	x	x	x	x	x			LC	
80	Nok lum pu	Green imperial pigeon	<i>Ducula aenea</i>		x	x		x	x		LC	
81	Nok moom	Mountain imperial pigeon	<i>Ducula badia</i>				x	x			LC	
82	Nok khao plao thamada	Thick-billed pigeon	<i>Treron curvirostris</i>		x	x	x	x			LC	
83	Nok khao pao ok sinamtan	Orange-breasted green pigeon	<i>Treron bicinctus</i>					x			LC	
84	Nok khao pao na luang	Ashy-headed green pigeon	<i>Treron phayrei</i>					x			NT	
85	Nok khao pao khor muang	Pink-necked green pigeon	<i>Treron vernans</i>		x			x			LC	
<b>Order Psittaciformes</b>												
Family Psittacidae												
86	Nok hok lek pak daeng	Vernal hanging parrot	<i>Loriculus vernalis</i>	x	x		x	x			LC	II
87	Nok khak tao	Red-breasted parakeet	<i>Psittacula alexandri</i>			x	x	x	x	x	NT	II
88	Nok khieo mong	Alexandrine parakeet	<i>Psittacula eupatria</i>				x	x			NT	II
<b>Order Cuculiformes</b>												
Family Cuculidae												
89	Nok ka wao	Asian koel	<i>Endynamys scolopacea</i>	x	x	x	x	x				
90	Nok bang rok yai	Green-billed malkoha	<i>Phaenicophaeus tristis</i>	x	x	x	x	x			LC	
91	Nok kaput lek	Lesser coucal	<i>Centropus bengalensis</i>			x		x			LC	
92	Nok kaput yai	Greater coucal	<i>Centropus sinensis</i>	x	x	x	x	x		x	LC	
93	Nok e-wab takkatan	Plaintive cuckoo	<i>Cacomantis merulinus</i>					x			LC	
94	Nok kakku si muang	Violet cuckoo	<i>Chrysococcyx xanthorhynchus</i>			x	x	x			LC	
95	Nok kakku ngon	Chestnut-winged Cuckoo	<i>Clamator coromandus</i>					x			LC	
96	Nok kukku pan urop	Eurasian cuckoo	<i>Cuculus canorus</i>					x			LC	
97	Nok kukku pan india	Indian cuckoo	<i>Cuculus micropterus</i>					x			LC	

No.	Native Name	Common Name 1/	Zoological Name	Thailand					Laos		Present Status 2/		
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES	
98	Nok kakku lek	Lesser cuckoo	<i>Cuculus poliocephalus</i>					x				LC	
99	Nok kakku pan himalai	Himalayan cuckoo	<i>Cuculus saturatus</i>		x			x				LC	
100	Nok kukku sangsaeo	Asian drongo cuckoo	<i>Surniculus lugubris</i>		x			x				LC	
<b>Order Strigiformes</b>													
Family Strigidae													
101	Nok kao mong	Asian barred owl	<i>Glaucidium cuculoides</i>	x	x	x	x	x				LC	II
102	Nok kao khrae	Collared owl	<i>Glaucidium brodiei</i>				x	x				LC	II
103	Nok kao yiao	Brown boobook	<i>Ninox scutulata</i>				x	x				LC	II
104	Nok tuedtue pan nua	Brown fish owl	<i>Ketupa zeylonensis</i>				x	x				LC	II
105	Nok hook	Collared scops-owl	<i>Otus bakkamoena</i>	x	x	x	x	x	x	x		LC	II
Family Tytonidae													
106	Nok sak dang	Oriental bay owl	<i>Phodilus badius</i>				x	x				LC	II
107	Nok sak	Eurasian barn owl	<i>Tyto alba</i>		x		x	x				LC	II
<b>Order Caprimulgiformes</b>													
Family Caprimulgidae													
108	Nok tob yung hang yao	Large-tailed nightjar	<i>Caprimulgus macrurus</i>				x	x				LC	
109	Nok tob yung lek	Indian nightjar	<i>Caprimulgus asiaticus</i>	x	x		x					LC	
110	Nok tob yung yak	Great eared nightjar	<i>Lyncornis macrotis</i>				x	x				LC	
<b>Order Apodiformes</b>													
Family Apodidae													
111	Nok an yai hua ta khao	Brown needletail	<i>Hirundapus giganteus</i>			x	x					LC	
112	Nok an tan	Asian palm-swift	<i>Cypsiurus balasiensis</i>	x	x	x	x	x				LC	
113	Nok an taphok khao	Pacific swift	<i>Apus pacificus</i>	x	x	x	x	x				LC	
114	Nok an ban	House swift	<i>Apus affinis</i>	x	x	x	x					LC	
<b>Order Trogonniformes</b>													
Family Trogonnidae													

No.	Native Name	Common Name 1/	Zoological Name	Thailand					Laos		Present Status 2/		
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES	
115	Nok khun pan ok si som	Orange-breasted trogon	<i>Harpacies oreskios</i>				x	x				LC	
<b>Order Coraciiformes</b>													
Family Coraciidae													
116	Nok ta-khap thung	Indian roller	<i>Coracias benghalensis</i>	x	x	x	x	x	x	x		LC	
117	Nok ta-khap dong	Dollarbird	<i>Eurystomus orientalis</i>	x	x		x	x				LC	
Family Alcedinidae													
118	Nok kraten noi thamada	Common kingfisher	<i>Alcedo atthis</i>			x	x	x	x	x		LC	
119	Nok kraten noi lang si nam ngoen	Blue-eared kingfisher	<i>Alcedo meninting</i>			x	x	x	x	x		LC	
120	Nok kraten yai thamada	Stork-billed kingfisher	<i>Pelargopsis capensis</i>		x		x	x				LC	
121	Nok kraten lai	Banded kingfisher	<i>Lacedo pulchella</i>				x	x				LC	
122	Nok kraten ok kao	White-throated kingfisher	<i>Halcyon smyrnensis</i>	x	x	x	x	x				LC	
123	Nok kraten hua dam	Black-capped kingfisher	<i>Halcyon pileata</i>			x	x	x				LC	
Family Meropidae													
124	Nok chap kha lek	Green bee-eater	<i>Merops orientalis</i>				x	x				LC	
125	Nok chap kha hua si som	Chesnut-headed bee-eater	<i>Merops lenchenaulti</i>			x	x	x				LC	
126	Nok chap kha hua khiao	Blue-tailed bee-eater	<i>Merops philippinus</i>		x			x				LC	
127	Nok chap kha klao namngen	Blue-bearded bee-eater	<i>Nyctyornis athertoni</i>		x			x				LC	
<b>Order Bucerotiformes</b>													
Family Bucerotidae													
128	Nok kak, Nok kang	Oriental pied hornbill	<i>Anthracoceros albirostris</i>	x		x	x	x				LC	II
129	Nok kok, Nok kahang	Great hornbill	<i>Buceros bicornis</i>			x	x	x				NT	II
Family Upupidae													
130	Nok krarang hua khwan	Hoopoe	<i>Upupa epops</i>			x		x				LC	
<b>Order Piciformes</b>													
Family Picidae													
131	Nok hua khwan si tan	Rufous woodpecker	<i>Micropternus brachyurus</i>				x	x				LC	
132	Nok hua khwan dang tongdam	Black-and-buff woodpecker	<i>Meiglyptes jugularis</i>				x	x				LC	

No.	Native Name	Common Name 1/	Zoological Name	Thailand					Laos		Present Status 2/	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
133	Nok hua khwan lek hon luang	Lesser yellownape	<i>Picus chlorolophus</i>				x	x				LC
134	Nok hua khwan khiao tapok dang	Black-headed woodpecker	<i>Picus erythropygius</i>		x		x	x				LC
135	Nok hua khwan kaw deang	Red-collared woodpecker	<i>Picus rabieri</i>						x	x		NT
136	Nok hua khwan khiao pa pai	Laced woodpecker	<i>Picus vittatus</i>		x		x	x				LC
137	Nok hua khwan yai hon luang	Greater yellownape	<i>Chrysophlegma flavinucha</i>				x	x				LC
138	Nok hua khwan dang khrae	Grey-capped woodpecker	<i>Picoides canicapillus</i>				x	x				LC
139	Nok hua khwan si namtan	Rufous woodpecker	<i>Celeus brachyurus</i>	x	x		x	x				LC
140	Nok hua khwan sam niu lang thong	Common flameback	<i>Dinopium javanense</i>	x		x		x				LC
141	Nok hua khwan si niu lang thong	Greater flameback	<i>Chrysocolaptes lucidus</i>	x	x	x		x				LC
142	Nok hua khwan khrae chut hau chai	Heart-spotted woodpecker	<i>Hemicircus canente</i>			x		x				LC
143	Nok hua khwan yai si thao	Great slaty woodpecker	<i>Muelleripicus pulverulentus</i>	x	x		x	x				
Family Megalaimidae												
144	Nok phoradok thamada	Lineated barbet	<i>Megalaima lineate</i>	x	x	x	x	x				LC
145	Nok phoradok ho khiao	Green-eared barbet	<i>Megalaima faiostricta</i>	x	x	x	x	x				LC
146	Nok phoradok naphak dam	Blue-eared barbet	<i>Megalaima australis</i>					x				
147	Nok phoradok khor sifa klao dam	Moustached barbet	<i>Megalaima incognita</i>					x				LC
148	Nok ti thong	Coppersmith barbet	<i>Megalaima heamacephala</i>			x	x	x				
<b>Order Passeriformes</b>												
Family Eurylaimidae												
149	Nok paya pak kwang lai luang	Banded broadbill	<i>Eurylaimus javanicus</i>					x				LC
150	Nok paya pak kwang hang yao	Long-tailed broadbill	<i>Psarisomus dalhousiae</i>					x				LC
Family Pittidae												
151	Nok taolao khieo khamen	Bar-bellied pitta	<i>Pitta elliotii</i>				x	x	x	x		LC
152	Nok taolao thamada	Blue-winged pitta	<i>Pitta moluccensis</i>		x		x	x				LC
Family Tephrodornithidae												
153	Nok chiaodong thamada	Common woodshrike	<i>Tephrodornis pondicerianus</i>		x			x				LC
154	Nok chiaodong hang si tan	Large woodshrike	<i>Tephrodornis virgatus</i>		x			x				LC

No.	Native Name	Common Name 1/	Zoological Name	Thailand					Laos		Present Status 2/	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
155	Nok khen noi pik thap khao	bar-winged flycatcher-shrike	<i>Hemipus picatus</i>			x	x	x				LC
Family Campephagidae												
156	Nok kheo thao yai	Large cuckooshrike	<i>Coracina macei</i>		x			x				LC
157	Nok chiao bung yai	Black-winged cuckooshrike	<i>Coracina melaschistos</i>		x			x				LC
158	Nok paya fai si tao	Ashy minivet	<i>Pericrocotus divaricatus</i>					x				LC
159	Nok paya fai yai	Scarlet minivet	<i>Pericrocotus speciosus</i>					x				
160	Nok paya fai si kularb	Rosy minivet	<i>Pericrocotus roseus</i>					x				LC
161	Nok paya fai ta pok si nam tan	Swinhoe's minivet	<i>Pericrocotus cantonensis</i>							x		LC
Family Irenidae												
162	Nok khiao khram	Asian fairy bluebird	<i>Irena puella</i>				x	x				LC
Family Chloropseidae												
163	Nok khiao kan tong tong si som	Orange-bellied leafbird	<i>Chloropsis hardwickii</i>					x				LC
164	Nok khiao kan tong yai	Greater green leafbird	<i>Chloropsis sonnerati</i>					x				LC
165	Nok khiao kan tong pik si fa	Blue-winged leafbird	<i>Chloropsis cochinchinensis</i>			x	x	x				LC
166	Nok khiao kan tong na phek si thong	Golden-fronted leafbird	<i>Chloropsis aurifrons</i>	x	x	x	x	x				LC
Family Laniidae												
167	Nok e-suea si nam tan	Brown shrike	<i>Lanius cristatus</i>		x	x	x	x				LC
Family Corvidae												
168	Nok pik lai skot	Eurasian jay	<i>Garrulus glandarius</i>	x	x	x	x	x				LC
169	Nok khun phan	Blue magpie	<i>Urocissa erythrorhyncha</i>	x	x		x	x				LC
170	E-ka	Large-billed crow	<i>Corvus macrorhynchos</i>	x	x	x	x	x	x	x		LC
171	Nok salika khiao	Common green magpie	<i>Cissa chinensis</i>					x				LC
Family Paridae												
172	Nok tit sultan	Sultan tit	<i>Melanochlora sultanea</i>					x				LC
Family Artamidae												
173	Nok an phong	Ashy wood-swallow	<i>Artamus fuscus</i>			x	x	x				LC
174	Nok khamin thaithoi dam	Black-naped oriole	<i>Oriolus chinensis</i>			x	x	x				LC

No.	Native Name	Common Name 1/	Zoological Name	Thailand					Laos		Present Status 2/	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
175	Nok khamin pak riao	Slender-billed oriole	<i>Oriolus tenuirostris</i>			x	x					LC
176	Nok khamin hua dam yai	Black-hooded oriole	<i>Oriolus xanthornus</i>		x			x				
Family Dicuridae												
177	Nok sangsaeo hang pla	Black drongo	<i>Dicrurus macrocercus</i>	x	x	x	x	x				LC
178	Nok sangsaeo si thao	Ashy drongo	<i>Dicrurus leucophaeus</i>		x	x	x	x				LC
179	Nok sangsaeo lek leuap	Bronzed drongo	<i>Dicrurus aeneus</i>				x	x				LC
180	Nok sangsaeo ngon khon	Hiar-crested drongo	<i>Dicrurus hottentottus</i>			x	x	x				LC
181	Nok sangsaeo hang buang yai	Greater racket-tailed drongo	<i>Dicrurus paradiseus</i>	x	x	x	x	x				LC
182	Nok sangsaeo hang buang lek	Lesser racket-tailed drongo	<i>Dicrurus remifer</i>					x				LC
Family Monarchidae												
183	Nok chap malang chuk dam	Black-naped monarch	<i>Hypothymis azurea</i>	x	x	x	x	x				LC
184	Nok saeo sawan	Asian paradise-flycatcher	<i>Terpsiphone paradisi</i>			x	x	x				LC
Family Aegithinidae												
185	Nok khamin noi thamada	Common iora	<i>Aegithina tiphia</i>			x	x	x				LC
186	Nok khamin noi pik si riap	Great iora	<i>Aegithina lafresnayei</i>			x	x	x				LC
Family Muscicapidae												
187	Nok krabueang kho khao	White-throated rock-thrush	<i>Monticola gularis</i>	x	x			x				LC
188	Nok krabueang pha	Blue rock-thrush	<i>Monticola solitarius</i>	x	x	x	x	x				LC
189	Nok iang tham	Blue whistling thrush	<i>Myophonus caeruleus</i>				x	x		x		LC
190	Nik chap malang si nam tan	Asian brown flycatcher	<i>Muscicapa dauurica</i>	x	x	x	x	x				LC
191	Nok chap malang kho daeng	Red-throated flycatcher	<i>Ficedula parva</i>	x	x	x	x	x				LC
192	Nok chap malang hua thao	Grey-headed flycatcher	<i>Culicicapa ceylonensis</i>	x	x		x	x				LC
193	Nok chap malang ok si fa	Hainan blue flycatcher	<i>Cyornis hainanus</i>			x	x	x				LC
194	Nok chap malang khao namtan daeng	Hill blue flycatcher	<i>Cyornis banyumas</i>		x	x	x	x				LC
195	Nok chap malang ok som thong khao	Tickell's blue flycatcher	<i>Cyornis tickelliae</i>				x	x				LC
196	Nok chap malang kho si namngen	Blue-throated flycatcher	<i>Cyornis rubeculoides</i>		x			x				LC
197	Nok chap malang si fa	Verditer flycatcher	<i>Eumyias thalassinus</i>		x			x				LC

No.	Native Name	Common Name 1/	Zoological Name	Thailand					Laos		Present Status 2/		
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES	
198	Nok chap malang lek khao dam	Little pied flycatcher	<i>Ficedula westermanni</i>		x			x				LC	
199	Nok khen noi Siberia	Siberian blue robin	<i>Larvivora cyane</i>				x	x					
200	Nok kangkhen ban	Oriental magpie-robin	<i>Copsychus saularis</i>	x	x	x	x	x				LC	
201	Nok kangkhen dong	White-rumped shama	<i>Copsychus malabaricus</i>	x		x	x	x				LC	
202	Nok kandkhen nam lang thao	Slaty-blacked forktail	<i>Enicurus schistaceus</i>			x						LC	
203	Nok yot ya hua dam	Stonechat	<i>Saxicola torquata</i>		x			x					
204	Nok yot ya si dam	Pied bushchat	<i>Saxicola caprata</i>	x	x	x	x	x				LC	
Family Alaudidae													
205	Nok chab fon peek dang	Indochinese bushlark	<i>Mirafra erythrocephala</i>		x	x	x	x				LC	
Family Sturnidae													
206	Nok kingkhong klap pik kao	White-shouldered starling	<i>Sturnus sinensis</i>			x						LC	
207	Nok kingkhong kho dam	Black-collared starling	<i>Sturnus nigricollis</i>			x		x				LC	
208	Nok kingkhong hua si nuan	Vinous-breasted starling	<i>Sturnus burmannicus</i>			x						LC	
209	Nok iang sarika	Common myna	<i>Acridotheres tristis</i>	x	x	x	x	x	x	x		LC	
210	Nok iang ngon	White-vented myna	<i>Acridotheres cinereus</i>			x	x	x				LC	
211	Nok khun thong	Hill myna	<i>Gracula religiosa</i>	x	x	x	x	x	x	x		LC	II
212	Nok iang hua si tong	Golden-crested myna	<i>Ampeliceps coronatus</i>		x		x	x				LC	
Family Stittidae													
213	Nok tai mai naphak kammayi	Velvet-fronted nuthatch	<i>Sitta frontalis</i>	x	x			x				LC	
Family Pycnonotidae													
214	Nok parot thong	Black-headed bulbul	<i>Pycnonotus atriceps</i>	x	x	x	x	x				LC	
215	Nok parot lueang hua chuk	Black-crested bulbul	<i>Pycnonotus melanicterus</i>	x	x	x	x	x	x	x		LC	
216	Nok parot kho lai	Stripe-throated bulbul	<i>Pycnonotus finlaysoni</i>	x	x	x	x	x				LC	
217	Nok parot suan	Streak-eared bulbul	<i>Pycnonotus blanfordi</i>	x	x	x	x	x				LC	
218	Nok parot hua si khamao	Sooty-headed bulbul	<i>Pycnonotus aurigaster</i>				x	x				LC	
219	Nok parot na nuan	Yellow-vented bulbul	<i>Pycnonotus goiavier</i>				x	x				LC	
220	Nok parot hua khon	Red-whiskered bulbul	<i>Pycnonotus jocosus</i>				x	x				LC	

No.	Native Name	Common Name 1/	Zoological Name	Thailand					Laos		Present Status 2/	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
221	Nok parot ong napak tao	White-throated bulbul	<i>Alophoixus flaveolus</i>	x	x		x					LC
222	Nok parot ong mueang nuea	Puff-throated bulbul	<i>Alophoixus pallidus</i>	x	x		x	x				LC
223	Nok parot lek ta khao	Grey-eyed bulbul	<i>Iole propinqua</i>				x	x				LC
224	Nok parot dam	Black bulbul	<i>Hypsipetes leucocephalus</i>		x		x	x				LC
Family Hirundinidae												
225	Nok nang-an pha si khlam	Dusky crag-martin	<i>Hirundo concolor</i>	x	x							LC
226	Nok nang-an ban	Barn swallow	<i>Hirundo rustica</i>	x	x	x	x	x				LC
227	Nok nang-an tapok daeng	Red-rumped swallow	<i>Hirundo daurica</i>		x	x	x	x				LC
228	Nok nang-an Hang Luad	Wire-tailed swallow	<i>Hirundo smithii</i>						x			LC
229	Nok nang-an lai	Striated swallow	<i>Cecropis striolata</i>					x				
Family Phylloscopidae												
230	Nok krachid khua lok nuea	Arctic warbler	<i>Phylloscopus borealis</i>				x	x				LC
231	Nok krachid hua mongkut	Eastern crowned leaf warbler	<i>Phylloscopus coronatus</i>				x	x				LC
232	Nok krachid khiao peek song thab	Two-barred warbler	<i>Phylloscopus plumbeitarsus</i>				x	x				
233	Nok krachid hang khao yai	Claudia's leaf warbler	<i>Phylloscopus claudiae</i>				x	x				LC
234	Nok krachid kew dam tong lauang	Sulphur-breasted leaf warbler	<i>Phylloscopus ricketti</i>		x		x	x				LC
235	Nok krachid khiao klam	Greenish warbler	<i>Phylloscopus trochiloides</i>		x		x	x				LC
236	Nok krachid si khlam	Dusky warbler	<i>Phylloscopus fuscatus</i>		x	x		x				LC
237	Nok krachid pak na	Radde's warbler	<i>Phylloscopus schwarzi</i>		x	x	x	x				LC
238	Nok krachid thamada	Inornate warbler	<i>Phylloscopus inornatus</i>		x		x	x				LC
239	Nok krachid kha si nuea	Pale-legged leaf-warbler	<i>Phylloscopus tenellipes</i>		x	x	x	x				LC
Family Acrocephalidae												
240	Nok pong pak na	Thick-billed warbler	<i>Phragamaticola aedon</i>				x	x				
241	Nok pong kew dam	Black-browed reed warbler	<i>Acrocephalus bistrigiceps</i>		x		x	x				LC
Family Cisticolidae												
242	Nok krachip ya sikhlang daeng	Rufescent prinia	<i>Prinia rufescens</i>	x	x	x		x				LC
243	Nok krachip ya ok tao	Grey-breasted prinia	<i>Prinia hodgsonii</i>	x		x	x	x				LC

No.	Native Name	Common Name 1/	Zoological Name	Thailand					Laos		Present Status 2/	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
244	Nok krachip ya si riap	Plain prinia	<i>Prinia inornata</i>	x	x	x	x	x				LC
245	Nok krachip ya tong lueang	Yellow-bellied prinia	<i>Prinia flaviventris</i>				x	x				LC
246	Nok krachip thamada	Common tailorbird	<i>Orthotomus sutorius</i>	x	x	x	x	x	x	x		LC
247	Nok krachip khoa dam	Dark-necked tailorbird	<i>Orthotomus atrogularis</i>	x	x	x	x	x				LC
248	Nok krachip hua dang	Ashy tailorbird	<i>Orthotomus ruficeps</i>				x	x				LC
249	Nok yod khao hang pan hua dang	Bright-capped cisticola	<i>Cisticola exilis</i>		x			x				LC
250	Nok yod khao hang pan lai	Zitting cisticola	<i>Cisticola juncidis</i>				x	x				LC
Family Pellorneidae												
251	Nok kin malang hua dang lek	Scaly-crowned babbler	<i>Malacopteron cinereum</i>				x	x				LC
Family Timaliidae												
252	Nok rawang prai pak yao	Large scimitar babbler	<i>Pomatorhinus hypoleucos</i>				x	x				LC
253	Nok rawang prai pak luang	White-browed scimitar babbler	<i>Pomatorhinus schisticeps</i>		x	x	x	x				LC
254	Nok karand hua ngok	White-crested laughingthrush	<i>Garrulax leucolophus</i>	x		x	x	x				LC
Family Pellorneidae												
255	Nok kin malang pa fon	Abbott's babbler	<i>Malacocincla abbotti</i>			x	x	x				LC
256	Nok chap din ok lai	Puff-throated babbler	<i>Pellorneum ruficeps</i>	x	x	x	x	x				LC
257	Nok kin malang ok laung	Striped tit-babbler	<i>Macronous gularis</i>	x	x	x	x	x				LC
258	Nok kin malang na thao	Grey-faced tit babbler	<i>Macronous kelleyi</i>						x			LC
259	Nok kin malang kramorn daeng	Chestnut-capped babbler	<i>Timalia pileata</i>	x	x			x				LC
Family Zosteropidae												
260	Nok phu ngon thong khao	White-bellied yuhina	<i>Erpornis zantholeuca</i>			x	x	x				LC
261	Nok wanta khao si tong	Oriental white-eye	<i>Zosterops palpebrosus</i>				x	x				LC
Family Dicaeidae												
262	Nok kaphak pak na	Thick-billed flowerpecker	<i>Dicaeum agile</i>		x			x				LC
263	Nok kaphak kon lueang	Yellow-vented flowerpecker	<i>Dicaeum chrysorrheum</i>					x				LC
264	Nok ka fak si riap	Plain flowerpecker	<i>Dicaeum concolor</i>				x	x				LC
265	Nok si chomphu suan	Scarlet-backed flowerpecker	<i>Dicaeum cruentatum</i>	x	x	x	x	x				LC

No.	Native Name	Common Name 1/	Zoological Name	Thailand					Laos		Present Status 2/	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
Family Nectariniidae												
266	Nok kin pli kam si thapthim	Ruby-cheeked sunbird	<i>Anthreptes singalensis</i>	x	x	x	x	x				LC
267	Nok kin pli kho muang	Purple-throated sunbird	<i>Nectarinia sperata</i>		x	x	x	x				LC
268	Nok kin pli ok luang	Olive-backed sunbird	<i>Nectarinia jugularis</i>	x	x	x	x	x				LC
269	Nok kin pli dan muang	Purple sunbird	<i>Nectarinia asiatica</i>			x		x				LC
270	Nok kin pli kho daeng	Crimson sunbird	<i>Aethopyga siparaja</i>		x	x	x					LC
271	Nok kin pli kam si thapthim	Ruby-cheeked sunbird	<i>Anthreptes singalensis</i>	x	x	x	x	x				LC
272	Nok kin pli kho si namtan	Brown-throated sunbird	<i>Anthreptes malacensis</i>		x			x				
273	Nok pli kluay lek	Little spiderhunter	<i>Arachnothera longirostra</i>		x			x				
274	Nok pli kluay lai	Streaked spiderhunter	<i>Arachnothera magna</i>		x			x				
Family Passeridae												
275	Nok krachok yai	House sparrow	<i>Passer domesticus</i>			x	x	x				LC
276	Nok krachok ban	Eurasian tree-sparrow	<i>Passer montanus</i>	x	x	x	x	x	x	x		LC
277	Nok krachok tan	Plain-backed sparrow	<i>Passer flaveolus</i>					x				LC
Family Estrildidae												
278	Nok kratid tapok kao	White-rumped munia	<i>Lonchura striata</i>			x	x	x				LC
279	Nok kratid khi mu	Scaly-breasted munia	<i>Lonchura punctulata</i>		x	x	x	x				LC
Family Ploceidae												
280	Nok ka jap kham	Asian golden weaver	<i>Ploceus hypoxanthus</i>							x		NT
Family Motacillidae												
281	Nok dao din ok dang	Red-throated pipit	<i>Anthus cervinus</i>		x			x				LC
282	Nok dao din suan	Olive-backed pipit	<i>Anthus hodgsoni</i>		x			x				LC
283	Nok dao din tung lek	Paddyfield pipit	<i>Anthus rufulus</i>		x			x				LC
284	Nok dao din thung	Richard's pipit	<i>Anthus richardi</i>	x	x	x	x	x				LC
285	Nok dao lom dong	Forest wagtail	<i>Dendronanthus indicus</i>		x			x				LC
286	Nok dao lom lang thao	Grey wagtail	<i>Motacilla cinerea</i>				x	x				LC
287	Nok dao lom lueang	Eastern yellow wagtail	<i>Motacilla tschutschensis</i>					x				LC

No.	Native Name	Common Name 1/	Zoological Name	Thailand					Laos		Present Status 2/	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
288	Nok dao lom menam kong	Mekong wagtail	<i>Montiilla samveasnae</i>	x	x					x		
289	Nok um bat na khao lang dam	Amur wagtail	<i>Motacilla alba leucopsis</i>	x	x		x	x				LC

Annex 2. Cont'd

Note: 1/ Reverse

PT	: Pha Taem National Park
KN	: Kaeng Tana National Park
BM	: Bun Thrik – Yot Mon Wildlife Sanctuary
PJ	: Phu Jong – Na Yoi National Park
YD	: Yot Dom Wildlife Sanctuary
PX	: Phou Xiangthong National Biodiversity Conservation Area
DK	: Dong Khanthung Protected Forest

2/ Present Status

IUCN	CR	: Critically endangered species
	EN	: Endangered species
	VU	: Vulnerable species
	NT	: Non – threatened
	LR	: Lower risk
	DD	: Data insufficiently known
CITES	I	: Endanger species
	II	: Vulnerable species
	III	: Species requested to be protected

3/ IUCN	: International Union of Conservation of Nature and Natural Resources
CITES	: Convention on International Trade in Endangered Species of Wild Fanna and Flora

**Annex 3.** List of Reptiles known from the Emerald Triangle Protected Forests Complex between Thailand and Lao PDR

No.	Native Name	Common Name	Zoological Name	Thailand					Laos		Present Status	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
<b>Order Testudines</b>												
Family Geoemydidae												
1	Tao Huai ko lai	Stripe-necked leaf turtle	<i>Cyclemys tcheponensis</i>		x		x	x			VU	
2	Tao Na	Malayan snail-eating turtle	<i>Malayemys subtrijuga</i>		x	x	x	x		x	VU	II
Family Testudinidae												
3	Tao Deuay	Impressed tortoise	<i>Manouria impressa</i>							x	VU	
4	Tao Laung	Elongated tortoise	<i>Indotestudo elongata</i>	x		x	x	x		x	EN	II
Family Bataguridae												
5	Tao Kham	Chinese-striped box turtle	<i>Cuora trifasciata</i>							x	CR	II
6	Tao Hub pheung	Indochinese box turtle	<i>Cuora galbinifrons</i>							x	CR	II
7	Tao Hab	South Asian box turtle	<i>Cuora amboinensis</i>		x	x	x	x		x	VU	II
8	Tao Baimai	Asian leaf turtle	<i>Cyclemys dentata</i>	x		x		x			NT	II
9	Tao Dam	Black terrapin	<i>Siebenrockiella crassicolis</i>			x	x				VU	II
Family Trionychidae												
10	Taphap gam daeng	Malayan softshell	<i>Dogania subplana</i>		x		x	x			NT	
11	Taphap nam thamada	Southeast Asian soft-shelled turtle	<i>Amyda cartilaginea</i>	x	x	x	x	x		x	VU	II
Family Crocodylidae												
12	Charakhe nam cheut, Khae	Siamese or freshwater crocodile	<i>Crocodylus siamensis</i>				x	x		x	CR	I
<b>Order Squamata</b>												
Family Gekkonidae												
13	Chingchok hang ban lek	Flat-tailed gecko	<i>Hemidactylus platyurus</i>	x	x	x	x	x			LC	
14	Chinchok din lai chut	Siamese leaf-toed gecko	<i>Dixonius siamensis</i>	x	x		x	x			LC	
15	Tuk kae ban	Tockay gecko	<i>Gekko gekko</i>	x	x	x	x	x	x	x	LC	
16	Tuk kae khao hin sai	Sandstone gecko	<i>Gekko petricolus</i>	x	x	x	x	x			LC	
17	Tuk kae si thao	Forest gecko	<i>Gekko smithi</i>	x	x	x	x				LC	

No.	Native Name	Common Name	Zoological Name	Thailand					Laos		Present Status	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
18	Chingchok hang nam	Spiny-tailed house gecko	<i>Hemidactylus frenatus</i>	x	x	x	x	x				LC
19	Chingchok hang riap	Garnot's house gecko	<i>Hemidactylus garnotii</i>	x	x	x	x	x				LC
20	Tukkae-pa Tai	Southern banded gecko	<i>Cyrtodactylus pulchellus</i>				x	x				LC
21	Tukkae-bin Hang Pan	Kuhl's parachute gecko	<i>Ptychozoon kuhli</i>				x	x				LC
Family Scincidae												
22	Ching laen Lai Keet	Nicobar skink	<i>Eutropis rugifera</i>		x		x	x				LC
23	Ching laen reao Tong Loeng	Bowring's slender skink	<i>Lygosoma bowringii</i>		x		x	x				LC
24	Ching laen din Chut Dam	Black-spotted ground skink	<i>Scincella melanosticta</i>		x		x	x				LC
25	Ching laen huai Kamir	Cambodian stream skink	<i>Tropidophorus microlepis</i>				x	x				LC
26	Ching laen hang yao	Long-tailed sun skink	<i>Mabuya longicaudata</i>	x	x	x	x	x				LC
27	Ching laen lak lai	Speckle sun skink	<i>Mabuya macularia</i>	x	x	x	x	x				LC
28	Ching laen ban	Many-lined sun skink	<i>Mabuya multifasciata</i>	x	x	x	x	x	x	x		LC
29	Ching laen phukhao kled riap	Streamside forest skink	<i>Sphenomorphus maculatus</i>		x	x	x	x				LC
30	Ching laen real lai	Harold Young's supple skink	<i>Lygosoma haroldyoungi</i>	x	x							LC
Family Agamidae												
31	Kingka khoa nam san	Cross-brearing tree lizard	<i>Acanthosaura crucigera</i>				x	x				LC
32	Kingka khao Nam Yao	Greater spiny lizard	<i>Acanthosaura armata</i>				x	x				LC
33	Kingka kao	Forest crested lizard	<i>Calotes emma</i>	x	x	x	x	x				LC
34	Kingka hua daeng	Garden fence lizard	<i>Calotes versicolor</i>	x	x	x	x	x	x	x		LC
35	Kingka hua si fa	Oriental garden lizard	<i>Calotes mystaceus</i>	x	x	x	x	x				LC
36	Kingka yak, ta kong	Indochinese water lizard	<i>Physignathus cocincinus</i>	x	x	x	x	x	x	x		EN
37	Kingka bin peek si som	Orange-winged flying lizard	<i>Draco maculatus</i>	x	x	x	x	x				LC
38	Kingka bin peek lai	Barred flying dragon	<i>Draco taeniopterus</i>		x		x	x				LC
Family Lacertidae												
39	Kingka noi hang yao	Long-tailed lizard	<i>Takydromus sexlineatus</i>		x	x	x	x				LC
Family Leiolepisidae												
40	Yae	Butterfly lizard	<i>Leiolepis belliana</i>	x	x	x	x	x	x	x		NT

No.	Native Name	Common Name	Zoological Name	Thailand					Laos		Present Status	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
Family Varanidae												
41	Ta kuat	Bengal or couded monitor	<i>Varanus bengalensis</i>	x	x	x	x	x	x	x	LC	I
42	Hia	Water monitor	<i>Varanus salvator</i>	x	x	x	x	x	x	x	LC	II
Family Boidae												
43	Ngu lueam	Reticulated python	<i>Broghamerus reticulatus</i>	x	x	x	x	x	x	x	LC	II
44	Ngu larm	Burmese python	<i>Python bivittatus</i>		x	x	x	x			LC	
Family Colubrinae												
45	Ngu Khiao kap mak	Red-tailed rat snake	<i>Gonyosoma oxycephalum</i>	x	x	x	x	x			LC	
47	Ngu Klom nang non	Asian vine snake	<i>Ahaetulla prasine</i>				x				LC	
46	Ngu Sing thamada	Indochinese rat snake	<i>Ptyas korros</i>	x	x	x	x	x	x	x	LC	
47	Ngu Sing hang lai	Rat snake	<i>Ptyas mucosa</i>	x	x	x	x	x			LC	
48	Ngu Soi lueang	Common wolf snake	<i>Lycodon capucinus</i>		x			x			LC	
49	Ngu Lai sap kho daeng	Red-necked keelback	<i>Rhabdophis subminiatus</i>	x	x			x			LC	
50	Ngu Lai sor suan	Yellow-spotted keelback	<i>Xenochrophis flavipunctatus</i>							x	LC	
51	Ngu Sa	Radiated ratsnake	<i>Coelognathus radiata</i>						x	x	LC	
52	Ngu Khiao hua chingchok	Gunther's whip snake	<i>Ahaetulla prasina</i>	x	x		x	x			LC	
53	Ngu Lai sap tong sam kheet	Deschaunsee's keelback	<i>Amphiesma deschauenseei</i>				x	x			LC	
54	Ngu Lai sap dok ya	White-striped keelback	<i>Amphiesma stolatum</i>				x	x			LC	
55	Ngu Lai sap malayu	Gunung Inas keelback	<i>Amphiesma inas</i>				x	x			LC	
56	Ngu Khiao bon	Green cat-eyed snake	<i>Boiga cyanea</i>		x		x	x			LC	
57	Ngu Mae tangao rang nok	Many-spotted cat snake	<i>Boiga multomaculata</i>		x		x	x			LC	
58	Ngu Sai-man pra-in	Common bronzeback	<i>Dendrelaphis pictus</i>		x		x	x			LC	
59	Ngu Tang-ma-prao lai keet	Copperheaded racer	<i>Elaphe radiata</i>		x	x	x	x			LC	
60	Ngu Plong-chanuan Lao	Laotian wolf snake	<i>Lycodon laoensis</i>		x		x	x			LC	
61	Ngu Pi-kaeo lai taem	Banded kukri snake	<i>Oligodon fasciolatus</i>				x	x			LC	
62	Ngu Ngod Thai	Striped kukri snake	<i>Oligodon taeniatus</i>		x		x	x			LC	
63	Ngu Mok	Mock viper	<i>Psammodynastes pulverulentus</i>				x	x			LC	

No.	Native Name	Common Name	Zoological Name	Thailand					Laos		Present Status		
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES	
64	Ngu Lai so yai	Checkered keelback	<i>Xenochrophis piscator</i>				x	x				LC	
Family Viperidae													
65	Ngu Kieo hang mai	Green pit viper	<i>Trimeresurus</i> sp.	x	x		x	x	x	x		LC	
66	Ngu Kappa	Malayan pit viper	<i>Calloselasma rhodostoma</i>	x	x	x	x	x	x	x		LC	
67	Ngu Kieo hang-mi tong laung	Yellow-lipped green pit viper	<i>Trimeresurus albolabris</i>		x	x	x	x				LC	
68	Ngu Kieo hangmai tong kio	Pope's green pit viper	<i>Trimeresurus fucatus</i>		x	x	x	x				LC	
69	Ngu Kieo hang-mi ta to	Large-eyed green pit viper	<i>Trimeresurus macrops</i>				x	x				LC	
70	Ngu Kieo pai	Bamboo pit viper	<i>Trimeresurus gumprechtii</i>		x	x	x	x				LC	
Family Elapidae													
71	Ngu Sam liam	Banded krait	<i>Bungarus fasciatus</i>	x	x		x	x	x	x		LC	
72	Ngu Hao mor	Monocled cobra	<i>Naja kaouthia</i>		x	x	x	x	x	x		LC	II
73	Ngu Chong ang	King cobra	<i>Ophiophagus hannah</i>	x	x	x	x	x	x	x		VU	II
Family Homalopsidae													
74	Ngu ta pla, Ngu pling	Grey water snake	<i>Enhydris plumbea</i>	x	x		x					LC	
75	Ngu Sai-rung	Rainbow water snake	<i>Enhydris enhydris</i>		x		x	x				LC	
76	Ngu Hua-kra-lok	Puff-faced water snake	<i>Homalopsis buccata</i>				x	x				LC	
Family Papeatidae													
77	Ngu Kin Tak Gled San	Keeled slug snake	<i>Pareas carinatus</i>				x	x				LC	
Family Tylopidae													
78	Ngu Din ban	Common blind snake	<i>Ramphotyphlops braminus</i>	x	x	x	x	x				LC	
Family Cyliophiidae													
79	Ngu Kon kob	Red-tailed pipe snake	<i>Cylindrophis ruffus</i>				x	x				LC	
Family Xenopeltidae													
80	Ngu Saeng ar-tit	Sunbeam snake	<i>Xenopeltis unicolor</i>		x		x	x				LC	

Annex 3. Cont'd

Note: 1/ Reverse

PT	: Pha Taem National Park
KN	: Kaeng Tana National Park
BM	: Bun Thrik - Yot Mon Wildlife Sanctuary
PJ	: Phu Jong - Na Yoi National Park
YD	: Yot Dom Wildlife Sanctuary
PX	: Phou Xiangthong National Biodiversity Conservation Area
DK	: Dong Khanthung Protected Forest

2/ Present Status

IUCN	CR	: Critically endangered species
	EN	: Endangered species
	VU	: Vulnerable species
	NT	: Non – threatened
	LR	: Lower risk
	DD	: Data insufficiently known
CITES	I	: Endanger species
	II	: Vulnerable species
	III	: Species requested to be protected

3/ IUCN	: International Union of Conservation of Nature and Natural Resources
CITES	: Convention on International Trade in Endangered Species of Wild Fanna and Flora

**Annex 4.** List of Amphibians known from the Emerald Triangle Protected Forests Complex between Thailand and Lao PDR

No.	Native Name	Common Name	Zoological Name	Thailand					Laos		Present Status	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
<b>Order Gymnophiona</b>												
Family Ichthyophiidae												
1	Khiat ngu koh tao	Koh Tao caecilian	<i>Ichthyophis kohtaoensis</i>		x	x	x	x				DD
<b>Order Anura</b>												
Family Bufonidae												
2	Kangkok ban	Asian common toad	<i>Duttaphrynus melanostictus</i>	x	x	x	x	x	x	x		LC
Family Ranidae												
3	Khiat Jik	Green-backed frog	<i>Hylarana erythraea</i>	x	x		x	x		x		LC
4	Khiat Lang kiet	Strip-backed frog	<i>Hylarana macrodactyla</i>	x	x		x	x			x	LC
5	Kob Ong yai	Mortensen's frog	<i>Hylarana mortenseni</i>		x	x	x	x				
6	Kob Ong lek	Common brown frog	<i>Rana nigrovittata</i>	x	x	x		x				LC
Family Dicroglossidae												
7	Kob Na	Rugose frog	<i>Hoplobatrachus rugulosus</i>	x	x	x	x	x	x	x		LC
8	Khiat E-mo	Marsh frog	<i>Fejervarya limnocharis limnocharis</i>	x	x	x	x	x	x	x		LC
9	Khiat E-mo hin	Sandston frog	<i>Fejervarya triora</i>	x	x		x	x	x			DD
10	Khiat Lang phrai	Dryzone or yellow-black frog	<i>Pelophylax lateralis</i>		x			x				LC
11	Kob Huai ka poom	Kuhl's stream frog	<i>Limnonectes kuhlii</i>			x	x	x				
12	Kob Hua to	Big-headed frog	<i>Limnonectes macrodon</i>				x	x				LC
13	Kob Panom dong rak						x	x				
14	Khiat Cha na	Common puddle frog	<i>Occidozyga lima</i>	x	x	x	x	x				LC
15	Khiat Sai	Martens's puddle frog	<i>Occidozyga martensii</i>	x	x	x	x	x				LC
16	Kob Cha ngon pha esan		<i>Odorrana aureola</i>		x		x	x				
Family Rhacophoridae												
17	Pat Ban	House tree frog	<i>Polypedates leucomystex</i>	x	x	x	x	x	x	x		LC
18	Khiat Tapat nue	Northern tree frog	<i>Polypedates mutun</i>	x	x		x					LC

No.	Native Name	Common Name	Zoological Name	Thailand					Laos		Present Status	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
19	Pat Phu kradueng	Phu kradueng flying-frog	<i>Kurixalus bisacculus</i>	x	x	x	x	x				LC
20	Pat Chew lai tam	Nongkhor bush frog	<i>Chiromantis nongkhorensis</i>				x	x				LC
21	Pat Chew pama	Burmese bush frog	<i>Chiromantis vittatus</i>				x	x				LC
Family Microhylidae												
22	Aueng Ang ban	Common burrowing frog	<i>Kaloula pulchra pulchra</i>	x	x	x	x	x	x	x		LC
23	Aueng Ang kon khet	Median-striped bullfrog	<i>Kaloula mediolineata</i>		x	x		x				
24	Aueng Pum lang lai	Striped sticky frog	<i>Kalophrynus interlineatus</i>					x				LC
25	Aueng Liam taem	Noisy froglet	<i>Microhyla butleri</i>	x	x		x					LC
26	Aueng Khang dam	Dark-sided froglet	<i>Microhyla heymonsi</i>	x	x	x	x	x	x	x		LC
27	Aueng Kha kham	Painted froglet	<i>Microhyla pulchra</i>		x			x				LC
28	Aueng Mae nao	Berdmore's chorus frog	<i>Microhyla berdmorei</i>			x		x				LC
29	Aueng Nam tao	Ornate chorus frog	<i>Microhyla ornate</i>		x	x		x				LC
30	Aueng Lang kheed	Inornate chorus frog	<i>Micryletta inornata</i>				x	x				LC

Annex 4. Cont'd

Note: 1/ Reverse

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2/ Present Status

IUCN	CR	: Critically endangered species
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	DD	: Data insufficiently known
CITES	I	: Endanger species
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3/ IUCN	: International Union of Conservation of Nature and Natural Resources
CITES	: Convention on International Trade in Endangered Species of Wild Fanna and Flora

**Annex 5.** List of freshwater fish known from the Emerald Triangle Protected Forests Complex between Thailand and Lao PDR

No.	Native Name	Common Name	Zoological Name	Thailand					Laos		Present Status	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
<b>Order Symbranchiformes</b>												
Family Symbranchidae												
1	Pla Lai na	Asian swamp eel	<i>Monopterus alba</i>	x		x	x		x	x		
Family Mastacembelidae												
2	Pla Kra ting	Spiny eel	<i>Mastacembelus armatus</i>	x	x	x	x	x	x	x	LC	
3	Pla Kra ting fai	Spiny eel	<i>Mastacembelus erythrotaenia</i>		x			x			VU	
4	Pla Lott	Spiny eel	<i>Macrogathus siamensis</i>	x	x		x	x			LC	
<b>Order Osteoglossiformes</b>												
Family Notopteridae												
5	Pla Sa lat	Bronze featherback	<i>Notopterus notopterus</i>	x	x	x	x	x	x	x	LC	
6	Pla Tong lai	Royal featherback	<i>Chitala blanci</i>	x	x		x		x	x	NT	
7	Pla Tong dao	Clown featherback	<i>Chitala omata</i>						x	x	LC	
<b>Order Cypriniformes</b>												
Family Balitoridae												
8	Pla Ching chok	Balitora	<i>Balitora annamitica</i>					x			LC	
9	Pla Phi sua tid hin	Homalotera	<i>Homaloptera smithi</i>					x			LC	
Family Gyrinocheiidae												
10	Pla Sio nam pheung	Honey sucking loache	<i>Gyrinocheilus aymonieri</i>		x			x			LC	
Family Cobitidae												
11	Pla Rak kluay	Loache	<i>Acanthopsis choirorhynchus</i>	x	x	x	x	x	x	x		
12	Pla Hmu lai	Loache	<i>Botia helodes</i>	x	x		x	x	x		LC	
13	Pla Mu lai sua	Loache	<i>Botia beauforti</i>		x		x	x			NT	
14	Pla Sai tong	Loache	<i>Pangio anguillaris</i>					x				
15	Pla Ngu	Loache	<i>Pangio fusca</i>				x	x			DD	
16	Pla Eed	Loache	<i>Lepidocephalichthys</i> sp.	x	x		x	x				

No.	Native Name	Common Name	Zoological Name	Thailand					Laos		Present Status	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
Family Cyprinidae												
17	Pla Ta kok	Barb	<i>Cyclocheilichthys enoplos</i>	x	x		x	x	x			LC
18	Pla Chok mai	Barb	<i>Cyclocheilichthys furcatus</i>	x	x				x			LC
19	Pla Nam lang	Yellow-tailed barb	<i>Mystacoleucus marginatus</i>	x	x	x	x	x	x			LC
20	Pla Wee	Barb	<i>Puntioplites falcifer</i>	x	x	x	x	x	x	x		LC
21	Pla Taphian thong	Barb	<i>Barbodes altus</i>	x	x	x			x	x		
22	Pla Taphien khao	Barb	<i>Barbodes gonionotus</i>	x	x	x	x	x	x	x		
23	Pla Soy	Siamese mud carp	<i>Henicorhynchus siamensis</i>						x	x		
24	Pla Taphain pak nuat	Barb	<i>Hypsibarbus vernayi</i>	x	x		x		x	x		LC
25	Pla Tapak	Barb	<i>Hypsibarbus wetmorei</i>	x	x	x	x		x			LC
26	Pla Pak Nuad	Goldfin Tinfoil Barb	<i>Hypsibarbus malcolmi</i>						x	x		LC
27	Pla Soi nokkhao	Barb	<i>Osteochilus hasselti</i>	x	x	x	x	x	x	x		
28	Pla Rong mai tap	Barb	<i>Osteochilus vittatus</i>	x	x		x	x	x			LC
29	Pla Taeb	Barb	<i>Paralaubuca typus</i>						x	x		LC
30	Pla Urn Moum	Thicklipped Barb	<i>Probarbus labeamajor</i>							x		EN
31	Pla Soot	Barb	<i>Hampala dispar</i>	x	x	x	x	x	x	x		LC
32	Pla Kra soup keit	Barb	<i>Hampala macrolepidota</i>		x			x	x	x		LC
33	Pla Lia hin	Barb	<i>Garra sp.</i>	x	x	x	x	x	x			
34	Pla Pak pa-lian	Barb	<i>Scaphognathops bandanensis</i>	x	x	x	x		x			VU
35	Pla Pea, Pla Ka dam	Greater back shark	<i>Morulius chrysophekadion</i>	x	x		x	x	x			
36	Pla Yi sok thet	Indian carp, Rohu (exotic sp.)	<i>Labeo rohita</i>		x		x	x				LC
37	Pla Sew ao	Luciosoma	<i>Luciosoma sp.</i>	x	x		x	x				
38	Pla Sew kwai	Rasbora	<i>Rasbora argyrotaenia</i>		x			x				
39	Pla Sew hang dang	Rasbora	<i>Rasbora borapetensis</i>	x	x		x	x				LC
40	Pla Sew naud yai	Rasbora	<i>Rasbora sp.</i>		x			x				

No.	Native Name	Common Name	Zoological Name	Thailand					Laos		Present Status	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
41	Pla Sew kwan thap dam	Rasbora	<i>Rasbora sumatrana</i>		X			X				
42	Pla Ta pian khao	Barb	<i>Barbodes gonionotus</i>	X	X		X	X				LC
43	Pla Ta pian sai	Barb	<i>Puntius brevis</i>		X		X	X				LC
44	Pla Gam sam	Barb	<i>Systemus orphoides</i>				X	X				
45	Pla Sua khang lai	Barb	<i>Systemus partipentozona</i>		X		X	X				
46	Pla Ta pian namtok	Barb	<i>Systemus binotatus</i>		X		X	X				LC
47	Pla Nuan chan	Barb	<i>Cirrhinus macrosemion</i>	X	X		X	X				VU
48	Pla Dang noi	Barb	<i>Discherodontus ashmeadi</i>		X			X				VU
49	Pla Nam hang khao	Barb	<i>Mystacoleucus sp.</i>		X			X				
50	Pla Nam hang	Barb	<i>Mystacoleucus marginatus</i>		X			X				LC
51	Pla Kra mang	Barb	<i>Puntioplites proctozysron</i>		X			X				
52	Pla Chad	Barb	<i>Poropuntius sp.</i>	X	X		X	X				
53	Pla Song klueang	Barb	<i>Epalzeorhynchus bicolor</i>					X				NT
54	Pla Mood	Barb	<i>Garra fisheri</i>					X				
55	Pla Soi look kluai	Barb	<i>Labiobarbus siamensis</i>		X		X	X				LC
56	Pla Soi look bua	Barb	<i>Labiobarbus sp.</i>		X		X	X				
57	Pla Leb mue nang	Barb	<i>Crossocheilus sp.</i>		X			X				
<b>Order Siluriformes</b>												
Family Siluridae												
58	Pla Kang buean	Sheat catfish	<i>Belodontichthys dinema</i>	X	X		X	X	X	X		
59	Pla Khrobe	Twisted-jaw catfish	<i>Belodontichthys truncatus</i>								X	LC
60	Pla Kang daeng	Sheat catfish	<i>Hemisilurus mekongensis</i>	X			X		X	X		LC
61	Pla Nam ngoen	Sheat catfish	<i>Micronema apogon</i>	X	X		X	X	X			
62	Pla Daeng, Pla Sa ngua	Sheat catfish	<i>Micronema micronema</i>	X					X			
63	Pla Nang Ngeuan	Sheat catfish	<i>Phalacrotonus bleekeri</i>								X	LC
64	Pla Peak kai	Sheat catfish	<i>Kryptopterus cheveyi</i>	X					X	X		

No.	Native Name	Common Name	Zoological Name	Thailand					Laos		Present Status	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
65	Pla Kha kai	Sheat catfish	<i>Kryptopterus cryptopterus</i>	x					x		LC	
66	Pla Khao	Great white sheatfish	<i>Wallago attu</i>							x	NT	
67	Pla Sayom pu	Sheatfish	<i>Ompok bimaculatus</i>		x			x			NT	
Family Bagridae												
68	Pla Kot Laung	Yellow catfish	<i>Hemibagrus filameatus</i>	x	x	x	x	x	x	x		
69	Pla Kang, Pla kot kaeo	Asian red-tailed catfish	<i>Hemibagrus wyckioides</i>	x	x		x	x	x	x	LC	
70	Pla Kha yang hin	Catfish	<i>Leiocassis sp.</i>			x		x	x		VU	
71	Pla Duk mun	Catfish	<i>Bagrichthys obscurus</i>	x	x		x	x	x	x		
72	Pla Kot dam	Black catfish	<i>Hemibagrus wyckii</i>		x			x			LC	
73	Pla Kha yang khang lai	Catfish	<i>Mystus sp.</i>				x	x				
Family Sisoridae												
74	Pla Khae yak, Pla Khae wau	Bagarius catfish	<i>Bagarius yarrelli</i>	x					x		NT	
75	Pla Khae tid hin	Catfish	<i>Glyptothorax sp.</i>					x				
Family Schilbeidae												
76	Pla Sang kawat khao	Shilbeid catfish	<i>Laiides hexanema</i>	x	x		x	x	x			
Family Clariidae												
77	Pla Duk rat sia	Catfish (exotic sp.)	<i>Clarias gareipinnus</i>		x							
78	Pla Duk dan	Walking catfish	<i>Clarias batrachus</i>		x		x	x	x	x	LC	
79	Pla Duk hin	Catfish	<i>Clarias sp.</i>	x							VU	
Family Pangasiidae												
80	Pla Buk	Mekong giant catfish	<i>Pangasianodon gigas</i>	x	x				x		NT	I
81	Pla Sawai nu	Giant catfish	<i>Helicophagus waandersii</i>	x	x				x			
82	Pla Sang kawat thong khom	Catfish	<i>Pteropangasius pleurotaenia</i>	x	x	x	x	x	x			
83	Pla Sang kawat luang	Catfish	<i>Pangasius macronema</i>	x			x	x	x		LC	
84	Pla Pho	Catfish	<i>Pangasius conchophilus</i>	x	x	x			x		LC	
85	Pla Yang	Bocout's giant catfish	<i>Pangasius bocourti</i>	x	x				x		LC	

No.	Native Name	Common Name	Zoological Name	Thailand					Laos		Present Status	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
<b>Order Perciformes</b>												
Family Chanidae												
86	Pla Kaang	Serpent-head fish	<i>Channa limbata</i>	x	x	x	x	x	x	x		86
87	Pla Chon	Serpent-head fish	<i>Channa striatus</i>	x	x	x	x	x	x	x		87
88	Pla Chado	Serpent-head fish	<i>Channa micropeltes</i>	x	x	x	x	x	x	x		
89	Pla Chon ngu hao	Serpent-head fish	<i>Channa marulius</i>					x			NT	
90	Pla Ka song	Serpent-head fish	<i>Channa lumbata</i>					x				
Family Osphronemidae												
91	Pla Men	Elephant Ear Gourami	<i>Osphronemus exodon</i>							x	VU	
92	Pla Kradee	Three spot gouramy	<i>Trichogaster trichopterus</i>	x	x	x	x	x	x	x		
Family Anabantidae												
93	Pla Mor	Climbling perch	<i>Anabas testudineus</i>	x	x	x	x	x	x	x		
Family Nandidae												
94	Pla Mor chang yiep	Nandid	<i>Pristolepis fasciatus</i>	x	x		x	x	x	x		
Family Eliotridae												
95	Pla Bu sai	Marbled sleeper	<i>Oxyeleotris marmorata</i>	x	x	x	x	x	x	x	LC	
Family Ambassidae												
96	Pla Paen kaeo	Glassperch	<i>Parambassis siamensis</i>	x	x	x	x	x	x	x	LC	
Family Belontiidae												
97	Pla Krim kwai, Pla kad pa	Croaking gourami	<i>Trichopsis vittatus</i>		x			x				
<b>Order Clupeiformes</b>												
Family Clupeidae												
98	Pla Mak phang	Laotian shad	<i>Tenualosa thibaudeaui</i>							x	VU	
<b>Order Beloniformes</b>												
Family Belonidae												
99	Pla Kra tung hew	Needle fish	<i>Xenentodon cancella</i>		x			x				

No.	Native Name	Common Name	Zoological Name	Thailand					Laos		Present Status	
				PT	KN	BM	PJ	YD	PX	DK	IUCN	CITES
<b>Order Tetraodontiformes</b>												
Family Tetraodontidae												
100	Pla Pak pao chud dam	Green spotted puffer	<i>Tetraodon nigroviridis</i>				x	x				
<b>Order Pleuronectiformes</b>												
Family Soleidae												
101	Pla Bai mai	Soleid	<i>Euryglossa siamensis</i>		x		x	x				

Annex 5. Cont'd

Note: 1/ Reverse

PT	: Pha Taem National Park
KN	: Kaeng Tana National Park
BM	: Bun Thrik – Yot Mon Wildlife Sanctuary
PJ	: Phu Jong – Na Yoi National Park
YD	: Yot Dome Wildlife Sanctuary
PX	: Phou Xiangthong National Biodiversity Conservation Area
DK	: Dong Khanthung Protected Forest

2/ Present Status

IUCN	CR	: Critically endangered species
	EN	: Endangered species
	VU	: Vulnerable species
	NT	: Non – threatened
	LR	: Lower risk
	DD	: Data insufficiently known
CITES	I	: Endanger species
	II	: Vulnerable species
	III	: Species requested to be protected

3/ IUCN	: International Union of Conservation of Nature and Natural Resources
CITES	: Convention on International Trade in Endangered Species of Wild Fanna and Flora

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View of Pha Taem National Park in Thailand and Phou Xiangthong NBCA in Lao PDR.

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