

Significant Wildlife and Wildlife Habitats of Bolikhamxay Province

*Integrated Ecosystem and Wildlife
Management Project*

April 2006



**Lao PDR
Program**

ອົງການ ອະນຸລັກ ສັດປ່າ



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ABBREVIATIONS

CITES	Convention on International Trade in Endangered Species
DFRC	Division of Forest Resource Conservation
DoF	Department of Forestry
DAFO	District Agriculture and Forestry Office
FIPD	Forest Inventory and Planning Division
GoL	Government of Lao PDR
IUCN	The World Conservation Union
IEWMP	Integrated Ecosystem and Wildlife Management Project
km	kilometers
NBCA	National Biodiversity Conservation Area
NPA	National Protected Area
NTFP	Non-timber forest product
PAFO	Provincial Agriculture and Forestry Office
PDR	Peoples' Democratic Republic
PMD	Prime Ministerial Decree
WCS	Wildlife Conservation Society

CONVENTIONS

Mammal taxonomy and systematics follow Corbett and Hill (1992). Taxonomy and nomenclature for birds follows Inskipp *et al.* (1996). Common location names include: *ban*: village; *houay*: stream; *keng*: rapid; *nam* or *xe*: river; *nong*: pool or small lake; *pak*: river mouth; *phou*: mountain or hill; *poung*: natural mineral lick, *hai* refers to hill rice fields

SIGNIFICANT WILDLIFE AND WILDLIFE HABITATS OF BOLIKHAMXAY PROVINCE

1 INTRODUCTION

1.1 PURPOSE OF THIS BOOK

Margin boxes are important! They contain key points from the text.

This book is for decision makers and technical staff concerned with the **conservation** of wildlife and wildlife habitats in Bolikhamxay Province. It is not a comprehensive review of all wildlife species in the province, but only those that are of concern and may need management attention to insure their survival.

Its purpose is to focus on what needs to be conserved, rather than serving as a manual on how to do wildlife conservation. We must first identify the 'what' before proceeding to the 'how', and this book is that first step.

1.2 WHY BOLIKHAMXAY?

Bolikhamxay has some of the most important forests and animals in the world for conservation.

Lao PDR has twenty provinces, yet only one, Bolikhamxay, was chosen for a provincial-wide, GEF (Global Environmental Fund) conservation project. Why? The reason is Bolikhamxay's high global importance for wildlife and **biodiversity** conservation. This importance comes from Bolikhamxay's location in the Saiphou Louang (or 'Annamite Mountains'). The international organization WWF carefully analyzed all natural habitats in the world - across Africa, Europe, the Americas, Asia, Australia, and islands of the oceans - and identified about 200 places that are the highest priority for conservation in the world, named the "**Global 200**". Many of these areas are biodiversity "hot spots", or areas of high biodiversity conservation importance. The Saiphou Louang, along the border of Lao and Vietnam, is one of the Global 200. It is by far the most important land ecosystem in Lao for the conservation of biodiversity.

A "hot spot" is an area of high biodiversity importance whose conservation is locally and globally important for future generations of people and wildlife.

The Saiphou Louang, however, is also found in Vietnam, and stretches across several other provinces of Lao, from Xieng Khouang and Bolikhamxay south through Khammouane, Savannakhet, Salavan, Xekong and Attapeu. What makes Bolikhamxay uniquely important? First, human population pressure in Vietnam (there are 81 million people in Vietnam, compared to just 5.5 million in Lao PDR) has caused severe degradation to Vietnam's forests and wildlife. Vietnam has lost the opportunity for conservation of their portion of the Saiphou Louang, but it still exists in Lao PDR.

On the Lao side of the Saiphou Louang, Bolikhamxay is different from the other provinces in some important ways:

- Its forest cover remains extensive, much more so than areas of the Saiphou Louang in Savannakhet.
- Its forest type and wildlife are different. There are Saola in Bolikhamxay and Khammouane, but none in Salavan or Attapeu - nor anywhere else in the world

outside of Saiphou Louang. The forest type that the Saola prefers is not found in these other provinces (more on that in the next sections).

- There are no National Protected Areas in the important Saiphou Louang forest along the Vietnam border. Although the forest cover of Nam Kading NPA and Phou Khao Khouay NPA are quite good, these areas have no Saola or any of the other special Saiphou Louang species, because their habitat is different.

In summary, Bolikhamxay has some of the most important forests and animals in the world for conservation.

1.3 THE INFORMATION BASE

Despite Bolikhamxay's importance, very little is known about its wildlife. By comparison, there have been repeated and detailed studies in Nakai-Nam Theun, Hin Nam No and Phou Hin Poun in Khammouane province, and in Pu Mat National Park across the border in Vietnam. In Bolikhamxay, there have been just a few studies in the Nam Chat-Nam Pan area, Nam Kading NPA and Phou Khao Khouay NPA. Most of the rest of Bolikhamxay is unknown for wildlife. An environmental inventory of the province, prepared by IUCN in 2000, had only two paragraphs on wildlife other than the Saola.

Consequently, the information available for preparation of this book is somewhat thin, and it must necessarily be only a first step toward a more thorough compilation describing the wildlife of Bolikhamxay. Also, much additional information is probably available in reports by the Provincial Forestry Department, and even more known by the staff and residents of Bolikhamxay, but these were not accessed for this report. The main sources used are listed below, with additional sources credited in the bibliography. Web pages used are credited in the text.

- *Handbook of the Birds of the World*. Del Hoyo, Elliott, and Sargatla, eds, 1994. Lynx Edicions.
- *A Wildlife and Habitat Survey of Nakai-Nam Theun National Biodiversity Conservation Area, Khammouan and Bolikhamxay Provinces, Lao PDR*. Timmins and Evans, 1996. Centre for Protected Areas and Watershed Management (Department of Forestry) and Wildlife Conservation Society.
- *Environmental and Social Action Plan for the Nakai-Nam Theun Catchment and Corridor Areas: Report*

of the Wildlife Survey. Tobias, 1997. Wildlife Conservation Society.

- *Wildlife Survey (Saola, or "Nyu-ja") From Villages in Bolikhan District, Bolikhamxay Province.* Souvanalath, 1998. Bolikhamxay Province Forestry Office and Wildlife Conservation Society.
- *Carnivores of Mainland Southeast Asia.* Kanchanasakha, Simcharoen and Than, 1998. WWF Endangered Species Unit, Thailand Office.
- *A Photographic Guide to Snakes and Other Reptiles of Thailand and Southeast Asia,* Cox, van Dijk, Nabhitabhata and Thirakhupt, 1998. Asia Books.
- *Summary of Saola, Herpetological and Wildlife Trade Studies in Nakai-Nam Theun NBCA and the Proposed Nam Theun Extension.* Robichaud and Stuart, 1999. Wildlife Conservation Society and IUCN.
- *Wildlife in Lao PDR: 1999 Status Report.* Duckworth, Khounboulane and Salter, 1999. IUCN, Wildlife Conservation Society and Department of Forestry.
- *Walker's Mammals of the World. Sixth Edition.* Nowak, 1999. John's Hopkins University Press.
- *A Field Guide to the Birds of Thailand and Southeast Asia.* Robson, 2000. New Holland.
- *A Photographic Guide to Mammals of Thailand and Southeast Asia.* Francis, 2001. Asia Books.
- *Photographic Guide to the Turtles of Thailand, Laos, Vietnam and Cambodia.* Stuart, van Dijk and Hendrie, 2001 Wildlife Conservation Society, IUCN, the World Bank, Fauna and Flora International, Wetlands International, Traffic Southeast Asia and the Darwin Initiative.

2 HABITATS OF CONSERVATION IMPORTANCE

2.1 WET EVERGREEN FOREST

The rainy season in Lao comes from a southwest monsoon that travels from the Indian Ocean in May. Vietnam gets much of its rain during the Lao dry season, from a northwest monsoon, which the Saiphou Louang and mountains in the north block from entering Lao. But low areas in the Saiphou Louang (500 – 800 meters) of Bolikhamxay

near the Vietnam border allow entrance of the northwest monsoon for several kilometers into eastern portions of Lao. These places experience extensive periods of overcast and cold mist and rains at a time when most of Lao is dry and clear. The consequence is an unusually long rainy season in some areas, up to ten months per year, with no month receiving less than 40 millimeters (mm) of rain (Robichaud & Timmins 2004). This localized border-area climate has produced a distinctive wet evergreen or "everwet" forest (Timmins & Evans 1996). Wet evergreen forest probably defines the distribution of some of the newly described endemic mammals from the Saiphou Louang.

These endemics occur at mid-elevation (roughly 500 - 900 m) near the Vietnam border, where winter monsoon precipitation penetrates the protected area, as described earlier. Annual precipitation could reach 3,000 mm, with only 1-3 months of dry season, and the air temperature is markedly lower than elsewhere in the protected area. This may be the preferred habitat of rare species such as the Saola and Annamite Striped Rabbit. Plant endemism is expected to be high, and wet evergreen forest is the most globally significant terrestrial habitat not only in NNT, but in all of Lao. The only other place in the world this type of wet evergreen forest occurs is in Vietnam, but there it has been heavily disturbed due to the country's large population.

Important areas of wet evergreen forest in Bolikhamxay include areas along the Vietnam border, such as the Nam Chat-Nam Pan Provincial Protected Area.

Important areas of wet evergreen forest in Bolikhamxay include the areas along the Vietnam border, such as the Nam Chat-Nam Pan Provincial Protected Area.

2.2 DRY EVERGREEN/SEMI-EVERGREEN FOREST

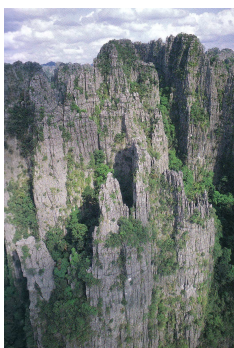
This is the predominant natural habitat in Bolikhamxay Province. It is probably found in all districts, but varies in quality. The largest block is in Nam Kading NPA, where it is among the highest quality dry evergreen/semi-evergreen forest remaining anywhere in Indochina. Many of the Key Species listed in the next section are dependent on this forest type, and some, such as hornbills, cannot survive without very large areas of this forest type.

Dry Evergreen/Semi-Evergreen Forest is the most predominant natural habit in the province.

Of particular importance are level places in low elevation areas of forest. These may be particularly important for species such as elephants and wild cattle.

2.3 LIMESTONE KARST

Limestone karst is one of the most significant habitats in Lao for rare species. There are several animals specially adapted to the type of forest that grows on and around karst, and it is their only habitat. Karst is found in some other parts of Lao (for example, Vang Vieng in Vientiane Province, Viengxai in Houa Phan and along the Nam Ou in Louang Phrabang), but only the karst in Bolikhamxay and Khammouane has the globally rare karst specialists. Some of



these animals are found nowhere else in the world. This particular karst is known as the "Central Indochina Limestone Karst", and is considered high priority for conservation. In fact, it is so important that the portion straddling the Lao/Vietnam border in Boualapha District, Khammouane Province, has been suggested as a World Heritage site (the only other World Heritage sites in Lao are Louang Phrabang and Wat Phou).

In Bolikhamxay there are several important areas of limestone karst, mainly in the southern portion of the province.

2.4 RIVERS AND STREAMS

The Mekong is one of the world's great rivers. It is also a unique river because of the high degree of change in seasonal water level. More of its tributaries are in Lao than in any other country, and many of these flow through Bolikhamxay, such as the Nam Kading, Nam Xan, Nam Ngiep and Nam Gnouang. Several factors make the rivers and streams of Bolikhamxay of high importance for biodiversity:

- Rivers and streams are vital, since all animals need water. Like the human residents of Bolikhamxay, wildlife is highly dependent on the clean water and food provided by rivers.
- Because humans also make heavy use of rivers - for example, for travel, fishing, hunting, and raising water buffalo - some of the most threatened species in Lao are characteristic of rivers. Species such as water-birds, crocodiles and, of course fish, have declined greatly in Lao due to people hunting and fishing on the rivers.
- It has been found that many species of fish found in the tributaries of the Mekong in Lao are found nowhere else in the world. They evolved there, and have spread nowhere else. Even some species of fish that occur in other rivers downstream are dependent on upper rivers in areas like Bolikhamxay for breeding.
- Most protein eaten by the villagers in Bolikhamxay comes from rivers. If the biodiversity of these rivers is not conserved, people will become poorer. Also, if fish decline in the rivers, people may need to hunt more wildlife for protein. River and fish conservation benefits all wildlife.

River and fish conservation benefits all wildlife.

3 WILDLIFE OF CONSERVATION IMPORTANCE

3.1 WHAT MAKES A SPECIES IMPORTANT FOR CONSERVATION?

How do we decide which species are important to conserve in Bolikhamxay? A logical approach is to focus on

animals that, if not conserved in Bolikhamxay might be lost from all of Lao, Asia or the world. Worldwide there are approximately 21,545 reptile, bird and mammal species – 10,000 birds (<http://www.birdlife.org/action/science/sowb/state/14.html>), 7,870 reptiles and 4,675 mammals (<http://www.embl-heidelberg.de/~uetz/db-info/HowManyReptileSpecies.html>). At this date in Lao, there are approximately 1,066 bird, reptile and mammal species – 800 birds, 166 reptiles and over 100 mammals. As this data indicates, Lao contains almost five percent of all world species, and many of them are found in Bolikhamxay. These are species whose populations in Bolikhamxay are a significant proportion of their entire population in the world. To know which species these are, we need to look beyond Bolikhamxay to assess an animal's status elsewhere in the world. This is a very important step. Some animals that are uncommon in Bolikhamxay might be common in other areas of the world (e.g., River Lapwing). On the other hand, some animals found regularly in Bolikhamxay might be extremely rare - or occur not at all - elsewhere in Asia or the world. For example, some villagers in the Nam Chat-Nam Pan area were surprised to learn that Saola do not also live in Africa, America, other countries in Asia or even other provinces of Lao.



Two factors determine the 'rarity' of a species: one is the size of the species' **range**, and the other is the size of its population. Some species are found in many places, but are uncommon everywhere (they have a low population density), and would thus be considered **rare** or **threatened**. An example is the Rufous-necked Hornbill. Other species are found in only a small area, but are common there (a relatively high population density), such as the Douc Langur. And some animals have both a small range and small population density. The best example in Bolikhamxay is the Saola.

Several key factors go into determining a species conservation importance, including its rarity, population trend, importance to the environment and importance to the people trying to conserve it.

Using these ideas, we can divide animals into four general groups, with different degrees of priority for conservation:

	<i>Small range</i>	<i>Wide range</i>
Low density	High priority species	Mid priority species
High density	Mid priority species	Low priority species

We can see that when deciding which species to conserve based on rarity, the highest priority will usually be those with a small population and a small range, and lowest priority those with a high population and a wide range. To determine in which box a species belongs, we need to understand its status both inside and outside Bolikhamxay.

It is important to have some idea not only of a species' current level of rarity, but the trend in its status.

In addition to rarity, another important consideration is the **trend** in the animal's population. Is the population declining, stable or increasing? This information also helps us to decide an animal's conservation importance. For example, if a survey finds that the elephant population in Bolikhamxay today is 50 animals (this is just a number for example - in truth, no one knows how many elephants are in Bolikhamxay), that total has a very different meaning if ten years ago there were 200 elephants or there were 40. If 200, it means that the current population of 50 is a drastic decline, and the species is under great threat. If formerly there were 40, it shows that the population is increasing or stable, and probably of less urgent conservation attention. It is important to have some idea not only of a species' current level of rarity, but the trend in its status.

In Lao, the term "**Key Species** of Conservation Importance" has been given to animals identified according to these criteria. In 1999, GoL and international scientists published a list of these species in the book *Wildlife in Lao PDR: 1999 Status Report*. The following sections summarize what is known about Key Species in Bolikhamxay Province. These are the animals on which wildlife conservation efforts in Bolikhamxay should focus. If not all of them can be conserved, then at least a subset should be drawn from the list.

Every animal has three names: Lao, English and scientific. Scientific names follow a policy and are agreed on by a committee of experts on a specific group of animals or plants. Lao and English names are more variable.

The applicable Key Species definitions used in this report are:

IUCN (2001):

- Critically Endangered** (CR): "...facing an extremely high risk of extinction in the wild".
- Endangered** (EN): "...facing a very high risk of extinction in the wild".
- Vulnerable** (VU): "...facing a high risk of extinction in the wild".
- Near Threatened** (NT): "...does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify...in the near future".
- Data Deficient** (DD): "...inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status".

Duckworth *et al.* (1999):

At Risk in Lao (ARL): This category is roughly equivalent at a national level to three threatened categories of IUCN (1996), collectively (Critically

Endangered, Endangered and Vulnerable).

Potentially At Risk in Lao (PARL): This category includes species (a) suspected to be At Risk in Lao but where information about threats or species status is insufficient to make a firm categorization, and (b) species close to the threshold of At Risk in Lao.

Little Known in Lao (LKL): This category provides for species where the conservation status is difficult to assess, i.e. those with detection or identification problems, or where fieldwork within their preferred range and habitats has been restricted, or where threats or species status are not clear for other reasons.

In addition, Lao is now a party to CITES (Convention on International Trade in Endangered Species). Species listed in the CITES appendices are designated as **CA I** (species that are the most endangered and threatened with extinction) or **CA II** (species which are not necessarily now threatened but may become so if their trade is not controlled). These are designated in the text, as well as in Table 1. See Table 1 for additional species of importance outside of Bolikhamxay and throughout Lao.

Lao is now a party to the Convention on International Trade in Endangered Species (CITES)

It should also be noted that two other factors sometimes contribute to determining the conservation priority of a species: i) a species' importance in the environment, and ii) its importance to the people trying to conserve it. By importance in the environment, we mean species whose survival is important to the survival of other animals, or even whole habitats, in the same environment. For example, Tigers cannot survive without prey animals to eat such as Sambar and Muntjacs. Therefore, the conservation of Sambar and Muntjacs might be needed not just for their own good, but also the conservation of Tigers. Hornbills are very important for the dispersal of tree seeds (by eating the tree fruits), and therefore their conservation may be critical for long-term conservation of the forest.

Second, we may decide to put more attention into conserving some species than others because they are important to us, as humans. Fish, for example, are very important to conserve for rural peoples' livelihoods. Elephants might be considered a priority to conserve due to their cultural importance to the Lao people.

3.2 REPTILES

Of all wildlife groups in Bolikhamxay, least is known about the status of reptiles (and amphibians). There have been very few surveys done for these groups, and consequently the information presented below is very incomplete. Below are accounts of all key reptile species in Bolikhamxay.

Turtles are the most heavily traded wildlife in Lao, and every year millions of them are imported to China. Every wild turtle species in Lao is threatened

Turtles

Every species of wild turtle in Laos is under very high threat from the wildlife trade. Consider that every year, tens of millions of wild turtles are imported into China. These turtles came from countries like Lao, Vietnam and Malaysia. This cannot continue much longer before all turtles will be gone from these countries.

By weight, turtles are among the most valuable non-timber forest products (NTFPs) in Lao. A one-kilogram Golden Turtle might sell for more than US\$2,000. This makes conservation and establishing sustainable harvest of turtles a tremendous challenge. Below are accounts of the threatened reptiles in Bolikhamxay, followed by a full list of all Key Species likely to occur in the province. It should be noted that, due to the intense trade pressure on all turtles, all turtle species in Laos are Key Species.

1. BIG-HEADED TURTLE *Platysternon megacephalum*

Natural history notes

This species is found mainly in mountainous areas, throughout Lao. It is nocturnal and lives near rocky streams. It has an oversized triangular head, which can be up to half the width of the carapace itself. While the carapace can range from yellow to a dark brown, occasionally with a darker radiating pattern, the underside is generally yellow. It spends the day hiding in the water, and at night forages in the stream and in nearby forest on small animals such as crabs, snails and worms. It is distinctive in that it cannot withdraw its head into its shell. It has a very strong tail and can climb trees. One or two white eggs are laid at a time.

<http://www.unc.edu/~dtkirkpa/stuff/bigheads.html>

<http://www.unc.edu/~dtkirkpa/stuff/bighead2.html>

Conservation

ARL; EN; CA II

Its small clutch size and specialized habitat leave the Big-headed turtle vulnerable. This is a heavily traded species, commonly seen in the possession of wildlife traders. As with all turtles, wildlife trade is a much greater threat than habitat loss.

Occurrence in Bolikhamxay

This species probably occurs widely in the province. Known records come from the Ban Napé area, Nam Gnouang and NNT. Villagers in Phou Khao Khoauy NPA report that it still occurs there.



***2. INDOCHINESE BOX TURTLE** *Cuora galbinifrons*

Natural history notes

This species is found only in the Saiphou Louang and its foothills of Lao and Vietnam, and parts of southern China. It has a variably patterned carapace that can be black, yellow and brown, with a yellow and black underside. As a typical 'box turtle' it can close its shell for protection. Also, like many box turtles, it produces only a few eggs and young per year, so populations cannot tolerate much harvest. It is a forest species, not a water turtle, and is usually found in evergreen forest, where it feeds on small animals such as worms.



Conservation

ARL; CR; CA II

It is one of the most threatened of all turtles, and one of the 10 most heavily traded turtle species in Hong Kong and China. Hunters search for it with trained dogs, a very effective technique, which has resulted in unsustainable harvest. This species' very small world range puts it at elevated risk.

Occurrence in Bolikhamxay

This turtle probably occurs in most areas of good forest in Sayphou Louang. Known records come from NNT and NCNP.

***3. CHINESE THREE-STRIPED BOX TURTLE** ("Golden Turtle") *Cuora trifasciata*

Natural history notes

This species is so rare that none have been seen in any wildlife surveys, but local communities report that it occurs in Sayphou Louang, and it is known from other areas of northern Vietnam and southern China. It has a black and orange carapace that grows up to 20 cm, is bright orange on the top of its head and black and bright orange below. Unlike the Indochinese Box Turtle, this species is not found throughout the forest, but mainly close to forested streams (where it feeds on vegetation, small animals such as worms and frogs, and carrion). This means that in any given block of forest, its natural population will probably be smaller and more susceptible to exploitation. Nesting is normally in May and the female lays five to six eggs.



Conservation

PARL; CR; CA II

By weight, this is by far the most valuable animal in the wildlife trade in Lao and the region, and is one of the 10 most heavily traded turtle species in Hong Kong and China. A single 1 kg turtle might sell for US\$2,000 (it is eventually traded into China, where the fresh blood is believed to make people well). This high price and high demand has driven the species to possible extinction in Lao, from excessive

harvest for the trade. Due to its small range, it is highly endangered globally.

Occurrence in Bolikhamxay

This species is now so rare that there are no field records from anywhere in Lao, only reports from villagers. Based on this, it maybe occurs in forests of NCNP and similar areas such as Nam Chouan PPA.

4. KEELED BOX TURTLE *Pyxidea mouhotii



Natural history notes

This species has a small range, found only in far northeastern India, southern China and parts of Lao and Vietnam. It has a high carapace with a flat top that grows up to 19 cm. The carapace is brownish-red with orange underneath. Within this range, it is a specialist of forest patches in limestone karst. It lives mainly on land. It eats many different kinds of food, but prefers snails.

Conservation

ARL

Like all box turtles, it is threatened by the wildlife trade. Given its specialized habitat requirements, this species naturally has a relatively low population in Lao, and so may be at elevated risk.

Occurrence in Bolikhamxay

There are only two records of this species in Lao, one from Hin Nam No NPA in Khammouane Province, and one from Nam Kading NPA in Bolikhamxay. It can probably be found in other limestone areas of Bolikhamxay.

5. LEAF TURTLES *Cyclemys* sp.



Natural history notes

There are several species of leaf turtle in the region that are very similar, with uncertain boundaries to their ranges. Therefore, no attempt will be made here to treat them separately. Leaf turtles are found in northern India, southern China and widely in Southeast Asia, including throughout Lao. This species usually has a brown, reddish brown or olive head with carapaces of differing colors that grow up to 22 cm. This is an aquatic species, which is usually seen sunning itself on a log along a stream or river at mid or low elevation. They feed on plants, fruit and aquatic invertebrates.

Conservation

PARL; NT (*Cyclemys tcheponensis*); CA II

Leaf turtles are reportedly not as highly sought as softshell turtles for their meat, or box turtles for the medicinal wildlife trade. However, they are still caught and sold as the opportunity arises. The extent to which they could be affected by habitat loss (such as from hydropower dams) is not well known.

Occurrence in Bolikhamxay

Leaf turtles are probably found throughout the province along suitable slow-flowing, lowland rivers and streams. For example, they have been recorded in Phou Khao Khouay NPA and for sale in the market in Lak Xao.

6. GIANT ASIAN POND TURTLE *Heosemys grandis*

Natural history notes

This species is found in Indochina, Thailand, Myanmar and Malaysia. It is an aquatic turtle of the lowlands and mid-elevation hills, where it can live in streams, marshes and deciduous forest. It spends much time on land partially hidden under shrubbery. The carapace has a single, well-shaped keel with spikes on the back end. It grows up to 48 cm. The head is pale orange with faint black spots and the underside is yellow with black lines. The anterior and posterior underside are serrated. It is omnivorous and eats fruits, vegetation and animal matter. The female lays four to five eggs.



Conservation

PARL, NT

Like most other hard-shelled turtles, this species is subject to hunting for international sale for the Chinese medicine / food trade, and also for local consumption. Large numbers of *H. grandis* and other fresh water turtles are caught in southeast Asian countries, and wild populations have decreased dramatically.

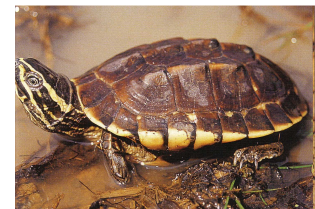
Occurrence in Bolikhamxay

This turtle is found fairly widely in central and southern Lao. It has not yet been recorded in Bolikhamxay, but should occur at low and mid elevation. There are several records from Khammouane Province.

7. MALAYAN SNAIL-EATING TURTLE *Malayemys subtrijuga*

Natural history notes

This species is found in Indochina, Thailand and part of Indonesia and Malaysia. This species is a lowland specialist that is found in densely vegetated shallow bodies of slow moving freshwater such as swamps, irrigation canals and flooded rice fields. It has a large head with white or yellow stripes and brown carapace with a yellow or pale white border. The carapace grows up to 21 cm. It is carnivorous, with a diet of freshwater snails and occasionally small mussels and shrimp.



Conservation

PARL

It is sold for medicine and food to Chinese markets, and also sometimes seen for sale in local markets in Laos. Threats to this species from trade are unclear but probably high like most other hard-shelled turtles.

Occurrence in Bolikhamxay

It is found fairly widely in Lao. Not yet recorded in Bolikhamxay, but it should occur there. The species has been found in both the Vientiane area and in Khammouane Province.

8. FOUR-EYED TURTLE *Sacalia quadriocellata*

Natural history notes

This distinctly marked turtle is found only in eastern portions of central and northern Lao, central and northern Vietnam, and southern China. This is a species of evergreen forest and mountains, where it lives in streams and feeds on plants, fruit and small animals. It is a skilled climber and has webbed feet. It has two or four bright yellow or green spots on the back of the head and three pale stripes on the upper side of the neck. It has a low, smooth edged carapace that grows up to 15 cm. The female normally lays two eggs.

Conservation

PARL; VU

The wild turtle trade in combination with this species' narrow range and habitat requirements make it very vulnerable.

Occurrence in Bolikhamxay

It has been found in the Khammouane Province portion of NNT, and undoubtedly occurs also in areas of Bolikhamxay such as NCNP and Nam Chouan area.



9. ELONGATED TORTOISE *Indotestudo elongata

Natural history notes

This species has a wide range in the region, from northern India and Nepal east and south to northern Malaysia. This is a land turtle, which prefers dry, open forest. It gets its common name from its distinctively long, somewhat narrow carapace. The carapace is a caramel to dark yellowish-brown color, with black blotches on each side, and grows up to 36 cm. The head is pale yellow. It feeds on fruits, herbs and mushrooms. Juveniles will sometimes eat earthworms. In Laos it inhabits mainly lowlands, with some hill areas, throughout the country.

Conservation

ARL; EN; CA II

Since it prefers open forest in lowland areas, it is easy to hunt. This species is both a popular local food item and is targeted by traders, and local populations have probably declined as a result.

Occurrence in Bolikhamxay

Found widely in Lao, and should be in Bolikhamxay, although the lack of turtle surveys there mean it has not yet been recorded. It has been found during surveys in areas of Khammouane Province.



***10. IMPRESSED TORTOISE** *Manouria impressa*

Natural history notes

Found in the mountains of Indochina, China, Myanmar and Malaysia, this land turtle lives only above 800 m, in evergreen forest. It has a flattened carapace that is cream to dark brown and black in color and grows to 31 cm. It has rounded legs with large scales and solid feet like an elephant and a single large spur on each upper thigh. It eats vegetation - mushrooms, bamboo shoots and fruit.



Conservation

ARL; VU; CA II

It is targeted for both local consumption and for the international trade, and local populations have probably declined. In Khammouane Province during the late 1990s local communities sold this species to international traders for USD 0.38-0.5/turtle.

Occurrence in Bolikhamxay

This species is found from north (Phongsaly) to south (Attapu) in Lao, and almost certainly in Bolikhamxay, although it has not yet been recorded there, due to the lack of surveys.

11. ASIATIC SOFTSHELL TURTLE *Amyda cartilaginea*

Natural history notes

This species is found in most of Southeast Asia. It lives in many types of water, from lowland marshes to mountain streams. It has a carapace that grows up to 83 cm and is brown or grey with yellow and black speckling and a row of rounded bumps along the anterior edge. Juveniles often have many yellow spots. It has a diverse diet, eating all types of small aquatic animals, insects, fruit and seeds. Females lay three to four clutches of five to thirty eggs.



Conservation

PARL; VU

Softshell turtles are highly desired and traded for their meat.

Occurrence in Bolikhamxay

It has so far been found in NCNP, but probably occurs more widely in the province. Villagers in Phou Khao Khouay NPA report that it still occurs there.

12. PHUWUA ROCK AGAMA *Mantheyus phuwanensis*

Natural history notes

This is a newly described species, known only from Phou Khao Khouay and one area of northeastern Thailand. It is a small lizard with a grey to brown to black head and body speckled with green spots and a brown-grey tail with bands. It has been found at 200 - 380 meters elevation, usually on rock surfaces near water. Little else is known about its habitat, diet or reproduction ecology.

Ananjeva and Stuart, 2001.

Conservation



Very little is known about this new species, or its conservation status and needs.

Occurrence in Bolikhamxay

Very little is known about the distribution of this species, but it is possible it may occur within the province. One of the few places in the world where it has been found is Phou Khao Khouay NPA.

13. WATER DRAGON *Physignathus cocincinus



Natural history notes

Also called the green water dragon, this large lizard inhabits the forests of Eastern Thailand, Lao, Vietnam, Malaysia, Cambodia and Southern China. As both of its names suggest, it is mainly green in color and lives near the water. It is a strong swimmer and can remain submerged in water for up to 25 minutes. It is arboreal, preferring to rest on tree limbs above the water. It lays its eggs in sandbanks along rivers, and feeds mainly on insects.

http://digimorph.org/specimens/Physignathus_cocincinus/

Conservation

PARL

Water Dragons are hunted and traded for their meat, often by using dogs.

Occurrence in Bolikhamxay

This species has been widely recorded in Lao, and is confirmed to occur in nearby Khammouane Province, where it appears to remain widespread in some areas. It is possibly still widespread in suitable habitats in Bolikhamxay.

14. BENGAL MONITOR *Varanus bengalensis



Natural history notes

This species occurs widely in Southeast Asia and prefers open forest, such as dipterocarp or pine forest. In pattern these lizards show enormous variation. The adult Bengal Monitor is black, dark grey or brown, with varying amounts of lighter pattern over the back. It feeds mainly on the ground, and despite its large size, it gets most of its nutrition from tiny prey and eats mainly beetles, grubs, scorpions, snails, ants and other small invertebrates, which are consumed in enormous numbers. Maximum size in neighboring Thailand is around 100cm in length. Males grow larger than females.

<http://mampam.50megs.com/monitors/bengalensis.html>

Conservation

PARL; CA I

Monitors are heavily hunted and traded for their meat and skins, often by using dogs.

Occurrence in Bolikhamxay

It probably occurs widely but patchily in the province, where there is suitable habitat. It is often seen for sale in markets in Thakhek and Lak Xao, and observed in the field on the

nearby Nakai Plateau. Villagers in Phou Khao Khouay NPA report that it occurs there.

15. WATER MONITOR *Varanus salvator

Natural history notes

This is one of the largest lizards in the world and it occurs widely in South and Southeast Asia. It is widely distributed in Lao. It is normally grey in color and can grow to over 2 m and weigh 25 kg. It inhabits streams and rivers in evergreen forest, where it feeds on a variety of animals, alive or dead. Diet can consist of birds, rodents, snakes, carrion, insects, crabs and even small mouse deer. It has powerful legs and swims well. Breeding year round, the female lays between three and twenty-five eggs in termite mounds, along rotting logs or in hollow stumps or burrows.

http://www.naturia.per.sg/buloh/verts/monitor_lizard.htm

Conservation

PARL; CA II

It is hunted and traded for its meat.



Occurrence in Bolikhamxay

It is probably found widely in the province. It is often seen for sale in markets in Thakhek and Lak Xao. Villagers in Phou Khao Khouay NPA report that it occurs there.

16. BURMESE PYTHON *Python molurus*

Natural history notes

This python species can be found in Southeast Asia from northeastern India to southern China and on some islands of the East Indies. It lives in a range of habitats from the lush vegetation lining riverbanks in rainforests to grasslands and montane forests. It can be found on the ground and in trees, and is an excellent swimmer. It can weigh up to 90 kg and grow to more than 6 m. It eats rabbits, rodents and other mammals, other snakes, and birds.

<http://nationalzoo.si.edu/Support/AdoptSpecies/AnimalInfo/BurmesePython/default.cfm>

Conservation

ARL

Pythons are killed for their meat, for sale to wildlife traders, and because they are believed to kill domestic dogs.

Occurrence in Bolikhamxay

It probably occurs throughout evergreen forest areas of the province. It has been recorded near Lak Xao, and in NNT NPA and NCNP. Reported by villagers in Phou Khao Khouay NPA to occur there.

17. RETICULATED PYTHON *Python reticulatus*

Natural history notes

This extremely large snake can grow up to nine meters, and occurs in a wide variety of forest types, including degraded areas, and is usually found near water. It has a triangular head and a body with an intricate geometric pattern of deep yellow, brown, and black. It is yellow on its underside. It lives in trees, swims across rivers, and ranges into meadows, farms, and has even been found in villages and cities. It is carnivorous and eats a wide variety of prey, including birds, mammals and reptiles, and even domestic animals. It is not venomous, however, killing its prey through suffocation. It lays as many as 100 eggs in a clutch. Campden-Main, 1970.

<http://www.britannica.com/ebi/article-9313193>

Conservation

PARL; CA II

Pythons are killed for their meat, for sale to wildlife traders, and because they are believed to kill domestic dogs.

Occurrence in Bolikhamxay

It probably occurs widely in the province, although there are few specific records. Reported by villagers in Phou Khao Khouay NPA to occur there.



18. INDOCHINESE RAT SNAKE *Ptyas korros*

Natural history notes

This large snake can grow to over 1.8 m in length and prefers open forest and agricultural lands. It is olive to brown in color, and white to yellow on its underside. It feeds on small mammals, birds, lizards and snakes. It normally lays about a twelve eggs and is not venomous.

Campden-Main, 1970.

Conservation

It is widely collected for the wildlife trade (for food), both locally and for export.

Occurrence in Bolikhamxay

It probably occurs widely in the province, and has been recorded from limestone areas.

19. MONOCELLATE COBRA *Naja kaouthia*

Natural history notes

This cobra is found in both good quality and degraded evergreen forest. It also can live near human habitations and cultivated fields. It measures about 1.5 m in length and is nocturnal. It feeds mainly on rodents, small birds and amphibians. When excited, a cobra can inflate its elongated neck ribs, thereby showing its hood. The Monocellate Cobra has a large black blotch or an 'O-ring' encircled by another yellow or orange ring on the hood.

http://banglapedia.search.com.bd/HT/C_0301.htm

Conservation

PARL

Occurrence in Bolikhamxay

It probably occurs widely in the province.

20. KING COBRA *Ophiophagus hannah***Natural history notes**

The King Cobra is the world's largest poisonous snake. Its length may extend up to 5.5 meters. It can be found in most forest types, including bamboo. When excited, a cobra can inflate its elongated neck ribs, thereby showing its hood. Adults are blackish to pale brown with faint bands over their heads and necks while the juveniles are colorfully banded. It feeds largely on other snakes. The King Cobra is mostly diurnal and adept in climbing, swimming and rapid movement over the ground.

http://banglapedia.search.com.bd/HT/C_0301.htm

Conservation

PARL; CA II

The King Cobra is sought for the wildlife trade to Vietnam and China, where it is believed to have medicinal value.

Occurrence in Bolikhamxay

It probably occurs throughout the province. It has been recorded in NCNP.

21. SIAMESE CROCODILE *Crocodylus siamensis***Natural history notes**

This species is found in Brunei, Cambodia, Indonesia (including Borneo and possibly Java), Lao, Malaysia, Myanmar, Thailand and Vietnam, though it may be extinct in several of these countries. It grows to four m in length and probably prefers slow-moving areas of freshwater for habitat, including lakes, rivers and streams. It eats mainly fish, but also amphibians, reptiles and possibly small mammals. Breeding occurs in April or May and the female lays 20 – 50 eggs in a mound nest.

http://www.flmnh.ufl.edu/natsci/herpetology/brittoncrocs/csp_csia.htm

Conservation

ARL; CR

This species used to be common in Lao, but has declined drastically, and is now one of the most endangered wildlife species in the country. Any remaining Lao populations are of very high global significance, since viable populations are thought to remain only in Lao and Cambodia. It is killed for its meat and skin, and captured to sell to Thai crocodile farms.

Occurrence in Bolikhamxay

One hundred years ago crocodiles were common in Bolikhamxay, along the Mekong and probably its adjacent wetlands and major tributaries. But the species is nearly gone from the province now, due to over hunting. Since the late 1990s, it has been reported from the Nam Ngum and in



Phou Khao Khouay NPA. The first photograph taken in the wild was at Phou Khao Khouay NPA in 2001.

3.3 BIRDS

22. BLUE BREASTED QUAIL *Coturnix chinensi*



Natural history notes

This widespread species is found from India to Indonesia. It is a stocky, round bird with a brown-black back, blue breast, short legs and a black and white throat band. Like most quails, it lives on the ground in grassy or scrub open areas, in both lowlands and mountainous areas (up to 1300 m). It feeds on grass seed and some insects, especially termites. The female nests on the ground and lays 4-7 eggs seasonally. It is nomadic and usually found in groups of 6-10 individuals.

Conservation

LKL

The status of this species in Lao, and potential threats to it, are poorly known.

Occurrence in Bolikhamxay

It has been recorded in Phou Khao Khouay NPA. If it occurs elsewhere in the province, it will be in fairly large open areas.

23. SIAMESE FIREBACK *Lophura diardi*



Natural history notes

This species is endemic to Thailand and Indochina. It is a lowland species, and thus other provinces in Lao naturally have more significant populations than does Bolikhamxay. The body is grey in color, with a bright red head, black throat neck and a black tail with green and blue highlights. The middle of the back is bright yellow, hence its name "Fireback". It is found in both good quality and degraded evergreen and semi-evergreen forest, below 800 m. It is omnivorous, feeding on fallen fruit, berries, insects, and worms. Breeding is in mid April to June. The female nests on the ground and lays 4-8 eggs.

Conservation

PARL; NT

This species has declined dramatically in Thailand. It has a smaller global range than the Silver Pheasant and the reduction of remaining populations is proportionately more detrimental. Lao is believed to support one of the most important world populations of Siamese Firebacks. This species is very susceptible to snaring.

Occurrence in Bolikhamxay

It has been recorded in Phou Khao Khouay and Nam Kading NPAs.

*24. CRESTED ARGUS *Rheinardia ocellata*

Natural history notes

This spectacular pheasant species is found in only two places in the world: Sayphou Louang (both Lao and Vietnam), and a small area of Malaysia. It is grey-brown-black all over with a black spotted pattern and a white throat. The tail feathers of the male are the longest feathers of any bird in the world. It is a bird of good quality forest, up to about 1800 m, where it is often heard calling but seldom seen due to its very shy nature. In Lao it has been found most often in wet evergreen forest near the Vietnam border. It eats crickets, insects, frogs, fruit and ferns. Nesting starts in March. The female lays only two eggs.

Conservation

ARL; VU; CA I

Male Crested Arguses clear a small area of the forest floor, to which they regularly return to display for mates. This makes them prone to being snared, and they are often captured and sold alive for the pet bird trade.

Occurrence in Bolikhamxay

During field surveys in the 1990s the Crested Argus was common in the Nam Chat-Nam Pan area, but its status there today is not known. It is also found in the Bolikhamxay portion of Nakai-Nam Theun NPA. Since it is confined to the Sayphou Louang, and often in wet evergreen forest, few other Lao protected areas have this rare bird.



25. GREEN PEAFOWL *Pavo muticus*

Natural history notes

This unmistakable bird still occurs in pockets from southern China to parts of Indonesia at lower elevations (up to 900 m), in a wide variety of habitats, including degraded areas. The female and male are both brightly colored, with areas of green, blue, yellow and black. The female has a long beautiful tail typical of peafowl. Diet consists of crickets, termites, berries, grass seeds, flower petals and moths. The female nests on the ground and lays 3-6 eggs.

Conservation

VU; CA II

Historically, this species was abundant and widespread in Lao, but populations have crashed, and it is now one of the most threatened species in the country. In fact, most populations of Green Peafowl in the world are severely threatened. The main cause of the decline must be hunting, since this species can use degraded habitat. If hunting was controlled, it could easily survive alongside humans. Currently, any surviving populations need immediate and effective protection if it is to survive in Lao.

Occurrence in Bolikhamxay



Phou Khao Khouay NPA is one of the few places in Lao where the Green Peafowl can still be found. In the 1990s, some local villages reported that it also still occurred in some areas of Nam Kading NPA (while others disagreed), but the report has never been investigated.

26. RED-COLLARED WOODPECKER *Picus rabieri*

Natural history notes

This species is near endemic to Indochina. It is a forest bird, and has been found in some secondary forest types up to 700 m. The body is mainly dark to bright green, with a red head and collar around the breast. It eats ants from the trunk of trees and normally breeds May to June. It is a little known or described species.

Conservation

NT

It prefers lowland forest, and therefore is threatened by logging.

Occurrence in Bolikhamxay

This species has been found in Phou Khao Khouay, Nam Kading and Nakai-Nam Theun NPAs, and in Nam Chat-Nam Pan PPA.



*27. GREAT HORNBILL *Buceros bicornis*

Natural history notes

This species is found from India and China to Indonesia, up to altitudes of about 1500 m. It is a very large bird with a yellow hornbill, black face, yellow neck and black and yellow body with a black band around a white tail. It eats forest fruits (such as figs, which are up to 73% of its diet) and insects. It nests in large hollow trees from 8 to 35 m up. The female lays only 2 eggs from January to April. It is usually seen in pairs or small groups of up to about ten birds. It is also somewhat nomadic, and in the course of a year ranges over very large areas in search of trees with ripe fruit.

Conservation

NT

Forest loss and hunting are both threats to the Great Hornbill. Its attraction to fig trees and fruit makes it very susceptible to being shot by hunters. It may be in significant trouble in Lao.

Occurrence in Bolikhamxay

It has been recorded from Nam Kading and Nakai-Nam Theun NPA, and Nam Chat-Nam Pan PPA. The Nam Kading/Nam Theun catchment may have the most important population of Great Hornbills in Lao, and probably in all of Indochina.



28. BROWN HORNBILL *Anorrhinus austeni*

Natural history notes

This species occurs from India east to China and parts of Southeast Asia. As its name suggests, this hornbill is normally brown in color over the body, with rufous cheeks and throat and a pale yellow bill. Brown Hornbills are usually found in flocks, which can number twenty or more. It prefers good primary forest, but can also use adjacent secondary forest. It eats fruit, insects, bats, lizards, and the eggs of other birds. The female nests in tree holes from 5 to 18 m high at the start of the dry season and lays only 2-3 eggs.

Conservation

Like all hornbills, this species is susceptible to being shot, especially at fruiting trees.

Occurrence in Bolikhamxay

It is found in Nam Kading and Nakai-Nam Theun NPAs and Nam Chat-Nam Pan PPA.



***29. RUFOUS-NECKED HORNBILL** *Aceros nipalensis*

Natural history notes

This species is found in mountainous areas (600 to 1800 m) in northern India, east to southern China and northern Indochina. The male has a rufous head and body with black wings and a white-tipped tail and a pale yellow bill with black stripes. The female is mainly black, with a white tail and same color bill as the male. It is usually found in pairs, but sometimes in small groups. This species is not common anywhere. Diet consists of fruits and figs. It is often found in the canopy in small family groups of 4-5 birds. The female nests in trees holes from January to June, laying only 1-2 eggs.

Conservation

VU

This is the most threatened hornbill in Lao, and the one least often seen. Its large size makes it a target for hunters.

Occurrence in Bolikhamxay

In Bolikhamxay it is known only from areas near the Vietnam border, in Nam Chat-Nam Pan PPA and higher areas of Nakai-Nam Theun NPA.



***30. WREATHED HORNBILL** *Rhyticeros undulatus*



Natural history notes

This species has a broad range from India and China through much of Southeast Asia. It is sometimes seen in flocks of more than fifty birds. This is a large, black hornbill with a white tail and pale yellow bill. The male has a white head and yellow throat while the female has a black head and blue throat. Like the Great Hornbill, Wreathed Hornbills are probably somewhat nomadic, roaming over large areas in search of trees with fruit. It feeds in the canopy on many different fruits and small animals and insects (5%). The female nests in tree holes 18-35 m high, and lays two eggs from January to March, but raises only one chick.

Conservation

ARL; CA I

Like the Great Hornbill, this species needs large areas of good forest, and is vulnerable to hunting, especially to being shot at fruiting trees.

Occurrence in Bolikhamxay

Nam Kading NPA has one of the highest densities of Wreathed Hornbills recorded anywhere in Lao. A single flock of more than 60 birds has been seen there. The population in the Nam Kading/Nam Theun catchment is the most important Wreathed Hornbill population in Indochina.

31. BLYTH'S KINGFISHER *Alcedo hercules*



Natural history notes

This kingfisher is resident from the Indian subcontinent east to Vietnam. In Lao, it usually prefers streams (up to 20 m wide) in deep forest, with well-shaded banks. Color is brilliant cobalt blue with a dark blue tail, rufous underparts and a black bill. It occurs from lowlands to mountains (up to 1200 m). Diet consists mainly of fish, with some insects. It nests in banks of forest streams from March to June. The female lays 4-6 eggs and both sexes take care of the nest.

Conservation

PARL; NT

Nowhere in Lao is this species common. It is probably shot opportunistically, and also threatened by forest clearance along rivers and hydropower development.

Occurrence in Bolikhamxay

It is found in Nam Kading NPA, Nam Chat-Nam Pan NPA, and probably the Bolikhamxay portion of Nakai-Nam Theun NPA.

32. RUDDY KINGFISHER *Halcyon coromanda*

Natural history notes

This kingfisher is widely distributed in Asia. In Lao, it is found as both a breeding resident and winter visitor from other areas. It has a glossy azure-blue back and rump, paler rufous underparts and a red or orange-red bill. It lives in evergreen forest near water, up to 900 m. Like most kingfishers, it can sometimes be seen inside the forest, not just along the water's edge. Diet consists of grasshoppers, bees, butterflies, earthworms, snails, frogs and small fish. The female nests in holes in the riverbank and lays 4-6 eggs.

Conservation

LKL

The status of and threats to this species in Lao are not well understood.

Occurrence in Bolikhamxay

There are not many records of this species in Lao, but some of them come from NCNP.



33. BLUE-TAILED BEE-EATER *Merops philippinus*

Natural history notes

This species is found widely in South and Southeast Asia. It prefers wide rivers with open habitat along the banks. Bee-eaters get their name from their diet of stinging insects (bees, wasps, hornets, ants). It eats other insects as well, such as dragonflies and butterflies. The Blue-tailed Bee-eater usually forages in open habitats near freshwater as well as on coasts. This species roosts together and a roost may include huge numbers (roosts of hundreds have been observed). It nests in a burrow dug into the ground or riverbank and lays 5-7 eggs between February and June.

http://www.naturia.per.sg/buloh/birds/Merops_philippinus.htm

Conservation

PARL

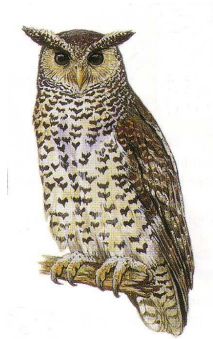
Main populations of this species are found along the Mekong in southern Lao, and Bolikhamxay is probably not important to its conservation.

Occurrence in Bolikhamxay

This is another species that in Bolikhamxay is known only from NCNP, but the record is probably only of migrant birds, not resident nesting ones.



34. SPOT-BELLIED EAGLE OWL *Bubo nipalensis*



Natural history notes

This species is found from northern India and Southern China east to Indochina and Thailand. This is the largest owl in Southeast Asia. It is dark brown with a whitish facial disc, brown to white breast with dark brown v-shaped spots. It is rarely seen, but occasionally can be heard calling at night. It is found up to 1200 m in evergreen, semi-evergreen and deciduous forest and eats mainly large birds (jungle fowl and pheasants) and small mammals and monitor lizards. The female lays only one egg in February in a tree hole, old raptor nest or on cliffs. The call is a deep hoo hoo.

Conservation

PARL

This owl is found at very low densities in Lao, but is seen commonly in captivity. This suggests that capture for the local pet trade may be a threat.

Occurrence in Bolikhamxay

It is known from Phou Khao Khouay NPA (just one record) and from NCNP. It might also occur in Nam Kading and NNT NPA, and other densely forested areas of the province.

35. TAWNY FISH OWL *Ketupa flavipes*



Natural history notes

This owl is resident from the Indian subcontinent east to southern China, Vietnam and Taiwan. The feathers are usually barred dark brown. It has an orange-rufous facial disc with an indistinct border. The tail is dark brown and it has well-defined white throat patch. This is one of the largest owls in Lao. It is always found in forest near water, since it lives mainly on fish. Other prey includes crabs, rodents, lizards, large beetles and other birds. It nests in an old raptor nest, or in a hollow in a ravine or riverbank. The female lays two eggs usually during November to February. Call is a deep whoo hoo call.

Conservation

LKL; CA I

The status of this species is poorly known. There are few confirmed records, in part because it is difficult to distinguish in the field from other fish owl species. It probably persists only in areas with low human presence. It is susceptible to being shot, since it often perches along the open channels of rivers. In fact, the only confirmed records in Lao come from feathers found in hunters' camps. As accessible forest along rivers or streams is often the first to be cleared for logging or cultivation, habitat loss may be a particular problem, as may be hydropower development.

Occurrence in Bolikhamxay

It has been recorded in Nam Kading and NNT NPA and NCNP, but undoubtedly occurs in other forested areas of the province. Its close resemblance to other owl species makes it difficult to confirm its presence.

36. PALE-CAPPED PIGEON *Columba punicea*

Natural history notes

The Pale-capped Pigeon is patchily distributed from eastern India and southernmost China to the Malay Peninsula. It has chestnut maroon upperparts, pale rusty underparts and blue-grey head. It occurs in primary and secondary evergreen forests and thickly wooded and cultivated areas. It is suspected to be at least partly nomadic. It prefers jungle fruit but will also eat grains of almost any kind. In Myanmar it breeds between May and August. Nests are usually placed within 2 m of the ground. Clutches comprise 1–2 eggs

http://birdbase.hokkaido-ies.go.jp/rdb/rdb_en/colupuni.pdf

Conservation

LKL; VU

This species has no known secure population anywhere in the world, and so any populations in Bolikhamxay are globally significant. As a large pigeon, it is a favored target of hunters. What little is known of its ecology suggests that extensive tracts or mosaics of forest, in which hunting can be controlled, are required to conserve it. Throughout Indochina such extensive areas of habitat are rapidly diminishing.

Occurrence in Bolikhamxay

Nam Kading NPA is the only place in Bolikhamxay and one of only a few places in all of Lao where this species has been found.



37. YELLOW-VENTED GREEN PIGEON *Treron seimundi*

Natural history notes

It is found patchily in Indochina, Thailand and Malaysia, in evergreen forest from lowlands up to 1500 m. This slender species has a long tail and is generally dark green with bright yellow wing fringes. Like most green pigeons, it can be found in large flocks, and is fond of wild fruit, such as figs. It is rarely seen, and known to travel long distances in search of food. It breeds from February to June and nests in a platform in a tree usually six to nine m from the ground.

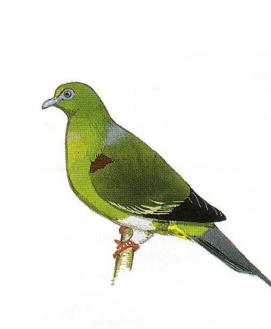
Gibbs, Barnes et al, 2001.

Conservation

Although hunted, and with a small world range, this species has been found often in Lao, and is probably not under great threat at this time.

Occurrence in Bolikhamxay

Known from Nam Kading and Nakai-Nam Theun NPAs, and NCNP.



38. WHITE-BELLIED GREEN PIGEON *Treron sieboldii*



Natural history notes

This large pigeon is found in East Asia (China, Taiwan, Japan) south to Indochina. It grows to 36 cm and has a long tail and bright yellow-green feathers. The belly is mostly white or pale yellow. It lives in evergreen forest or mixed woodland, including quite degraded habitats, but prefers primary forest up to 900 m. Food includes wild cherries, grapes and other fruit. It nests in shrubs or small trees on a platform of twigs. Females lay two white eggs.

Gibbs, Barnes et al, 2001.

Conservation

LKL

This species has not often been seen in Lao, and its status is unclear. Like all pigeons, it is targeted by hunters.

Occurrence in Bolikhamxay

There are only a few field records of this species in Lao, all centered around the Nam Theun/Nam Kading catchment - specifically, Nam Kading and Nakai-Nam Theun NPAs, and NCNP.

39. WATERCOCK *Gallinix cinerea*



Natural history notes

This species is found widely in Asia. It lives in marshes and rice paddies (if not hunted), where it can be shy and hard to observe. The male is blackish with a red-based yellow bill, the female is normally dark brown with a grayish-brown head. It has mainly black-grey plumage with red legs, bill, forehead shield and horn. It mainly eats insects, small fish and seeds and forages on the ground. Nests are in a dry location on the ground in marsh vegetation, and the female lays 3-6 eggs. It is a noisy bird, especially at dawn and dusk, with a loud gulping call.

<http://www.yotor.org/wiki/en/wa/Watercock.htm>

Conservation

ARL

It has not been recorded very often in Lao, and has probably declined significantly in the country. Its wetland habitat is also heavily used by humans. However, hunting in these wetlands, rather than habitat loss, is probably the main issue, since it is capable of living in areas of rice paddy.

Occurrence in Bolikhamxay

Recorded in Bolikhamxay only from Phou Khao Khouay NPA.

40. LONG-BILLED PLOVER *Charadrius placidus*

Natural history notes

This species breeds in Northeast Asia and migrates to Southeast Asia. It is a winter visitor to Lao, and is found only along rivers, but more specific habitat preference is unclear, having been found in a diversity of riverine habitats. It is larger than most plovers and has a longer bill. It has a white underside, brown feathers on the back and tail and a black or brown band on its neck with a mostly black bill. It is usually solitary, and the call is a clear penetrating *piwee*. Females nest on open ground and dig shallow holes lined with pebbles or plant debris.

Grimmett, Inskipp et al, 1998.

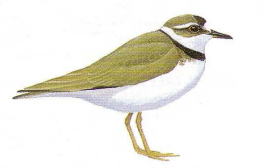
Conservation

LKL

The significance of the wintering population in Lao is not known. It is most likely threatened by loss of habitat from hydropower development.

Occurrence in Bolikhamxay

Most records of Long-billed Plover in Lao come from the Nam Kading river and adjacent stretches of the Mekong in Bolikhamxay.



41. RIVER LAPWING *Vanellus duvaucelii*

Natural history notes

This species is found in only one habitat in Lao - slow moving rivers and wide streams, with wide sand or gravel banks. It is resident in Lao all year. It has a black head and throat, with grey sides to the neck, sandy-brown upperparts, white belly and black legs and bill. It usually occurs singly, in pairs or in small groups. It breeds from March to June and the nest is a shallow scrape on an open sand or shingle bar in the river.

Grimmett, Inskipp et al, 1998.

Conservation

ARL

The River Lapwing is highly susceptible to disturbance of riverbanks, where it nests (usually on sand banks along rivers and large, open streams). Use of the same banks by water buffalo, and by people for camping, probably depress its population in Lao. Poor breeding success from this disturbance of sandbanks, rather than hunting of adults, is likely the major cause of this species regional decline. Protection of some stretches of river against such use may be essential for its conservation.

Occurrence in Bolikhamxay

Most River Lapwings in Lao are found along the Mekong. It is also fairly common along the lower Nam Kading, between the mouth of the Nam Mouan and Pakkading. This may be the most important population in Lao off the Mekong. It has also been found along the Nam Gnouang, Nam Mouan (in very small numbers) and Nam Hai.



42. GREY-HEADED LAPWING *Vanellus cinereus*



Natural history notes

Unlike the River Lapwing, this species does not live in Lao for the whole year. It nests much farther north in Asia (China and Japan), and only visits this part of Asia in winter. It is a small stocky yellow-legged lapwing. As its name suggests, it has a grey head with a black-tipped bill, black band around the breast and a white underside. It is similar to the River Lapwing in the habitat it uses: open banks of rivers and large streams. But unlike the River Lapwing, it will also use the banks of large ponds and reservoirs.

Conservation

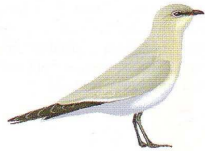
PARL

This species was probably never very common in Lao, and at present is probably not of high conservation concern in the country.

Occurrence in Bolikhamxay

This species has been seen most often along the Nam Kading, its tributaries (e.g., Nam Mouan), and along the adjacent Mekong. The highest counts come from the lower Nam Kading.

43. SMALL PRATINCOLE *Glareola lactea*



Natural history notes

This pretty bird is a specialist of wide rivers, where it is usually found in flocks. It occurs in India, Southwest China and mainland Southeast Asia. In Lao, it is found mainly along the Mekong and Xe Kong rivers. It has a grey body and black and white wings, with a grey head and a black and white tail. It feeds on insects and is very noisy and animated. It is particularly active at dusk. The female nests on riverbanks.

Hayman, Marchant and Prater, 1995.

Conservation

PARL

This species is apparently less abundant than in past years, but is still common in Lao. It is most common along the Mekong River, and so is less threatened by current hydropower development than other riverine birds.

Occurrence in Bolikhamxay

Most Small Pratincoles in Bolikhamxay are found along the Mekong River. Some also use the lower Nam Kading. Other rivers that the species might use, such as the Nam Xan, have not been surveyed.

44. BLACK KITE *Milvus migrans*

Natural history notes

The Black Kite is a medium-sized (47 to 55 cm) bird of prey (raptor). From a distance, it appears almost black, with a light brown bar on the shoulder. The plumage is actually dark brown, with scattered light brown and rufous markings, particularly on the head, neck and underparts. The Black Kite preys on lizards, small mammals and insects, especially grasshoppers. It breeds at any time of year, but usually between August and November. The female lays one to three eggs. Although it is more normally seen in small groups, the Black Kite may form huge flocks of many thousands of birds.

http://www.amonline.net.au/factsheets/black_kite.htm

Conservation

CA I

Since it is uncommon in Lao, little information is available.

Occurrence in Bolikhamxay

Thus far, the Black Kite has been found only occasionally in NNT, but at times undoubtedly occurs in other parts of Bolikhamxay.



45. LESSER FISH EAGLE *Ichthyophaga humilis*

Natural history notes

This little-studied species lives along rivers, and lives by catching fish. It is distributed from Northeast India through the Himalayan Mountains to Nepal, Myanmar North Indochina and Indonesia and Borneo. It is small for an eagle, and grayish-brown, preferring forested margins of streams and rivers in foothills and mountains. It builds a large stick nest in a tall tree in the forest near a river or stream. In Southeast Asia it likely breeds in the winter (November to March) and the female lays two to three eggs.

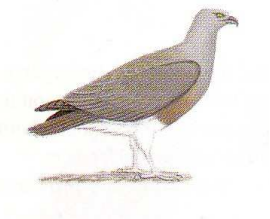
Conservation

NT; CA II

Because this eagle is found only along navigable rivers, it is easy to shoot. There are few rivers in Lao where healthy populations of fish eagles remain.

Occurrence in Bolikhamxay

Recorded in Bolikhamxay in NCNP and Nakai-Nam Theun NPA. For reasons unknown, it has never been found on the Nam Kading (before or after the Theun-Hinboun dam was built).



46. RUFOUS-WINGED BUZZARD *Butastur liventer*



Natural history notes

This small bird of prey is found from Myanmar to South Central China and throughout Southeast Asia, including the Indonesian islands of Java and Sulawesi. It has a brown to grey back, flight feathers and head, with a chestnut brown tail, white underside and black-tipped yellow bill. It prefers open country, savanna and scrub, but is also found near rivers and swamps. It eats small mammals, lizards, frogs, crabs and insects. It builds nests in the crown of a large, solitary tree and the female normally lays two to three eggs.

Conservation

This bird has been found in many places in Lao, and is not particularly threatened in the country. One reason for this is it can live in degraded habitats.

Occurrence in Bolikhamxay

This species is sometimes seen along Route 13, in very degraded areas. It has also been seen in Nam Kading NPA.

47. GREATER SPOTTED EAGLE *Aquila clanga*



Natural history notes

The Greater Spotted Eagle is a large bird of prey. It is about 65 cm in length and the outside plumage is black in color. It breeds from northern Europe across Asia, and winters in southeastern Europe, the Middle East and south Asia. This Eagle lays 1-3 eggs in a tree nest. This is a species of fairly wooded country, which hunts small mammals and similar, mainly terrestrial prey. The female lays one to three eggs in a tree nest. The call is a dog-like yip.

<http://greater-spotted-eagle.foosquare.com/>

Conservation

VU

This species appears to be a rare passage migrant (doubtless largely overlooked), possibly wintering in small numbers. In other areas of Asia where it is found, threats include human disturbance and persecution, as well as pollution and habitat loss.

http://www.rdb.or.id/view_html.php?id=76&op=aquiclan

Occurrence in Bolikhamxay

NCNP is one of the few places in Lao where this bird has ever been seen.

48. PIED FALCONET *Microhierax melanoleucus*

Natural history notes

This pretty bird is perhaps the smallest hawk in Lao. It is found from Northeast India across to Southern China and Northern Vietnam and Lao. It is black on its back wings and has a white belly, with a black ring around the eye and black bill. It is often easy to see, since it likes to perch at the very top of dead trees. It prefers the forest edge and open areas of moist deciduous and evergreen forest. It preys on large insects, small to medium-sized birds and occasionally lizards. It nests in old barbet or woodpecker holes 13-30 m above the ground, and breeds during March to May. Amount of eggs is unknown, but three to four babies are usually born.

Conservation

CA I

Being a small bird that perches high in trees, and does not gather in flocks, it is probably little hunted. Conversion of forest habitat is probably the most significant threat.

Occurrence in Bolikhamxay

In Bolikhamxay, the Pied Falconet has been seen only in NCNP, but might also occur in other protected areas in the province.



49. ORIENTAL DARTER *Anhinga melanogaster*

Natural history notes

The Oriental Darter is a large waterbird found near rivers, floodplains and flooded forest throughout Southeast Asia. It is heron-like in appearance and black, brown and white, with a black underside, brown neck, white on the wings and an orange-yellow bill. It eats mainly fish, but also will prey on watersnakes, turtles, insects and mollusks. Its nest is a platform of sticks, or sometimes reeds. It can breed throughout the year, and the female usually lays two to six eggs.

Conservation

NT

This species has declined throughout most of its Southeast Asian range, nearly to local extinction in many areas. Once common in Lao, it is almost extinct as a breeding bird in the country, so any remaining populations, however small, are significant.

Occurrence in Bolikhamxay

The only place this bird has been recorded in Bolikhamxay is on the lower Nam Kading river. But that was only once, and it probably no longer occurs there.



50. PURPLE HERON *Ardea purpurea*



Natural history notes

This species is found throughout Southeast Asia from India in the West across Indochina to Indonesia, Malaysia and the Philippines in the East. It is black, orange, yellow, grey, white and brown in color with a yellow-orange bill. The head is orange and black with white underneath on the neck and breast and grey or brown plumage. It prefers open, shallow freshwater swamps with dense vegetation. It can also be found in ricefields, lakeshores and mangroves. Diet consists of frogs, insects, crustaceans, and small birds and mammals. The nest is over or beside water usually at a height of 3 m. Females normally lay two to eight eggs.

Conservation

ARL

Historically this heron was described as common, but it is likely that a decline has occurred. Herons can be affected by habitat destruction and water pollution.

Occurrence in Bolikhamxay

Recorded in Phou Khao Khouay NPA and NCNP

51. VON SCHRENCK'S BITTERN *Ixobrychus eurhythmus*



Natural history notes

This small stocky waterbird is found in China, Japan and Southeast Asia through the Malay Peninsula, Indonesia and the Philippines. The male is brown on top and grayish-brown underneath with a white throat and long yellow bill. The female has different coloration, with a dark brown back with white spots, brown body and white neck and chest. This species lives in marshes, swamps and wet, grassy meadows in flat open areas of river valleys and sometimes rice paddies. It eats small fish, frogs, shrimp and a variety of insects. It nests in grass near water, near or close to the ground and the female lays three to six eggs.

Conservation

ARL

This bird is a winter migrant in Lao and is little known.

Occurrence in Bolikhamxay

One of the only places in Lao where this bird has been seen is in NCNP.

52. BLUE-NAPED PITTA *Pitta nipalensis*

Natural history notes

This bird is found in the northern part of South Asia, southern China and, uncommonly, in Indochina and Myanmar. This medium-large pitta species has a head with a rufous buff or deeper orange rufous color near the eye. Males have a bright blue nape, while females have a green nape. Underparts are green. It lives in a wide variety of habitats, including primary and secondary forests and various types of degraded habitats. It usually prefers higher elevations, and is found up to 2,150 m. It eats a wide variety of insects, as well as worms, lizards and even field mice. The nest is a large loosely constructed domed structure with an entrance at one end, and is usually built on the ground. Females normally lay three to seven eggs.

Lambert and Woodcock, 1996.

Conservation

LKL

Because pittas live mainly on the ground, and are therefore susceptible to snaring, the status of this species in Lao is unclear, as relative distributions and habitat use are not clearly established.

Occurrence in Bolikhamxay

The relationship between this and the following, similar species (Blue-rumped Pitta) is poorly understood, but one or both species are probably common throughout well-forested areas of Bolikhamxay. The Blue-naped Pitta has been recorded in Nam Kading NPA and NCNP.



53. BLUE-RUMPED PITTA *Pitta soror*

Natural history notes

This medium-large pitta species is very shy and found in southern China, Indochina and parts of Thailand. Like most pittas, this species is difficult to survey in areas of dense cover. The upper parts are green to bright green with a distinctive blue lower back and rump. Head color varies, but is usually dull purple or lilac. It is much brighter than the Blue-Naped Pitta. It is tolerant of a wide range of habitats, including secondary and logged forests and bamboo stands. It eats insects, snails and perhaps frogs. Little is known about nesting behavior, though in the past nests made with twigs and dead leaves have been found over two m off the ground. Nesting probably occurs in May or June and nests with two or three young have been observed.

Lambert and Woodcock, 1996.

Conservation

PARL

The Pitta lives mainly on the ground, and is therefore susceptible to snaring. The status of this species in Laos is unclear, as relative distributions and habitat use are not clearly established.

Occurrence in Bolikhamxay

This species probably occurs in many well-forested areas of the province. It has been recorded in Nam Kading NPA and NCNP.



54. WHITE-WINGED MAGPIE *Urocissa whiteheadi*

Natural history notes

This large bird is found in Southeast Asia in Vietnam and Northern Laos as well as South and Southwest China. It has a heavy build with a distinct black and white pattern and an orange bill. It lives in evergreen and mixed forests up to 1,400 m. It is very noisy and lives in large parties or extended family groups. Little other information is known about this uncommon species.

Mackinnon and Phillipps, 2000.

Conservation

It is not often seen in Southeast Asia and globally is considered near threatened.

Occurrence in Bolikhamxay

In Bolikhamxay, it occurs only in the Sayphou Louang, and has been recorded from NCNP.

55. INDOCHINESE GREEN MAGPIE *Cissa hypoleuca*

Cissa hypoleuca

Natural history notes

This beautiful bird is found only in southern China, Thailand and Indochina. It has a green body with a black eye-strip, red bill and chestnut wings. It is found in evergreen and semi-evergreen forest (including areas with bamboo) up to about 1500 m. It eats insects and is very noisy. It travels in pairs or small groups, and is hard to see, despite its colorful plumage. The nest is built in trees, large shrubs and often in tangles of various climbing vines. The female normally lays 4–6 eggs.

Mackinnon and Phillipps, 2000.

http://en.wikipedia.org/wiki/Green_Magpie

Conservation

This species is hunted opportunistically. It is uncommon and globally considered near threatened.

Occurrence in Bolikhamxay

Among the few places this bird is known to live in Lao are NCNP and Nakai-Nam Theun NPA.



56. SWINHOE'S MINIVET *Pericrocotus cantonensis*

Natural history notes

This small, slim bird, also called the Brown-Rumped Minivet is found in China and throughout Southeast Asia east to Myanmar in the winter. Males are more colorful than females, with pale brown breast and sides, white on the forehead, and black crown and nape. It lives in broadleaved evergreen and deciduous forest up to 1,200 m. It eats insects and lives and travels in small to fairly large flocks.

Rasmussen and Anderton, 2005.



Conservation

Hunting is probably of little threat to this small bird. Of more concern is forest loss.

Occurrence in Bolikhamxay

It is known from Nam Kading NPA, Nakai-Nam Theun NPA and NCNP.

57. BROWN DIPPER *Cinclus pallasii***Natural history notes**

This active little bird is always found in and near flowing streams usually in the mountains throughout Asia and Southeast Asia west to Tibet and Afghanistan. It is small, short-billed, stocky and entirely brown. It is capable of swimming underwater (much like a penguin), which it does to search for aquatic insects. Dippers live in pairs spaced out along watercourses. They typically build a domed nest over water in the cleft of a steep bank. The female lays four to five eggs.

Rasmussen and Anderton, 2005.

Conservation

PARL

Occurrence in Bolikhamxay

The Brown Dipper is found in several areas of Lao, most commonly in the north. It has also been seen in Nam Kading NPA, Nakai-Nam Theun NPA and NCNP, but the populations in Bolikhamxay are probably not as large and important as ones farther north in Lao.

**58. FUJIAN NILTAVA *Niltava davidi*****Natural history notes**

Little is known about this very beautiful, small bird. Outside of Indochina, it is found only in southern China, and occasionally Hong Kong and Thailand. The male is deep blue above, with rufous underparts and a black face. The female is grayish-brown with rufous brown tail and wings. It nests in high quality evergreen forest, up to 1700 m, especially along damp gullies and small streams.

Mackinnon and Phillips, 2000.

Conservation

PARL

It is not threatened by hunting, but its preference for the margins of small streams could place it at elevated risk of habitat loss.

Occurrence in Bolikhamxay

It is difficult to distinguish from some similar species, but it has been confirmed in Nam Kading NPA and NCNP, where it may be a winter visitor.



59. GREEN COCHOA *Cochoa Viridis*



Natural history notes

This thrush lives mainly in the mountains from India in the West to Southern China, Myanmar, Thailand, Lao and Vietnam. It has a dark purple head with a more pale purple tail, grey back and black wings with white patches on the male and white mixed with green on the female. It is found from 900 to 2,700 m and is a quiet bird which feeds mainly on insects and fruits. It prefers to stay in the tree canopy, and builds a shallow cup nest in the fork of a small tree, usually near water.

Rasmussen and Anderton, 2005.

Conservation

As it is a fairly large bird, hunters target it.

Occurrence in Bolikhamxay

Known from Nam Kading and Nakai-Nam Theun NPAs and NCNP.

60. JERDON'S BUSHCHAT *Saxicola jerdoni*



Natural history notes

This medium-sized bird is found throughout South and Southeast Asia from India in the West to Southwest China, Lao and Vietnam in the East. The male has glossy black upperparts and white underparts. The female is brown with a rufous-brown rump. It is a specialist of rivers and large streams, where it nests in the seasonally flooded brush of islands. It perches among grass stems and dives to catch insect prey.

Mackinnon and Phillips, 2000.

Conservation

A resident of Northern Lao, its status is unknown. It is likely too small for hunters to target.

Occurrence in Bolikhamxay

It is known in the province only from NCNP.

61. GOLDEN-CRESTED MYNA *Ampeliceps coronatus*



Natural history notes

This species is found from India through Myanmar into China and throughout Southern Indochina. It is glossy black in color with the crown, forehead and throat golden. The wings have a white or yellow patch and the bill is orange. It lives in dense lowland evergreen forest, moist deciduous woodland and cultivated clearings with large leftover trees. It prefers the treetops and feeds mainly on fruit, though it will also eat insects. It occurs in pairs or small groups. Nests have been recorded in April and May, and are made of grasses. Number of eggs is unknown, though a captive pair laid four.

Feare and Craig, 1998.

Conservation

As this bird is rarely seen in Lao, its conservation status is unknown.

Occurrence in Bolikhamxay

This bird is not known from many places in Lao. Two of them are Nakai-Nam Theun NPA and NCNP.

62. BEAUTIFUL NUTHATCH *Sitta formosa***Natural history notes**

This large nuthatch is found from India in the West throughout Myanmar and the rest of Southeast Asia. It is unmistakable, with brilliant blue streaks on a black head, blue highlights on the rump, wing and tail, white throat and rufous underparts. This bird is specialist of dense, broadleaved evergreen forest in the mountains (950 - 2,300 m), and is often found in groups. It searches for food in lichens and epiphytes, as well as from tree trunks and branches. The nest is normally in a hole or crevice in a tree. Rasmussen and Anderton, 2005.

Conservation

VU

It is not threatened by hunting, but could be very threatened by logging. Worldwide its population is fragmented and declining as a result of loss of its evergreen forest habitat.

Occurrence in Bolikhamxay

Thus far it has been seen only in Nakai-Nam Theun NPA, but probably also occurs in NCNP and the Nam Chouan Proposed NPA.

**63. WIRE-TAILED SWALLOW *Hirundo smithii*****Natural history notes**

This is probably the most beautiful swallow in Lao. It lives throughout much of tropical Asia and Africa. It has blue upperparts and creamy white underparts, with a rufous head. It is almost always found near wide, rocky streams and rivers, where it builds its nest on the side of a large rock in or near the water. Unlike many other species of swallows, it nests alone, not in large groups, and the female lays two to five eggs. It feeds in the river valley in the vicinity of the nest site.

Turner and Rose, 1994.

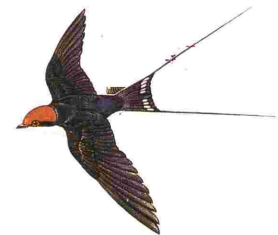
Conservation

PARL

The habitat of this bird - wide, rushing rivers - also tends to be good for hydropower development, and this is probably the greatest threat to this species in Bolikhamxay. It was formerly much more common in Lao, and has declined greatly (David-Beaulieu 1949-1950, Thewlis *et al.* 1998).

Occurrence in Bolikhamxay

The Nam Kading River below the mouth of the Nam Mouan supports one of the most important populations of the Wire-tailed Swallow in Lao. The only other site it has been found in the province is along the Mekong River.



64. YELLOW-VENTED WARBLER *Phylloscopus cantator*



Natural history notes

This beautiful warbler is found from India to South China and North Southeast Asia. It is very distinct, with a yellow head, black crown stripes and eyeline and a yellow throat and breast. It prefers humid evergreen forest, bamboo clumps and dense vegetation near water and is found up to 2000 m. It forages actively in the bushes and lower branches of large trees, and feeds mainly on insects. It is usually found singly or in pairs, and often in mixed flocks during the winter. The nest can be hidden on the ground among fallen leaves or in a hollow in a bank.

Mackinnon and Phillips, 2000.

Grimmett, Inskipp et al, 1998.

Conservation

Though conservation status in Lao is unknown, it is likely too small to be hunted.

Occurrence in Bolikhamxay

Recorded in NCNP and NNT.

65. GREY LAUGHINGTHRUSH *Garrulax maesi*



Natural history notes

This forest bird has a small world range - only southern China and parts of Lao and Vietnam. It is found at elevations from 600-1700 m. It is a medium-sized bird with fluffy soft plumage and strong legs. Little is known about its diet and breeding ecology, but like most other laughingthrushs, it is probably somewhat terrestrial, spending much of its time on the ground. This noisy species lives in groups of up to twelve individuals, and is often hard to find in the dense vegetation it prefers.

<http://en.wikipedia.org/wiki/Laughingthrush>

Conservation

Globally it is considered near threatened, but not at risk in Lao.

Occurrence in Bolikhamxay

It has been found in Nam Kading and NNT and NCNP. It probably also occurs in other forested areas of the province, especially in the Sayphou Louang.

66. RED-TAILED LAUGHINGTHRUSH *Garrulax milnei*



Natural history notes

This thrush is endemic to parts of Lao, Vietnam, Thailand, Myanmar and south China, and is found in evergreen forest, secondary growth, bamboo and occasionally dense scrub. This beautiful medium-sized bird has a black head and bill, dark to light brown or grey body, small bright red wings tipped with black and a bright red tail tipped with black. Little is known about its diet and breeding ecology, but like most other laughingthrushs, it is probably somewhat terrestrial, spending much of its time on the ground.

This noisy species lives in groups of up to twelve individuals, and is often hard to find in the dense vegetation it prefers.

<http://en.wikipedia.org/wiki/Laughingthrush>

Conservation

It is globally near threatened, but records from Lao indicate it is fairly common in Northeast Lao and along the Annamite Mountain chain.

Occurrence in Bolikhamxay

It is known from NNT and NCNP

67. SHORT-TAILED SCIMITAR BABBLER *Jabouilleia danjoui*

Natural history notes

This bird is an endemic resident of the Sayphou Louang of Lao and Vietnam, and is probably a specialist of wet evergreen forest. It has dark brown upperparts, white underparts and a brown breastband and a short tail. The bill is very long and curved. It lives in undergrowth in evergreen forest and is always found on or near the ground at a wide range of altitudes. As with other scimitar babblers, it likely forages on the ground as well, turning over leaf litter for insects. Little information is available on its other habits and reproduction.

Eames, June 2001.

Conservation

PARL; NT

Its small world range and preference for forest that may also be targeted by logging places it at risk

Occurrence in Bolikhamxay

It has been recorded in NNT and NCNP.



68. SPOTTED WREN BABBLER *Spalaeornis formosus*

Natural history notes

This tiny bird is found in Asia from Nepal in the East to South China and North Southeast Asia. It is short-tailed and dark brown, covered entirely with white specks and heavy black bars on the wings and tail. It appears scarcely in the understory of broadleaved evergreen forest and in scrub and weeds. It forages on the ground. It reportedly breeds in April and May and builds a domed nest on the ground or a bank.

Rasmussen and Anderton, 2005.

Conservation

As it occurs infrequently in Southeast Asia, information is not available, though it is likely not under threat from hunting as it is too small.

Occurrence in Bolikhamxay

It has been recorded in the province only in Nam Kading NPA.



69. SOOTY BABBLER *Stachyris herberti*



Natural history notes

There is only one place in the world where this bird lives - limestone karst in Bolikhamxay, Khammouane and adjacent central Vietnam at 50-610 m. Scientists first discovered it as a new species in 1920 in the area that is now Phou Hin Phou NPA. It wasn't found again until 1994. It has a dark brown body with a white throat and pale whitish bill. It is typically found in small flocks. Very little else is known about its habits, diet and reproduction.

Conservation

NT

Hunting and habitat loss do not appear to be immediate threats to this species. However, its world range and thus world population are very small, and any impacts on limestone karst areas need to be closely monitored.

Occurrence in Bolikhamxay

It was recorded at the Nadee limestone in Viengthong District, the Sayphou Louang limestone along Route 8 near Lak Xao, and limestone areas in and near Nam Kading NPA.

70. SPECTACLED FULVETTA *Alcippe ruficapilla*



Natural history notes

This medium-sized fulvetta is found from Southeast Tibet to South China and Northern Southeast Asia. It has a rufous head with a white eye ring, a white throat and whitish underparts with grayish-brown upperparts and brown tail. It inhabits evergreen forest from 1250 to 2500 m.

Mackinnon and Phillips, 2000.

Conservation

This species is not common in Lao and therefore its conservation is unknown.

Occurrence in Bolikhamxay

One of the only places in Lao where this species has been recorded is NNT.

71. RUFOUS-THROATED FULVETTA *Alcippe rufogularis*



Natural history notes

This large Fulvetta is found in India and is locally common throughout Southwest China and Southeast Asia. It has a short tail, and is brown, with a long black stripe, white underparts and a broad chestnut band on the lower throat. It lives in the understorey of broadleaved evergreen forest, secondary forest and bamboo. It forages on the ground for food in low undergrowth. Usually found in pairs, it makes a domed, or semi-domed nest on the ground or in low vegetation one m above ground.

Rasmussen and Anderton, 2005.

Conservation

This species is fairly common in Lao, and not threatened at present.

Occurrence in Bolikhamxay

It occurs patchily, but probably widely in the province. Known from Phou Khao Khouay, Nam Kading and NNT NPAs and NCNP.

72. LESSER RUFIOUS-HEADED PARROTBILL
Paradoxornis astrosuperciliaris

Natural history notes

This mid-sized Parrotbill is found in Asia from India in the West to Southwest China and North Southeast Asia. It is plain olive-brown with a bright rufous head and pale white to white below. In North Southeast Asia it inhabits bamboo or broadleaved evergreen forest. It is usually found in small groups of six to twelve foraging in bamboo for insects and seeds. It often mixes with other species of Parrotbill and babblers. It breeds from April to July, making a deep cup nest with a distinctive yellowish-white exterior, in bamboo or grass about two m above the ground.

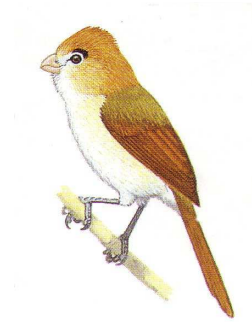
Rasmussen and Anderton, 2005.

Conservation

Since this species is not commonly found in Lao, its conservation status is unknown.

Occurrence in Bolikhamxay

One of the few places this species has been found in Lao is in NNT.



3.4 MAMMALS

73. CHINESE PANGOLIN *Manis pentadactyla* and **SUNDA PANGOLIN** *M. javanica*

Natural history notes

The pangolin has a long and tapering body covered with overlapping scales. The scales are attached to the base of the thick skin from which they grow. It lives in forests, thick brush or open savannah country, and is solitary, though it sometimes associates in pairs. The pangolin is nocturnal, and sleeps during the day in underground burrows. It has no teeth, and lives by using its very long tongue to eat ants, termites and other insects. A female usually gives birth to only one baby per year.

Conservation

M. pentadactyla - NT; *M. javanica* - NT; CA II

Pangolins are highly sought for the wildlife trade, because their scales and blood are thought to have medicinal value. The trade, although illegal, is well organized, and live pangolins are sometimes shipped in groups of hundreds from Bolikhamxay to Vietnam. Because pangolins reproduce so slowly, the trade is probably driving them to extinction in Lao. Properly managed protected areas,

strongly protected against poaching, are likely to be highly important to conserve pangolins.

Occurrence in Bolikhamxay

The pangolin probably occurs widely in the province. One or both species have been found in PKK, Nam Kading and NNT NPAs and NCNP.

74. NORTHERN SLOW LORIS *Nycticebus coucang*
INTERMEDIATE LORIS AND PYGMY LORIS *Nycticebus pygmaeus*



Natural history notes

There are apparently three species of loris in Lao, of different sizes. Little is known about how to reliably distinguish the species from one another, or the extent of their ranges. A Slow Loris normally has a length of 265-380 mm while a Pygmy Loris is typically 180-210 mm. Lorises have short, thick fur and range in color from light brown and grey to a deep red-brown. The Slow Loris is normally found in forests or bamboo groves and is solitary, nocturnal and arboreal. Lorises sleep in the fork of a tree or among thick leaves during the day. Its diet consists of mollusks, insects, lizards, birds, small mammals and fruits. There is usually a single baby, and the mother carries the infant.

Conservation

N. Coucang – DD; *N. pygmaeus* – VU; CA II

Hunting of the loris is probably on the increase, in part to supply local and international demand for traditional medicines. Traditional medicine sellers in Vientiane's markets sell loris skins, for example.

Occurrence in Bolikhamxay

Lorises probably occur widely in Bolikhamxay, except at the highest elevations. The Pygmy Loris has been confirmed from the Nam Gnouang area.

75. NORTHERN PIG-TAILED MACAQUE *Macaca nemestrina*

Natural history notes

This medium-sized monkey is somewhat nomadic, sometimes being seen in an area of forest only once every few months. Coloration is usually yellowish-brown above and lighter below, though some macaque species are olive. It travels in large troops. It is mainly a lowland species, and probably prefers dense evergreen forests, where it feeds on seeds, fruit and sometimes small animals. This species is widespread in Lao.

Conservation

VU; CA II

Preferring lowland habitats - where most human pressure is focused - places this species at elevated risk.

Occurrence in Bolikhamxay

It is known from PKK, Nam Kading and NNT NPAs.

76. ASSAMESE MACAQUE *Macaca assamensis*

Natural history notes

This medium-sized monkey ranges from Nepal and southern China to mainland South-east Asia. In contrast to Pig-tailed Macaque, this is mainly a montane species, found in sub-tropical or evergreen forest often at elevations of 2,000 meters or more. It is mainly arboreal, but will spend some time on the ground. It lives in groups from ten to one hundred. Diet consists of fruits, berries, grains, leaves and buds, but it will also eat insects and other small invertebrates when available. The female normally gives birth to a single baby.

Conservation

VU, CA II

Like all primates, it faces hunting pressure.

Occurrence in Bolikhamxay

It is known from Nam Kading and NNT NPAs and NCNP.

77. RHESUS MACAQUE *Macaca mulatta*

Natural history notes

This species of medium-sized monkey has a wide range from Pakistan east to the Pacific and into northern Southeast Asia, and it remains common in much of this range. It moves and feeds mostly on the ground, not in trees. Lao records indicate a strong association with rivers. It is highly adaptable, and often seen around human settlements as well. Like other macaques, it is largely vegetarian, eating fruits, berries, leaves, grains and buds, but will also eat insects and other small invertebrates when available. It lives in groups as small as eight and as large as 180 individuals. The female gives birth to one baby.

Conservation

NT; CA II

Because it is often found along rivers, where humans also travel and live, it may be at greater risk from hunting and other human pressure than most other macaques.

Occurrence in Bolikhamxay

It is known from PKK and Nam Kading NPAs and NCNP.

78. BEAR MACAQUE *Macaca arctoides*



Natural history notes

This species of medium-sized monkey occurs from eastern India through Southern China and in most of Southeast Asia. It lives and feeds mainly on the ground. It can live in a wide variety of forest types, from secondary to mature deciduous or evergreen, and is often found in mountainous regions, making seasonal migrations from one mountain range to another. Like other macaques, it is largely vegetarian, eating fruits, berries, leaves, grains and buds, but will also eat insects and other small invertebrates when available. It lives in groups of twenty to 100, usually led by a dominant male. The female gives birth to one baby.

Conservation

VU; CA II

Occurrence in Bolikhamxay

It has been recorded from Nam Kading and NNT NPAs and NCNP.

*79. LAO LEAF MONKEY *Trachypithecus laotum*

Natural history notes

This species is part of group of poorly known "Francois' Langur" species with very small global ranges. All live only in Lao or Vietnam (or a very small part of southern China). The overall coloration is black and it has a broad, white forehead band. Limestone karst and adjacent forests are its special habitat. It feeds on leaves and fruit in nearby forests, and returns every night to sleep in groups on limestone cliffs.

http://members.tripod.com/uakari/trachypithecus_laotum.html

Conservation

DD

Worldwide the Lao Leaf Monkey is known only from parts of Bolikhamxay and a small area of Khammoune. This puts this species at very high risk from hunting and habitat disturbance.

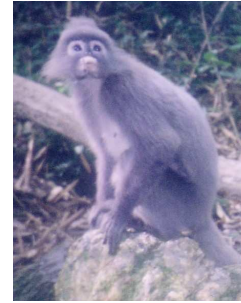
Occurrence in Bolikhamxay

The Lao Leaf Monkey is known only from parts of Nam Kading NPA and western areas of nearby Phou Hin Phoun NPA in Khammouane Province.

80. PHAYRE'S LEAF MONKEY *Trachypithecus phayrei*

Natural history notes

The Phayre's Leaf Monkey occurs in Indochina, Myanmar, Thailand and Northeastern India. However, there are few recent field records from anywhere in Lao or Vietnam. It is small to medium-sized and normally brown, dark grey or black in color. It has white circles around the eyes. It usually lives in upland forests, away from people, and may have a preference for forest with bamboo thickets. It lives high in the canopy, and feeds on leaves, flowers and fruit. It lives in groups of six to thirty individuals. The female gives birth to one baby.



Conservation

ARL; CA II

In Indochina, the Phayre's Leaf Monkey is now scarce and localized due to a combination of high hunting pressure and reduction and fragmentation of suitable forest habitats. Populations in Bolikhamxay could be of global significance, due to the extent of suitable habitat remaining and that populations of this species may still be fairly large.

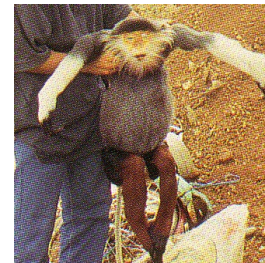
Occurrence in Bolikhamxay

A fairly large population lives in and near Nam Kading NPA, and it is also found in Phou Khao Khouay NPA. It probably occurs in other scattered forested areas of the province.

81. RED-SHANKED DOUC *Pygathrix nemaeus

Natural history notes

This beautiful primate is endemic to Indochina. It inhabits rainforests from sea level to 2,000 meters. The head is normally brown, the face bright yellow and the whiskers white. The body is grey, the rump and tail are white and the upper parts of the arms, legs, hands and feet are black. The forearms are white and lower legs are dark brown. It is arboreal and diurnal, feeding mainly on leaves and fruits. It lives in large groups of often fifty individuals or more. The female gives birth to one baby.



Conservation

EN; CA I

As a restricted range species, under relatively high pressure from hunting, all populations, particularly those in large habitat blocks, have global significance for conservation of this species.

Occurrence in Bolikhamxay

The northern extent of Douc's range in Lao is probably somewhere in Bolikhamxay - this species is not found in northern provinces such as Houaphanh, Luang Phrabang and Phongxaly. It is found only in areas near Sayphou Louang, and has been found in Nam Kading and NNT NPAs, and NCNP.

82. WHITE-CHEEKED CRESTED GIBBON *Hylobates leucogenys

Natural history notes



The species of this primate that occurs in Bolikhamxay has not been confirmed, but is most likely to be White-Cheeked. Unlike most other primates, the gibbon lives in very small territorial groups - usually a male, a female and their young. It inhabits monsoon and evergreen forests, mainly in the lowlands and hills. The Gibbon is monogamous, with one pair mating for life. The White-Cheeked Crested Gibbon male is black and the female is grey or golden brown. They have large patches of white fur on their cheeks. Unlike many other Asian primates, the gibbon does not have a tail. It is arboreal and uses its extremely long arms to move rapidly through the trees. Diet consists of fruit, leaves, vegetables and insects. Females give birth to one baby.

Conservation

DD

Nam Kading NPA, along with the Northern Annamites spine, probably has the most northerly, relatively numerous, populations of this species. If there are discrete species in the north and if the southern boundary includes the NPA, then this population would be highly significant at the global level. Even if only the Pale-Cheeked Crested Gibbon remained in the area, that population would still have global significance for conservation of this species. Observations suggest that gibbon populations have been depleted due to hunting, and that natural densities now persist only in the core areas of the NPA. Within these core areas, it seems that between survey periods these populations have remained stable.

Occurrence in Bolikhamxay

This species has recently been seen in Bolikhamxay, though its status is unknown.

83. DHOLE *Cuon alpinus*



Natural history notes

The Dhole was formerly found in most non-desert areas of eastern Asia, but is now greatly reduced. It is a medium-sized wild dog that is social, lives in packs, and hunts cooperatively over large areas. It is either red or brown in color. The Dhole breeds all year and usually delivers four to nine babies in an underground hole or a cave. It hunts in packs during the day, and preys on deer, sambar, rodents and rabbits. In many areas of Lao, now that Tigers have been greatly reduced, Dholes are the most commonly reported predator of large village livestock.

Conservation

EN

The Dhole is vulnerable to shooting, as well as habitat degradation and fragmentation. Globally, this species is under great threat because packs need to roam over large areas. It is estimated that only 2,500 individuals remain in the wild throughout its range. Lao is one of the few countries in this species' range retaining extensive areas suitable for its survival, and thus Lao is of global importance to its conservation.

Occurrence in Bolikhamxay

It is probably found widely in Bolikhamxay Province. Dholes have been recorded from Phou Khao Khouay, Nam Kading and Nakai-Nam Theun NPAs and NCNP.

84. ASIATIC BLACK BEAR *Ursus thibetanus***Natural history notes**

The Asiatic Black Bear is found throughout North, Southeast and East Asia. It is black in color and has a big head and heavy body with thick legs. On the chest there is white or beige hair in a "V" shape. It lives in hilly country with thick forests and is largely nocturnal and arboreal. Diet consists of a great variety of foods, from fruits and vegetables to insects, small reptiles and even large mammals. The female normally has two cubs in a litter.

**Conservation**

ARL; VU; CA II

This bear species is likely to persist mainly in core blocks of forest.

Occurrence in Bolikhamxay

Bears are found in several areas of the province, but at low density in areas away from people. They are known from Phou Khao Khouay, Nam Kading and Nakai-Nam Theun NPAs and NCNP.

85. SUN BEAR *Ursus malayanus***Natural History Notes**

The sun bear is the smallest bear in the world and found throughout South China and Southeast Asia. Length never exceeds 1.4 m, and it has short black fur and a white or beige "V" shape on the chest, similar to the Asiatic Black Bear. It lives alone and inhabits forests at all elevations. It is mostly nocturnal, eating everything from animal carcasses to a wide variety of ripe fruit and plant material. Litter size is normally two cubs.

**Conservation**

ARL; CA I

This bear species is likely to persist mainly in core blocks of forest.

Occurrence in Bolikhamxay

Bears are found in several areas of the province, but at low density in areas away from people. They are known from Phou Khao Khouay, Nam Kading and Nakai-Nam Theun NPAs and NCNP.

86. STRIPE-BACKED WEASEL *Mustela strigidorsa***Natural history notes**



This little-known animal is found in forests from Bhutan to Vietnam, with few documented records. Nowhere is it known to be common. The general coloration is dark brown, with pale yellow cheeks, chin and throat. There is a narrow white stripe down the middle of the back. It inhabits evergreen forest at elevations from 1,200 to 2,200 m. Little other information is available on its diet, habits and reproduction.

Conservation

VU

Occurrence in Bolikhamxay

It has been seen in Nam Kading and NNT NPAs, and probably also occurs in other montane forested areas.

87. HOG BADGER *Arctonyx collaris*

Natural history notes

This species is found in Upper China to the east of Myanmar, Lao and in the north of Vietnam and Cambodia. It is a thickset animal with a short tail. It looks like a wild pig and has small eyes and ears, short hair on the body and is light yellow, light brown, grey or black in color. It is active day and night and is solitary, usually living and hunting alone. Diet consists of roots, earthworms, insects and other small animals such as centipedes and millipedes. Breeding occurs during April to September and the baby is born in February. Litter size is usually two or three.

Conservation

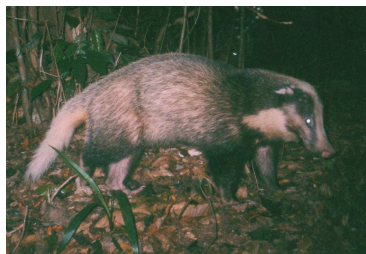
LKL

In Lao (and the rest of Indochina), this species appears to be declining, probably due to hunting, especially with dogs. The main long-term security for the Hog Badger is large blocks of habitat with low hunting pressure.

Occurrence in Bolikhamxay

Hog Badgers have been seen in Phou Khao Khouay, Nam Kading and Nakai-Nam Theun NPAs and NCNP.

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88. EURASIAN OTTER *Lutra lutra* and SMOOTH-COATED OTTER *Lutrogale perspicillata*

Natural history notes

Both large otters have wide ranges in Asia, and the Eurasian occurs over most of Europe, though it is known to be more rare in Asia than the Smooth-Coated Otter. The Eurasian Otter is primarily a fish eater and is solitary. It is found in freshwater rivers and marshes and generally afraid of humans so occurs mostly in higher altitude streams and other remote areas. The Smooth-Coated Otter is named for its shorter, smoother coat and is thought to be the most common Asian otter throughout its range. It lives in small family groups and is found in a variety of habitats, from freshwater wetlands to mangroves and large forested rivers. Foster-Turley, Macdonald et al, 1990.



Conservation

L. Lutra – NT; *L. perspicillata* - VU

In Lao, otters are highly threatened by hunting for the wildlife trade to Vietnam and China. One otter skin can be sold to traders for about one million kip. They are also increasingly threatened by the destruction of marshland and riverine habitat, due to factors such as hydropower development.

Occurrence in Bolikhamxay

It is not clear which, or if both, of the large otters occur in areas of Bolikhamxay, since these two species are difficult to distinguish by signs or sight. Unidentified otters have been found in Phou Khao Khouay, Nam Kading and NNT NPAs.

***89. ASIAN SMALL-CLAWED OTTER** *Aonyx cinerea*

Natural history notes

The Asian Small-clawed Otter occurs from India to China and to Southeast Asia. It is the smallest of the world's otters, rarely weighing more than five kg. It is often seen in large groups and is a playful species. It has unusual hand-like front paws, which are very sensitive, and reduced webbing, which it uses to capture its prey of crustaceans, mollusks and small fish. Most groups consist of an alpha breeding pair and their offspring from successive litters.

Foster-Turley, Macdonald et al, 1990.

Conservation

NT

This species is increasingly threatened by the destruction of marshland and riverine habitat. Hunting for the wildlife trade, as well as hydropower development, are also serious threats. There have been few (if any) attempts to comprehensively assess the status of various otter species in all of Southeast Asia, let alone Lao. But all partial status assessments and incidental data suggest that otters are significantly threatened throughout Indochina, with healthy populations now restricted to remote catchments. In

particular, there are few large lowland rivers where an otter presence has been confirmed in recent years.

Occurrence in Bolikhamxay

The Nam Theun/Kading is the only catchment in Lao where otters (particularly large species) have been found relatively commonly over a wide area. Despite the declines noted on the latest surveys, the rivers of Nam Kading NPA remain an important haven for otters of at least one species. In Lao, Nam Kading NPA affords otters rare insulation from human persecution, given the increasing paucity of unsettled riverbanks in the country. Otters have also been seen in NCNP.

90. OWSTON'S PALM CIVET *Chrotogale owstoni*

Natural History notes

This beautiful species is found mainly in southern China and northern Lao and Vietnam. It has brown to pale orange fur, with large black bands on its back and an all black bushy tail. It prefers humid habitats, such as forested valleys, hills and foothills with streams lakes and rivers. It also can be found in bushland near riverbanks and cultivated fields. It is terrestrial, but can climb very well and often searches for food in trees. Diet consists mainly of earthworms, plus small amounts of fruits and other animals such as lizards and birds. This civet is nocturnal, and natural holes in trees, rocks or in the ground are used for resting during the day, as well as nesting. The female has two litters per year, giving birth to one to three young.

http://www.iucn.org/themes/ssc/sgs/mvps/g/pdf/SNC06_OwstonsPalmCivet.pdf

Conservation

VU

Habitat loss and hunting during the last few decades has eliminated much of this civet's former range, as well as led to a population decline. Worldwide it is considered critically endangered.

Occurrence in Bolikhamxay

This species has not yet been confirmed yet in the area, but has been found in Nam Chat-Nam Pan and Nam Chouan.



91. BINTURONG *Arctictis binturong*

Natural history notes

Often called a Bear Cat, this is the biggest civet and looks like a small bear. The Binturong is found in Bhutan and India in West Asia and throughout Southeast Asia and East Asia as far as Borneo and the Philippines. The Binturong has long black hair and a long tail. It lives in mature forest and is solitary, arboreal and usually nocturnal. Diet consists of fruits, as well as small animals such as birds, rats, insects and tree lizards. It breeds year-round and has one to three babies in a litter. The Binturong climbs trees very well and can also swim.



Conservation

ARL

In Indochina, like the Hog Badger, the Binturong appears to be relatively scarce, probably due to hunting. Its attraction to fruiting trees, generally sluggish behaviour, and propensity for daytime activity all make it susceptible. As also with the Hog Badger, large blocks of habitat are likely to be necessary for its long-term conservation.

Occurrence in Bolikhamxay

It probably occurs in most well forested areas of the province. It has been recorded in Nam Kading NPA.

92. FISHING CAT *Prionailurus viverrina*

Natural history notes

This species is a larger cat with a wide distribution stretching from North and Central India throughout Southeast Asia to Indonesia. It is olive grey in color, patterned with rows of parallel, solid black spots that often form stripes along the spine. The body is dark in color and it has a very short tail. It lives in woods with dense cover, usually near rivers and streams. It hunts both on land and by swimming after waterfowl. Diet consists of fish, as well as fresh-water mollusks, cetaceans and small mammals, birds, frogs and insects. The female gives birth to one to four young.

Conservation

VU

Occurrence in Bolikhamxay

One of the few places in Lao where this little-known species has been seen is in NCNP.

93. ASIAN GOLDEN CAT *Catopuma temminckii*

Natural history notes

This species is the largest of the small Asian cats and is found from Nepal to South China, south to the Malay Peninsula and Sumatra. Typical coloration is red or golden-brown, but it can also be black, brown or grey. There are spotted and plain forms, and the underside is predominantly white, with small black spots. It is a forest dweller that lives mainly on the ground, and inhabits tropical and sub-tropical moist evergreen and dry deciduous forest habitat. Prey includes wild boar and sambar, as well as rodents, hares, muntjacs and hog deer. Little is known about the behavior of this species, but it is thought to be nocturnal.

Conservation

VU

Occurrence in Bolikhamxay

It has been recorded from Nam Kading and NNT NPAs





94. MARBLED CAT *Pardofelis marmorata*

Natural history notes

This small cat species ranges widely throughout Southeast Asia, from Nepal in the north and west to Sumatra in Indonesia and Borneo. The coat is very similar to that of the clouded leopard, though its black splotches on the side of the body are less distinct and its black spots more numerous. Very little is known about its behaviour, diet and ecology. It is primarily found in moist tropical forest, though it can also be found in mixed deciduous and dry evergreen forest. Its diet includes rats, birds and squirrels, and it is believed to be primarily nocturnal.

Conservation

VU; CA I

Occurrence in Bolikhamxay

Thus far it has been recorded only from NNT NPA, but it probably occurs in other areas of Bolikhamxay.

95. CLOUDED LEOPARD *Neofelis nebulosa

Natural history notes

This beautiful cat is smaller than the leopard but larger than the other small Asian cats. It is found throughout mainland and peninsular Asia, from Nepal and Northern India through Indochina to Malaysia, Borneo and Sumatra. It has a cloudy pattern on its fur, with large rosettes of variable color bordered in black. The “clouds” on and just behind the shoulders are the largest. The Clouded leopard is arboreal and nocturnal, but is shy and seldom seen, so little is known about its habits. Diet consists of birds, monkeys, small game animals and snakes. The female normally has a litter of two to four cubs.



Conservation

VU

The clouded Leopard is quite rare, and with high demand for its skin and continued reduction of its forest habitat, it is likely endangered throughout its range.

Occurrence in Bolikhamxay

Like most cats other than the Tiger, the Clouded Leopard is difficult to find in the field without specialized techniques like camera trapping. Nonetheless, it has been recorded in Phou Khao Khouay and NNT NPAs.

96. LEOPARD *Panthera pardus

Natural history notes

The leopard is widespread throughout both Asia and Africa. This large cat has a beautiful coat with a ground color or yellow to grey with black spots that are grouped in clusters. Some individuals are completely black, and are called black panthers. This solitary animal inhabits tropical rain forest as well as deciduous forest. It is a versatile hunter and preys upon a range of mammals from medium-sized ungulates and domestic cattle to small rodents, birds and reptiles. It is nocturnal and spends the daytime resting in tree branches. The female normally has a litter of two to three cubs.

Conservation

ARL; CA I

Occurrence in Bolikhamxay

It probably occurs widely, but at very low density, in Bolikhamxay. Villagers say a few live in Nam Kading NPA, and it has been seen in NNT NPA.



97. TIGER *Panthera tigris

Natural history notes

The tiger is known throughout the world and is the largest of all the big cats. It ranges widely throughout eastern and Southeast Asia, and survives only in scattered populations from India to Vietnam and in Sumatra, China and the Russian Far East. It has a large, muscular, powerful body with a red-orange to yellow-ochre coat color and black stripes with a white underbelly. It is found in a variety of habitats, from the tropical forests of Southern Asia to the coniferous woodlands of Siberia. Habitat requirements include: dense vegetative cover, sufficient large ungulate prey and access to water. The tiger is usually solitary and attacks its prey normally by stalking from the rear. It is an excellent swimmer. The female has litters up to four cubs.

Conservation

EN; CA I

The tiger has been exploited relentlessly for its skin and the believed medicinal value of its bones and body parts, and it is widely traded throughout Asia and beyond. It is highly endangered throughout its range, and the maximum number in the wild is believed to be no more than 5,000.

Occurrence in Bolikhamxay

It has been reported in Nam Kading and NNT NPAs. Villagers near Phou Sithon in Viengthong district have said Tigers still occur there, too. Formerly it was found in Phou Khao Khouay, but it is not known if any remain there today.



***98. ASIAN ELEPHANT** *Elephas maximus*



Natural history notes

The largest living land mammal, the elephant is well known throughout Asia and worldwide. It is a huge cow-like animal with a prominent head, large ears, a long trunk and white tusks protruding from the trunk just above the mouth. Color is grey all over. In the past it appeared in a wide variety of habitats, although in Southeast Asia it is now likely restricted to forest and open grassland areas. An elephant can eat up to 150 kilos of food per day, and it consumes a wide variety of grasses, bark, roots and leaves. Cultivated crops, such as bananas and sugar cane, are also eaten. Elephants almost always live in herds, though some young males live alone. Most herds have a dominant male and larger group of females and young. The female gives birth to one calf, which can weight between 50 – 150 kg. An adult female can weigh up to 2,270 kg while a male can weigh up to 5,400 kg.

Conservation

EN

The elephant remains scattered throughout Lao, although in few places are numbers likely to be viable. The population in Nam Kading NPA is likely to be more substantial than in most other conservation areas, and nationally significant, although not nearly as large as populations on and adjacent to the Nakai Plateau or in Xaignaboury Province.

Occurrence in Bolikhamxay

Populations of elephants are found in Phou Khao Khouay, Nam Kading and Nakai-Nam Theun NPAs. Villagers living near Nam Chouan PNPA also say there are many elephants there. The population in NNT is reduced to small herds of just a few animals each, which indicates significant exploitation.

99. LESSER ONE-HORNED RHINOCEROS AND ASIAN TWO-HORNED RHINOCEROS

Rhinoceros sondaicus anniamiticus and *Dicerorhinus sumatrensis*

Natural history notes

This very large animal is well known, and extremely endangered in Southeast Asia. It is not known if any populations exist in Lao. The rhino is a large, grey awkward looking animal with a large head, short legs, small eyes and a large body with skin folds, which make it looks like it is wearing armor. The rhino normally inhabits dense rainforests where there is a good water supply, and generally prefers low-lying areas up to 1000 m. Diet consists of fruit, shoots, twigs and young trees. The rhino is generally solitary. The female gives birth to a single calf.



Conservation

CR; CA I

The Asian rhino is among the most endangered animals in the world. It is killed for its horn, which allegedly has medicinal purposes, and body parts. Any populations in Lao of either species would be globally significant.

Occurrence in Bolikhamxay

Although there are no recent confirmed rhino records in Lao, Bolikhamxay is one of three areas in the country where its presence continues to be periodically reported. Possible tracks of an Asian Two-horned Rhinoceros were seen in NCNP in 1998, and at about the same time local villagers reported that rhinos still occur in Nam Chouan PNPA

100. HEUDE'S PIG *Sus bucculentus*

Natural history notes

This pig is probably endemic to the Sayphou Louang. Very little is known about it. Biologists are not even sure what it looks like. It was described as a species in Vietnam in the 19th century, and went unrecorded for more than 100 years until two of its skulls were found in NCNP in 1995. The wild pig is generally gregarious, forming herds of various sizes. It is often noisy when traveling and feeding, and is usually omnivorous, eating everything from fruits, vegetables and fungi to insects, small animals and carrion. Big cats such as tigers and leopards often prey upon wild pigs.

Conservation

DD

Occurrence in Bolikhamxay

Although biologists know little about this species, reports from villagers suggest that it is fairly common in the province, at least in the Sayhou Louang.

101. SAMBAR *Cervus unicolor

Natural history notes

This large deer is found from India to Southeast Asia and many of the islands of Indonesia and Malaysia. It is generally dark brown with a white rump and white underside of the tail. It has very large antlers. The Sambar is found in a variety of habitats, but seems to prefer wooded areas on mountain slopes up to 3,700 m. It feeds on leaves, buds, grass, berries and fruit. It is largely nocturnal. The main mating season seems to be between September and January, and the female has one fawn.



Conservation

PARL

The Sambar has been heavily depleted throughout Indochina due to hunting, mainly driven by the value of its antlers in the East Asian traditional medicine market. The main long-term requirement for its conservation is large blocks of habitat with low hunting pressure.

Occurrence in Bolikhamxay

It is found at reduced density in most forested areas of the province. Sambar have been confirmed in Phou Khao Khouay, Nam Kading and NNT NPAs and NCNP.

102. LARGE-ANTLERED MUNTJAC *Muntiacus vuquangensis*



Natural history notes

Muntjacs are a small deer species often called barking deer. The Large-antlered Muntjac is restricted to the Sayphou Louang and its foothills of Indochina. Little is known about this species' ecology and habitat requirements, although it tends to be less tolerant of degraded forest and human disturbance than the common Red Muntjac (*Muntiacus muntjac*). Like other muntjacs, this species likely feeds on grasses, leaves, tender shoots, and perhaps fruit. The young muntjac is usually born in dense forest, and remains hidden until it can move about with its mother. The name comes from the deep, bark-like sound it produces to communicate and warn others of predators.

Conservation

DD

Although antlers of this species are commonly seen in villages in the province, there are very few recorded field sightings, which suggests reduced density. Hunting has reduced populations of all muntjacs throughout Lao. In addition, forest loss is more likely to be a problem for this species than the Red Muntjac.

Occurrence in Bolikhamxay

This species is known from Nam Kading and NNT NPAs and NCNP. It undoubtedly occurs in other forested areas of eastern Bolikhamxay, such as Nam Chouan PPA.

103. ANNAMITE DARK MUNTJAC *Muntiacus truongsoneis* and ROOSEVELT'S MUNTJAC *Muntiacus rooseveltorum*



Natural history notes

These small muntjac species are similar in appearance, and little is known about either one. The Annamite Dark Muntjac is known only from the Sayphou Louang of Lao and Vietnam. Body color is probably dark, with a black tail on the upperside. Roosevelt's Muntjac is brown in color and it has short antlers. Like other muntjacs, these species likely feed on grasses, leaves, tender shoots, and perhaps fruit. Young muntjacs are usually born in dense forest, and remain hidden until they can move about with their mother. The name comes from the deep, bark-like sound they produce to communicate and warn others of predators. Lao is the only country in the world where Roosevelt's Muntjac has been recorded.

Conservation

M. truongsoneis – DD

Little is known about the status and distribution of these two species. But as muntjacs, they are probably heavily hunted wherever they occur near humans.

Occurrence in Bolikhamxay

The Annamite Dark Muntjac has been confirmed from the area of NCNP and is probably found in mountain forests along the length of the Sayphou Louang in the province. The only place in Lao (and the world) where Roosevelt's Muntjac has been confirmed is in Phongsaly Province and southern Xieng Khouang Province, not far from Bolikhamxay, so it likely occurs there.

104. GAUR *Bos gaurus**Natural history notes**

This wild cattle species occurs in pockets in India and mainland Southeast Asia, and was more evenly distributed in former times. Along with the Banteng it is one of the most endangered large mammals in Southeast Asia. Both species remain scattered throughout Lao, but at very low densities and in few places are numbers likely to be viable. It is a very large animal and is usually dark reddish-brown to blackish brown in color with white legs and feet and horns. The male has a large hump on the shoulders. The gaur inhabits forested hills and grassy clearings up to 1,800 m. It eats grasses and leaves. It is active day and night, though often only moves about at night if in areas disturbed by people. It lives in herds. The female gives birth to a single calf.

Conservation

VU; CA I

Occurrence in Bolikhamxay

The Gaur is known from Nam Kading and Nakai-Nam Theun NPA. Local people also report that it can be found on Phou Sithon in Viengthong District, and in good numbers in the area of Nam Chouan PNPA.



105. BANTENG *Bos javanica

Natural history notes

The Banteng is a wild cattle species found in Southeast Asia from Myanmar in the West through Thailand, Lao, Vietnam, Cambodia, Malaysia and the island of Bali in Indonesia. This species is shorthaired, with females having a rufous-chestnut coat in color and males having either a blue-black or dark chestnut coat. Both have horns, with the male horns growing up to 65-75 cm. There is a hump on the back above the shoulders. The Banteng is very shy and generally prefers more lowland open forest than the Gaur. It eats leaves, grasses and chutes, and is active during day and night, living in herds of two to forty animals with a single mature male. Breeding occurs throughout the year and the female has a single calf.

http://www.ultimateungulate.com/Artiodactyla/Bos_javanicus.html

Conservation

EN

The Banteng is now very rare in the world, and is probably approaching extinction in Lao. It is one of the most threatened animals in the country. Its preference for lowland open habitat makes it relatively easy to find and shoot. Any population in any part of Lao is nationally significant, and larger populations - if any remain - would be globally significant.

Occurrence in Bolikhamxay

Villagers report that a few Banteng survive in Nam Kading NPA. Scattered, small numbers probably occur in other areas of the province as well.



106. SOUTHERN SEROW *Naemorhedus sumatraensis*

Natural history notes

This goat-like species has a wide range from southern China and the Himalayas south to Indonesia. The upperparts are normally grey or black, the mane can be from white to black and the underparts are generally white. Villagers in Lao say that it prefers forest in steep, rocky areas. It can be found in areas up to 2700 m. Diet consists of grass, shoots and leaves, and it is usually solitary, but can occur in groups up to seven individuals. Mating usually takes place in October to November, and the female has one baby.

Conservation

VU; CA I

The main pressure on this species is probably hunting for the wildlife trade. Serow body parts are commonly sold as medicine in Lao (even though it is illegal).

Occurrence in Bolikhamxay

It is probably found widely in relatively remote, steep forested areas. It probably occurs in Phou Khao Khouay NPA, and has been reported from Nam Kading and NNT NPAs and NCNP.

107. SAOLA *Pseudoryx nghetinhensis**Natural history notes**

The Saola was first described by science in the early 1990s, from an area of Vietnam near the border of Bolikhamxay and Khammouane Provinces. It is found only in the Sayphou Louang of Lao and Vietnam. It is a forest-dwelling ox that can weigh up to 100 kg. It is a species of good quality, wet evergreen forest, where it usually lives singly. It is a browser, feeding mainly on leaves. It may make seasonal movements, and if true this means that it needs fairly large areas of habitat.

Conservation

ARL; EN; CA I

Saola numbers are now very low, and this species is highly endangered. It is probably most threatened by indiscriminate poaching in its range along the Vietnam border. If action is not taken on its behalf, it will probably become extinct fairly soon.

Occurrence in Bolikhamxay

The Saola has twice been photographed in NCNP. It also occurs in the Bolikhamxay section of NNT, and local residents also report that it occurs in the Nam Chouan PNPA. There are pockets of Saola in other areas of the province, and these are high priority for conservation.

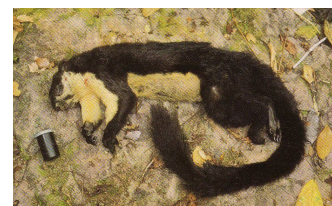
***108. BLACK GIANT SQUIRREL *Ratufa bicolor*****Natural history notes**

This beautiful animal is found from Nepal south to Indonesia. It is by far the largest squirrel in Lao, and prefers good quality forest, living in dense vegetation. As its name suggests, it is usually black in color, but can have yellow, brown or white underparts. It is arboreal and extremely agile in trees. It eats fruits, nuts, the bark of some trees, insects and birds' eggs. It is normally solitary or associates in pairs. It has two or three young per litter and two litters per year.

Conservation

PARL; CA II

This species is much more sensitive to human pressure than are other squirrels, and is similar to gibbons in its absence from forests that have been fragmented and hunted (Wang *et al.* 1989, Duckworth *et al.* 1994). It might be preferably hunted due to its large size. It has been in decline in Lao, and if nothing changes will eventually be



confined to unbroken forests within NPAs, and threatened even there.

Occurrence in Bolikhamxay

It is known from Nam Kading and NNT NPAs and NCNP. It might also occur in Phou Khao Khouay.

109. INORNATE SQUIRREL *Callosciurus inornatus*



Natural history notes

This squirrel is a poorly known Indochina endemic. It is one of the most brilliantly colored of mammals and often in the family of squirrels known as “beautiful squirrels”. Coat colors are varied. It seems to prefer disturbed or secondary lowland forest and is often found in cultivated areas and gardens. It is active day and night and mainly arboreal. It lives in hollow trees and constructs nests of leaves and tree branches. Food includes fruits, nuts, seeds, buds, flowers, insects and even birds’ eggs. Breeding occurs throughout the year, and the female has up to three litters annually, each with one or two young.

Conservation

LKL

Its tolerance - and perhaps preference - for disturbed forest means it is not highly threatened at present. Hunting, rather than habitat loss, is potentially a greater problem.

Occurrence in Bolikhamxay

It has been recorded in Nam Kading and NNT NPAs, and NCNP.

110. EAST ASIAN PORCUPINE *Hystrix brachyura*



Natural history notes

This species is found throughout Southeast Asia, and is highly adaptable, being found in all types of forests, plantations, mountains and other rocky areas. The head, neck, shoulders and limbs are covered with dark brown and black bristles. There are long quills around the head and back. It has a shorter tail than most other porcupine species. It eats bark, roots, bulbs, fallen fruits, cultivated crops and occasionally insects and small vertebrates. Shelter is caves, rock crevices or a burrow it digs itself. It is nocturnal. Small groups often share burrows. Litter size is normally one to four young.

Conservation

VU

This species appears not to be under any serious threat in Indochina, and its IUCN Red List assessment appears to be over-cautious. Although it is hunted, its persistence in heavily hunted areas of Indochina, along with aspects of its ecology, suggest that it is not susceptible to rapid decimation, as appears to be the case for some similar sized quarry species of mammal (e.g. Black Giant Squirrel, Binturong).

Occurrence in Bolikhamxay

It is probably found throughout the province, and has been confirmed in Phou Khao Khouay, Nam Kading and NNT NPAs and NCNP.

111. ANNAMITE STRIPED RABBIT *Nesolagus timminsi*

Natural history notes

This species was discovered by science in the Lak Xao market in 1995. Worldwide it is known only from the Sayphou Louang of Lao and Vietnam, where it is probably found only in wet evergreen forest. It has one of the smallest ranges of any rabbit in the world. It is a small rabbit with buffy grey or light brown fur and prominent black stripes. It has short ears and a small tail. It may have habits similar to the Sumatran Striped Rabbit, found only on the island of Sumatra in Indonesia. The Sumatran Striped Rabbit lives in the forest understory feeding on plant stalks and leaves. It is active at night, resting in the burrows of other animals during the day.

Francis, 2001.

Conservation

DD

This species is very little known in Lao, and any threats to it are unclear.

Occurrence in Bolikhamxay

In Lao, it is known only from market specimens in Lak Xao. It is also reported by villagers to occur in NCNP, and undoubtedly also occurs in wet evergreen areas of NNT NPA and Nam Chouan PNPA.



112. KHA NYOU *Laonastes aenigmamus*

Natural History Notes

This newly discovered species is also called the Laotian Rock Rat, and has been found at the Southeastern edge of Khammouan Province in limestone karst areas. It has an elongated head and is black or grayish black, with the underside a lighter grey. It is presumed to be nocturnal and primarily vegetarian in diet, eating leaves, grass and seeds. Females are believed to have a single baby.

Jenkins, Kilpatrick et al, 2005.

Conservation

As this species was only described scientifically for the first time in 2005, its conservation status is not yet known. Where it is found, villagers frequently trap it for food.

Occurrence in Bolikhamxay

It is now known to occur in and around the Khammouan Limestone National Biodiversity Conservation Area.



4 INTEGRATING SPECIES AND HABITAT CONSERVATION

4.1 INTRODUCTION TO THE LANDSCAPE SPECIES APPROACH

LANDSCAPE CONSERVATION: CONSERVATION WITHOUT BORDERS

The landscape conservation strategy develops better ways for people and animals to share and benefit from the earth's landscapes.

The Landscape conservation strategy is based on a simple reality: animals do not recognize park boundaries, particularly wide-ranging species such as elephants, bears and leopards. Indeed, while parks are essential for conservation, the larger landscape adjacent to protected areas, with both humans and animals living within it, is often as important as the protected core. Protecting these “**Landscapes**” means engagement with not only parks and protected areas, but neighboring people, governments and the private sector as well.

Today, WCS is implementing this approach in 28 land-and-sea scapes across Africa, Asia, Latin America and North America, including Lao. It resolves threats to wildlife and wild places while minimizing the costs to humans, thereby creating a landscape that is sustainable for both.

Landscape level conservation strategies take into account human impact, as well as linking monitoring of wildlife directly to assessing conservation progress.

This strategy develops better ways for people and animals to share and benefit from the earth's landscapes. While looking through the eyes of wildlife and following it beyond borders, it also recognizes few places on earth remain free from human influence. Consequently, landscape level conservation develops and tests wildlife-based conservation strategies that take into account human impact, and links monitoring of wildlife directly to assessing conservation progress. By pursuing a common set of strategies and approaches at sites across the world, this strategy promotes inter-site research and learning and develops models of conservation project management that are broadly applicable.

4.2 CANDIDATE SPECIES FOR LANDSCAPE CONSERVATION ACTION

To provide a framework for conservation action, we use **landscape species**. By conserving landscape species, we also conserve the species that co-occur with them and the wild lands on which they depend. What are the characteristics of a “landscape species”? Five criteria have been developed according to the definition and principles of the Living Landscapes program. These Five are: 1) Area, 2) Heterogeneity, 3) Vulnerability, 4) Functionality, and 5) Socio-Economic significance.

1) **Area** – This is the species' range. Wide-ranging species that need a large home area – the tiger for example – are difficult to conserve when confronted with human disturbance. Conserving a wide-ranging species like the tiger also benefits less wide-ranging species.

2) **Heterogeneity** – This is the specific habitat and vegetation types a species requires to survive. A leopard, for example, requires a sufficient number of prey animals, as well as sufficient forest cover, in order to hunt successfully and reproduce. If the habitat has few animals that the leopard eats and is too open for the leopard's normal hunting method of attacking by surprise, then it cannot survive in the area. Conserving a species that requires many different types of habitats for survival also benefits other species in those different habitats.

3) **Vulnerability** – This is when a species is threatened by human uses of its habitat. Species that are sensitive to disturbance are good candidates for landscape species. An otter, for example, requires clean, free flowing rivers with sufficient food to survive. Altering the river through pollution, building a dam or over-fishing it would negatively impact the otter. Conserving the otter would benefit all other species in the river as well.

4) **Functionality** – This is defined as the economic role the species plays in the natural environment. Many species play many different roles. The hornbill, for example, acts as a seed disperser for the forest through the fruit it eats. Conserving the hornbill would benefit the forest it inhabits as well.

5) **Socio-economic significance** – This is the cultural and economic value that a species has for humans. It can be a positive benefit, such as forming a large part of people's diet or providing income in the form of ecotourism, or a negative one, such as eating or destroying crops. The elephant, for example, has a significant role in the culture of many Lao people, and can be a source of tourism revenues, but can also eat or destroy crops around human settlements such as bananas, sugarcane and rice.

Landscape species candidates are based on five criteria: area, heterogeneity, vulnerability, functionality and socio-economic significance.

Species that meet all five criteria can be considered landscape species. In this book, candidates for this designation are marked in the text with an asterisk (*) symbol.

GLOSSARY

Aquatic – Living in water.

Arboreal – Living in trees or other vegetation.

Bird of prey – A bird that hunts and eats mainly other animals.

Biodiversity – The variety of life forms: the different plants, animals and microorganisms, plus the genes they contain and the ecosystem they form.

Canopy – The habitat found at the uppermost level of the trees in a forest.

Carapace – The shell of a turtle.

Carnivorous – Eating mainly meat, and preying on other animals for food.

Catchment – The drainage basin of a river, or the region of land whose water drains into a specific body of water.

Clutch – The total number of eggs an animal lays at one time.

Conservation – The protection, maintenance, sustainable use, restoration and enhancement of the environment.

Deciduous forest – A forest with trees and plants that lose their foliage, or leaves, during part of the year, such as in winter or during the dry season.

Diurnal – Active mainly in daylight.

Dipterocarp – A forest in the tropics consisting mainly of lowland rainforest trees with two-winged fruits.

Endemic – Restricted to a specific region or locality.

Evergreen forest – A forest with trees and plants that retain their foliage, or leaves, all year.

Everwet forest – A forest with an unusually long rainy season, lasting up to ten months per year, with no month receiving less than 40 mm of rain.

Extinction – The ceasing of existence of a species.

Forage – Plant material eaten by grazing animals, or the act of searching for that plant material.

Habitat – The place or type of site in which an animal normally occurs.

Karst – An area of rock, typically limestone, marked by little surface drainage of water. Karst mountains typically have underground drainage, which produces many caves, caverns and distinct rock formations.

Marshland – A wetland area featuring grasses, reeds, and other plants in the context of shallow water.

Nocturnal – Active mainly at night.

Nomadic – Moving from place to place, rather than settling in one location or community.

Omnivorous – Feeding on both animals and plant material.

Plastron – The underside of a turtle's shell

Primary forest – An original forest, usually a rainforest, where the trees have not been cut down and are typically of old age.

Range – The geographical area where a species can be found.

Rare – Not common. A species that is difficult to find over a certain area or habitat.

Riverine – An environment or habitat featuring rivers. A riverine species is one that lives on or near rivers.

Savannah – A grassland with only a few trees, which are normally found in clusters.

Secondary forest – A forest or woodland area that has re-grown after being cut down.

Threatened – A species or community that is vulnerable, endangered, or presumed extinct.

Trend – A species' population over a period of time, and its increase, decrease or stability.

Tributaries – Rivers or streams that do not drain into the ocean, but join a larger river.

Understory – An area of forest which grows in the shade of the overstory, or canopy, characterized by young trees, shrubs and other small plants.

Ungulate – A mammal that has a hoof, such as the gaur or domestic cattle.

Venomous – An animal, such as snake, spider or insect, which injects poison into its hunted prey or in self-defense.

BIBLIOGRAPHY

Anenjeva and Stuart, 2001. *Russian Journal of Herpetology*, vol. 8, no. 3.

Campden-Main, 1970. *A Field Guide to the Snakes of South Vietnam*. Smithsonian Institution.

Eames, June 2001. *Oriental Bird Club*. Bulletin 33.

Feare and Craig, 1998. *Starlings and Mynas*. Christopher Helm.

Foster-Turley, Macdonald, Mason, eds, 1990. *Otters, An Action Plan for Their Conservation*. IUCN/SSC Otter Specialist Group.

Francis, 2001. *Mammals of Thailand and Southeast Asia*. Asia Books.

Gibbs, Barnes and Cox, 2001. *Pigeons and Doves, A Guide to Pigeons and Doves of the World*. Pica Press.

Grimmett, Inskipp and Inskipp, 1998. *Birds of the Indian Subcontinent*. Helm Identification Guides.

Hayman, Marchant and Prater, 1995. *Shorebirds: An Identification Guide to the Waders of the World*. Christopher Helm.

Jenkins, Kilpatrick, Robinson and Timmins, April 2005. *Systematics and Biodiversity* 2 (4).

Lambert and Woodcock, 1996. *Pittas, Broadbills and Asities*. Pica Press.

Mackinnon and Phillipps, 2000. *A Field Guide to the Birds of China*. Oxford University Press.

Rasmussen and Anderton, 2005. *Birds of South Asia. The Ripley Guide, Volume 2*. Smithsonian Institution.

Turner and Rose, 1994. *A Handbook to the Swallows and Martins of the World*. Christopher Helm.

IMAGE CREDITS

Ban Vanbian village/WCS and IUCN. **107**

A. Benn. **70**

S. Chape/IUCN. **Introduction (Forest and Limestone Karst)**

T.D. Evans/WCS. **109**

D.B. Hendrie. **2, 8**

A. Johnson/WCS. **80, 82, 99**

Larrac/Dept of Forestry. **21**

C.W. Marsh/IUCN. **81**

P. Pattanakeaw / WCS. **98**

W.G. Robichaud. **74, 112**

W.G. Robichaud/WCS. **90, 91, 102, 108**

W.G. Robichaud/WCS and IUCN. **95, 106**

C. Robson. **22 – 65, 67 – 69, 71, 72**

B. L. Stuart/WCS. **12, 14, 15, 17**

J.A. Tobias/WCS and IUCN. **66**

P.P. van Dijk. **1, 3 - 7, 9 – 11**

C. Vongkhamheng / IUCN and WCS. **104**

WCS Lao/NEPL NPA. **78, 83 – 87, 93 – 97, 103, 110**

Table 1 – Important Species In Lao PDR

	SCIENTIFIC NAME	COMMON NAME	GLOBAL STATUS	LAO STATUS
1	<i>Ichthyophis sp.</i>	Caecilians		
2	<i>Leptotalax pelodytoides</i>	Asian horned frogs		
3	<i>Leptobrachium pullum</i>	asian horned frog		
4	<i>Megophrys lateralis</i>	asian horned frogs		
5	<i>Ophryophryne poilani</i>	asian horned frog		
6	<i>Bufo galeatus</i>	toad		
7	<i>Huia nasica</i>	frog		
8	<i>Limnonectes kuhlii</i>	typical frog		
9	<i>Paa microlinaea</i>	typical frog		
10	<i>Rana andersonii</i>	typical frog		
11	<i>Rana archotaphus</i>	typical frog		
12	<i>Rana johnsi</i>	typical frog		
13	<i>Rana limnocharis</i>	typical frog		
14	<i>Rana livida</i>	typical frog		
15	<i>Rana maosonensis</i>	typical frog		
16	<i>Rana nigrovittata</i>	typical frog		
17	<i>Rana taipehensis</i>	typical frog		
18	<i>Polypedates feae</i>	tree frog		
19	<i>Polypedates leucomystax</i>	tree frog		
20	<i>Rhacophorus bisacculus</i>	tree frog		
21	<i>Rhacophorus calcaneus</i>	tree frog		
22	<i>Kalophrynus pleurostigma</i>	narrow-mouthed frog		
23	<i>Microhyla annamensis</i>	leaf litter frogs		
24	<i>Microhyla berdmorei</i>	leaf litter frogs		
25	<i>Aerodramus sp.</i>	swiftlet		
26	<i>Francolinus pintadeanus</i>	Chinese Francolin		
27	<i>Arborophila rufogularis</i>	Rufous-throated Partridge		
28	<i>Arborophila brunneopectus</i>	Bar-backed Partridge		
29	<i>Arborophila charltonii</i>	Scaly-breasted Partridge		
30	<i>Gallus gallus</i>	Red Junglefowl		
31	<i>Lophura nycthemera</i>	Silver Pheasant		
32	<i>Lophura sp.</i>	pheasant		
33	<i>Lophura diardi</i>	Siamese Fireback	Globally Near-Threatened	PARL
34	<i>Polyplectron bicalcaratum</i>	Grey Peacock Pheasant		
35	<i>Rheinardia ocellata</i>	Crested Argus	Globally Threatened - Vulnerable; CA I	ARL
36	<i>Pavo muticus</i>	Green Peafowl	Globally Threatened - Vulnerable; CA II	ARL
37	<i>Dendrocygna javanica</i>	Lesser Whistling-duck		
38	<i>Anser anser</i>	Greylag Goose		ARL
39	<i>Cairina scutulata</i>	White-winged Duck	Globally Threatened - Endangered; CA I	ARL
40	<i>Anas querquedula</i>	Garganey		
41	<i>Anas crecca</i>	Common Teal		
42	<i>Turnix tanki</i>	Yellow-legged Buttonquail		

	SCIENTIFIC NAME	COMMON NAME	GLOBAL STATUS	LAO STATUS
43	<i>Turnix sp.</i>	buttonquail		
44	<i>Dendrocopos atratus</i>	Stripe-breasted Woodpecker		
45	<i>Celeus brachyurus</i>	Rufous Woodpecker		
46	<i>Picus chlorolophus</i>	Lesser Yellownape		
47	<i>Picus flavinucha</i>	Greater Yellownape		
48	<i>Picus vittatus</i>	Laced Woodpecker		
49	<i>Picus sp</i>	woodpecker		
50	<i>Picus rabieri</i>	Red-collared Woodpecker	Globally Near-Threatened	
51	<i>Picus canus</i>	Grey-headed Woodpecker		
52	<i>Chrysocolaptes lucidus</i>	Greater Flameback		
53	<i>Gecinulus grantia</i>	Pale-headed Woodpecker		
54	<i>Blythipicus pyrrhotis</i>	Bay Woodpecker		
55	<i>Meiglyptes jugularis</i>	Black-and-Buff Woodpecker		
56	<i>Hemicircus canente</i>	Heart-spotted Woodpecker		
57	<i>Mulleripicus pulverulentus</i>	Great Slaty Woodpecker		
58	<i>Megalaima virens</i>	Great Barbet		
59	<i>Megalaima lagrandieri</i>	Red-vented Barbet		
60	<i>Megalaima lineata</i>	Lineated Barbet		
61	<i>Megalaima franklinii</i>	Golden-throated Barbet		
62	<i>Megalaima incognita</i>	Moustached Barbet		
63	<i>Megalaima australis</i>	Blue-eared Barbet		
64	<i>Anthraceroceros albirostris</i>	Oriental Pied Hornbill	CA II	
65	<i>Buceros bicornis</i>	Great Hornbill	Globally Near-Threatened; CA I	ARL
66	<i>Anorrhinus tickelli</i>	Brown Hornbill	Globally Near-threatened; CA II	PARL
67	<i>Aceros nipalensis</i>	Rufous-necked Hornbill	Globally Threatened - Vulnerable; CA I	ARL
68	<i>Aceros undulatus</i>	Wreathed Hornbill	CA II	ARL
69	<i>Harpactes oreskios</i>	Orange-breasted Trogon		
70	<i>Harpactes erythrocephalus</i>	Red-headed Trogon		
71	<i>Coracias benghalensis</i>	Indian Roller		
72	<i>Eurystomus orientalis</i>	Dollarbird		
73	<i>Alcedo hercules</i>	Blyth's Kingfisher	Globally Near-Threatened	PARL
74	<i>Alcedo atthis</i>	Common Kingfisher		
75	<i>Lacedo pulchella</i>	Banded Kingfisher		
76	<i>Halcyon smyrnensis</i>	White-throated Kingfisher		
77	<i>Megaceryle lugubris</i>	Crested Kingfisher		
78	<i>Nyctornis athertoni</i>	Blue-bearded Bee-eater		
79	<i>Merops orientalis</i>	Green Bee-eater		
80	<i>Merops viridis</i>	Blue-throated Bee-eater		
81	<i>Merops leschenaulti</i>	Chestnut-headed Bee-eater		

	SCIENTIFIC NAME	COMMON NAME	GLOBAL STATUS	LAO STATUS
82	<i>Hierococcyx sparveroides</i>	Large Hawk Cuckoo		
83	<i>Cuculus micropterus</i>	Indian Cuckoo		
84	<i>Cuculus saturatus</i>	Oriental Cuckoo		
85	<i>Cacomantis sonneratii</i>	Banded Bay Cuckoo		
86	<i>Cacomantis merulinus</i>	Plaintive Cuckoo		
87	<i>Chrysococcyx maculatus</i>	Asian Emerald Cuckoo		
88	<i>Surniculus lugubris</i>	Drongo Cuckoo		
89	<i>Eudynamys scolopacea</i>	Asian Koel		
90	<i>Phaenicophaeus tristis</i>	Green-billed Malkoha		
91	<i>Carpococcyx renauldi</i>	Coral-billed Ground Cuckoo		
92	<i>Centropus sinensis</i>	Greater Coucal		
93	<i>Centropus bengalensis</i>	Lesser Coucal		
94	<i>Loriculus vernalis</i>	Vernal Hanging Parrot	CA II	
95	<i>Hirundapus cochinchinensis</i>	Silver-backed Needle-tail		
96	<i>Hirundapus giganteus</i>	Brown-backed Needle-tail		
97	<i>Hirundapus sp.</i>	needletail		
98	<i>Cypsiurus balasienensis</i>	Asian Palm Swift		
99	<i>Apus pacificus</i>	Fork-tailed Swift		
100	<i>Phodilus badius</i>	Oriental Bay Owl	CA II	
101	<i>Otus spilocephalus</i>	Mountain Scops Owl	CA II	
102	<i>Otus bakkamoena</i>	Collared Scops Owl	CA II	
103	<i>Ketupa sp.</i>	fish owl		
104	<i>Ketupa flavipes</i>	Tawny Fish Owl	CA II	LKL
105	<i>Glaucidium brodiei</i>	Collared Owlet	CA II	
106	<i>Glaucidium cuculoides</i>	Asian Barred Owlet	CA II	
107	<i>Ninox scutulata</i>	Brown Hawk Owl	CA II	
108	<i>Eurostopodus macrotis</i>	Great Eared Nightjar		
109	<i>Caprimulgus macrurus</i>	Large-tailed Nightjar		
110	<i>Streptopelia orientalis</i>	Oriental Turtle Dove		
111	<i>Streptopelia chinensis</i>	Spotted Dove		
112	<i>Macropygia unchall</i>	Barred Cuckoo Dove		
113	<i>Chalcophaps indica</i>	Emerald Dove		
114	<i>Treron curvirostra</i>	Thick-billed Green Pigeon		
115	<i>Treron apicauda</i>	Pin-tailed Green Pigeon		
116	<i>Treron seimundi</i>	Yellow-vented Green Pigeon		
117	<i>Treron sp.</i>	pigeon		
118	<i>Ducula aenea</i>	Green Imperial Pigeon		ARL
119	<i>Ducula badia</i>	Mountain Imperial Pigeon		
120	<i>Ducula sp.</i>	pigeon		
121	<i>Gallinago sp.</i>	snipe		
122	<i>Amaurornis phoenicurus</i>	White-breasted Waterhen		
123	<i>Gallinula chloropus</i>	Common Moorhen		
124	<i>Scolopax rusticola</i>	Eurasian Woodcock		
125	<i>Tringa erythropus</i>	Spotted Redshank		
126	<i>Tringa nebularia</i>	Common Greenshank		

	SCIENTIFIC NAME	COMMON NAME	GLOBAL STATUS	LAO STATUS
127	<i>Tringa ochropus</i>	Green Sandpiper		
128	<i>Tringa glareola</i>	Wood Sandpiper		
129	<i>Actitis hypoleucos</i>	Common Sandpiper		
130	<i>Hydrophasianus chirurgus</i>	Pheasant-tailed Jacana		
131	<i>Charadrius dubius</i>	Little Ringed Plover		
132	<i>Vanellus duvaucelii</i>	River Lapwing		ARL
133	<i>Vanellus cinereus</i>	Grey-headed Lapwing		PARL
134	<i>Vanellus indicus</i>	Red-wattled Lapwing		
135	<i>Aviceda jerdoni</i>	Jerdon's Baza	CA II	
136	<i>Aviceda leuphotes</i>	Black Baza	CA II	
137	<i>Pernis ptilorhynchus</i>	Oriental Honey-buzzard	CA II	
138	<i>Milvus migrans</i>	Black Kite	CA II	ARL
139	<i>Ichthyophaga humilis</i>	Lesser Fish Eagle	Globally Near-Threatened	ARL
140	<i>Ichthyophaga ichthyaetus</i>	Grey-headed Fish Eagle	Globally Near-Threatened; CA II	ARL
141	<i>Spilornis cheela</i>	Crested Serpent Eagle	CA II	
142	<i>Circus aeruginosus</i>	Eurasian Marsh Harrier	CA II	
143	<i>Circus melanoleucos</i>	Pied Harrier	CA II	
144	<i>Accipiter trivirgatus</i>	Crested Goshawk	CA II	
145	<i>Accipiter badius</i>	Shikra	CA II	
146	<i>Butastur indicus</i>	Grey-faced Buzzard	CA II	
147	<i>Buteo buteo</i>	Common Buzzard	CA II	
148	<i>Ictinaetus malayensis</i>	Black Eagle	CA II	
149	<i>Aquila sp.</i>	eagle		
150	<i>Hieraaetus kienerii</i>	Rufous-bellied Eagle	CA II	
151	<i>Spizaetus nipalensis</i>	Mountain Hawk Eagle	CA II	
152	<i>Microhierax melanoleucos</i>	Pied Falconet	CA II	LKL
153	<i>Falco tinnunculus</i>	Common Kestrel	CA II	
154	<i>Tachybaptus ruficollis</i>	Little Grebe		
155	<i>Egretta garzetta</i>	Little Egret		
156	<i>Ardea cinerea</i>	Grey Heron		PARL
157	<i>Ardea purpurea</i>	Purple Heron		PARL
158	<i>Ardeola sp.</i>	pond heron		
159	<i>Butorides striatus</i>	Little Heron		
160	<i>Ixobrychus cinnamomeus</i>	Cinnamon Bittern		
161	<i>Ciconia nigra</i>	Black Stork	CA II	ARL
162	<i>Pitta oatesi</i>	Rusty-naped Pitta		
163	<i>Pitta cyanea</i>	Blue Pitta		
164	<i>Pitta sp</i>	pitta		
165	<i>Corydon sumatranus</i>	Dusky Broadbill		
166	<i>Eurylaimus javanicus</i>	Banded Broadbill		
167	<i>Psarisomus dalhousiae</i>	Long-tailed Broadbill		
168	<i>Irena puella</i>	Asian Fairy Bluebird		
169	<i>Chloropsis cochinchinensis</i>	Blue-winged Leafbird		
170	<i>Chloropsis aurifrons</i>	Golden-fronted Leafbird		
171	<i>Chloropsis hardwickii</i>	Orange-bellied Leafbird		
172	<i>Lanius cristatus</i>	Brown Shrike		

	SCIENTIFIC NAME	COMMON NAME	GLOBAL STATUS	LAO STATUS
173	<i>Lanius schach</i>	Long-tailed Shrike		
174	<i>Lanius tephronotus</i>	Grey-backed Shrike		
175	<i>Garrulus glandarius</i>	Eurasian Jay		
176	<i>Urocissa erythrorhyncha</i>	Red-billed Blue Magpie		
177	<i>Urocissa whiteheadi</i>	White-winged Magpie		PARL
178	<i>Cissa chinensis</i>	Common Green Magpie		
179	<i>Cissa sp.</i>	magpie		
180	<i>Dendrocitta formosae</i>	Grey Treepie		
181	<i>Crypsirina temia</i>	Racket-tailed Treepie		
182	<i>Temnurus temnurus</i>	Ratchet-tailed Treepie		
183	<i>Artamus fuscus</i>	Ashy Woodswallow		
184	<i>Oriolus xanthornus</i>	Black-hooded Oriole		
185	<i>Oriolus sp.</i>	oriole		
186	<i>Oriolus traillii</i>	Maroon Oriole		
187	<i>Coracina macei</i>	Large Cuckooshrike		
188	<i>Coracina sp.</i>	cuckooshrike		
189	<i>Coracina melaschistos</i>	Black-winged Cuckooshrike		
190	<i>Pericrocotus cinnamomeus</i>	Small Minivet		
191	<i>Pericrocotus sp.</i>	Honey-Buzzard		
192	<i>Pericrocotus brevirostris</i>	Short-billed Minivet		
193	<i>Pericrocotus flammeus</i>	Scarlet Minivet		
194	<i>Hemipus picatus</i>	Bar-winged Flycatcher-shrike		
195	<i>Dicrurus macrocercus</i>	Black Drongo		
196	<i>Dicrurus leucophaeus</i>	Ashy Drongo		
197	<i>Dicrurus aeneus</i>	Bronzed Drongo		
198	<i>Dicrurus remifer</i>	Lesser Racket-tailed Drongo		
199	<i>Dicrurus hottentottus</i>	Spangled Drongo		
200	<i>Dicrurus paradiseus</i>	Greater Racket-tailed Drongo		
201	<i>Hypothymis azurea</i>	Black-naped Monarch		
202	<i>Terpsiphone paradisi</i>	Asian Paradise-flycatcher		
203	<i>Terpsiphone atrocaudata</i>	Japanese Paradise-flycatcher	Globally Near-Threatened	LKL
204	<i>Aegithina tiphia</i>	Common Iora		
205	<i>Aegithina lafresnayei</i>	Great Iora		
206	<i>Tephrodornis gularis</i>	Large Woodshrike		
207	<i>Tephrodornis pondicerianus</i>	Common Woodshrike		
208	<i>Cinclus pallasii</i>	Brown Dipper		PARL
209	<i>Monticola solitarius</i>	Blue Rock Thrush		
210	<i>Zoothera citrina</i>	Orange-headed Thrush		
211	<i>Zoothera sibirica</i>	Siberian Thrush		
212	<i>Zoothera dauma</i>	Scaly Thrush		
213	<i>Zoothera marginata</i>	Dark-sided Thrush		
214	<i>Turdus merula</i>	Eurasian Blackbird		
215	<i>Turdus obscurus</i>	Eyebrowed Thrush		
216	<i>Brachypteryx leucophrys</i>	Lesser Shortwing		
217	<i>Ficedula parva</i>	Red-throated Flycatcher		

	SCIENTIFIC NAME	COMMON NAME	GLOBAL STATUS	LAO STATUS
218	<i>Ficedula monileger</i>	White-gorgeted Fly-catcher		
219	<i>Ficedula hypertyra</i>	Snowy-browed Fly-catcher		
220	<i>Ficedula westermanni</i>	Little Pied Flycatcher		
221	<i>Eumyias thalassina</i>	Verditer Flycatcher		
222	<i>Niltava grandis</i>	Large Niltava		
223	<i>Niltava macgrigoriae</i>	Small Niltava		
224	<i>Niltava sp.</i>	niltava		
225	<i>Cyornis concretus</i>	White-tailed Fly-catcher		
226	<i>Cyornis hainanus</i>	Hainan Blue Fly-catcher		
227	<i>Cyornis unicolor</i>	Pale Blue Flycatcher		
228	<i>Cyornis sp.</i>	flycatcher		
229	<i>Cyornis banyumas</i>	Hill Blue Flycatcher		
230	<i>Cyornis tickelliae</i>	Tickell's Blue Fly-catcher		
231	<i>Muscicapella hodgsoni</i>	Pygmy Blue Fly-catcher		
232	<i>Culicicapa ceylonensis</i>	Grey-headed Canary Flycatcher		
233	<i>Luscinia cyane</i>	Siberian Blue Robin		
234	<i>Tarsiger cyanurus</i>	Orange-flanked Bush Robin		
235	<i>Copsychus saularis</i>	Oriental Magpie Robin		
236	<i>Copsychus malabaricus</i>	White-rumped Shama		
237	<i>Chaimarrornis leucocephalus</i>	White-capped Water Redstart		
238	<i>Rhyacornis fuliginosus</i>	Plumbeous Water Redstart		
239	<i>Myiomela leucura</i>	White-tailed Robin		
240	<i>Enicurus schistaceus</i>	Slaty-backed Forktail		
241	<i>Enicurus leschenaulti</i>	White-crowned Fork-tail		
242	<i>Cochoa viridis</i>	Green Cochoa		
243	<i>Saxicola torquata</i>	Common Stonechat		
244	<i>Saxicola ferrea</i>	Grey Bushchat		
245	<i>Sturnus malabaricus</i>	Chestnut-tailed Starling		
246	<i>Sturnus sinensis</i>	White-shouldered Starling		
247	<i>Sturnus nigricollis</i>	Black-collared Starling		
248	<i>Acridotheres tristis</i>	Common Myna		
249	<i>Acridotheres cinereus</i>	White-vented Myna		
250	<i>Ampeliceps coronatus</i>	Golden-crested Myna		PARL
251	<i>Gracula religiosa</i>	Hill Myna	CA II	
252	<i>Sitta castanea</i>	Chestnut-bellied Nuthatch		
253	<i>Sitta formosa</i>	Beautiful Nuthatch	Globally Threatened - Vulnerable	PARL
254	<i>Parus spilonotus</i>	Yellow-cheeked Tit		
255	<i>Melanochlora sultanea</i>	Sultan Tit		
256	<i>Aegithalos concinnus</i>	Black-throated Tit		
257	<i>Hirundo rustica</i>	Barn Swallow		

	SCIENTIFIC NAME	COMMON NAME	GLOBAL STATUS	LAO STATUS
258	<i>Hirundo daurica</i>	Red-rumped Swallow		
259	<i>Delichon sp.</i>	martin		
260	<i>Pycnonotus melanicterus</i>	Black-crested Bulbul		
261	<i>Pycnonotus jocosus</i>	Red-whiskered Bulbul		
262	<i>Pycnonotus aurigaster</i>	Sooty-headed Bulbul		
263	<i>Pycnonotus finlaysoni</i>	Stripe-throated Bulbul		
264	<i>Alophoixus pallidus</i>	Puff-throated Bulbul		
265	<i>Iole propinqua</i>	Grey-eyed Bulbul		
266	<i>Hemixos flava</i>	Ashy Bulbul		
267	<i>Hypsipetes mcclllandii</i>	Mountain Bulbul		
268	<i>Hypsipetes leucocephalus</i>	Black Bulbul		
269	<i>Cisticola juncidis</i>	Zitting Cisticola		
270	<i>Prinia hodgsonii</i>	Grey-breasted Prinia		
271	<i>Prinia flaviventris</i>	Yellow-bellied Prinia		
272	<i>Prinia inornata</i>	Plain Prinia		
273	<i>Zosterops sp.</i>	white-eye		
274	<i>Tesia olivea</i>	Slaty-bellied Tesia		
275	<i>Cettia diphone</i>	Japanese Bush Warbler		
276	<i>Locustella lanceolata</i>	Lanceolated Warbler		
277	<i>Acrocephalus aedon</i>	Thick-billed Warbler		
278	<i>Orthotomus sutorius</i>	Common Tailorbird		
279	<i>Orthotomus atrogularis</i>	Dark-necked Tailorbird		
280	<i>Phylloscopus fuscatus</i>	Dusky Warbler		
281	<i>Phylloscopus schwarzi</i>	Radde's Warbler		
282	<i>Phylloscopus proregulus</i>	Pallas's Leaf Warbler		
283	<i>Phylloscopus inornatus</i>	Yellow-browed Warbler		
284	<i>Phylloscopus tenellipes</i>	Pale-legged Leaf Warbler		
285	<i>Phylloscopus reguloides</i>	Blyth's Leaf Warbler		
286	<i>Phylloscopus davisoni</i>	White-tailed Leaf Warbler		
287	<i>Phylloscopus cantator</i>	Yellow-vented Warbler		
288	<i>Phylloscopus ricketti</i>	Sulphur-breasted Warbler		
289	<i>Phylloscopus sp</i>	Limestone Leaf Warbler		
290	<i>Seicercus burkii</i>	Golden-spectacled Warbler		
291	<i>Seicercus poliogenys</i>	Grey-cheeked Warbler		
292	<i>Abroscopus albogularis</i>	Rufous-faced Warbler		
293	<i>Abroscopus superciliaris</i>	Yellow-bellied Warbler		
294	<i>Garrulax leucolophus</i>	White-crested Laughingthrush		
295	<i>Garrulax monileger</i>	Lesser Necklaced Laughingthrush		
296	<i>Garrulax pectoralis</i>	Greater Necklaced Laughingthrush		
297	<i>Garrulax maesi</i>	Grey Laughingthrush		
298	<i>Garrulax sp. A</i>	Laughingthrush sp. A		LKL

	SCIENTIFIC NAME	COMMON NAME	GLOBAL STATUS	LAO STATUS
299	<i>Garrulax erythrocephalus</i>	Chestnut-crowned Laughingthrush		
300	<i>Pellorneum tickelli</i>	Buff-breasted Babbler		
301	<i>Pellorneum ruficeps</i>	Puff-throated Babbler		
302	<i>Malacopteron cinereum</i>	Scaly-crowned Babbler		
303	<i>Pomatorhinus hypoleucos</i>	Large Scimitar Babbler		
304	<i>Pomatorhinus schisticeps</i>	White-browed Scimitar Babbler		
305	<i>Pomatorhinus sp</i>	scimitar -babbler		
306	<i>Pomatorhinus ruficollis</i>	Streak-breasted Scimitar Babbler		
307	<i>Pomatorhinus ochraceiceps</i>	Red-billed Scimitar Babbler		
308	<i>Pomatorhinus ferruginosus</i>	Coral-billed Scimitar Babbler		
309	<i>Napothera brevicaudata</i>	Streaked Wren Babbler		
310	<i>Napothera epilepidota</i>	Eyebrowed Wren Babbler		
311	<i>Phoebe pusilla</i>	Pygmy Wren Babbler		
312	<i>Stachyris chrysaea</i>	Golden Babbler		
313	<i>Stachyris nigriceps</i>	Grey-throated Babbler		
314	<i>Stachyris striolata</i>	Spot-necked Babbler		
315	<i>Macronous gularis</i>	Striped Tit Babbler		
316	<i>Pteruthius flaviscapis</i>	White-browed Shrike Babbler		
317	<i>Pteruthius melanotis</i>	Black-eared Shrike Babbler		
318	<i>Pteruthius aenobarbu</i>	Chestnut-fronted Shrike Babbler		
319	<i>Gampsorhynchus rufulus</i>	White-hooded Babbler		
320	<i>Actinodura ramsayi</i>	Spectacled Barwing		
321	<i>Minla cyanouroptera</i>	Blue-winged Minla		
322	<i>Minla strigula</i>	Chestnut-tailed Minla		
323	<i>Minla ignotincta</i>	Red-tailed Minla		
324	<i>Alcippe castaneiceps</i>	Rufous-winged Fulvetta		
325	<i>Alcippe dubia</i>	Rusty-capped Fulvetta		
326	<i>Yuhina flavicollis</i>	Whiskered Yuhina		
327	<i>Yuhina zantholeuca</i>	White-bellied Yuhina		
328	<i>Paradoxornis gularis</i>	Grey-headed Parrotbill		
329	<i>Paradoxornis nipalensis</i>	Black-throated Parrotbill		
330	<i>Dicaeum agile</i>	Thick-billed Flowerpecker		
331	<i>Dicaeum chrysorrheum</i>	Yellow-vented Flowerpecker		
332	<i>Dicaeum concolor</i>	Plain Flowerpecker		
333	<i>Dicaeum ignipectus</i>	Fire-breasted Flowerpecker		
334	<i>Dicaeum cruentatum</i>	Scarlet-backed Flowerpecker		

	SCIENTIFIC NAME	COMMON NAME	GLOBAL STATUS	LAO STATUS
335	<i>Anthreptes singalensis</i>	Ruby-cheeked Sunbird		
336	<i>Hypogramma hypogrammicum</i>	Purple-naped Sunbird		
337	<i>Aethopyga gouldiae</i>	Mrs Gould's Sunbird		
338	<i>Aethopyga nipalensis</i>	Green-tailed Sunbird		
339	<i>Aethopyga christinae</i>	Fork-tailed Sunbird		
340	<i>Aethopyga saturata</i>	Black-throated Sunbird		
341	<i>Aethopyga siparaja</i>	Crimson Sunbird		
342	<i>Arachnothera longirostra</i>	Little Spiderhunter		
343	<i>Arachnothera magna</i>	Streaked Spiderhunter		
344	<i>Passer flaveolus</i>	Plain-backed Sparrow		
345	<i>Passer montanus</i>	Eurasian Tree Sparrow		
346	<i>Dendronanthus indicus</i>	Forest Wagtail		
347	<i>Motacilla alba</i>	White Wagtail		
348	<i>Motacilla flava</i>	Yellow Wagtail		
349	<i>Motacilla cinerea</i>	Grey Wagtail		
350	<i>Anthus richardi</i>	Richard's Pipit		
351	<i>Anthus rufulus</i>	Paddyfield Pipit		
352	<i>Anthus hodgsoni</i>	Olive-backed Pipit		
353	<i>Anthus cervinus</i>	Red-throated Pipit		
354	<i>Lonchura striata</i>	White-rumped Munia		
355	<i>Emberiza fucata</i>	Chestnut-eared Bunting		
356	<i>Emberiza pusilla</i>	Little Bunting		
357	<i>Emberiza aureola</i>	Yellow-breasted Bunting		
358	<i>Emberiza rutila</i>	Chestnut Bunting		
359	<i>Manis javanica</i>	Sunda Pangolin	Globally Near-Threatened; CA II	ARL
360	<i>Tupaia belangeri</i>	Northern Treeshrew	CA II	
361	<i>Nycticebus coucang</i>	Slow Loris	CA II	LKL
362	<i>Nycticebus pygmaeus</i>	Pygmy Loris	Globally Threatened - Vulnerable; CA II	LKL
363	<i>Macaca nemestrina</i>	Pig-tailed Macaque	Globally Threatened - Vulnerable; CA II	PARL
364	<i>Manis pintadactyla</i>	Chinese Pangolin	Globally Near-Threatened; CA II	ARL
365	<i>Macaca assamensis</i>	Assamese Macaque	Globally Threatened - Vulnerable; CA II	PARL
366	<i>Macaca mulatta</i>	Rhesus Macaque	Globally Near-Threatened; CA II	PARL
367	<i>Macaca arctoides</i>	Bear Macaque	Globally Threatened - Vulnerable; CA II	PARL
368	<i>Pygathrix nemaeus</i>	Douc Langur	Globally Threatened - Endangered; CA I	ARL
369	<i>Hylobates sp.</i>	gibbon		
370	<i>Cuon alpinus</i>	Dhole	Globally Threatened - Vulnerable;	ARL

	SCIENTIFIC NAME	COMMON NAME	GLOBAL STATUS	LAO STATUS
			CA II	
371	<i>Ursus thibetanus</i>	Asiatic Black Bear	Globally Threatened - Vulnerable; CA I	ARL
372	<i>Ursus malayanus</i>	Sun Bear	Data Deficient (Global); CA I	ARL
373	<i>Mustela strigidorsa</i>	Back-striped Weasel	Globally Threatened - Vulnerable	LKL
374	<i>Martes flavigula</i>	Yellow-throated Marten		
375	<i>Lutrogale sp.</i>	otter		
376	<i>Aonyx cinerea</i>	Oriental Small-clawed Otter	CA I	ARL
377	<i>Viverra zibetha</i>	Large Indian Civet		
378	<i>Viverricula indica</i>	Small Indian Civet		
379	<i>Prionodon pardicolor</i>	Spotted Linsang	CA I	LKL
380	<i>Paradoxurus hermaphroditus</i>	Common Palm Civet		
381	<i>Paguma larvata</i>	Masked Palm Civet		
382	<i>Arctogalidia trivirgata</i>	Small-toothed Palm Civet		
383	<i>Herpestes urva</i>	Crab-eating Mongoose		
384	<i>Prionailurus bengalensis</i>	Leopard Cat	CA II	
385	<i>Pardofelis marmorata</i>	Marbled Cat	CA I	LKL
386	<i>Panthera pardus</i>	Leopard	CA I	ARL
387	<i>Panthera tigris</i>	Tiger	Globally Threatened - Endangered; CA I	ARL
388	<i>Elephas maximus</i>	Asian Elephant	Globally Threatened - Endangered; CA I	ARL
389	<i>Sus sp</i>	pig		
390	<i>Tragulus javanicus</i>	Lesser Oriental Chevrotain		
391	<i>Cervus unicolor</i>	Sambar		PARL
392	<i>Muntiacus muntjak</i>	Red Muntjac		
393	<i>Bos gaurus</i>	Gaur	Globally Threatened - Vulnerable; CA I	ARL
394	<i>Bos javanicus</i>	Banteng	Globally Threatened - Endangered	ARL
395	<i>Naemohedus sumatraensis</i>	Southern Serow	Globally Threatened - Vulnerable; CA I	PARL
396	<i>Pseudoryx nghetinhensis</i>	Saola	Globally Threatened - Endangered; CA I	ARL
397	<i>Ratufa bicolor</i>	Black Giant Squirrel	CA II	PARL
398	<i>Callosciurus erythraeus</i>	Pallas's Squirrel		
399	<i>Callosciurus inornatus</i>	Inornate Squirrel	Globally Threatened - Vulnerable	LKL
400	<i>Tamiops maritimus</i>	Eastern Striped Squirrel		
401	<i>Dremomys rufigenis</i>	Red-cheeked Squirrel		
402	<i>Menetes berdmorei</i>	Berdmore's Squirrel		
403	<i>Petaurista sp.</i>	flying Squirrel		

	SCIENTIFIC NAME	COMMON NAME	GLOBAL STATUS	LAO STATUS
404	<i>Petaurista elegans</i>	Lesser Giant Flying Squirrel		
405	<i>Hystrix sp.</i>	porcupine		
406	<i>Megaerops niphanae</i>	Northern Tail-less Fruit Bat		
407	<i>Macroglossus sobrinus</i>	Hill Long-tongued Fruit Bat		
408	<i>Rhinolophus luctus</i>	Large Woolly Horse-shoe Bat		PARL
409	<i>Rhinolophus paradoxolophus</i>	Bourret's Horseshoe Bat	Globally Threatened - Vulnerable	PARL
410	<i>Rhinolophus macrotis</i>	Big-eared Horseshoe Bat		PARL
411	<i>Rhinolophus pearsonii</i>	Pearson's Horseshoe Bat		PARL
412	<i>Rhinolophus sp.</i>	horseshoe bat		
413	<i>Rhinolophus pusillus</i>	Least Horseshoe Bat		PARL
414	<i>Rhinolophus malayanus</i>	Malayan Horseshoe Bat		PARL
415	<i>Rhinolophus thomasi</i>	Thomas's Horseshoe Bat	Globally Near-Threatened	PARL
416	<i>Rhinolophus affinis</i>	Intermediate Horse-shoe Bat		PARL
417	<i>Hipposideros pomona</i>	roundleaf bat		
418	<i>Hipposideros cineraceus</i>	Least Roundleaf Bat		PARL
419	<i>Hipposideros lylei</i>	Shield-faced Round-leaf Bat	Globally Near-Threatened	PARL
420	<i>Hipposideros armiger</i>	Great Roundleaf Bat		PARL
421	<i>Aselliscus stoliczkanus</i>	Stoliczka's Trident Bat		PARL
422	<i>Myotis sp.</i>	myotis bat		
423	<i>Myotis annectans</i>	Hairy-faced Myotis	Globally Near-Threatened	LKL
424	<i>Myotis montivagus</i>	Large Brown Myotis	Globally Near-Threatened	LKL
425	<i>Myotis horsfieldii</i>	Horsfield's Myotis		
426	<i>Myotis hasseltii</i>	Rickett's Large-footed Myotis	Globally Near-Threatened	PARL
427	<i>Eptesicus serotinus</i>	Serotine		
428	<i>Tylonycteris pachypus</i>	Lesser Flat-headed Bat		
429	<i>Pipistrellus sp</i>	pipistrelle bat		
430	<i>Miniopterus schreibersii</i>	Common Bent-winged Bat		PARL
431	<i>Murina sp.</i>	tube-nosed bats		
432	<i>Murina tubinaris</i>	Tube-nosed bat		
433	<i>Murina huttonii</i>	Hutton's Tube-nosed Bat	Globally Near-Threatened	LKL
434	<i>Murina cyclotis</i>	Round-eared Tube-nosed Bat		
435	<i>Kerivoula papillosa</i>	Papillose Woolly Bat		
436	<i>Kerivoula hardwickii</i>	Hardwicke's Woolly Bat		
437	<i>Phoniscus jagorii</i>	Greater Groove-toothed Bat		
438	<i>Rat sp</i>	rat		
439	<i>Niviventer sp.</i>	rat		

	SCIENTIFIC NAME	COMMON NAME	GLOBAL STATUS	LAO STATUS
440	<i>Chiromyscus chiropus</i>	Fea's Tree Rat		LKL
441	<i>Maxomys surifer</i>	Red Spiny Rat		
442	<i>Maxomys sp.</i>	rat		
443	<i>Amolops cremnobatus</i>	frog		
444	<i>Platysternon megacephalum</i>	Big-headed Turtle		ARL
445	<i>Cuora galbinifrons</i>	Indochinese Box Turtle	Globally Near-Threatened	ARL
446	<i>Cuora trifasciata</i>	Chinese Three-striped Box Turtle	Globally Threatened - Endangered	PARL
447	<i>Sacalia quadriocellata</i>	Four-eyed Turtle	Globally Threatened - Vulnerable	PARL
448	<i>Manouria impressa</i>	Impressed Tortoise	Globally Threatened - Vulnerable; CA II	ARL
449	<i>Amyda cartilaginea</i>	Asiatic Softshell Turtle	Globally Threatened - Vulnerable	PARL
450	<i>Cyrtodactylus interdigitalis</i>	gekko		
451	<i>Calotes emma</i>	lizard		
452	<i>Calotes versicolor</i>	lizard		
453	<i>Physignathus cocincinus</i>	Water Dragon		PARL
454	<i>Ophisaurus sp.</i>	legless lizards		
455	<i>Varanus bengalensis</i>	Bengal Monitor	CA I	PARL
456	<i>Varanus salvator</i>	Water Monitor	CA II	PARL
457	<i>Lipinia sp.</i>	skink		
458	<i>Mabuya multifasciata</i>	skink		
459	<i>Scincella reevesi</i>	skink		
460	<i>Python reticulatus</i>	Reticulated Python	CA II	PARL
461	<i>Pareas hamptoni</i>	Hampton's Slug Snake		
462	<i>Pseudoxenodon bambusicola</i>	Chinese Mountain Keelback		
463	<i>Ptyas korros</i>	Indochinese Ratsnake		PARL
464	<i>Rhabdophis subminiatus</i>	Red-necked Keelback		
465	<i>Sinonatrix aequifasciata</i>	Mountain Keelback		
466	<i>Ophiophagus hannah</i>	King Cobra	CA II	PARL
467	<i>Trimeresurus mucrosquamatus</i>	Checker-backed Pit Viper		
468	<i>Trimeresurus popeiorum</i>	Popes' Pit Viper		