



Lao People's Democratic Republic
Peace Independence Democracy Unity Prosperity

Gibbon Conservation Action Plan for Lao PDR 2011-2020



Division of Forest Resource Conservation
Department of Forestry
Ministry of Agriculture and Forestry
Lao PDR

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Gibbon Conservation Action Plan for Lao PDR
2011 to 2020

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Acronyms

BCI	Biodiversity Corridors Initiative, component of Core Environment Program of Asian Development Bank
CBD	Convention on Biological Diversity
CITES	Convention on International Trade of Endangered Species of Wild Fauna and Flora
CR	Critically Endangered (Conservation status defined by the IUCN Red List of Threatened Species)
DAFO	District Agriculture and Forestry Office
DFRC	Division of Forest Resource Conservation of DoF
DoF	Department of Forestry of the Ministry of Agriculture and Forestry, GoL
DoFI	Department of Forestry Inspection of the Ministry of Agriculture and Forestry, GoL
EN	Endangered (Conservation status defined by the IUCN Red List of Threatened Species)
EPF	Environment Protection Fund, GoL
EIA	Environmental Impact Assessment
FFI	Fauna & Flora International
GoL	Government of Lao PDR
GPS	Global Positioning System
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit (German Technical Cooperation)
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (German International Cooperation) - now comprises GTZ
Ha	Hectare
IUCN	International Union for Conservation of Nature
KfW	Kreditanstalt für Wiederaufbau (German Development Bank)
Lao PDR	Lao People's Democratic Republic
LWU	Lao Women's Union
mtDNA	Mitochondrial DNA
NGO	Non-government organisation
NLMA	National Land Management Authority, GoL
NTFPs	Non-timber forest products
NPA	National Protected Area
NUoL	National University of Laos
PAFO	Provincial Agriculture and Forestry Office, GoL
PoFI	Provincial Office for Forestry Inspection, GoL
PPAM	Provincial Division for Protected Area Management, GoL
PPA	Provincial Protected Area
PTO	Provincial Tourism Office
SUFORD	Sustainable Use of Forest and Rural Development Project
WCS	Wildlife Conservation Society
WMPA	Watershed Management and Protection Authority, GoL
WWF	World Wide Fund for Nature

Glossary of Terms

Biodiversity corridor: Habitat connectivity within or between protected areas that allows for movement of wildlife.

Convention on Biological Diversity (CBD): a United Nations convention ratified in 1993, and to which Lao PDR is a signatory, with the objective of conserving biodiversity, its sustainable use and fair and equitable sharing of its benefits.

Category 1 Species (Protected Species): according to the 2007 Wildlife Law of Lao PDR, species that are considered to be rare, highly threatened (close to extinction), of high economic value, significant to socio-economic development, environmental protection or scientific research. Hunting and trade during all seasons and in any place are illegal.

Category 2 Species (Managed Species): according to the 2007 Wildlife Law, species that are not yet highly threatened by extinction, but are significant to socio-economic development, environmental protection or scientific research. Hunting outside the totally protected zone (see below) for subsistence is occasionally allowed but not for sale.

Category 3 Species (Managed Species): according to the 2007 Wildlife Law, species that are common in nature and have a high reproductive rate. They are also highly significant to socio-economic development, environmental protection or scientific research. Hunting for subsistence is occasionally allowed, but not for sale.

Ecologically sensitive site: area with important wildlife habitats and an abundance of wildlife species, which are sensitive to human disturbance.

In-situ conservation: According to CBD, the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings.

Managed (or Controlled Use) Zone: area where sustainable use of forest resources by local communities for subsistence purposes is allowed.

National Protected Area: forest area of national importance that is designated by the central government for conserving the nature, fauna and flora, forest ecosystems, natural and culture values of the area as well as providing a location for scientific research.

Provincial Protected Area: forest area with provincial conservation significance that is designated by provincial government for conserving the nature, fauna and flora, forest ecosystem, natural and cultural values.

Protection Forest: forest area that is designated for protection of watersheds, river banks, preventing soil erosion and natural disasters, and national defence.

Production Forest: natural or industrial plantation forest that is set aside for the timber industry and investors to support the needs of socio-economic development.

Sustainable financing mechanism: reliable long-term funding sources with a transparent management system in place to ensure that funds are used efficiently and effectively to achieve a goal.

Sustainable development: socio-economic development that seeks to meet humans' livelihood needs while preserving the natural environment so as to ensure that natural resources will be available for future generations.

Threat: any activity that leads to degradation of habitats and wildlife populations and impacts the survival of a species.

Totally Protected Zone (TPZ): area where human activities are prohibited in order to maintain core breeding areas for wildlife and preserve the integrity of sensitive ecological systems.

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Foreword

Lao PDR is a country rich in wildlife including mammals, reptiles, amphibians, birds, insects and aquatic animals. The great diversity of wildlife exists thanks to Lao PDR's abundant forest and water resources, which cover the entire length of the country. The forests and watersheds are important habitats for all species of wildlife and aquatic animals. They include: lowland and highland evergreen forest; mixed deciduous forest; dry dipterocarp forest; deciduous forest; pine forest; limestone forest; grasslands; and wetlands. These habitats are home to many rare and endangered species, some of which are extinct in some parts of the world but are still found in Lao PDR, such as: Asian elephant (*Elephas maximus*), tiger (*Panthera tigris*), clouded leopard (*Pardofelis nebulosa*), leopard (*Panthera pardus*), gaur (*Bos gaurus*), saola (*Pseudoryx nghetinhensis*), gibbon (*Hylobates spp.*, *Nomascus spp.*), Siamese crocodile (*Crocodylus siamensis*), Irrawaddy dolphin (*Orcaella brevirostris*), hornbill spp., and white-winged duck (*Cairina scutulata*), to name a few.

The gibbon is a distinctive animal in the forest ecology of the Lao PDR that is found living in scattered groups throughout the country. Gibbons can live only in healthy forests where wildlife are in a natural state of balance. Currently, the gibbon population in Lao PDR is on the verge of disappearance in the wild, which is a clear indicator of the declining status of Lao biodiversity and forest degradation.

The government has been quick to realize the need to protect biodiversity, aquatic animals and wildlife in Lao PDR by establishing the national protected area system in the country and enacted laws, decrees, directives and regulations on the management of forest, aquatic animals and wildlife all over the country.

Essential tools to support effective implementation include the Forestry Law, the Law on Aquatic and Wild Animals along with regulations and comprehensive implementation action plans, such as the Gibbon Conservation Action Plan. However, unless these laws and plans are applied in practice and concrete actions are taken, these legal instruments and strategies will be of little help. Hence, all of us should join efforts to protect the valuable Lao national heritage from disappearance. The Government of Lao PDR promises to protect the gibbon as well as other biodiversity resources throughout the country forever, for the current generation as well as our children and grandchildren.

Vientiane Capital, date. 23 JUN 2011

Minister of Agriculture and Forestry



Sitaheng RASPHONE

Foreword

In order to contribute to and successfully protect biodiversity and meet the environmental protection goals of Lao PDR, action plans can be used to direct measures for conservation of endangered species. Such action plans help to meet national obligations and commitments for implementation of the Convention on Biological Diversity (CBD). Lao PDR has one of the highest diversities of gibbons in the world and is particularly important for conservation of crested gibbons. Therefore, conservation of gibbons in Lao PDR is very important in contributing to global gibbon conservation efforts.

Lao PDR has a good opportunity now for retaining its diversity of gibbon species while maintaining them as a resource for future development of the country. Because gibbons can be considered representative and indicator species for biodiversity, measures to ensure their protection supports biodiversity conservation as a whole.

Preparation of this gibbon conservation action plan signifies another formal step forward for species conservation in Lao PDR.

The action plan defines a set of activities, rationales, policies and approaches for action. It is intended to act as a reference for the entire country so that plans can be further formulated to fit local conditions at the site level. Success of this action plan is dependent upon cooperation of all stakeholders from government and private sectors as well as the international community.

28 JUN 2011
Vientiane Capital date.....

Deputy Director General
Department of Forestry



Kham Phanh NANTHAVONG

Foreword

Gibbons are truly representative animals of Southeast Asia, in that they occur almost throughout the region and extend only marginally outside it. They are also among the most distinctive and detectable, with their prolonged loud songs, diurnal activity and dramatic arm-swinging mode of motion through the vegetation. Looked at internationally, Lao PDR has a number of strong positive attributes for gibbon conservation. First, it possesses among the highest number of gibbon species of any country, despite its relatively small size (reflecting its long north–south distance and straddling of the important, range-bounding, River Mekong). Second, it retains much larger tracts of forest (i.e., gibbon habitat) than do many other countries with gibbons. Third, many of the people living in the same areas as gibbons consider it spiritually indefensible to hunt them. When I was first fortunate enough to survey wildlife in Lao PDR, in the early 1990s, gibbons were such a common background noise in some areas that it was difficult to believe that they could ever become in need of urgent conservation attention. Yet within 10 years an action plan is needed to prevent the extinction of some of the country's gibbon species.

What has gone wrong? The large tracts of forest still remain. While most have been logged, this does not of itself prevent gibbons from inhabiting them, as I have seen for myself in various heavily degraded forests, from Vientiane south to Attapu Province. But in some areas of forest (including little-degraded areas) it is now difficult to hear gibbons where, less than 20 years ago, several groups could be heard per morning. The 'emptying forests' point to the factor driving declines in Lao gibbons: hunting, hunting, and more hunting. This is a tragedy, because gibbons cause harm to no-one, they have no high financial value in the wildlife trade (most times a hunter shoots a gibbon, he probably wishes it were something of higher value), and a dead gibbon is no more use to the hunter than simply its weight in fresh meat. But these very same attributes mean that with sufficient interest, gibbons can readily be conserved in Lao PDR, the more so because they are arboreal and not threatened by the heavy levels of ground-level snaring and trapping in many forest areas. Animals with high financial value in the illegal international trade, such as Tiger and Asian Elephant, are truly difficult to conserve because such high vested financial interests drive continued poaching. Gibbons are at the opposite extreme: even a modest raising of public awareness of their protected and threatened status combined with basic patrolling would result in rapid declines in hunting levels.

By clearly identifying hunting as the driver behind the declines in all Lao gibbon species, and clearly prioritising actions to reduce hunting levels, this conservation action plan provides a clear and workable structure to avert the horrible 'baseline' prospect: the extinction of Lao gibbons, species by species. It is set within existing Lao law – gibbons are fully protected species, and most of the identified priority areas are already afforded legal protection for their biodiversity interest – and thus has no major implementation challenges. All that is needed is the will of the necessary partners to bring it into action, for which external financing is required. Overall sums required are modest by almost any standard, and looking at the rewards which will follow from gibbon conservation, it is apparent that we cannot afford not to implement it. This is no more powerfully demonstrated at Nam Kan NPA, where a commercial venture has recognised the direct financial benefits of conserving gibbons: this may be the only concrete example in Lao PDR, and provides a leadership beacon for the country.

I therefore commend the Government of Lao PDR, especially the Department of Forestry, for taking the initiative to place gibbon conservation high on the agenda, and the various partners, which have risen to the challenge of supporting the efficient production of the plan. As do a large proportion of the rural Lao, I hope that gibbons can continue to be seen and heard across the country's forests.

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They cannot survive unless hunting levels drop dramatically, and finally I urge all stakeholders to give their utmost support to the implementation of this plan.

J. W. Duckworth, Saltford, UK, 6 March 2011.

Author of Preliminary Gibbon Status Review for Lao PDR 2008

Executive Summary

Lao PDR is renowned for its richness of natural resources and biodiversity. The country will continue to have this reputation as long as conservation work continues to be supported and effectively carried out. Without wildlife, forest ecosystems will be imbalanced and may collapse. Gibbons are important flagship species for conservation, and indicators of forest with low disturbance. Unfortunately, today it is becoming more difficult to hear gibbon songs in the forests of Lao PDR. Their numbers are declining.

Gibbons are primarily threatened by hunting. When forest is fragmented and access is easier for hunters, the survival of gibbons is increasingly threatened. Unfortunately, efforts to conserve gibbons in Lao PDR have so far been limited. Currently, law enforcement is more focused on illegal hunting of larger mammals. In addition limited human and financial resources and low awareness of decision-makers about biodiversity conservation in general and gibbon conservation specifically constrain effective conservation.

Still, in general, the gibbon population remains healthy in comparison to many neighbouring countries especially when one focuses on the *Nomascus* group, which is of particularly high conservation significance. Six species of gibbon are known from Lao PDR and, in combination, are distributed throughout the country. Black crested gibbons are found in the north-western part of the country in at least Bokeo and Luang Namtha Provinces. The northern white-cheeked crested gibbon has been recorded in the north-eastern region of Lao PDR from Vientiane Province northward and into Bolikhamsay Province. Southern white-cheeked crested gibbons are found in the Annamite Mountain Range in Khammouane Province and, perhaps, the northern part of Savannakhet Province. White-handed gibbons are found only west of the upper Mekong River in Xaignabouli Province. Pileated gibbons are found only in Munlapamok District, Champasack Province. Northern buff-cheeked gibbons are found in the south of Lao PDR east of the Mekong River. All species except the pileated gibbon are found within national protected areas.

All six Lao gibbon species are included in the IUCN Red List of Threatened Species (some are listed, globally as Critically Endangered, the highest category of extinction risk) and the Convention on International Trade of Endangered Species of Wild Fauna and Flora (CITES) Appendix I which stipulates that international trade in gibbons is not allowed. In the Lao Wildlife Law of 2007 all species of gibbons are classified as Category 1 protected species, so hunting and trade of gibbons is illegal throughout the year and at any location. At present, law enforcement efforts for gibbon conservation are low compared with those of other large mammals such as elephants, tigers and gaurs because of low public awareness, whereas the Wildlife Law provides gibbons the same level of protection as those larger mammals. There are very few examples of successful site-based gibbon conservation in Lao PDR. To date, limited gibbon research has been conducted in Nam Kading National Protected Area (NPA), Bolikhamsay Province, by the Wildlife Conservation Society (WCS) and the ecotourism project “the Gibbon Experience” in Nam Kan NPA, Bokeo Province appears to be giving good protection of gibbons. Some communities have traditional beliefs which protect gibbons because they believe that gibbons are very similar to humans or that they are spirits.

The Government of Lao PDR (GoL) needs to strengthen conservation of threatened species in order to meet its commitments to the United Nations Convention on Biological Diversity (CBD) and to implement its own National Biodiversity Strategy and Action Plan, National Forest Strategy towards 2020 and National Ecotourism Strategy. As can be understood from the above, the conservation of flagship species like gibbons is particularly important. Therefore, there is an urgent need for a gibbon

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conservation action plan for Lao PDR to be translated into effective actions on the ground and to support fundraising efforts. In recognising this need the Division of Forest Resource Conservation (DFRC) of the Department of Forestry of GoL, in collaboration with IUCN and FFI has prepared this gibbon conservation action plan. This was made possible by additional funding support from the US Embassy to Lao PDR, the Arcus Foundation and Mohammed bin Zayed Species Conservation Fund. At the national level, a Technical Working Group was formed to prepare the action plan. The working group included representatives from concerned government departments, the National University of Laos and international non-governmental organisations. Four working group meetings were held between May 2010 and February 2011 and focused on developing the action plan by defining a vision, goal and objectives with an analysis of the issues and then detailed activities responding to the issues.

This gibbon action plan has been developed with reference to the Preliminary Gibbon Status Review for Lao PDR in 2008, then reviewed and revised by the working group to refine and ensure that it is consistent with the Lao Government's strategies. The working group is aware that rural people rely on forest resources for their subsistence and that addressing poverty is impossible and unsustainable without protecting and managing the natural resources that they rely on. Species conservation, with gibbons as an example, can contribute to maintaining the richness of nature and bring possible alternatives sources of income generation for villagers in the future.

The Gibbon Conservation Action Plan for Lao PDR was prepared with the vision of conserving every species of gibbon so that they can coexist with Lao people and provide benefits to the Lao society in the future.

Its goal is to manage and increase the numbers of gibbons both inside and outside protected areas in Lao PDR. In order to meet this goal, seven specific objectives have been identified and are listed below:

1. to strictly curb hunting and trading of gibbons in priority sites
2. to protect important and representative gibbon habitats
3. to increase public support for gibbon conservation
4. to build capacity of Lao people for gibbon conservation
5. to improve local people's livelihoods through site-based gibbon conservation and ecotourism
6. to improve coordination between organisations on gibbon conservation
7. to improve understanding of the status of gibbons

The action plan describes the current known status of gibbons and identifies activities to conserve them in the future. The scope of work and objectives are laid out in 19 activities. Each activity has a rationale, policy implication and action. Priorities are given based on the species, site of conservation significance and activities for those sites. The timeframe, indicators, responsible agencies, and estimated budget per activity are also identified (Table 3).

The action plan focuses on the gibbon species of particular global conservation significance due to their globally Critically Endangered status, that is the northern white-cheeked crested gibbon and the western black crested gibbon. Priority areas for conservation of these gibbon species include Nam Kading, Nam Et – Phou Loei, Phou Den Din and Nam Kan NPAs. The southern white-cheeked crested gibbon and northern buff-cheeked crested gibbon (only recently described as a new species by scientists) both rightly receive attention in this action plan as Lao PDR holds globally important populations for both species. Both of these species are found in the southern half of the country where Nam Kading, Phou Hin Poun, Nakai – Nam Theun, Hin Nam No, Xe Sap, Xe Pian and Dong

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Amphans are considered priority locations for gibbon conservation. In order to maintain the country's diversity of gibbon species there is also a need to conserve the species of lower international conservation significance; the white-handed gibbon (perhaps in Nam Phui National Protected Area) and pileated gibbon (perhaps in Dong Khanthung Provincial Protected Area). These two species are the most threatened with extinction in Lao PDR and require urgent actions. As a whole, to maintain and rehabilitate the gibbon population in Lao PDR requires addressing hunting as the main issue that is driving a decline in all Lao gibbon species, and then clearly prioritising actions to address those threats.

Key activities for the priority areas are to ensure that totally protected zones and managed zones are clearly defined. Regular patrolling is required as well as strong information networks for effective law enforcement of illegal wildlife trade. In addition, conservation awareness raising and dissemination of laws and regulations are needed. Gibbon surveys and research to inform conservation actions, alongside capacity building of Lao officials and site-based conservation that is supported by local communities are expected to work together effectively. Local livelihoods are considered in this action plan through working in collaboration with other partners. As a whole, successful conservation of gibbons in Lao PDR depends upon identifying and taking actions to address local threats at particular sites. Implementing the plan will require that some obstacles be addressed, such as staffing and financial limitations and indifference from some decision-makers to species conservation.

Projects already working in prioritised areas should take account of the needs for gibbon conservation in their target areas such as the projects of WCS, Worldwide Fund for Nature (WWF), Watershed Management Protection Authority (WMPA) of the Nam Theun 2 Hydropower project, and German development assistance from GIZ and KfW.

This national gibbon conservation action plan is focused on linking conservation activities with livelihood development activities of projects and organisations at the national and local levels whenever possible. Collaboration with other projects is encouraged. Any organisations including the private sector that are interested in developing a tourism project related to gibbon conservation are encouraged to get involved.

This action plan has been designed in a concise user-friendly way for use by local officials, without determining concrete scientific indicators due to the current lack of comprehensive data on gibbon population. This action plan has a duration of 10 years from 2011 to 2020 with two phases of five years each. A total budget estimate is proposed at USD 3.07 million, from which are excluded the parallel budgets of partners sought for gibbon conservation at their sites.

1 Introduction

1.1 *Protecting gibbons and supporting national development*

Lao PDR is embarking on its path of socio-economic development by relying on the use of its great natural resource potential. Due to population growth and increased market demand, uses of natural resources have increased, especially for wildlife, which is used for food and traditional medicine. Nowadays, it is noticeable that compared to the 1990s many of these once abundant forest resources have declined at an alarming rate (MAF 2005). In order to respond to this serious problem as well as to meet national commitments to the United Nations Convention on Biological Diversity (CBD), which calls for the conservation of all plant and animal species, it is necessary to have strong strategies and mechanism for conservation.

Lao PDR has a high diversity of gibbons with six species, one of the highest of any country in the world. The country is particularly important for conservation of crested gibbons of the genus *Nomascus*, especially for western black crested gibbons and white-cheeked crested gibbons. Lao PDR can thus play a very important role in contributing to global gibbon conservation, especially since national populations of some species of crested gibbons are still much larger than those of neighbouring countries. Therefore, the initiative has been taken to prepare this gibbon conservation action plan which will provide the foundation for long-term conservation of gibbons in Lao PDR.

The gibbon conservation action plan for Lao PDR has been prepared with a vision to conserve the population and sufficient habitat of each gibbon species so that gibbons will always be part of the life of Lao people and provide benefits to Lao society.

Every Lao PDR national strategy (see item 3.1) stresses the importance of wise natural resource management, which is crucial for reducing poverty and supporting sustainable development. Furthermore, Lao PDR has commitments to the CBD, which is the global umbrella convention guiding biodiversity conservation. Every contracting party is obliged to adopt and translate the CBD into concrete actions in their respective country with the aim to protect the diversity of fauna and flora species and ensure their sustainable use. This gibbon conservation action plan responds to these national strategies, especially the National Biodiversity Strategy and Action Plan and international commitments.

This action plan has been designed in a concise user-friendly way for use by local officials and draws upon the best available information to focus on immediate gibbon conservation needs.

1.2 *Steps in developing the Lao Gibbon Conservation Action Plan*

In 2008 a national gibbon status review (Duckworth 2008) collated records of gibbons in Lao PDR and made recommendations to fulfil the first major need for the formation of an action plan. In May 2010, the Division of Forest Resource Conservation (DFRC) of the Department of Forestry and the IUCN Lao PDR office prepared a called “Call to Action”, which provided information on the status and needs for gibbon conservation, to raise public awareness on the formation of this action plan. 800 copies were distributed to all provinces in Lao PDR and key organisations in Vientiane. It called for everyone to take part in providing information and ideas for developing this action plan. As part of the process, discussions and consultations were conducted with various stakeholders, international non-government organisations (NGOs) as well as local organisations, to collect up-to-date

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information on the status of gibbons, their distribution and threats, and also needs for gibbon conservation in the future.

The Lao Gibbon Conservation Action Plan was prepared through a national technical working group whose members come from the Department of Forestry, Department of Forestry Inspection, the National University of Laos and international NGOs (WCS, IUCN, WWF and FFI). At the provincial and district levels, coordinators were designated to support with information collection. A first national workshop was convened on 5 May 2010 at the Department of Forestry to set the vision and exchange ideas and opinions towards preparing the action plan. A second technical meeting was held in July 2010 to inform the working group on findings from field visits, to outline and draft the action plan and brainstorm key activities to address the threats to gibbons. A third workshop on 28 September 2010 reviewed the first draft of this action plan, improved its objectives and analysed threats by gibbon species and site. A final draft of the action plan was sent to the national technical working group for further review and a meeting was held in January 2011 to discuss the budget and responsibilities for action plan implementation. A final review workshop with wider stakeholders was held in February 2011 at the Department of Forestry.

1.3 Contents of the action plan

This action plan summarises current information on the status and conservation of gibbons in Lao PDR (much greater detail is presented in the 2008 gibbon status review) and provides a rationale for the importance of gibbon conservation. Based on these, a vision, objectives and activities have been identified along with a timeframe, responsible entities and estimated budget for each activity. Implementation of this action plan must be linked with other existing projects and conservation and development activities of other organisations at both local and national levels to ensure that gibbon conservation is practicable. This means that implementation of the plan is not the sole responsibility of any one single organisation, but any parties who are interested and capable, including the private sector which, for example, may be interested in developing tourism activities related to gibbons.

The timeframe of this Gibbon Conservation Action Plan is 10 years, from 2011 to 2020, comprised of two phases, each of five years. It consists of four parts (Part 1. Introduction; Part 2. Gibbon Status and Conservation in Lao PDR; Part 3. Gibbon Conservation Action Plan in Lao PDR; and Part 4. Implementing the Plan). There are seven objectives and 19 activities. In order to implement this plan, it is estimated that a budget of USD 3.07 million for 10 years is required.

2 Gibbon Status and Conservation in Lao PDR

In 2008, a Preliminary Gibbon Status Review for Lao PDR (Duckworth, 2008) compiled gibbon records to support the identification of national priorities for gibbon conservation and development of this action plan. Since it was completed in 2008, most conclusions and recommendations remain relevant and appropriate. Recent developments, including the naming of the taxon referred to therein as *Nomascus* sp. *incertae sedis* (i.e. of uncertain taxonomic placement) as the newly named species *Nomascus annamensis* and the identification of the species at several more sites based upon mitochondrial DNA (mtDNA) analysis and vocalisations (Van Ngoc Thinh *et al.* 2010a), do not significantly change the overall recommendations and priorities identified in that status review. In addition further gibbon surveys were carried out in 2009 and 2010 fill in some of the information gaps regarding the two *Hylobates* species.

The status review confirmed the global significance of Lao PDR for gibbon conservation as maintaining the largest populations in the world of two or three of the six gibbon species found in the country. With six gibbon species, based upon current taxonomy, Lao PDR has one of the richest diversities of gibbons in the world. Of special note is the diversity of crested gibbons (genus *Nomascus*) with four out of seven species in the genus recorded in Lao PDR. For each of those four species, Lao PDR holds globally significant populations. Crested gibbons are the most threatened genus of gibbons globally, reinforcing the global importance of Lao PDR for gibbon conservation. Nevertheless, in order for Lao PDR to maintain its full complement of gibbon species, the two *Hylobates* species require most immediate attention to prevent them going nationally extinct, even though the Lao populations of those species are much less significant globally.

2.1 Ecology and behaviour of gibbons

Gibbons are small, tree-dwelling apes which inhabit tropical and subtropical forests. They are among the most charismatic of animals, and readily appeal to people due to their charming appearance, fascinating and often acrobatic behaviour, and beautiful morning songs. They never come into direct conflict with people, either as a physical threat or by damaging livelihood resources of local people, which is sometimes the case with some other animals of high conservation concern such as tigers, elephants and some macaque species. Therefore, gibbons can perform an outstanding role as a flagship species for overall biodiversity conservation, because it is easier to garner support for their conservation from local communities and other stakeholders than for some other, more controversial, species.

Gibbons live in small family groups usually comprising a father, mother and one or usually more young. The birth rate of gibbons is low compared with most mammals, with only one infant born to a mother per time and a long interval between births (two-three years) as the mother devotes much of her efforts to caring for the infant. Gibbons also reach sexual maturity slowly, with female gibbons sexually mature at about seven years old and males slightly later. As a result of such a low birth rate, gibbon populations are especially sensitive to hunting.

For most species of gibbons, adult males and females have very distinct colouring making identification of their sex unmistakable. However, their coats undergo marked changes in colour as they reach adulthood, with distinct infant and juvenile phases, so it may not be possible to distinguish the sex of sub-adults from their colouration. Crested gibbons are usually born with a light buff coloured coat which turns to black at about one year and remains so until for females it changes back to mainly a buff colour. Male crested gibbons remain predominantly black. The males of the

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different species can usually be distinguished by the colour and shape of their cheek fur. For pileated gibbons, juveniles have a light coat resembling an adult female so it is the males which change colour as they reach adulthood. White-handed gibbons have two colour forms for both sexes and at all ages, being almost black or brownish charcoal for the dark form or creamy white or white-buff for the lighter form (Geissmann 1995; Groves 2001; Mootnick 2006). Photos distinguishing the different species and colour forms of gibbons in Lao PDR are shown in Figure 1.

Gibbons are territorial animals with a restricted home range. The sizes of home ranges vary considerably depending upon the habitat and quality of the forest. For example in Khao Yai National Park in Thailand, white-handed gibbons have a home range averaging 40 hectares (ha) (0.4 km²) (Bartlett 2007), while at Wuliangshan in Yunnan, one black crested gibbon group has been observed with a home range of 151 ha (Fan Pengfei *et al.* 2009). There are no credible home-range estimates from Lao PDR. In Nam Kading, 29 groups were recorded in 127 km² of survey area (WCS Lao Program unpublished data 2010). It would be unreasonable to convert this to a home range figure, but such a density may indicate that the gibbon population in this area is probably below carrying capacity for the forest, presumably as a result of hunting in the past. In Nam Kan NPA group density was tentatively estimated at 2.2 groups / km² (Geissmann 2007).

Gibbons feed mainly on fruit, but also young leaves, flowers and occasionally insects and other animal material. Through their feeding habits they assist the functioning of forest ecosystems by dispersing seeds within their territory.

Gibbons may be sensitive to some forms of forest degradation. Selective removal of key feeding tree species may require them to expand their home ranges to find sufficient food resources. Gibbons also require extensive canopy connectivity to move effectively through the forest as their main means of movement is brachiation, i.e. using their long arms to swing between branches. Heavy fragmentation of the forest may prevent new groups forming and disrupt gene flows within the local population. Nevertheless, gibbons of several species have been documented to persist in Lao PDR in highly degraded forest (Duckworth 2008).

All gibbon species sing loud, complex and elaborate songs, which are often beautiful and evocative to the human ear. Song bouts usually occur in the mornings, with males starting and females joining in with a distinctive accompaniment. They may be expected to sing most days but timing and the frequency with which the songs occur varies with the weather. Vocalisations also vary between species and can be used as a means to identify the species. In some parts of the country, analysing vocalisations can help to clarify which species are present where it is not yet clear. The songs of gibbons provide an effective means for confirming their presence in the forest and also monitoring populations. Methods for surveying gibbons use this characteristic to determine population densities, often using several fixed listening posts with small survey teams at each post collecting and comparing data on times, locations and types of songs which are heard. The downside to this characteristic of gibbons is that the ease by which gibbons can be located through their songs and their high visibility makes them also easily found by hunters. Full-grown gibbons have few if any other predators apart from humans.

Figure 1. Photos of each gibbon species in Lao PDR

The photos following of each gibbon species in Lao PDR distinguish the species morphology and marked colour differences between males and females of the same species.

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Male black crested gibbon (*Nomascus concolor*)
Photo: Zhao Chao / FFI



Infant crested gibbon
Photo: Monty Sly



Female (right) grooming a male (left) northern white-cheeked crested gibbon (*Nomascus leucogenys*). Photo: Terry Whittaker



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Southern white-cheeked crested gibbon (*Nomascus siki*).

Photos: T.Nadler/Frankfurt Zoological Society

Young male



Female



Northern buff-cheeked crested gibbon (*Nomascus annamensis*).

Photos: T.Nadler/Frankfurt Zoological Society

Male



Female



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White-handed gibbon (*Hylobates Lar*)

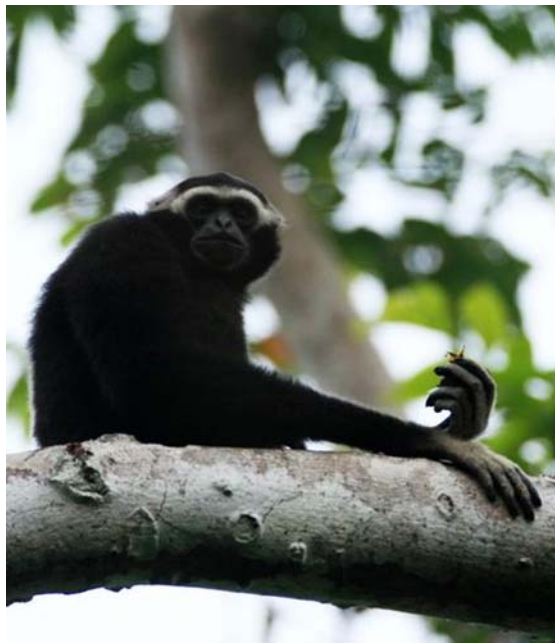
Photo: Phaivanh Phiapalath / IUCN



Pileated gibbon (*Hylobates pileatus*)

Photos: Warayuth Kenjan (left) and Jon Bugge (right)

Male



Female



2.2 Distribution and status of gibbons in Lao PDR

Clear information on the status, distribution and, particularly, threats to gibbons is crucial to preparing the national gibbon conservation action plan. The most comprehensive assessment to date of the status and distribution of gibbons in Lao PDR is in the Preliminary Gibbon Status Review

for Lao PDR (Duckworth 2008). That report recognises that while there are gaps in information on the status of gibbons in Lao PDR, enough is known to prioritise areas and activities for immediate effective conservation action; and indeed, enough is known to highlight how urgent such action is for some of the species. This section draws from that report and a summary paper updated with more recent information (Hallam in press).

Lao PDR has a high diversity of gibbons, one of the highest for any country in the world. Based upon current taxonomy, six species occur in Lao PDR; the western black crested gibbon *Nomascus concolor*; northern white-cheeked crested gibbon *N. leucogenys*; southern white-cheeked crested gibbon *N. siki*; a newly described species, the northern buff-cheeked crested gibbon *N. annamensis* (Van Ngoc Thinh *et al.* 2010a), white-handed gibbon *Hylobates lar* and pileated gibbon *H. pileatus*. The first two are globally Red Listed as Critically Endangered and all the others apart from *N. annamensis* are Endangered (IUCN, 2010). As a newly-named species *N. annamensis* has yet to be evaluated. Under the Lao Wildlife Law (07/NAS 24 December 2007) all gibbons are given the highest level of protection. However, law enforcement for gibbons is low compared with some large charismatic animals such as elephants, tigers and gaurs.

Gibbons are distributed throughout Lao PDR; the two species of *Hylobates* are found west of the Mekong River and the four species of *Nomascus*, i.e. crested gibbons, are found east of the Mekong River. Figure 2 shows a general distribution of gibbons in Lao PDR.

2.2.1 White-handed gibbon or Lar gibbon *Hylobates lar*

IUCN Red List Category and Criteria: Endangered A2cd

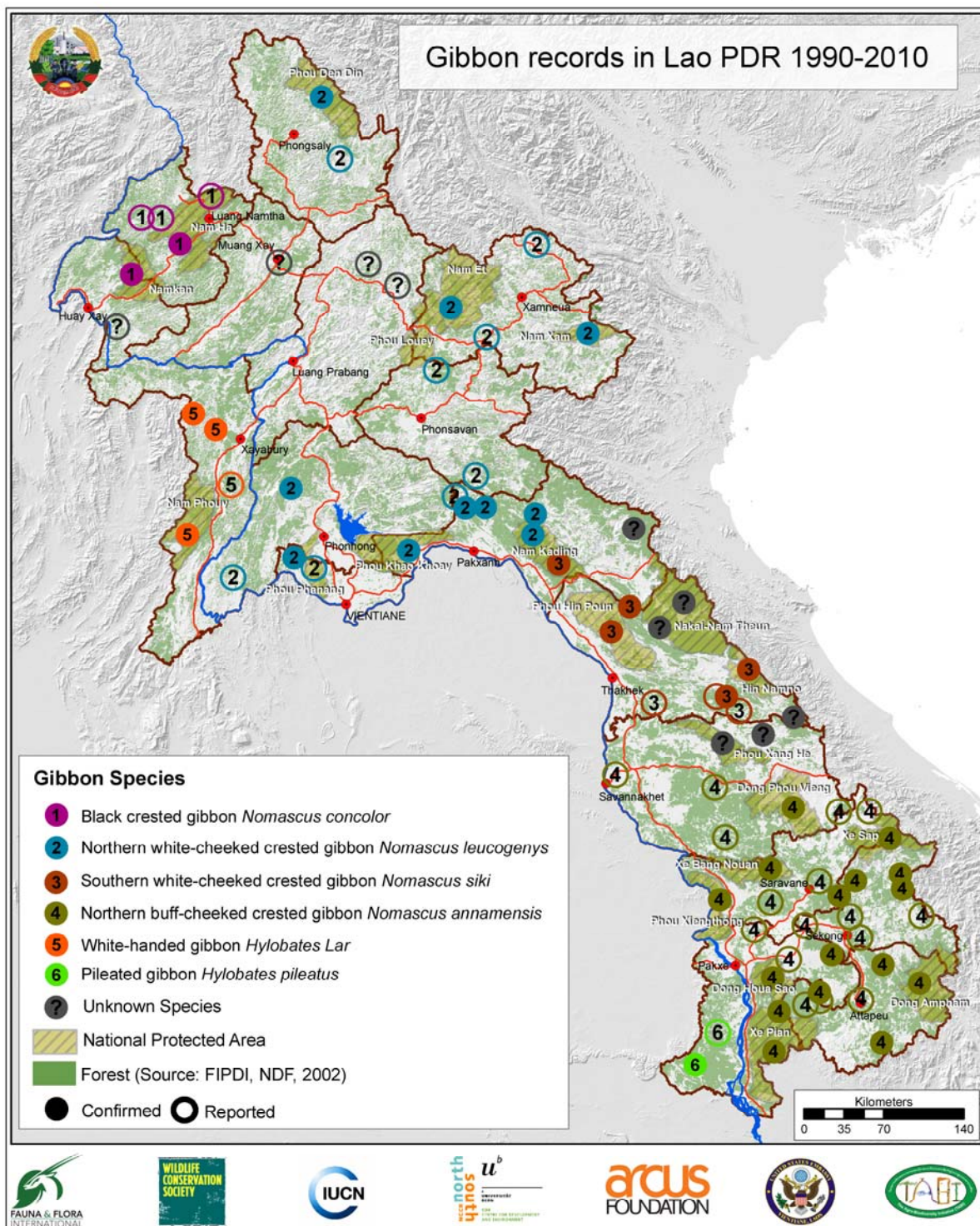
This species is only found in Lao PDR west of the Mekong River in the north of the country and Nam Phui NPA is the only national protected area in its range. Recent reconnaissance surveys there (collated in Boonratana *et al.* in press) have confirmed the species persists in the NPA but in small fragmented blocks with on-going hunting pressure causing a decline in the population (e.g. Phiapalath and Saisavanh 2010). Other white-handed gibbon populations, probably mostly small, survive outside this NPA, such as in Phou Phadam Production Forest Area. Most notably, a population (assumed small) survives near Ban Sapi because of local beliefs, which has led to protection of the gibbons. Areas elsewhere in its Lao range thus warrant attention in case other such populations survive (Duckworth 2008). Nationally this species is therefore critically endangered and warrants immediate attention to prevent its extinction in Lao PDR.

Globally, the white-handed gibbon has the largest north-south range of any gibbon species, from the border area of Myanmar and southern China, through Thailand and down as far south as peninsular Malaysia and northern Sumatra. The species is considered to have recently gone extinct in China (Grueter *et al.* 2009). The population of this species in Lao PDR has therefore limited global conservation significance. The sub-species in Lao PDR is presumed to be *H. l. carpenteri*, which ranges across eastern Myanmar and northern Thailand (Groves 2001, Brandon-Jones *et al.* 2004) where it continues to be threatened by hunting, habitat loss and habitat degradation, and is increasingly restricted to the forests of north-western Thailand and eastern Myanmar, with only a few confirmed populations close to Lao PDR in Thailand (Gene Mesher and Mark E Grindley pers. comm. 2010).

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Figure 2. Map of gibbon records in Lao PDR (1990-2010)

This map is presented here to show the diversity and overall distribution of gibbons in Lao PDR and makes no claims for accuracy on a site-by-site basis. Nor does the map intend to reflect the status of gibbons in different parts of the country, although generally the status of gibbons and biodiversity is better in the south than the north. The data of gibbon records is mainly based upon Duckworth (2008) plus additional records from 2010 (Phiapalath and Saisavanh 2010). Many of the records for sites on the map are inferred as being of a particular species rather than confirmed, based upon revised understanding of the taxonomy and distribution of gibbons (Van Ngoc Thinh *et al.* 2010). For information on an individual site please refer to the original data sources.



2.2.2 Pileated gibbon *Hylobates pileatus*

IUCN Red List Category and Criteria: Endangered A4cd

The pileated gibbon is distributed in the south of Lao PDR, west of the Mekong River. No national protected areas have been established in this area, despite it being identified as an area of outstanding conservation value (Berkmüller and Vilawong 1996, Timmins and Vongkhamheng 1996b, Round 1998, Wolstencroft 1998). The species still persists in the Dong Khanthung area where gibbons were recorded through vocalisations in two locations and reported as present by local villagers at another five (Phiapalath and Saisavanh 2010). This area includes Dong Khanthung Provincial Protected Area and a national protection forest, which is situated along the Lao-Cambodia border to the south and Lao-Thai border to the west and is managed by the army. The population is however highly fragmented with few groups persisting at each of the seven recently reported locations.

Internationally the conservation significance of the Lao population is limited when compared with numbers in Cambodia and Thailand (Phoonjampa and Brockelman (2008: 604) but nationally this species is critically endangered. There is currently no active protection of this species in Lao PDR.

2.2.3 Western black crested gibbon *Nomascus concolor*

IUCN Red List Category and Criteria: Critically Endangered A2cd

Western black crested gibbons are only known to persist in two locations in Lao PDR: Nam Ha NPA and Nam Kan NPA, both in the northwest of the country. Nam Ha NPA has experienced rapid forest conversion, fragmentation and subsequent degradation. As a result of this and failed tourism initiatives linked to gibbon conservation, coupled with low management capacity, *N. concolor* seems on the verge of extinction in the Nam Ha NPA (Brown 2009).

In Lao PDR, only Nam Kan NPA is suspected to have a viable population of this species. There the species is receiving attention from an ecotourism project, which provides protection to about 9 to 14 groups in the southern part of the protected area. Funds from tourism revenues are used to support forest patrols and local village development. The distribution of gibbons in the north of Nam Kan NPA remains unclear and hunting with guns appears to have caused a decline in some other hunted animal species (Robichaud *et al.* 2010), so could very well remain a serious threat. Pressure from hunting is likely to increase with the recent construction of Road No. 3, funded by the Asian Development Bank, which passes through the southern part of the protected area to the Chinese border.

The identity of gibbons in a wide area of the north-west and central parts of Lao PDR's northern highlands is at present unknown, so other populations of this species might remain. With only one known viable population, this species is highly threatened nationally.

Globally the species is distributed through parts of Yunnan Province in China and the Hoanglien mountains in northwest Vietnam. Most of the global population of this species is in Yunnan where there are estimated to be over 200 groups (FFI 2010). In Vietnam there is now considered to be only one viable population (Le Trong Dat and Le Minh Phong 2010). With probably less than 2,000 individuals worldwide, the population in Lao PDR has global conservation significance. The significance is greater because the population in Lao PDR may represent a unique taxon endemic to Lao PDR, currently referred to as the subspecies *N. concolor lu* (Thinh 2010b).

2.2.4 Northern white-cheeked crested gibbons *Nomascus leucogenys*

IUCN Red List Category and Criteria: Critically Endangered A2cd+3cd

The northern white-cheeked gibbon is currently understood to range from the far north east of Lao PDR to the vicinity of the Nam Kading River in Nam Kading NPA (Van Ngoc Thinh *et al.* 2010b). There are several NPAs in the species' range within Lao PDR with Nam Et – Phou Loei NPA representing surely the largest patch of little-encroached and effectively managed habitat for the species. Enforcement patrolling from Nam Et – Phou Loei NPA reports 8 to 15 groups (WCS Lao Program unpublished data, 2010) in patrolled areas of the NPA; this is only a small proportion of the NPA and the entire gibbon population there cannot yet be estimated. Nam Kading may also hold considerable populations of this species. In both Nam Kading and Nam Et – Phou Loei NPAs the crested gibbons are key species for management and ongoing conservation is confirmed through donor support and technical input from WCS.

Populations of *N. leucogenys* are also likely to persist in Nam Xam NPA. The small numbers in Phou Den Din NPA can also safely be assumed to be *N. leucogenys*, as they can in Phou Khao Khouay NPA. Surveys in the northern highlands within the range of *N. leucogenys* are far from exhaustive, but it seems unlikely, based on land cover and human access patterns, that there could be any unsuspected Lao populations of this species in Lao PDR which rival the important NPA populations in size or in conservability. Its north-western distribution limit and whether it overlaps with *N. concolor*, are both unclear.

Outside Lao PDR, this species is known from China and Vietnam. In Vietnam, it has recently only been recorded in a few forests close to the Lao border, but the viability of all remaining populations is questionable, with the exception of Pu Mat National Park, which maintains an important population (Rawson in press). In China, despite recent concerted survey efforts only a few semi-wild individuals have been recorded in Xishuangbanna Prefecture, Yunnan Province, close to Luang Namtha Province (Fan Pengfei and Hou Sheng 2009), so there the species is on the verge of extinction in the wild. Lao PDR holds most of the world's remaining wild northern white-cheeked gibbons and may hold all the viable populations (apart the one at Pu Mat National Park which may be part of a larger transboundary population with Lao PDR). As such Lao PDR is an outstanding global priority for conservation of this species.

2.2.5 Southern white-cheeked crested gibbon *Nomascus siki*

IUCN Red List Category and Criteria: Endangered A2cd

The precise location of the northern extent of *Nomascus siki* is unknown, but in the lower Nam Kading catchment it seems to be the mainstream itself (Van Ngoc Thinh *et al.* 2010a), from where its range extends south probably to somewhere in Savannakhet Province. The Nam Kading NPA is currently receiving technical and financial support from WCS through an agreement with the GoL (IEWMP 2004) and ongoing funding is secured until at least 2020 through mitigation payments from a nearby hydropower project (WCS 2009). Several other NPAs exist in the range of this species that offer some protection. At Phou Hin Boun and Hin Nam No NPAs the limestone karst landscape is relatively inaccessible, which provides some level of deterrence against hunting. The identity of the gibbon species in Nakai – Nam Theun NPA remains to be confirmed, but this NPA has significant and sustained funding for conservation management and protected area management processes are well-established. Occupancy estimates for gibbons in Nakai – Nam Theun are considerably higher (Smith 2008) than in Nam Kading (WCS unpublished data 2010). Surveys of the gibbon population in Hin Nam No NPA indicate detection rates of around 0.03 groups per kilometre of reconnaissance path walked and an average group size of around 3.8 individuals (Phiapalath 2009).

This species is probably currently secure in Lao PDR and is much more numerous than in Vietnam, the only other range state (Duckworth 2008). The global conservation significance of Lao PDR's southern white-cheeked gibbons is therefore very high, and establishing a strong basis for the long-term survival of the species in Lao PDR is crucial for its long-term existence.

2.2.6 Northern buff-cheeked crested gibbon *Nomascus annamensis*

IUCN Red List Category and Criteria: Not Evaluated (This species has only recently been described)

The northern-most range of this recently-described and most southerly crested gibbon in Lao PDR is suspected to fall within Savannakhet Province. It is found in Lao PDR east of the Mekong and down to the Cambodian border. Within this range some large tracts of forest remain. Despite recent declines of the population in the Xe Pian NPA – Bolaven Southwest proposed NPA – Dong Hua Sao NPA (Duckworth 2008) the total population of this species in Lao PDR must still be significant. However, among these areas only Xe Sap NPA, the scarp of the Bolaven plateau, Nam Pa Production Forest, and small parts of Dong Ampham NPA have significant natural terrain-based protection affording inaccessibility to the local populations. Resources currently deployed for conservation management are negligible in this area apart from Xe Pian NPA (WWF 2009) and at very local scales. This taxon's long-term future in Lao PDR is thus uncertain.

The global distribution of this species is limited to the corner of north-east Cambodia and central and south-central Vietnam, thus the Lao populations of this species are highly significant for its global survival.

2.3 Threats to gibbons

Clear understanding of the threats to gibbons in different areas of the country is paramount for planning and developing this gibbon action plan. It is also necessary to know the underlying causes of the threats and issues for each gibbon species and priority locations in order to strategically plan actions to address the issues most effectively.

Hunting, habitat degradation and deforestation all have severe impacts on wildlife in Lao PDR in general. These activities also inhibit sustainable economic development, particularly for rural communities who are often entirely dependent upon local natural resources. While gibbons are affected by similar issues to other wildlife, a gibbon action plan needs to address those threats of highest relevance to gibbons in order to deliver the most effective conservation outcomes, but still conscious of the context of broader national biodiversity conservation and sustainable development objectives. Successful conservation of gibbons in Lao PDR will largely depend upon addressing local threats at particular sites, so the threats at each site need to be analysed and appropriate action taken. What follows is a broad overview of the general threats to gibbons in Lao PDR, many of which are entangled and cannot necessarily be considered in isolation when practical steps need to be taken. In addition, apart from staffing and financing issues, limited interest by decision-makers for conservation of species such as gibbons needs to be addressed for effective conservation in Lao PDR.

2.3.1 Hunting

Hunting is the leading threat to gibbons in Lao PDR. Generally for all gibbon species and in all areas where gibbons are present, hunting with projectiles, especially guns, is likely to be a significant threat. Hunting as a threat to gibbons has been well-documented in Nam Ha, Nakai – Nam Theun, Hin Nam No, Nam Phui, Dong Khanthung, Phou Hin Poun, Nam Et – Phou Loey, Xe Pian, Dong Hua Sao, Phou Xang He and Phou Khao Khouay, and no doubt holds true for most if not all surviving populations except the relatively tiny areas around villages which afford gibbons traditional protection (and even in these, the villagers themselves point out that outsiders may continue to

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hunt gibbons). While hunting is prevalent throughout the country, it is particularly severe in the north.

Gibbon populations in most forests are probably far below the natural carry capacity and as a first measure preventing hunting would enable gibbon populations to recover to natural population densities. Hunting gibbons will almost always be the result of a specific conscious decision, although it may be opportunistic, because being arboreal they are very unlikely to be caught by traps which non-selectively catch ground dwelling animals. As such, generalised opportunistic hunting of gibbons for consumption has driven declines in gibbon populations across the country, and continues to do so.

Gibbons are not usually targeted but the reasons why they are hunted vary. Gibbons may be hunted for local consumption by villagers, local consumption by poachers or for outside trade. Often the purpose of shooting the gibbon may not be consciously evaluated at the time by the hunter. Hunters do not normally embark on a trip especially to target gibbons. They may be collecting non-timber forest products, hunting other animals or fishing and carry a gun with them. But when they encounter a gibbon or hear their songs, in most cases they will not turn down the chance to shoot them. This is the case for most wildlife but because gibbons are large, diurnal and conspicuous, they are at higher risk from such opportunistic hunting with guns. In addition because of their life history characteristics (see 2.1 above) any level of offtake is far more damaging to gibbons than to other faster breeding and faster maturing mammals of comparable size (such as macaques and even colobines).

There are varying attitudes throughout rural communities in Lao PDR towards the consumption of gibbons for food. Some communities have a taboo against consuming gibbon meat due to their similarity to humans. Gibbons are eaten in some areas, but their low productivity means that they could never be a significant part of the diet of a rural community. Nevertheless, the low breeding levels of gibbons also means that a low level of opportunistic hunting for consumption could drive significant declines in a local gibbon population.

Hunting for trade has a greater impact on wildlife than hunting for local subsistence and is often conducted by outsiders; even where locals are the main hunters, they are usually acting to supply externally initiated opportunities. When hunting for trade, gibbons are still likely to be taken opportunistically rather than directly sought. In some areas, traders come to villages to buy or place orders for gibbons. The trade is often facilitated through middlemen, who will buy and re-sell the animals for higher profits.

Gibbons have not figured highly among species recorded in investigations on wildlife trade in Lao PDR, indicating that hunting is not driven by a strong market demand. But markets for gibbon parts or live gibbons do exist. Gibbons are sold for the use of their bones in traditional medicines, especially in Vietnam, although it is not gibbon bones in particular which are sought, but those of primates in general (see Box 1). Given the dramatic decline in primate populations in Vietnam, a continued demand there will lead to increased pressure on primates in Lao PDR, through now well-established wildlife trade routes. Additionally a sudden fashion for primate bone medicine could also fuel a sharp increase in demand as has recently occurred for rhino horn.

Box 1: Primate bone trade at Hin Nam No NPA

The selling price for primate bones at Ban Dou, Hin Nam No NPA increased from 1 USD/kg in 2004 to 7 USD/kg in 2008. By comparison prices in neighbouring Quang Binh Province in Vietnam, where many of the hunted animals would be headed, were between 2 to 4 USD/kg in 2004 at the retail end of the market chain (FFI, 2004). The driving force is easy access to wildlife market as mobile traders come to villages offering to buy wildlife.

There have been efforts in Lao PDR to tackle wildlife trade, such as direct enforcement in local markets by the Vientiane Provincial Agriculture and Forestry Office with support from WCS, and awareness raising by different conservation organisations. However much progress still needs to be made.

Meanwhile information on individuals involved in the trade at all levels is still lacking and there is no coordinated approach to tackling the issue with all parties considering the responsibility resting elsewhere (Phiapalath and Suwanwaree 2008).

Another demand, currently less significant, for gibbons is for the pet trade. Where a gibbon is sold it is usually an infant, which was collected after its mother was shot. Keeping gibbons in captivity is not common throughout Lao PDR. Where gibbons are kept in captivity it is usually in commercial establishments to entice customers, at temples, in zoos, and houses of foreigners and affluent Lao as a novelty status symbol. The sale price for live gibbons seems now to be generally low and demand does not seem high. But gibbons can sometimes be tempting purchases, since they are charismatic animals with the infants having many behavioural traits similar to human babies.

2.3.2 Habitat destruction and deforestation

The significance of habitat destruction and deforestation as an issue for gibbon conservation varies throughout the country. There is a strong contrast between the north and south, with forests in northern Lao PDR being more degraded and fragmented. Fortunately Lao PDR still has large tracts of forest, especially compared with its neighbours, and a substantial area of forest is included within the protected area system.

Gibbons are arboreal animals and if given the chance will spend their entire lives in the trees, with no need to descend to the ground. Contiguous forest with a well developed canopy and a sufficient density of preferred plant species to feed upon are best for a healthy gibbon population. However gibbons are adaptable and have been known to survive in highly degraded forest if hunting pressure is low enough.

Fragmented habitat reduces the size of forest blocks, making gibbons more accessible to hunting, and therefore, except for occasional site-specific circumstances, gibbon conservation will always be more efficient, and indeed more likely to succeed rather than fail, in large forest landscapes. While gibbons adapt to less than optimal forests (more readily than is popularly imagined, reflecting that most degraded forests also have high hunting levels and as a result lose gibbons), wholesale conversion of forest to other land uses such as agriculture (including tree plantations), or clear felling for commercial purposes will doom a local gibbon population. Any human activity which leads to degradation or destruction of habitat also heightens the threat of hunting as an opportunity arising from closer contact between people and gibbons and greater accessibility to gibbon habitats. In many places, particularly in NPAs, increased hunting is probably the most important direct threat coming from habitat fragmentation.

While the north of the country suffered the greatest fragmentation and deforestation during recent decades, across the country habitat is now being lost by conversion of forest to plantations,

particularly for such crops as rubber, cashew, cassava, acacia and eucalyptus. Problems with forest land use claims and conversions to other uses are also beginning to occur, such as forest concessions for industrial crop plantations by foreign investors. The negative impact on gibbons is foreseeable. Farmers claim more plots of land for rice cultivation lost for industrial crop plantation. An increase in labourers from neighbouring countries (e.g. Vietnamese) may put more pressures on forest resources in their areas, particularly by increasing hunting pressure.

Within protected areas in northern Lao PDR, swidden agriculture has degraded forest in NPAs such as Nam Ha, Nam Phui, Nam Et – Phou Loei, Phou Den Din and Nam Xam. The habitats of white-handed gibbon in Nam Phui have been degraded and fragmented because of forest fire and bisection by roads, facilitating access to the forest for hunting. In the central region there is less of a problem of habitat loss within NPAs such as Nakai – Nam Theun, Nam Kading, Hin Nam No, Phou Hin Poun, which have highly potential for gibbon conservation. The southern region faces some problems of habitat loss especially Dong Ampham, Xe Pian, Dong Hua Sao and Dong Khanthung. The population of pileated gibbon in Dong Khanthung is fragmented by roads now cutting through areas of the forest.

2.3.3 Small population effects

Reducing animal populations to very low levels introduces various additional extinction risks through chance effects (e.g. freak weather or forest fires wiping out an entire population or at least all potentially breeding individuals of one sex) and 'inbreeding depression' (genetic deterioration through loss of intra-population variability). These effects might inhibit recovery if threats were successfully reduced in cases where small populations of gibbons persist in fragmented forest patches. Most such small populations outside protected areas should be written off from active conservation interventions if resources are limited, due to the magnitude of the challenge to conserve gibbons already facing the NPA system and other large areas.

Although no NPA in Lao PDR is too small to maintain a healthy sustained gibbon population, past heavy hunting has reduced populations in some NPAs to tiny proportions of the respective NPA's suitable habitat. Especially where these threats still occur, gibbon populations in some NPAs may already be at risk of small-population effects: Nam Ha and Phou Phanang are the most likely, then perhaps Phou Den Din and Nam Phui; but the likelihood for Nam Xam, Phou Khao Khouay and some others cannot currently be assessed (Duckworth 2008).

Both pileated and white-handed gibbon might be so reduced that all remaining Lao populations risk small-population effects, as might western black crested gibbon. There are multiple populations of the other three species well above the size where small-population effects could be problematic, but without active intervention they will not last indefinitely. Village protected gibbon populations may also risk small-population effects where they are isolated and thus do not necessarily represent viable options at a national level for long-term species conservation.

2.4 *Gibbon conservation in Lao PDR*

All gibbon species in Lao PDR are classified as Category 1 protected species in accordance with the Wildlife Law (2007) and Decree 81/PM of 2008. According to Article 11 of that law, Category 1 species are “rare and endangered species with high conservation value, which are important for socio-economic development and any use of these species requires government approval”. Hunting of species on the Category 1 list by anyone is thus illegal according to the Wildlife Law. Despite this listing, there have been no adequate efforts to impose sanctions for hunting gibbons in line with government regulations and very few cases of sanctions being imposed for hunting gibbons. Some

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work has been done to raise awareness of their protected status like nationwide distribution of posters and TV programmes.

Where there is current on-going gibbon conservation, it has usually been in the context of broader site-based conservation projects, with gibbons often serving as flagship species for conservation among local communities. WCS has made a strong contribution to site-based gibbon conservation in Lao PDR. Interventions from WCS for conservation management at Nam Et – Phou Loei since 2000 and Nam Kading NPAs since 2005 have probably supported important gibbon populations at these locations. Detailed surveys of gibbons by WCS at Nam Kading give some estimates for population densities of gibbons in the country, albeit of an area where the population is likely to be well below carrying capacity. Experiences from Nam Kading can serve as a model for other sites to protect large gibbon populations, although the approach is too resource intensive for blanket replication throughout Lao PDR at the moment.

Nakai – Nam Theun NPA receives significant and sustained annual conservation support from the Nam Theun 2 Power Company, and the Watershed Management and Protection Authority (WMPA) of the Lao Government has established protected area management systems in place which will provide protection to residing gibbon populations.

At Nam Kan NPA the Gibbon Experience, an ecotourism venture, funds patrols in the forest and the regular presence of tourists in the gibbon habitats will deter hunters, while tourism revenues support local communities. This site could serve as an example of conservation outcomes being directly supported by ecotourism.

WWF has been implementing projects in the south of Lao PDR in and around gibbon habitat, particularly at Xe Pian NPA, where they have supported gibbon surveys. At Nam Phui NPA, WWF is establishing patrols for elephant conservation, but also including gibbons as a flagship species.

Local gibbon protection is practiced by some villages, where the traditional beliefs of local communities lead to taboos on hunting gibbons. The underlying local beliefs which support gibbon protection vary and often are related to their human-likeness and that they may be perceived as spirits of their ancestors. In such areas, the gibbon population is noticeably high, but in all known sites, the area protected is very small and maybe too small for populations to be viable in the long term. There are numerous examples of such locations in Lao PDR (Box 2), indicating a widespread and grassroots appreciation for gibbons among Lao people, but this has not always led to protection from hunting by outsiders.

Box 2. Local beliefs supporting gibbon protection

Gibbons hold a special place in the cosmology and belief systems of many villages in Lao PDR. Gibbons are often believed to be ghosts of the ancestors of local villagers and as such there is a taboo on hunting or eating them. At the same time, gibbons are also considered to be intelligent and gentle animals and their songs are appreciated for their beauty. These belief systems are however likely being eroded under new development pressures and greater contact with outside influences.

Ban Khontao, Vienthong District, Bolikhamsay Province, is one such village where this process is underway. In this village there is a distinct difference between the older generations and the younger in the way gibbons are perceived in the village. Elders still respect taboos against eating gibbons and maintain beliefs in the gibbons as part of the spirit system of the village. The younger generation who are more exposed to the cultures and influences of the “outside” are less likely to uphold taboos and believe in gibbons as a forest spirit. The taboos are also not being enforced

Box 2. Local beliefs supporting gibbon protection (continued)

socially within the village meaning that the taboos along with many traditional beliefs surrounding gibbons are rapidly changing. Despite this gibbons are held in high esteem as animals and are revered for their song (Chris Hallam (WCS) personal communication).

Examples of such beliefs are found among different ethnic groups throughout Lao PDR and, while preparing this action plan, staff from NPAs and PAFOs reported cultural protection of gibbons at the following locations: Ban Vak, Ka Leum District, Xekong Province; the Aka of Ban Thonglath, Luang Namtha Province; Ban Sanyayon in Ta Oy District, Saravan Province; the Hmong near Nam Kan NPA, Bokeo Province; villages in Phongsaly Province; and Ban Houy Sala in Huaphan Province.

Duckworth 2008 listed the following additional villages: Ban Buamfart (Nam Et – Phou Loei NPA), Ban Sakok (Muang Viengthong, Huaphan Province), Ban Sapi (Xaignabouli Province), Ban Wangma (Sangthong District, Vientiane Municipality), Ban Phoukathap (Phou Khao Khouay NPA), Ban Namyouk (Nam Gniap catchment), Ban Phonkham (Muang Bolikhan, Bolikhamsay Province) and Ban Phadai (Muang Bolikhan, Bolikhamsay Province). Ban Sapi has special significance as potentially protecting the few remaining white-handed gibbons in the country. This list is far from exhaustive, but already demonstrates widespread, specific appreciation for gibbons among the different peoples of Lao PDR.

2.5 Challenges to gibbon conservation in Lao PDR

2.5.1 Socio-economic development

Lao PDR is undergoing rapid economic development. While socio-economic development is important for the country, it can have negative impacts on sensitive natural resources, including biodiversity and wildlife, which will be to the long-term detriment of the Lao people. Projects that can cause major impacts on biodiversity include road construction, mining sites, hydropower dams, high voltage power transmission lines and plantations. These activities often lead to increased wildlife trade and hunting in those areas, in addition to a general degradation in natural resources and the environment. However, if planners are aware of the importance of nature protection and undertake measures to prevent the impacts beforehand, they could be greatly reduced.

Logging in the past has not been well managed in a systematic and sustainable way. Illegal logging remains to be solved. The selective harvesting of specific tree species and destruction caused to the structure of the forest may reduce the ability for a local gibbon population to recover. Of most relevance to gibbons, logging not only destroys habitat and food sources for gibbons, but also creates greater opportunities for hunting, by making forest areas more accessible and, often, enhancing market connectivity for forest products additional to the timber itself. The beneficiaries of logging are mostly the private sector, individuals or business people.

2.5.2 Limited resources

Limited personnel resources and budget are major challenges to gibbon conservation.

○ Personnel

Limited personnel resources here not only mean numbers of people, but also technical competency and motivation of those staff, and their access to a supportive work environment. There are few members of staff in Lao institutions with extensive knowledge and specific experiences of conservation in general. Educational institutions that have the interests and capacity to conduct research domestically remain low. However there are some positive developments. The Faculty of Science of the National University of Laos (NUoL) is developing a curriculum on protected area management with support from WCS. The School of Biology in the Faculty of Science has a specific

focus on wildlife and can train personnel for wildlife conservation. Within NUoL, the Faculty of Forestry provides training on basic watershed management and wildlife, and the Faculty of Environmental Sciences offers environmental studies.

Protected area managers and rangers are the key personnel at the forefront of gibbon conservation in Lao PDR. There needs to be sufficient personnel staffing NPAs, but also with appropriate levels of training and skills to be able to conduct their work effectively. For gibbon conservation, there is a general lack of support to protected area staff from outside experts who can advise their work to effectively protect gibbons as flagship species for their overall protected area goals. When NPA staff try to take action against illegal activities, they are often discouraged by a lack of support from other concerned government agencies.

- Budget

The Lao Government's revenue is presently too limited to allow sufficient budget allocation for conservation and managing protected areas and wildlife. At the same time, the private sector has not yet shown significant interest in investing in activities which can support gibbon conservation such as developing ecotourism. With few exceptions, where income is generated from tourism, very little comes back for effective management of the protected areas.

2.6 Opportunities for gibbon conservation

2.6.1 Gibbons as flagship species

Gibbons are benign and attractive animals. They do not come into conflict with local people and are appealing, to the extent that in some areas villagers voluntarily try to protect their local gibbon populations. Gibbon protection in the wild is only likely to work through concerted efforts and collaboration at the local level. Raising awareness and involving local stakeholders in protecting gibbons is less challenging than other less immediately charismatic animals or animals which are perceived locally as troublesome. Gibbons can thus serve as flagship species and a starting point to raise consciousness for biodiversity conservation and developing cooperation and understanding with local stakeholders. As flagship species they can also serve to raise funds from outside sources.

2.6.2 Monitoring

Compared with much other wildlife, gibbons are relatively easy to survey and monitor, because of their vocalisations and high visibility. Success to protect gibbons can more easily be demonstrated through relatively easier monitoring techniques than other wildlife. Gibbons can also be used as one indicator for measuring success towards overall biodiversity conservation goals, bearing in mind the caveat that a healthy gibbon population does not necessarily mean that there are no other major issues, for example, widespread trapping of ground-dwelling animals.

2.6.3 Traditional protection

There are communities throughout Lao PDR which provide cultural protection to gibbons. The Preliminary Gibbon Status Review for Lao PDR cited ten examples and the list is far from exhaustive (see Box 2). The reasons local communities protect gibbons may vary, but such local examples of local gibbon conservation should be supported and the motivations of local communities better understood.

2.6.4 Large areas of habitat

Despite increasing pressures on forests, Lao PDR still maintains some of the largest areas of forest in the region when compared with its neighbours. The national protected area network of Lao PDR has

a wide coverage and covers enough representative habitats of all Lao gibbon species, except pileated gibbon, for their long-term survival.

2.6.5 National experience in gibbon conservation

Gibbon conservation in Lao PDR is not starting from scratch. There is already experience in gibbon monitoring, protection and awareness raising from Nam Kading and Nakai – Nam Theun, which can serve as models for gibbon conservation at other locations. The Gibbon Experience in Nam Kan has developed a successful approach to tourism that appears to be protecting the local gibbon population and generates revenues that support patrolling and livelihoods of local communities.

2.6.6 Drawing from regional experience

As Lao PDR is establishing closer links to its neighbours in many fields, there is a wealth of regional experience in gibbon conservation and ecological research, which can be drawn from. Research links can be created with counterpart institutions to support the available knowledge base on gibbon ecology. The geographical location of Lao PDR facilitates access to widely differing approaches to protected area management. With closer economic and political ties, there are also improved opportunities for transboundary cooperation where issues cannot just be addressed within the country, such as wildlife trade.

2.6.7 Ecotourism

Gibbons are one of the most appealing animals to observe in the wild and, where they have been habituated, can be quite easy to see. They therefore offer great opportunities for ecotourism, which can provide incomes for local communities and for protected area management (section 2.5). However, tourism projects in ecologically sensitive areas need careful planning and management to avoid degrading the very resources which are attracting visitors. Visitors need management and any infrastructure that is developed should be minimal and sensitive to the local surroundings. Additionally, planning gibbon-based tourism activities should be done in consideration of other local biodiversity values. As gibbons are arboreal they would not be sensitive to impacts from tourism on ground-level or aquatic biodiversity. The Gibbon Experience in Nam Kan can serve as a good model for gibbon-based tourism not only for Lao PDR, but also for neighbouring countries. There are good and bad examples of tourism activities in the region which can provide valuable lessons.

3 Gibbon Conservation Action Plan for Lao PDR

This section defines the vision, objectives and key actions for conservation of gibbons in Lao PDR from 2011 to 2020. Priority actions are identified for each gibbon species as well as each objective of the national action plan. Detailed activities of the action plan for achieving the goals and objectives set are presented in section 3.3.

3.1 *Setting the vision*

The vision of this Gibbon Conservation Action Plan is formulated in the light of related policies, determined objectives and purposes. The technical working group has discussed and analysed the problems, options for solutions and activities for each objective of the plan.

3.1.1 The vision

to conserve each species of gibbon and their habitats to be healthy and provide benefits to Lao society in the future.

The GoL envisions that socio-economic development should go hand in hand with the conservation of forests and wildlife as demonstrated in the Lao Forestry Strategy towards 2020, the goal of which is to increase the country's forest cover to 70%. In addition, the government has also adopted the National Biodiversity Strategy to 2020 and Action Plan to 2010 (a new action plan is currently in preparation) to ensure the protection of biological diversity of fauna and flora. Pursuant to these important strategies, the Gibbon Conservation Action Plan of Lao PDR aims to ensure the continued existence and growth in the population of all gibbon species in the wild, and at the same, generate benefits for communities who participate actively in gibbon conservation.

3.1.2 Policies relevant to this action plan

Socio-economic development and poverty reduction is a first priority of the GoL. An estimated 80% of the Lao population live in rural areas and rely heavily on nature, and most of them are poor. However, poverty will be difficult to address sustainably if natural resources are not protected. In this respect, the GoL understands and has adopted national strategic directions which give due regard to natural resources as important for socio-economic development. This is demonstrated in five key national strategies as follows.

1. **National Socio-Economic Development Plan (2011 to 2015)¹**
Ensure the sustainability of development by emphasising economic development with, cultural and social progress, preserving natural resources and protecting the environment.
2. **National Poverty Reduction Strategy 2004**
Economic growth must be based on both sound management of natural resources and enhanced social and cultural development.
3. **National Biodiversity Strategy to 2020 and Action Plan to 2010**
Biological diversity must be protected as an important asset base for the poor and key to sustainable poverty reduction.

¹ The 7th National Socio-Economic Development Plan (2011-2015) is still draft (dated May 2010).

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4. **National Forestry Strategy toward 2020**

National Protected Areas have been established in order to protect natural areas and species of fauna and flora to ensure the balance of nature, protecting watersheds, natural sceneries, historical and cultural values and for education and scientific research.

5. **National Eco-tourism Strategy and Action Plan (2005-2010)**

An objective of this strategy is for tourism development to use natural resources sustainably and contribute to poverty reduction.

3.1.3 Goal of the Gibbon Conservation Action Plan

Gibbon populations in the priority areas have been fully protected and the gibbon status for each species nationwide is improving.

3.1.4 Objectives

Gibbons are good flagship species for biodiversity conservation and their presence can support socio-economic development (e.g. ecotourism). Thus, in order to ensure that gibbon population in Lao PDR can continue to survive and develop, this action plan has the following objectives:

1. to strictly curb hunting and trading of gibbons in priority sites
2. to protect important and representative gibbon habitats
3. to increase public support for gibbon conservation
4. to build capacity of Lao people for gibbon conservation
5. to improve local people's livelihoods through site-based gibbon conservation and ecotourism
6. to improve coordination between organisations on gibbon conservation
7. to improve understanding of the status of gibbons

3.2 *Priority conservation sites for each gibbon species in Lao PDR*

This action plan targets representative populations of all six gibbon species in Lao PDR. All four crested gibbon species in Lao PDR are globally highly threatened and have globally very significant populations in the country. The main hope globally for the survival of both white-cheeked crested gibbon species is in Lao PDR. Nevertheless the most threatened species nationally are the white-handed and pileated gibbons, which demand immediate and urgent action to survive in Lao PDR.

The technical working group has identified the locations shown in Table 1 as priority location for conservation of each species.

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Table 1. Priority sites and justification for conservation of gibbons in Lao PDR

Location	Priority	Justification	Key agency	Support agency
White-handed Gibbon <i>Hylobates lar</i>				
Nam Phui NPA, Xaignabouli Province	1	Only protected area in Lao PDR in the species' range. Due to its small, fragmented population, even a low threat from hunting could lead to its imminent extinction from the NPA.	NPA/PPAM	WWF GIZ as part of planned REDD project
Ban Sapi and other places in Xaignabouli Province	1	Production forest with a population of white-handed gibbon being protected by local community. Little is known about the gibbon population there, but it could offer another chance to maintain this species in Lao PDR, through a community-based approach.	PPAM/Xaignabouli PAFO	Required
Pileated Gibbon <i>Hylobates pileatus</i>				
Dong Khanthung Provincial Protected Area	1	Part of the only known Lao population and in an area of high biodiversity significance. Due to its small, fragmented population, even a low threat from hunting will lead to its imminent extinction.	PPAM /Champasack PAFO	Required
Western Black Crested Gibbon <i>N. concolor</i>				
Nam Kan NPA, Bokeo Province	1	The only location in Lao PDR known to have probably a viable population of this species, where part of the population is being protected by an ecotourism project.	NPA/ Bokeo PAFO	Animo / The Gibbon Experience on-going
Northern White-cheeked Crested Gibbon <i>N. leucogenys</i>				
Nam Et – Phou Loei NPA, Huaphan, Luang Prabang and Xieng Khuang Provinces	1	The largest area of protected forest in Lao PDR and under on-going conservation support. Although the gibbon population size is not well known.	NPA/PPAM/ PAFO	WCS on-going
Nam Kading NPA, Bolikhamxay Province.	1	Known viable population north of the Nam Kading River with on-going conservation support.	NPA/PPAM/ PAFO	WCS on-going

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Location	Priority	Justification	Key agency	Support agency
Phou Den Din NPA, Phongsaly Province	2	High potential but low in number and fragmented in distribution over much of the NPA in a relatively remote forest known to have important biodiversity remaining. Maybe contiguous population with groups in Vietnam.	NPA/PPAM/ PAFO	Required
Nam Xam NPA, Huaphan Province	3	Unknown potential, but large population in the 1990s and may still retain a good gibbon population.	NPA/PPAM/ PAFO	Required
Phou Khao Khouay NPA	3	Close to Vientiane Capital and therefore has potential for helping to raise awareness about gibbons at a national level through tourism activities.		
Other potentially important areas: Nam Chat Provincial Protected Areas				
Unclear White-cheeked Crested Gibbon				
Nakai – Nam Theun NPA, Bolikhamsay and Khammouane Provinces	1	Large NPA with important gibbon population and well-resourced for long-term conservation, therefore high potential to make a significant contribution to national gibbon conservation. The gibbon species still needs to be confirmed across the NPA.	WMIPA/PPAM	NTPC funding for 20 years World Bank / Panel of Experts – monitoring
Southern White-cheeked Crested Gibbon <i>N. siki</i>				
Nam Kading NPA, Bolikhamsay Province	1	Known viable population south of the Nam Kading River with on-going conservation support.	NPA/PPAM	WCS
Phou Hin Poun NPA, Khammouane Province	2	Forest adjoins broader Nam Theun 2 dam watershed landscape and maintains a reasonable density of gibbon groups in some areas. The landscape in the centre is very rugged and large-scale habitat conversion there is implausible	NPA / PPAM Khammouane PAFO	Required
Hin Nam No NPA, Khammouane Province	2	Known important population and forthcoming conservation support planned for the protected area.	NPA / PPAM Khammouane PAFO	GIZ
Other potentially important areas: Phou Luang protection forest, Khoun Xe Nongma PPA and Laving Lavern PPA. The latter appear to have important gibbon populations and are located in the area of uncertain overlap between <i>N. siki</i> and <i>N. annamensis</i> .				

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Location	Priority	Justification	Key agency	Support agency
Northern Buff-cheeked Crested Gibbon <i>N. annamensis</i>				
Xe Sap NPA, Saravan and Xekong Provinces	1	Relatively remote affording natural protection and forthcoming conservation interventions are planned	NPA/PPAM	WWF
Xe Pian NPA, Champasack Province	2	Known population and forthcoming conservation interventions are planned.	NPA/PPAM	WWF / BCI
Dong Ampham NPA, Attapeu and Xekong Provinces	2	Relatively remote affording natural protection.	NPA/PPAM	WWF / BCI
Other potentially important areas: Dong Phouvieng, Xe Bang Nuan, Dong Hua Sao NPA, Nam Kong (aka Nam Ghong) PPA, Nam Pa Production Forest				

3.3 Actions to address objectives of the Gibbon Conservation Action Plan for Lao PDR

For each objective of this Gibbon Conservation Action Plan a set of actions is described with an underlying rationale for the action and approach. Some activities are important at both national and local levels. The approach needs to be appropriate in each case. Tackling hunting at priority representative gibbon locations is of highest importance and requires most effort at a local level. The implementation of activities at the field level will need to be integrated into existing and on-going activities such as protected area management plans, zoning, and provincial or district socio-economic development plans to ensure that there are no negative impacts on gibbon populations. Details of these activities are given below to be implemented and integrated into any existing plans at priority sites to support conservation objectives as well as local livelihoods in the long-term.

3.3.1 Strictly curb hunting and trading in gibbons in priority sites

Generally wildlife has dramatically decreased during the past several years due to continued hunting. Although regulations banning hunting and trade in gibbons exist, they are not effectively implemented. Stricter enforcement of these regulations is the overwhelming priority to maintain gibbon populations and enable them to recover, before it is too late.

3.3.1.1 Enforcement and monitoring patrols in and around priority areas

Rationale: Hunting is the main threat to gibbons in Lao PDR and occurs throughout the country including in all NPAs which are considered priority sites for gibbons. Almost invariably, much of the hunting is linked with general wildlife trade activity outside the protected areas, and this may often also be the case for gibbons. Regular patrols and improved law enforcement are required to curb gibbon hunting, bearing in mind that there is nowhere in Lao PDR where hunting gibbons is a significant contributor to local livelihoods, and thus there is no rationale for a phased reduction in gibbon hunting while people find alternative livelihood sources.

Policy: Prioritise patrolling zones in protected areas with gibbons, based upon maximising the potential impact from patrols on significantly reducing threats to maintain viable local populations and understanding of the tactics of hunters and wildlife traders. Also, identify areas for patrolling along roads/tracks in and around protected areas. Networks and patrol teams in the prioritised protected areas should be well trained.

Actions:

- Patrolling to be undertaken in important gibbon habitat inside protected areas by patrol units (NPA staff and villagers) supervised by the Provincial Division for Protected Area Management, and participation by Provincial Offices of Forestry Inspection (PoFI) and Provincial and District Agriculture and Forestry Offices (PAFO/DAFO).
- Training for conservation managers on designing patrols targeting gibbons, training patrol teams, management responses to patrol reports, collaborating with relevant government agencies and community outreach.
- Training for patrol teams on basic field skills, gibbon ecology, use of equipment, reporting and responding to incidents on site.
- Reporting and response systems should be in place, to improve lines of communication from the ground level to decision-makers and to facilitate effective management responses.

3.3.1.2 Designation of totally protected zones and controlled use zones in NPAs to cover important gibbon areas

Rationale: Zoning enables protected area managers to target limited resources to priority locations, based upon known biodiversity values and pressures on the forest and chances of mitigating those

pressures, so should involve participation of local communities. As gibbons would be among the flagship species of most NPAs holding them, totally protected zones should ensure that they cover substantial proportions of gibbon populations in the NPA.

Policy: Designate totally protected zones and controlled use zones with local stakeholders in protected areas to ensure that gibbons are systematically protected from hunting under the management plan and regulations of protected areas.

Actions:

- DFRC, Department of Forestry, to provide guidance to concerned Provincial Divisions for Protected Area Management. PAFOs to review and revise the zoning for individual priority protected areas to ensure gibbon populations are well covered, such as: totally protected zone, tourism development zone, controlled use zone and buffer zone.
- District authorities and local villagers should actively participate in identifying zones to ensure awareness of their locations and support for zoning regulations.

3.3.1.3 Improve links between conservation managers and local law enforcement agencies to address hunting

Rationale: Enforcement of the wildlife law is weak even when NPA staff and patrol teams are highly motivated, because they receive insufficient support from law enforcement agencies. NPA and PAFO staff themselves have weak powers of enforcement.

Policy: Agree protocols between conservation managers and appropriate law enforcement agencies on addressing wildlife hunting violations. This is just as relevant to gibbons as other protected wildlife.

Actions:

- Pilot models of cooperation between NPAs and law enforcement agencies, such as POFI, to gain experience on tackling with poachers and illegal wildlife trade and establishing reporting and law enforcement protocols which can be replicated throughout Lao PDR. Local law enforcement agencies will need some basic knowledge of gibbons, which being charismatic animals and easy to relate to, can enable law enforcement agencies to deepen their appreciation and understanding of wildlife protection in general.
- DAFO, the army and police from district and village levels should be involved in identifying measures to address and suppress wildlife hunting.

3.3.1.4 Set up networks for wildlife threat monitoring and law enforcement

Rationale: Market demand for wildlife leads to hunting, to which gibbons are particularly vulnerable. People benefiting most from the wildlife trade are not usually the poorest. There are certainly some people who are reliant on illegal hunting to supply middlemen. However, none of them gains a significant portion of their income from supplying gibbons, at least not for any serious length of time. Wildlife traders develop various tactics to avoid inspections of officials, so informer networks are required for effective detection of wildlife crime.

Policy: Improve understanding of the driving forces behind wildlife hunting around priority gibbon sites by establishing effective coordination mechanisms and regular meetings PoFIs and police. Different agencies will need to collaborate specifically to build the proactiveness of each village and village cluster, appointing local informants especially at the district and village cluster levels and to establish a strong informer network.

Actions:

- PoFIs and police to identify local informants from provincial to district levels and village clusters around priority gibbon conservation areas to actively prevent illegal wildlife hunting and trading, especially gibbons. Strong incentives will need to be provided to local informers.
- Work with police at concerned areas to develop mechanisms to deal with illegal wildlife trade.

3.3.1.5 Disseminate information on regulations and enforcement governing hunting and trading gibbons

Rationale: The protected status of gibbons in Lao PDR under the Wildlife Law is generally not known by local villagers or even the government officials charged with ensuring their protection. As a first step awareness needs to be raised of their legal protection as a disincentive for hunting and trading gibbons.

Policy: Using the appropriate government channels, ensure clear, concise and locally accessible information on regulations and enforcement governing hunting and trading gibbons is disseminated to all areas with importance for gibbon conservation.

Actions:

- This work should be the responsibility of DoFI, PoFI and PPAM under the direction of DFRC, Department of Forestry, in collaboration with relevant PAFOs, and other concerned conservation organisations to disseminate relevant regulations/laws and raise awareness (links to activity 3.3.4).

3.3.2 Protect important and representative gibbon habitats

Rationale: While hunting is usually the predominant threat, habitat disturbance and destruction impact the stability of gibbon populations in some protected areas, especially by increasing the levels of hunting and the effects of any given level of hunting. Land use planning has not been well implemented in many areas. Encroachment and forestland conversions are high concerns especially when they are not well-planned or occur inside NPAs.

Policy: Current designation of forest areas provides sufficient habitat to maintain good populations of gibbons throughout the country, be they protected areas, protection forests or production forests. The issue for gibbon protection is correct management of these areas in accordance with stated regulations to ensure forest land is not converted and hunting is curbed. Provincial or district authorities should clearly inform the public and any important stakeholders about the location of conservation areas and totally protected zones, and regulations regarding their management.

Action:

- National University of Laos collaborates with DFRC, Department of Forestry, as well as Provincial Divisions for Protected Area Management to conduct cross-sectoral field research of human activity to identify local drivers for land conversion and hunting.
- PAFOs should ensure that other local stakeholders, especially local communities and concerned projects working in the prioritised areas, participate in zoning, awareness raising and enforcement and support a broader integrated planning approach with improved stakeholder coordination.

3.3.3 Increase public support for gibbon conservation

Rationale: Gibbons are charismatic and attractive animals that do not harm anyone. Nor would “not shooting” a gibbon have a big impact on a hunter’s income. Awareness raising can play a significant role in gibbon conservation, in particular by encouraging local people to feel pride in the gibbon populations nearby and want to protect them. Awareness raising needs to be done for gibbon conservation at the priority sites for gibbon conservation.

3.3.3.1 Understanding the knowledge, attitudes and perceptions of stakeholders towards gibbons

Policy: Study and specify target groups including insiders (e.g. residents) and outsiders (e.g. traders, officials) in and adjacent to protected areas to determine the target groups for awareness raising and create understanding about the importance of conservation. The information should be used for designing awareness raising programmes to meet the perceptions of different groups of people.

Actions:

- Provincial Divisions of Protected Area Management and protected area management offices to undertake surveys in areas within their jurisdiction in order to plan awareness raising for the appropriate target groups.
- Relevant district education divisions, Lao Women's Union, Youth Union and Lao Front for National Construction of the district and provinces should participate in designing appropriate awareness raising materials following advice provided from gibbon or conservation specialists who are working in the areas or at the national level.

3.3.3.2 Implement local community outreach programmes

Policy: Community outreach should be a two-way process of communication between local communities and conservation practitioners, be sensitive to local cultures and draw from the results of the previous section 3.3.3.1. The knowledge and experiences of local, district and provincial officials in conducting such work may be relatively limited; however, they are key stakeholders in implementing conservation measures starting from raising awareness to law enforcement. Communication tools may be video, radio or village loud speakers, posters or drama, role-plays, or cartoon books for school children. Participatory initiatives should be promoted, which encourage active involvement of target groups rather than passive consumption of information, such as conservation contests, green clubs and school activities. Gibbons are, after all, very charismatic and attractive animals and can thus be used to engage people in conservation. The use of local languages should be encouraged at the site level and where possible support traditional conservation practices.

Actions:

- Provincial Divisions for Protected Area Management and other protected area staff to implement community outreach programmes.
- DFRF, Department of Forestry, and DoFI collaborate with Provincial Divisions for Protected Area Management and relevant projects to plan training and awareness raising activities for government officials in the prioritised areas.
- Community outreach skills are specialised and training should be provided by experienced practitioners, where those skills are lacking locally.
- Lao Women's Union, Youth Union and Lao Front for National Construction of the district and provinces concerned should participate in designing appropriate awareness raising materials through advice provided by specialists.

3.3.3.3 Conduct provincial and national level awareness raising

Policy: Public media channels at provincial or national levels should be used to raise awareness about wildlife trade and encourage broader support for wildlife conservation and sustainable development with gibbons as flagship species. At national level, some awareness raising products e.g. songs, should be produced in at least Hmong and Lao Theung languages.

Actions:

- DFRF, Department of Forestry and DoFI collaborate with Provincial Divisions for Protected Area Management and relevant projects to coordinate the design and development of provincial and national awareness raising programmes.
- At provincial and national levels, Lao Women's Union, Youth Union and media should be involved in this activity.

3.3.3.4 Provide opportunities for the participation of high-ranking decision-makers

Rationale: High-ranking government officials are important decision-makers and can influence the implementation of this action plan. However, whether their influence is positive or negative depends

on their understanding of the issues. Engaging them in activities and study tours related to gibbons will help them learn the issues first hand, especially from successful conservation projects.

Policy: Provide opportunities for influential decision-makers to be better informed about the importance of Laos for gibbons and raise their interest in biodiversity conservation.

Actions:

- DFRC, Department of Forestry, collaborates with relevant sectors and projects to improve coordination with decision-makers from other government agencies through a study tour approach to learn from successful cases in Lao PDR and abroad on protected area management and threatened species conservation, with gibbons as a flagship species.

3.3.4 Build capacity of Lao people for gibbon conservation

3.3.4.1 Build capacity in surveys and research

Rationale: There are no Lao national gibbon specialists yet the long-term hope for survival of gibbons lies with Lao people, so a base of good technical knowledge needs to be built as soon as possible. Research activities themselves also often provide protection to gibbons through the benign presence of researchers in the forest and may generate strong interest among local communities.

Approach: Capacity building for young personnel in various fields of conservation work such as conducting threat assessments, studying natural resource use of local communities, conservation management, surveys and research techniques for wildlife and gibbons in particular. Opportunities to study in the country and abroad, especially among neighbouring countries, should be sought.

Actions:

- Select personnel from priority areas for training on conservation threat assessments, participatory rural appraisal (PRA), conservation management planning and gibbon survey and monitoring techniques.
- Identify staff from DFRC and Provincial Divisions for Protected Area Management to attend training courses, surveys and research with experts or foreign students in various conservation fields.
- Enable students from NUoL and relevant projects to conduct research at priority gibbon sites to support conservation planning.
- Strengthen curriculum development at NUoL for conservation biology, including gibbons as flagship species, perhaps integrated with the existing WCS assistance program.
- Establish and strengthen cooperation partnerships between NUoL and relevant foreign academic institutes on gibbon research.

3.3.4.2 Plan and implement conservation projects

Rationale: Having capable personnel who can plan and manage conservation projects is crucial to driving conservation activities to support gibbon conservation. Capacity building for government officials who are conservation leaders in Lao PDR is needed to guide conservation work for the country in the future.

Policy: Support capacity building for young personnel in various fields to strengthen conservation planning and implementation.

Action:

- Select personnel from priority areas, DFRC and Provincial Divisions for Protected Area Management for training on project planning and management.
- Outstanding officials can be selected to attend training or further study, especially abroad in the field of planning and protected area management.
- DFRC/DoF should collaborate with NUoL and with relevant field conservation projects.

3.3.5 Improve local people's livelihoods through site-based gibbon conservation and eco-tourism

There are people living in and around all designated protected areas in Lao PDR and their livelihoods depend heavily on local natural resources. Species conservation planning in and around protected areas should include carefully targeted support for livelihood development that links the needs of local villagers to conservation objectives.

Ecotourism represents a means of directly tying increased incomes for local communities to the presence of the local gibbon population, as gibbons in themselves can be a major tourist attraction. This has already been demonstrated in Lao PDR. Ecotourism projects should give high priority for the poor and people who fully participate in gibbon conservation. However, project design and planning to implement this project should be carefully considered in order to avoid direct and indirect adverse impacts, both short-term and long-term, on other biodiversity as well as gibbon populations.

3.3.5.1 Feasibility study on potentials for ecotourism development

Rationale: Many factors are required to secure sustainable tourism investment that benefits both local communities and NPAs and their conservation objectives and not all the places where gibbons are present are suitable for tourism development.

Policy: Conduct a feasibility study to assess potentials for community-based tourism investment in relation to gibbon conservation, as well as looking at additional tourism values in the area, such as the landscape, culture, food production and handicraft development, and assess community capabilities at the selected sites. Planning gibbon-based tourism activities should be done in consideration of other local biodiversity values, e.g. as gibbons are arboreal they may not be as sensitive to impacts from tourism, which may affect ground-level or aquatic biodiversity.

Action:

- NUoL in collaboration with Lao National Tourism Administration's Provincial Tourism Offices and PPAMs to conduct a feasibility study on potential sites for gibbon-based ecotourism development.

3.3.5.2 Promote community-based ecotourism development

Rationale: Gibbon-focussed tourism already supports direct gibbon conservation in one area in Lao PDR. There is still more potential in the country for local community tourism development, which enhances local villagers' ownership and engages them in conservation and provides much needed revenues for protected areas.

Policy: Promote gibbon-focussed tourism development with tourism companies, which have experience and a good reputation for engaging local communities within a broad range of tourism services and supporting conservation. Benefit/income sharing should be proportional and include revenues for local communities and protected area management through sustainable financing mechanisms.

Action:

- Guidelines should be developed to design ecotourism projects appropriate to gibbons as well as being environmentally sensitive and providing equitable benefits to local communities. They should also help local authorities vet private companies to ensure that they have the capacity and interest in meeting high standards of best practice for ecotourism before approval is given for their operations.
- Concerned PPAM and PTOs to coordinate with interested private organizations and conservation agencies to establish community-based tourism at potential sites that would benefit gibbon conservation.

3.3.6 Improve coordination between organisations on gibbon conservation

Preparing this gibbon conservation action plan has already brought together a number of key government agencies. To implement the action plan that collaboration needs to continue at the national level and, most importantly, be developed locally for controlling wildlife hunting and trade.

3.3.6.1 Coordinate site-based gibbon protection

Rationale: Some foreign and government investment projects operating in landscapes with important gibbon populations may have limited understanding of the important local biodiversity values in their field of operation. There should be regular dialogue with project managers for gibbon conservation to be considered with development activities to minimise negative impacts and provide support where as possible, as part of a sustainable development agenda.

Policy: Build good relationships with projects working at site level for them to understand and incorporate support for gibbon conservation into their plans for the sake of social and economic development and biodiversity conservation within the broader landscape.

Actions:

- PPAM, Provincial Rural Development Offices and concerned projects to work together in order to find solutions and prevention of hunting and habitat loss.
- Field-based conservation projects should incorporate activities and the need for gibbon conservation into their implementation plans.

3.3.6.2 Coordinate prevention of hunting and trade in gibbons

Rationale: Roles and responsibilities as well as coordination mechanisms for concerned organisations to have the opportunity to participate in a dialogue on wildlife trade issues, specifically for gibbons, are not yet in place at the local level².

Policy: Build opportunities and develop coordination mechanisms for all key concerned organisations to confront wildlife trade issues together, especially for gibbons.

Action:

- At priority sites POFIs should propose a list of key concerned organisations, hold consultations and develop a coordination mechanism to deal with wildlife trade issues, especially for gibbons. It should include POFI, PAFO, PPAM, Customs and other involved organisations.

3.3.6.3 Greater collaboration for gibbon research

Rationale: Research is important for species and conservation planning and management to ensure that actions are well thought out to address the priority issues facing gibbons. Although it is already very clear that gibbons are threatened overwhelmingly by hunting, research is particularly needed on understanding various human threats and by conducting research young Lao conservationist can also build their skills and experience. Interdisciplinary research on gibbon conservation needs must be considered, incorporating a wide range of relevant research areas beyond purely biological and ecological research. The importance of social research should not be undervalued in the contribution it can make to designing well-thought out long-term conservation interventions.

Policy: Train researchers from the NUoL, focussing on assessing threats, impact analysis of gibbon hunting for subsistence use and for the wildlife trade and consumers' attitudes, in addition to regular ecological studies. Research activities for gibbons should be focussed on the threats in specific locations. Research at areas where gibbons live in highly degraded environments, such as in Nam Pa PPA, would help understand how gibbons survive outside little-degraded forest. Where

² A multi-stakeholder working group on illegal wildlife trade, including DoFI, DFRC and a range of non-government and international organisations exists at the central level. Discussions have also been initiated regarding establishing Lao PDR's own Wildlife Enforcement Network Coordination Unit (Lao-WEN).

possible and appropriate, cooperation with foreign institutions should be encouraged drawing from regional expertise.

Action:

- NUoL coordinates with DFRC/DoF and universities abroad, particularly in China, Thailand and Vietnam, to collaborate in gibbon conservation research in priority areas and the following fields: causes of gibbon hunting and trade; public attitudes; local use of natural resources in gibbon habitat; and appropriate monitoring protocols.

3.3.7 Improve understanding of the status of gibbons

While addressing the immediate threats to gibbons at key locations is a priority, further detailed information might assist in the conservation of some species at some specific locations. Species, species distribution range/patterns as well as the status of habitat conditions are all unclear.

3.3.7.1 Site-based surveys of gibbon distribution

Rationale: Basic information on gibbon distribution is needed for defining zones for gibbon conservation. Several priority gibbon conservation sites lack sufficient detailed information on gibbon distribution to be able to adequately target conservation efforts locally. Exceptions include Nam Kading NPA (where surveys were conducted for northern and southern white-cheeked crested gibbons), Nakai – Nam Theun and Hin Nam No NPAs.

Policy: Gibbon surveys to be conducted to assess the distribution of and threats to gibbons locally where required. Participants for the surveys will be trained by experienced specialists using survey methods that most effectively enable immediate protection for gibbons to occur. In this respect, the importance of tapping into local knowledge should never be over-looked.

Action:

- DFRC, Department of Forestry, to collaborate with concerned Provincial Divisions for Protected Area Management including PAFOs and NUoL to identify and coordinate surveys in priority areas.
- Pre-assessment using local knowledge and a participatory approach to help identify gibbon habitat would be a priority. Gibbon surveys in the forest may be needed as a follow-up.

3.3.7.2 Gibbon surveys in other sites

Rationale: Despite information gaps, currently there is sufficient information on the status and distribution of gibbons in Lao PDR (as presented in Section 2.2) for representative locations to be identified to target protection of each of the gibbon species in Lao PDR. Nevertheless there are two important information gaps, which need addressing: 1) investigating the possibility of other viable populations of the two *Hylobates* species and *Nomascus concolor*; and 2) further clarifying the range boundary between some of the species, although the latter is not a priority to maintain the full suite of species in Lao PDR.

Actions: The following locations should be targeted for surveys through coordination with DFRC and relevant PAFOs:

- Forest west of the upper Mekong in the north for white-handed gibbons, in habitat where there may be the possibility that populations hold out.
- Dong Khanthung and surrounding areas in Champasack Province west of the Mekong River where the area is critical for pileated gibbons.
- The central northern and north-western provinces for any more populations of black crested gibbons, or possibly northern white-cheeked crested gibbons, as the historical range of each species is unknown in this area.

3.4 Overall workplan and budget

To support implementation of the action plan Table 2 provides a plan of activities, timeframe, implementing agencies and tentative budget.

Table 2. Workplan and budget of Gibbon Conservation Action Plan for Lao PDR

No	Objective and Activity	Leading agency	Partners	Indicators	Means of Verification	2011-2015	2016-2020
Objective 1. Strictly curb hunting and trading in gibbons in priority sites							
1.1	Enforcement and monitoring patrols in and around priority areas to reduce threats to gibbons	PPAM PoFI PAFO	WCS WMMPA GIZ/KfW WWF IUCN/FFI	Reduction in threat recorded per unit effort of patrol	Patrol reports	x1x2x3x4x5	x6x7x8x9
	Budget: \$970,000 (co-financing to other projects)					\$570,000	\$400,000
1.2	Designation of totally protected zones and controlled use zones in NPAs to cover important gibbon areas	PPAM DFRC PAFO	WCS WMMPA GIZ/KfW WWF IUCN/FFI	No of zones identified and largely connected identified in prioritised areas	Reports	x2x3x4x5	
	Budget: \$200,000 (co-financing to other projects)					\$200,000	
1.3	Improve links between conservation managers and local law enforcement agencies to address hunting	PoFI PPAM	PAFO DFRC DoFI IUCN/FFI	Protocols agreed. Violators prosecuted	Reports of arrests and prosecutions with conservation managers	2x3x4	x6
	Budget: \$50,000 (co-financing to other projects)					\$40,000	\$10,000

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No	Objective and Activity	Leading agency	Partners	Indicators	Means of Verification	2011-2015	2016-2020
1.4	<i>Set up network for wildlife threat monitoring and law enforcement</i>	PoFI PPAM Local police	PAFO DFRC DoFI WCS WMPA GIZ/KfW WWF IUCN/FFI	Local teams and network are formed and functioning	Reports of incidents with conservation managers	x2x3x4	x6x7x8x9
	<i>Budget: \$490,000 (co-financing to other projects)</i>					\$300,000	\$190,000
1.5	<i>Disseminate information, regulations and enforcement governing hunting and trading gibbons</i>	DoFI/ PoFI PPAM	DFRC WCS IUCN	Raised awareness of local people and government staff	Social surveys	x2x3x4	x6x7x8x9
	<i>Budget: \$250,000 (co-financing to other projects)</i>					\$150,000	\$100,000
Objective 2. Protect important and representative gibbon habitats							
	<i>Budget: \$130,000</i>	NUoL DFRC	WCS IUCN/FFI	No. of research projects	Reports Research materials	x3x4x5	x6x7 \$50,000
Objective 3. Increase public awareness on conservation							
3.1	<i>Understanding the knowledge, attitudes and perceptions of stakeholders toward gibbons</i>	DFRC PPAM	DoFI WCS IUCN/FFI	Social surveys conducted	Reports	x1x2	
	<i>Budget: \$30,000</i>					\$30,000	
3.2	<i>Implement local community outreach programmes</i>	DFRC PPAM NUoL	DoFI WCS IUCN/FFI	No. of events held	Reports	x2x3x4x5	x6x7x8x9
	<i>Budget: \$300,000</i>					\$200,000	\$100,000

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No	Objective and Activity	Leading agency	Partners	Indicators	Means of Verification	2011-2015	2016-2020
3.3	<i>Conduct provincial and national level awareness raising</i> <i>Budget: \$40,000 (co-financing to other projects)</i>	DFRC LWU NUoL	DoFI WCS IUCN/FFI	No of participants, dissemination	Reports	x2x3 \$30,000	x6 10,000
3.4	<i>Provide opportunities for the participation of high-ranking decision-makers</i> <i>Budget: \$50,000</i>	DFRC DoF	DoFI IUCN/FFI	No. of participants and events held	Reports	x2 x4 \$30,000	x7 \$20,000
Objective 4. Build capacity of Lao people for gibbon conservation							
4.1	<i>Build capacity in surveys and research</i> <i>Budget: \$100,000 (co-financing to other projects)</i>	NUoL DFRC PPAM	WCS WWF IUCN/FFI WMPA GIZ/KfW	At least 4 masters students focus on gibbon research Government staff trained.	Number of theses	x3x4x5 \$50,000	x6x7x8x9 \$50,000
4.2	<i>Plan and implement the conservation projects</i> <i>Budget: \$50,000</i>	NUoL DFRC	DoF IUCN/FFI	Government staff able to plan and develop gibbon conservation projects	New gibbon-focused conservation projects initiated	x3x4x5 \$20,000	x6x7x8x9 \$30,000
Objective 5. Improve local people's livelihood through site-based gibbon conservation and ecotourism							
5.1	<i>Feasibility study on potentials for ecotourism development</i> <i>Budget: \$30,000</i>	PTO PAFO	LNTA DFRC IUCN/FFI	At least 5 sites assessed for tourism potential	Reports	x3x4 \$30,000	

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No	Objective and Activity	Leading agency	Partners	Indicators	Means of Verification	2011-2015	2016-2020
5.2	<i>Promote community-based ecotourism development</i>	PPAM PTO PAFO	LNTA DFRC IUCN/FFI	No of pilot projects	Projects operational	x4x5	x6x7
	Budget: \$100,000					\$50,000	\$50,000
Objective 6. Improve coordination between organizations on gibbon conservation							
6.1	<i>Coordinate site-based gibbon protection</i>	PoFI PAFO DFRC	DOFI NLMA WCS WMMPA GIZ/KfW WWF IUCN/FFI	No of coordination/ meetings and target groups received info	Minutes of meetings	x2x3x4x5	x6x7x8x9
	Budget: \$30,000					\$20,000	\$10,000
6.2	<i>Coordinate prevention of hunting and trade in gibbons</i>	PoFI PPAM	DoF, DoFI PAFO WCS WMMPA GIZ/KfW WWF IUCN/FFI	Coordination mechanism established	Agreement signed	x2x3x4x5	x6x7x8x9
	Budget: \$50,000					\$30,000	\$20,000
6.3	<i>Greater collaboration for gibbon research</i>	NUoL DFRC PPAM	WCS PAFO IUCN/FFI WMMPA GIZ/KfW	No of research projects and participants	Research materials and reports	x2x3x4x5	x6x7x8x9
	Budget: \$50,000					\$30,000	\$20,000
Objective 7. Improve understanding of gibbon status							

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No	Objective and Activity	Leading agency	Partners	Indicators	Means of Verification	2011-2015	2016-2020
7.1	<i>Site-based surveys of gibbon distribution</i>	DFRC PPAM PAFO	WCS WMPA WWF GIZ/KfW IUCN/FFI	Priority areas are surveyed	Reports	x2x3x4x5	
	Budget: \$100,000 (co-financing to other projects)					\$100,000	
7.2	<i>Gibbon surveys in other sites</i>	DFRC NLMA	DoF IUCN WCS WWF	Areas surveyed	Reports	x4x5	x6x7
	Budget: \$50,000					\$30,000	\$20,000
	Total						\$3,070,000

Remarks: x = year

DFRC = Division of Forest Resource Conservation, DoF = Department of Forestry, DoFI = Department of Forestry Inspection
FFI = Flora & Fauna International, GIZ = Deutsche Gesellschaft für Technische Zusammenarbeit (German International Cooperation)
IUCN = International Union for Conservation of Nature, KfW = Kreditanstalt für Wiederaufbau (German Development Bank),
PoFI = Provincial Office for Forestry Inspection, PTO = Provincial Tourism Office, LWU = Lao Women's Union, NLMA = National Land Management Authority,
WMPA = Watershed Management and Protection Authority, NPA = National Protected Area, LNTA = Lao National Tourism Administration,
NUoL = National University of Laos, PAFO = Provincial Agriculture and Forestry Office, PPAM = Provincial Division for Protected Area Management,
WCS = Wildlife Conservation Society, WWF = World Wide Fund for Nature.

4 Implementing the Gibbon Conservation Action Plan

4.1 *Stakeholder responsibilities*

Division of Forest Resource Conservation, Department of Forestry, is the lead organization to advise on plan implementation, of which Provincial Divisions for Protected Area Management (PPAM) and the National Protected Area Team are the key implementing agencies to deliver results on the ground. Provincial and District Agriculture and Forest Offices should provide support, advice and facilities and participate in implementing projects. DFRC will act as the office for coordination and collaboration in implementing the gibbon conservation action plan for Lao PDR and will work closely with each sector and related projects to ensure that this action plan is implemented. The office will collect reports from gibbon conservation projects in the country and prepare a summary of progress of each project working on gibbon conservation in the country.

Department of Forestry Inspection and Provincial Offices for Forestry Inspection are key partners, working with other agencies such as DAFO, the army and police to develop effective law enforcement mechanisms in order to reduce wildlife trade and illegal logging in their areas of responsibility.

Any departments/sectors at the provincial level should consider and cooperate to implement the gibbon conservation action plan to ensure their own implementing plans will generate neither direct nor indirect adverse impacts on the gibbon population or their habitats.

The **National University of Laos**, particularly Faculties of Science, Forestry and Environment, should support and coordinate research related to gibbon conservation among themselves and with other international institutions. Human resource development for Lao PDR as well as for their own faculties should be a strategic high priority.

To achieve the goal and objectives of the gibbon conservation action plan, any projects working in the priority areas such as those planned or under implementation by IUCN, FFI, WCS, WWF and GIZ should help mobilise funds for plan implementation.

4.2 *Budget and funding sources*

This action plan acts as a reference for translation into detailed planning and used for fundraising within and outside the country. Any organisation or project can raise funds for supporting this action plan and can implement activities on their own, under the management of or in collaboration with the Department of Forestry, Lao PDR. Every project should set aside budget for the central level (e.g. DFRC) to supervise, monitoring and participate in gibbon project activities.

The indicative budget in section 3.4 serves as a reference for fundraising and raising interest in gibbon conservation in Lao PDR among donors, with both national and global interests. A number of potential internal and external funding sources are presented here but this suggested list is far from exhaustive.

4.2.1 *In-country funding*

The Environment Protection Fund (EPF), Forest Resources Development Fund, UNDP-GEF Small Grants, and compensation schemes from large development projects such as hydropower, mining,

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etc, are all sources of in-country funding that can support the goal of this plan and ultimately sector plans that support overall national sustainable development goals. These funds can be accessed by district and provincial authorities with external technical assistance where necessary. Typically, they cover habitat conservation rather than certain species, but gibbons should be used as flagship species at priority sites indicated in this action plan.

4.2.2 International funding

A range of international donors and foundations provide funds for biodiversity conservation. Grant sizes vary considerably from small species-focused grants which are relatively easy to apply for to larger multi-year grants which require considerable planning in order to have a successful application. The US Fish and Wildlife Service and Arcus Foundation have programmes which fund ape conservation directly and are key donors for gibbon conservation in this region. Broad biodiversity conservation donors of importance in the region are the Critical Ecosystem Partnership Fund (CEPF), Global Environment Facility (GEF), MacArthur Foundation and Asia Foundation. Small grants for species conservation work are also available from the Mohammed bin Zayed Species Conservation Fund, Margot Marsh Biodiversity Foundation (focused on primates), and Rufford Small Grants for Conservation to name but a few. This list is far from exhaustive, but is given here as a starting point and to indicate a range of international funding sources.

4.3 Monitoring and evaluation

The GoL through the Department of Forestry will assess the progress of all gibbon projects in Lao PDR under this action plan. The assessment will emphasise progress, achievements, lessons learned, constraints and challenges. The evaluation may include effective expenditure of those projects to understand if they are cost effective.

Each project under this gibbon action plan framework should submit a progress report on a quarterly basis. Annual reports and complete project reports should be used to assess 5 year and 10 year achievements against this action plan.

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Figure 3. Photo of the Final Consultation Workshop on Gibbon Conservation Action Plan for Lao PDR. Department of Forestry, February 2011.

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Division of Forest Resource Conservation
Department of Forestry
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In cooperation with
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