



Annual Report

2019



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Foreword



Another year has ended; our **5th year in activity!** It is a good time to reflect on what we have been able to achieve in the past 12 months, and plan for our next steps forward.

It is encouraging to realize how much we've accomplished and at the same time how fast the year has gone. But we must at all time remain humble in measuring our impacts and continue our efforts with our local, holistic, multidisciplinary and collaborative approach.

This year 2019, we reached a milestone with the signature of a Memorandum of Understanding with the Lao Government (with our partner the Nakai – Nam Theun National Park Authority) to implement all our activities for (at least) the next 5 years.

We have maintained and strengthened our four pillar programs (biodiversity research, anti-poaching patrols, conservation awareness and community sustainable livelihoods) and have built new collaborations with various partners. With the development of new projects, our team also grew with notably 12 new rangers and five new staff members who each come with their own skills to make our association stronger and more diversified.

To me this year feels somehow a little different, like a step closer to our mission and our vision. Last year, at around the same period, I was writing in my foreword of our Annual Report 2018 that answers to the current biodiversity crisis we are facing will only come about if community members of the civil society participate collectively in the management of natural resources and build solutions for their resilience as well as strengthen and cultivate their traditions and knowledge. This year, I am very pleased that we have launched our Community Resilience and Biodiversity Conservation project, and excited to see this project develop in the coming years.

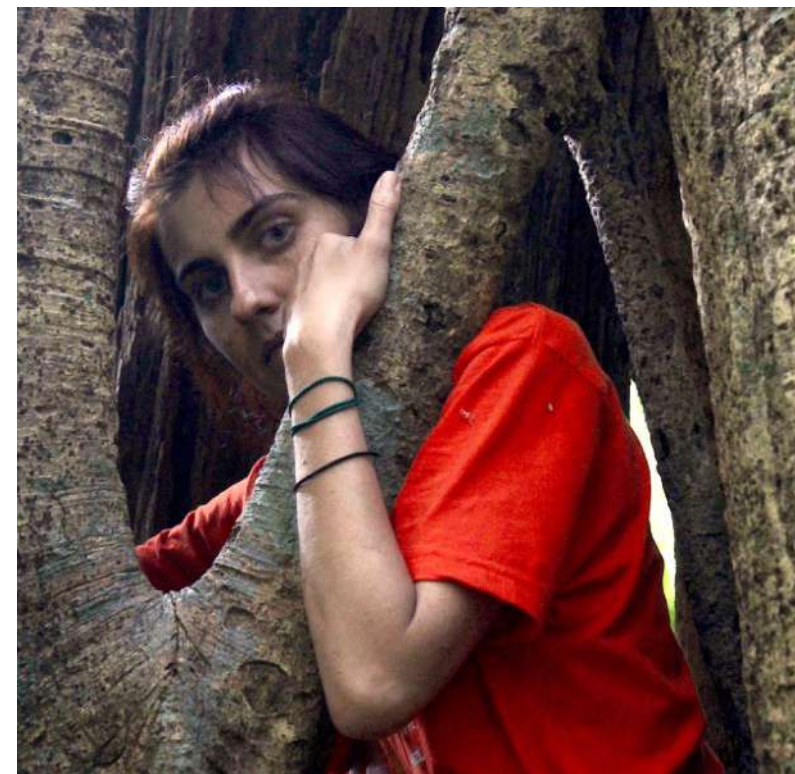
We have so much to undertake and along the way we will encounter challenges. But every experience will test our resilience and ultimately brings about lessons learnt from which we can strengthen our values, purpose and vision. Embrace the challenges, the imperfections and the unknown throughout your journey; from these we will create, evolve and resolve.

*Every new year, we strive to reinforce our values; to us, they are a **Community Spirit, Resilience** and **Sustainable Living; Optimism** and **Gratitude; Compassion, Kindness** and **Non-Violence; Honesty** and **Humility; Dedication, Creativity** and **Pragmatism**...and an endless **Wonder** and **Respect** for the **Natural World** and its **Intrinsic Value** and **Beauty**... I am looking forward to this new year 2020.*

Camille.

Founder and director

Nakai, Laos, 3 January 2020





About us

Association Anoulak (*conservation* in Lao language) is a French-registered association dedicated to the long-term conservation and study of wildlife in their natural habitat in Lao People's Democratic Republic (Lao PDR or **Laos**), in particular in the **Nakai-Nam Theun** National Park.

Our **mission** is to develop and implement innovative, multidisciplinary and sustainable approaches to the long-term conservation and study of the biodiversity and ecosystems in Nakai-Nam Theun National Park, with a skilled, passionate and dedicated team of nationals and internationals.

In **2019**, we changed our legal statute to an association under the French “Law 1901” (formerly it was registered under a local Alsace-Moselle law), our legal name to **Association Anoulak**, our headquarter address and our administrative founding members.



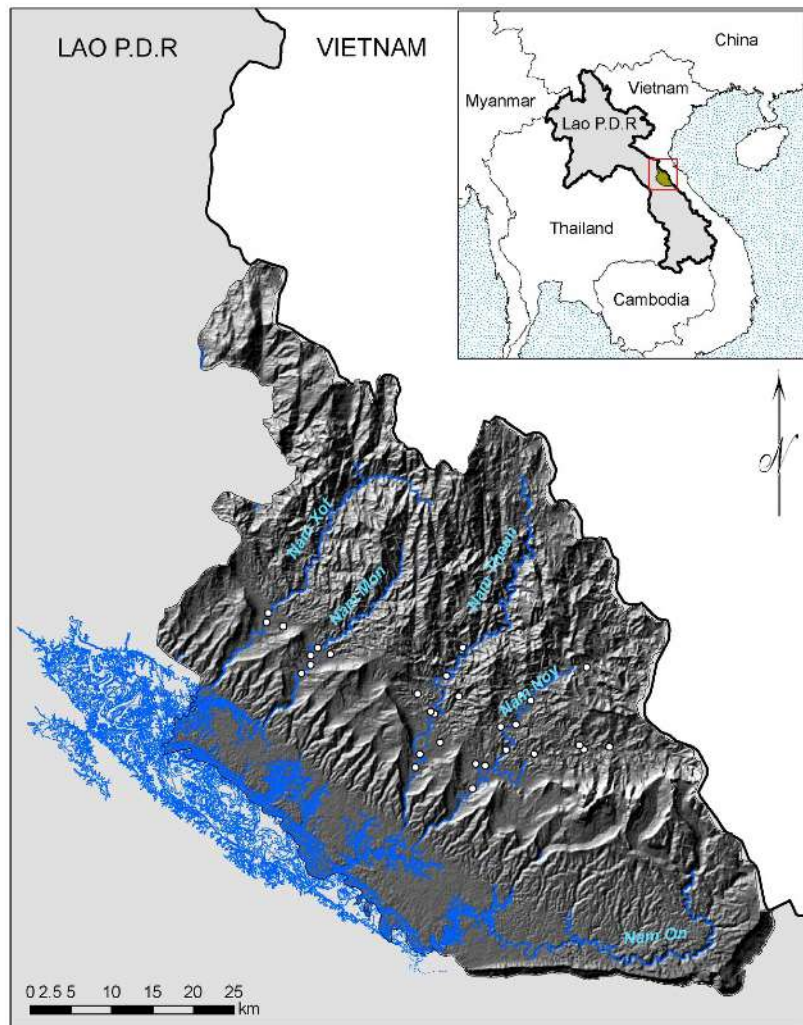
Association Anoulak currently employs **44 Lao people** (of which 41 are locals from Nakai):

- Mr. Chanthaphone (Tou) - Field projects coordinator
- Mr. Ouphakhone (Done) - Research officer
- Mr. Chaolor - Research officer
- Mrs. Dr. Lampheuy - Community project Manager
- Ms. Laythong - Community project officer
- Mr. Khongphet - Community project officer
- Mr. Khammai - Patrols quality control officer
- Mr. Khantaly - Patrols quality control officer
- 36 rangers from local community

Behind every one of them there is a story and a family. What keep us motivated is their smiles, their hard work, their dedication... In the end, what will remain from our efforts is how we support the community and the results this has on their livelihoods, on nature and on biodiversity.

Region of focus and intervention

Nakai-Nam Theun National Park (3500 km²) is one of the largest remaining contiguous forest blocks in the Indochinese peninsula and holds numerous **rare, endemic and highly threatened species**. It falls in the heart of one of the richest regions of Southeast Asia in terms of biodiversity and endemism and is one of the identified 'Key Biodiversity Areas' within the Indo-Burma biodiversity hotspot. In Laos, Nakai-Nam Theun is ranked as a **priority for its National and Global biodiversity importance**.



Nakai - Nam Theun is located in the heart of the **Annamite Mountains** with a unique climatic pattern and ecosystem characterized by a very high species richness and endemism. The Annamite Mountain range is where some of the **last mammals discoveries** took place (Critically Endangered saola *Pseudoryx nghetinhensis*; Critically Endangered large-antlered muntjac *Muntiacus vuquangensis*; Data Deficient Annamite muntjac *M. truongsongensis*; Data Deficient Annamite Stiped Rabbit *Nesolagus timmins*).

The challenge: Southeast Asia has long been identified (including by the IUCN) as being the region of the world with the **highest biodiversity extinction risk** principally from **unsustainable harvesting of forest resources** and this pattern is observed throughout Laos and in Nakai-Nam Theun.

Association Anoulak implements activities on:

***Biodiversity research and monitoring for conservation**

Objective: to understand the distribution, monitor wildlife populations and to increase our knowledge on in-situ species ecology and status of the threatened and endemic species in the Annamite Mountains which will inform conservation management

***Community anti-poaching patrols**

Objective: to reduce illegal poaching of species in the wild, allow their populations to remain stable or recover from unsustainable hunting

***Conservation awareness**

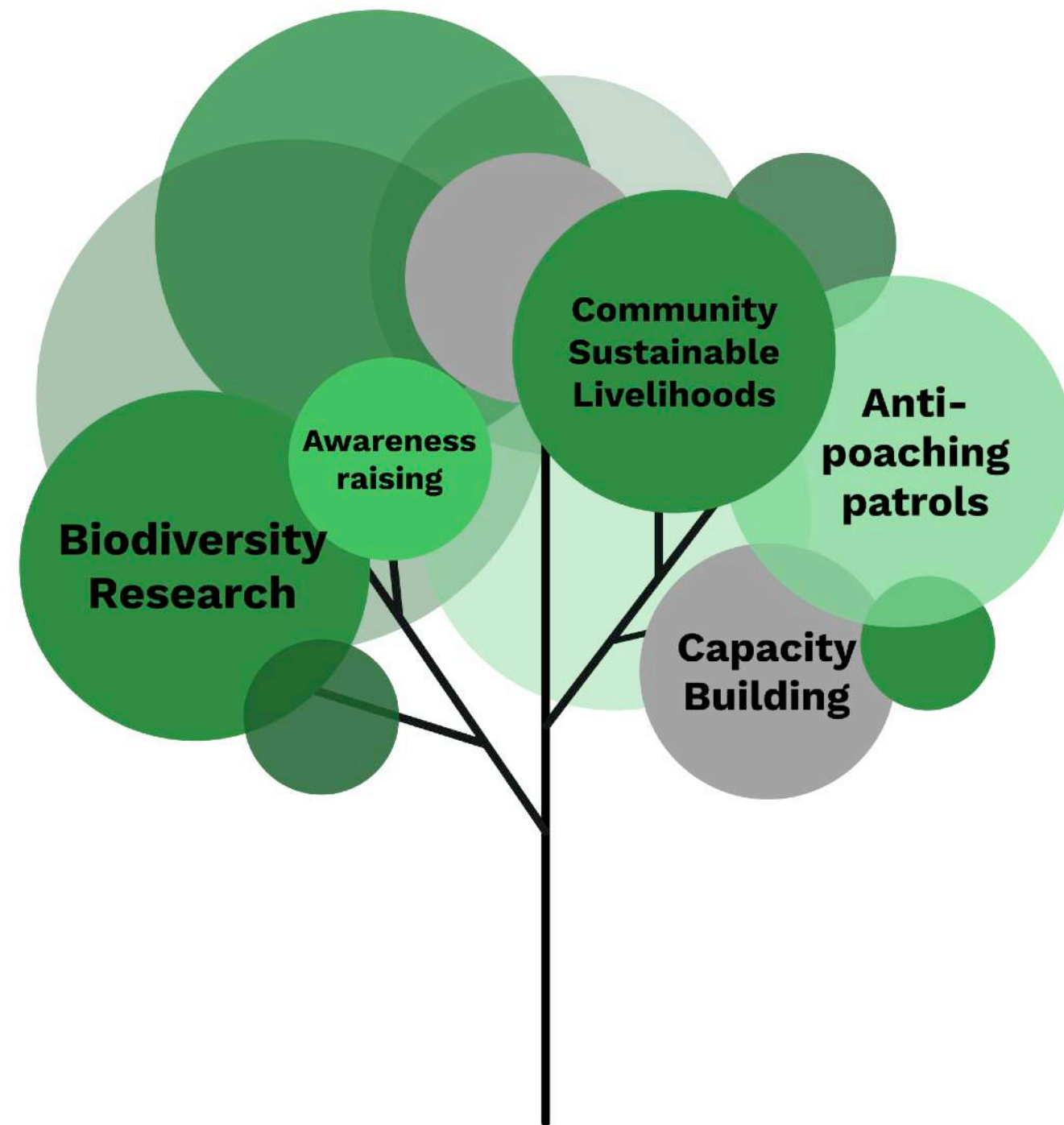
Objective: to raise awareness of the local community and the international community about the biodiversity of the Annamite mountains and the importance of protecting it.

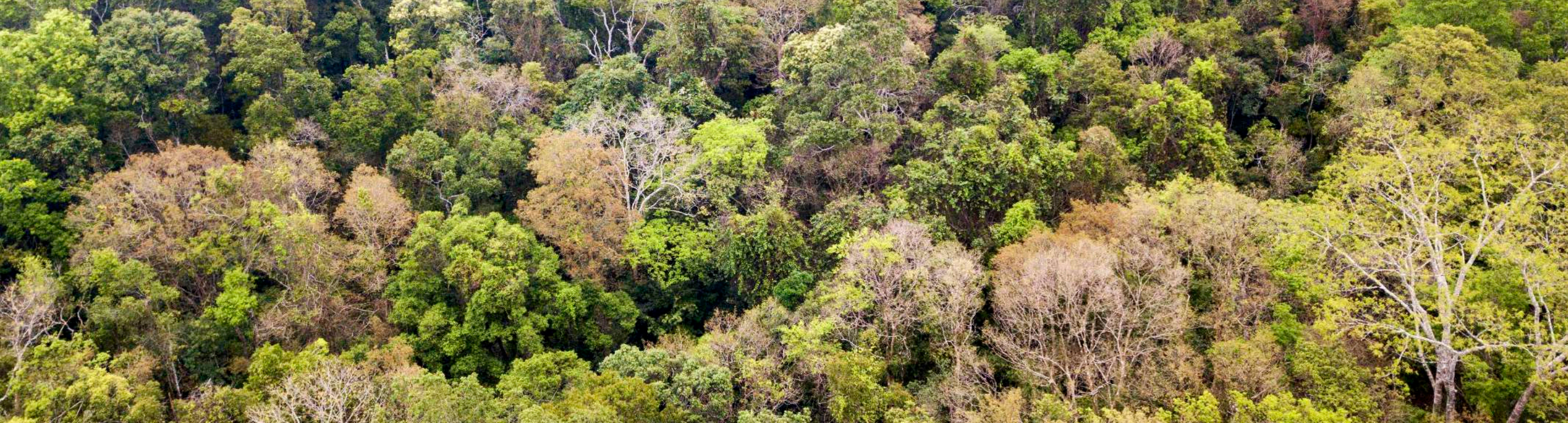
***Community sustainable livelihoods**

Objective: to provide alternative and sustainable livelihoods and income to local communities to reduce their reliance on natural resources

***Capacity building**

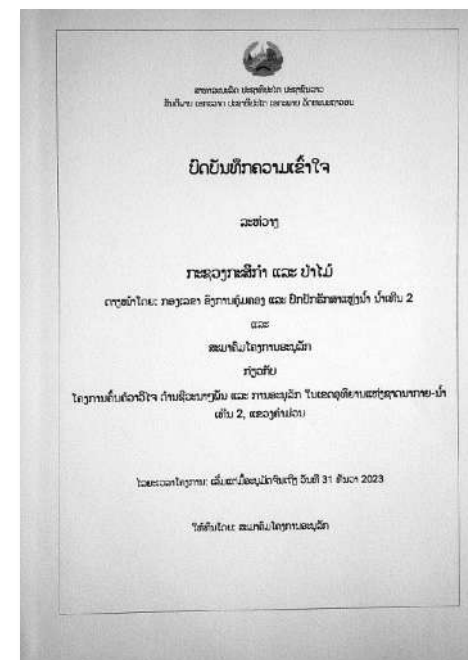
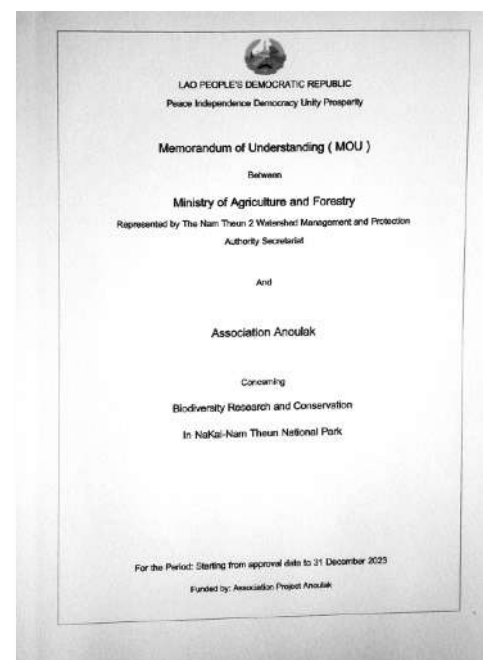
Objective: to inspire and train the new generation of Lao conservationists and biologists and ensure the sustainability of and sense of ownership of all our projects at the national level





Since 2017, Association Anoulak became one of four NGOs that formed a consortium ('Consortium of Technical Experts') to contribute to the management of Nakai-Nam Theun National Park alongside the managing government authority (Nakai - Nam Theun National Park Authority, formerly known as the Nam Theun 2 Watershed Management and Protection Authority. The aim of the consortium is to strengthen the capacity of the Nakai - Nam Theun National Park Authority to ensure the effective conservation and protection of biodiversity of the Nakai-Nam Theun National Park through the joint delivery of the 5-year (2017-2022) management plan and their outcome indicators.

In **2019**, Association Anoulak also signed a **Memorandum of Understanding** (MoU) with the Nakai - Nam Theun National Park Authority, governed under the Department of Forestry of the Ministry of Agriculture and Forestry of Lao PDR for the long-term implementation of our programs.





Biodiversity research and monitoring in 2019

Red-shanked Douc (*Pygathrix nemaeus*) habituation process

Rationale: The Red-shanked Douc is a charismatic Asian monkey endemic to Vietnam, Cambodia and Laos. Its largest population is found in central-eastern Laos, and notably in Nakai - Nam Theun National Park. Given the precarious conservation status of the global population, ecological studies on the species are important for in-situ and ex-situ conservation plans. Habituation of group(s) are necessary to carry out behavioral ecology studies

In **March 2019**, volunteer Mr. Andréa Sotto-Mayor joined our teams for the next 12 months (until end Feb 2020) with the aim to support the habituation process of the Red-shanked Douc and assess the long-term feasibility of the project. *Andréa came for four months already in 2018 to train our local team to follow habituation protocols.*

After a year of hard work with the teams in the field, the habituation has proven much more challenging than originally anticipated. This is due to their characteristic fission-fusion group dynamic. Red-shanked Doucs have a basic social organization of one-male unit (OMU). Several of these 'units' regularly fission-fusion during the day (or seasonally) forming multi-male/multi-female super-groups.

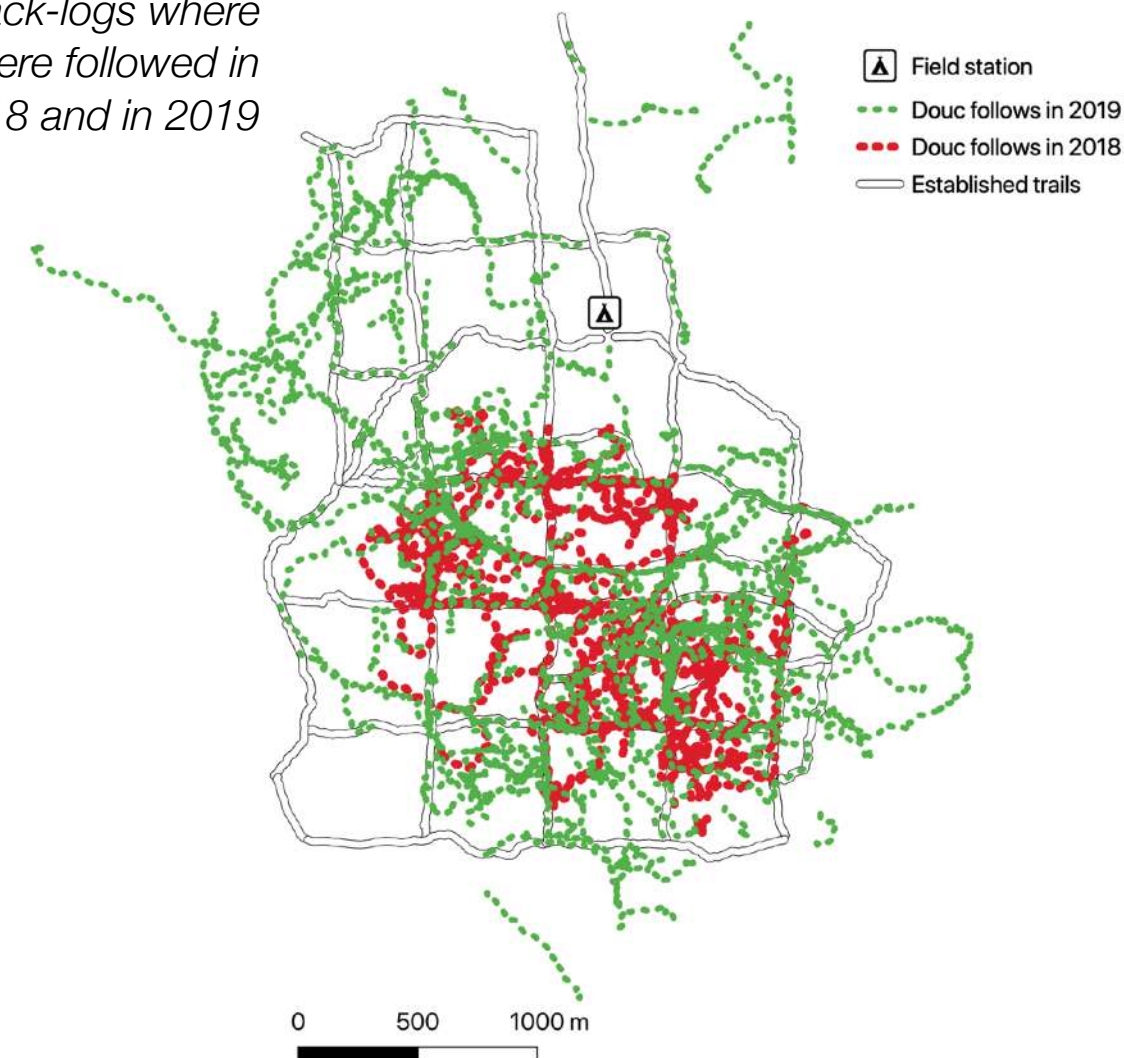
This specific social organization and group dynamic makes the habituation process unfeasible, due to the impossibility to distinguish between units and follow the same one. This is made even more challenging with the difficult terrain and dense forest.

Although the doc follows were relatively concentrated in one zone in 2018 (without certainty to systematically follow the same units/groups), the contacts and follows of groups in 2019 was much more challenging, as home ranges seem to have shifted and spread over larger zone (c.f. map beside).

Given the extremely intensive efforts that were dedicated for Douc habituation in 2018 and 2019, and the existing challenges described above, we decided to discontinue this project further in 2020. However, we will seek out potential alternative techniques and collaborations (e.g. study of their diet derived from plant-DNA extraction from fecal samples, which has been successfully implemented in other langur ecological studies).



GPS track-logs where docs were followed in 2018 and in 2019



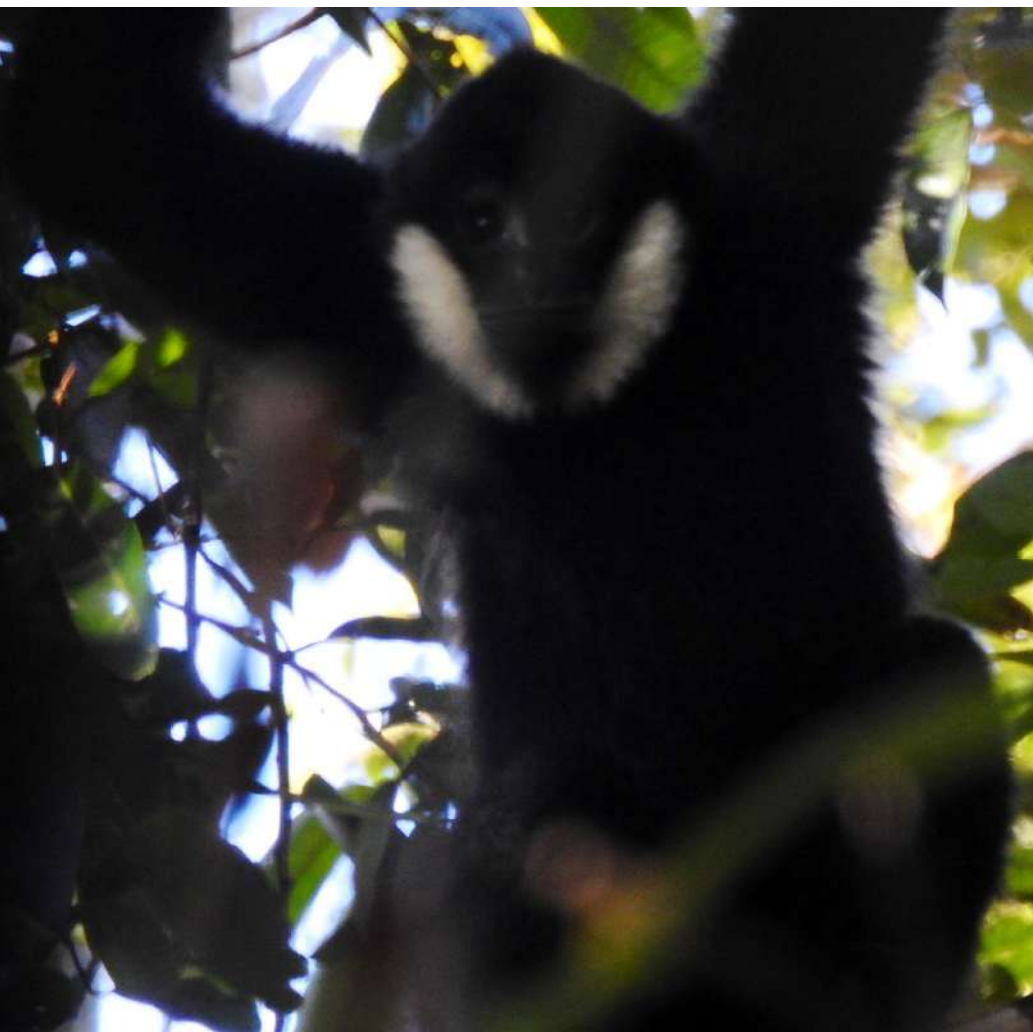


White-cheeked Gibbons (*Nomascus siki*/ *N. leucogenys*) distribution

Rationale: The current taxonomic status and distribution range limit of the population of gibbons occurring in Nakai-Nam Theun remains uncertain. It may hold both the Northern and Southern white-cheeked gibbon and/or a hybrid population. To better plan conservation actions on these species, it is crucial to know their distribution across the landscape. Because gibbon vocalizations are species specific we are recording gibbon calls in as many sites as possible across Nakai-Nam Theun, which we will identify to species.

We are collaborating with Dr. Michal Hradec from the University of Life Sciences of Prague, Czech Republic for the analysis using computer softwares.

In **2019**, we continued the collection of gibbon recordings. Additional samples will be collected in 2020 and all the recordings collected will be analysed in 2020.



female with young White-cheeked Gibbon feeding on fruits. Nakai-Nam Theun National Park 2019



Gibbon survey methods development

Rationale: Gibbons are some of the most threatened primates in the world, due to habitat loss, illegal pet trade, and hunting for food and traditional medicine. All twenty recognised species of gibbons are threatened with extinction on the [IUCN Red List of Threatened Species](#): five are Critically Endangered, fourteen are Endangered, and one is Vulnerable. Effective conservation measures and actions to mitigate threats to gibbon populations require accurate and precise estimates of their abundance, distribution, and population trends. However reliable survey methods are lacking.

Acoustic surveys are the most applicable method for gibbon, as they produce territorial calls that can be heard from large distances. Acoustic survey methods (with human detectors) have commonly been used to survey gibbons but there is subjectivity in the data from these surveys as they require surveyors to estimate gibbon locations without ever seeing them, resulting in unreliable abundance estimates. There is also no existing standardized survey protocol and/or analysis method, which prevents long-term population monitoring across time and space.

In **November 2019**, a team of researchers from the [Centre for Research into Ecological and Environmental Modelling \(CREEM\)](#), University of St Andrews in Scotland, including Professor David Borchers, PhD student Filippo Franchini and engineer Federico Franchini came to our field site to test a gibbon survey technique with a drone mounted with sound recorders. This was the first step into the start of a collaboration to develop a reliable user-friendly method to survey gibbons.

This first visit resulted in discussing and sharing ideas on the development of a different hardware, more adapted to the environment and that can be affordable and easy to use by field biologists and national park staff across Southeast Asia. In the coming year, we will be working with a team from CREEM (including statisticians and engineers) to develop a new technology that will be field tested at our site in 2020.

This collaborative project with the CREEM and endorsed by the [IUCN Species Survival Commission Primate Specialist Group \(PSG\) Section on Small Apes \(SSA\)](#) will have considerable applications for gibbon conservation across their range in Asia.

CREEM is an inter-disciplinary research centre at the University of St Andrews, linking researchers from the Schools of Mathematics and Statistics, Biology and Geography and Geosciences. Their aim is to develop and apply advanced mathematical and statistical methods to practical problems in biology, ecology and geography.

The SSA is a community of over ninety experts from twenty-one countries on a mission to save gibbons against the threats they face, from habitat destruction to the illegal pet trade.



Preliminary botanical surveys

Rationale: The flora of Laos remains one of the least studied in the region with little botanical work for the last 60 years. There have been so far only three incomplete published checklists of plants for Laos. Only one preliminary inventory was conducted between 2004 and 2007 in Nakai-Nam Theun, focusing on vascular plants, which led to a preliminary checklist of vascular plants for the area (Newman et al., 2007b), representing only a small fraction of the number of species that are present. No botanical study has been conducted since. It is likely that many new species or new records can be discovered. This work will contribute to scientific knowledge and plant species conservation globally.

In **March 2019**, we initiated a botanical survey focusing on trees, towards the production of a photographic field guide of tree species in Nakai-Nam Theun.

A team of botanists and assistants visited our field site to initiate a botanical survey, initially focusing on trees.

The team visiting our site included a team of Lao and French botanists: Mr. Keoudone Souvannakhommane a national botanist; Mr. Vong an assistant botanist from the [Pha Tad Ke Botanical Garden](#); Aurélien Morin (French) an eco-agro-biologist and botanist

The team sampled six vegetation plots (most of them 100 m x 20 m, total sampled = 9200 m²) around the Anoulak field station for three weeks. A total of 1350 trees were recorded and most of them were tagged with unique ID. Nearly 400 voucher specimens were collected, dried and prepared in the field for transport to the Pha Tad Ke Botanical Garden, Luang Prabang where a preliminary identification of the family of each taxon collected was carried out.

Most of the voucher specimens collected included only leaves, which prevented an identification to species. However, based on the preliminary analysis it is estimated that within the sampled area (<1ha), over 400 different taxon were recorded, which suggest the great diversity of trees (and other plants) in the Nakai - Nam Theun.

We are planning to conduct long-term botanical surveys from next year, to cover several taxonomic groups in collaboration with the Singapore Botanical Garden and Pha Tad Ke Botanical Garden, Luang Prabang.



Wildlife populations monitoring with systematic camera-trap surveys

Rationale: The current **conservation status** of several globally threatened species remains unknown in Nakai-Nam Theun. In addition, in order to **evaluate the management efforts** (especially patrol efforts) being implemented it is critical to obtain **baseline population estimates of key indicator species and monitor their populations trend over time**.

As part of the Biodiversity Research & Monitoring Strategy for Nakai – Nam Theun National Park (NNT NP) implemented by the NNT NP Management Authority and the role of Association Anoulak to advise and oversee the implementation of the strategy, systematic camera-trap surveys were conducted in 2018-2019. The main objective is to **estimate trends in animal populations (monitoring) over time and across the landscape** as part of the park's management plan.

The NNT NP is divided into management zones including **three Biodiversity Priority Zones** (BPZs) (Figure 1) delineated based on their conservation importance at the national and/or global levels and on threat analysis.

In **2018–2019**, the three BPZs were surveyed with ground camera-traps: a total of **134 camera-trap stations (two cameras per station = 268 camera-traps)** were set-up, with an overall survey effort of **20,183 active camera-trap nights**.

The survey design for the camera-trapping implemented in NNT NP follows the rationale and protocols developed by the *Leibniz Institute for Zoo and Wildlife Research (IZW)* (Abrams et al., 2018), with whom we collaborate for this project.

In **February 2019**, Mr. An Nguyen from IZW came to our site to join our team and provide training and assistance for the surveys in one of the three zones.

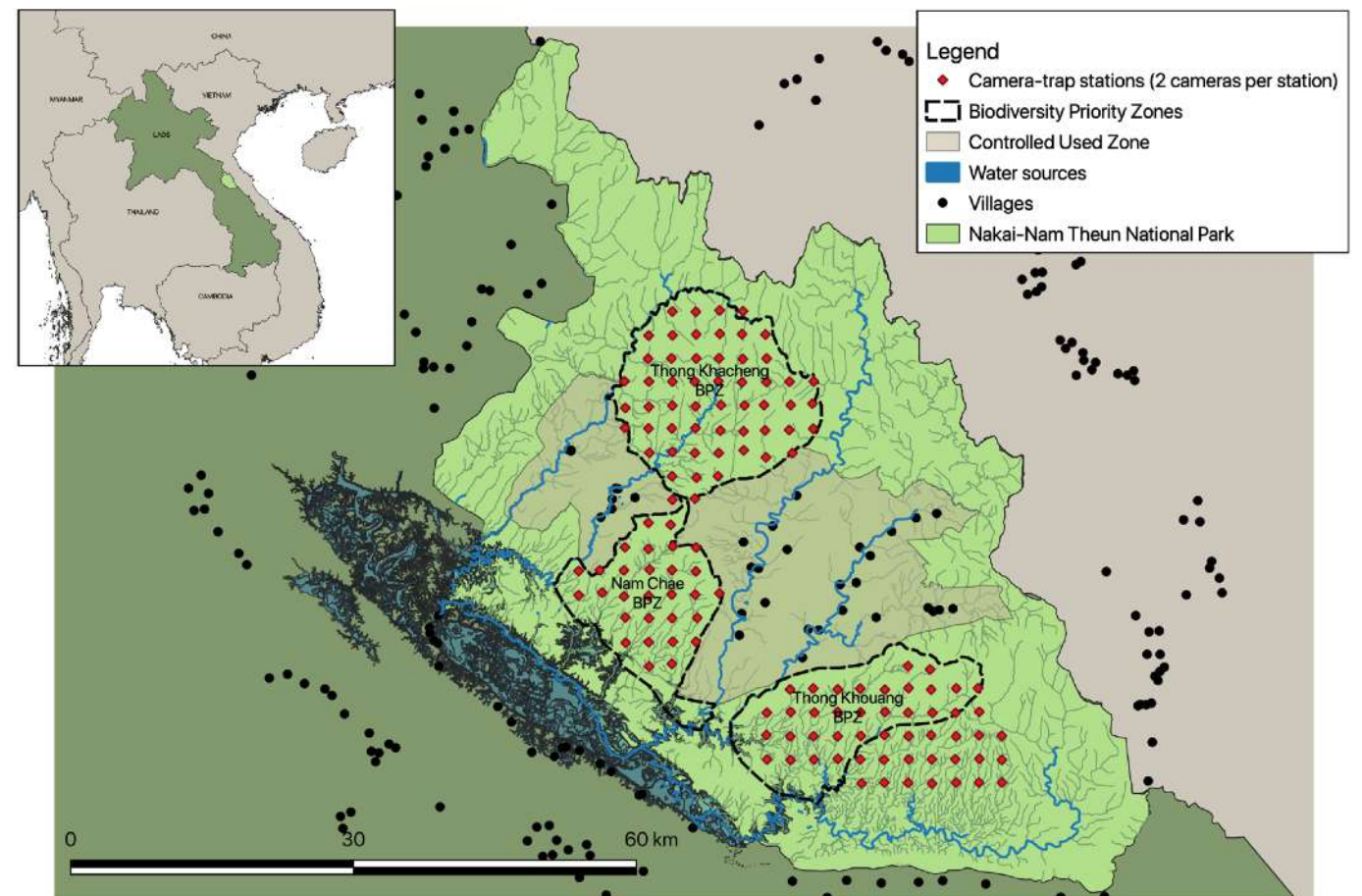
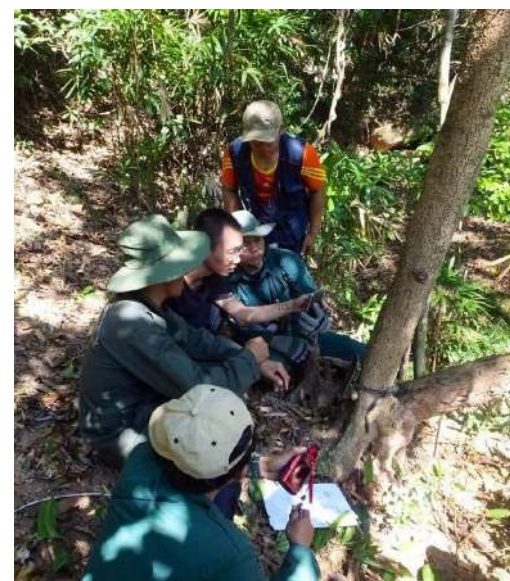


Figure 1: Location of the 134 camera-trap stations (268 camera-traps) set-up in 2018-2019 in Nakai - Nam Theun National Park



Overview of results

Excluding murid rodents (rat, mice); squirrels (except for Black Giant Squirrel *Ratufa bicolor*); bird species (except for galliforms specifically sought in the dataset), bats and monitor lizards, **a total of at least 39 species were recorded**, of which **14 are classified as Globally Threatened** (Critically Endangered; Endangered; or Vulnerable), two as Globally Near Threatened and one as Globally Data Deficient by the IUCN Red List of Threatened Species (ferret badger(s), weasel(s), partridge(s), bamboo rat(s) and pangolin(s) were not identified to species. Some photos of macaques, muntjacs and bears could not be identified to species).

The surveys recorded several hunting-sensitive species (indicator species), such as **Hog Badger, Owston's Civet, Binturong, Large-Indian Civet, Bears, Pangolins, Sambar, Muntjacs** (including the Critically Endangered **Large-antlered Muntjac** and Data Deficient **Roosevelts'-group Muntjac**). The fact that these species are still recorded in NNT NP is encouraging and means their population might be able to recover if law enforcement effort are adequate. Other species not recorded during our surveys that had been recorded in the past (e.g. Clouded Leopard, Asian Golden Cat, Coral-billed Ground Cuckoo; Crested Argus; Saola) may indicate their very low density or possibly their extirpation from NNT NP.

A complete survey report is available upon request (*Association Anoulak. 2019. Camera-trap surveys in Nakai – Nam Theun National Park for wildlife population monitoring Report for surveys conducted in 2018-2019. Nakai, Lao PDR*).

In **August 2019**, Anoulak's director Camille spent two weeks at the IZW's headquarters in Berlin, Germany, to work with their team on further aspects of the data that will lead to collaborative publications in 2020.



Overview of results (continued)

Table 1 : Overall systematic camera-trapping survey effort implemented in Nakai – Nam Theun National Park in 2018-2019, including the three Biodiversity Priority Zones.

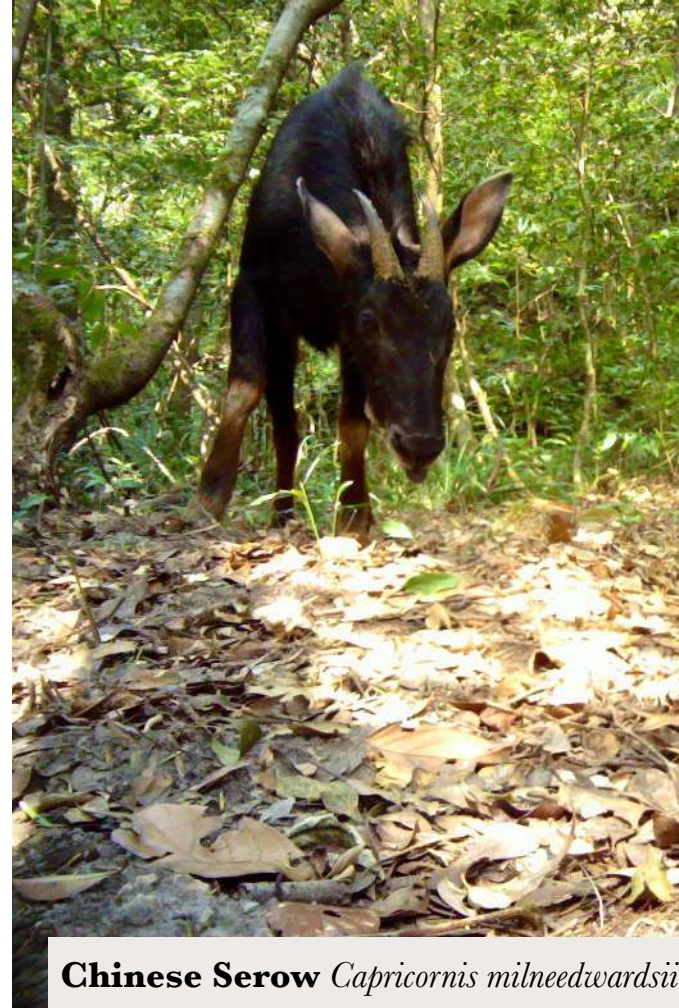
Survey zone	Nam Chae	Thong Khacheng	Thong Khouang	Total
Total number of stations	34	50	50	134
Number of operational stations	33	49	49	131
Total number of cameras initially set up	68	100	100	268
Total number of operational camera-traps	66	98	92	256
Active camera-trap nights	4509	11186	4488	20183
Total trapping period	14 Feb 2018 to 12 May 2018	13 Nov 2018 to 18 Mar 2019	4 Feb 2019 to 10 May 2019	

Table 2 footnotes:

- **n_events** = number of notionally independent events (photos are defined as notionally independent events when they occur at least one hour apart from each other); **n_stations** = number of stations where the species was recorded
- **IUCN Red List of Threatened Species** (www.iucnredlist.org) categories: CR=Critically Endangered; EN=Endangered; VU=Vulnerable; NT=Near Threatened; LC=Least Concerned; DD=Data Deficient
- excluded from the table are test/team photos; humans and domestic animals; murid rodents (rats, mice); squirrels (except Black Giant Squirrel *Ratufa bicolor*); birds (except galliforms and Coral-billed Ground Cuckoo); bats; and monitor lizards
- * Wild Pig *Sus scrofa*: it is possible that more than one species occurs in the region
- ** Lesser Oriental Chevrotain *Tragulus kanchil*: it is possible that more than one species occurs in the region
- *** François's-group leaf monkey: lack of comprehensive taxonomic, morphological, genetic and distribution range data for the group and the different morphs occurring in Laos and more widely across their range
- **** White-cheeked Gibbon *Nomascus*: more than one species of white-cheeked gibbon may occur in NNT NP: Southern White-cheeked Gibbon *Nomascus siki* (EN) and Northern White-cheeked Gibbon *N. leucogenys* (CR)

Table 2: List of species (sorted by total number of notionally independent events) recorded during the camera-trap surveys.

Species recorded	IUCN Red List category	Total_events	Total_stations
Ferret badger(s) <i>Melogale</i>	LC	1289	98
Roosevelts'-group Muntjac(s) <i>Muntiacus</i> cf. <i>rooseveltorum</i>	DD	645	29
Northern Red Muntjac <i>Muntiacus vaginalis</i>	LC	514	49
Common Palm Civet <i>Paradoxurus hermaphroditus</i>	LC	340	76
Large-antlered Muntjac <i>Muntiacus vuquangensis</i>	CR	285	64
Unidentified muntjac(s) <i>Muntiacus</i>		275	66
Masked Palm Civet <i>Paguma larvata</i>	LC	212	76
Assamese Macaque <i>Macaca assamensis</i>	NT	192	63
Owston's Civet <i>Chrotogale owstoni</i>	EN	181	24
Yellow-throated Marten <i>Martes flavigula</i>	LC	157	74
Wild Pig <i>Sus scrofa</i> *	LC	152	68
Asiatic Brush-tailed Porcupine <i>Atherurus macrourus</i>	LC	134	32
Crab-eating Mongoose <i>Herpestes urva</i>	LC	110	50
Partridge(s)	LC	110	26
Northern Pig-tailed Macaque <i>Macaca leonina</i>	VU	102	42
Lesser Oriental Chevrotain <i>Tragulus kanchil</i> **	LC	99	11
Treeshrew(s)	LC	86	27
Chinese Serow <i>Capricornis milneedwardsii</i>	NT	85	35
Red Junglefowl <i>Gallus gallus</i>	LC	73	26
Grey Peacock Pheasant <i>Polyplectron bicalcaratum</i>	LC	69	25
Stump-tailed Macaque <i>Macaca arctoides</i>	VU	65	29
East Asian Porcupine <i>Hystrix brachyura</i>	LC	56	23
Silver Pheasant <i>Lophura nycthemera</i>	LC	53	33
Spotted Linsang <i>Prionodon pardicolor</i>	LC	31	20
Weasel(s) <i>Mustela</i>	LC	31	20
Large Indian Civet <i>Viverra zibetha</i>	LC	25	7
Sambar <i>Rusa unicolor</i>	VU	24	10
Bamboo rat(s) <i>Rhizomys</i>	LC	20	14
Sun Bear <i>Helarctos malayanus</i>	VU	15	12
Rhesus Macaque <i>Macaca mulatta</i>	LC	13	6
Unidentified Macaque(s) <i>Macaca</i>		12	10
Leopard Cat <i>Prionailurus bengalensis</i>	LC	9	8
Pangolin(s) <i>Manis</i>	CR	7	6
Black Giant Squirrel <i>Ratufa bicolor</i>	NT	5	4
Red-shanked Douc <i>Pygathrix nemaeus</i>	EN	5	5
Binturong <i>Arctictis binturong</i>	VU	4	2
Greater Hog Badger <i>Arctonyx collaris</i>	VU	4	4
Asiatic Black Bear <i>Ursus thibetanus</i>	VU	3	1
François's-group leaf monkey <i>Trachypithecus</i> cf. <i>francoisi</i> ****	EN	2	1
Unidentified bear(s)	VU	1	1
White-cheeked gibbon(s) <i>Nomascus</i> ****	EN/CR	1	1





Sambar *Rusa unicolor*



Wild Pig *Sus scrofa*



Sunda Pangolin *Manis javanica*



Sun Bear *Helarctos malayanus*



Asian Black Bear *Ursus thibetanus*



Northern Pig-tailed Macaque *Macaca leonina*



Assamese Macaque *Macaca assamensis*



François's-group leaf monkey
Trachypithecus sp.



Red-shanked Douc
Pygathrix nemaeus



Stump-tailed Macaque *Macaca arctoides*



Large Indian Civet *Viverra zibetha*



Binturong *Arctictis binturong*



Yellow-throated Marten
Martes flavigula



Weasel sp *Mustela sp*



Owston's Civet *Chrotogale owstoni*



Greater Hog Badger *Arctonyx collaris*



(c) Enquête d'Arbres



(c) Enquête d'Arbres

Canopy camera-traps

Rationale: Our ground camera-traps overlooks several arboreal species also occurring in Nakai - Nam Theun National Park. Setting-up camera-traps in the canopy is relatively novel and offers new avenues for conservation and research of biodiversity. This pilot project will determine how best to put this method to use in our programs.

In March 2019, two professional arborists (or tree surgeons) and founder of the French association *EnQuête d'arbres*, Jérémie Thomas and Laurent Pierron, visited our field station to train our team in tree climbing for 10 days. Laurent and Jérémie created their association with the aim to bring the skills of professional tree climbers to scientists from around the globe to help them in their research.

Four of our team were trained: Mr. Done and Mr. Chalor, our two field technicians; Andréa, our resident volunteer in 2019 and Camille, Anoulak's founder and director.



(c) Enquête d'Arbres



(c) Enquête d'Arbres



(c) Enquête d'Arbres



Brown Hornbill *Anorrhinus austeni*



Black Giant Squirrel
Ratufa bicolor



Great Slaty Woodpecker
Mulleripicus pulverulentus



Assamese Macaque
Macaca assamensis



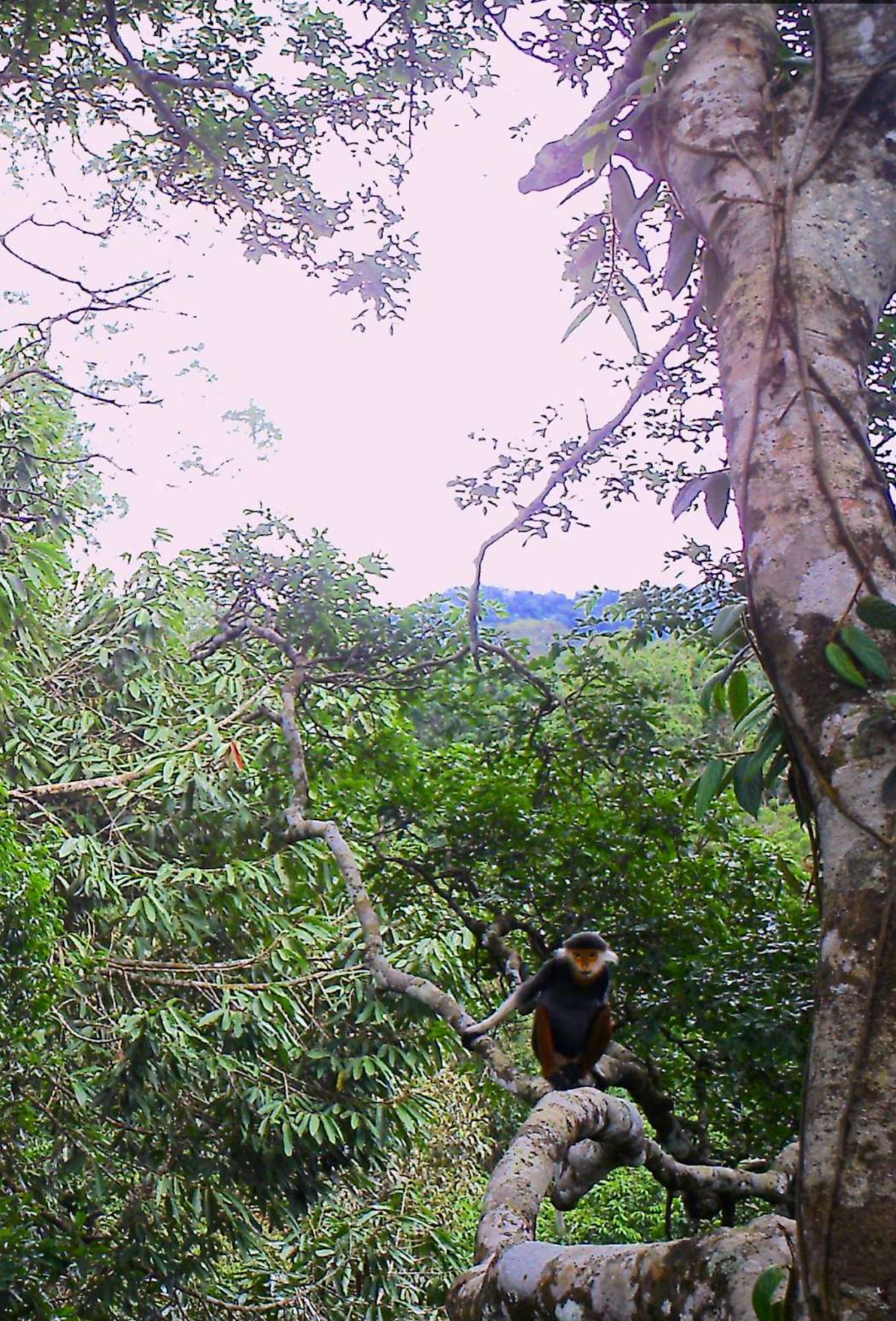
Pig-tailed Macaque
Macaca leonina



White-cheeked Gibbon *Nomascus sp.*



White-cheeked Gibbon *Nomascus sp.*



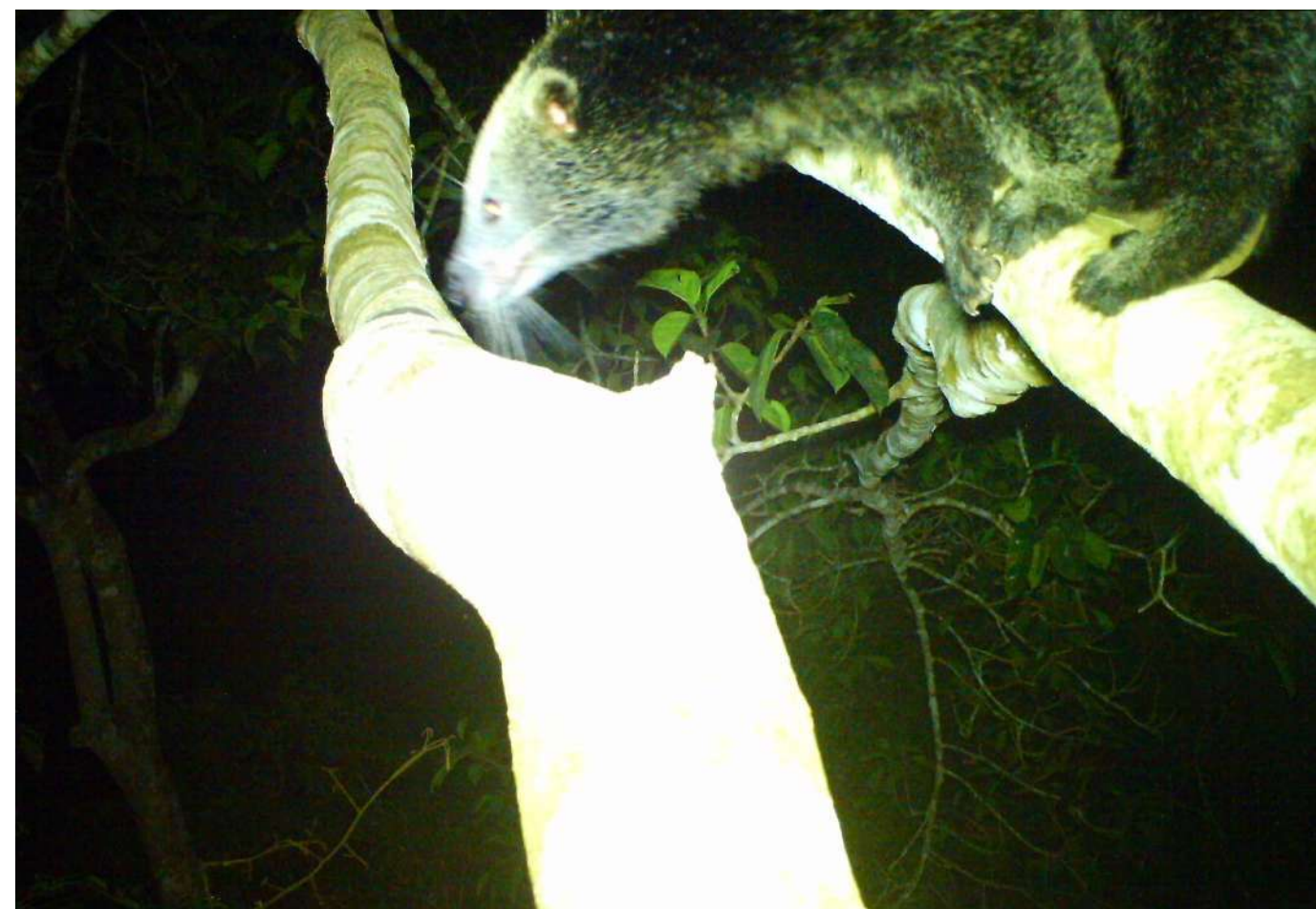
Red-shanked Douc *Pygathrix nemaeus*



Giant Flying Squirrel *Petaurista* sp.



Small-toothed Palm Civet
Arctogalidia trivirgata



Binturong *Arctictis binturong*



Otter surveys

Rationale: The distribution of Asian-ranged otter species remains very little known. In Laos, three species have been confirmed to occur: Asian Small-clawed Otter *Aonyx cinereus*, Smooth-coated Otter *Lutrogale perspicillata* and Eurasian Otter *Lutra lutra*.

Given the global conservation status of these three species – with declining populations throughout their range due to a continuous loss of habitat, decreasing number of their prey and hunting for the pet trade and pelt trade – new information is urgently needed on their distribution, habitat use and local threats in order to adopt species-specific and site-based management and conservation strategies.

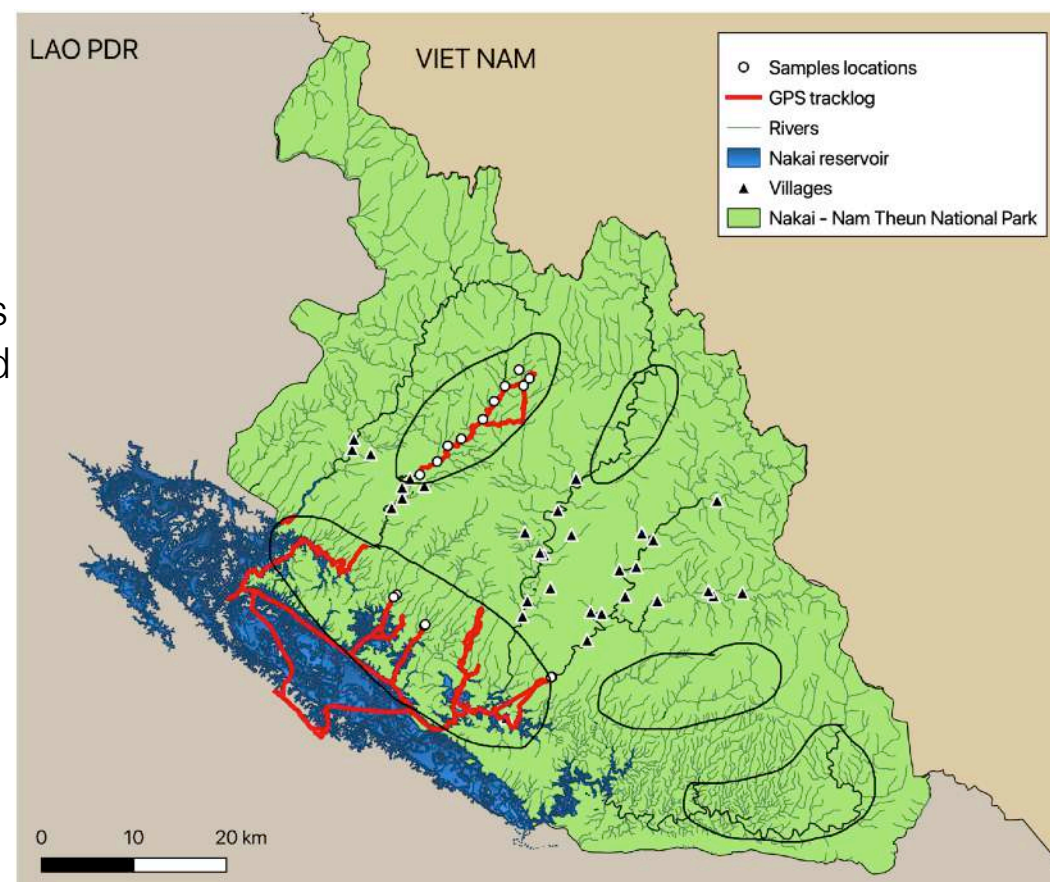
In Nakai – Nam Theun National Park, at least two otter species have been previously reported from the area: Asian Small-clawed Otter and a larger unidentified otter species. In 2016, we conducted a preliminary survey along the Nam Mon and only recorded Asian Small-clawed Otter (Coudrat, 2016). Further surveys are therefore necessary. The paucity of information available on otter species in NNT NP (and across Laos and the rest of their range) combined with the current threats they face globally, call for this urgent study. NNT NP is probably of, at least, regional importance for its otter populations.

In **December 2019**, we visited two sites as part of an otter survey that we will conduct over the next few months across Nakai – Nam Theun National Park (Figure 2). This survey is based on the collection of fecal samples from otter species (called ‘spraints’) from which DNA will be extracted. A total of **17 samples** were collected in 2019. This project is conducted in collaboration with Dr. Worata Klinsawat from *the Conservation Ecology Program*, School of Bioresources and Technology, King Mongkut’s University of Technology Thonburi, Thailand, where samples will be analysed.

This project has the following objectives:

1. To identify species and population-level genetic diversity of otter species in Nakai– Nam Theun National Park, Lao PDR
2. To investigate the evolutionary relationships of otter species within Mustelidae family
3. To determine sex-ratio based on molecular sexing of otter species
4. To investigate level and patterns of recent gene flow level among nearby populations based on microsatellite markers to monitor impacts of human disturbance on population dynamics and long-term survival
5. To use these data to develop follow up projects for the conservation and ecological study of otter species in Southeast Asia

Figure 2: Rivers and streams surveyed in 2019 and expected sites to be surveyed in 2020





Environmental DNA sampling method assessment (conducted in 2018-2019)

Rationale: Environmental DNA (eDNA) sampling is a non-invasive technique that consists of collecting water samples from streams, rivers and ponds in natural habitats, which are later analysed in a laboratory to extract remnants DNA from animals that came into contact with the water. This innovative and recent technique is used to for biodiversity inventory, monitoring biodiversity richness, species distribution and detect rare species.

In collaboration with *Vigilife*, *Beauval Nature* and *Spygen*, we collected eDNA samples in 2018-2019 to assess the potential of the technique for our research needs in Nakai-Nam Theun (including otter surveys). Two sampling schemes were implemented in 2018-2019: (1) *trial sampling in running waters for species inventories* and (2) *river catchment-scale design to compare results from eDNA samples and camera-traps*. The data collected in 2018-2019 was processed and analysed in 2019. We present the results, discuss the current limitations of the method and conclude on our decision to not pursue the use of the method further in Nakai - Nam Theun.

(1) Trial sampling in running waters for species inventories



Site ID	Date of sampling	Number of samples collected*	Nb species detected identified to species	>> of which Globally Threatened (IUCN Red List 2019)
Nam Xot 1	Mar-2018	2	3	1
Nam Xot 2	Mar-2018	2	4	1
Nam Xot 3	Mar-2018	2	4	1
Houay Sanap	Mar-2018	2	0	0
Houay Sagnong	Apr-2018	2	2	0
Houay Tong	Apr-2018	2	4	1
Nam Mon (2018)	Nov-2018	2	4	1
Nam Mon (2019)	Jan-2019	2	5	1
Houay Morrow	Nov-2018	2	3	1

Notes: *a samples corresponds to the filtration of 30 liters of water into a 'filtration capsule'
Only large mammals are considered in the results (i.e. excluding Rodentia, Chiroptera, Eulipotyphla, Scandentia); Wild Pig is excluded from the results for both methods as Pig's DNA is blocked during DNA extraction in the Lab; species detected with number of sequences < 100 are also included

Summary of results

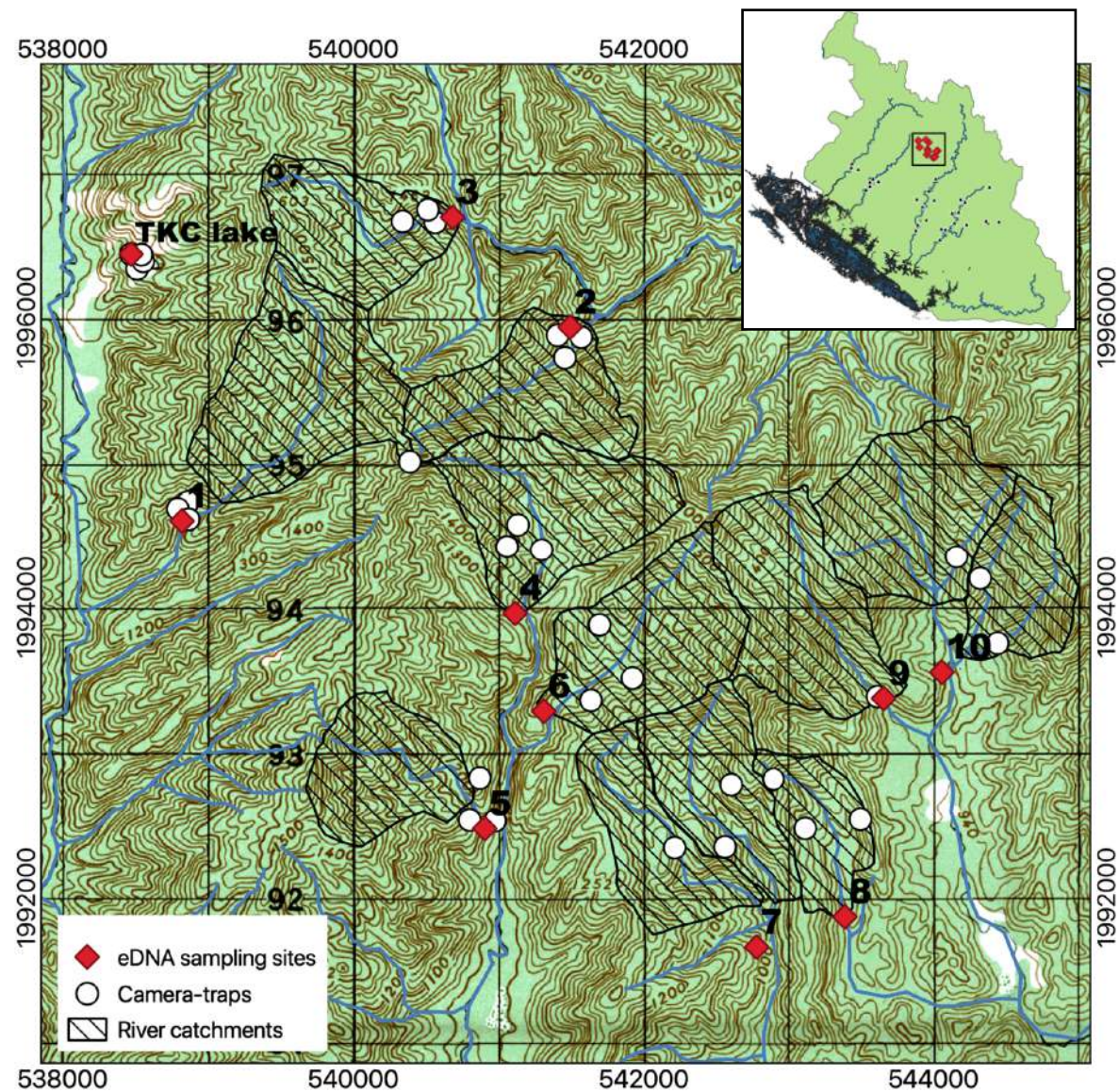
Total number of samples collected	18
Total number of species detected identified to species	11
>> of which Globally Threatened (IUCN Red List 2019)	5

(2) River catchment-scale design to compare results from eDNA samples vs. camera-traps

Methodology

Water-based eDNA in principle will gather data from upstream of the sampling location. The 10 eDNA sampling sites on running water were therefore selected to cover water catchments (see map below). We sampled these same 10 locations on two occasions: in November 2018 and again in January 2019 to compare results. One lake (TKC lake) was also sampled using eDNA sampling protocol for stagnant water.

Camera-traps (1 to 4, due to failure of some cameras) were set-up within the river catchments (due to the extreme ruggedness of the terrain, cameras were all set up relatively close to the eDNA sampling site), and retrieved during the second eDNA sampling occasion. Camera locations were selected based on animals signs/trails.



Results

Method	Site ID	Date of sampling	Nb of samples collected (eDNA) - Nb cameras	Liter of water filtered (eDNA) - Active camera-trap nights	Nb species detected identified to species	>> Of which Globally Threatened
eDNA	1	Nov-2018	2	60	2	1
eDNA		Jan-2019	0	0	0	0
camera-trap		Nov18 to Jan19	4	229	11	2
eDNA	2	Nov-2018	2	60	3	2
eDNA		Jan-2019	2	60	4	1
camera-trap		Nov18 to Jan19	3	174	7	2
eDNA	3	Nov-2018	2	60	3	1
eDNA		Jan-2019	2	60	1	1
camera-trap		Nov18 to Jan19	3	174	12	2
eDNA	4	Nov-2018	2	60	0	0
eDNA		Jan-2019	2	60	2	0
camera-trap		Nov18 to Jan19	2	116	9	3
eDNA	5	Nov-2018	2	60	2	1
eDNA		Jan-2019	2	60	2	0
camera-trap		Nov18 to Jan19	3	174	7	0
eDNA	6	Nov-2018	2	60	8	3
eDNA		Jan-2019	2	60	2	1
camera-trap		Nov18 to Jan19	3	171	7	2
eDNA	7	Nov-2018	2	60	4	0
eDNA		Jan-2019	1	30	1	0
camera-trap		Nov18 to Jan19	3	174	8	1
eDNA	8	Nov-2018	2	60	2	1
eDNA		Jan-2019	2	60	1	0
camera-trap		Nov18 to Jan19	3	173	8	3
eDNA	9	Nov-2018	2	60	2	1
eDNA		Jan-2019	2	60	0	0
camera-trap		Nov18 to Jan19	1	57	1	0
eDNA	10	Nov-2018	2	60	2	1
eDNA		Jan-2019	2	60	1	0
camera-trap		Nov18 to Jan19	3	171	9	2
eDNA	TKC lake	Nov-2018	1	2	1	0
camera-trap		Nov18 to Jan19	4	224	15	4

Notes: Only large mammals are considered in the results (i.e. excluding Rodentia, Chiroptera, Eulipotyphla, Scandentia); Wild Pig is excluded from the results for both methods as Pig's DNA is blocked during DNA extraction in the Lab; species detected with number of sequence < 100 are also included

Summary of results

eDNA	Total number of species detected identified to species	13
	>> Of which Globally Threatened (IUCN Red List 2019)	6
Camera-trap	Total number of species detected identified to species	22
	>> Of which Globally Threatened (IUCN Red List 2019)	8

Discussion

- The eDNA samples detected a low number of species (identified to species) given the relative effort and cost required to collect eDNA samples in the field
- In contrast, despite the relatively low survey effort and cost of the camera-traps we set up (i.e. cameras require relative low effort, as they can remain in the field for several months without maintenance), the number of species detected was higher from cameras
- Despite the detection of some species with the camera-traps (e.g. Small-clawed otter *Aonyx cinereus* — one of our target group — from the TKC lake), these were not detected from the eDNA samples
- Some species were misidentified by the eDNA analysis (species not occurring in Nakai - Nam Theun National Park: *Macaca fascicularis*; *Rucervus eldii*), which suggests species identification should be interpreted carefully from eDNA results (especially for the presence of several closely related species)
- There were variations in species detection in the two eDNA samples taken consecutively (30 L/30 minute-sampling taken consecutively at each site), which indicates the difficulty in results interpretation

Current limitations of the method based on our experiments:

- The method was initially **developed for aquatic species (fish and amphibians)** for which it has proven a powerful tool in sites where tested (e.g. Valentini et al., 2016; Biggs et al., 2015; Pont et al., 2018); However, the method is **currently not well adapted to mammal surveys**
- Essentially **relying on GenBank which lacks referencing for many species and/or may not be reliable for several others**
- Analysis **based on mitochondrial DNA**: problematic in case of introgression between two species (i.e. differentiation of two species that share the same mtDNA may not be possible if both are present or have been in contact in the past; e.g. this is the case notably for some otter species)
- **Detection probability and sampling unit**: needs more research and survey design protocols to account for imperfect detection and understand what sample units are represented (i.e. for non-aquatic species, the method currently **does not allow to estimate abundance index for population monitoring**)
- Substantial advances and research on the method is still needed for **interpretation of the results**: spacial and temporal occurrence of species is uncertain

Given the current limitations of the method and outputs from eDNA results, the method is **not suitable to apply to our research and conservation management needs in Nakai - Nam Theun National Park**

Anti-poaching patrols in 2019



Anti-poaching patrols

Rationale: Illegal poaching in Nakai-Nam Theun National Park have led in the past few decades to declines in biodiversity populations and local species extirpations, including several globally threatened and endemic species. In order to conserve the current remaining populations of threatened species in the area and allow animal populations to recover from past hunting pressure, it is imperative that an **intensive anti-poaching patrol system** is put in place **over the long-term**. To do so, site prioritization is essential. Three Biodiversity Priority Zones have been identified in terms of their qualitative and quantitative biodiversity value. We collaborate with current law enforcement technical teams and authorities and support anti-poaching patrols that complement existing efforts from the national park.

Context

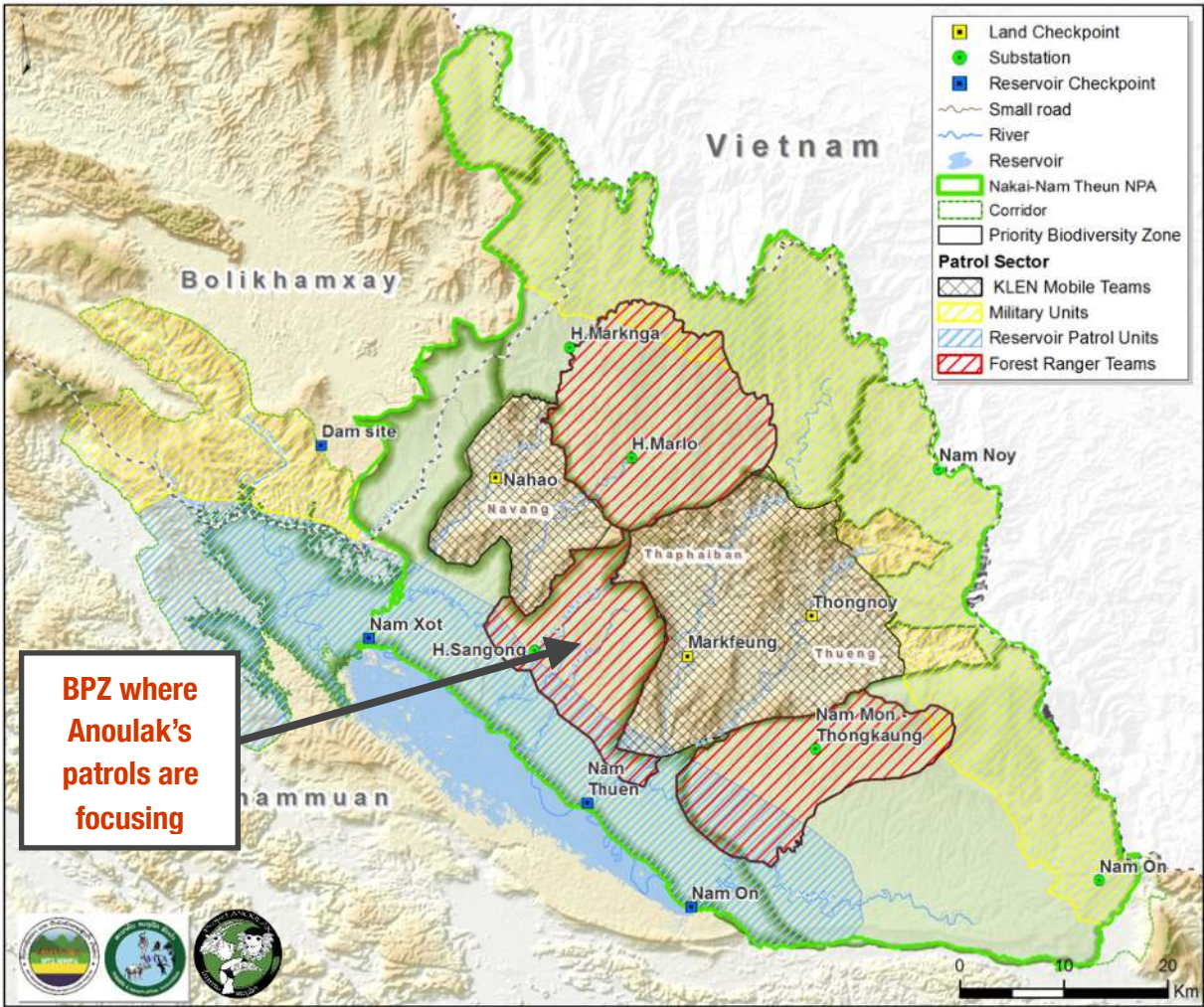
We are working in close collaboration with the Nakai - Nam Then National Park Authority and its technical law enforcement team to coordinate our efforts in anti-poaching patrols as part of the overall Law Enforcement Strategy for the national park. Data management and work flow is facilitated with the Program SMART (Spatial Monitoring and Reporting Tool ; <http://smartconservationtools.org/>).

The law enforcement strategy for the national park is based on sites prioritization where forest patrols are focusing on three Biodiversity Priority Zones (BPZ; the three BPZ where delineated based on a consultation workshop with experts coordinated by Association Anoulak in 2015 and represent zones with the highest value in terms of biodiversity richness, wildlife population abundance and relative lower level of threats).

Since 2016, we have been deploying monthly 4 anti-poaching patrol teams focusing patrols in one of the three BPZs, covering approximately 250 km² in order to control illegal activities in this zone.

Since **May 2019**, we are supporting **two more teams**, resulting in **6 anti-poaching patrols (i.e. 36 trained villagers from the local community)**.

Patrols in the other two BPZs (and other key areas) are supported by the Nam Theun 2 Watershed Management and Protection Authority since 2017.

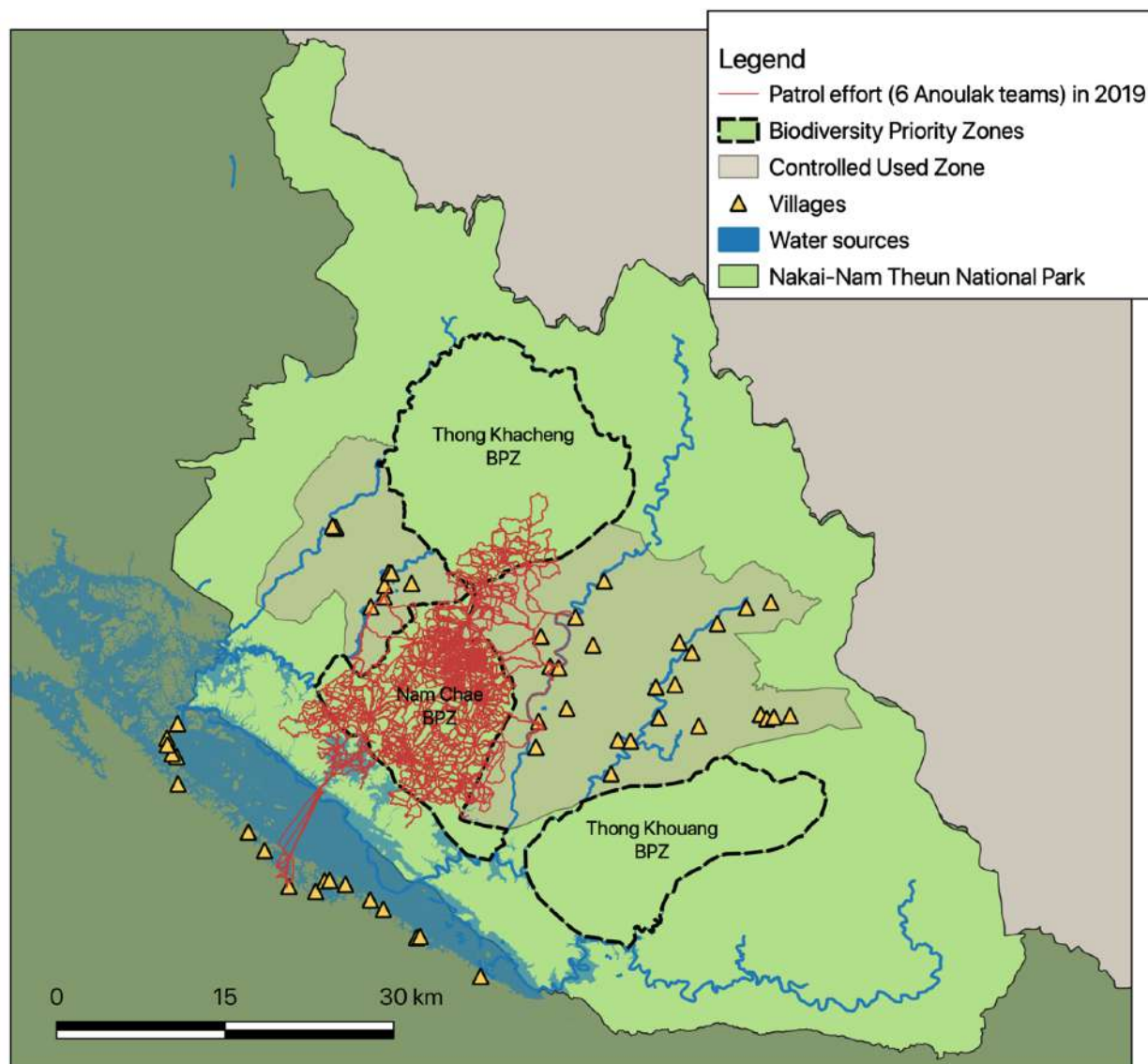


Strategic zonation of law enforcement in Nakai-Nam Theun. This includes three Biodiversity Priority Zones (BPZ; ~700 km²) where 'Forest Ranger Teams' focus their patrols. Association Anoulak's six ranger teams focus on one of these three zones (indicated on the map).

Association Anoulak's Patrol Report for 2019



Patrol effort from 1st Jan 2019 to 31st Dec 2019



Patrol coverage from GPS tracklog of the six (6) patrol teams combined deployed by Association Anoulak, for the entire year 2019.

Patrol team	Number of Patrols	Number of Days	Distance (km)
Thaiphai banh Team	13	183	1744
Makfuang Team	13	185	1726
Fangdeng Team	12	180	2661
Navang Team	12	180	3124
Korbong Team	7	103	936
Nakang Team	6	88	901
Total	63	919	11092

Total number of poachers encountered

	Observed Only	Escaped	Written warning	Confiscated items	Arrested
Total	2	31	108	0	0

Total number of snares collected

	Snares (all types)
Total	599

Total number of firearms collected

	Semi Automatic	Hand-made guns
Total	9	30

Community sustainable livelihoods in 2019



Nakai Women Handicraft Program

Rationale: Women financial empowerment and alternative skills can contribute to social-economic stability in a community. Our objective with this project is to provide skills and alternative income to women from the Nakai community.

In **June 2019**, we launched our Nakai Women Handicraft Program to provide skills and alternative income to women from the Nakai community. We provided a 3-week workshop targeted at women and young adults to create handmade bracelets.

For three weeks, 20 women/young adults (aged 16 to 40) participated in the workshop. Mrs. Hélène Coudrat (Camille's mum!) trained the participants sewing and handcrafting bracelets made of locally-sourced fabric (batik), charms and seeds. The participants were given freedom to design their own bracelets and proved to be extremely creative! Each bracelet is unique, handmade with love and creativity by Lao women, approved by our quality check, and supporting a great cause for people and nature! The trainees were very enthusiastic with the workshop and expressed their interest in having another workshop in 2020. We plan to conduct another workshop next year to create new models and new items, sourcing as much as possible all materials locally.



As part of this first workshop, Association Anoulak purchased two-thousands (2000) bracelets paid to the *Happy Nakai Cooperative*, a community fund, shared and managed by the community themselves. These are then retailed through our partners worldwide; a great way for our association to raise funds, then reinvested in the project for its sustainability.

Our Anoulak bracelets collection 2019 is currently sold at Mulhouse Zoo, Beauval Zoo, Cerza Zoo, Juhlava Zoo, Wroclaw Zoo, La Vallée des Singes, Nature Yoga, and some contacts in the USAs...

If you are interested in purchasing some bracelets at wholesale price, do not hesitate to contact us at camillecoudrat@conservationlaos.com (bracelets are wrapped in elegant plant-based compostable packaging).



A short video about the workshop was produced by Vilay Souylasith (available to watch on our video channel)



Community resilience and biodiversity conservation in Nakai District

Rationale: Local communities on in Nakai District (1) are highly reliant on natural resources for their livelihoods, (2) their food security often is dependent on foods collected in the wild; (3) their income generation often is dependent on unsustainable natural resources harvest, (4) often practice unsustainable agriculture; (5) are lacking of entrepreneurship capacity, and technical capacity. This project aims to address some of these issues.

On **24 December 2019**, we officially launched our 3-year project (2019-2022) *Community resilience and biodiversity conservation in Nakai District* with a partners kick-of meeting involving Nakai District's authorities and stakeholders.

Overall project aim

Build resilient communities (notably in terms of sustainable income generation and healthy nutritional intake, via entrepreneurship and technical skills) and conserve biodiversity in Nakai District, notably in the Nakai-Nam Theun National Park

Project objectives and focus

- This pilot 3-year project will particularly focus on:
- Natural resources management including value chain and marketing of native Non-Timber Forest Products (NTFPs) and the management of their use by local communities (e.g. regulations)
 - A community sustainable ecotourism farm for training and support on sustainable farming practices and alternative sustainable business development (notably focus on youth leadership coaching and cooperative strengthening)



Formal kick-of meeting 24 December 2019 for *Community resilience and biodiversity conservation in Nakai District*



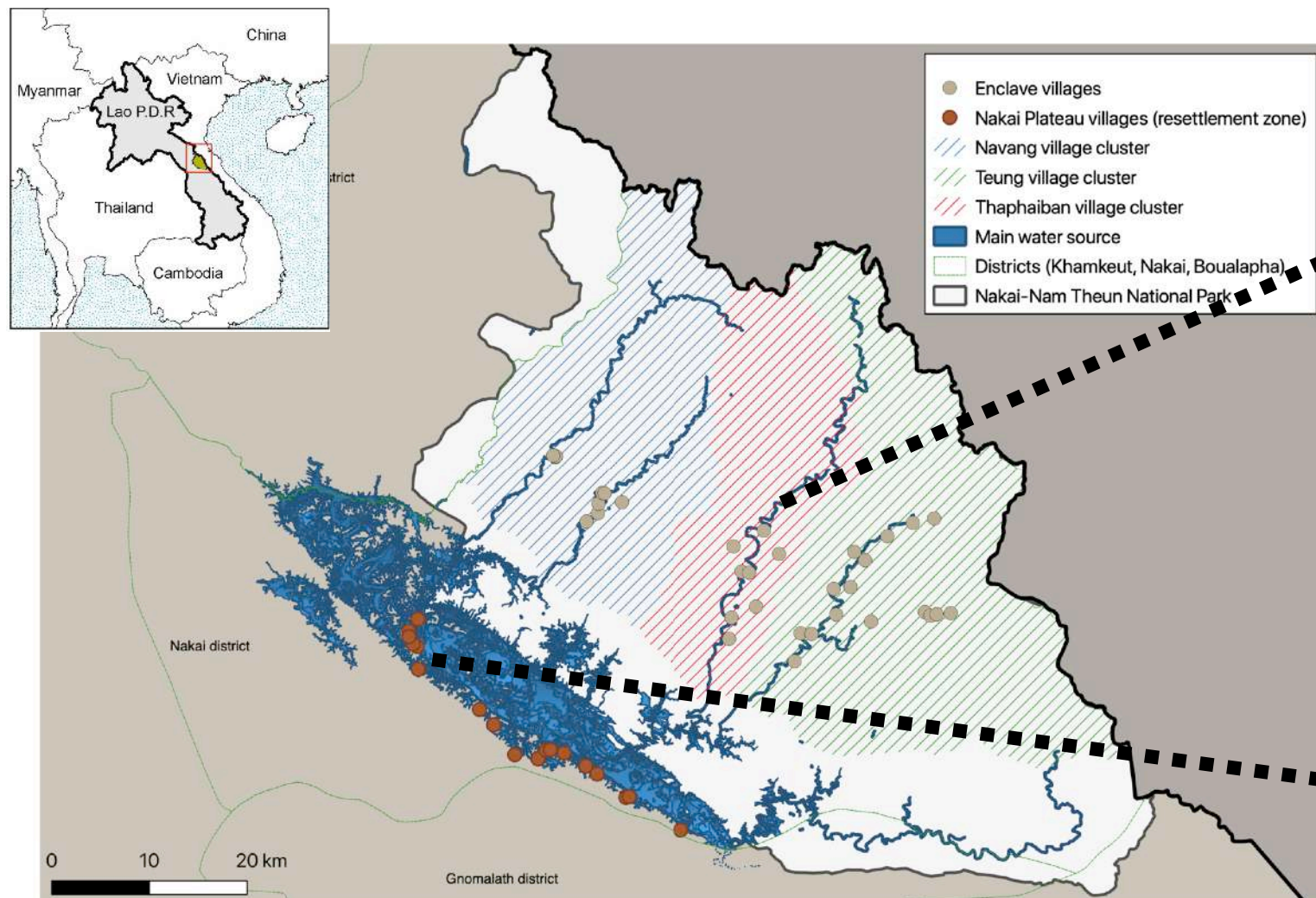
Formal kick-of meeting 24 December 2019 for *Community resilience and biodiversity conservation in Nakai District*

Project approach

We are collaborating with the *Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD)* to apply the *Capacity Development for Agricultural Innovations Systems* (a global partnership to make agricultural innovation systems more efficient and sustainable in meeting the demands of farmers, agri-business and consumers and help improve food security).

Some of the key strategic approach and principles include:

- Based on **local context** (relevance, needs, demand) and **local knowledge**
- **Bottom-up** approach
- **Community-led** and **ownership**
- **Leadership and entrepreneurship coaching** approach
- **Functional capacity** first: individual-level to hamlet-level to community-level, *then* **technical capacity** support
- **Learning-by-doing, adaptive** approach
- **Pilot** approach (to be scaled up for **long-term sustainability**)
- **Collaborative** approach



THAIPHAIBANH VILLAGE CLUSTER

Natural resources management including value chain and marketing of native Non-Timber Forest Products (NTFPs) and the management of their use by local communities (e.g. regulations)



RESETTLED VILLAGE ZONE

A community sustainable ecotourism farm for training and support on sustainable farming practices and alternative sustainable business development (notably focus on youth leadership coaching and community cooperative strengthening)

In **November 2019**, as part of our *Community resilience and biodiversity conservation in Nakai District*, we received the visit of partners from *EcoAsia* for a pilot consultancy mission to evaluate and advise on the development of the community sustainable ecotourism farm in the resettlement zone, to benefit to the local community.

The center is located at the *Nong Boua Kham community centre* in Nong Boua Kham village (one of the 16 resettled villages following the Nam Theun 2 hydroelectric dam construction and impounding of the Nakai Plateau reservoir since 2008).

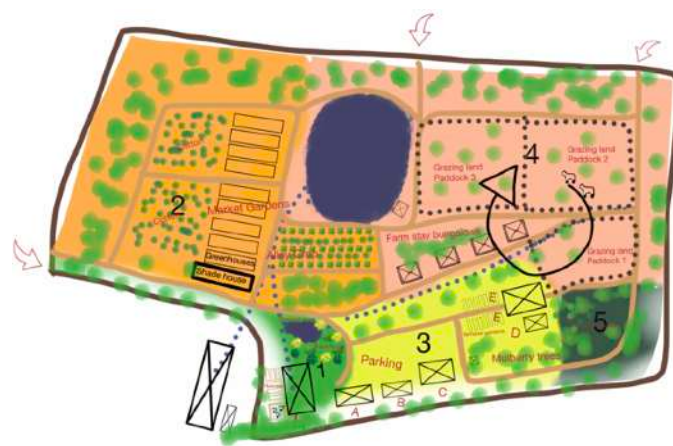
As part of this mission, EcoAsia provided basic training on agro-ecology principles to members of the community, involving notably community discussions, lectures, hand-on practices and community design mapping.

Based on community members' aspiration and under the consultants' guidance, potential designs were projected to develop the farm. The land was divided into five zones and several activities were proposed into each of them: e.g. ecotourist farm stay; restaurant; handcrafting workshop (e.g. cotton and silk weaving, wood carving etc.); visitor shop; nature and cultural museum; training classroom and community hall; medicinal plant garden; alternative and sustainable agriculture practices (e.g. polyculture, agro-forestry, use of legume/fertilizer trees in crop systems, soil biology and tree systems, soil care, seed bank, rotational cell grazing for sustainable livestock use etc.).

The community farm will serve as a demonstration and training centre contributing to improving food security and providing alternative income and livelihoods to the local community.



Aerial view of the future community sustainable ecotourism farm



Suggested design to be developed, based on community members' suggestions and aspiration for the future



Conservation awareness in 2019



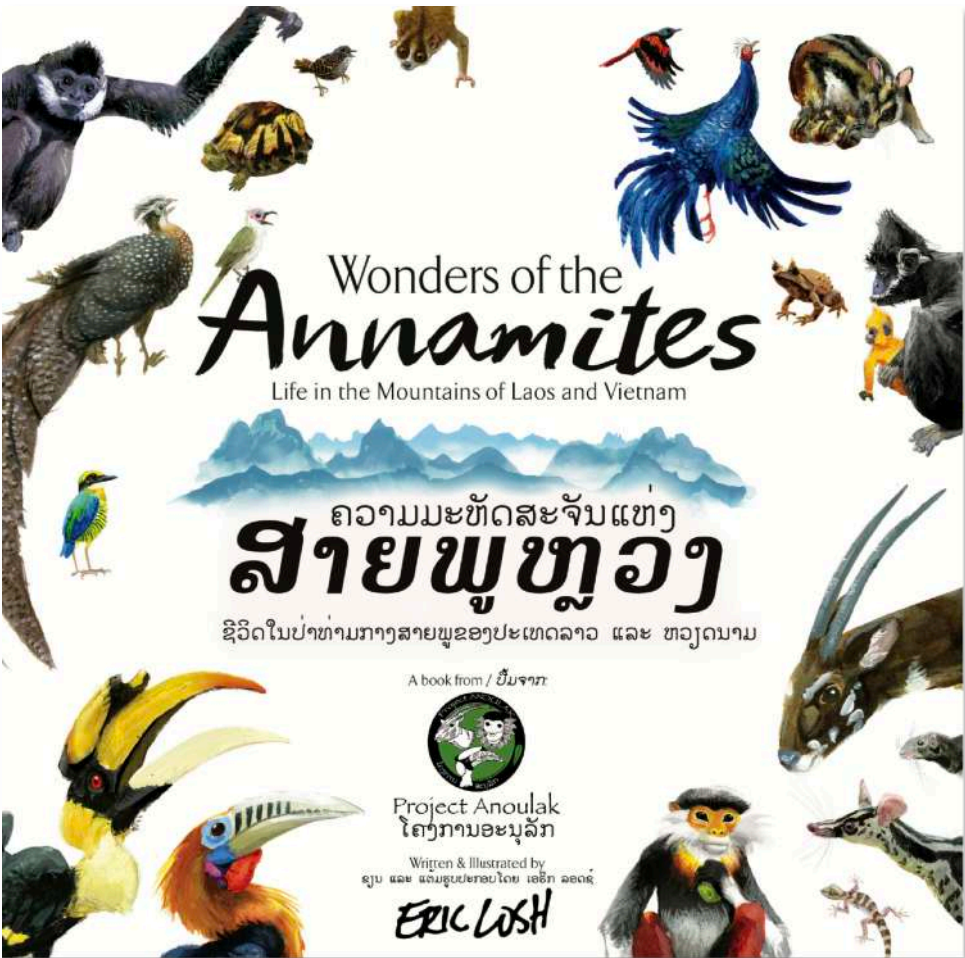
Conservation awareness published books

Rationale: There is a general lack of knowledge by the national and international community of the rich biodiversity from the region and the critical threat it is facing. Knowledge is one of the key components to protect biodiversity. Association Anoulak has made one of its numerous missions to raise awareness of young and older humans, from the region and abroad, of the beautiful nature of Laos, and the importance of biodiversity conservation. Art and storytelling are great ways to do so, and notably through the publication of attractive and informative books about animals and nature.

Wonders of the Annamites

Wonders of the Annamites is written illustrated by Eric Losh. It was published by Association Anoulak in 2016-2017 in three editions: English; English-French; English-Lao; English-Vietnamese.

The book is available for purchase in Laos, Vietnam and France.



Spirit of the Saola

Spirit of the Saola is written by Melody Kemp and illustrated by Dao Van Hoang. It was published Association Anoulak in 2018 in English-Lao edition.

The book is available for purchase in Laos at [TaiBaan](#) shop in Vientiane.



New book co-published in 2019 !

Pangolin Life of a scaly anteater



On the **15th October 2019**, was held at the Pha Tad Ke Botanical Garden in Luang Prabang the launch of the children's book ***Pangolin Life of a Scaly Anteater***, which Association Anoulak supported the first publication of along side two other co-publishers: *The Pha Tad Ke Botanical Garden* and *Comité de Coopération avec le Laos (CCL)*. This beautiful book was written and illustrated by Luang Prabang-based *Joséphine Billeter*, a former primary teacher and today a freelance graphic designer and illustrator.

With this new book, we aim to inform the public about the fascinating Pangolin and the threats it is facing, which could lead to its extinction in the wild in the near future.

This **first Lao-English edition** of ***Pangolin Life of a Scaly Anteater*** was printed in **3000 copies**, of which 1000 were donated to partners in Laos with on-going outreach programs across Laos (i.e. *WCS, WWF, GIZ, IUCN, Lao Conservation Trust for Wildlife*). The rest of the copies were divided between the three co-publishers and the author to use in their respective projects and raise project funds through the sales of the book.

Pangolin Life of a Scaly Anteater is currently available for purchase in Luang Prabang at *Pha Tad Ke Botanical Garden* and in Vientiane at *TaiBaan*.



Conferences, public talks, meetings and events in 2019



✿ **1 - 4 April 2019: Conservation Planning Workshop for Owston's Civet, Hanoi, Viet Nam**

The workshop was hosted and facilitated by [Save Vietnam's Wildlife](#) and the [Conservation Planning Specialist Group \(CPSG\)](#) (part of the International Union for Conservation of Nature [IUCN] Species Survival Commission [SSC]).

This was the first range-wide workshop for the species. Its main objective was to identify the priority actions (both ex-situ and in-situ) needed to prevent the extinction of the species.

Owston's Civet, *Chrotogale owstoni*, was categorized as [Endangered on the IUCN Red List of Threatened Species in 2016](#). This civet has one of the smallest distributions of any carnivore species in Asia; formerly found in southern China, it now occurs only in Lao PDR and Vietnam. The primary threat to its recovery and conservation is indiscriminate snaring for the illegal wildlife trade.



The workshop resulted in the publication of a conservation strategy document that summarises discussions and recommendations from the Conservation Planning Workshop:

Willcox, D., Lees, C., Hoffmann, R., Roopali, R., Duckworth, J. W., & Nguyen Van Thai. (Eds.) (2019) Conservation Strategy for Owston's Civet *Chrotogale owstoni* 2019 – 2029. Save Vietnam's Wildlife, Vietnam and the IUCN SSC Small Carnivore Specialist Group.

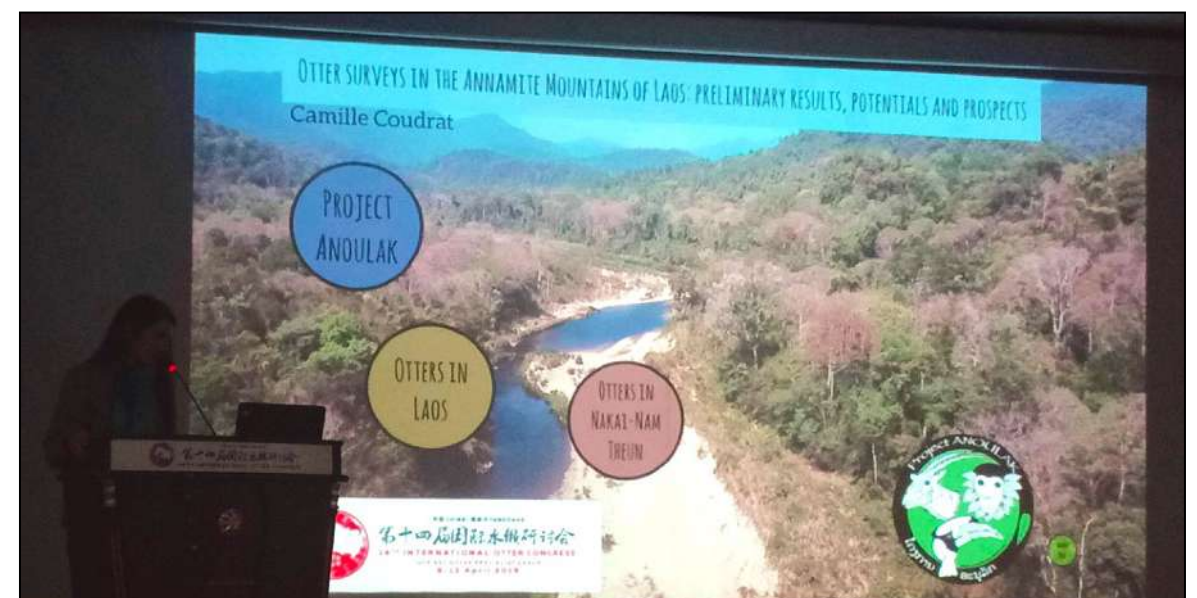


✿ **8 - 13 April 2018: 14th International Otter Congress, Tangjiahe Natural Reserve, Sichuan Province, China**

The International Otter Congress is held every two years for otter researchers and the members of the IUCN SSC Otter Specialist Group (OSG). In 2019, the theme of the congress was "Ensuring the Future of Otters". Nearly 200 participants attended from all around the globe.



Anoulak's current work on otters was presented to the audience.



✿ **23 June 2019:** Guest speaker at the Jane Goodall Institute Singapore's lecture series "Celebrating Primates in Southeast Asia", Singapore

Camille was invited as a guest speaker for the *Jane Goodall Institute Singapore (JGIS)*'s lecture series "Celebrating Primates in Southeast Asia", to share about the work of Association Anoulak in Laos.



The Jane Goodall Institute (JGI) is a global nonprofit focused on inspiring individual action to improve the understanding, welfare and conservation of great apes and to safeguard the planet we all share. JGI's mission is based on Dr. Jane Goodall's belief that the well-being of our world relies on people taking an active interest in all living things.



With members of the Jane Goodall Institute Singapore, including its President Andie Ang

✿ **5 June 2019:** Environmental Day in Gnomalath District, Khammouan Province, Laos

June 5th was the **World's Environment Day**. On this occasion, Association Anoulak, along with our local partner the Nakai-Nam Theun National Park Authority, were invited to participate in an event organized by the Nam Theun 2 Power Company in Gnomalath District, to present and display our work. The day's event targeted an audience of primary and secondary school to raise awareness about environmental issues.



✳️ 17 July 2019: Signing ceremony of Memorandum of Understanding between Association Anoulak and Nakai - Nam Theun National Park Authority

On the 17th July 2019, we reached a milestone with the signature of a **Memorandum of Understanding (MoU)** with the **Nakai-Nam Theun National Park Authority (NNT NP)**, approved by Department of Forestry, Ministry of Agriculture and Forestry and Ministry of Foreign Affairs. This gives us the permission to implement our programs for the next 5 years (to be renewed).

This MoU was developed in line with the overall management goal of the Nakai-Nam Theun National Park which is to *“protect wildlife and other biological resources in the watershed, with particular emphasis on endangered Annamite endemic species, to ensure their long-term well-being and continued viability through effective and proactive law enforcement”*.



This MoU includes the following objectives (under which several activities will be implemented):

- **Objective 1:** To collect novel data on ecological aspects of the local biodiversity and monitor wildlife populations in order to inform conservation plans and increase global scientific knowledge;
- **Objective 2:** To protect natural habitats actively with anti-poaching patrol teams;
- **Objective 3:** To increase and promote the community outreach, conservation education, and awareness raising;
- **Objective 4:** To develop and promote sustainable agriculture and alternative livelihoods projects for local communities in NNT NP and Nakai District through the use of permaculture and agro-ecological approach in order to reduce the impacts and pressure on natural resources;
- **Objective 5:** To raise the profile of the Annamite mountains and Nakai-Nam Theun National Park locally, nationally, and internationally;
- **Objective 6:** To develop the institutional and community capacity building;
- **Objective 7:** To develop partnerships for project implementation;
- **Objective 8:** To provide advisory consultations and guidelines on biodiversity conservation to the Nakai - Nam Theun National Park Authority;
- **Objective 9:** To promote and strengthen collaboration among relevant institutions on biodiversity research study and conservation

✳️ 27 - 28 September 2019: Sustainable Ecotourism Expo, Vientiane, Laos

We joined the booth representing the Nakai - Nam Theun National Park at the Sustainable Ecotourism Expo to display and sell Association Anoulak's goods and share our work to visitors



✳️ 21 - 24 October 2019: Sixth ASEAN Heritage Parks Conference: Sustainability and Innovation for Parks and People, Pakse, Laos

Association Anoulak was invited by the Government of Lao PDR to attend the Sixth ASEAN Heritage Park which was held in Pakse, Lao PDR 21 - 24 October 2019.

A great opportunity to hear from many actors from the (Association of South-East Asian Nations (ASEAN) working on conservation, and share with colleagues.

We are grateful to the Ministry of Agriculture and Forestry for inviting Association Anoulak at the conference.





Media communication in 2019

**Number of Blogposts
in 2019 =
22**

**Number of
Anoulak Newsletters
in 2019 =
9**

14 July 2019: Interview at the French Embassy in Laos, Vientiane

On the occasion of July 14 2019 (France's National Day), *the French Embassy in Laos* met with three French organizations active in the field of sustainable development in Laos.

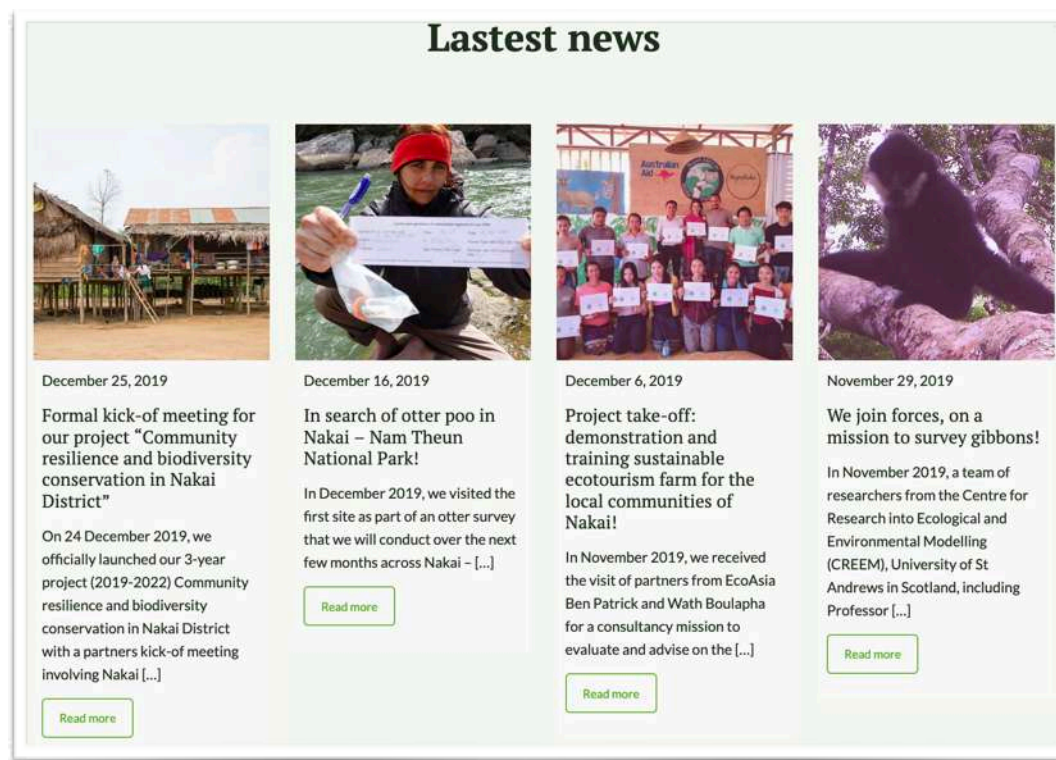
The full interview with Dr. Camille Coudrat, director of the Association Anoulak (in French) can be watched [here](#).



For a written translation in English of the Interview go [here](#).

The original video (with Lao subtitles) was shared on the Facebook Page of the French Embassy of Laos: <https://www.facebook.com/ambassade.france.laos/videos/438618066977986/?t=0>

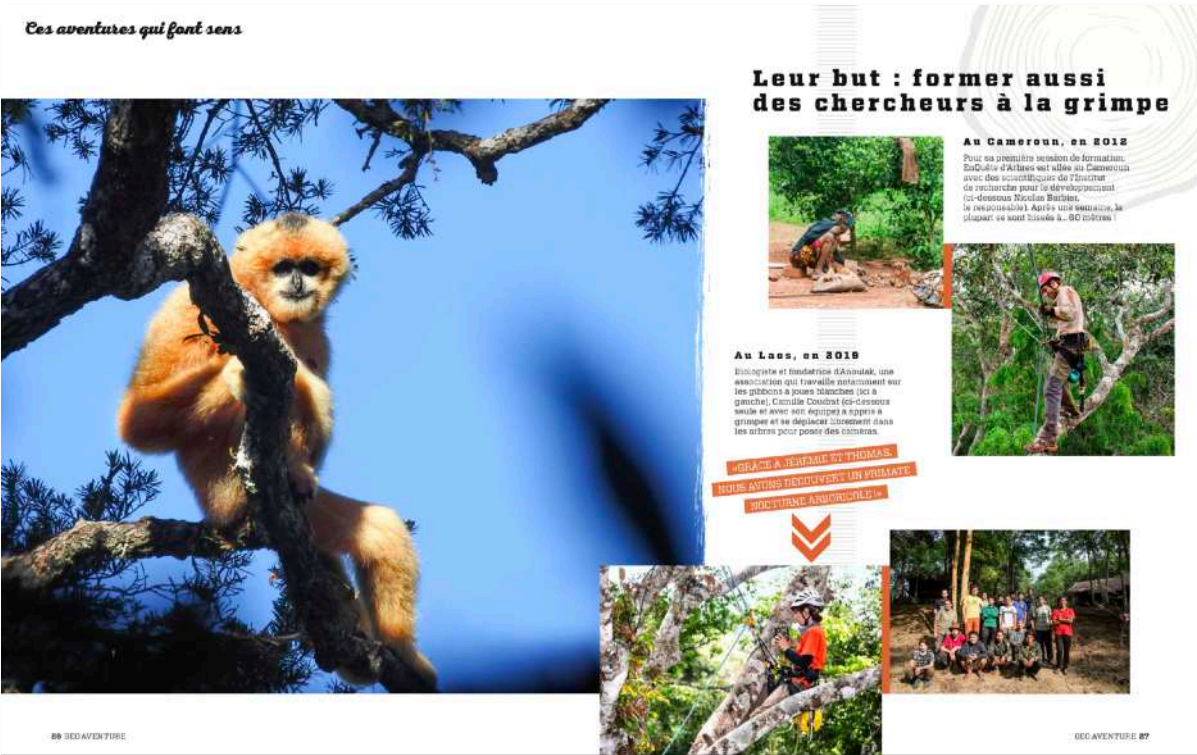
Many thanks to the French Embassy for giving us the opportunity to share our work!



Publication in French Magazine GEOAVENTURE n°8 (October-December 2019) about Enquête d'Arbre and their mission in Laos to train Anoulak's team at tree climbing



Les conquérants des sommets verts, reportage complet de Marc Ouahnon à découvrir dans le magazine GEO Aventure n°8 "Vive la vie en van !" d'octobre-décembre 2019.



Peer-reviewed publication in Vietnamese Journal of Primatology (2019) vol.3(1) on Preliminary results on the food intake and nutrient digestibility of southern white-cheeked gibbons (*Nomascus siki*) and red-shanked Douc (*Pygathrix nemaeus*) at the Endangered Primate Rescue Center, Vietnam, by Camille Coudrat and Francis Cabana



Vietnamese Journal of Primatology (2019) vol.3(1), 71-76

Preliminary results on the food intake and nutrient digestibility of southern white-cheeked gibbons (*Nomascus siki*) and red-shanked douc langurs (*Pygathrix nemaeus*) at the Endangered Primate Rescue Center, Vietnam

Camille Coudrat¹ and Francis Cabana²

¹ Project Anoulak, Secretariat Office of the Nam Theun 2 Watershed Management & Protection Authority, Village Oudomsouk, Nakai District, Khammouan Province, Lao PDR.
Corresponding author <camillecoudrat@gmail.com>
² Wildlife Reserves Singapore, 80 Mandai Lake Road 729826 Singapore.
<francis.cabana@wrs.com.sg>

Key words: food intake, diet, primate, protein to fibre intake, comparative nutrition

Summary

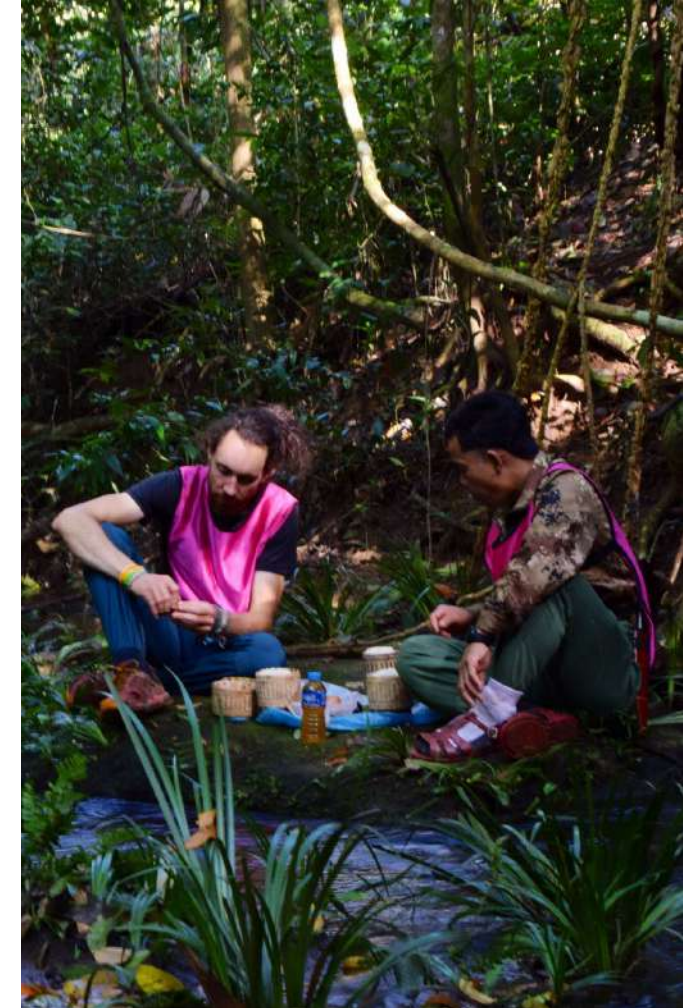
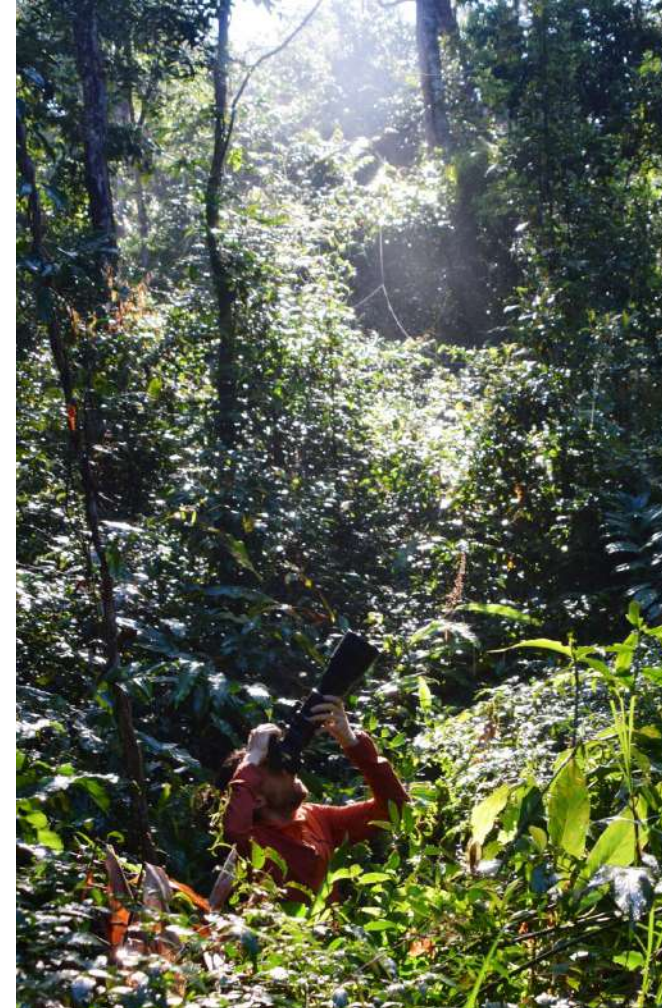
During a period of 6 days, we recorded the amount of food ingested, their nutrient content and the amounts of each nutrient in grams within the faeces (analysed in a laboratory) to determine the apparent digestibility for each nutrient for both the red-shanked douc (*Pygathrix nemaeus*) and the southern white-cheeked gibbon (*Nomascus siki*) housed at the Endangered Primate Rescue Center, Cuc Phuong National Park, Vietnam. Based on our results, both the gibbons and the douc langurs were able to ferment structural carbohydrates with the gibbons having a slightly higher apparent digestibility for both Neutral Detergent Fiber (NDF), Acid Detergent Fibre (ADF). The douc langurs digested a much larger amount when compared to the gibbons given the higher proportion of fibre they ingested by weight. The protein to NDF intake ratio is different between douc langurs and gibbons. Douc langurs were very specific and stringent in their selection of protein to fibre, choosing 2.7g of fibre to every gram of protein. Gibbons were less restrictive in their selection but ingested more fibre than was thought necessary for this apparent frugivorous species which suggest that fibre may be more important in their diets than previously thought.



Partners visit in 2019

In **September 2019**, we received the visit of Mr. Romain Rivière, zoo keeper at the Parc Animalier d'Auvergne in France, one of our donors (through their association *Passerelle Conservation*).

Romain spent five days with our field team at the field station.



Financial report for 2019



In 2019, our association spent a total of **223,033 USD** for our conservation activities

Funds balance on 01/01/2019 + TOTAL CREDITS in 2019 from donations and fund raising sales	USD 407,811
TOTAL AVAILABLE in 2019	USD 407,811
TOTAL SPENT 2019	USD 223,033

Figure 1: Annual (Jan-Dec 2019) expenditure by category

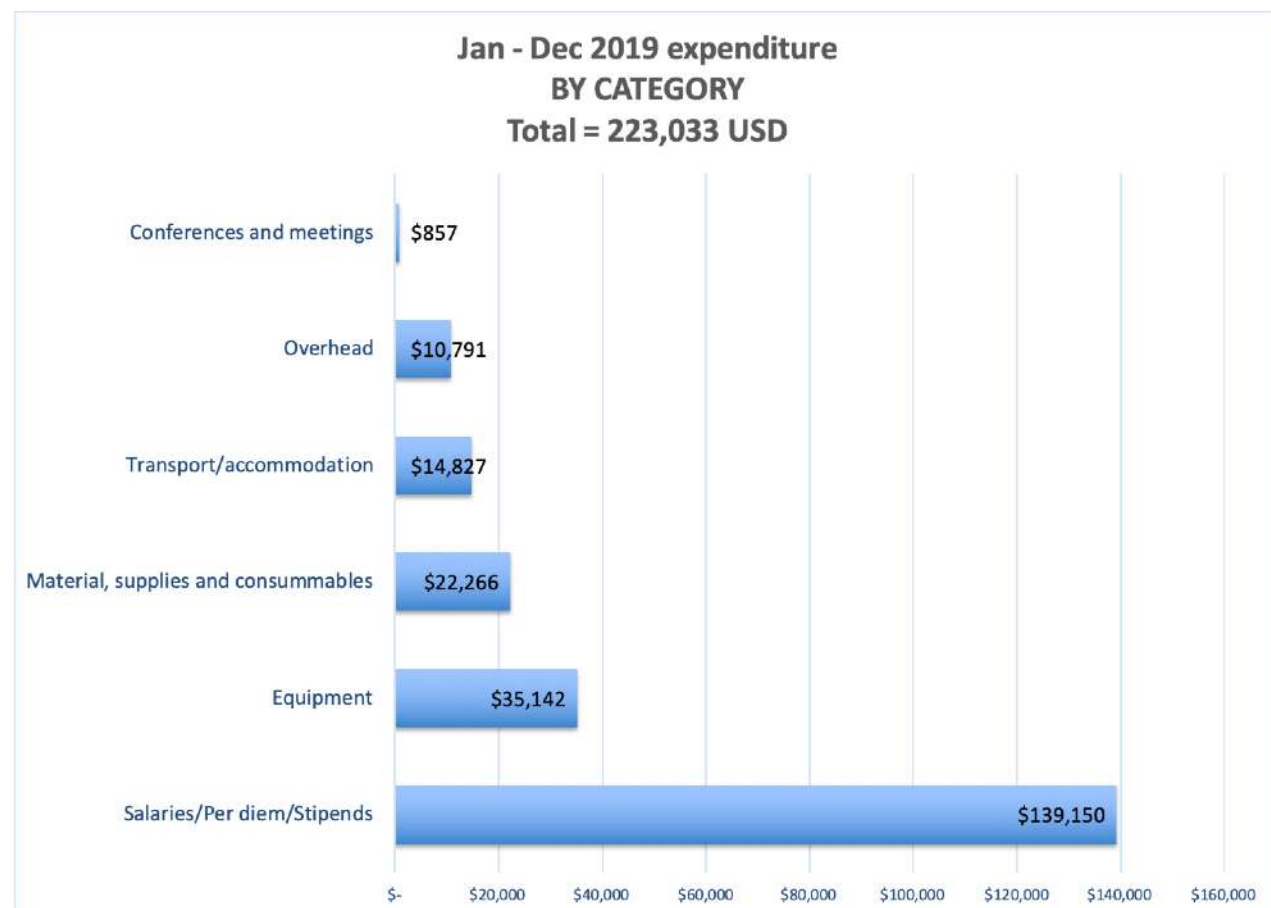
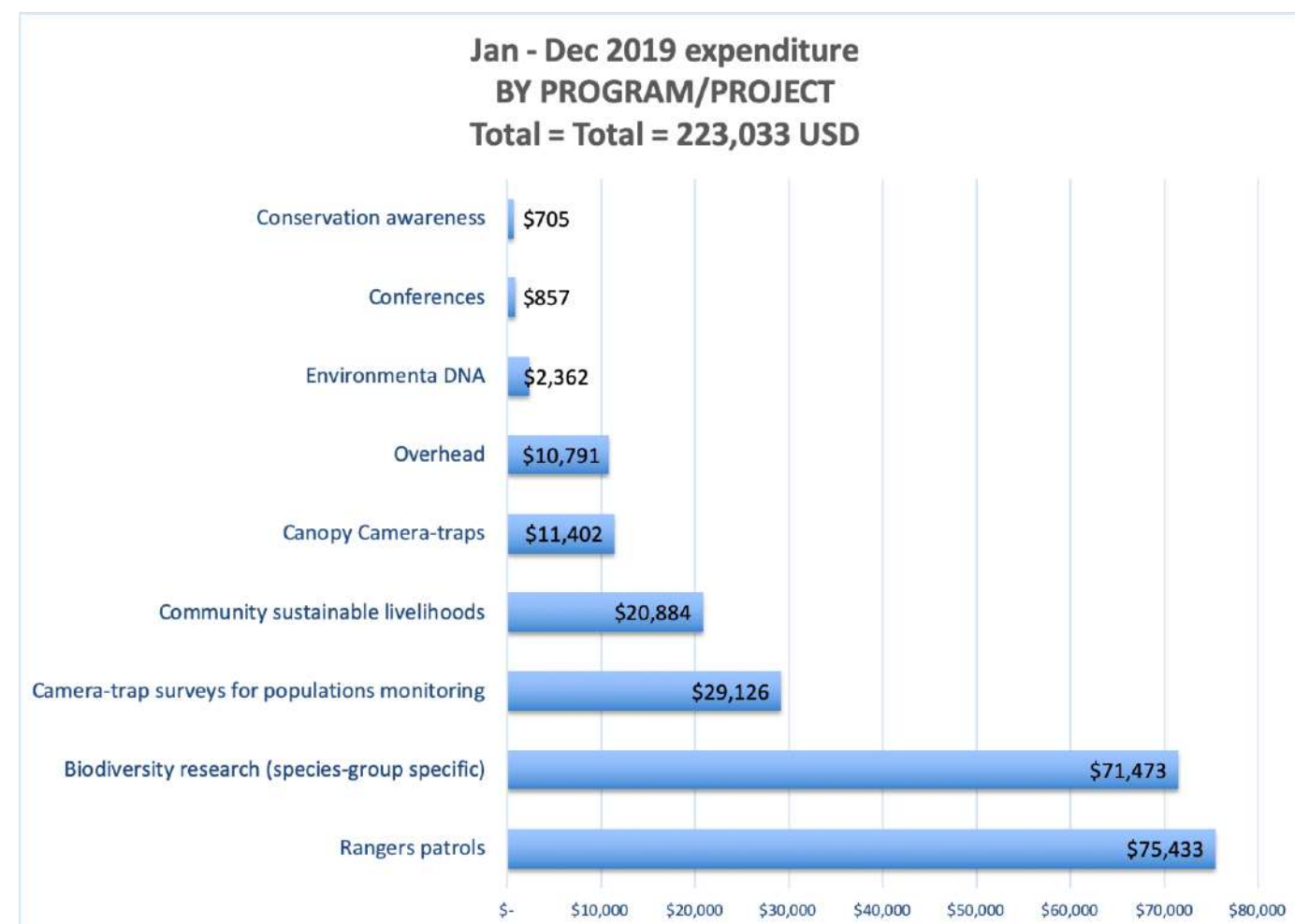


Figure 2: Annual (Jan-Dec 2019) expenditure by program/project





Workplan 2020

Program/project	Project partners (expected)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Biodiversity Research Program													
- Otter fecal sample surveys	The Conservation Ecology Program, King Mongkut's University, Thailand												
- Gibbon calls recordings	Czech University of Life Sciences												
- Gibbon survey method field testing	University of St Andrews												
- Camera-trap survey monitoring in three BPZs	Nakai-Nam Theun National Park; Leibniz Institute for Zoo & Wildlife Research												
- Canopy camera-trap surveys	n/a												
- Hornbill surveys	Thailand Hornbill Project; Hornbill Research Foundation												
- Botanical surveys	Pha Tad Ke Botanical Garden, Luang Prabang and Singapore Botanical Garden												
- Herpethological surveys	Laos' Biotechnology and Ecology Institute; Phayao University, Thailand	To be confirmed											
- collaboration with other external researchers on biodiversity projects	To be confirmed	To be confirmed											
Anti-poaching patrols Program													
Monthly forest patrols (by 6 teams)	Nakai-Nam Theun National Park; Wildlife Conservation Association												
Enforcement strategy and data analysis evaluation toolkit testing	Leibniz Institute for Zoo & Wildlife Research; Nakai-Nam Theun National Park; Wildlife Conservation Association	To be confirmed											
Community sustainable livelihoods Program													
Community resilience and biodiversity conservation in Nakai District Project	CIRAD; EcoAsia; Nakai Working Group; other technical partners to be determined												
Conservation awareness													
Intervention for Highschool students from Lycée Français of Hong Kong at a biodiversity awareness school-trip to Thailand	Krabie Nature Club; Lycée Français Hong Kong												
Intervention for Highschool students from Lycée Français of Singapore	Lycée Français Singapore												
Conferences, workshops, public talks													
3rd Internation Gibbon Conference (Hanoi, Viet Nam)	IUCN SSC Primates Section on Small Apes												
International conferences and public talks (To Be Confirmed)		To be confirmed											
Partner(s) visits													
Partner(s) visits		To be confirmed											



Acknowledgements

WE ARE GRATEFUL TO OUR DONORS WHO SUPPORTED OUR ACTIVITIES IN 2019



THANK YOU TO OUR PROJECT PARTNERS IN 2019



Pha Tad Ke Botanical Garden





New Year's Greetings



HAPPY NEW YEAR

2020

**We wish you all a new year
2020 filled with new
experiences, creativity,
personnel and professional
projects and true
connections with people
and nature**

Contact:
camillecoudrat@conservationlaos.com

SUPPORT US



Association Anoulak

10 Rue des Pruniers
04100, Manosque, FRANCE
Association Loi 1901 n°W044006152
SIREN n°848 614 897
info@conservationlaos.com
www.conservationlaos.com

