# EXPEDITION K 19

## Caving expedition in Khammouan
## Laos

Expedition sponsored by the French Federation of Speleology

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## February 22 to march 16, 2019

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Cover photo: Navigation in Tham Saphong (photo J.M. Ostermann)

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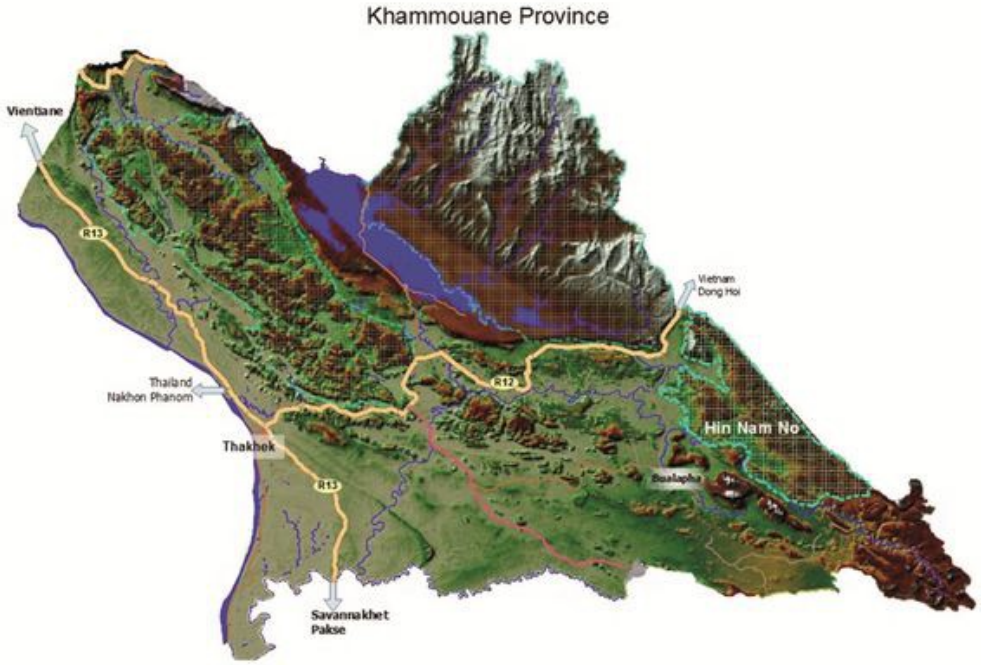
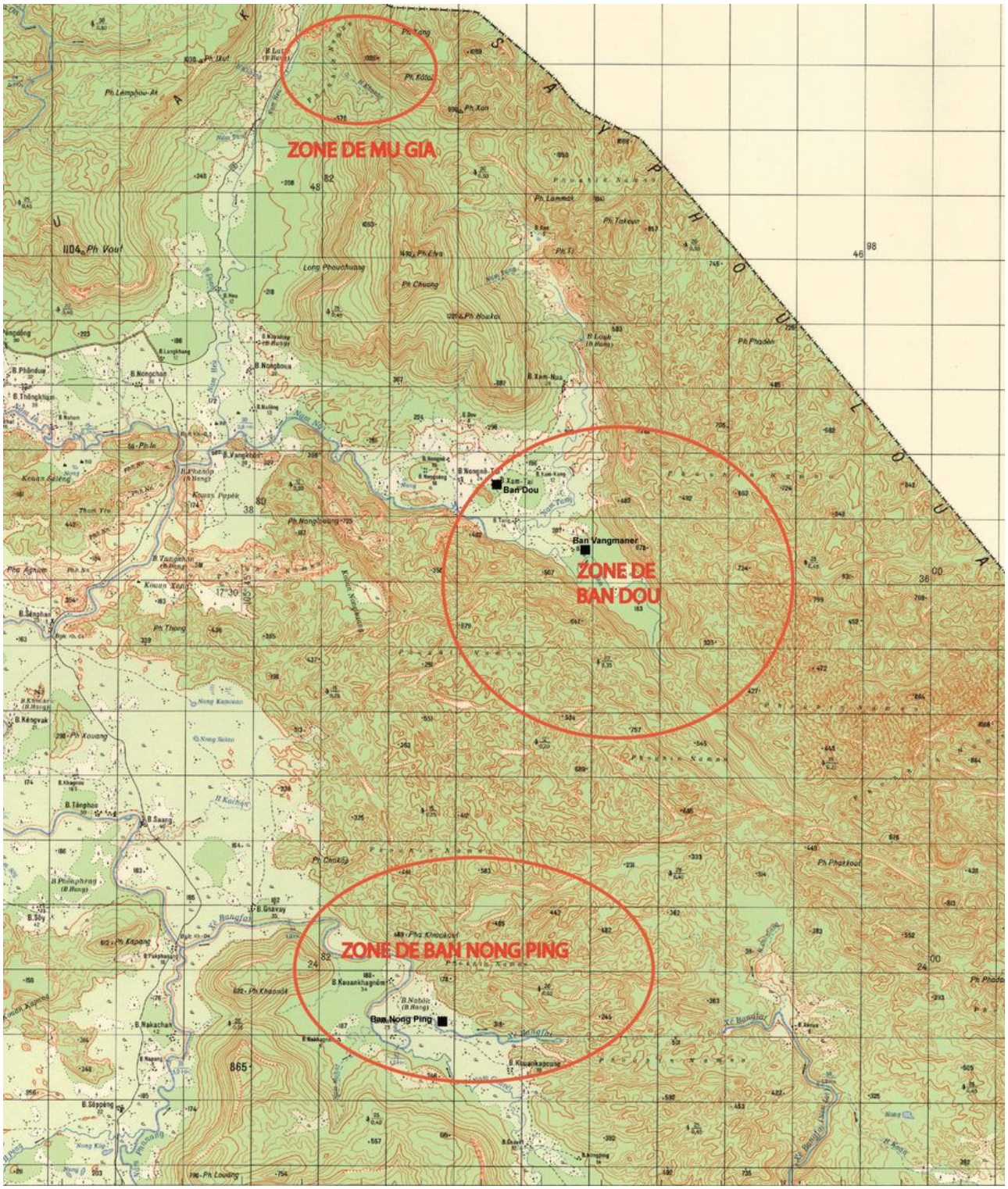
# K19 EXPEDITION

## Summary


Khammouan province location




Hin Nam No National Protected Area location




*Location of the prospected areas*

# Introduction

J.M. Ostermann

This third expedition of the Expé-Laos association in the protected natural area of Hin Nam No had to completing the inventory of cavities of the area and their biodiversity, just like the 2016 and 2018 expeditions. We had once again the logistical support of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), the ultimate goal being to present a project to classify Hin Nam No as World Heritage.
We benefited from the experience of the two previous expeditions, and had many objectives, between the "unfinished" cavities last year, and those, numerous, identified by the rangers and villagers.
The team was as it should be multidisciplinary with topographers, technicians, biologists and photographers. The logistical support from GIZ made things much easier with two all-terrain vehicles, and teams from Hin Nam No Natural Area (managers and rangers) gave us a lot of facilities.
The project revolved around two areas with certain work facilities (village, electricity, local means of transport, etc.): the Ban Dou region in the north, and Ban Nong Ping in the south.
In the Ban Dou region, the camp was established at Banvangmaner, and allowed to continue prospecting and explorations of the previous year without new major cave, but with the discovery of important extensions in Tham Kwaï.
A new area was visited in the far north of the protected area, in the immediate vicinity of the Vietnamese border (Mu Gia pass), allowing some minor karst phenomena to be explored.
Then, work in the Ban Nong Ping region has led to the discovery of another entry to the fantastic underground Xé Bang Faï network (Tham Koukhiew), and several cavities of interest downstream from the village.
Many cavities having been pointed by the rangers in the area, it was necessary to discuss with the locals to get there, often discovering that they were said to be only minor karst phenomena.
Each cave visit has enabled biologists to collect numerous specimens, which are in the process of being determined, with certainly key new species for science.
The end of the stay allowed a smaller team to make contacts in the Nam Hin Boun valley, where we had often worked, in order to resume prospecting in this area, and a short stay in the province of Saravane in the south. Khammouane, where great explorations have been carried out in previous years, also allowed us to maintain contact with local authorities whose welcome was warm. Several new exploration perspectives are now opening up in the Tham Din network, a beautiful cave fitted out for tourism since our explorations.
The team brings back some 4800 m of surveys, and a better understanding of karst networks functioning in the Hin Nam No NPA, as well as the prospects for future explorations, knowing that further explorations could of course still be carried out there, but by small and very mobile teams.

People and landscapes in Ban Vangmaner (photos J.M. Ostermann)

## Field Schedule

**Saturday, February 23**
The first part of the team goes shopping.

**Sunday, February 24**
Arrival of the rest of the team, departure for the Ban Dou area. Installation in Ban Vangmaner.

**Monday, February 25**
Tham Saphong: continued exploration of this cave discovered last year: In the main gallery the water is much lower than last year. Climbing in height is inaccessible. In the shaft right after the entrance, survey of a gallery with three suspended lakes, no continuation. Biological samples, photographs.
Tham Don: quick visit, stop at siphon.
Several objectives are abandoned: Tham Kuan Yu, Tham Din Say, Tham Khi Xi are "small cavities" according to the villagers, others were probably explored by an Anglo-Vietnamese team (Tham Long / Tham Aen / Tham Nam) .

**Tuesday, February 26**
Tham Don 1
Exploration after climbing, the cave is 160 m lengh. Biological samples, photographs.
Tham Don 2
Locating the entry.
Tham Phataek
Survey and climbing above the sump, no continuation.
Great sinkhole
Visit of a large sinkhole - emergence during the monsoon season. No passage.
Poljé
Tracking access to polje southeast of Ban Dou, Exploration of a small cave near the pass, Tham Lot Khone Kaen. The bottom of the polje is composed of a thick vegetation with many bamboos.

**Wednesday, February 27**
Tham Khuay
Discovery of a new passage and 400 m of new galleries with speleothems. Topography and photos.
Tham Mi Haeng
New emergence cave, narrow. Exploration completed at - 16 m with sump.

**Thursday, February 28**
Tham Khuay
Continued exploration, survey and photographs. The cave is now 2,380 m lengh.

**Friday, March 1st**
Karst near the Mu Gia Pass
Exploration of two sinks without continuation, and a cave with underground stream, former refuge during the Vietnam War, 175 m long (Tham Koun Huay).
Tham Khuay
Survey of a gallery near the entrance.
Exploration of the porch above the cave, only a 20 m gallery.
Tham Don 2
Climbing to the entrance, no continuation despite the draft.

**Saturday, March 2**
Transfer to Ban Nong Ping. Tourist visit of the Xé Bang Faï river cave.
Almost all the cavities that we planned to explore upstream of the XBF turn out to be uninteresting, low development caves. We must change our plans...

**Sunday March 3**
Hou Inkeo

Exploration of the shaft up to 50 m deep, unfortunately no continuation.
Tham Long
Simple visit. Discovery of human bones and potteries following a probable looting of burial.
Tham Khiewkout
Small cave with stop on lake, climbing in the clay is necessary to go on.
Tham Khong / Tham Yeung
Beautiful cave, junction with the team that explores Tham Yeung. 524 m of survey.

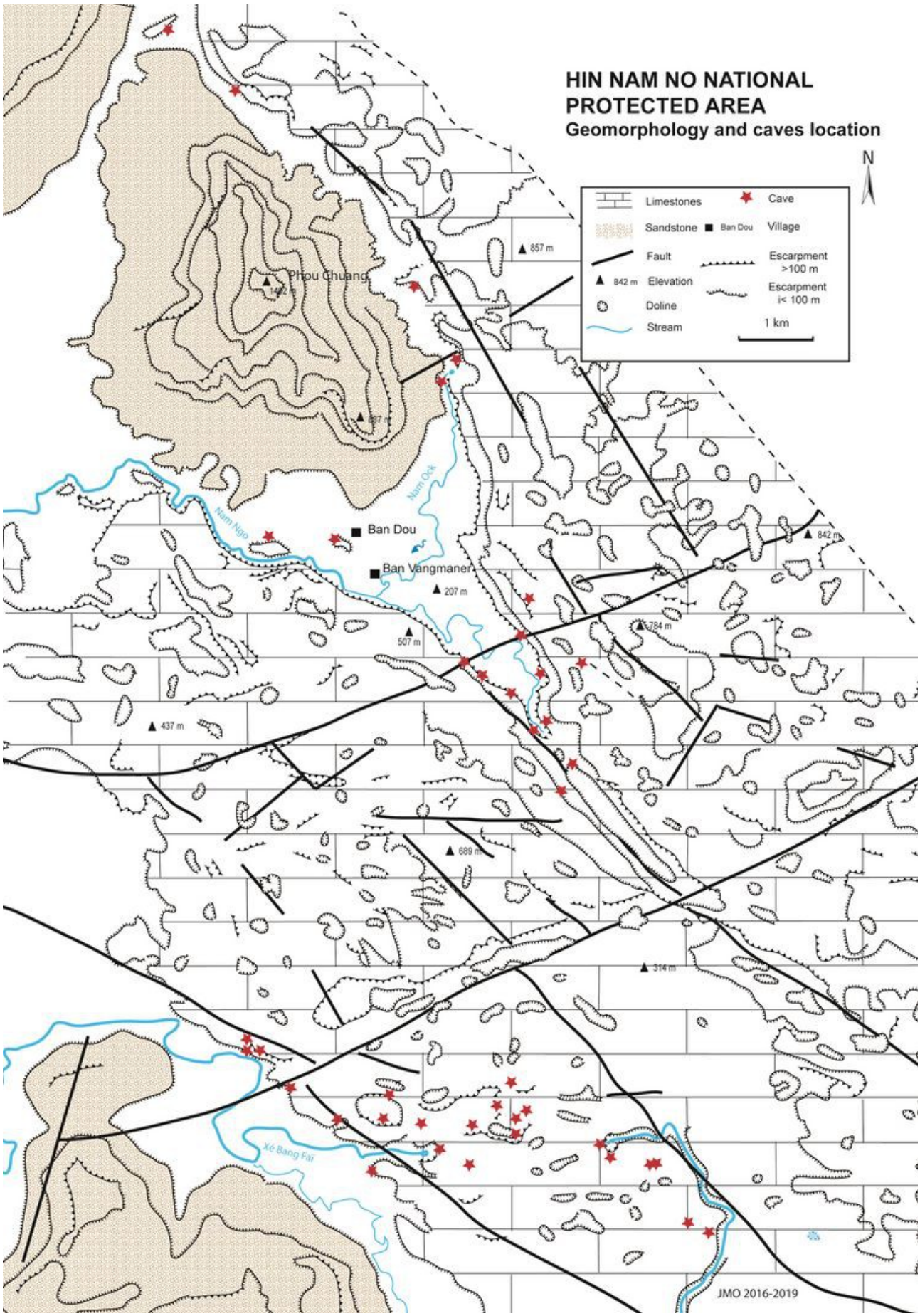
**Monday March 4**
Tham Lom
Beautiful 200 m gallery which ends on a sump.
Tham Khiewkout
Passage of the lake and climbing, discovery of another exit.
Tham Khong
Descent of a shaft and junction with the known part.
Tham Hoy
Beautiful cave discovered by prospecting, many galleries to pursue. 300 m surveyed.

**Tuesday March 5**
Tham Hoy
Continuation of the exploration, discovery of 200 m of new galleries. Biological samples and photos.
Emergence
Impenetrable, upstream of Tham Khong.
Tham Jok
New cave, 200 m surveyed

**Wednesday, March 6**
Tham Kuankhiew
Discovery of this beautiful cave during a two-day camp. Junction with the Xe Bang Faï river cave at 150 m deep.
Tham Hoy
Continuation of the survey and exploration, to continue.
Tham Aen
Visit and topography of this cave, in fact already explored in 2007-2008.

**Thursday March 7**
Tham Kuankhiew
Continuation of the survey to the river, photos.
Tham Hoy
Survey and exploration of the last shafts and galleries, the water table is reached at 60 m depth.

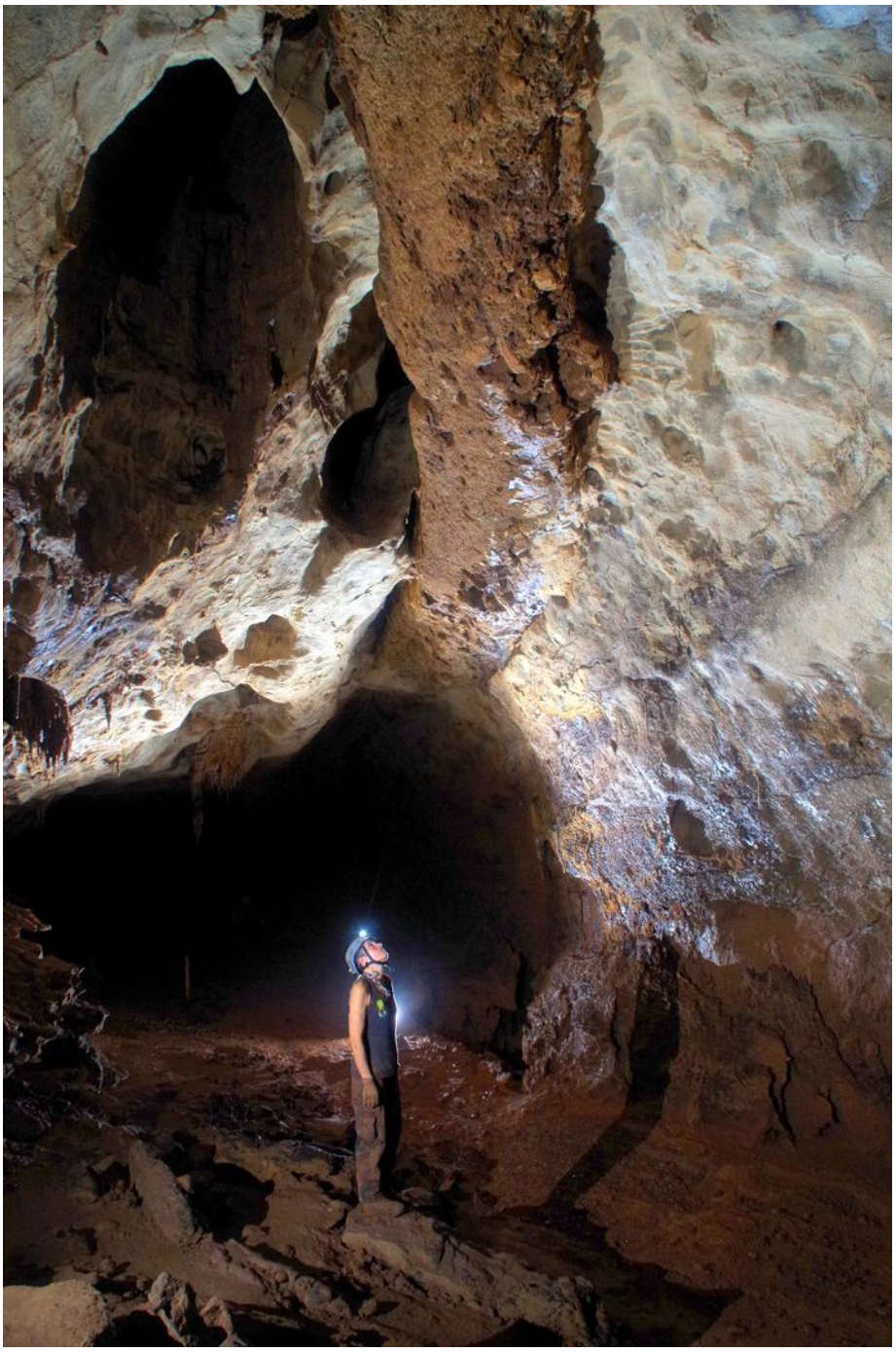
**Friday, March 8**
Back to Thakhek. Car breakdown...


HIN NAM NO NATIONAL PROTECTED AREA
Geomorphology and caves location
N
Limestones
Cave
Sandstone
Ban Dou
Village
Fault
Escarpment >100 m
842 m Elevation
Escarpment i< 100 m
Doline
Stream
1 km
Phou Chuang
1442 m
857 m
687 m
Nam Ock
Nam Ngo
Ban Dou
Ban Vangmaner
207 m
507 m
842 m
784 m
437 m
689 m
314 m
Xé Bang Fai
JMO 2016-2019

# Table of cave names, locations, length and depth

| Ban Vangmaner area | | E | N | Alt | Notes | Length (m) | Depth. (m) | 2019 surveyed (m) |
|---|---|---|---|---|---|---|---|---|
| Tham Saphong | 48 Q | 0590864 | 1933959 | 188 | No visible continuation | 558 | 57 | 113 |
| Tham Done | 48 Q | 0590313 | 1934393 | 194 | No visible continuation | 177 | 24 | 177 |
| Tham Done 2 | 48 Q | 0589909 | 1934397 | 194 | No visible continuation | | | |
| Tham Khuay | 48 Q | 591164 | 1935690 | 184 | Beautiful temporary emergence | 2443 | 48 | 1443 |
| Tham Mi Haeng | 48 Q | 0591747 | 1934818 | 196 | Resurgence | 28 | 17 | 28 |
| Tham Lat Khone Kaen | 48 Q | 0592544 | 1932221 | 285 | Small cave | 24 | -2 | 24 |
| Cliff Cave 1 | 48 Q | 0591551 | 1935108 | 183 | Petite cavité | | | 24 |
| Cliff Cave 2 | 48 Q | 0591610 | 1935046 | 186 | Small cave | 15 | | |
| Porch Above Tham Khuay | 48 Q | 0591133 | 1934764 | 204 | Small cave | 30 | 2 | 30 |
| Emergence Doline | 48Q | 0592088 | 1932575 | 188 | No visible continuation | | | |
| Tham Phataek | 48Q | 0591897 | 1933002 | 150 | Resurgence | 50 | -16 | 50 |
| **Mu Gia pass area** | | | | | | | | |
| Tham Koun Huay | 48 Q | 0581884 | 1951775 | 280 | Small cave with sump | 175 | 17 | 175 |
| Emergence | 48 Q | 0581859 | 1951733 | 286 | Emergence from Tham Koun Huay | | | |
| Sink # 2 | 48 Q | 0582857 | 1950632 | 270 | Sink | | | |
| Tham Huay Tad Pha | 48 Q | 0582639 | 1950893 | 247 | Sink with mall cave | 20 | | 20 |
| **Ban Nong Ping area** | | | | | | | | |
| Tham Khiewkout 1 | 48Q | 0583834 | 1923929 | 200 | Entry 1 | 140 | 13 | 140 |
| Tham Khiewkout 2 | 48Q | 0583856 | 1923939 | 200 | Entry 2 | | | |
| Tham Hoy | 48Q | 0583799 | 1924014 | 271 | Fossil cave | 650 | 60 | 650 |
| Tham Yeung | 48Q | 0583852 | 1923979 | 201 | Connected to Tham Khong | 791 | 39 | 791 |
| Tham Khong | 48Q | 0583924 | 1923929 | 216 | Connected to Tham Yeung | | | |
| Tham Koun Huay Jok | 48Q | 0585845 | 1922765 | 170 | Emergence | | | |
| Tham Jok | 48Q | 0585340 | 1922765 | 210 | Fossil cave | 120 | 21 | 58 |
| Tham Kuan Khiew | 48 Q | 0590742 | 1921553 | 345 | Connected to Xé Bang Faï | 603 | -149 | 603 |
| Tham Lom | 48 Q | 0584216 | 1923816 | 278 | Emergence with sump | 278 | -22 | 280 |
| Hou Inkeo | 48Q | 0590289 | 1920847 | 405 | Shaft | 150 | -50 | 150 |
| **Sum** | | | | | | | | **4756** |

# Cave studies

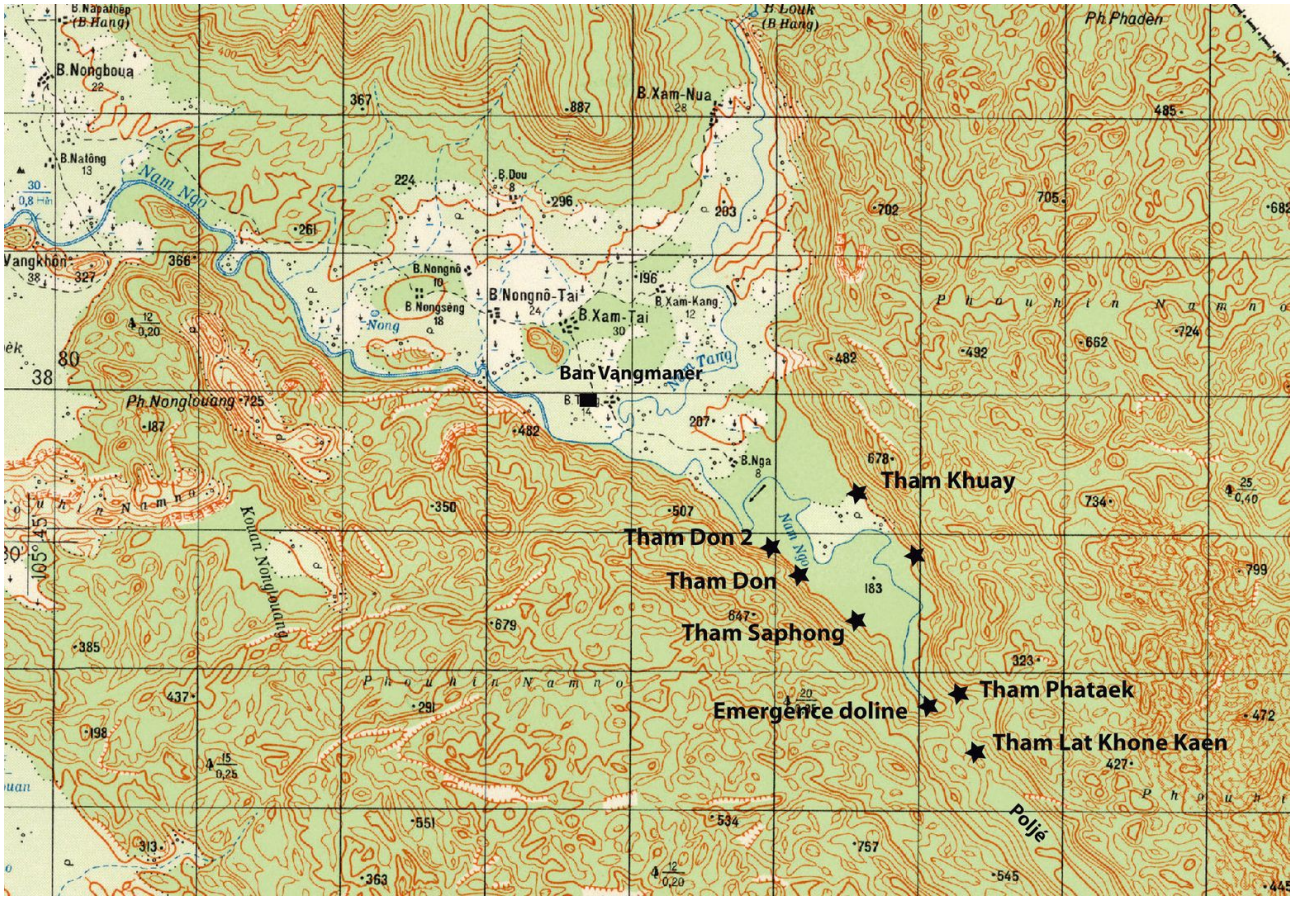


*Fault with breccia in Tham Khuay*

## Ban Dou area

A. Augustin, B. Lips, J.-M. Ostermann

Ban Dou is a village located in a wide valley of NW-SE orientation in the northern part of Hin Nam Non NPA. The area is a place where with the karst is in contact with the sandstone massif dominated by the Phou Chuang (1492 m). Ban Dou having water problems due to drought, our base camp was set up at Ban Vangmaner (48Q 587655.26 m E, 1936981.77 m N), which is also closer to the prospecting areas where most of the interesting karst phenomena are located. Significant prospecting and exploration work was carried out there by the 2018 team, and several caves deserved to be continued. We therefore took up theses caves (Tham Done 1 and 2, Tham Kwaï, Tham Saphong, Tham Pha Taek), and made an incursion to the poljé upstream of the Nam Ngo valley, to check its accessibility and exploration possibilities. Some small cavities have been added to the inventory (Tham Lot Khone, Tham Kaen, Tham Mi Haeng). The other cavities pointed by the rangers in the area, all very far away, were considered by the villagers to be of no speleological interest (simple porches, cracks with low development …?).




*Caves location in Ban Dou area*

**Tham Saphong**

Access
The cave is located about 5 km from Ban Vangmaner. It is reached with the help of guides, on the left bank of the valley, almost at the end of it. The opening is on the foot cliff.
Coordinates 48Q 0590 864 1933 959 188 m

Historical
This cave has been explored by the K18 team, which signals it as promising due to a draft at the end of the gallery with a short climb to perform.

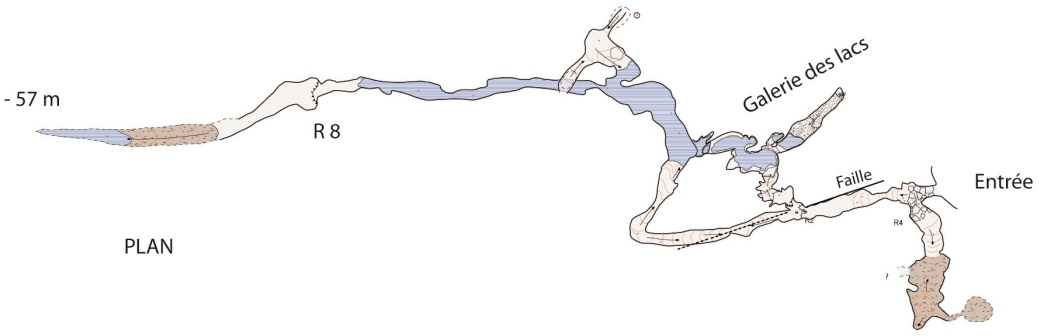
Description
The scree entry leads through a steep passage to a high rectilinear gallery. Immediately after entering you can reach two clay-filled rooms to the southeast. Continuing the main gallery, we arrives after about 60 m at a small side room to the northwest in which there is a succession of small wells (necessary equipment: 30 m rope and climbing equipment) which lead to a deep water reservoir (the lakes gallery*).* We then extend to the right by crossing another basin ant then a rising gallery which joins an impenetrable scree ventilated, but close to the surface. Back to the main lake, we see that it is due downstream to a large gour. Going down this one finds another closed lake, about 10 m long.
The main gallery, 100 m from the entrance, has a right angle and lead to another lake. It is cluttered with scree alternating with vast clay deposits. The lake, suspended 20 m above the base level, is traversed for approximately 120 m, followed by a new slope which quickly descends towards a water level marking the end of the cave at - 57 m. The escalation reported by the team from last year not being found, but we note that the water level is significantly lower this year, the possible ventilated gallery is now much higher. Its possible exploration does not seem to be a priority given the configuration of the cave, but further exploration is not to be excluded, with an escalation whose importance will vary depending on the level of the water.
The topographic development is 558 m, difference in height - 57 m.

Cave formation
The cave is essentially developed on a fault clearly visible at the level of the pit of the lakes towards the entrance. It was due to the variations of the water table, and constitutes an emergence in the monsoon period. The lakes at the entrance are formed by large gour pools. The water level at the bottom is therefore probably a look at the water table, whose level variations are at the origin of the formation of the cave.

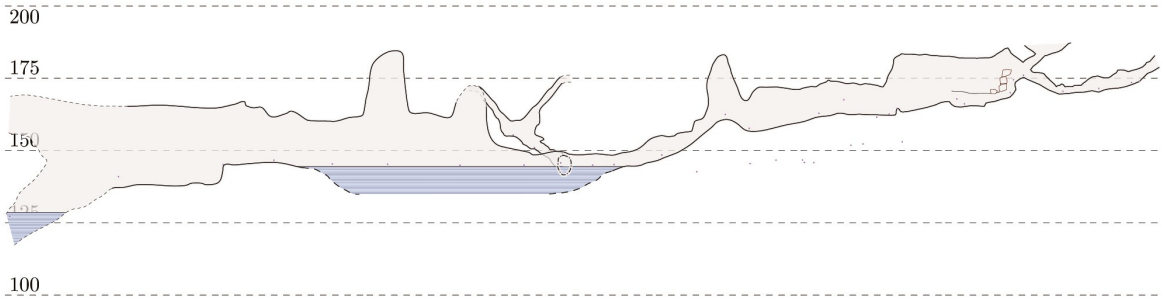
# Tham Saphong

République démocratique populaire du Laos
Province du Khammouane
X : 0590864 Y : 1933959 Z : 188 UTM WGS 84
Développement: 558 m Profondeur : -57 m
Levés topographiques : B. Martinez, J.-L. Marty, D. Pioch, F. Muller, D. Gignoux, J. M. Ostermann
Report : B. Martinez
Association Explo Laos / expédition K19

0 100 m




PLAN




COUPE DEVELOPPEE

**Tham Done**

Access
From the village of Ban Vangmaner, cross the Nam Ock and head southeast in the Nam Ngo valley. A path first crosses crops and then you gradually sink into a wooded area. Further on, the path splits in two and you have to take the right one. The path continues in a wooded area then crosses the Nam Ngo (dry bed in February 2019). At this point, continue in the Nam Ngo bed downstream. On the left bank, go up the first thalweg. At the end of it, you come to a boulder area. Rising slightly, you reach the entrance of Tham Done. We are about 4 km from the village.
Coordinates 48Q 0590313 1934393 194 m.

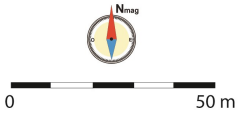
Historical
The cave was explored during the K18 expedition to the first lake. The explorers had spotted the climb to be made on the left. However, they didn't made it due to lack of equipment.

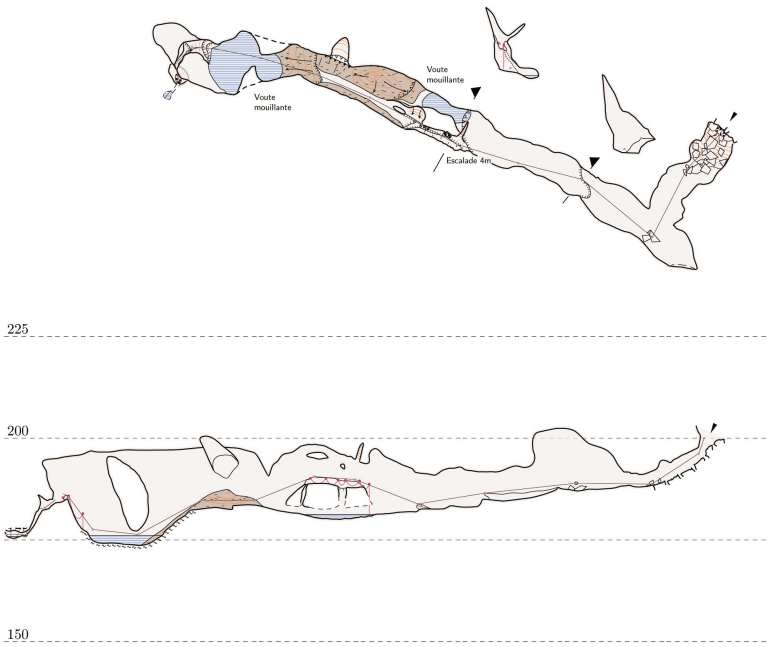
Description
The fairly modest entrance (approx. 3x2m) is in the middle of the boulders, some of which are riddled with impact. A short step down allows you to gain a foothold in a descending gallery cluttered with blocks at the start. Quickly, the gallery levels out with fewer blocks. A little further down, we cross a gallery perpendicular to the entrance. From this point, there is on the right a lrge gallery (approx. 10 m wide and 10 to 20 m high). After fifty meters, the gallery leads to a first lake which can be avoided by climbing a few meters on the left side. The progression in the water is faster and allows, after a low passage, to join a vast gallery. An imposing dune of alluvium (sand mixed with clay) bars two thirds of the gallery. On the right, a blind bell has been escalated. A little further, we reach down a second lake. Deeper than the previous one, it requires to swim, especially during a brief passage in a wet vault. The lake then takes on beautiful size (approx. 20 m wide) and it fits into an imposing 20 m high room. Despite these important dimensions, there is no passage around the lake. A ten meters escalation on the west side reveals a weak extension by joining another small pond located at the same level as the big lake. This climb also shows a significant blockage on the upper part of the room of the large lake. Development 177 m, depth 24 m.

Cave formation
The entrance into the middle of the blocks riddled with impact and well washed seems clearly emissive. The gallery following the entrance seems to have formed due to a northeast-southwest joint. The latter is the only one found on this alignment. Most of the cave develops on a north-west to south-east axis. Unlike the entrance gallery, it is the layer joints that govern the flow of water to the exit.
The alluvial fillings with a fine grain size are present in great thickness between the two lakes.

Conclusions, perspectives
This major emergence leaves little hope of continuation, the clogging resulting from the filling affects most of the network. However, at the rhythm of the monsoons, when the cave becomes emissive, it is likely that the fillings move and let glimpse of new passages.

**Tham Done**
République démocratique populaire du Laos
Province du Khammouane
X : 0590313 Y : 1934393 Z : 194 UTM WGS 84
Développement: 150 m Profondeur : -50 m
Levés topographiques : A. Augustin, B. Gignoux, D. Gignoux, A. Hourtal
Report : B. Martinez
Association Explo Laos / expédition K19




## Tham Done 2

Access
From Tham Done, take a slightly marked path which goes towards the North West and therefore towards the downstream course of the Nam Ngo. The path gradually approaches the edge of the massif. The cliffs appear on the left while continuing the progression. A very fractured area marks the arrival on Tham Done 2. Coordinates 48Q X: 0589909 Y: 1934397 Z: 194 m

Historical
During the K18 expedition, the team reported a ventilated cliff cave accessible after an escalation of about fifteen meters. However, the team could not reach the entrance, the last part of the climb probably required equipment.

Description
Tham Done 2 does not correspond to a single cave but to an area where several entrances can be observed from below. Some are well ventilated, you can clearly see the moving vegetation. Two of these entrances were reached after escalation. In both cases, development is limited to a few meters and the air flow comes from chimneys (convection air flow?)

## Tham Khuay

Access
The cave is located 4 km from the village, access by tractor then ten-minute walk from a large buffalo pond (hence probably the name of the cave).
Coordinates 48Q 591164  1935690 184 m

Historical
First exploration in March 2018 by the K 18 team over approximately 1000 m. Continuation in 2019 with the discovery by following an air flow of a passage leading to a large well decorated upper gallery, giving 2443 m length.

Description
The main access is through a 20 m entrance at the cliff foot leading to a comfortable gallery followed by a fork. To the south, the gallery reaches a second entrance and then joins the main gallery. We continue the gallery which after a water pond quickly becomes clayey. We find indeed a strong sediments filling with the V shape. We leave here two high galleries which run north discovered this year, we will come back to this. The gallery therefore continues for approximately six hundred meters, with some connections to the bottom, impenetrable lateral galleries, then a sump marking the end of the route.
The northern galleries were discovered this year along the clay slope. Two obstructed passages gave access to a large and high gallery. The western part is rich in various speleothems: shields, flowstone, helicitites ... There are also several black circles on the ground. A side smaller gallery goes on a hundred meters before obstruction. The eastern part allows to observe a fault with brecciated filling, then is extended after several bends by a part with a strong clay filling until obstruction.

Cave formation
Tham Khuay is a emerging from a fault and its related fractures. The fault is particularly visible in the upper network, with a brown, cemented breccia. The cave is a temporarily emergence during the monsoon rainy season. On this temporarily active level we have alluvial fillings, sand and above all clay, in significant slopes attesting to a slow circulation caused by the scree at the outlet. The upper gallery corresponds to an old flow level, before the uplift of the massif. There are various speleothems. Clay is also sometimes present in abundance.

## Porch above Tham Khuay

Access
The cave is visible above the Tham Khuay entrance.
Coordinates 48Q 0591133 1934764 204 m

History and description
Simple porch followed by a 30 m gallery with flat, earthy obstructed end.

Tham Khuay (photos J.M. Ostermann, A. Augustin)

# Tham Khuay

République démocratique populaire du Laos
Province du Khammouane
X : 0591133 Y : 1934764Z : 184 m UTM WGS 84
Développement: 2382 m
Dénivellée : 50 m
Levés topographiques : D. Pioch, B. Galibert, B. Gignoux, A. Hourtal, B. Martinez
Report : B. Martinez
Association Explo Laos / expéditions K18/ K19

## Tham Mi Haeng

Access
About 5 km from the village, access by tractor then half an hour's walk.
Coordinates 48Q 0591747 1934818 196 m.

Historical
Exploration on 02/27/2019 (T. Bolger, D. Gignoux, B. Lips, J.M. Ostermann).

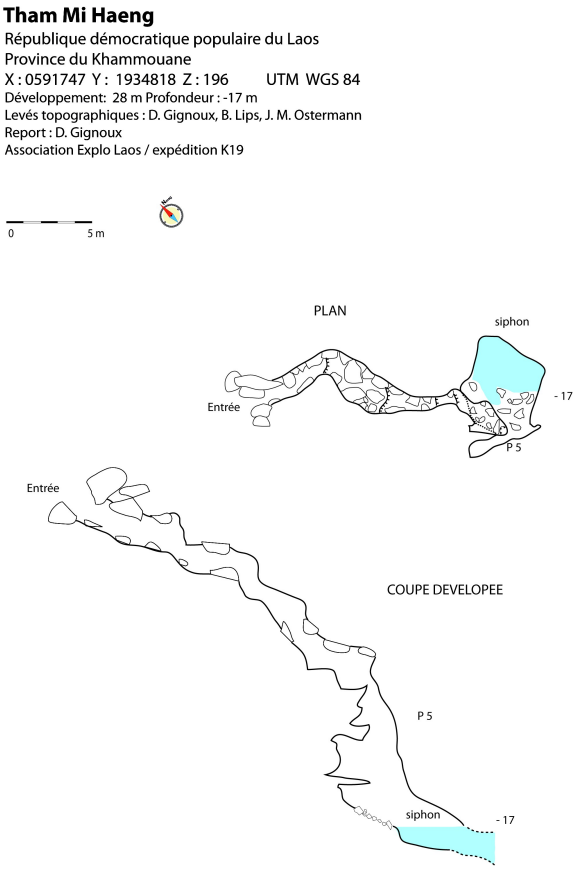
Description
The cave opens between blocks at the cliff foot, it's obviously an emergence. After crossing alarge blocks area, we reach a joint system with a 5 m pit (rigging is necessary) and then a sump with floating calcite, probable look at the water table at level - 17. The flow in flood must be consistent: abundantly polished rock, presence of sand.

Prospect
The siphon can easily be plunged: water is clear, passage several meters wide.

## Emergence

Access: 7 km from the village, in the middle of the valley. Coordinates 48Q 0581859 1951733 286 m.

Description: sinkhole-emergence of about 70 m wide, cluttered at the bottom with tree trunks, metric blocks, and sand. No passage more than a few meters long, no draft.



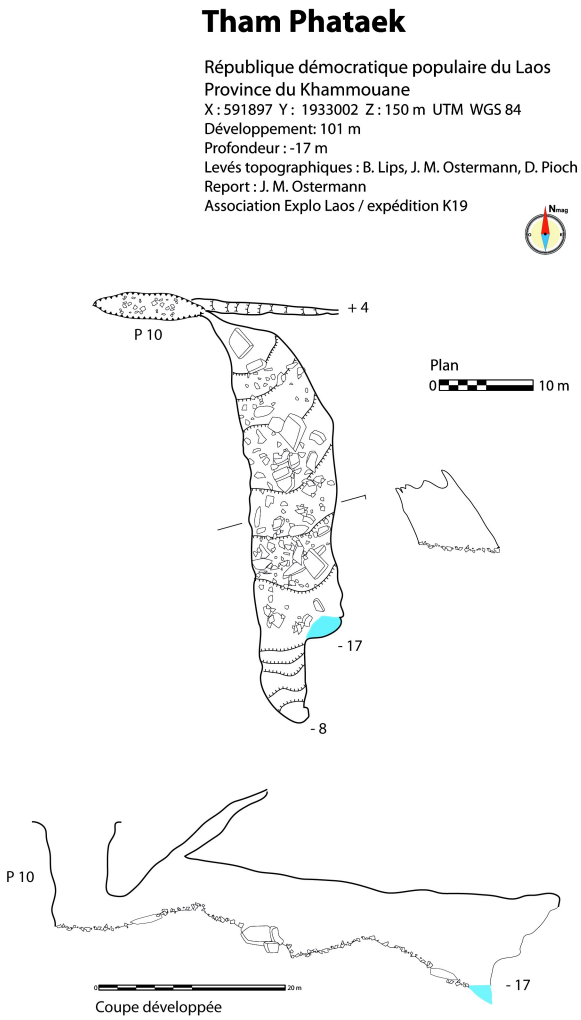
**Tham Phataek**

Access
About 6.5 km from the village, access by tractor then 5 minutes walk.
Coordinates 48Q 0591897 1933002 150 m.

Historical
Explored for the first time on 03/13/2018 by the K 18 team. A climbing was to do, which explain our visit. Note that the cave was then named Tham Phatay.

Description
Joint entrance about 10 m deep, rigged for comfort but it is possible to descend without rope. The cave is a temporary emergence as evidenced by the thalweg which start from the cave. A small crumbling gallery is followed to the south by a short horizontal gallery then descent into a room 7-8 m wide, 5 to 15 m high which leads to the siphon. A dive could be done without problem: clear water and visibility over about 3 m deep. A side ascending gallery, yet to explore, goes up about 20 m long to end on obstruction. The cave is dug on a joint (entry) cutting a very inclined bedding.

Prospect
The siphon would be easy to dive, wide with very good visibility and about three meters deep.

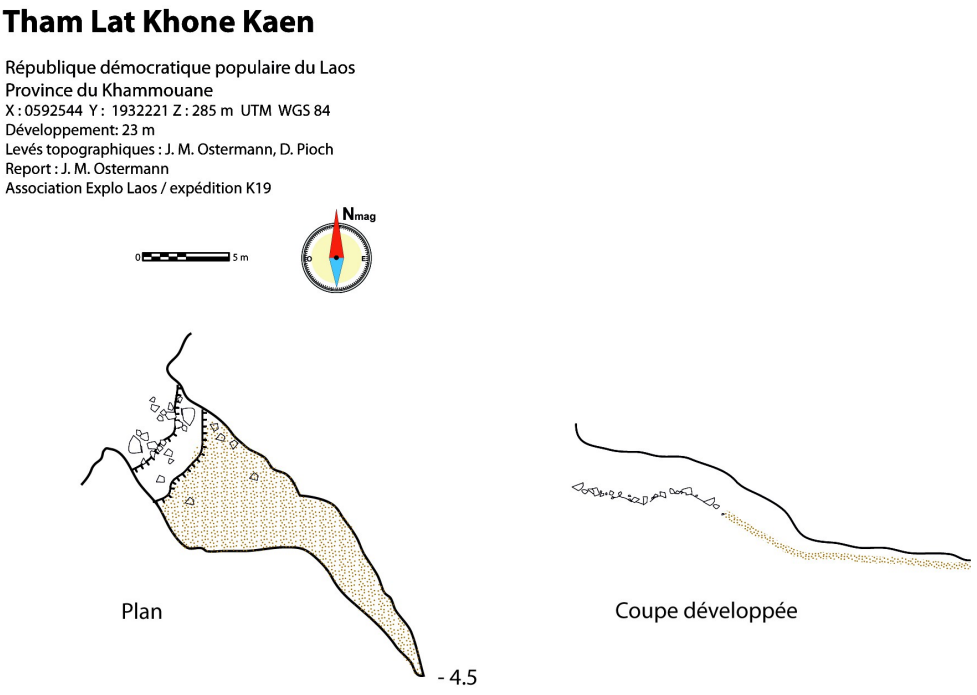


**Tham Lot Khone Kaen**

Access
It is a small cave discovered by accessing the poljé located upstream of the Ban Dou valley, at the pass. We are approximately 8 km from Ban Vangmaner.
Coordinates 48Q 0592544 1932221 285 m

Historical
Surveyed on 2/26/2019

Description
Cave with a wide, sloping entrance followed by a short gallery with a flat bottom and earthy filling. Ideal for a bivouac on the way to the poljé, so we made the survey. Development 24 m.



## Mu Gia Pass area

Jean-Michel Ostermann

The Mu Gia pass is a border post with Vietnam, located less than two kilometers from the prospected area. This area is on the separation between the large sandstone massifs of the Nakay plateau and to the east the karst of Que Bang / Hin Nam No. A reconnaissance by T. Bolger had made it possible to locate karst phenomena to be explored (mainly sinks). The area is located in the north east of Tham Nam Ock explored in 2016, north of the Protected Natural Area.
A one-day survey allowed us to explore a short but hydrologically and historically interesting cave, as well as several sinks. The route follows the old Ho Chi Minh trail, in the middle of shell craters, we even found old ammunition ... The abundance of bombardment is explained by the presence of a pipeline which served to supply the troops in fuel.

### Tham Koun Huay

Location
From the barracks of the border guards, a walk of about 1.5 km allows you to cross a stream of low flow (at this season), and going up this stream you arrive at the source, surmounted by an important blockfall area. At the top of the blockfall we reach a rocky bar to the north of which is the entrance.
Note that many small cavities with strong draught have been explored in this blockfall, none of which allow to progress more than a few meters.
Coordinates 48Q 0581884 1951775 280 m.

Description
The declining entry provides access after a few meters to a small underground stream that can be easily followed for thirty meters before arriving at a water pool. There is here a strong draft, but unfortunately the air is coming from a small chimney at the siphon level. Climbing a steep slope on the left leads to a small room which allows to find again the gallery downstream. From the entrance, we can reach the downstream part of the cave to the south by small galleries, sometimes narrow and concreted, not surveyed, but you quickly find the surface scree. The whole develops over 175 m.

Biology: no detailed study due to lack of time, but note the presence of a beautiful viper (Triceratolepidophis sieversorum) in the south gallery.

Human occupation
The cave served as a shelter for soldiers during the Vietnam War, as evidenced by many remains: clothing, shoes, electrical equipment, ... At the entrance there are traces of intense bombing. It is one of the few shelters in the area, which was heavily "watered" during this conflict.

Prospect
The siphon would be easy to dive, and would certainly allow access to an upstream gallery.

### Tham Huay Tad Pha

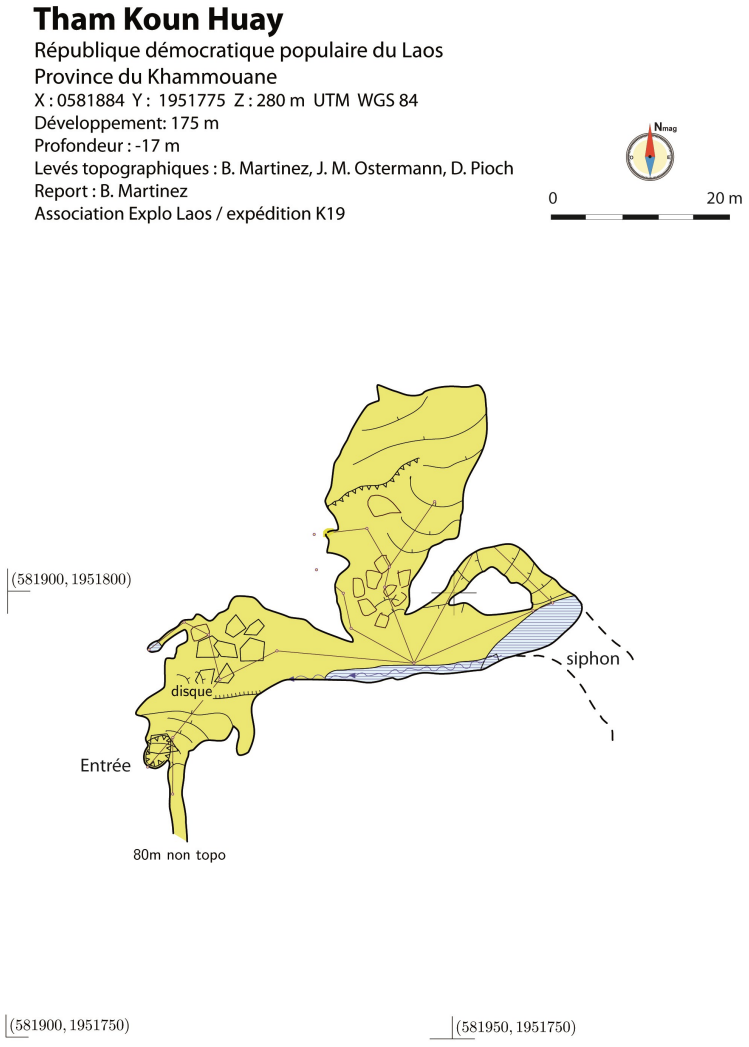
Location
From the base of the above-mentioned scree, we cover around 1.3 km, sometimes following a thalweg along the cliff to arrive after a meander to the “cave”.
Coordinates*:* 48Q 0581859 1951733 247 m

Description
It is a sink absorbing a temporary river of high flow, given the width of the thalweg and the presence of many tree trunks at its level. The sink area extends for about thirty meters along the cliff, and a passage to the north allows, following a draught through the scree, to access a declining area and a small gallery quickly clogged.

**Sink # 2**

Location: from the previous cave, we continue to follow the cliff in a south-easterly direction for around 350 m. Coordinates: 48Q 0582857 1950 632 270 m.

Description: It's an opening under a large tree roots, a large funnel lined with blocks. A passage leads to a narrow gallery about 15 m long, obstructed.

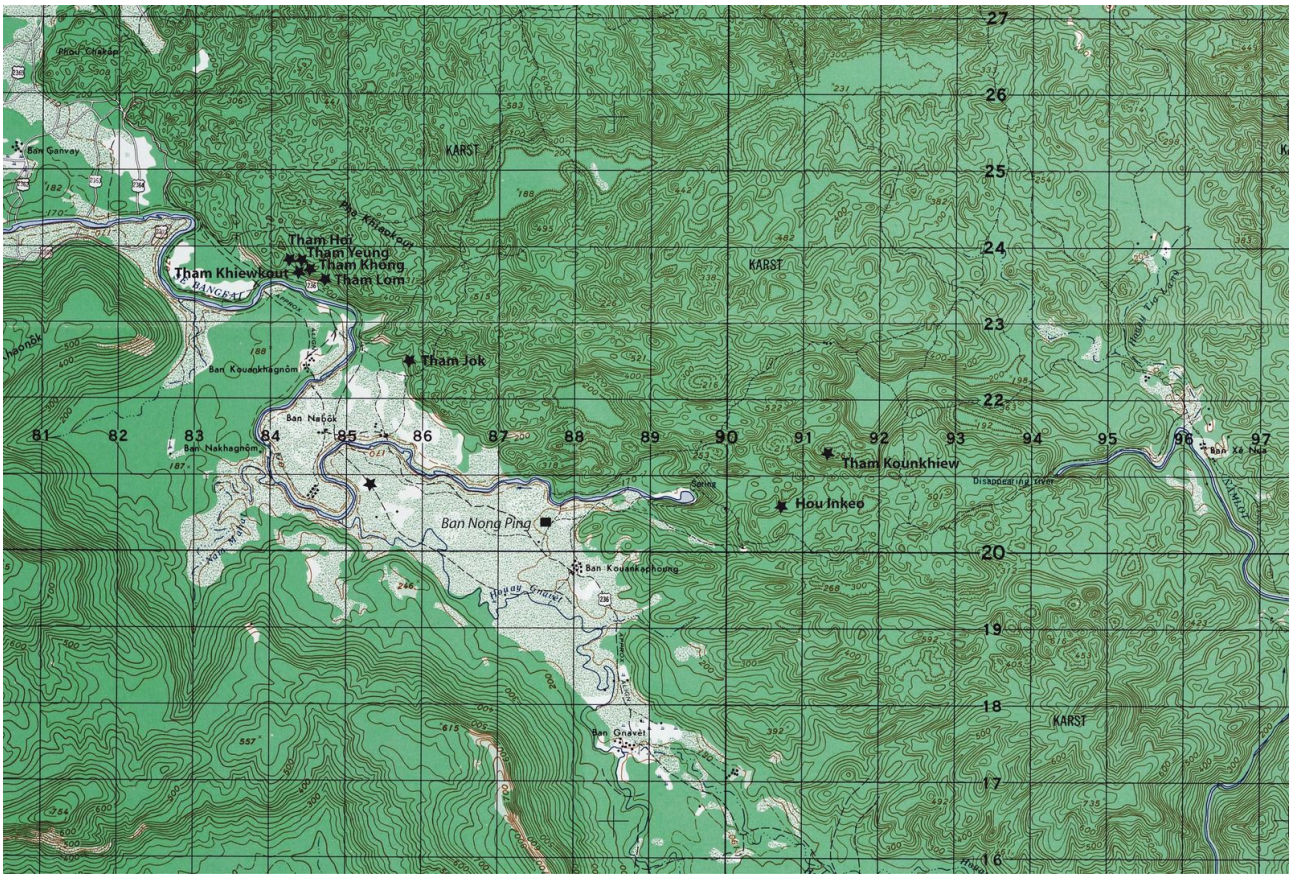


Karst and sinks near Mu Gia Pass (photos J.M. Ostermann)

## Ban Nong Ping Area

A. Augustin, B. Lips, J.-M. Ostermann

The second part of the expedition took place in the Ban Nong Ping area, base camp for many years for Xé Bang Faï expeditions. The village is accessible by a difficult road, but tends to develop with the attraction of the underground river, which has been briefly developed and opened to tourists since few years.
We stayed as usual in the guest house, the ideal access point to the XBF system in the east, and to the downstream cavities which were reached by boat.
The initial plan to make an advanced camp upstream of the underground river was abandoned, local guides having informed us that the planned objectives were cavities of low development and without interest. We referred to some cavities accessible from the village, and especially on a set of unexplored caves downstream, reached after a navigation of about 8 km.




*Caves location in Ban Nong Ping area*

**Tham Yeung - Tham Khong**

Access
From the village downstream from Ban Nong Ping, a boat makes it possible to descend the river for approximately 8 km, stopping soon after having skirted a cliff. The disembarkation is done at point 48 Q 583909 1923745. Tham Khong entrance is at cliff foot about 200 m north, in an elevated area. We reach the entrance to Tham Yeung following the cliff in a north-west direction at around 100 m. The two caves are connected.
Coordinates Tham Khong 48 Q 583925 1923929 217 m
Coordinates Tham Yeung 48 Q 583852 1923979 201 m

Historical
Exploration from March 3 to 5, 2019 by the team, but the entrance to Tham Khong is frequented by the locals at least up to the room, notably for bat hunting.

Description
Entering through Tham Yeung, we notice a strong draught in the declining gallery lined with clay. We descend a fairly steep slope which quickly leads to a pool of water which we follow to the left to then climb up into a scree and a small room. We find an ascending gallery on joints with phreatic forms. The gallery quickly divides into several connected tubes. One of the passages leads to a room where the Tham Khong team joined on the day of exploration. From this room, several conduits join the Bat Room (30x40x10 m), wider than the rest of the network, and which was formed by a collapse at the intersection of several joints and a fault. The room is occupied by many bats, and we can see beautiful biogenic karstification forms with the guano. A gallery allows you to reach the exit by Tham Khong. We can notice at this level a beautiful NE-SE orientation fault mirror, at the entrance level.
Development 791 m, difference in height 39 m.

Cave formation
The cave developed on a dense tectonic network with fault (magnificent mirror visible at the entrance to Tham Khong) and numerous adjacent joints. It is an outlet area (Tham Yeung) for the water table. This is reached at the sump near Tham Yeung entrance, and there is at this level a water outlet during the monsoon period. The intersections of tectonic accidents gave rise to the formation of the Bat room. Many galleries also have phreatic forms with bells. Speleothems are rare. There are clay deposits in the lower areas.

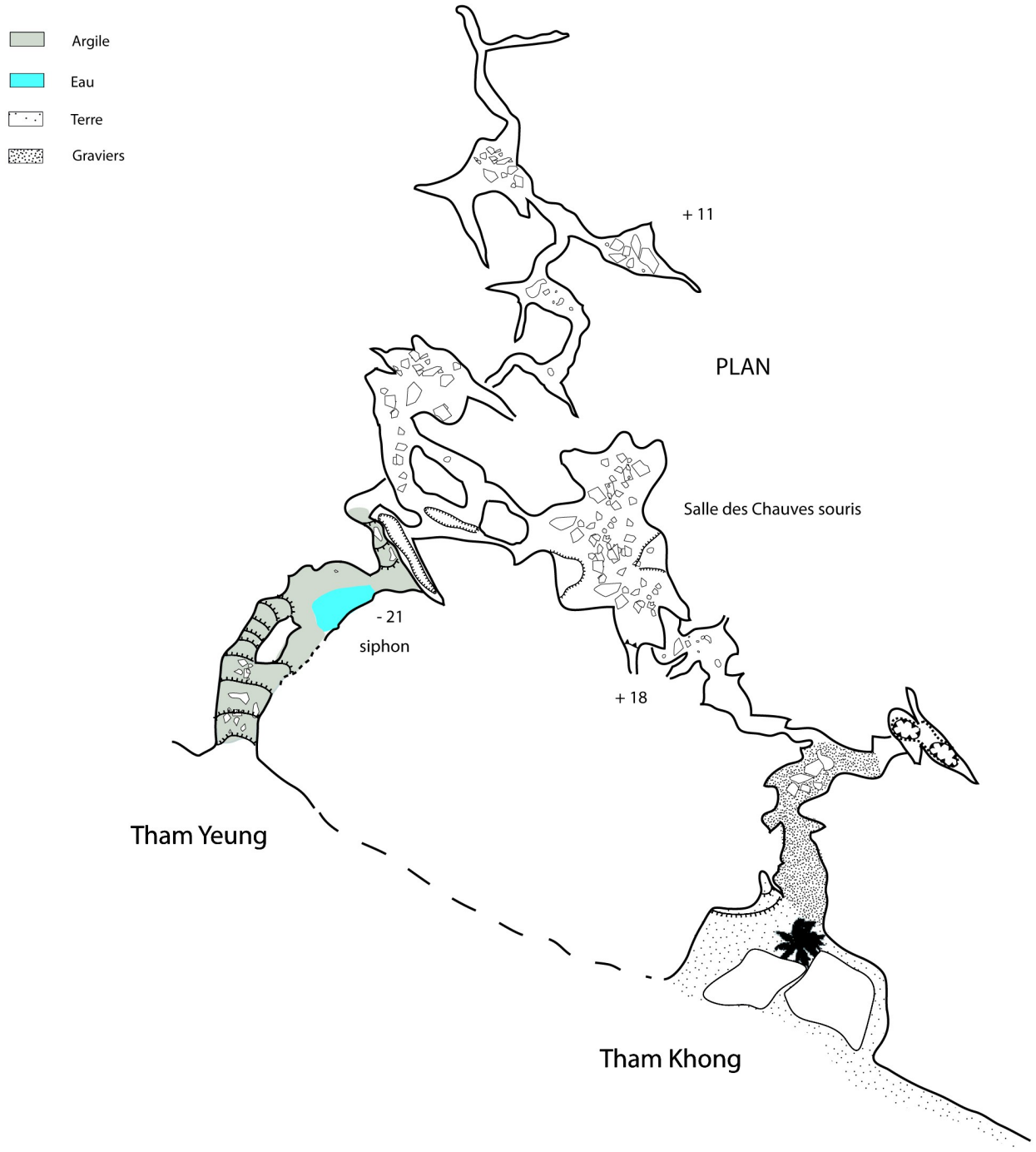
*Cave pearls in Tham Yeung*

# Tham Yeung - Tham Khong

République démocratique populaire du Laos
Province du Khammouane
X : 0583852 Y : 1923979 Z : 201 m UTM WGS 84
Développement: 791 m Dénivellée : 39 m
Levés topographiques : A. Augustin, B. Lips, B. Martinez,
Jean-Michel Ostermann, D. Pioch
Report : B. Martinez, J.M. Ostermann
Association Explo Laos / Expédition K19

0 50 m

Ng



Tham Yeung (up) and Tham Hoy (photos J.M. Ostermann)

**Tham Khiewkout**

Access
From the landing point (48 Q 583909 1923745), the entrance is approximately 200 m at the cliff foot, NNW direction.
Zone 48Q X: 0583834 Y: 1923929 Z: 200

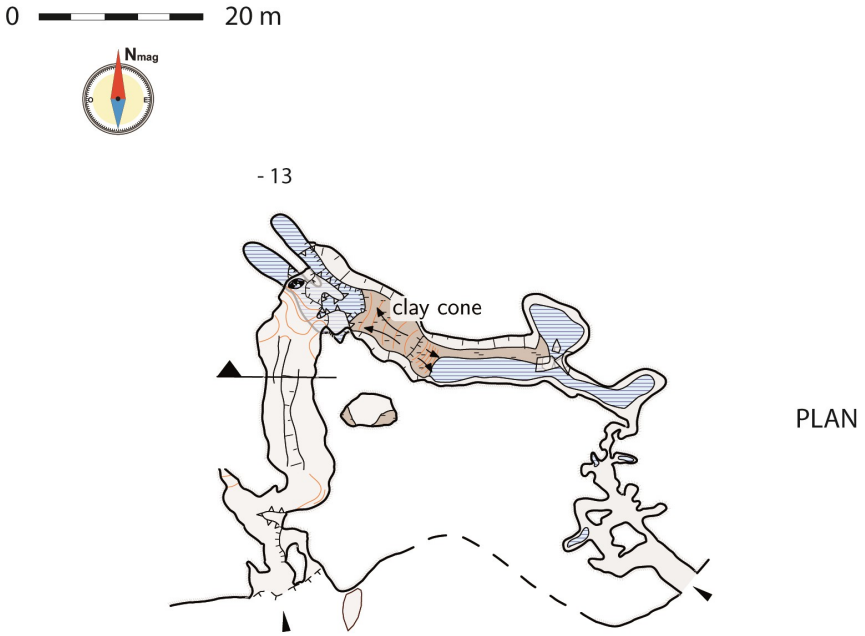
Exploration
Recognition to the water pool on March 3, 2019 by J. Lips, B. Martinez and D. Pioch, exploration of the continuation on March 4, 2019 by B. and D. Gignoux, A. Hourtal.

Description
The entrance gallery leads after about 30 m to a step, then a short gallery with a pool of water with a large clay slope in the middle. At the NE end of the gallery, a chimney makes it possible to join another exit by a tortuous gallery.
Development 140 m, difference in height - 13 m.

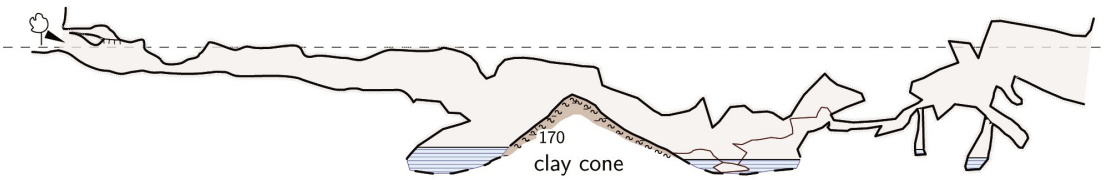
Cave formation
Like the other cavities in the area, Tham Khiewkout is a small cave serving as an outlet for groundwater during the monsoon period.

# Tham Khiewkout

République démocratique populaire du Laos
Province du Khammouane
X : 0583834 Y : 1923929 Z : 200 UTM WGS 84
Développement: 140 m Profondeur : -13 m
Levés topographiques : D. Gignoux, A. Hourtal, J. Lips, B. Martinez, D. Pioch
Report : B. Martinez
Association Explo Laos / expédition K19




PLAN




COUPE DEVELOPEE

**Tham Hoy**

Access

From the landing point (see above), we reach Tham Kiewkout 200 m, then follow the cliff to the south until a fault cutting the hill and cluttered with boulders and vegetation. Going up this fault of around 120 m (difference in height + 70 m), you cannot miss the main entrance to the cave.
Zone 48Q X: 0583799 Y: 1924014 Z: 271 m

Exploration

The cave was discovered on March 4, 2019 by B. and D. Gignoux, and J.M. Ostermann by prospecting along the fault. She was not known to the locals who would come in numbers to visit it, and baptized it Tham Hoy, Cave of Snails, because of the abundance of shells in one of the rooms.

Description

The crumbling entry gives after a choked passage on several galleries. A low room contains the many shells. A rising gallery makes it possible to find a second entrance. Continuing towards the north, another squeeze allows you to gain a large rising gallery covered by flowstone, with roots puncturing the ceiling. The passage continues to climb and gives access to a gallery to the east with a blind 5m pitch. In the north, the ascent continues and we joins a gallery developed in the east to a crossroads leading to several often connected galleries. The network is then oriented NO -SE. Note the presence of anemolites.
Development 650 m, difference in height 60 m.

Cave formation

Tham Hoy is an ancient phreatic network having used the dense fracturing of the area. The galleries have indeed a typical phreatic form (bells, rounded shapes). The connection with the water table is found around - 60.

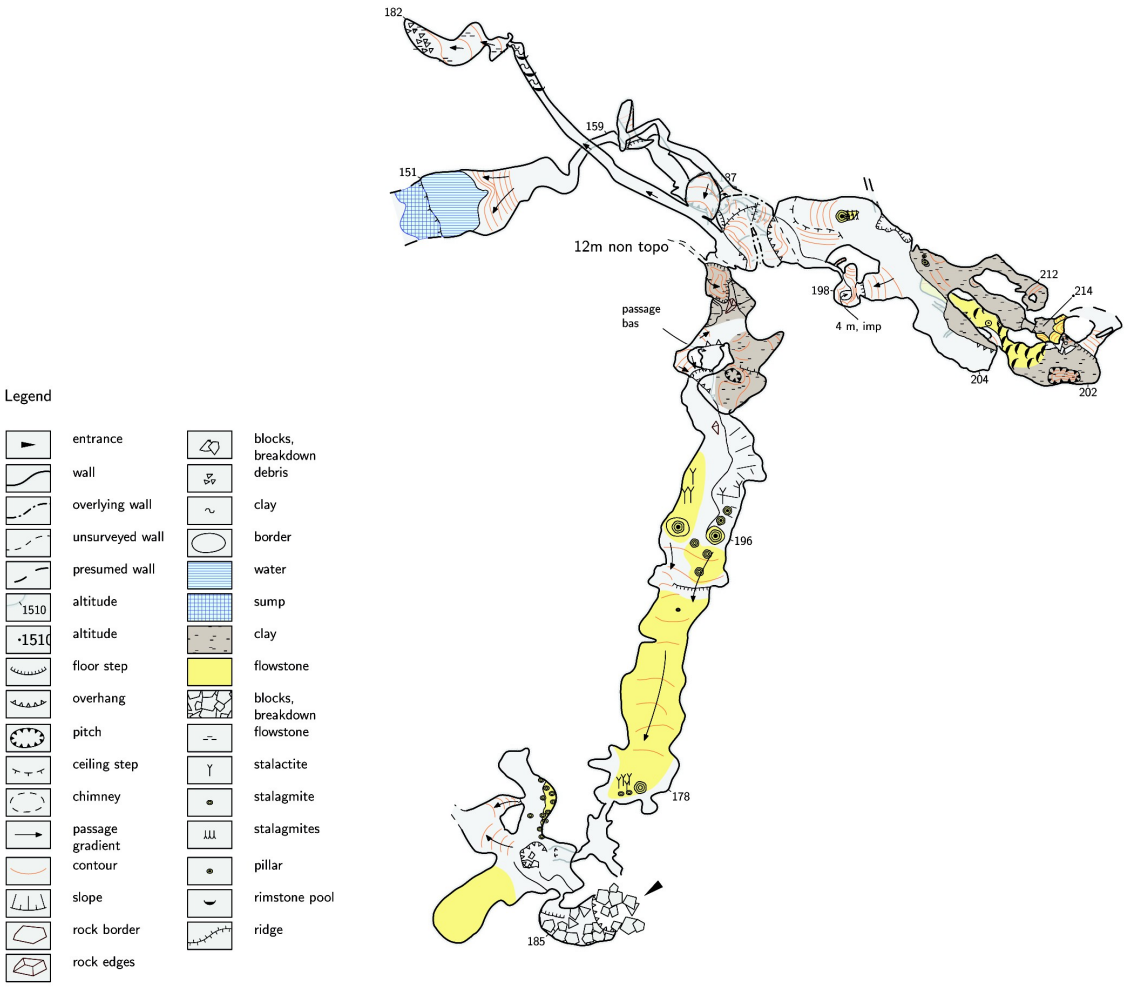
*Calcified snails in Tham Hoy*

# Tham Hoï

République démocratique populaire du Laos
Province du Khammouane
X : 0583799 Y : 1924014 Z : 271 UTM WGS 84
Développement: 650 m Dénivellée : 60 m
Levés topographiques : A. Augustin, T. Bolger, D. Gignoux, B. Gignoux, A. Hourtal, B. Lips, B. Martinez, Jean-Michel Ostermann
Report : B. Martinez
Association Explo Laos / expédition K19

0 50 m

Ng



**Tham Lom**

Access
Zone 48Q X: 584216; Y: 1923816; z = 245 m
The cave is located 4.2 km northwest of Ban Nong Ping. Access is by boat from a small village 1 km from Ban Nong Ping on the banks of the Xe Bang Faï river. From the landing point (see above), Tham Lom is located 400 m southeast.

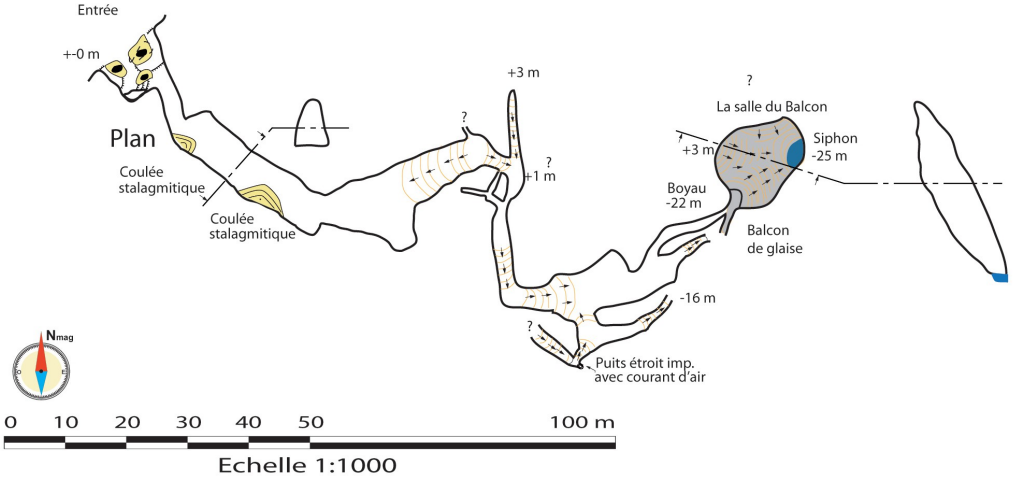
Exploration
The cave was reported to us on March 4 by local guides. D. Pioch and B. Lips explored and surveyed it.

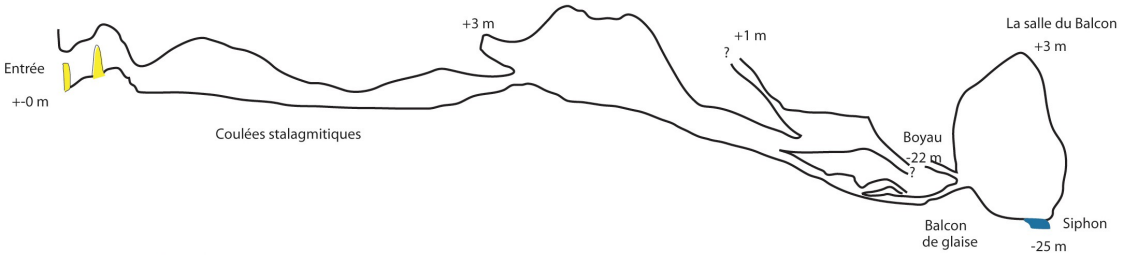
Description
The cave opens almost on the cliff foot. The entrance is small due to a large speleothem which almost completely blocks it, leaving only a narrow passage less than a meter wide. Without this concretion, the cave would start with a beautiful 10 m wide and 7 to 10 m high entrance.
Then there is a good size flat galley with two nice stalagmites on the right wall.
This easy progression is unfortunately short. You have to climb a scree then go back down. At the top of the scree, a small gallery going up on the left wall is probably of little interest.
At the bottom of the descent, we reach a N-S gallery. Towards the north, it stops after a strong ascent, at the highest point of the cave at +3 m above the entrance. To the south, an opening in the right wall gives access to a small parallel gallery, joining the main gallery almost at the base of the scree.
At the base of the descent the gallery becomes more muddy and widens with few openings. The exploration of one of them was stopped for lack of material but the gallery goes back and probably has little interest. A small pitch with a sensitive outgoing air flow is too narrow to be penetrated.
Downstream, the gallery is divided into several more or less narrow passages. The main hose is the most northerly. The absence of a draft suggests a rapid end. The soil is sandy. However, after a short upward slope, it is with surprise that we comes out on the edge of a large volume of almost 20 m in diameter by ending up on a small balcony with a one meter high clay wall. A good lamp makes it possible to see the water level of a sump 6 m lower as well as the ceiling, 20 m higher. Very steep clay slopes converge towards the sump. With a rope it is possible to reach to the water pool by cutting steps quite easily in the clay slope. From the sump (bottom point of the cave at -25 m), we can see that the Balcony room does not have any other possibility..
Development: 278 m , elevation: 31 m (+3 m, -25 m)

Prospect
By diving the sump, the cave offers little prospect of continuation. The few small question marks on topography seem to be of limited interest.

# Tham Lom

République démocratique populaire du Laos
Province du Khammouane
X 584216 Y 1923816 Z 345 UTM WGS 84
Développement: 278 m
Dénivelé : 31 m (+3 m ; -25 m)
Levés topographiques : Daniel Pioch, Bernard Lips
DistoX + carnet 4 mars 2019
Report : Bernard Lips
Association Explo Laos / expédition K19




Coupe développée

**Tham Jok**

Access
Zone 48Q X: 585338; Y: 1922710; z = 213 m
The cave is located 2.6 km northeast of Ban Nong Ping.
Access is by foot crossing the Xe Bang Faï at the level of the small village, departure of the boats for the cavities further downstream. A 2 km walk through cultivated fields leads to the cliff. An impenetrable emergence gives a small stream which flows towards the Xe Bang Faï downstream of the great meander.
Tham Jok opens in the cliff ten meters above the resurgence. An easy climbing give access the entrance porch (south entrance).

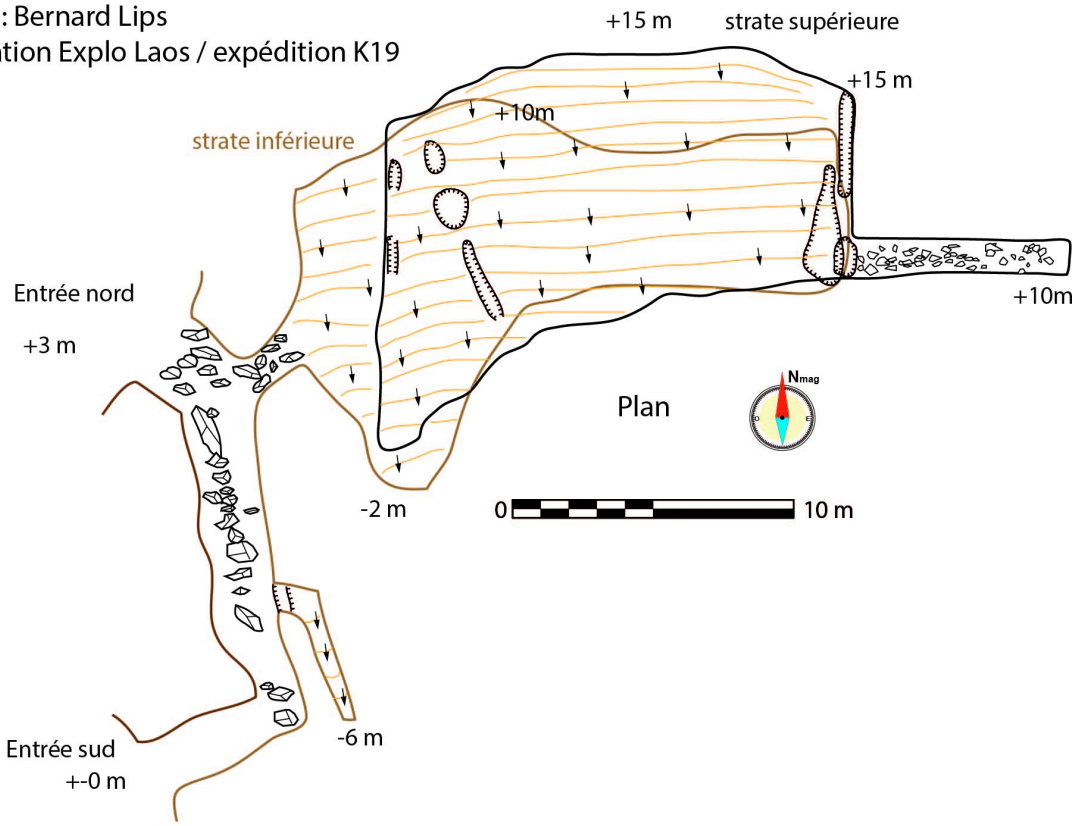
Historical
The cave was reported to us on March 5 by local guides. We explored and surveyed it the same day. We are joined by Alexis and Aude who, after having searched in vain the surroundings of the resurgence, make a photo session by revisiting the whole of this small cave.

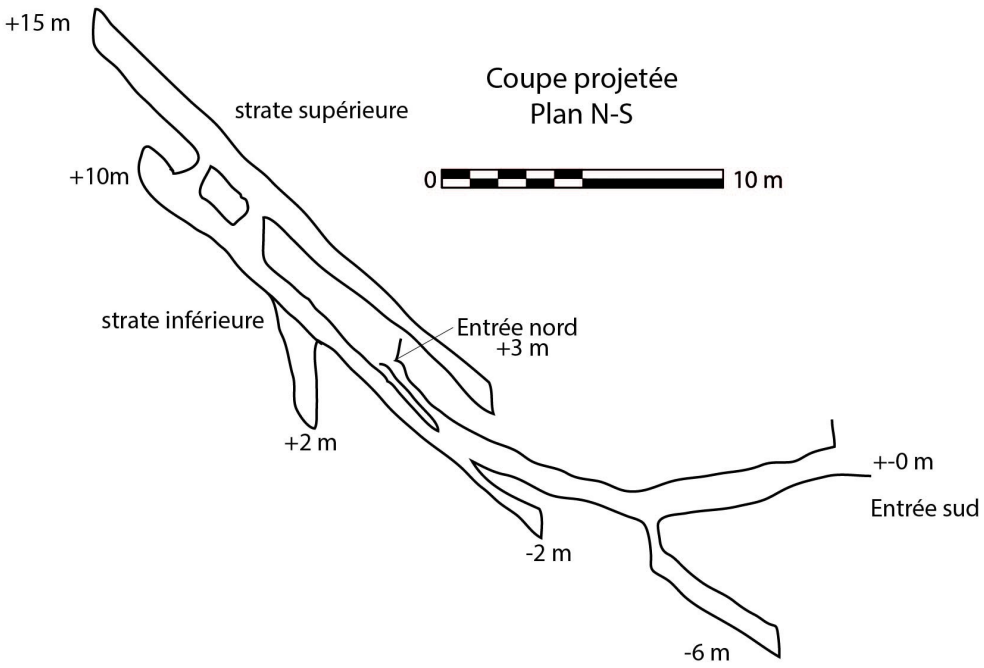
Description
If not important, this cave has the merit of originality.
The entrance porch gives access to a south-north gallery, parallel to the cliff and cluttered with large blocks. A small easy pitch brings to the lowest point of the cave at -6 m. This gallery opens after a dozen meters near the north entrance.
Shortly before this exit, a passage on the right leads into a bedding about 10 m to 15 m wide (north-south direction) for 20 m long (east-west direction). This bedding has a slope of 40 ° and goes up towards the north. The height of the ceiling is about a meter. At the eastern end, a crack from north to south develops over ten meters with a 6 m depth.
In the northwest corner, two ceiling openings provide access to an upper bedding plane of roughly the same size and, of course, the same slope. A thickness of about 1.5 m of stone separates the two bedding planes. At the east end, we find the same crack but slightly offset as in the lower layer. Finally, a short gallery, quickly blocked, develops over ten meters to the east.
Development: approx. 120 m Elevation: 21 m (+15 m, -6 m)

Perspective
This cave offers no prospect of continuation.
However, the formation of this cave remains to be studied. The short north-south entrance gallery is probably due to a decompression effect due to the cliff. But the two hollowed bedding planes formation is more difficult to explain.

# Tham Jok

République démocratique populaire du Laos
Province du Khammouane
X 585338 Y 1922710 Z 220 m UTM WGS 84
Développement : env. 120m
Dénivelé : 21 m (+15 m ; -6 m)
Levés topographiques : Daniel Pioch, Bernard Lips
DistoX + carnet 5 mars 2019
Report : Bernard Lips
Association Explo Laos / expédition K19



**Hou Inkeo**

Access
From the village of Ban Nong Ping, head towards the resurgence of Xé Bang Faï. At the resurgence reception hut, continue in a well-marked dry valley on the right. At the end of this valley, a path climbs on the left towards the massif. Take it until you reach a small pass (approx 150m D +), ideal for a short break. The path continues to meander through the bamboo forest. After 10 minutes, the path divides, take on the right towards the Xé Bang Faï sink. The cave opens about 50m further just to the right of the path.
Coordinates 48 Q X: 0590289 Y: 1920847 Z: 405 m

Historical
Although in the immediate vicinity of the path that leads to the loss of Xé Bang Faï, this pitch has not been explored during previous expeditions to this area.
It was during the K18 expedition that the NPA rangers reported this pitch. However, K18 members don't have time to explore it. A draft is mentioned, the cave therefore seems promising, especially since it is located vertically above the underground river of Xé Bang Faï.

Description
The fairly wide opening (about 4m wide by 15m long) gives access in a 15m vertical shaft, and to the top of a 15x20m sloping room. Towards the south-east, an earthy slope comprising blocks of different sizes leads to an area obstructed by detritic fillings. Towards the north-west, in the midst of speleothems, a new 15 m vertical shaft ends in a small gallery. During the descent of this pit, a monkey skull was discovered. At the bottom, the small gallery offers no notable suite, only a few parallel pits all quickly obstructed. To the north, two other pits are blocked by boulders and concretions around -30m.

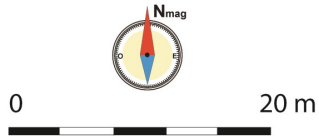
Cave formation
The shaft opens up on to a south-west - north-east joint. We can clearly see it extending to the northeast when we begin the descent of the entrance shaft opposite. The main room, which is reached after the entrance pitch, seems formed by overlapping the previously mentioned fracture with one or more bedding planes largely affected by tectonics (remarkable deformation of the strata clearly visible in the south-eastern extension of the room).

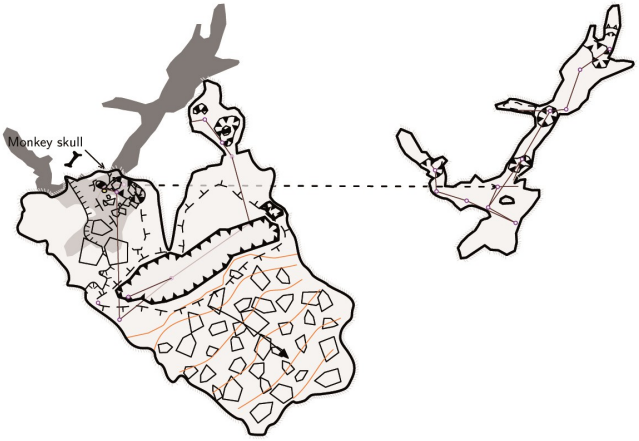
Biospeleology
Gastropods of the Cyclophoridae family are observable from the descent of the second pitch and they line the floor of the small gallery of -40m, some are covered with calcite. Several specimens of Heteropoda steineri are visible.

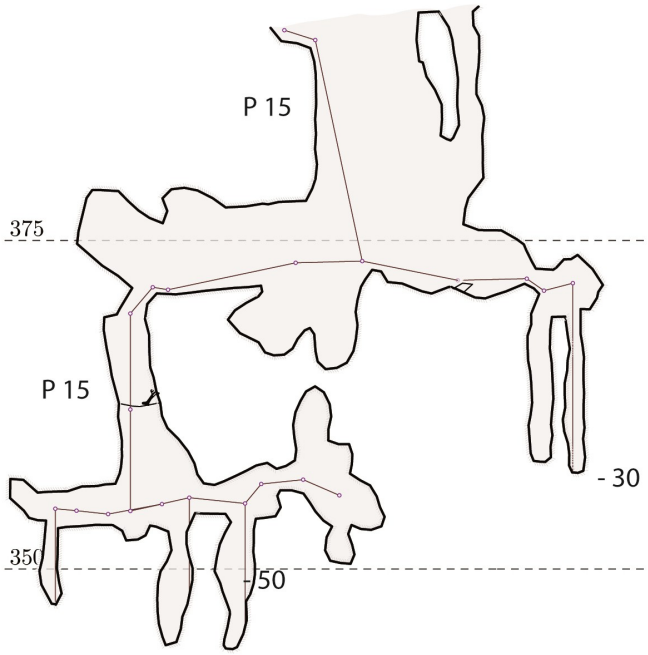
Conclusion
There is little hope of continuation in Hou Inkeo.

# Hou Inkeo

République démocratique populaire du Laos
Province du Khammouane
X : 0590289 Y : 1920847 Z : 405 UTM WGS 84
Développement: 150 m Profondeur : -50 m
Levés topographiques : A. Augustin, D. Gignoux, A. Hourtal
Report : D. Gignoux
Association Explo Laos / expédition K19



**Tham Kuan Khiew**

Access
From the village of Ban Nong Ping, head towards the resurgence of Xé Bang Faï. At the cave desk, continue in a well-marked dry valley on the right. At the end of this valley, a path climbs on the left towards the massif. Take it until you reach a small pass (approx 150m D +), ideal for a short break. The path continues to meander through the bamboo forest. After 10 minutes, the path divides, take on the left (on the right, it heads towards the Xé Bang Faï sink). Progress becomes easier for about fifteen minutes before reaching an area of lapiaz. Bamboo arrangements facilitate this lapiaz crossing. We then climb regularly to another pass. Just after, we start a steep descent. We reach a flat area where there are traces of logging. At this point, we leave the path which continues to descend, we go to the right in order to reach a cliff area (no path, difficult to find your way without a guide...) . The cave opens at the cliff foot. From the village, take around three hours to walk.
Coordinates 48 Q X: 0590 742 Y: 1921553 Z: 345 m

Historical
Nowhere is the existence of this cave mentioned. The GPS pointing was also not performed. However, the cave is well known to the villagers. Our guides concerted during the final approach as if several knew the entrance. During the exploration, one of our guides let us know that the cave was in relationship with the Xé Bang Faï river cave.

Description
The entrance, 6m wide and 3m high, quite modest for Laos, but we are at the top of a breakdown area. There is a clear draft of air going inside the cave. A chaotic first chamber follows, it develops mainly to the West. After a few short climbing down, we reach a sandy gallery just after a squeeze with strong draft. The gallery takes on nice dimensions and the dripstones multiply. On the right, we find a well ventilated declining gallery, we will come back to this extension later.
The sandy gallery widens just after to become a 10m wide by 30m long chamber. On the left, we see a beautiful ascending room. This extends towards the entrance, in an always ascending gallery. A short passage shortly before the gallery end exhales a draft which proves that the entrance area is nearby.
We return to the 10x30 chamber. Heading towards the end of the latter (south-east direction), a characteristic opening (“door” with strong draft, rumble of the underground river) gives access to the underground Xé Bang Faï and its extraordinary dimensions. A sloping balcony overlooks the impressive underground volumes characteristic of the underground river. A 10 m projection (equipment required) allows to continue the progression towards the river. A very steep, partly calcified slope, requires special vigilance during progression. Then we are on the right bank of the Xé Bang Faï at -149m, upstream of the second rapids that we hear, at the "Salle des trois sœurs" level. This part has not been surveyed by the American team.
Let's go back to the entrance to the 10x30 chamber, where a gallery is developing at the start. Shortly after, boulders appear, and a narrower passage brings back again to good dimensions. It is a large gallery, the chaotic part of which leads, passing through the blocks, into the hall of the entrance to the cave. Towards the west, the gallery is large (about 20m wide), with a lot of aesthetic speleothems. On the ground, alternate boulders, sand and flowstone. On the right, a smaller gallery heads due north and ends quickly. As for the main gallery, the slope increases in the middle of the boulders and flowstone. After a drop to -82 m, a narrowing marks the end of the gallery.

Cave formation
The entrance to the cave appears to be on a major joint, probably a fault. The cliff aligned on a north-west to south-east axis is indicative of this tectonic accident. The entrance chamber and then

the downward gallery seem to have developed on a bedding plane with a significant dip towards the South and therefore towards the Xé Bang Faï river.
Even if it is difficult to perceive the importance of this dip of the strata in the major part of the cave (the calcite having carpeted many walls), there is no doubt about the flat at -82m in the West gallery where the dip is remarkably visible. At this level, we can even see it accentuating considerably until reaching 80 °. It is very likely that the same phenomenon occurs at the level of the small balcony, which would explain the presence of this obstacle.
The filling of the cave is essentially clastic at the entrance, then with many speleothems (drapery, columns, flowstone, pearls, ...) giving the whole a certain aesthetic, worthy of the already known network. We also observed mondmilch at the bottom of the entrance chamber.

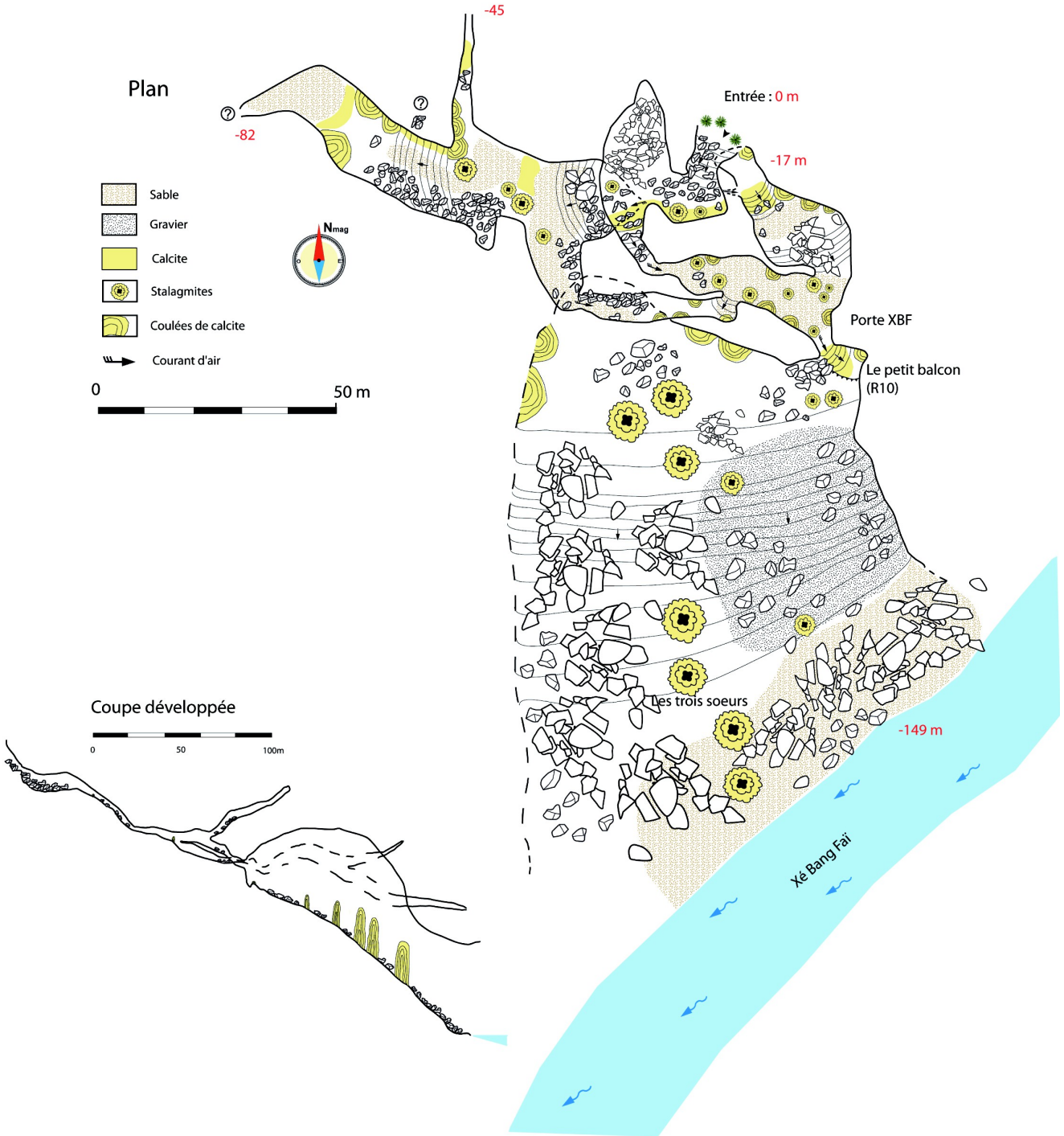
Biospeleology
No study was carried out due to lack of time and biologist during the exploration. However, we note the presence of bats, especially in a small side gallery of the entrance room where corrosion is intense (biokarstification).

Conclusion
It is very likely that the ends of the gallery which go towards the cliff alignment (north-west to south-east axis) are other minor entrances. Only the end of the West gallery at -82m can allow access to an extension, provided you progress through narrow passages. The discovery that this new entry to the already immense underground Xé Bang Faï network proves that other explorations are possible. The underground volumes are considerable, the karstification is remarkable,… the underground XBF can further increase its development in the years to come.


*Tham Kuan Khiew location on XBF Cave*

# Tham Kuan Khiew

République démocratique populaire du Laos
Province du Khammouane
X : 590741  Y : 1921540  Z : 345  UTM WGS 84
Développement: 603 m Profondeur : -149 m
Levés topographiques : D. Pioch, J. M. Ostermann, A. Augustin
DistoX 6 et 7 mars 2019
Report : A. Augustin
Association Explo Laos / expédition K19



Tham Kuan Khiew (photos J.M. Ostermann, A. Augustin)

## Conclusion

This expedition made it possible to raise the question marks of K 18, and to discover some new cavities, thus adding 4.8 km of topography to the inventory of the region. With the 2016 (8.3 km) and 2018 (4.2 km) campaigns, around 17 km of galleries were therefore listed on three expeditions.
The caves in the north of the massif (Ban Dou / Ban Vangmaner area) are generally weak in development, with the exception of Tham Khuay with its 2,440 m. They come either from local drainage networks (Tham Nam Ock / Tham Phak Tham explored in 2016), or in relation to the water table thanks to tectonic accidents (Tham Phataek, Tham Khuay, Tham Done, ...) . Several sumps complete these cavities, with prospects for exploration, but no major drain is emerging in this area.
Far north, towards Mu Gia pass, there are only impenetrable sinks or small cavities. Only Tham Koun Huay deserves a dive.
In the Ban Nong Ping area, apart from the shafts in actual or potential relationship with the underground Xé Bang Faï river cave (Tham Kuankhiew / Hou Inkeo), the discoveries this year were made downstream of Ban Nong Ping, with caves as at north in relation to the water table, mainly dug on fault, and of modest development. Tham Kuankhiew, new entry in the underground river of Xé Bang Faï, was however a very beautiful race which supplemented the existing survey on an unexplored area of the system.
It should also be remembered that the 2016 expedition made it possible to reconstruct part of the fossil upstream of the underground Xé Bang Faï (Tham Pha Pong, Tham Nguen 1 and 2, Tham Nguen Maï).
Finally, one of the zones that we had planned to explore (poljé south of Ban Dou, 5 listed cavities) would have been visited by an Anglo-Vietnamese team, without our being able to have more information. This objective was therefore abandoned.
There are of course many cavities identified by the rangers to visit throughout the natural area. However, most of us have subsequently been reported to be of low interest, although at least one of them exhales a clear draft. Furthermore, these objectives, which were initially included in our program, are all distant, and may require one to two days of walking from advanced camps upstream from Xé Bang Faï. The motivation to guide us towards these distant objectives was also moderate, a factor to take into account.
The south of the massif, where several cavities are also identified by the rangers, was recognized by T. Bolger but the local population seemed to be little collaborative.
Prospects for exploration on Hin Nam No are therefore now reduced, even if the potential remains significant.

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Hin Nam No karst aerial view (photos T. Bolger)

# Biospeleological studies

## Biology: collection and study method

Josiane Lips

In shipment

* Each species encountered for the first time in a given cave is photographed, then collected and put alone in a tube with 96 ° alcohol. A label marked in pencil indicates the number of the photo.
It is thus possible to keep a strict correspondence between the animal photographed and the animal which will be studied under a binocular magnifier.
* Other same species specimens are taken and put, in greater or lesser number, in tubes with alcohol. It is important to have multiple specimens of the same species. Depending on the species, you must be sure to have either a male or a female to allow determination.
* Back at the base camp, all the tubes are subject to data entry in the database. The tubes are assigned a new numbering determined automatically by the database. A new label (bearing, always in pencil, the place and date of collection, as well as the new number) is inserted in each tube. The photos are renamed with this new numbering. The circumstances of the collection are also recorded in the database.
* The photos are used to make a slideshow presenting all the species. Each slide shows the number of the database.

Back in France

* Back in France it remains to observe under a binocular magnifier all the samples and to sort the tubes containing multiple specimens in order to advance in the determination, often limited to the level of the family, if not of the suborder or the order .
* Species level determination is usually a specialist job in a given group. It is therefore a question of knowing and contacting the various specialists. The photos allow them to verify that the specimens correspond to species of their specialty. It only remains to send them the material.
* For some groups it is difficult, if not impossible, to find a specialist able to study the material. It is important in this case to keep the tubes and all the information for the day (possibly several years or even several decades later) when a specialist will express his interest. The slideshow, accessible on the internet, often allows you to initiate contacts.
* In all cases (before or after determination), the bottles are always kept in “double alcohol”: the tubes containing the animals are of course filled with 96 ° alcohol and these tubes are themselves stored in jars (of jam for example) filled with alcohol. The aim is to prevent specimens from drying out by evaporation of the alcohol.
* According to specialists, the determination can be more or less rapid. It is clear that in some cases it may take one or more years before having the precise determination.
* In the case of a new species for science, it is the specialist who takes care of the description. The proposed species name often refers to the collector or to a name proposed by the collector.

Results
Iconic species
Among the emblematic species, we can cite the two spiders Heteropoda maxima and Heteropoda steineri. They are found in all cavities, the first species relatively close to the entrances, the second penetrating much further into the cavities. It should be noted that Heteropoda maxima is often seen in a protective position on its large white cocoon when we do not know the cocoon of Heteropoda steineri.

In 2016, we discovered three new species for science:
* A beetle of the family Leiodidae (Ptomaphaginus lipsae, n. Sp., Perreau M. and Lemaire J.M., 2017). This beetle is very common and has been found in large quantities in five of the eleven cavities studied this year.
* A troglobia beetle of the Carabidae family (Lanxangaphaenops augustini, n. Sp., Deuve 2017) only two copies in 2016, this beetle was found in four cavities this year including a particularly important colony in Tham Saphong. Carabidae troglobies are often isolated and in very small numbers. The existence of a large colony in Tham Saphong is probably explained by the biological richness (very many small heteroptera) of the area.
* A fish from the family Cyprinidae, classified in a new genus (Speolabeo musaer, n. Gen.). This fish was not observed this year but we did not return to the cave where it was collected, Tham Nguen Mai).
* Other species, probably new (for example the beetles of the family Aderidae), found in 2016 and found in 2019, are still being studied by specialists.

List of cavities studied:
(1): Tham Done; (2): Tham En; (3): Tham Hoi; (4): Tham Khiewkout (5): Tham Khong; (6): Tham Khoun Huay; (7): Tham Kway; (8): Tham Mi Hang; (9): Tham Pha Taek; (10): Tham Saphong; (11): Xe Bang Fai

List of species collected

0 means there was no debit (photos only)
A slideshow presenting all of these species is available on the GS Vulcain website (https://www.groupe-speleo-vulcain.com/wp-content/uploads/2019/11/Laos2019-Bio-light.pdf) .
It is updated when determined.

*Heteropoda steineri*

| Order | Family | Genus species | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Arthropoda, Arachnida | | | | | | | | | | | | | |
| Acari, Mesostigmata | | sp5 | | | | | | | | 1 | | | |
| Acari, Mesostigmata | Uropodidae | sp6 | | | | | 0 | | | | | | |
| Acari, Oribatida | | sp1 | | | 1 | | 1 | | | | | | |
| Acari, Oribatida | | sp2 | 1 | | | | | | | | | | |
| Acari, Oribatida | | sp3 | | | | | 0 | | | | | | |
| Acari, Oribatida | | sp4 | | | | | 0 | | | | | | |
| Araneae | Agelenidae | sp1 | | | 1 | | | | | | | | |
| Araneae | Agelenidae | sp2 | | | | | 1 | | | | | | |
| Araneae | Agelenidae | sp3 | | | 1 | | 1 | | | | | | |
| Araneae | Leptonetidae | sp1 | | | | | | | | | | 1 | |
| Araneae | Pholcidae | Khorata khammouan | | 1 | | | 4 | | | | | | |
| Araneae | Pholcidae | sp1 | | | 0 | | 1 | | 9 | | | | |
| Araneae | Pholcidae | sp3 | | | | | 0 | | | | | | |
| Araneae | Salticidae | sp1 | | | | 1 | 2 | | | | | | |
| Araneae | Salticidae | sp2 | | | | | 0 | | | | | | |
| Araneae | Scytodidae | sp1 | | | 1 | | | | | | | | |
| Araneae | sp. | sp1 | | | 2 | | | | | | | | |
| Araneae | sp. | sp2 | | | | | 1 | | | | | | |
| Araneae | sp. | sp3 | | | 2 | | | | | | | | |
| Araneae | sp. | sp4 | | | 1 | | | | | | | | |
| Araneae | sp. | sp5 | | | 1 | | | | | | | | |
| Araneae | sp. | sp6 | | | 7 | | | | | | | | |
| Araneae | sp. | sp7 | | | 0 | | | | | | | | |
| Araneae | sp. | sp8 | | | | | | | 0 | | | | |
| Araneae | Sparassidae | Heteropoda maxima | 0 | | 0 | 0 | 1 | 0 | 0 | | | 1 | |
| Araneae | Sparassidae | Heteropoda steineri | 0 | 2 | 2 | | 1 | | 5 | | | 1 | |
| Araneae | Theridiidae | sp1 | 9 | | | | 2 | | 3 | | | 4 | |
| Araneae | Theridiidae | sp2 | | | | | 8 | | | | | | |
| Araneae | Uloboridae | sp1 | | | | | | | 1 | | | | |
| Opiliones | | sp2 | 1 | | | 1 | 0 | | 2 | | | | |
| Opiliones | | sp3 | | | | | | | 3 | | | 2 | |
| Opiliones | | sp4 | | | | | | | 1 | | | | |
| Opiliones | | sp5 | | | | 2 | | | 1 | | | | |
| Opiliones | | sp6 | | | | 1 | | | | | | | |
| Opiliones | | sp7 | | | | | 1 | | | | | | |
| Opiliones | | sp8 | | | 2 | | 0 | | | | | | |
| Opiliones | | sp9 | | | | | 3 | | | | | | |
| Opiliones | Sclerosomatidae | sp1 | 0 | | 0 | 0 | | | 0 | 0 | 0 | 2 | |
| Pseudoscorpiones | Cheiridiidae | sp2 | | | | | 10 | | | | | | |
| Pseudoscorpiones | Chthoniidae | sp1 | | | | | | | | | | 1 | |
| Scorpiones | | sp1 | | | | | | | 0 | | | | |
| Arthropoda, Hexapoda | | | | | | | | | | | | | |
| Blattodea | | sp2 | 1 | | | | | | | | | | |
| Blattodea | | sp3 | | | | | 2 | | | | | | |
| Blattodea | | sp4 | | | | | 8 | | | | | | |
| Blattodea | | sp5 | | 1 | | | | | | | | | |
| Blattodea | Blaberidae | sp1 | | | | | | | | | | 1 | |
| Coleoptera | Aderidae | Zarcosia sp1 | 1 | 5 | | | 2 | | | | | | |
| Coleoptera | Anthicidae | Anthelephila sp1 | | | | | | | | | | 0 | |
| Coleoptera | Bostrichidae | sp1 | | | | | 1 | | | | | | |
| Coleoptera | Carabidae | sp1 | | 1 | | 1 | | | 2 | | | 8 | |
| Coleoptera | Carabidae | sp2 | | | | | | | | 2 | | 3 | |
| Coleoptera | Carabidae | sp3 | | | | | | | | 1 | | 18 | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Coleoptera | Carabidae | sp4 | | | | | | | | | | 1 | |
| Coleoptera | Carabidae | sp5 | | | | | | | | 1 | | 10 | |
| Coleoptera | Carabidae | sp6 | | | | 1 | | | | | | | |
| Coleoptera | Carabidae | sp7 | | | | | 1 | | | | | | |
| Coleoptera | Chrysomelidae | sp1 | | | | | 2 | | | | | | |
| Coleoptera | Chrysomelidae | sp2 | | | | | 1 | | | | | | |
| Coleoptera | Chrysomelidae | sp3 | | | | | | | 1 | | | | |
| Coleoptera | Chrysomelidae | sp4 | | | | | 2 | | | | | | |
| Coleoptera | Dermestidae | sp1 | | | | | 4 | | | | | | 15 |
| Coleoptera | Elateridae | sp1 | | | | | 1 | | | | | | |
| Coleoptera | Histeridae | sp1 | | | | | 1 | | | | | | |
| Coleoptera | Histeridae | sp2 | | | | | | | | | | 1 | |
| Coleoptera | Leiodidae | Ptomaphaginus lipsae | 8 | | 7 | 3 | | | 13 | | | 1 | |
| Coleoptera | Leiodidae | sp2 | 1 | 4 | | | 0 | | | | | 9 | |
| Coleoptera | Oedemeridae ? | sp1 | | | | | 3 | | | | | | |
| Coleoptera | Scarabaeidae | sp1 | | | | | | | | 1 | | | |
| Coleoptera | Staphylinidae | sp2 | | | | 0 | | | 5 | | | | |
| Coleoptera | Staphylinidae | sp3 | | | | | | | | | | 5 | |
| Coleoptera | Staphylinidae | sp4 | 1 | | | | 1 | | 2 | | | 8 | |
| Coleoptera | Staphylinidae | sp5 | 1 | | 1 | | | | 1 | | | 5 | |
| Coleoptera | Staphylinidae | sp6 | | | | | 0 | | | | | | |
| Coleoptera | Staphylinidae | sp7 | | | | | | | 2 | | | | |
| Coleoptera | Staphylinidae | sp8 | | | | | | | | | | 1 | |
| Coleoptera | Staphylinidae | Stenus sp1 | 4 | | | | | | | | | 1 | |
| Collembola | Entomobryidae | sp1 | 4 | | | | | | 20 | | | 0 | |
| Collembola | Entomobryidae | sp2 | | | | | | | | 1 | | | |
| Collembola | Paronellidae | Dicranocentroides | | | 1 | | | | | | | | |
| Collembola | Tomoceridae | sp3 | | | | | | | 0 | | | | |
| Dermaptera ? | | sp1 | | | | | | | | | | 1 | |
| Dermaptera ? | | sp2 | | | | | | | | | | 1 | |
| Diptera | | sp1 | 0 | | | 1 | | | | | | | |
| Diptera | | sp2 | 2 | | | | | | | | | | |
| Diptera | | sp3 | 0 | | | | | | | | | 0 | |
| Diptera | | sp4 | 1 | | | | | | | | | | |
| Diptera | | sp5 | 1 | | 1 | | | | | | | | |
| Diptera | | sp6 | | | | | 1 | | | | | 3 | |
| Diptera | | sp7 | | | | 0 | 0 | | | | | | |
| Diptera | | sp8 | | | | 2 | | | | | | | |
| Diptera | | sp9 | | | | 0 | 1 | | | | | | |
| Diptera | | sp10 | | | | 1 | | | | | | | |
| Diptera | | sp11 | | | | | 1 | | | | | | |
| Diptera | | sp12 | | | | | 1 | | | | | | |
| Diptera | | sp13 | | 1 | | | | | | | | | |
| Diptera | | sp14 | 1 | | | | | | | | | | |
| Diptera | | sp15 | 1 | | | | | | | | | | |
| Diptera | | sp16 | | | | | | | 1 | | | | |
| Diptera | | sp17 | | | 1 | | | | | | | | |
| Diptera | | sp18 | | | | | 1 | | | | | | |
| Diptera | Psychodidae | sp3 | | 1 | | | 1 | | | | | | |
| Diptera | Sciaridae | sp1 | | | | 1 | | | | | | | |
| Diptera | Tipulidae | sp1 | | | | | 1 | | | | | | |
| Diptera | Tipulidae | sp2 | 1 | | | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diptera (larva) | Mycetophilidae | sp1 | | | | 0 | | | 2 | | | | |
| Heteroptera | | sp1 | 17 | | | | | | | | | 12 | |
| Heteroptera | | sp3 | | | | | | 0 | | | | | |
| Heteroptera | Reduviidae | sp2 | | | | | | | | | | 1 | |
| Heteroptera | Reduviidae | sp4 | | | | 1 | | | | | | | |
| Heteroptera | Reduviidae | sp5 | | 1 | | | 1 | | | | | | |
| Heteroptera | Reduviidae | sp6 | | 1 | | | | | | | | | |
| Heteroptera | Tingidae | sp7 | | | | | | | | | | 1 | |
| Hirudinea | | sp1 | | | | | | | | 3 | | | |
| Hymenoptera | | sp1 | 1 | | | | | | | | | | |
| Hymenoptera | | sp2 | 1 | | | | | | | | | | |
| Hymenoptera | | sp3 | | | | | 1 | | | | | | |
| Hymenoptera | Formicidae | sp1 | | | 3 | | | | 4 | | | | |
| Hymenoptera | Formicidae | sp2 | | | | | 3 | | | | | | |
| Hymenoptera | Formicidae | sp3 | | | | | 38 | | | | | | |
| Hymenoptera | Formicidae | sp4 | | | 2 | | | | | | | | |
| Lepidoptera | | sp1 | 0 | | | | | | | | | | |
| Lepidoptera | | sp2 | | | | | | | | 0 | | 0 | |
| Lepidoptera | | sp3 | | | | | | | 0 | | | | |
| Lepidoptera | | sp4 | | | | | | | 0 | | | | |
| Lepidoptera | | sp5 | | | 0 | | | | | | | 1 | |
| Lepidoptera | | sp6 | | | | | 2 | | | | | | |
| Lepidoptera | | sp7 | | | | | | | | | | 0 | |
| Lepidoptera | | sp8 | | | | 0 | | | | | | | |
| Lepidoptera | | sp9 | | | | 0 | 0 | | | | | | |
| Lepidoptera | Erebidae | Erebus macrops | | | | 0 | | | | | | 0 | |
| Lepidoptera | Tineidae | sp | | 1 | | | 2 | | | | | | |
| Lepidoptera | Tineidae | sp1 | | | | | 3 | | | | | | |
| Lepidoptera | Tineidae | sp2 | | | | | 0 | | | | | | |
| Orthoptera | | sp3 | | | | | 0 | | 0 | | | | |
| Orthoptera | Rhaphidophoridae | sp | | | 1 | | 1 | | | | | | |
| Orthoptera | Rhaphidophoridae | sp1 | 0 | | 0 | 0 | 1 | | 1 | | | 0 | |
| Orthoptera | Rhaphidophoridae | sp2 | | 2 | 1 | | 4 | | 3 | | | 1 | |
| Psocodea | | sp1 | | 1 | | | | | | | | | |
| Psocodea | | sp2 | 1 | | | | 1 | | | | | | |
| Arthropoda, Malacostraca | | | | | | | | | | | | | |
| Decapoda | Brachiuridae | sp1 | | | | | | | | | | 1 | |
| Decapoda | Palaemonidae | Macrobrachium sp1 | 1 | | | | | | 1 | | | 1 | |
| Isopoda | Armadillidiidae | sp1 | | | | | | | 1 | | | | |
| Isopoda | Armadillidiidae | sp2 | | 1 | 1 | | | | | | | | |
| Isopoda | Armadillidiidae | sp3 | | | | | 5 | | | | | | |
| Isopoda | Armadillidiidae | sp4 | | | | | | | | | | 1 | |
| Isopoda | Armadillidiidae | sp5 | | | 1 | | | | | | | | |
| Arthropoda, Myriapoda | | | | | | | | | | | | | |
| Chilopoda | Scutigeridae | Thereuopoda longicornis | 0 | | | 0 | 1 | 0 | 0 | | 0 | | |
| Diplopoda, Callipodida | Callipodidae | sp8 | | | | | | | 1 | | | | |
| Diplopoda, Glomerida | | sp6 | | | | | 2 | | | | | | |
| Diplopoda, Polydesmida | | sp4 | | | | | | | 2 | | | | |
| Diplopoda, Polydesmida | | sp5 | | 2 | | | | | 1 | | | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diplopoda, Polydesmida | | sp7 | | | | | | | 1 | | | | |
| Diplopoda, Spirostreptida | Cambalopsidae | sp1 | 1 | 13 | 1 | 2 | 1 | | | | | | |
| Diplopoda, Spirostreptida | Cambalopsidae | sp2 | | | 9 | | 6 | | 2 | | | | |
| Diplopoda, Spirostreptida | Cambalopsidae | sp3 | | | | | 12 | | | | | | |
| Mollusca | | | | | | | | | | | | | |
| Gastropoda | | sp4 | | | | 0 | | | 0 | | | | |
| Gastropoda | | sp5 | | | | | | | | | | 0 | |
| Gastropoda | | sp7 | | | 0 | | | | | | | | |
| Gastropoda | | sp8 | | | 0 | | | | | | | | |
| Gastropoda | Cyclophoridae | sp1 | 0 | | | | | | | | | | |
| Gastropoda | Cyclophoridae | sp3 | 0 | | | | | | 0 | | | | |
| Gastropoda | Cyclophoridae | sp6 | | | 1 | | | | | | | 2 | |
| Gastropoda | Cyclophoridae | sp9 | | | 0 | | | | | | | | |
| Gastropoda | | sp10 | | | 0 | | | | | | | | |
| Vertebrata | | | | | | | | | | | | | |
| Actinopterygii, Cypriniformes | | sp1 | 4 | | | | | | 1 | | | 2 | |
| Actinopterygii, Siluriformes | | sp1 | | | | | | | 2 | | | | |
| Actinopterygii, Siluriformes | | sp2 | 0 | | | | | | | | | | |
| Anura | | sp1 | | | | 0 | | | | | 0 | 0 | |
| Anura | | sp2 | 0 | | | 0 | | | | | | | |
| Anura | | sp3 | 0 | | | 0 | | | 0 | | | | |
| Anura | | sp4 | | | 0 | 0 | | | | | | | |
| Anura | Rhacophoridae | Odorrana chloronota | 0 | | | | | | 0 | | | 0 | |
| Squamata | Viperidae | Triceratolepidophis sieversorum | | | | | | 0 | | | | | |
| Squamata (œufs) | Gekkonidae | sp1 | | | 0 | | | | 0 | | | | |
| Rodentia | | sp1 | | | | | 1 | | | | | | |

0 means there was no debit (photos only)

| Ordre | Famille | *Nom scientifique* |
|---|---|---|
| Grotte | Taille | Déterminateur |

CLASSE

# Faune cavernicole du Khammouane (LAOS)

## 24 février au 08 mars 2019

(déterminations au 26/05/19)

Photo : *Jean-Michel Ostermann*

Fédération Française de Spéléologie

Groupe d'Etude de Biospéléologie

| Hirudinea | | sp1 |
|---|---|---|
| Tham Mi Hang(Laos) | 1 cm | |

CLITELLATA


| Stylommatophora | Cyclophoridae | *sp1* |
|---|---|---|
| Tham Done (Laos) | 30 mm | |

GASTROPODA


| Pulmonata | Subulinidae | *sp2* |
|---|---|---|
| Tham Hoi (Laos) | 8 mm | |

GASTROPODA


| Stylommatophora | Cyclophoridae | *sp3* |
|---|---|---|
| Tham Kway (Laos) | 25 mm | |

GASTROPODA


| Stylommatophora | | *sp4* |
|---|---|---|
| Tham Kway (Laos) | 25 mm | |

GASTROPODA

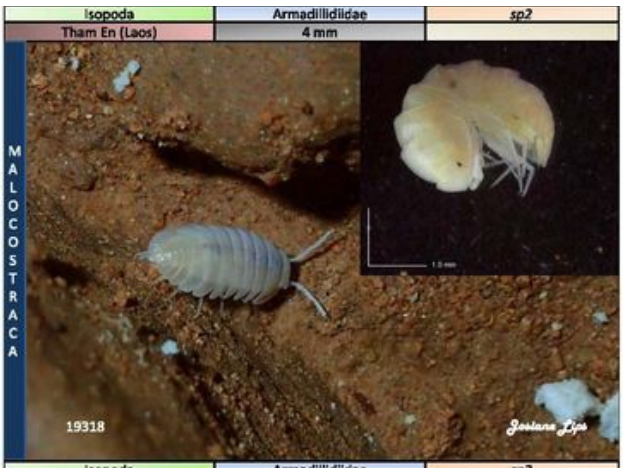

| Stylommatophora | | *sp4* |
|---|---|---|
| Tham Khiewkoud (Laos) | 25 mm | |

GASTROPODA


| Stylommatophora | | *sp5* |
|---|---|---|
| Tham Kway (Laos) | 5 cm | |

GASTROPODA


Stylommatophora
Cyclophoridae
sp6
Tham Kway (Laos)
1 cm
GASTROPODA
19178
Josiane Lips
Stylommatophora
sp7
Tham Hoi (Laos)
4 cm
GASTROPODA
19325*
Josiane Lips
Stylommatophora
sp8
Tham Hoi (Laos)
4,5 cm
GASTROPODA
19330*
Josiane Lips
Stylommatophora
Cyclophoridae
sp9
Tham Hoi (Laos)
3 cm
GASTROPODA
19344*
Josiane Lips
Stylommatophora
sp10
Tham Hoi (Laos)
3 cm
GASTROPODA
19345*
Josiane Lips
Decapoda
Palaemonidae
Macrobrachium sp1
Tham Done (Laos)
1,5 cm
MALOCOSTRACA
19104
Josiane Lips
Decapoda
Brachiuridae
sp1
Tham Done (Laos)
1,5 cm
MALOCOSTRACA
19046
Josiane Lips
Isopoda
Armadillidiidae
sp1
Tham Kway (Laos)
8 mm
MALOCOSTRACA
19153
Josiane Lips


Isopoda
Armadillidiidae
sp2
Tham En (Laos)
4 mm
MALOCOSTRACA
19318
Josiane Lips


Isopoda
Armadillidiidae
sp2
Tham Hoi (Laos)
3 mm
MALOCOSTRACA
19356


Isopoda
Armadillidiidae
sp3
Tham Khong (Laos)
1,2 cm
MALOCOSTRACA
19235
Josiane Lips


Isopoda
Armadillidiidae
sp3
Tham Khong (Laos)
1,2 cm
MALOCOSTRACA
19250
Josiane Lips


Isopoda
Armadillidiidae
sp4
Tham Saphong (Laos)
1 cm
MALOCOSTRACA
19056
Josiane Lips


Pseudoscorpiones
Chthoniidae
sp1
Tham Saphong (Laos)
2 mm
ARACHNIDA
19073
Josiane Lips

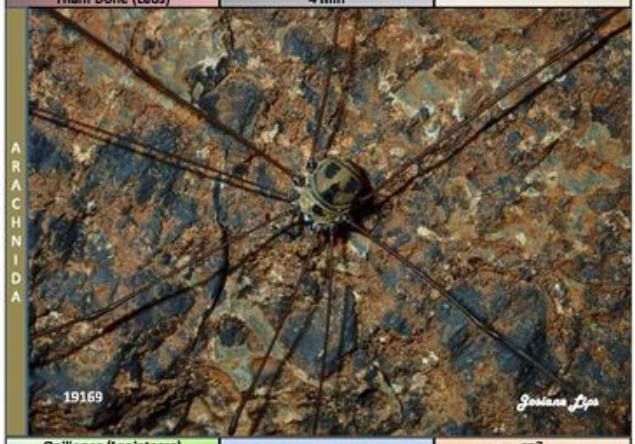

Pseudoscorpiones
Cheiridiidae
sp2
Tham Khong (Laos)
5 mm
ARACHNIDA
19253
Josiane Lips


Pseudoscorpiones
Cheiridiidae
sp2
Tham Khong (Laos)
4 mm
ARACHNIDA
19249
Josiane Lips

| Scorpiones | | sp1 |
|---|---|---|
| Tham Kway (Laos) | 3 cm | |


| Opiliones | Sclerosomatidae | sp1 |
|---|---|---|
| Tham Done (Laos) | 1 cm | |


| Opiliones | | sp2 |
|---|---|---|
| Tham Done (Laos) | 4 mm | |




| Opiliones | | sp2 |
|---|---|---|
| Tham Khiewkoud (Laos) | 4 mm | |


| Opiliones (Laniatores) | | sp3 |
|---|---|---|
| Tham Done (Laos) | 7 mm | |


| Opiliones (Laniatores) | | sp4 |
|---|---|---|
| Tham Done (Laos) | 7 mm | |


| Opiliones | | sp5 |
|---|---|---|
| Tham Kway (Laos) | 4 mm | |


| Opiliones | | sp6 |
|---|---|---|
| Tham Khiewkoud (Laos) | 3 mm | |


Opiliones (Laniatores)
sp7
Tham Khong (Laos)
5 mm
ARACHNIDA
19237
Josiane Lips


Opiliones
sp8
Tham Hoi (Laos)
3 mm
ARACHNIDA
19327
Josiane Lips

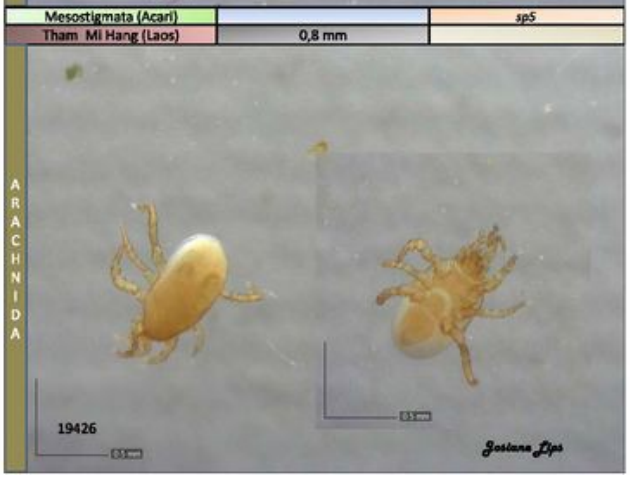

Opiliones
sp9
Tham Khong (Laos)
4 mm
ARACHNIDA
19283
Josiane Lips


Oribatida (Acari)
sp1
Tham Hoi (Laos)
0,5 mm
ARACHNIDA
19370
0.5 mm
Josiane Lips


Oribatida (Acari)
sp2
Tham Done (Laos)
0,5 mm
ARACHNIDA
19416
0.5 mm
Josiane Lips


Oribatida (Acari)
sp3
Tham Khong (Laos)
0,5 mm
ARACHNIDA
19409
0.5 mm
Josiane Lips


Oribatida (Acari)
sp4
Tham Khong (Laos)
0,5 mm
ARACHNIDA
19409
0.5 mm
Josiane Lips


Mesostigmata (Acari)
sp5
Tham Mi Hang (Laos)
0,8 mm
ARACHNIDA
19426
Josiane Lips

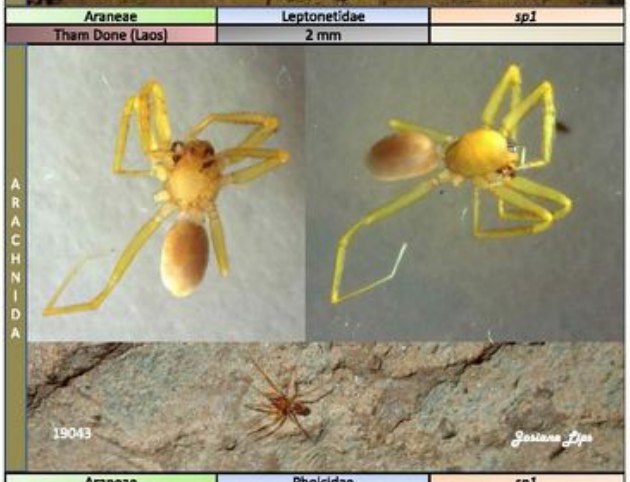

Mesostigmata (Acari)
Uropodidae
sp6
Tham Khong (Laos)
0,6 mm
ARACHNIDA
19409
Josiane Lips

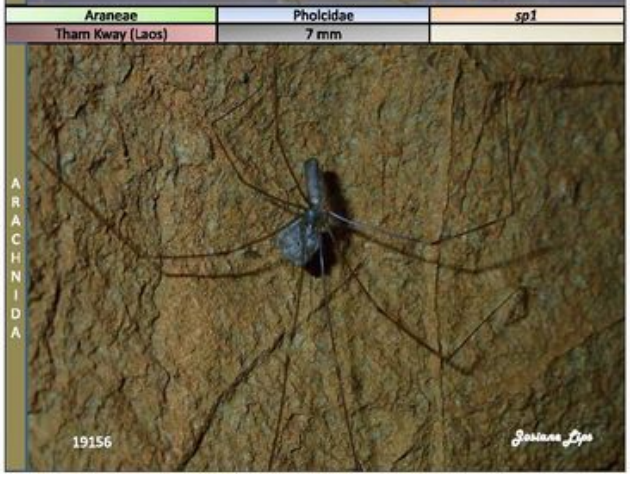

Araneae
Agelenidae
sp1
Tham Hoi (Laos)
8 mm
ARACHNIDA
19342
Josiane Lips


Araneae
Agelenidae
sp2
Tham Khong (Laos)
2 mm
ARACHNIDA
19258
Josiane Lips


Araneae
Agelenidae
sp3
Tham Hoi (Laos)
1,5 cm
ARACHNIDA
19347
Josiane Lips

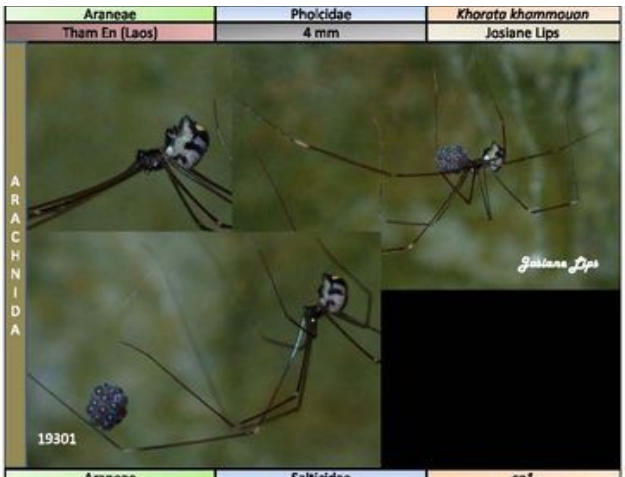

Araneae
Agelenidae
sp4
Tham Khong (Laos)
4 mm
ARACHNIDA
19399
Josiane Lips


Araneae
Leptonetidae
sp1
Tham Done (Laos)
2 mm
ARACHNIDA
19043
Josiane Lips


Araneae
Pholcidae
sp1
Tham Kway (Laos)
7 mm
ARACHNIDA
19156
Josiane Lips

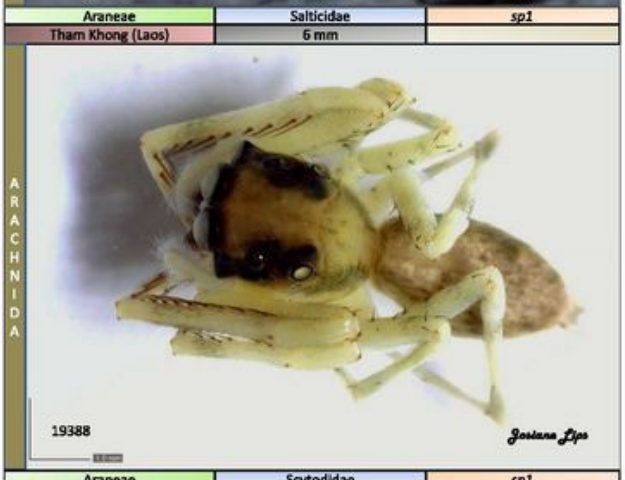

Araneae
Pholcidae
sp1
Tham Kway (Laos)
7 mm
ARACHNIDA
19157
Josiane Lips


Araneae
Pholcidae
sp1
Tham Kway (Laos)
4 mm
ARACHNIDA
19173
Josiane Lips

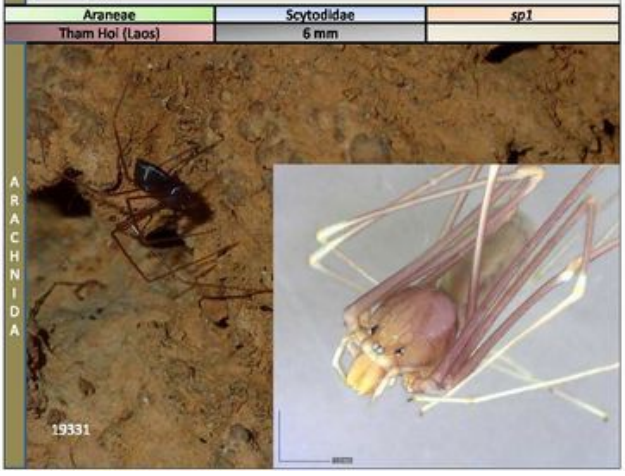

Araneae
Pholcidae
Khorata khammouan
Tham En (Laos)
4 mm
Josiane Lips
ARACHNIDA
19301
Josiane Lips

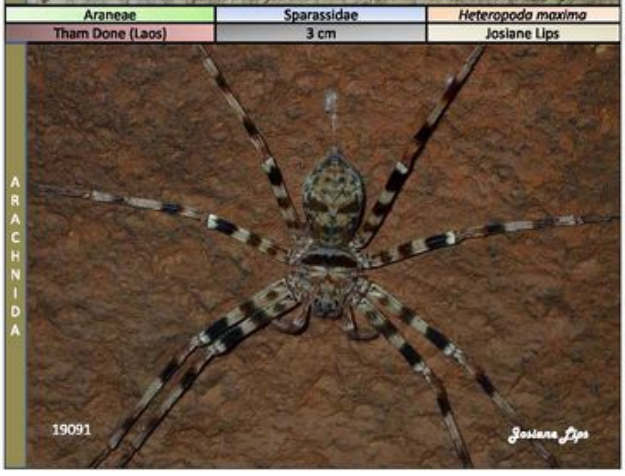

Araneae
Pholcidae
sp3
Tham Khong (Laos)
6 mm
ARACHNIDA
19275*
Josiane Lips

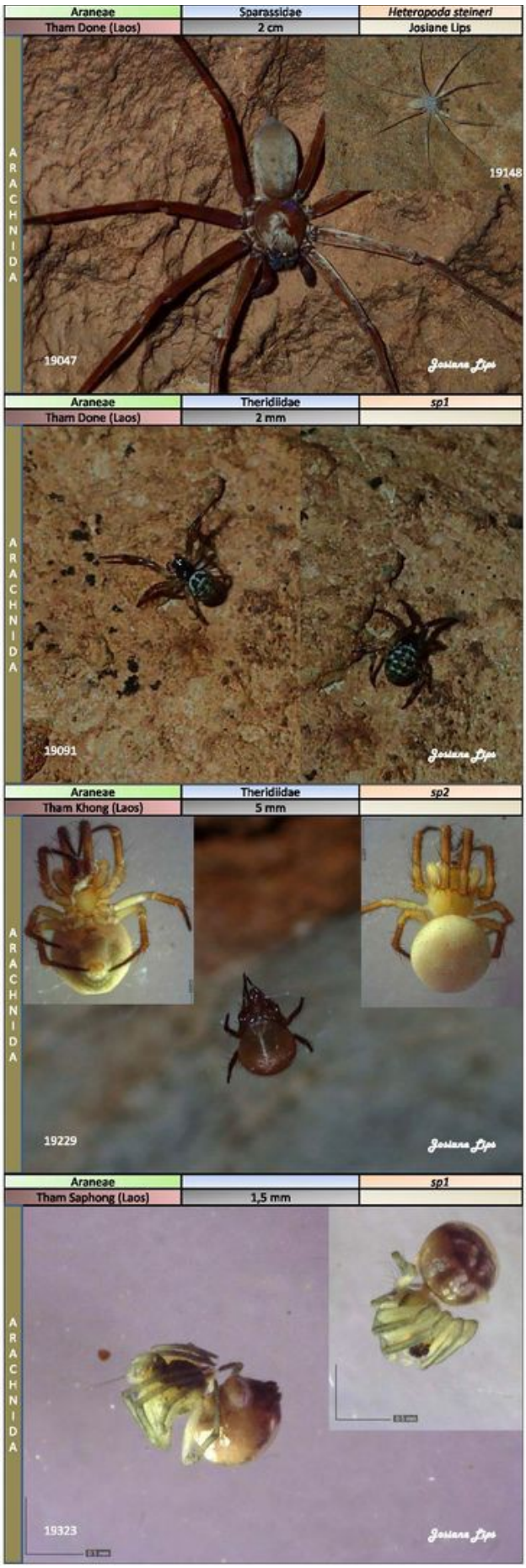

Araneae
Salticidae
sp1
Tham Khong (Laos)
6 mm
ARACHNIDA
19274
Josiane Lips

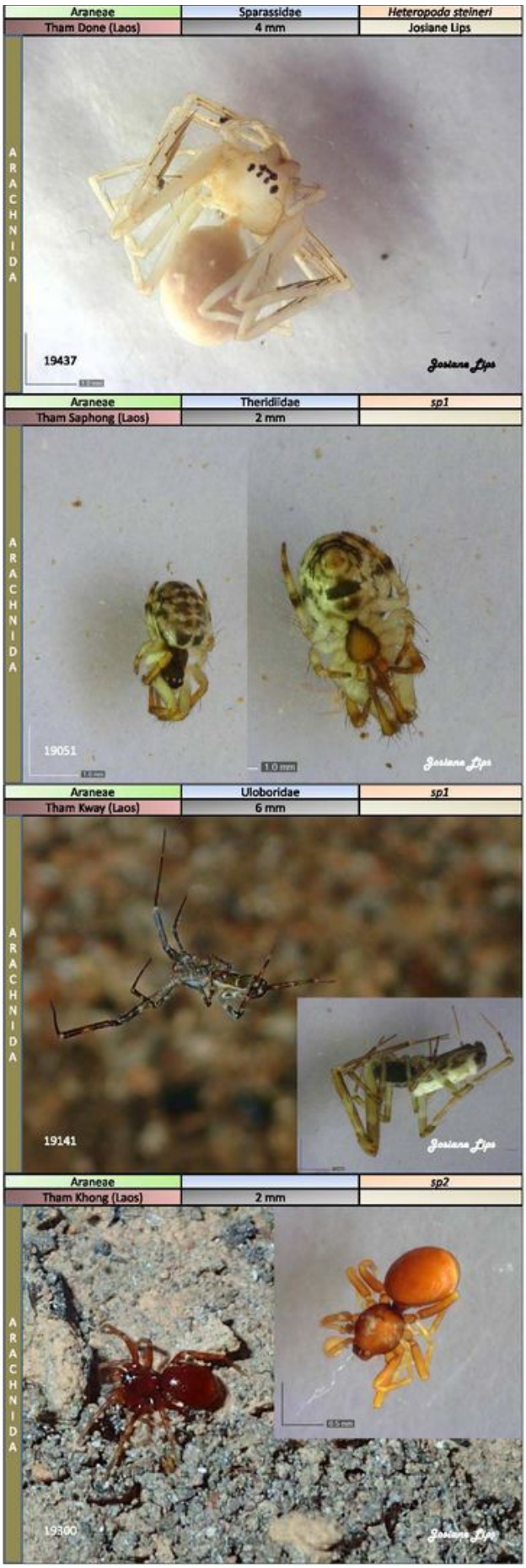

Araneae
Salticidae
sp1
Tham Khong (Laos)
6 mm
ARACHNIDA
19388
Josiane Lips


Araneae
Salticidae
sp2
Tham Khong (Laos)
4 mm
ARACHNIDA
19285*
Josiane Lips


Araneae
Scytodidae
sp1
Tham Hoi (Laos)
6 mm
ARACHNIDA
19331

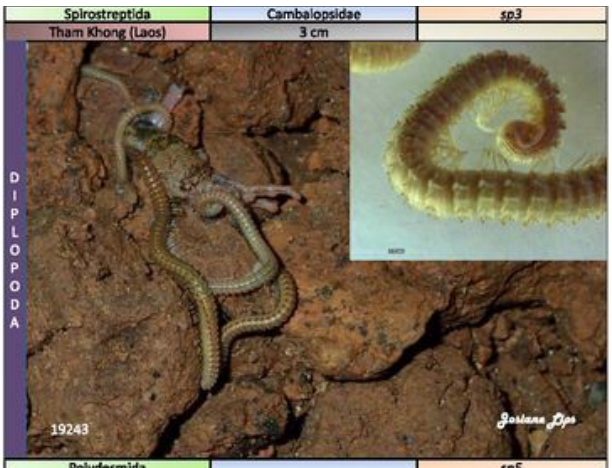

Araneae
Sparassidae
Heteropoda maxima
Tham Done (Laos)
3 cm
Josiane Lips
ARACHNIDA
19091
Josiane Lips


Araneae | Sparassidae | Heteropoda steineri
Tham Done (Laos) | 2 cm | Josiane Lips
ARACHNIDA
19148
19047
Josiane Lips
Araneae | Theridiidae | sp1
Tham Done (Laos) | 2 mm
ARACHNIDA
19091
Josiane Lips
Araneae | Theridiidae | sp2
Tham Khong (Laos) | 5 mm
ARACHNIDA
19229
Josiane Lips
Araneae | | sp1
Tham Saphong (Laos) | 1,5 mm
ARACHNIDA
19323
Josiane Lips


Araneae | Sparassidae | Heteropoda steineri
Tham Done (Laos) | 4 mm | Josiane Lips
ARACHNIDA
19437
Josiane Lips
Araneae | Theridiidae | sp1
Tham Saphong (Laos) | 2 mm
ARACHNIDA
19051
1.0 mm
Josiane Lips
Araneae | Uloboridae | sp1
Tham Kway (Laos) | 6 mm
ARACHNIDA
19141
Josiane Lips
Araneae | | sp2
Tham Khong (Laos) | 2 mm
ARACHNIDA
19300
Josiane Lips


Araneae
Tham Hoi (Laos)
3 mm
sp3
ARACHNIDA
19324
Josiane Lips
Araneae
Tham Hoi (Laos)
4 mm
sp4
ARACHNIDA
19368
Josiane Lips
Araneae
Tham Hoi (Laos)
1 cm
sp5
ARACHNIDA
19348
Josiane Lips
Araneae
Tham Hoi (Laos)
0,5 mm
sp6
ARACHNIDA
19355
Josiane Lips
Araneae
Tham Hoi (Laos)
4 mm
sp7
ARACHNIDA
19349*
Josiane Lips
Araneae
Tham Kway (Laos)
6 mm
sp8
ARACHNIDA
19178*
Bernard Lips
Araneae
Tham Kway (Laos)
sp9
ARACHNIDA
19960
Jean-Michel Gutermann
Spirostreptida
Cambalopsidae
Tham Done (Laos)
2 cm
sp1
DIPLOPODA
19106
Josiane Lips


Spirostreptida
Cambalopsidae
sp2
Tham Done (Laos)
3 cm
DIPLOPODA
19155
Josiane Lips

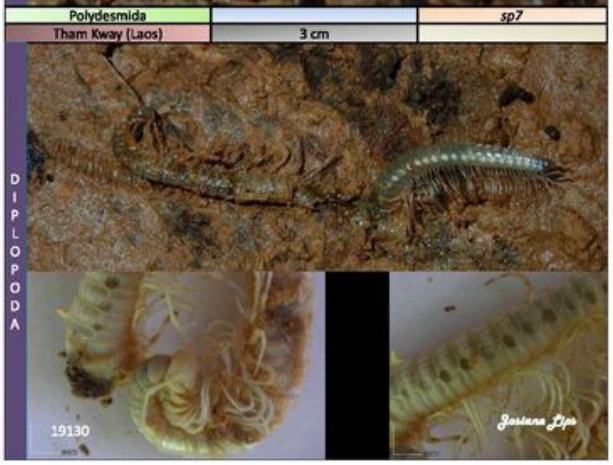

Spirostreptida
Cambalopsidae
sp3
Tham Khong (Laos)
3 cm
DIPLOPODA
19243
Josiane Lips

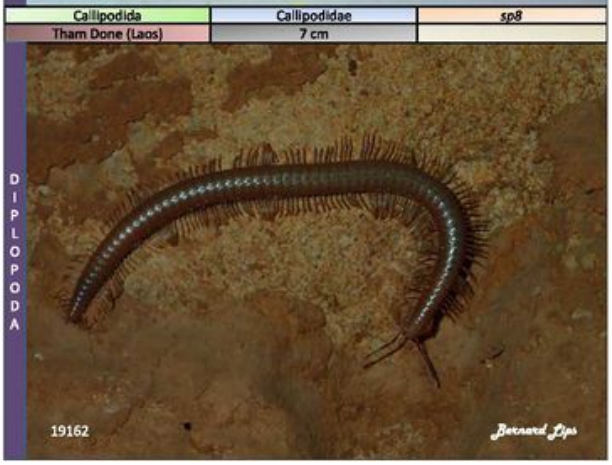

Polydesmida
sp4
Tham Kway (Laos)
3 cm
DIPLOPODA
19183
Bernard Lips

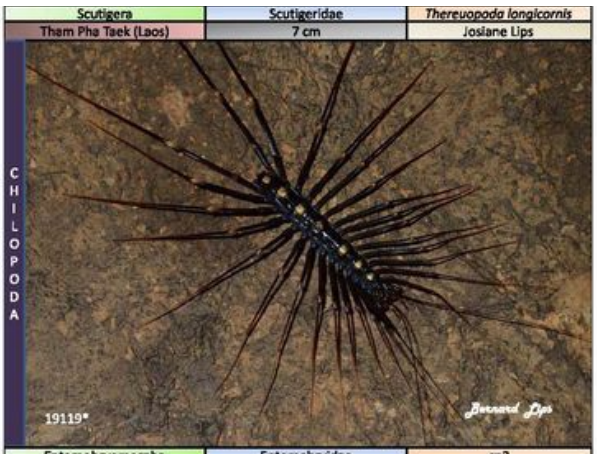

Polydesmida
sp5
Tham En (Laos)
2 cm
DIPLOPODA
19317
Josiane Lips


Glomerida
sp6
Tham Khong (Laos)
3 mm
DIPLOPODA
19262
Josiane Lips


Glomerida
sp6
Tham Khong (Laos)
3 mm
DIPLOPODA
19397
Josiane Lips


Polydesmida
sp7
Tham Kway (Laos)
3 cm
DIPLOPODA
19130
Josiane Lips


Callipodida
Callipodidae
sp8
Tham Done (Laos)
7 cm
DIPLOPODA
19162
Bernard Lips


Scutigera | Scutigeridae | Thereuopoda longicornis
Tham Pha Taek (Laos) | 7 cm | Josiane Lips
CHILOPODA
19119*
Bernard Lips


Entomobryomorpha | Entomobryidae | sp1
Tham Done (Laos) | 2 mm
COLLEMBOLA
19102
Josiane Lips

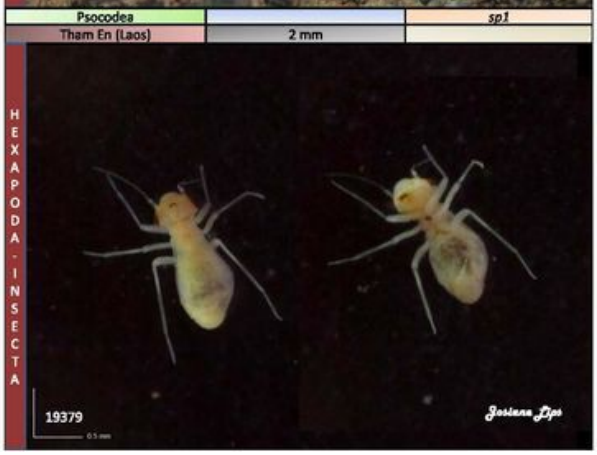

Entomobryomorpha | Entomobryidae | sp2
Tham Mi Hang (Laos) | 1,5 mm
COLLEMBOLA
19125
Josiane Lips


Entomobryomorpha | Tomoceridae | sp3
Tham Mi Hang(Laos) | 3 mm
COLLEMBOLA
19170*
Josiane Lips


Entomobryomorpha | Paronellidae | Dicranocentroides
Tham Mi Hang (Laos) | 4 mm | Louis Deharveng
COLLEMBOLA
19369
Bernard Lips


sp1
Tham Saphong (Laos) | 5 mm
HEXAPODA - INSECTA
19052
Bernard Lips


sp2
Tham Saphong (Laos) | 12 mm
HEXAPODA - INSECTA
19076
Josiane Lips


Psocodea | sp1
Tham En (Laos) | 2 mm
HEXAPODA - INSECTA
19379
Josiane Lips

| Psocodea | | sp2 |
|---|---|---|
| Tham Done (Laos) | 2 mm | |


| Coleoptera | Aderidae | Zarcosia sp1. |
|---|---|---|
| Tham Done (Laos) | 4 mm | Josiane Lips |


| Coleoptera | Aderidae | Zarcosia sp1. |
|---|---|---|
| Tham Khong (Laos) | 4 mm | Josiane Lips |

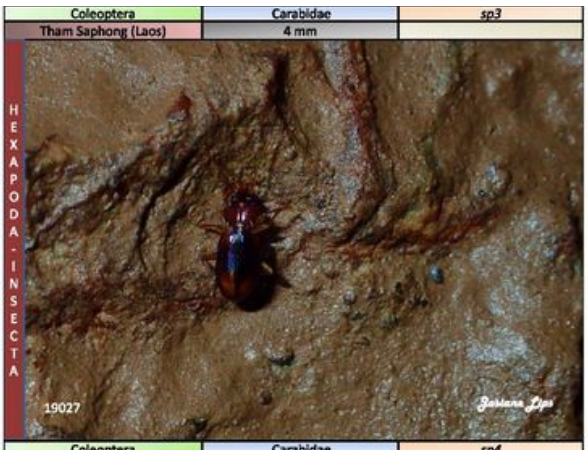

| Coleoptera | Anthicidae | Anthelephila sp1 |
|---|---|---|
| Tham Saphong (Laos) | 8 mm | Josiane Lips |


| Coleoptera | Bostrichidae | sp1 |
|---|---|---|
| Tham Khong (Laos) | 2 mm | |


| Coleoptera | Carabidae | Lanxangaphaenops augustini |
|---|---|---|
| Tham Kway (Laos) | 6 mm | Bernard Lips |


| Coleoptera | Carabidae | sp2 |
|---|---|---|
| Tham Mi Hang (Laos) | 7 mm | |


| Coleoptera | Carabidae | sp2 |
|---|---|---|
| Tham Mi Hang (Laos) | 8 mm | |

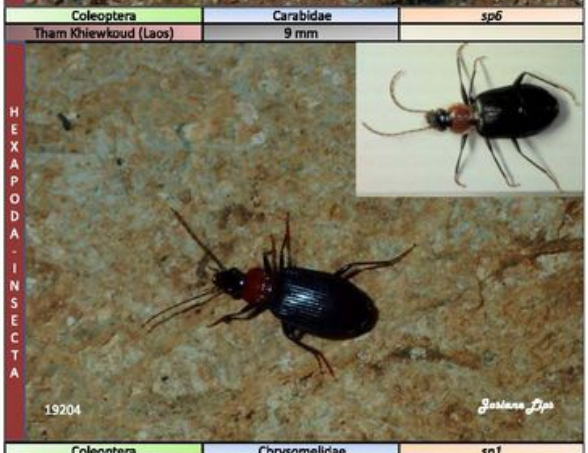

Coleoptera
Carabidae
sp3
Tham Saphong (Laos)
4 mm
HEXAPODA-INSECTA
19027
Josiane Lips


Coleoptera
Carabidae
sp3
Tham Mi Hang (Laos)
4 mm
HEXAPODA-INSECTA
19524
Josiane Lips

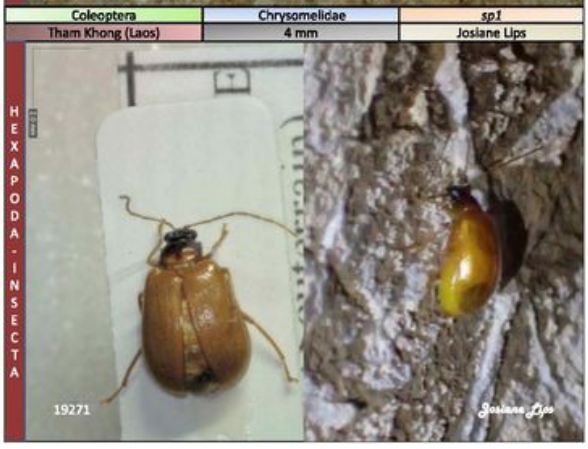

Coleoptera
Carabidae
sp4
Tham Saphong (Laos)
4 mm
HEXAPODA-INSECTA
19480
Josiane Lips

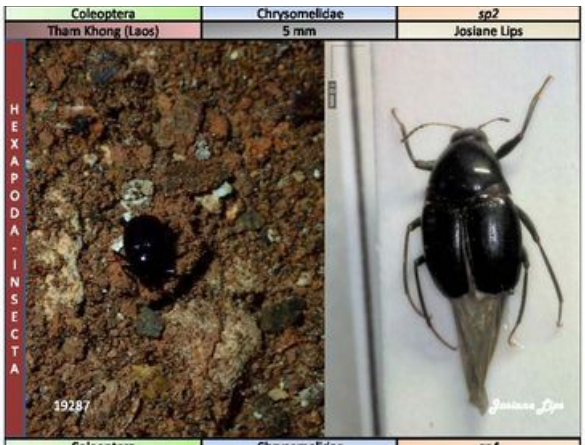

Coleoptera
Carabidae
sp5
Tham Saphong (Laos)
8 mm
HEXAPODA-INSECTA
19057
Josiane Lips

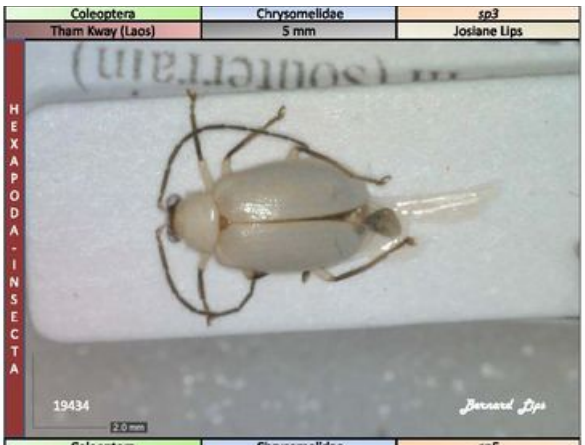

Coleoptera
Carabidae
sp5
Tham Saphong (Laos)
8 mm
HEXAPODA-INSECTA
19471
Bernard Lips


Coleoptera
Carabidae
sp6
Tham Khiewkoud (Laos)
9 mm
HEXAPODA-INSECTA
19204
Josiane Lips


Coleoptera
Carabidae
sp7
Tham Khong (Laos)
6 mm
HEXAPODA-INSECTA
19395
Bernard Lips


Coleoptera
Chrysomelidae
sp1
Tham Khong (Laos)
4 mm
Josiane Lips
HEXAPODA-INSECTA
19271
Josiane Lips


Coleoptera | Chrysomelidae | sp2
Tham Khong (Laos) | 5 mm | Josiane Lips
HEXAPODA - INSECTA
19287


Coleoptera | Chrysomelidae | sp3
Tham Kway (Laos) | 5 mm | Josiane Lips
HEXAPODA - INSECTA
19434

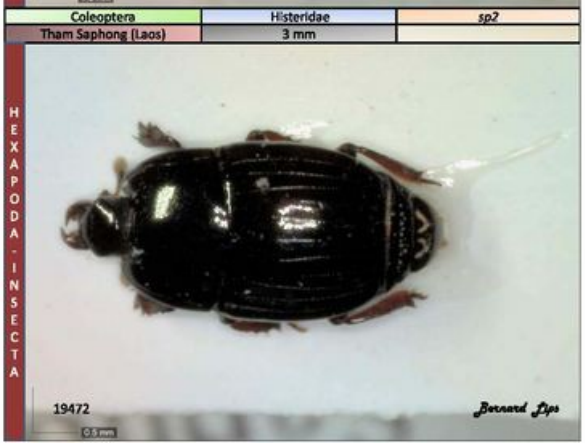

Coleoptera | Chrysomelidae | sp4
Tham Khong (Laos) | 5 mm
HEXAPODA - INSECTA
19271


Coleoptera | Chrysomelidae | sp5
Tham Khong (Laos) | 5 mm
HEXAPODA - INSECTA
19271

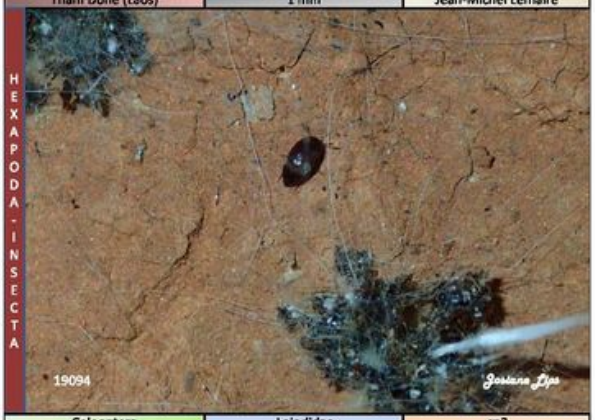

Coleoptera | Dermestidae | sp1
Xe Bang Fai (Laos) | 4 mm
HEXAPODA - INSECTA
19358


Coleoptera | Elateridae | sp1
Tham Khong (Laos) | 7 mm
HEXAPODA - INSECTA
19294


Coleoptera | Histeridae | sp1
Tham Khong (Laos) | 4 mm
HEXAPODA - INSECTA
19407


Coleoptera | Histeridae | sp2
Tham Saphong (Laos) | 3 mm
HEXAPODA - INSECTA
19472

| Coleoptera | Leiodidae | *Ptomaphaginus lipsae* |
|---|---|---|
| Tham Done (Laos) | 1 mm | Jean-Michel Lemaire |




| Coleoptera | Leiodidae | *Ptomaphaginus lipsae* |
|---|---|---|
| Tham Saphong (Laos) | 1,5 mm | Jean-Michel Lemaire |


| Coleoptera | Leiodidae | *sp2* |
|---|---|---|
| Tham Kway (Laos) | 2 mm | |


| Coleoptera | Leiodidae | *sp2* |
|---|---|---|
| Tham Saphong (Laos) | 2 mm | |

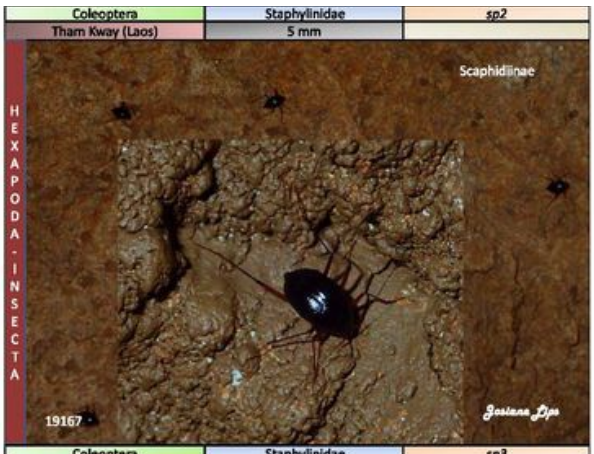

| Coleoptera | Oedemeridae | *sp1* |
|---|---|---|
| Tham Khong (Laos) | 1,5 cm | |

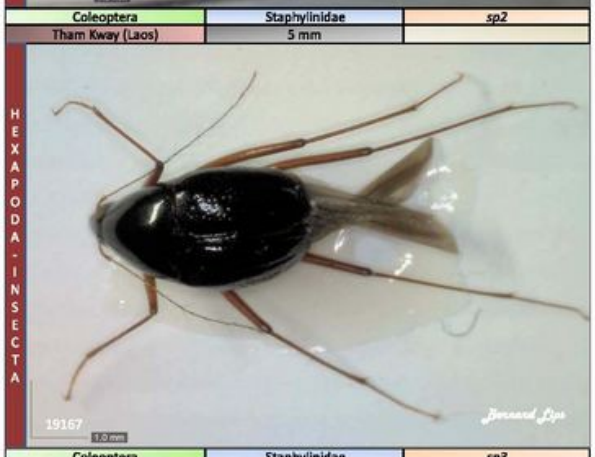

| Coleoptera | Oedemeridae | *sp1* |
|---|---|---|
| Tham Khong (Laos) | 1,5 cm | |


| Coleoptera | Scarabaeidae | *sp1* |
|---|---|---|
| Tham Mi Hang(Laos) | 1 cm | |


| Coleoptera | Staphylinidae | *Stenus sp1* |
|---|---|---|
| Tham Done (Laos) | 8 mm | |


Coleoptera
Staphylinidae
Stenus sp1
Tham Done (Laos)
8 mm
HEXAPODA-INSECTA
19115
Josiane Lips


Coleoptera
Staphylinidae
sp2
Tham Kway (Laos)
5 mm
Scaphidiinae
HEXAPODA-INSECTA
19167
Josiane Lips


Coleoptera
Staphylinidae
sp2
Tham Kway (Laos)
5 mm
HEXAPODA-INSECTA
19167
Bernard Lips


Coleoptera
Staphylinidae
sp3
Tham Kway (Laos)
1 cm
HEXAPODA-INSECTA
19063
Josiane Lips


Coleoptera
Staphylinidae
sp3
Tham Saphong (Laos)
1 cm
HEXAPODA-INSECTA
19478
Bernard Lips


Coleoptera
Staphylinidae
sp4
Tham Saphong (Laos)
3 mm
HEXAPODA-INSECTA
19071
Josiane Lips


Coleoptera
Staphylinidae
sp4
Tham Kway (Laos)
3 mm
HEXAPODA-INSECTA
19477
Josiane Lips

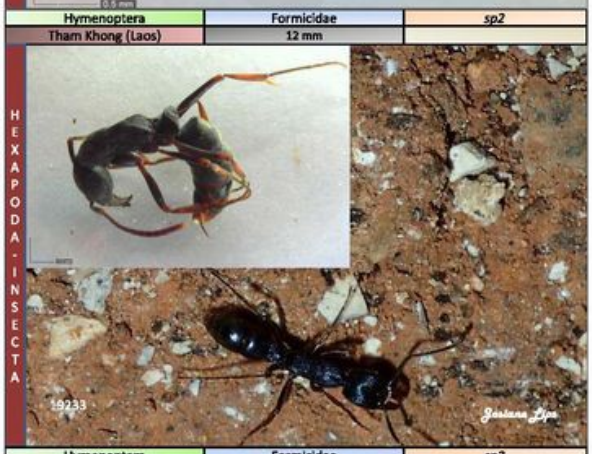

Coleoptera
Staphylinidae
sp5
Tham Saphong (Laos)
2 mm
HEXAPODA-INSECTA
19479
Bernard Lips


Coleoptera
Staphylinidae
sp6
Tham Khong (Laos)
12 mm
HEXAPODA - INSECTA
19282*
Josiane Lips


Coleoptera
Staphylinidae
sp7
Tham Kway (Laos)
3 mm
HEXAPODA - INSECTA
19165
Bernard Lips


Coleoptera
Staphylinidae
sp8
Tham Saphong (Laos)
2 mm
HEXAPODA - INSECTA
19481
Bernard Lips

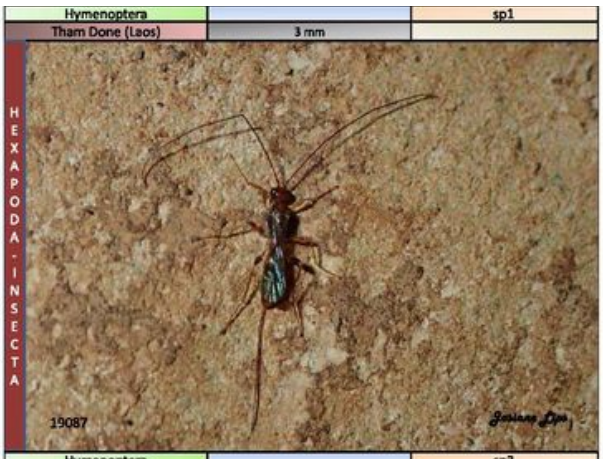

Hymenoptera
Formicidae
sp1
Tham Kway (Laos)
8 mm
HEXAPODA - INSECTA
19161
Josiane Lips


Hymenoptera
Formicidae
sp2
Tham Khong (Laos)
12 mm
HEXAPODA - INSECTA
19233
Josiane Lips


Hymenoptera
Formicidae
sp3
Tham Khong (Laos)
3 mm et 10 mm
HEXAPODA - INSECTA
19246
Josiane Lips


Hymenoptera
Formicidae
sp3
Tham Khong (Laos)
1,5 cm
HEXAPODA - INSECTA
19257
Josiane Lips


Hymenoptera
Formicidae
sp4
Tham Hoi (Laos)
8 mm
HEXAPODA - INSECTA
19338
Josiane Lips


Hymenoptera
sp1
Tham Done (Laos)
3 mm
HEXAPODA-INSECTA
19087
Josiane Lips

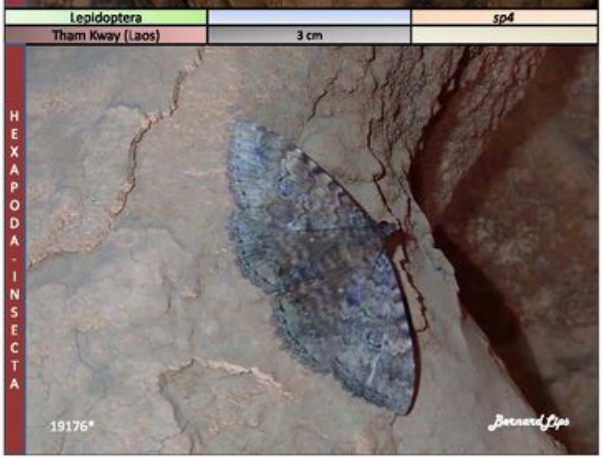

Hymenoptera
sp2
Tham Done (Laos)
1,5 cm
HEXAPODA-INSECTA
19113
Josiane Lips

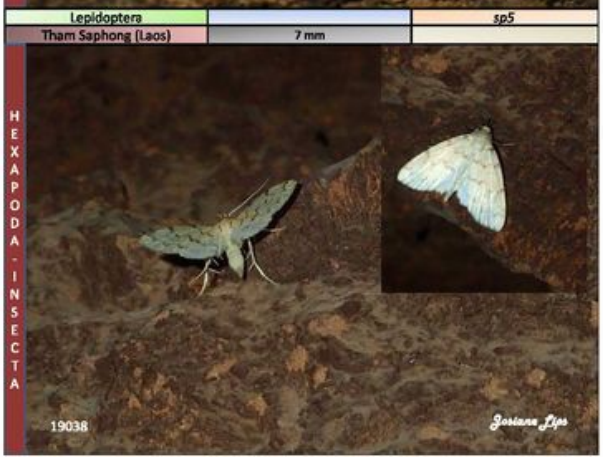

Hymenoptera
sp3
Tham Khong (Laos)
5 mm
HEXAPODA-INSECTA
19387
Josiane Lips


Lepidoptera
sp1
Tham Done (Laos)
1,5 cm
HEXAPODA-INSECTA
19086*
Josiane Lips


Lepidoptera
sp2
Tham Mi Hang(Laos)
2,5 cm
HEXAPODA-INSECTA
19055*
Josiane Lips


Lepidoptera
sp3
Tham Kway (Laos)
1 cm
HEXAPODA-INSECTA
19171*
Josiane Lips


Lepidoptera
sp4
Tham Kway (Laos)
3 cm
HEXAPODA-INSECTA
19176*
Bernard Lips

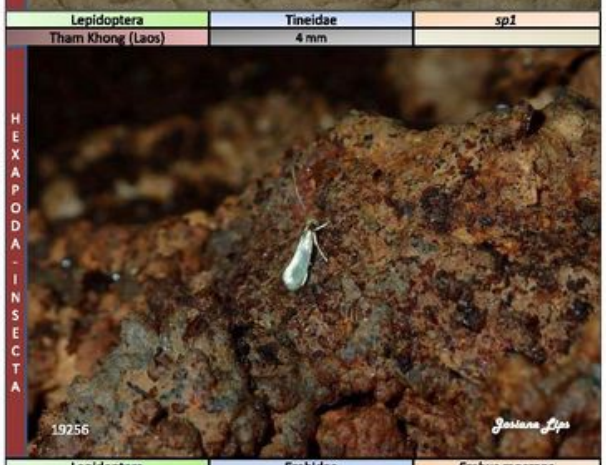

Lepidoptera
sp5
Tham Saphong (Laos)
7 mm
HEXAPODA-INSECTA
19038
Josiane Lips


Lepidoptera
Tham Khong (Laos)
5 mm
sp6
HEXAPODA-INSECTA
19277*
Josiane Lips


Lepidoptera
Tham Saphong (Laos)
2 cm
sp7
HEXAPODA-INSECTA
19041
Josiane Lips


Lepidoptera
Tham Khiewkoud (Laos)
1,5 cm
sp8
HEXAPODA-INSECTA
19207*
Josiane Lips

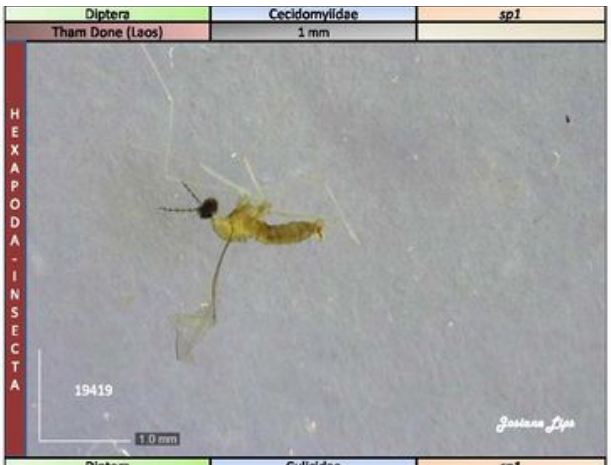

Lepidoptera
Tham Khiewkoud (Laos)
1,5 cm
sp9
HEXAPODA-INSECTA
19194*
Josiane Lips

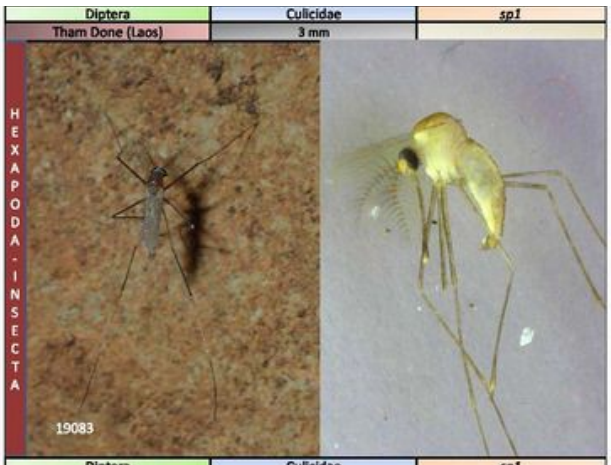

Lepidoptera
Tham Khong (Laos)
Tineidae
4 mm
sp1
HEXAPODA-INSECTA
19256
Josiane Lips


Lepidoptera
Tham Khong (Laos)
Tineidae
4 mm
sp2
HEXAPODA-INSECTA
19290*
Josiane Lips

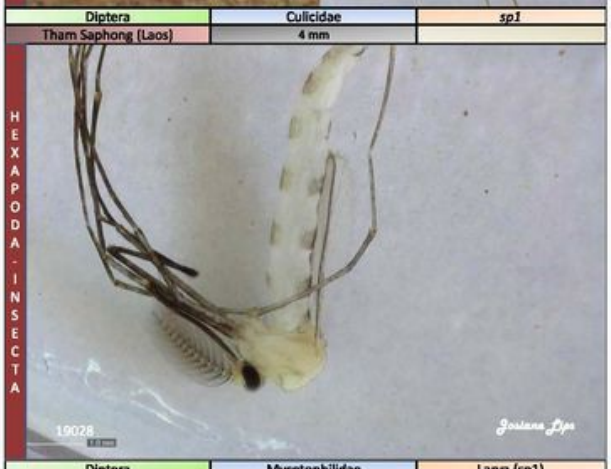

Lepidoptera
Tham Kway (Laos)
Erebidae
5 cm
Erebus macrops
Josiane Lips
HEXAPODA-INSECTA
19021*
Josiane Lips

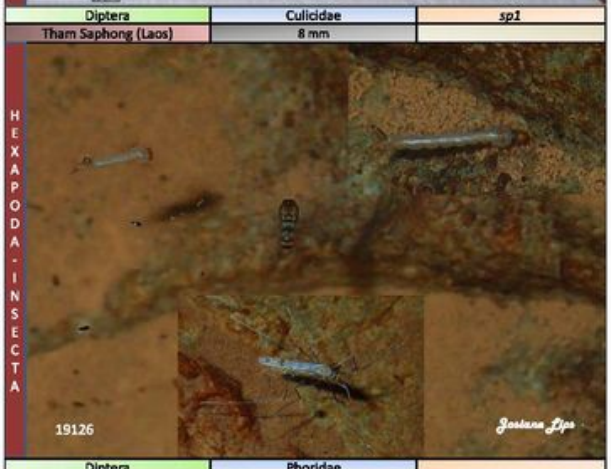

Diptera
Tham En (Laos)
Cecidomyiidae
1 mm
sp1
HEXAPODA-INSECTA
19376
1.0 mm
Josiane Lips


Diptera
Cecidomyiidae
sp1
Tham Done (Laos)
1 mm
HEXAPODA - INSECTA
19419
1.0 mm
Jocelyne Pyo


Diptera
Culicidae
sp1
Tham Done (Laos)
3 mm
HEXAPODA - INSECTA
19083

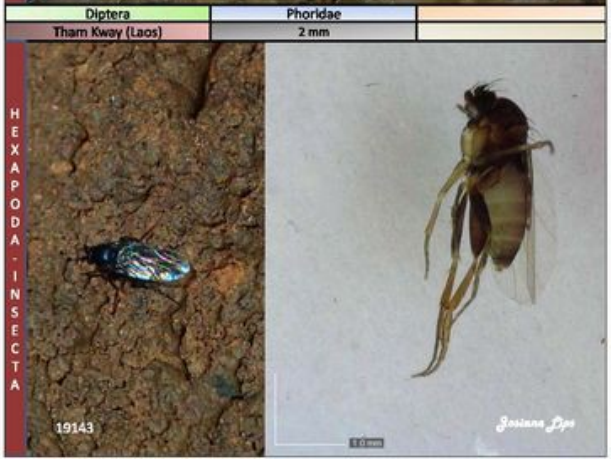

Diptera
Culicidae
sp1
Tham Khong (Laos)
4 mm
HEXAPODA - INSECTA
19276
Jocelyne Pyo

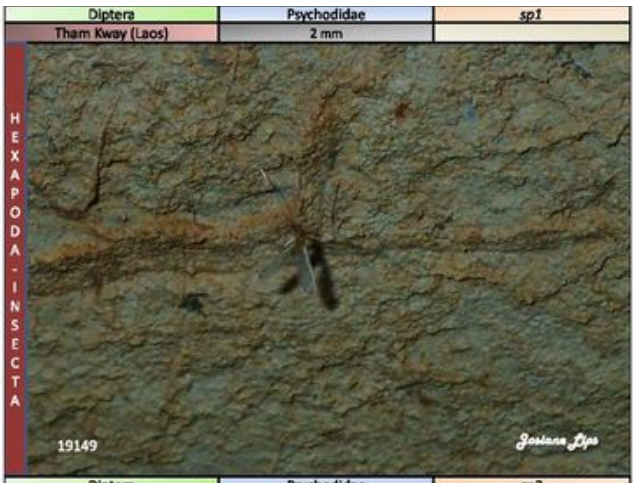

Diptera
Culicidae
sp1
Tham Saphong (Laos)
4 mm
HEXAPODA - INSECTA
19028
Jocelyne Pyo

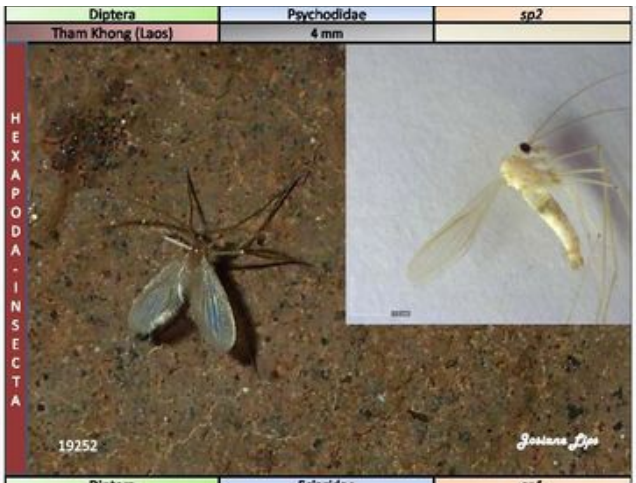

Diptera
Culicidae
sp1
Tham Saphong (Laos)
8 mm
HEXAPODA - INSECTA
19126
Jocelyne Pyo


Diptera
Mycetophilidae
Larva (sp1)
Tham Kway (Laos)
2 cm
HEXAPODA - INSECTA
19142
Jocelyne Pyo


Diptera
Phoridae
Tham Kway (Laos)
2 mm
HEXAPODA - INSECTA
19163
Jocelyne Pyo


Diptera
Phoridae
Tham Kway (Laos)
2 mm
HEXAPODA - INSECTA
19143
Jocelyne Pyo

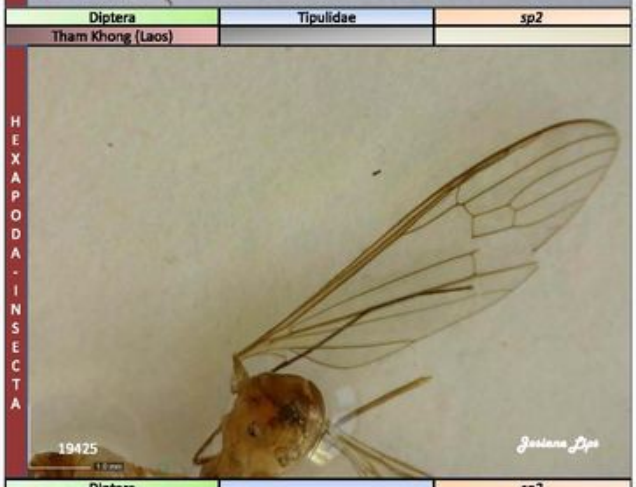

Diptera
Psychodidae
sp1
Tham Kway (Laos)
2 mm
HEXAPODA-INSECTA
19149
Josiane Lips

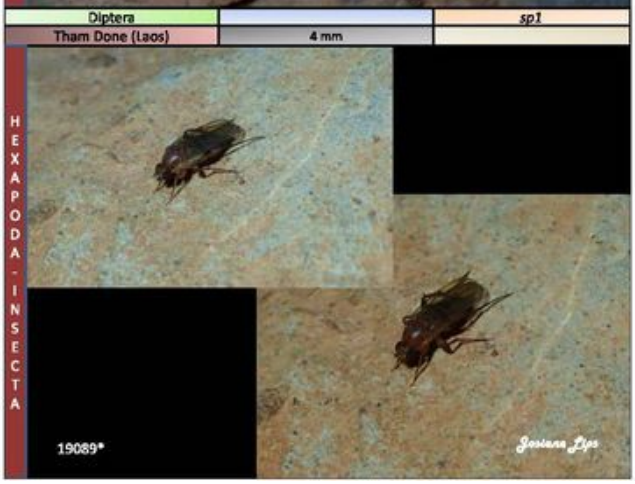

Diptera
Psychodidae
sp2
Tham Khong (Laos)
4 mm
HEXAPODA-INSECTA
19252
Josiane Lips


Diptera
Psychodidae
sp3
Tham En (Laos)
4,5 mm
HEXAPODA-INSECTA
19378
Josiane Lips


Diptera
Sciaridae
sp1
Tham Khong (Laos)
2 mm
HEXAPODA-INSECTA
19359
Josiane Lips


Diptera
Tipulidae
sp1
Tham Khong (Laos)
1,5 cm
HEXAPODA-INSECTA
19299
Josiane Lips

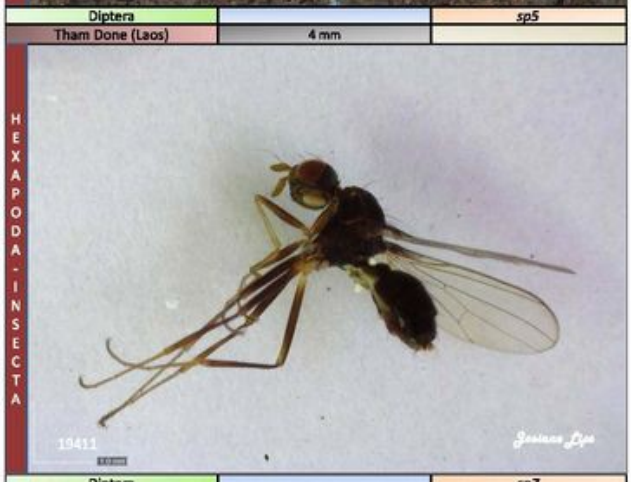

Diptera
Tipulidae
sp2
Tham Khong (Laos)
HEXAPODA-INSECTA
19425
Josiane Lips

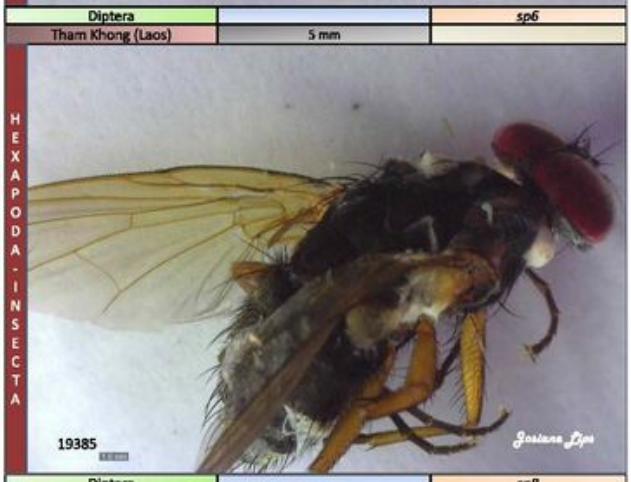

Diptera
sp1
Tham Done (Laos)
4 mm
HEXAPODA-INSECTA
19089*
Josiane Lips


Diptera
sp2
Tham Done (Laos)
2 mm
HEXAPODA-INSECTA
19418
Josiane Lips


Diptera
sp3
Tham Done (Laos)
8 mm
HEXAPODA-INSECTA
19111*
Josiane Lips

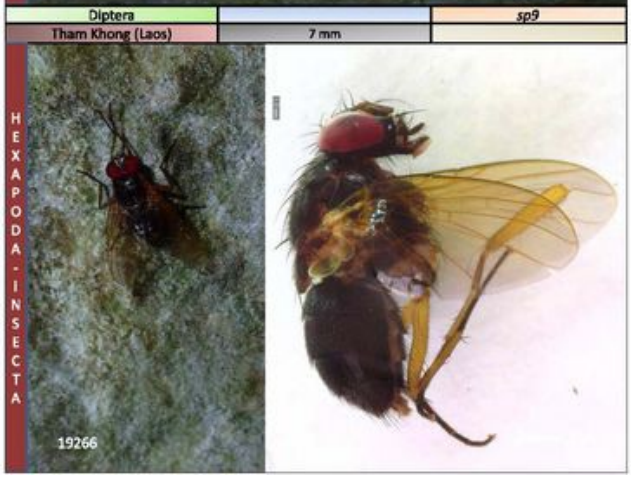

Diptera
sp4
Tham Done (Laos)
3 mm
HEXAPODA-INSECTA
19099
Josiane Lips

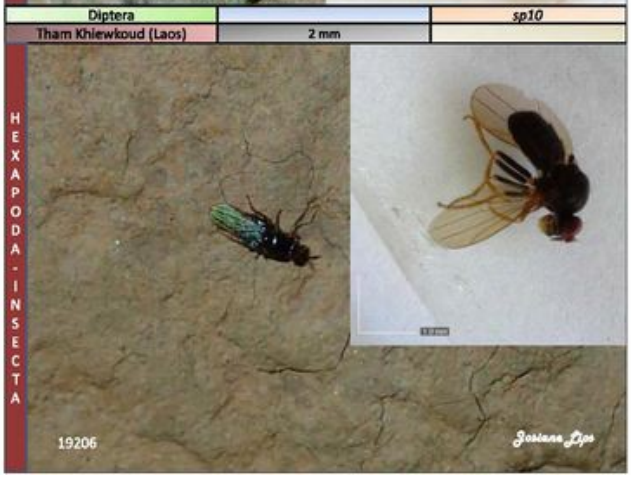

Diptera
sp5
Tham Done (Laos)
4 mm
HEXAPODA-INSECTA
19411
Josiane Lips

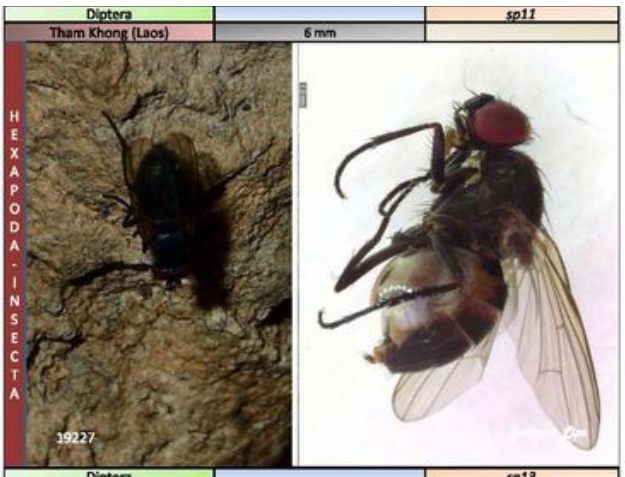

Diptera
sp6
Tham Khong (Laos)
5 mm
HEXAPODA-INSECTA
19385
Josiane Lips

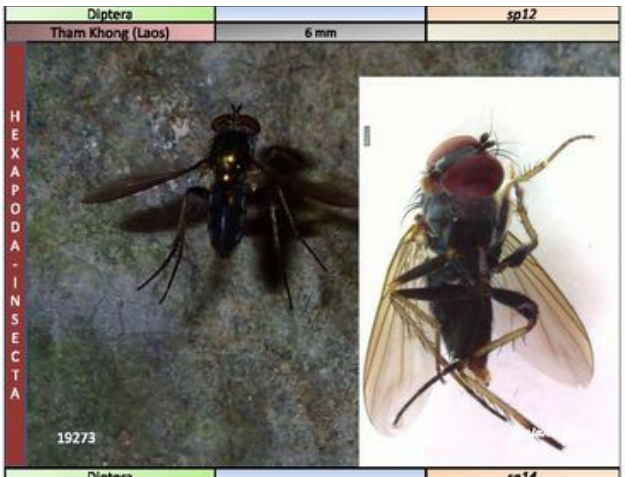

Diptera
sp7
Tham Khiewkoud (Laos)
6 mm
HEXAPODA-INSECTA
19195*
Josiane Lips


Diptera
sp8
Tham Khiewkoud (Laos)
7 mm
HEXAPODA-INSECTA
19197
Josiane Lips


Diptera
sp9
Tham Khong (Laos)
7 mm
HEXAPODA-INSECTA
19266


Diptera
sp10
Tham Khiewkoud (Laos)
2 mm
HEXAPODA-INSECTA
19206
Josiane Lips

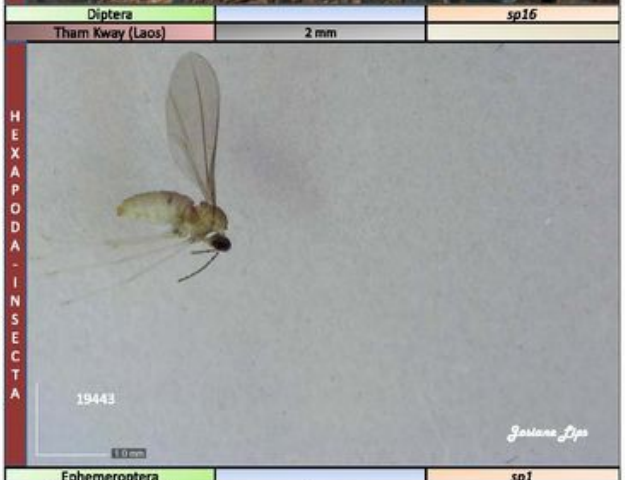

Diptera
sp11
Tham Khong (Laos)
6 mm
HEXAPODA - INSECTA
19227

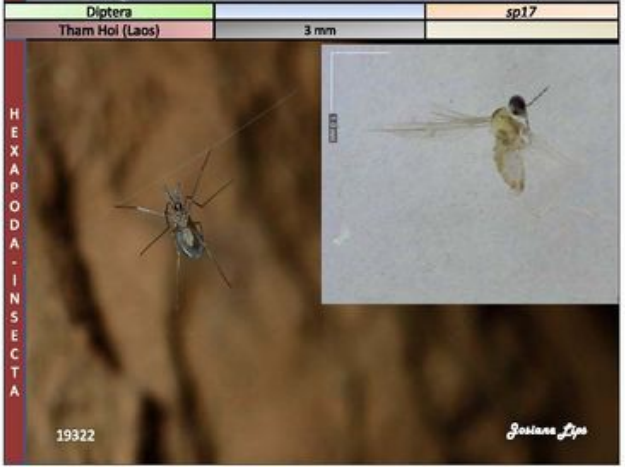

Diptera
sp12
Tham Khong (Laos)
6 mm
HEXAPODA - INSECTA
19273


Diptera
sp13
Tham En (Laos)
3 mm
HEXAPODA - INSECTA
19320
Josiane Lips

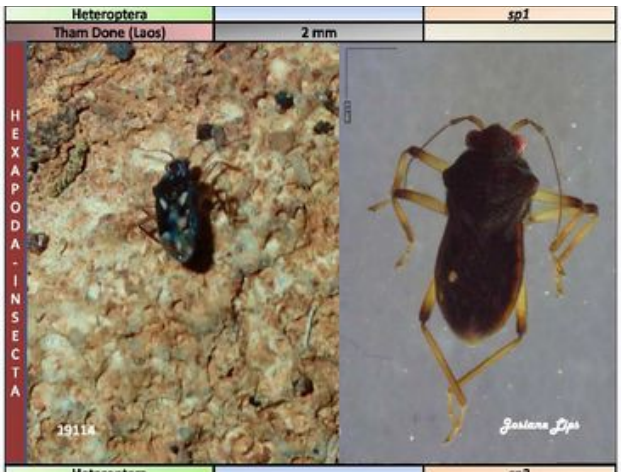

Diptera
sp14
Tham Done (Laos)
8 mm
HEXAPODA - INSECTA
19090
Josiane Lips

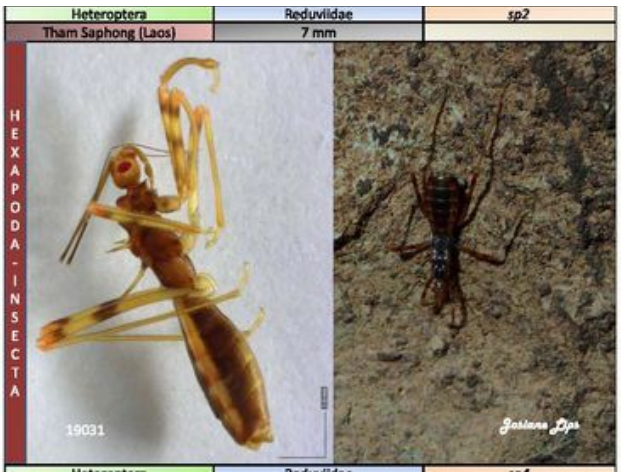

Diptera
sp15
Tham Done (Laos)
2 mm
HEXAPODA - INSECTA
19420
Josiane Lips


Diptera
sp16
Tham Kway (Laos)
2 mm
HEXAPODA - INSECTA
19443
Josiane Lips


Diptera
sp17
Tham Hoi (Laos)
3 mm
HEXAPODA - INSECTA
19322
Josiane Lips


Ephemeroptera
sp1
Tham Saphong (Laos)
4 mm
HEXAPODA - INSECTA
19499
Josiane Lips


Heteroptera
sp1
Tham Done (Laos)
2 mm
HEXAPODA-INSECTA
19114
Josiane Lips


Heteroptera
Reduviidae
sp2
Tham Saphong (Laos)
7 mm
HEXAPODA-INSECTA
19031
Josiane Lips

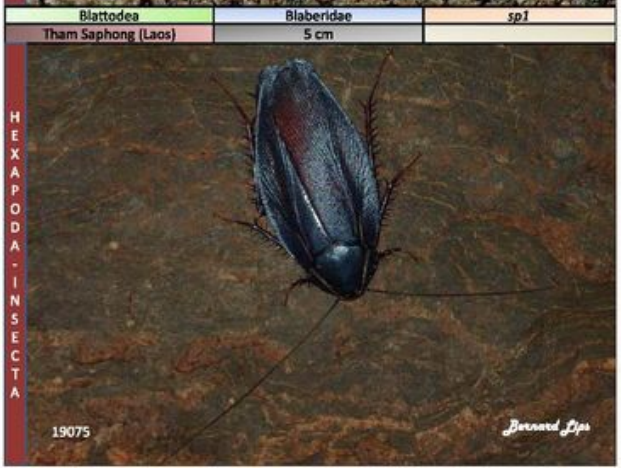

Heteroptera
sp3
Tham Done (Laos)
6 mm
HEXAPODA-INSECTA
19191*
Jean-Michel Cotermann

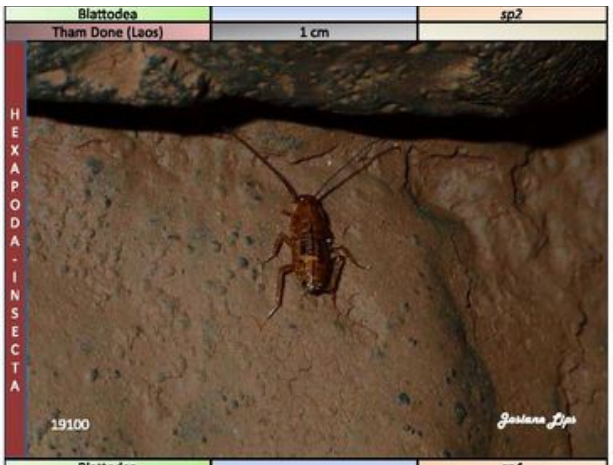

Heteroptera
Reduviidae
sp4
Tham Khiewkoud (Laos)
12 mm
HEXAPODA-INSECTA
19203
Josiane Lips

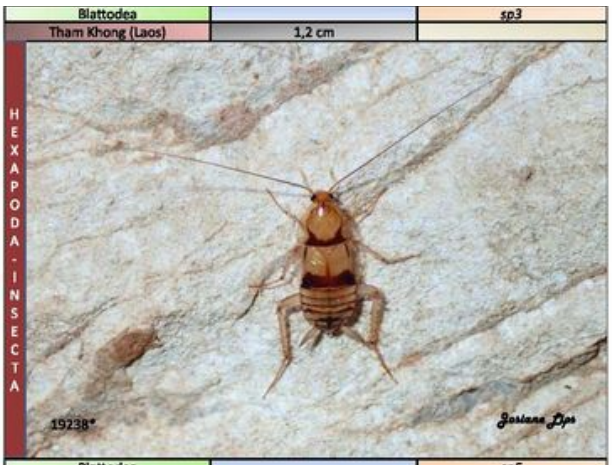

Heteroptera
Reduviidae
sp5
Tham Khong (Laos)
3 mm
HEXAPODA-INSECTA
19284
Josiane Lips


Heteroptera
Reduviidae
sp6
Tham En (Laos)
4 mm
HEXAPODA-INSECTA
19302
Josiane Lips

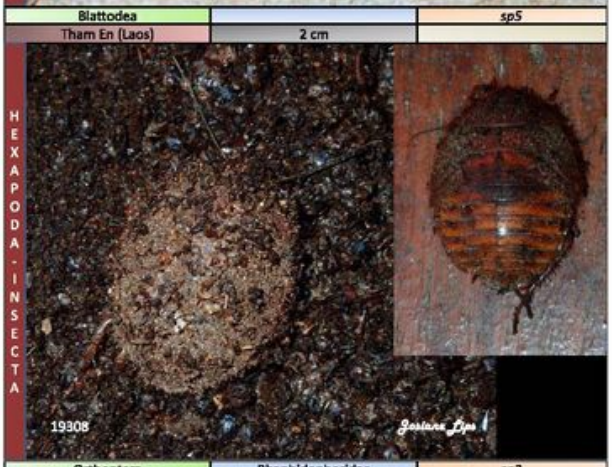

Heteroptera
Tingidae
sp7
Tham Saphong (Laos)
2 mm
HEXAPODA-INSECTA
19500
Josiane Lips


Blattodea
Blaberidae
sp1
Tham Saphong (Laos)
5 cm
HEXAPODA-INSECTA
19075
Bernard Lips


Blattodea
Tham Done (Laos)
1 cm
sp2
HEXAPODA - INSECTA
19100
Jocelyne Dips

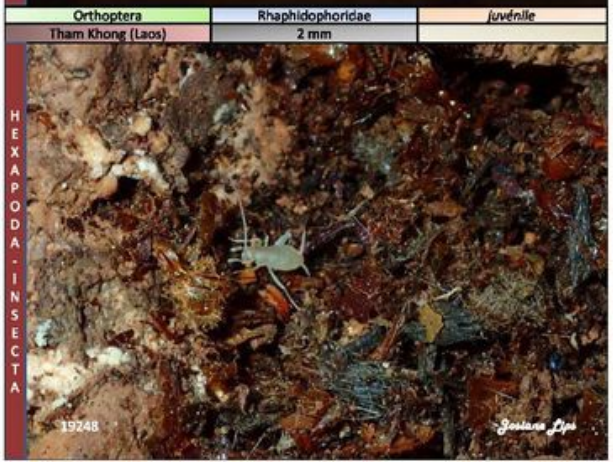

Blattodea
Tham Khong (Laos)
1,2 cm
sp3
HEXAPODA - INSECTA
19238*
Jocelyne Dips


Blattodea
Tham Khong (Laos)
3 cm
sp4
HEXAPODA - INSECTA
19247*
Jocelyne Dips


Blattodea
Tham En (Laos)
2 cm
sp5
HEXAPODA - INSECTA
19308
Jocelyne Dips


Orthoptera
Rhaphidophoridae
Tham Done (Laos)
1,5 cm
sp1
HEXAPODA - INSECTA
19082
Jocelyne Dips


Orthoptera
Rhaphidophoridae
Tham Saphong (Laos)
1,2 cm
sp2
HEXAPODA - INSECTA
19067
Jocelyne Dips


Orthoptera
Rhaphidophoridae
Tham Khong (Laos)
2 mm
juvénile
HEXAPODA - INSECTA
19248
Jocelyne Dips


Orthoptera
Tham Kway (Laos)
1,2 cm
sp3
HEXAPODA - INSECTA
19180
Jocelyne Dips

| Anura | Rhacophoridae | *Odorrana chloronota* |
|---|---|---|
| Tham Done (Laos) | 2,5 cm | Josiane Lips |

AMPHIBIA


| Anura | Rhacophoridae | *sp1* |
|---|---|---|
| Tham Saphong (Laos) | 3,5 cm | |

AMPHIBIA


| Anura | Rhacophoridae | *sp2* |
|---|---|---|
| Tham Done (Laos) | 2,5 cm | |

AMPHIBIA


| Anura | | *sp2* |
|---|---|---|
| Tham Khiewkoud (Laos) | 2,5 cm | |

AMPHIBIA


| Anura | | *sp3* |
|---|---|---|
| Tham Kway (Laos) | 4 cm | |

AMPHIBIA


| Anura | | *sp4* |
|---|---|---|
| Tham Khiewkoud (Laos) | 3 cm | |

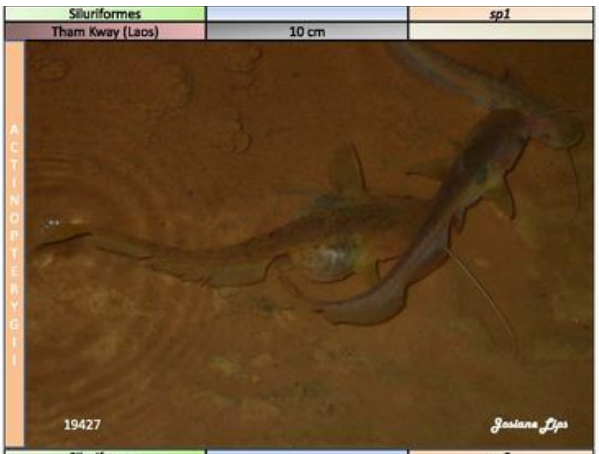
AMPHIBIA

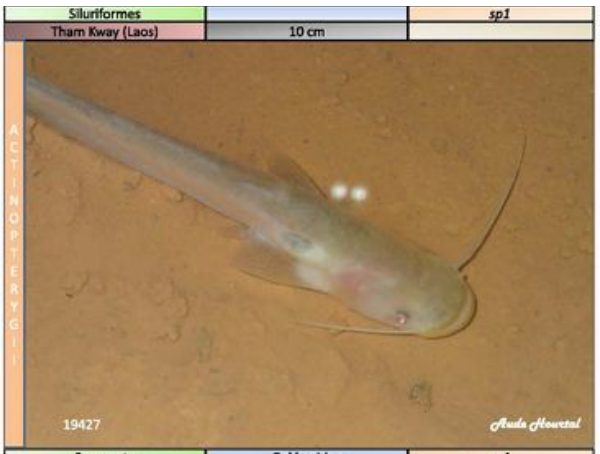

| Cypriniformes | | *sp1* |
|---|---|---|
| Tham Done (Laos) | 2 cm | |

ACTINOPTERYGII

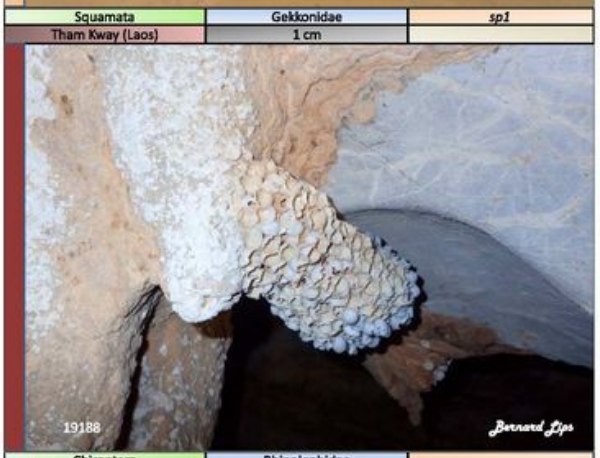

| Cypriniformes | | *sp2* |
|---|---|---|
| Tham Kway (Laos) | 10 cm | |

ACTINOPTERYGII


Siluriformes
sp1
Tham Kway (Laos)
10 cm
ACTINOPTERYGII
19427
Josiane Lips

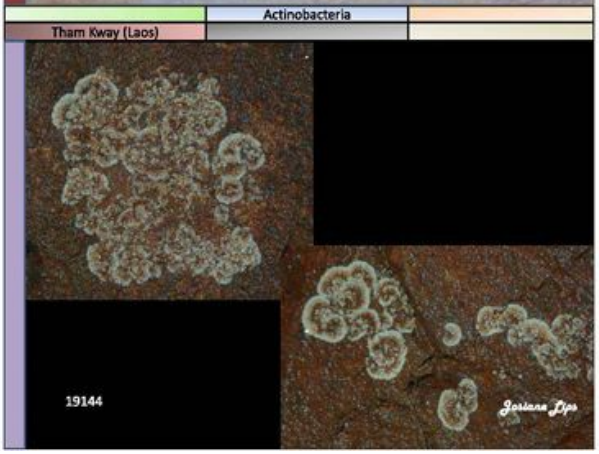

Siluriformes
sp1
Tham Kway (Laos)
10 cm
ACTINOPTERYGII
19427
Aude Houdal

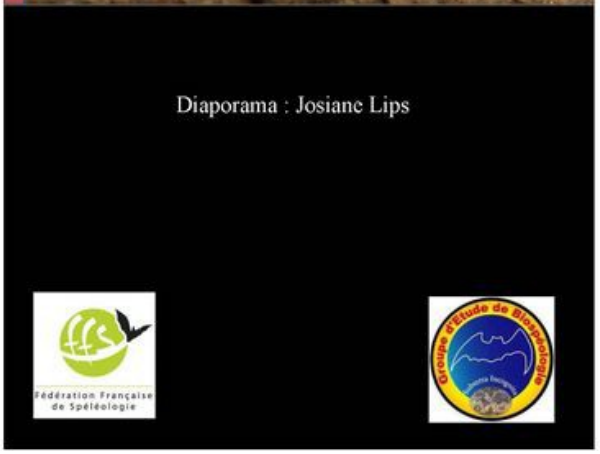

Siluriformes
sp2
Tham Done (Laos)
6 cm
ACTINOPTERYGII
19109*
Josiane Lips


Squamata
Gekkonidae
sp1
Tham Kway (Laos)
1 cm
19188
Bernard Lips


Squamata
Viperidae
Triceratolepidophis sieversorum
Tham Khoun Huay (Laos)
40 cm
Josiane Lips
19189
Jean-Michel Ostermann


Chiroptera
Rhinolophidae
Hou Inkeo (Laos)
MAMMALIA
19553
Aude Houdal


Actinobacteria
Tham Kway (Laos)
19144
Josiane Lips


Diaporama : Josiane Lips
Fédération Française de Spéléologie
Groupe d'Etude de Biospéologie

ສາທາລະນະລັດ ປະຊາທິປະໄຕ ປະຊາຊົນລາວ
ສັນຕິພາບ ເອກະລາດ ປະຊາທິປະໄຕ ເອກະພາບ ວັດທະນາຖາວອນ
LAO PEOPLE'S DEMOCRATIC REPUBLIC
PEACE INDEPENDENCE DEMOCRACY UNITY PROSPERITY

ຕົ້ນສະບັບ
ORIGINAL

Convention on international trade in endangered species of wild fauna and flora

# ໃບຢັ້ງຢືນ
# CERTIFICATE

ເລກລະຫັດ: Form No **L/2019**
ເລກທີ: Namber no. **0001/MA**

1. ຊື່, ທີ່ຢູ່, ເຄື່ອງໝາຍ/ກາຈປະທັບ ແລະ ປະເທດທີ່ອະນຸຍາດ
1. Name, address, national seal/stamp and country of Management Authority

Ministry of Agriculture and Forestry
Department of Forestry
CITES Management Authority
P.O Box: 2932; Tel: (856) 21 215000
Fax: (856) 21 217161; (856) 21 216921.

- [✓] ສົ່ງອອກ EXPORT
- [ ] ສົ່ງອອກຄືນ RE-EXPORT
- [ ] ນຳເຂົ້າ IMPORT
- [ ] ອື່ນໆ OTHER

2. ໃຊ້ໄດ້ເຖິງ
2. Valid until **07/09/2019**

3. ຜູ້ຖືກືນຕ໋ (ຊື່ ແລະ ທີ່ຢູ່, ປະເທດ)
3. Permit (name and address, country)

Protection and Sustainable Use of Forest Ecosystems ana Biodiversity HNN Component: Hin Nam No Project
Chormphet Village Thakhek District, Khammouan Province,
PO Box: 555 Tel. 051214175 Fax:051214175

4. ຜູ້ຮັບສິນຄ້າ (ຊື່ ແລະ ທີ່ຢູ່)
4. Consignee (Name and address)

French Federation of Speleology, 4 Avenue, Allende 69100 Villeurbanne, France
Tel: +33478933218, Email: josiane.lips@free.fr

5. ຈຸດປະສົງຂອງການຄ້າ
5. Purpose of the transaction (see reverse) **S**

6. ປະເທດຮັບສິນຄ້າປາຍທາງ
6. Country of destination **FRANCE**

| | 7. ຊື່ວິທະຍາສາດ (ສະກຸນ ແລະ ຊະນິດ) ແລະ ຊື່ທົ່ວໄປຂອງນົກ ຫຼື ສັດ<br>7. SCIENTIFIC NAME (genus and species) AND COMMON NAME OF ANIMAL OR PLANT | 8. ລາຍລະອຽດຂອງສິນຄ້າລວມທັງເຄື່ອງໝາຍ ຈຳແນກ ຫຼື ຈຳນວນ (ອາຍຸ/ເພດ ຖ້າຍັງມີຊີວິດ)<br>8. Description of specimens, including identifying marks or number (age/sex if live) | 9. ບັນຊີ CITES ແລະ ແຫຼ່ງທີ່ມາ<br>9. Appendix No. And source (see/reverse) | 10. ຈຳນວນ (ລວມທັງຫົວໜ່ວຍ)<br>10. Quantity (including unit) | 11. ປະເທດຖິ່ນກຳເນີດ<br>11. Country of origin |
|---|---|---|---|---|---|
| A | 1. Araneae | Ethanol whole body | Wild | 16 Samples | LAO P.D.R |
| | 2. Blattodea | Ethanol whole body | Wild | 02 Samples | LAO P.D.R |
| | 3. Coleoptera | Ethanol whole body | Wild | 120 Samples | LAO P.D.R |
| | 4. Collembola | Ethanol whole body | Wild | 15 Samples | LAO P.D.R |
| B | 5. Decapoda | Ethanol whole body | Wild | 04 Samples | LAO P.D.R |
| | 6. Dermaptera | Ethanol whole body | Wild | 02 Samples | LAO P.D.R |
| | 7. Diplopoda | Ethanol whole body | Wild | 10 Samples | LAO P.D.R |
| | 8. Diptera | Ethanol whole body | Wild | 30 Samples | LAO P.D.R |
| C | 9. Gastropoda | Ethanol whole body | Wild | 02 Samples | LAO P.D.R |
| | 10. Heteroptera | Ethanol whole body | Wild | 10 Samples | LAO P.D.R |
| | 11. Opiliones | Ethanol whole body | Wild | 12 Samples | LAO P.D.R |
| | 12. Orthoptera | Ethanol whole body | Wild | 06 Samples | LAO P.D.R |
| D | 13. Fishes | Ethanol whole body | Wild | 17 Samples | LAO P.D.R |
| | 14. Pseudoscorpiones | Ethanol whole body | Wild | 01 Samples | LAO P.D.R |

12. ໃບອະນຸຍາດອອກໃຫ້ໂດຍ:
12. THIS PERMIT IS ISSUED BY:

DG Department of Forestry
Head of CITES Management Authority
Lao PDR

**Vientiane**
ສະຖານທີ່ Place

**07/03/2019**
ລົງວັນທີ Date

ເຊັນ ແລະ ປະທັບຕາ
Security stamp, signature and official seal

13. ສິນຄ້າທີ່ອະນຸຍາດສົ່ງອອກ/ນຳເຂົ້າ:
13.Export endorsement/Import:

| ຫ້ອງ Block | ຈຳນວນ Quanlity |
|---|---|
| A | 153 Samples |
| B | 46 Samples |
| C | 30 Samples |
| D | 13 Samples |

14. ໃບນຳສົ່ງສິນຄ້າ ເລກທີ
14.Bill of Lading/ Air Way bill Number

Sousath SAYAKOUMMANE

ດ່ານຂາເຂົ້າ/ຂາອອກ Port of Export/Import | ລົງວັນທີ Date | ລາຍເຊັນ Signature | ຊື່ແຈ້ງ ແລະ ປະທັບຕາ (ເຈົ້າໜ້າທີ່ປ່າໄມ້) Official stamp and title(Forestry official)

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*Triceratolepidophis sieversorum* in Tham Koun Huay photo J.M. Ostermann

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