

SHAN PLATEAU AND TROPICAL ISLAND KARST



Platforms of Birds Nest harvesters near the cave entrance, Myeik (U. Etter)

21.01. –
07.02.17

Myanmar Cave Documentation Project 2017



EuroSpeleo
Project

The Euro Speleo Team of the Myanmar 2017 expedition continued exploration of karst areas on the Shan plateau and the Myeik Archipelago. The scenic Phruno River cave near Hpruso in Kayah was extended to 4.6 km length. It is now the 2nd largest cave of Myanmar. New found karst springs and doline landscapes indicate on a larger underground network of rivers that has to be further studied. East of Hopon, in Loilen district, the potential for new large caves has been confirmed. In the Myeik archipelago two island clusters of limestone have been found. They host large chambers of up to 100 m height used for birds nesting. Other islands are of quartzite/granite and possess bedding oriented single passage caves of up to 300 m length. Fauna is plentiful with pythons, sea other and sea snakes at entrances. A high density of bats is observed at Lampi Nationalpark with colonies of several thousand species.

Overview

The Euro Speleo Team of the Myanmar 2017 expedition successfully continued exploration of karst areas on the Shan plateau and the Myeik Archipelago. As surprise came the cancelation of special permits from the Ministry of Hotels & Tourism prior Christmas due to security concerns for foreigners in border areas. Thanks to very well established contacts in combination with a highly flexible team this proved an advantage and enabled the visit of new areas not affected by the restrictions.

The expedition consisted of two parts. The first week focused on key areas from former expeditions in the districts of Demeso and Hpruso (Kayah) and Pinlaung and Hopon (Shan). The second part explored the Myeik archipelago for the occurrence of limestone, presence of caves and bat fauna. The entire chain of islands was crossed from Myeik to Kawthaung for a systematic overview and understanding the extension of limestone rocks.

The expedition team was honored by a dinner reception of the Swiss ambassador Paul Seger and his wife. The project was introduced by J. Dreybrodt to an audience of 40 representatives from NGO and the international community. Afterwards the 35 minutes documentary “First Steps – Kayah” was screened for the first time in Myanmar. It was filmed by director Phil Bence during the 2016 expedition. The trailer can be viewed online.

Shan Plateau

The main objective was further exploration of the scenic karst landscape in Demeso and Hpruso district. Here the Phruno River Cave was extended from 2.5 km to 4.6 km length in a 12 hour push trip to the 2nd longest cave of Myanmar. The passage sumps in a lake, but several unexplored collapse halls possess further potential for top entrances. More caves have been surveyed close to Loikaw. The 600 m long Mountain Pig Eye Cave (Loite Mu) is a Buddhist cave within a military compound and now open to public with the change in government. Several passage levels are connected by ladders and are well decorated by Buddha statues. The entrance information leaflet counts 254 Buddha statues and 15 Stupas with construction of more ongoing.

A scenic karst spring 8 km west from Demeso indicates on the hydrogeological setting. It emerges from a lake at the edge of a mountain ridge and flows into the river passing Loikaw town. The locals reported two top entrances in large passages that collapsed 7 and 13 years ago. Suspected is a large underground network of passages that drain the Hpruso karst. Another similar example is Nang Toke Hwtut Cave on the district border between Pinlaung and Pekon. Here a river resurges from a 20 m wide and 10 m high passage which floods to the roof in rainy season. It must drain a large basin behind the first mountain ridge.

In Pinlaung new fossil caves were surveyed. The Hti Ngut Shaft with a previous depth of -156 extended to -165 m and finished with a length of 358 m. The shaft has an impressive 80 m direct pit. An active stream disappears in a mud block which might be removable during a digging project. The villagers reported further caves along the ridge.

The last two days were spent in Taunggyi with day trips to Hopon. The road blocks and check points from 2011 are removed and the road is drivable beyond Hopon. The town Mong Pawn of neighboring district Loilen could be visited for a lunch stop. Here the presence of at least three river caves is reported. This district is partially under control of the Restoration Council of Shan State (RCSS) and requires special permits from their regional headquarter for field trips.

Myeik Archipelago

The Myeik islands were investigated for the presence of caves, rock types and fauna. Initial findings from a British visit for bat and fauna studies in cooperation with the University of Yangon in 2003, a short visit in 2016 and several internet citations from diving boats, confirm caves. The crossing of the archipelago from Myeik to Kawthaung in the South was done in a local fishermen boat. An officer from the forestry department accompanied the team and helped arranging accommodation in local fishermen villages. The limited time of 7 days to traverse the 300 km distance allowed only investigations of the most promising islands. The dominant rock type is quartzite or granite with caves developed along major bedding lines. The average length of the caves ranges between 30 – 100 m with some through caves up to 300 m length. The orientation of the passages is mainly North North West to South South East or perpendicular to it. The exception are two island clusters of limestone. These have steep rising cliffs of 100-200 m altitude and form bays or Lagunas, so called hongs. Usually a tidal trough cave connects to the sea. The Kyauk Thin Bone cluster is in central at the eastern shore of Pan Daung Island while the cluster around horse shoe bay is in the very south. The caves have large halls of up to 120 m length and 80 m height and are connected to the sea by tidal entrances. They are used for birds nest collection with impressive scaffoldings and temporary housings. The erected bamboo towers reach 40 m height and are reinforced every year resulting in impressive constructions.

The cave entrances are reached by swimming and climbing in between often slippery rocks. Bats are found in almost every cave with an unusual high density at Lampi National Park. Caves on small islands of about 100 m diameter tend to form a maze of passages with multiple entrances (ie. Kyun Thone Lone Gu). They are of particular interest for eco-tourism due to their unique setting and special experience of sound and light.

Cave Fauna at Myeik Archipelago

Fauna is plentiful with pythons and sea snakes at entrances and bats deeper inside. Two caves host very large bat colonies of several thousand species. This is very rare in Myanmar. Two different sized bats were observed. One was identified by pictures as medium-large false vampire bats (*Megaderma Spasma*). They are a new record within the National park. Further detailed investigations are planned during an April-May campaign.

The following fauna was observed. Please see also the column in the cave list.



Reviewing pictures for bat identification with P. Brakels and A Gagliardi

- sea otters, pythons and bats at Kyauk Thin Limestone islands
- sea kraits on dry plateaus near the entrances
- 10-15 sharks on the bottom of the cave trench, partially more than 1 meter long at Christie island area
- Lampi island with two large bat colonies of several thousand species

Anchialine caves have pools of mixed sea-fresh water hosting adapted marine species. Such conditions could exist in the limestone cluster at Horse Shoe Bay. One visited inland lake had very deep water with many insect larvae. Further investigations are necessary by a marine fauna expert.



Results

The project surveyed 43 caves with a length of 7.8 km. Of these 3 km are in the Myeik archipelago. Cave fauna is highlighted in the last column:

Kayah and Shan

No.	Date	Name	Village / Ban / Island	Township	State	Length (m)	Fauna
1	22.1.17	Sidwi Mountain Cave	Pedanko	Demeso	Kayah	50	
2	22.1.17	Loite Mu (Mountain Pig Eye Cave)	Loikaw	Loikaw	Kayah	600	
3	22.1.17	Yetwa Bauk Gu (Upper Spring Cave, 7year collapse)		Demeso	Kayah	30	
4	22.1.17	Upper Spring Cave (14year collapse)		Demeso	Kayah	20	
5	22.1.17	Karst Spring to Demeso dam		Demeso	Kayah	0	
6	23.1.17	Htumoeai Cave	Hoyar	Hpruso	Kayah	870	
7	23.1.17	Phruno River Cave	Maw Thi Do	Hpruso	Kayah	1986	bat colonies
8	24.1.17	Ye Ngote Gu (Water disappear cave)	Loikaw	Loikaw	Kayah	70	bats
9	24.1.17	Snake Cave		Demeso	Kayah	20	snake
10	25.1.17	Nang Toke Htuwt Gu	Nang Toke	Pinlaung	Shan	345	bats
11	25.1.17	Taung Bwar Gu(Train Cave)	Hsawng Pyaung	Pinlaung	Shan	402	
12	26.1.17	Hti Ngut Shaft	Hti Hwali	Pinlaung	Shan	112	
13	26.1.17	Yin Kwei Taung Gu		Pinlaung	Shan	180	
14	29.1.17	Parpant Stream Shaft	Parpant	Hopong	Shan	100	
15	29.1.17	Dream Cave	Parpant	Hopong	Shan	35	

Myeik

No.	Date	Name	Village / Ban / Island	Township	State	Length (m)	Fauna
16	1.2.17	Tidal Lagoon Cave	Hnget Thaik Taung Island	Bokpyin	Myeik	90	
17	1.2.17	Fossil Lagoon Cave	Hnget Thaik Taung Island	Bokpyin	Myeik	200	Bats
18	1.2.17	Upper Lagoon Cave	Hnget Thaik Taung Island	Bokpyin	Myeik	55	bats, 100
19	1.2.17	Big Tidal Hall Cave	Hnget Thaik Taung Island	Bokpyin	Myeik	235	Water Snake
20	1.2.17	Tidal Shell Cave	Kyauk Thin Bone Island	Bokpyin	Myeik	45	
21	1.2.17	Rock Pyhton Cave	Kyauk Thin Bone Island	Bokpyin	Myeik	110	Severael Pyhtons
22	1.2.17	Double Chiminee Cave	Kyauk Thin Bone Island	Bokpyin	Myeik	120	
23	2.2.17	Sea Shore Caves 1	Nyipa Aw / Lampi North	Bokpyin	Kawthaung	50	
24	2.2.17	Sea Shore Caves 2	Nyipa Aw / Lampi North	Bokpyin	Kawthaung	35	
25	2.2.17	Bat Colony Cave 1	Lampi North island	Bokpyin	Kawthaung	81	Bats ++10.000
26	2.2.17	Bat Crack Cave	Lampi North island	Bokpyin	Kawthaung	35	bats
27	2.2.17	Top Chamber Island Maze	Lampi North island	Bokpyin	Kawthaung	100	swallows
28	2.2.17	Top Chamber Cave 2	Lampi North island	Bokpyin	Kawthaung	30	Bats, 500
29	2.2.17	Fig Tree Caves	Lampi North island	Bokpyin	Kawthaung	30	Bats
30	2.2.17	Drip Fresh Wafer Cave	Lampi North island	Bokpyin	Kawthaung	85	bats, 100

No.	Date	Name	Village / Ban / Island	Township	State	Length (m)	Fauna
31	2.2.17	Bat Colony Cave 2	Lampi North island	Bokpyin	Kawthaung	105	Bats +1000-5000
32	3.2.17	Makyone Galet Cave	Lampi South island	Bokpyin	Kawthaung	30	Bats
33	3.2.17	Double Crack Cave	Lampi South island	Bokpyin	Kawthaung	95	Bats
34	3.2.17	Big square Entrance Cave	Lampi South island	Bokpyin	Kawthaung	25	
35	3.2.17	Bay Cave 1	Cavern Island (Hlaing Gu)	Kawthaung	Kawthaung	40	
36	3.2.17	Thunder Cave	Cavern Island (Hlaing Gu)	Kawthaung	Kawthaung	50	
37	3.2.17	Bay Cave 2	Cavern Island (Hlaing Gu)	Kawthaung	Kawthaung	30	Bats
38	4.2.17	Red Jelly Fish Cave	Bo Wei Island	Kawthaung	Kawthaung	35	
39	4.2.17	Blue snake cave	Bo Wei Island	Kawthaung	Kawthaung	60	blue snake
40	5.2.17	Tidal Cave Heart Shaped Laguna	Cocks Comb Island	Kawthaung	Kawthaung	50	
41	5.2.17	Shark 1 left	NW of Christie Island	Kawthaung	Kawthaung	360	
42	5.2.17	Shark 2 right	NW of Christie Island	Kawthaung	Kawthaung	120	10 sharks
43	5.-6.2.17	Birds Nest Cave	Myin Kwa Islands	Kawthaung	Kawthaung	714	scorpions, water

Longest caves of Myanmar

No.	Name	State	District	Length (m)	Year
1	Khauk Khaung (Stone Cave)	Shan	Ywangan	4'790	2012-14
2	Phruno River Cave	Kayah	Hpruso	4580	2016-17
3	Red River Cave	Kayah	Bawlakhe	4'095	2015-16
4	Namun Spring Cave	Shan	Pinlaung	2'628	2013-14
5	Kyet Cave	Kayah	Loikaw	2'194	2015

Summary and Outlook

The overall understanding of the Karst of Myanmar could be further increased. Very fruitful are partnerships with NGOs that use the cave documentation results for biodiversity surveys and karst conservation. Such cooperation's should be intensified in future with common projects and extended to universities. An urgent topic is the training of cave interested local people in order to inhibit caving groups. This enables faster research and increases awareness for preserving the caves and the sensitivity of karst.

The following major tasks are:

- Hydrogeology studies and field trips in the doline landscape of Hpruso/Demeso (Kayah)
- A booklet of caves around Loikaw for sustainable eco-tourism
- Exploration in the areas east and north of Hopon, ie Loilen district
- Systematic initial bat survey and fauna studies

Expeditions will continue in 2017/18 with planning starting in September 2017.

Acknowledgement

Ngwe Lwin and Frank Momberg,(Fauna & Flora International) for arranging permission with the Forest Department (MONRE) for Myeik.

U Than Zaw Win from the forest department for guiding us and arranging overnight stays

Ko Nyi Nget and Ko Soe Wai for their skills in navigating the boat in Myeik archipelago

Aung Ko Htwe (Tam) for guiding, translating and exploring with us together

Tania Miorin (OIKOS) for supporting us at Lampi Marine Park

Ko Thau (Theo), chairman of the Kayah Guide Association, for sharing his excellent local knowledge.

Aung Naing Oo (Elga) for taking good care of us as main guide in Shan.

Mr. Myoe with his yellow minibus who drives us always safely and explores with us.

Beal from France for supporting with durable speleo ropes.

Team 2017: Joerg Dreybrodt (coordinator), Urs Etter, Roman Hapka, Marc Boureau, Chris Densham in cooperation with Alessandra Gagliardi*, Peter Brakels from Instituto Oikos (*University of Insubria) and Siegfried Moser from GiZ Germany.

Report prepared by Joerg Dreybrodt in April 2017 under CC license



References

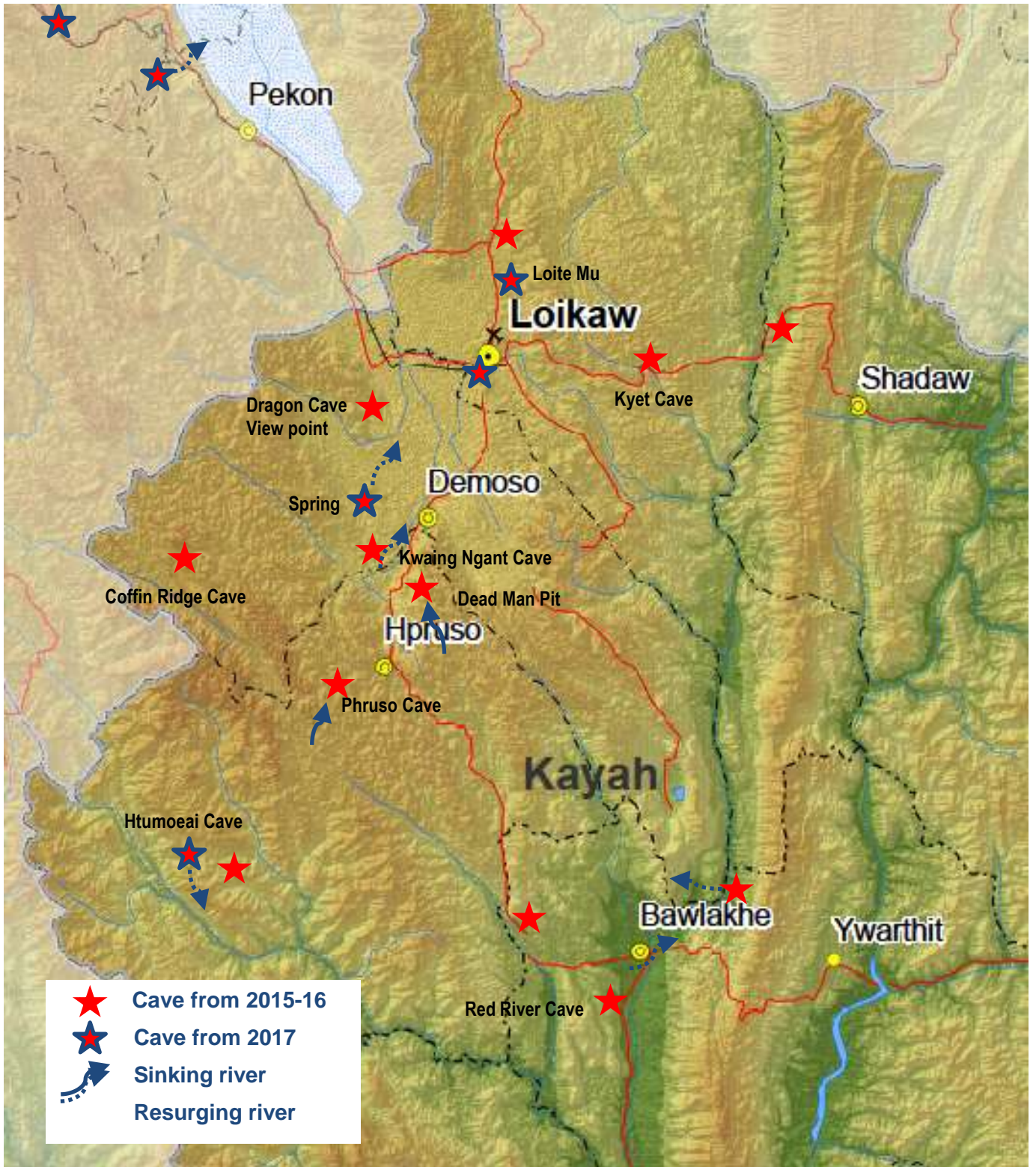
Trailer “First Steps – Kayah “ on Youtube: <http://tinyurl.com/hzcm7kr>

Waltham T. and Eavis A., 2004: Caves in Myanmar, *Cave and Karst Science*, 31 (1), pp. 3-6.

Dreybrodt J. and Laumanns M., 2013: Karst and Caves of Myanmar (Expeditions to the Shan States 2011-2013), *Berliner Hoehlenkundliche Berichte*, 51.

Caves in Kayah

Caves from 2015-16 are marked as red star, from 2017 as red star with blue line, see legend



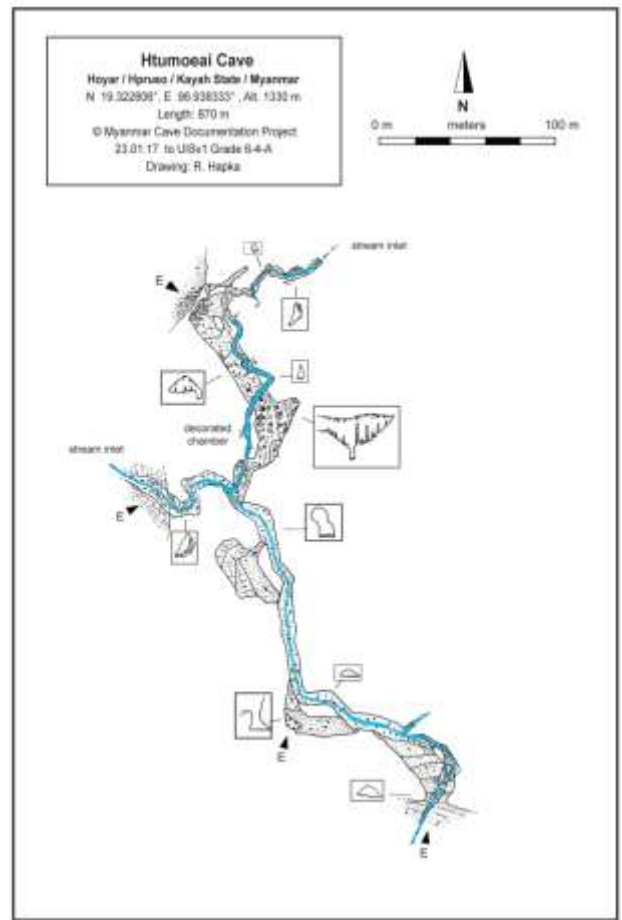
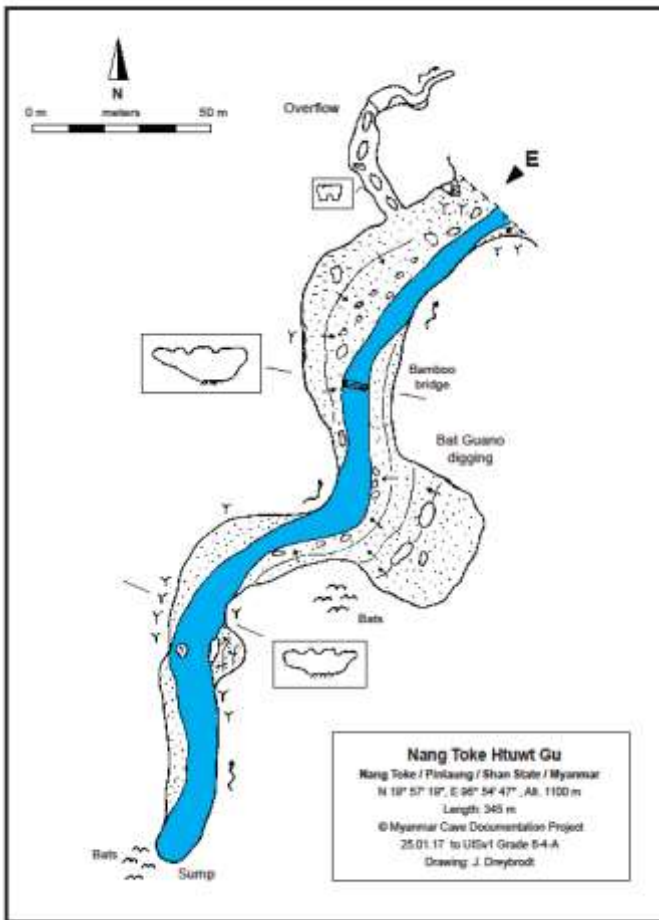
	Cave from 2015-16
	Cave from 2017
	Sinking river
	Resurging river

<p>Map ID: MIMU182v03 Creation Date: 17 April 2012.A3 Projection/Datum: Geographic/WGS84</p> <p>Map produced by the MIMU - Info.mimu@undp.org www.themimu.info</p>	<table border="0"> <tr> <td></td> <td>Airports</td> <td></td> <td>Railway</td> <td></td> <td>District Boundary</td> <td></td> <td>0 - 250</td> <td></td> <td>2,001 - 2,500</td> </tr> <tr> <td></td> <td>State Capital</td> <td></td> <td>Road</td> <td></td> <td>State Boundary</td> <td></td> <td>251 - 500</td> <td></td> <td>2,501 - 3,000</td> </tr> <tr> <td></td> <td>Township</td> <td></td> <td>Stream</td> <td></td> <td>International Boundary</td> <td></td> <td>501 - 750</td> <td></td> <td>3,001 - 4,000</td> </tr> <tr> <td></td> <td>Sub-Township</td> <td></td> <td>Township Boundary</td> <td></td> <td>River/Water Body</td> <td></td> <td>751 - 1,000</td> <td></td> <td>4,001 - 5,000</td> </tr> <tr> <td></td> <td></td> <td></td> <td>Non-Perennial</td> <td></td> <td>Perennial</td> <td></td> <td>1,001 - 1,500</td> <td></td> <td>5,001 - 7,002</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1,501 - 2,000</td> <td></td> <td></td> </tr> </table>		Airports		Railway		District Boundary		0 - 250		2,001 - 2,500		State Capital		Road		State Boundary		251 - 500		2,501 - 3,000		Township		Stream		International Boundary		501 - 750		3,001 - 4,000		Sub-Township		Township Boundary		River/Water Body		751 - 1,000		4,001 - 5,000				Non-Perennial		Perennial		1,001 - 1,500		5,001 - 7,002								1,501 - 2,000			<p>Data Sources : MIMU Base Map - MIMU Boundaries - WFP/MIMU Elevation : SRTM Place names - Ministry of Home Affair (GAD) translated by MIMU</p>
	Airports		Railway		District Boundary		0 - 250		2,001 - 2,500																																																					
	State Capital		Road		State Boundary		251 - 500		2,501 - 3,000																																																					
	Township		Stream		International Boundary		501 - 750		3,001 - 4,000																																																					
	Sub-Township		Township Boundary		River/Water Body		751 - 1,000		4,001 - 5,000																																																					
			Non-Perennial		Perennial		1,001 - 1,500		5,001 - 7,002																																																					
							1,501 - 2,000																																																							

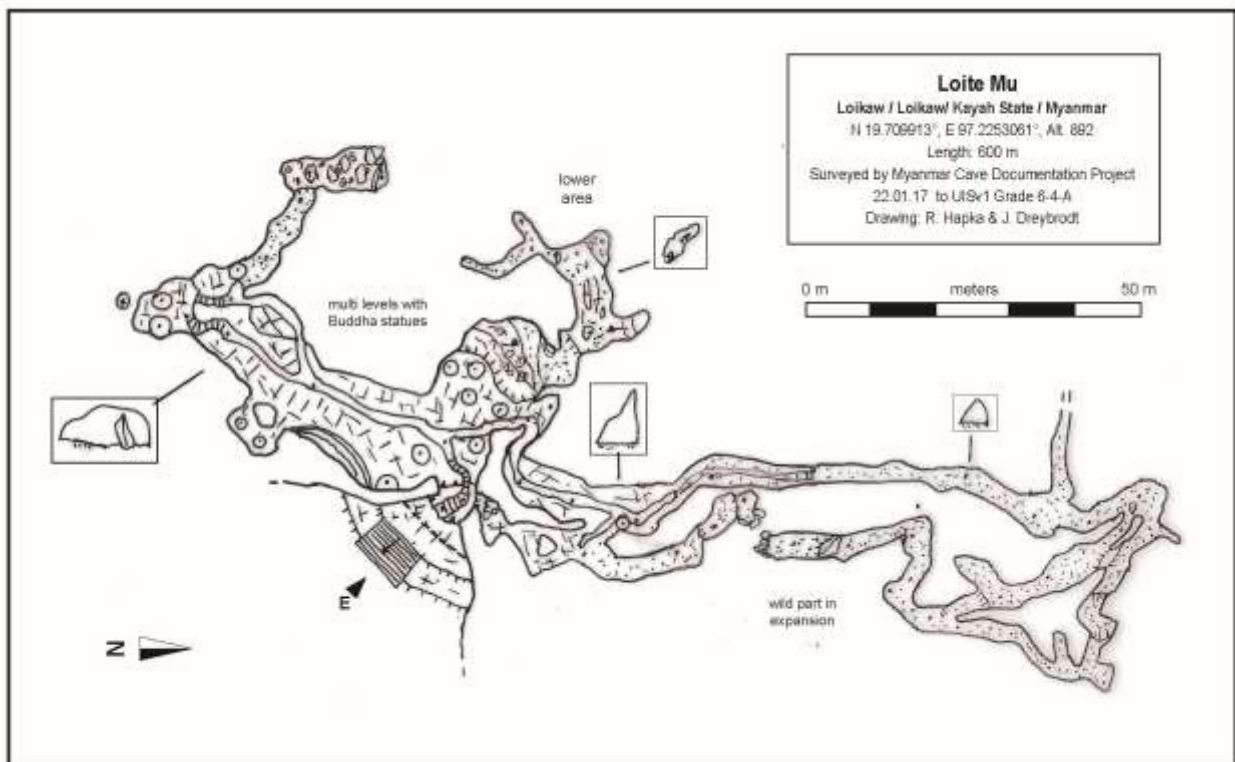
Disclaimer: The names shown and the boundaries used on this map do not imply official endorsement or acceptance by the United Nations.

Cave Maps Kayah/Shan

Maps of river caves © Myanmar Cave Documentation Project



Map of Buddhist Cave Loite Mu (Mountain Pig Eye) near Loikaw © Myanmar Cave Documentation Project



Pictures Kayah and Shan States

Hpruso tower karst (M. Scheurerer) ▼



Entrance hall of Ye Ngote Gu near Loikaw (C. Densham) ▼



Large sinter formations in Hoyar district – Kayah (U. Etter) ▼

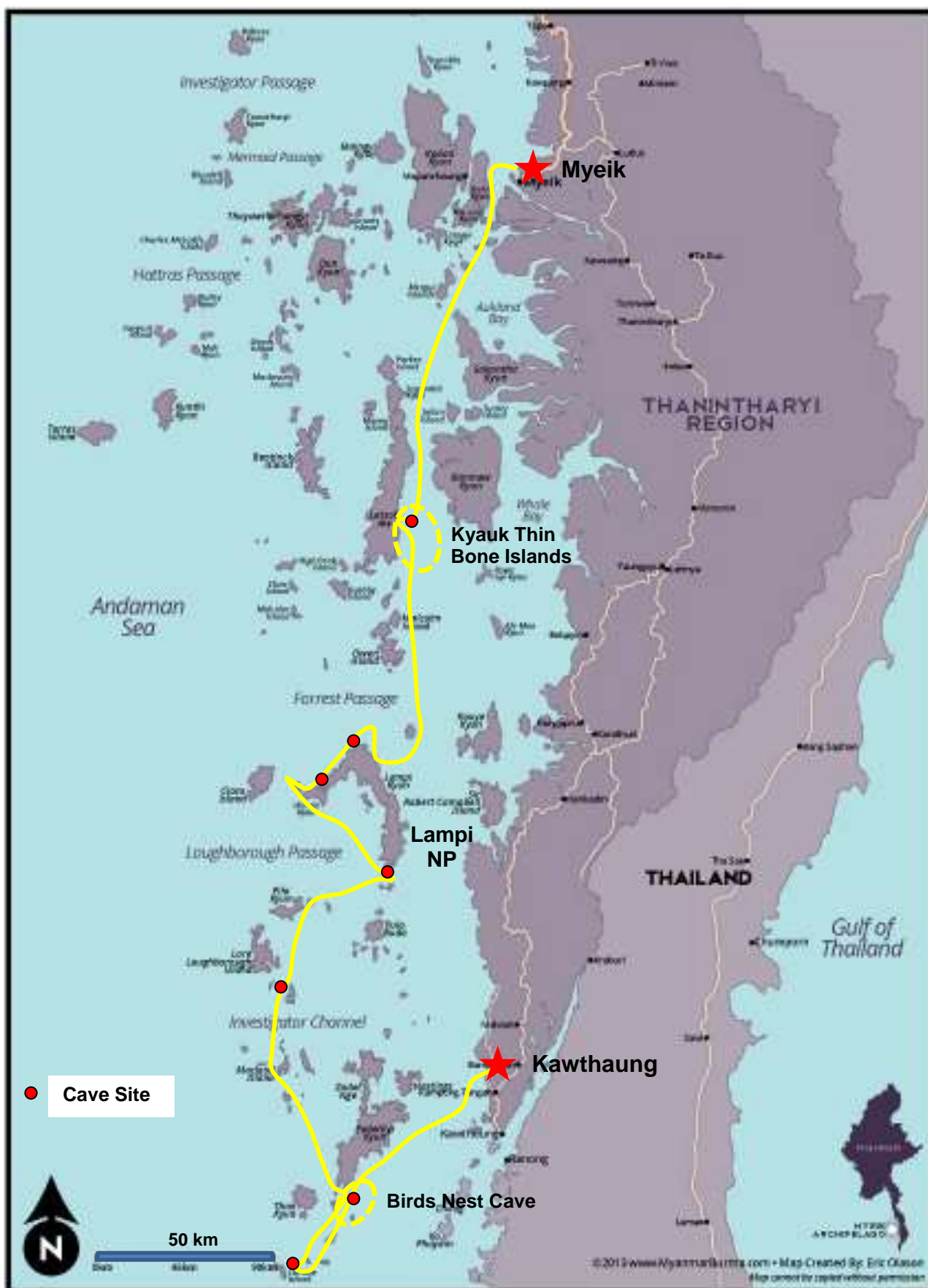


Monk cave at Parpant near Hopon (M. Boureau) ▼



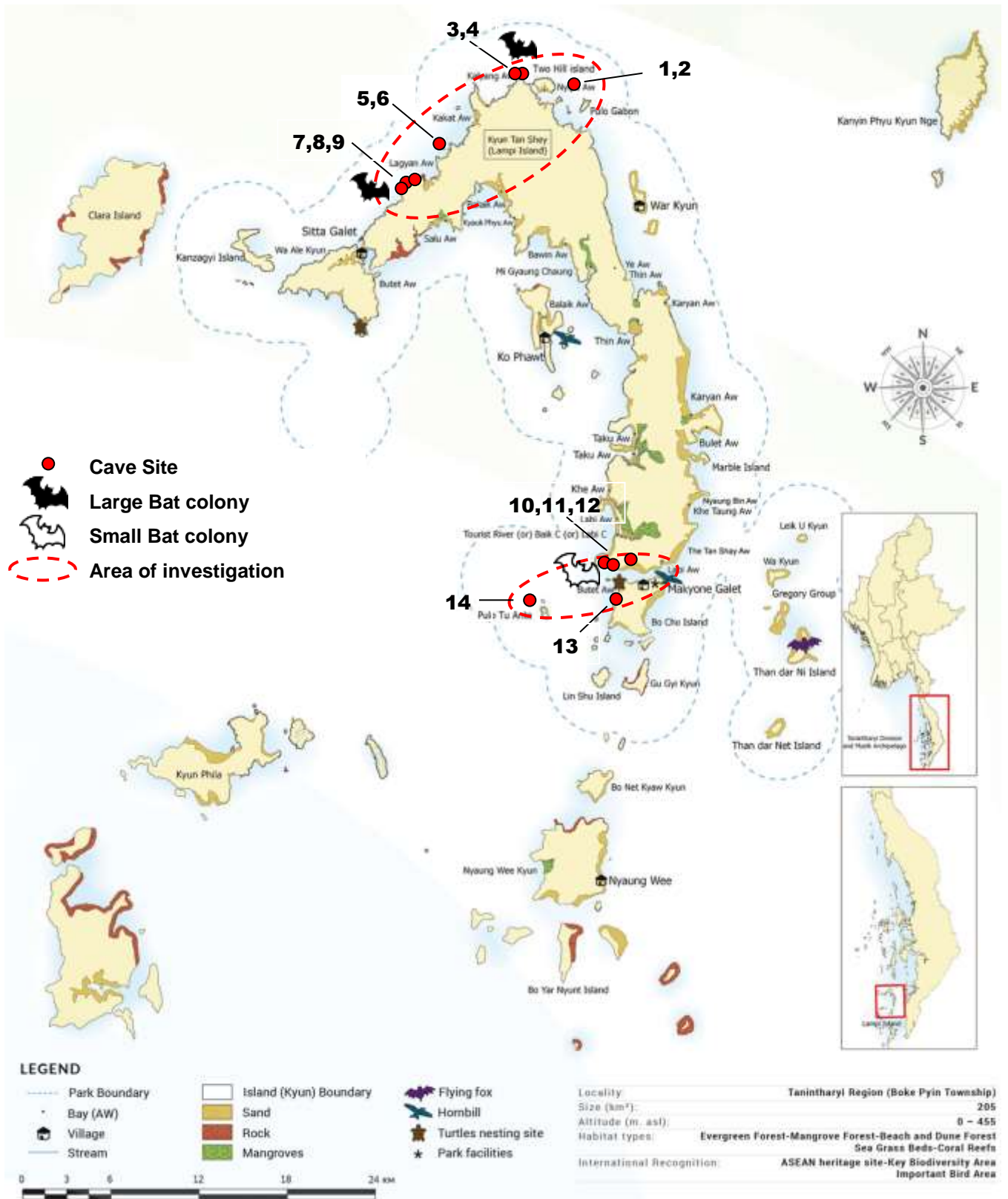
Overview islands in Myeik Archipelago

The traveled way is marked in yellow, lime stone islands are highlighted with circles



Caves at Lampi Marine Park

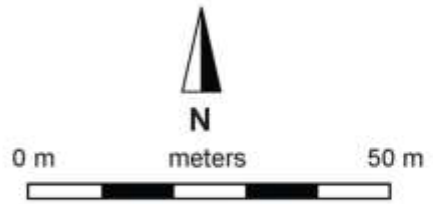
Map of Lampi with cave locations. The investigated areas are marked with red circles.



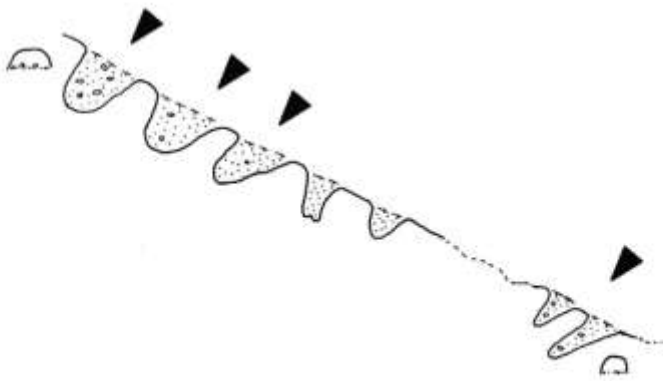
Cave Maps

Maps on the Northern Shore of Lampi island (© Myanmar Cave Documentation Project)

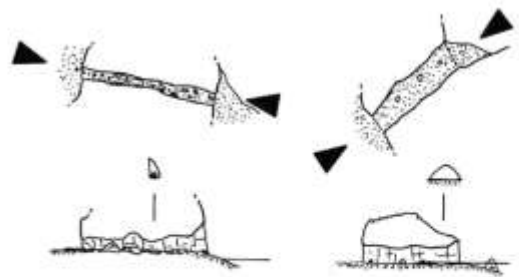
Lampi Island Caves
Myeik Archipelago / Tanintharyi State / Myanmar
Surveyed by Myanmar Cave Documentation Project
2.2.17 to UISv1 Grade 4-3-A
Drawing: J. Dreybrodt & R. Hapka



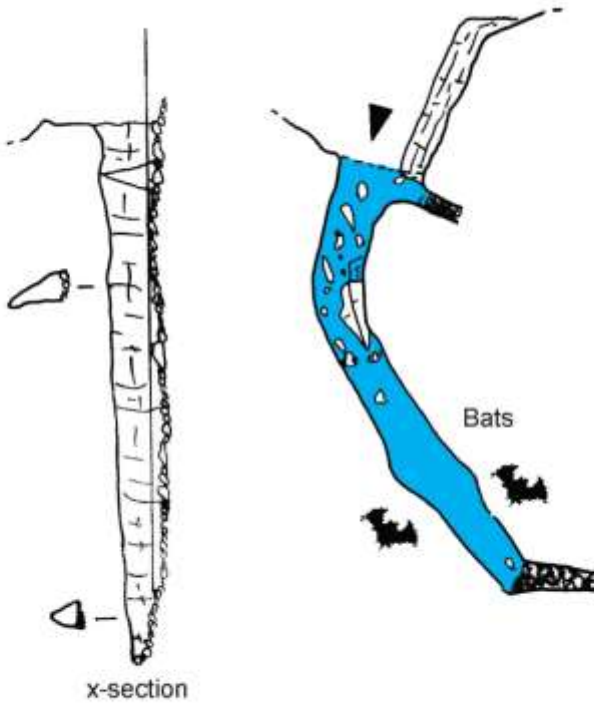
Sea Shore Caves 1
Length: 50 m



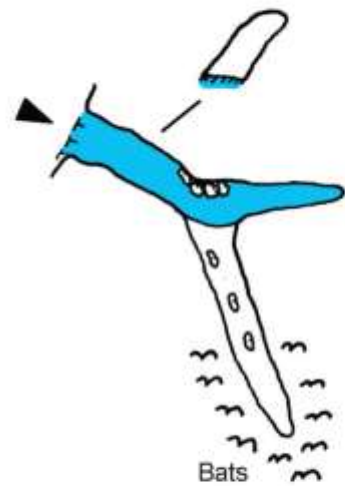
Sea Shore Caves 2
Length: 35 m

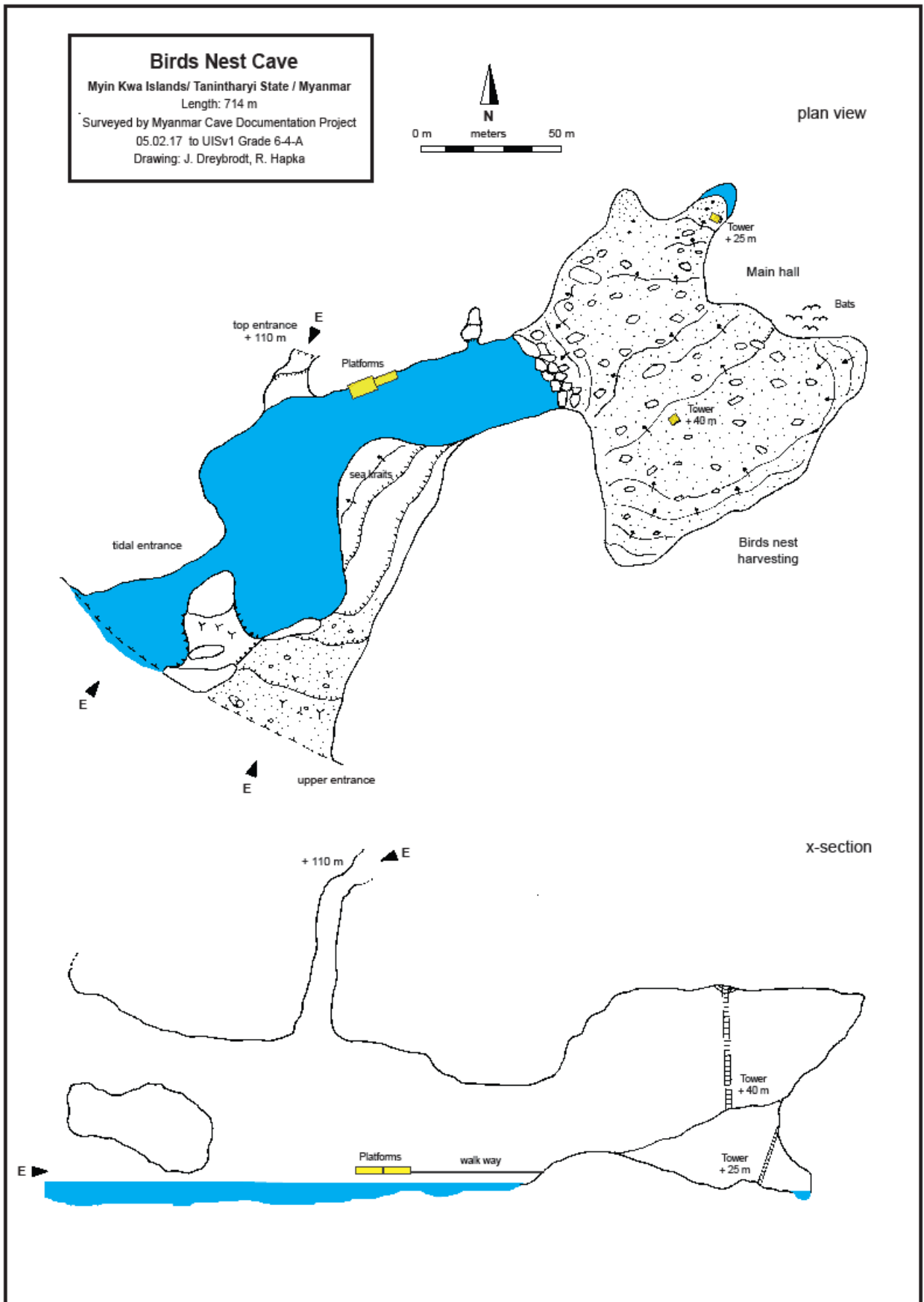


Bat Colony Cave 1
Length: 81 m



Bat Crack Cave
Length: 35 m





Pictures Limestone Islands

Arriving in the late afternoon at Kyauk Thin Bone islands (R. Hapka) ▼



The fossil cave in the lagoon (C. Densham) ▼



Tidal cave entrance to the lagoon (C. Densham) ▼



Karst towers and beach at our base in horse shoe bay (M. Boureau) ▼



Swimming into one of the lagoon tidal caves (J. Dreybrodt) ▼



Pictures Birds Nest Cave

The 40 m high bamboo tower in the main hall (C. Densham) ▼



Tidal entrance reached by boat ▼



Canoeing in the entrance hall with light from the tidal entrance (U. Etter) ▼



Technique lesson of a harvester (C. Densham) ▲

Pictures Lampi Marine National Park

Sea Shore caves at the Northern tip of Lampi (J. Dreybrodt) ▼



Entrance of Bat Colony 1 Cave (J. Dreybrodt) ▼



Cave near Maykone Galet (R Hapka) ▼



Island with maze cave of several entrances at northern Lampi, top entrance at tree (C. Densham) ▼



Fauna

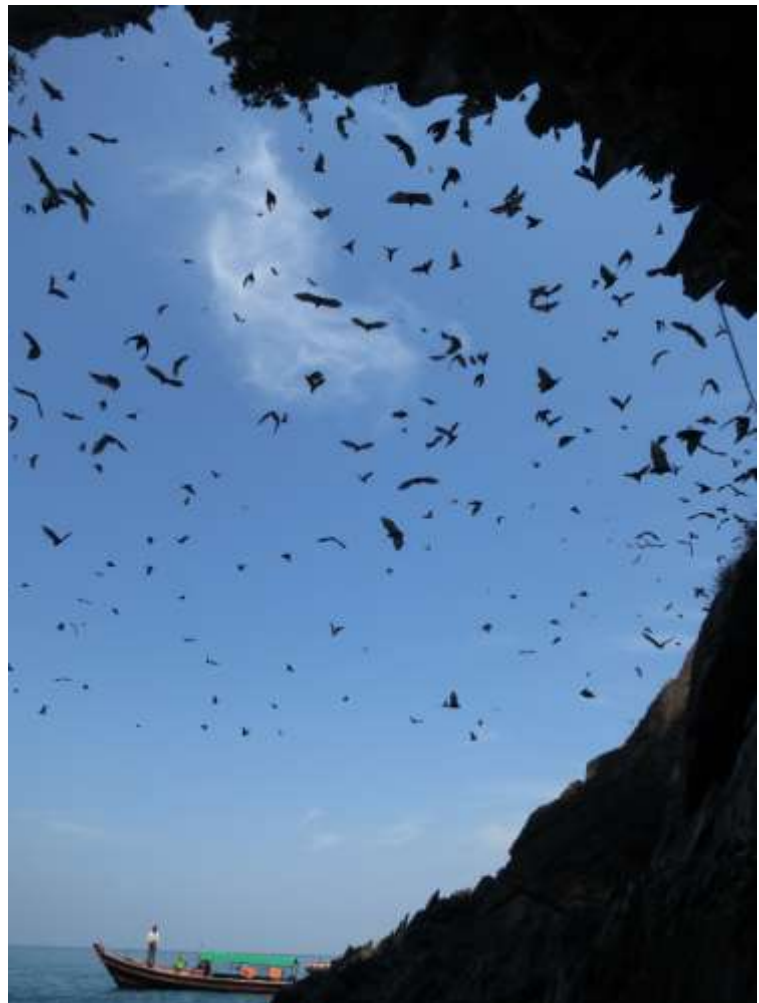
Bats at the ceiling near entrance (M. Boureau) ▼



Two sea kraits coiled into each other (U. Etter) ▼



Thousands of bats leaving Bat Colony Cave (J. Dreybrodt) ▼



False vampire Bats (U. Etter) ▲

Team 2017 at the dinner reception in the Swiss ambassador's residence in Yangon

Left to right: Chris Densham (UK), Joerg Dreybrodt (D/CH), H.E. Paul Seger (host), Roman Hapka (CH), Colette Seger, Urs Etter (CH) and Marc Boureau (F)



We are

Experienced cavers organized in national caving societies with a large speleological expertise.

We partner with authorities, NGO and research institutions.

Our Mission

We bring value to Myanmar and contribute to the Sustainable Development Goals (SDGs) by a systematic documentation of caves and karst for biodiversity research, conservation and ecotourism. 31 cavers of 12 nations contributed in 14 expeditions since the foundation in 2009.

Acknowledgement

We acknowledge the cooperation with the Department of Forestry, OIKOS, GiZ and FFI.

Receiving EuroSpeleo Project Status from the European Speleological Federation (FSE) is highly appreciated.



Contact

Dr. Joerg Dreybrodt (Coordinator)
Joerg.dreybrodt@myanmarcaves.com



www.myanmarcaves.com