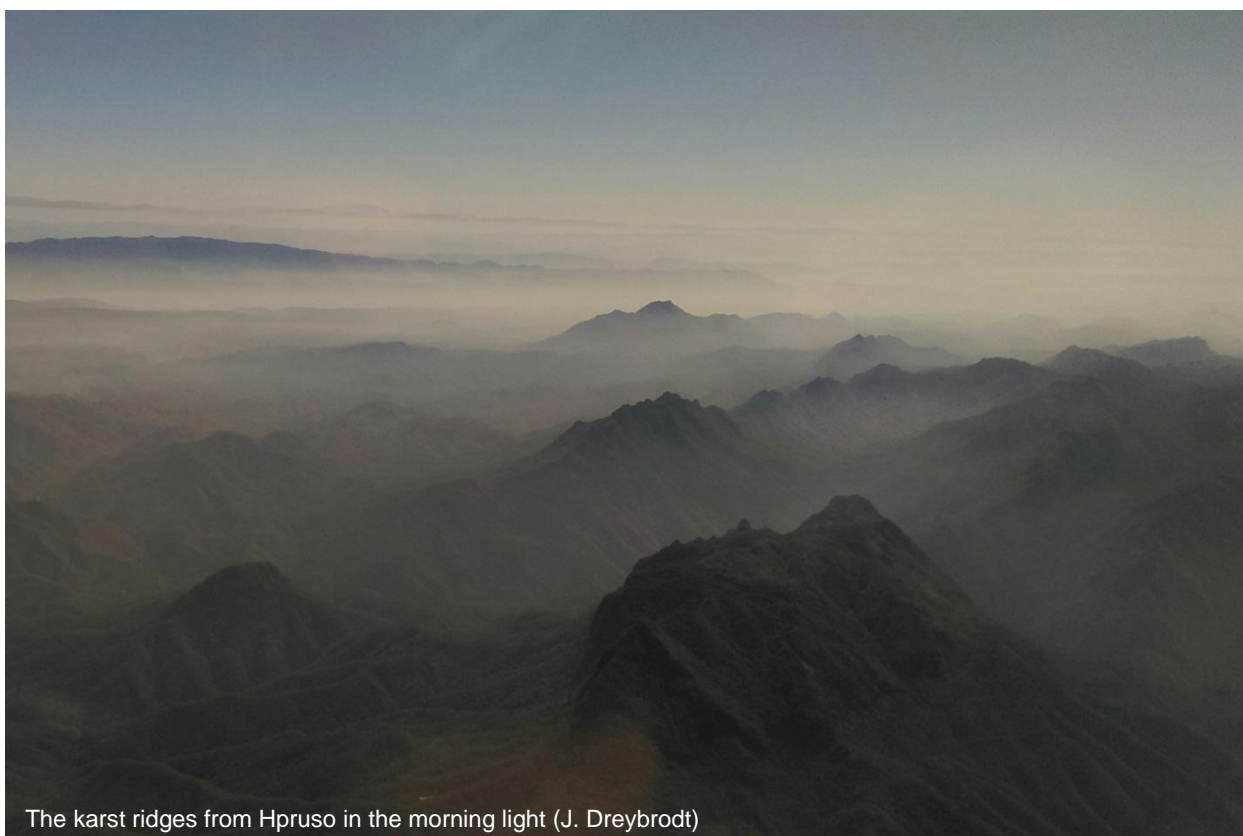


MYANMAR EXPEDITION SHAN PLATEAU-MYEIK



The karst ridges from Hpruso in the morning light (J. Dreybrodt)

2.2. –
23.2.19

Myanmar Cave Documentation Project 2019



EuroSpeleo
Project

The experiences during 2019 expedition confirmed that caves and karst obtain an increased attention in Myanmar. The Kayah State Governor and his cabinet received the team for a presentation. Friends and karst enthusiast hosted us in the field. We continued cave exploration as a joint International/Myanmar Team. Phruno Cave is slowly integrated into a nationwide tourism scheme. The changes are fast and call beyond documentation for a sustainable use of the ecosystem karst and its services.

The 2019 expedition documented about 6.5 km passage in 47 caves with many promising open leads especially in vertical caves. The report summarizes the results of three expedition weeks to Shan-, Kayah State and the Myeik Archipelago.



1. Overview

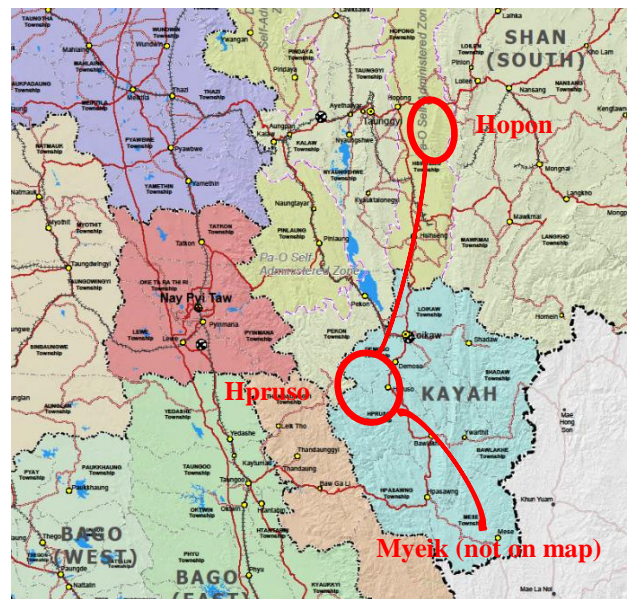
The 2019 Speleological Expedition targeted the areas of Hopon (Hopong) in Shan State, Hpruso karst in Kayah State and the Myeik archipelago in the very south of Myanmar. Each area was investigated for about one week with total eleven expedition members from Switzerland, Slovakia, France, Germany, UK, Australia and Myanmar. The highlights of the expedition are:

- Several new river caves in Kayah within the same valley as the major sinking stream into Phruno River Cave
- Deep active shafts going beyond -200 m towards a 600 m lower lying valley at Hoyar township in Hpruso (Kayah)
- Shore caves at the Myeik archipelago with a rich bat fauna of few 1000 different species, in addition very scenic color rock caves

The project enjoyed increased attention from local supporters and authorities. The state minister of Kayah invited for a presentation to his cabinet. Also a school opening was attended as guest of honor in a mountain village. There is an increased interest on our findings especially for ecotourism. The Phruno cave is now part of a re-creation area with planned 50 bungalows and trekking to a view point. Therefore the focus of the project is shifting beyond documentation to karst conservation and education. In this perspective contacts to Loikaw University were established.

The expedition concluded with the public event in Yangon “Meet the cave explorers”. It was a full house of friends, supporters and interested outdoor and nature conservation people. The attendance was from several cities in Myanmar. Attention was also gained from the MRTV4 channel who conducted an interview.

This is a great encouragement for future work and making the karst conservation of the by rapid industrialization highly endangered Shan plateau a high priority.



Expedition areas for 2019

2. Areas

The expedition started in Hopon for the first week, moved for the 2nd week to Kayah and ended the 3rd week in Myeik. Expedition members could join or leave each week in order to allow a larger number of participants.

Sam Phu village at Hopon

The Sam Phu village near Hopon was revisited in 2019. The survey of the multilevel system of Ho Hwe cave with a resurging river and large passages of 20 m width and 10 m height was continued. The cave ends in a sump with unstable blocks. The villagers claim that Blood Stone Shaft (Tham Leng Two Pay) at the 600 m higher ridge connects to Ho Hwe. The shaft was rigged in several days to a depth of -200 m. It continues with fresh air. Its exploration requires a separate rigging group due to the high effort.

Kayah – Hpruso

The project returned for the 5th time to Kayah State. Two local cavers from Yangon joined for this core week of the expedition. The team stayed for the first days in the village of Mawtido close to the entrance of Phruno Cave. Along the same valley several more river caves were surveyed, increasing the overall understanding of the water flows in the area. The Turbine cave is an active sink with a series of entrance pitches just few hundred meters before the main entrance of Phruno cave. The 2nd part of the expedition was spent at Hoyar district town. The sink of Kayar Yin was visited and the entrance pit of 25 m descended. The cave continues steep downwards in a climbable passage to a depth of -220 m. The passage continues beyond a duck with fresh air. The passage with fallen blocks and an active stream is difficult to explore and survey is slow. The 600 m lower spring at the valley bottom was found which drains the water from the same valley. It is a major project finding the connection and requires a separate vertical team for the next expedition.

Myeik

The Myeik archipelago was revisited in 2019 for continuing the documentation of caves, fauna and geology. The former expeditions in 2016 and 2017 aimed on an overview and traversed the entire archipelago. The presence of longer caves was confirmed in limestone karst and metamorphic rock. Surprisingly large bat colonies were found in the northern part of Lampi Marine National Park. The 2019 expedition focused on the so far not visited area in the north western part of the archipelago. Here maps for tourism development showed bird nest harvesting near Mali island which is typically performed in limestone caves (Oswald, 2016). In addition, based on a tourist trip of project members in 2018 caves are reported north of Dome island (Daung Kyun). The expedition hired a small local fisherman boat in order to approach close to the sea shore and in addition used an inflatable kayak. The final access is achieved by snorkeling into the entrances. The team was accompanied by an officer of the forestry department who acted as contact man to the local communities and arranging accommodation in Moken and fishermen villages. The limited time of 6 days only allowed investigations of the most promising areas and entrances



Snorkelling into cave entrances (Photo J. Dreybrodt)

3. Cave Fauna

Cave Fauna is an important part of the ecosystem karst with endemic species still unknown to science. The best example are 15 new species of cave geckos in Myanmar. They were recently found in a small area near Hopon as part of a collaboration from Fauna & Flora International (FFI) with Sierra University (USA). The publications and cave maps of the project were an important contribution in identifying such areas of high potential. Therefore cave fauna is systematically recorded and mentioned in descriptions for later investigation by



Cave Fish (J. Dreybrodt)

experts.

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

- Several white fish in Kayah
- Micro Snails in Kayah
- Large bat colonies in Myeik



Sorting of snails and inspection under the microscope
(J. Dreybrodt, U. Etter)



Bats in a sea shore cave at Myeik (J. Spies)

4. Results

The project visited 47 caves with a total length of 6.5 km. The table below shows name, location and length. The observed cave fauna is mentioned in the last column.

Shan

No	Date	Name	District	Province	Length	Depth	Prospects	Fauna
					(m)	(m)		
1	03/02/2019	Ae 5	Hopong	Shan South	40	30	finished	
2	04/02/2019	Ho Hwe Cave	Hopong	Shan South	400		finished	bats, Milipedede, Brachydesmus., Gastropod-Subulinidae-Micropeas sp., Spiders: Hetropoda sp., Unknown blind species, unknowHeteroptera. Cave crickets,
3	05/02/2019	Thae Gone Gyi Cave	Hopong	Shan South	150		finished	dead gastropoda shells, subulinidae Spriaxis sp. Cyclophorus sp.
4	06/02/2019	Htoe Ngote Resurgence	Hopong	Shan South	300		finished	milipede, gastropoda, Subulinidae Opeas sp.
5	06/02/2019	Sink of Htoe Ngote	Hopong	Shan South	150		going	
6	5.-7/02/19	Tham Leng Two Pay	Hopong	Shan South	300	200	going	Bind spider, milipeded, cave crickets, unknown arachnid. Gastropod-Subulinidae, Micropeas sp.

6 caves with 1.4 km passage are surveyed. Tham Leng Two Pay reaches -200 m depth and continues wide open with fresh air. Ho Hwe cave ends after 1.5 km in a sump and is now the new 10th longest cave of Myanmar.

Kayah

No	Date	Name	District	Province	Length	Depth	Prospects	Fauna
					(m)	(m)		
1	09/02/2019	Hto Ei Hso I	Hpruso	Kayah	30		finished	crickets
2	09/02/2019	Hto Ei Hso II	Hpruso	Kayah	25		finished	crickets
3	09&11&12/02/2019	Turbine Cave	Hpruso	Kayah	368	-80	finished	blind 'fish, spider, few bat, tadpoles of genus Amolops and Megophrys
4	10/02/2019	Htee Dee Ku Cave	Hpruso	Kayah	60	-40	finished	
5	10/02/2019	Sinkhole	Hpruso	Kayah	30	-15	finished	
6	10/02/2019	Bo Pha Gu	Hpruso	Kayah	1300		+- finished	milipedede, heteropoda, blind spider, Tadpoles, 2 sp., frog
7	11/02/2019	Lokalay Gu	Demoso	Kayah	780	90	going	bind fish:Nemacheilidae. Cf. Mustura new. sp., tadpoles , one Megophrys, 2 sp., large crab, small white crustacean
8	13/02/2019	Spring Cave	Hpruso	Kayah	150		finished	large 'centipedes, Ostracoda on tree roots, falen surface snails Cyclophorus sp. Plectopylis sp, blid fishes with black tail
9	14/02/2019	Kyar Yin	Hpruso	Kayah	608	-225	going	fishes, very few bats
10	14/02/2019	Plo The Gu Sink	Hpruso	Kayah	170		going	Blind fishes, tadpoles, surface fishes
11	14/02/2019	Plo The Gu Resurgence	Hpruso	Kayah	70		going	tadpoles
12	14/02/2019	Kosu Gu Entrance Main	Hpruso	Kayah	80		going	
19	14/02/2019	Kosu Gu 2nd Entrance	Hpruso	Kayah			going	

19 caves with 3.7 km passage are surveyed. The cave Kayar Yin with an active stream continues beyond -200 m depth in open passage

Myeik

No	Date	Name	Hill / Island	District	Length (m)	Fauna with size of colonies	Rock
1	18/02/2019	Camp 2 Cave	Mali Bird Nest Island	Myeik	440	swiftlets	limestone
2	18/02/2019	Laguna Cave	Mali Bird Nest Island	Myeik	90	swiftlets	limestone
3	18/02/2019	Main Camp Cave	Mali Bird Nest Island	Myeik	255	sea kraits, swiftlets	limestone
4	18/02/2019	Main Snake Cave	Mali Bird Nest Island	Myeik	50	sea kraits, swiftlets	limestone
5	19/02/2019	Thaya 1	Thayawthadangyi Is.	Kawthoung	15	none	metamorphic
6	19/02/2019	Thaya 2	Thayawthadangyi Is.	Kawthoung	15	none	metamorphic
7	19/02/2019	Thaya 3	Thayawthadangyi Is.	Kawthoung	20	none	metamorphic
8	19/02/2019	Bat	Thayawthadangyi Is.	Kawthoung	30	bats (1000)	metamorphic
9	19/02/2019	Middle Chicken Cave	Thayawthadangyi Is.	Kawthoung	65	bats (100)	metamorphic
10	19/02/2019	Chicken Feet Cave	Thayawthadangyi Is.	Kawthoung	130	bats (5000), different	metamorphic
11	20/02/2019	Three 10 m Caves	Drakes Island	Kawthoung	30	bats (100)	metamorphic
12	20/02/2019	Cave	Drakes Island	Kawthoung	15	none	metamorphic
13	20/02/2019	Tunnel Cave	Drakes Island	Kawthoung	60	bats (100)	metamorphic
14	20/02/2019	Balcony Cave	Drakes Island	Kawthoung	20	none	metamorphic
15	20/02/2019	Bat-Swiftlet Cave	Drakes Island	Kawthoung	25	bats (50), swifts (50)	metamorphic
16	20/02/2019	Double Eye Cave I	Drakes Island	Kawthoung	45	bats (100)	metamorphic
17	20/02/2019	Double Eye Cave II	Drakes Island	Kawthoung	75	bats (100)	metamorphic
18	21/02/2019	Arch Cave	Dome Island	Kawthoung	20	none	metamorphic
19	21/02/2019	Tube Cave	Parker Island	Kawthoung	15	none	metamorphic
20	21/02/2019	Cave	Parker Island	Kawthoung	30	none	metamorphic
21	21/02/2019	Shelter Cave	Parker Island	Kawthoung	20	none	metamorphic
22	21/02/2019	Side Gallery Cave	Parker Island	Kawthoung	50	bats (50)	metamorphic
					1515		

The project documented 22 caves with a length of 1.5 km in 2019. Cave fauna and rock types are highlighted in the last columns.

5. Summary and Outlook

The overall understanding of the Karst of Myanmar could be further increased. From this and former explorations an initial hydrological concept is derived that allows a first understanding of the origin of karst water and its flow underground. Identifying areas for protection is now of high importance to warrant long term safe supply of drinking water, because fast urban development and industrialization impact groundwater by unintended contamination. The biodiversity in the karst of Myanmar is high but hardly investigated. Karst areas possess also a large potential for ecotourism such as familiar examples in Vietnam and China. The scenic Phruno River Cave in Kayah State is exhibiting now slow local driven development as nationwide ecotourism sites. Myanmar's karst requires further intense research dealing with its hydrology and survey of its fauna in order to conserve it. This requires support and involvement of regional governments, international karst research institutions, and local communities.

6. Acknowledgement

Aung Thein and his family for inviting and hosting us in his house at Sam Phu village.

Mr. Michael and his family for hosting us in Hpruso, arranging local guides and showing us his amazing karst.

Ko Htay Aung (Theo) our guide in Kayah for his excellent arrangements and always being attentive.

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

Ngwe Lwin (Fauna & Flora International) for arranging permission with the Forest Department (MONREC)

U Kyi Oo, Park Warden from Lampi Marine Park (Forest Department) for guiding and arranging overnight stays.

Aung Ko Htwe (Tamk), our valuable friend from Myeik for translating and exploring with us together

Done Nyaung Mai village for the very warm welcome. The teacher hosted us in the kinder garden. Families honored us by invitations to Buddhist and Christian ceremonies.

7. Sponsors

The European Union of Speleology (FSE) for granting EuroSpeleo Project Status.

Korda's from Spain for sponsoring 200 m of Speleo rope.



8. Expedition Members 2019

International (CH, F, UK, D, SVK, AU)

Joerg Dreybrodt (main co-ordinator), Urs Etter (co-expedition leader), Florian Hof, Martin Foakes, John Spies. Nico Boisard, Jozef Grego & Mario Olsavsky

Yangon Cavers

Nyi Nyi Aung (main co-ordinator), Aung Khaing Myint, Zay Yar Min

Myeik Cavers

Tamk Aungkohtwe



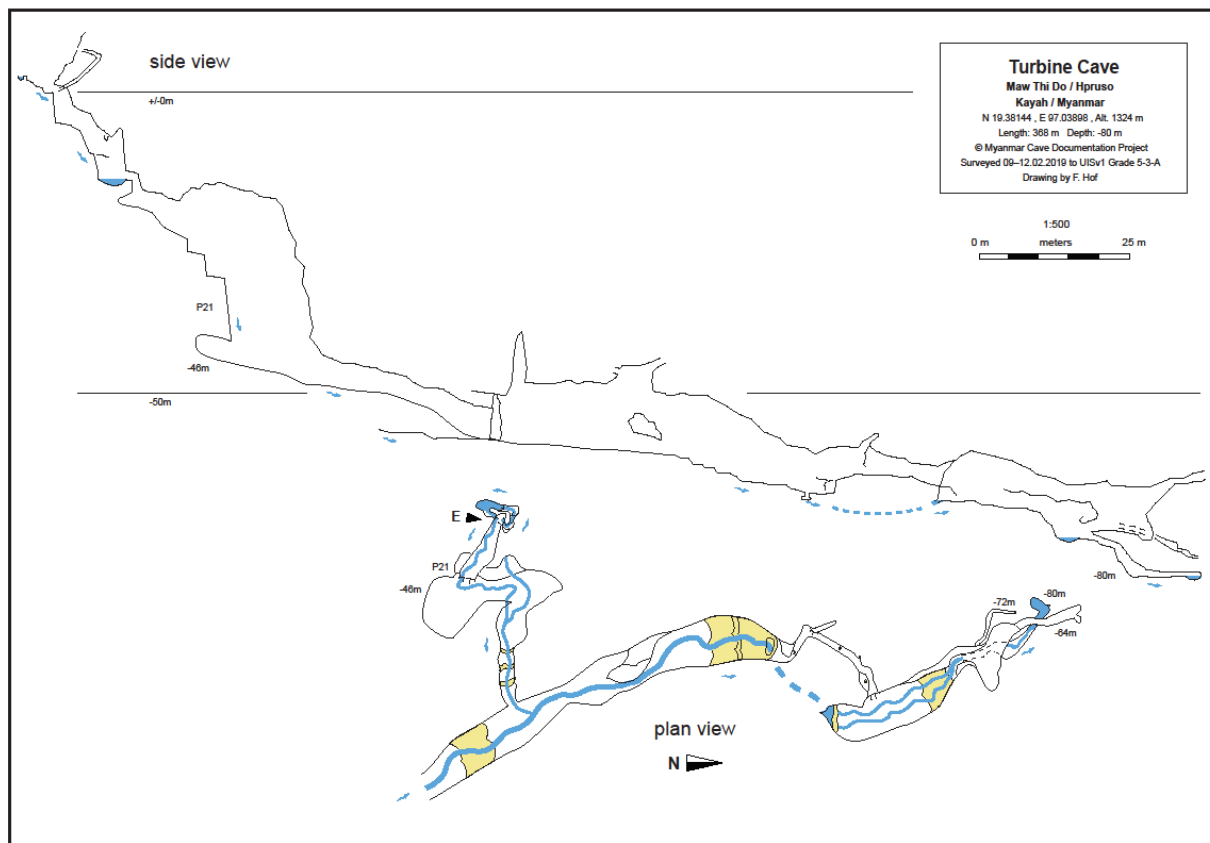
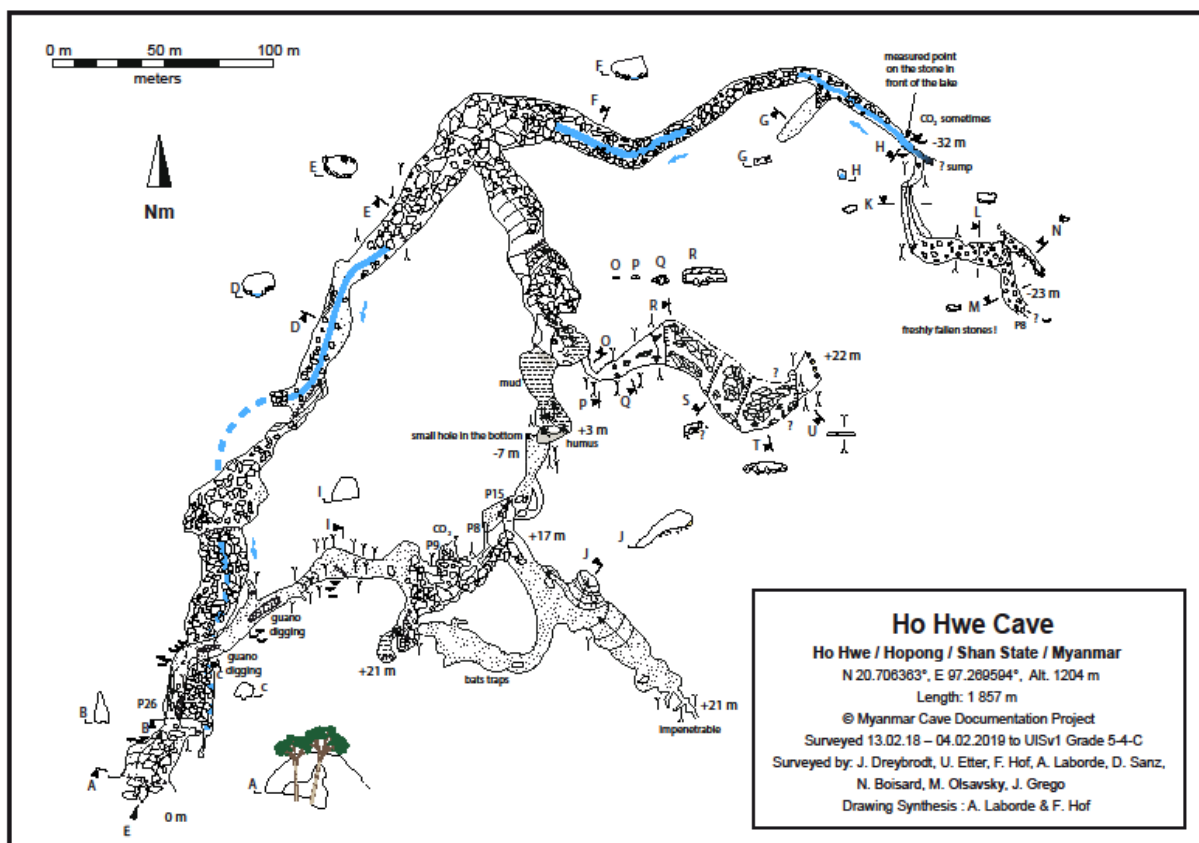
The joint Kayah expedition team with our hosts and friends.

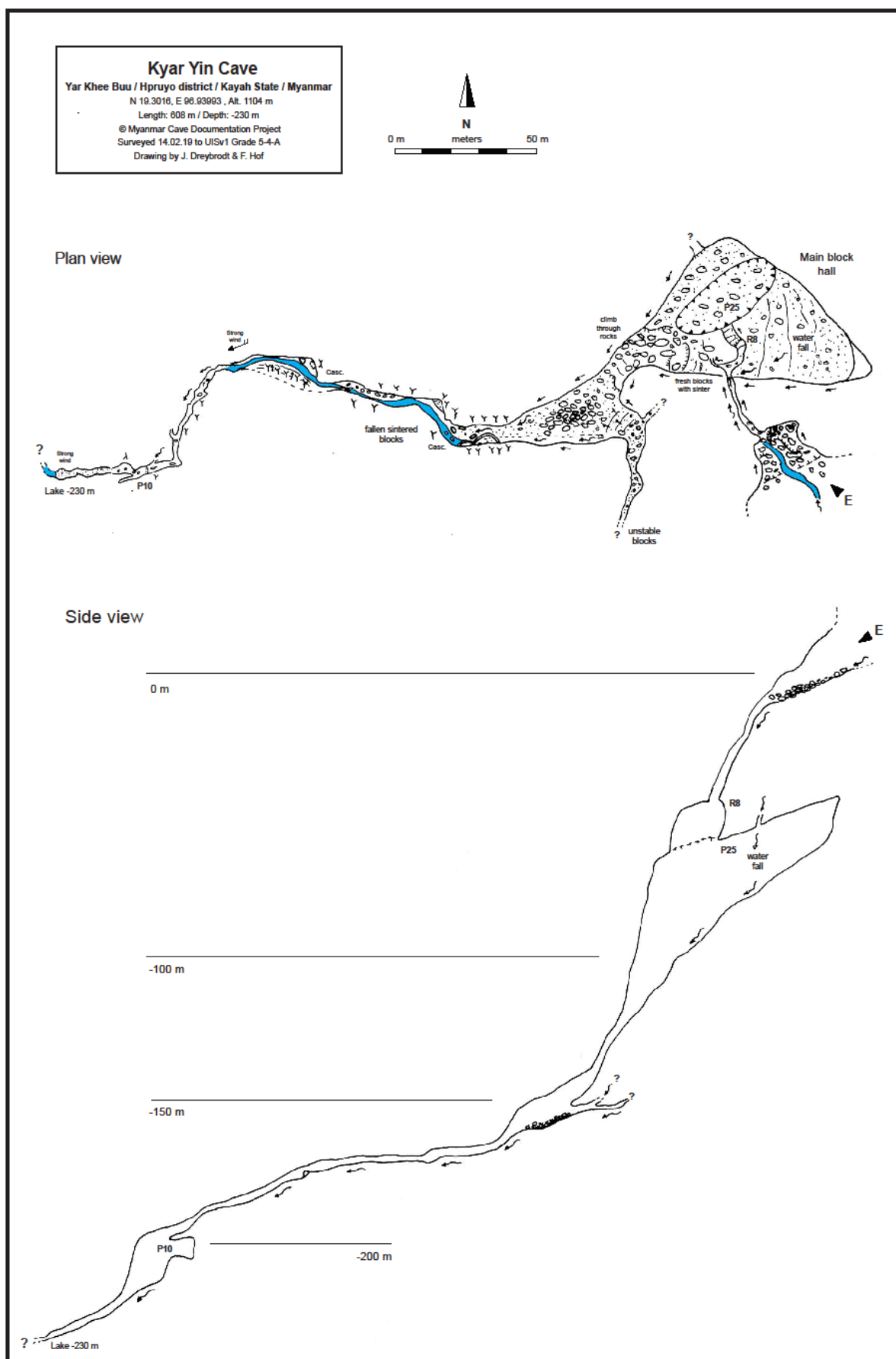


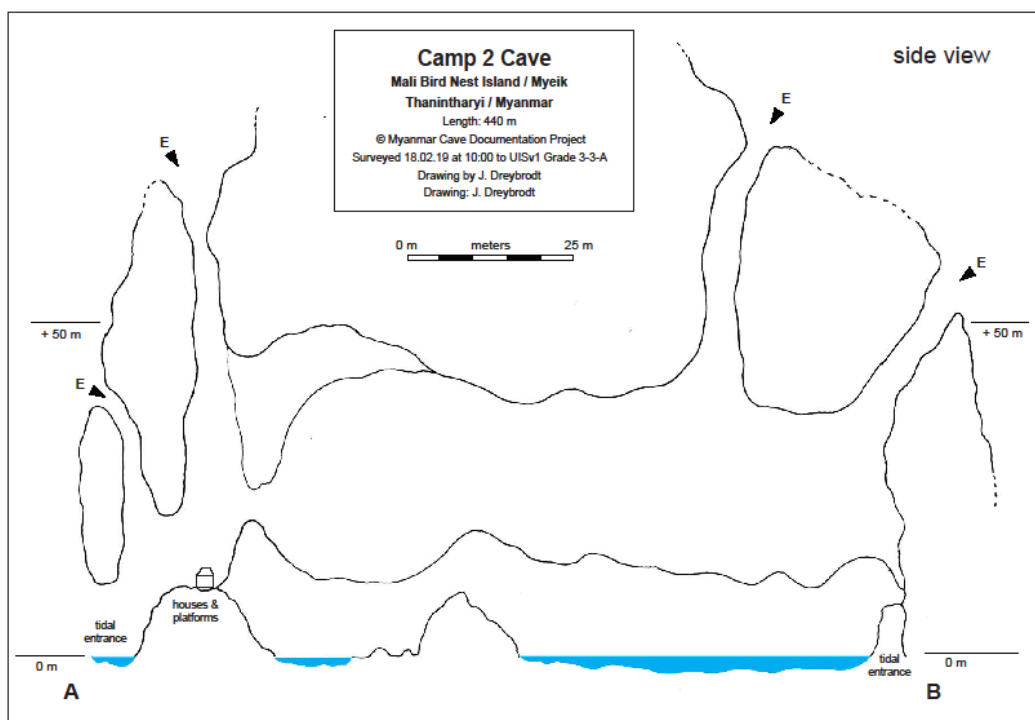
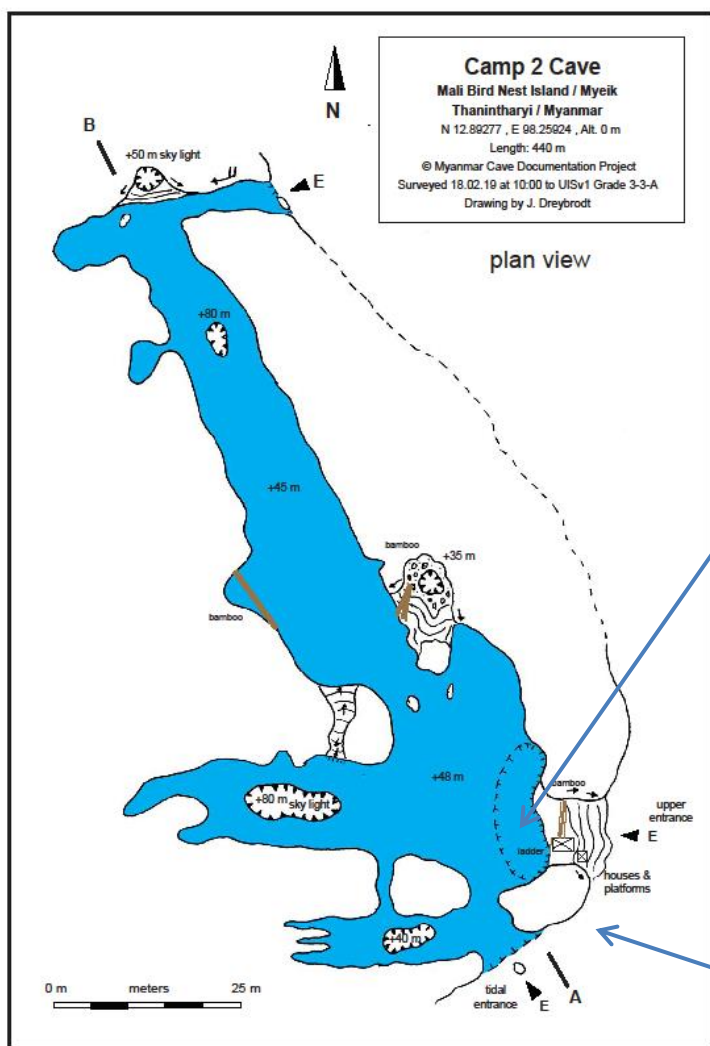
The Karst Community of Myanmar at the public event in Yangon.

9. Cave Maps

Maps of Ho Hwe Cave and Turbine Cave (© Myanmar Cave Documentation Project)







10. Pictures Shan States

Survey of Ho Hwe Cave (Hopon) (U. Etter) ▼



Main chamber of Sandhill Cave (U. Etter)



11. Pictures Kayah

View from Elephant mountain view point over the karst landscape of Hpruso (J. Dreybrodt)



Sinterpool in Turbine Cave (U. Etter)



12. Pictures Myeik Bird Nest Caves

Camp 2 Cave at Mali birds nest island with the lower tidal and upper entrance (J. Spies)



A view from the entrance chamber of Camp 2 Cave along the main passage with bamboo constructions for bird nest harvesting (J. Spies)

The Team 2019 says “Thank you” to all dear friends and supporters. We are looking forward further exploring and documenting with you Myanmar’s beautiful karst.



The team at Myeik in traditional Longyi – a present of Thet Painghtun from the Mandalay cavers (Photo J. Spies)

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. 51 cavers of 13 nations contributed in 16 expeditions since the foundation in 2009.

Acknowledgement

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



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