Report Langkawi

Malaysia-Swiss Caving Expedition 2025

Société Suisse de Spéléologie
Societad Svizra da Speleologia
Società Svizzera di Speleologia
Schweizerische Gesellschaft für

Executive Summary

The expedition cooperation between the Department of Geology, Universiti Malaya (UM), Malaysian Cave and Karst Conservancy (MCKC) and the Swiss Speleological Society (SGH) documented the caves in Langkawi from 08.- 14. February 2025. In total 2.6 km of passage in 15 caves was surveyed over 5 days. The expedition trained five team members in electronic cave survey with DistoX and Topodroid. The three longest caves of Langkawi are Gua Pinang (679m), Gua Wat Tham Siam (506m) and Gua Pasir Dagang (406m). The team plans to return in 2026 to continue the documentation.

Title: Malaysia-Swiss Caving Expedition 2025 – Report Langkawi
Author: Joerg Dreybrodt , Source: https://www.researchgate.net/profile/Joerg-Dreybrodt

Contents

1. Introduction

The caves of Peninsular Malaysia have been documented by international caving expeditions from 1998 until 2012. The best overview of caves is currently published in the registry of the Berliner Hoehlenkundliche Berichte. Nevertheless, it is in an initial state with many coordinates and cave descriptions missing. Cave maps exist only from selected caves of a few areas. This is surprising since the landscape is diverse from tropical islands to isolated karst hills and national forest karst parks.

The Langkawi group of 104 islands is located some 30 km off the coast of Perlis and 112 km north of Penang. It has been protected as Langkawi UNESCO Global Geopark since 2007. It is a tropical island with many caves used for geo-tourism. However there are no maps for the caves (except for Gua Kelawar and Gua Pinang), despite many being accessible and are marked on the Geopark map for geotourism.

The expedition cooperation between the Department of Geology, Universiti Malaya (UM), Malaysian Cave and Karst Conservancy (MCKC) and the Swiss Speleological Society (SGH) documented the caves in Langkawi from 08.- 14. February 2025. The objective is the contribution of detailed maps of the limestone caves of the Kilim Geoforest Park and Dayang Bunting Marble Geoforest Park to the Geopark Inventory. It is combined with hands-on training in electronic cave survey, karst morphology and paleontological observations. This report summarizes the results. It contains all the surveyed caves with maps.

The expedition visited beyond Langkawi the areas Perlis, Baling and Merapoh. Individual reports are published for each location. An overview of the karst on the peninsular and the targeted areas is given in Map 1.

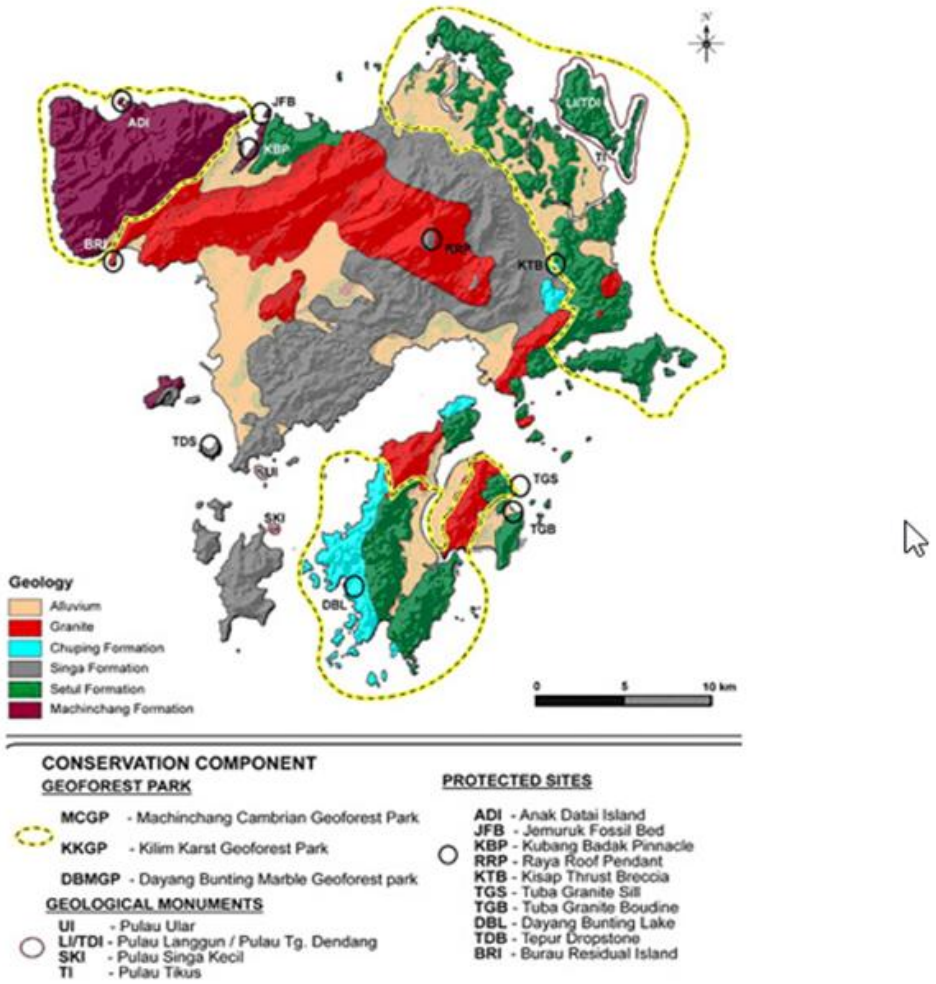
Map 1: Peninsular Malaysia with karst areas in red. The green stars mark the four expedition areas of Langkawi, Perlis, Baling and Merapoh.

2. Langkawi Cave Areas

The Langkawi group has some of the best and most interesting exposures of Palaeozoic rocks in Malaysia ranging in age from Cambrian to Permian. These sedimentary formations consisting of both clastics and carbonates had been deposited within differing palaeoenvironments and under different palaeoclimatic conditions to provide a highly variable set of rocks. These sedimentary rocks had been intruded by younger granites that produced interesting metamorphic imprints at their contacts. These rocks had also undergone at least two phases of tectonic deformation that created interesting geological structures for study.

The Stratigraphy of Langkawi

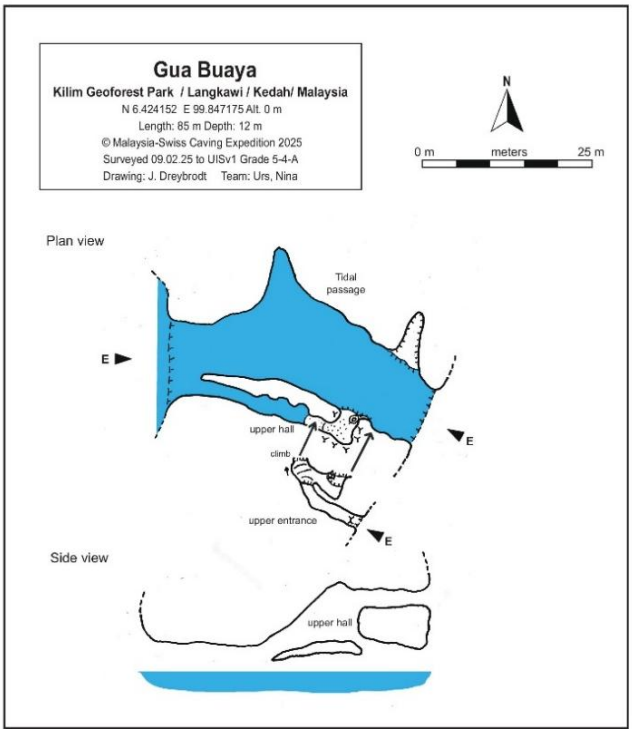
The Palaeozoic sedimentary rocks of Langkawi are divided into four formations, from oldest to youngest: Machinchang, Setul, Singa, and Chuping. Their distribution and stratigraphic relationships are shown in Fig. 1. These rocks are mostly shallow marine shelf deposits, forming part of a belt that stretches from South China through Burma, Thailand, northwest Peninsular Malaysia, and north Sumatra. Most caves on the island are found in the limestone of the Setul and Chuping formations, mainly in the eastern and southern areas.



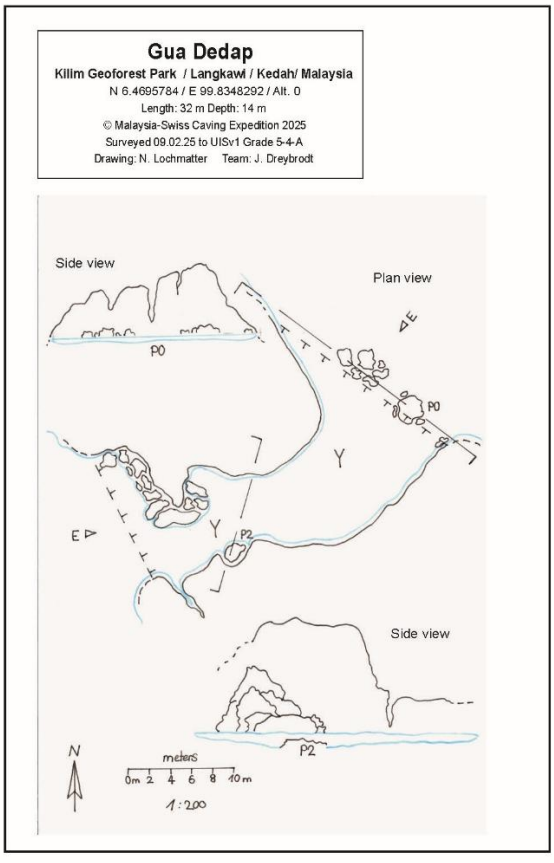
Map 2: The geology of Langkawi. The Setul and Chuping formation consist of limestone with the caves being mostly located in the eastern and southern part of the island

2.1. Caves Kilim Geoforest Park

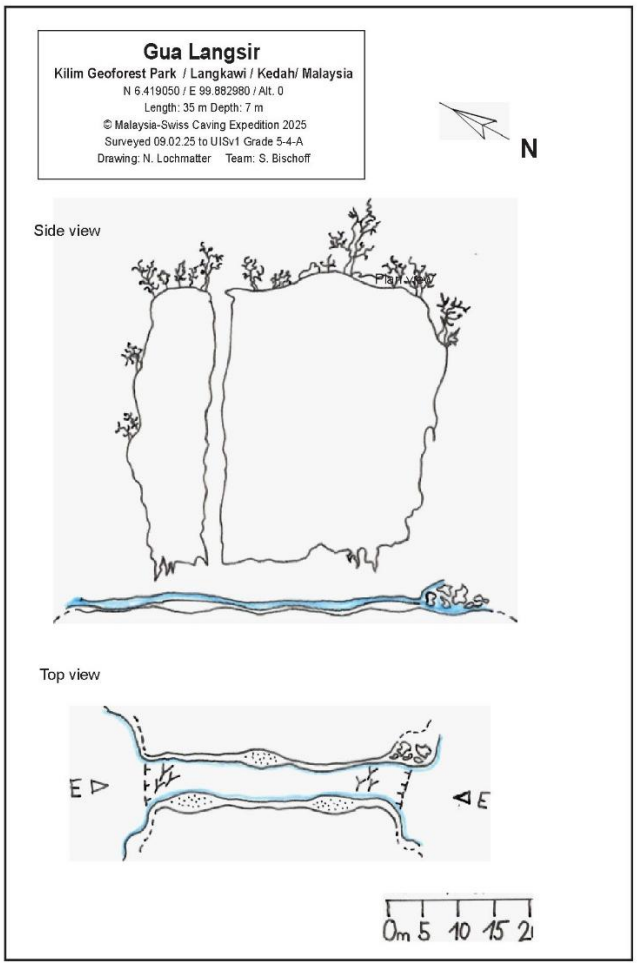
2.1.1. Gua Buaya



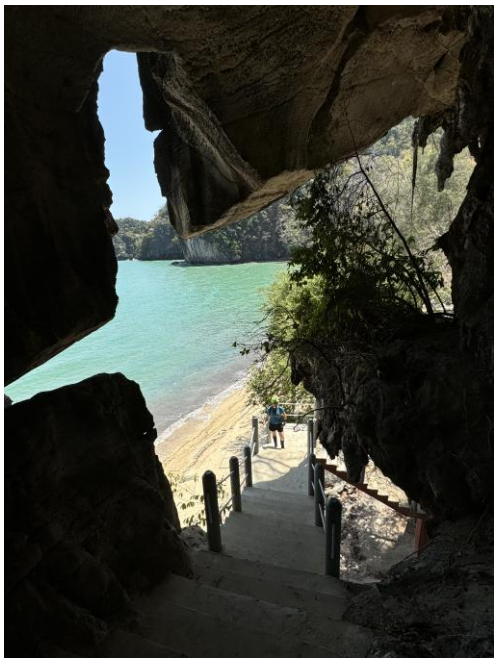
2.1.2. Gua Dedap



2.1.3. Gua Langsir



2.1.4. Gua Cherita



Gua Cherita

Kilim Geoforest Park / Langkawi

Kedah/ Malaysia

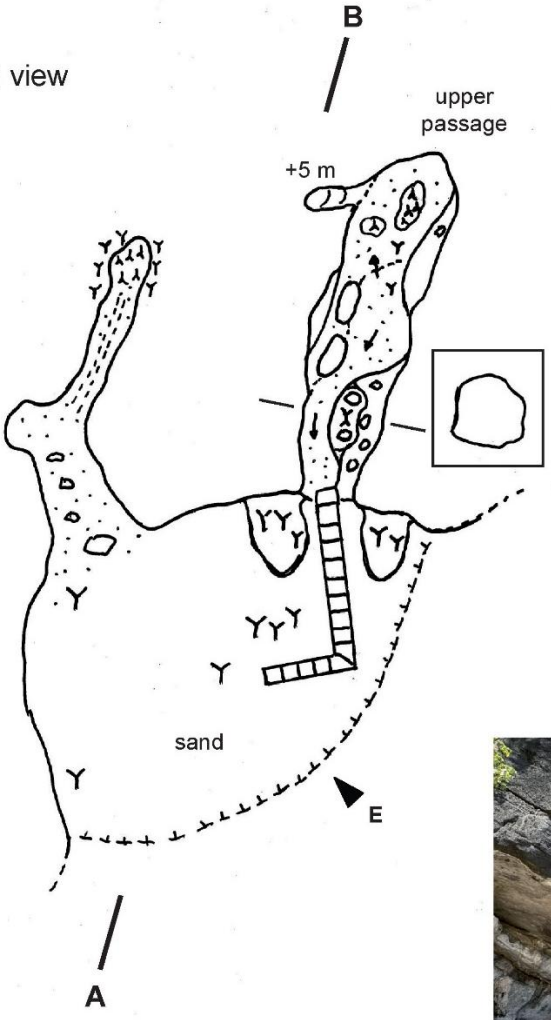
N 6.467040 E 99.846870 Alt. 5 m

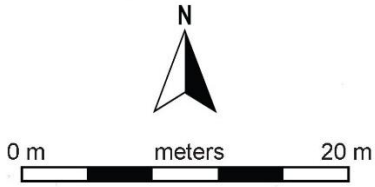
Length: 83 m

Surveyed 09.02.25 to UISv1 Grade 5-4-A

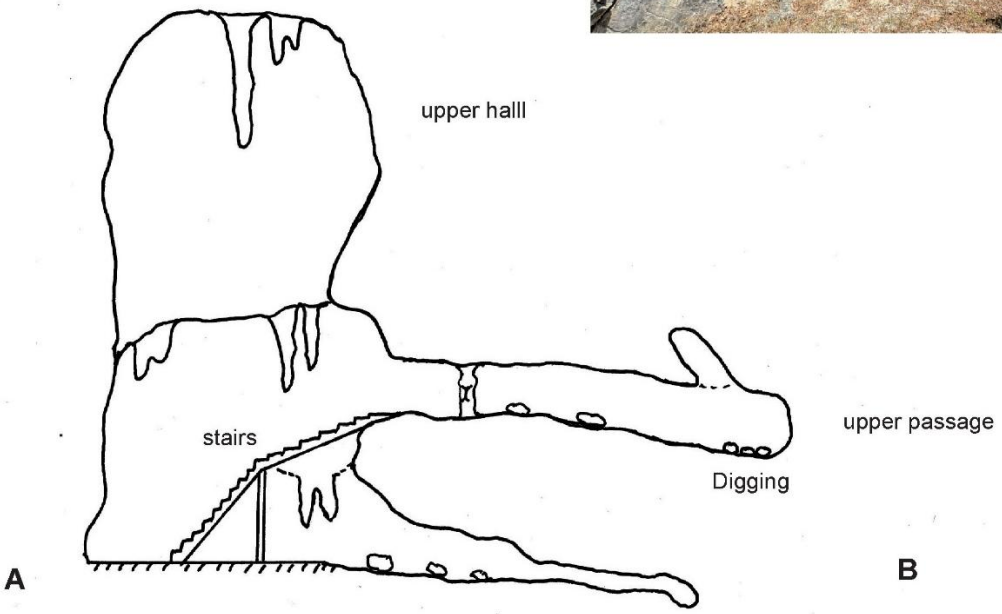
Drawing: L.K. Lee, N. Lochmatter, J. Dreybrodt

Plan view

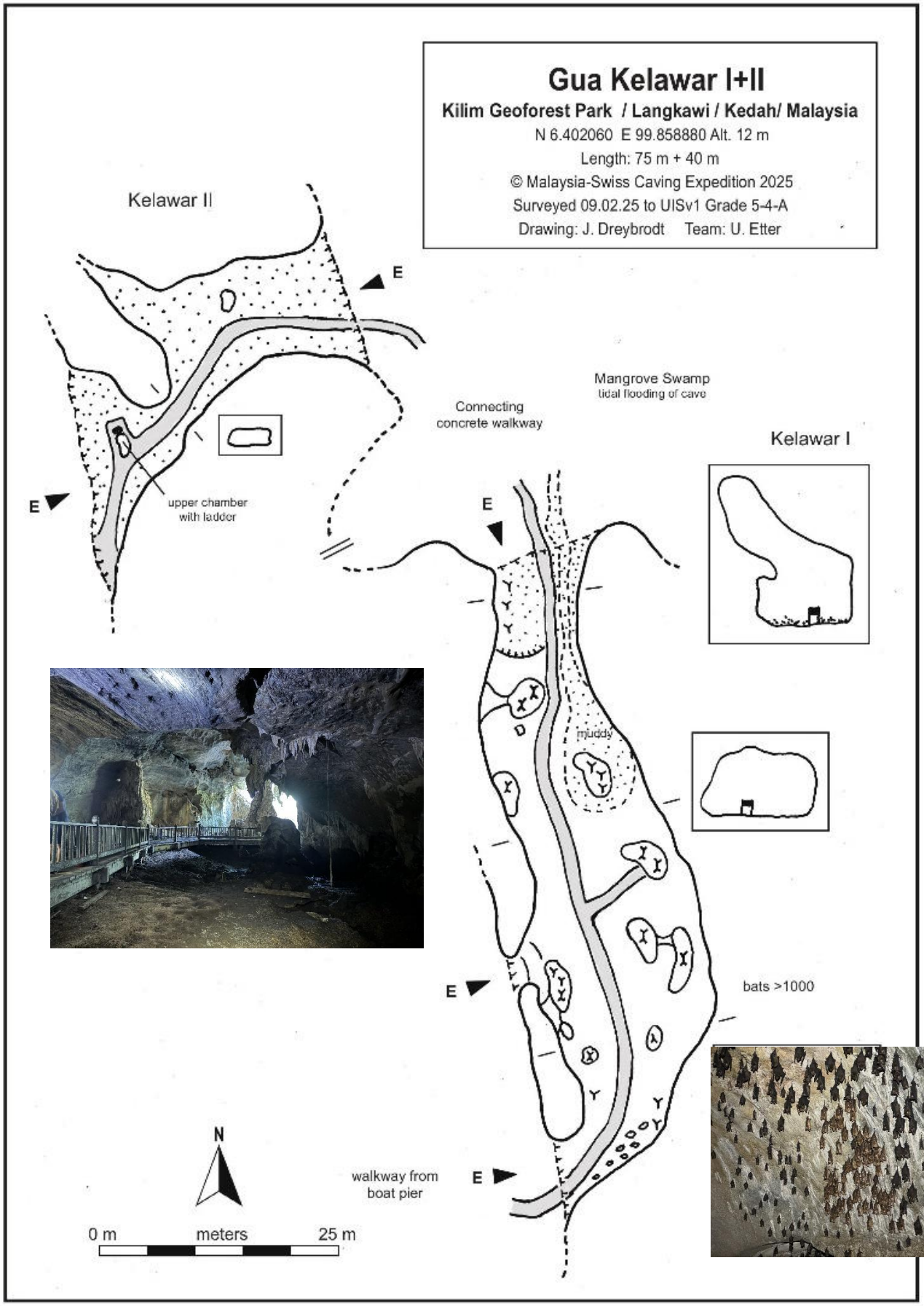




Side view

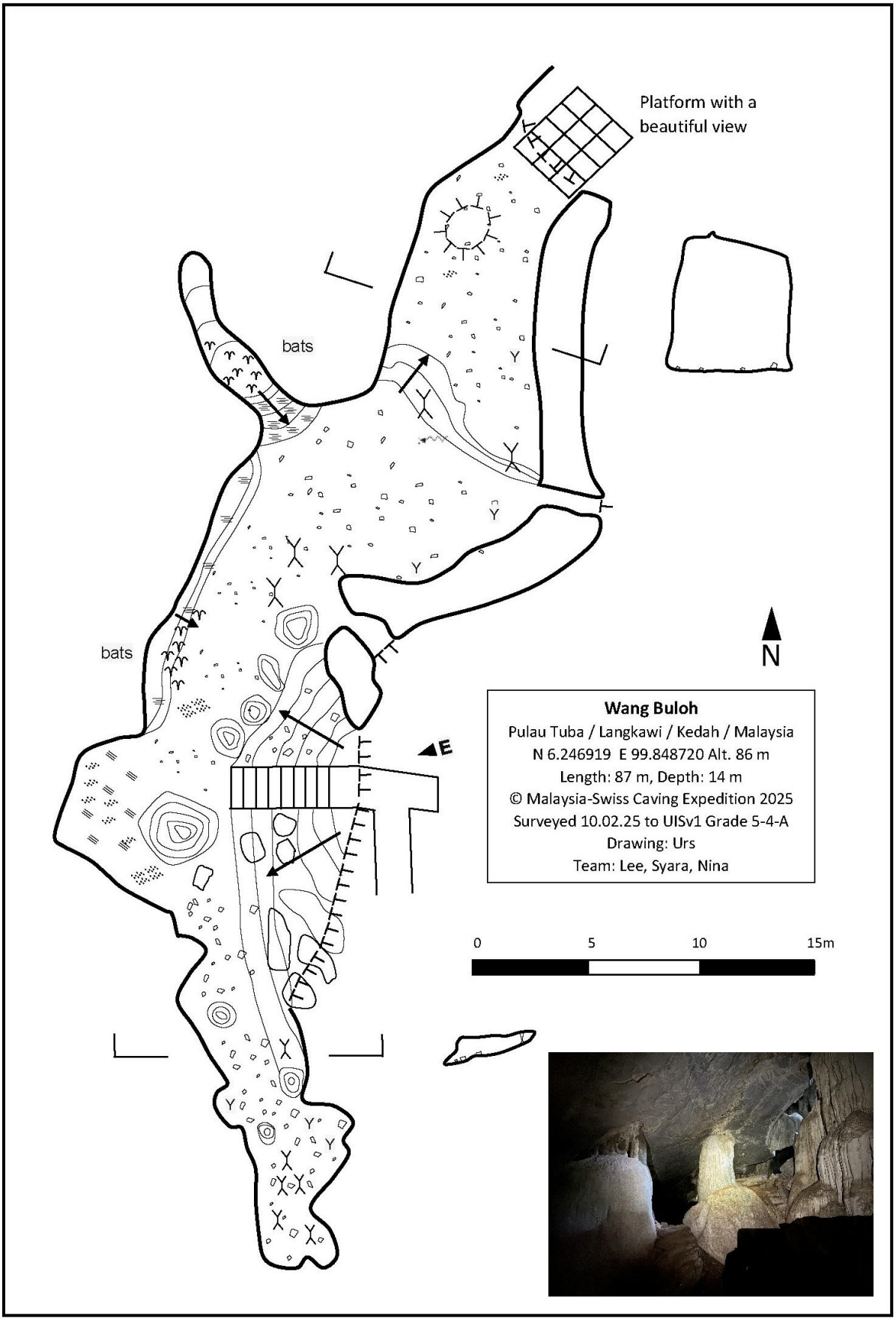


2.1.5. Gua Kelawar I + II

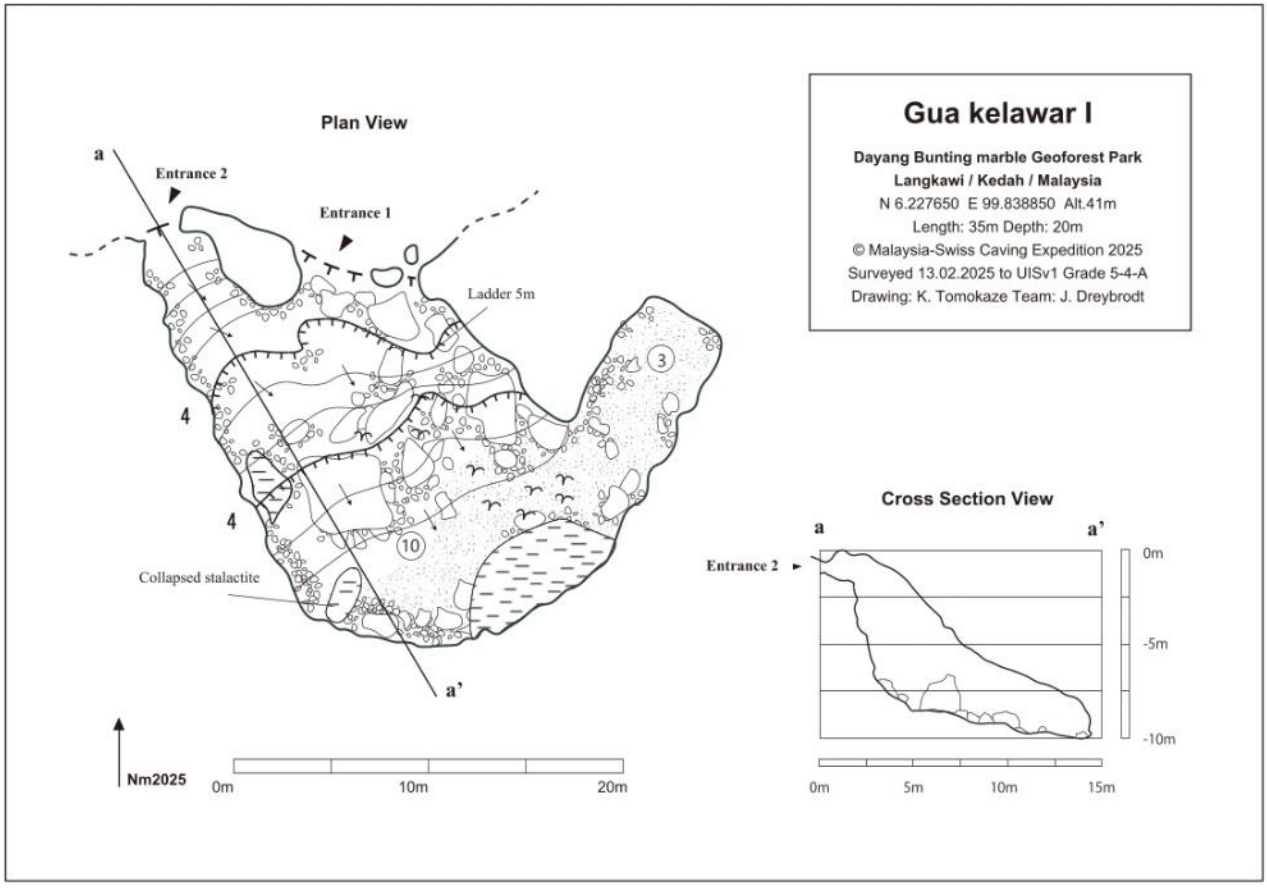


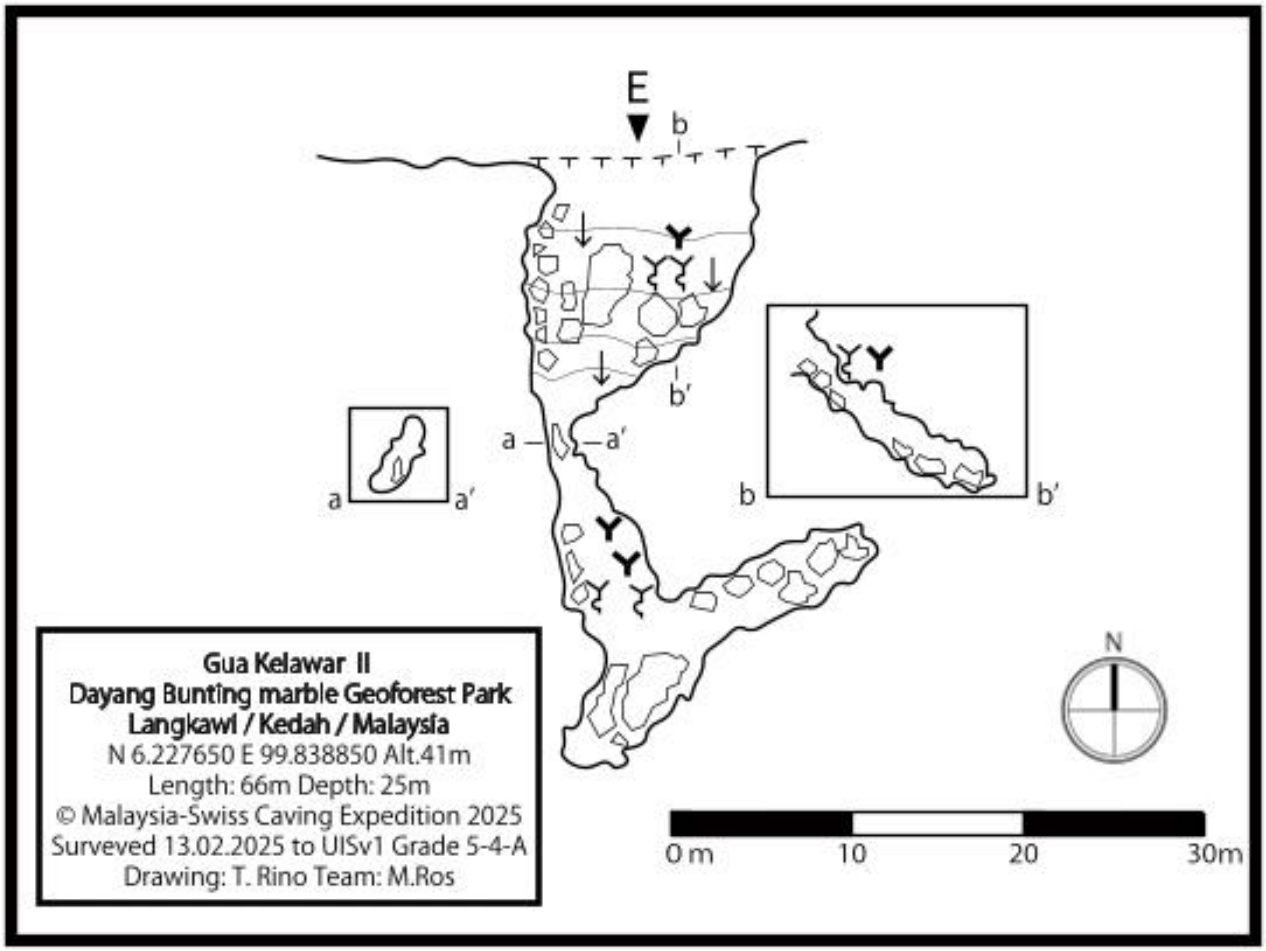
2.2. Caves Pulau Toba

2.2.1. Wang Buloh



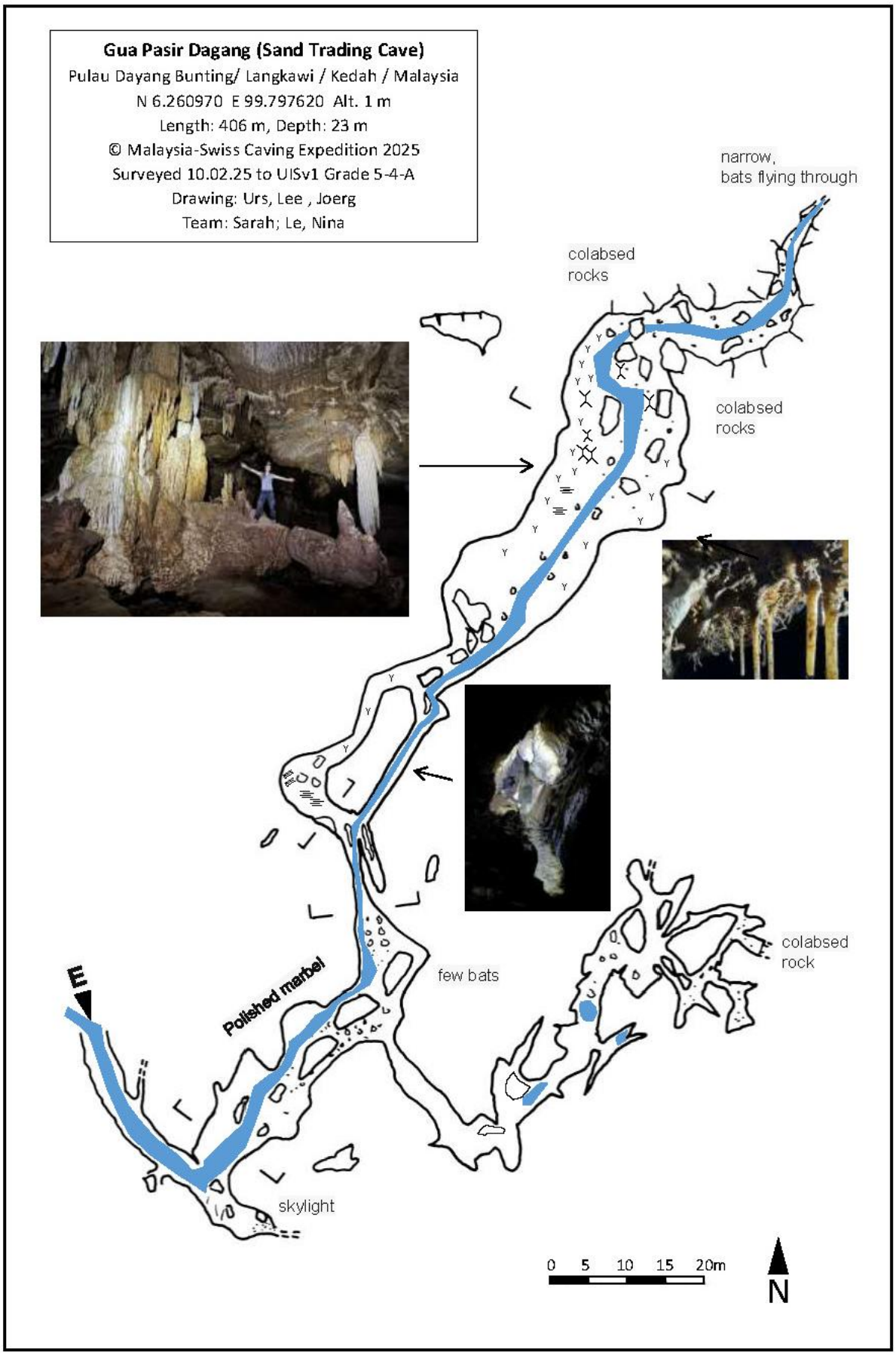
2.2.2. Gua Kelawar I+II



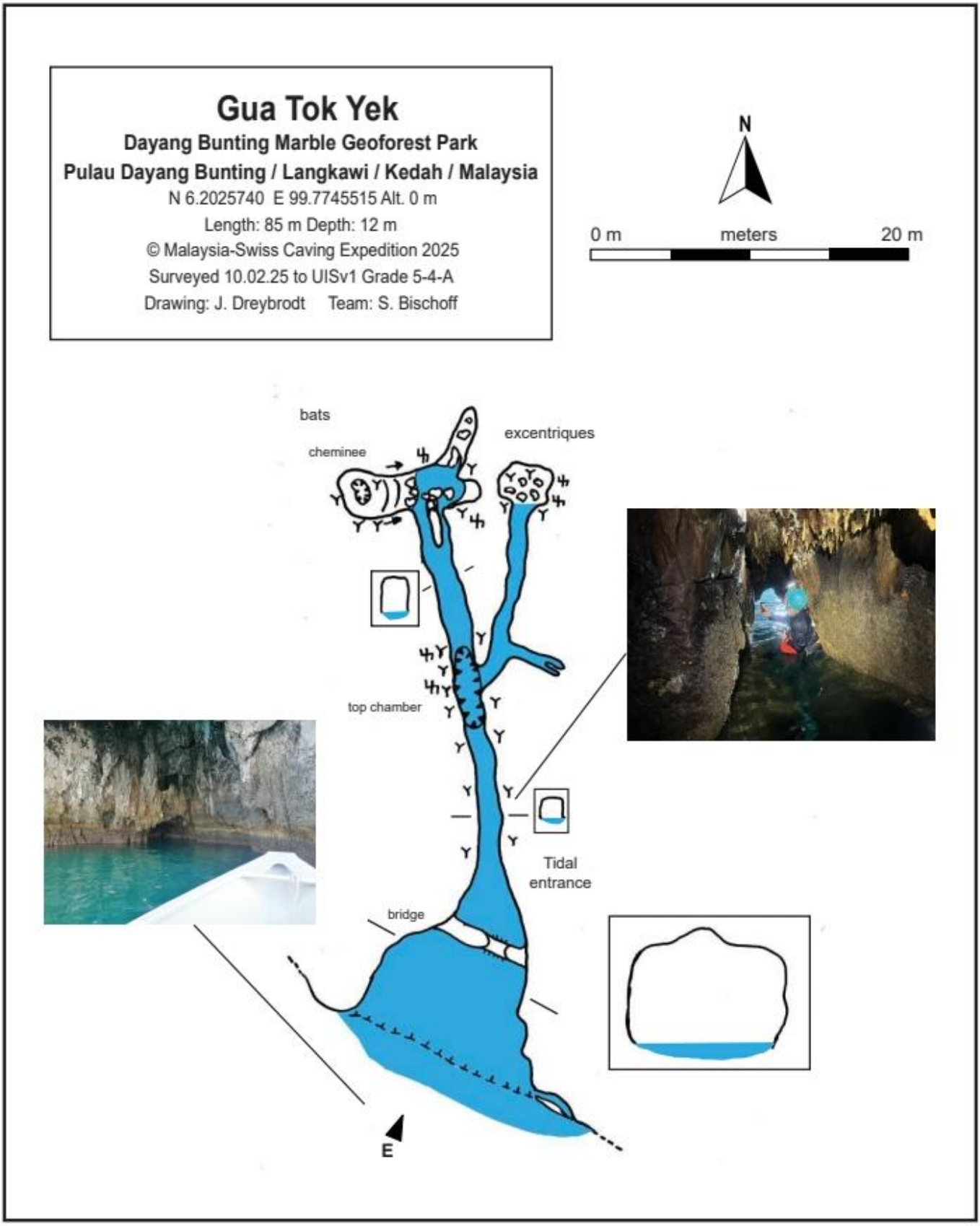

E
b
b′
a
a′
a
a′
b
b′
N
0 m
10
20
30m
Gua Kelawar II
Dayang Bunting marble Geoforest Park
Langkawi / Kedah / Malaysia
N 6.227650 E 99.838850 Alt.41m
Length: 66m Depth: 25m
© Malaysia-Swiss Caving Expedition 2025
Surveyed 13.02.2025 to UISv1 Grade 5-4-A
Drawing: T. Rino Team: M.Ros

2.3. Caves Pulau Dayang Bunting

2.3.1. Gua Pasir Dagang

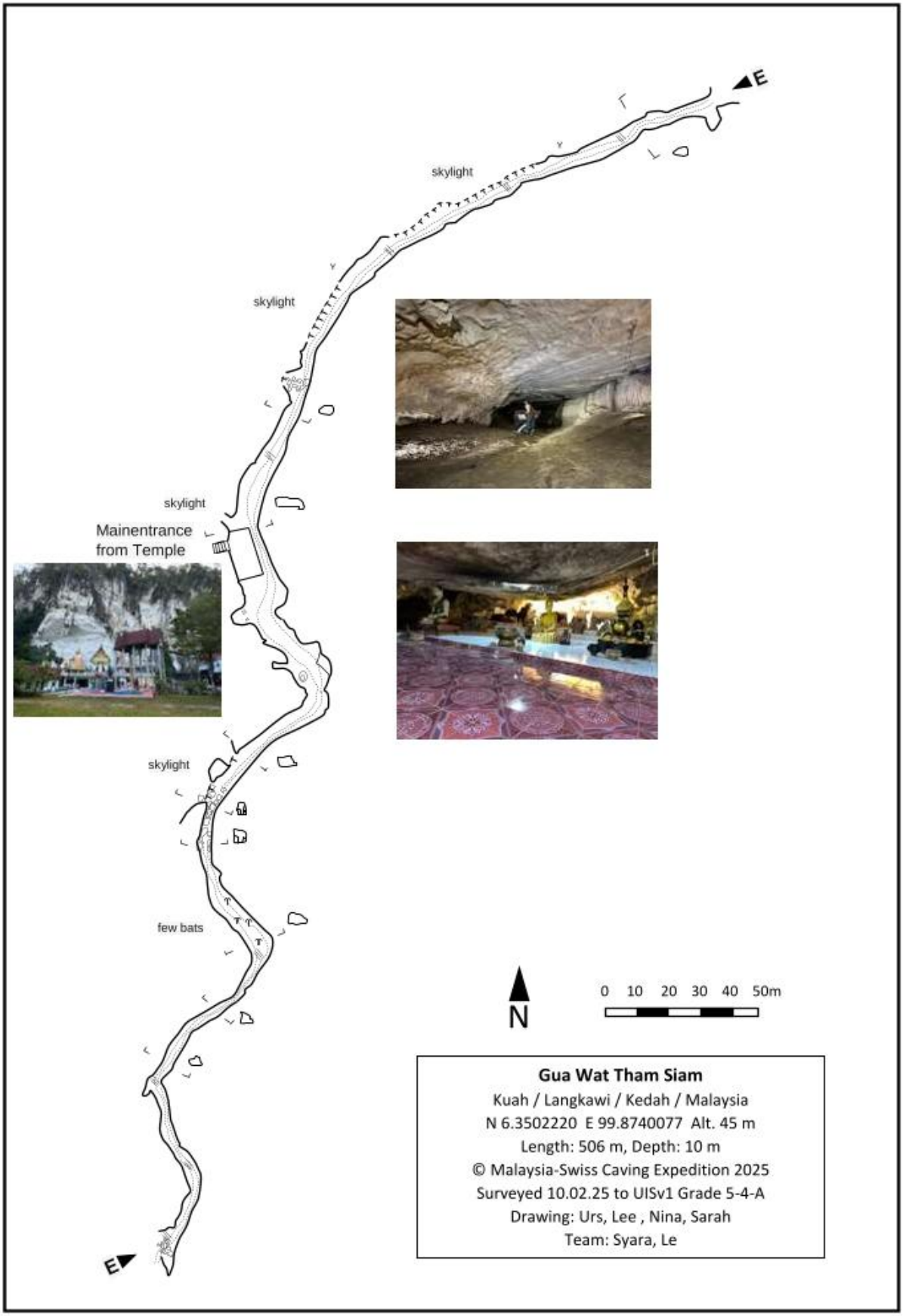


2.3.2. Gua Tok Yek

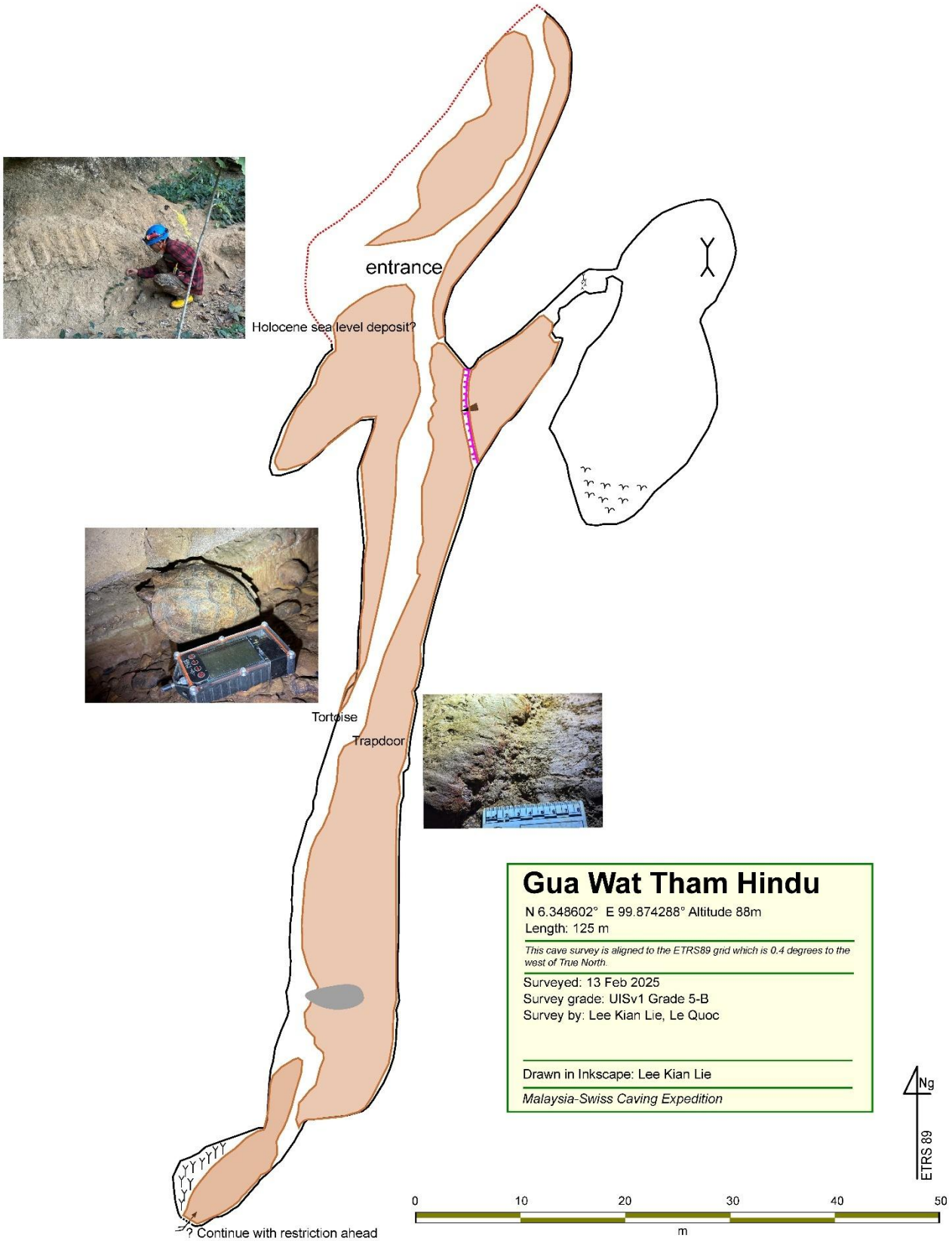


2.4. Caves Langkawi Main Island

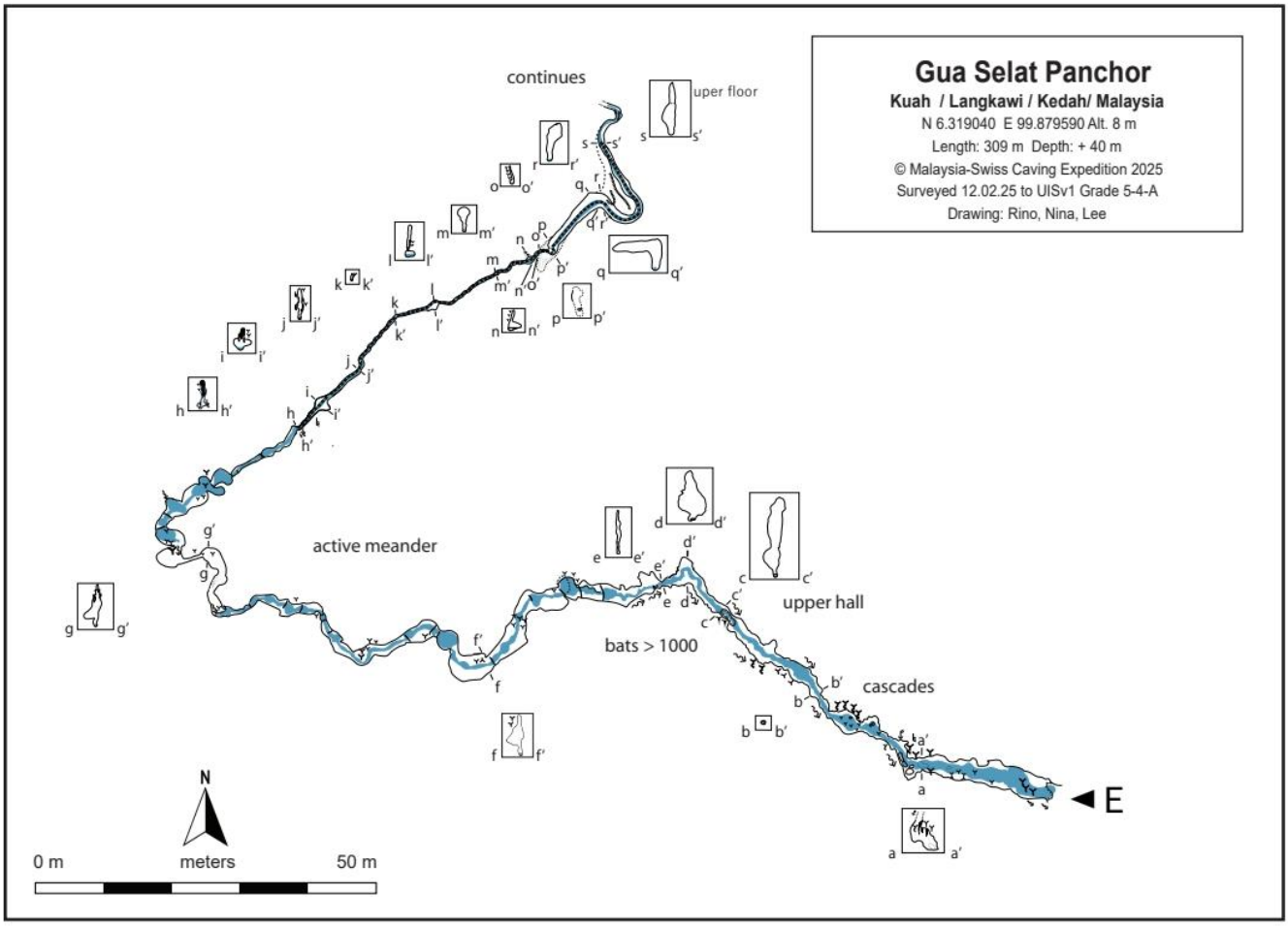
2.4.1. Gua Wat Tham Siam

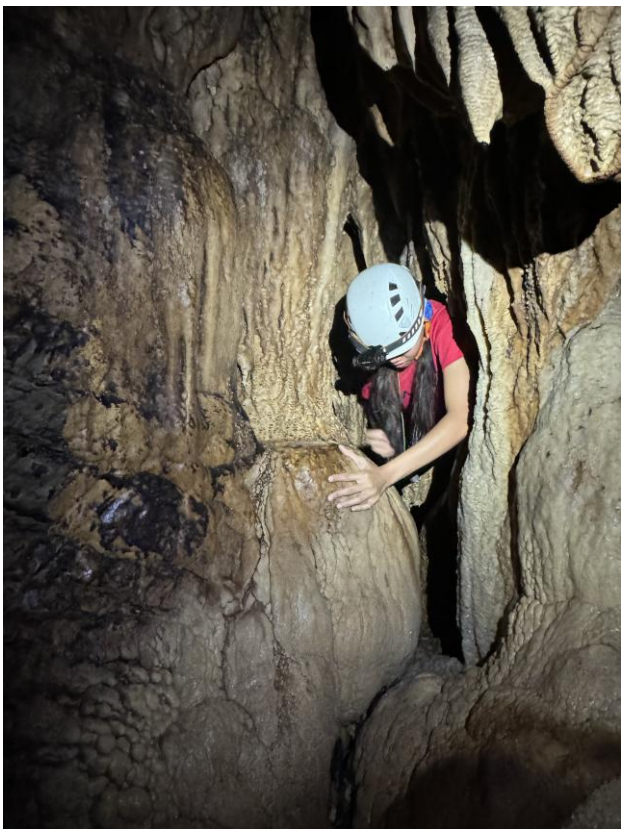


2.4.2. Gua What Tham Hindu

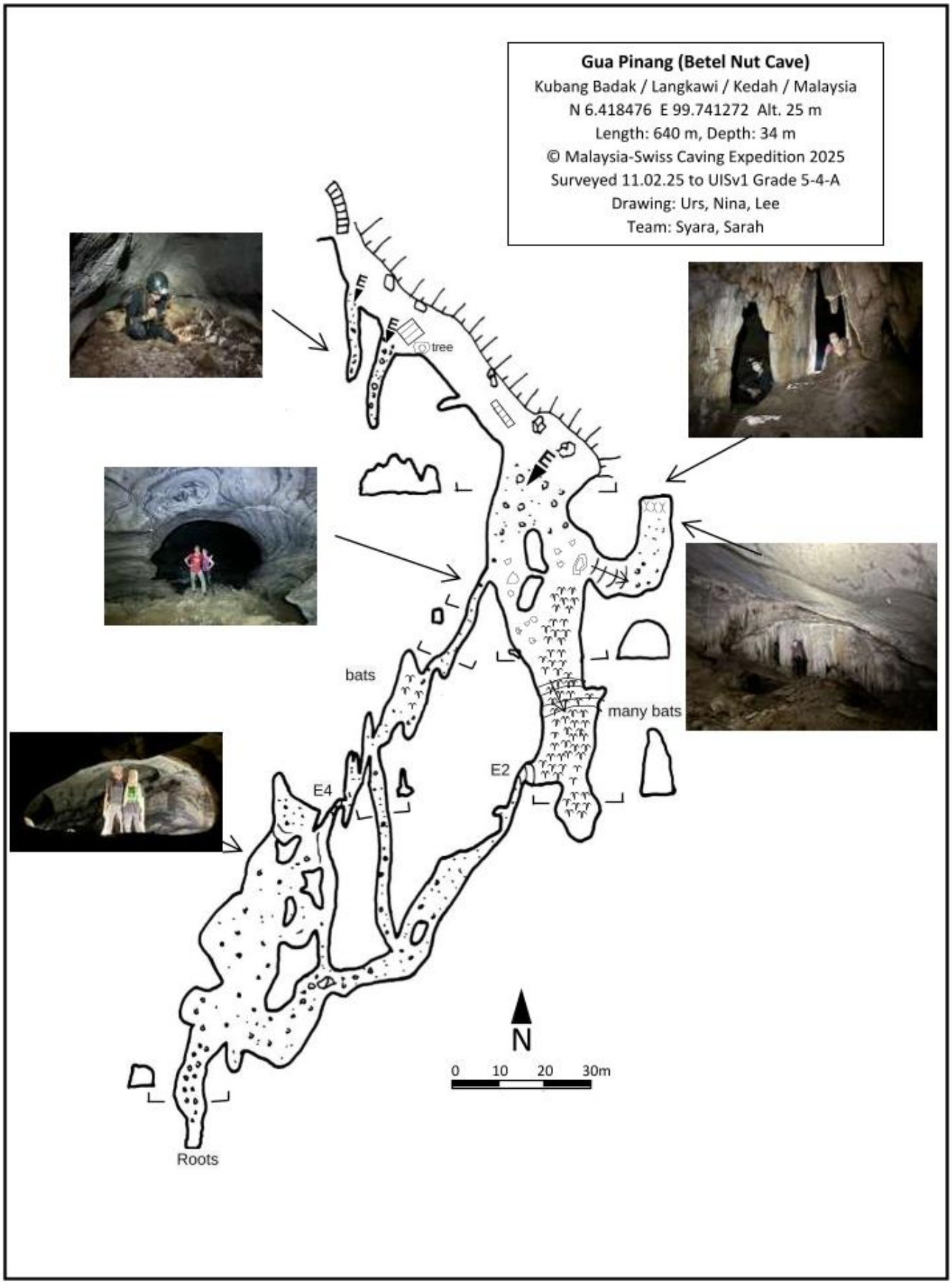


2.4.3. Gua Selat Panchor





2.4.4. Gua Pinang (Betel Nut Cave)



3. Karst Morphology and Paleontology

Many towers display vertical walls on most or all sides, shaped by ongoing rockfalls and large slab failures. Initially formed through subaerial limestone erosion, they were later invaded and slightly modified by the sea, as indicated by modern tidal notches visible at their bases. Subsequent degradation produced dolines that opened to the sea, forming lakes. The towers also preserve remnants of old caves, along with foot caves that represent stages of undercutting at different levels. Vertical downcutting has created canyons, where several caves are fed by underground streams that resurge at the surface and merge with tidal waters.

The expedition also involved paleontologist Hoang Le Quoc, who identified various fossils and remains in several caves. These included bats, gastropods, rats/gastropods, unidentified bones, shells, archaeological middens with shells, nautilus, deer, wild boar, monkey, rhino, Quaternary breccia with gastropod fossils, and a small section of Quaternary midden.

Separate reports of the karst morphology and paleontology will be issued by Le Hoang Quoc and Ros Fatihah Muhammad.

.

Investigation of cave sediments for fossils

4. Cave Fauna

The following cave fauna was identified: Bats, crabs, fish, crabs, spiders, shrimps, milipede, wip spiders, crickets, trapdoor spiders

The largest bat colonies are in:
Gua Kelewar in Kilim Geoforeest Park > 2000
Gua Kelewar in Pulau Tuba > 500
Gua Selat Panchor > 1000

A biospeoleogical survey is highly recommended.

5. Summary and Outlook

The caves are mostly located in the limestone areas on the Eastern part of Langkawi. The map and table below provide a summary of documented caves with coordinates and length. In total 2.6 km of cave passage are documented. The expedition plans to return in early 2026 to continue the survey of caves in Langkawi.

No.	Date	Name	Latitude	Longitude	Alt	Village	District	State	Length (m)
1	09.02.2025	Gua Buaya	N 6.424152	E 99.847175	0	Kilim Geoforest Park	Ayer Hangat	Kedah	**85**
2	09.02.2025	Gua Dedap	N 6.469578	E 99.834829	0	Kilim Geoforest Park	Ayer Hangat	Kedah	**32**
3	09.02.2025	Gua Cherita	N 6.467040	E 99.846870	5	Kilim Geoforest Park	Ayer Hangat	Kedah	**83**
4	09.02.2025	Gua Langsir	N 6.419050	E 99.882980	0	Kilim Geoforest Park	Ayer Hangat	Kedah	**35**
5	09.02.2025	Gua Kelawar I+II	N 6.402060	E 99.858880	11	Kilim Geoforest Park	Ayer Hangat	Kedah	**115**
6	10.02.2025	Gua Pasir Dagang	N 6.260970	E 99.797620	0	Dayang Bunting marble Geoforest Park	Pulau Dayang Bunting	Kedah	**406**
7	10.02.2025	Gua Wang Buloh	N 6.246919	E 99.848720	86	Dayang Bunting marble Geoforest Park	Pulau Tuba	Kedah	**87**
8	11.02.2025	Gua Pinang	N 6.418476	E 99.741272	25	Kubang Badak	Langkawi	Kedah	**640**
9	12.02.2025	Gua Tok Yed	N 6.2025740	E 99.7745515	0	Dayang Bunting marble Geoforest Park	Pulau Dayang Bunting	Kedah	**65**
10	12.02.2025	Gua Selat Panchor	N 6.319040	E 99.879590	8	Kuah	Kuah	Kedah	**309**
11	13.02.2025	Gua Wat Tham Siam	N 6.350222	E 99.874007	45	What Tham Kisap	Kuah	Kedah	**506**
12	13.02.2025	Gua Wat Tham Hindu	N 6.348602	E 99.873723	40	What Tham Kisap	Kuah	Kedah	**125**
13	13.02.2025	Gua Kelawar I	N 6.227650	E 99.838850	41	Dayang Bunting marble Geoforest Park	Pula Tuba	Kedah	**35**
14	13.02.2025	Gua Kelawar II	N 6.227650	E 99.838850	41	Dayang Bunting marble Geoforest Park	Pula Tuba	Kedah	**66**

6. Expedition Members

Malaysia	Ros Fatihah Muhammad	Department of Geology, Universiti Malaya, MCKC Coordination Malaysia
	Le Hoang Quoc	Universiti Malaya
	Lee Kian Lie	MCDA (Malaysia Cave Diving Association), MCKC
	Beasyara Zulkifli	MCKC
International	Joerg Dreybrodt	Swiss Speleological Society, Coordination Cave Survey
	Urs Etter	Swiss Speleological Society
	Nina Lochmatter	Swiss Speleological Society
	Tomokaze Kobayashi	Hosei University Exploration Club, Tokyo Speleo Club
	Sarah Bischoff	German Speleological Federation
	Rino Tomizawa	Hosei University Exploration Club, Tokyo Speleo Club

Contact Expedition: Dr. Joerg Dreybrodt, E-Mail: Joerg.dreybrodt@gmail.com

Contact Science: Dr. Ros Fatihah Muhammad, E-Mail: rosfmuhammad@um.edu.my

7. References

Malaysian Cave and Karst Conservancy: https://www.mckc.org.my/home
Caves of Malaysia: https://cavesofmalaysia.wordpress.com/
Malaysia Cave Registry: https://www.speleo-berlin.de/en_publikationen.php
Langkawi Geopark: https://langkawigeopark.com.my/
Geological Field Guide to Langkawi by Lee Chai Peng
https://gsmpubl.wordpress.com/2014/09/02/geological-field-guide-to-langkawi/#:~:text=The%20Langkawi%20area%20had%20undergone,coarse%20marbles%20and%20tough%20metaquartzites

Pictures are from all the expedition members and not individually labeled.

8. Acknowledgement

We are grateful for the support of Kedah State Government through Dato Salleh Saidin, Member of the Kedah State Executive Council (Tourism, Culture and Entrepreneurship) and Universiti Malaya grant IIRG004A-2020FNW: Top Down: Evolutionary Dynamics Study of Quaternary Faunal Remains from Karstic Landscapes of Peninsular Malaysia for partly financing the expedition and the Langkawi Development Authority (LADA) for providing permits and boat logistics. Our guides, Mrs. Shahidah and Mr. Zamzuri shared not only their expertise but also their enthusiasm for nature and caving, allowing us to learn a lot about Langkawi's little-known limestone ecosystem