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LAVA CAVES EAST AFRICAN RIFT VALLEY - BARINGO - KENYA



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East Rift Valley Lava Cave Expedition 2022

The East African Rift Valley Lava cave expedition visited the volcano areas north of Baringo lake and the valley rim at the western edge near Eldoret. Large lava caves were found at Silali Volcano based on literature references. The caves consist of three segments and belong to one system of 1.8 km length. One segment contains a very large bat colony with several different species. Further research is required on the bats and fauna in the caves as well as the presence of other lava caves of similar type in the regions towards Turkana lake.



1. Overview and Summary

The Eastern branch of the East African Rift transects through Kenya along the north-south direction. The super trench has about 40-60 km E-W width and spreads 1200 km N-S with an annual drifting rate of about 0.5 mm, This further causes thinning of the earth crust along the rift floor and development of line of weaknesses through the faults that eject lava to the surfaces, forming chains of eruption centers on the rift floor. Some of this volcanic centres host large caldera systems. The main caldera systems include Barrier, Silali, Paka, Menengai, Longonot and Suswa volcanoes. Silali and Paka volcanoes are north of Baringo lake. The Cave Exploration Group of East Africa visited the area in the 90ies and reported a large system at Silali volcano with a length of about 3 km that would rival the so largest known lava caves in Kenya. At the time of exploration the area was hard to reach requiring a two day drive from Nairobi and being in addition very unsafe. Therefore the group did not re-visit the area and the cave remained without survey. Baringo lake is now reachable on good tared roads in a half day from Nairobi and possess a touristic infrastructure with camps and restaurants. Therefore a small international speleological team organized a reconnaissance expedition to the area in June 2022.

The objective was to find the reported cave named “rainbow cave” in the reports and to investigate for other caves at the neighbor volcanoes of Paka and Korosi. A Google map search also showed caves marked towards the western rim of the Valley at Kabernet and Ifen.

The expedition found the mentioned Lomechan cave near the village of Natan and surveyed it in two days to a length of 1.9 km. The local people knew the cave entrances well and four more caves were visited within one week. Lomechan is the only cave possessing a lava tube of considerable length. The other caves are rather small tubes and partially formed by underground drainage of water. It seems large lava tubes are present in a very limited area around Mount Silali.

After one week, the caves towards Kabernet and Eldoret were visited and surveyed. They are mostly overhangs formed by erosion and not connected to volcanic activity.

An overview of all surveyed caves in given in below table:

No	Date	Name	Coordinates (WGS 84)		Altitude (m)	Village	District	County	Length (m)	Depth (m)
			N	E						
1	27.06.22	Loripokume	1.25272	36.35783	852	Nasorot	Silali	Turkana	40	
2	28.06.22	Lokus Cave	0.89243	36.15344	1148	Chepfungus	Paka	Baringo	40	
3	28.06.22	Lulemoi	0.84753	36.16681	1035	Adomeyon	Paka	Baringo	20	20
4	29.06.22	Lomechan Reres Main	1.0824798	36.13386	805	Natan	Silali	Baringo	805	
5	29.06.22	Lomechan Reres Back	1.084941	36.1310801	805	Natan	Silali	Baringo		
6	29.06.22	Lomechan Saput	1.0824369	36.1342451		Natan	Silali	Baringo	220	
7	01.07.22	Lomechan Karaam	1.0852179	36.1307619	798	Natan	Silali	Baringo	720	
8	02.07.22	Chemot Cave	0.75401	36.11711	1335	Korosi	Korosi	Baringo	117	
9	03.07.22	Tavambas Hill Cave	0.48896	35.80102	2161	Kituro	Kabernet	Baringo	12	
10	04.07.22	Mela Cave	0.79916	35.55838	1890	Kaptum	Iten	Kaptum	13	

In total 9 caves of 2 km length were mapped. The location of caves is shown in figure 1.

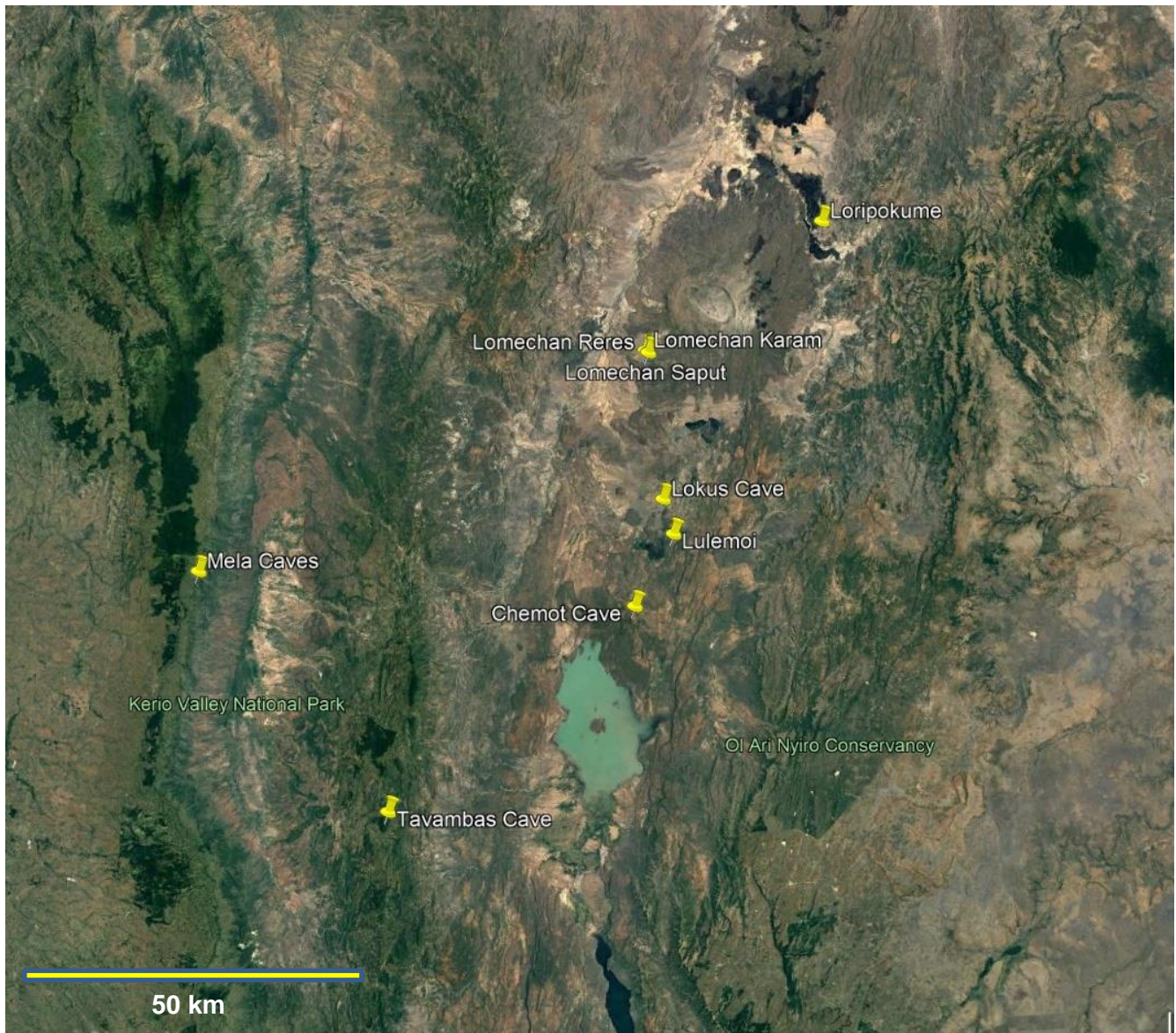


Figure 1: Overview of the expedition area around Baringo lake and towards the western rim. The surveyed caves are indicated by yellow markers.

2. Access to Silali, Paka and Korosoi

The caves are located around 2 km north of the village Natan (Fig. 2). This is on the south eastern extension of the Mt Silali volcano and north east from Paka volcano. The road from the accommodation at Baringo lake to the north is newly renovated and paved all the way from Nakuro to Marigat and onwards to Kinyang. It takes from the Baringo camps around 40 minutes on the tar road until the branch off on a dirt road towards the volcano area. The dirt road is first flat and dusty with several small stream crossing and later traverses of lava fields. This part takes around 1:30 to 2:00 hours depending on driving skills. Total access time from Baringo to the parking close to the Lomechan cave is around 2:30 hours. The road requires a high clearance vehicle and was driven in a 4x4 RAV. It was manageable with occasional walking at rocky areas. All the rivers were dry at this time of year. The caves are in 1.2 km distance and reached from the parking location by a 20-25 minute walk in a flat semi-arid landscape.

The other caves are easier to reach on better dirt roads with around 1.5 hour driving time from Baringo. Paka and Korosoi are developed for geothermal power. Therefore water has to be pumped up for drilling holes and pipelines are laid and the roads are maintained for large trucks.

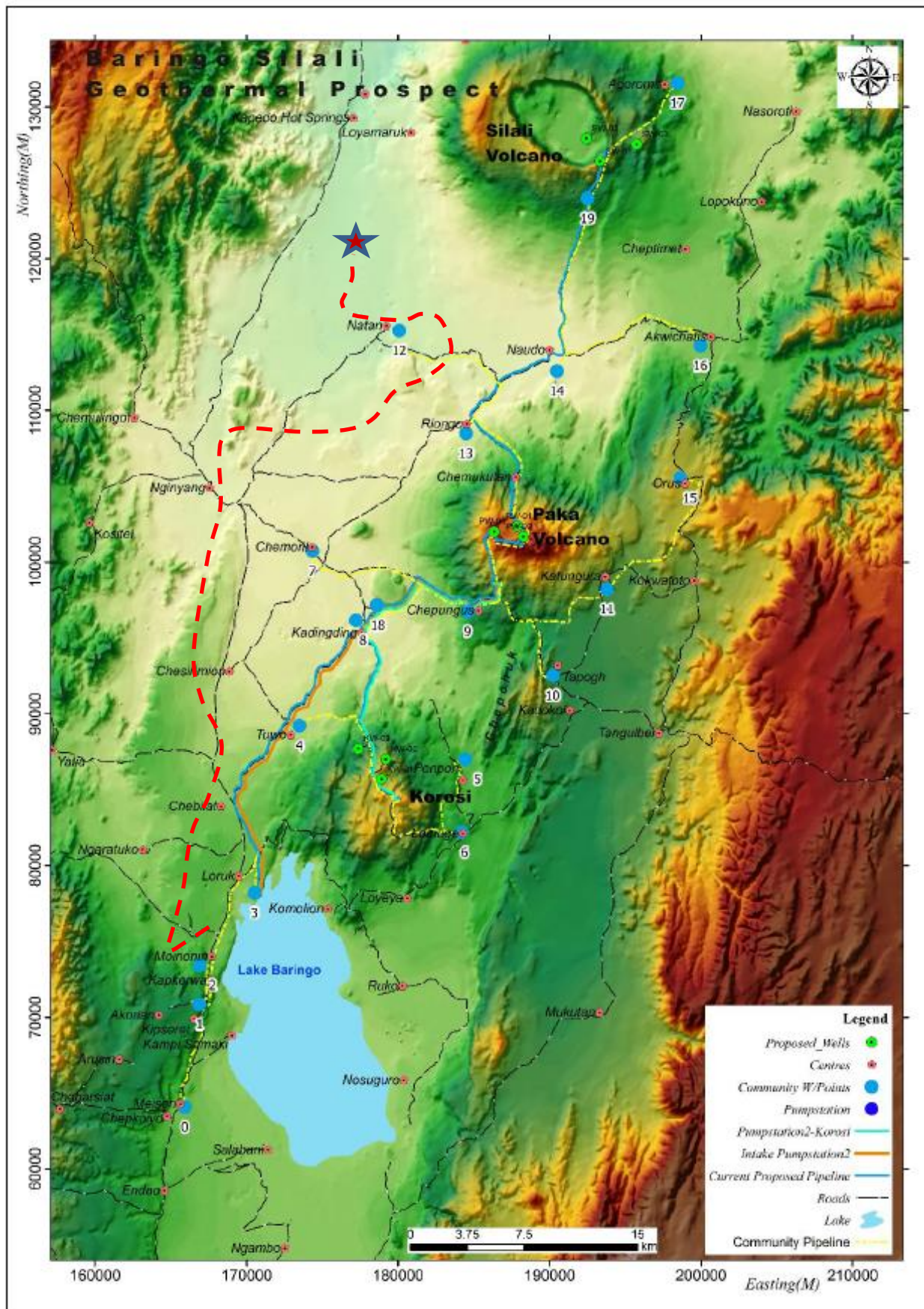


Figure 2: Overview map of the Lake Baringo and Volcano area with dirt tracks from the geothermal project. The Silali caves are north of Natan village and marked by a red star. The red dashed line indicates the access.

3. Mt Silali Lava Caves

The Lomechan caves consist of three lava cave segments (Reres, Saput, Karmaan) with three entrances (Fig. 2). The main entrance is 10 m wide and 5 m high (cover photo) and located on the western end of a collapse. This entrance is well known in the Baringo area and described in publications (Simons 1998. Kipseba 2009). The entrance to the Saput Segment is on the eastern end of the same collapse. The entrance to the Karaam segment is 450 m to the northwest. It is on the northern end of a collapse and relatively narrow with a 0.80 m x 0.60 m opening. The segments belong to once one system and were later separated by roof collapses of the lava caves. Figure 2 shows an overview of the segments. The orientation of 133 Degree and altitude difference of 20 m suggests a lava flow from the large collapse at the end of the Reres and Caput segment towards and outflow on the eastern end of the Karam segment. Here a dark outflow shape and a rounded passage match.

Reres Segment

The cave hosts a large bat colony of estimated more than 100 k bats. The smell is already extreme at the entrance and a face mask is recommended. The 12 m wide and 6 m high lava passage splits into two passages after around 100 m. The northern passage hosts the majority of the bats and ends after 350 m in a blockage. Light is seen from the surface, but it is too narrow to exit. The southern branch narrows after 270 m into a 2 m long, 0.50 m high and 1 m wide crawl. Afterwards the passage becomes larger and continues for another 250 m. There are only very few bats after the crawl and the type is different. The passage is at the end blocked with large stones and becomes very narrow. A first squeeze of 0.50 m x 0.30 m was passed, while the second is narrow and long and requires a squeeze specialist.

Saput Segment

The Saput segment is named after Porcupines living in holes inside the cave. There are only few bats in this cave.

Karmaan Segment

The wasp nest at the entrance gives the name to this cave. After a 2 m climb down between blocks the major single passage of around 12-18 m width and 6 m height is reached. It has much less bats, fresh air and is easy to visit. The passage splits after 350 m and unites after 50 m again into a single passage. Two snakes were observed between the blocks. It ends after 800 m into a block fall.

An overview of the segments over the surface is given in Fig. 3. The lava seems to have flown from the west towards the east. A large entrance collapse is visible to the very eastern passage where the lava seems to have submerged to emerge again at the western end. Here a typical toe shape is visible. The area at the collapse at the eastern end of Saput and Reres was carefully checked. A continuation between blocks was not found. The area at the western end of Karaam was not checked due to limited time. Our local guides reported one shaft full of bats near the village of Natan. Therefore a revisit to the area is interesting.

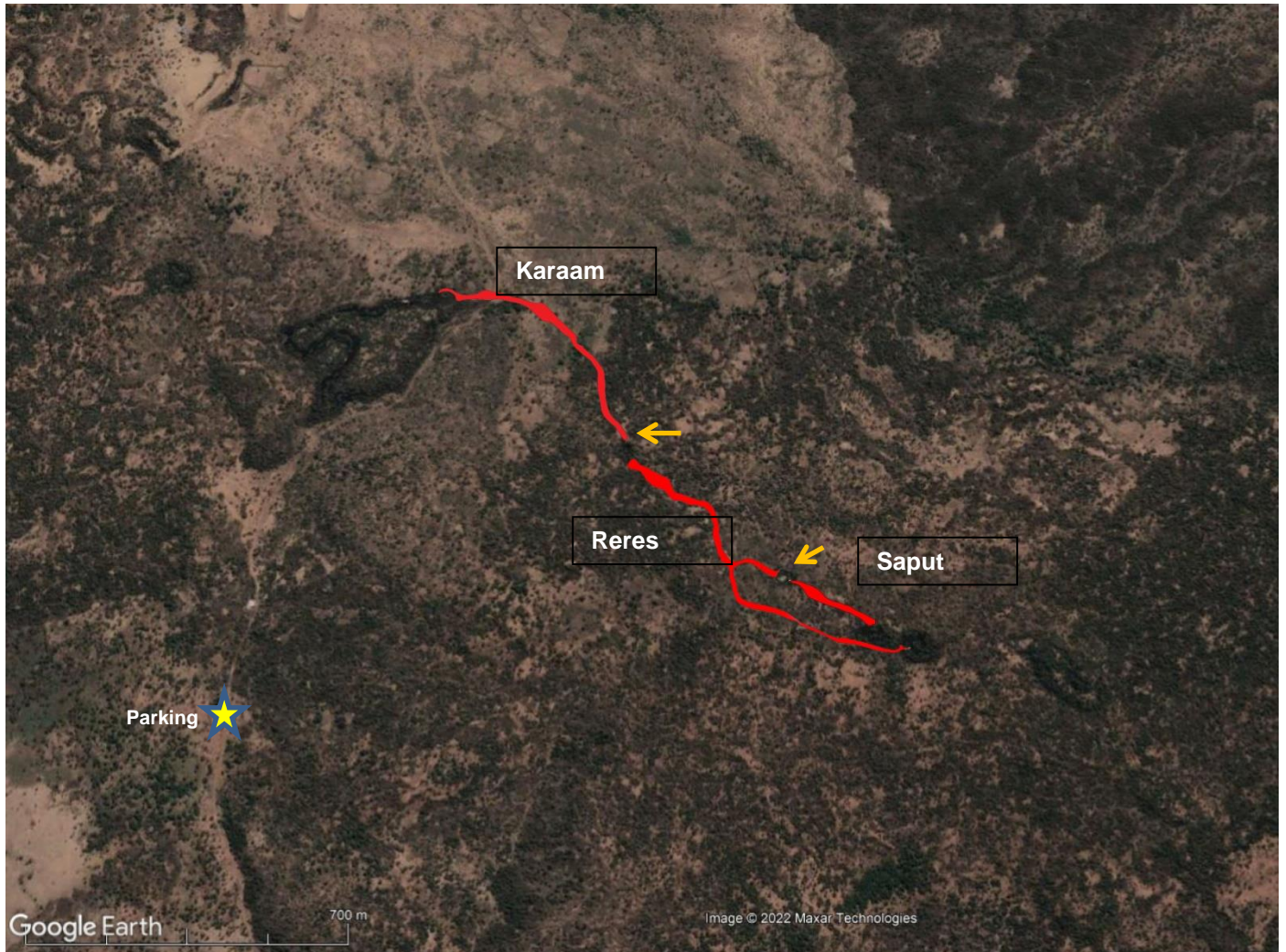


Figure 3: Lava tube passages (red) with entrances (arrows) and names of the three segments. The star indicates the parking position. The collapses are clearly visible at the beginning and end of the passages. The three independent segments are labeled with their name.

4. Caves at the western extension of the East Rift Valley

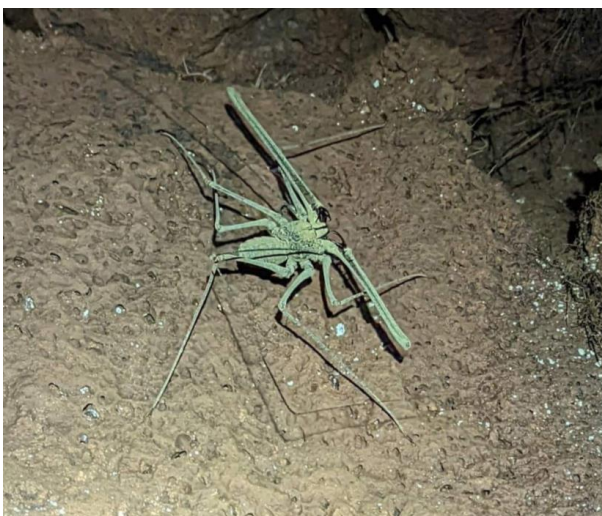
The Tavambas caves near Kabernet and the Mela Caves near Iten were visited based on Google Map locations. Both are short with only around 13 m length being overhangs or shelters formed by erosion. The local people did only indicate other caves at the base of waterfalls or at hill tops. The areas do not seem to have a potential for lava tube caves. We checked the road from Iten along the cliff to the North. This 100m – 200 high rim is the limit of the rift valley to the west. We did not find any opening and only water falls were reported.

5. Biodiversity

Bats & Porcupine Spikes



Invertebrates



The fauna in the caves were briefly investigated. Beside bats there are many different species of invertebrates.

6. Local Situation

The area north of Baringo was at the time of visit on a curfew due to local conflicts between the Pokot tribes with cattle rustling. The volcano area was safe to visit according to the district security officer. The villagers at Natan were first curious and supported our visit on the first day. When returning on a 2nd day an elder objected and asked us to leave. The situation could be calmed down after one hour explanations with an “entrance fee”. It seems not been fully understood why the cave is visited and might require further explanation. The villagers near Paka and Korosi volcanoes did not have any objections and guided us to the entrances.

7. Outlook

The Lomechan are the only large lava tubes in the area of Silali, Korosi and Paka. The local people knew the entrances likely, because of importance for water which is scarce in the semi-arid landscape. The main focus is to re-visit the Silali area for other tubes and to investigate volcanoes north towards the Turkana lake.

8. References

- Jim W. **Simons**, Volcanic Caves of East Africa – An overview, International Journal of Speleology. 27 B (1/4), (1998): 11-20.
- Enoch K. **Kipseba** — Supt. Geologist, Mines & Geological Dept., Judith J. Kotut — Geologist I, Mines & Geological Dept., Julius Kasitet – S.L.D.O., A.L.R.M.P., East Pokot branch; Mineral exploration and assessment of geological materials and geotourism sites, Baringo and East Pokot Districts, April 2009
- Yussuf N. **Mohamud** and Tito Lopeyok , Geothermal Development Company, Ltd-GDC, The Future Potential of the Silali Caldera, North Rift, Kenya Proceedings of the 7th African Rift Geothermal Conference (ARGeo C7), 29 October. - 4 November. 2018. Kigali Convention Centre, Rwanda.

9. Acknowledgement

Lucas from the Bushbaby campsite and bar for camping accommodation, arranging dinner and breakfast and connecting us with the local community (Mobile/Whatsapp +254 720 322113)
<https://www.facebook.com/bushbaby2015>



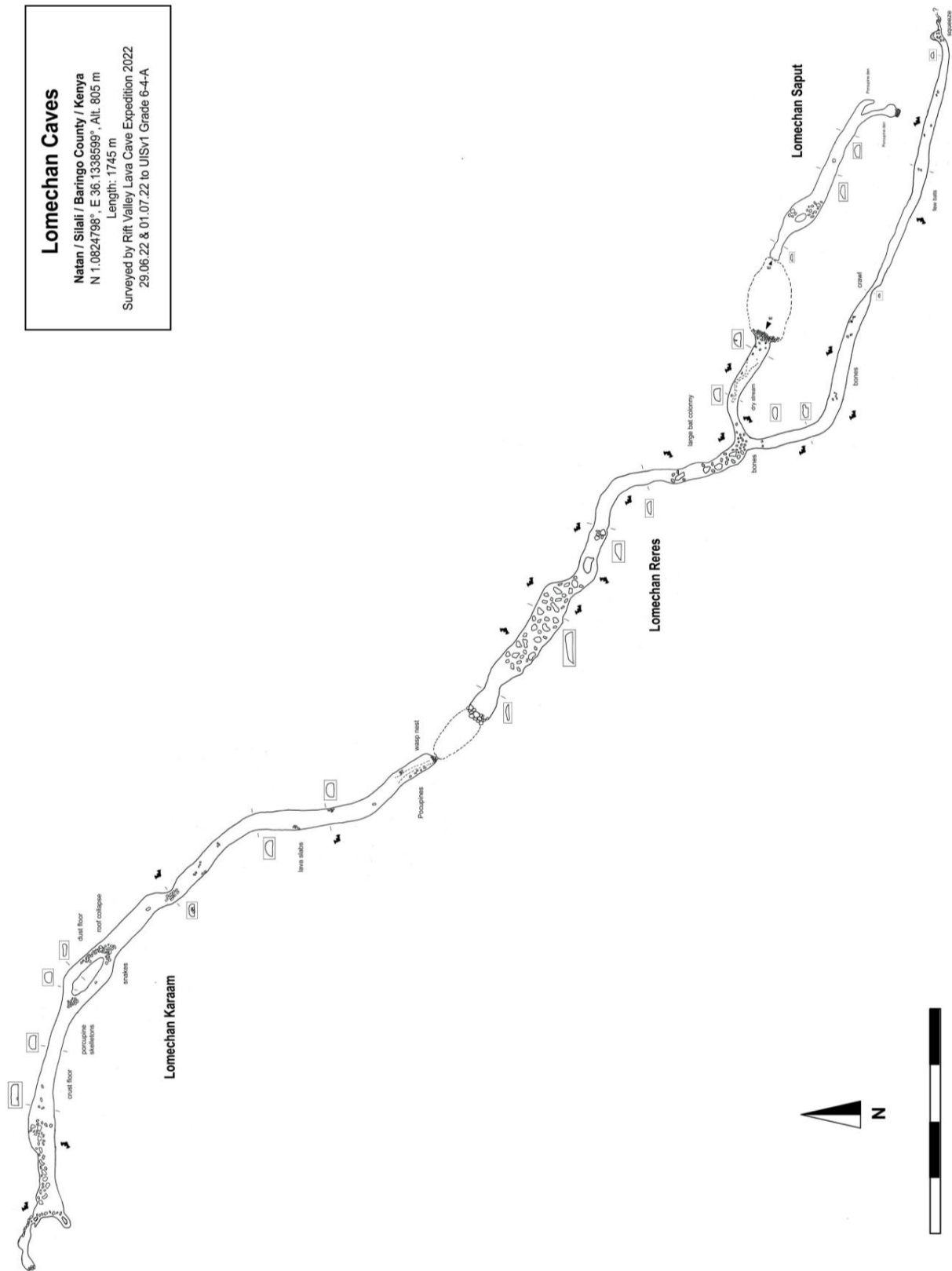
BUSH BABY
BAR & RESTAURANT

Nelson Apura Xavi from the Silali Pokot tribe for guiding us in the stunning volcano landscape.

10. Cave Maps

Lomechan Caves

Natan / Silali / Baringo County / Kenya
 N 1.0824798°, E 36.1338559°, Alt. 805 m
 Length: 1745 m
 Surveyed by Rift Valley Lava Cave Expedition 2022
 29.06.22 & 01.07.22 to UISv1 Grade 6-4-A



Chemot Cave

Korosi / Baringo County / Kenya

N 0.75401, E 36.11711, Alt. 1335 m

Length: 117 m

Rift Valles Lava Cave Expedition 2022

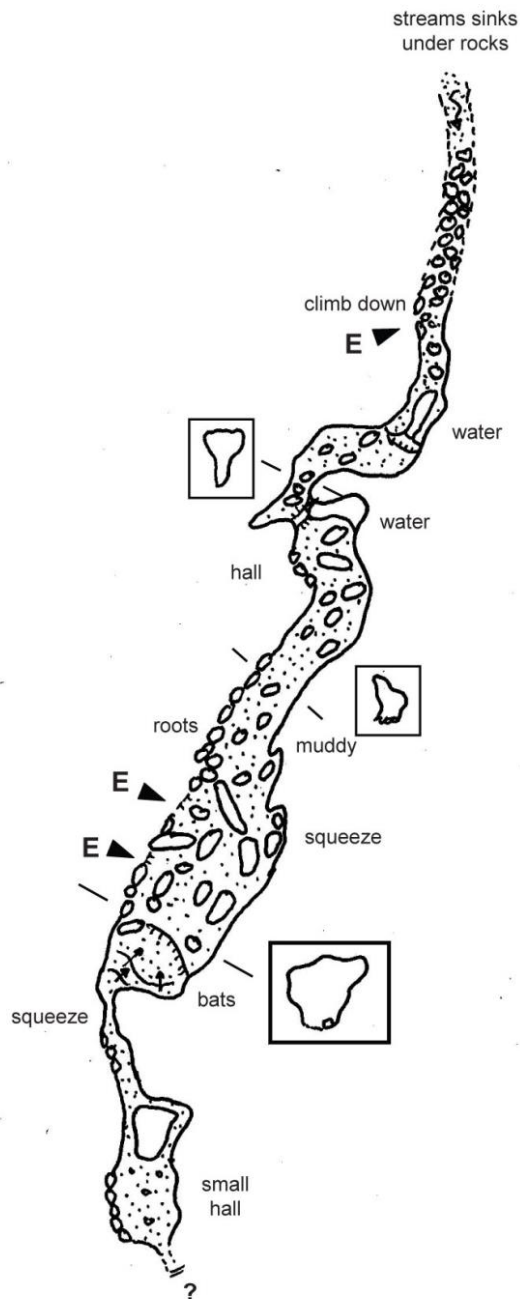
Surveyed 02.07.22 to UISv1 Grade 6-4-A

Drawing by J. Dreybrodt & R. Haemers



N

0 m 25 m
meters

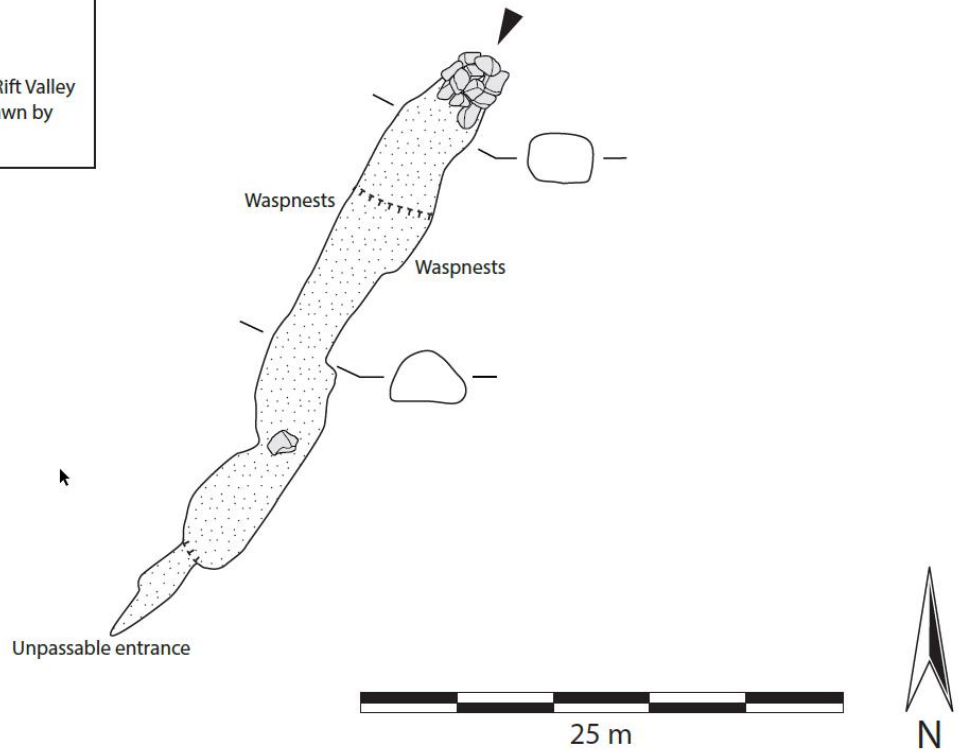


Lukus

Chepfungus, Baringo County, Kenya

N 0.89243, E 36.15344, Alt. ?m
Length: 40m

Surveyed on 28 June 2022 by Rift Valley
Lava Cave Expedition 2022 Drawn by
René Haemers

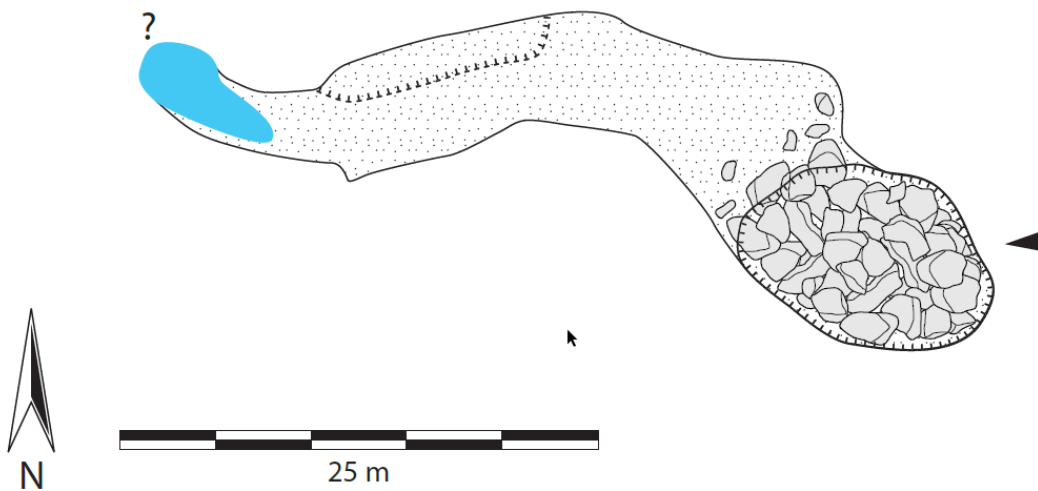


Loripokume

Nasorot, Turkana County, Kenya

N 1.25272, E 36.35783, Alt. ?m
Length: 40m

Surveyed on 27 June 2022 by Rift Valley
Lava Cave Expedition 2022 Drawn by
René Haemers



Tavambas Hill Cave

Kituro / Kabernet / Baringo County / Kenya

N 0.48896, E 35.80102, Alt. 2161 m

Length: 12 m

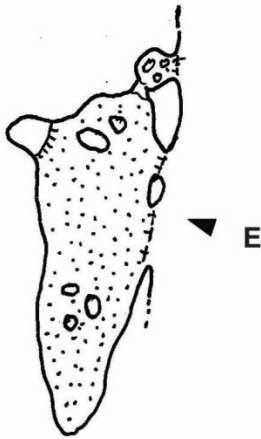
Rift Valles Lava Cave Expedition 2022

Surveyed 03.07.22 to UISv1 Grade 6-4-A

Drawing by J. Dreybrodt



Cave developed with soft rock being removed under an upper layer of hard basaltic rock.



Mela Cave

Kaptum / Iten / Elgeyo-Marakwet / Kenya

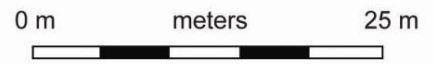
N 0.79916, E 35.55838 , Alt. 1890 m

Length: 13 m

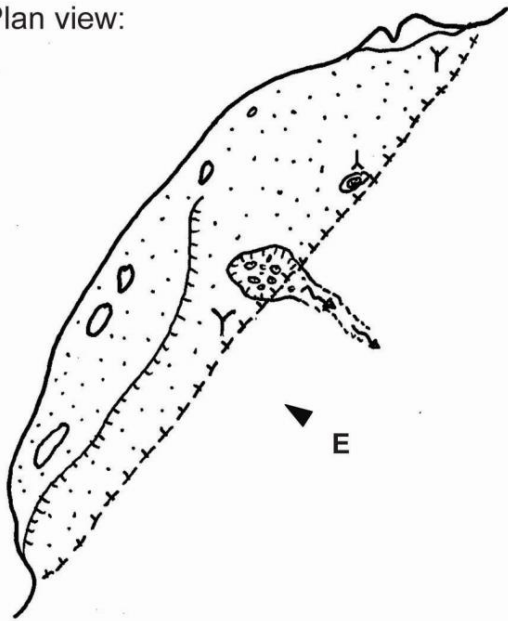
Rift Valles Lava Cave Expedition 2022

Surveyed 04.07.22 to UISv1 Grade 6-4-A

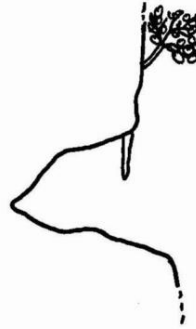
Drawing by J. Dreybrodt



Plan view:



Cross-section:



11. Pictures

Driving the dirt road to Silali (J. Dreybrodt)



Walking after a 3 hour drive the last miles to Loripokume Cave (J. Dreybrodt)

Loripokume Cave entrance area



Natan village: Approach from the parking to the cave entrances on a semi-arid landscape with camels (J. Dreybrodt)



Entrance area of Lomechan Reres (D. Froehlich)



Start of the crawl in the southern part of Lomechan Reres, the passage increases after 2 meters again (D. Froehlich)



Entrance of Lokus cave near Paka volcano (D. Froehlich)



The collapse blocks of Chemot cave (D. Froehlich)



Water melons are a very popular gift for the village people





Expedition Members 2022



Joerg Dreybrodt
Switzerland



Dominik Froehlich
Germany



Rene Haemers
Netherlands



Yuki Ito
Japan

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 contribute to Karst & Cave protection by a systematic documentation for biodiversity research, conservation and ecotourism.

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