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Caves of Inhaminga: the speleological heritage of the Cheringoma Plateau, Mozambique

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Abstract: Speleological expeditions have been conducted in Gorongosa National Park (GNP), Mozambique, under the Paleo-Primate Project Gorongosa (PPPG) since 2016. The main purpose of this work is to inventory, explore and characterize the karstic caves in the limestone formations, and to assess their archaeological and palaeontological potential.

In 2022 and 2023, expeditions were held to the northern region of the Cheringoma plateau, covering an area located in Inhaminga, Sofala Province (outside the GNP). Following previous bibliographical and documentary research, this karstic area was inspected with the help of local guides, who pointed out the locations of thirteen caves, eight of which were previously undocumented. These caves were explored and described with regard to their general and specific features, including appraisals of sedimentary deposits and related heritage.

Keywords: Stone Age, Africa, pottery, mammal bones.

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Introduction and framework

The Cheringoma Plateau stands in a geographical setting with great potential for the study of human evolution, at the south end of the East African Rift System (EARS) (cf. Bobe *et al*., 2020), in central Mozambique. Located east of the Urema Graben, the plateau comprises a karstified Eocene nummulitic limestone formation, remnant of the former coastal plain (Tinley, 1977).

The western flank of the plateau features impressive karst canyons sculpted by water drainage toward the Rift Valley. According to Laumanns (2001), these limestones were initially karstified in post-Eocene times and then filled with conglomerates and sand during a marine transgression that took place during the Miocene, followed by a second karstification phase in the Pleistocene. Erosion on the east slopes of the Rift promoted the removal of part of the sediment infill and sculpted rocky arches and canyons (Steinbruch, 2010: 280). The Urema Rift, which began to form between 4 and 2 Ma (million years ago) (MacGregor, 2015), played a significant role in this geological process. The limestone in the plateau is largely covered by sands and clays, with outcrops and other exposed surfaces mostly visible in the canyons and their upper borders. According to Steinbruch (2010), the Cheringoma Plateau reaches an altitude of 352m, with gentle slopes, less than 5° to the seaside, 5° to 7° towards the southeast and between 5° and 10° to the Urema Rift.

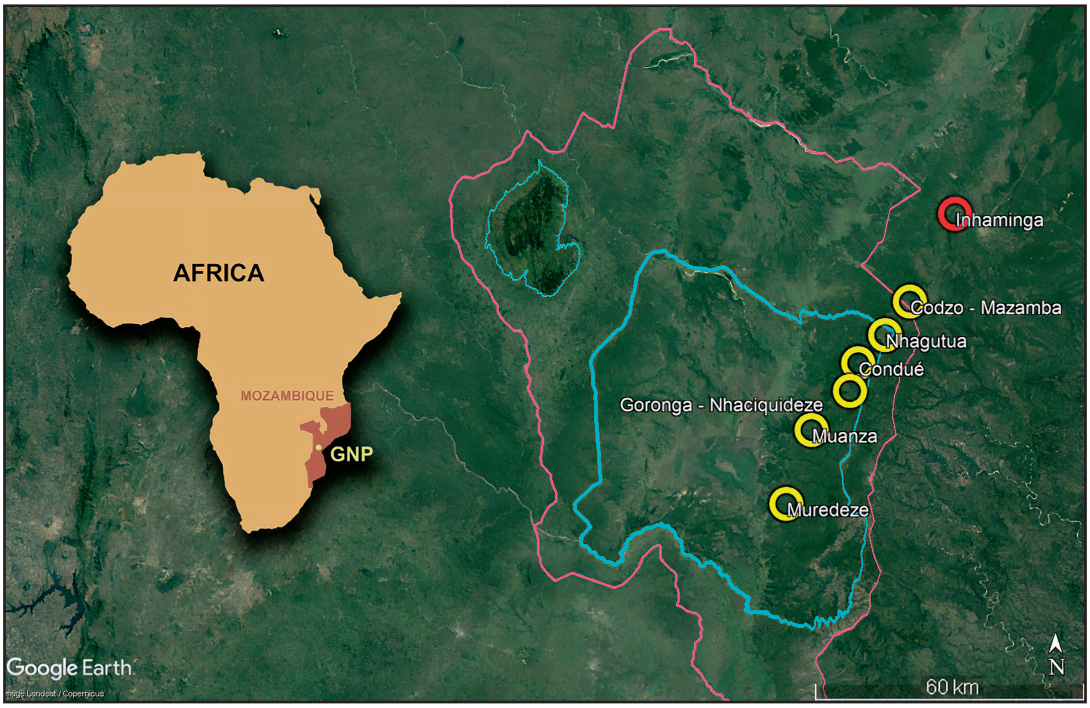


Figure 1: *Intervention areas visited since 2016 with indications of the GNP main limits (blue line) and Buffer Zone (purple line). In 2022–2023 field surveys were conducted in the Inhaminga area (red circle). Image prepared in GoogleEarth.*

Previous knowledge of caves in the Cheringoma region was documented in unpublished reports from guano prospectors (cf. Vachamuteco, 1982). Later, Laumanns and collaborators published surveys and detailed descriptions of several caves to the north and east of Gorongosa National Park (GNP) (Laumanns, 2001; 2017; Laumanns *et al.*, 2016). From 2010 to 2012, Mercader and his team carried out archaeological surveys of the Cheringoma Plateau and discovered a dozen karstic sites, including caves and rockshelters that contain evidence from the Middle to Late Stone Age (Mercader and Sillén, 2013). More recent speleological research was conducted in the northeastern boundaries of the park (Chadelle and Bruxelles, 2022; Fourvel *et al.*, 2022).

The Paleo-Primate Project Gorongosa (PPPG), established in 2015 under the direction of Professor Susana Carvalho, is a long-term paleontological, archaeological, and primatological research and training initiative. One of the key goals of PPPG is to carry out surveys, descriptions, and inventories of caves in the limestone formations of GNP and surrounding areas, with especial attention to the caves' archaeological and paleontological potential.

During the 2016–2019 and 2022–2023 campaigns, several karst areas in the Cheringoma plateau, mostly within GNP, were surveyed for caves. The growing speleological record, presently with 98 inventoried caves and rockshelters, is providing significant insights into central Mozambique's endokarst context and highlights the archaeological potential of the region (Regala *et al.*, 2022).

Figure 2*: Calibrating the DistoX2 with AESDA Calib and Topodroid, Chitengo 2022.*

This paper presents the results obtained during the 2022–2023 campaigns in Inhaminga, Sofala Province, in the northern part of the Cheringoma Plateau. Here, the presence of caves within a densely populated rural setting was previously recognized and documented by Laumanns (2001, 2017).

Materials and methods

Specialized equipment for cave rigging and progression was required, specifically selected, and acquired under the PPPG. Geographical coordinates and leading tracks were recorded with a Garmin *OREGON 750t* – Geographical Positioning System (GPS). The topographical and topometric surveys were carried out using the *DistoX2* laser distance measurement device specifically created for subterranean topography by Beat Heeb (2008; 2009a; 2009b), and the *TopoDroid* (5.1.40) software, with a *Samsung Galaxy Note 10.1* tablet. The *DistoX2* use requires a previous calibration in the generic geographical area where the work is conducted. The calibration procedure was performed with the *AESDA Calib* (Regala, 2015) (Fig.2). Cave map drawings were carried out *in loco* according to the methodology and accuracy recommended by AESDA and mainly following the conventions for underground topography established by the International Union of Speleology (UIS, 2024).

The temperature and the relative humidity inside the caves were registered using a PCE-444 Thermo Hygrometer (PCE Deutschland GmbH Prüfgeräte).

Mandatory arrangements with community leaders were required for prior negotiation to obtain collaboration from local guides and to engage in related traditional ceremonies for the appeasing of their ancestors, according to customary local rules (Fig.3). This practice is common in Mozambique prior to conducting archaeological activities. As argued by Macamo and Adamowicz (2017), recognition of the socio-cultural values of local communities attached to archaeological sites, through these ceremonies, also help to protect heritage. They add that local communities value and protect these archaeological sites, and this is the reason the sites remained preserved for such a long time, and we are now able to access them for research.

Prospecting was mostly based on visual inspection performed through directed on-foot tracking, with the involvement of the Inhaminga community, and was based almost exclusively on the local population's knowledge of the terrain.

***Figure 3**: The PPPG speleo team with guides and their families in Inhaminga.*
L–R, top row, position 2: Vasco Alberto Ntondo; middle row: Manuel Tomás Saene, Frederico Tátá Regala, Maria Pinto, Manuel António Jimo; lower row: Luís Meira Paulo, Arquimedes André, Ricardo Alberto Sousa.

Results

During these expeditions, 13 caves were visited and explored (see geographical coordinates in Table 1). Also, two small shelters and two obstructed karstic cavities (Ntacolabawa 1 and Ntacolabawa 2) were located and recorded. Five of these caves match the topographical surveys and descriptions published by Laumanns in 2001, although two of them are currently known by different designations – Ninga Injale 1 (formerly known as "Ninga Rego Swere"), Ninga Injale 2 (formerly known as "Ninga Niamagingiri"), Tombo Apale 1, Larger and Smaller Umbira (current and former names) (Table 2). The larger and most relevant is Ninga Injale 2 / Niamagingiri (Fig.4), a cave with a total length of 165m, housing a large colony of bats, that has copious sedimentary deposits and archaeological remains, which includes bones and handmade pottery (Fig.5).

Cave	Datum: WGS 84	GPS: Garmin Oregon 750t	
	Coordinates (Decimal)		
	Latitude	Longitude	Alt. (m a.s.l.)
Ninga Injale 1/Rego Swere	−18.373191°	34.969139°	272
Ninga Injale 2/Niamagingiri	−18.373093°	34.975247°	265
Tombo Apale 1	−18.380506°	34.966212°	269
Ninga Injale 3	−18.373035°	34.975437°	264
Tombo Apale 5	−18.391542°	34.955082°	273
Tombo Apale 6/Baboon Cave	−18.382346°	34.963257°	270
Larger Umbira	−18.343072°	35.014461°	223
Smaller Umbira	−18.343989°	35.013286°	225
Ninga Nhapatata 1	−18.392244°	34.951281°	277
Ninga Nhapatata 2	−18.391658°	34.951378°	279
Ninga Nhapatata 3	−18.391164°	34.951942°	278
Shelter 1	−18.395078°	34.950561°	276
Shelter 2	−18.392575°	34.951292°	277
Ninga Fumo Lourenço	−18.393589°	34.951269°	277
Ninga Molongola	−18.395222°	34.948964°	278
Ninga Ntacolabawa 1	−18.399545°	34.943259°	280
Ninga Ntacolabawa 2	−18.398983°	34.942087°	281

***Table 1 [above]**: Location of the caves explored in 2022–2023 in the Inhaminga region.*

***Figure 4**: Ninga Niamagingiri/Injale 2 main chamber, view from the northeast towards the southwest.*

Since Laumanns' (2001) description, Ninga Rego Swere, Ninga Niamagingiri and Larger Umbira have been severely disturbed by bat guano harvesting. These caves were subjected to massive sediment removal by bat guano prospectors to use as agricultural fertilizer (Figs 7–9). The impact of this activity on archaeological remains and endogenous features is noticeable, in addition to the disturbance certainly caused to the bat colony and the associated biodiversity. As illustrated in Figures 6 and 10, fragments of ancient ceramics and various bones were commonly observed during the exploration incursions, remnants of widely and deeply affected archaeological deposits.

Cave	Meaning	Source
Ninga	Term generally used in the region to designate any cave	Assumed as such in the previous work coordinated by Laumanns (e.g. Annex 3 in Laumanns, 2001)
Tombo	Means «stone» (in Shona)	According to Fumo Ricardo Alberto Sousa
Apale	"Apale" stands for «boys» (in Sena)	According to Fumo Ricardo Alberto Sousa
Tombo Apale	Overall local designation for the caves in the area	Adopted by Laumanns and followed in this record
Molongola	Also known as "Gruta do Salvador" or "Saviour's Cave" because in that area a site near the cave was the last place where water was available during drought season	According to Fumo Ricardo Alberto Sousa
Nhapatata	Name given to the area where the related caves are, with no other known specific meaning	According to the local guides
Fumo Lourenço	In honour of the related local community leader	Given by the guides on the occasion of our visit to the cave
Injale	May be a mis-spelled word related with the term injala, that stands for famine in the Nianja language	According to the local guides
Niamagingiri	Presently not recalled by the local people and no specific meaning was acknowledged	Recorded by Laumanns (*op. cit.*)

***Table 2 [right]**: Etymology and synonymy of the caves explored in 2022–2023 in the Inhaminga region (based on published data and information provided by local collaborators).*

Figure 5*: Handmade pottery found half buried in the southwest gallery, near the constriction passage, in Ninga Niamagingiri/Injale 2.*

Figure 6*: Pottery rim fragment with decoration collected in the Ninga Rego Swere / Ninga Injale 1.*

Eight additional caves were indicated by local guides – Ninga Injale 3, Tombo Apale 5, Tombo Apale 6, Ninga Nhapatata 1, Ninga Nhapatata 2, Ninga Nhapatata 3, Ninga Fumo Lourenço and Ninga Molongola (Fig.11). These are new and unpublished sites and were therefore selected as the main objective of this paper. Smaller Umbira was described by Laumanns (2001), but a topographical survey of the cave was never published. Atmospheric parameters are given in Table 3.

Ninga Injale 3

Located approximately 20m northeast of Ninga Injale 2, this is a small shelter in a collapse doline. It features a sizable block at the entrance and a shallow hardly penetrable branch to the east, extending for 2.75m. While heavily obstructed, there are indications of possible further progression. The covered area ranges to 3.8m wide and 1.6m high, with an extension of 5.5m, sloping downwards to the northeast (Fig.12).

Cave	Date	Temperature ºC	Relative humidity RH %
Tombo Apale 5	09/08/2022	22.6	70.7
Tombo Apale 6 / Baboon Cave	10/08/2022	21.1	77.9
Smaller Umbira	28/07/2023	20.7	80.8
Ninga Nhapatata 1	29/07/2023	32.0	79.9
Ninga Nhapatata 2	29/07/2023	22.5	84.1
Ninga Nhapatata 3	29/07/2023	24.0	91.2
Ninga Fumo Lourenço	27/07/2023	22.5	76.7

Table 3*: Environmental measurements of the caves explored in the Inhaminga region in 2022–2023.*

Figure 7 (above)*:*
Ninga Rego Swere/Injale 1. The sedimentary deposits were removed down to the bedrock. This occurred after the speleological recording carried out by Laumanns in 1988.

Figure 8 (right)*:*
The Main Gallery in Larger Umbira, showing evidence of massive removal of sedimentary deposits (including guano).

Figure 9 (above)*:*
Larger Umbira: a pit in the floor of the secondary gallery, probably dug by guano prospectors, highlighting the depth of the disturbance caused to the original cave deposits.

Figure 10: *Sediment deposits in Larger Umbira: close-up showing the presence of ancient ceramics and bones.*

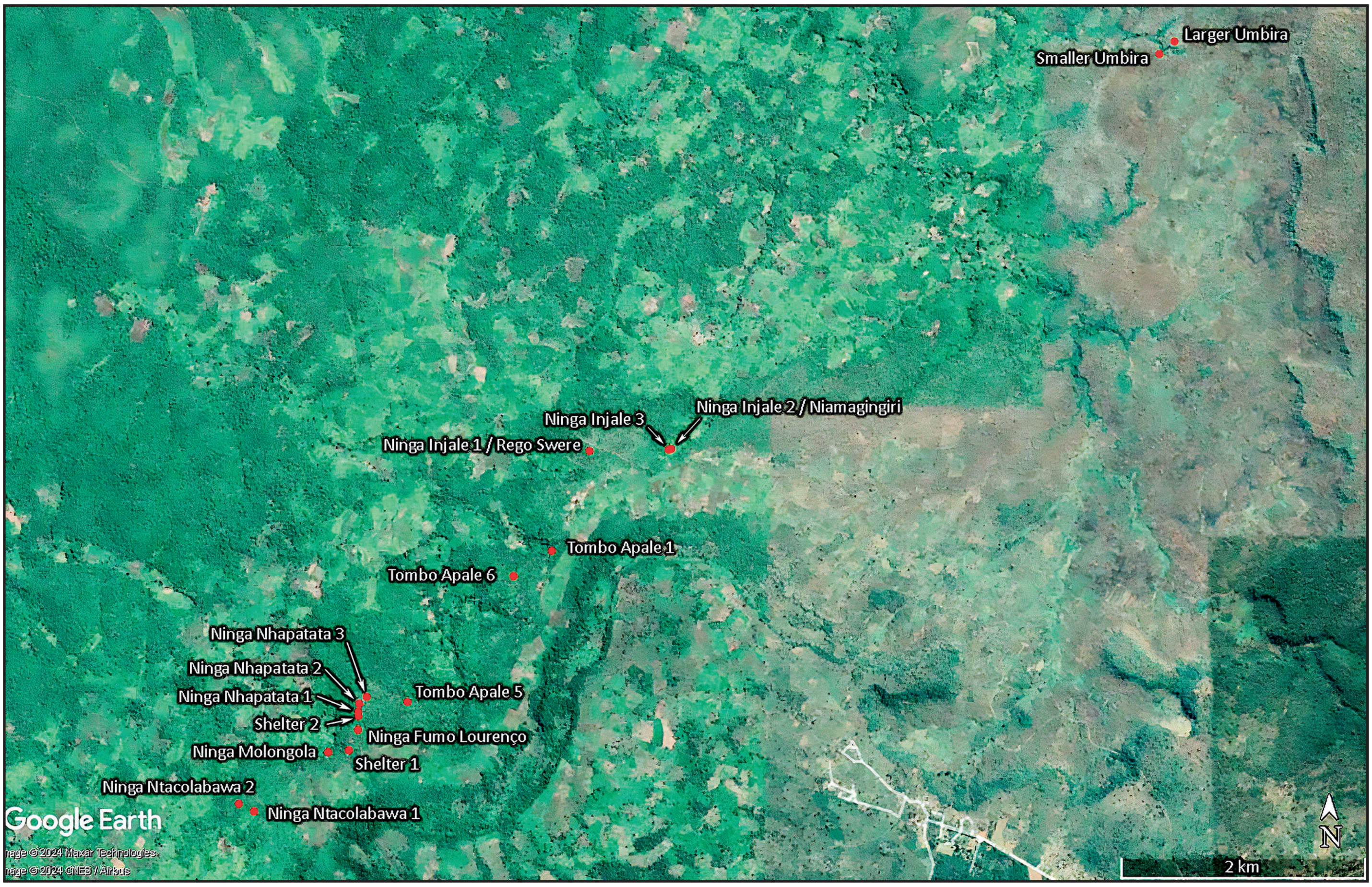


Figure 11 (above): *Aerial view showing the locations of the karstic cavities recorded in the Inhaminga area to date. [Adapted from GoogleEarth imagery.]*

Figure 12 (right): *The entrance to Ninga Injale 3, viewed looking towards the northnortheast.*

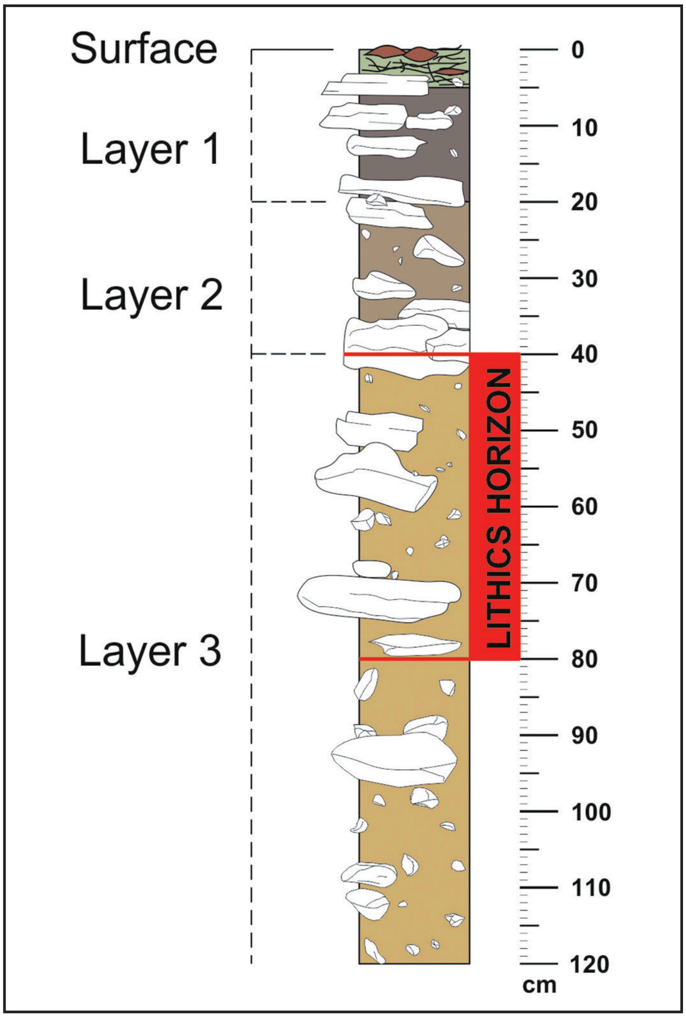


Figure 13:
Schematic profile of the deposits, including the lithic horizon, recorded in the Tombo Apale 5 test pit (Figure 15).

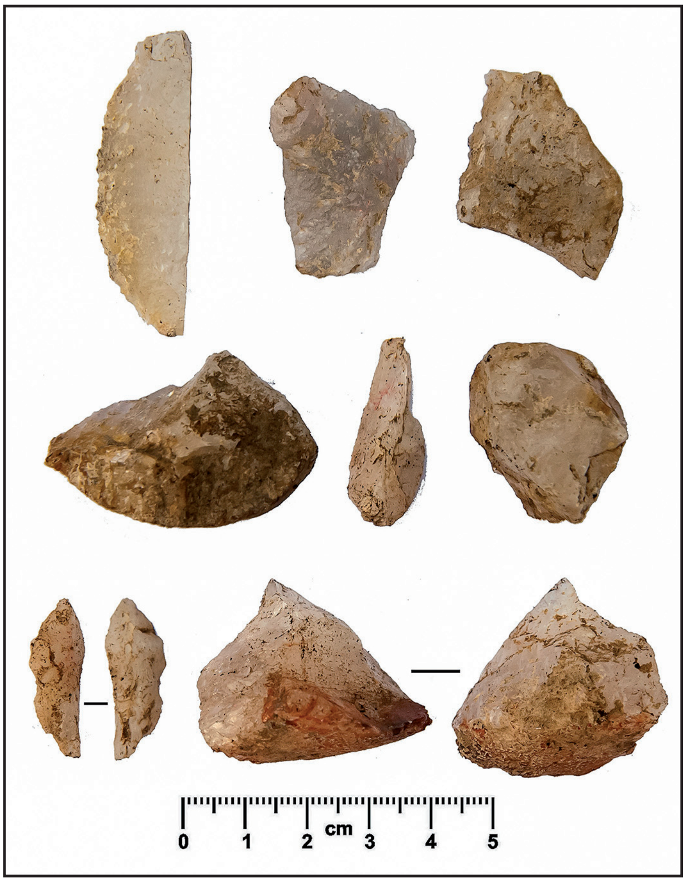


Figure 14: *A selection of lithic artefacts collected in the test pit (Layer 3).*

Figure 15:
General view of the archaeological test pit in Tombo Apale 5 after its excavation.

Tombo Apale 5

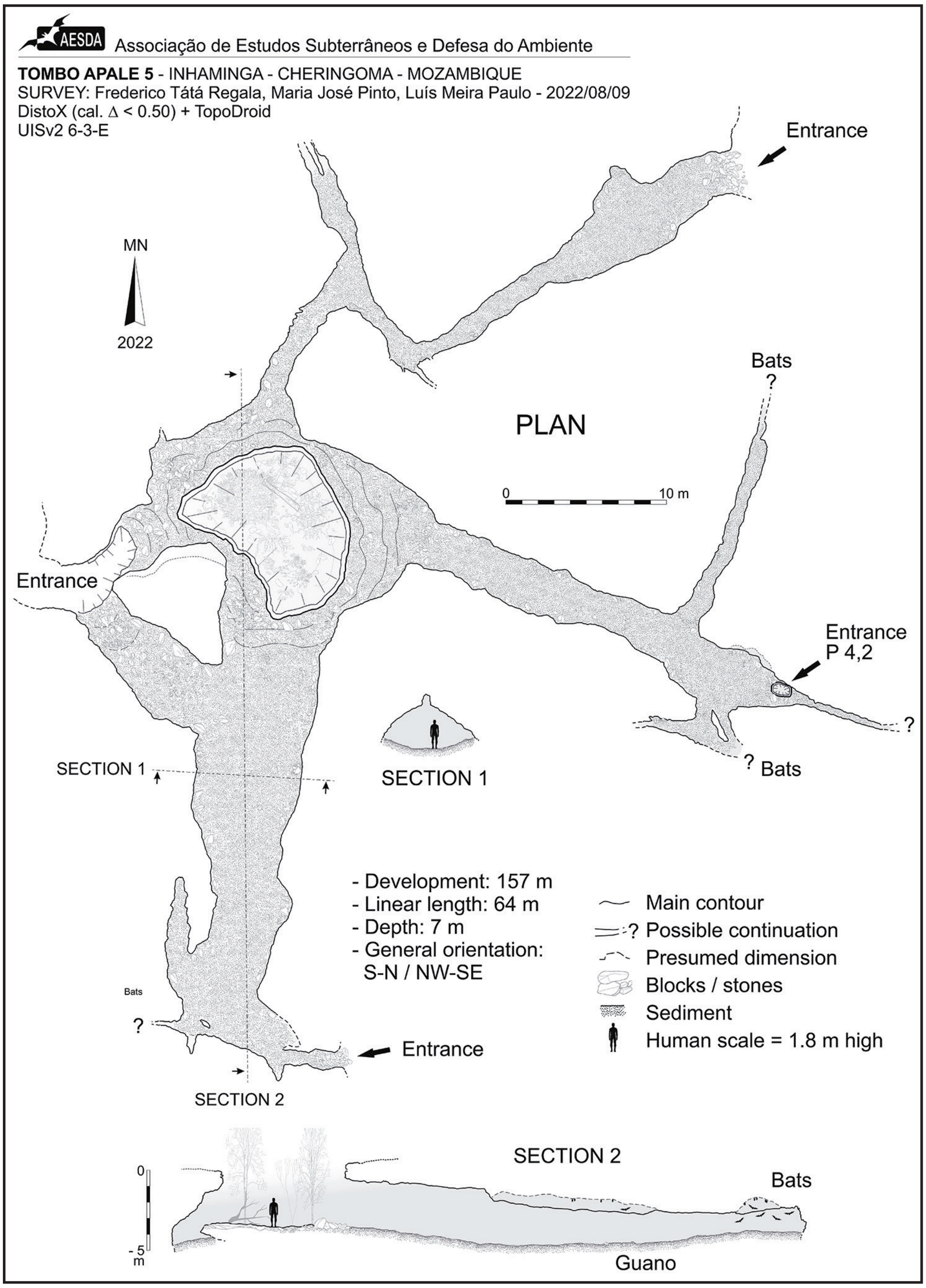
The cave has a fault-guided radial configuration branching from a collapse doline of 10×7m in plan. It features four other apertures in the distal ends of the larger galleries. The main access is through the western side of the doline, under a bridging archway. The galleries taper gradually, becoming shallower and narrower along their length. Whereas some passages are currently blocked, evidence of bats circulating suggests the presence of unsurveyed inner spaces, which might be explored further after unblocking work. The total measured cave development spans 157m, which ranks as the second largest known cave in Inhaminga and, slightly less developed than Ninga Injale 2 / Niamagingiri.

This cave bears resemblance to the one recorded by Vachamuteco (1982) as "Caverna Nº 5". Cursory examination of the schematic sketch shown in his report reveals general similarities with Tombo Apale 5, which suggests that they are probably the same cave.

***Figure 16**: Tombo Apale 5 – general view of the south gallery.*

***Figure 17**: Part of the Tombo Apale 5 doline.*

***Figure 18 (right)**: Topographical survey of Tombo Apale 5.*



The cave is inhabited by bats, and evidence in the bigger sections of the galleries suggests that guano harvesters have removed a large part of the former sediments. However, the sheltered perimeter area of the collapse doline retains undisturbed deposits, presenting favourable conditions for the preservation of archaeological remains. In fact, preliminary excavations near the entrance, conducted during 2023 [1], have confirmed the presence of lithic artefacts in stratigraphical association with mammalian faunal remains. Excavation of the 1×2m test pit (Figs 13 to 15) yielded a collection of white translucent vein-quartz flakes (Fig.14).

Following their preliminary analysis, the exhumed materials have not yet allowed chronological definition of the anthropogenic horizon to which they correspond, because they lack suitable attributes to support diagnostic typological interpretation. However, the total absence of pottery remnants among the excavated material must be noted and indicates a Stone Age deposition. Additional and more comprehensive archaeological excavations will almost certainly provide new and more definitive chronocultural information. These materials and their archaeological context are currently under study.

Footnote 1
Under the licence Nº 06/2023, issued to Susana Carvalho by Direcção Nacional do Património Cultural, Ministério da Cultura e Turismo, República de Moçambique.

***Figure 19**: View towards the eastsoutheast of the entrance to Tombo Apale 6 / Baboon Cave, with the local guides. L to R: Arquimedes André, Manuel Tomás Saene, Maria Pinto, Luís Meira Paulo, Vasco Alberto Ntondo, António Vasco, Ricardo Alberto Sousa and Manuel António Jimo.*

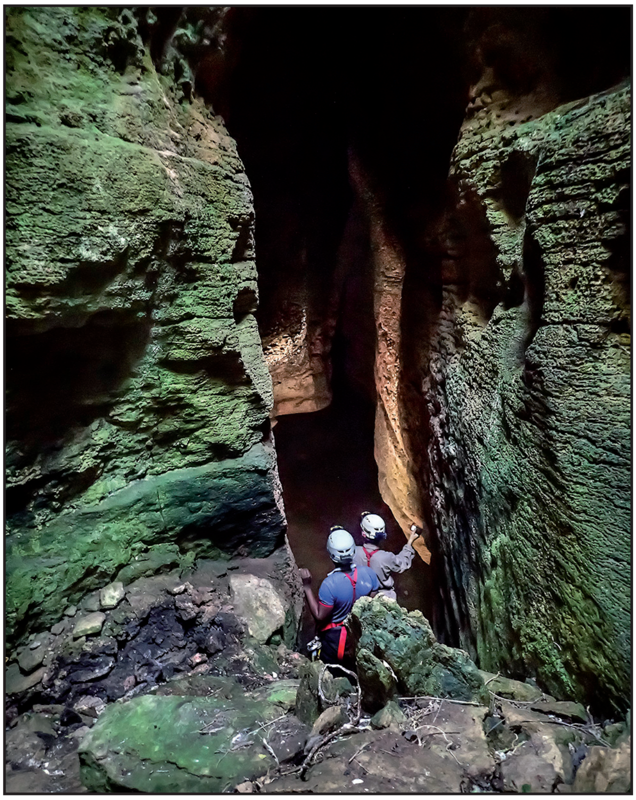


***Figure 20 (above)**: View of the access to the inner gallery of Tombo Apale 6, from south to north.*

Tombo Apale 6 / Baboon Cave

The cave entrance is an elongated shaft with a 5.2m vertical drop onto a talus of loose stones below. It exhibits typical joint-guided formation in a nearly orthogonal pattern. The larger development extends to the northwest side, encompassing an 18m gallery, approximately 5.5m in height and reaching around 3.3m in width. This gallery is inhabited by rhinolophid bats and houses a substantial deposit of bat guano. Noteworthy speleothems with weathered surfaces are also present. The total development of the cave is 57m.

Beneath the entrance, some contemporary debris items were found, including a large ballistic shell and an iron blade. Towards the southeastern side of the shaft there is a small eastern branch, and the gallery becomes very narrow at its distal end. In this area the articulated skeletons of a domestic dog and a baboon (*Papio* sp.) were discovered, exhibiting nearly intact anatomical arrangement of the bones (Fig.21).

***Figure 21**: Baboon (*Papio *sp., possibly chacma baboon,* Papio ursinus*) skeleton near the south end of the cave.*

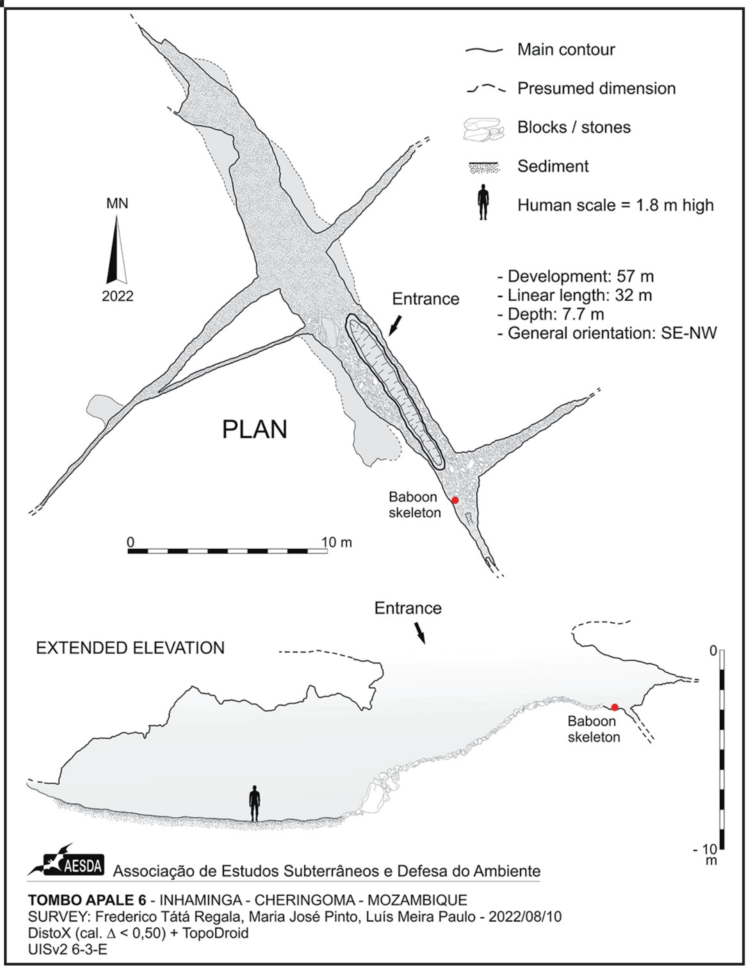


***Figure 22**: Tombo Apale 6 / Baboon Cave topographic survey.*

Figure 23 (above): *View of the access to the inner gallery of Ninga Fumo Lourenço.*

Figure 24 (right): *Details of part of the breccia/conglomerate that infills a ceiling cleft in Ninga Fumo Lourenço.*

Ninga Fumo Lourenço

The cave is located 460m southwest of Tombo Apale 5 and south of the Nhapatata group. The access is through a vertical 3.9×0.8m crevice, dropping approximately 2m into the top of a cone composed of loose blocks. The cave has a total development of 38m. Elements indicative of palaeontological or archaeological interest were not found. Some highly weathered formations are present at the southern end. The main ceiling cleft is filled with a consolidated breccia. A very large population of rhinolophid bats inhabits this cave. According to the local *Fumo* (community leader) Ricardo Alberto Sousa, it served as a refuge for people during colonial times.

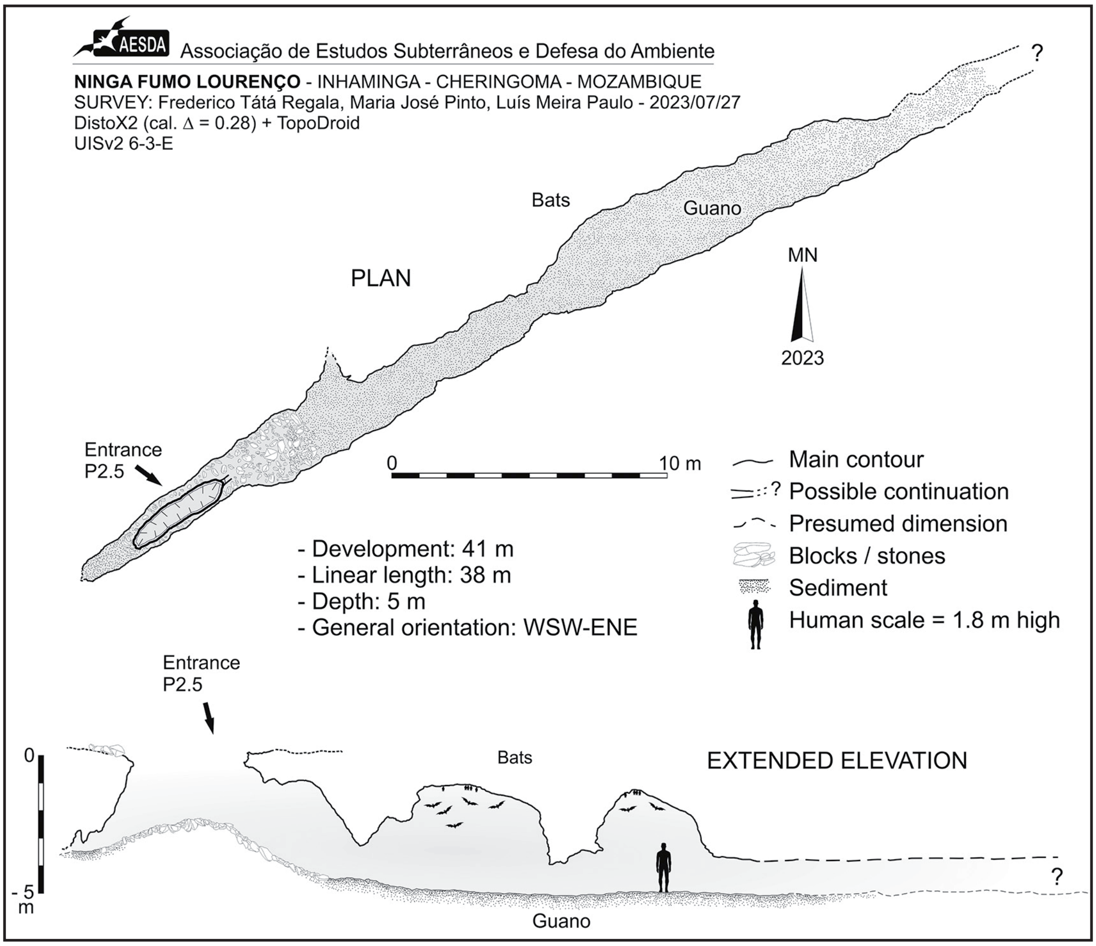


Figure 25 (right): *Topographic survey of Ninga Fumo Lourenço.*

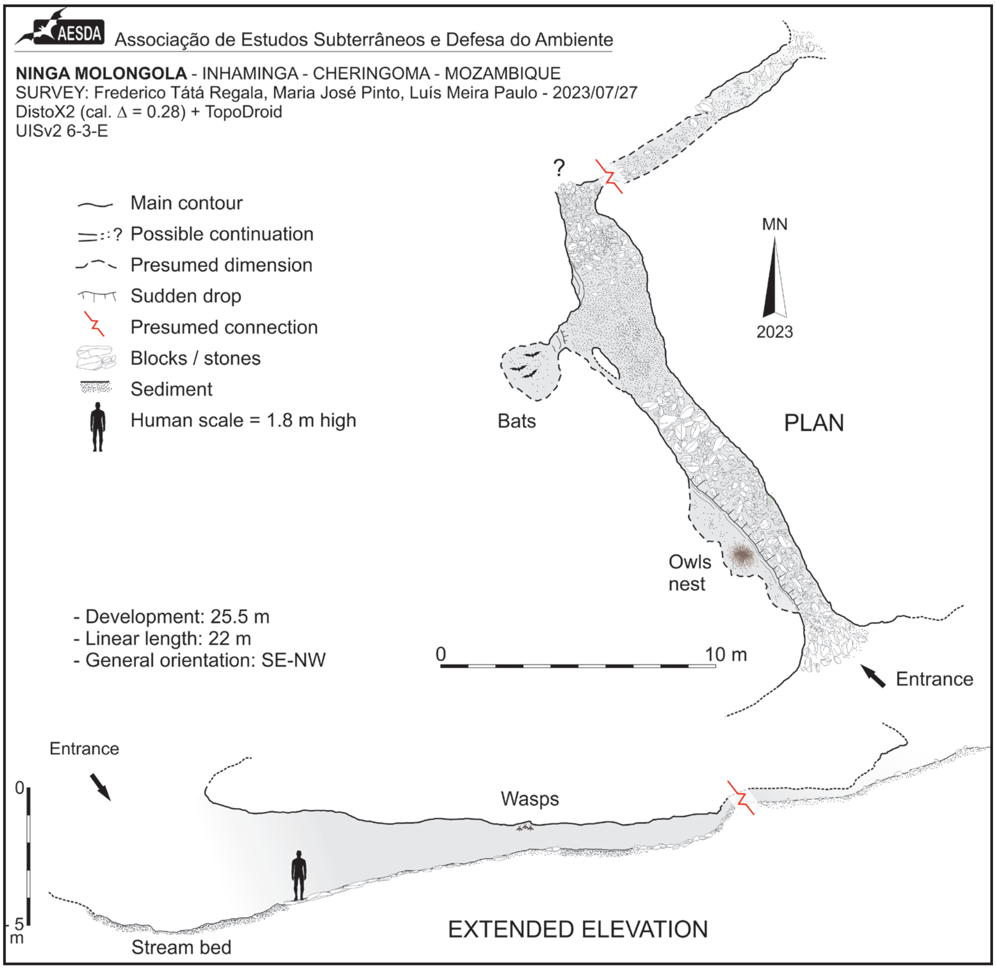


Figure 26 (left): *Topographic survey of Ninga Molongola.*

Ninga Molongola

The cave begins as a narrow fault-guided linear corridor that exhibits a slightly meandering pattern in plan (Fig.26). The main opening leads out directly into a dry stream bed. Towards the northern end of the inner gallery, a second narrow passage that is partially obstructed leads northeastwards through a shallow corridor, providing an alternative exit. Loose sediment and fragments of handmade pottery are present.

Close to the cave's main entrance a pair of owls with hatchlings were observed inhabiting a recess near to the ceiling. As might be expected, numerous bones from micro-mammals blanketed the ground near the cave entrance, particularly beneath the owls' nesting site. Additionally, a small niche within an internal area of the main passage served as a shelter for approximately a dozen large rhinolophid bats.

Figure 27: *Ninga Molongola – view of the inner gallery.*

Figure 28: *Outside the entrance to Ninga Nhapatata 1.*

Figure 29: *View of the inner gallery in Ninga Nhapatata 1.*

Ninga Nhapatata 1

This horizontal cave is composed of a main 37m gallery, developing into a relatively large double chamber. Within the chamber, an 8m branch extends towards the northwest, while a narrow corridor heads southeastwards. However, exploration of the latter was limited due to the overwhelming presence of bats, numbered in their thousands. Dead specimens are commonly observed on the floor or hanging from the cave walls. The abundant guano deposit made the atmosphere nearly unbreathable and required the use of masks, which hindered exploration and comprehensive mapping efforts. Notably, a large Nile monitor (*Varanus niloticus*) was encountered roaming inside the inner chamber.

Ninga Nhapatata 2

This cave lies 65m to the north of the Ninga Nhapatata 1. The shaft is small with a constricted aperture that leads to a 5m-deep vertical entrance. Inside the cavity, a narrow lowermost slit gradually becomes too tight for further progression. At the beginning of this section, between the boulders of the entrance talus, part of a medium-sized primate skeleton ("vervet monkey": cf. *Chlorocebus pygerythrus*) was collected and subsequently included in the GNP bone collection.

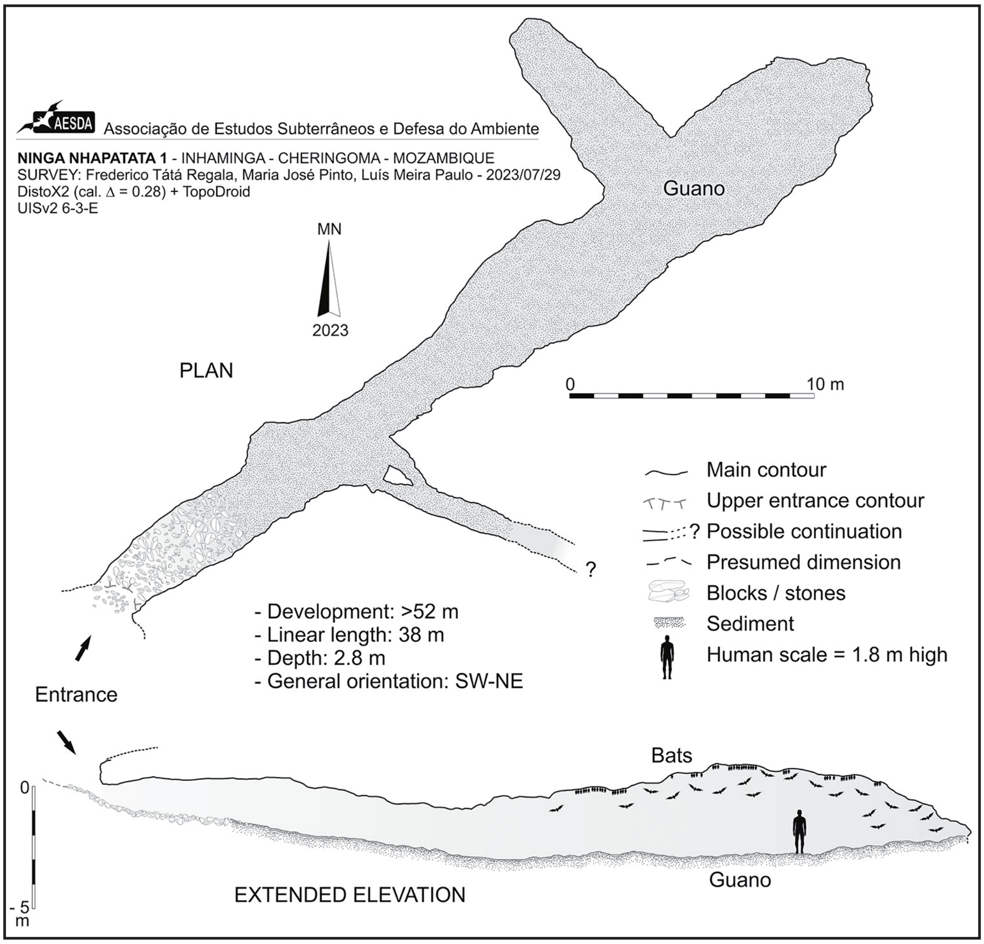


***Figure 30 (above)**: Topographic survey of Ninga Nhapatata 1.*

Figure 31: The entrance to Ninga Nhapatata 2.

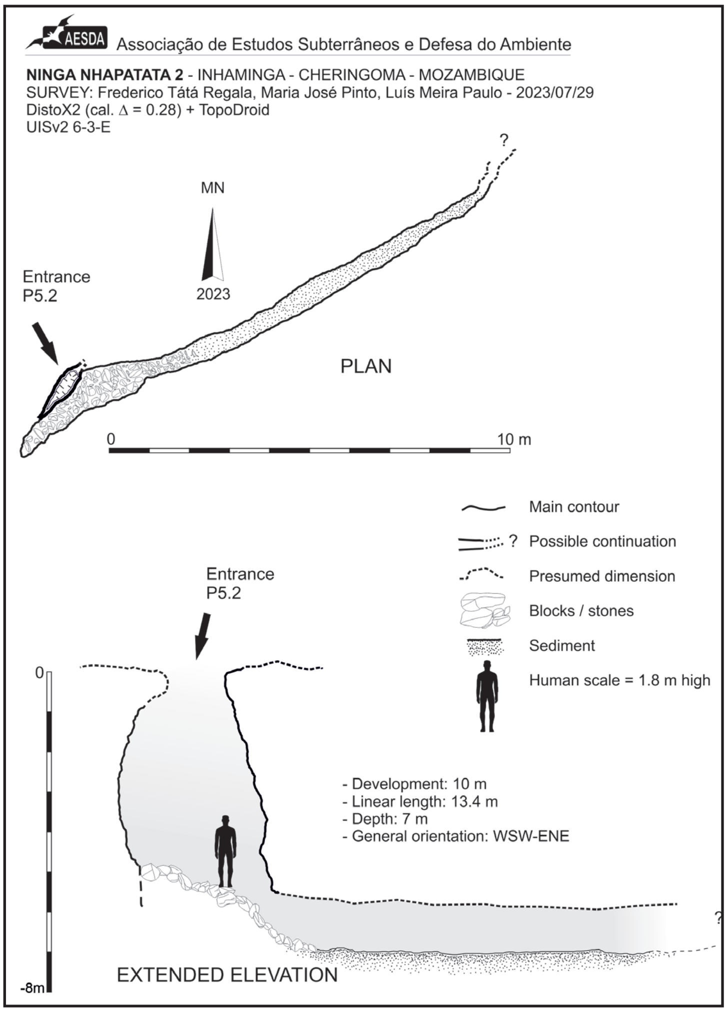


Figure 32: Ninga Nhapatata 2 topographic survey.

***Figure 33**: Entrance to Ninga Nhapatata 3.*

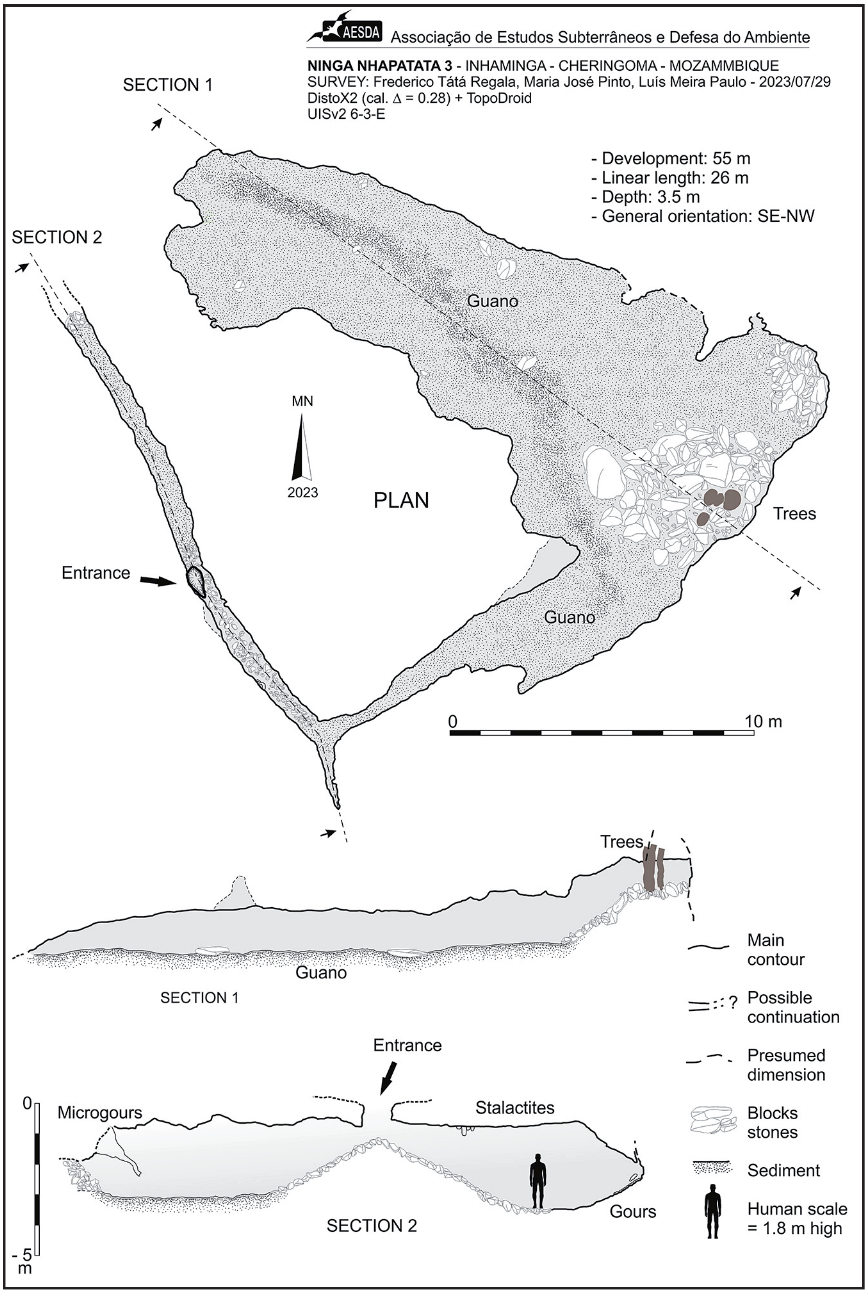


***Figure 34**: Ninga Nhapatata 3 topographic survey.*

Ninga Nhapatata 3

This cave lies 80m northeast of Nhapatata 1. The vertical entrance intersects a linear gallery, forming two opposite corridors, the shortest to the northwest and the main development to the southeast, inflecting abruptly to the northeast through a narrow gap. After this constriction it widens towards a former entrance, presently obstructed by a cone of tumbled stones and sediment, where a tree has taken root, extending its branches into the cave. From this point onward, the cave develops into a wide chamber with a relatively low ceiling, housing an extensive bat guano deposit. A meandering groove traverses through the biogenic deposit, underneath a longitudinal rock fracture visible along the ceiling, indicating water penetration during periods of heavy rainfall.

At the time of the investigation, only one large rhinolophid bat was observed within the cave. Additionally, in the middle area of the inner room, near the south wall, a non-fossilized human molar tooth was discovered.

A few poorly developed and mostly weathered-looking speleothems are present, and a conglomerate with quarzitic pebbles fills some clefts in the walls.

***Figure 35**: View of the low and wide inner gallery in Ninga Nhapatata 3.*

***Figure 36**: Smaller Umbira entrance.*

Smaller Umbira

The description of the Smaller Umbira provided by Laumanns (2021) fully matches this cave. It presents a large and thick deposit of bat guano with signs of water action and sinking at two points in the middle of the room, adjacent to the opposing walls, where stones beneath the guano are visible. Some dispersed long bones, probably from a baboon, were found scattered along the north wall and near the terminal narrowing. Only one large rhinolophid bat was observed within the cave.

Conclusions and future work

During the 2022–2023 field seasons, the Inhaminga area, situated northeast of GNP, became part of the scope of PPPG's speleological expeditions. A total of thirteen caves were explored and inspected in this region, several of which were previously undocumented, adding to our knowledge of the area. Five of the caves described by Laumanns in 1998 (Laumanns, 2001) were recognized and eight other caves entered the inventory, as expected on the basis of the 1980s report issued by the guano prospectors (Vachamuteco, 1982). Thus, new mapping of 420m of galleries was added to the Cheringoma Plateau's cave inventory, which now includes over 2.15km of topographical cave surveying under the PPPG (*see* Regala *et al*., 2022: 168), further enhancing our understanding of the region's subterranean landscape. Additionally, the regional registry now includes over a hundred karstic structures of speleological interest, encompassing caves, obstructed cave entrances, dolines and rockshelters. Following the Mozambique Monument Policy, these caves, if properly preserved, can be used for educational and touristic purposes to benefit local communities. Although some of these caves have been impacted by bat guano extraction, several preserve substantial and deep sedimentary deposits, predominantly within the entrance areas and beneath roof falls,

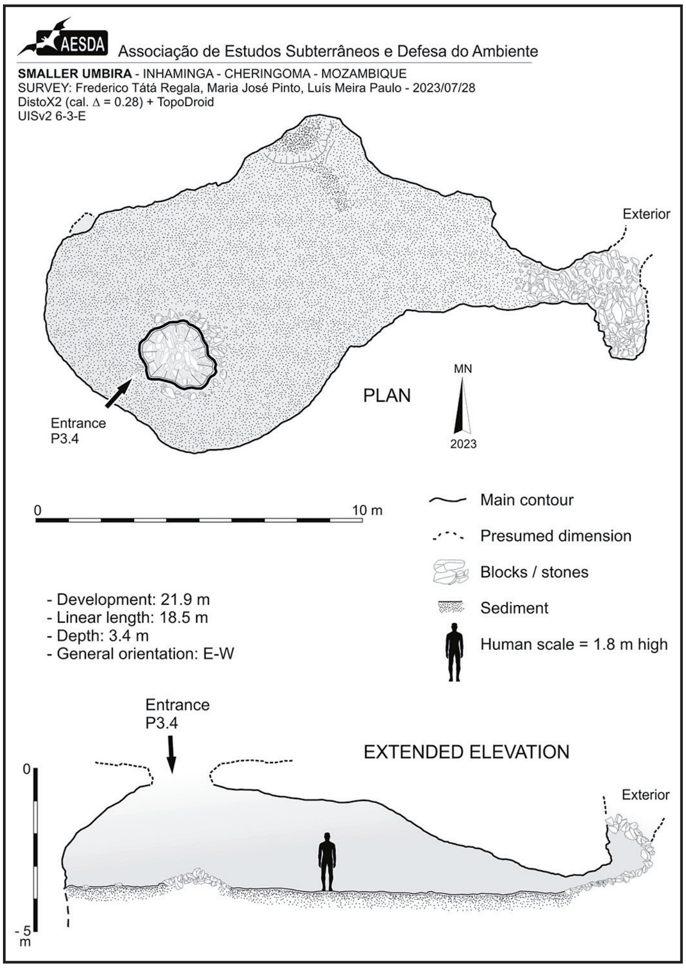


***Figure 38**: Smaller Umbira topographic survey.*

including related boundaries. These deposits commonly contain evidence of large mammal bones from several different species (e.g., suids ["pigs"], other artiodactyls, and baboons).

Consequently, it is vital to safeguard these sites by leveraging the existing legislation in Mozambique (Decreto nr. 27/94, de 27 de Julho; Lei nr. 10/88, de 22 de Dezembro [2]) and by conducting outreach efforts to raise awareness of their scientific and cultural significance among local communities and other stakeholders.

Footnote 2

Decreto nr. 27/94, de 20 de Julho, que aprova o Regulamento de Protecção Arqueológica e a composição do Conselho Nacional do Património Cultural, *Boletim da República* nr. 29 (I). Maputo (Moçambique). Lei nr. 10/88, de 22 de Dezembro, que determina a protecção legal dos bens materiais e imateriais do património cultural Moçambicano, *Boletim da República* nr. 51 (I). Maputo (Moçambique) Resolução nr. 12/2010, de 2 de Junho, que aprova a Política de Monumentos, *Boletim da República* nr. 22 (I). Maputo (Moçambique).

***Figure 37**: View of the inner gallery in Smaller Umbira.*

These underground settings are valuable repositories for the collection of useful specimens, particularly crucial for comparative anatomy and molecular data sources for phylogenetic studies (e.g., Rao *et al*., 2020), migration patterns (e.g., Kowalik *et al*., 2023), climate reconstructions (e.g., Sealy *et al*., 2020), dietary habits (e.g., Jaouen *et al*., 2022), and trophic interactions (cf. Lüdecke *et al*., 2022). The occurrence of handmade pottery reveals past human activities within these caves, suggesting that the infilling deposits may also contain other preserved archaeological remains. For instance, the Tombo Apale 5 cave offers favourable conditions for human use, with expansive sheltered spaces, and well-preserved sediment deposits. In fact, the archaeological test excavation conducted in 2023 confirmed the presence of archaeological layers containing lithics and animal remains within these deposits.

The region of Inhaminga has demonstrated great speleological potential. Several of the caves reported here were not previously recognized in the literature. Engaging local communities in further exploratory surveys is expected to yield additional significant discoveries. Consequently, continuing research efforts in this area is deemed a high priority.

In Mozambique, the establishment of an inventory of monuments and archaeological sites is a mandatory task for their documentation. This involves recording their location, typology, periodization, cultural affinities, number of the recorded objects, as well as the applied techniques for surveys and excavations, and the existing bibliography (Artigo 16, Decreto nr. 27/94, de 20 de Julho).

As previously noted, after pulling together details of all the work done since the first field season in 2016, the Gorongosa–Cheringoma cave inventory has grown to be a comprehensive reference database. The inventory encompasses 98 caves and rockshelters, and points towards significant potential for future research into various aspects of both the natural and human sciences. Surveys to date have succeeded in identifying key localities for further archaeological excavations, with the potential to fill major gaps in the knowledge of human evolution in southeastern Africa. The PPPG facilitated unique opportunities to advance this critical research.

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