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Archaeological Field Report
Munsayac Cave, Biak na Bato, Bulacan

Project: Archaeological Excavation of Munsayac Cave, Biak na Bato National Park, San Miguel Bulacan and survey of contiguous cave sites
Period: March 4-24, 2018
Proponent: This is a joint project between the Archaeological Studies Program, University of the Philippines and the Center for Bulacan Studies, Bulacan State University. Funding for the project is provided by National Geographic Society Grant No. HJ-152R-17
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The team first conducted the customary courtesy calls to different local government units. The team proceeded to the Municipal Hall of San Miguel for a meeting with Mayor Marivee Mendez Coronel. The team also did a courtesy call with the DENR Region 3 in particular to PENRO Celia Esteban and PASU Ofelia Conag.

Munsayac Cave

Munsayac Cave was first explored during the 2017 archaeological excavation of the nearby Tanggapan Cave. The cave is within the property of former Bulacan vice Governor Joey Munsayac, whose house is also the base camp for the team. The cave is about 15 minutes' walk from the house (Figure 1).

The cave is located in the upper portion of a limestone gully and the entrance is generally oriented to the North. The top most part of the formation is a large limestone plateau. The

cave has a coordinates of 15^0 06’ 04”N and 121^0 04’ 14”E. The mouth of the cave which is in Northwestern part is a limestone talus and whose ceiling has recently broken and fallen off. The cave has two chambers and two sink holes (Figure 2). The antechamber is located in the northern side and the inner chamber in the southern end. Between the two chambers is a daylight sinkhole. Another sinkhole is found in the eastern side of the cave wall. The cave floor is generally dipping to the south towards the inner chamber (Figures).

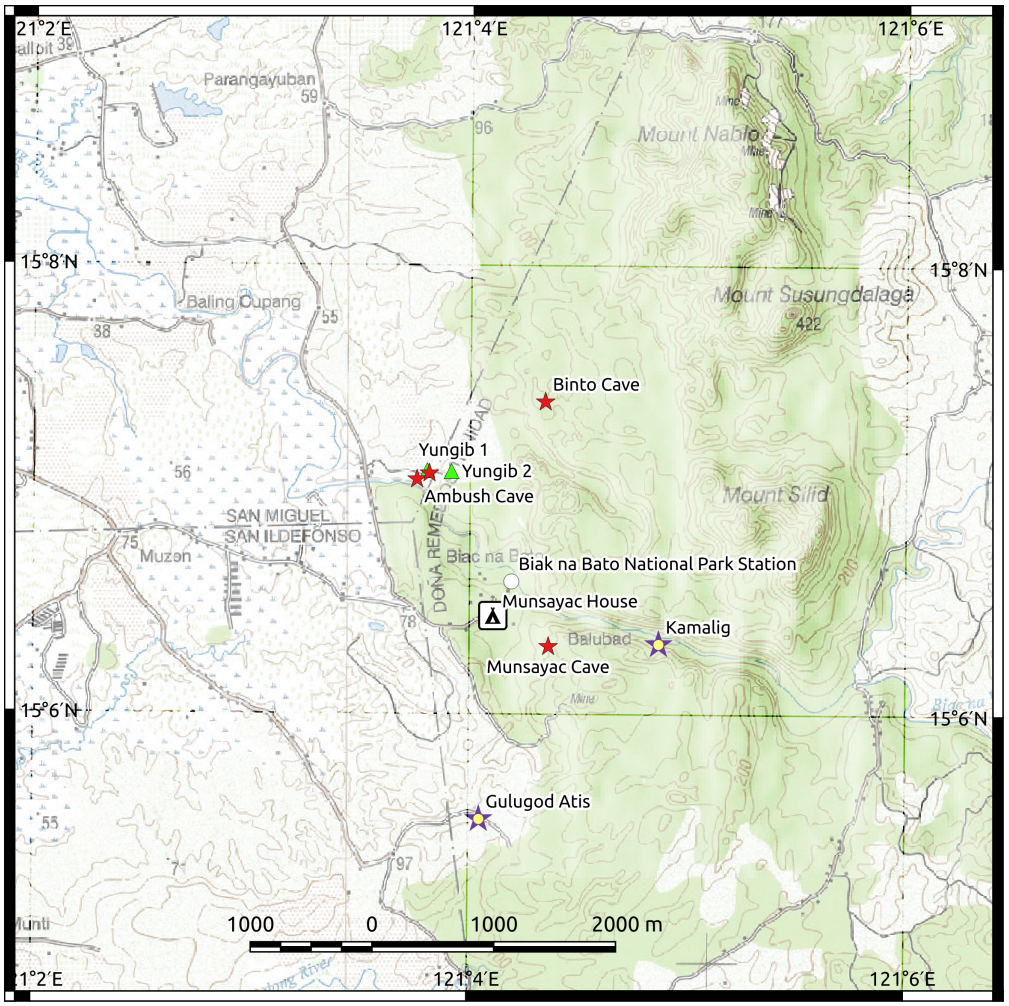

Figure 1 Location map for the Biak na Bato Sites

Excavation

The team set up two contiguous 2x2 m excavation units near the east wall of the antechamber (Figure 3). The northern square was designated SQ1 and the southern unit as SQ2.

The NE corner of each unit was designated as the Local Datum Point (LDP) and SQ1 LDP is 10cm higher than SQ2 LDP. The cave Datum Point (DP) was set up in the large limestone boulder in the mouth and was marked with red paint.

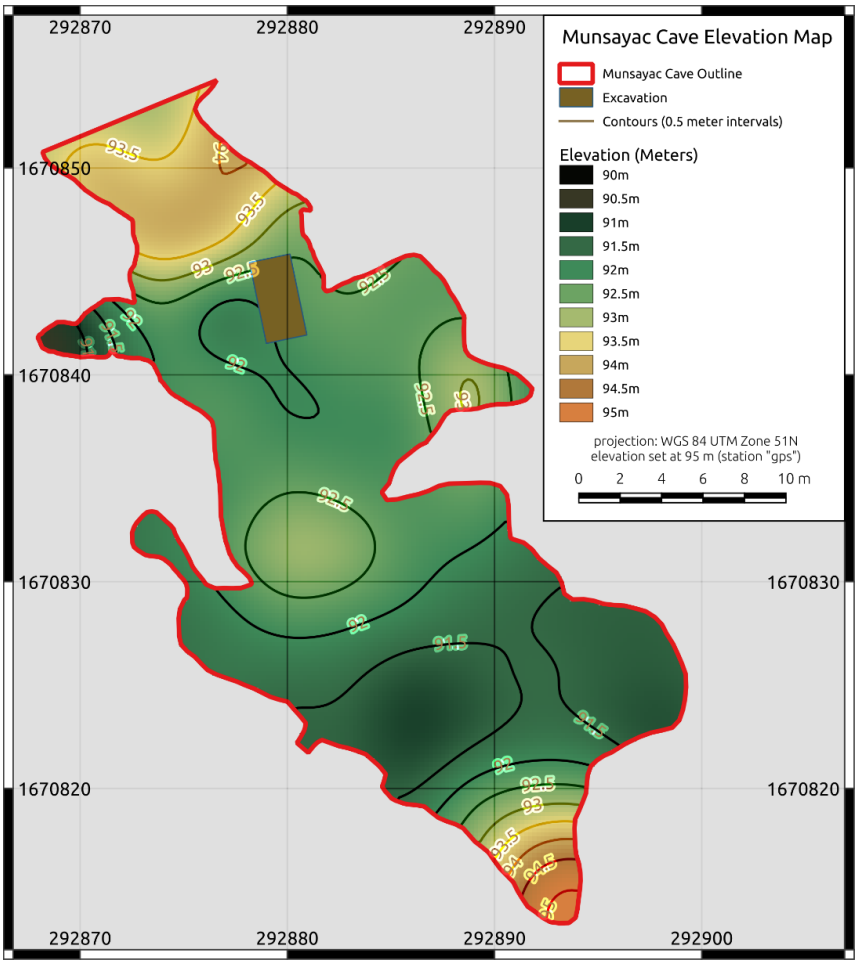

Figure 2 Slope map of Munsayac Cave and showing the location of the excavation unit

Figure 3 Excavation of Munsayac Cave March 2018

The excavation proceeded using the spit system approach. Each spit is 5 cm deep using nominal values. All the material remains recovered were recorded per spit. Important materials were recorded using the 3 dimensional values. The spits were then consolidated with the identified natural layers during the excavation and in plotting the stratigraphic profile (Figure 4).

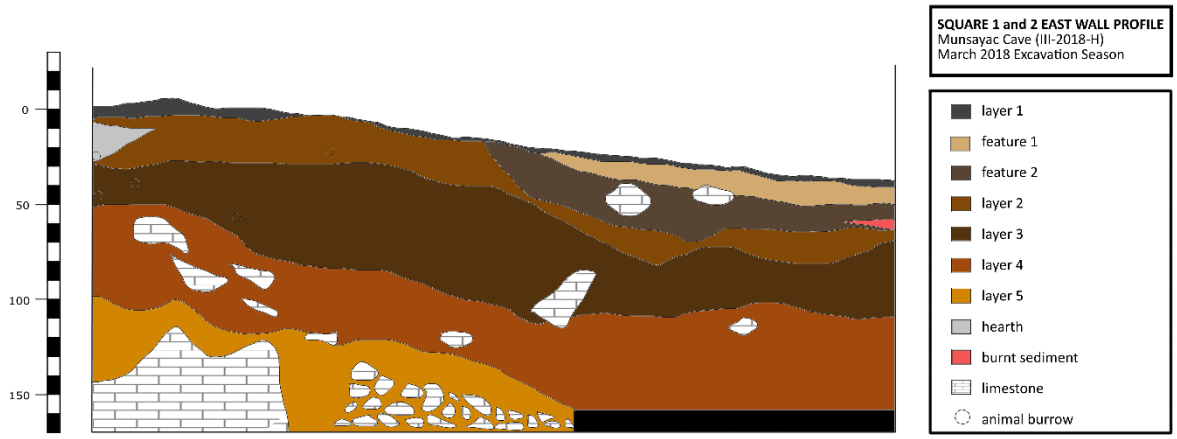

Figure 4 Stratigraphic Profile of the east wall of SQ1 and SQ2

Since the slope is dipping southward, the layers in Sq1 is thinner than those in SQ2. Five layers were identified in SQ1 with an ash feature in Layer 2. Two features were identified in SQ2 above Layer 2. A light colored sediment was designated Feature 1 and could have been a modern sediment washed in from the eastern wall sink hole. Feature 2 which is rich in animal remains and contains tradeware ceramic as well as earthenware pots, is a historical layer.

Layer 2 and Layer 3 contains earthenware sherds with associated flake tools. Layer 4 on the other hand only contains flake tools. Layer 5 is devoid of cultural material but sediment is brecciated. Layer 5 was primarily observed in SQ1 at the end of the excavation season. Micro tektites were recovered between Layer 3 and 4.

SQ1 reach the maximum depth of 170 cm BS while SQ2 reached a depth of 150 cm BS. The units were backfilled using sacks with sediments as we are still planning to dig deeper nest field season.

Material Remains

Stone Implements

The stone implements from Munsayac cave are mostly simple flakes (Figure 5) but there are few cores and hammer stones (Figure 6). Chert is the predominant type of raw material which can be sub divided into chalcedony, radiolarite and yellowish chert. Other raw materials are quartz and volcanic such as andesite and dacite. Flake tools were associated with pottery were found in Layer 3. Layer 4 and 5 are aceramic layers. Similar to Tanggapan cave micro tektites were also recovered from Munsayac Cave at a depth of 80 cm BS in SQ2. They are found between Layer 3 and 4.

Figure 5 Chert flake tools from Munsayac Cave

Figure 6 Hammer stones from Munsayac Cave

During the survey of Gulugod Atis (Figure 1) about 1.5 km distance from the caves, we were able to identify possible source of the yellowish chert. Samples were collected for comparison with the flake tools.

Ceramic

Stoneware sherds (Figure 7) were mostly recovered in Feature 2 of SQ2. This feature is an historical period and contain stoneware, celadon and Manila ware sherds (Figure 8). The feature cut goes as deep as Spit 10 and associated with high concentration of animal remains.

Figure 7 Stoneware (above) and celadon sherds (below)

Figure 8 High fired earthenware (Manila ware)

Earthenware pots were recovered in SQ1 and SQ2 up to Spit 19. The earthenware potteries from Munsayac cave are mostly cooking pots (Figure 9). The rim forms are out curving with round lip profile (Figures 10). Most are brown pots with fire soot.

Figure 9 Layer 3 earthenware rims

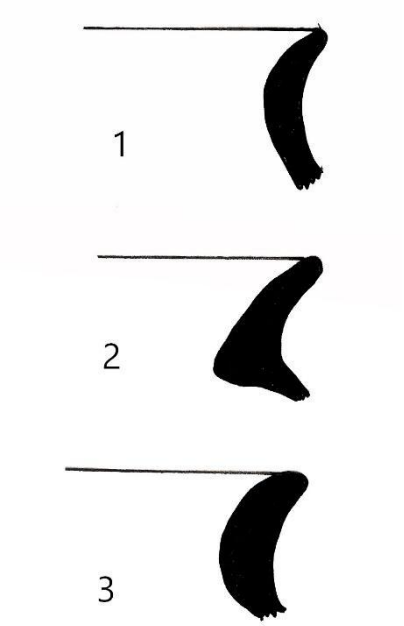

Figure 10 Other Pottery Rims forms from Munsayac cave

Animal Remains

The site can be considered as a bone midden with a high volume of animal remains recovered from the surface up to the last spit excavated. Almost 80% of recovered materials are animal remains. The site also has a diverse taxa of animal remains recovered. These includes medium size mammals such as Bovids (cf. *Bubalus sp*), Cervid, Suids (*Sus philipinensis*) (Figure 11) and macaque (Figure 12). Reptiles such as snakes, monitor lizards

and turtles are also recovered. Most of the bones also have distinct cut marks including a macaque bone from Layer 2.

Due to the fragmentary condition of the bones not every specimen can be identified by its taxon. Among the identified specimen (NISP), counts were conducted as shown in Table 1 and Figure 13. Among the layers, Layers 2 and 3 has the riches in terms of volume of animal remains. Square 2 also has more animal remains than Square 1.

Among the taxa, Cervids has the most number followed by Bovids. Macaques were identified only up to Layer 3, or those upper layers associated with pottery. Among the replies, there are more snakes than monitor lizards. Layer 4 which is an aceramic layers, there are fewer animal remains but still dominated by Cervids with Suids and Bovids.

Fish shells and Gastropds were also collected across the different units. Some of the identified shellfish species are Bradybaenidae, Cylophoridae, Thiaridae and Helicostyla.

Figure 11 Suid and Cervid teeth and mandible from Munsayac Cave

Figure 12 Macaque teeth from Layer 3

Table 1 NISP per taxa and layers

Layer	Bovid			Cervid			Suid			Macaque			Snake			Monitor Lizard			Turtle
	SQ1	SQ2	Total	SQ1	SQ2	Total	SQ1	SQ2	Total	SQ1	SQ2	Total	SQ1	SQ2	Total	SQ1	SQ2	Total	SQ2
Feature 1		14	14		26	26		9	9		2	2		9	9			0	
Feature 2		24	24		22	22		16	16		1	1		2	2		1	1	
2	1	95	96	7	93	100	5	30	35		17	17		11	11		8	8	2
3	6	21	27	44	78	122	14	35	49	15	23	38	11	27	38	4		4	6
4	14		14	21	10	31	12	2	14			0	1		1	2		2	

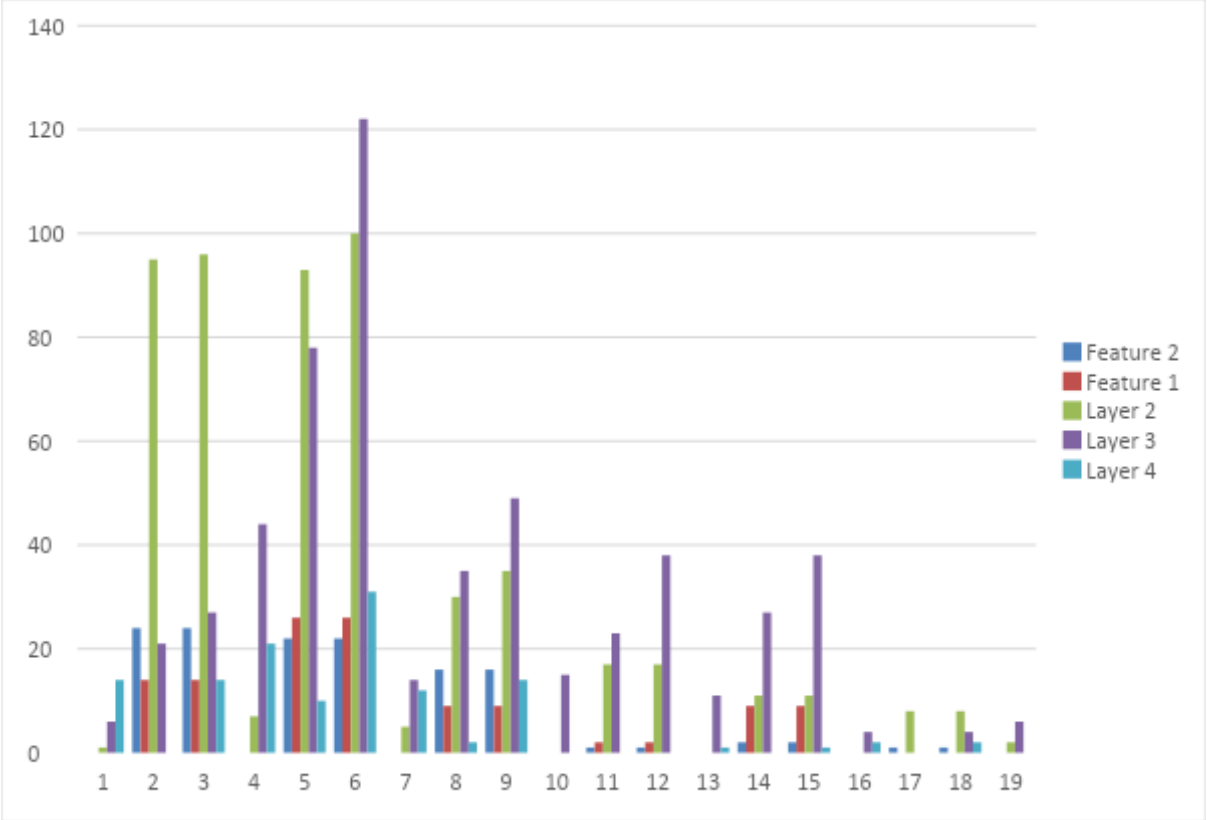

Figure 13 NISP per Taxa and Layer

Similar to Tanggapan Cave, we were also able to recover bone tools. The bones were curved from long bones into barbs that can be used for fishing (Figure 14). A small broken tip was recovered and another bigger almost complete barb bone tool. The bone tools were recovered associated with the ceramic layer.

Figure 14 Barb Bone tools from Munsayac cave

Discussion

Our current effort to expand our research into Southern Luzon, Bulacan in particular has been fruitful. The test excavation at Tanggapan Cave in 2017 has shown that there are prehistoric deposits in Biak na Bato formation. The 2018 excavation in Munsayac cave has provided us with an *in situ* and undisturbed context for the material remains. Most cave sites in Biak na Bato have been disturbed by treasure hunters including Tanggapan Cave. Munsayac cave which is within a private property luckily did not suffer the same fate.

The 2018 excavation of Munsayac Cave. we have identified at least three cultural horizons. The upper historical layer, the middle Neolithic layer and the lower Upper Paleolithic layer. We still need to subject a number of samples for radiocarbon dates to verify this periodization.

There has been a number of preliminary insights from the cave site. Similar to Tanggapan Cave, the Tektite layer could be the boundary of the Neolithic and Paleolithic layers. This could then be use as marker to pre Neolithic deposition.

Macaque remains were also only found in upper layers associated with pottery and are absent in the lower layers. This verify early hypothesis that Macaques were only a recent introduction to Luzon and might have been humanly transported.

Comparing the Biak na Bato sites in Bulacan to the Peñablanca caves in Cagayan Valley, we can see a number of similarities. Both the Peñablanca caves and Biak na Bato cave sites have pottery associated with flake tools. Both also have a lower aceramic layer with flake tools. Peñablanca caves show subsistence based on foraging wild pig and deer with wild roots, palms, nuts and other arboreal forest products. A similar subsistence strategy although more broad can be observed in Biak na Bato cave sites. One difference between the two areas is the recovery of bone tools at Biak-na Bato. The barb bone tools were possibly used for fishing is unknown in the Peñablanca.

Based on this initial archaeological research in Biak na Bato karstic formation particularly Tanggapan and Munsayac Caves, we were able to show that beyond the historical period, the area has a verified prehistoric occupation.