# Archaeological Research at Bukit Sarang Caves, Ulu Kakus, Sarawak

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## Introduction

Archaeological research was carried out at Bukit Sarang Caves in Ulu Kakus, Sarawak in 2000-2003. The research, which included survey and excavations was conducted by a research team from the Centre For Archaeological Research Malaysia, Universiti Sains Malaysia, Penang in cooperation with staff from Sarawak Museum Department and the Minerals and Geoscience Department Malaysia, Sarawak. The archaeological survey was carried out over a period of about one week in September 2000, followed by 3 weeks of archaeological excavations at Lubang Makuta in November 2001 and another 3 weeks of excavations at Lubang Batu Puteh in February-March 2003. This final report discusses the results of the survey, excavations and analyses of the excavated artefacts at the Bukit Sarang Caves.

## Bukit Sarang Caves

Bukit Sarang Caves is a limestone complex located in the upper reaches of Sungai Mayeng Sarang, about 67 kilometers southeast of the town of Tatau in Bintulu, Sarawak (Map 1). The journey from Bintulu to Tatau by road, over a distance of about 120 kilometres, takes about 45 minutes. The only means of transport from Tatau to the Bukit Sarang Caves complex is to travel by longboat for about 3 hours up-river Sungai Kakus and its tributary Sungai Mayeng Sarang.

Bukit Sarang Caves complex is an isolated and small limestone formation, surrounded by extensive swamps (Plate 1). The geology of the Bukit Sarang Caves complex had been studied by several geologists such as Kirk (1957), Wilford (1955, 1964), Azemi & Renggang (1999), and Dana (2001). It consists of two main limestone hills: the larger Bukit Sarang and a smaller Bukit Lebik. The Bukit Sarang Caves complex reaches about 91 metres in height at Bukit Sarang and is elongated in shape with a southeast-northwest orientation. The Bukit Sarang Caves complex is drained by underground streams, which flow into Sungai Mayeng Sarang. The presence of foraminiferal suggested an Upper Oligocene to Lower Miocene age for this limestone complex (Wilford 1955, Azemi & Renggang 1999).

Bukit Sarang Caves is presently very well-guarded by collectors of the edible and highly valued swiftlet nests. The descendants of the Punan have traditional rights to harvest the bird nests from Bukit Sarang Caves. The Punan communities are small and are scattered along the upper reaches of Sungai Kakus. The main population, however, are the Iban along Sungai Kakus.

## Previous Studies, Issues and Problems

The Bukit Sarang Caves complex was investigated briefly in 1965 by Harrisson and Reavis (1966). Their two weeks of investigation included archaeological surveys and test excavations at the Bukit Sarang Caves. Fourteen caves were surveyed and mapped, and test excavations were carried out at two of these caves, namely Lubang Ringen dan Batu Puteh. Human skeletons, stone tools, broken pieces of earthernwares and stonewares, animal bones, shells, and hearth areas were recovered during the surface surveys and test excavations. Two wall drawings of mostly crude human figures done in charcoal were also reported at Lubang Batu Puteh and Lobang Ringen. The results of their surveys and test excavations at Bukit Sarang Caves concluded that the caves were used as prehistoric habitation and burial sites as well as recent camping sites.

The previous archaeological investigations by Harrisson and Reavis, however, raised numerous questions about the prehistory of Bukit Sarang Caves. Some of these questions include fundamental question such as the dating of the habitations and burials. The human habitations were said to date from end of the palaeolithic through the Neolithic period on the basis of stone tool types while the burials were believed to date from 1600 to 1800 A.D. based on the presence of iron and Sung-Ming ware (Harrisson and Reavis 1966:252-253). However, no radiocarbon or chronometric dating was done during the excavations to substantiate these relative dates. The method of excavation carried out was rather crude as six inches per spit was used during the tests excavations. In addition, the so-called "Hoabinhian" stone tools mentioned by Harrisson and Reavis (1966:257-258) do not appear to be similar to those found on mainland Southeast Asia.

## The Present Study

The present study hopes to identify potential archaeological sites in the Bukit Sarang Caves complex in order to answer some of the issues and questions related to the prehistory of the Bukit Sarang Caves. Among some of the major questions and problems that need to be addressed in the present study of the Bukit Sarang Caves include the dating of the archaeological remains at Bukit Sarang Caves, the culture sequences as well as its relationships with other sites in Sarawak such as Niah and other contemporaneous sites in Borneo and Southeast Asia.

The present study uses a multi-disciplinary approach involving not only archaeologists but also scientists such as geologist, chemist and zoologist to obtain archaeological data to answer the research questions. The various phases in the present study include (i) surveys and mapping of the Bukit Sarang Caves in order to identify potential sites, (ii) archaeological excavations of the potential sites to obtain *in-situ* data and radiocarbon dating samples, and (iii) analyses of the excavated artifacts and interpretation of the data.

**The Archaeological Survey at Bukit Sarang Caves**

Archaeological surveys were done at five main caves in the Bukit Sarang Caves complex, which have good potential for uncovering prehistoric habitations and burials. These caves were namely Lubang Batu Puteh, Lubang Ringen, Lubang Nunok, Lubang Makuta, and Lubang Lebeh. Lubang Batu Puteh, Ringen, Nunok, and Makuta are situated in Bukit Sarang while Lubang Lebeh is located at Bukit Lebeh (Map 2)

The archaeological survey of the five caves for a period of about one week uncovered various evidence of prehistoric human habitations and burials. The evidence comprised surface finds such as food shells, animal bones, pottery sherds, stone tools, and human bones. The findings of the archaeological surveys are discussed below:

Lubang Batu Puteh: This cave has two large mouths and an underground stream. There is a considerably large floor area (10 x 8 metres) located at a rock shelf, about 30 metres from the stream. The earlier trial trench, measuring 1 x 1 metre, excavated by Harrisson and Reavis (1966) is still noticeable on the cave floor at the rock shelf (Plate 2). The floor has a thick cultural deposit of at least 1 metre deep. Surface finds include some food shells and animal bones. At the back wall of the rock shelf, charcoal drawings of mostly human figures in the form of sticks and geometric styles are still visible (Plate 3).

Lubang Nunok: This cave is located about 91 metres high. It has a large floor area at the entrance of the cave. A recent cave-in at the entrance suggested that there were probably many stalactite boulders beneath the cave floor. Surface finds include a few pieces of riverine shells.

Lubang Ringen: This is a big cave with two large mouths. An underground stream flows through it and often floods part of the cave floor during the raining season. The cave floor is spacious, about 61 metres by 36 metres in area. The cave floor, however, was badly disturbed by otters (Plate 4). At the walls of the cave, charcoal wall drawings of human figures in the form of sticks and geometric designs can still be seen. The 1 x 1 metre trial trench excavated earlier by Harrisson and Reavis (1966) is still noticeable at the "grotto" of the south of the main entrance that overlooks the Sarang river, about 10 metres below. Surface finds include a number of earthernware sherds, animal bones as well as some turtle bones and shells.

Lubang Makuta: This cave is located in Bukit Sarang, about 10 minutes hike from the base camp. The cave is well-lighted and is situated about 46 metres above sea level. The cave measures about 32 metres wide, 13 metres high and 24 metres deep. There is a small and dry cave floor near the main entrance that had cave-in. Surface finds include some pottery sherds and shells.

Lubang Lebeh: This cave was badly disturbed by recent diggings. There were a number of stoneware fragments at the mouth of the cave. A cluster of human bones and teeth, together with some fragments of stoneware jars were found inside a hole (Plate 5). One piece of hammerstone was also found nearby.

## The Archaeological Excavations at Lubang Makuta

Archaeological excavations at Lubang Makuta was initially carried out with test excavations of three trial trenches, namely A3, B5 and D6, located near the entrance of the cave (Map 3 and Plate 6). The test excavation was done in order to assess the archaeological potential of the site. The three trial trenches, measuring 1 x 1 metre each, were excavated using only trowels, brushes and ice picks in arbitrary levels or spits of 10 cm, down to their sterile basal layers. The excavated soil were sieved using 0.2 cm wire meshes in order to retrieve small pieces of artifacts not recovered during the excavations. The results of the test excavations revealed the presence of artefacts that included stone tools and animal bones. It also indicated that the cultural deposits at Lubang Makuta were at least 60 cm deep and were concentrated towards the main cave entrance. During the test excavations, however, there were many stalactites from the cave-in of the outer ceiling of the main cave entrance. The test excavations showed rather clear and distinct changes in soil colours or layers at all the three trial trenches. Given the rather clear changes in the soil colours, it was decided that further excavations be done based on soil colours or layers while at the same time the arbitrary levels were also recorded for reference. Based on the results of the test excavations, thirteen more 1 x 1 metre trenches were excavated, which extended the excavations towards the cave entrance in order to have a larger and better view of the archaeological deposits at Lubang Makuta (Map 3 and Plate 7). These trenches were excavated according to both natural soil layers and spits until their culturally sterile base layers (Plates 8 and 9).

## The Excavated Artefacts

A variety of artefacts, which included stone artefacts, pottery sherds, and faunal remains, were recovered during the excavations at Lubang Makuta. The following discusses the preliminary analyses of the stone artefacts, faunal remains and pottery sherds (Table 1).

**Stone Artefacts:** A total of 652 stone artefacts were found during the excavations. Preliminary analyses of the stone artefacts suggested 8 main classes of stone types: hammerstones, cores, pebble tools, miscellaneous tools, flake tools, quartz firestrikers, waste flakes and chips (Table 2). The stone artefacts were made from a variety of raw materials such as chert, andesite, quartz, sandstone, basalt, agate, and limestone.

**Faunal Remains:** The faunal remains consist of animal bones and mollusks (Table 3). Animal bones recovered during the excavations totaled 4,784 pieces, weighing about 9 kilograms. There were only 5 pieces of molluscs, all riverine species. The animal bones were those of very small mammals such as bats, mousedeer, turtle as well as bones of big mammals. The majority of the animal bones, however, were identified as bat bones.

**Pottery sherds**: A total of 229 pieces of pottery sherds were recovered during the excavations (Table 4). The potsherds were found mostly at the top layers of the soil, between spit 1 and 4 (0-40 cm). The pottery sherds have plain, cord-marked and checked designs.

**Soil Profile and Radiocarbon Dating**

The soil profile was recorded and radiocarbon dating samples were collected during the excavations at Lubang Makuta. The profile of soil layers were identified and defined on the basis of soil colours, soil texture and their contents of archaeological artefacts. Five main soil layers were defined during the excavations (Figures 1 & 2).

Layer 1: the top layer is dark in colour and contained many charcoal and some artefacts.

Layer 2: the second layer is thin, hard and compact. It had to be excavated using ice picks but no artifacts were found in this layer

Layer 3: the third layer is loose, fine textured and brownish in colour. It contained some pottery sherds and flake tools.

Layer 4: the fourth layer contains many flake tools and animal bones but no pottery were recovered. The soil is light brownish in colour and the pH is measured between pH 6-8.

Layer 5: the fifth layer is yellowish in color. The upper levels of this layer contained some flake tools and many bones of bats and other small mammals. The small number of flake tools, however, appeared to have come from the upper layer 4. The lower levels of this layer contained no artefacts but mostly weathered limestone rocks.

Three samples of charcoal and bones from the excavations at Lubang Makuta were selected and submitted for radiocarbon dating analyses at the Beta Analytical Radiocarbon Laboratory in Florida, the United States of America. The results of the radiocarbon dating provided dates of between 920 BC to10 AD (Table 5). The charcoal sample (Beta -162654) from the lowest layer of the site yielded dates of 920 to 800 BC while the charcoal sample from the top layer of the site provided dates of 390 BC to 10 AD. These seemed to suggest that the site was first used at around 920 BC until 10 AD during prehistoric times. At present, only the bird-nests collectors used to collect nests from the ceiling of the cave.

Table 5: Radiocarbon dates from Lubang Makuta, Ulu Kakus, Sarawak

| Lab # | Conventional Age (BP) | Calibrated Age (BC/AD)* | Material | Notes |
|---|---|---|---|---|
| Beta-162655 | 2160 ± 80 BP | 390 BC to 10 AD | Charcoal | BS01, Trench D2, Layer 1, 15 cm |
| Beta-162653 | 2580 ± 80 BP | 420 BC to 880 BC | Charcoal | BS01, Trench D2, Layer 2, (30-32) cm |
| Beta-162654 | 2770 ± 40 BP | 800 BC to 920 BC | Charcoal | BS01, Trench D2, Layer 3, (40-50) cm |

* Cal BC/AD dates (2 sigma, 95% probability)

## The Archaeological Excavations at Lubang Batu Puteh

Archaeological excavations at Lubang Batu Putih were carried out at the grotto of the cave (Plate 10). Thirteen 1 x 1 metres trenches, namely A1, A2, A3, B1, B2, B3, C1, C2, C3, D1, D2, E1 and E2 were excavated (Map 3). The excavated area was situated very close to the trial trench dug by Harrisson in 1966 (Map 3). This was done in order to extract new archaeological data and evidence so that comparison can be made with data from Harrisson. The thirteen trenches were excavated using only trowels, brushes and ice picks in arbitrary levels or spits of 10 cm, down to their sterile basal layers. The excavated soil were sieved using 0.2 cm wire meshes in order to retrieve small pieces of artifacts not recovered during the excavations. The results of the test excavations revealed the presence of artefacts that included stone tools and animal bones. It also indicated that the cultural deposits at Lubang Batu Puteh were at least 70 cm deep. The excavations showed rather clear and distinct changes in soil colours or layers at most of the trenches. Given the rather clear changes in the soil colours, it was decided that further excavations be done based on soil colours or layers while at the same time the arbitrary levels were also recorded for reference. These trenches were excavated according to both natural soil layers and spits until their culturally sterile base layers (Plates 11 and 12). A brief geological study of the surrounding area was also done around the foothills of Bukit Sarang. Results of the coring of the soil in the lowlands immediately surrounding Bukit Sarang showed that it contained mainly peat swamps while areas further away Bukit Sarang, about 1 kilometres or more, comprised mainly clayey soil as well as some peat soil (Plate 13).

## The Excavated Artefacts

A variety of artefacts, which included stone artefacts, pottery sherds, and faunal remains, were recovered during the excavations at Lubang Batu Puteh. The following discusses the preliminary analyses of the stone artefacts, faunal remains and pottery sherds recovered during the excavations (Table 6).

**Stone Artefacts:** A total of 211 pieces of stone artefacts were found during the excavations. Preliminary analyses of the stone artefacts suggested that there were 9 main classes of stone types: hammerstones, pebble tools, flake tools, slab anvil, adze, flakes, chips, and miscellaneous tools (Table 7). The stone artefacts were made from a variety of raw materials such as andesite, quartz, sandstone, basalt and limestone.

**Faunal Remains:** The faunal remains consist of animal bones and mollusks (Table 8). Animal bones recovered during the excavations weighed about 5.8 kilograms. A total of 1,935 pieces of mollusks were found, weighing about 8.6 kilograms. The animal bones were those of very small mammals such as bats, small and big mammals. There were also some fish and shells remains. The majority of the animal bones, however, were identified thus far as bat bones. Some of the faunal remains were made into bone and shell tools.

**Pottery sherds**: A total of 699 pieces of pottery sherds were recovered during the excavations. The potsherds were found mostly at the top layers of the soil, between spit 1 and 5 (10-50 cm). The pottery sherds have plain and cord-marked designs (Table 9).

## Soil Profile and Radiocarbon Dating

The soil profile was recorded and radiocarbon dating samples were collected during the excavations at Lubang Batu Puteh. The profile of soil layers were identified and defined on the basis of soil colours, soil texture and their contents of archaeological artefacts. Five main soil layers were defined during the excavations (Figure 3).

Layer 1: the top layer is gray in colour and contained many faunal remains and some cooking ash, charcoal and potsherds.

Layer 2: the second layer is very dark gray in colour. It contained mostly shells, small bones, cooking ash, charcoal and many potsherds.

Layer 3: the third layer is brown in colour and contained potsherds, cooking ash, charcoal and many faunal remains.

Layer 4: the fourth layer is grayish brown in colour and contained some potsherds and stone artifacts and many faunal remains.

Layer 5: this layer is very brown in colour with some stone artifacts and faunal remains.

Three charcoal samples from the excavations at Lubang Batu Puteh were selected and submitted for radiocarbon dating analyses at the Beta Analytical Radiocarbon Laboratory in Florida, the United States of America. The results of the radiocarbon dating provided dates of between 1630AD and 1030AD (Table 10). The charcoal sample (Beta -177990) from the lowest layer of the site yielded dates of 1030 to 1270 AD while the charcoal sample from the top layer of the site provided dates of 1420 to 1630 AD. These dates seemed to suggest that site was first used at around 1030 AD until 1630 AD.

Table 10: Radiocarbon dates from Lubang Batu Puteh, Ulu Kakus, Sarawak

| Lab # | Conventional Age (BP) | Calibrated Age (BC/AD)* | Material | Notes |
|---|---|---|---|---|
| Beta-177988 | 420 ± 50 BP | 1420 AD to 1630 AD | Charcoal | BS03, Trench A3 Layer 2, 15 cm |
| Beta-177989 | 490 ± 50 BP | 1400 AD to 1470 AD | Charcoal | BS03, Trench B1 Layer 4, (40-50) cm |
| Beta-177990 | 860 ± 50 BP | 1030 AD to 1270 AD | Charcoal | BS03, Trench E1 Layer 5, (70-80) cm |

* Cal BC/AD dates (2 sigma, 95% probability)

## Conclusions

The archaeological survey of the Bukit Sarang Caves complex revealed several archaeological cave sites that have good potential for answering the questions and issues related to the prehistory of Bukit Sarang Caves and the Ulu Kakus area. Some of these potential sites include Lubang Ringen, Lubang Batu Puteh and Lubang Makuta. Archaeological excavations were done at two of these sites, Lubang Makuta and Lubang Batu Putih, which provided *in-situ* data, artefacts and radiocarbon dating samples required for the present study. The preliminary analyses of the excavated artefacts and data thus far indicated early human habitations at Lubang Makuta and Lubang Batu Putih from 1630 AD to 920 BC. These dates provided substantial evidence that the cultural layers and artifacts at Lubang Batu Putih and Lubang Makuta were not as early as suggested by Harrisson and Reavis (1966: 252-253).

A preliminary report of the archaeological research of Bukit Sarang is currently in the process of being published in the Sarawak Museum Journal 2003 issue. Analyses of the excavated artifacts are still continuing and I am hopeful that a complete paper will be ready for publication in the Sarawak Museum Journal. In addition, this short term project had been able to partly supported the fieldwork of my master student who is currently doing his research of the archaeology of Lubang Batu Putih, Bukit Sarang, Sarawak.

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