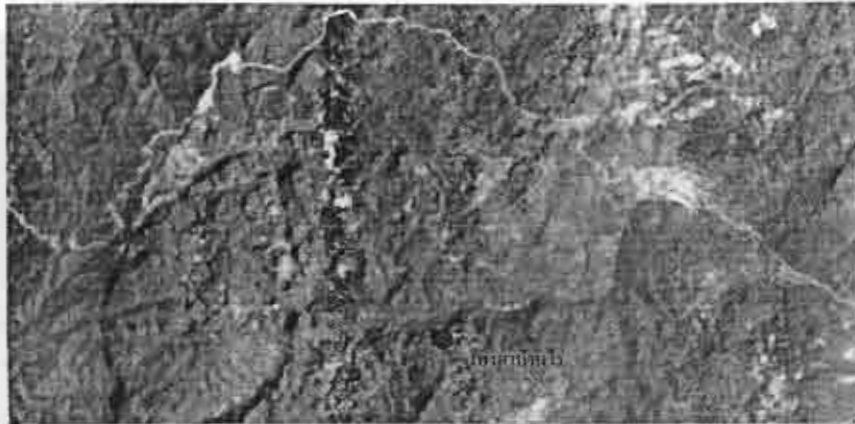
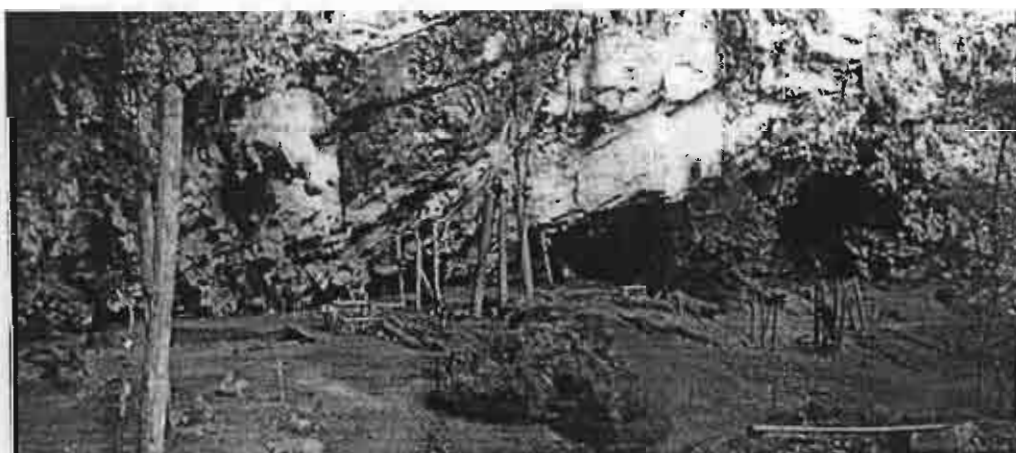




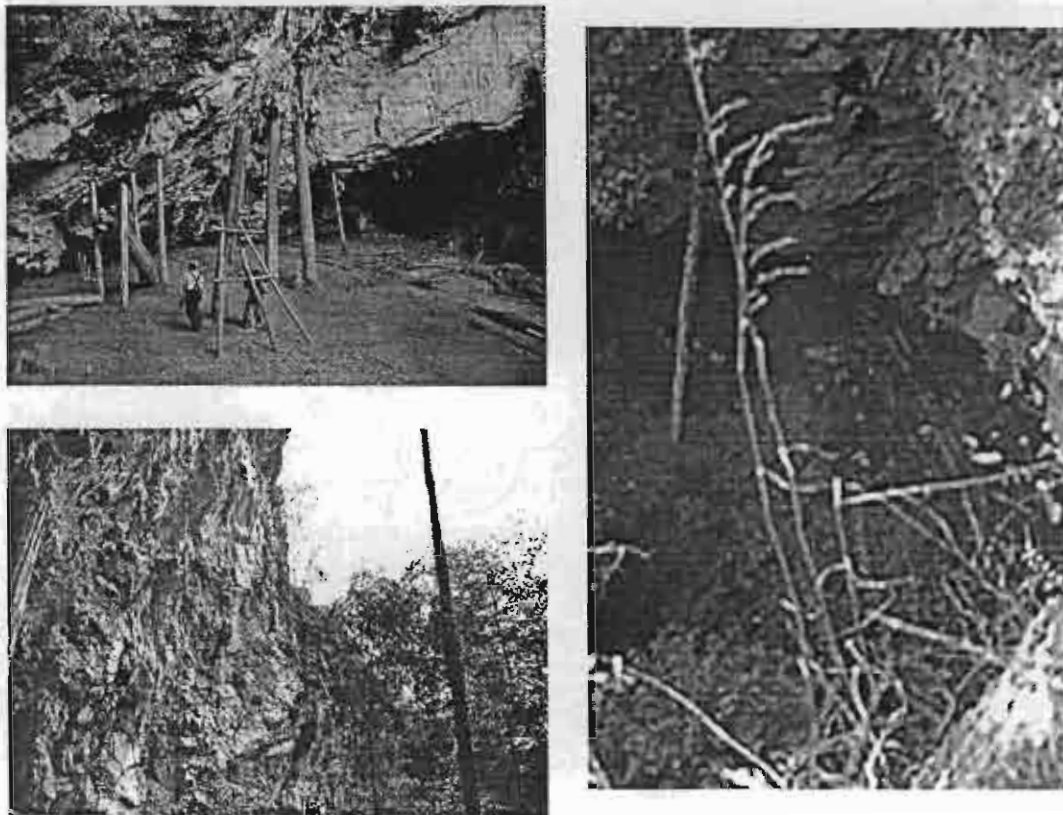
รูปที่ 1 ภาพจากดาวเทียมบริเวณคารสต์บ้านไร่
(ปรับปรุงจากคณะกรรมการวิจัยแห่งชาติ (2538))



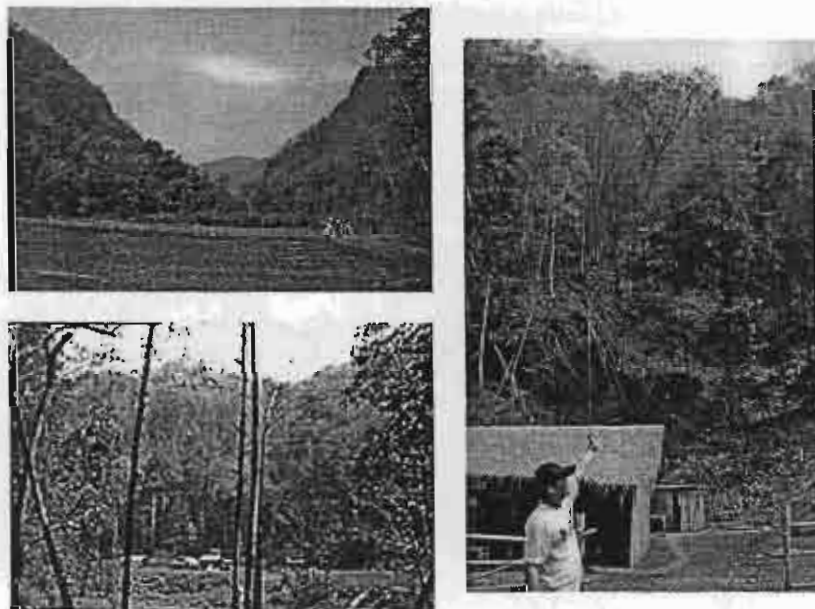
รูปที่ 2 ลักษณะสภาพภูมิประเทศบริเวณหลุมยุบบ้านไร่

โครงการ โบราณคดีบนพื้นที่สูงในอำเภอปางมะผ้า จังหวัดแม่ฮ่องสอน



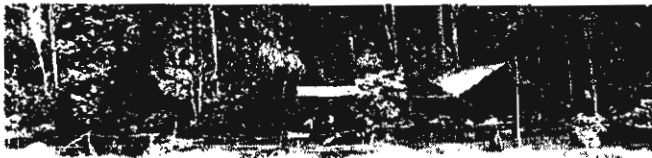
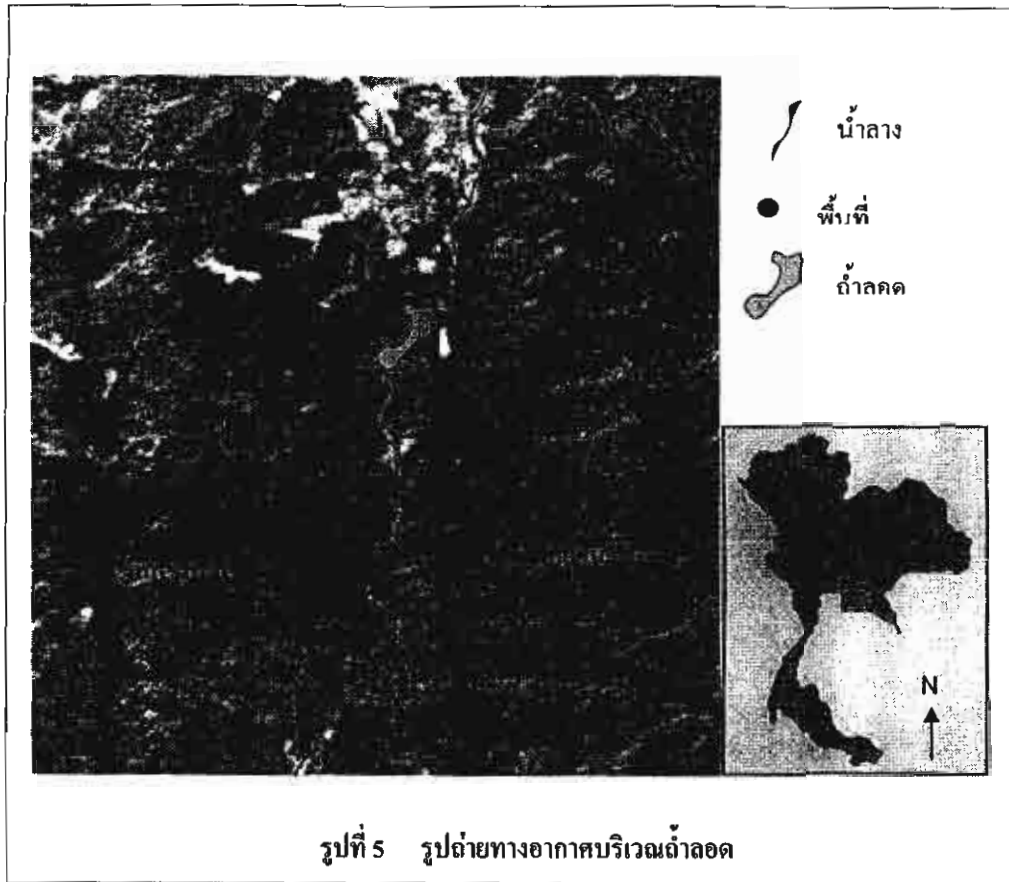


รูปที่ 3 ลักษณะภูมิประเทศโดยรอบเพิงผาบ้านไร่



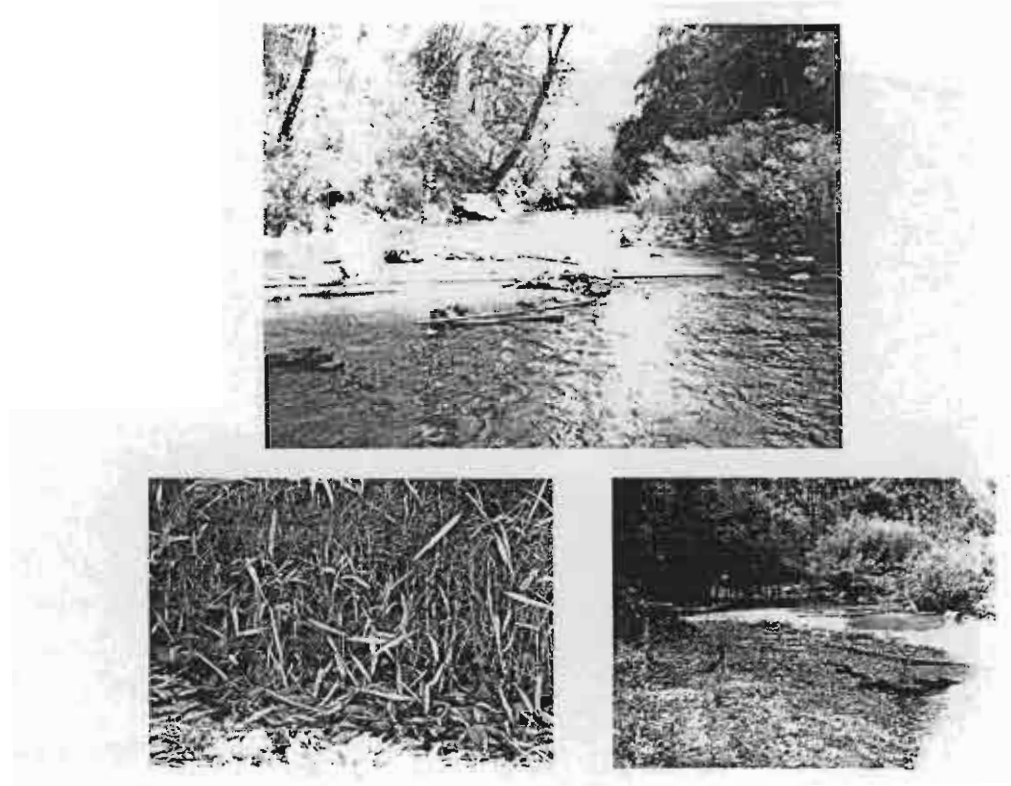
รูปที่ 4 สภาพพื้นที่โดยรอบเพิงผาบ้านไร่



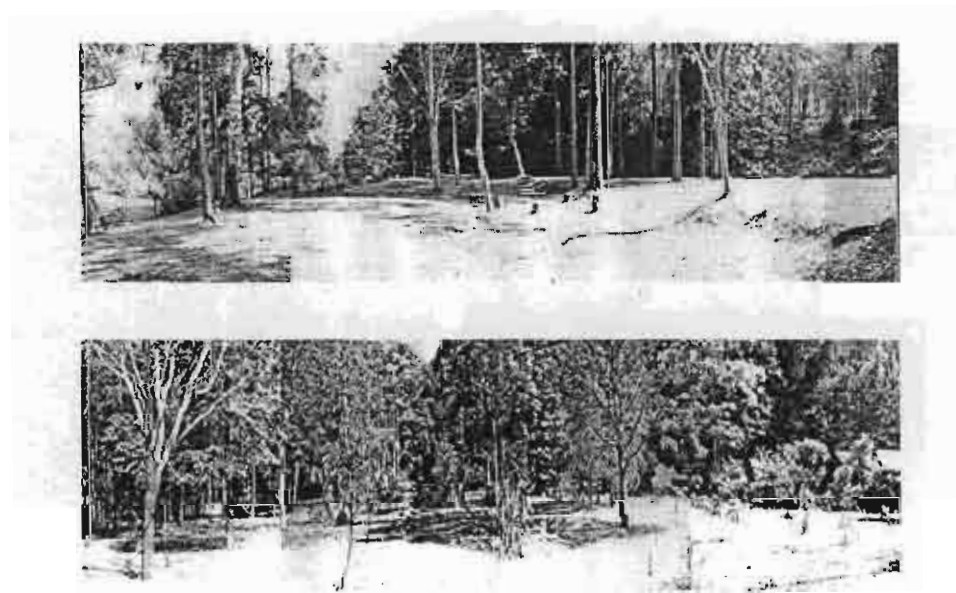


รูปที่ 6 ลักษณะสภาพภูมิประเทศของบริเวณเพิงผาถ้ำลอด





รูปที่ 7 ลักษณะธรณีสัณฐานลานตะพักลำน้ำแต่ละระดับ
ในแหล่งโบราณคดีเพิงผาถ้ำลอด



รูปที่ 8 สภาพลำน้ำกลาง และแหล่งทรัพยากรหินกรวดแม่น้ำที่พบในลำน้ำกลาง



บรรณานุกรม

คณะกรรมการวิจัยแห่งชาติ,สำนักงาน

2538 **ธรรมนูญฐานประเทศไทยจากห้วงอวกาศ, กรุงเทพฯ ๔: ด้านสุทธาการพิมพ์**

รัศมี ชูทรงเดช

2534 **การศึกษาความสัมพันธ์ระหว่างมนุษย์ก่อนประวัติศาสตร์กับสิ่งแวดล้อม ในบริเวณลุ่มแม่น้ำแควตอนล่าง, กรุงเทพฯ : ศูนย์วิจัย มหาวิทยาลัยศิลปากร**

รัศมี ชูทรงเดช, นาฏสุตา ภูมิจำนงค์ และ สุภาพร นางบัลลังค์

2544 **รายงานความก้าวหน้าฉบับที่ 1 โครงการโบราณคดีบนพื้นที่สูง ในอำเภอปางมะผ้า จังหวัดแม่ฮ่องสอน, ภาควิชาโบราณคดี คณะโบราณคดี มหาวิทยาลัยศิลปากร.**

รัศมี ชูทรงเดช, นาฏสุตา ภูมิจำนงค์ และ สุภาพร นางบัลลังค์

2545 **รายงานความก้าวหน้าฉบับที่ 2 โครงการโบราณคดีบนพื้นที่สูง ในอำเภอปางมะผ้า จังหวัดแม่ฮ่องสอน, ภาควิชาโบราณคดี คณะโบราณคดี มหาวิทยาลัยศิลปากร.**

สุรินทร์ ภู่อจรร

2534 **ข้อมูลใหม่เกี่ยวกับหลักฐานทางโบราณคดียุคไพลสโตซีนตอนปลายถึงยุคโฮโลซีนตอนกลาง ที่ถ้ำหมอบเขียว จังหวัดกระบี่. เอกสารประกอบ การประชุมทางวิชาการระดับนานาชาติ ไทย-ฝรั่งเศส ครั้งที่ 2 เรื่องการค้นคว้าวิจัยทางโบราณคดีในประเทศไทย ระหว่างวันที่ 9 -11 ธันวาคม 2534. กรุงเทพฯ : อมรินทร์พริ้นติ้งแอนด์พับลิชชิ่ง.**

สุรินทร์ ภู่อจรรและคณะ

2534 **รายงานเบื้องต้นการขุดค้นที่ถ้ำหมอบเขียว จังหวัดกระบี่ ถ้ำชาไก จังหวัดตรัง และการศึกษาชาติพันธุ์วิทยาทางโบราณคดี ชนกลุ่มน้อยเผ่าชาไก จังหวัดตรัง เล่มที่ 1. กรุงเทพฯ : คณะโบราณคดี มหาวิทยาลัยศิลปากร.**

สุรินทร์ ภู่อจรรและคณะ

2537 **รายงานขั้นสรุปการขุดค้นที่ถ้ำหมอบเขียว จังหวัดกระบี่ ถ้ำชาไก จังหวัดตรัง และการศึกษาชาติพันธุ์วิทยาทางโบราณคดี ชนกลุ่มน้อยเผ่าชาไก จังหวัดตรัง เล่มที่ 2. กรุงเทพฯ : คณะโบราณคดี มหาวิทยาลัยศิลปากร.**

อัญญาณ์ โปราณานนท์ และคณะ

2538 **รายงานฉบับสุดท้าย การศึกษาเพื่อจัดทำแผนการจัดการอนุรักษ์สิ่งแวดล้อมธรรมชาติบริเวณถ้ำน้ำลอด จังหวัดแม่ฮ่องสอน, มหาวิทยาลัยเชียงใหม่.**

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PINNACLE PEAKS: PREHISTORIC CULTURAL SITES IN THE NAM LANG CATCHMENT, PANG MAPHA DISTRICT, MAE HONG SON.

John Spies
Independent Researcher

Abstract

Eleven prehistoric cultural sites have been identified on pinnacle peaks amongst rugged limestone karst in the Nam Lang catchment area. Artifacts found on the peaks include complete and broken river cobbles, flaked stone tools and potsherds. The sites appear to have been used for some type of ceremony or ritual. The distribution of the sites suggests that the people living in the area shared some beliefs, possibly about spirits of the deceased. The cord marked pottery found at 4 sites may not be contemporaneous with the lithic material.



PINNACLE PEAKS: PREHISTORIC CULTURAL SITES IN THE NAM LANG CATCHMENT, PANG MAPHA DISTRICT, MAE HONG SON.

John Spies*

1. Introduction

The Nam Lang, in Pang Mapha District of Mae Hong Son Province, is the major tributary of the Nam Khong, a tributary of the Mae Nam Pai. The Nam Lang catchment delineates the Myanmar border to the North and drains an area of approximately 400 square kilometres, the vast majority outside areas of karst. In the lower part of the catchment area the Nam Lang passes through two caves, Lod and Nam Lang, before it flows into the Nam Khong. Tham Lod is a through cave with a huge river tunnel up to 50 metres high and 600 metres long. Further downstream, the river sinks into several impenetrable holes. It reappears from Tham Nam Lang, another massive cave with 8.4 kilometres of surveyed length. Limestone karst borders the lower Nam Lang and its tributaries, with the topography dominated by caves, dolines, cliffs and areas of rugged, exposed limestone.

Some of the limestone towers and mountains in the area have heavily weathered and jagged rocky pinnacles. The pinnacle tops are typically areas of exposed rock with patches of stunted small trees and plants adapted to the dry, minimal soil conditions. The exposed limestone is riddled with cracks, solution tubes and holes. The pinnacles are difficult to climb and often require scaling vertical sections and traversing extremely jagged sharp limestone.

Most of the recorded pinnacle sites are west of the Nam Lang, between Tham Lod and Tham Nam Lang, in Tham Lod sub district, on the edge of the karst. John Spies and Stephen Brown discovered the sites between June and November 2000. Nine of the sites are recorded on a map of the Tham Lod area (fig.1), along with other known lithic sites in the vicinity.

The next section provides some examples of cultural use of other limestone peaks in the region followed by a brief description of the sites and the artifacts discovered. The implications of the existence of the artifacts on the peaks are discussed and conclusions are drawn.

2. Pinnacle Peaks and Culture

Towering limestone pinnacles are some of the most impressive geographical features of the landscape. In Mae Hong Son Province their peaks have been used for cultural purposes from prehistoric times.

A possible cemetery is located on a prominent limestone hill 300 metres west of Ban Tham Lod Temple. The top of this hill has forested, gently sloping areas with many

* Independent Researcher



small sherds of cord marked pottery on the surface. A few holes have been dug by animals, and among the excavated soil were found a small, bifacially flaked, mudstone axe along with a small flake from a river pebble and several cord marked potsherds. It is very unlikely that this site was ever used for habitation due to its distance from a water source and the difficulty of access.

Doi Saeng is a rocky pinnacle near Ban Tham Lod, located 200 metres east of Tham Poo Pa (site 4). On the highest point are the remains of what was probably a Buddhist chedi. A pile of bricks, lime mortar and a few small pieces of iron are all that's visible at this heavily disturbed site but, on the eastern side, below the peak, are small cord marked potsherds. Residents of Ban Tham Lod have also found highly polished stone adzes near this site.

The broad, forested peaks of Doi Laem and Doi Pha Daeng, large limestone pinnacles west of the Nam Khong, are probable cemetery sites from the historical period. Glazed ceramics, including Kalong ware, are scattered across the surface of these difficult to access sites.

On a high pinnacle near Tham Boong Hoong (Banyan Valley Cave, excavated by Gorman), Lahu villagers from Ban Yappanair found pottery, and two bronze gongs. The Lahu believe that Lua people, who once lived in the area, left these artifacts.

Buddhist monks today, at Tham Wua in Amphur Muang and at Tham Lod, erect flags on prominent pinnacles near their temple. Some Lisu people in Pang Mapha District place flags, and leave offerings for the sky spirit, on limestone peaks near their village.

3. Peak Sites

On the majority of the peaks investigated, we have found artifacts left there by people. These sites are between 700 and 900 metres above sea level. Artifacts have been found only on pinnacles with areas of exposed, barren limestone but this may partly be due to the difficulty of locating artifacts amongst the low and prickly plants that cover some peaks. The artifacts found on the peaks consist of large quartzite river cobbles, broken pieces of cobbles, flaked stone tools and potsherds. They are usually near the highest point and can be difficult to find among the collapsed and broken limestone. No bones have been found and it is unlikely that any organic material could have survived for long periods on the exposed peaks.

All lithic materials and pottery on the pinnacle sites were left where they were found, except one small potsherd from site 4 that was removed for further examination. The location of each site has been recorded as grid co-ordinates on 1:50,000 maps (series L7017, sheets 4648 II and III). The Elevations recorded are in metres above sea level and have been determined from the same maps with a margin of error of approximately 20 metres.

Site 1. Large pinnacle above a cave with a sinking stream. The cave, Tham Christmas, is 600 metres from the Ban Tham Lod – Ban Yappanair road, 2 kilometres northwest of Ban Tham Lod. The pinnacle can only be climbed from near where the small stream sinks into the cave. The highest point is rough and exposed with sheer cliffs on three sides. One piece of a broken quartzite river cobble was found on the lower, northern end of the pinnacle top.

Elevation: 909 Location: 25.15/65.25

Site 2. Highest pinnacle, visible from and 300 metres southwest of Tham Lod Nature Education Station. The top of the pinnacle is rough exposed limestone with crevasses between higher points. A few metres below the highest rock was



found one reddish-grey quartzite river cobble, approximately 30cm long and 15cm wide. A piece has been broken off on one side.

Elevation: 740 Location: 24.50/63.35

Site 3. Highest pinnacle, 200 metres south of the Tham Lod inflow. The top is exposed limestone with one small peak jutting two metres higher than the surrounding flatter area of broken jagged rocks.

A few artifacts were discovered in small fractures and holes on the sides of the highest rock. On the north side is a small broken piece of a reddish, quartzite river cobble. Another small rounded pebble of a red-brown, fine-grained rock, probably quartzite, was found nearby. On the western side, in a small hole, protected from direct rainfall, is a cord-marked potsherd approximately 10 cm across. The cord marks are deeply impressed in a cross pattern. The pottery is grey coloured and coarse grained. In a crack on the top of the pinnacle is a rounded piece of heavily weathered, almost crumbly, granite, about 10 cm in diameter.

Elevation: 700 Location: 24.70/63.10

Site 4. Pinnacle above Tham Poo Pa, next to and west of the road, 1 kilometre southwest of Ban Tham Lod. On a rough flat area, just below the highest point, was found one large river cobble 33cm long and 23cm across, broken into three adjoining pieces. The cobble is light grey, fine-grained quartzite with a thin red-brown staining on the outer surface. Near this cobble is a unifacially flaked core tool, (sumatralith), fashioned from a light yellow, quartz-sandstone river pebble. Nearby is a fragment of a reddish-grey quartzite pebble, broken in several places. A small heavily weathered potsherd was also found. The pottery is dark grey, 3mm thick and coarse grained. Microscopic examination of the sherd showed that the clay contained angular quartz grains and flakes of mica.

Elevation: 760 Location: 23.95/62.75

Site 5. Two rocky pinnacles, about 50 metres apart, 400 metres south of Tham Poo Pa, to the east of the road. On the higher, eastern pinnacle was found six small, grey coloured, cord marked potsherds in a hole at the base of the highest point. A small broken river cobble was nearby.

On the western pinnacle, under a small overhang about five metres directly below the highest point, a few sherds from a grey and a brown pot were found. One rim piece is from a pot at least 30 cm in diameter.

Elevation: 720 Location: 24.00/62.35

Site 6. Rocky pinnacle 300 metres west of the Tham Lod road, about 700 metres north of the Nong Daeng turnoff. One large piece of grey, fine-grained quartzite broken from a rounded cobble was found in a small crevasse, 15 metres east of and 5 metres lower than the highest point.

Elevation: 800 Location: 23.30/61.90

Site 7. The peak of Doi Luang, the highest hill between the road from Ban Tham to Soppong and the Nam Lang. The site is about two kilometres south of Ban Tham Lod. The western face of this pinnacle is a sheer cliff and the only access is by climbing steep, razor sharp limestone on the eastern side. On the top between the two highest rocks is a small trench floored with a jumble of heavily weathered blocks of limestone. On the surface and in amongst the broken rocks in the trench, were found five unbroken quartzite river cobbles, 20-30 cm long. About 10 metres lower, on a rough flat area, was another large cobble. Climbing this pinnacle, we were reminded of how sharp the weathered limestone can be and wondered if the original climbers of this peak had any foot protection.

Elevation: 860 Location: 23.80/61.75



Site 8. Pinnacle just east of the Ban Tham road about 200 metres north of the Nong Daeng turnoff. This pinnacle is steep and difficult to climb. The top has an exposed area of weathered, broken and jagged limestone, about 10 metres long and 3 metres wide. Two, small sharp peaks jut another 1.5 metres higher. On a partially sheltered rock below the southern peak a small brown potsherd was found. The clay contains coarse quartz grains and faint impressions of a net or cords are visible on the outside of the sherd. Below the northern peak, in a slightly depressed area of broken limestone, are two large river cobbles. One cobble is complete and the other has two smaller pieces broken off. The broken pieces were found under a jumble of weathered limestone rocks nearby. Near the boulders is a hole about 50 cm deep, based with broken limestone. The stones may be in their original position, or, they may have fallen from the peak, been excavated from the hole or moved from elsewhere. The cobbles are about 30-40 cm long and are grey, fine-grained quartzite, with a brown stained crust.

Elevation: 720 Location: 23.45/61.50

Site 9. Prominent pinnacle 300 metres west of the Tham Lod-Soppong road, 1 kilometre northwest of the Nam Lang. The pinnacle top has a large exposed rocky area more than 30 metres long and 10 metres wide. The limestone is typically jagged and broken with deep crevasses. One broken piece from a river cobble was found on the western part of the pinnacle, a few metres below the highest point. It is fine-grained cream coloured quartzite, stained brown on the surface of the cobble. The piece found is approximately 15 cm long and 5 cm wide.

Elevation: 772 Location: 23.25/60.75

Site 10. Prominent rocky pinnacle 3 kilometres west of Ban Rai and 500 metres southeast of the final sink of the Nam Lang. The pinnacle top has an exposed rocky area about 15 metres across. In a small crevasse about 5 metres east of the highest point were found 8 pieces of flaked quartzite. Some were visible and others were under pieces of weathered limestone. They are all from a large, pink, rounded river cobble. All of these stones have been roughly flaked to common tool shapes but appear to be unfinished and to have no evidence of use. The assemblage consists of 3 oval shaped stones and 5 triangular stones with points.

Elevation: 840 Location: 13.80/58.25

Site 11. Pinnacle top, about 300m west of site 10 and 40 metres lower. This peak is relatively easy to climb and has a rocky exposed area about 10 metres across. Only one piece of a broken quartzite cobble was found in a crevasse near the highest point.

Elevation: 800 Location: 13.70/58.10

4. Discussion

The discovery of these difficult to access sites raises several questions. How long ago were the artifacts left on the pinnacles? Why were they left there? Who left them there and where were their settlements? What can the sites tell us about the beliefs of these people?

The dating of the artifacts that have survived long term exposure on the peaks is presently not possible unless associated organic remains are found. The existence of a few cord marked potsherds at 4 sites does not necessarily help determine when the lithic artifacts were left there.

It is possible that the pottery was brought to the peaks at a much later date than the stones. The sherds have all been found on peaks between Ban Tham Lod and Ban Soppong, an area with many other known archaeological sites including 5 caves that contain pre-historic log coffins and associated cord marked pottery. This area has many



places suitable for agriculture and there is some evidence of occupation by swidden agriculturalists much earlier than the coffin sites. The flaked stone axe and cord marked pottery found on the hilltop near Tham Lod may be associated with this period.

On ridges east of the Nam Lang, similar flaked mudstone and slate axes have been found at probable habitation sites amongst tools made from flaked quartzite river cobbles. Some of these small axes have ground edges. More axes, associated with pottery, have recently been discovered close to the Nam Lang, near to site 9. Cord marked pottery has also been found at the ruins of several Buddhist temple sites near the Nam Lang, 2 to 3 kilometres upstream from Tham Lod.

The same peaks may have been used several times during the past and the occurrence of pottery and quartzite together at the 4 sites could be coincidental. Similar pottery is certainly ubiquitous in the region but unfortunately at present there is not enough evidence from dated sites to determine when it was first used or locally produced. In Pang Mapha, cord marked pottery has been found in sites with flaked core tools, small bifacially flaked axes, edge ground stone axes and adzes, bronze artifacts and iron artifacts. However, based on present evidence, it can only be confidently stated that cord marked pottery was widely used around the middle of the first millennium AD. There are no definite associations of pottery with material dated earlier than about 300 BC.

Further research in other sheltered and open sites may reveal that similar pottery was used thousands of years earlier. There are more than 10 cave and rockshelter sites in Pang Mapha that contain no coffins remains but have flaked stone tools and pottery on the surface, including 3 sites near the Nam Lang and the pinnacles between Ban Tham Lod and Soppong. However, the cord marked sherds found at these sites may date from much later than the flaked tools, possibly being brought there by people hunting or fishing or by dry rice farmers seeking shelter during the wet season.

The flaked tools at sites 4 and 10 suggest that the lithic artifacts were brought to the pinnacles by hunter-gatherers. Similar tools have been found at excavated sites with occupation layers dated between the Late Pleistocene and the Middle Holocene.

A considerable amount of effort, and obviously a good reason, was required to carry heavy quartzite cobbles from their source, which was most likely the Nam Lang, to the pinnacle tops. The limestone is often extremely sharp on the exposed areas and without foot protection the ascent of some peaks would have been treacherous. Lacking any practical use, the most reasonable explanation for the existence of river cobbles on the peaks is that the sites were used for some sort of ritual or ceremony. The stones appear to have been left for symbolic rather than actual use. The complete cobbles found are all fine-grained quartzite, which, judging by the tools found in sheltered and open lithic sites in the area, was the most popular raw material for flaked stone tool manufacture in the region. The flaked stones found at site 10 are particularly interesting as they seem to symbolically represent a typical assemblage of tools commonly found at habitation sites in the region. The crude tools include 2 palm sized, oval shaped stones. Another 5 are pointed stones of various sizes; the smallest triangular flake the size and shape of an arrowhead. The intended function of these tools is speculative, as is the reason why they are on a remote pinnacle in the first place.

Pang Mapha is presently inhabited by people from a wide range of ethnic backgrounds who share a common belief that there exists a 'spirit land', occupied by the spirits or souls of the deceased. The possessions of the deceased or necessities that they will need in an afterlife are usually buried or burnt with the bodies. In prehistory this burial custom is well illustrated by the wide range of burial goods associated with the log coffins in Pang Mapha caves. These goods include pottery, iron and bronze jewelry, glass beads, laquerware, iron tools and sharpening stones. The sharpening stones are



usually flat river cobbles 15-20cm long and show no sign of use, indicating that rather than being personal possessions of the deceased, their intended purpose was for sharpening iron tools, in the spirit world.

The stones may have been left on the peaks as grave goods but, unless bones are found, we cannot determine whether the body was also carried there or if it was 'buried' elsewhere. The exposed peaks, rising above the canopied forests, would certainly be an ideal place for the soul or spirit of the deceased to easily find the objects left for them, assuming that the spirits could move freely through the air. The peaks may also have been inaccessible to tigers and other animals such as porcupines that feed on corpses and bones. The peaks are well removed from areas suitable for habitation, if not geographically at least by their relative inaccessibility. The Lahu Nyi people who inhabit the area today dig their gravesites on higher ridges and hills about 500 metres or more from their village. To avoiding meeting the spirits of the deceased and to help insure that they never come back, the dead are left with the things that they will need to continue their existence elsewhere.

The people who used the peaks probably lived in the vicinity. It is not possible to determine exactly where they lived but the nearest known habitation sites with lithic materials are a good guess. I have recorded open and sheltered lithic sites on a map (fig 1) in the areas near the pinnacles, that have evidence of being occupied by people using flaked stone tools. I have only included sites that are within about an hours walk of the utilised peaks- enough to sufficiently illustrate that the area has many places suitable for habitation, particularly in the non karst areas. Further away from the peaks are many more sites.

Judging by the large number of habitation sites and the limited numbers of artifacts found on the peaks there remains several important unanswered questions. If the river cobbles were individual grave goods, say for example, one per burial, then there were not enough for everyone who died, even over a short period of time. Are we seeing evidence of some sort of hierarchical system where only certain individuals were left with peak top grave goods or were the pinnacles not the only places where bodies or grave goods were left? Or maybe there is another explanation. I once asked a Lahu 'spirit doctor' why he left only the beak, claws, blood and feathers of a sacrificed chicken to appease some spirits during a healing ceremony, keeping all the meat for him. He replied simply that spirits don't need much, they can get full by sniffing. Symbolically, there may have been plenty of stones for all of the deceased.

5. Conclusions

People living in the area today share a belief that spirits or souls of the dead exist in a 'spirit land' that is generally perceived to be above the earth. When standing on a towering peak with a 360 degrees view, far above the forest, it is easy to understand why these pinnacle sites have long been chosen for ritual and spiritual purposes.

I hesitate to draw any conclusions based on the circumstantial evidence that I have presented in the discussion of the pinnacle peak sites. However, I do believe that the lithic artifacts were part of some sort of prehistoric ceremony or ritual. Regardless of their exact purpose, the sites are significant in that they indicate that at least one group of people, probably hunter-gatherers, shared some common beliefs. That these people believed in the spirits of the deceased and ritually offered goods to be used in the spirit land, is a matter of speculation. The artifacts could have been part of offerings to other spirits or gods or have been used in some totally unrelated ritual.



If the cobbles were left by aceramic populations then some of the pinnacle sites have been used more than once, probably at some time after the late Pleistocene. We still do not know whether the pre-agricultural inhabitants of the area used pottery.

The small amount of artifacts discovered seems to indicate that the custom of leaving cobbles and/or pottery on the limestone peaks in the Nam Lang area was short lived. A change of location for the ritual or a change in ceremony itself is a possible reason for this.

It is likely that this custom was not confined just to the Nam Lang valley and I am looking forward to similar sites being discovered in different areas.

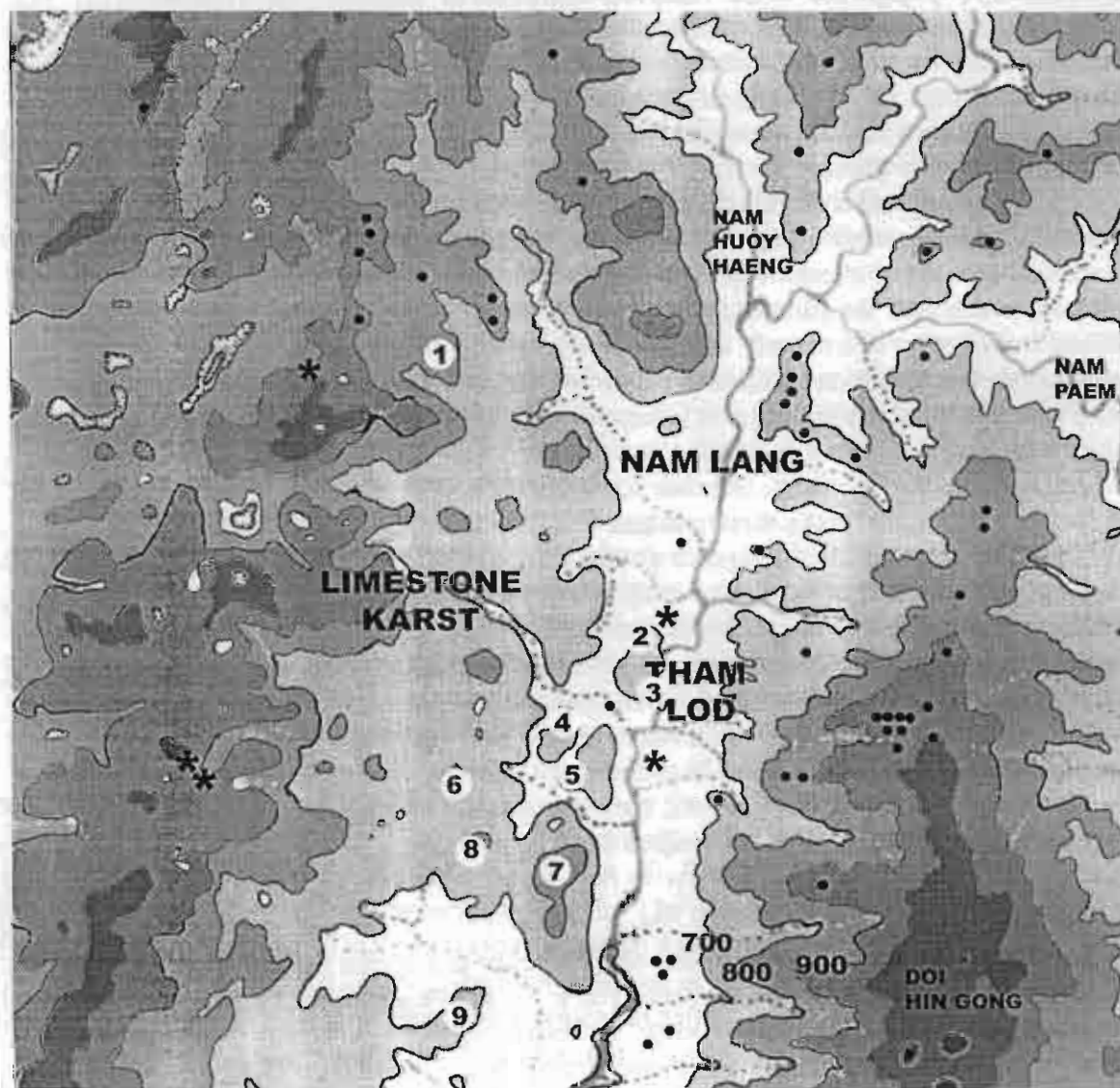
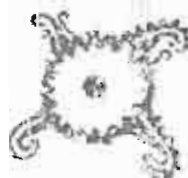


Figure 1: Prehistoric Lithic Sites in the Tham Lod Area

Notes on the map: Pinnacle sites- white circles with site numbers
Open lithic sites- black dot Sheltered lithic sites- black stars Map area is approximately 50 sq.kms. Top is North. The Nam Lang flows South.



OPEN LITHIC SITES IN NORTHWEST THAILAND A Preliminary Report

John Spies
Independent Researcher

Abstract

Eighty-six open lithic sites have been recently discovered in Mae Hong Son and Chiang Mai Provinces. The majority of the sites are located in highland areas of Tambon Tham Lod in Pang Mapha District, Mae Hong Son Province. Typically, sites are situated on relatively flat and barren, well drained areas on ridges and hilltops, between 350 and 1,300 metres in elevation. A water source, often seasonal, is always nearby.

Other sites have been identified next to hot springs and on elevated areas near rivers. Lithic material found on the surface of the sites includes flaked tools fashioned from river cobbles and other locally available raw materials, such as chert and quartzite sourced from outcrops in the hills. At a few sites elongated, bifacially flaked axes and edge ground tools have been identified. There have been no ceramics or organic remains found. The location of the sites implies that they were used for wet season habitation. The density of sites suggests that the non-karst highland areas of Northwest Thailand were once extensively occupied by hunter-gatherers.



OPEN LITHIC SITES IN NORTHWEST THAILAND

A Preliminary Report

John Spies *

1. Introduction

The first archaeologist to excavate prehistoric sites in Pang Mapha and Pai districts of Mae Hong Son province was Chester Gorman, more than 30 years ago. He identified one of the six key traits of the 'Hoabinhian' as "a cultural and ecological orientation to the use of rockshelters generally occurring near fresh water streams in an upland karstic topography" (Gorman 1972).

Since then prehistorical research in Northwest Thailand and highland areas in general, has focused on cave and rockshelter sites (Shoocongdej 1996). This research bias towards sheltered sites has limited our understanding of the overall settlement patterns of hunter-gatherers. Higham states that "The upland groups, known generally as Hoabinhian, took advantage of the shelter offered by the front of caves. But this does not mean that they were not equally if not more at home out in the open, near rivers, or within the forest to exploit seasonal harvests. It is simply that caves provide greater protection for habitation remains and are more easily located." (Higham 1998, 63-64)

In a later publication he reiterates that our knowledge of inland hunter-gatherers comes "almost exclusively from occupation remains in rockshelters. This provides only a partial glimpse of their way of life, for they must surely have occupied many open sites as well" (Higham 2002, 81).

Shoocongdej (1996) has also noted that open sites are virtually absent from archaeological literature on Thailand and has pointed out the need to investigate lifestyles and mobility strategies of hunter-gatherers away from naturally sheltered sites.

Prishanchit (1988), however has previously recorded 52 open lithic sites in Mae Hong Son Province near the Mae Nam Pai and several tributaries at elevations from 300-700m. These sites were found only on hills and mountains close to rivers, or other water sources, and were up to 250m across "covered by stone flaking debris" (Prishanchit 1988). The lithic material scattered over the surface of these hilltop sites included large numbers of bifacially flaked, elongated axes. Prishanchit concluded that the sites were "workshops" for producing stone tool, and mentioned the "problem of finding associated habitation sites." (Prishanchit 1988).

Previous research has established that prehistoric hunters and gatherers sought caves and overhanging cliffs for shelter. There are, of course, large areas of Northwest Thailand devoid of natural shelters where the prehistoric inhabitants had to live in the open. Even in areas dominated by limestone karst, like Pang Mapha district that has hundreds of known caves, there are relatively few cave mouths that are particularly suitable for extended human habitation. Active stream caves are rarely habitable; their mouths often choked with mud, flood debris or boulders. Dry, inactive caves may be already inhabited by bats, snakes, and insects. Until recently tigers and bears also sought shelter in caves. Cave mouths can be covered in guano or be too damp and musty for occupation. Many cave entrances also have rough floors, dangerous boulder piles or

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limited livable space. Location can also pose a problem due to difficult access or distance from a water source, particularly in karst areas where there are often no surface streams.

Rockshelters, which I define as day-lit places protected from rain by an overhanging cliff, are generally more suitable for habitation. Guano is not a problem and they can be bright, breezy places that often have flat dirt floors and extensive areas under shelter. Virtually every rockshelter recorded in Pang Mapha District that is near a water source and has a dry, flat living space more than a few metres across, contains evidence of prehistoric use.

In Pang Mapha the total number of recorded cave and rockshelter sites with flaked stone tools and space suitable for habitation is less than 40. This low number of sites is despite more than 20 years of intensive exploration of the District's caves and karst areas by this author, international teams of cave explorers, researchers, and local inhabitants. One of the most impressive caves in Pang Mapha is Tham Lod, a huge cavern formed by the Nam Lang, a stream that drains over 400 sq kilometres before sinking underground. Within 5 kilometres of Tham Lod, are scores of known caves, but only 3 cave mouths and 4 rockshelters contain evidence of use by hunter-gatherers. The only significant habitation site recorded in the karst hills west of Tham Lod is a large overhanging cave mouth at Tham Nam Bor Suksit (Sacred Well Cave). At the lowest point in Tham Nam Bor is a natural rimpool that contains water all year, the only perennial water source for several kilometres. Five of the other sheltered sites are located on the edge of the karst area, close to streams (fig 1).

In contrast to the low number of sheltered habitation sites around Tham Lod, more than 60 open lithic sites have been recently identified in the vicinity. John Spies and Stephen Brown located most of the open sites in Tambon Tham Lod during 2000, and continued exploration of other areas sporadically throughout 2001-2. The total number of documented sites is 86 with many more sites still unrecorded.

This paper proposes that open lithic sites, which I believe were used for habitation, occur in greater density and numbers than previous research has shown. Open sites are far more numerous than sheltered sites, even in regions bordering on, and including, limestone karst. They are easy to locate and widespread. This paper argues that the site locations indicate that hunter-gatherers in highland areas spent the wet season at these sites, where they could live in relative comfort and had easy access to a wide variety of resources.

The recorded open sites in Pang Mapha are listed in a table with a summary of information collected at each location. Lithic sites in the Tham Lod area are recorded on a map. The next section describes how these sites were located. It is hoped that this will be useful for the identification of sites in other regions.



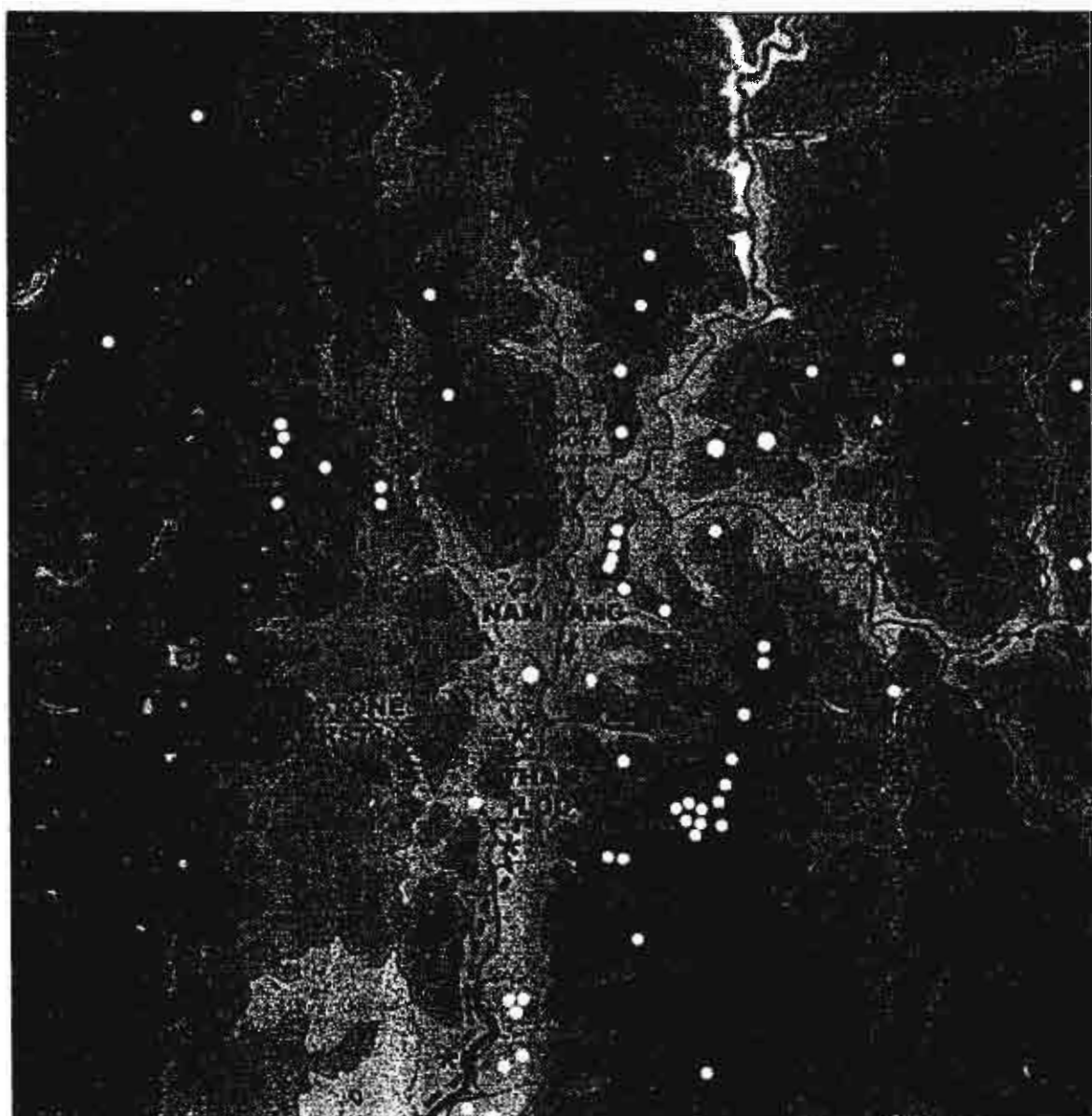


Fig. 1: Lithic Sites in the Tham Lod Area, Pang Mapha, Mae Hong Son
Open Lithic Sites: White Circles Actually
Sheltered Lithic Sites: Black Stars
Notes on the Map: Map area is 100 sq. kms. Contours are 700m to 1000m.
 Top is north. Areas of exposed limestone are bordered with broken lines. Some circles represent a group of sites.

This is followed by general descriptions of the various types of sites and the lithic remains. The discussion section focuses on the similarities between sites, the lithic materials, settlement patterns and the possible mobility strategies employed by the region's prehistoric inhabitants. It must be emphasised that this paper is based on preliminary reconnaissance and there have been no excavations or detailed surveys conducted at the sites.



2. Locating Open Sites

The first open lithic site recorded in Pang Mapha (1.1), was located during January 2000, on a low ridge near Huoy Hin Gong, a seasonal tributary of the Nam Lang, in Tambon Tham Lod. About 30 unifacially flaked river cobbles lay exposed on the surface of an elevated area, with more found a few metres away, by a seasonal pool. Further exploration of the Tham Lod area was conducted mainly during the wet season, from June to October 2002, and involved many long walks along ridgeline paths. At this time of the year these trails through open forest remain easy to negotiate, unlike the overgrown and muddy paths near streams. It was during a period of heavy rain, while standing on a well-drained lithic site, when we first developed the theory that the ridges were used for wet season habitation.

A pattern of prehistoric occupation of the area around Tham Lod was forming and we began examining other areas in Mae Hong Son and Chiang Mai Provinces for similar sites. Again we found that elevated flat areas on ridges and hilltops, near sources of water and abundant wild foods, were often littered with stone tools. Sites were found on high ridges above tributaries of the Mae Nam Pai in Muang District of Mae Hong Son and on mountain ridges between Pai and Chiang Mai. On the low hills and ridges in the broader parts of the Mae Nam Ping, Mae Nam Pai and Mae Nam Chaem valleys there are many sites, some very close to the river.

At some thermal springs we have found relatively huge concentrations of stone tools indicating intensive and/or extended use of these special sites. We visited as many of the undeveloped hotspots as we could find in Northwest Thailand, but not all had evidence of prehistoric use. At some places, such as the springs at Pha Bong near Mae Hong Son, development of the area as a tourist attraction has made the recovery of evidence problematic.

Highland lithic sites are easy to locate, due to the consistency in their geographical location and the relatively undisturbed natural environment at most sites. It has been fortunate that the ridges and hilltops were generally too dry or infertile for farming and, until recently, had few trees worth exploiting commercially. On elevated, undisturbed areas the rate of soil loss appears to be about equal to the rate of build up. Flaked tools are commonly found scattered over the surface of the sites, or partially embedded, with little evidence of deeper deposits. Ridge sites, whilst unsuitable for farming, are however being increasingly threatened by road construction in highland areas. Evidence from many sites has already been disturbed.

When searching for sites, often the first clear indicators of prehistoric use are rounded river stones that must have been brought from elsewhere. The wet season and early winter months are best for finding lithics after forest fires and rain have cleared the dry season litter of deciduous leaves.

3. Hilltop and Ridge Sites

Highland lithic sites can be found in varying densities across Northwest Thailand. Topography has a major influence on the number of locations suitable for wet season habitation in geographically different regions. Karst areas are composed of rugged exposed limestone, caves, dolines (closed depressions) and sinking seasonal streams with few flat places available. Underground drainage and the subsequent lack of surface water add to the inhospitability of karst areas. The valleys of rivers such as the Mae Nam Pai and Mae Nam Chaem, are often steep sided with flat land confined to riverbanks. Highland terrain formed by the smaller tributaries of the region's rivers however, is characterised by long ridges dividing catchments where there are many places suitable for



habitation. The highest density of recorded sites is on these dry ridgelines. Most sites are within open pine, mixed deciduous, dry dipterocarp or mixed forest. Some higher sites are located in lower montane evergreen forest, often again mixed with pine.

All lithic sites are located on an elevated and well-drained, relatively barren area that requires minimal or no clearing. The sites are flat, or gently sloping, with thin or sandy soils, in places where there is no mud during the wet season. The dimensions of the flat areas can vary from a few metres to more than 50 metres across. The forest is generally open-canopied with little shelter provided by the trees, making the sites open to sunlight. The nearest available water source in many cases is a seasonal stream or pool. The pools, typically 3-5m across, are found in depressed areas on ridges where spring water or runoff can collect. They are only active during the wet season and often appear to have been dug or enlarged by humans, sometimes into a rectangular shape. Flat areas with stone tools are usually only a few metres away from the pools.

Lithic material can spread over hundreds of square metres and there can be as many as 10 lithic sites in a square kilometer. The density of lithic material can vary widely between the sites. Some sites contain a few scattered pieces while other sites are densely covered. Lithics are usually concentrated on the flat elevated areas, but can also be spread across nearby slopes.

Paths that follow the natural ridgelines, which can be as narrow as one metre across, connect the sites on ridges to other features in the landscape. Today, as in prehistory, people walking along ridges often have no choice as to which route to take and it is likely many pathways have been in use since the first people inhabited the area.

Most sites are close to raw materials for stone tool manufacture, usually rounded river cobbles or quartzite outcrops. Other valuable resources, that are ubiquitous and are used in the Tham Lod area, include bamboo, pine wood (for lighting), the bark from *mai bor* (for twine and rope) and gum from *mai huk* (making composite tools, waterproofing). It is likely that these forest products were particularly important for prehistoric hunter-gatherers.

Around Tham Lod there are 7 varieties of bamboo commonly used by the local Shans that occur naturally near their village- *mai bo*, *mai sung*, *mai hea*, *mai kao larm*, *mai bong*, *mai bao* and *mai rai*. Each of these varieties is best suited for different functions. *Mai sung* and *mai kao larm*, for instance, are the best varieties for cooking and boiling food. Other varieties are used for water containers, building shelters and roofing, making snares and traps, weaving mats and baskets etc. Lengths of dry bamboo, split by hand, make extremely sharp knives, which, amongst other tasks, are effective for cleaning and cutting skin and meat from animals. It is unlikely that stone tools would have been used for this task. The shoots of all varieties of bamboo are edible, with different flavours, and in highland areas today they are an important supplementary food during the wet season.

Most tools and other pieces of stone were often left or discarded on the flat area that I assume was the campsite. This could indicate that shelters had raised floors, being constructed in much the same way as they are by people in the area today. Having a stone tool that could chop, split and flatten bamboo (by chopping many times around the joints between sections) would have made construction of such shelters easy. I believe that hafted ‘sumatraliths’ could have performed these functions effectively, but this theory needs field-testing.

Another observation is that places near precipitous drops that are otherwise suitable for habitation have very few or no lithics. This suggests that dangerous sites were avoided out of concern for the safety of small children.



4. Thermal Spring Sites

The thermal springs near Ban Muang Paeng in the Mae Nam Pai valley and the Theppanom springs in the Mae Nam Chaem valley both have particularly large mounds of lithic material near to the hot pools, more than is found at any other open site and most rockshelter sites. Both these sites are located near to other water sources. Some other thermal springs, such as those nearer to Pai, also have many tools but not in such high concentrations.

The extremely hot water was undoubtedly the attraction of thermal springs for hunter-gatherers. Rather than water for washing, the springs were mostly likely used as a convenient way to cook and process foods. Today, people living near thermal springs cook bamboo shoots and eggs and use the water to remove feathers from birds and fur from animals. In prehistoric times the only natural containers that could boil water were lengths of green bamboo and these are still used for cooking by people camping in the forest. However, bamboo is not so effective for the extended boiling of bamboo shoots or large sections of meat, as it tends to burn through after a while. Having the ability to boil large amounts of food for long periods and to easily clean animal carcasses would have been a definite advantage for hunters and gatherers. Boiled bamboo shoots and meat can also be dried in the sun and stored.

Of importance for future research is the fact that, unlike at other open sites, there is the possibility that prehistoric materials have been preserved in sequential deposits, cemented by the mineral rich waters. At the Muang Paeng springs in the valley of the Nam Pai, 'sumatraliths' and other flaked tools are partially cemented into the rim of several hot pools and it is possible that more tools and possibly bones, charcoal and even hair have been preserved in the lower mineral deposits.

Table 1: Open lithic sites in Pang Mapha. Notes on the table: The table is a summary of information recorded at some open lithic sites in Pang Mapha District. It is neither complete nor comprehensive.

The elevations and map co-ordinates have been determined from 1:50,000 maps with some GPS readings. The heights are generally accurate within 20m and the co-ordinates within 20-100m.

Ridgepath access (RPA) for most sites demonstrates that ridgeline paths undoubtedly crossed the landscape allowing for easy exploitation of wide areas during the wet season.

The density of the lithic materials at each site is arbitrarily given as low, medium and high. This preliminary grading reflects the amount of lithics relative to other sites. The lithic symbols simply illustrate whether rounded river pebbles and cobbles or quartzite and chert sourced from hill outcrops were the predominant raw materials. The forest types are the dominant species in the immediate vicinity of the site.

The site dimensions are an approximation as are some of the distances and times given to the nearest sources of water, during the wet season.



Table 1: Open lithic sites in Pang Mapha.

NO 1.1 to 1.64 TL area	TYPE	ALT masl	CO-ORDS. 1:50,000 sheets 4648 I 4648 II 4647 I 4647 IV	LOCATION TL- Tham Lod NL- Nam Lang	DESCRIPTION DIMENSIONS Width of flat drained area in metres. RPA-ridgepath access to wide areas	FOREST P- Pine DD-dry dipterocarp MD- Mixed deciduous LME-Lower montane evergreen	LITHICS L-low M-medium H-high R-cobbles Q-quartzite HQ-hill quartzite C-chert S-unifacial discoids	WATER SOURCE SS-seasonal stream PS- perennial stream S-seasonal
1.1	Low ridge	730	25.10/62.20	East of Nam Lang, near T.L.	Above seasonal stream. 10m. RPA	MD DD.	H. R. Q. S. bifacially flaked axe	S.pool-5m SS-100m
1.2- 1.11	High broadridge	960- 1040	26.50/62.70- 63.10	Doi Hin Gong, east of T.L., 20 mins. from N.L.	9 sites near pools and SS. 20- 30m. Barren, open. Broad, flat areas. RPA	P	H.R.Q.S.	S.pool at top of ridge, SS near sites.
1.12	High broad ridge	1100	25.30/60.45	Doi Hin Gong, looks over NL.	Small flat area on edge of precipice, barren, rocky. RPA	p	L. R. Q. Minor site	Spring-10 mins walk
1.13- 1.16	High narrow ridge	940	22.65/66.10	3km NW of TL. Edge of karst	Nearby sites, 5-10m. Open forest, barren RPA	P. LME.	M.H.Q.R.	PS-5-10 mins walk
1.17- 1.18	High narrow ridge	820	23.55/65.60	2km NW of TL. Edge of karst	Nearby, 20-30m, open forest, RPA	P. DD.	M.R.Q.C.	SS-5-10 mins walk
1.19	High narrow ridge	980	22.45/67.55	West of Huoy Haeng, near karst	10 by 30m, cut by road. Narrow ridge RPA.	P LME.	M.R.C.HQ	Next to spring PS-10 mins
1.20	High narrow ridge	900	21.95/68.80	Between Huoy Haeng/Nam Yappanair	10 by 40m, cut by road, elevated area on ridge RPA	P LME	M.R.	Perennial spring-400m
1.21- 1.22	High narrow ridge	1040	21.30/70.35	Between headwaters of Huoy Haeng and Nam Mae La Na	20 by 20m. rounded hills on ridge, gravel. Barren. RPA	P LME	H.R.C.	S.pool near. P spring 300m
1.23	High broad ridge	1060	21.70/70.90	North of headwaters of Huoy Haeng on ridge east of Nam Mae La Na	70 by 10-30m, broad flat area, RPA	MD LME. P.	H. R. Q. S. 2 ground adzes	S stream- 100m. P spring 300
1.24	High small hill on ridge	1080	21.35/71.10	300m north of 1.23. On north-south ridgeline east of Nam Mae Lana	5m across, on hill top, disturbed by 'ring ditch burial' mound RPA	P LME	L.R. Q. Minor site	
1.25- 1.26	High broad ridge	1040	21.80/70.80	100m SE of 1.23. Above headwaters of Nam Huoy Haeng	One site is 60 by 10m, and other is 20 m. Broad, open area. RPA	P. LME	M.R.Q.S.	SS next to site. P spring-5 mins
1.27- 1.29	Low broad ridge	740	25.55/65.20	On ridge between Nam Lang and Nam Paem	Highest site is 20 by 10m, others about 5-10m across. Broad open area. RPA	DD.P.	H.R.Q.S.	s.pool next to site. NL-5 mins
1.30	Low ridge	720	25.66/64.80	Beside road to Muang Paem	15m across.	DD	M.R.Q.	PS.-10 mins
1.31	Low ridge	740	25.90/64.70	Cut by road to muang Paem	10 by 15m RPA	MD	M.R.Q.C.	SS-5-10 mins
1.32	Low hill	750	26.45/65.25	Above Nam Paem	10 m, barren, next to precipice	P.MD	M.R.Q.	PS.- 5 mins.
1.33- 1.35	Low ridge	790	25.40/63.95	East of NL, opposite Ban Tham Lod Sth. Sites 50m apart	10m across, barren, open. RPA	P.MD.	H.R.Q.C.	S.spring- 300m, NL- 500m
1.36- 1.41	High ridge	745- 953	25.65/66.15 - 25.80/67.70	3 major, 3 minor sites along ridge between NL and Nam Huoy Haeng	Minor-3-5m Major- 20m across Barren, open. RPA	P DD MD.	H.R.Q.S.	S.pool at main site. P streams 10-20 mins.
1.42- 1.45	Low ridge	650- 688	25.50/60.00- 24.65/60.50	4 sites, one major, east of NL, near river.	Major-flat area 100m by 30m. RPA	P	Major- H.R.Q.	S.pool next to main site. PS-5 mins
1.46	Low broad hill	650	24.60/64.00	Tham Lod sth village area	Broad flat hilltop, flat area 2000sq.m.	MD	Significance unknown. Sub surface tools. R.Q.	P spring- 200m NL- 500m.
1.47	Low hill	680	24.30/62.90	Near TL-Soppong road, edge of karst	10m across, rocky	MD. DD.	L.R.Q.	Near S pool
1.48	High ridge	964	25.75/61.65	East of NL, high on junction of ridgelines	20m by 15m, barren, open. Next to steep slopes. RPA	P.MD.	H.R.Q.S.	PS-5-10 mins
1.49- 1.51	Low broad hills	650	24.65/61.00	200m east of NL, on gently sloping hillside.	Broad flatter area about 200m by 30m RPA	P	M.R.Q. small flaked bifacial axe	PS and NL nearby.
1.52- 1.54	Low ridge	740	25.35/63.30 25.65/63.15	East of NL, 3 sites along ridge south of Huoy Pa Chang, Opp. TL.	10-50m across, sites about 50m apart. RPA	P. DD.	M-L. R.Q.HQ.	PS-5-10 mins
1.54	Mineral spring	700	28.10/63.90	South of Muang Paem, near tributary of Nam Paem, low by stream	Spring-100m across Possible living area about 20m across.	Stream gallery evergreen	H.R.Q. Small ground adze	PS nearby
1.55	Hill slope	700	28.00/64.80	On path 500m sth of Muang Paem	Tools found on slope	MD	L.R.Q.	PS nearby
1.56- 1.58	High broad Ridge	800- 880	26.50/66.00 26.90/66.10 28.00/66.85	Along highest ridge dividing NL and Nam Paem, north of Muang Paem	3 major sites, 20-30m across, 300-500 m. apart. Some tools embedded. RPA	P.MD.	H.R.Q.S.	SS & PS in valleys. 5-10 mins.
1.59- 1.61	High ridge	860- 884	26.90/64.2 26.95/64.00 26.70/63.70	Along ridge dividing NL and Nam Paem, east of Ban Tham Lod.	3 sites about 10m across. RPA	MD.P.	M.R.Q.	SS-5-10 min.
1.62- 1.64	High Ridge	780- 956	29.80/65.00 30.30/65.20 30.85/65.80	Along ridge, sth of Ban Eylu road, above headwaters of Nam Paem.	3 sites on hilltops along ridge. 20m across. RPA	MD.	H.R. Basalt? More tools than flakes.	PS in valley- 5-10 mins
2.1	High ridge	1003	22.60/45.60	Near road to Ban Manoula, 1.5km from Luk Pa Kor.	On hilltop on ridge, 15 by 20m. RPA	MD. LME	H.R.Q.S.	S.pool/sprin g. 50m.
2.2	High ridge	1230	22.20/50.35	On ridge SW of Ban Nam Rin.	High, far from P. streams. RPA	P.LME	H.R.Q.	2 S.pools nearby.
2.3- 2.5	Low ridge	730- 780	07.75/60.45 08.10/60.60 08.20/60.55	Sth of 1095 Highway, about 1km east of Nam Khong.	3 sites along ridge, about 10m across RPA	DD	H.R.Q.S. several biface axes	SS in valley- 10 min.



5. Lithic Remains:

From a general reconnaissance level perspective there appears to have been a wide range of raw materials and techniques employed in the making of stone tools at different sites. There are also a variety of sizes and shapes of tools observed including some sites with bifacially worked tools. The overall impression however is that most sites have at least some unifacially or bifacially flaked river pebbles or cobbles that could be considered typical 'Hoabinhian' tools. These include 'sumatraliths', 'half axes' and 'scrapers'. Some of these tools have been manufactured from cores broken from large cobbles or boulders, rather than from pebbles and small cobbles. Most sites also have pointed tools, usually triangular in shape. All of the sites show evidence of at least some tools being fashioned in situ, with unused flakes, broken cores and debris making up the bulk of most assemblages.

Lithic raw materials generally appear to be whatever suitable stone was easily obtainable. If a stream was nearby, then rounded river stones were usually the raw material used for most tools. Pink or grey, fine to medium grained quartzite appears to have been the stone of choice in the Nam Lang area, but many other rocks, such as basalt, were also used. There are also sites, far from a source of river stones, where the raw materials were not so uniform or symmetric. Some tools have been fashioned from pieces of quartzite, broken from nearby outcrops, irregular pieces of quartz and occasionally chert, which is common on some high ridges. Sites near the Mae Nam Pai and Mae Nam Chaem contain tools made from a larger variety of raw materials, including fine-grained quartzite, basalt, schist and chalcedony.

At a few sites, natural or human excavation has provided cross-sections that clearly show the depth of lithic material. This is particularly well illustrated at site 2.5, where a road cut through the centre of the ridge has exposed a steep profile. The lithic material is less than 10 cms deep and this appears to be the case at most barren ridge top sites. There are a few sites on less well drained or less open areas where there has been an accumulation of soil with many tools partially embedded. There is a possibility that an excavation could reveal deeper deposits.

At several sites edge-ground axes and shouldered adzes were found amongst the flaked pebble tools. Two complete shouldered adzes, flaked and ground from a soft, cream coloured rock, possibly siltstone, were found at site 1.23. The larger adze is 10 cms long, 4.5 cms wide and 2 cms wide. They have both been fashioned from the same rock and are identical in design. They have a rust coloured coating, presumably due to oxidation after long exposure on the surface. Another adze was found next to a path 300m northwest from the site. At a mineral spring near the Nam Paem was found a small, heavily used, shouldered tool. Originally made as an adze, the tool was later ground on both sides of the cutting end, effectively making it into an axe.

Several bifacially flaked axes made from a cream coloured stone, have been found amongst unifacially flaked river cobbles at sites 1.1, 1.51, 2.4 and 2.5. These appear to be similar to axes found near Mae Hong Son (Prishanchit and Dissayadej 1983).

At site 1.37 is half of a broken stone ring, with a man made hole in the centre. This ring, made from a flat round river pebble, is similar to many more found at the Tham Lod rockshelter excavation site (Shoocondej pers. com.). It appears to have been drilled and one possible use for such a ring could have been as a weight for a bow drill for starting a fire or for drilling stone, wood and bone.

Whether these artifacts are contemporaneous with the other tools at the sites or are from a later occupation or use is a matter of speculation. The finds do suggest however that people who may have been amongst the first agriculturalists in the area used some of the same highland sites.



No ceramics were found at any of the sites. This could be interpreted as being due to weathering and erosion over thousands of years rather than as confirmation that the sites were exclusively used by an aceramic population

6. Discussion:

It is likely that the artifacts found at the open sites represent only a small fraction of the material remains left by hunter-gatherers. Most stone tools, particularly those made from rounded river cobbles and pebbles were probably fashioned at the source. Broken or blunted tools used away from the campsite were probably discarded anywhere. Without any surviving organic material, what remains are the lithics that weren't swept away during campsite clearance or by erosion. Still, much material survives in situ and provides valuable information on settlement patterns.

The density of sites in some areas, and the relatively large amounts of lithics found at some locations tends to indicate that either there was extended use and re-use of sites, or that some favourable areas were more heavily populated. At some of the well-used ridgetops, such as Doi Hin Gong, the close proximity of lithic sites suggests that some could have been inhabited contemporaneously. In other areas where there are several places suitable for a campsite in close proximity, usually only the most comfortable site has lithic remains. This may indicate that only one small group of people periodically used the site, possibly over an extended period.

The higher ridges were probably used as campsites only during the wet season. The evidence supporting this theory comes from the lithic artifacts left at the sites, their geographical locations and the distances to the nearest water sources.

The lithics are always concentrated on flat or gently sloping elevated areas that are naturally well drained. The lithic assemblages generally include a variety of well-used or broken tools, lots of flakes, debris and large river cobbles or quartzite rocks with peices broken off. Many of these sites are close to water sources that are only active in the wet season, usually the headwaters of small streams or pools.

The existence of flat, well-drained, places on the ridges and hilltops in the region, gave the inhabitants a distinct advantage over populations in lowland areas. Movement from stream valley camps during the dry season to higher sites during the wet season might have only involved a 20 minute walk, but would have resulted in a noticeable improvement in campsite comfort levels. Many sites are several hundred metres higher than the valley floors and the differences in airflow, humidity and temperature at these elevations would have been a factor in their choice for habitation. In addition to this the vast majority of sites occur within sparse or open forest on thin soils. Ground cover is minimal or requires little clearing; there is no mud or leeches and a greatly reduced number of snakes and insects, including mosquitoes and ticks. Malaria is not present above 900m, where many of the sites are located. If malaria was prevalent, then having wet season camps at high elevations would have helped to reduce the transmission rate.

Another advantage of having campsites on ridges is the relatively quick access to a wide variety of food resources. Paths along ridgelines are easy to follow all year and are rarely overgrown. In the Tham Lod area, for example, the inhabitants of campsites on the Doi Hin Gong ridge (sites 1.2-11) could walk along paths to Tham Lod and the Nam Lang valley in 15 minutes. The Nam Muang Paem valley is 20 minutes away and the Nam Huay Haeng and Nam Pha Mon valleys are less than an hours walk. They could also use the natural bridge over Tham Lod to safely cross the Nam Lang during the wet season, and exploit vast areas of limestone karst to the west of the river. The area around Tham Lod is particularly diversified with different forest types found on the valley floors,



hillslopes, ridges, higher mountaintops and within the karst (Richardson 2003a). The easy access to all of these areas of evergreen and deciduous forests and several streams from ridge top campsites would have enabled the exploitation of a wide area and a large variety of wild foods.

Assuming that dry season camps were generally located near streams, often the only water sources available, then a move to nearby hills or ridges during the wetter months was not primarily in response to the availability of seasonal food resources or materials for everyday use. People moved uphill simply to find a more comfortable campsite location, rather than to change or expand their areas of exploitation.

Furthermore, the advantages of using ridge paths to exploit a variety of ecosystems and natural resources would have lessened the need to move wet season campsites. Mobility strategies employed by hunter-gatherers during the wet season in seasonal tropical environments have been hypothesised as being residential, entailing more frequent moves to enable better exploitation of seasonal resources (Shoocongdej 1996). The archaeological remains at such camp sites would be expected to be predominantly local lithic types, with an expedient stone tool technology, where at dry season camps there should be evidence of long distance use of lithic raw materials and a more curated stone technology (Shoocongdej 1996). During the dry season it has been reasoned that logistic strategies were preferred with less movement of camps required. However, much of the archaeological evidence supporting this hypothesis has been derived from naturally sheltered sites. The evidence from open lithic sites suggests that hunter-gatherers in the seasonal tropics may have employed different mobility strategies than has been previously thought.

A problem with the residential mobility model for the wet season, when viewed in the light of this new evidence, is that it appears more logical to assume that wet season shelters, constructed on ridges, should be relatively well built to protect from wind and rain. If roofed with split bamboo, a likely construction material, then shelters could last for several seasons. It seems unlikely that people would frequently move camp and build new shelters. It is more plausible that logistic strategies were used, with people using the ridge paths to easily access food and other resources over wide areas, returning to the main camp each day. During the dry season it again seems more logical for residential mobility to be higher, as shelters are often not required and stream valleys are easier to negotiate. During the driest months long sections of streams and other valleys could be more easily exploited by moving camp.

The lithics found at the highland sites are generally comprised of tools expected to be used by people using logistic mobility patterns, with extended stays at one campsite, rather than more simply made, expedient tools expected from briefly occupied sites. Shoocongdej has theorised that toolkits used at logistic camps: “should show a relatively high level of diversity of functionally specialised tool types...and less concern over transport of complete residential inventories.” (Shoocongdej 1996a).

There are many ridges sites that I believe were inhabited during the wet season and also contain a diversity of typical ‘Hoabinhian’ pebble tools; the type of assemblages associated with the logistic mobility strategy model.

The antiquity of the sites recorded in this paper can not be accurately determined without the recovery of datable material. This may prove impossible due to the open nature of the sites and the unlikelyhood of any organic material surviving. The best possibility of directly dating these open sites may be the extraction of organic material from thermal mineral deposits. A comparison of the open lithic material with the assemblages from dated sheltered sites in the region could help establish if these types of sites were used contemporaneously.



I believe that the sites we found are just a few of many more similar sites that undoubtedly exist across Asia. It is plausible that Post Pleistocene hunter-gatherer occupation spread across the whole region from river valleys to the highest habitable mountains. The Tham Lod area is a good example of the intimate knowledge prehistoric populations had of the region. The Nam Lang, like many other streams that flow into karst, sinks underground and the only access to the valley and its tributaries is over high mountains. The wealth of natural resources and the relatively large number of suitable campsites spread across the landscape were a big incentive for people to inhabit this area. It is also plausible that the people who stayed or moved in and out of the region eventually had no where else to go as the landscape filled with people. The idea that highly diversified highland areas could support continuous hunter-gatherer habitation is attractive. Long term habitation and familiarisation with an area and its resources should lead to more efficient exploitation. The accumulating archaeological evidence shows many different cultural periods in Northwest Thailand, extending from well over 10,000 BP until about 400 BP. It is quite possible that more evidence, including DNA analysis, may show that the original inhabitants of the region never left, until historical times.

7. Summary and Conclusions:

A clear pattern of extensive occupation by hunter-gatherers of the non- karst highland areas of Northwest Thailand has emerged. Caves and rockshelters, while being invaluable as preservers of cultural remains, tell only a small part of the overall prehistoric settlement of the region. The vast majority of the people must have spent their lives in the open, away from natural shelters.

The density of open lithic sites, even in areas where there are caves and rockshelters suitable for habitation, suggests that some areas supported larger populations than has previously been thought. Dry hills and ridgelines forested with pine or deciduous species, near to, or dividing, small streams at elevations of 400-1200 metres, were the most favoured locations for wet season camps. It is very likely that detailed surveys of similar terrain in other regions will reveal the same pattern of site location.

The people who left the lithics at these highland sites had several distinct advantages over people who inhabited lowland areas, with more variety in elevation and microclimates, forest types and food resources. Importantly, they were able to ameliorate the discomforts of the wet season, possibly reduce the transmission of malaria, and still have easy access to food and material resources via ridgeline paths.

The location of the sites on the drier hills and ridges implies that mobility during the wet season was primarily in response to a human desire for a more comfortable campsite. In the Tham Lod area, a variety of ecosystems and the raw materials for tools and commonly used items were all readily accessible during every season. It is most likely that residential mobility strategies were employed during the dry season and logistic mobility was favoured during the wet season.

The lithics found at the sites need to be surveyed and studied in depth, and compared with assemblages found at dated sites, before any firm conclusions can be made. The use of a variety of lithic raw materials and the different styles of flaking also needs more investigation, as does the presence of edge-ground tools. Lithic functionality experiments, especially with bamboo, could also increase our understanding of these sites, and assist with the interpretation of lithic assemblages.

The thermal spring sites are particularly important as their accumulated mineral deposits may contain a more complete record of the earliest habitation of the region.



I expect that many more similar sites will eventually be recognised, spread across the highland topography of the distinctly seasonal climatic zones of Asia.



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