CHAPTER V

RESULT II : ARCHAEOLOGICAL REMAINS ANALYSIS

Numerous archaeological remains at Tham Lod rockshelter including stone tools, animal remains, shells, potsherd, beads and other artifacts provide fairly direct information about human behavior in the past. Especially stone tools, animal remains and shell from excavation were main artifacts and of these mostly came from the stratigraphic unit B which refers to Late Pleistocene Period. Potsherds and beads were discovered only from stratigraphic unit C and D which refers to Early Holocene to Middle Holocene Period.

Description of archaeological remains was based on the distinct categories of them. To separate archaeological remains, it is necessary to carry on a detailed analyses by specialists. Thus, the description of archaeological remains in this chapter will be presented on basic statistic from preliminary categories of artifacts and comparison in amount of artifacts from each unit.

The majority of archaeological remains for analysis were stone tools representing human occupation in Late Pleistocene Period. However, other artifacts were also described here on a preliminary basis.

5.1 Analysis of Stone tools

Stone tools were the most dominant artifacts founds from Tham Lod excavations. Most of them were found from stratigraphic unit B that refers to Late Pleistocene layers. Numerous of cores and flakes were discovered. Preliminary analysis will be based on random sampling of excavated block representing all of stone tools founds in the area (Figure 5.1).

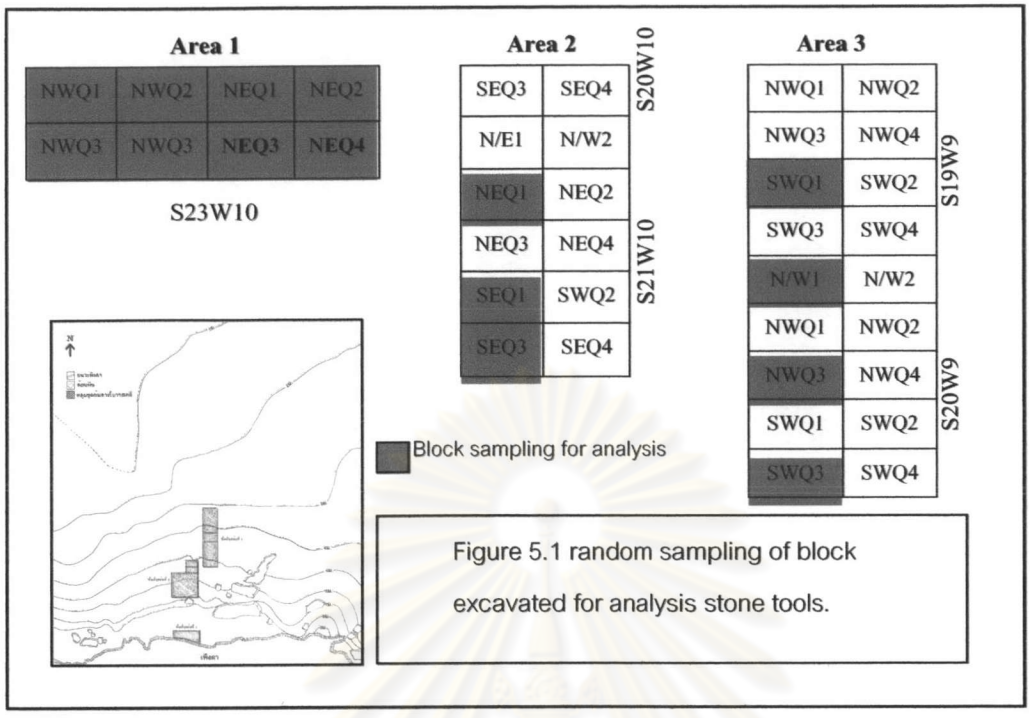


Figure 5.1 random sampling of block excavated for analysis stone tools.

5.1.1 Analysis core and flake from area 1

A total number of core and flake analysis is 10,576 pieces which 1,985 pieces of core and 8,633 pieces of flake. All of them was made from gravels that consists mainly of 56 % of sandstone, 26% of quartzite and consecutively of mudstone, andesite, rhyolithic tuff, siltstone, quartz and chert.

Core samples analysis represent utilized core, wasted core and broken core. They include 18 % of utilized core, 69 % of wasted core, 10 % of broken core and 3 % hammer stone (Table 5.1). Utilized core are characterized mostly by the appearance of unifacial core tools which were made by direct percussion with hard hammer stone technique.

Flake samples analysis represent utilized flakes and wasted flake including 2% of utilized flake, 2 % of secondary utilized flake, less than 1 % of tertiary utilized flake, 38 % of primary wasted flake, 40 % of secondary wasted flake, 14 % of

tertiary wasted flake and 4.5 % of resharpening flake (Table 5.1). The evidence of stone tools especially utilized core and utilized flake represented that this area was suitable for habitation site. However, cores and flakes that found entire stage of production such as wasted flake, wasted core to finished products such as utilized core and utilized flake indicated that this area was the place for stone tools manufacture during this time as well as habitation area.

Table 5.1 Category of core and flake analysis of Area 1

Category	Artifact Types	Amount (p.)	%
Core	Utilize Core	354	18
	Wasted Core	1380	69
	Broken Core	198	10
	Hammer	62	3
Flake	Primary utilize flake	196	2
	Secondary utilize flake	206	2
	Tertiary utilize flake	48	0.5
	Primary wasted flake	3295	38
	Secondary wasted flake	3519	40
	Tertiary wasted flake	984	14
	Resharpening flake	385	4.5

Table 5.2 Raw material of core and flake analysis area 1

Category	Rock Types								
	Sandstone	Quartzite	Mudstone	Rhyolithic tuff	Andesite	Quartz	Siltstone	Chert	Granite
Core	986	608	105	31	119	26	49	2	4
Flake	4899	2198	690	33	593	41	143	49	0
Total	5885	2806	795	64	712	67	192	51	4

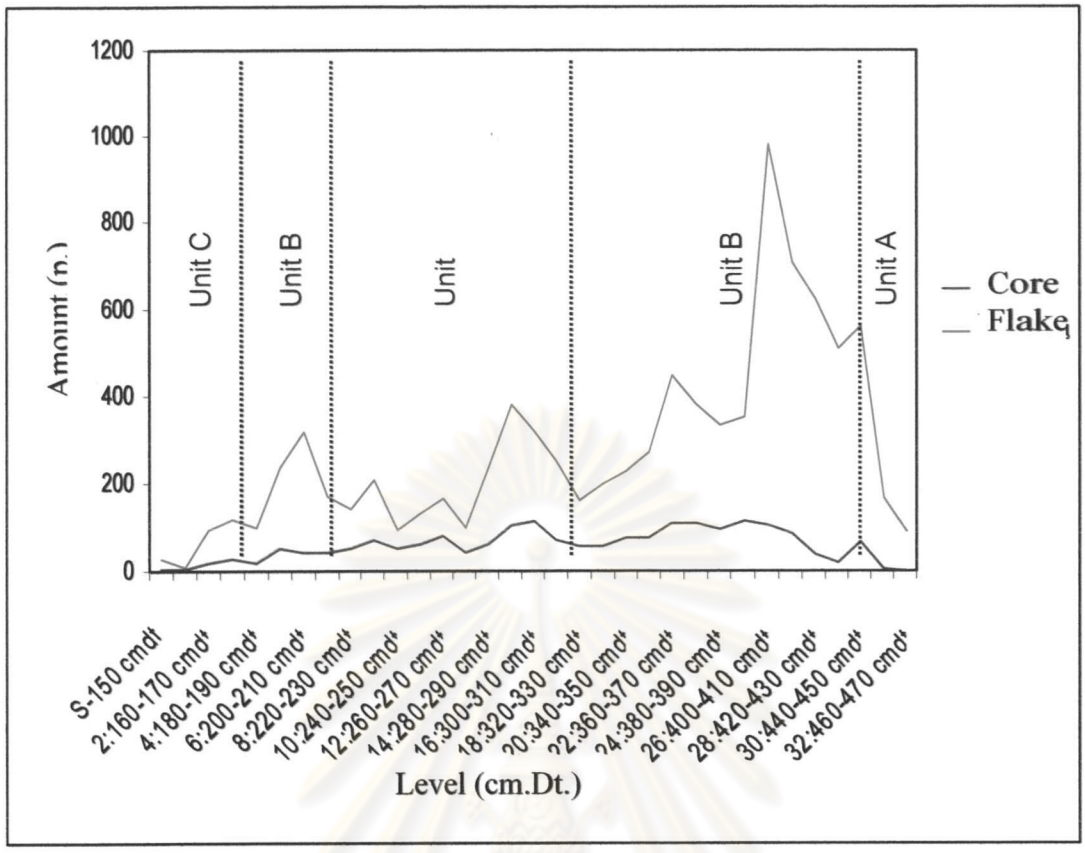


Figure 5.2 The relationship between core and flake from each level in area 1

The distribution of cores and flakes from each level in excavated area represents a relationship between stratigraphic unit and amount of core and flake. From Figure 5.2, the density of cores and flakes were high in stratigraphic unit B especially in the lower part of unit. It suggests that during late Pleistocene period, human mainly used stone tools as a part of their subsistence. However, stratigraphic unit B represented a little decrease in density of core and flake because limestone rock fall may occurred during this time.

5.1.2 Analysis core and flake in area 2

Core and flake analyses at area 2 were based on a random sampling from three blocks of excavation incliding S20W10 NEQ1, S21W10 SEQ1 and S21W10 SEQ3. The total number of core and flake analysis is 11,126 pieces which 3,107 pieces of core and 8,019 pieces of flake. All of them was made from gravels that are mainly

composing of 70 % of sandstone, 27% of quartzite and consecutively of mudstone, quartz, andesite, and rhyolithic tuff.

Table 5.3 Category of cores and flakes analysis of area 2

Category	Artifact Types	Amount (p.)	%
Core	Utilize Core	247	8
	Wasted Core	931	30
	Broken Core	1920	62
	Hammer	9	-
Flake	Primary utilize flake	227	3
	Secondary utilize flake	215	3
	Tertiary utilize flake	27	<1
	Primary wasted flake	2427	30
	Secondary wasted flake	3806	47
	Tertiary wasted flake	1384	17
	Resharpening flake	23	<1

Table 5.4 Raw materials of cores and flakes analysis area 2

Category	Rock Types								
	Sandstone	Quartzite	Mudstone	Rhyolithic tuff	Andesite	Quartz	Siltstone	Chert	Granite
Core	2093	1021	26	7	4	15	-	-	9
Flake	5916	2090	124	2	6	6	-	6	-
Total	8009	3111	150	9	10	21	-	6	9

Result of core samples analysis is similar to those of area 1 that the amount of cores including 8 % of utilized core, 30 % of wasted core, 62 % of broken core and less than 1 %of hammer stone (Table 5.3). Utilized core are characterized by the appearance of unifacial core tools which were made by direct percussion with hard hammer stone technique. Flake sample analysis was made similarly with core analysis that amount of wasted flakes are more than utilized flake that 3% of utilized flake, 3% of secondary utilized flake, less than 1% of tertiary utilized flake, 30 % of primary wasted flake, 47 % of secondary wasted flake, 17 % of tertiary wasted flake and less than 1 % of resharpening flake. (Table 5.3)

Low percentage of utilized core and flake but high percentage of wasted core and flake representing that stone tools manufacture activity due to high percentage of primary wasted and secondary wasted flakes. Generally, in the stage of stone tools production, primary and secondary wasted flakes were found in highest density.

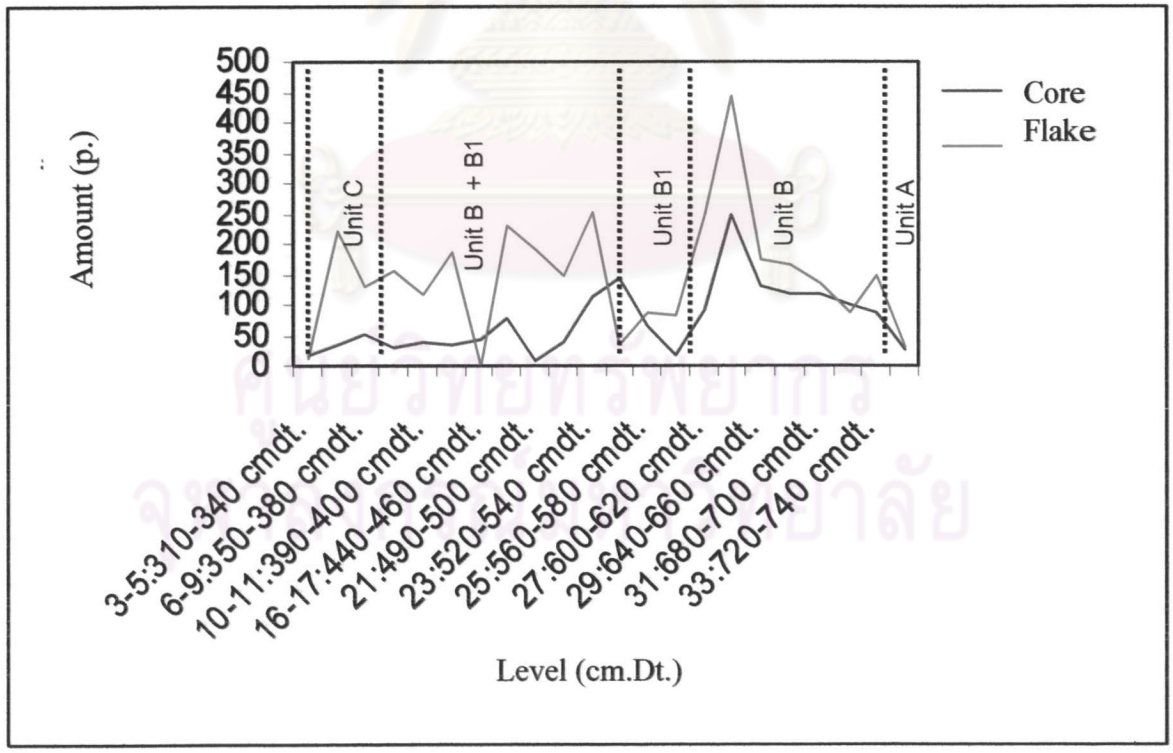


Figure 5.3 The relationship of Core and Flake from each level in area 2 S21W10 NEQ1

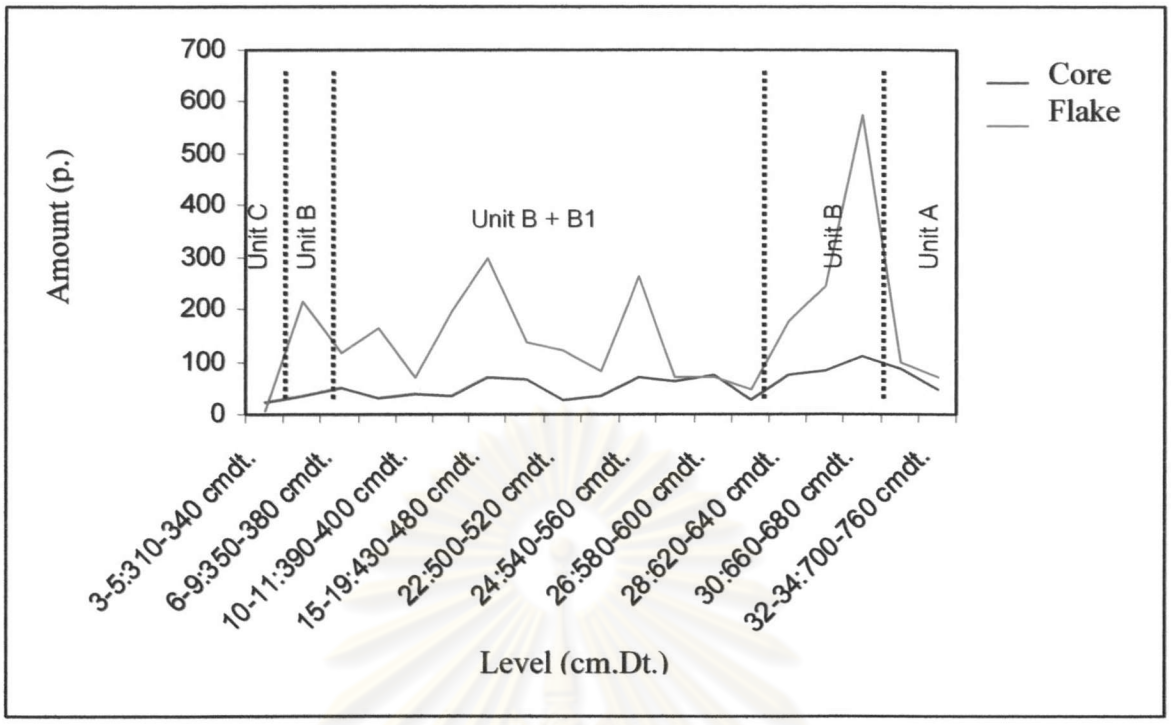


Figure 5.4 The relationship between cores and flakes from each level in area 2 S21W10 SEQ1

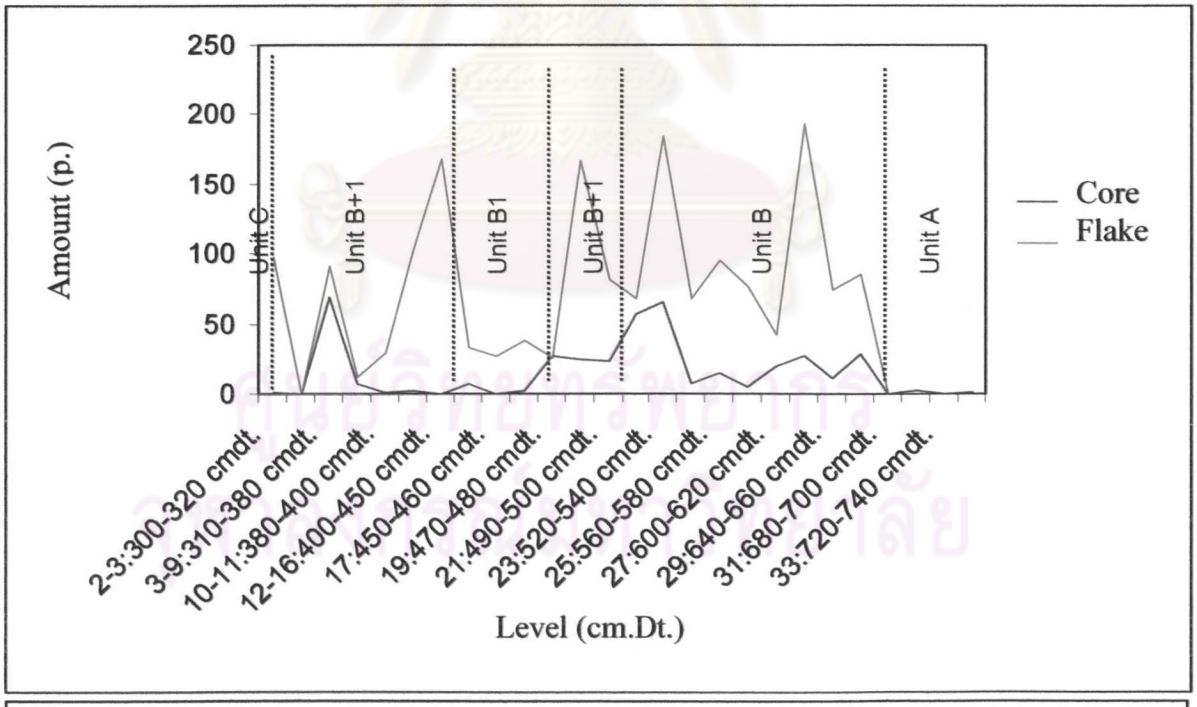


Figure 5.5 The relationship between core and flake from each level in area 2 S21W10 SEQ3

Figures 5.3 to 5.5. Show the high density of core and flake in the lower part of strtigraphic unit B indicating that intensive of stone tools manufacture seemed to occur during this period. In the upper part of stratigraphic unit B is represented by the inconstant density of core and flake that was possibly affected from limestone rock fall particularly in stratigraphic unit B1.

5.1.3 Analysis core and flake in area 3

Core and flake analyses at area 3 were based on random sampling from four blocks of excavation : S20W9 SWQ3, S20W9 NWQ3 , S20W9 Buulk N/W1 and S19W9 SWQ1. The total number of the core and flake analysis is 13,819 pieces which 3,282 pieces of core and 10,537 pieces of flake.

Table 5.5 Category of cores and flakes analysis of area 3

Category	Artifact Types	Amount (p.)	%
Core	Utilize Core	328	10
	Wasted Core	974	30
	Broken Core	1946	59
	Hammer	34	1
Flake	Primary utilize flake	249	2
	Secondary utilize flake	195	2
	Tertiary utilize flake	22	<1
	Primary wasted flake	3092	29
	Secondary wasted flake	4661	44
	Tertiary wasted flake	2246	21
	Resharpening flake	72	<1

Table 5.6 Raw material between cores and flakes analysis area 3

Category	Rock Types								
	Sandstone	Quartzite	Mudstone	Rhyolithic tuff	Andesite	Quartz	Siltstone	Chert	Granite
Core	2079	1061	72	6	-	16	-	-	7
Flake	6973	3075	357	-	-	79	-	47	15
Total	9052	4136	429	6	-	95	-	47	22

A number of core samples analysis in area 3 is corresponce to analysis from area 1 and area 2 that amount of core occurs including 10 % of utilized core, 30 % of wasted core, 59 % of broken core and 1 %of hammer stone. In this area several sizes of gravels were chosen for stone tools production. Some types are characterized by the unifacial core tools which were made by direct percussion with hard hammer stone technique but none of pattern for category occurs in some types, for example large gravel with boulder size was percussed by hammer stone for taking the large flake to make core tools again. Likewise, flake samples analysis has a result similar to core analysis that amount of wasted flake more than utilized flake as 2% of utilized flake containing 2% of secondary utilized flake, less than 1% of tertiary utilized flake, 29 % of primary wasted flake, 44 % of secondary wasted flake, 21 % of tertiary wasted flake and less than 1 % of resharpening flake (Table 5.5).

The evidence of core and flake can be interpreted in relation to area 2 that human occupation in this area used to be stone tools manufacture. The entire stage of stone tools production made up of numerous primary wasted flake and secondary wasted flake to finish products such as utilized core and utilized flake.

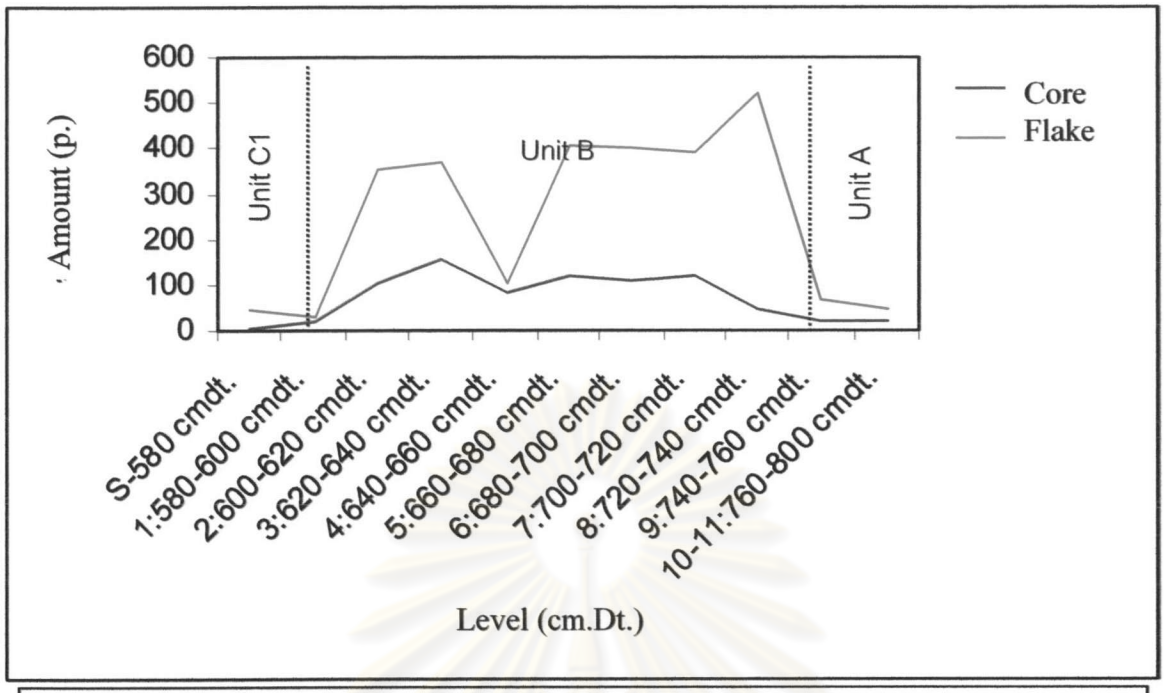


Figure 5.6 The relationship between cores and flakes from each level in area 3 S20W9 Baulk N/1

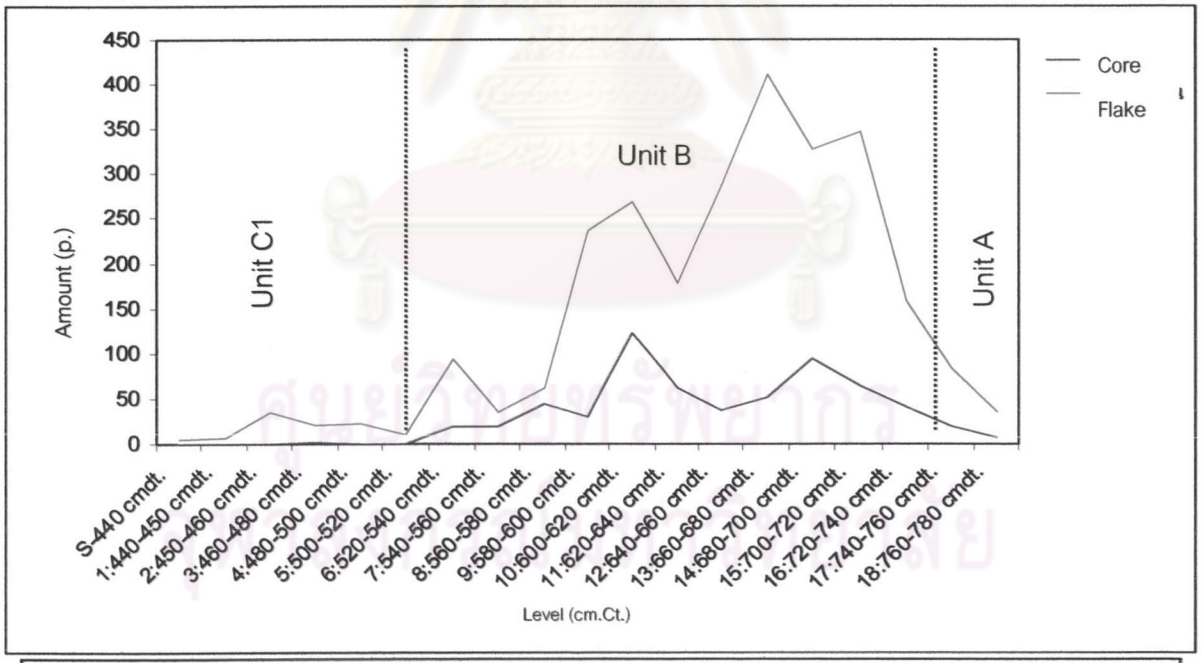


Figure 5.7 The relationship between cores and flakes from each level in area 3 S20W9 NWQ3

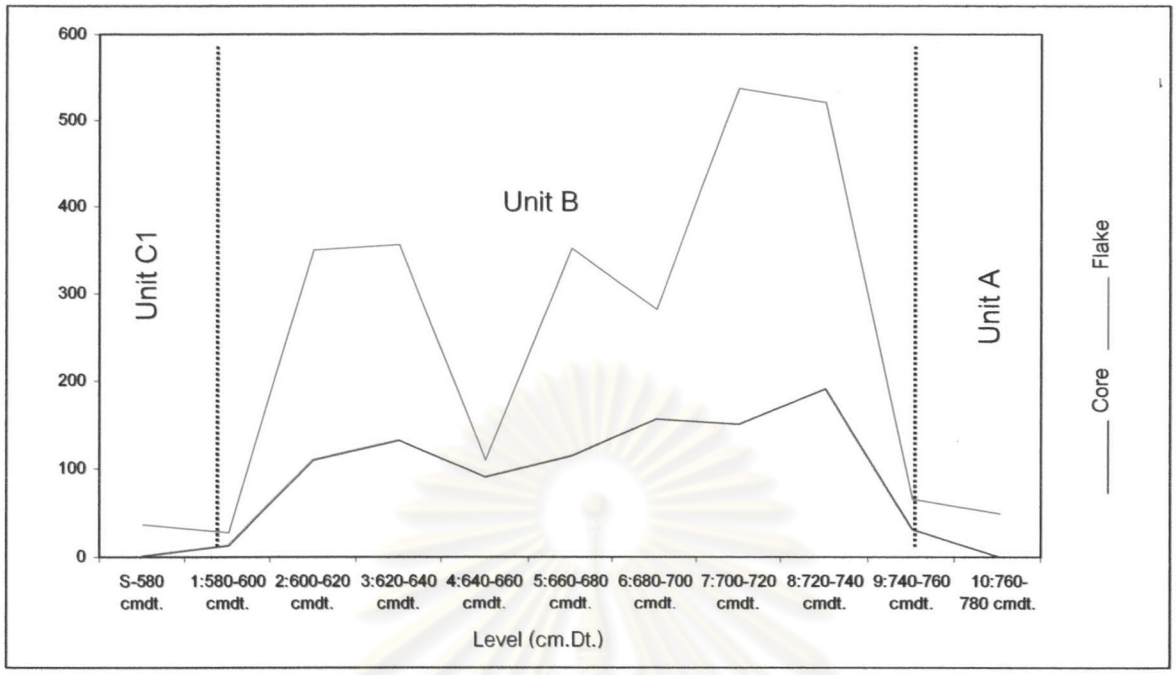


Figure 5.8 The relationship between cores and flakes from each level in area 3 S19W9 SWQ1

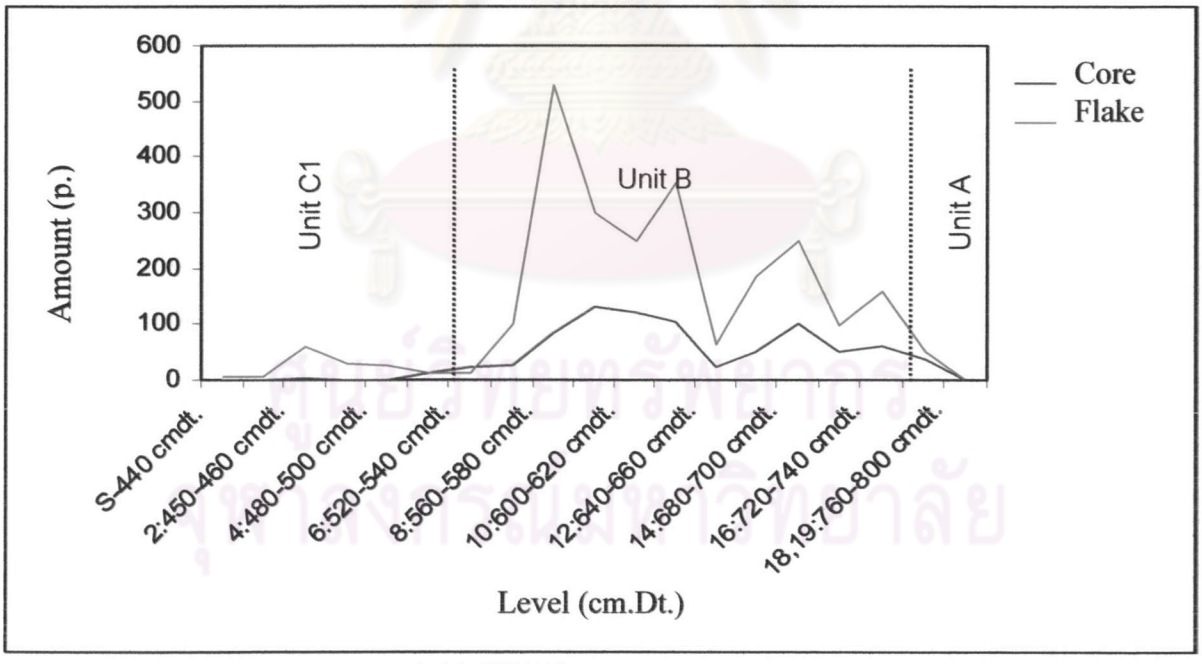


Figure 5.9 The relationship between cores and flakes from each level in area 3 S20W9 SWQ3

From figures 5.7 to 5.9, it is clear that the high density of cores and flakes in the stratigraphic unit B indicated, intensive of stone tools manufacture activity during this period. However, in the middle part of stratigraphic unit B, all of block analysis represented the decrease in amount of core and flake indicated by similar level 640 – 660 cm.Dt. with the level of rock fall in area 2. Thus, it was made by the effect of rock fall and showed a little time gab of human activity. In contrast, the next level shows rapid increase in amount of core and flake represented the re-occupation in this area again by human in the past.

5.2 Animal Remains Analysis

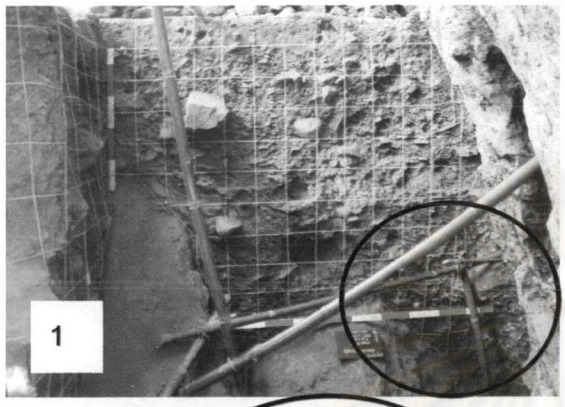
Animal remains were found in all of excavated area. Only in area 1, most of animal bones was moderately good preserved. All of them is characterized by a small to medium pieces of bone, both found burned and not burned. Although, A lot of animals remains (bones) in area 2 and area 3 was found, but most of them became small fragments and highly weathered. Therefore, a preliminary analysis of animal remains in this research was based solely on analysis only in area1. The species of animal were analysed only based on random sampling of animal remains from high density of deposition and interpretation from teeth. Numerous of animal bones were tossed near the wall of shelter in level 21 – 25 : 350 – 400 cm.Dt. (Figure 5.10). Based on analysis of teeth it can be grouped animal by size into 3 groups as follows:

Large size animal (Figure 5.11): Most of them was classified cervid and bovid. Surprisingly, bear was recognized in the deposit too.

Medium size animal (Figure 5.12) : Most of them was identified as cervid, mountain goat, pig, rhizomys and small primates.

Small animal (Figure 5.13) : Most of them were identified lizard, fish, rat, reptile, crab, trionyx and birds.

The distribution of animal remains was analysed by amount of bones from each layer that represented high density of animal remains in stratigraphic unit B (Figure 5.14)



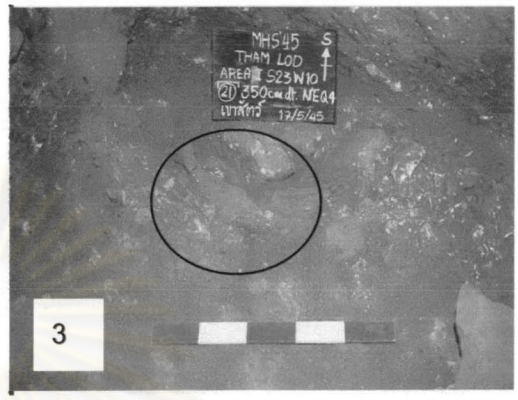


Figure 5.10 Deposition of animal remains in Level 21 – 25 (350 -400 cm.Dt.) in area 1

1. Location that high density of animal remains of east profile was found.

2. Bird eye view from the surface shows location of high density of animals remains that were tossed near the rock shelter wall in the east wall.

3. close up of animals remains deposition, circle in the picture shows deposit of horn of bovid (same location from picture 1 and 2)

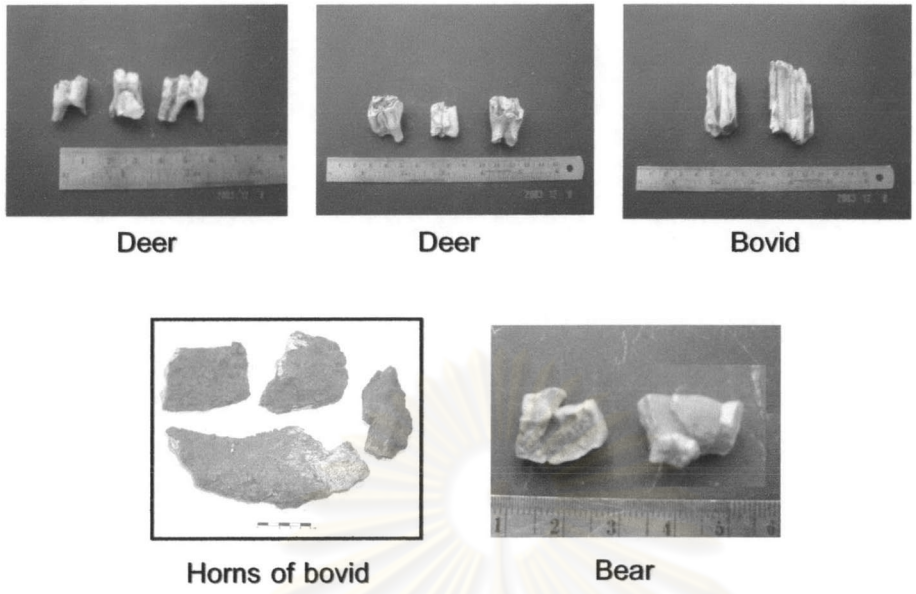


Figure 5.11 Teeth samples and horn sample of large animal found in Area1.

Source. Highland Archaeological Project, 2002

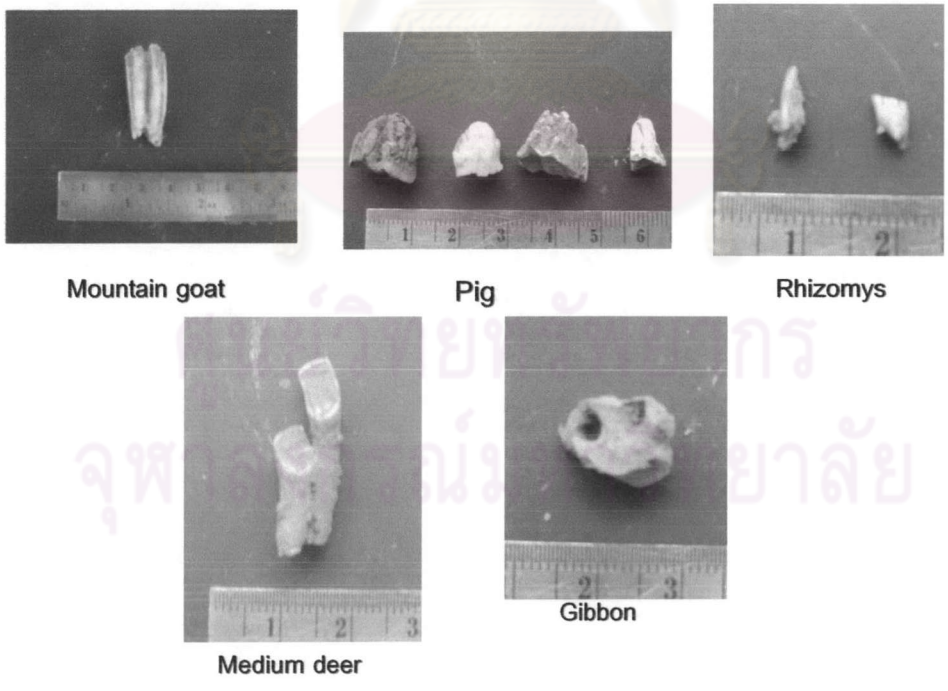


Figure 5.12 Teeth sample and bones of medium animals from Area 1

Source: Highland Archaeology Project, 2002

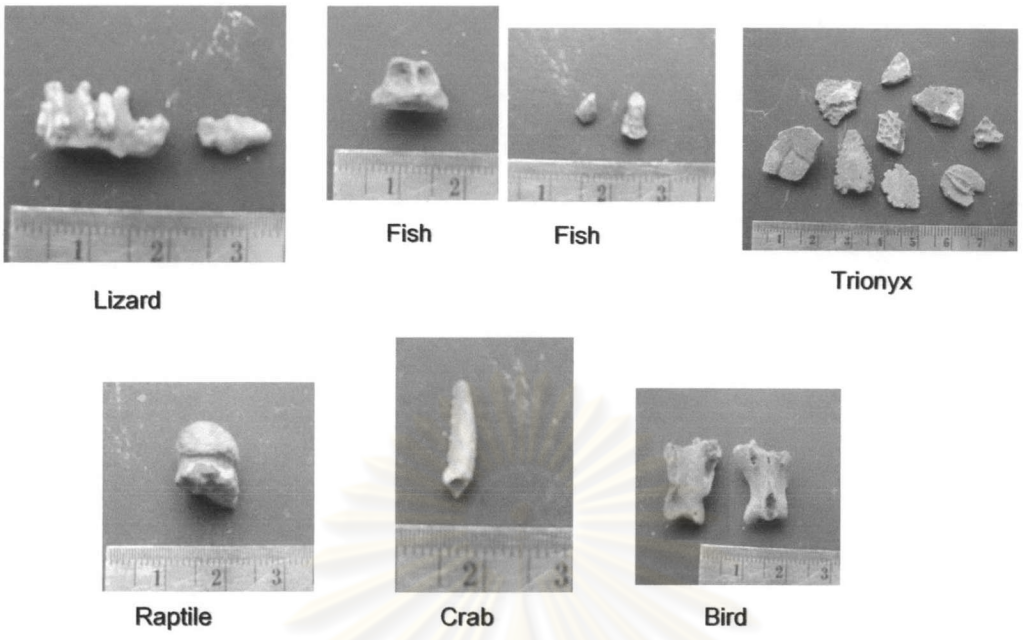


Figure 5.13 Animal remains samples of medium size animals from Area 1

Source: Highland Archaeology Project, 2002

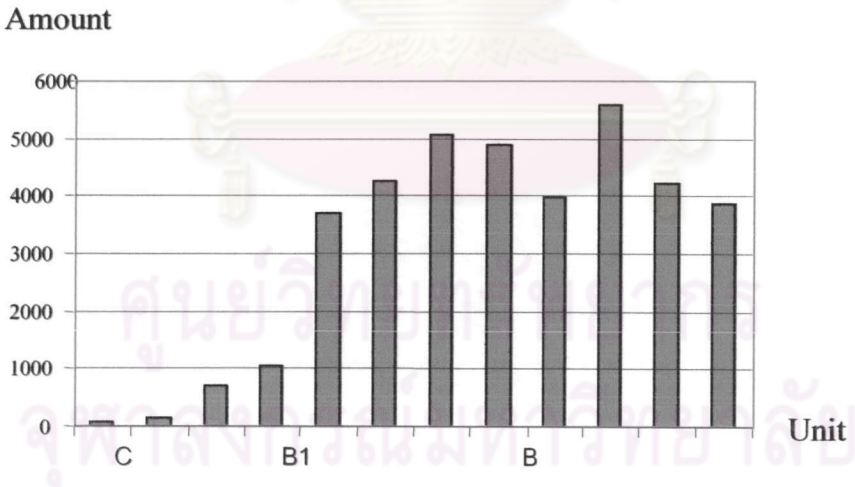


Figure 5.14 Primary total number of animal remains from each level unit

5.3 Analysis of Shell Remains

Shell remains were well preserved. All of them is characterized by burned and not burned, mostly found in Area 1. Analysis of density of animal remains especially in area1 shows high density in stratigraphic unit B. A preliminary analysis of fresh water shell was identified as ***Nodularia scobinata (Carditidae)***.

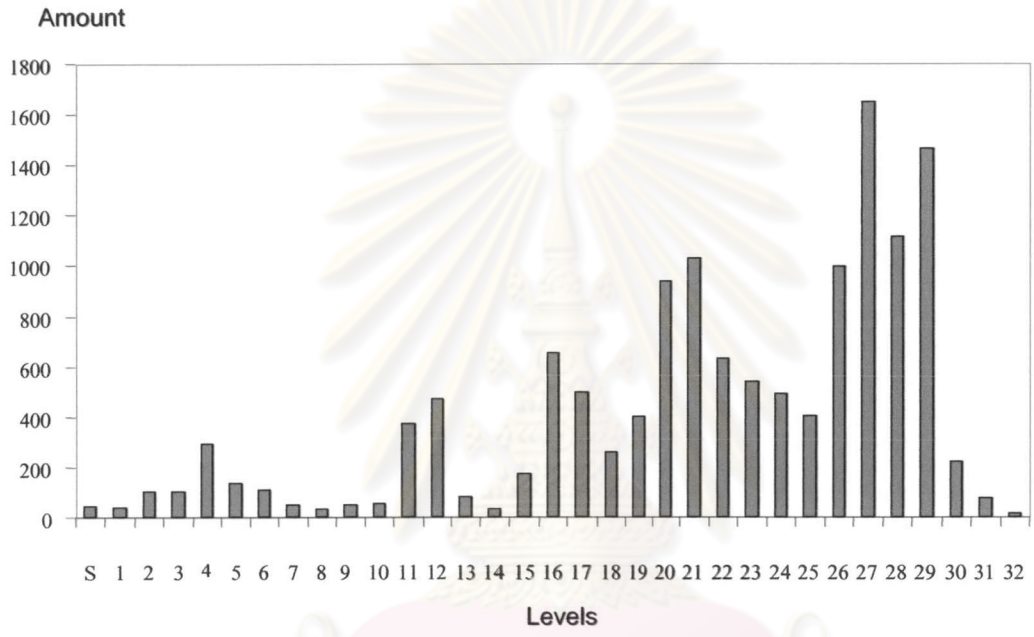


Figure 5.15 Density of fresh water shell remains from each level of Area 1

Source: Highland Archaeological Project, 2002

Figure 5.16 Fresh water shell remains (***Nodularia scobinata (Carditidae)***.

5.4 Analysis of Potsherd Remains

Potsherds remains were moderately preserved. All of them was characterized by small pieces fragments, mainly found in stratigraphic C and C1 (Figure 5.17 and 5.18). Potsherd is of earthenware potsherd that most of them was characterized by a small pieces with color is brown to dark brown on the surface. Texture is mainly composed of coarse-grained to fine-grained. The surface finish and decorations are plain, polished plain and cord marked.

The distribution and density of earthenware potsherds were analysed by counting pieces and weight (Table 5.7). Potsherd in area 2 and 3 is more abundant than area 1. Although, a total number of potsherd is high, but when comparing to the amount of potsherd with density per area volume, it indicated low of potsherd deposited in the area. The potsherd was deposited in close association with other artifacts such as beads, iron tools and grinding stone etc.

Table 5.7 Density of potsherd from Area 1 , 2 and 3

Source : Highland Archaeological Project, 2002

Pit Area	**Amount**		**Area Volume (m^3)**	**Density (m^3/pieces)**
	pieces	**weight (grams)**		
1	202	529.5	36	1/6
2	4,421	13,365.5	60	1/74
3	1,588	4,757	70.2	1/23
Total	6,211	18,652	166.2	-

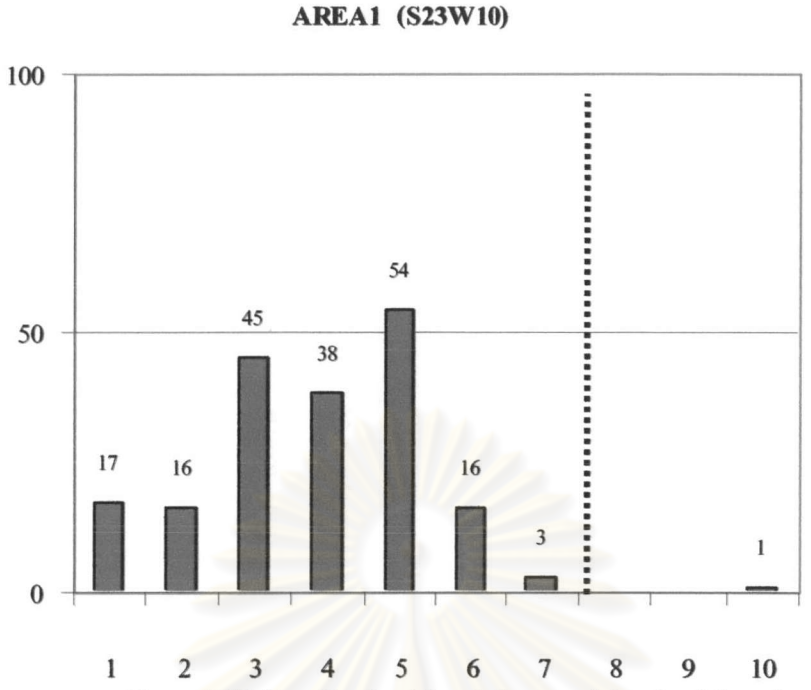


Figure 5.17 Density of potsherds from each levels of Area 1

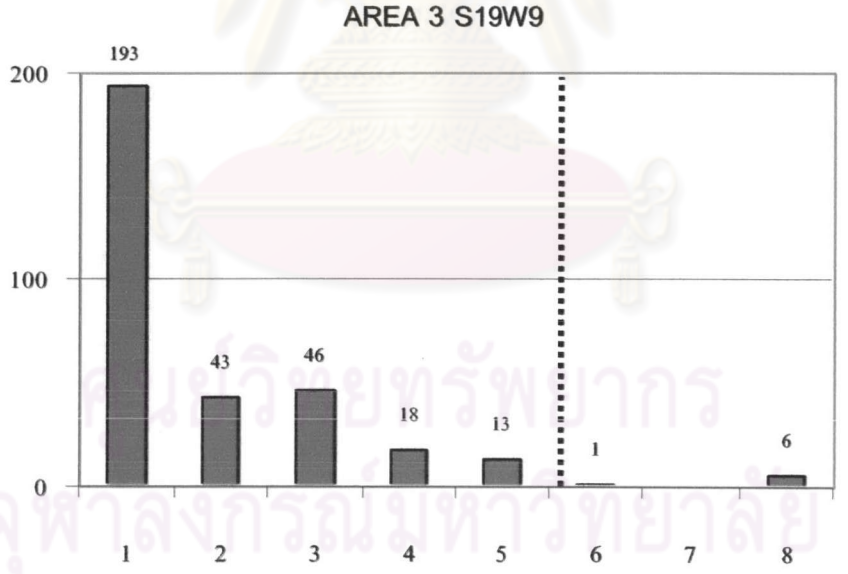


Figure 5.18 Density of potsherds from each levels of Area 3 S19W9

Source: Highland Archaeological Project, 2002