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REVIEW ARTICLE

INVESTIGATION OF CUPULES IN HAICHENG, LIAONING PROVINCE

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ABSTRACT

To master the distribution and status of the **cupules** in Anshan, Anshan Museum has appointed an investigation panel and coordinated administrative departments for cultural relics at and above the county level, to investigate the **cupules** in five areas of Anshan. The quantity of **cupules** in Haicheng ranks first in the five areas of Anshan, with various types of patterns and representative shapes. This article mainly describes the investigation of **cupules** in Haicheng, and introduces the **cupules'** geographical location, pattern, and inspiration from the investigation, etc.

KEYWORDS

Haicheng, Cupules, Investigation

Cupules in Anshan are mainly concentrated in north and south zones: the south zone is in Haicheng (county-level city); the north zone is in four districts of Anshan: Qianshan District, Tiedong District, Yufoshan Scenic Area and High-Tech Industrial Development Zone. (Li, et al., 2012)

1. INTRODUCTION

Haicheng has a long history and remains many historic sites. Xianrendong Cave in Gushan Town, as a national key cultural relics protection units, has the remains of human existence as early as 50,000 years ago. Shimu Town and Jiewen Town with more cupules are just beside Gushan Town.

1.1 Survey Background

In 2000, Anshan archaeology enthusiast, Zhang Junwei discovered rocks engraved with plum-shaped patterns in Yang er Yu, and then reported to the Anshan Museum. Anshan Museum appointed archaeologists to conduct exploration. According to the field investigation, archaeologists think it was man-made. Due to the limited historical data and information, the archaeologists of the Anshan Museum could not conduct textual research on the historical origin and its purpose. They only noted it as the archaeological material, and called it "the Stone Nest."

In 2008, during the third national survey on cultural relics, the survey team found and registered a large number of "the Stone Nest" in Anshan. In recent years, discovery and research about "the Stone Nest" gradually appear on a variety of media, which broadens the horizons of

researchers. More people realized the existence of the remains in other parts of the world, and has been named "cupules". (Tang, et al., 2004; Tang 2011)

1.2 Investigation purpose

In 2015, Anshan government carried out the declaration of the eighth batch of municipal cultural relic protection units, and meanwhile started the declaration of the of cultural relic protection units at county (city) and district level. The number of cupule Cave rock art in Haicheng area ranks first in five districts of Anshan, with rich patterns and types. In order to accurately master the distribution and status of rock art and lay a foundation for the protection after the promotion, Anshan Museum has organized an investigation team, and contacted the Haicheng Historic Relic Administration, to investigate the cupule Cave rock art around the areas.

2. DISTRIBUTION MAP AND STATISTICS TABLE OF CUPULES IN HAICHENG

2.1 Distribution map of cupules in Haicheng

Haicheng is a county-level city in central Anshan, covering a total area of 2732 km². It has a splendid landscape with hills, plains, and lowlands. The land is high in the southeast and descends to the northwest, sloping from east to south and northwest. The eastern mountainous and hilly areas are between 60 and 500 meters above sea level, and the western

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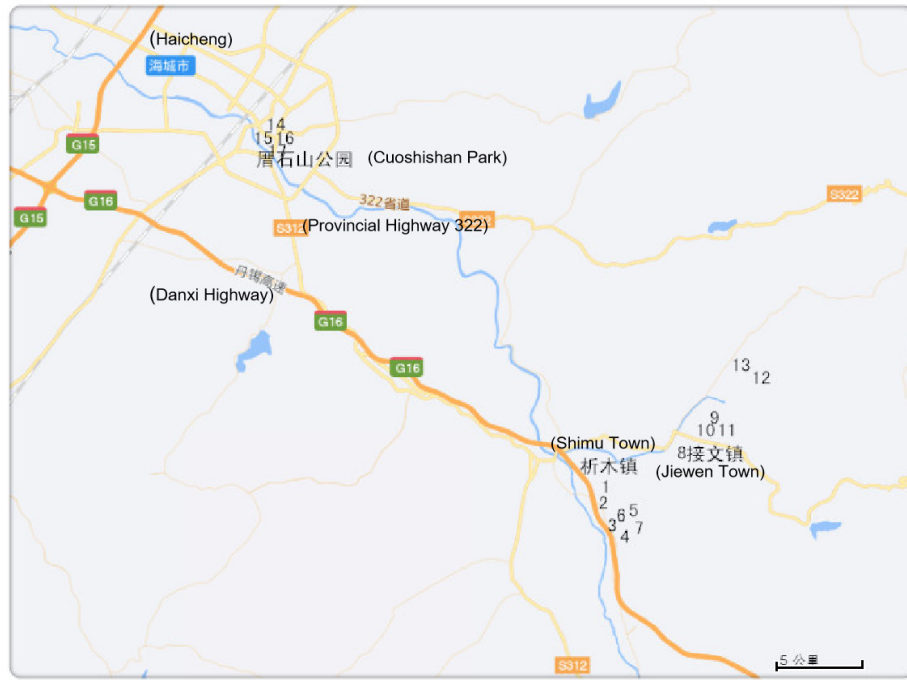


Figure 1: Distribution map of the mainly cupule sites in Haicheng

Table 1: Statistics table of Cupules in Haicheng

Number	Name	Town (street)	Village (community)	Site	Latitude (N)	Longitude (E)	Altitude (m)	
1	Cupules in Gusaoshi Village	Shimu town	Gusaoshi Village	First site	40°40'4"	122°57'22"	210	
				Second site	40°39'59"	122°57'20"	202	
				Third site	40°39'59"	122°57'19"	193	
				Fourth site	40°39'59"	122°57'18"	188	
				Fifth site	40°40'8.1"	122°57'17.6"	230	
				Sixth site	40°40'8.3"	122°57'17.6"	230	
				Seventh site	40°40'08"	122°50'	173	
2	Cupules in Dadaoyu Village	Shimu town	Dadaoyu Village	First site	40°39'51"	122°57'47"	228	
				Second site	40°39'52"	122°57'49"	233	
				Third site	40°39'53"	122°57'53"	246	
				Fourth site	40°39'56"	122°57'53"	246	
				Fifth site	40°40'02"	122°57'46"	274	
				Sixth site	40°40'07"	122°57'32"	230	
3	Cupules in Laoniuzhai Village	Jiewen town	Laoniuzhai Village	First site	40°41'47"	122°58'50.6"	185	
4	Cupules in Jiewen Village		Jiewen Village	First site	40°43'11"	123°00'37"	257	
				Second site	40°43'9.9"	123°00'37.4"	263	
				Third site	40°43'9.8"	123°00'40.4"	258	
5	Cupules in Songjiapu Village		Jiewen town	Songjiapu Village	First site	40°43'38"	123°02'16"	232
					Second site	40°43'41"	123°02'20"	254
					Third site	40°43'40"	123°02'13.8"	242
					Fourth site	40°43'39"	123°02'11"	227
					Fifth site	40°43'38"	123°02'10"	225
6	Cupules in Cuoshishan		Haizhou District Offices	Cuoshishan Park	First site	40°50'40.5"	122°44'51.1"	61
		Second site			40°50'40.6"	122°44'49.8"	61	
		Third site			40°50'40.9"	122°44'51.4"	61	
		Fourth site			40°50'40.7"	122°44'49.7"	61	
		Fifth site			40°50'40.6"	122°44'49.8"	61	
		Sixth site			40°50'40.6"	122°44'49.9"	61	
		Seventh site			40°50'40.1"	122°44'50.1"	61	
		Eighth site			40°50'40.7"	122°44'50.3"	61	
		Ninth site			40°50'40.4"	122°44'49.9"	61	
		Tenth site			40°50'40.6"	122°44'50.4"	61	



Figure 2: first site of the cupules in Gusaoshi village



Figure 3: the turtle shell pattern of the first site of the cupules in Gusaoshi village

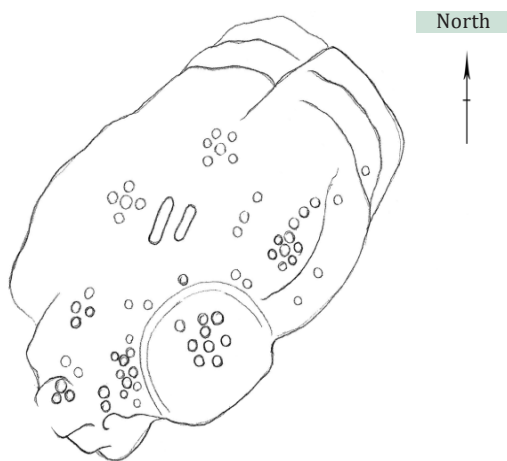


Figure 4: the turtle shell Line graph of the first site of the cupules in Gusaoshi village

plains gradually descend from 60 meters above sea level to Hunhe river and Taizihe plains. Cupules in Haicheng are distributed in the eastern and central regions, with a total of thirty-three rock art sites (Figure 1).

- 1: Seventh site of cupules in Gusaoshi Village; 2: Shimu Dolmen; 3: First site of cupules in Dadaoyu Village; 4: Second site of cupules in Dadaoyu Village; 5: Third site of cupules in Dadaoyu Village; 6: Fourth site of cupules in Dadaoyu Village; 7: Sixth site of cupules in Dadaoyu Village; 8: Cupules in Laoniuzhai Village; 9: First site of cupules in Jiewen Village; 10: Second site of cupules in Jiewen Village; 11: Third site of cupules in Jiewen Village; 12: First site of cupules in Songjiapu Village; 13: Fifth site of cupules in Songjiapu Village; 14: Second site of cupules in Cuoshishan; 15: Third site of cupules in Cuoshishan; 16: Fourth site of cupules in Cuoshishan; 17: Tenth site of cupules in Cuoshishan

2.2 Distribution statistics of cupules in Haicheng

The survey team has investigated Shimu Town, Jiewen Town and Cuoshishan Park, including a total of six villages with cupules. Cuoshishan Park is located in the urban area of Haicheng and belongs to the Haizhou Sub-district Office. The site is named after Cuoshishan Park because the park is well-known.

3. INVESTIGATION CONTENT

Through GPS and map, the “2012 Anshan City Administrative Divisions Handbook”, camera, laptops, compass and other tools, the team investigated the sites with rock arts, and eventually made the “Promotion Archive of Cupules in Haicheng”. The archive are mainly written around the following four items: the first is to find the exact locations of the cupules and accurately express with maps and words; the second is to locate the administrative belonging of the cupules (town, village, natural village) and name them exactly; the third is to accurately describe the contents, patterns and shapes of rocks via photographs and diagrams; the fourth is to master the conservation state of the cupules and lay the foundation for the promotion of protection.

3.1 Cupules in Shimu town

Shimu town is located 25 kilometers southeast of Haicheng, with the total land area of 148.8 square kilometers and 23 village committees under the jurisdiction. It is a basin surrounded by mountains, known as the “seven-tenths of hills, one-tenth of waters and two-tenths of farmland”. Three rivers from Gushan, Chagou, Jiewen merges into the river upstream of Haicheng River. Cupules in Shimu town are mainly concentrated in the eastern part of Gusaoshi village and Dadaoyu village, with a total of thirteen sites.

3.1.1 Cupules in Gusaoshi village

Gusaoshi village includes three natural villages of Gusaoshi, Hougusaoshi and Weijiapuzi. Cupules is concentrated in the east mountain of Gusaoshi village, with a total of seven sites.

(1) First site of the cupules in Gusaoshi Village

Found in the southeast of the hillside of the Gusaoshi village in Shimu town, it is located at 40°40'04"N, 122°57'22"E with an altitude of 210 meters. It is a turtle-shaped stone with a length of 2.9 meters, a width of 2.4 meters and a height of 1.4 meters. There are 5 cupules in the turtle neck, and 63 cupules (diameter: 2-6 cm; depth: 1-2 cm) in the curved turtle shell with a group of plum blossom pattern. Besides the southeast of the turtle shell is engraved with a circular pattern like the sun, and the southwest is engraved with the meniscus including three cupules. Under the south and west sides of the turtle stone, there are 4 groups of plum blossom pattern and cupules, and a square plate (Figure 2, 3, 4). (Cao and Li, 2019)

On the rocks below the west side of the turtle stone, there are combination patterns and 90 cupules. Among them, there exist four groups of rectangular patterns, a group of triangular patterns, and a group of crisscross patterns. Among the 90 round cupules, there are two groups of plum blossom pattern. One group is that there is 1 cupule



Figure 5: Lower part of the first site of the cupules in Gusaoshi village

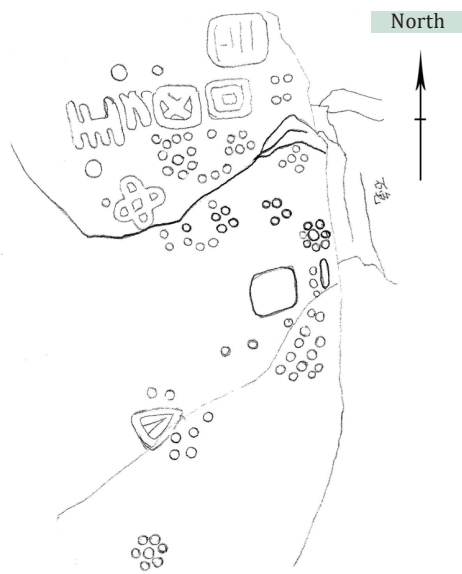


Figure 6: Lower part Line graph of the first site of the cupules in Gusaoshi village



Figure 7: second site of the cupules in Gusaoshi Village

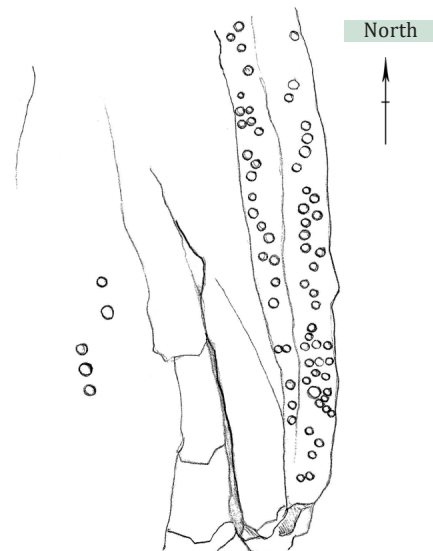


Figure 8: Line graph of the second site of the cupules in Gusaoshi Village

in the middle (diameter: 9 cm; depth: 3 cm), with the surrounding 6 cupules (diameter: 4 cm; depth: 2 cm). Another group is also that there is 1 cupule in the middle (diameter: 9 cm; depth: 3 cm), with the surrounding 7 cupules (diameter: 4 cm; depth: 2 cm). The rest of the cupules are irregular distributed (diameter: 2-7 cm; depth: 1-2 cm). These patterns are like the sun, moon, and stars. (Figure 5, 6).

(2) Second site of the cupules in Gusaoshi Village

Found 100 meters south of the first site, it is located at 40°39'59"N, 122°57'20"E with an altitude of 202 meters. On one rock, about 10 meters long and 0.5 meters wide, there exists 72 cupules (diameter: 3-10 cm; depth: 1-2 cm), in a scattered distribution (Figure 7, 8).

(3) Third site of the cupules in Gusaoshi Village

Found 20 meters southwest of the second site, it is located at 40°39'59"N, 122°57'19"E with an altitude of 193 meters. On a rock, there are 9 cupules(diameter: 3-6 cm; depth: 1-2 cm) which forms two groups of patterns. One group is consisted of 6 cupules, and the other is consisted of 3 cupules (Figure 9, 10).

(4) Fourth site of cupules in Gusaoshi Village

Found 50 meters west of the third site, it is located at 40°39'59"N,



Figure 9: part of the third site of cupules in Gusaoshi Village

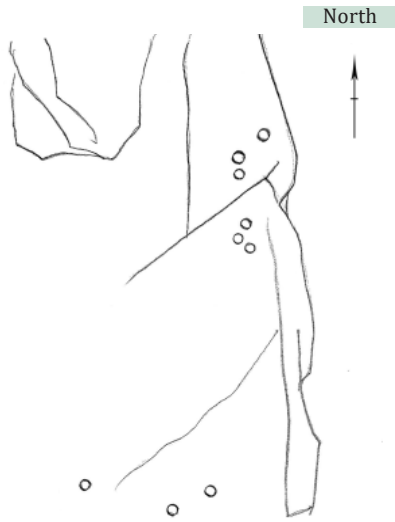


Figure 10: Line graph of the third site of cupules in Gusaoshi Village



Figure 11: fourth site of cupules in Gusaoshi Village



Figure 12: fifth site of cupules in Gusaoshi Village

122°57'18"E with an altitude of 188 meters. There are 4 cupules with a diameter of 4cm and depth of 1 cm on the rock (Figure 11).

(5) Fifth site of cupules in Gusaoshi Village

Found 300 meters on the top of the hill northwest of the first site, it is located at 40°40'8.1"N, 122°57'17.6"E with an altitude of 230 meters. There exist 5 cupules (diameter: 5-8 cm; depth: 2 cm) on a rock with the length of 2.2 meters and width of 1.8 meters (Figure 12, 13).

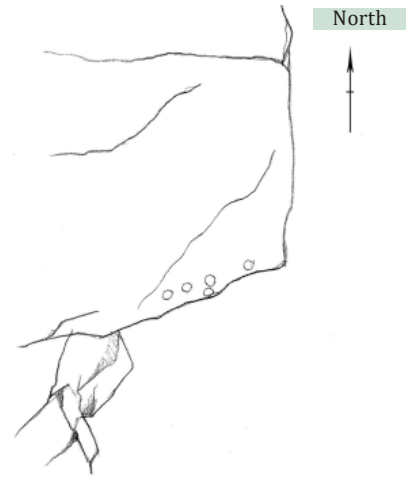


Figure 13: Line graph of the fifth site of cupules in Gusaoshi Village



Figure 14: sixth site of cupules in Gusaoshi Village

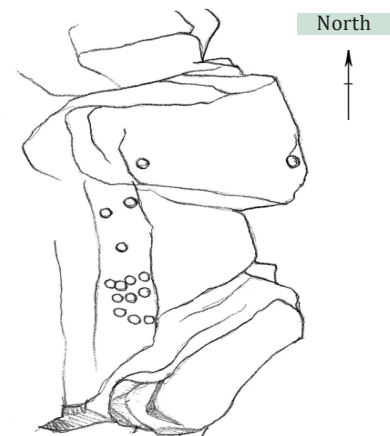


Figure 15: Line graph of the sixth site of cupules in Gusaoshi Village

(6) Sixth site of cupules in Gusaoshi Village

Found 10 meters east of the fifth site, it is located at 40°40'8.3"N, 122°57'17.6"E with an altitude of 230 meters. There exists 15 cupules (diameter: 2-5 cm; depth: 1 cm) on a rock with the length of 2.4 meters and width of 2.2 meters (Figure 14, 15).

(7) Seventh site of cupules in Gusaoshi Village



Figure 16: Cupules on the west side of the dolmen



Figure 19: Second site of cupules in Dadaoyu village



Figure 17: First site of cupules in Dadaoyu village

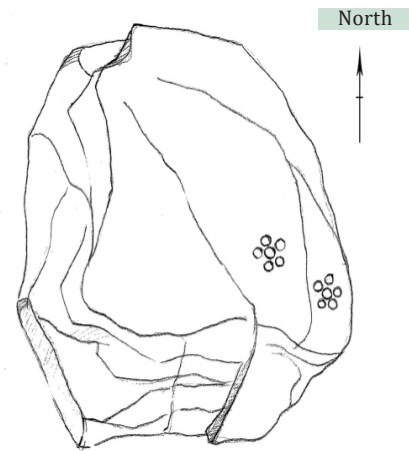


Figure 20: Line graph of the second site of cupules in Dadaoyu village

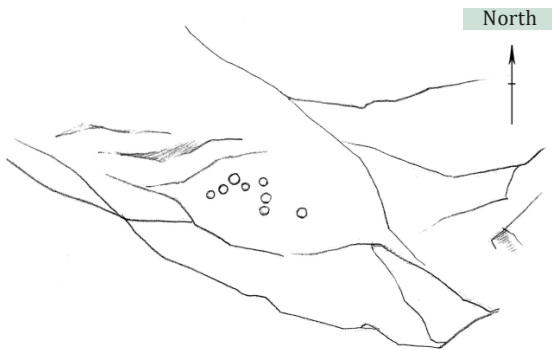


Figure 18: Line graph of the First site of cupules in Dadaoyu village



Figure 21: Part of the third site of cupules in Dadaoyu village (from up to down)

Dadaoyu village has Dadaoyu and Gujiazi as the two natural villages. The cupule Caves rock art is mainly concentrated in the northern mountains of Dadaoyu village, with a total of six sites.

(1) First site of cupules in Dadaoyu village

Found 2 kilometers north of Dadaoyu village, it is located at 40°39'51"N, 122°57'47"E with an altitude of 228 meters. There exist 8 cupules (diameter: 1-6 cm; depth: 2 cm) on a rock with the length of 10 meters and width of 10 meters (Figure 17, 18).

(2) Second site of cupules in Dadaoyu village

Found about 100 meters north of the first site, it is located at 40°39'52"N, 122°57'49"E with an altitude of 233 meters. On a triangular rock with the side length of about 2 meters, there are 12 cupules (diameter: 3 cm; depth: 1 cm), composed of two groups of plum blossom patterns (Figure 19, 20). Each plum blossom pattern is made up of 6 cupules: one is in the center surrounded the other 5 ones.

Discovered in the east slope of the Shimu Dolmen, Gusaoshi Village, Shimu town, Haicheng, it is located at 40°40'08"N, 122°50'07"E with an altitude of 173 meters. Shimu Dolmen is commonly known as "Gusao dolmen stone", the tomb in the Bronze Age. It is constructed by six huge granite slabs that have been processed and polished with the height of 2.8 meters. The upper cover is slightly rectangular, 6 meters long, 5.1 meters wide, 0.47 meter thick. There are 105 cupules totally (diameter: 2-7 cm; depth: 1-2 cm), including 72 cupules on the west side of the inner wall, and 33 cupules on the upper end of the south wall of the stone as two rows (Figure 16).

3.1.2 Cupules in Dadaoyu village

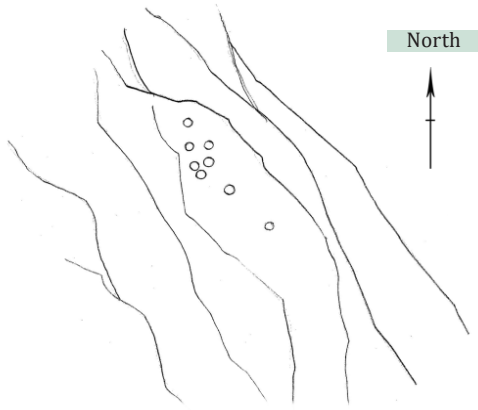


Figure 22: Line graph of third site of cupules in Dadaoyu village



Figure 25: Part of the fifth site of cupules in Dadaoyu village (from up to down)



Figure 23: Part of the fourth site of cupules in Dadaoyu village

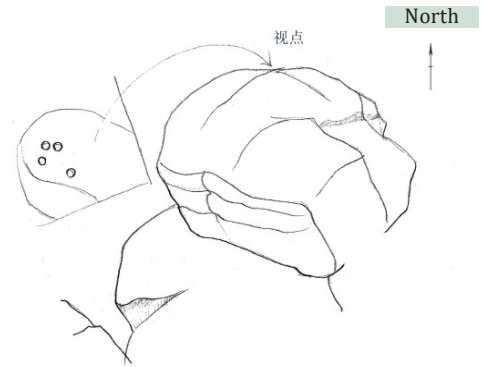


Figure 26: Line graph of the fifth site of cupules in Dadaoyu village

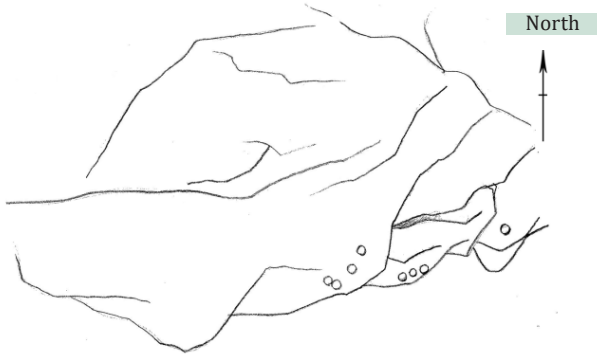


Figure 24: Line graph of the fourth site of cupules in Dadaoyu village



Figure 27: sixth site of cupules in Dadaoyu village

(5) Fifth site of cupules in Dadaoyu village

(3) Third site of cupules in Dadaoyu village

Found 20 meters north-east of the second site, it is located at 40°39'53"N, 122°57'53"E with an altitude of 246 meters. There exists 8 cupules (diameter: 3-6 cm; depth: 2-3 cm) on a rock with the length of 5 meters and width of 3 meters (Figure 21, 22).

(4) Fourth site of cupules in Dadaoyu village

Founded 100 meters north of the third site, it is located at 40°39'56"N, 122°57'53"E with an altitude of 246 meters. On a rock with the length of about 3 meters and width of about 2 meters, there are 8 cupules (diameter: 3-6 cm; depth: 1-3 cm), composed of three groups of patterns which are in different positions of the rock in the form of stepped distribution (Figure 23, 24).

(6) Sixth site of cupules in Dadaoyu village

Founded about 2 kilometers northeast of the fifth site, it is located at 40°40'07"N, 122°57'32"E with an altitude of 230 meters. There are two pieces of rock relying on each other (originally one rock that has been broken); the two pieces of rock are with a total length of 2.4 meters, width of 2.4 meters, and height of 0.8 meters. There are 12 cupules on the rock (diameter: 3-13 cm; depth: 1-4 cm), composed of four groups of patterns (Figure 27, 28).

On the eastern side of the rock, the first group of patterns is composed of 3 double cupules, 2 on the left and 1 on the right. The second group of patterns is located 10 centimeters in the southwest side of the first group, and there are a total of seven cupules, among which 6 cupules constitute plum blossom pattern. Founded 15 cm on the north side of the

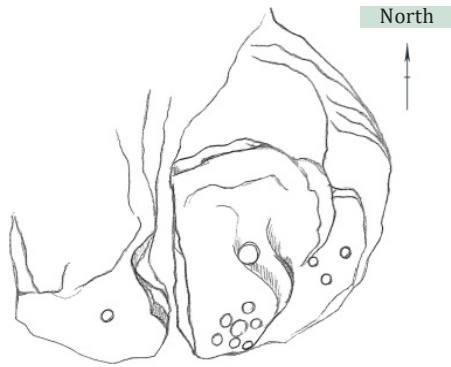


Figure 28: Line graph of the sixth site of cupules in Dadaoyu village



Figure 31: first site of cupules in Jiewen village



Figure 29: Cupules in Laoniuzai

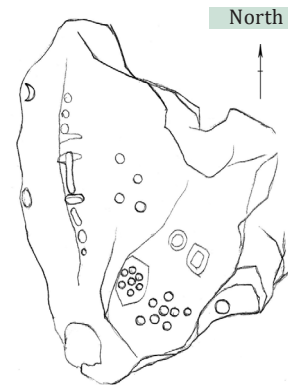


Figure 32: Line graph of the first site of cupules in Jiewen village

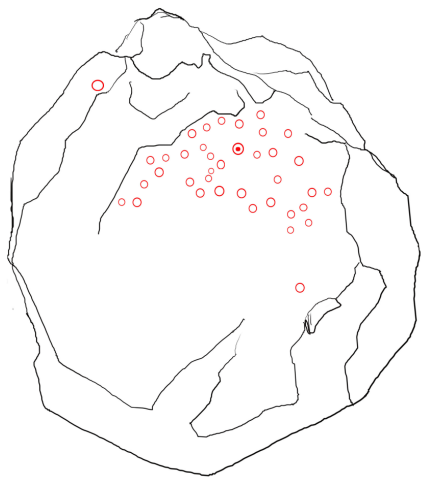


Figure 30: Line graph of cupules in Laoniuzai

village.

Cupules in Laoniuzai are located 32 km southeast of Haicheng, 1 km in the northern slopes of the hills of the south of Laoniuzai village in Jiewen town. It is located at 40°41'47"N, 122°58'50.6"E with an altitude of 185 meters. There are three pieces of stone hanging over dolmen, looking like a turtle from the side. There are 38 cupules with the diameter of about 2-6 cm and the depth of about 1-2 cm above the turtle (Figure 29, 30). (Li et al., 2019; Li 2015))

3.3 Cupules in Jiewen village

Jiewen village have seven natural villages of Jiewen village, Yaogou, Gujiazi, Hujiagou, Beigou, Henan, Tazigou. The cupules are located in the northeast of the dolmen hill in Jiewen village.

3.3.1 First site of cupules in Jiewen village

Located on the west side of dolmen hill on the northern Jiwen village, Jiwen town, Haicheng, it is located at 40°43'11"N, 122°58'50.6"E with an altitude of 257 meters. There is a piece of turtle shaped stone, about 4 meters long, about 3 meters wide, about 2 meters high. There are 26 cupules on the stone, as well six groups of patterns like the shape of the sun, moon, rectangle and an arrow and plum blossom (Figure 31, 32).

The first group of patterns is on the southernmost side of the rock, which is a sun-shaped cupule with the diameter of about 30 centimeters and depth of 8 cm. The second group has 15 cupules among which there is a plum blossom shaped pattern that consists of 7 cupules. There is 1 cupule cave (diameter: 5 cm; depth: 2 cm) in the center surrounded by 6 cupules (diameter: 4-7 cm; depth: 2 cm). The rest cupules are in irregular distribution. The third group of patterns includes 2 patterns and 4 cupules, founded 57 cm in the northeast side of the second group. One is in a circular pattern (which can be taken as the sun pattern). The other is in a square pattern, which is similar to the pattern of Chinese character "回". There are 4 cupules in the northwest side of those two patterns (diameter: 4-7 cm; depth: 2 cm). This group of patterns is in the lowest of the rock. The fourth group of patterns is at the top of the rock, 32 cm on the west side of the third group. This group of patterns

second group, the third group of patterns has a large cupule; the fourth group of patterns that has a single cupule was found on the other half rock, 60 cm on the southwest of the third group.

3.2 Cupules in Jiewen Town

Located in 35 kilometers southeast of Haicheng, with a total area of 170 square kilometers, it has 17 village committees under its jurisdiction. The longest length is 17 kilometers from east to west and 15 kilometers from north to south. Cupules is mainly concentrated in Jiewen village, Laoniuzai village and Songjiapuzi village, with a total of ten rock art sites.

Laoniuzai village have four natural villages of Laoniuzai, Qian laoniuzai, Fujiagou, Shanqian. The cupules are located on the slopes of Laoniuzai



Figure 33: second site of cupules in Jiewen village

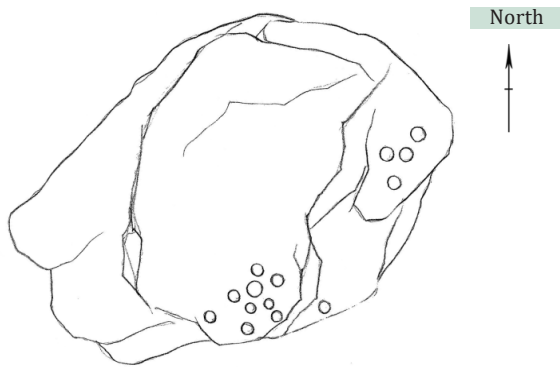


Figure 34: Line graph of the first rock in second site of cupules in Jiewen village



Figure 35: second rock of the second site of cupules in Jiewen village



Figure 36: line graph of the second rock in the second site of cupules in Jiewen village

consist of an arrow shaped pattern, two square pits and 5 cupules. Five cupules (diameter: 4-9 cm; depth: 1-2 cm) are distributed in the north and south ends, including 3 in the north end and 2 in the south end. The fifth group of patterns is located at 64 cm on the west side of the fourth group, which was engraved on the rock of the convex part as a crescent moon shaped pattern and a single cupule. The crescent moon is 20 cm long, 8 cm wide, and 2 cm deep. There is a single cupule (diameter: 15 cm; depth: 2 cm), founded 1.2 meters south in the crescent moon shaped pattern. The sixth group of patterns is located at 20 cm east of the first group, with one single cupule (diameter: 10 cm; depth: 2 cm).

3.3.2 Second site of cupules in Jiewen village

Founded 20 meters in the east of the first site, it is located at 40°43'9.9"N, 123°00'37.4"E with an altitude of 263 meters. There are three rocks with cupules, from near to far, the near as the first rock, left above as the second rock, right above as the third rock (figure 33, 34).

The first rock is 1.73 meters long, 1.5 meters wide, and 2 meters high. There are 14 different sizes of cupules on the rock which form three groups of patterns. The pattern is dispersed, so the description is from north to south in order.

The first group of patterns, in the northeast side of the rock, form a double cupule patterns composed of four cupules (diameter: 6-7 cm; depth: 1-2 cm). There are 3 cupules on the left and one on the right. Founded 112 cm on the southwest side of the first group, the second group of patterns includes 9 cupules, among which 6 cupules are composed of plum blossom pattern. There are 1 cupule in the center (diameter: 9 cm; depth: 3 cm), surrounded by five cupules (diameter: 4-5 cm; depth: 1-2 cm), and the rest 3 cupules are near the plum blossom pattern (diameters: 4-5 cm; depth: 1-2 cm). The third group of patterns is located 19 cm below the east side of the pattern of the second group, with 1 single cupule (diameter: 4 cm; depth: 1 cm).

The second rock is about 4 meters long, 1.5 meters wide, and 0.6 meters high. There is a cupule like "pool" in the rock with the diameter of 38 cm and depth of 15 cm (Figure 35, 36). There are 15 cupules in the northeast part of the "pool" (diameter: 5-14 cm; depth: 3-5 cm).

Third rock is 6 meters long, 3 meters wide, and 0.7 meters high. There are 7 cupules (diameter: 5-7 cm; depth: 2 cm) on the rock, consisting of two groups of patterns. One group is composed of 6 cupules composing of a double cupule pattern, including 4 on the left and 2 on the right. The distance of two rows of cupules is 20 cm. There is 1 single cupule 1.5 meters from the pattern of the group (Figure 37, 38).

3.3.3 Third site of cupules in Jiewen village

Founded 100 meters east of the second site, it is located at 40°43'9.8"N, 122°00'40.4"E with an altitude of 258 meters. There are 3 cupules (diameter: 5-11 cm; depth: 1-2 cm) on the rock with the length of 1.5 meters, the width of 1.2 meters and the height of 0.8 meters (Figure 39, 40).

3.4 Cupules in Songjiapuzi village

Songjiapuzi village has 16 natural villages of Taiyanggou, Guojiagou, Zhangjiapuzi. The cupules are mainly concentrated in the mountains north of Taiyanggou, and there are 6 cupule cave rock painting sites.

3.4.1 First site of cupules in Songjiapuzi village

Founded on the north face of the mountain on the southern slope of the fruit tree garden in Songjiapuzi village, Jiewen town, it is located at 40°43'38"N, 123°02'16"E with an altitude of 232 meters. A turtle shaped rock with the length of 3.3 meters, the width of 4.7 meters and the height of 1.5 meters, has 17 cupules (Figure 42, 41). On the north side of the turtle shaped rock, there is a group of pattern for the double row cupules, composed of 7 cupules (diameter: 4-10 cm; depth: 0.5-4 cm). A group of double row cupules pattern with 4 cupules (diameter: 2-4 cm; depth: 0.5-1 cm) is located 7 cm on the south side of the turtle shaped rock. Founded 143 cm at the bottom of the southeast side of turtle shaped rock, there are 2 cupules (diameter: 9 cm and 6 cm; depth:



Figure 37: third rock of the second site of cupules in Jiewen village

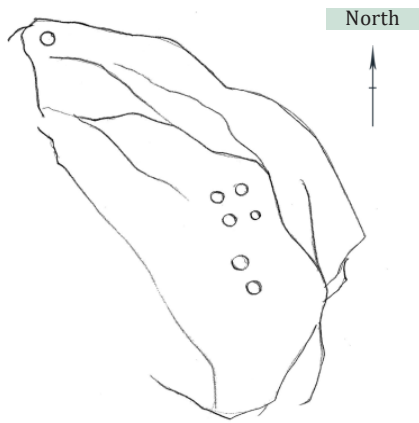


Figure 38: line graph of the second rock in the second site of cupules in Jiewen village



Figure 41: First site of cupules in Songjiapuzi village



Figure 42: Lie graph of the first site of cupules in Songjiapuzi village



Figure 39: third site of cupules in Jiewen village



Figure 40: Line graph of the third site of cupules in Jiewen village



Figure 43: Second site of cupules in Songjiapuzi village

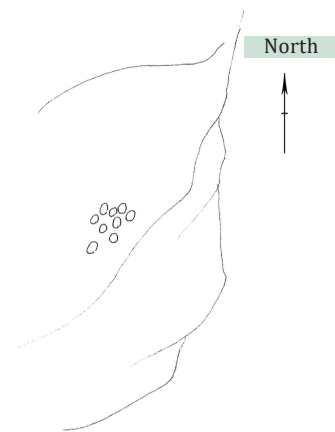


Figure 44: Line graph of the second site of cupules in Songjiapuzi village



Figure 45: Third site of cupules in Songjiapuzi village

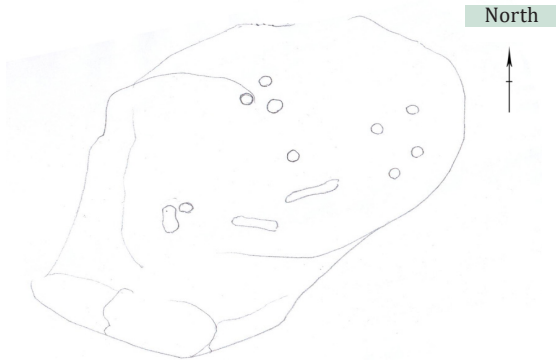


Figure 46: Line graph of the third site of cupules in Songjiapuzi village



Figure 49: Fifth site of cupules in Songjiapuzi village

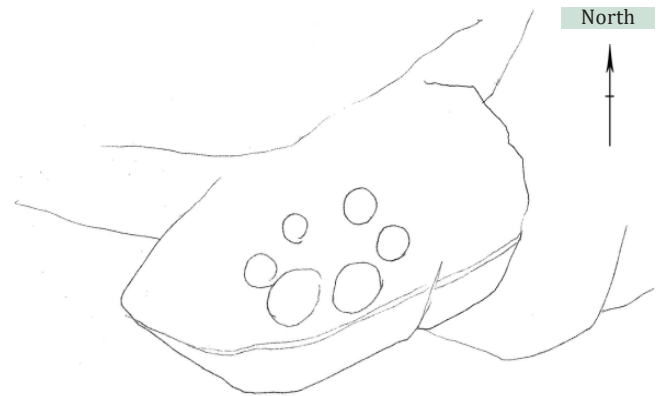


Figure 50: Line graph of the fifth site of cupules in Songjiapuzi village



Figure 47: Fourth site of cupules in Songjiapuzi village

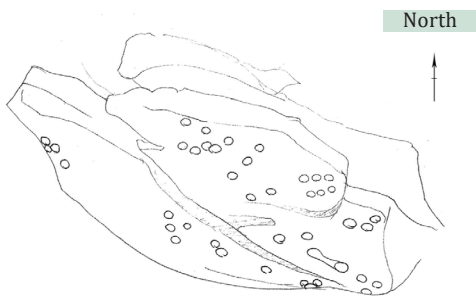


Figure 48: Line graph of the fourth site of cupules in Songjiapuzi village

0.5 cm). Discovered 148 cm at the bottom of the southwest side of turtle shaped rock, there is 1 single cupule (diameter: 6 cm; depth: 0.5 cm). The remaining 3 cupules are in irregular distribution in the turtle shaped rock (diameter: 4-6 cm; depth: 0.5 cm).

3.4.2 Second site of cupules in Songjiapuzi village

Founded about 130 meters in the northeast of the first site, it is located at 40°43'41"N, 123°02'20"E with an altitude of 254 meters. There are 9 cupules (diameter: 3-8 cm; depth: 0.5 cm) on the rock with length of 2.5 meters and the width of 1.7 meters (Figure 43, 44).

3.4.3 Third site of cupules in Songjiapuzi village

Founded 170 meters in the southwest of the second site, it is located at 40°43'40"N, 123°02'13.8"E with an altitude of 242 meters. On the rock with the length of 1.8 meters, the width of 1.5 meters and the height of 0.3 meters, there are 12 cupules in different sizes, among which there are 3 oval shaped cupules. The longest oval cupule is in the size with the diameter of 21 cm and depth of 0.5 cm and the smallest cupule is in the size with the diameter of 10 cm and the depth of 1 cm. The remaining 9 circular cupules (diameter: 3-7 cm; depth: 1 cm) are in irregular distribution (Figure 45, 46).

3.4.4 Fourth site of cupules in Songjiapuzi village

Founded about 60 meters in the southwest of the third site, it is located at 40°43'39"N, 123°02'11"E with an altitude of 227 meters. On the rock with the length of 2.3 meters, the width of 1.3 meters and the height of 0.5 meters, there are 39 cupules in different sizes (Figure 47, 48). The rock has a concave groove with 26 cupules (diameter: 2-10 cm; depth: 0.5-3 cm) on the south side of the groove and 13 cupules (diameter: 2-6 cm; depth: 0.5 cm) on the north side of the concave groove.



Figure 51: Sixth site of cupules in Songjiapuzi village

3.4.5 Fifth site of cupules in Songjiapuzi village

Founded 30 meters south of the fourth site, it is located at 40°43'38"N, 123°02'10"E with an altitude of 225 meters. On the rock with the length of 1.4 meters, the width of 0.5 meters and the height of 1.5 meters, there are 6 cupules (diameter:7-23 cm; depth:1 cm) in relatively big size, which form an oval (49, 50).

3.4.6 Sixth site of cupules in Songjiapuzi village

Founded 100 meters in the west of the fifth site, it is located at 40°43'39.5"N, 123°02'07.2"E with an altitude of 225 meters. There are 14 cupules (diameter:3-5 cm; depth:1 cm) on a turtle shaped rock (Figure 51).

3.5 CUPULES IN CUOSHISHAN PARK

Cuoshishan Park is located in Cuoshi hill south of Haicheng, 200 meters south from Haicheng River, in the territory of the Haizhou District Offices. It has a total area of nearly 30,000 square meters, including Kuixing Building, glass shadow wall, Xizi tower and other cultural relics. The cupules are in the northwest side of front gate and eastern side of Xizi tower.

3.5.1 First site of cupules in Cuoshishan Park

It is located at 40°50'40.5"N, 122°44'51.1"E with an altitude of 61 meters. On the rock with the length of 3.3 meters, the width of 2.9 meters and the height of 1.38 meters, there are 179 cupules that will be described in order from the northwest side to the south side(Figure 52, 53).

The first group consists of 122 cupules (diameter:1-9 cm; depth:0.5-2.5 cm)in irregular distribution. The second group of pattern lies at 22 cm



Figure 52: First site of cupules in Cuoshishan Park



Figure 54: Second site of cupules in Cuoshishan Park

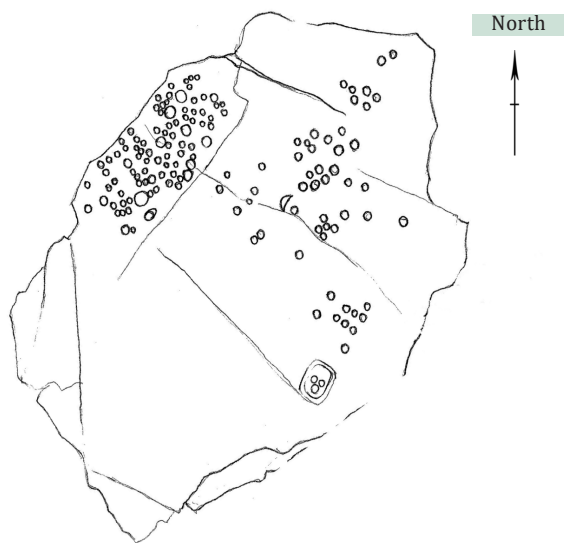


Figure 53: Line graph of the first site of cupules in Cuoshishan Park

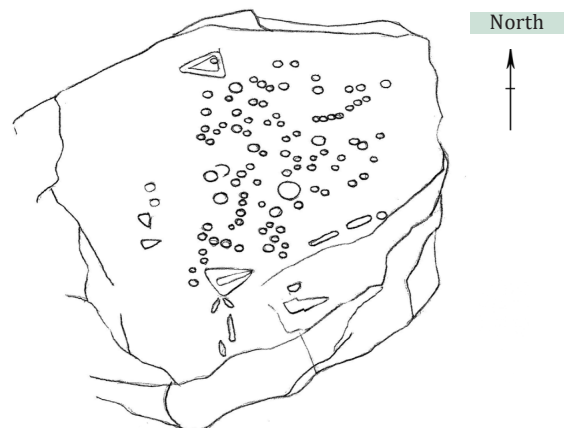


Figure 55: Line graph of the second site of cupules in Cuoshishan Park

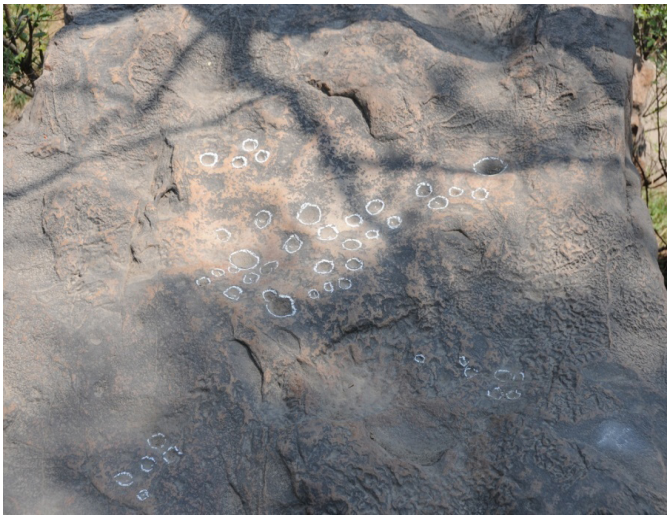


Figure 56: Third site of cupules in Cuoshishan Park

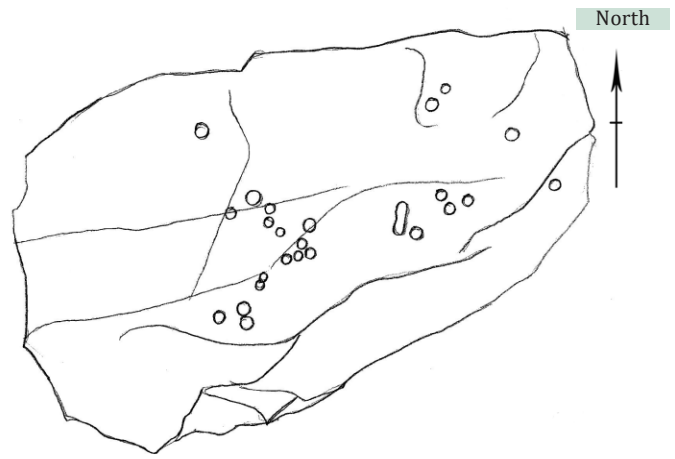


Figure 59: Line graph of the fourth site of cupules in Cuoshishan Park

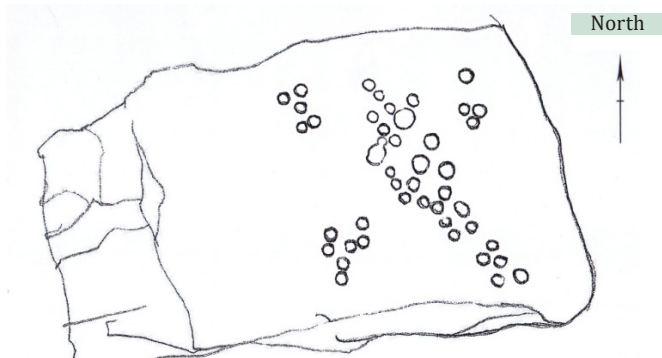


Figure 57: Line graph of the third site of cupules in Cuoshishan Park



Figure 60: Fifth site of cupules in Cuoshishan Park



Figure 58: Fourth site of cupules in Cuoshishan Park

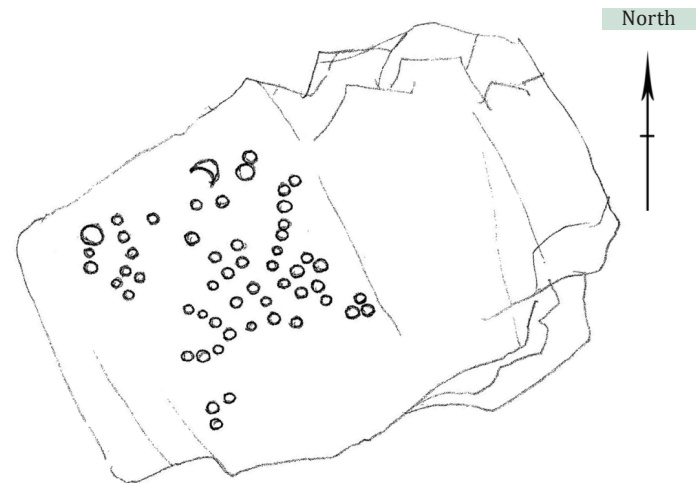


Figure 61: Line graph of the fifth site of cupules in Cuoshishan Park

on the east side of the first group, and consists of 2 cupules as a single row cupule (diameter:4 cm; depth:2 cm). The third group is located 10 cm east of the second group as a group of single row cupule, consisting of 4 small cupules (diameter:2 cm; depth:1 cm). The fourth group is founded 33 cm east of the third group, consists of 38 cupules in an irregular distribution, among which there is a crescent shaped cupule (diameter:1-3 cm; depth:0.5-2 cm). The fifth group pattern in the southernmost part of the rock, composed of 13 cupules and a carved shallow square plate. There exist 3 cupules in the square plate and the remaining 10 cupules (diameter:1 cm; depth:1 cm) are in an irregular distribution.

3.5.2 Second site of cupules in Cuoshishan Park

Founded 5 meters on the north side of the first site, it is located at 40°50'40.6"N, 122°44'49.8"E with an altitude of 61 meters. On the rock with the length of 1.9 meters, the width of 1.5 meters and the height of

1 meter, there are 133 cupules (diameter: 1-10 cm; depth: 0.5-3.5 cm), among which there are two triangular-like combination patterns and two small triangular cupules (Figure 54, 55).

3.5.3 Third site of cupules in Cuoshishan Park

Founded 0.5 meters on the north side of the second site, it is located at 40°50'40.9"N, 122°44'51.4"E with an altitude of 61 meters. On the rock with the length of 1.9 meters, the width of 1.1 meters and the height of 1 meter, there are 45 cupules with the diameter of 1-10 cm and the depth of 0.5-3.5 cm (Figure 56, 57).



Figure 62: Sixth site of cupules in Cuoshishan Park

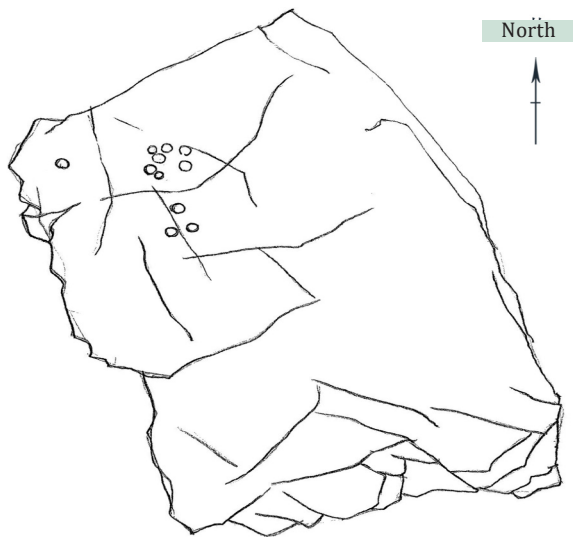


Figure 63: Line graph of the sixth site of cupules in Cuoshishan Park



Figure 64: Seventh site of cupules in Cuoshishan Park

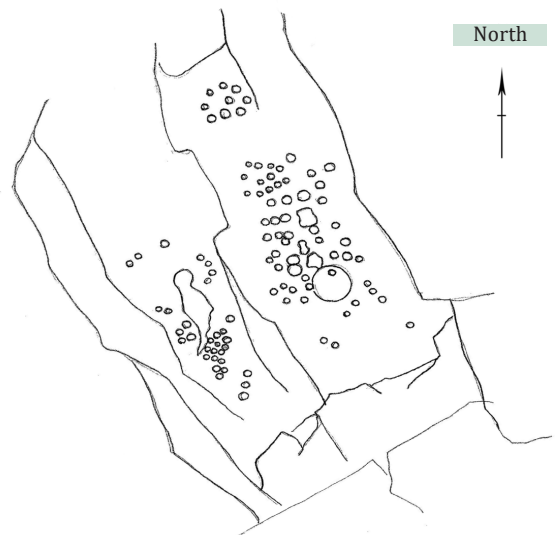


Figure 65: Line graph of the seventh site of cupules in Cuoshishan Park

3.5.4 Fourth site of cupules in Cuoshishan Park

Founded 8 meters in the northwest side of the first site, it is located at 40°50'40.7"N, 122°44'49.7"E with an altitude of 61 meters. On the rock with the length of 2.2 meters, the width of 1.3 meters and the height of 0.8 meters, there are 45 cupules (diameter: 1-10 cm; depth 0.5-2 cm) in the irregular distribution (Figure 59, 58)

3.5.5 Fifth site of cupules in Cuoshishan Park

Founded 1.5 meters in the northwest side of the fourth site, it is located at 40°50'40.6"N, 122°44'49.8"E with an altitude of 61 meters. On the rock with the length of 2.2 meters, the width of 1.3 meters and the height of 1 meter, there are 55 cupules (diameter: 1-5 cm; depth 0.5-1.5 cm), including a crescent shaped cupule (Figure 60, 61).

3.5.6 Sixth site of cupules in Cuoshishan Park

Founded 1 meter on the northeast side of the fourth site, it is located at 40°50'40.6"N, 122°44'49.9"E with an altitude of 61 meters. On the rock with the length of 2.5 meters, the width of 2.1 meters and the height of 1 meter, there are 11 cupules (diameter: 1-3 cm; depth: 0.5-1 cm) in the irregular distribution (Figure 62, 63).

3.5.7 Seventh site of cupules in Cuoshishan Park

Founded 1 meter below the sixth site, it is located at 40°50'40.1"N, 122°44'50.1"E with an altitude of 61 meters. On the rock with the length



Figure 66: Eighth site of cupules in Cuoshishan Park

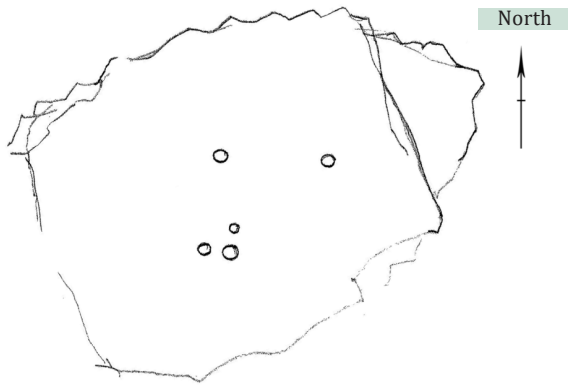


Figure 67: Line graph of the eighth site of cupules in Cuoshishan Park



Figure 68: Ninth site of cupules in Cuoshishan Park

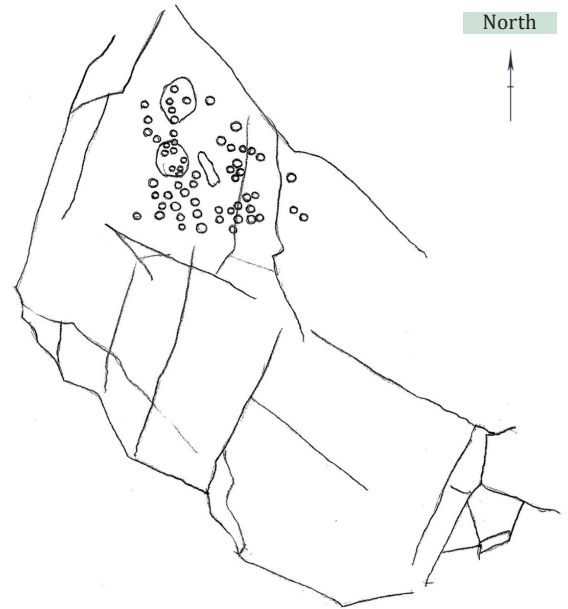


Figure 69: Line graph of the ninth site of cupules in Cuoshishan Park



Figure 70: Tenth site of cupules in Cuoshishan Park

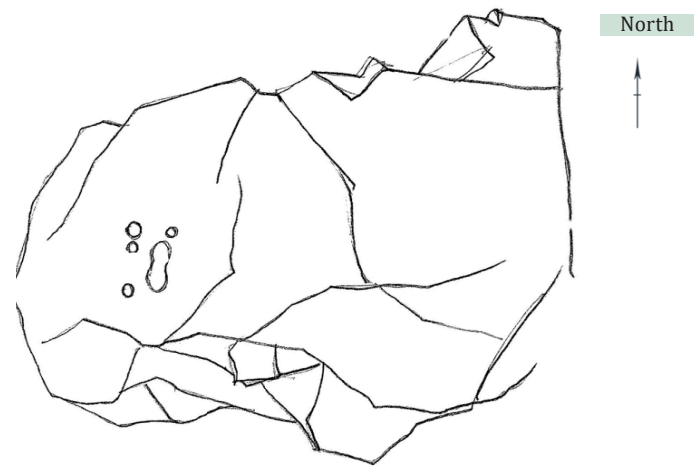


Figure 71: Line graph of the tenth site of cupules in Cuoshishan Park

of 2.5 meters, the width of 2.1 meters and the height of 1 meter, there are 103 cupules in total. On the east side of the rock, there are 71 cupules among which there is a big cupule (diameter: 30 cm; depth: 3 cm) like a small pool (Figure 64, 65). There is a small one (diameter: 6 cm; depth: 2 cm) in the big cupule and the rest cupules (diameter: 4-9 cm; depth: 0.5-2 cm) are in the irregular distribution. Located 71 cm on the west side of this group of patterns, there is a group of patterns including 32 cupules (diameter: 1-4 cm; depth: 0.5-1 cm).

3.5.8 Eighth site of cupules in Cuoshishan Park

Founded 7 meters on the northeast side of the sixth site, it is located at 40°50'40.7"N, 122°44'50.3"E with an altitude of 61 meters. On the rock with the length of 2.5 meters, the width of 2 meters and the height of 1 meter, there are 5 cupules (diameter: 1-4 cm; depth: 0.5-1 cm) in the irregular distribution (Figure 66, 67).

3.5.9 Ninth site of cupules in Cuoshishan Park

Founded 8 meters below on the southwest side of the fourth site, it is located at 40°50'40.4"N, 122°44'49.9"E with an altitude of 61 meters. On the rock with the length of 1.4 meters, the width of 1.2 meters and the height of 0.7 meters, there are 61 cupules with the diameter of about 1-4 cm and the depth of about 0.5-1 cm (Figure 68, 69). Among the cupules, there are two large cupules (diameter: 19 cm and 16 cm; depth: 1 cm) surrounded by the remaining 59 ones (diameter: 1-4 cm; depth: 0.5-1 cm).

3.5.10 Tenth site of cupules in Cuoshishan Park

Founded 10 meters on the east side of the first site, it is located at 40°50'40.6"N, 122°44'50.4"E with an altitude of 61 meters. On the rock with the length of 1.2 meters, the width of 1.2 meters and the height of 1.2 meters, there are 5 cupules (Figure 70, 71). The cupules consist of a double row cupule pattern including 3 (diameter: 2 cm; depth: 1 cm) on the left side and 2 on the right side in which there is 1 strip shaped cupule (length: 9 cm; width: 3 cm; depth: 1 cm), and the other cupule (diameter: 1 cm; depth: 1 cm).

4. INVESTIGATION SUMMARY

Through this investigation, we have gained a lot of achievements and inspiration:

(1) Through the satellite maps, GPS positioning and photos, we fully master the accurate geographic position and pictorial content and the related information of the cupules in Haicheng area.

(2) We formulated complete protection archives for the cupules in Haicheng, which laid the foundation for its protection and promotion to the next step.

(3) The pattern and shape characteristics of the cupules are summarized in the survey. It shows different types of patterns in which the plum blossom pattern is most common, besides the sun and moon, stars, square, cross, and other patterns. At the same time, there also exist many turtle-shaped stones and dolmens of the cupules, which needs more in-depth research.

(4) It is worth exploring the relationship between the rock art and cultural relics of the surroundings. Jiewen town and Shimu town are adjacent of Gushan town, which are all rich in cultural relics. Xiaogushan cave site was found as the earliest human sites in Anshan area. About 50000 years ago, ancient ancestors lived here. Shimu Dolmen is typical remain of the Bronze Age in Anshan, on which cupules were founded.

Were these rock arts made by Xiaogushan people or their descendants? Was the rock art on the dolmen made by the people in the Bronze Age? All these questions need deep research.

(5) New ideas were generated for the protection of cupules. The cupules in this area can be divided into movable and immovable ones. The cupules in Anshan lie in mountainous areas, with the protection of a certain degree of difficulty, which have already been lost or damaged. For the movable cupules, we can move it to the museum, and display in the replication site with brief introduction. For the immovable ones, we must declare for the promotion, make signs, appoint responsible persons, and take protection measures as soon as possible.

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