Ⅰ．Preface

In the fall of 2021, the Hakubi Center of Kyoto University and the Institute of Archaeology, Mongolian Academy of Sciences, agreed to undertake joint excavations over a period of four years. The research term began in 2022 April, and the focus of the study is the Xiongnu archaeological sites in Mongolia.

The Kyoto University team requested excavations in the northern part of Central Mongolia, especifically in the Selenge, Dalkhan Uul, Orkhon, and Bulgan provinces. This area was chosen because of its proximity to the border with the Republic of Buryatia, Russian Federation. Xiongnu remains have also been found in the Zabaikal region of Buryatia. Therefore, the northern part of Mongolia is an important area for comparative studies between Mongolia and Buryatia.

After the 2000s, the number of excavations in Mongolia has increased. Many Xiongnu remains have been excavated; however, few studies have been conducted near the mainstream of the Selenge River. The general image of Mongolia is that of a steppe or arid land, but the northern part of Central Mongolia is rich in water because of Selenge River and its tributaries. Excavation in this area were expected to reveal new aspects of Xiongnu society.

Through discussions between the Japanese and Mongolian teams, we chose the Ulaan bulag site for excavation in the 2022 season. This site is located in Selenge Province, Yöröö District **(Fig.1,2)**. In the summer of 2022, restrictions on activities owing to the COVID-19 pandemic were gradually lifted. The dates for the excavation survey and the survey setup were as follows:

■ Term

2022 7. 17. ― 2022. 7.30. (14 days)

■ Member of the excavation team

〈Japan side〉

Ikue OTANI (Hakubi Center, Kyoto University)

〈Mongolian side〉

Lochin Ishtseren (Institute of Archaeology, Mongolian Academy of Sciences)

Ganbaatar Galdan (Institute of Archaeology, MAS)

Basandorj Buyan-Orshikh (Institute of Archaeology, MAS)

Workers: Eight students of the Mongolian National University of Education (One of students is Bayarsaikhan Misheelt)

Drivers: Three drivers

Cooks：Two cooks

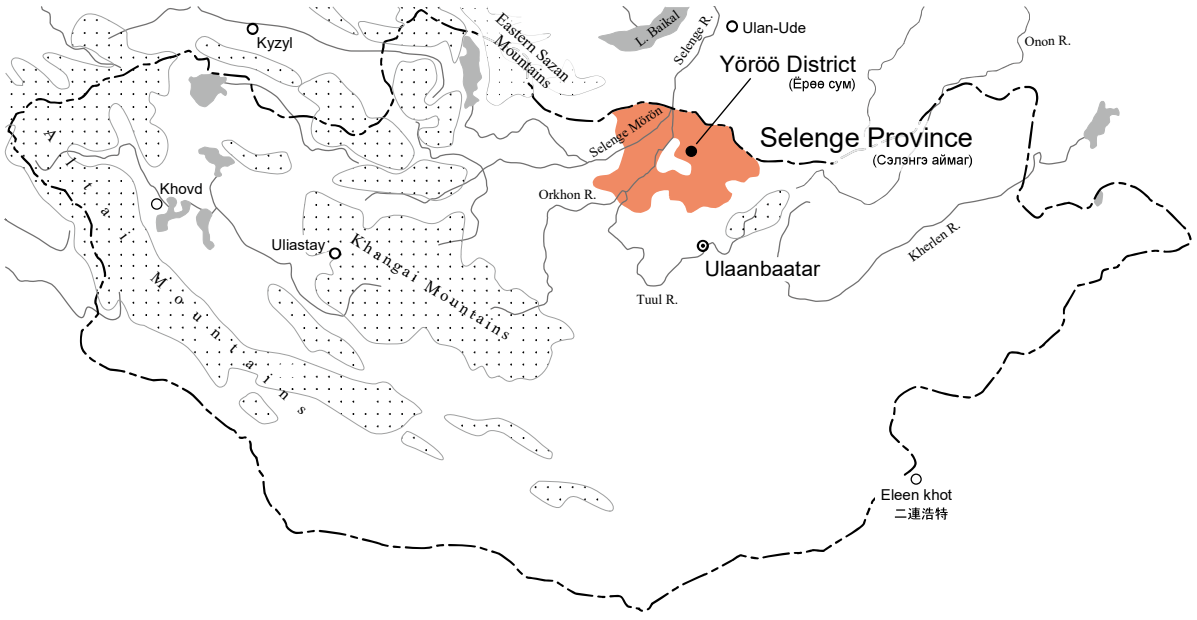


Fig.1　Location of Yöröö district, Selenge Prefecture

Ⅱ .Yöröö district with its historical aspect and its natural environment

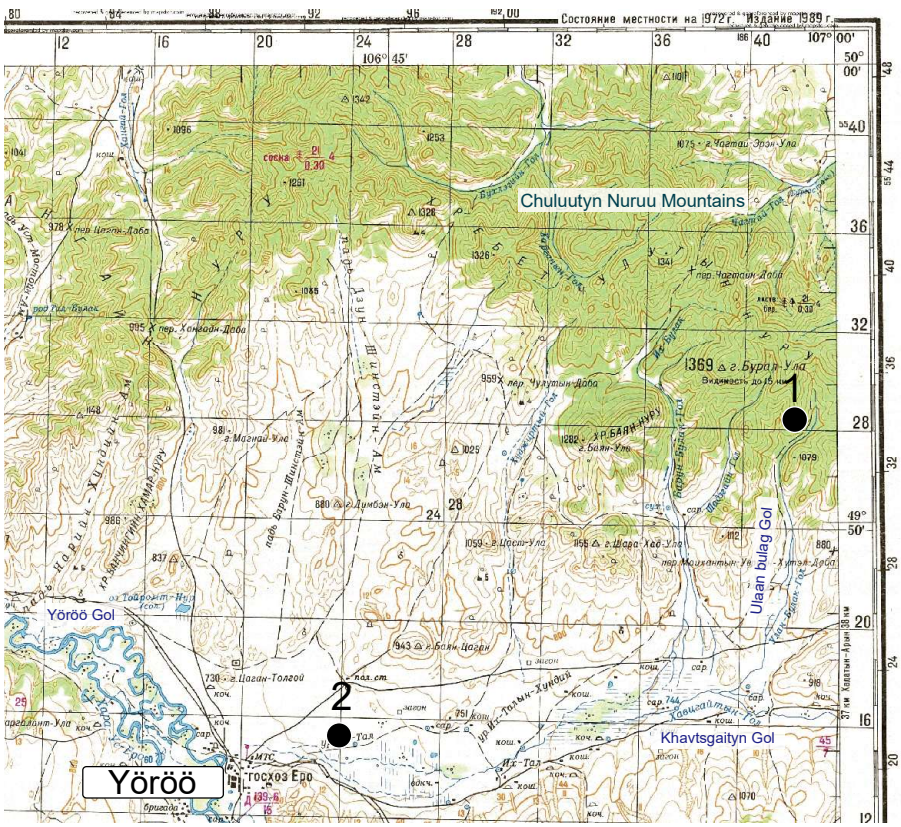
1. Location

The Ulaan bulag is an archaeological site located in Selenge Province, Yöröö District. It is approximately 20 km northeast of the center of Yöröö District **(Fig.2)**.

The site is named after the Ulaan bulag River, which flows from the Chuluutyn Nuruu Mountains range; at the source of this river, a spring, known as the “Red Spring,” emerges. To the north of the Chuluutyn Nuruu Mountains is the Republic of Buryatia. The rivers on the northern side of the mountains flow into the Chikoy River, whereas those on the southern side flow into the Yöröö River system, eventually becoming the Orkhon and Selenge Rivers, crossing the Mongolia–Russia border and flowing northward toward Lake Baikal **(Fig.4)**.

2. History of research

The Ulaan bulag site was registered in 2019, following a team from the National Museum of Mongolia, led by Ts. Odbaatar [Монголын үндэсний музей 2019]. A report detailing a comprehensive survey of archaeological sites in Mongolia, titled Historical and immovable properties in Mongolia, has been published by each administrative unit, but the Selenge Province volume, published in 2011, does not include this site **(Fig.3-1)**. The survey report of the National Museum of Mongolia summarizes the history of archaeological surveys conducted across Selenge Province since 1912 **(Fig.3-2)** [Ibid: 5-7]; however, until now, this province has been an under-researched area [Ibid: 6].



1. Ulaan bulag site (Excavation in 2022)
2.Khandgait fortress (excavation in 2023 and 2024)

Fig.2　The center of the Yöröö District and Ulaan bulag site

Nonetheless, when examining the remains of the Xiongnu period over a slightly wider area, as shown in **Fig.4**, many cemeteries and fortresses have been reported in Buryatia, across the Mongolian–Russian border. Among these, the Tsaram, Orgoiton, and Ilymovaya pad’ cemetery contain large T-shaped kurgans, which are considered the mausoleums of Xiongnu nobility. This region, where important archaeological sites are concentrated, is a key area for Xiongnu research.

Given this context, it is difficult to believe

that there are no remains from the Xiongnu period on the Mongolian side, across the Selenge River basin. Satellite images have confirmed the existence of the Handgait fortress, estimated to date back to the Xiongnu period. Therefore, this survey focused on the Yöröö River Basin, and we explored two types of Xiongnu remains. In the first year, 2022, we excavated a cemetery, and from 2023 onwards, we excavated a fortress.

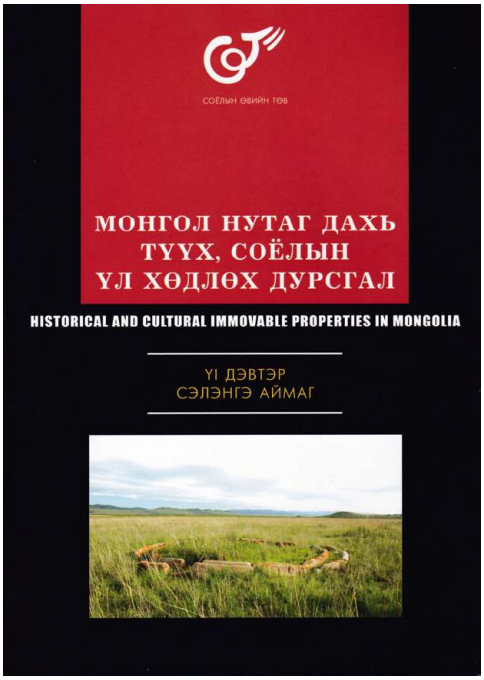
Finally, I provide additional information about the Ulaan bulag site excavated in 2022. Three Ulaan bulag sites—cemeteries—were registered in the survey report. The three cemeteries are almost aligned in a straight line in the southeast direction, from the most mountainous Ulaan bulag III to the Ulaan bulag I, which is closest to the plain. Although they have been given the same name, it is better to consider them as different cemeteries(1: the distance between Ulaan bulag I and II is approximately 0.6 km, and the distance between Ulaan bulag II and III is approximately 1.4 km. The excavation was conducted at Ulaan bulag III, and the following report focuses on this investigation.

(1 According to the survey report, the Ulaan bulag I site contains 15 tombs, all of which have ring-shaped stone piles with diameters ranging from 4 to 7 m. This cemetery is considered to date back to the Xiongnu period. The Ulaan bulag II site has 5 tombs, all of which have round-shaped stone piles on the ground, with a diameter of 3 m. This cemetery is considered to date to the Mongol Empire period, because the interior of the round stone piles is filled with stones. Regarding the locations of these three cemeteries, Ulaan bulag I is situated on a different slope across a ridge. Therefore, these three cemeteries do not seem to be closely related.

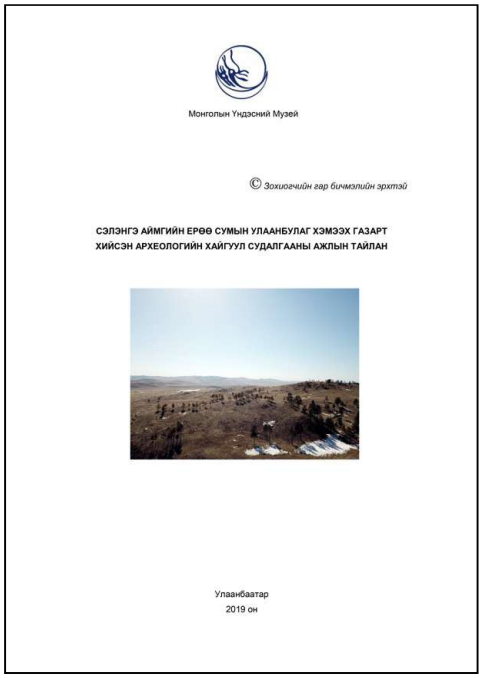
References:

Монголын үндэсний музей, 2019, *Сэлэнгэ аймгийн Ерөө сумын Улаанбулаг хэмээх газарт хийсэн археологийн хайгуул судалгааны ажлын тайлан*, УБ. [National Museum of Mongolia, *Report of the Archaeological survey conducted in the Yöröö District, Selenge Province*, Ulaanbaatar]

Соёлын өвийн төв, 2011, *Монгол нутаг дахь түүх, соёлын үл хөдлөх дурсгал, VI.Сэлэнгэ аймаг*, Улаанбаатар. [Center of Cultural Heritage, *Historical and cultural immovable properties in Mongolia, volume VI. Selenge province*, Ulaanbaatar]

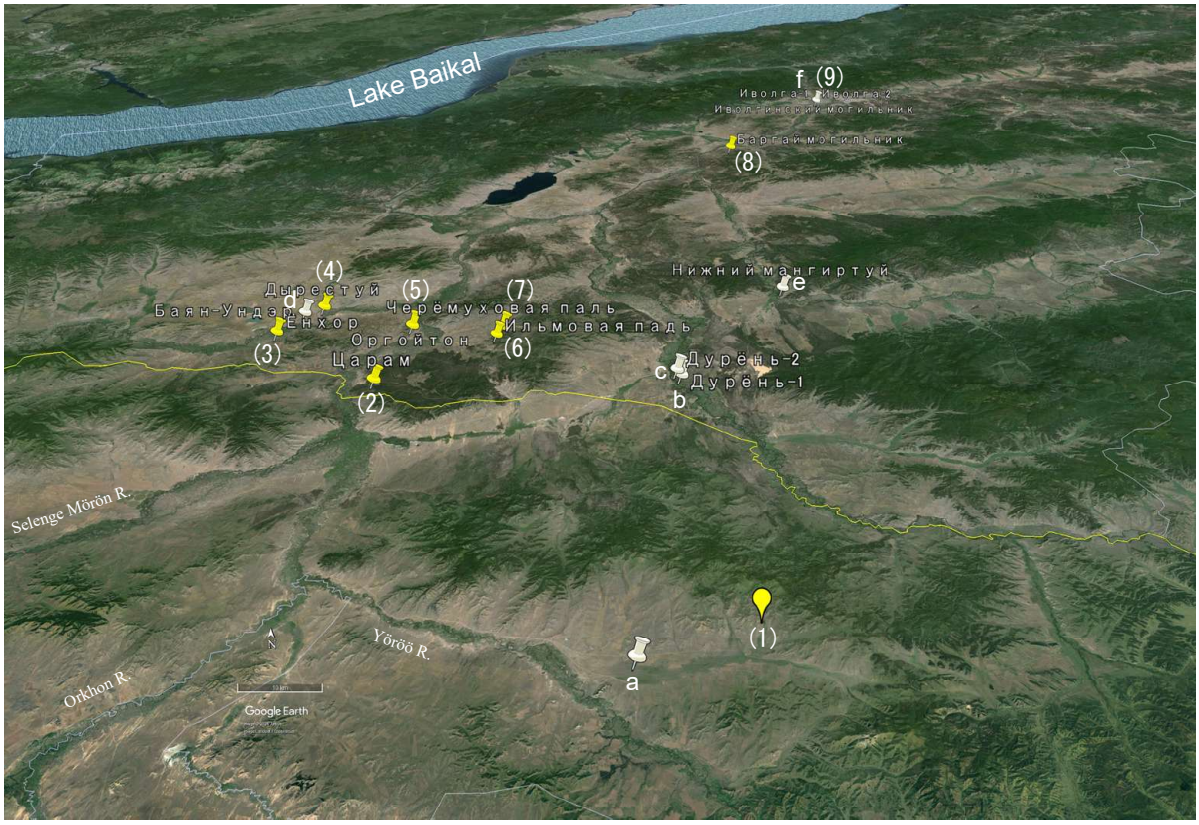


1. Historical and cultural immovable properties in Mongolia [2011]



2. The survey report of the National Museum of Mongolia [2019]

Fig.3 Excavation reports of the archaeological sites in Selenge Province



Cemetery

1. Ulaan bulag　Улаан булаг
2. Tsaram　Царам
3. Yonkhor　Ёнхор
4. Dyrestuy　Дырестуй
5. Orgoiton　Оргойтон
6. Il’movaya pad’　Ильмовая падь
8. Cheryomkhovaya pad’　Черёмуховая падь
9. Bargay　Баргай
10. Ivolga　Иволга

Fortress

a. Khandgait　Хандгайт
b. Duryony-I　Дурёны-I
c. Duryony-II　Дурёны-II
d. Bayan-Under　Баян-Ундэр
e. Nizhniy mangirtuy　Нижний мангиртуй
f. Ivolga　Иволга

Fig.4Principal Xiongnu archaeological sites along the Selenge River and its tributaries

Ⅲ . Excavation

1. Ulaan bulag site and excavated tombs

The Ulaan bulag site (Ulaan bulag III cemetery) is located on a hill locally known as “Modt.” According to the survey report, the GPS coordinates of the archaeological site are 49°49’28.9”N, 106°57’54.9”E. A grave distribution map was created when a team from the National Museum of Mongolia surveyed the site in 2019. However, a re-survey was conducted during the excavation, and the distribution map was redrawn **(Fig.5)**. Based on the stone structures visible on the surface(2, three types of graves from different periods can be identified; these are primarily concentrated in the three main areas.

(2 In Mongolia, periods are determined based on the following criterion: If a tomb has a circular stone pile filled with stones, it is considered to belong to the Mongol Empire period (Medieval period). However, if a tomb has a ring-shaped stone pile, it is considered to belong to the Xiongnu period.

■ Group 1

Group I is located on a gentle ridge on the western side of the river. Fourteen slab graves are clustered together **(Fig.6)**.

■ Group 2

Group 2 is located on a different ridge to the east of Group 1. It comprises 14 tombs, 2 of which are slab graves, and the remaining 12 are believed to be medieval tombs with round stone piles on the ground.

■ Group 3

The Khereksuur is located on a ridge. It has a stone enclosure measuring approximately 40 m × 40 m, with small stone piles arranged along the eastern side. In the center of the stone enclosure is a circular stone burial mound, and to the southwest of it, two square stone structures have been identified. The Xiongnu graves are distributed along the gentle slope of the ridge, to the southwest of Khereksuur. There are 86 tombs, and we excavated 3 of them **(Fig.7)**.

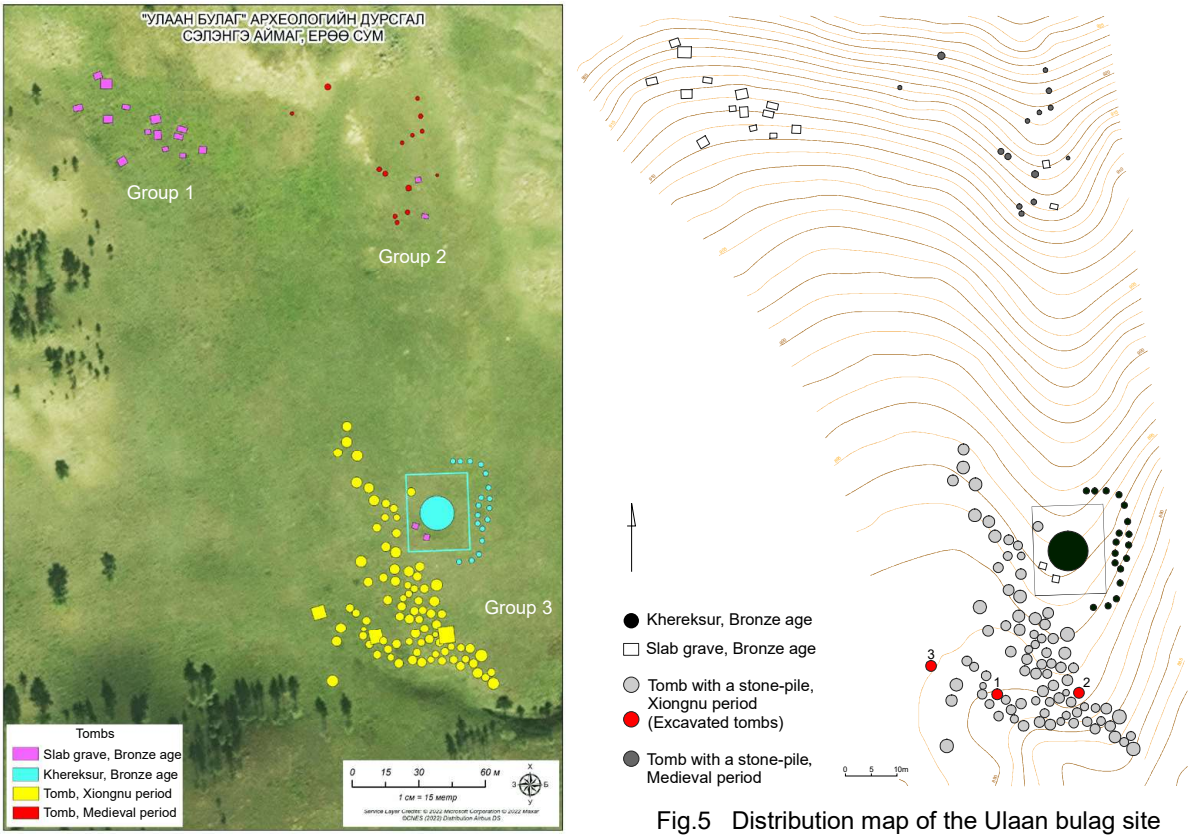


Fig.5　Distribution map of the Ulaan bulag site

Fig.6　Ulaan bulag site before excavation (the top of the photograph is north)

Fig.7　The three tombs that were excavated (taken from the southeast)

Fig.8　The three tombs that were excavated (taken from the summit of the mountain to the north of the ruins)

Along the lower area (upper left of the photograph), a green line of dense trees can be observed. This is a line of trees, such as willows, that grow along both banks of the Ulaan bulag River. To the east of the ruins runs the river valley of the Ulaan bulag River, whereas to the west of the ruins, as shown in Fig.9, there is a highland with continuing hills (see also **Fig.2**).

Fig.9　View from the northeast to the southwest

2. Excavation of Tomb 1

2-1. Process of the excavation

Before the excavation, a circular stone pile, approximately 4 m in diameter, was identified on the ground. Therefore, we set up the survey area measuring 6 m in the east–west direction and 6.5 m in the north–south direction. To clean the vegetation, we excavated to a depth of approximately 10 cm **(Fig.10, 11-1)**. During this stage, pottery fragments were found beside a stone on the western side of the circular stone piles. As we cleared the ring of stone piles, it was determined that the stones at the southeastern corner of the survey area likely belonged to a different, neighboring tomb. We recorded the soil profile of this tomb, which belongs to the A-A' line on the western side of the north–south belt **(Fig.12)**. Based on the soil profile, the accumulated soil inside the circular stone pile was 10–15 cm thick. Therefore, the outline of the burial pit had not yet been identified. As we decided to preserve the stone ring, excavation continued inside

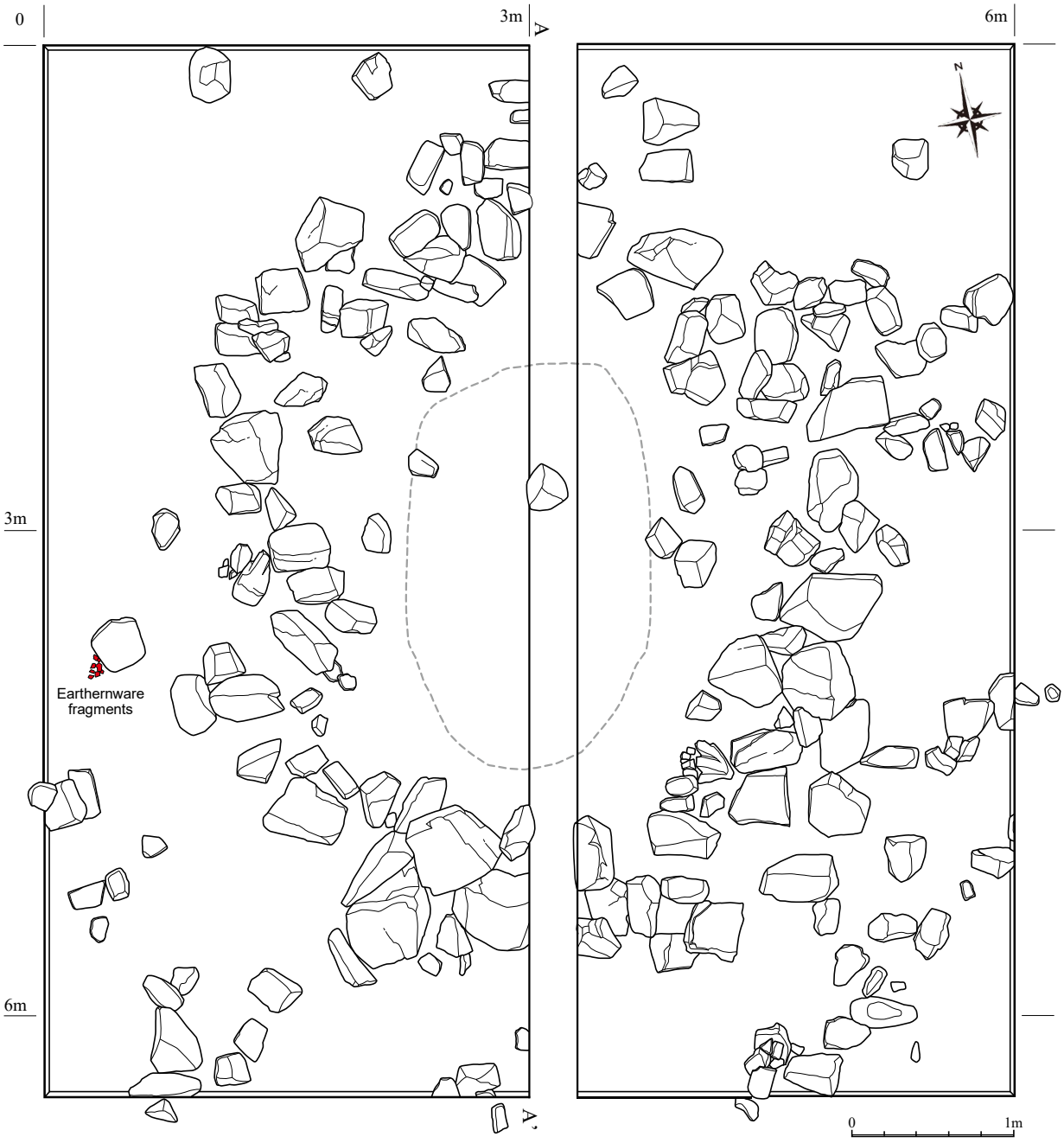


Fig.10　Ulaan bulag Tomb 1 after surface soil removal

1. After the removal of the surface soil

2. Excavation began from the western part of the half

3. Both sides of the stone ring were excavated (1st phase)

4. Removal of the north–south belt

5. Excavation of the burial pit, western half (2nd phase)

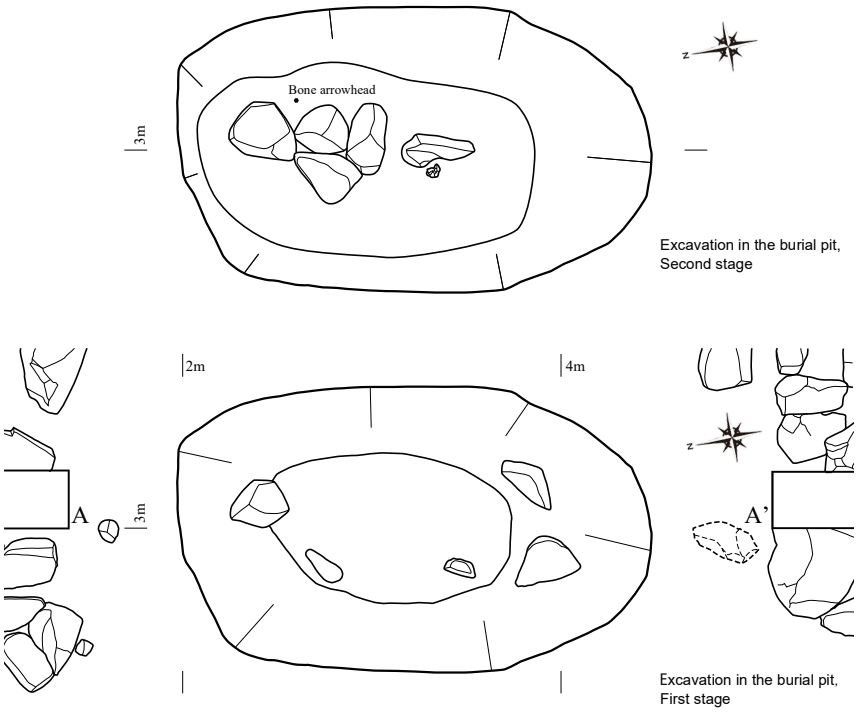
6. Concentration of stones in the burial pit

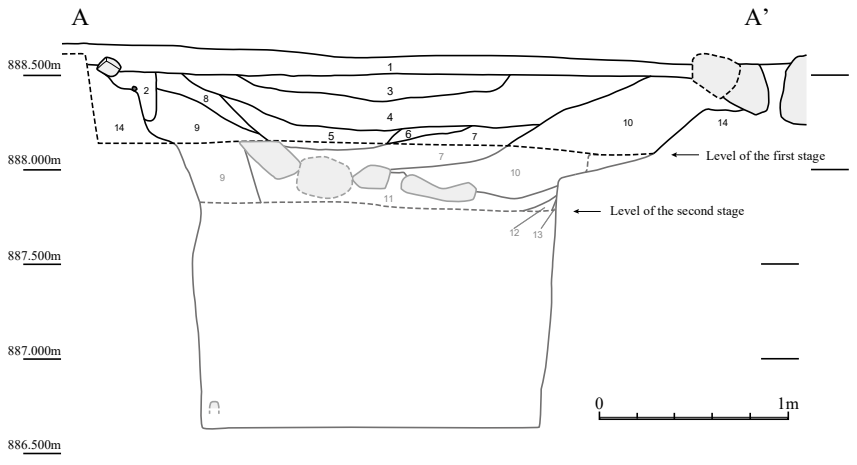
Fig.11 Ulaan bulag Tomb 1, excavation process

7. After removing of stones, a few more stones appeared

8. A stone funeral structure appeared

(Fig.11)　Ulaan bulag Tomb 1, excavation process





1. 10YR 3/2. Brownish black. Sandy soil.
2. Soil 2 was disturbed by tree roots. Color is same with 1.
3. 10YR 5/3. Dull yelloish brown. Sandy soil. Fine gravel of less than 1mm is mixed in small amount.
4. 10YR 4/2. Groyish yellow brown. Sandy soil. Fine gravel of less than 1mm is mixed in small amount.
5. 10YR 3/2. Brownish black. Sandy soil. There is almost no gravel visible.
6. 10YR 5/3. Dull yellowish brown. Fine gravel of less than 3mm is mixed at 7%.
7. 10YR 3/3. Dark brown. Sandy soil. Fine gravel of less than 1mm is mixed in small amount.
8. 10YR 5/2. Groyish yellow brown. Sandy soil. Soil 8 is darker in color than Soil 9.
9. 10YR 5/3. Dull yellowish brown. Sandy soil. Fine gravel of less than 3mm is mixed at 3%.
10. Soil 10 is yellower than Soil 9.
11. 10YR 4/3. Dull yellowish brown. Sandy soil. Fine gravel of less than 3mm is mixed at 1%.
12. 10YR 4/3. Dull yellowish brown. Sandy soil.
13. 10YR 8/3. Light yellow orange. When it dries, it becomes milky white and hardens well. Fine gravel of less than 3mm is mixed at 1%.

Fig.12　Cross-section of the burial pit, Tomb 1

the ring. We dug an additional 40 cm in the western half of the north–south belt **(Fig.11-2)**. At the altitude of 888.100 m, stones appeared near the center of the pit; therefore, we recorded them using drawings and photographs at this level. After recording, we removed the north–south belt and continued the excavation **(Fig.11-3, 11-4, 13)**. Around the altitude of 887.700 m, we found a concentration of stones in the center of the pit. A bone arrowhead **(Fig.24-3)** was also discovered at this altitude **(Fig.14)**. No further stones were found below the altitude of 887.700 m, and the vertical depression of the burial pit became more apparent.

Fig.13　Soil profile along the A-A' line (same phase as Fig.11-2, 11-3) (W→E)

Fig.14　The 2nd excavation in the burial pit (same phase as Fig.11-5, 11-6; top is east)

Fig.15　The stone funeral structure appeared

Fig.16　After cleaning, the upper surface soil was removed

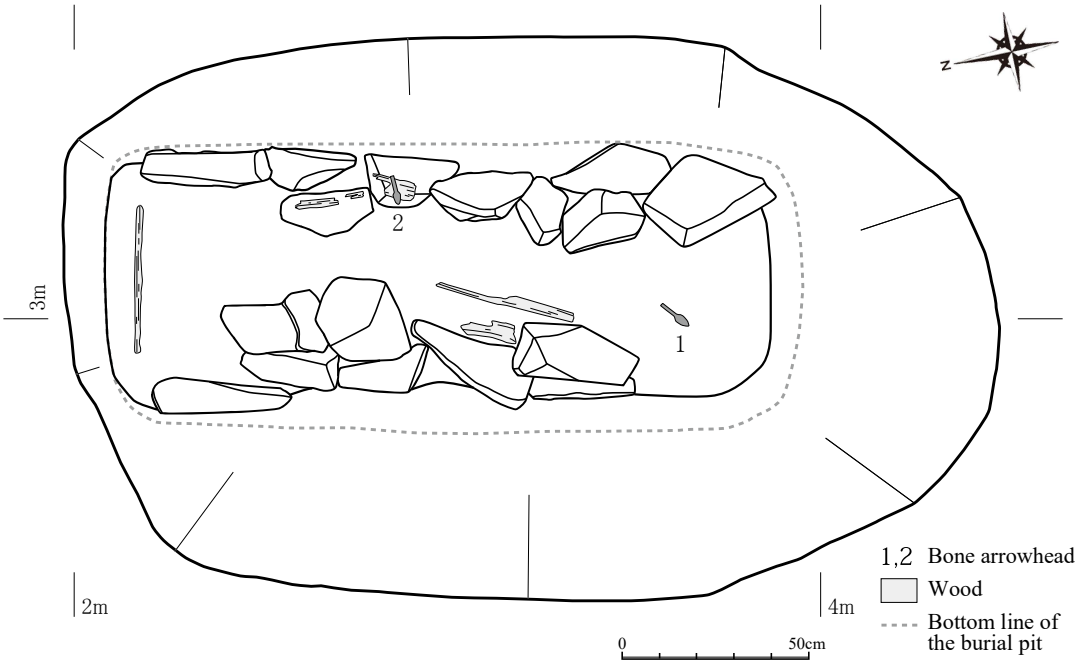


Fig.17 Stone funeral structure (same phase as Fig.16)

Fig.18 Interior of the stone funeral structure

We continued digging deeper, and stones reappeared near the altitude of 876.800 m. These stones appeared to have been arranged with their sides upright, slightly inside the walls of the burial pit **(Fig.15)**. While some stones were aligned along the long side of the burial pit, other stones appeared to be scattered haphazardly inside, suggesting that the tomb had been disturbed by robbers. Initially, we attempted to expose all the stones; however, no stones were found along the short walls. After exposing this level, we found some decayed wood among the haphazardly piled stones, as well as two arrowheads made of horn **(Fig.16, 17)**. As we removed the disordered stones and continued cleaning, rectangular traces of a wooden coffin along the inside the stone coffin became visible **(Fig.17)**. The estimated size of the wooden coffin was 1.75 m × 0.45 m. Human bones were found inside the coffin; the upper body was significantly disturbed, but the lower legs, from the tibia down, remained in their

original position. Based on anthropological analysis, the body was of a young male (late teens)[3], buried in an extended position with his head oriented to the north **(Fig.18)**. After removing the bones, we continued cleaning the inside of the coffin and the wood presumed to be the bottom of the coffin became visible. The structure of the coffin could not be determined owing to decay; only the grain direction along the long axis of the wood could be observed **(Fig.19)**. We excavated the interior of the stone funeral structure and, after completing the excavation of the burial pit **(Fig.20, 21)**, the excavation of Tomb 1 was concluded.

(3 The details of the anthropological analysis are reported in Chapter 2 of the Analysis section.

Fig.19　After the removal of the human bones, decayed wood, the possible bottom boards of a coffin appeared.

Fig.20　Excavation of the stone funeral structure was completed

Fig.21　Excavation of the burial pit was completed

2-2.Findings

Three types of objects—Earthenware, horn and bone tools, and stone tools—were excavated from Tomb 1. However, the only artifacts found near the stone funeral structure were three bone arrowheads.

■ Earthenware

All earthenware were fragments of pottery. These were mostly small fragments found during surface soil removal. Some fragments could be reconstructed with others, such as those found beside one of the piles of stones during surface soil removal **(Fig.10, 22, 23-1, 23-2)**.

The two pieces shown in **Fig.23-1** and **23-2** are thought to originate from the same vessel. Both the inner and outer surfaces are reddish-brown color, and the pottery clay appears muddy and has been fired hard. The outer surface is well-smoothed, whereas the inner surface has left finger marks. The wooded spatula strokes, which moved from top to bottom, are piled on top of them. The fragment in **Fig.23-4** is similar to the two pieces mentioned above, in terms of the clay and firing, and was similarly found during surface soil removal in the southwest part of

the circular stone pile. Both the inner and outer surfaces are well-smoothed, and a shallow line runs on the outer surface. **Fig.23-3** depicts a fragment unearthed from the eastern side of the burial pit during the first excavation phase. Both surfaces are brownish, made of muddy clay, and well-fired but brittle. It is presumed to be the rim of a jar.

■ Bone tool

All objects were arrowheads. Four objects were categorized into three types.

▪ Type 1:

The cross-section of the arrowhead is diamond-shaped owing to two sharp ridges. The upper and lower sides of the tang are shaved thinner toward the bottom so that it could be inserted into the arrow shaft. **Fig.24-1** and **24-2** correspond to this type; both are made of antler and were unearthed during the cleaning of the stone funeral structure (Fig.17)[4]. The plane shape of the arrowhead is diamond-like with rounded edges. The blades extend to the widest point, beyond which the converging part is not sharp-edged.

- Fig.24-1: Length 9.6 cm, maximum width of the arrowhead 2.0 cm, maximum thickness 1.1 cm.
- Fig.24-2: Length 8.2 cm, maximum width of the arrowhead 1.8 cm, maximum thickness 0.9 cm.

▪ Type 2:

The cross-section of the arrowhead is a convex lens. The tang is missing, but it is presumed to have been inserted into the arrow shaft. **Fig.24-3** corresponds to this type and was unearthed from the burial pit during the second phase of excavation (Fig.14, right). The plane shape of the bone arrowhead is lanceolate, and when viewed from the side, the blade extends to the maximum point. The edge of the converging part appears to be shaved.

- Remaining length 5.1 cm, maximum width of the arrowhead 1.7 cm, maximum thickness 0.8 cm.

▪ Type 3:

This type has a stem that is split to sandwich the arrow shaft. **Fig.24-4** corresponds to this type. It has a length of 10.1 cm and a maximum width of 0.9 cm. Although there are ridges on the upper and lower sides, they are not symmetrically placed. Consequently, the cross-section of the arrowhead has a shape similar to a parallelogram.

(4 The sub-numbering is the same in Figures 17 and 24.

Fig.22　Earthenware fragments
(Photo taken from the west; see also Fig.1)

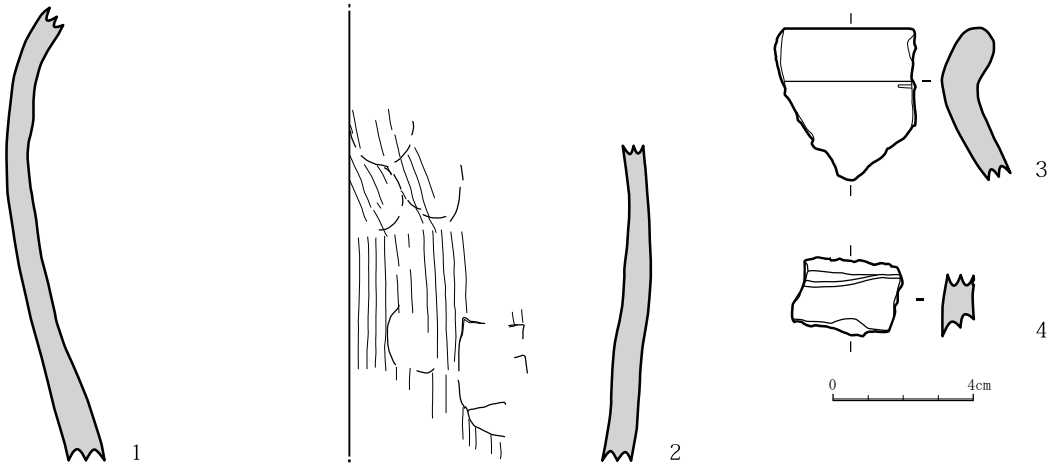


Fig.23　Earthenware

■ Stone tool

Two kinds of tools were found: a flake and a whetstone.

The flake was unearthed from the first phase of excavation of the burial pit. Knapping seems to have been performed along the lower edge **(fig.24-5)**.

• Length approximately 2.6 cm.

The whetstone is composed of sandstone **(fig.24-6)** . The surfaces of both wide sides are smooth. All four sides are irregular.

• Maximum length 5.9 cm, thickness 0.9 cm.

Fig.24　Tools made of bone, horn, and stone

3. Excavation of Tomb 2

3-1. Process of the excavation

Tomb 2 is located at the end of a ridge, where the largest number of Xiongnu tombs are clustered. This tomb had a circular stone pile, approximately 6 m in diameter, on the ground. Therefore, we set up a survey area centered around the depression, measuring 6 m in the east–west direction and 8 m in the north–south direction, and removed the weeds and surface soil to expose the stone mound. However, the area was extended by 0.5 m on the east side to expose the entire stone mound. Consequently, the survey area increased to 6.5 m in the east–west direction and remained 8 m in the north–south direction **(Figs. 25, 28-1)**. We excavated to a depth of approximately 10 cm to remove weeds, and bones believed to be from an animal skull were found in the southwestern part of the stone pile during this process (marked in **Figs. 25, 26**). Additionally, pottery fragments were found in the southeastern part of the survey area **(Fig. 27)**. We recorded the soil profile of this tomb, which belongs to the A-A' line on the western

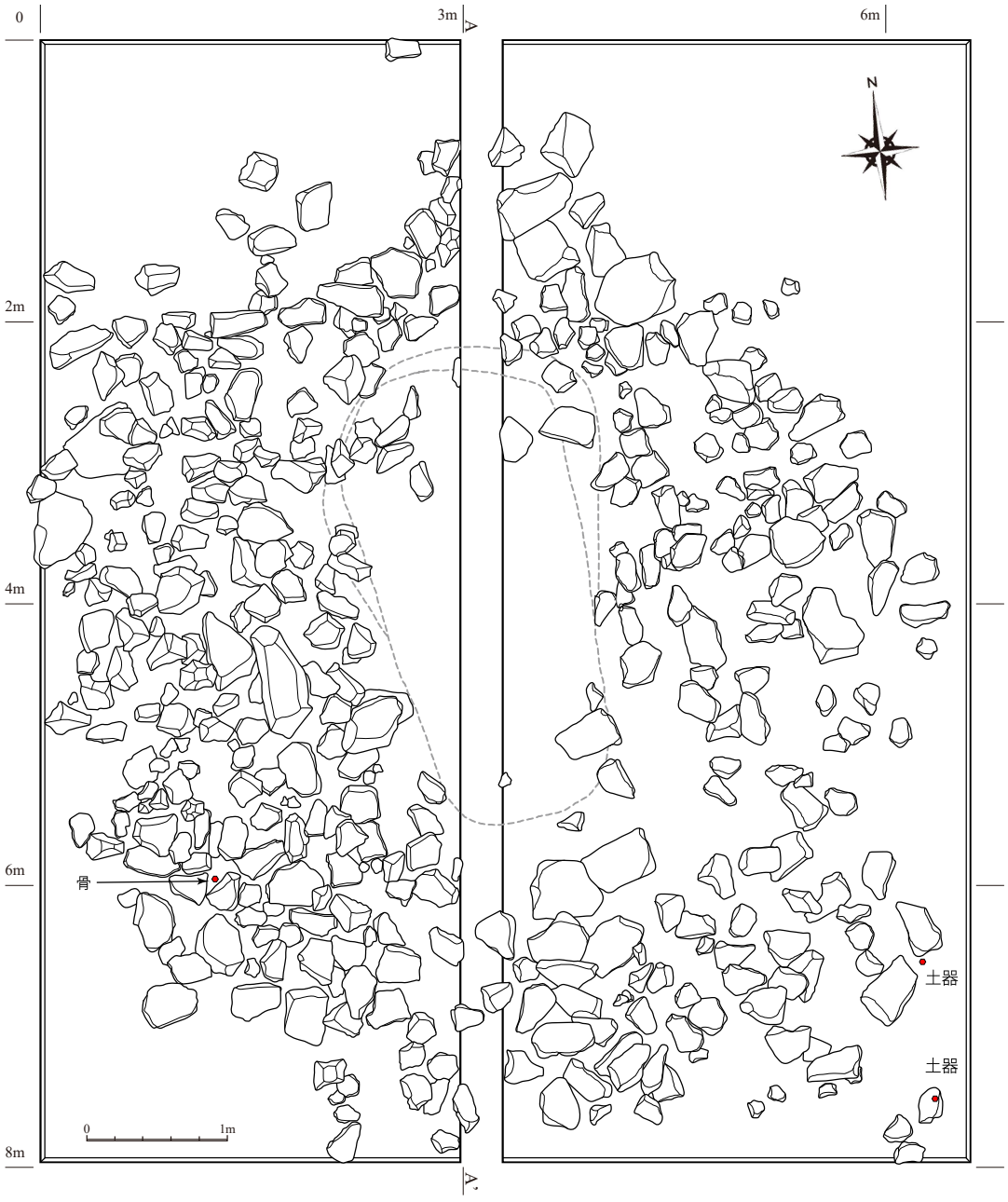


Fig.25 Ulaan bulag Tomb 2, after surface soil removal

Fig.26 Bones found between the piled stones during the removal of the topsoil (top is north)

Fig.27 Piled stones and pottery (SE→NW)

1. After the removal of the surface soil

2. The first excavation (1st phase)

3. The first excavation (2nd phase)

4. Removal of the north–south belt (2nd phase)

Fig.28 Ulaan bulag Tomb 2, excavation process

5. The third excavation (3rd phase)

6. Removal of the north–south belt and stones

7.Excavation of the burial pit; western half (4th phase)

8. The fifth excavation (5th phase)

9. Wooden chamber

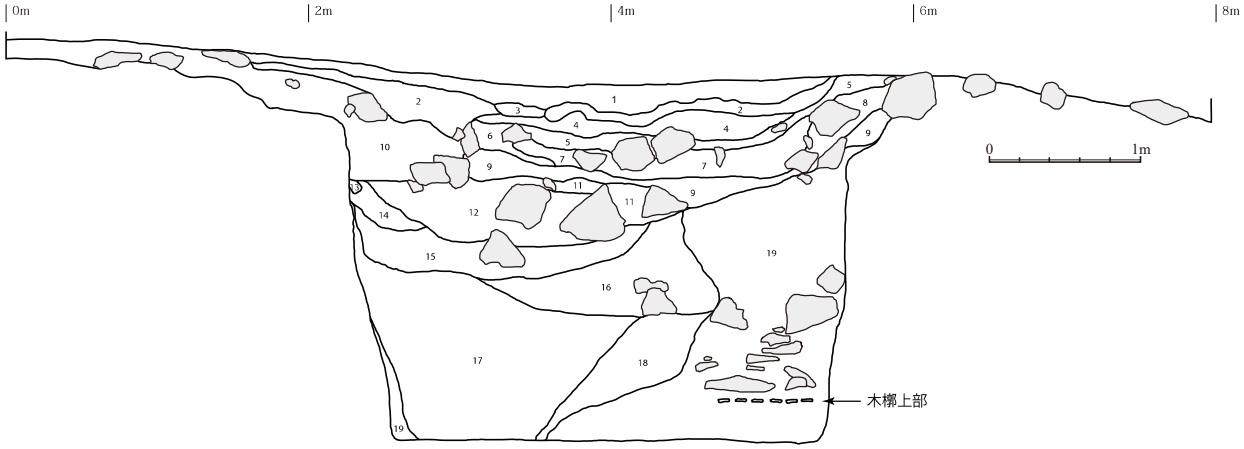
(Fig.28)

Ulaan bulag Tomb 2, excavation process

side of the north–south belt **(Fig. 30)**. The thickness of the surface soil inside the circular stone mound was approximately 20 cm; therefore, the outline of the tomb's depression had not yet been confirmed. Because the stone mound was to be preserved, we initially excavated to a depth of approximately 30 cm inside the circular stone mound, leaving the north-south belt untouched **(Fig. 28-2)**. Consequently, black soil containing a large amount of organic material was revealed, likely caused by the

depression in the center, and stones from the stone piles were also mixed in the soil. The soil was removed from the upper to the lower layers, starting with the black soil, and the collapsed stones were gradually removed as excavation continued. Approximately 60 cm below ground level, the number of collapsed stones decreased, and variations in the color of the depression soil became clearer **(Fig. 28-3)**. As the long sides of the tomb pit gradually became clearer, we removed the north-south belt and attempted to confirm the tomb pit planimetrically **(Fig. 28-4)**. With the stones left in place, the dark soil inside the tomb pit was removed. The stones, piled haphazardly, are believed to have fallen because of subsidence **(Fig. 28-5)**. Therefore, we removed the displaced stones and continued to dig **(Fig. 28-6)**. After the third phase of excavation, as shown in Fig. 26-6, the

Fig.29　Cross-section of the burial pit, Tomb2　(Same phase as Fig.28-3)(W→E)



1. 5YR 1.7/1. Black. Surface soil. Fine gravel is mixed at 3%.
2. 5YR 1.7/1. Black. Fine gravel is mixed at 3% to 5%(5.
3. 2.5YR 3/1. Reddish gray. Fine gravel is mixed at 1% to 3%.
4. 5YR 4/1. Brownish gray. Fine gravel is mixed at 1% to 3%.
5. 5YR 4/2. Grayish brown. Fine gravel is mixed at 1% to 3%.
6. Same as (3).
7. Same as (4).
8. Same as (4).
9. Same as (5).
10. Same as (5).
11. There is no record of this.
12. Same as (4).13. Same as (4).
14. 5YR 4/3 Dull reddish brown. Fine gravel is mixed at 1% to 3%.
15. A mixture of soils (2) and (3).
16. A mixture of soils (4) and (6).
17. A mixture of soils (2), (4), and (6).
18. Same as (4).
19. Same as (4).

(5 There is a problem in that the soil color is the same as that of the upper layer. The same problem occurred in following layers: 1, 2; 2, 5; 7, 8; 9, 12; and 18, 19. Additionally, there is no record regarding layer 11. Because the original data were held by the Mongolian side and have not been shared, the elevation could not be added to the drawing.

Fig.30　Cross-section of the burial pit, Tomb2

1. Close-up view of the inside of the burial pit (same phase as Fig. 28-8)

2. After the cleaning of the upper side of the chamber

3. The inside of the chamber

Fig.31　Chamber (Top is West)

Fig.32
Close-up view of the disturbed bones
(➡ bow fittings)

shape of the rectangular tomb pit became clear. This was because, after removing the stones shown in Fig. 26-6 and digging an additional 20 cm, we were able to confirm that the walls of the tomb pit continued vertically. We divided the tomb pit along its long axis and continued to excavate half of it **(Fig. 28-7)**. As displaced stones remained within the tomb pit, excavation continued while the uncovering of these stones was recorded.

Fig. 28-8 shows the phase following the fifth excavation, which was just before the discovery of the wooden chamber. A portion of the soil and stones on the northern side of the tomb pit was confirmed to be severely disturbed, and the soil contained many wood fragments **(Fig. 31-1)**. Therefore, it was presumed that the burial structure had been looted from the northern side. Upon removing the stones and excavating further, a wooden chamber with a length of 2.6 m and width of 0.6 m was revealed **(Figs. 28-9, 31-2)**. Timbers had been placed across the short axis as a ceiling for the chamber, but these timbers were only preserved on the southern side and could not be found on the northern side. The wooden chamber has a partition located 0.4 m from the northern wall. Since the discovery of the chamber, numerous human bones, such as skulls and femurs, have been found near the partition. Therefore, the interior of the chamber was presumed to have been disturbed; however, after cleaning the interior of the chamber, tibias, fibulas, and foot bones were found in what is believed to be the original position in which the burial occupant had been laid**(Fig. 31-3)**. Through anthropological analysis, the burial occupant was identified as a middle-aged male in his late 30s to early 40s. He was presumably buried with his head facing north. This assumption was made for the following reasons: (1) the foot bones were found on the southern side and (2) the compartment for burial goods in Xiongnu tombs is usually near the head. Owing to looting, no artifacts were found in the compartment. The concentration of human bones near the partition is also thought to be the result of looting. Furthermore, bone laths, used to stiffen composite bows, were also found there. If these laths had been in their original position, they would have been found lined up at a certain distance from each other **(Fig. 32)**.

3-2. Findings

Three types of objects were excavated from Tomb 2: earthenware and clay products, iron tools, and horn and bone tools. However, all the earthenware was found during the removal of the surface soil; therefore, it is unclear whether they were originally grave goods inside Tomb 2. All the other artifacts were found inside the wooden chamber.

■ Earthernware and clay product

All the pottery fragments were found in the southeastern part of the survey area, near the stone piles (marked in Fig. 25).

Fig. 33-1 shows part of the base of a jar. The outer surface is dark reddish-brown, whereas the inner surface appears black because of soot absorption. The bottom surface has a slightly rectangular depression measuring 2.8 × 3 cm, believed to be a mark from the potter's wheel. The remaining height is 6.8 cm, and the bottom diameter is 9 cm.

Fig. 33-2 shows a slightly bent fragment. The outer surface has been smoothed horizontally, whereas the inner surface retains vertical tool marks. It is 6.3 cm long.

Fig. 33-3 shows a clay ring, believed to be a spindle whorl. It was found inside the wooden chamber. It has a diameter of 3 cm and a hole diameter of 0.9 cm.

■ Iron tool

The iron artifacts include a knife, arrowheads, staples, and ring-shaped iron objects. The uses of the other items remain unclear.

Fig. 34-1 shows an arrow shaft near the head, as evidenced by string wrapping. Observation of its cross-section, which has a diameter of 0.8 cm, reveals an iron rod running through the center. The remaining length is 4.7 cm.

Fig. 34-2 shows an iron rod, believed to be the axis of an arrow. The diameter of the cross-section is 0.5 cm, and the remaining length is 6.7 cm.

The fragments shown in **Figs. 34-3** to **34-6** are assumed to be staple fragments because of their right-angle bends. Only the artifact shown in Fig. 34-6 was

photographed when it was unearthed. All these artifacts were rusted and swollen. However, upon examining the broken points, two types of cross-sectional shapes were observed: near-square and rectangular.

Fig. 34-7 shows a fragment with a rectangular cross-section.

Fig. 34-8 shows a ring made by bending a round iron rod into a C-shape. The diameter is 3.6 cm.

Fig. 34-9 shows a part of a ring with a square cross-section. Although the details are unclear because of the rust and swelling, it appears a thin, square iron plate is attached to one side of the ring.

Fig. 34-10 shows a round, bent ring. The iron rod, which has a square cross-section, gradually tapers toward one side. The length is 3.0 cm.

Figs. 34-11 to **34-13** show parts of iron artifacts. They are unidentified and are mostly rust. Fig. 34-11 shows rust peeled from a hook-shaped iron plate. The length is 3 cm. **Fig. 34-12** shows a hollow rust with a length of 4.9 cm. Fig. 34-13 shows plate-like rust that has peeled off. The maximum length of this fragment is 5.1 cm.

Fig. 35-1 shows a knife equipped with a horn handle. The handle, made of horn, is oval shaped, with slight ridges remaining from the carving process. The iron blade is broken 0.7 cm from the handle. The back of the knife is 0.4 cm thick, and the handle is 12.1 cm long. The knife was found to the right of the buried person, placed along the body (Fig. 31).

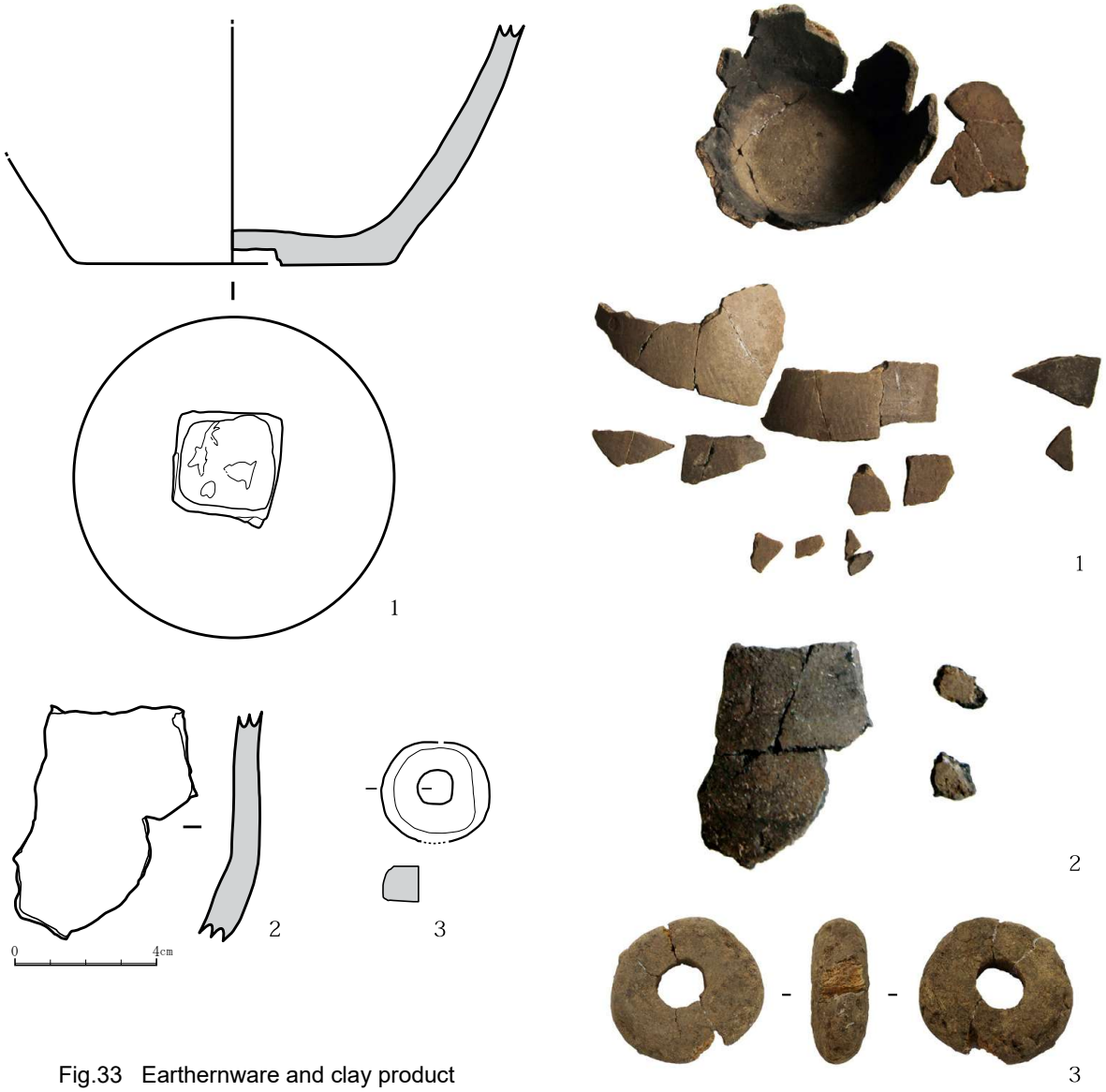


Fig.33 Earthernware and clay product

■ Bone tool

Excluding the knife handle mentioned above, all bone and horn items are related to bows and arrows.

There are four bone arrowheads, and except for one whose shape is unclear because of damage, all have a different shape.

Fig. 35-2 shows a rod-shaped arrowhead. The upper and lower sides of the tang were shaved thinner toward the bottom so it could be inserted into the arrow shaft. The tip of the arrowhead is shaped such that the four faces converge at the point. The remaining length is 6.7 cm.

Fig. 35-3 also shows a rod-shaped arrowhead; however, the stem is split to sandwich the arrow shaft. The cross-section is a neatly rounded circle, and the tip of the arrowhead is shaped such that the four faces converge at the point. A thin iron piece, 0.6 cm wide, was wedged between the two split parts of the stem. The length is 10.6 cm.

Fig. 35-4 shows a triangular arrowhead without a tang. The length is 4.2 cm.

(Fig.34-6 Situation at the time the staple was unearthed)

Fig.34 Iron tool

Fig. 35-5 shows a fragment of the tip of an arrowhead, which appears to be split vertically in half. The remaining length is 4.3 cm.

A set of laths used for stiffening composite bows was also found. The artifact shown in Fig. 36-7 was found along the eastern wall of the wooden chamber, while the others were mixed with disturbed human bones (Fig. 32). **Figs. 36-1** to **36-7** show fragments of crescent-shaped bow fittings used to reinforce the grip of the bow. Although none of the pieces are complete, they comprise two fittings (Figs. 36-1 to 36-4; 36-5 to 36-7). Some parts of the surface have multiple fine lines. **Fig. 36-8** also shows a bow fitting used to reinforce the grip of the bow. Both ends are flared, and one side of the surface is carved like a spatula, with numerous fine lines visible on it.

Figs. 36-9 to **36-13** show laths, which are attached to the ends of a bow. The head is rounded, and it has a carved groove where the bowstring is hooked. The cross-section is nearly triangular, and numerous fine vertical lines are visible on the outer surface of the laths. However, these lines are only present on the inner arc of the bow (the side with the groove). Of the four laths in total, two are broken and two are complete. The lath shown in Fig. 36-10 is 27.7 cm long, while the one in Fig. 36-13 is 28.1 cm long.

Fig. 36-14 shows a fragment of an unknown, roughly arc-shaped object. One side of the end is scraped, and the scraped surface is very smooth. The remaining length is

Fig.35　Bone tool (1)

6.1 cm.

Fig. 36-15 show a flat fragment of an unknown object. Both the upper and lower surfaces are very smooth. The remaining length is 3.1 cm.

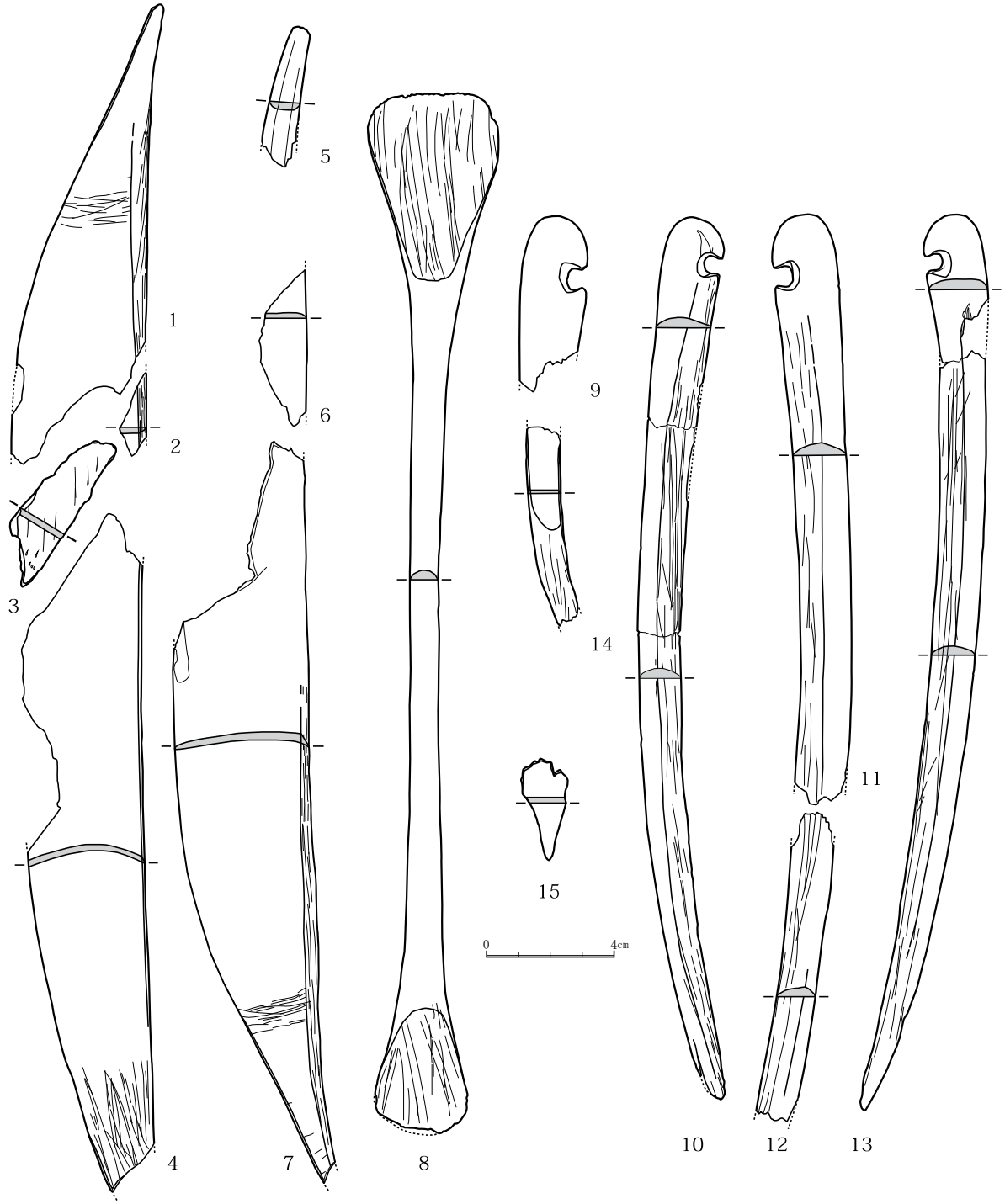


Fig.36 Bone tool (2)

(Fig.36) Bone tool (2)

4. Excavation of Tomb 3

4-1. Process of the excavation

Before the excavation, a circular stone pile, approximately 5.5 m in diameter, was identified on the ground. Therefore, we set up a survey area measuring 6 m in the east-west direction and 6.5 m in the north-south direction. To remove the vegetation, we excavated to a depth of approximately 10 cm, exposing the circular stone pile **(Figs. 37, 38-1)**. During this stage, pottery fragments were found on the southern side of the survey area **(Fig. 37)**.

We recorded the soil profile of this tomb, which belongs to the A-A' line on the western side of the north–south belt **(Figs. 39, 40)**. However, the outline of the burial pit had not yet been identified by this stage of excavation. In the excavations of Tombs 1 and 2, we did not remove the circular stone piles; however, to confirm whether detecting the burial pit was truly difficult after removing approximately 10 cm of surface soil, during the excavation of Tomb 3, we removed the piled stones and excavated the entire survey area by an additional 10 cm. Consequently, visually confirming the sunken area based on the differences in soil color was not possible.

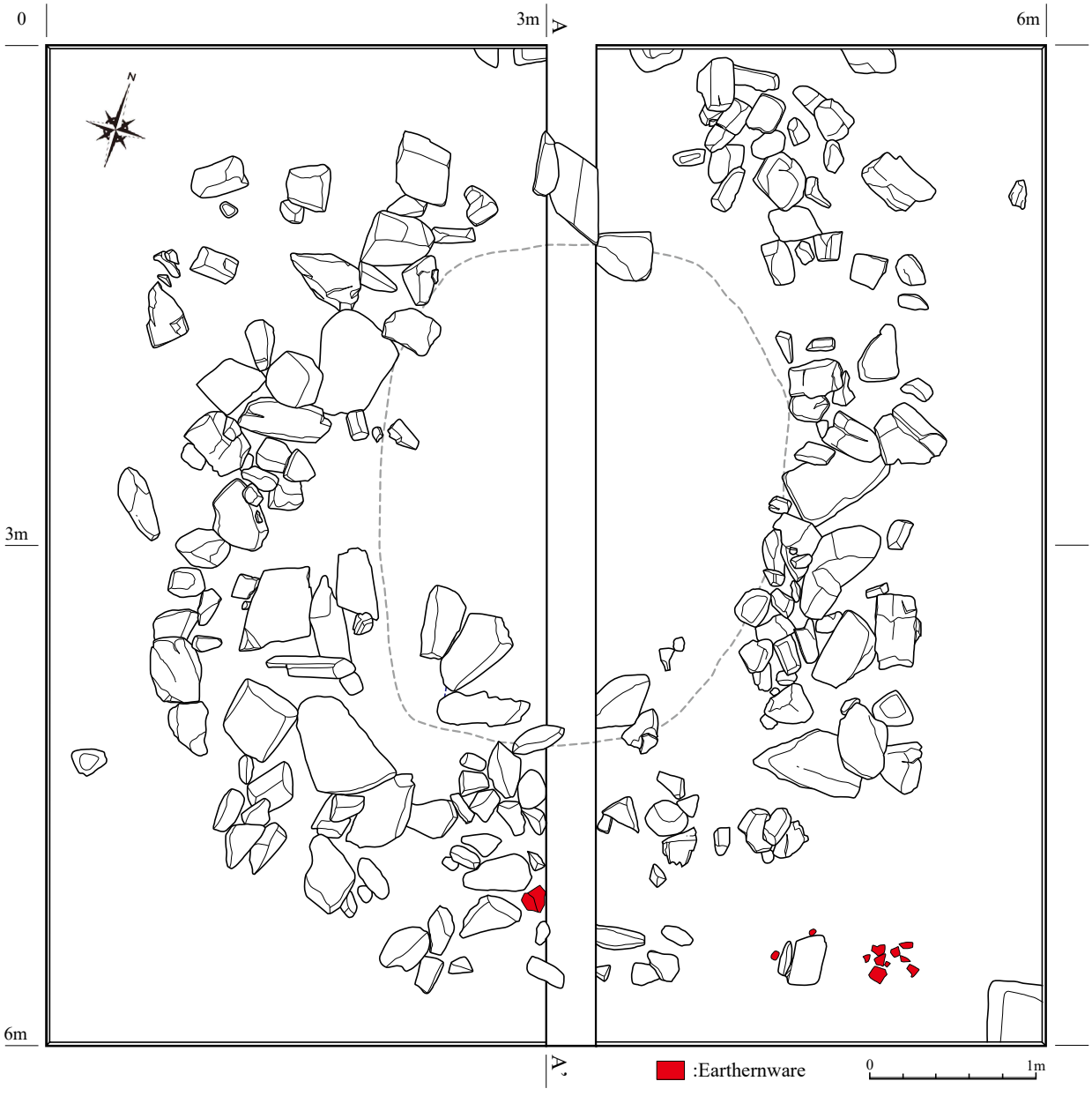
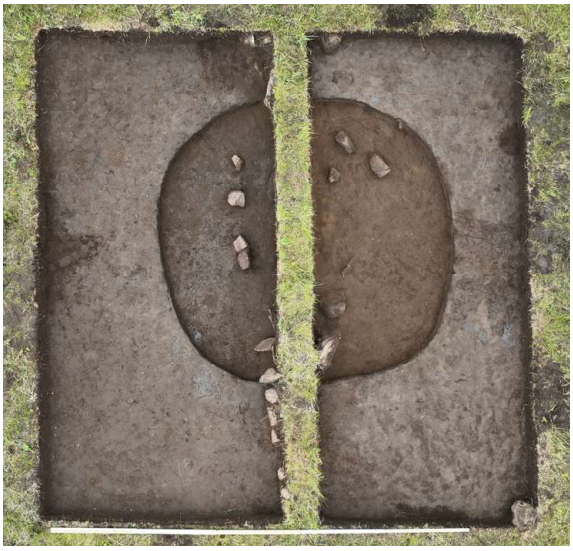


Fig.37 Ulaan bulag tomb 3, after surface soil removal

1. After the removal of the surface soil



2. After the removal of the piled stones; the 1st excavation to locate the burial pit

3. The 2nd excavation

4. The 3rd excavation

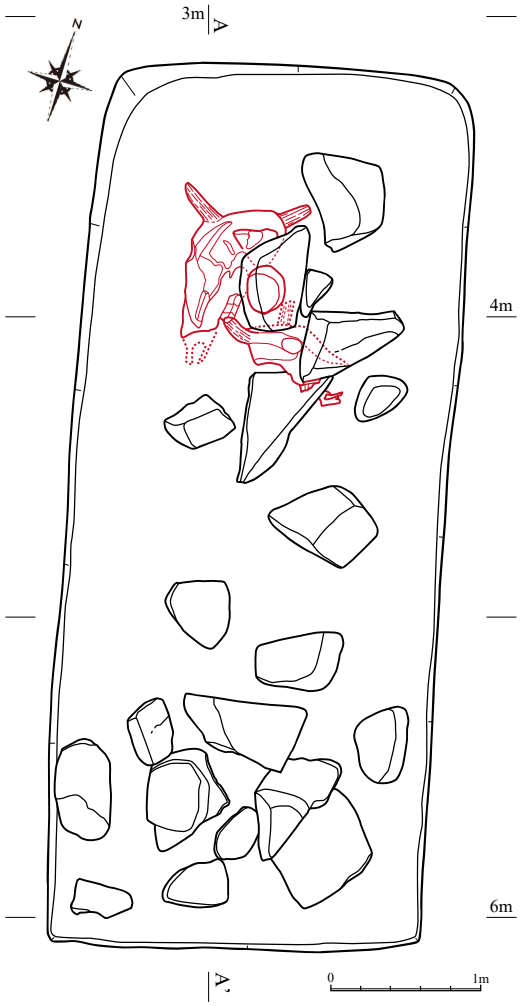
5. Excavation of the burial pit; western half

6. Excavation of eastern half (4th phase)

Fig.38　Ulaan bulag Tomb 3, excavation process

7.The 5th excavation

9.The upper part of the chamber's ceiling timbers revealed



8. Close-up view of the bovid skulls

(Fig.38) Ulaan bulag Tomb 3, excavation process

Fig.39　Cross-section of the burial pit, Tomb 3 (W→E)

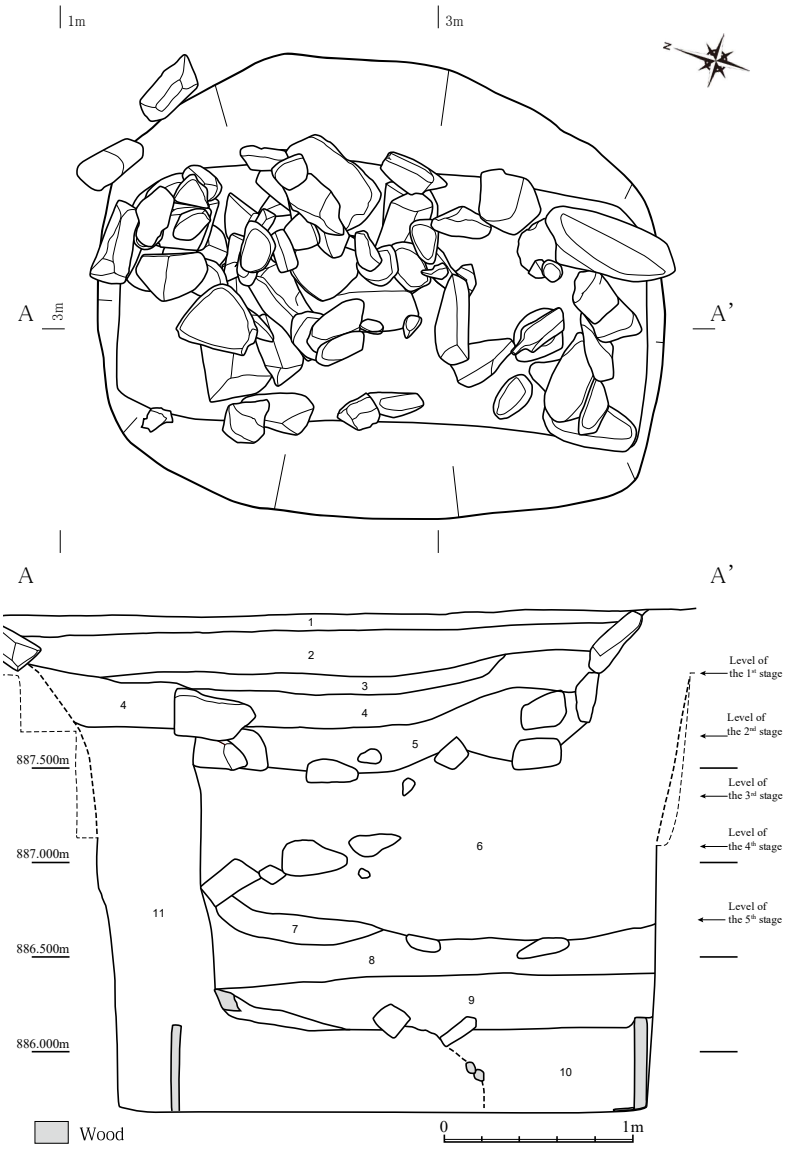
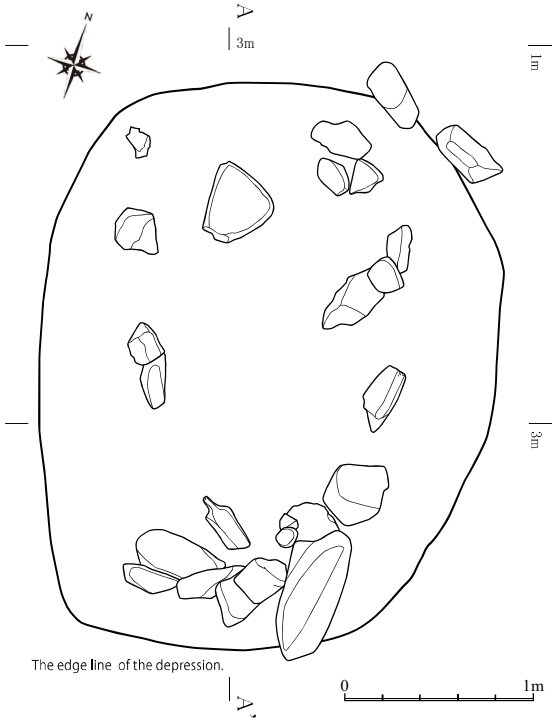


Fig.40　Cross-section of the burial pit, Tomb 3

1. 2.5Y 2/1. Black. Surface soil.
2. 10YR 4/3. Dull yellowish brown. Sandy soil.
3. 10YR 5/4. Dull yellowish brown. Sandy soil. It has a strong yellowish tint, but there are partially carbon-rich black spots.
4. 10YR 4/2. Groyish yellow brown. Sandy soil. Fine gravel smaller than 3mm is mixed at 3%.
5. 10YR 4/3. Dull yellowish brown. Sandy soil.
6. 10YR 4/2. Groyish yellow brown. The base soil is (4), but there are patches of dark brown and grayish-white soil. Fine gravel smaller than 3mm is mixed at 3%.
7. 10YR 3/2. Brownish black. homogeneous sandy soil.
8. 10YR 4/2. Groyish yellow brown. It is a mottled soil similar to (5), but the mottled areas are few.
9. 10YR 3/2. Brownish black. Sandy soil. It has a stronger brownish tint than the soil (10).
10. 10YR 4/3. Dull yellowish brown. homogeneous sandy soil.
11. 2.5YR 4/2. Dark grayish yellow. Sandy soil. Fine gravel smaller than 3mm is mixed at 10%. The soil that filled the looting pit.

Next, we excavated to a depth of approximately 20 cm in the area the circular stone pile had been located and confirmed the outline of the burial pit **(Figs. 38-2, 41-1)**. During the second phase of the excavation, the contours of the depression became clearer because of the differences in soil color. We then removed the north-south belt and confirmed the outline of the burial pit **(Figs. 38-3, 4; 41-2)**. During the third phase of the excavation, it became clear that the pit extended deeper, and numerous stones, likely originating from the stone pile, were found



1. The first excavation (same phase as Fig. 28-8)

2. The second excavation

3. The second and third excavations

4. The third and fourth excavations

Fig.41　Ground plan of the burial pit

inside **(Fig. 41-3)**. Following the A-A' line, the burial pit was divided into two sections and excavated **(Figs. 38-5, 6)**. During the fifth phase of the excavation, two bovine skulls with horns were discovered along with numerous stones **(Figs. 38-7, 8; 39)**. The skulls did not appear to have been placed with any particular intention, and no

1. The whole view (top is west)

2. Southern part (N→S)

3. Northern part

4. Southern part (overlook)

5. A bone pin among the disturbed timbers

Fig.42　Close-up view of the upper side of the wooden chamber

Fig.43　Inside of the chamber (After removal of the ceiling timbers of the chamber)

Fig.44　Inside of the wooden coffin

Fig.45　After removal of the coffin
(The coffin was placed on the two timbers. The southern timber is clearly visible)

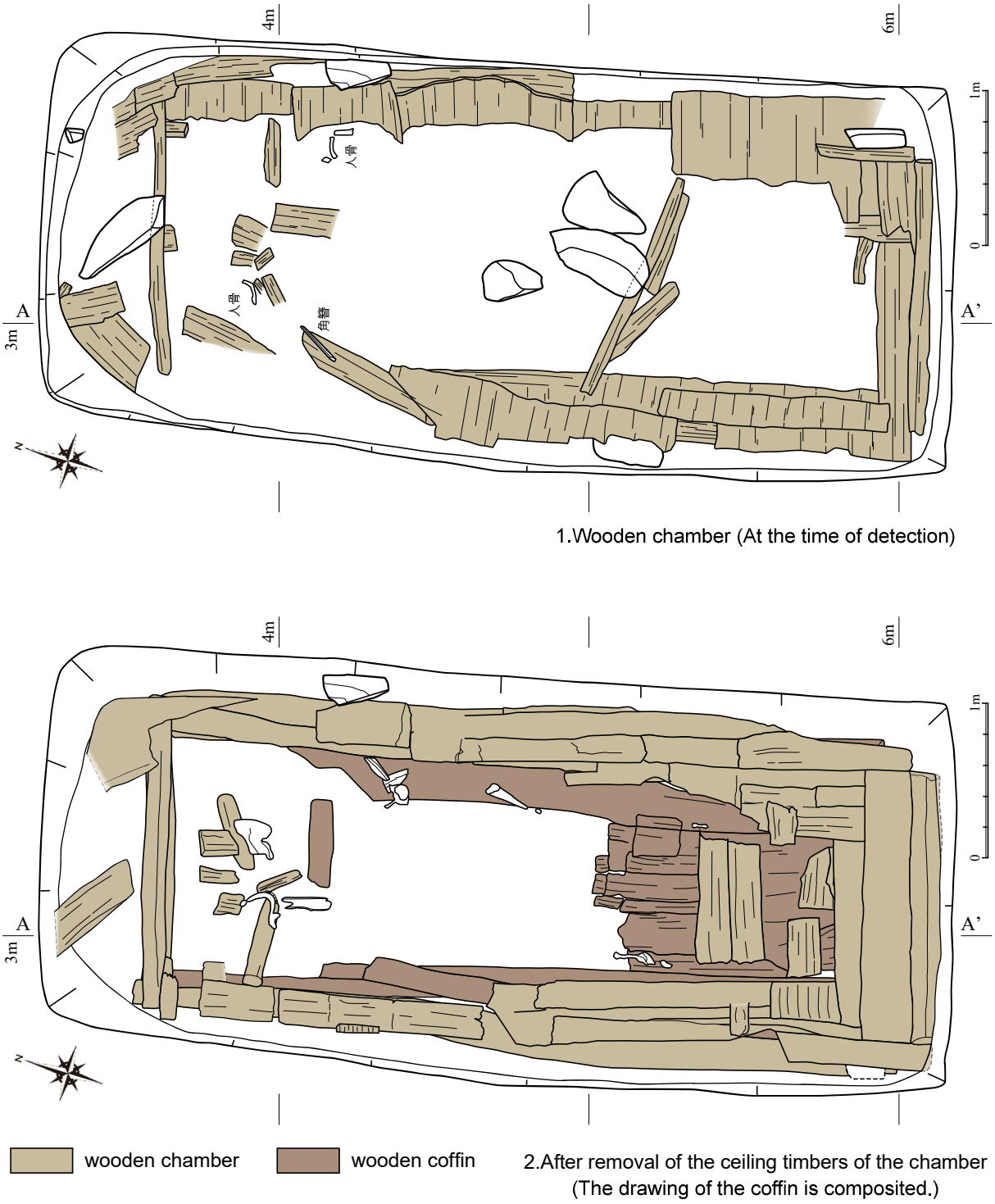
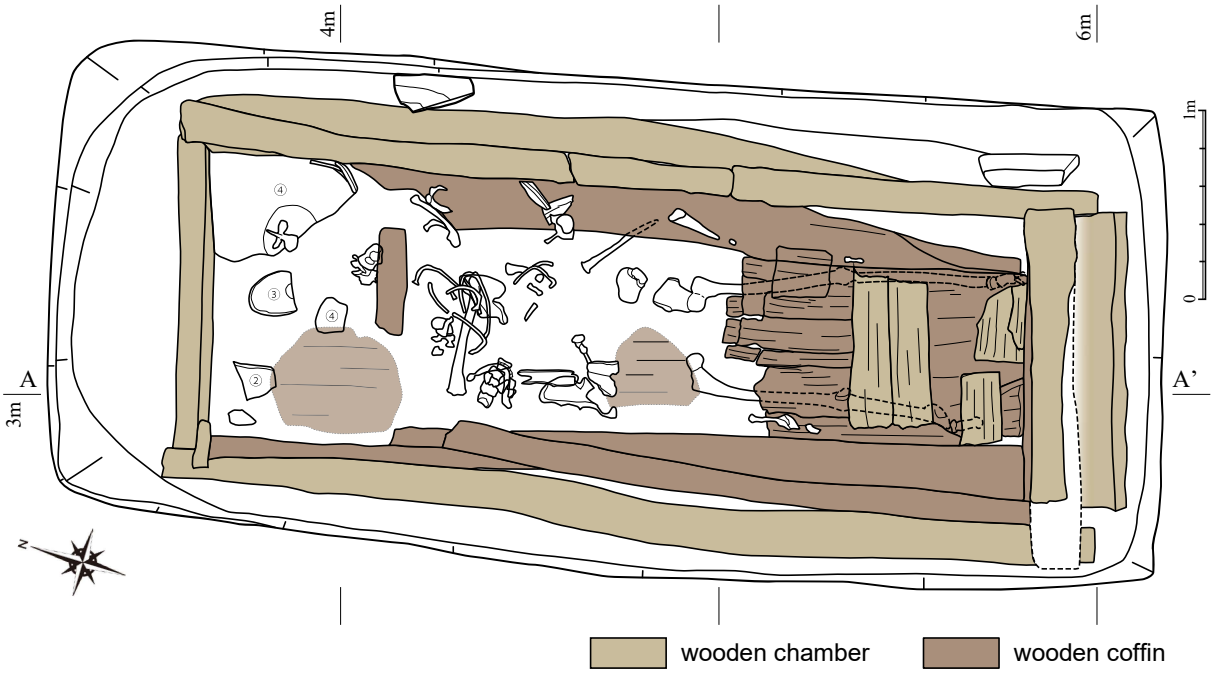


Fig.46　Funeral structure

other bones were found around them. Hence, the bones were removed and the excavation continued. The next find was many stones just above the wooden chamber ceiling **(Fig. 38-9)**.

The timber had been placed across the short axis as the chamber ceiling and was first identified near the four walls of the chamber. These timbers were well preserved in the southern half, but fewer sections were found in the northern half, and almost none were identified in the northwestern part **(Figs. 42, 46-1)**. Near the northwestern corner of the chamber, timbers or logs, likely originating from the wooden chamber, were found scattered in disarray or in fragments. Considering the soil profile, it is believed that a robbery pit had reached this part. We



3. Inside of the coffin

(Fig.46)　Funeral structure

Close-up view of the right femur;
in the process of revealing the bones

Fig.47　Grain layer spread over the south of the wooden coffin (top is west.)

Fig.48　Southern panel of the wooden chamber

found a bone pin alongside the destroyed timber [6] **(Figs. 42-3, 5)**. Although we tried to expose all the ceiling timbers, it was not possible to reveal the bent timbers in the center. It gradually became clear from the hole in the center that the burial facility was a double structure, with a wooden coffin placed inside the wooden chamber **(Figs. 43, 46-2)**.

The wooden chamber was 2.6 m in length and 1.0 m in width. Later, during the removal of the wooden chamber, it was confirmed that the southern wall was a single board that was 0.83 m long, 0.49 m wide, and 0.6 m thick **(Fig. 48)**. This board was wedged against all the walls (east and west walls, bottom, and ceiling), indicating the size of the board was the same as the internal dimensions of the wooden chamber.

The wooden coffin was 1.7 m in length and 0.47 m in width. The southern wall of the wooden coffin was also made of a single board that was 0.43 m long, 0.24 m wide, and 6 cm thick. This board was wedged against all the walls (east and west walls, bottom, and ceiling). The fact that the two boards of the southern wall, the chamber board and the coffin board, were in contact, suggests that the wooden coffin was placed against the southern wall of the wooden chamber. After the timbers of the chamber ceiling were removed, human bones began to be revealed in the northern part of the chamber, as shown in Fig. 43. Later, as the inside of the chamber was cleaned, it became clear that human bones were scattered in the northern part (Fig. 44). However, the bones below the waist were found to be in their original positions. Anthropological analysis revealed that the burial occupant was a woman in her 50s. She was buried in a north-facing position. Notably, during the process of detecting the bones of both legs, which were found in their original position, a layer of grain deposits[7], approximately 1.5 cm thick, was found across the entire area, covering her, specifically, her lower body **(Fig. 47)**. The grain layer was observed only in the lower-body side. Although careful excavation was conducted on the disturbed upper-body side, no grain particles were found even after excavating to the bottom

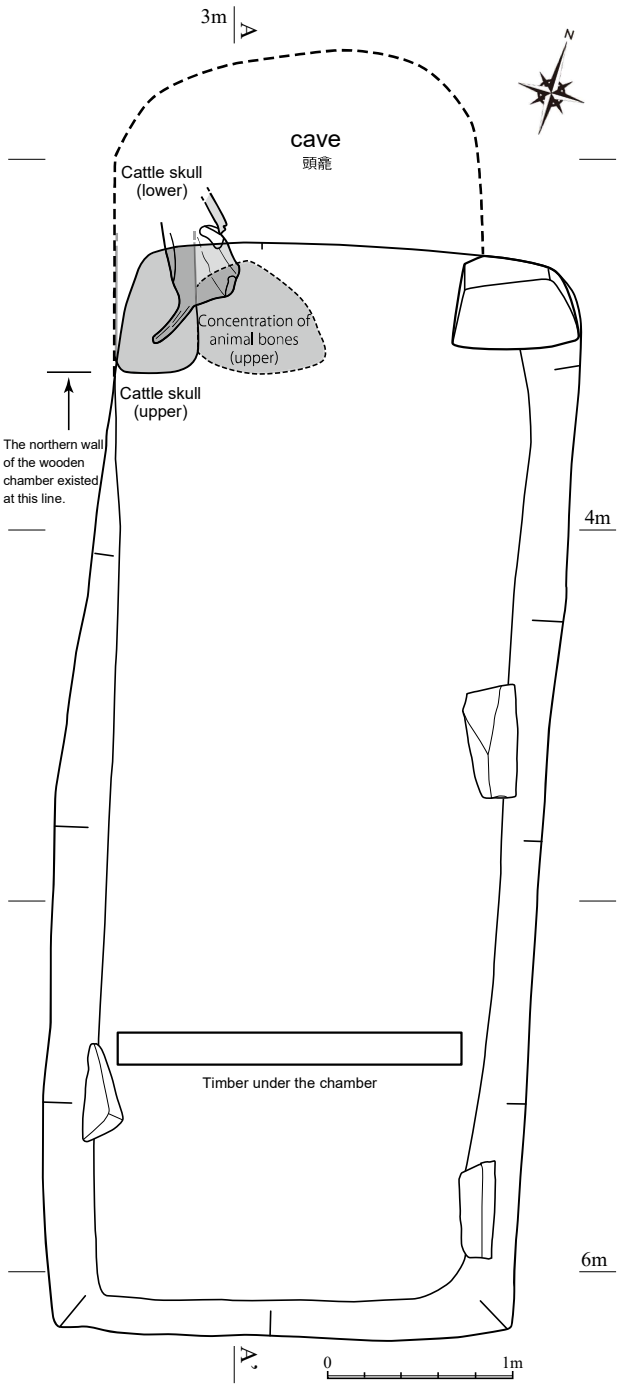


fig.49　The ground of the burial pit.
After removal of the chamber

(6 The lacquer film was also unearthed, and the analysis is reported in Chapter 4 of the Analysis section.

(7 The details of the grain are reported in Chapter 5 of the Analysis section.

of the wooden coffin in this area.

In the northern part, which had been looted, there was a space created by the difference in length between the chamber and coffin, in which grave goods were likely placed. The bottom of a large vessel was found in the northeastern corner **(Fig. 50)**.

After the wooden coffin (Fig. 45) and wooden chamber were removed **(Fig. 49)**, two timbers placed horizontally as supports for the coffin or chamber were revealed. The upper side of the timber support for the coffin measured 9 cm, while the one for the chamber measured 12 cm.

After removing the wooden chamber, we cleaned the inside of the burial pit. During this process, animal bones were found in contact with the northern wall of the burial pit, indicating the presence of a cave (Fig. 49). An animal skull and limb bones were initially identified in the northwestern corner of the burial pit **(Fig. 51)**. To excavate inside the cave, the bones that were initially visible were removed, revealing a bovine skull with horns and numerous other bones[8] **(Fig. 52)**. The final

(8 For the identification of animal bones, refer to Tubushingarul's report in Chapter 3 of the Discussion.

Fig.50　Compartment in the chamber (top is north)

Fig.51　After removal of the chamber. Animal bones were unearthed near the northern wall of the burial pit

Fig.52　Inside of the cave (fourth phase)

Fig.53　The burial pit after the excavation (Bottom is south)

length of the cave was 0.85 m from the northern wall of the burial pit. We excavated the entire cave and burial pit **(Fig. 53)**, thus completing the excavation.

4-2. Findings

Three types of objects were excavated from Tomb 3: Earthenware, horn and bone tools, and a stone tool.

■ Earthernware

Four pottery pieces were found, as shown in Fig. 54.

All the animal bones are bovine, and the number of animals is calculated to be at least four based on the skulls. However, based on the mandibles, the number is calculated to be six. The numbers “Cattle 1” to “Cattle 6” were assigned to each bovine in his study. However, the correlation between the unearthed locations and bones could not be reported. This information is noted on plastic bags; therefore, further examination is desired.

Fig. 54-1 shows the neck of a jar or vessel, discovered during the first phase of excavation. A groove is observed along the inside of the rim. The pottery clay contains sand and is hard-fired. The diameter of the rim is 17 cm.

Fig. 54-2 shows two fragments of a jar, discovered in the compartment within the chamber (Fig. 46-3 ②) The outer surface below the rim is covered with soot and carbonized material. The inner surface is smoothed horizontally. The rim diameter is 13 cm.

The fragment shown in **Fig. 54-3** was also discovered in the compartment (Fig. 46-3 ③). It is a fragment of the bottom or body of a vessel. The outer surface is covered with soot and carbonized material, like the fragment in Fig. 54-2. The clay and color tone are also similar to those of the jar in Fig. 54-2. The length is 16.7 cm.

Fig. 54-4 shows the fragments of a large vessel. Tracing the excavation dates when the fragments were discovered, the earliest date corresponds to the day the burial pit was initially dug. Ultimately, the lower part of the jar was found in the northeastern corner of the

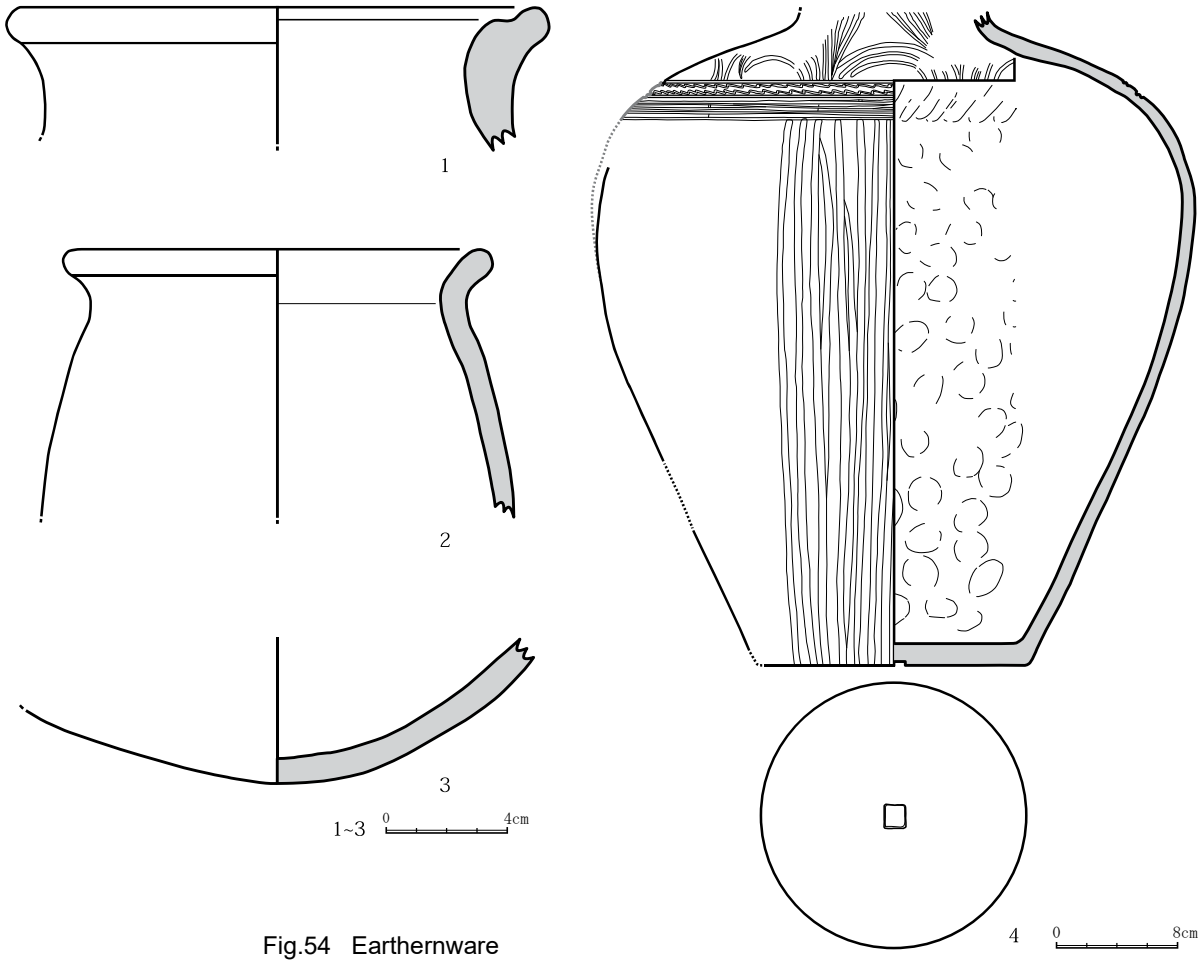
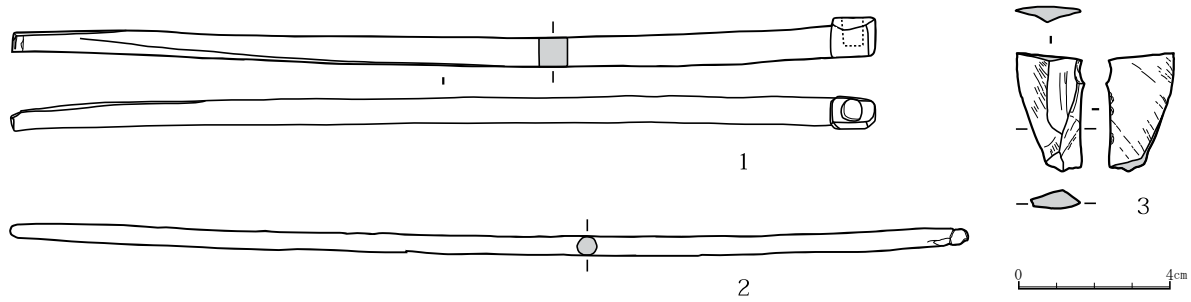


Fig.54 Earthernware

(Fig.54) Earthernware

Fig.55 Bone tool and stone tool



(Fig.55) Bone tool and stone tool

compartment (Figure 46-3 ④ , 50). The bottom surface has a square depression, believed to be a mark from the axle of the potter's wheel. The side of the square is 1.4 cm long. Two lines of grooves run around the shoulder, slightly above the maximum diameter of the jar. Two wave patterns are drawn inside the two lines. Below this decorative band, the surface is well burnished vertically and the area 1.6 cm below the decorative band is burnished horizontally. Therefore, the vertical burnishing in this area has been erased. Above the decorative band, half-arches are drawn with burnishing lines, created by three lines of burnish. Triangular patterns are present between the half-arches. The interior shows numerous traces of finger impressions. At the height of the horizontal burnishing below the decorative band, continuous finger marks can be observed on the interior surface, appearing to be stroked upward to the right. The bottom diameter is 17.6 cm, and the remaining height is 39.4 cm.

■ Bone tool

Both items are long, rod-shaped pins.

The item shown in **Fig. 55-1** was unearthed when we were exposed the ceiling of the wooden chamber with disturbed timbers (Fig. 42-5). The pin is a square prism with a cross-sectional side of approximately 0.7 cm. One end is shaped like a smoking pipe, and a circular hole is carved in the center. The length is 22.8 cm.

Fig. 55-2 shows a long pin with a circular cross-section and a circumferential groove at one end. It was found when we removed the soil between the northern wall of the chamber and the burial pit. Although only one pin was found, if two had been discovered, they could be considered bone chopsticks. The length is 25.4 cm, and the diameter is 0.5 cm.

■ Stone tool

Fig. 55-3 shows a flake collected during the removal of the surface soil. It measures 3.1 cm in length and 1.7 cm in width.

Ⅳ. Conclusion

In 2022, the Hakubi Center of Kyoto University and the Institute of Archaeology, Mongolian Academy of Sciences, conducted an excavation at the Ulaan Bulag site, located in Yöröö District, Selenge Province. This archaeological site contains graves from different periods, with 86 of them dating to the Xiongnu period. We excavated three of these tombs.

All three tombs had the same structure; each featured a circular stone mound, with a rectangular burial pit dug vertically at the center. This structure is typical of small and medium-sized tombs from the Xiongnu period. While the structure of all three tombs was the same, the structure of the burial facilities in which the deceased were placed differed for each tomb.

Tomb 1 had a wooden coffin placed inside a stone funeral structure (however, no stones were found on the short side of the structure and the upper lid was unclear). As explained in Chapter 4 of the anthropological analysis, the complete skeleton of a young male in his late teens was very well preserved, but it was found in a disordered state. While conducting our excavation, no clear signs of a robbing hole were observed. However, it is possible that such a hole existed on the north side of the burial pit.

The burial facility of Tomb 2 was a wooden chamber; because no wooden coffin was found, it is believed that the deceased was buried directly within it. The northern part of the chamber was separated to form a compartment, and a robbing hole was found there. Tomb 2 was robbed, but the skeleton of a middle-aged male in his late 30s to early 40s was relatively well preserved. Quite a few bone and iron artifacts were excavated from this tomb. Among them, laths for stiffening a composite bow were found as a complete set, corresponding to one bow. Additionally, the discovery of an iron knife with its horn handle still attached is the first confirmed example of its kind in Mongolian Xiongnu period materials.

The burial facility of Tomb 3 had a double structure: a wooden coffin inside a wooden chamber. The space between the coffin and chamber formed a compartment for grave goods. Additionally, this tomb had a cave reaching the northern wall of the burial pit, with animal bones inside. There was a robbery hole on the northern side of the burial pit, and the northern area was severely affected by robbing; however, the southern side was well preserved. The burial occupant was a female in her 50s, and her skeletal remains were missing several parts, including the skull. However, the bones of her lower body were found in situ. Notably, a widespread layer of grain was confirmed here. Instead of in bags or pottery, the grain was spread out over the southern area. This is possibly the first such example from the Xiongnu period.

Radiocarbon dating was conducted on the human remains excavated from the three tombs, and the results showed that all three tombs dated to the 1st century AD. Their dates are clustered within a relatively close range. According to historical records, the Xiongnu period is generally considered to span from the late 3rd century BCE to the 1st century CE. Therefore, the Ulaan Bulag site is a Xiongnu cemetery that dates back to the end of the Xiongnu period.

This survey was planned with the aim of increasing the number of excavations of Xiongnu period sites in northern central Mongolia, and new findings, such as the grains, were obtained. Recently, tombs with long slopes, dating to the post-Xiongnu period and commonly referred to as “Xianbei period tombs,” have started to be identified in northern central Mongolia. If this site dates to the 1st century AD, the regional and chronological relationship with these newly emerging tomb types will likely become a focus of future research. Over the remaining four years of investigation, we aim to deepen our analysis.

Fig. 56 Excavation team