Comprehensive Technical Report on Archaeological Investigations at Site IV-293 Tiselis Seri KP 203

Prepared by

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Table of Contents

List of Appendices

List of Plates:

3. Bowl (inv. No. 98/253)
4. Animal figurine. Clay. Fragment (inv. No. 99/254)

Pl. XXVI. SCP area:
1. Cylindrical hearth (from the cultural layer, inv. No. 213/506)
2. Profiles of the lids (structure No. 1. inv. Nos. 10/83; 16/100-1; 22/117)
3. Profiles of the lids (from the cultural layer, inv. Nos. 179/399; 219/563; 234/615)

Pl. XXVII. BTC area:
1. Horseshoe-shaped tripod. Clay. Fragment (structure No. 3. inv. No. 44/166)
2. Prop. Clay. Fragment (structure No. 1. inv. No. 3/18)
3. Axe. Bronze (structure No. 1. inv. No. 31/133)

Pl. XXVIII. SCP area:
1. Small pots (inv. Nos. 213/508; 213/395)
2. Anthropomorphous figurine. Fragment of the prop (inv. No. 175/395)
3. Hand-mill stone (inv. No. 188/428)

Pl. XXIX. SCP area:
1. Horn-shaped prop. Fragmented (cultural layer of the cemetery. inv. Nos. 227/591; 213/505)
2. Bowls (inv. Nos. 213/507; 233/613)
3. Cylindrical hearth. Fragment of the rim (inv. No. 212/477)

Pl. XXX. Pottery (structures Nos. 1 and 2)

Pl. XXXI. SCP area:
1. Beads. Paste (burial crypt No. 4. inv. No. 252/657)
2. Jug (burial No. 6. inv. No. 257/663)

Pl. XXXII. BTC area:
Axe. Bronze. Prior to and after restoration (structure No. 1. inv. No. 31/133)

Pl. XXXIII. BTC area: Horseshoe-shaped tripod. Fragment (structure No. 2. inv. No. 302)

Pl. XXXIV. BTC area: Sickle insets. Flint (structures Nos. 1 and 3. inv. Nos. 133, 133/1; 193/1; 194; 194/1)

Pl. XXXV.
1. Lamella. Obsidian (inv. No. 470)
2. Sickle inset. Flint (inv. No. 432/1)
3. Spear head. Flint (inv. No. 213/523)

Pl. XXXVI.
1. Pottery (structures Nos. 1 and 6. inv. Nos. 368, 663)
2. Small pots (cultural layer of the cemetery. inv. Nos. 508, 509)

Pl. XXXVII.
1. Pottery with fabric imprints. Fragmented (inv. Nos. 245, 353)
2. Large pot. Fragment of the neck (inv. No. 613)

Pl. XXXVIII. Anthropological materials

Pl. XXXIX. Human crania. After restoration (burials Nos. 6, 7 and 8)

Pl. XL. Palaeozoological materials:
1. Sheep (burial No. 8. inv. No. 667)
2. Cow (burial No. 9. inv. No. 670)
3. Sheep (burial No. 9. inv. Nos. 670/1; 670/2)

Pl. XLI. Palaeobotanical materials

Pl. XLII. Axes handle remains. Parenchymal cells of pine timber

Abstract

This report presents the results of an archaeological study undertaken at the Site Tiselis Seri (IV-293 KP 202+900). The site is located in Borjomi District, historical Tori, south-west of the village of Tadzrisi. Field and laboratory work was conducted by the Otar Lordkipanidze Centre of Archaeology of the Georgian National Museum. Research activities were performed in 2004-07 by a team from the Borjomi Archaeological Expedition headed by George Gogochuri.

The site is a one layer settlement and cemetery. It belongs to the Early Bronze Age, Kura-Araxis Culture.

An area 75 x 8 m was examined by means of trial trenches. A total area of 600 square metres was excavated in which remains of structures, a hearth, and burials were recorded.
The total number of finds is 677. They include 573 ceramic objects, 57 stone tools, one bronze axe and three fragments of figurines. In addition anthropological and palaeozoological materials were collected.

Tiselis Seri is a site of great importance. It is recommended that further excavations be carried out south of the corridor in order to obtain more information. This section is not affected by machinery, and its study would provide us with additional information about chronology, architecture, and the extent of the site.

1.0 Introduction

Purpose of the Investigation

The goals of the project were: to research and protect the site discovered within the pipeline corridor on KP 202; also to elucidate the type, character, and extent of the monument. Preliminary research has shown that the site with its settlement and cemetery is to be dated to the first half of the 3rd millennium BC.

Project Sponsor

Archaeological fieldwork and laboratory work were kindly sponsored by BTC/SCP Pipeline Company.

Permits and Contracts

License No. 12, form No. 1 was issued by the Archaeological Board of the Georgian Academy of Sciences. The license was issued to George Gogochuri to conduct archaeological research in Borjomi District on the territory of the BTC/SCP pipeline corridor.
Activities were undertaken on the basis of the following contracts: C-03-BTC-52923-HL-081; C-03-BTC-52923-HL-081; C-03-BTC-52923-HL-146; C-03-BTC, BTS-52923-HL159; C-03-BTS-52923-HL-170, C-03-BTC-5293-HL-171; C-03-BTC-52923-HL-202; C-03-BTC-52923-HL-212; C-03-BTC-52923-HL-226; C-03-BTC-52923-HL-239, C-06 -BTC-11 66 28, C-06-SCP-116630-HL-239

Legal requirements

According to the legislation of Georgia the Archaeological Board of the Georgian Academy of Sciences was authorized to allow any kind of archaeological work on the territory of Georgia. The archaeological work should be carried out according to specifications approved by the archaeological board.

Dates of the investigation

The archaeological investigations at Tiselis Seri took place in November 2004 and in June-August 2005.

Final disposition and repository Address

All archaeological finds from Site IV-293 Tiselis Seri and relevant field and laboratory reports are deposited in the Otar Lordkipanidze Centre of Archaeology of the National Museum of Georgia and the repository of the Akhaltsikhe expedition.
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2.0 Environmental Background

2.1. Site Location and Description

The Early Bronze Age settlement and cemetery Tiselis Seri ("Tiseli Hill") is located in Borjomi District, south-eastern Georgia. The site occupies part of the western hillside of Tiseli ridge that is the natural border dividing Borjomi and Akhaltsikhe Districts. The altitude of the site is 1607 m AMSL. This territory has a complicated relief and forms part of the agricultural activities of the village Tadzrisi (Borjomi District). There is a spring some 250-300 m to the west.

Geologically the site is located on the volcanic relief. Generally the territory of Borjomi Valley is formed from volcanogenic layers of Eocene: andesites, tuffs, and other marine and continental sediments. Dark grey forest and dark grey scrubland soils occur in the environs of the site from between 1100-1130 and 1600-1700 m AMSL, while at lower altitudes brown forest soils are the norm. Barren field soil occurs above the forest zone. The depth to bedrock is around one metre.

The climate in Borjomi District is transitional from continental sub-tropical to maritime continental; winters are cold, and summers long and mild. The climate is temperate. The mid-annual temperature is 6 °-10 ° C; the average temperature during the coldest months is -4 °/- 6 ° C; the annual range of temperature is between -5 °and +25 ° C; annual precipitation is 400-600 mm. (*Physical Geography of Georgia* 2000, 57).

Vegetation in Borjomi District is very diverse, and includes more than 1600 different species of plants.

Two-thirds of the environs of the site are covered with bushes and forest, where fir, pine, cedar and beech predominate. The wildlife includes a number of mammals such as deer, roe, wolf, fox, marten, badger, otter, and rarely bear. The main fish in the local rivers is trout.

2.2 Past Environment

Before the Mindel glaciation (*c*. 0.6-0.7 million years ago) in the area of what is today Georgia there was a moderately warm climate and a savanna-type landscape. A dramatic change of climate took place at the beginning of the Mindel period. This phenomenon occurred in Georgia too, although due to its southern location there was no large-scale fall of temperature here. After this the Mindel-Riss warm period began which was followed by the Riss period, the greatest glaciation in the history of the Earth. The Riss glaciation was followed by the warm interglacial epoch, which can be dated to 120-70,000 years ago.

About 70,000 ago there began dramatic fall in temperature, which brought about the Wurm glaciation. This glaciation strongly affected human settlement patterns in the Stone Age. Because of the severe conditions humans left the upland and highland areas and used them only during the warm summer season, mainly for hunting. In this period in Georgia humans lived only in the plains.

The Mesolithic corresponds to the transitional stage from Upper Pleistocene to Holocene (approx. 12,000-10,000 years ago). This period is connected with climate change, namely global warming. By this period humans reappear in the high mountainous regions they had left during the Würm Glacier Stage. Since this time humans have lived in all the climate zones that are found on the territory of Georgia. This indicates that the environmental changes that occurred in the Holocene Epoch that followed this transitional stage were not substantial.

It is possible to some extent to reconstruct the palaeo-environment of Georgia in the period from the Early Pleistocene to the beginning of the Holocene. Information derived from palynological analysis suggests that the terrain of western Georgia was typically hilly and with mountains covered with forests (Shatilova 1977, 106-107). The fauna included: roe deer, red deer, lynx, hyena etc. The terrain of the eastern part of Georgia consisted of mountain massifs of average height separated from each other by deep canyons and valleys. The climate was temperate, dry, and warm (Gabunia, Vekua 1977, 13-15). The fossil record indicates that forests contained oak, willow, zelkova, birch, aspen, hazelnuts etc. (Gabunia, Vekua 1978, 3-56); mammals included hyena, beaver, mammoth, roe deer, red deer, lynx, sabre-toothed tiger, rhinoceros, elephant, antelope, hornless cow. Birds included the ostrich, etc (Gabunia, Vekua 1977, 10-11).

2.3. Land Use History

The site is situated on a slope that was cleared of vegetation before pipeline construction began. This area had been used for agricultural activity in the past. At present, the land next to the site is used for pasture.

3.2. Summary of Previous Research

A Kurgan was identified 100 metres north of the Early Bronze Age settlement and cemetery Tiselis Seri at Site IV-293, but it has not yet been excavated. Otherwise, there are no other known archaeological sites within a one kilometre radius of Tiselis Seri.

4.0. Methodology

4.1. Field Methods

The area of the site extended along a strip 75 metres long and 8 metres wide spanning the pipeline. To begin with, cultural layers were uncovered in the western corner by heavy machines working on the construction, and so there was no need to make trenches in this section. Nine trial trenches of different sizes were dug to see how far the cultural layers extended to the east. The trenches were aligned north-south. A total of 600 square metres of land were investigated. Parts of three structures and two burials were found in this area.

Along the SCP evaluation work was carried out along a section 50m x 8m. Ten trenches were dug here, aligned north-south. The evidence for cultural layers was found on a 21 metres long area extending east-west. In the SCP section an area of 94.5 square metres was excavated. Eight burials and one circular hearth were discovered here.

To begin with, the dimensions of the area to be investigated were measured and a sketch site map created. The area of the corridor was divided into East and West parts and a datum point established. The area was divided into plots of 4 m x 4 m squares.

Field work was done manually with shovels, spades, and picks. The cleaning of the cultural layers and archaeological objects was carried out with brushes, small knives, and scalpels.

In the course of fieldwork, plans, section drawings, and photo documentation of the site and features were made. The head of the excavations and all archaeologists kept daily diaries. The structures and burials were given individual numbers.

Samples of soil were collected from various parts of the settlement. This material was extracted with special tools (such as knives, scalpels, pincers, etc.) and placed in hermetically sealed plastic bags. Each sample was labelled with relevant information. The material was collected from all the important parts of the excavated area (structures, walls, burials, etc.).

4.2. Laboratory Methods

During the laboratory work, the artefacts were sorted out into groups of ceramic, stone, metal, glassy paste, and bone objects.

All pottery artefacts were washed in tap water and cleaned with brushes. When dry, they were labelled and catalogued. Inventory numbers were placed with permanent marker on the inner side of the object (examples: IV-293, 15/50; IV-293 44/166). Conservation and/or restoration treatment was given to some of the objects. Visually interesting pieces were drawn and photographed. An inventory was made of the artefacts, field drawings, field photos, and soil samples. Selected objects with their labels were placed in cardboard boxes. All boxes had individual ID numbers.

A bronze axe was cleaned mechanically and conservation treatment undertaken.

Soil samples, and anthropological, palaeozoological, metal, and stone materials were studied by relevant specialists. The results of their studies are attached to this report.

Hard copy and electronic versions of field and laboratory records together with the artefacts deposited with the Otar Lordkipanidze Centre of Archaeology of the Georgian National Museum.

5.0. Results

5.1. Basic Data Summary

Archaeological activities were undertaken along the Borjomi section of the BTC pipeline in two places, namely Tiselis Seri KP 202+900 (Pl. I) and the village of Tadzrisi KP 201+450.
At KP 201+450 an evaluation survey was conducted of an area outside the corridor. This was at a place called Rikianebi, one kilometre south-west of the village of Tadzrisi.
Six trenches of different sizes were dug along both sides of the corridor:
No. 1: 3 x 1 x 0.6 m;
No. 2: 3 x 1 x 0.8 m;
No. 3: 4 x 2 x 0.5 m;
No. 4: 4 x 2.5 x 0.5 m;
No. 5: 3 x 1 x 1 m;
No. 6: 3 x 1 x 0.8 m (Pl. II, III).

There was no evidence for an archaeological site found in this area.

At KP 202+900 a strip 75 metres long and 8 metres wide along the BTC pipeline was examined. A total of 600 square metres were excavated. In order to find the eastern extremity of the site nine trenches of different sizes were dug:

No. 1: 20 x 2 x 0.4 m;
No. 2: 3 x 1 x 1.85 m;
No. 3: 3 x 1 x 1.35 m;

No. 4: 3 x 1 x 0.8 m;
No. 5: 3 x 1 x 0.7 m;
No. 6: 3 x 1 x 0.8 m;
No. 7: 3 x 1 x 0.7 m;
No. 8: 3 x 1 x 0.8 m;
No. 9: 3 x 2 x 1.8 m (Pl. IV, V, VI, VII).

During fieldwork on Trench No. 1 the archaeologists discovered that this section had already been cleared the machines working on the construction. Parts of three different structures as well as two burials were recorded in this area. The study of this site has shown that it was an Early Bronze Age settlement with one cultural layer akin to the Kura-Araxis Culture.

Along the corridor of the SCP a strip 50 metres long and 4 metres wide was examined. Ten test trenches were dug. Their dimensions were as follows:
No. 10: 4 x 2 x 0.6 m;
No. 11: 4 x 1 x 0.7 m;
No. 12: 4 x 2 x 0.8 m;
No. 13: 4 x 2 x 0.8 m;
No. 14: 3.5 x 2.5 x 1 m;
No. 15: 3 x 3 x 1 m;
No. 16: 2 x 1 x 0.8 m;
No. 17: 2 x 1 x 0.9 m;
No. 18: 2 x 1 x 0.8 m;
No. 19: 2 x 1 x 0.9 m (Pl. V).

Four trenches along the SCP corridor produced cultural layers, namely, Trenches Nos. 14, 15, 16, and 17. The whole area was explored, and a total of 21 x 4.5 m was excavated. Eight burials and one circular hearth were found here (Pl. VIII – 1,2; IX).

The total number of artefacts discovered at Tiselis Seri settlement and cemetery was 677. They were classified in the following groups by material: ceramic, stone, metal, paste (glass), and bone.

From earth disturbed by machinery 26 artefacts were recovered: some 17 % of all the materials discovered in the cultural layers of the site.

Palaeozoological remains from the Tiselis Seri settlement included bone fragments. Animal bones from the burials are relatively better preserved. The total number of osteological remains is 194 units. They were grouped and given 32 inventory numbers.

Osteological materials include the remains of bull, cow, sheep, and goat as well as bone fragments of wild animals such as wild boar and roe deer (for additional details see the attachment E-1 **A** “Report on Research on the Palaeozoological Materials” by Oleg Bendukidze).

Anthropological material was collected only from some of the burials (for additional details see attachment D-1 “Report on Palaeoanthropological Research” by Liana Bitadze).

74 soil samples were taken for palaeobotanic and palynological research.

5.2 Features

As mentioned above the remains of three structures and two burials were exposed. This section of the report presents a brief description of the excavated site.

Structure No. 1 (Pl. XI)

The structure was discovered in Squares A2A3, B2B3-W, at –3.06 m below datum. It was greatly damaged during construction work on pipeline. The structure consisted of the remains of a stone wall 7.0 m long, 0.6 m thick and 0.65 m high, and oriented NE-SW. It was built of basalt and soft sandstone, and structure stone was lying in a disordered fashion on mud. The facade of the structure apparently faced NW. The structure was built on yellow clayey soil. There was no evidence of a floor inside the structure, whose approximate size was 30-35 square metres. About 140 artefacts were found in the area of the structure, mostly ceramic fragments as well as stone and metal objects and palaeozoological material. Among the stone objects it is worth pointing out various fragments of what might have been a quern, flint sickle blades, and obsidian blades. As already mentioned, ceramic objects predominated among the finds. In the SW part of Square B3 a bronze axe was found.

Palaeozoological material from the structure consisted of small fragments (22 items) of bone, mostly of domestic animals: cattle, sheep, and goat. A boar's tusk was also present.

Structure No. 2 (Pl. XII)

In Squares F3 F4; G3 G4-W – 5.65 m from the datum point part of a floor was cleaned. It had been greatly damaged by machinery, but it was possible to record the following features *in situ*: much broken pottery; a rectangular stove; a mass of ash and mud; a circular hearth 0.15 m in diameter and 0.8 m deep. The hearth was cut in the ground, and the bottom plastered. The remains of a plaster platform were also documented.

All the above suggested the presence of a structure. There was insufficient information to say anything useful about the plan or building techniques.

On the floor were found the following ceramic objects: a large pot, a tub, a tripod-type vessel with perforated sides, fragments of a zoomorphic vessel; the horn fragment of a figurine of a bull. Stone tools include two querns of basalt, and a pestle made from a pebble. Bone material included 13 cattle remains (Nos. 154/363; 155/364; 156/365).

Structure No. 3 (Pl. XIII)
A small fragment of wall was found in Squares C3 D3 –W, 3.5 m from datum. The wall was built from basalt and mud, was 0.85 m long, 0.5 m thick and 0.2-0.3 m high, and was oriented north-south. Stones had been placed on clayey red earth, the colour of which probably resulted from the fire. The structure was almost destroyed in the course of pipeline construction works.

Ceramic fragments were found near the wall, including: fragments of an ornamented horseshoe-shaped tripod, a figurine of animal. There were also three flint sickle blades.

Burial No. 1 (Pl. XIV-1)

A burial was found in the southern profile of the corridor, in Square BO-W, 0.7 m below datum. Its northern part had been cut by machinery. The burial was oriented east-west, and its dimensions were 0.85 x 0.4 x 0.7 m.
A child between 8 and 10 was buried in the burial, but only teeth survived. The head was at the east end. Two clay pots were found near the western wall of the burial (Pl. XXXII-158/367; 159/368).

Burial No. 3 (Pl. XIV-2)

Burial was found in Square G3-W. While the lower, or northern, edge of the burial was damaged by machinery, the upper part was cleaned by the archaeological team. The rectangular pit-grave was dug in yellow clayey soil 5.60 m below datum, measured 1.8 x 1.4 x 0.3 m, and was oriented from north to south.
Along both the eastern and western walls of the burial were placed eight pieces of basalt and soft sand-stone, while there were five along the southern wall. As we have just had occasion to note, the northern part of the burial was damaged. The burial was probably covered with wooden beams. The deceased was a child approximately 5-6 years old and it lay in a crouched position on its right side. The head was oriented to the south. The skeleton was poorly preserved. The skull, neck bones, and ribs of cattle were placed on the stones in the southern part of the burial. The bones of the animal were also poorly preserved. There were no objects in the burial.

All burials were dug in a lens-shape trench oriented north-south that had been made deliberately, and which was contemporary with the settlement. (Pl. VII, IX, X).

The cultural layer consists of five horizons distinguishable from each other by means of earth colour, as follows (top first):

I. The horizon beneath the humus consisted of brownish soil that did not contain artefacts. Burial No. 2 was set in this layer. The earth was 0.4-0.5 m thick.
II. A crisp mass of ash and charcoal 0.4 m thick with a high concentration of pottery and palaeontological material. Burial No. 6 was situated in this level.
III. Crisp, brown earth containing charcoal, and ceramic, stone, and bone materials. At this level were the circular hearth and Tomb No. 4.
IV. This horizon 0.30-0.35 m thick was artificially prepared; yellow, clayey, hard-packed earth had been deliberately placed here. It contained sherds and small fragments of animal bone. Burials in this horizon did not contain grave goods, but only remains of domestic animals (No. 5, No. 7, No. 8, No. 9, No. 10). The pits were filled and later plastered so that their outlines are not identifiable.
V. A black, crispy mass 0.15-0.20 m thick, lying on bedrock; the deepest part of the trench, containing fragments of a lid and pot.

Burial No. 2

The Burial was found in Square A9-W at a depth of 0.2 m below ground level after the topsoil had been removed. Damaged by machinery. Only part of the burial could be saved, but it was` clear that it lay in a layer of the Early Bronze Age.

It was oriented north-south, and its approximate dimensions were 0.8 x 0.6 x 0.2 m. The deceased lay in a crouched position on the right side, with the head to the North. The skeletal material was poorly preserved, and only the hip bone and the bones of the lower extremities were saved. A small clay jug was found in the southern part of the Burial. It was greatly damaged and was`black-polished outside, and roseate inside. (Pl. XXXII-251/654).

Tomb No. 4 (Pl. XV)

A rectangular Tomb oriented SE-NW appeared in Square 09-EW at a depth of 1.0 m below ground level after the topsoil had been removed, and 3.65 m below datum. The external dimensions were: 2.3 x 1.8 m, and the inner: 1.80 x 1.55 x 0.5 m. It was set in the cultural layer, with its lower section cut into sandy soil.

The Tomb was built with five or six courses of medium-sized sandstone. It was roofed with wooden beams covered with earth and stones. The interior was filled with ruddy brown sandy earth. The deceased was a female of 30-35 who lay crouched along the south-western wall, the the head to the south-east.
The following items were found in the Tomb:

1. A bone blade, near the feet (252/656-1).
2. 39 white and 28 blue glass paste beads opaque cylindrical beads, at the neck (Pl. XXXIII-252/657).
3. The remains of a ceremonial meal: bovine teeth, the jaw-bone and extremities of a sheep, metacarpal bones of a roe deer, all placed at the wall in the south-east corner (257/658 – 1-4).
4. A pottery fragment (525/655) was recorded in the filling of the Tomb.

Burial No. 5 (Pl. XVI)

The Burial appeared in Square 09-W at a depth of 1.1 m below ground level after the topsoil had been removed, and 4.35 m below datum. It was set in specially prepared yellow, clayey, soil that had a plaster surface. The outline of the pit was not recorded, but its approximate size was 0.8 x 0.5 x 0.2 m, and it was oriented SE-NW. The deceased was a child of 6-7 lying in a crouched position with the head to the SE.

Burial No. 6 (Pl. XVII)

The burial appeared in Square 08-E at a depth of 1.1 m below ground level after the topsoil had been removed. It was cut into the cultural layer and stony soil. It was rectangular, measuring 1.8 x 1.2 x 0.8 m, and was oriented SE-NW. It was filled with stones and earth, having most probably been roofed with wooden beams and covered with earth and stones.

Only one individual was buried here: a male of 40-45 lying in a crouched position on the left with the head to the SE.

Following objects were found:

1. A one-handled pot placed at the south-west wall of the Pit, opposite the deceased.
2. Bones of sheep and lamb were found near the head (Pl. XXXIII-257/663)..
3. A fragment of a basalt quern (256/662) was found in the fill.

Burial No. 7 (Pl. XVIII)

Found in Square A8-W at a depth of 1.3 m below ground level after the topsoil had been removed, and 4.35 m below datum. It was set in specially prepared yellow, clayey, soil that had a plaster surface. The outline of the pit was not recorded, but its approximate size was 1.5 x 1.4 x

0.2 m, and it was oriented SE-NW. Two individuals, both male, of 40-45 and 50-55 respectively were buried here, lying lying in a crouched position on the left with the heads to the SE. There were no surviving grave goods.

Burial No. 8 (Pl. XVIII)

Found in Square A9-W at a depth of 1.1 m below ground level after the topsoil had been removed, and 4.2 m below datum. It was set in specially prepared yellow, clayey, soil that had a plaster surface. The approximate size was 1.2 x 0.8 x 0.15 m, and it was oriented SE-NW. The deceased was male, of about 18-20, lying in a crouched position on the left with the head to the SE. Small cattle bones were recorded, and near the head was found the cranium of a sheep and near the hip four metapodium bones of a sheep (No. 259/667). There were no surviving grave goods.

Burial No. 9 (Pl. XIX)

Found in Square 08-W at a depth of 1.05 m below ground level after the topsoil had been removed, and 4.10 m below datum. It was set in specially prepared yellow, clayey, soil that had a plaster surface. The outline of the pit was not recorded, but its approximate size was 2.0 x 1.7 m, and it was oriented SE-NW. Above the Burial a cultural layer was recorded, and within it and 0.5-0.6 cm above the Burial was a circular hearth, most probably inserted after the cultural layer appeared over the Burial. There were two deceased, both males, of 40-45 and 60-65. They were lying crouched and facing each other, one on the left side and the other on the right, with the heads to the SE

A large number of animal bones was recorded in Burial No. 9. A cranium and the hooves of cattle, as well as crania and feet of sheep and lamb were found alongside the NE wall (No. 261/670). There were no surviving grave goods.

|Burial No. 10 (Pl. XX)

Found in Square 09-W at a depth of 1.05 m below ground level after the topsoil had been removed, and 4.10 m below datum. It was set in specially prepared yellow, clayey, soil that had a plaster surface. The outline of the pit was not recorded, but its approximate size was 1.8 x 1.4 m x 0.15m, and it was oriented SE-NW.

The deceased was male, aged 40-45, laid on the left in a crouched position, and with the head oriented to SE.

Hearth (Pl. XXI)

Found in Square 09-W at a depth of 0.50 m below ground level after the topsoil had been removed, and 3.20 m below datum. It was circular in form, 0.25 m high, 0.6 cm in diameter externally, and 0.4 m internally at the top and at the bottom. The hearth was filled with charcoal and ash. An area of approximately 3-4 square metres was cleaned around the hearth; its ruddy colour was due to the fire. At the edge of the hearth two glass paste beads were found, similar to those from the Tomb. The platform around the hearth extended over the SW and SE parts of the Tomb, and in profile extended further. This part, however, remained unexcavated since it between the pipelines. The presence of a hearth in the area of the cemetery is probably connected with commemorative ceremonies.

5.3 Artefacts

The total number of artefacts found in the area of the settlement and cemetery is 677. They include clay, bronze, stone, bone, and glass paste objects. Palaeozoological and anthropological samples were also extracted.

The artefacts, classified by material and frequency:

Table No. 1

Artefact	Excavated finds	Chance finds	Total
Ceramic	-	-	-
Common	536	23	559
Painted	-	-	-
Decorated	14	-	14
Stone	-	-	-
Flint	7	-	7
Obsidian	26	2	28
Quern, pestle, grind-stone	21	1	22
Metal	-	-	-
Bronze	1	-	1
Glass paste	69	-	69
Bone objects	1	-	1
Bone material	-	-	-
Human	11	-	11
Animal	32	-	32
Total Number	718[1]	26	744

Ceramic artefacts predominated among the excavated finds, numbering 573 in total, or 84 % of the whole. The pottery was hand-made. This material as well as the other groups of artefacts belong to the developed phase of the Kura-Araxes Culture (the first part of the 3rd millennium), and this will be taken as read in the discussion below.

Ceramic

Nearly all types of pottery typical of the Kura-Araxes Culture are represented on the site. It was impossible to reconstruct most of the ceramic materials, and they were classified using rim and neck fragments. The following groups were distinguished: large pots, pots, jugs, jars, hearths, lids, pans, stands, tubs, bowls, "salt-cellars", stoves, moulds, and small figurines (see Table No. 2).

Table No. 2

Material	**Group**	**Amount**
Ceramic	Large pot	58
	Pot	36
	Jar	2

[1] The number of artefacts included in Table No. 1 is higher because the glass paste beads were counted individually.

	Lid	88
	Pan	51
	Stand	28
	Hearth	26
	Jug	130
	Tub	1
	Bowl	28
	“Saltcellars”	12
	Mould	1
	Stove	1
	Pendant	1
	Animal figurine	1
	Horn fragment of a bull figurine	1
Stone	Quern	9
	Mortar	4
	Pestle	4
	Grind-stone	2
Flint	Sickle blade	5
	Arrowheads	1
Obsidian	Blade	6
Bronze	Axe	1
Paste (glass)	Bead	69
Bone	Spindle-whorl	1

Large Pots

Some 58 fragments of the ceramic finds were identified as coming from large pots. It was almost impossible to restore complete shapes of vessels. Only one piece was partially restored: it had a spherical body and a cylindrical neck, a greyish surface and a roseate fabric. The shoulders were lightly decorated with rhomboid shapes (Pl. XXII-114/294).
Usually, the large pots have long cylindrical or conical necks and out-turned rims. The rough and fragile surfaces are mostly reddish-buff and the fabric pinkish-grey. Occasionally large pots have a black-polished surface and a roseate fabric. The fabric varies in thickness between 1.0 cm and 3.0 cm. The handles are attached to the necks and shoulders or in some cases to the bodies (Pl. XXII-78/211-1; XXIII-114/299-1; 114/299-2).
Large pots are rarely decorated. Four ornamented finds, decorated after firing, probably belong in the large pot category:

1. A light grey thick fabric (Pl. XXVII-82/226) decorated with a schematically incised figure of an animal and above, an incised circle (or wheel?) divided into four.
2. A smooth greyish fabric (Pl. XXVII-94/247) decorated with an incised geometric ornament of a rectangle divided into two triangles, and a schematic animal.
3. Buff fragment decorated with a schematic animal consisting of triangles (Pl. XXVII-114/296).
4. Fragmentary neck of a large pot with a polished surface and red fabric, and decorated with a net pattern (Pl. XXVII-42/162). The large pot fragments were found in the cultural layers of the settlement and cemetery. Large pots were used for the storage of cereals and other food.

Pots

36 rim and neck fragments of pots were identified among the ceramic finds. They were rarely decorated, and only a few carried any ornament, and then mostly in relief. In three cases the ornaments had spiral forms,

One piece is decorated with a snake in relief. All fragments with relief ornaments are black with a roseate fabric.

There was an equal distribution between rough pinkish-buff pots and black polished wares. They all have cylindrical necks and rounded mouths. The handles are attached either on rims and shoulders, or onnecks and shoulders. The fabric contains non-organic mixtures.

Three pots differing from the others in that they have thin walls, and polished inner and outer surfaces; two brownish-black (Pl. XXX-213/508) and the third reddish-brown (Pl. XXX-213/509). Pots were found in the cultural layers of both areas of the site.
Such small vessels were in daily use as kitchen-ware. Those with finer shapes and surfaces were for use use on special occasions.

Jars

This type of vessel is rare. Only two pieces were found. Both are a buff-brown in colour. One was found in Structure No. 2 (144/298), and the other in Burial No. 6. Jars were used as kitchen-ware.

Jugs

A total of 130 jugs were found on the site, the highest number among all categories of finds. The fragments were undecorated. It was impossible to reconstruct the shapes, beyond noting that the necks are cylindrical, and that the handles are attached to necks and shoulders and in some cases to mouths and shoulders. In most cases the surfaces and interiors are light purple-red and pinkish-grey in colour.

Hearths

Fragments of hearth from *Tiselis Seri* belong to a type that is typical of the Kura-Araxes Culture. There is one complete example and 26 fragments of hearth from the site (Pl. XXVIII-213/506; Pl. XXXI-212/477).
There are two kinds of hearth known from the Kura-Araxes Culture, one a hearth built into the floor and the other a removable version. Those built into the floor are earlier. They were set up in the middle of a house; floors were cut and afterwards plastered with a mixture of clay and straw. The edges protruded slightly above the floor. This kind of hearth was usually circular. There are two versions of the shape: circular and ridged.

Circular Hearth

A circular hearth was found in the cultural layer of the cemetery. Its dimensions were: outer diameter 0. 6 cm; diameter of rim 0. 4 m; height – 0. 25 m; diameter of bottom – 0. 18 metre. Nearby were found four different fragments of circular hearth. Hearths were used for every day purposes but also they often had ritual function.

Lids

Pottery lids are typical elements of the Kura-Araxes Culture. A total of 88 clumsily made, round, and undecorated lid fragments were found on the site. There are handles and ridges in the centre if the lids, whose function was to cover vessels.

Pans

51 pan fragments were found on the site; only two are ornamented. Semicircular motifs in relief decorate the inward sloping rims (Pl. XXV-23/122).

Pans are round, with low walls, and slightly out-turned rims concave in places, occasionally with horseshoe-shaped handles.

All sherds are reddish or pinkish. Inner surfaces are smooth and polished. Surfaces are rough. Some of the pans are perforated on the bottoms and sides (Pl. XXVI-227/594; 263/672).

It is probable that pans were re used for cooking.

Stands

Fragments of various shapes of hearth stands form one of the groups of ceramic material. 28 sherds were found on the site; some belong to U-shaped, others to horn-shaped, conical, or edged stands.

Horn-shaped Stands

Ten fragments of this type of stand were found. All of them are nonedescript, with a plain, polished greyish-pink surface (Pl. XXXI-213/505; 277/591).

Conical Stands

Two fragmentary reddish-brown conical stands made of sandy clay were found. One came from the settlement, the other from the burial-ground (Pl. XXIV-55/181-1).

Edged Stands

An edged stand of indeterminate shape decorated with a formalized human head was found in a cultural layer in the cemetery (222/577) (Pl. XXX-175/395).

The stands were mostly used for ritual purposes.

Tub

There was one carelessly made hemispherical tub, with a flat rim and bottom, of which side and front fragments survive. A perforated ridge, polished grey inside and out, was attached below the rim (Pl. XXV-104/260). The vessel was used as kitchenware.

Bowls

28 undecorated fragments were found. Two pieces have a relief ridge and projecting knob. One bowl has redundant perforated handles at rim and side. Fragments indicate that the bowls were hemispherical. Some have flat rims, others round. Most have greyish-pink outer and inner smooth surfaces. (Pls. XXIII-114/293; XXVII-98/253; 213/507; 233/613).

The bowls were for table use.

"Saltcellars"

12 fragments were found, but only one was complete. This group was characterised by the very small size of the vessels and their light grey-brown inner and outer surfaces. The surface was smooth, and sometimes even polished. They served as both kitchen and table items.

Stove

A damaged open-shaped fragment of a stove, probably part of a bakery, was found.

Mould

Only one fragment was found: light pink terracotta with rounded corners (Pl. XXV-111/284); used for metalworking.

Three small figurines

Three small figurines were found at the settlement: an animal, a horn fragment, and a pendant.

1. Animal figurine (sheep?) is one of the few pieces of sculpture to have been found at Tiselis Seri. It was damaged, with the legs and upper right part of the face broken. It was fired pinkish-brown, and is now 7.8 cm long, and 4.2-4.3 cm high (the head 3.6 cm high and 1.1-3.1 cm). (Pl. XXIV-65/191).

The figurine had a ritual function.

2. A horn fragment from a figurine of a bull is roughly made, but has polished surface. It is curved and was used for ritual purposes. It is 3.4.cm long and 1.1 cm in diameter (Pl. 99/254).

3. A pinkish oval pendant was used as an adornment. It is 3.4.cm long and 1.7 cm in diameter (Pl. XXIV-66/192).

Stone Tools

Stone tools of different shapes and uses were at the settlement and cemetery. They are made of basalt, cobble, sandstone, flint and obsidian. Around 50 items have been found altogether: querns, mortars, pestles, grind-stones, sickle blades, arrow heads, and flakes.

Nine querns made from specially selected pebbles were found. All of them were worn.

Round or flat-round pebbles were used as pestles. All four that we found were worn.

Querns, mortars and pestles were used to mill grain and crush seeds. They were used exclusively for household purposes.

Only two grindstones were found at the site. They have a polished and worn surface and were used to sharpen metal tools.

Five flint sickle blades with saw-like edges on both sides were once inserted into grooved curved wooden handles and were used for cutting crops (Pl. XXXVI; XXXVII-432-1)

A leaf-shaped spearhead was made of flint; its entire surface was made by scaled pressure-flaking. It was 7.7 cm long, 3.2 cm wide and 1.0 cm thick (Pl. XXXVII-523). Spearheads were used for fighting and hunting.

Six blades were found made of flat obsidian flakes. All of them are fragmentary and fractured at a single touch (Pl. XXXVII-470). They were used for household purposes.

Metal

A bronze axe was found inside Structure 1 in Square B3. It has an oblique heel, and is long bodied and trapezoid. There is a barely visible casting ridge along the top, and there is a circular hole for a handle. It is 12.0 cm high, 3.0 cm thick at the head, and 5.0 cm at the rim; the hole for the handle is 2.2 cm (Pls. XXIX-31/133-1; XXXIV).

The axe was used for household purposes alone.

Glass Paste

69 cylindrical opaque glass paste beads were found: 41 white, and 28 blue. They were used as adornments.

Bone

Hemispherical spindle whorl made from the head of an animal thighbone. It is 4.0 cm in diameter and 1.4 cm thick.

Bone spindle whorls seem to have had a religious/ritual function.

6.0 Interpretation

In the course of construction of KP 202+900 at Tiselis Seri, archaeological sites were found on both lines of the pipeline route. The construction works along the SCP pipeline caused less damage to the sites compared to those along the BTC pipeline. The settlement in the BTC pipeline zone was completely destroyed and only certain details indicated the presence of three structures in the lower terrace. Two burials were excavated within the same pipeline route. The depth of the single surviving cultural layer in this part of the settlement was 0.2-0.5 m.

Eight burials and a circular hearth above them were found along the SCP pipeline. The burials were placed in a large ditch specially cut for burial purposes, and which was gradually filled up with soil containing cultural, as well as burial remains.

The remains identified at Tiselis Seri belong to the Kura-Araxes Culture. It is worth noting that no other Caucasian culture, either before or after, was as widespread as the Kura-Araxes Culture (Djaparidze, 1976: page 62). Kura-Araxes settlement of Tiselis Seri is the only one to date

among those revealed in the Borjomi Valley to cast light on the expansion of the Kura-Araxes Culture in this part of Georgia.

Due to the severe damage, it is impossible to give a clear picture of the structures at the settlement, and the many questions to which the settlement gives rise remain unanswered. It can only be assumed that since the settlement was laid out on a mountainside the constructions were be terraced. The surviving parts of the straight stone walls indicate that the structures were rectangular and presumably had flat roofs. Stone structures are typical of neighboring regions. The cylindrical rimless clay hearth and fragments of similar hearths discovered in the area of the cemetery and settlement have much in common with finds from sites in Akhaltsikhe District. The closest parallels for the hearth fragments were found at Amiranis Gora (Chubinashvili 1963; figs. 2, 4).

Burial No. 4 (one of the eight burials along the SCP pipeline) was a stone tomb (Pl. XV), the rest were pit-graves. The burials were mainly individual, however two of them were double burials. Most of the deceased were crouched, lying on the side with the heads mainly to the SE. Burial practice seems to have been same for both males and females. Grave goods were found in only four burials: four vessels, the bone spindle whorl and the beads (Pls. XXXII-XXXIII). Two burials were excavated along the BTC pipeline (No. 1, No. 3). Remains of a single row of stones were found in burial No. 3. It was presumably roofed with wooden beams (Pl. XIV-2). Both were children's burials. The deceased were crouched, lying on their sides, with the heads towards the south.

Burials of this kind are quite common on Kura-Araxes Culture sites. Burials are exceptional in their survival and distribution, but are typical in Shida Kartli: at Kvatskhela (*Urbnisi* I, 23), Khizanaant Gora (Kikvidze 1972, 43), Urbnisi (Chilashvili 1964, 9), etc. This kind of burial is found elsewhere in the South Caucasus, but there are different types as well; for example, stone tombs alike the one found at Tiselis Seri, are mainly characteristic of Kvemo Kartli (*Archaeology in Georgia*, II, 1992, 99), and can also be found at Amiranis Gora and Akhaltsikhe (Chubinashvili 1963, 36), in Armenia (Khandzyan 1972, 152) and in Dagestan (Gajiev 1969, 103).

Eleven individuals were found in the burials excavated at the Tiselis Seri settlement and cemetery. It was established that, on average, the men were 45 years of age, women 25,8 and children 7.0. The reconstructed crania were mainly mesocranial, only one being dolichocranial. Analysis identified the following diseases: caries, osteomyelitis, and tumors. The scale of the work was insufficient and the palaeoanthropological material too insecure to allow for a more wide-ranging demographic picture.

Most of the finds from the Tiselis Seri settlement are fragments of ceramic vessels, mostly large pots, pots, pans, bowls, etc. typical of the Kura-Araxes Culture. All vessels are hand- not wheelmade. There are small non-organic inclusions in the fabric. Most of the pottery is pinkish in colour. Some have a greyish-black polished surface over a pinkish-brown fabric. The larger vessels are decorated with relief spirals, snake or horseshoe elements. There are also geometric figures incised after firing: circles, triangles, rhomboids, etc., and occasionally horned animals such as goats. Rarely smaller vessels are decorated with ridges or double knobs (Pl. XXVII).

Large Pot. Numerous vessels of this type were found in the settlement along both the BTC and SCP pipelines. This is a large vessel with cut rim, wide neck and egg-shaped body (Pl. XX-114/294/ 78/211-1; XXIII-114/299-1; 114/299; 114/299-2; 213/527).

Some of the large pots are decorated with relief spirals (Pl. XXVII-80/215). More often the upper parts of the vessels are incised (Pls. XXVII-114/294; XXVII-42/162), for example with stylised goats made up of a series of triangles (Pl. XXVII-114/296, 82/226, 94/247).

The large pots from Tiselis Seri are similar to those found at Amiranis Gora (Akhaltsikhe) that are decorated with relief spirals (*Archaeology of Georgia* II, 1992, Pl. CX), to vessels of the late period of the Kura-Araxes Culture from Zveli with incised triangles on the shoulders (*Archaeology of Georgia* II, 1992; Pl. CXVII); and to Beshtasheni vessels (Zhorzhikashvili, Gogadze 1974, Tables 34-35). There are certain similarities with vessels from the A layer of Tsikhiagora (Makharadze, 1994; Pl. LVI), a large pot from the settlement Digasheni 1 with relief ornament on the shoulder (Orjonikidze 1998, Pl. I-18), and another from a burial at Zveli that also has stylized goats made up of isosceles triangles (Orjonikidze 1983, Pl. 27-5). The same theme was widespread on the decorated pottery of Near Eastern cultures (Masson 1963, fig. 7), for example at Sengavit, Armenia (Munchaev 1975, fig. 26), and Tepe Jik and Arslan Tepe in Anatolia (Sagona 1984, figs. 250, 256).

Pots. Three small one-handled pots found between the SCP pipeline zone hearth and cemetery have been restored (Pls. XXX-213/508; 213/509; XXXVII-565; 509). Vessels of this kind are typical of Shida Kartli sites (*Urbnisi* I, Pl. IV; Kikvidze 1972, figs. 14, 15). One of the fragments is decorated with a relief line, perhaps a snake, below a wide hole. This kind of ornament is typical of the pottery of the Kura-Araxes Culture (Orjonikidze 1998, Pl. I).

Biconical pots with double knobs and applied ornamental relief modelling, or sometimes with a short row of dimples, have been found in Burials No. 1 and No. 2 of the Tiselis Seri cemetery (Pls. XXXII-159/368; XXXII-251/654).

One one-handled pot has a formed neck, a large upper part to the body and a narrow, concave bottom (Pl. XXX-213/509). There are many similarities with finds from elsewhere in Shida Kartli (Kikvidze 1972, 72-73).

A one-handled jar was found in Burial No. 6. It has a slightly out-turned rim, and long, concave neck neatly turning into the swelling short body. A thick handle was applied to neck and shoulder (Pl. XXXIII-257/663). There were no parallels from the Tiselis site. Formally it resembles examples found at the settlement of Satkhe, Javakheti (Kikodze and others; 1998; Pl. V-5, 6). There are, moreover, minor parallels with relatively short-necked vessels from the B_2 layer at Tsikhiagora (Makharadze 1994, Pl. XXVIII). There are general parallels with round-bodied vessels of the Didube-Kiketi group (*Archaeology of Georgia* II, Pl. LXXX).

Bowls. Mainly, the bowls are hemispherical with incurving rims and narrow bottoms (Pl. XXIII-114/293). Some have knobs beneath the rim (Pl. XXXI-213/507) or perforated ridges (Pl. XXXI-104/260; -233/613), thus resembling material of the Bedeni Culture (Jalabadze 1998, 15).

Pans. The shallow pans with concave walls, slightly out-turned rims concave in places, and occasional horseshoe-shaped handles (Pl. XXV-23/122) find Late Kura-Araxes sites in Javakheti (Kikodze et al., 1998, Pl. IV), Trialeti (Zhorzhikashvili, Gogadze 1974, Pl. XVII), Shida Kartli (Kikvidze 1972, fig. 4; Makharadze 1994, Pl. LXII), Armenia (Petrosyan 1989. Pl. 13), etc. Vessels with this kind of handle are thought to be of Georgian origin (Kikvidze 1972, 75).

Lids. Ceramic disc-shaped lids are typical of settlements of this period. Lids of this type found at Tiselis Seri settlement either have handles attached in the middle (Pl. XXIV-81.218) or modelled cylindrical ridges (Pl. XXVIII-10/83; 16/110-1; 22/117; 179/399; 219/563; 234/615).

Lids with cylindrical handles are relatively rare. They have been found at Zghudrisgverda, Abelia (Kushnaryova, Chubinishvili 1970, fig. 51), Kvatskhela (*Urbnisi* I, 1962, 31), Parekha (Ghambashidze, Kvizhinadze 1981), as well at Güzelova in Anatolia (Sagona 1984, Form 223), etc.

Hearth stands. A number of hearth stands were found at the settlement. They are horn-shaped, conical or horseshoe-shaped. One of the horseshoe-shaped stands with small phallus applied in front (Pl. XXX-175/395) might have an anthropomorphic ridge in the centre (Pl. XXXV-113/302). One of the stands from Structure 3 has a foot decorated with incised triangles and rhomboids with large dots in the middle (Pl. XXXIX-44/166).

In Georgia, most of the hearth stands of this type have been found at Amiranis Gora, Akhaltsikhe. A larger number of them were found in regions south of Georgia: in Armenia, eastern Anatolia, and the eastern Mediterranean. Like the Tiselis Seri hearth stands, those found in these regions have decorated feet (Braidwood, Braidwood 1960, 374, 400; Amiran 1970, 70).

The horn-shaped stands were flat clay slabs with two modelled horn-like ridges on one side and a large hole pierced on the opposite side (Pl. XXXI-213/505; 227/591). Stands of this kind are widespread in the Near East and Balkans. Horn-shaped stands are known from sites in the Caucasus that belong to the early stage of the Kura-Araxes Culture. (*Archaeology of Georgia* II, 1992, 76).

Conical stands were found in Structure 3 of the Tiselis Seri settlement and in the cultural layer along the SCP pipeline (Pl. XXXIV-55/181-1). Like the horn-shaped stands, this shape was widespread in the Near East and Aegean (Japaridze 1961, 81).

Clay figurine. A clay figurine of an animal, perhaps a sheep, with indented eyes was found in Structure 3 (Pl. XXIV-65/191). Figures of this kind are common in settlements of the Kura-Araxes Culture. Apart from the possible sheep, there might also have been a figurine of a bull, since a fairly long fragment of a bull's horn was found in Structure 2 (Pl. XXVII-99/254). Stylized bull figures in Georgian art of the period, however, have short horns. The Tiselis Seri horn fragment perhaps resembles one from Tsikhiagora layer B (Makharadze 1994, Pl. LXXVII) and Arichi (Khachatryan 1975, fig. 41).

Palynological and palaeobotanical testing of the soil samples from Tiselis Seri settlement and cemetery allow a comparative reconstruction of the palaeoclimatic and palaeo-environmental picture of the Early Bronze Age. It is remarkable that the results of the palynological and palaeobotanical studies match. This coincidence reinforces the validity of the research results. During the lifetime of the settlement at Tiselis Seri, the climate in this region seems to have been warm and humid. Fossilized pollen from the deciduous forest serves as proof of this. In the 3rd millennium BC the settlement was surrounded by oak, beech, hornbeam and alder trees. The number of pines, firs and silver firs was relatively small compared to the present. A large number of forest fern spores also attests a warm and humid climate (refer to Annex G-1,2; pp. 128-140).

The Kura-Araxes Culture was a culture of farmers and cattlebreeders. Farming was highly developed. The land was cultivated with primitive horn ploughs pulled by oxen (*Urbnisi* I, 1962; 38). In common with the Tiselis Seri settlement, carbonized grains of wheat and barley are frequently found at settlements of the Kura-Araxes Culture (*Studies in Georgian History*, 1970, 758).

Palynological and palaeobotanical studies have shown that the majority of the inhabitants of the settlement were engaged in agricultural activities. This is indicated by the samples of cultivated

grain found at the settlement: soft wheat, emmer wheat, barley and millet. The presence of hazelnut, walnut and cultivated vine pollen points to fruit and vine growing (refer to Annexes: F-1, 2, pp. 112-127; G-1, 2, pp. 128-140).

Double-bladed flint sickles (five found at Tiselis Seri) suggest domesticity (Pls. XXXVI; XXXVII-432-1). Nearby, at Amiranis Gora, Akhaltsikhe, metal sickle blades have been found (Chubinishvili 1963, 55). The grain was ground with stone boat-shaped querns of which many were found at Tiselis Seri (Pls. XXV-1/6; XXX188/428). Pestles and large grain vessels are also relevant here.

The palaeozoological materials found at the site indicate that the community of Tiselis Seri settlement engaged in animal husbandry, and were presumably bred sheep, goats, and cattle. It is interesting that there is almost no sign of the domestic pig. Palynological analysis results show, however, that the local inhabitants were contaminated by a parasite, namely the swine tapeworm, and this points to pig breeding. The remains of wild boar and roe deer found at the site indicate that people also hunted (refer to Annexes E 1, 2, pp. 16-111).

Information about domestic life can be obtained from traceological analysis of the obsidian and flint. Tools made of these materials (sickle blades, knife blades, a side-scraper, and a spear head) were used for harvesting the grain and for cutting wood, leather, meat and bone (refer to Annex H, pp. 141-143).

It was noteworthy that fibres of wool and flax were also found at the site. Multi-coloured threads found here show that weaving was practised, textiles were also used in pottery production (refer to Annex G-1, 2, pp. 128-140).

It is remarkable that soil samples taken from the abdomen of the deceased from Burial 8 revealed spores of a number of different ferns, plants that even today are used for medical purposes. It seems that the inhabitants of Kura-Araxes settlements knew of the medical properties of ferns and prescribed them to those suffering from swine tapeworm.

Metalworking was another important activity of the people of the Kura-Araxes Culture. In the Kura-Araxes period there appear mould-made weapons and household tools. One such object was found at the Tiselis Seri settlement (Pls. IXXIX-31/133-1, XXXIV). Finds like the clay mould and filter are certainly related to metallurgy (Pls. XXV-111/284, XXVII-105/261). Clay vessels and glass paste beads of different forms and functions point to highly developed craftworking (Pl. XXXIII-252/657).

A leaf-shaped flint spearhead with scaly retouch on both sides is also very interesting (Pl. XXXVII-213/523). Tools of this kind are unusual for sites of the Kura-Araxes Culture, although a spearhead was found at Khizanaant gora Layer B (Kikvidze 1972, 20). Closer parallels can be found among the finds made in caves in western Georgia, at Sagvarjile (Nebieridze 2003, Pl. VII-4) and Samele Klde (Nebieridze 1986, Pl. XXXIV). Similar tools found at Near Eastern sites fall into the Tel-Brak category. One found at Norshun-Tepe (eastern Anatolia) belongs to the Early Bronze Age (Schmidt 1996, 68, Pl. 60). Spherical and cylindrical paste beads have been found in Burial No. 4 and at the edge of the hearth of the Tiselis Seri cultural layer (Pl. XXXIII-252-657). Similar jewellery has often been found in burials of the Kura-Araxes Culture.

Especially noteworthy is the bronze axe from Structure No. 1 (Pl. XXIX-31/133-1; XXXIV) which belongs to what is termed the Kulbakebi type. It seems to be a product of south Caucasian metallurgy (cf. Japaridze 1961, 92). Stone axes of similar shape are considered to be predecessors of the aforementioned bronze example (Orjonikidze 2004, 101).

The axe from Tiselis Seri contains 15% of arsenic that was added to the alloy. The axe was carefully cleaned mechanically and conserved (refer to Annex C, p.101)

The finds from Tiselis Seri show that it is a typical settlement of the Kura-Araxes group with a contemporary cemetery nearby.

It is certain that the small number of ceramic finds do not allow a direct comparison between these sites, but the few parallels that can be made allow us to assume that they are contemporary and the site dates to the second quarter of the 3rd millennium (according to the traditional chronology).

The Tiselis Seri settlement is a contact site for the Shida Kartli and southern zones of the Kura-Araxes Culture with the latter predominating.

7.0 Summary and Recommendations

Several questions were answered as a result of an analysis of the site discovered at KP202+900; namely:

- At this stage of research it is clear that the site is a one layer settlement and cemetery of the Early Bronze Age Kura-Araxes Culture dated to the second quarter of the 3rd millennium BC.
- Elements typical of the Samtskhe-Javakheti region of the Kura-Araxes Culture (hearths, stands, vessel forms and decoration) predominate. The number of artefacts typical of Shida Kartli (smaller pots, horn-shaped stands) is relatively small
- There are clear connections with Armenia and NE Anatolia during the active life of the site (in the form of horseshoe-shaped stands, round hearths, the decoration of the stands, and pottery).
- Unfortunately, the damage caused by pipeline construction did not allow the determination of the architectural nature, plan, or construction materials used in the Tiselis Seri settlement.
- Palynological and palaeobotanical analysis of soil samples from the site prove that the climate in this region was warm and humid. The vegetation included oak, beech, hornbeam, alder, hazel, pine, fir and silver fir. The population was mostly engaged in farming, growing wheat, barley, millet and rye. Cultivated vine pips point to the existence of vitculture in this period. The pollen of hazel and walnut was also discovered. Animal husbandry was also important. The bones of cow, bull, goat and sheep have been revealed among the palaeozoological materials. Hunting also seems to have played an important role, in that remains of wild boar and roe deer were also found.
- Two types of burials have been discovered within the territory of the settlement: pit-graves and a tomb (No. 4)
- Judging by the stratigraphy, the burials belong to three groups of different periods. Nos. 3, 5, 7, 8, 9 and 10 belong to the earlier period. Tomb No. 4 and burial No. 6 fit in to the next chronological group. Burials Nos. 1 and 2 are the latest.

Since the pipeline construction damaged the site, excavations should be carried out south of the corridor in order to obtain more information. New excavations would determine the extent of the site, its architecture and planning. It would throw light on construction technology, the nature of the building materials employed, as well as the length of time the settlement was occupied. The chronology of the site could be established with much greater certainty if C-14 dating methods were applied to charcoal and bone from Tiselis Seri.

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Appendix A

Ceramics Restoration and Analyses Report

Elguja Gligvashvili

At Tiselis Seri at KP 202+900 on the BTC/SCP pipeline a settlement and cemetery of the Early Bronze Age were discovered. 5600 pottery fragments were found.

The goals of restoration and conservation were to determine pottery forms, to organize the pottery into chronological groups, and to learn more about the distribution of the pottery.

Nine vessels were fully restored (158/367; 159/368; 213/503; 213/506; 213/508; 213/509; 214/527; 220/565; 257/663). 97 objects were partially restored. The total number of ceramic pieces that were glued together was 683.

The vessel fragments were laid out in groups corresponding to the Squares, buildings and burials in which the fragments had been found. After this, similar fragments were sorted and joining pieces were glued with "Shomali-PBA" made in Iran. Fragments with a fragile fabric were placed in a mixture of glue and water. The pores of the fabric soaked up the solution. After a time the pieces were taken out of the solution and dried. This treatment helped to make the fabric more stable. Later, joining pieces were attached to each other. Missing parts were restored with plaster of Paris (Plate XXXVI).

The pottery from Tiselis Seri was handmade. Large pots were shaped by means of coil construction. Textiles and ceramic fragments (especially parts of necks and bases) were used in forming the vessels.

Appendix B

Metal Artefact Analysis Report

By Nino Kalanddze
N. Tavartkiladze

At the Tiselis Seri site Borjomi archaeological expedition have found only one metal object, a bronze axe.
Axe was restored and conserved.
Spectral analysis revealed the chemical content of the axe as presented in Table No. 1 below.
Axe (inv. No. 31/133-1), made of arsenic-rich bronze.
Restoration program for the bronze axe:
Before treatment the macrostructure and morphology of the axe was examined. The object was photographed. The bronze axe was treated mechanically with a scalpel and various sharp tools (Photo No.2). Treatment was conducted beneath a microscope using bright illumination. The cleaned artefact was treated with acetone and covered with Paraloid B 72 (Paraloid B 72 + acetone [40 gr. +1.5 lit.]).

Table No. 1. Spectral Analysis Results

No.	Laboratory	Artefact	Inv. No.	Cu	Sn	Pb	Zn	Bi	Ag	Sb	As	Fe	Ni	Co	Au

	press-mark														
1	U-702	Bronze Axe	131-1	98.0	0.006				0.08		1.5	0.014			

Appendix C

Anthropological Analysis Report

By Liana Bitadze

10 burials have been excavated in 2005 at Tiselis Seri, containing 11 individuals. In burial No. 2 were found only the imprints of a hipbone and lower extremities. Burials Nos. 7 and 9 contained two individuals while all the others were single burials.

The relevant material is described and classified by age and sex in the attached Anthropological List.

Table No. 1 shows anthropological material from Tiselis Seri settlement and cemetery grouped by age and sex.

Table No. 1

Burial No.		Age	Gender
No.1		8-10 Infantilis I	
No.3		5-6 Infantilis I	
No.4		30-35 Adultus	Female
No.5		6-7 Infantilis I	
No.6		40-45 Maturus	Male
No.7	Right	50-55 Maturus	Males
	Left	40-45 Maturus	
No.8		18-20 Juvenis	Female
No.9	Right	60-62 Senilis	Males
	Left	40-45 Maturus	
Left No.10		40-45 Maturus	Male

In the excavated part of cemetery were buried 54% men, 12% women, 27% infants. The average life expectancy among men was 47.5, among women 25.8, among infants 7.0. Average life expectancy for the inhabitants as a whole was 32.5.

There is quite a large difference between average life expectancy among men and women in these figures. It is clear that in the 4^{th}-3^{rd} millennia BC mortality rate among women and infants was much higher then among men, something that can be explained by unsanitary and premature births (Alekseev, 1970, pg. 20).

The average life expectancy in Georgia in the Early Bronze Age was, for adults as a whole 35.6, for men 40.2, and for women 31.0 (Bitadze 2005, 161). The age of men buried at the cemetery was much higher than that of women, but this may be the result of an insufficient statistical sample.

Palaeoantrophological data that might throw light on the characteristic physical type of the local population are scarce (Plates XXXVIII-XXXIX). Nevertheless, certain anthropological features could be observed:
First, the adult crania that could be restored were mesocranial. Only one of the crania was dolicocranial with a long sagittal (vertical) diameter. The crania are characterized by narrow foreheads, gracility, a small mastoid process, thick crown, thick corpus mandible, narrow mandibular alveolar arch and short mandibular rami. At the same time tubular bones are characterized by a small transverse diameter and gracility.

The height of the men varied between 162.0 cm to 167.0 cm (based on two individuals), an average of 164.5 cm. It was possible to measure the height of only one female skeleton; at 142.6 cm it was rather small.

Epigenetic features imply that people buried in the Tiselis Seri cemetery are a group of relatives. These features are: *Sutura metopica, Os. Bregmaticum, Os. Incae tripartituam, Os. Incae incomplectum, Os. triquetrum proprium.*

Pathologies are common to any population. Our study identified the following pathologies at Tiseli Seri: caries, ontogenetic osteomyelitis, loss of teeth, and tumors.

Evidence for physical trauma was to be found in incisors broken in life.

Materials collected from the Site do not allow more complete palaeodemographical, palaeoantropological, or palaeopathological analyses. Additional material could give specific information concerning average life expectancy and the physical development of the local population. A study of more individuals would provide greater information about pathologies as well as physical characteristics.

Appendix D

Paleozoological Analysis Report

By Oleg Bendukidze

In 2004-05 the settlement situated on Tiselis Seri near the village of Tadsrisi was examined. Palaeobiological remains were found in the cultural layers of the settlement and in burials. Osteological remains from the cultural layers are fragmentary and damaged. Bone material found in the burials was better preserved.

About 200 bone fragments were examined. The study showed that osteological material included: cattle (*Bos taurus*), sheep (*Ovis aries*), and goat (*Capra hircus*). (Plate XL)

It is worth mentioning that the cattle bones belong to a small sized breed that finds a parallel in the breed known as Khevsurian cattle. The physical data indicate that the sheep and goats from Tiseli Seri do not differ from the breeds of sheep and goats in present day Georgia; for example, the sheep is similar to the Tushetian sheep.

In burial No. 9 were found the bones of a cow and three sheep. In each case, only the heads and extremities, metapodia, foot bones, phalanges. It is interesting that all three sheep were male. Two were rams and one a lamb.

Among the bone material were observed the upper tusk of a boar (*Sus scrofa*) (Structure No. 1) and the front extremity bone of a roe deer (*Capreolus capreolus*) (burial No. 4). This indicates that hunting was part of the local economy.

Appendix E

Palynological Research Results

By Eliso Kvavadze

An Early Bronze Age settlement and cemetery of the Kura-Araxes culture was found along the BTC pipeline, Borjomi section, at KP-202+900. On the evidence of the finds, the site was dated to the first half of the 3rd Millennium BC.
For the purpose of palynological research, 32 samples were taken from the site and analyzed. The palynological material was studied in the laboratory of the Institute of Palaeobiology. The research was conducted using the following methods:

Stage 1: the samples underwent laboratory processing. 100-150 g of soil or rock were placed in a 1 litre ceramic vessel, covered with 10% solution of KOH (or NaOH), and boiled for 3-5 minutes while being stirred with a glass stick. The resulting material was cooled, then diluted and poured through a sieve with 0.1 mm perforations. The boiled and sieved sample was poured into a large recipient and suspended for 24 hours.

Stage 2: the sediment was separated from the sample by means of centrifugation. The sample was washed with distilled water until the water became transparent. Liquid cadmium was added to the sample and centrifuged for 20 minutes. As a result of this process, a separation of soil and pollen grains took place. The whole pollen mass began to float on the surface. It was poured into a small vessel, diluted with distilled water and suspended for 24 hours. The cadmium solution was prepared in the following way: 1 kg Cadmium iodide (CdJ-2) and 800 g. potassium iodide (KJ) were diluted in 900 g of hot distilled water and then filtered. A solution was prepared with an ideal weight of 2.2.

Stage 3: the resulting solution was centrifuged in small test-tubes, and the cadmium was washed away. Then acetolysis was carried out, as a result of which the pollen grains became dark. This facilitated their identification. Acetolysis was done in the following way: a solution was prepared, consisting of nine parts of acetic anhydride and one part of hydrochloric acid. Material was dried with acetic acid and centrifugation. The sample was placed into the acetolysis solution and put into a bath (the test-tube was placed into hot water for 2 minutes with the water temperature no less than 80 degrees). Then the test-tube was centrifuged and dried by means of acetic acid. Finally, the sample was washed with distilled water. The collected pollen spores were dried and placed in glycerine. One drop of material was taken for investigation and then preparation was carried out.

The identification and counting of the pollen material was performed by means of a microscope. No fewer than 200-300 pollen grains could be counted in one sample.

Stage 4: Then the percentage of pollen grains was calculated according to the ecological groups of the plants, and these data were marked on the graphs, known as palynograms. The description and analysis of palynograms enables us to reconstruct the flora and palaeoclimate.

Axe handle From the palynological point of view it was interesting to study the black organic substance that was preserved in handle of the bronze axe found in Building No. 1. Palynological research revealed a very rich and interesting pollen spectrum. There were 445 very well preserved pollen grains and spores in total (Table No. 2).

There was a large amount of parenchymal cells of pine bark (Plate XLII). This means that the handle was made of pinewood. Pollen grains of pine (*Pinus*) constituted 30 % of the spectrum while fir (*Picea orientalis*) was represented by 8 % and Caucasian fir (*Abies nordmaniana*) with only 4 %. Present day spectra readings are: pine (*Pinus*) 31-48%; fir (*Picea orientalis*) 19-14 %, and Caucasian fir 17-7% (*Abies nordmaniana*).

Study of the sample taken from the inside the handle showed that while holm oak (*Quercus*) was absent, alder (*Alnus*) and juniper (*Juniperus*) were present in the spectrum. Spores of forest ferns were also well represented, and included moonwort (*Botrichium lunaria*), sweet fern (*Pteridium vulgare*), adder's tongue (*Ophioglossum vulgatum)*, bracken (*Pteridium tauricum*), parsley fern (*Cryptogramma crispa)*, and spleenwort (*Asplenium)*. Most of these ferns require humidity and also a warm climate. They now grow in forests at a lower altitude.

There is a rich palynological spectrum of other herbaceous plants. Bronze corrosion products preserved pollen grains of wheat, rye, and barley. The same spectrum also includes weeds that typically accompany grain crops such as bindweed (*Convolvulus)* and knotweed (*Poligonum)*.

Ruderal vegetation was also found, namely: plantain (*Plantago*), chicory (*Cichorioidae*), milfoil (*Achillea*), and wormwood (*Artemisia*).

Small amounts of pollen grains were found of butter-crop (*Ranunculus),* pigweed (*Chenopodiaceae*) and others. They point to the existence of pastures.

Some pollen grains showed traces of fire. In the sample were found micro-remains of coal and fibres of flax. Together with pine bark were found the parenchymal cells of bark of other plants.

Samples from Square No. G-2

Sixteen samples were studied from the southern profile of the corridor. They were taken at every ten centimetres from the surface down to the Early Bronze Age cultural layer that was found at a depth of 1-1.6 m. The palynological spectrum of the cultural layer obviously differs from the upper levels. The Early Bronze Age layer is characterized by numerous garden and roadside weeds, as well as weeds that grow on rubbish dumps. Among the ruderals, plantain (*Plantago lanceolata, Plantago media/major*) was predominant. At a depth of 1.30-1.40 cm, elements of viticulture and horticulture are well represented. Pollen grains of cultivated grapevine (*Vitis vinifera*) and hazelnut (*Corylus*) were recorded. For micro-photos of vine, see Plate XLIV. Typical crop weeds were also found, yet further evidence for agriculture; these included knotweed (*Poligonum)*, cornflower (*Centaerea*), and thistle (*Carduus*).

It is important to note that fact that there were many more pollen grains of thermophilic broadleafed forest in the spectrum of the Early Bronze Age layer (Table No. 2) than in the modern one. In the Early Bronze Age spectrum, oak (*Quercus*) pollen is predominant. There are also beech (*Fagus orientalis*), hornbeam (*Carpinus caucasica*), and alder (*Alnus*). As for cold-

loving plants, such as fir (*Picea orientalis*), they are less prolific in antiquity than they are in the modern spectrum. Today, fir pollen grains occur at a rate of 18-19%, but in the lower layer they only score 5-7%. In the Early Bronze Age layer pollen grains of Caucasian fir (*Abies nordmannian*) are also unusual. It is worth mentioning there is no evidence of thermophilic broad leaf plants in the surface spectrum (Plate XLIII).

Soil samples taken from Square BO

The thickness of the layer of the southern profile of the corridor is 1.6 m. The Early Bronze Age layer appeared at a depth of 0.8 m (Plate XLII). The palynological spectrum included pollen grains of plantain (*Planago*), cultivated grapevine (*Vitis vinifera*), walnut (*Juglans regia*) and hazelnut (*Corylus*). These data indicate the existence of viticulture and horticulture. There were also found pollen grains of wheat and barley, and their weeds. As for the forest elements, thermophilic trees, such as oak (*Quercus*) and beech (*Fagus orientalis*) were predominant.

Among the non-palynological materials on the site were found: parenchymal cells of pine bark, mushroom spores, the epidermal cells of various grains, and textile fibre. There were numerous fibres of flax (Plate XLV), as well as cotton, and micro-remains of woollen textile (LI-LII). In addition, there were red and green fibres from threads (Plates XLVI-XLVIII).

As well as these profiles, there was some interesting palynological material from Building No. 2 (Sq. G3, 5.67 m from datum). The palynological spectrum includes:

- Anthropogenic indicators such as pollen grains of wheat and their weeds (List I, Plate XXXIX);
- Ruderal weeds such as plantain (*Plantago*), milfoil (Achille); and *Seratula*;
-Trees, among which oak (*Quercus*) was predominant, but also also hornbeam (*Carpinus caucasica*), beech (*Fagus orientalis*), and hazelnut (*Corylus*). Fir (*Picea orientalis*) was not found at all.
- There were numerous spores of forest ferns.

Among the non-palynological material were found such remarkable micro-remains as the epidermal cells of grain, the epidermis of the ears of wheat; parenchymal cells of pine bark; flax textile fibres (see the photographic plates for details).

Burial 1, Pot 2

Palynological study of the content of the clay vessel has revealed the following peculiarities:

- Pollen grains of ruderals were well represented, and included plantain (*Plantago*), milfoil (*Achille*); and wormwood (*Artemisia*);
- Pollen grains of corn weeds.
- Horticultural elements were well represented with pollen grains of walnut (*Juglans regia*) and hazelnut (*Corylus*);
- There were pollen grains of trees such as oak, hornbeam, beech;
- Fern spores of the sweet fern (*Polipodium vulgare*). This fern is thermophilic and grows only in forests at lower altitudes.

As for non-palynological remains, there were many fossils of the water plant *Dinoflagellata*, mushroom spores, soil ticks, wool and flax fibres, and parenchymal cells of oak and pine bark.

It is difficult to say definitely what the vessel originally contained, but the evidence of the water plant indicates that vessel contained water at some time. Earth presumably subsequently fell into the vessel, and this will have affected the range of botanical remains recorded in this fossil.

Burial No. 8, Area of abdomen

The burial was that of a juvenile. A sample was taken from the area of the abdomen. There were a large number of well preserved pollen grains (Table No. 2) which could have been the coprolites of any living creature. Among cultivated plants, pollen grains of wheat (*Triticum*) were present. Pollen grains of wild buckwheat (*Fagopirum*) were also recorded. Clearly, these were two ingredients of porridge or bread.

It is interesting that numerous pollen grains of medicinal herbs, as well as fern spores, were represented. In the sample taken from the abdomen were helminthes of the solitary tapeworm (*Taenia solium*). A parallel picture was derived from Saphar-Kharaba, Tsalka district. An infusion of ferns is still used as a traditional method against helminthism.
In the Bronze Age, the solitary tapeworm was a major problem for the inhabitants of southern Georgia. Pig breeding seems to have been well developed and pork was part of the diet.

The material studied indicates that the economy of the Tiselis Seri population relied on agriculture, cultivating such plants as wheat, barley, and rye. A warm climate created suitable conditions for the development of viticulture and horticulture. The local population intensively used flat surfaces for agricultural activity.

The surrounding mountains were covered with broad leaf and mixed forests, with oak predominant, but with beech, hornbeam, alder, hazelnut also present. Coniferous forests grew at a higher altitude. The Early Bronze Age population of Tiselis Seri practiced animal breeding. It is clear that pigs and sheep were bred: pigs from the fact that the reason for the death of the occupant of Burial No. 8 was the swine-induced solitary tapeworm; sheep from the presence of wool. The occupants of the site not only used wool but also linen. The existence of coloured threads indicates a spinning tradition. Fibres of light red thread predominated, typical of Early Bronze Age cultures. There were also light coloured linen fibres.

Early Bronze Age people were familiar with healing plants which, it seems, were used for therapeutic purposes. For example, soil samples taken from Burial No. 8 from the abdomen of the deceased produced quite a number of different fern spores. Even today these plants are used in traditional medicine, including remedies for swine tapeworm.

The climate in the Early Bronze Age was different from today, being warmer and more humid. The complex of vegetation is enough to indicate this. The warm climate created favourable conditions for agricultural development, especially for viticulture and horticulture.

The coloured fibres of woollen textile and linen from the site confirm the existence of a spinning tradition. It is also possible that flax was cultivated here.

Description of Tables:
Table No. 1 Number of plant pollen grains and spores found at Tiselis Seri: Square G 2 (Profile 1), axe handle, and burials Nos. 1 and 8.

Table No. 2 Number of plant pollen grains and spores found at Tiselis Seri: Square BO (Profile 2).

Table No. 1

Settlement	Sq. G-2	Sq. G-2	Sq. G-2	Sq. G-2	Sq. G-2	Sq. G-2	Sq. G-2	Sq. G-2	Sq. G-2	Sq. G-2	Sq. G-2	Sq. G-2	Sq. G-2	Sq. G-2	Sq. G-2	Sq. G-2
Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Depth m.	0.0 0.1	0.1 0.2	0.2-0.3	0.3-0.4	0.4-0.5	0.5-0.6	0.6-0.7	0.8-0.9	0.9-1.0	1.0-1.1	1.1-1.2	1.2-1.3	1.3-1.4	1.4-1.5	1.5-1.55	1.551.60
Trees:																
Abies nordmanniana	15	10	12	2	2	2	7		1			1	2	3	9	8
Picea orientalis	40	43	27	8	2	2	18	5	2		6	2	14	8	33	21
Pinus	102	113	104	55	11	7	76	23	8	7	31	6	120	89	87	41
Betula		2		1										1	1	
Fagus orientalis			1										2		1	2
Carpinus caucasica		2	2										2			
Alnus	1	3	3											1		
Quercus			2					1					8		1	3
Corylus		3	3	2			2						1			
Rosaceae													1			
Vitis vinifera													2			
Sum:	***158***	***176***	***154***	***68***	***15***	***11***	***103***	***29***	***11***	***7***	***37***	***9***	***152***	***102***	***132***	***75***
Herbs:																
Poaceae	3		1	3	2	2	2	1			5		11	3	2	4
Triticum		1		1												
Cerealia		1	1	1												
Chenopodiaceae	3	5	1	3	3			1								
Chanopodium album			1													
Artemisia				1												
Aster type		2														
Achillea			1					1					1	2		
Cichorioidae	5	7	26	3	7	4	8	8	3	4		2			3	11
Carduus	1						3									1
Centaurea			1	2											1	1
Polygonum type			4			2	3	1		3		3	1	2		
Polygonum aviculare			2													
Convolvulus			1													
Ranunculus								1								
Papaver	1															
Malva	1	1														
Geranium		1					2									
Viola			1													
Apiaceae			1	1	1								1			
Fabaceae															1	6
Caryophyllaceae		1	2	1												
Saxifragaceae	1															
Boraginaceae	1															
Plantago m/m						1							1			3
Plantago lanceolata							2						5	6	4	
Sphagnum		1						1								
Lycopodium		2														
Lycopodium selago							1									
Bothrychium lunaria			5	1	1	1	1	2								
Ophioglossum		1	1	2				1								

Polypodiaceae	30	45	22	25	12	3	40	50	8	4	4	3	2			2
Polypodium vulgare		1														
Asplenium	2															
Asplenium ruta-muraria	7		2	1											1	
Dryopteris	1															
Cryptogramma crispa		1														
Pteris cretica			1													
Undeterminate NAP								2								2
Sum:	***56***	***70***	***74***	***45***	***26***	***13***	***62***	***69***	***11***	***11***	***9***	***8***	***22***	***13***	***12***	***30***
Sum of Palynomorphs	**214**	**246**	**228**	**113**	**41**	**24**	**165**	**98**	**22**	**18**	**46**	**17**	**174**	**115**	**144**	**105**

Table No. 2

Settlement	**Sq. B0**	**Sq. B0**	**Sq. B0**	**Sq. B0**	**Sq. B0**	**Sq. B0**	**Sq. B0**	**Sq. B0**	**Sq. B0**	**Sq. B0**	**Sq. B0**	**Sq. F3**	**Axe handle**	**Burial No. 2**	**Burial No. 8**
Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Depth, m.	0-0.1	0.1-0.2	0.3-0.4	0.7-0.8	0.8-0.9	0.9-1.0	1.0-1.1	1.2-1.2	1.3-1.4	1.4-1.5	1.5-1.6	5.67			
Trees															
Abies nordmanniana	42	20	1	1	2						1	1	20	6	1
Picea orientalis	34	25	6	9	16	11	23	1	1	8	2		39	30	2
Pinus	78	65	35	25	41	42	66	6	9	20	9	1	128	73	13
Juniperus													3		1
Betula	1	2													
Juglans regia							2		1					1	
Fagus orientalis	1			1	1							1		1	
Carpinus caucasica			1									1		1	
Carpinus orientalis	1														
Acer							1								
Alnus	2	2											1		
Quercus				1		1	3	1	1			3	4	3	
Tilia		1													
Corylus	1	2	1	1		1	1					1		2	
Rosaceae				1					2						
Rhododendron	1														
Vitis vinifera				1											
Sum:	***161***	***117***	***44***	***40***	***60***	***55***	***96***	***8***	***14***	***28***	***12***	***8***	***195***	***117***	***17***
Herbs															
Cyperaceae		2													
Poaceae	1	7	4	1	4	4	3	1		2	1	3	10	2	
Triticum				1								8			2
Hordeum	1						1								
Secale type													1		
Cerealia		2	1									4	9		1
Chenopodiaceae	7	3	3	2	1		1			1			5		1
Chanopodium album															
Artemisia				1	1		1						3	1	1
Aster type			3		1			2	1		2		6		1
Achillea	3	1					1					1	1	1	1

Cichorioidae	21	28	17		2		3	4	2	2	3	1	28	10	47
Carduus	2		3					3		1	2			1	5
Centaurea	2														7
Serratula												1			3
Polygonum type	1	4		3	1		2					1	11		8
Polygonum aviculare	1			1											1
Polygonum cognatum													2		
Convolvulus	11	13	8										1		
Ranunculus	7		2	1								3	1		2
Dipsacus	1														
Apiaceae		1										1		1	1
Fabaceae	2										1				
Lamiaceae	2														
Caryophyllaceae	3	4	2		1							1			1
Saxifragaceae			2												1
Boraginaceae	3					1							1	1	
Plantago m/m	1	1		1	1							2	7	5	1
Plantago lanceolata				1			6			1				2	
Urtica											1				
Onagraceae													2		
Brassica			1	1			1								
Lycopodium selago															
Bothrychium lunaria	1	8	8	1			1						5		3
Ophioglossum	1		1										2		
Polypodiaceae	15	11	22	5	20	1				2		42	130	44	175
Polypodium vulgare	1												2	1	
Polypodium serratum															1
Pteridium													1		
Asplenium													4	1	
Asplenium ruta-muraria	2														
Athyrium														1	
Cryptogramma crispa													2		
Undeterminate NAP	6	3	6	2	2		4	2	2	3		1	5		1
Sum:	***95***	***88***	***83***	***21***	***34***	***6***	***24***	***12***	***5***	***12***	***10***	***69***	***239***	***71***	***264***
Sum of Palynomorphs	**256**	**205**	**127**	**61**	**94**	**61**	**120**	**20**	**19**	**40**	**22**	**77**	**434**	**188**	**281**

Appendix F

Palaeoethnobotanical Analysis Report

By Nana Rusishvili
Nino Meladze

Soil samples collected from various layers of the Tiselis Seri settlement were studied from a palaeoethnobotanical point of view. A total forty samples were studied. Fossilized botanical material was discovered in 15 samples. Soil samples were treated by the flotation method, which involves the isolation of botanical remains by means of water and CCl4. The objects of research were fossilized seeds and fruits. The next stage was the consolidation and conservation of the isolated material and its preparation for identification. Identification of plant remains was carried out by means of a microscope. Identification was performed to the level of species and genus on the basis of a set of morphological features.

Of cultivated plants, there were defined: soft wheat (*Triticum aestivo-compactum Schiemann.*), emmer wheat (*Triticum dicoccum Schubl.*), barley (*Hordeum vulgare L.*), and cultivated millet (*Panicum miliaceum L.*). Twenty-nine weeds and wild plants were identified.

Round fine grains of wheat were represented in the archaeobotanical material. Their apical and ventral sides were equally wide. The ventral grooves were deep. Their dorsal sides were rounded (Pl. XLI-1). The length of grains (L) varied within the parameters of 3.0-4.5 mm. The proportion

of the grain's length to its width (L/B) varied within 1.2-1.7 mm (Table No.3). On the basis of these peculiarities, the carbonized wheat grains were attributed to *Triticum aestivo-compactum Schiemann*. Such identification is admissible in palaeo-ethnobotanics when it is difficult make a clear distinction between soft and compact wheats (Yanushevich 1976: 78-103).

M. Tumanyan described a similar agro-population with similar grain parameters at the Shengavit settlement (1928: 225-276), and defined them as fine-grained compact wheat with a short stem, adapted to humid climatic conditions. A similar agro-population was also identified at the Badaani settlement of the Kura-Araxes Culture (Rusishvili 1991: 285-294).

Double-grained wheat was identified in two soil samples collected at Building No.2 and in the contents of a clay pot from burial No. 6.

The grains were oblong with deep ventral grooves. Their dorsal sides were slightly asymmetrical and had high ridges. The parameters and indices of the grains under discussion satisfied standard accepted values for *Triticum dicoccum* (Table No. 4). As to whether there was an independent agro-population of emmer wheat, the scarcity of material makes it difficult to draw conclusions.

Husk-grained barley (*Hordeum vulgare*) was identified in two samples (Table No. 2). According to its morphological features, the grain had an elliptical shape. Its vertical and dorsal sides were flattened. A triangular groove on its ventral side became broader towards its apical area. An imprint characteristic of floriferous glume (Pl. XLI-2) was distinctly visible in its dorsal area. On the basis of these features, parameters and indices (Table No. 5), the grain under discussion belonged to husk-grained barley (*Hordeum vulgare L.*)

Millet (*Panicum mediaceum L.*) was also identified in one sample (Table No. 2). The grain in question had an oblong shape and measured 2.0 (L) x 1.5 mm (B). The embryo occupied approximately one third of the grain volume (Pl. XLI-3).

Weeds and wild plants:

1. *Ajuga reptans L.*: Blue bugle. Family, Labiateae. Seed parameters 1.8 x 1.3 x 1.0 mm. Widespread in humid meadows, forests, and undergrowth. Grows in mountains and is widespread all over the Caucasus (Pl. XLI-4).
2. *Arenaria serphyllifolia L.*: Family, Caryophyllaceae. Seed parameters 0.4-0.75 x 0.4 x 0.25 mm. A weed of cultivated cereals, growing in meadows and on roadsides.
3. *Avena sp.*: Oats. Family, Graminae. Most of this genus encompasses weeds of cultivated plants.
4. *Brassica sp.*: Cabbage. Family, Cruciferae. Includes cultivated and wild plants and their weeds.
5. *Carex leporine L.*: Sedge. Family, Cyperaceae. Seed parameters 1.5 x 1.0 x 0.5 mm. Rarely mixes with crops and grows in meadows (Pl. XLI-5).
6. *Carex vulpine L.* Family, Cyperaceae. Seed parameters 2.0 x 1.5 mm. Grows in humid areas and on riversides.
7. *Chenopodium album L.*: Goosefoot. Family, Chenopodiaceae. Seed parameters 1.5-1.75 mm. An 'annoying' weed, since its ability to resprout is retained for decades. Besides crops, it grows in ruderal places. The young shoots are edible. The seeds have high nutritive values. Used as an additive in the diet of sheep and pigs.
8. *Eupatorium cannabinum L.*: Hemp agrimony. Family, Compositae. Seed parameters 2.5 x 0.5 mm. Grows in humid places at the sides of rivers and ditches. In the past a fibre was made with the stems, and a blue dye from its leaves and flowers. Small doses of leaves were used as a tonic.
9. *Gallium spurium L.*: Goosegrass. Family, Rubiaceae. Seed parameters 2.5 x 1.0 x 1.2 mm. Rarely mixes with cereals. Considered as a specific weed of flax (Table XLIII-6).
10. *Hyoscyamus niger L.***:** Henbane**.** Family, Solanaceae. Seed parameters 1.5 x 1.0 x 0.5. Rarely mixes with cereals and grows in ruderal places. Henbane is toxic and a strong narcotic.
11. *Lolium sp.*: darnel. Family, Graminaeae. The species includes weeds of cultivated cereals. Grows on meadows.

12. *Lugia passerina (L.) Fas.*: Spurge flax. Family, Thymelaeaceae. Seed parameters 1.5 x 1.0 mm. Mixes with cultivated cereals.
13. *Melilotus sp.*: Melilot. Family, Leguminosae (pulses). Most of the species are considered as weeds. They also grow on meadows.
14. *Moehringia trinervia (L.) Clairv.*: Sandwort. Family, Caryophyllacae. Seed parameters 1.0 x 0.6 mm. Widespread all over the Caucasus. In humid areas it takes up a considerable portion of edible grass. Used as food for animals both freshly cut and dried. (Pl. XLIII-7).
15. *Neslia paniculata (L.) Desv.* Family, Cruciferae. Seed parameters 2.0 x 2.0 x 1.5 mm. Mixes with spring and autumn crops, especially millet, from which it is difficult to tell apart (Pl. XLIII-8).
16. *Polygonium aviculare L.*: Common knot-grass. Family, Polygonaceae. Seed parameters 2.0 x 1.0 x 0.75 mm. A weed of cultivated cereals growing on roads, and widespread throughout the Caucasus. (Pl. XLI-9).
17. *Polygonum convolvulus L.*: Black bind-weed. Family, Polygonaceae. Seed parameters 2.5 x 1.75 mm. Mixes with cultivated cereals, growing in orchards. The seeds retain the ability to germinate for 5-6 years (Pl. XLI-10).
18. *Polygonum dumetorum L.*: Copse bindweed. Family, Polygonaceae. Seed parameters 2.5 mm. Grows in forests and rarely mixes with cultivated cereals.
19. *Polygonum patulum M.B.*: Family, Polygonaceae. Seed parameters 2.0 x 1.25 x 0.75 mm. A weed of cultivated cereals growing predominantly in humid areas.
20. *Rumex acetosa L.*: Sorrel. Family, Polygonaceae. Seed parameters 2.0 x 1.5 x 1.0 mm. Known as a weed. Grows in meadows, pastures and orchards. A sour soup is made from its leaves.
21. *Salvia sp.*: Sage. Family, Labiatae. Within the genus are both weeds and ruderal plants. Grows on meadows and roadsides.
22. *Sambucus racemoca L.* Elder. Family, Solanaceae. Seed parameters 3.0-3.5 x 1.2-1.5 x 1.0 mm. Grows in forests and undergrowth (Pl. XLI-11).
23. *Scleranthus annuus L.* Knawel. Family, Caryophyllaceae. The parameters of its false fruit are 3.5 x 1.5 mm. Mixes with cultivated cereals, growing on roadsides and meadows, and is widespread throughout the Caucasus. A microscopical insect, *Coccus polonicus*, that produces red dye, lives on the roots of knawel.
24. *Setaria sp.*: Bristle-grass. Family, Graminae. The genus mostly encompasses weeds of cultivated cereals.
25. *Trifolium arverse L.*: Hare's foot clover. Family, Leguminosae (pulses). Seed parameters 1.25x1.0x0.75 mm. Mixes with cultivated cereals, also growing in meadows. Widespread throughout the Caucasus.
26. *Trifolium campestre*: Meadow clover. Family, Leguminosae. Seed parameters 1.0x0.75x0.5 mm. A weed of cultivated cereals, also growing in meadows.
27. *Trifolium repens L.*: White clover. Family, Leguminosae. Seed parameters 1.2x1.0x0.75 mm. A weed of cultivated cereals, also growing in meadows. High nutritive qualities.
28. *Veronica arvensis L.* Family, Scrophulariaceae. Seed parameters 1.25x0.75x0.5 mm. A weed of cultivated cereals, also growing in meadows.
29. *Viola hirta L.*: Viola. Family, Violaceae. Seed parameters 2.0x1.5 mm. Grows in forests, water meadows, undergrowth and meadows.

Thus, palaeobotanical research on the material from the Tiseli Hill settlement has revealed a specific agropopulation of soft wheat that was adapted to humid climatic conditions. The scarcity of the material does not allow conclusions to be drawn regarding independent crops of emmer wheat, husk-grained barley or millet. It is possible that these represent only insignificant admixtures in the soft wheat agropopulation.

The identification of some species of weeds and wild plants (*Carex, Polygonum*) proves the existence of a humid climate.

Explanation of Table No.1.

1. The southern section of the corridor, Square G-2, at a depth of 0-0.1 m from the surface.
   Viola hirta
   Carex vulpine
   Trifolium sp.
2. The southern section of the corridor, Square G-2, at a depth of 0.1-0.2 m from the surface.
   Polygonum convolvulus.
   Brassica sp.
3. The southern section of the corridor, Square G-2, at a depth of 0.2-0.3 m from the surface.
   Ajuga reptans.
   Chenopodium album.
   Carex leporine.
   Eupatorium cannabinum.
   Moehringia trinervia.
   Melilotus sp.
   Polygonum aviculare.
   Polygonum dumetorum.
   Trifolium campestre.
   Veronica arvensis.
   Viola hirta.
4. The southern section of the corridor, Square G-2, at a depth of 0.3-0.4 m from the surface.
   ------
5. The southern section of the corridor, Square G-2, at a depth of 0.4-0.5 m from the earth surface.
   ----
6. The southern section of the corridor, Square G-2, at a depth of 0.5-0.6 m from the surface.
   ----
7. The southern section of the corridor, Square G-2, at a depth of 0.6-0.7 m from the surface.

Sambucus racemosa

   Polygonum dumetorum
   Veronica arvensis

8. The southern section of the corridor, Square G-2, at a depth of 0.8-0.9 m from the surface.
   Polygonum aviculare.
9. The southern section of the corridor, Square G-2, at a depth of 0.9-1.0 m from the surface.
   Sambucus racemosa.
   Chenopodium album.
10. The southern section of the corridor, Square G-2, at a depth of 1.0-1.1 m from the surface.
    Sambucus racemosa.
    Rumex acetosa.
    Polygonum patulum.
11. The southern section of the corridor, Square G-2, at a depth of 1.1-1.2 m from the surface.
    ----

12. The southern section of the corridor, Square G-2, at a depth of 1.2-1.3 m from the surface.
    Sambucus racemosa.
    Setaria sp.
13. The southern section of the corridor, Square G-2, at a depth of 1.3-1.4 m from the surface.
    ---
14. The southern section of the corridor, Square G-2, at a depth of 1.4-1.5 m from the surface.
    ---
15. The southern section of the corridor, Square G-2, at a depth of 1.5-1.6 m from the surface.
    ---
16. The southern section of the corridor, Square BO, at a depth of 1.0-1.1 m from the surface.
    ---
17. The southern section of the corridor, Square BO, at a depth of 1.1-1.2 m from the surface.
    ---
18. The southern section of the corridor, Square BO, at a depth of 1.2-1.3 m from the surface.
    ---
19. The southern section of the corridor, Square BO, at a depth of 1.3-1.4 m from the surface.
    Sambucus rasemosa.
20. The southern section of the corridor, Square BO, at a depth of 1.4-1.5 m from the surface.
    ---
21. The southern section of the corridor, Square BO, at a depth of 1.5-1.6 m from the surface.
    Explanation of Table No. 2
22. Burial No. 1, content of clay vessel No.1, at a depth of 0.6 m from the surface.
    Galium spurium.
23. Burial No.1, content of clay vessel No.2, at a depth of 0.6 m from the surface.
    Setaria sp.
24. Building No. 1, Square A2, at a distance of 2.6 m from datum.
    Ajuga reptans.
    Avena sp.
    Carex leporine.
    Lygia passerina.
    Neslia paniculata.
    Sambucus racemosa.
    Scleranthus annuus.
    Triticum aestivum, fragment of an ear
25. Building No.2, Square F3, at a distance of 5.67 m from datum.
    Avena sp.
    Galium spurium.
    Hyoscyamus niger.
    Lolium sp.
    Trifolium campestre.
    Triticum dicoccum.
26. Building No.2, Square C4 at a distance of 5.7 m from datum.
    ---
27. Building No.2, content of the hollow in the hearth, at a distance 5.6 m from datum.
    ---
28. Building No.1, floor level, at a distance 2,7 m from datum
    Triticum aestivo-compactum
    Trifolium arvense

Avena sp.

29. Necropolis, trench No.15, the pipeline area, at a distance of 3.0 m from datum.
    Trifolium repens
    Carex leporina
30. Necropolis, trench No. 16, the pipeline area, from the platform of the hearth, at a depth of 1.0 m from the modern surface.
    ---
31. Necropolis, trench No. 16, from the content of the hearth, at a depth of 1.0 m from the modern surface.
    Rumex acetosa.
    Hordeum vulgare.
32. Necropolis, trench No. 16, from the content of the hearth, at a depth of 1.0 m from the earth surface.
    Triticum sp.
33. Necropolis, trench No. 15, from the surface of the artificial yellow loam, at a distance of 3.0 m from datum.
    ---
34. Necropolis, burial No. 16, content of the clay vessel, at a depth of 1.0 m from the modern surface.
    Triticum diccocum
    Triticum aestivo-compactum
    Carex leporine
    Arenaria serphyllifolia
35. Necropolis, burial No. 16, from the area of the abdomen of the deceased, at a depth of 1.0 m from the modern surface.

Trifolium campestre

36. Necropolis, the pipeline installment area, southern section, at a depth of 0.4 m from the removed earth surface.
    Salvia sp.
    Hordeum vulgare
    Panicum miliaceum L.
37. Necropolis, the pipeline instalment area, at a depth of 0.8-1.0 m from the removed earth surface.

Moehringia trinervia

38. Necropolis, the pipeline instalment area, at a depth of 0.8-1.0 m from the modern surface.
    ---
39. Necropolis, the pipeline instalment area, at a depth of 1.0-1.25 m from the modern surface.
    ---
40. Necropolis, the pipeline instalment area, at a depth of 1.25-1.5 m from the modern surface.

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Appendix G

Lithics Analysis Report

By Ketevan Esakia

The study of the surfaces of the stone tools (made of obsidian, flint, and pebbles) was carried out beneath a microscope. With the naked eye alone it is impossible to observe specific marks such as linear traces, scratches, engraving, dotted lines, dull and polished areas characteristic of stone tools. The study of these specific marks gives the possibility of establishing the function a stone tool may have had, whether cutting meat, wood, grass or grain, scraping leather or bone, or stone flaking. Technical problems made it impossible to take micro-photos or to document specific marks of the stone tools under study. Visual documentation was made with a regular digital camera.

The long-term aim of traceological research on stone tools is to explore and study the forms of economical life, and to reconstruct and identify the agricultural economy. The following stone tools found at the Tiselis Seri settlement were examined using traceological methodology beneath a microscope.

1. Sickle inset, flint, one unit (31/133-3, Structure No. 1). A double blade, medium size, triangular blade, bifacial pressure retouches, both working edges are straight and cogged, well polished as is usual with sickle blades. Microscopical research revealed that the blade bore specific linear traces that appear only when a tool is used for cutting grass. This linear trace was overlaid by another, typical of use for cutting cultivated corn. We may conclude that this tool had one primary function but was used for two different kinds of agricultural work. (Plate LI-133-3).

2. Sickle blade, flint, one unit (67/193-1, Structure No. 3). A single blade, medium size, straight, long blade, bifacial pressure retouches; working edge is cogged, slightly curved, polished on both sides. There is evidence of specific linear traces that indicate that the tool was used for cutting cultivated corn. (Plate LI-193-1).

3. Sickle blades, flint, two units (68/193-1; 68/194-1 cultural layer). 1). A double blade, small, straight blade. The point and end are broken, one active edge is slightly curved and cogged, the other blunt due to usage, bifacial pressure retouches, polished on both sides. There is evidence of specific linear traces that indicate the tool was used for cutting cultivated corn. 2). A single blade, made from a curved blade, cogged, working edge slightly cogged, polished. There is evidence of specific linear traces that indicate that the tool was used for cutting cultivated corn. (Plate LI-194; 194-1).

4. Saw-like tool, obsidian, one unit (31/133-2 Structure No. 1). Medium size, straight blade; one, cogged working edge, blunting retouch on the back. Used for woodwork. (Plate LI-31/133-2).

5. Scraper, obsidian, one unit (208/470), shaped on the edge of a large blade. Used for scraping leather. (Tools like this are useful for processing chamois leather). (Plate LI-/470).

6. Retouching tool, obsidian, one unit (209/471, cultural layer), made from a curved, broken blade, without retouch. The reverse of the tool was used as the active side.

7. Blade, obsidian, one unit (209/471-1, cultural layer), curved, without retouch and without trace of usage.

8. Spearhead, flint, one unit (213/523), made from a large arrowhead, used as a knife for a short time (Plate LI-523).

9. Knife, obsidian, one unit (190/432, trench No. 15), single blade, made from an large broken blade, small chips on the back, without retouch. Used for cutting meat.

10. Blade, obsidian, 1 unit (73/201, cultural layer), medium size, curved, without retouch or traces of usage. (Plate LI/201).

11. Saw-like tool, obsidian, one unit (218/554, cultural layer), made from a medium sized blade, single blade, slightly cogged due to usage. Point and end broken; without retouch. Used to process soft material.

12. Saw-like tool, obsidian, one unit (73/201-1, cultural layer), made from a medium sized flake, single blade, without retouch. Used to process bone material.

13. Point of a broken blade, obsidian, one unit (205/467), without retouch or traces of usage.

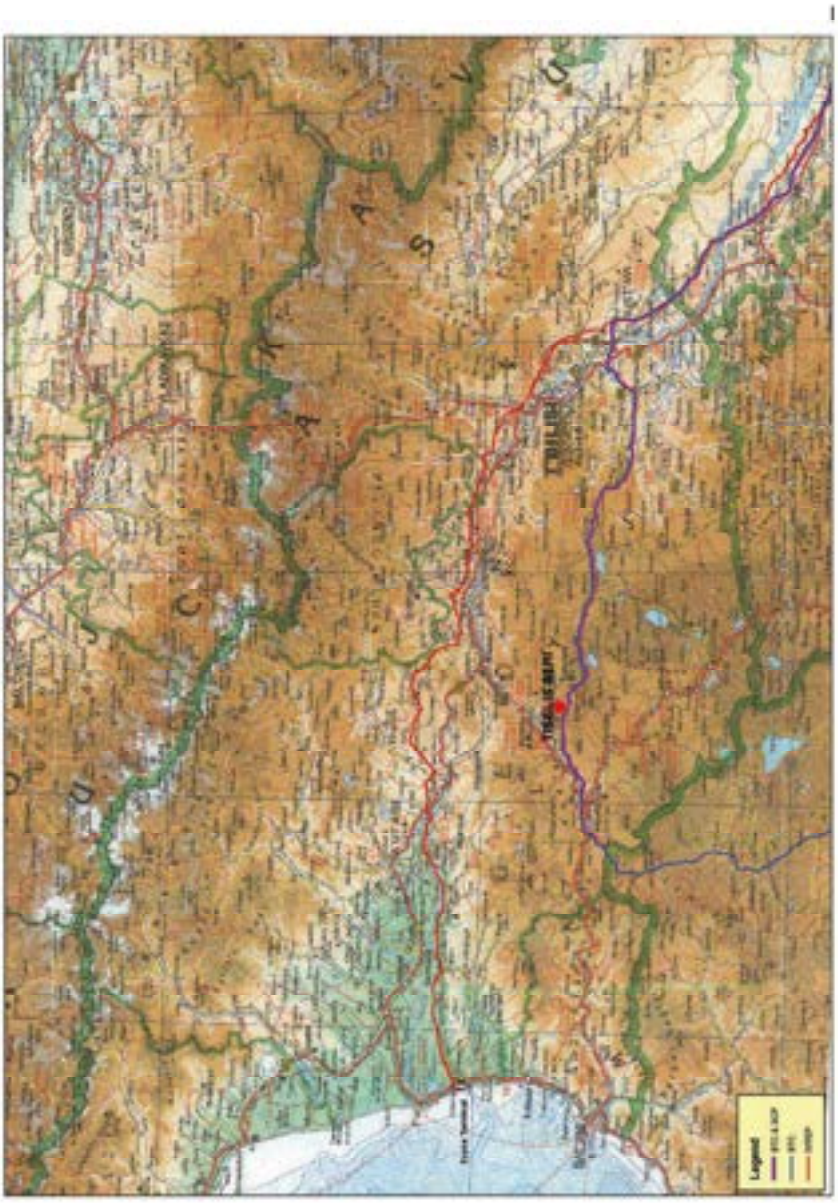
14. Blade, obsidian, one unit (67/193), medium size, straight, point and end broken, without retouch or traces of usage. (Plate LI-193).

15. Flake, obsidian, one unit (204/468), medium size, without retouch or traces of usage.

16. Flake, obsidian, one unit (206/468), medium size, without retouch or traces of usage.

The function of each stone tool found at the site was studied and described. The number of tools in the study was not large, but it was enough to understand the nature of the economic activities of the population of Tiselis Seri in the Early Bronze Age.

PLATES



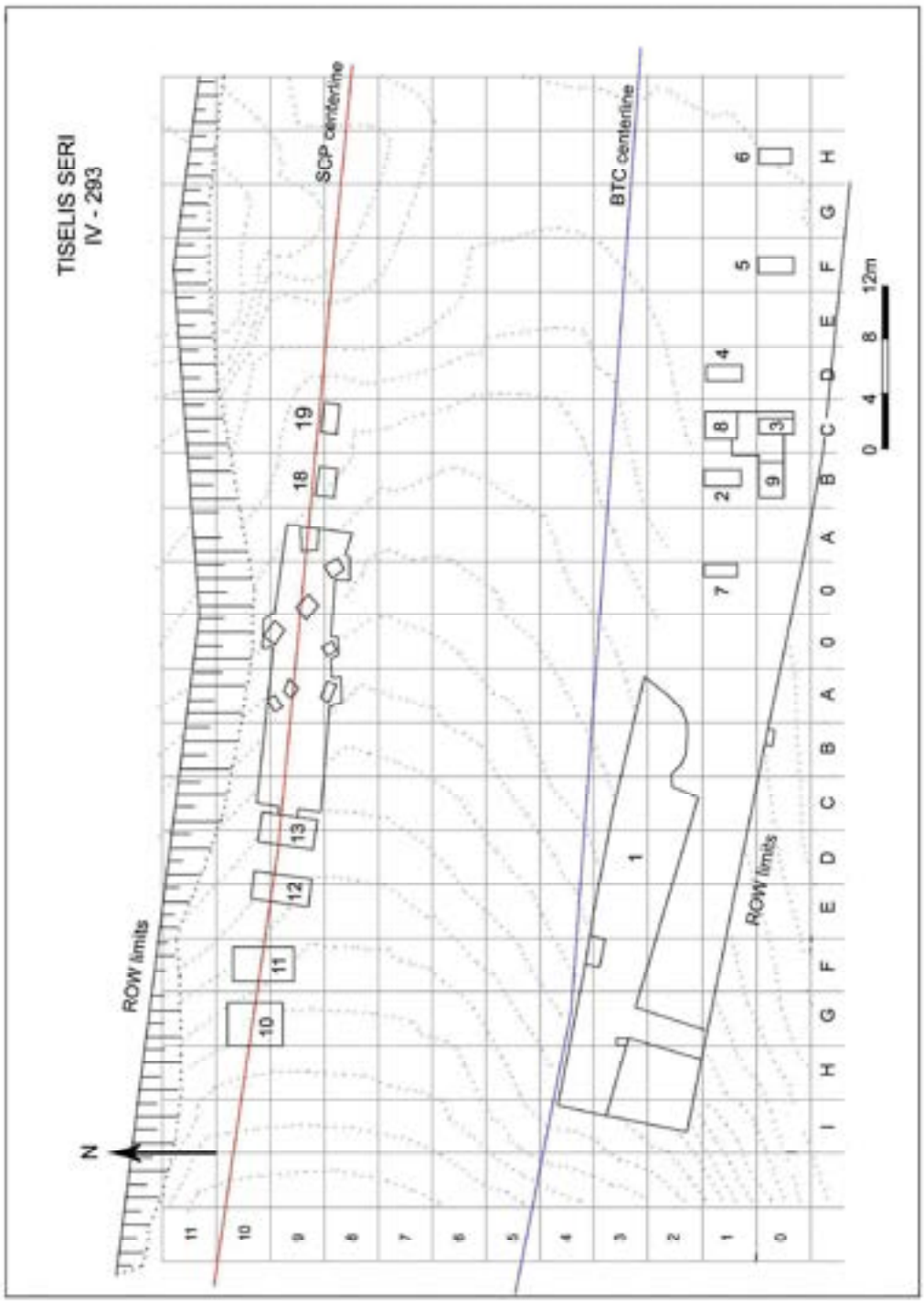
II

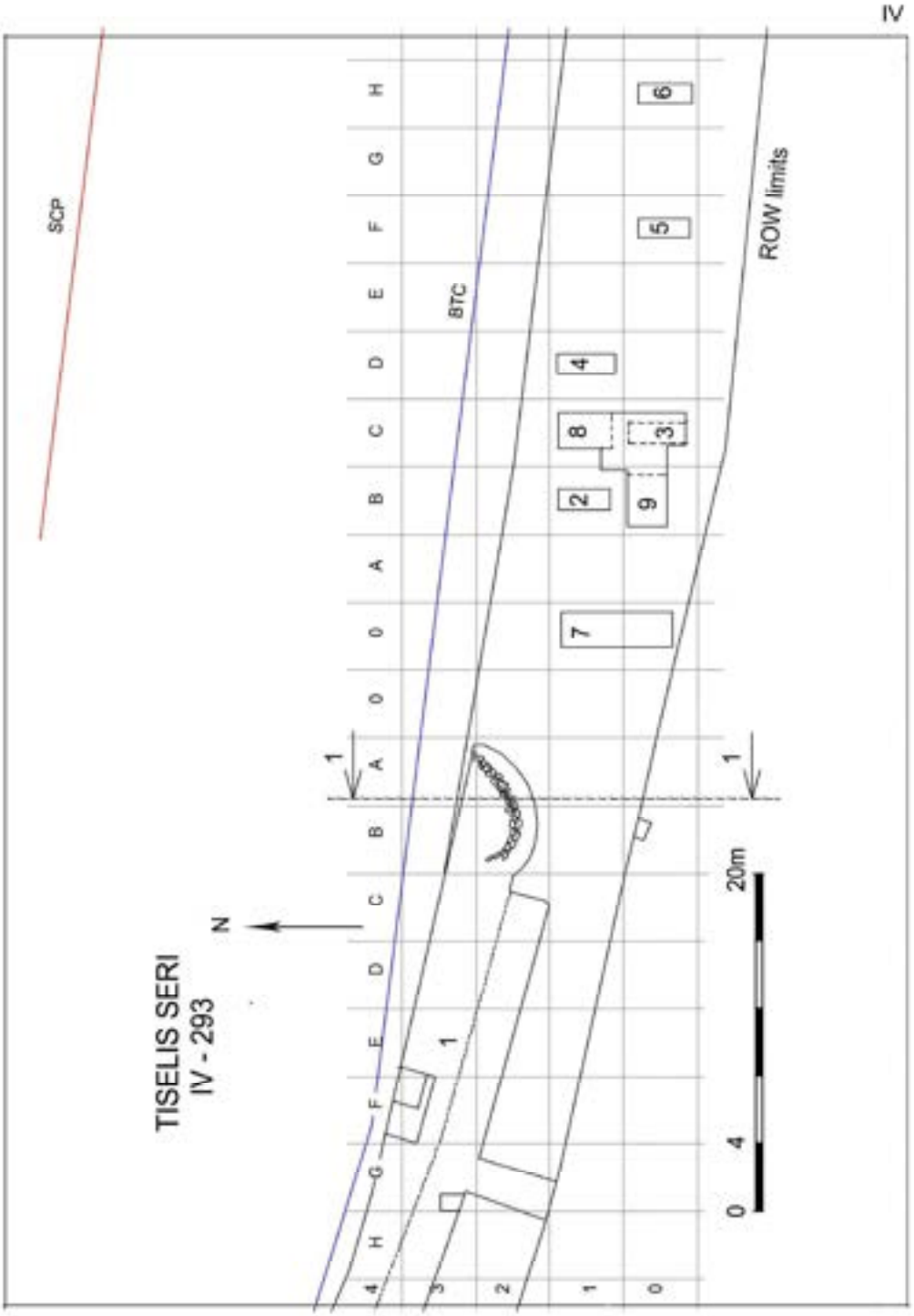
TISELIS SERI IV-293

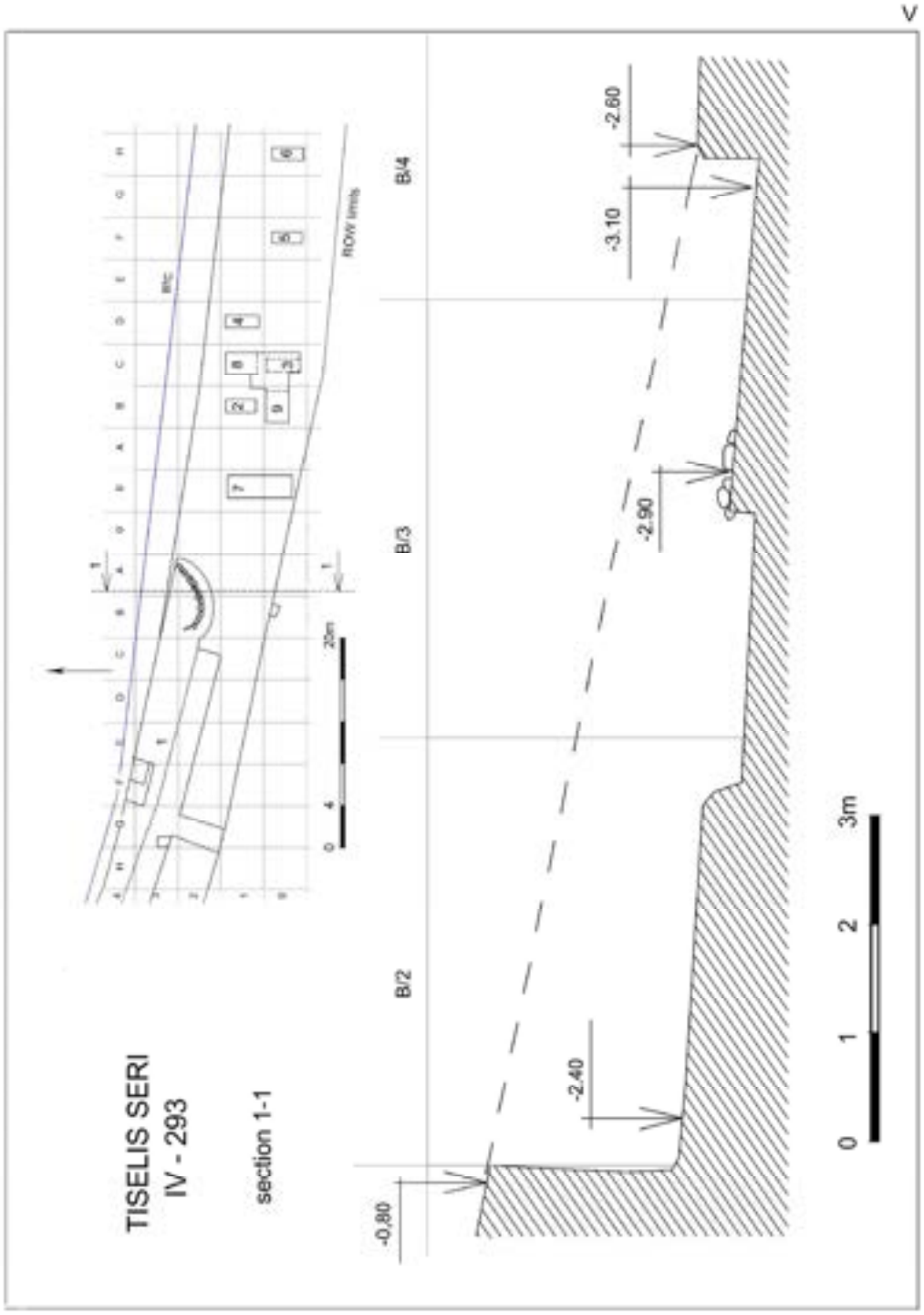
1

2

III


TISELIS SERI
IV - 293
SCP centerline
BTC centerline
ROW limits
ROW limits
N
0 4 8 12m


IV
SCP
BTC
ROW limits
TISELIS SERI
IV - 293
N
20m
0
4

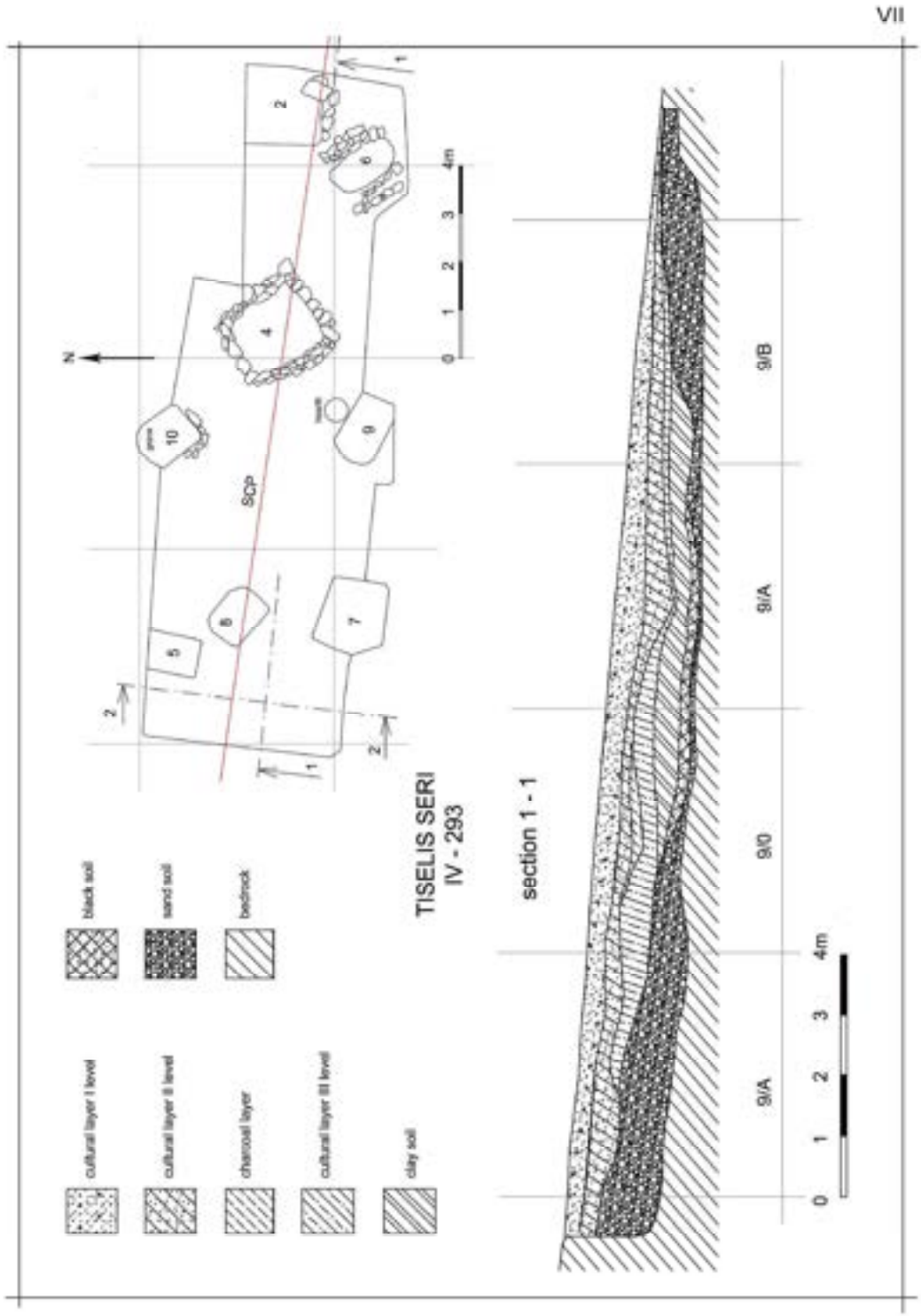

V
TISELIS SERI
IV - 293
section 1-1
B/4
B/3
B/2
-2.60
-3.10
-2.90
-2.40
-0,80
0
1
2
3m
ROW limits
25m
0
4

VI

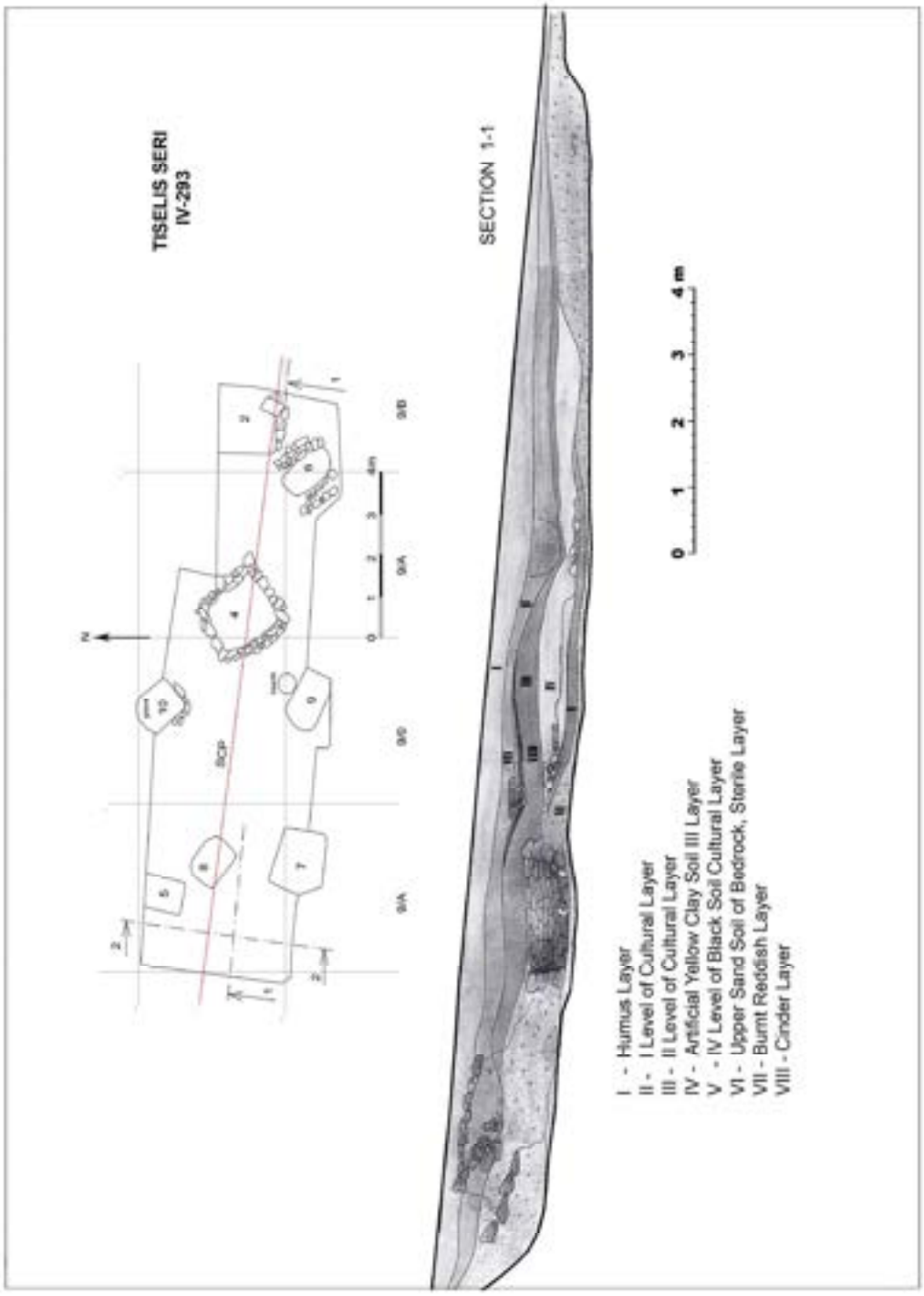
TISELIS SERI
IV-293

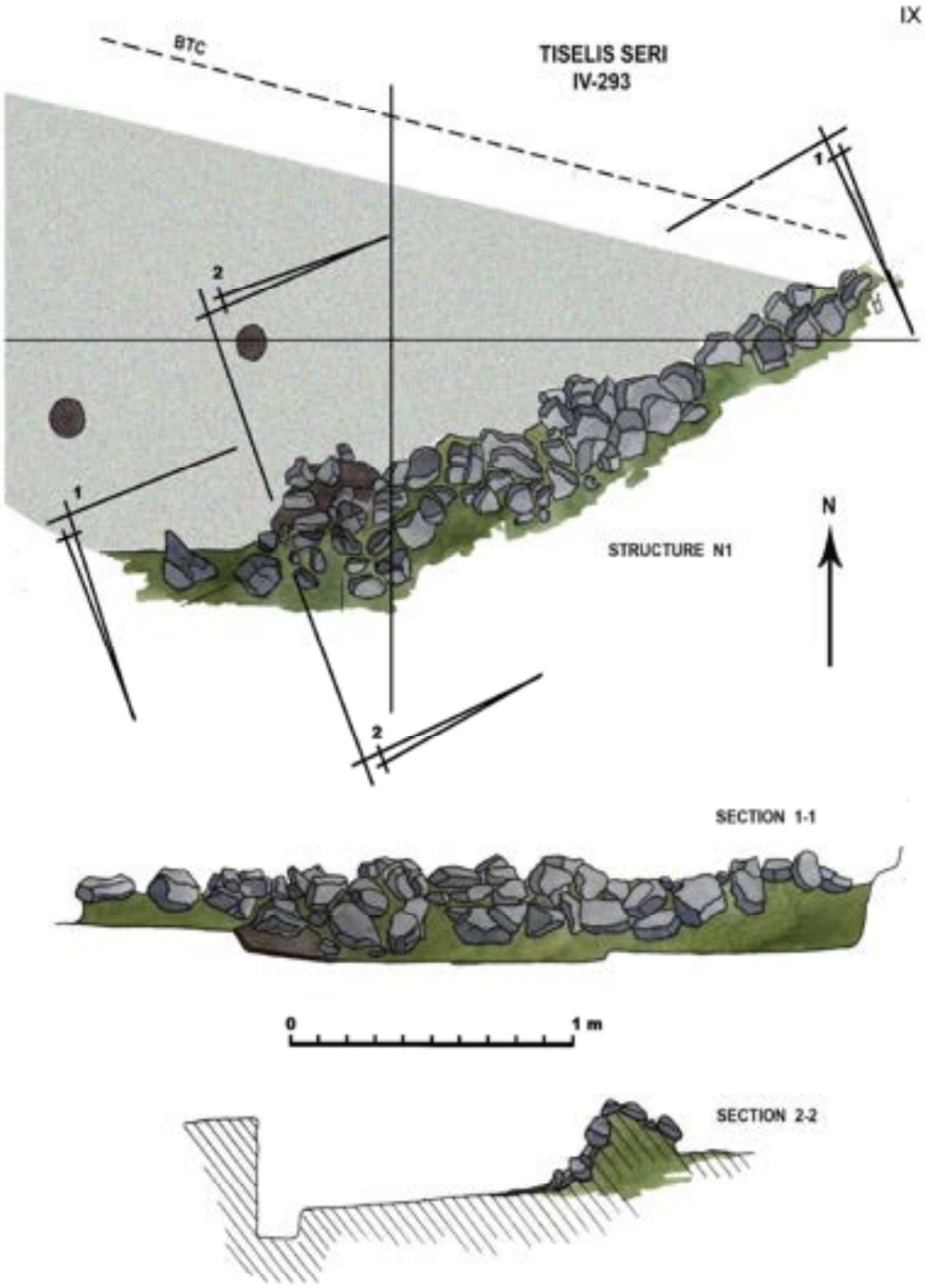
1

2


VII
N
SCP
TISELIS SERI
IV - 293
section 1 - 1
9/B
9/A
9/0
9/A
0 1 2 3 4m
black soil
sand soil
bedrock
cultural layer I level
cultural layer II level
charcoal layer
cultural layer III level
clay soil

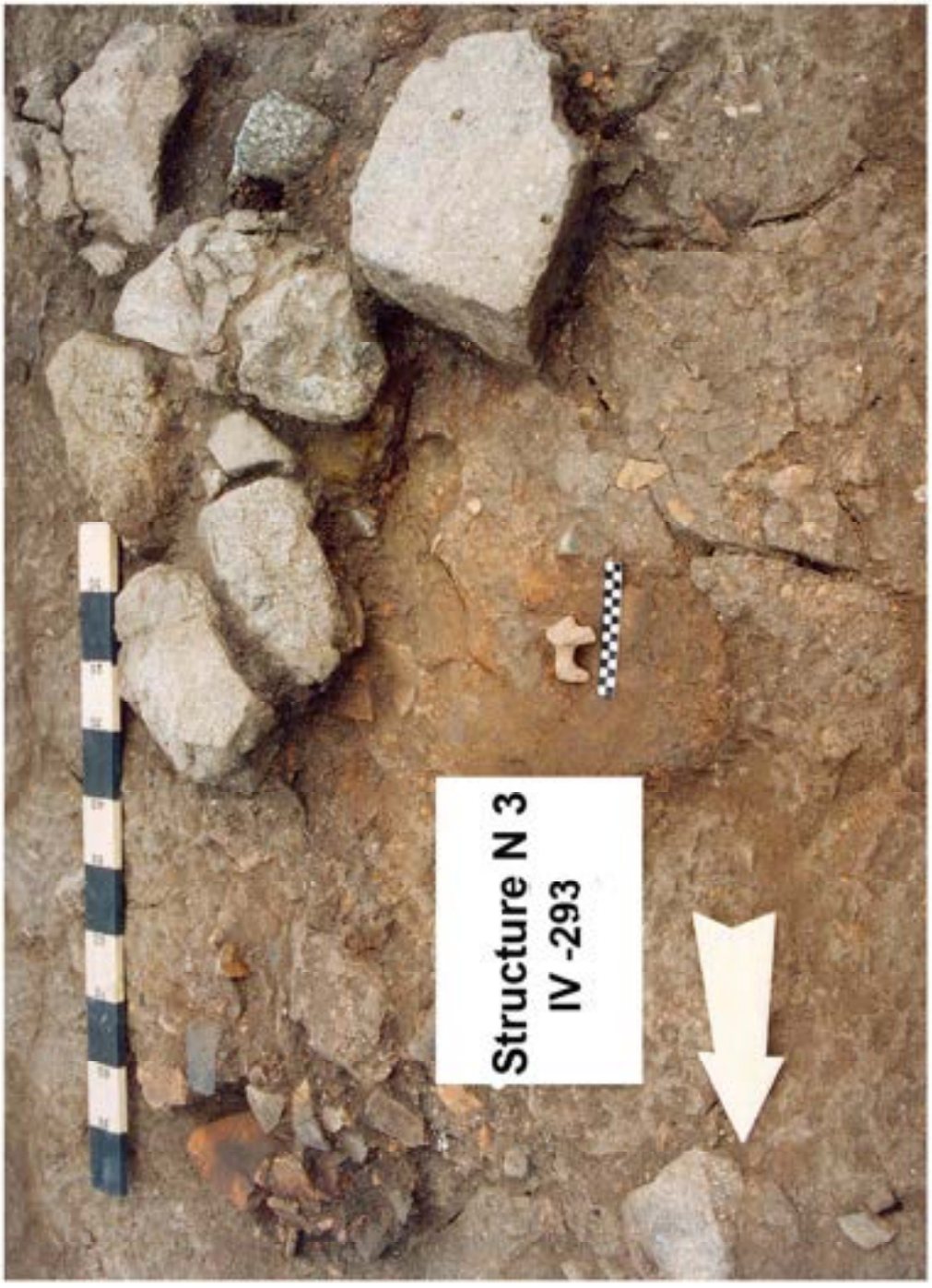
VIII


TISELIS SERI
IV-293
SECTION 1-1
0 1 2 3 4 m
I - Humus Layer
II - I Level of Cultural Layer
III - II Level of Cultural Layer
IV - Artificial Yellow Clay Soil III Layer
V - IV Level of Black Soil Cultural Layer
VI - Upper Sand Soil of Bedrock, Sterile Layer
VII - Burnt Reddish Layer
VIII - Cinder Layer


IX
BTC
TISELIS SERI
IV-293
1
2
1
2
N
STRUCTURE N1
SECTION 1-1
0
1 m
SECTION 2-2

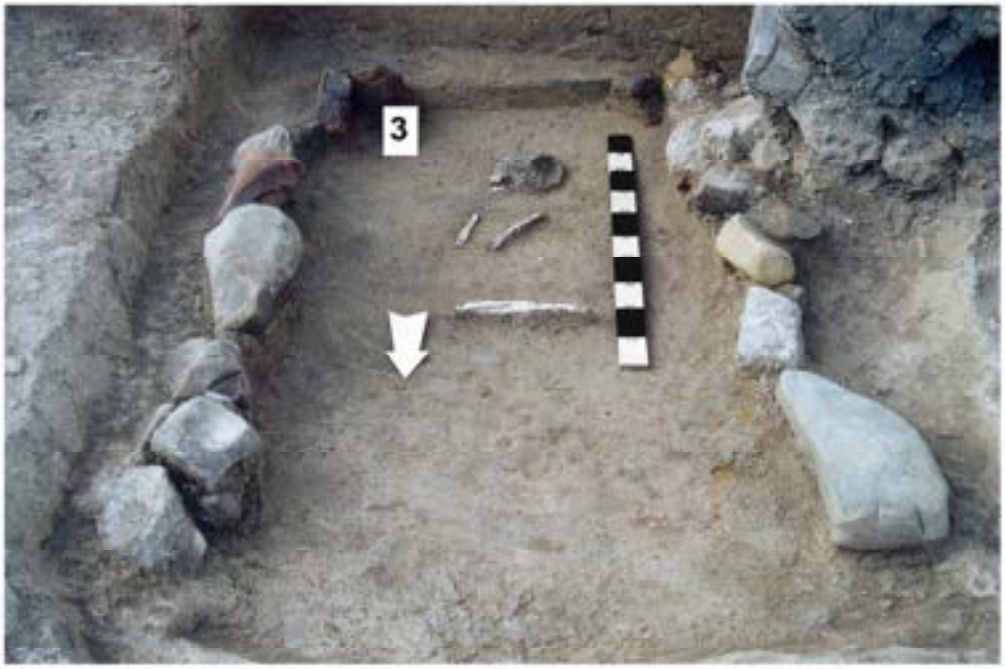
X

XI



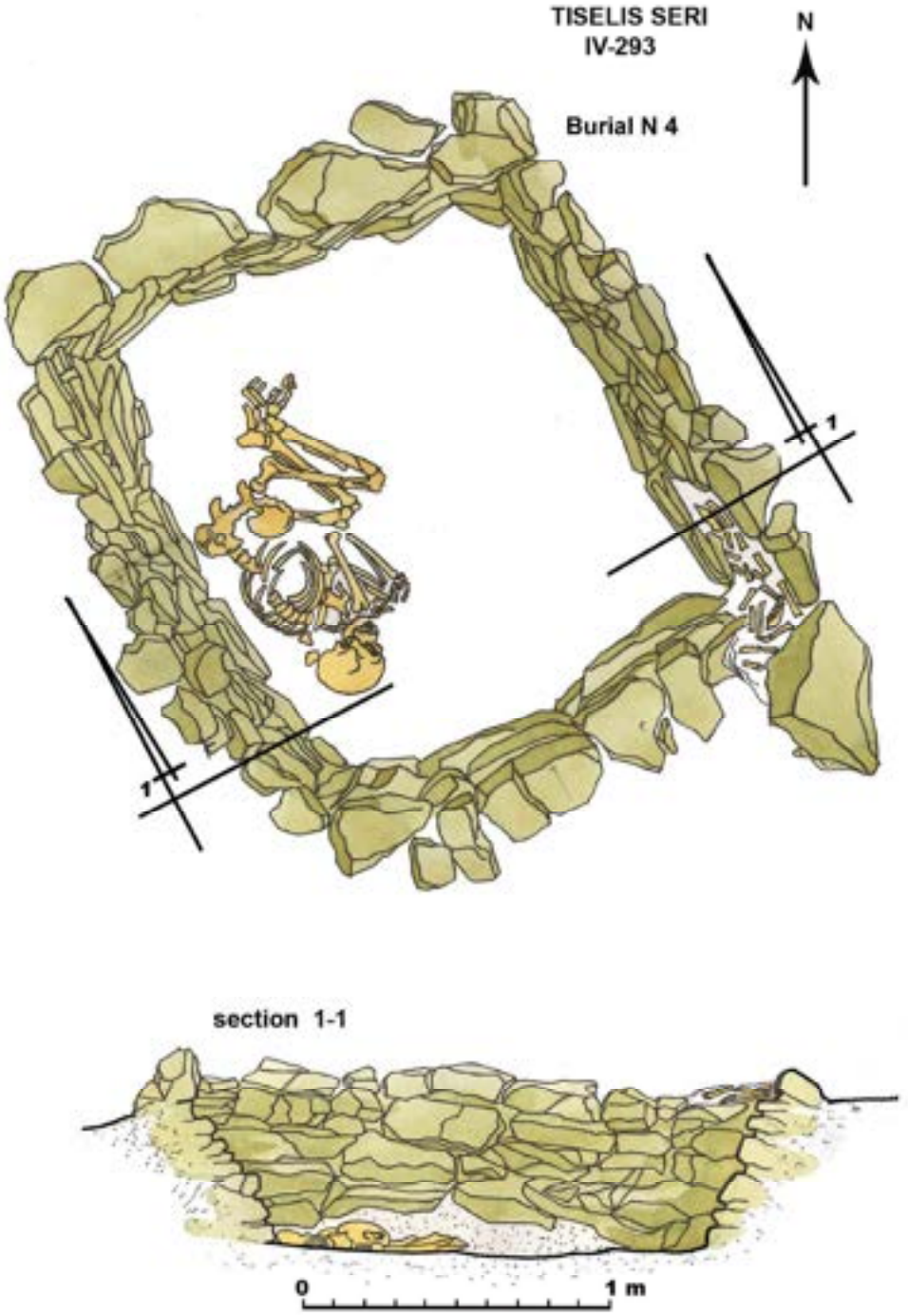
XII

1



2

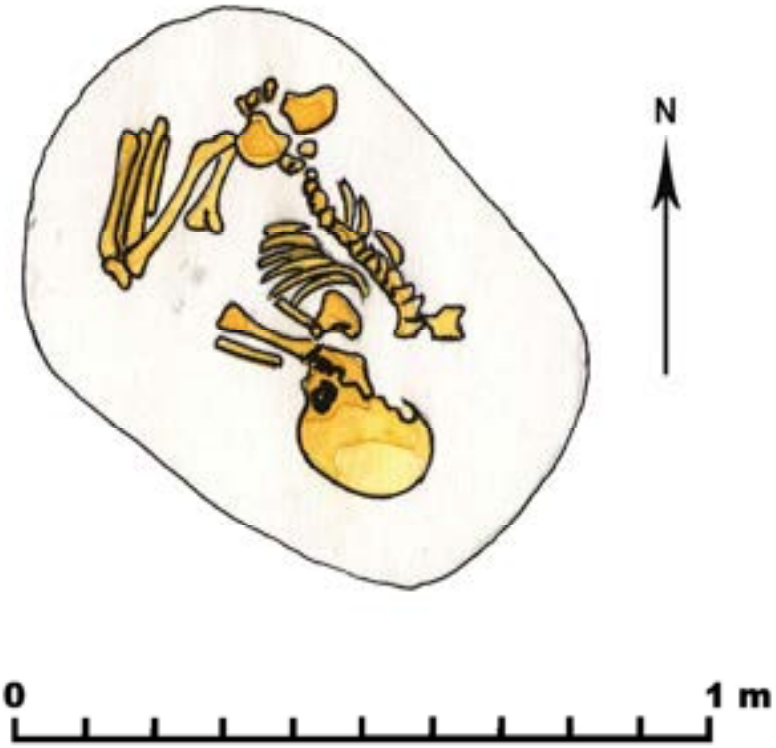
XIII



XIV

TISELIS SERI
IV-293

Burial N 5



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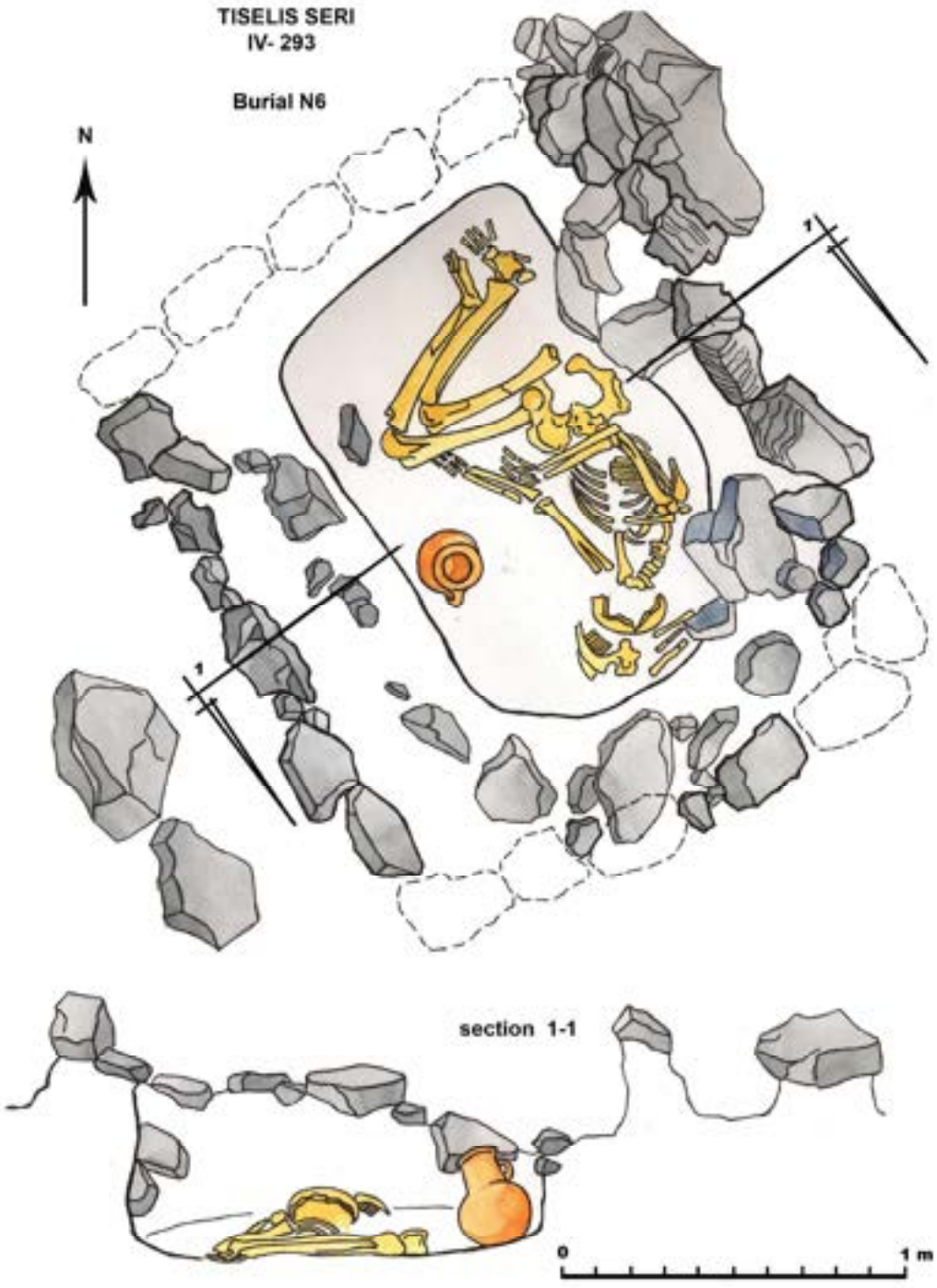
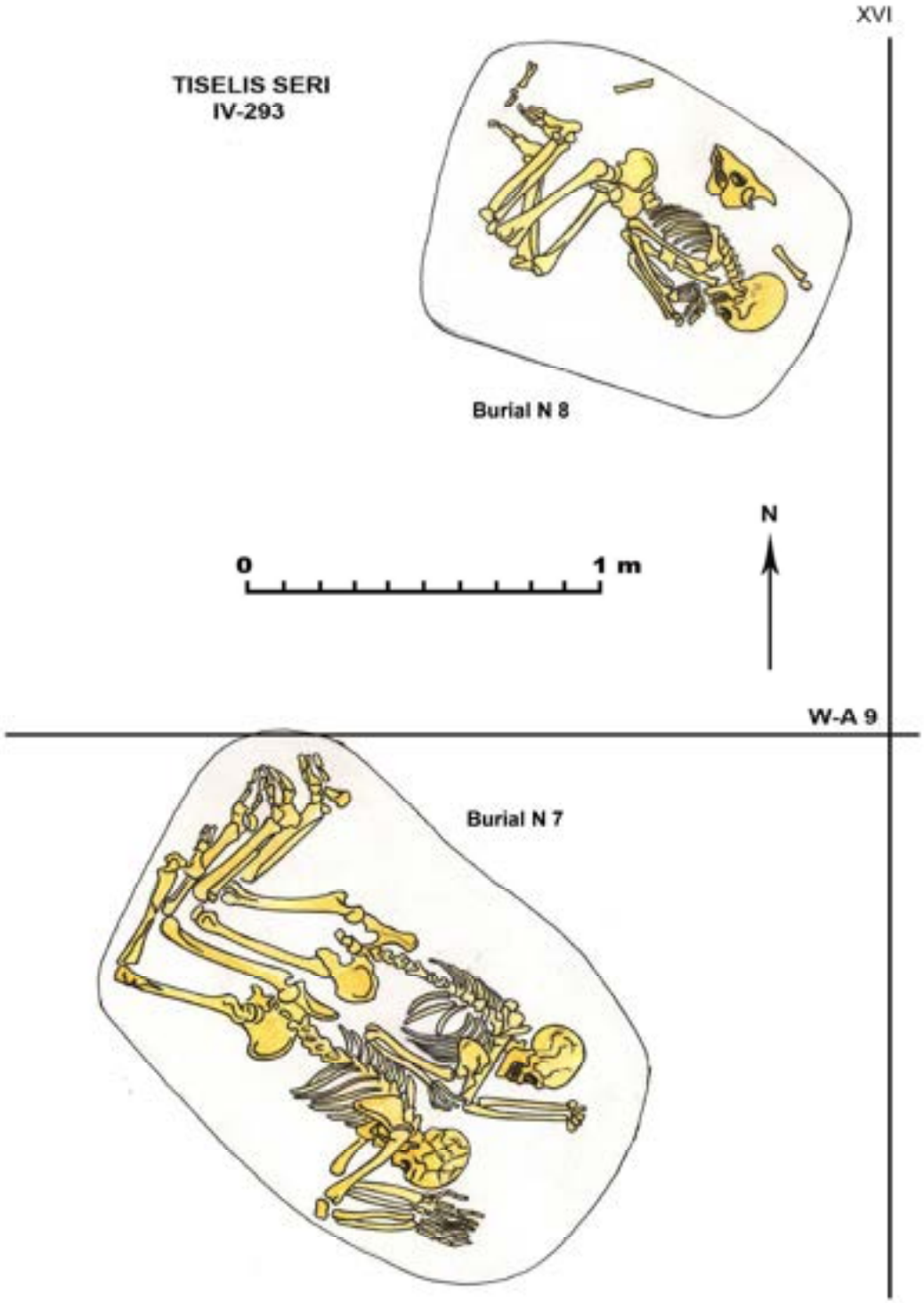
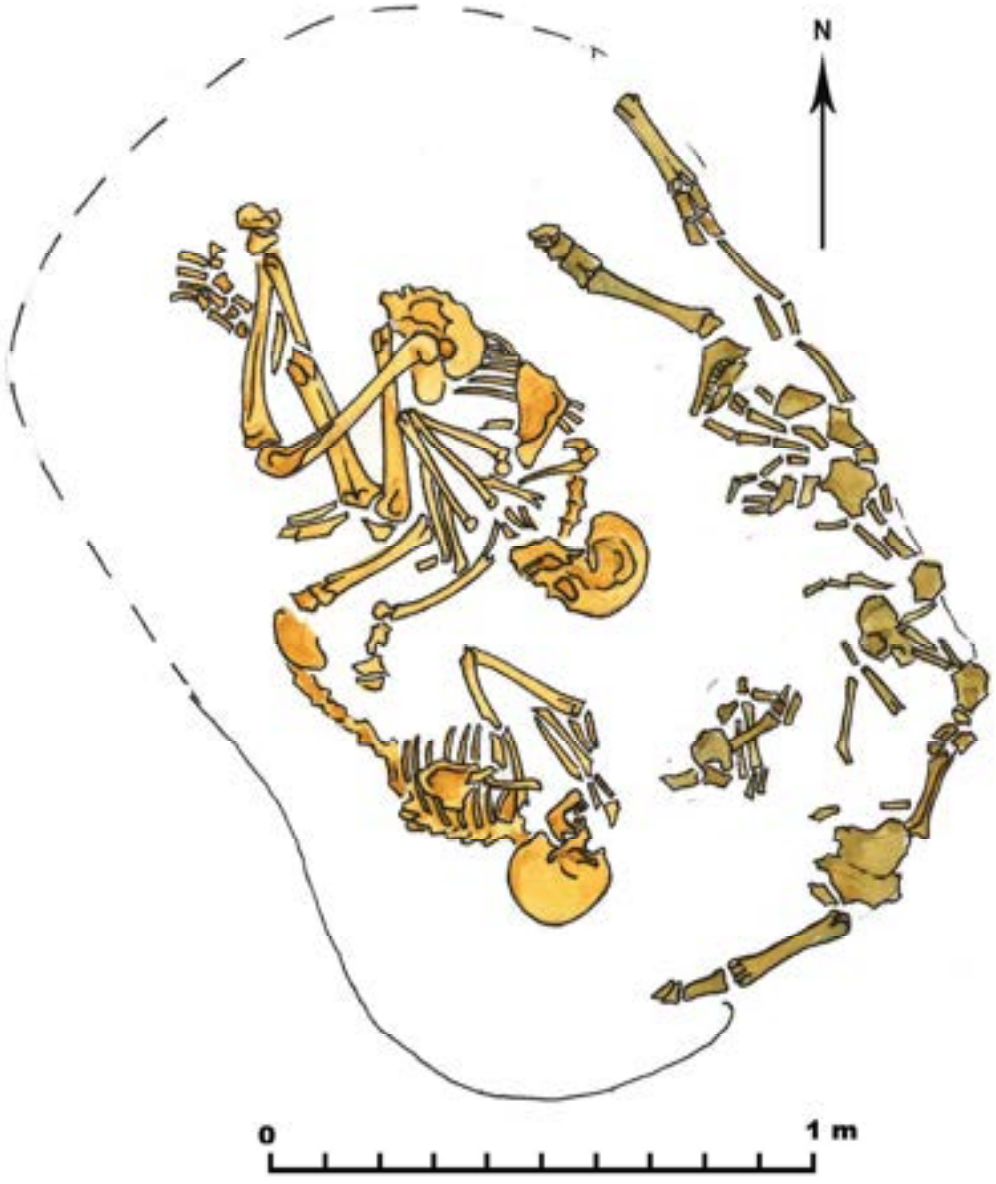



XVI
TISELIS SERI
IV-293
Burial N 8
N
0
1 m
W-A 9
Burial N 7

XVII

TISELIS SERI
IV-293

Burial N 9



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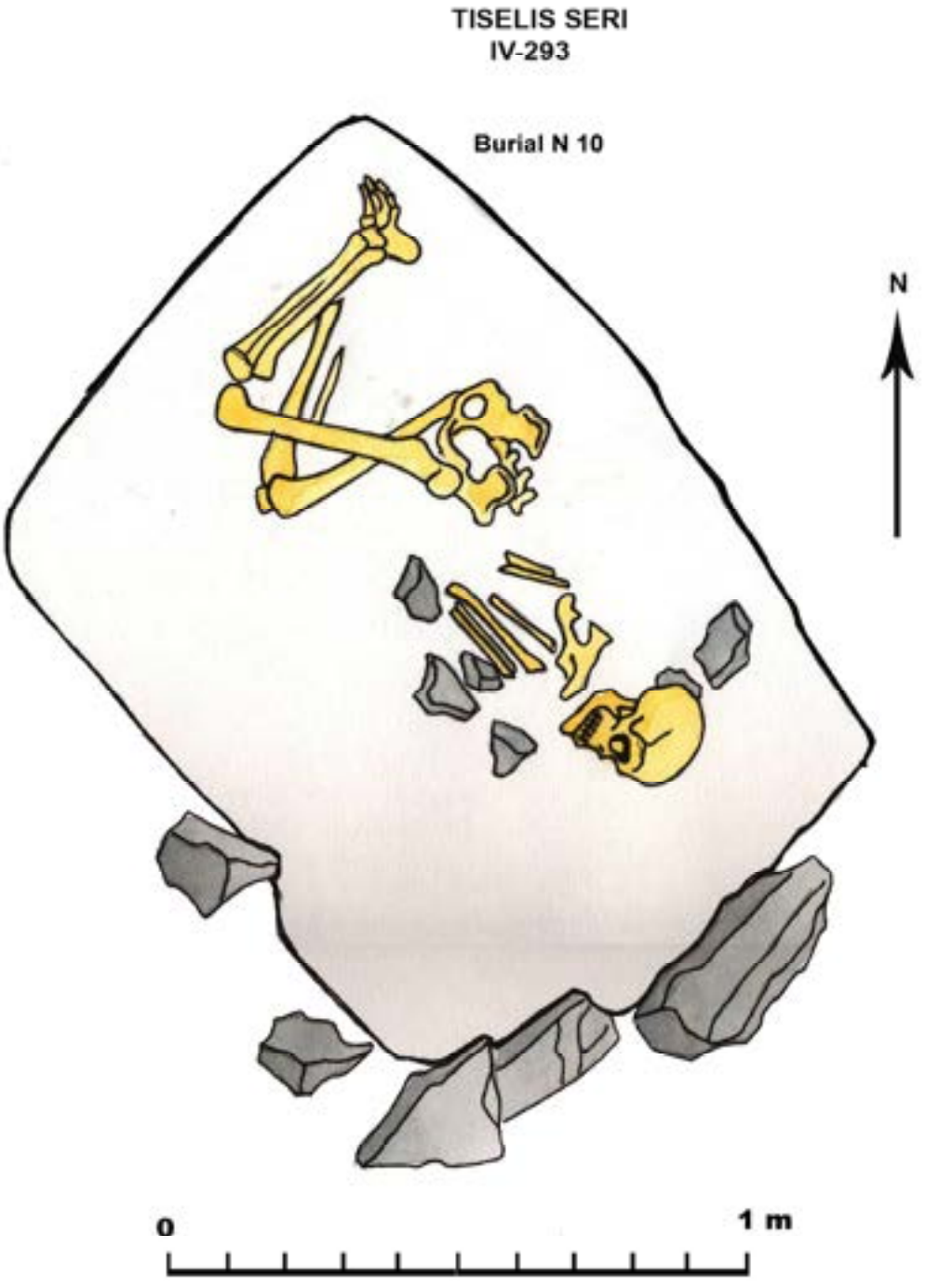

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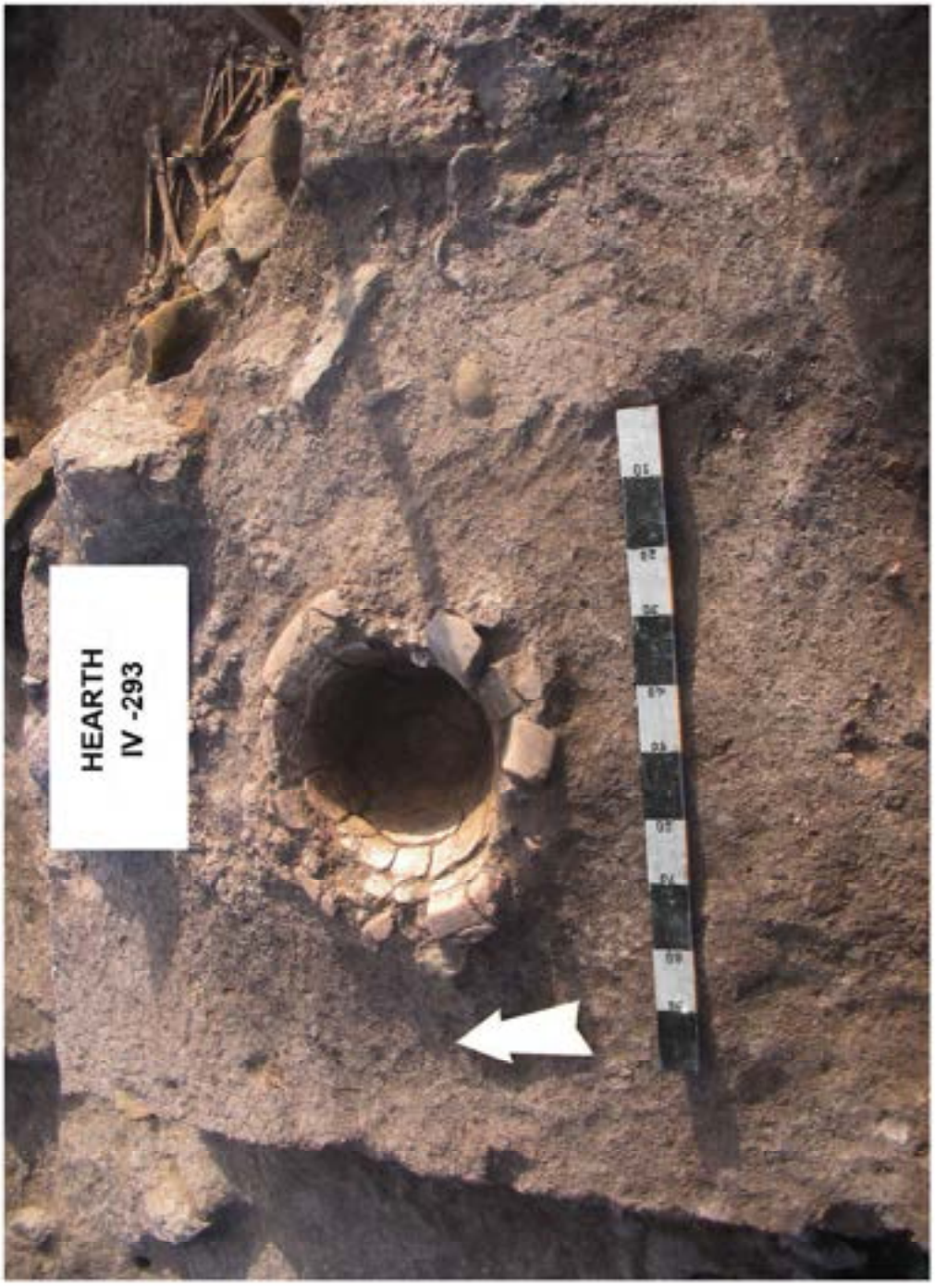
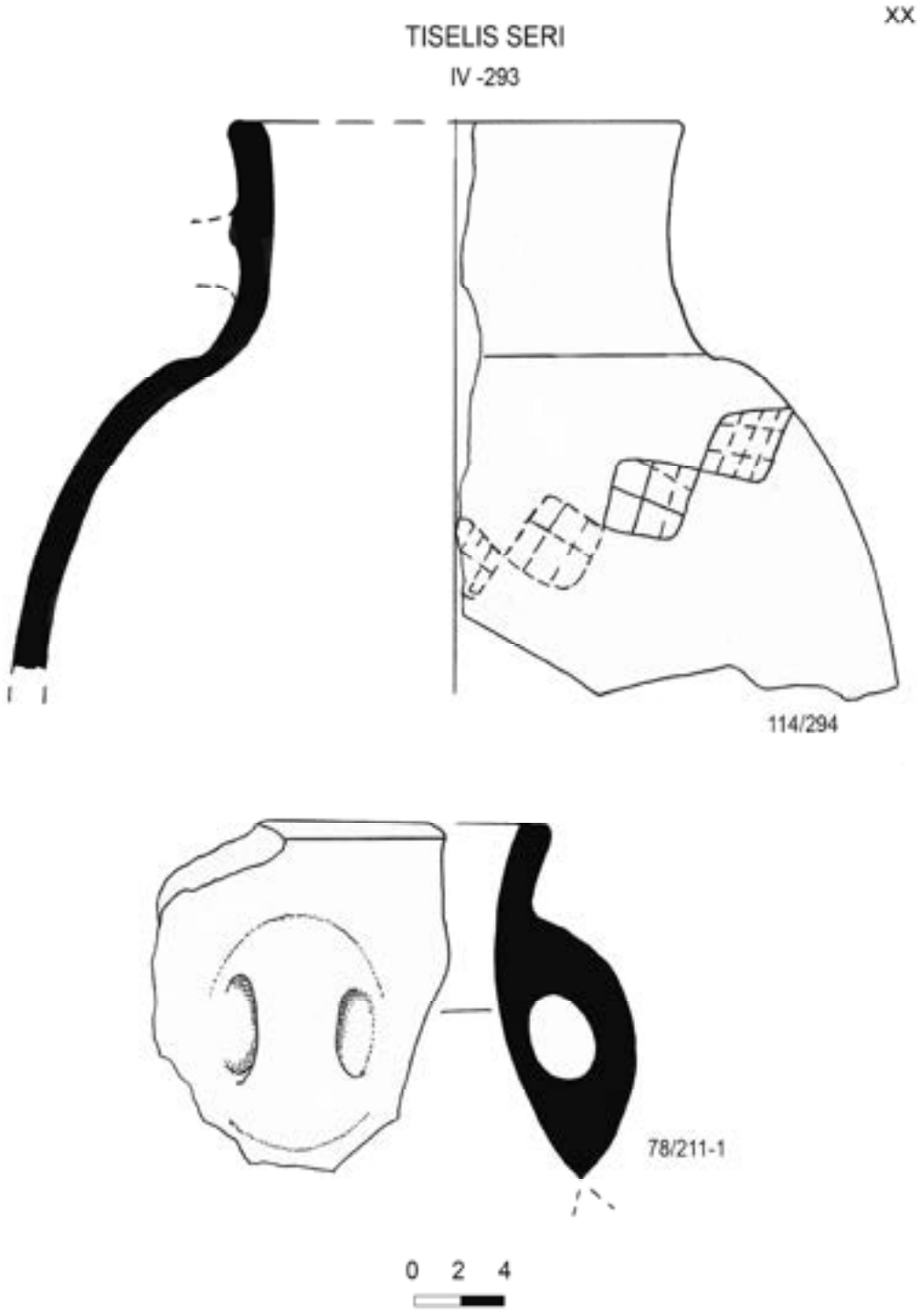
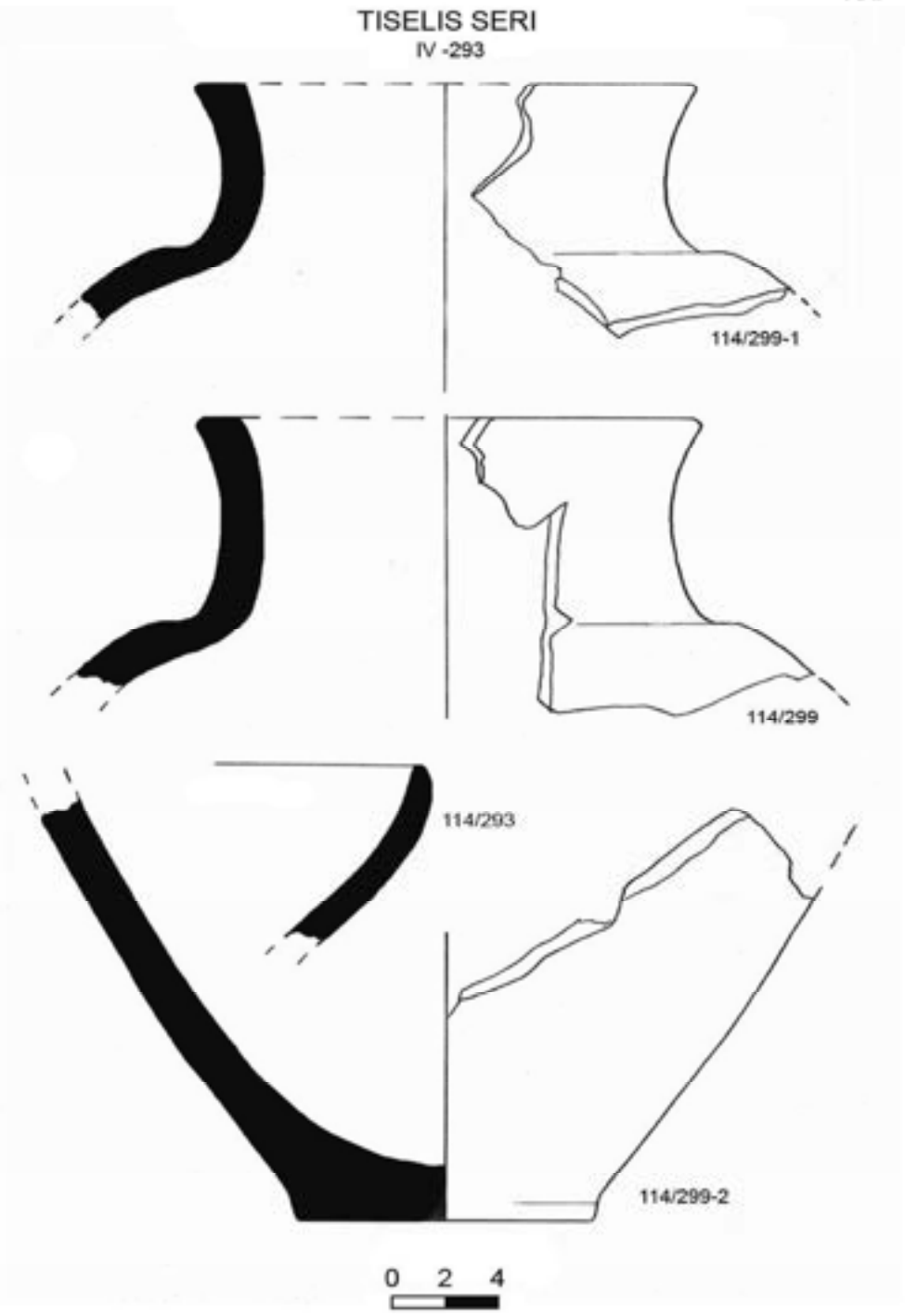



XX
TISELIS SERI
IV -293
114/294
78/211-1
0 2 4

XXI



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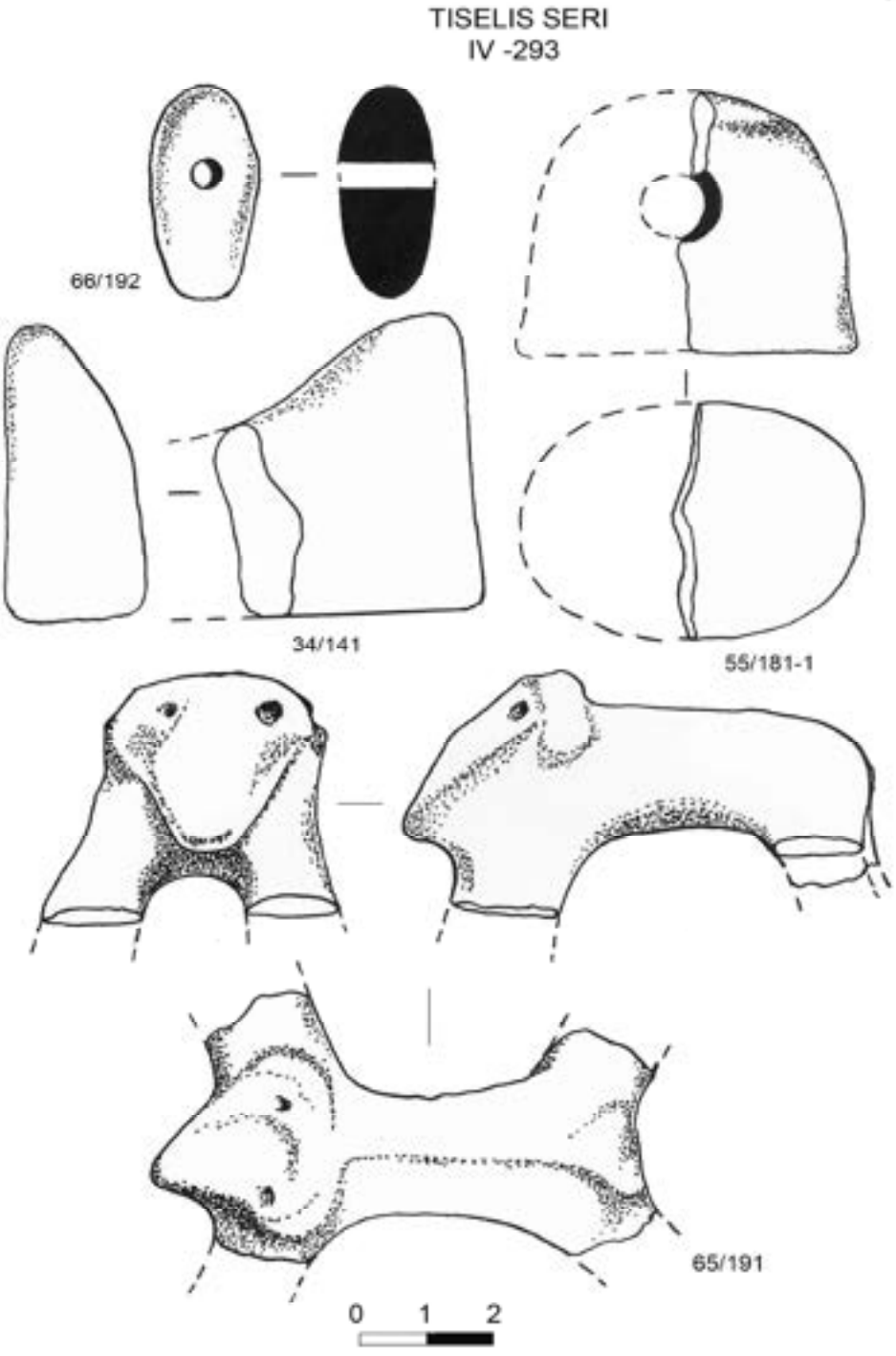

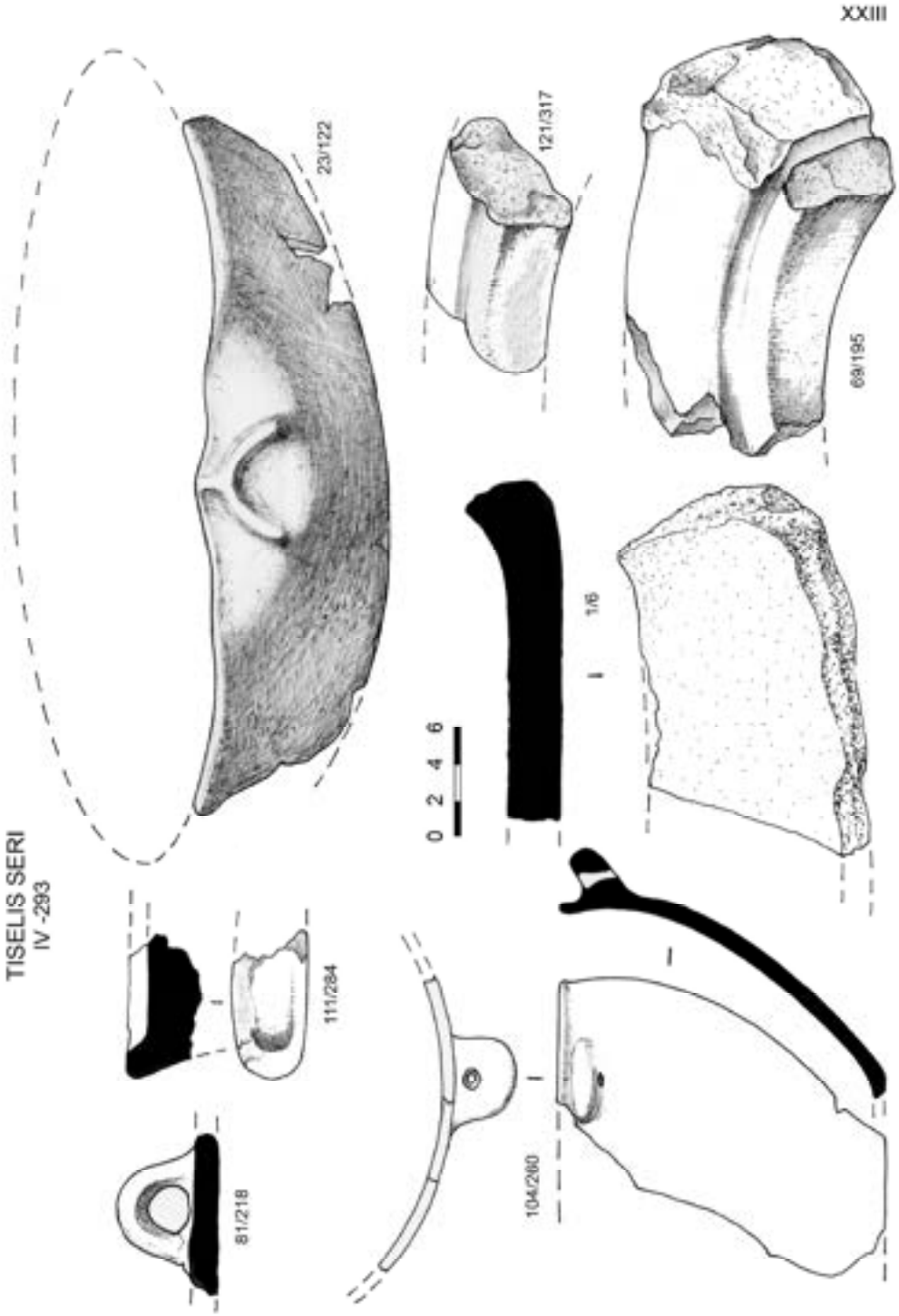
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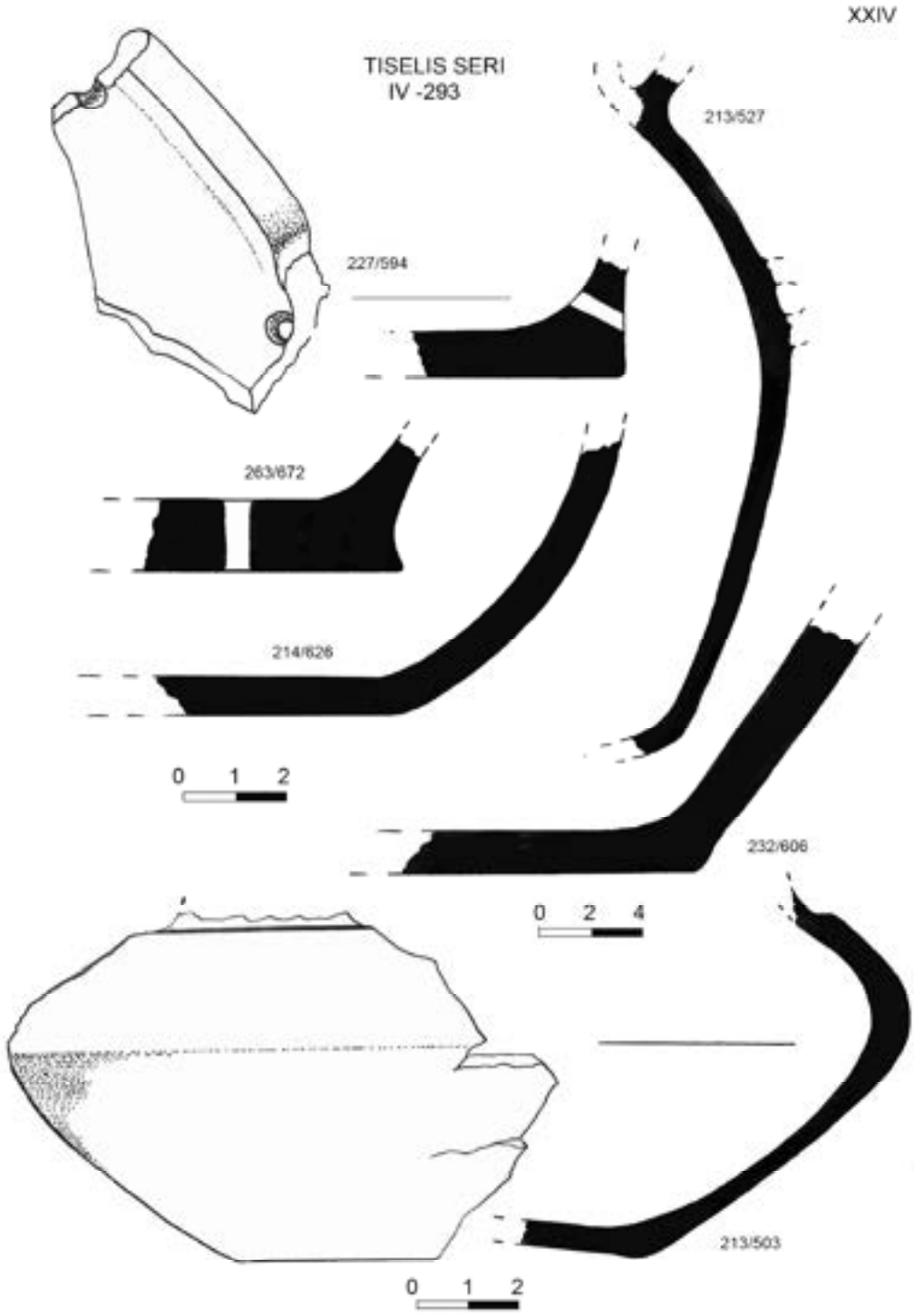
TISELIS SERI
IV -293
23/122
121/317
69/195
0 2 4 6
1/6
111/284
81/218
104/260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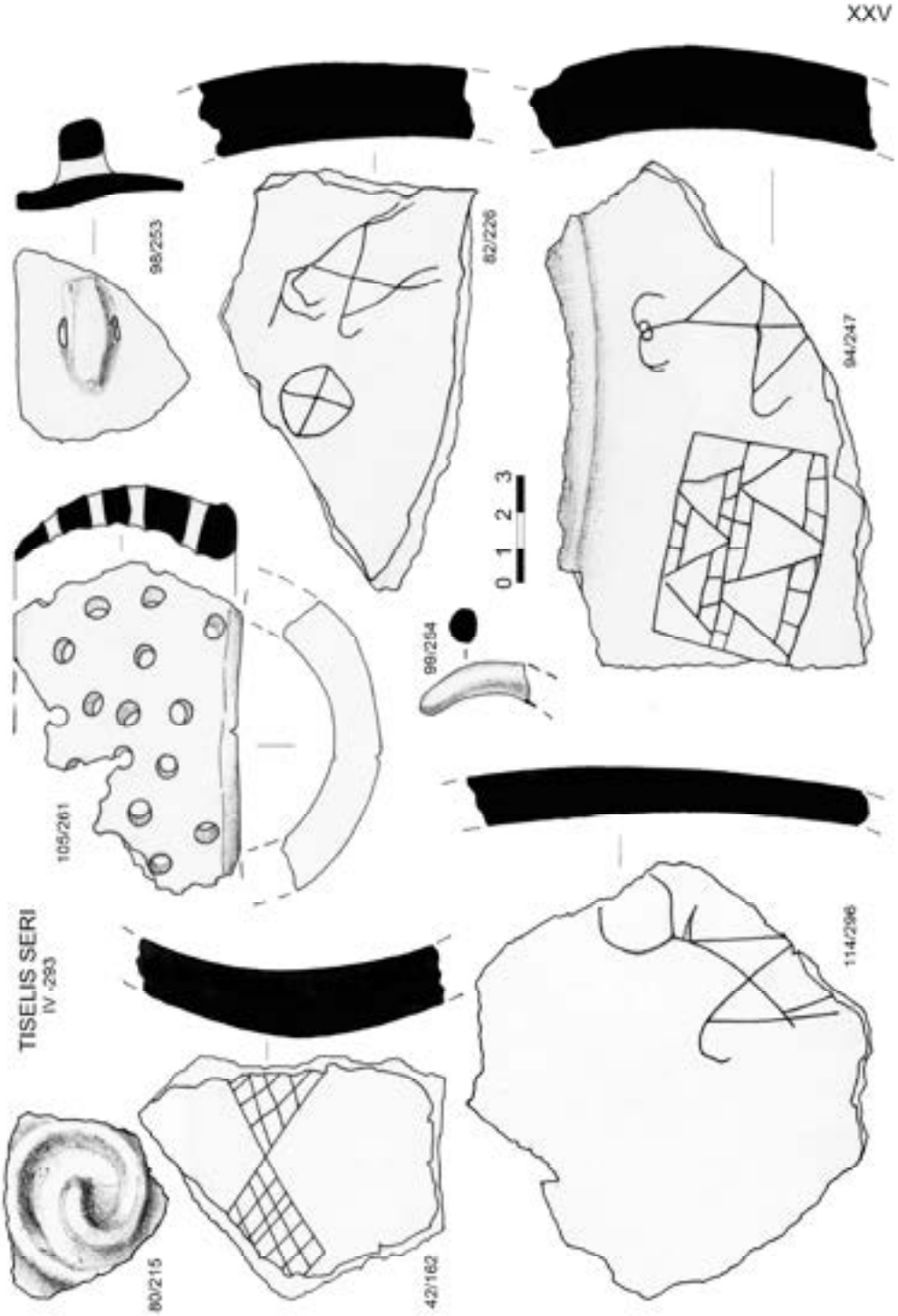
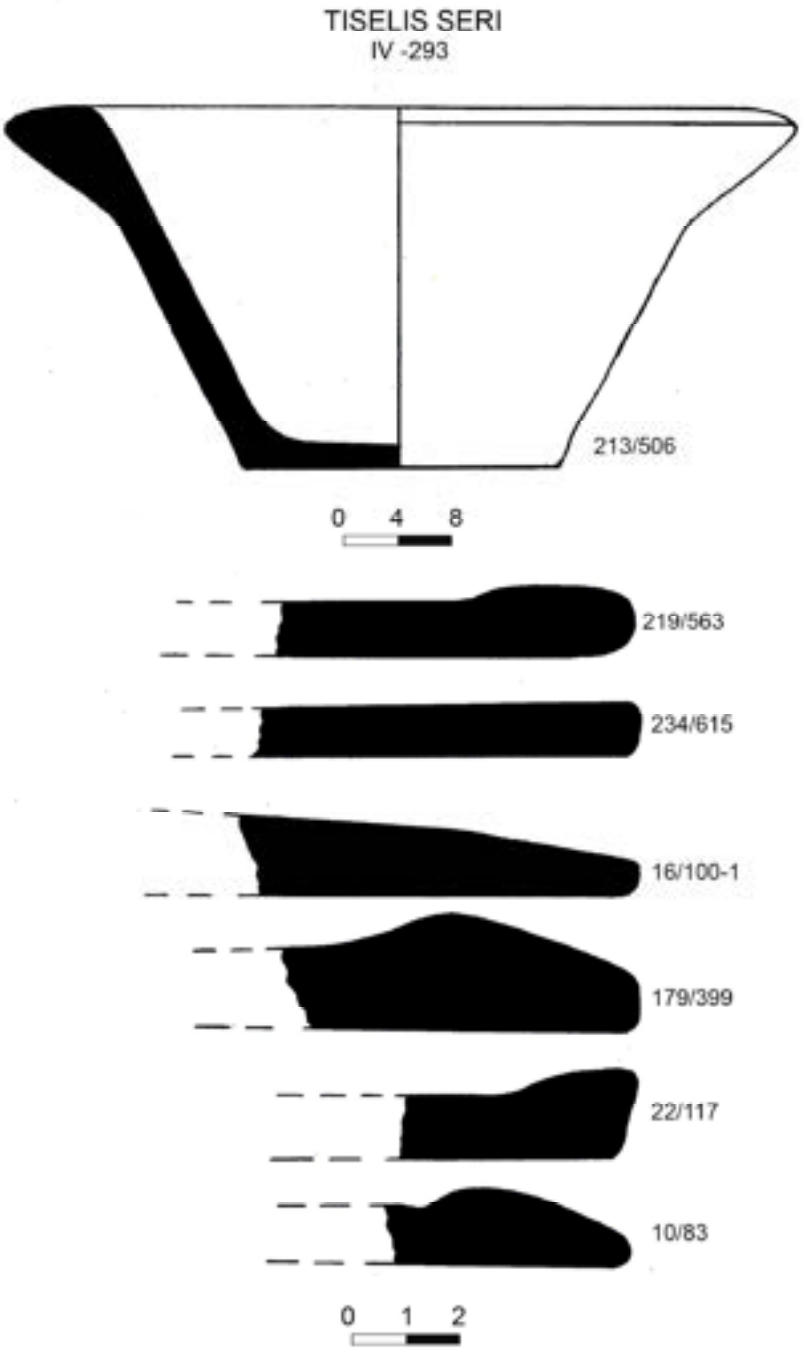
IV -293
213/527
227/594
263/672
214/626
0 1 2
232/606
0 2 4
213/503
0 1 2


XXV
98/253
82/226
94/247
0 1 2 3
98/264
105/261
TISELIS SERI
IV -293
114/286
80/215
42/162

XXVI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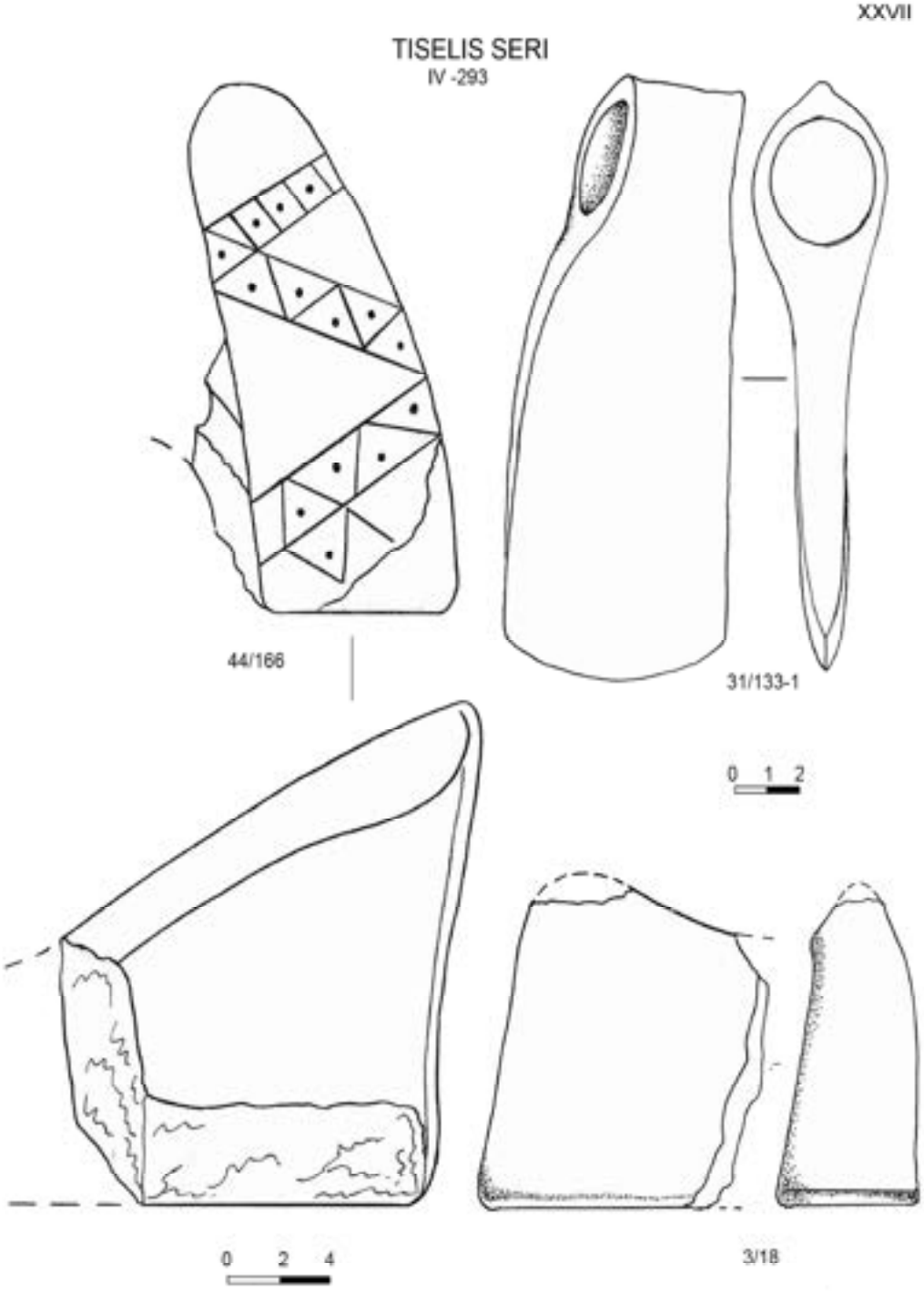
IV -293
213/506
0 4 8
219/563
234/615
16/100-1
179/399
22/117
10/83
0 1 2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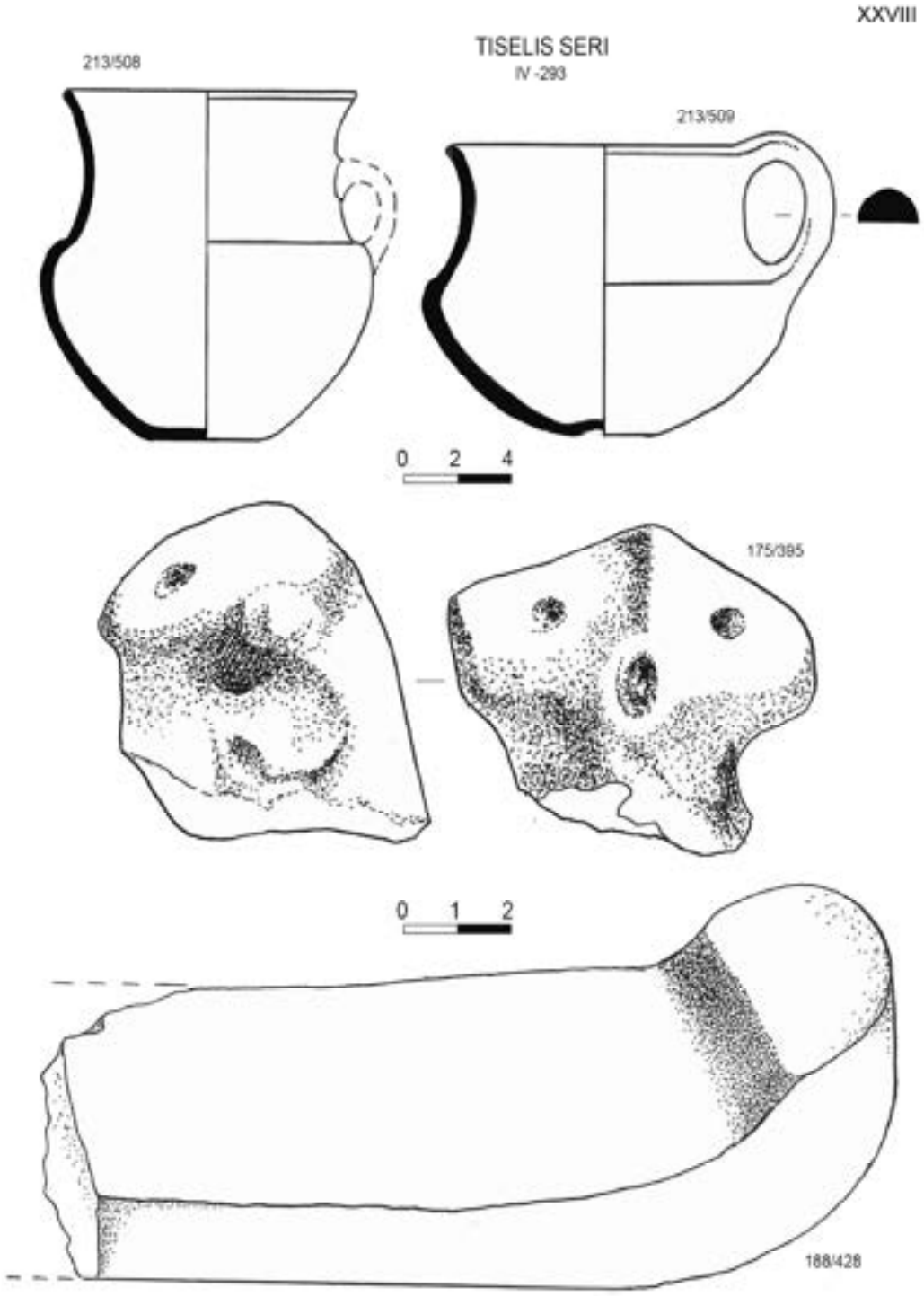
TISELIS SERI
IV -293
44/166
31/133-1
0 1 2
0 2 4
3/18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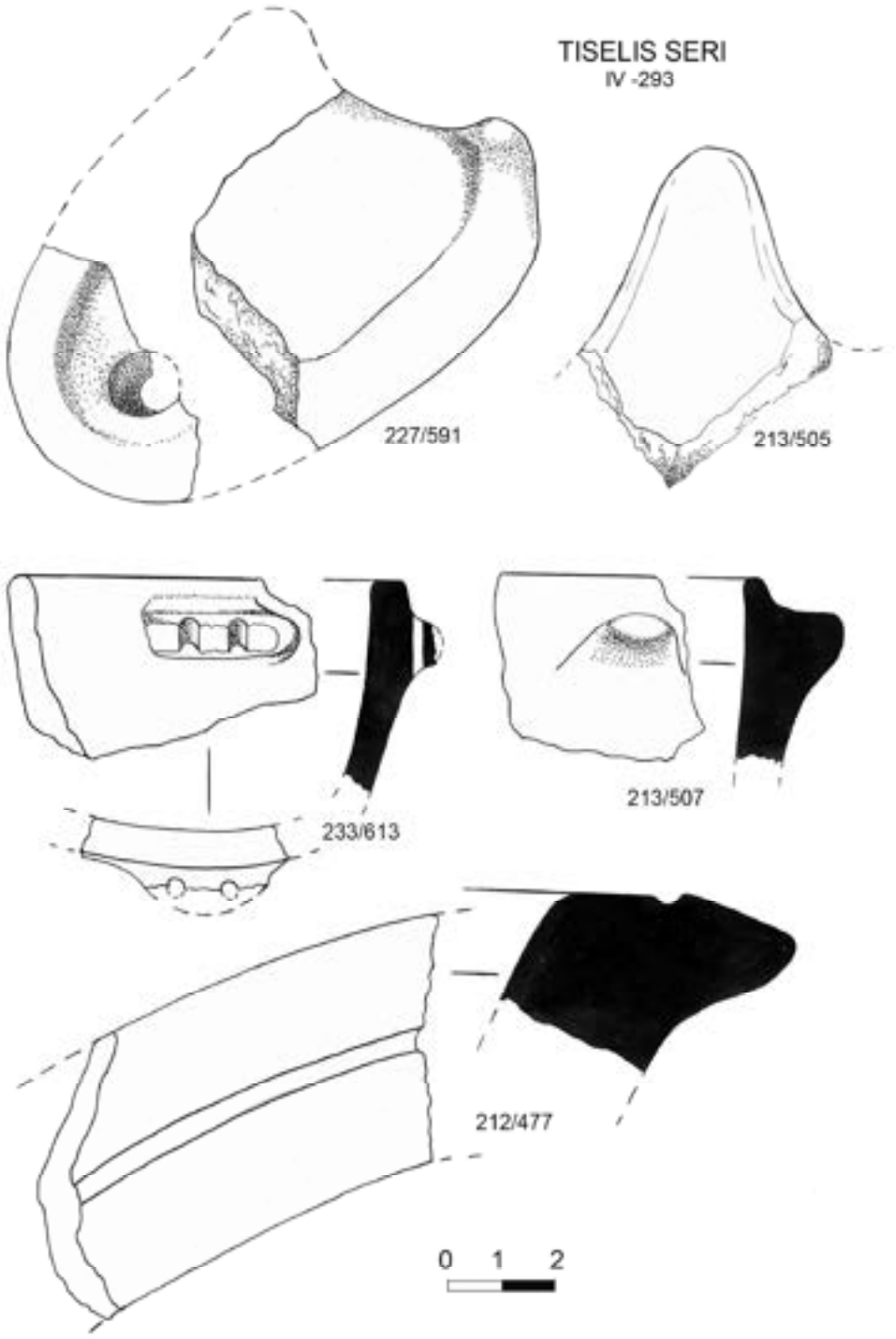
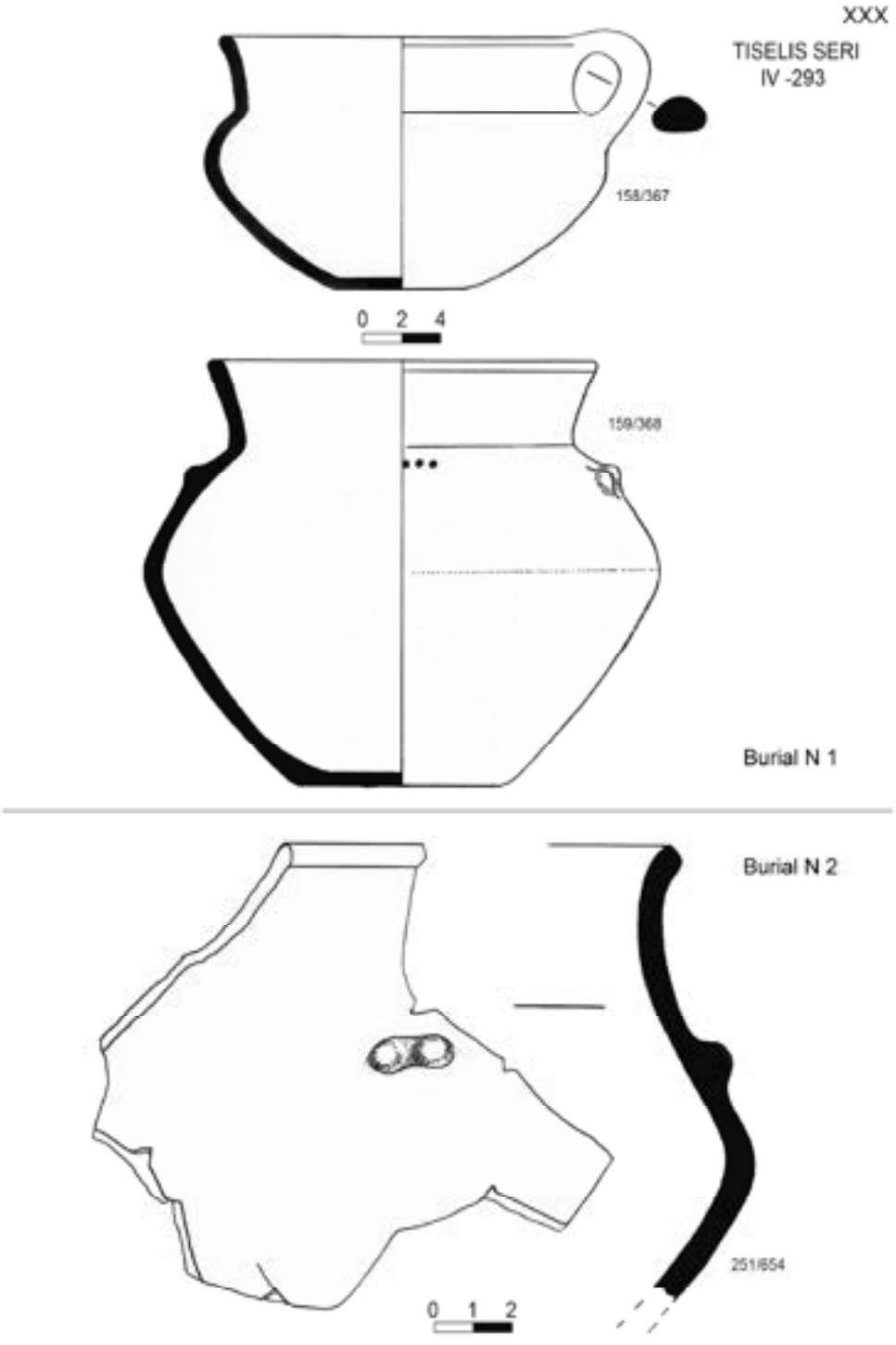
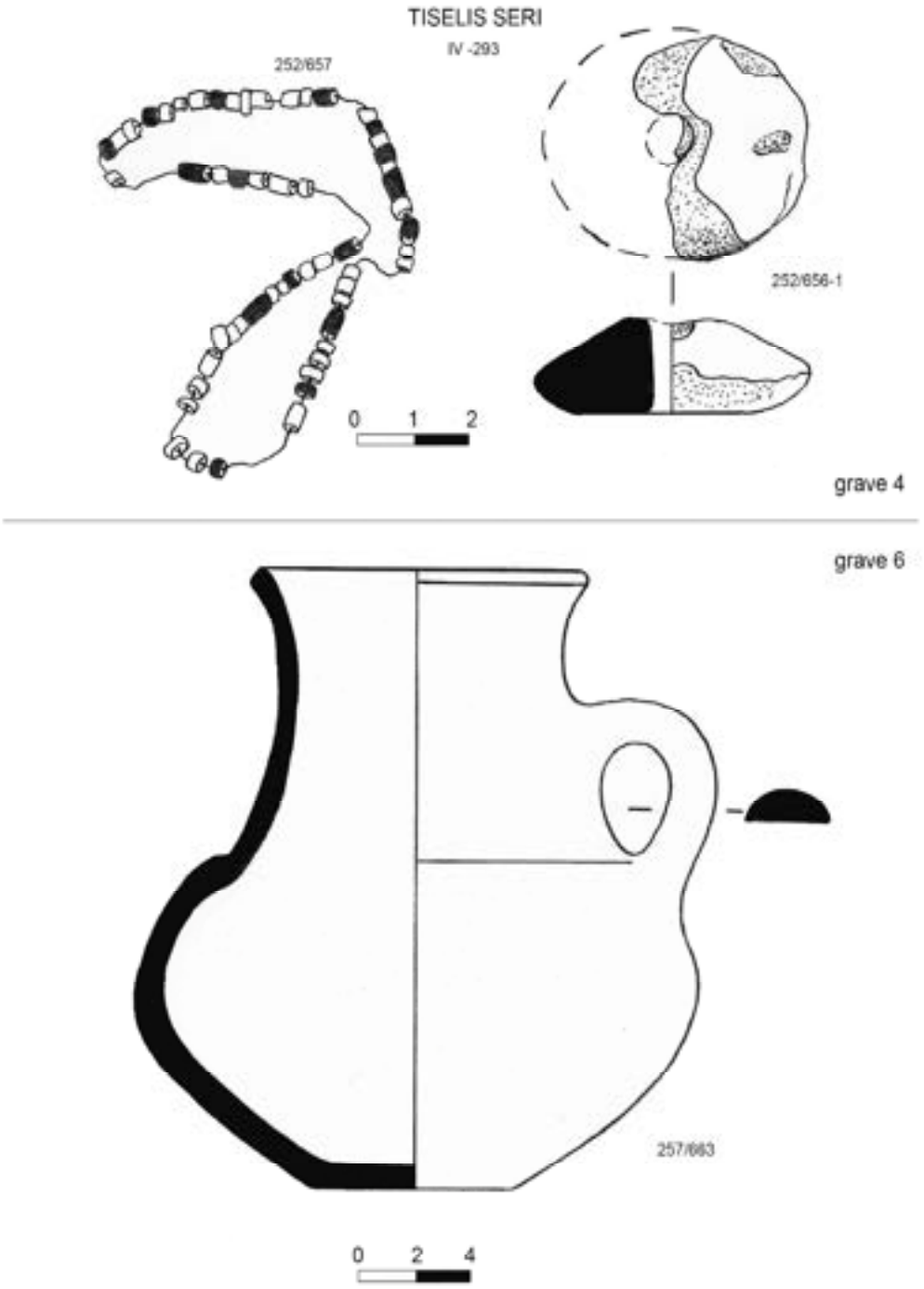
TISELIS SERI
IV -293
213/508
213/509
0 2 4
175/385
0 1 2
188/428

XXIX




XXX
TISELIS SERI
IV -293
158/367
0 2 4
159/368
Burial N 1
Burial N 2
251/654
0 1 2

XXXI


TISELIS SERI
IV -293
252/657
252/656-1
0 1 2
grave 4
grave 6
257/663
0 2 4

XXXII

XXXIII

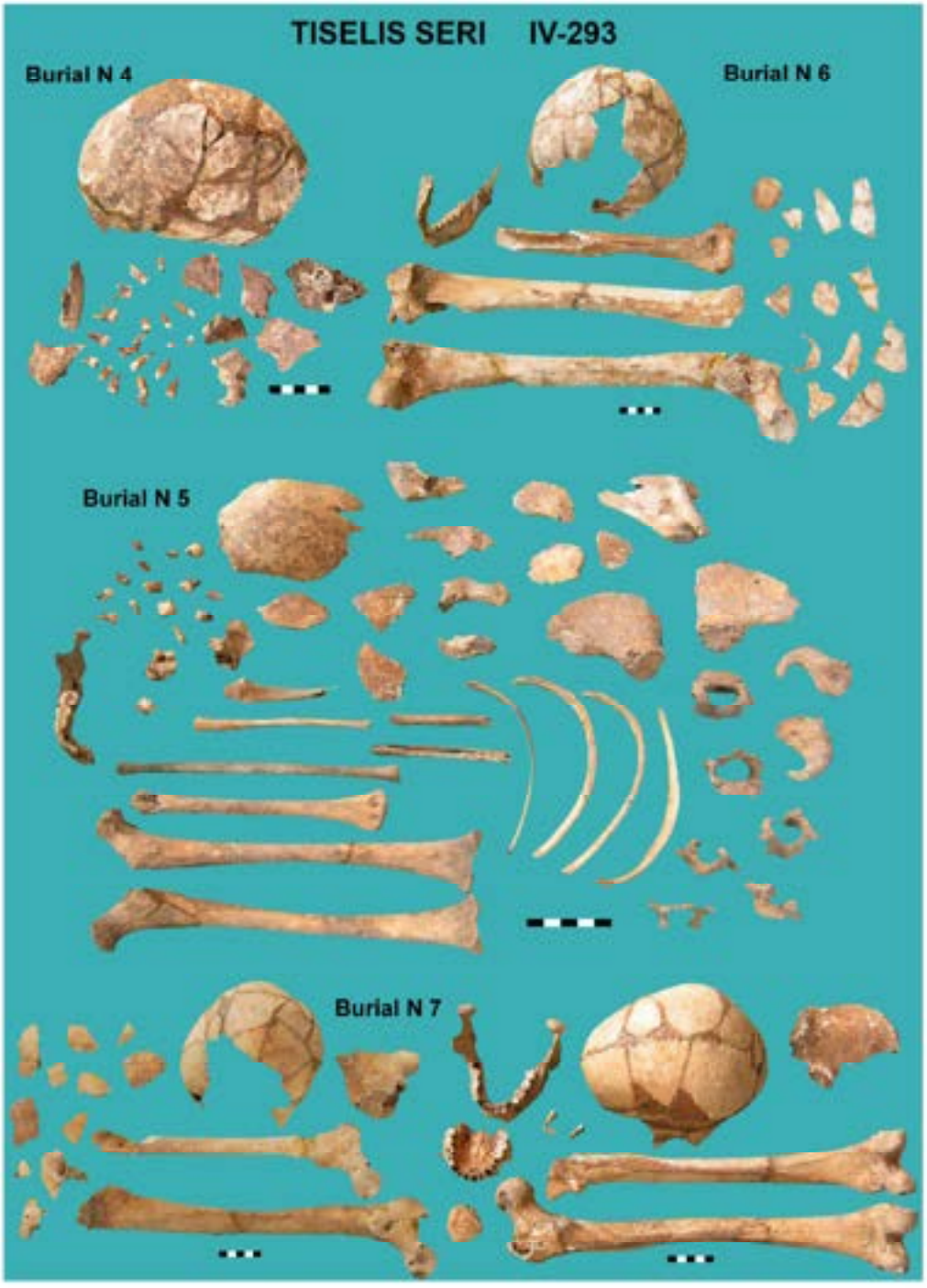
XXXIV

XXXV

XXXVI

XXXVII

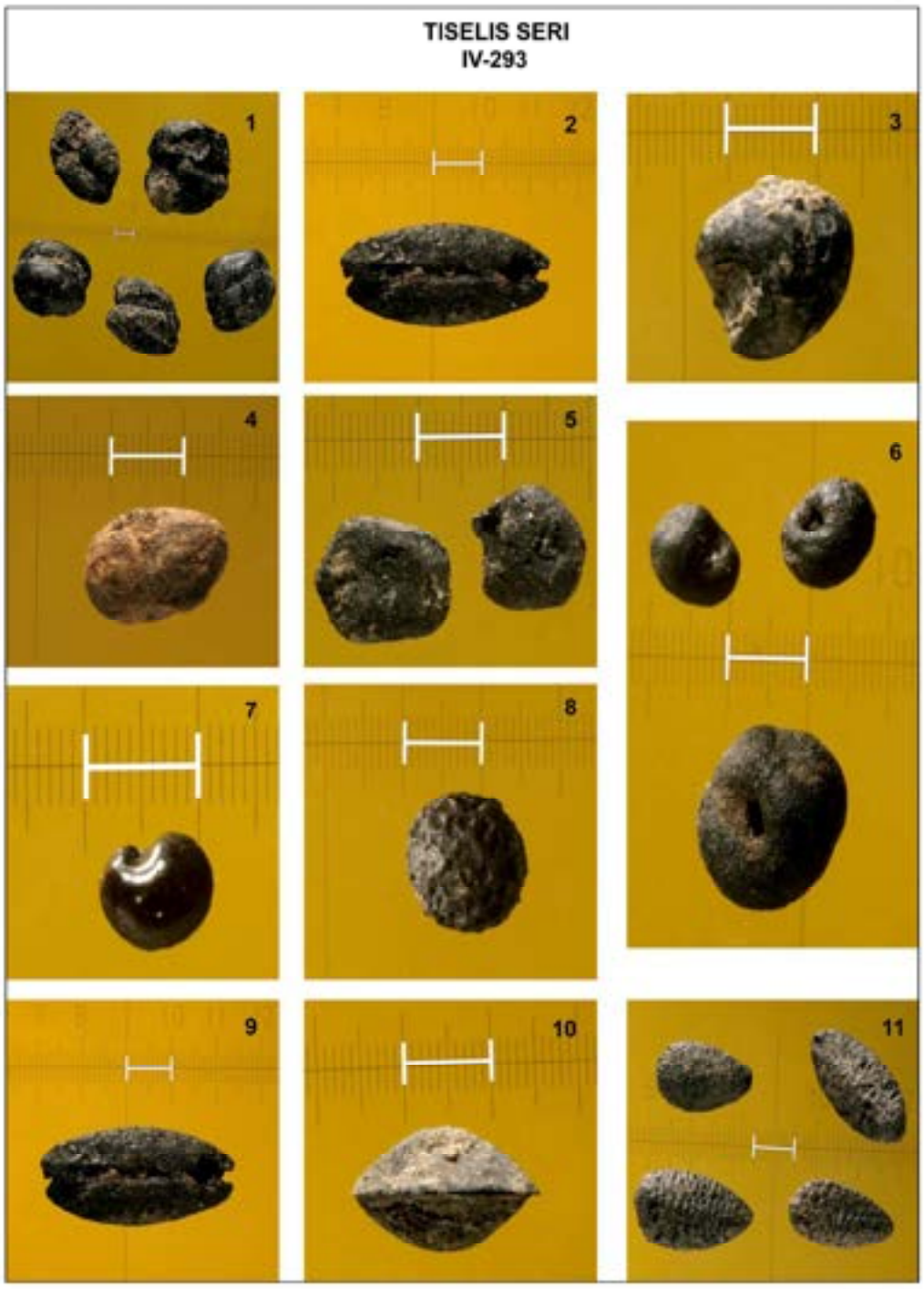
XXXVIII



XXXIX

XL

XLI



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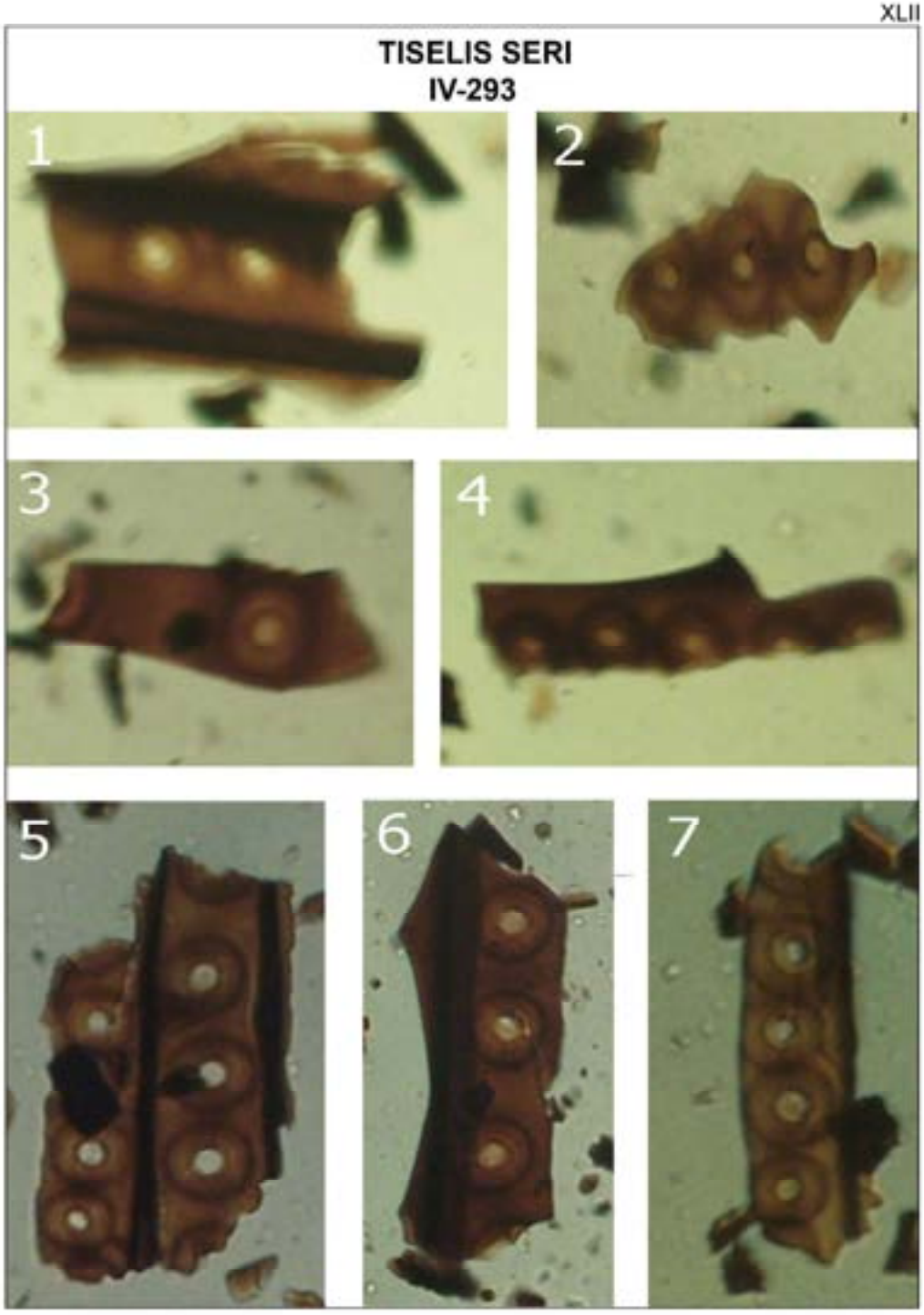

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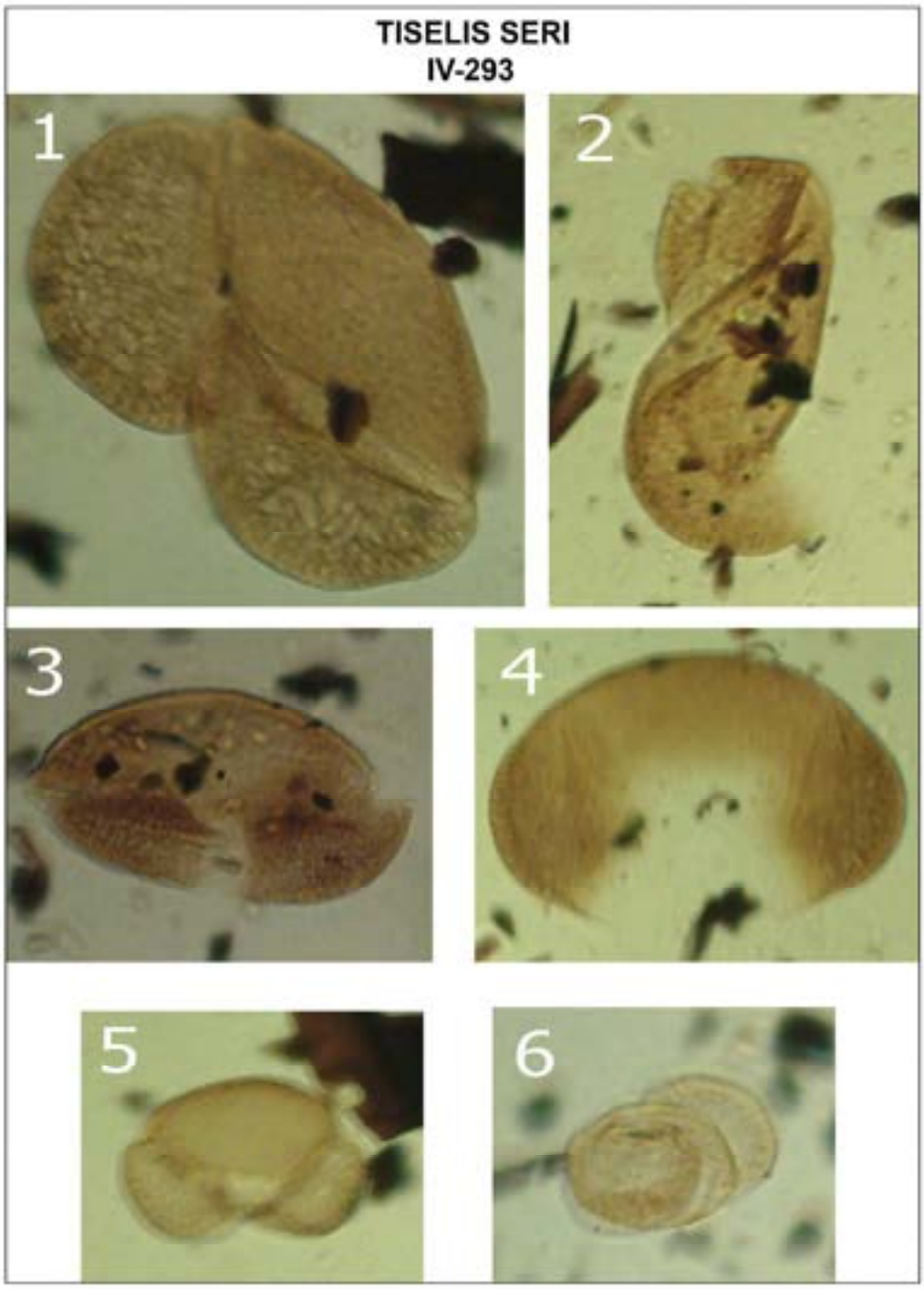

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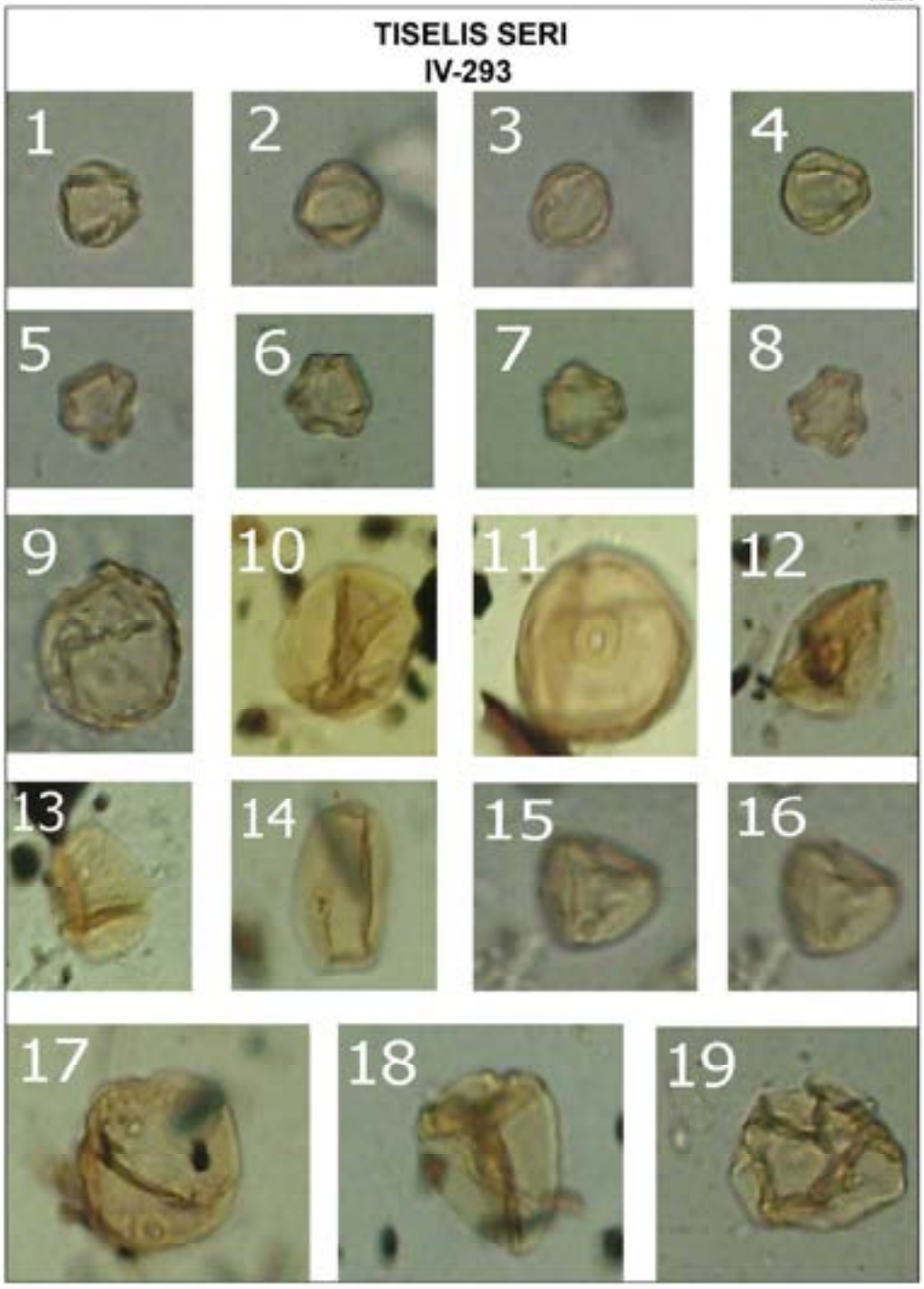

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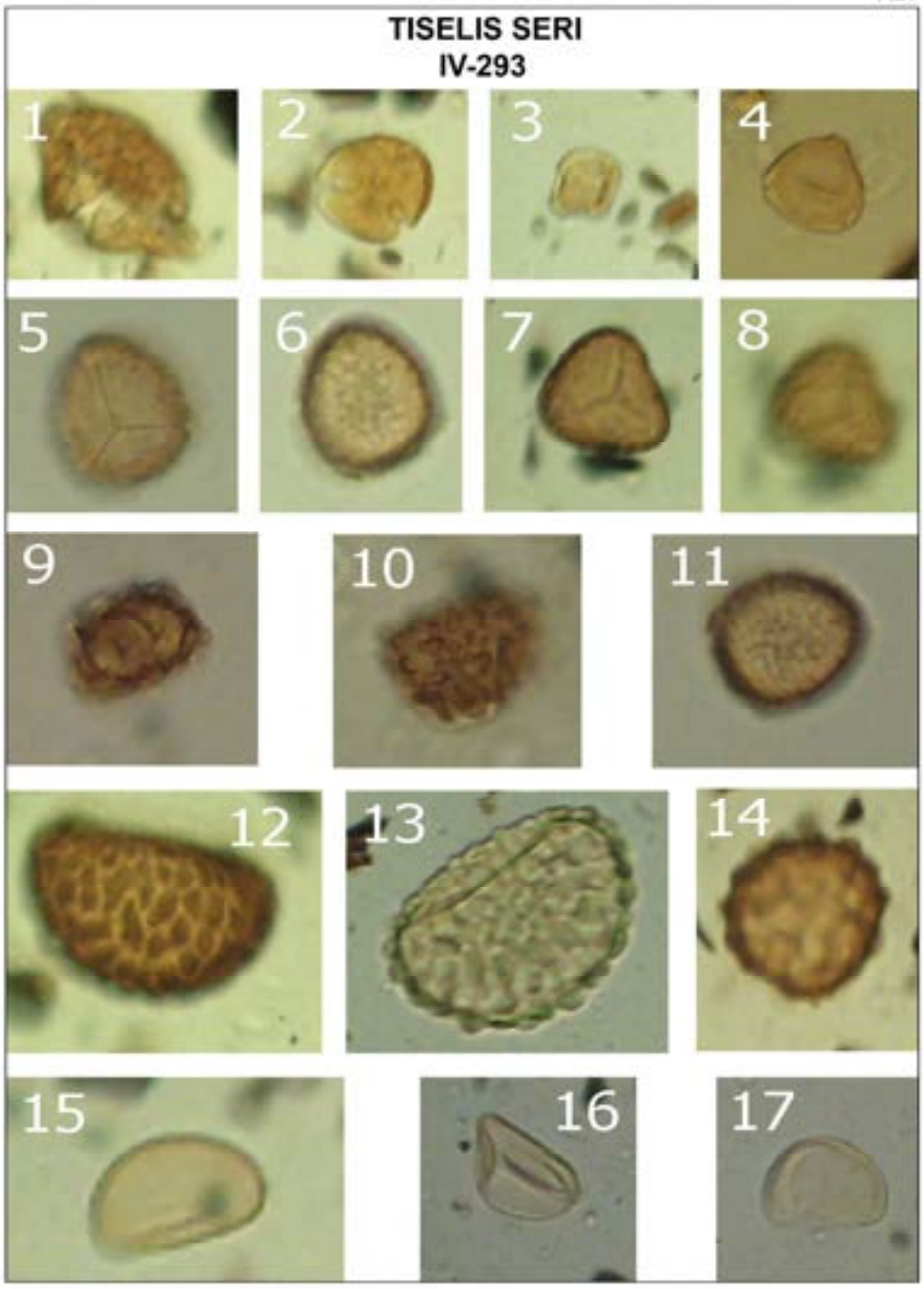

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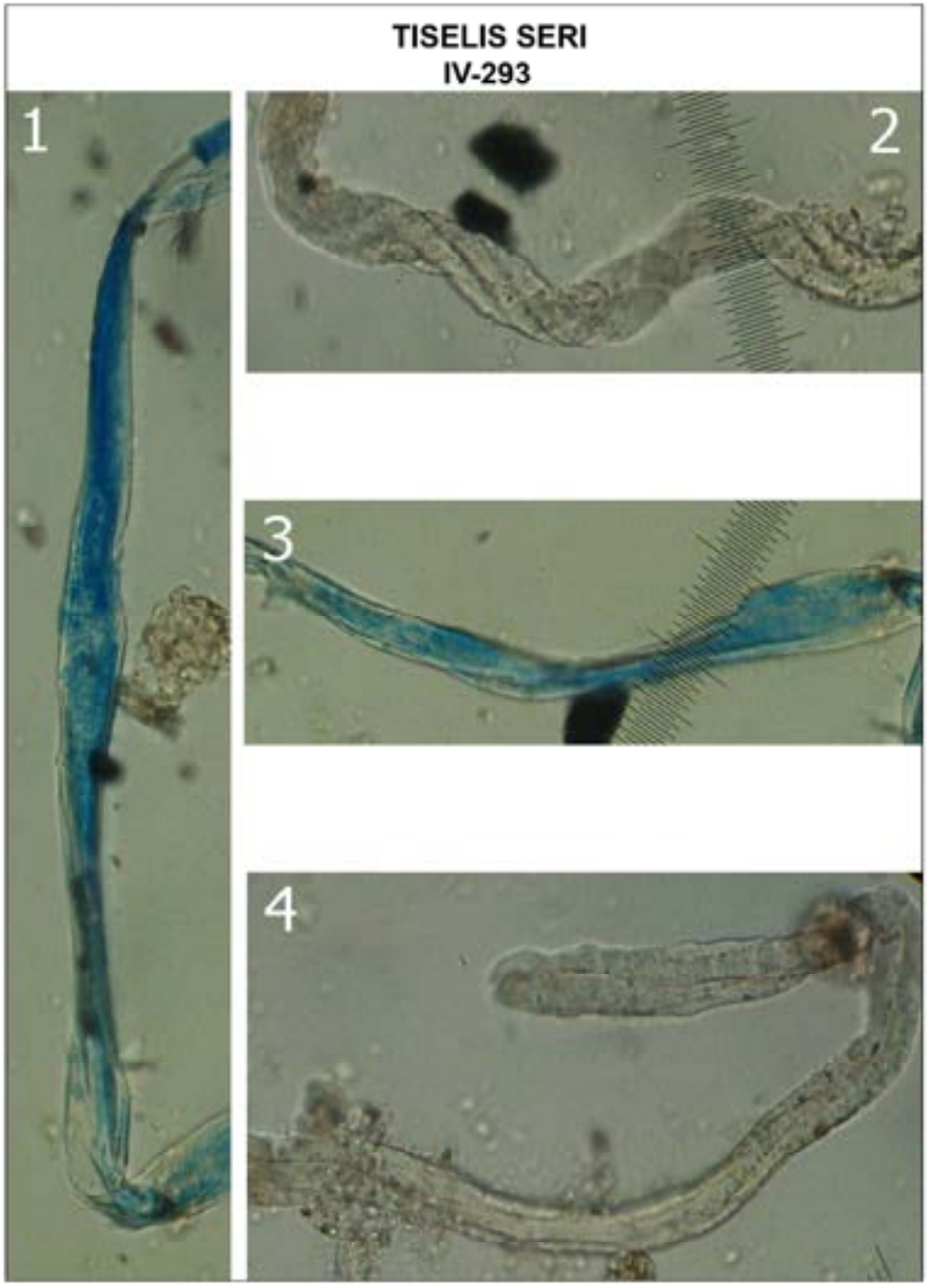

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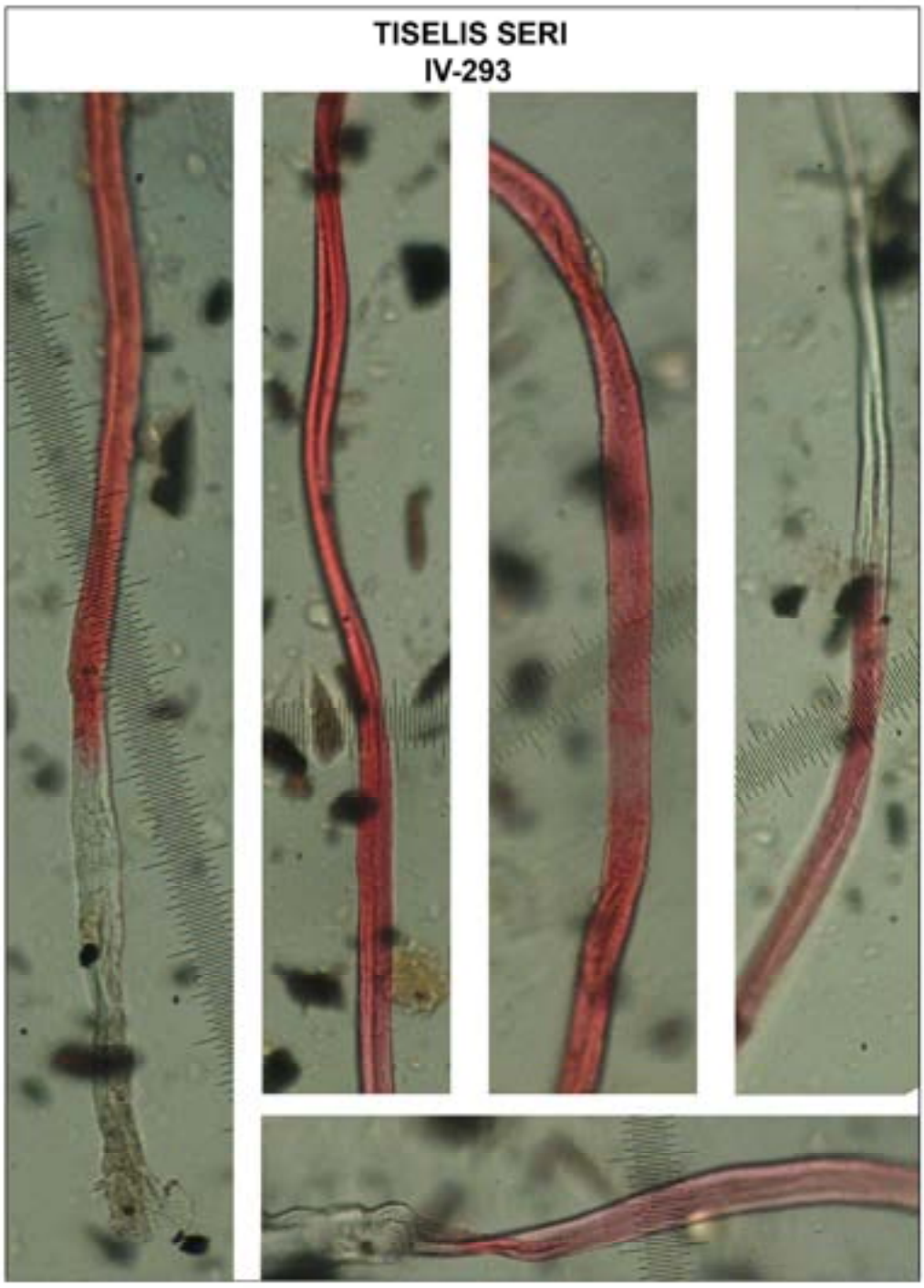

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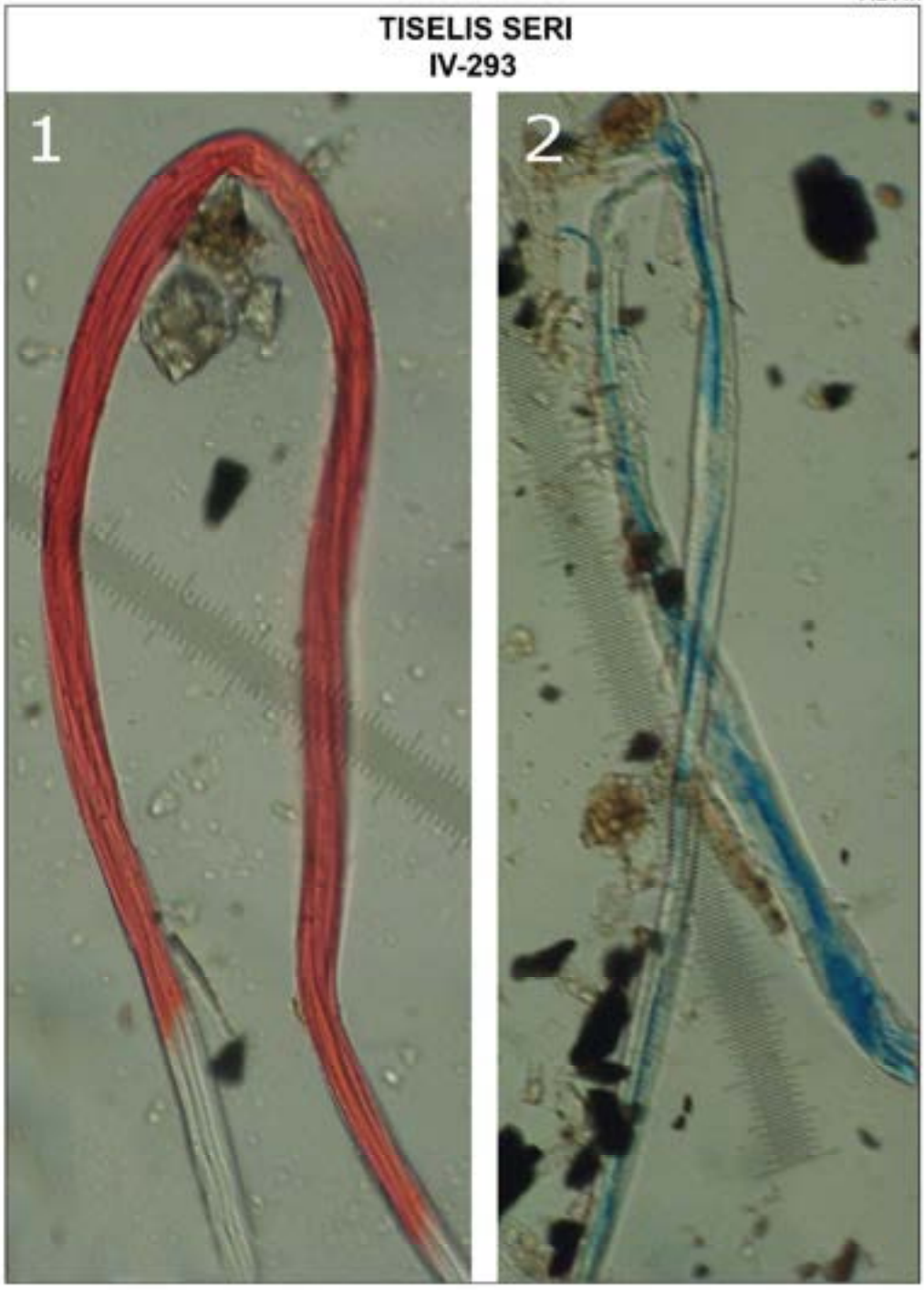

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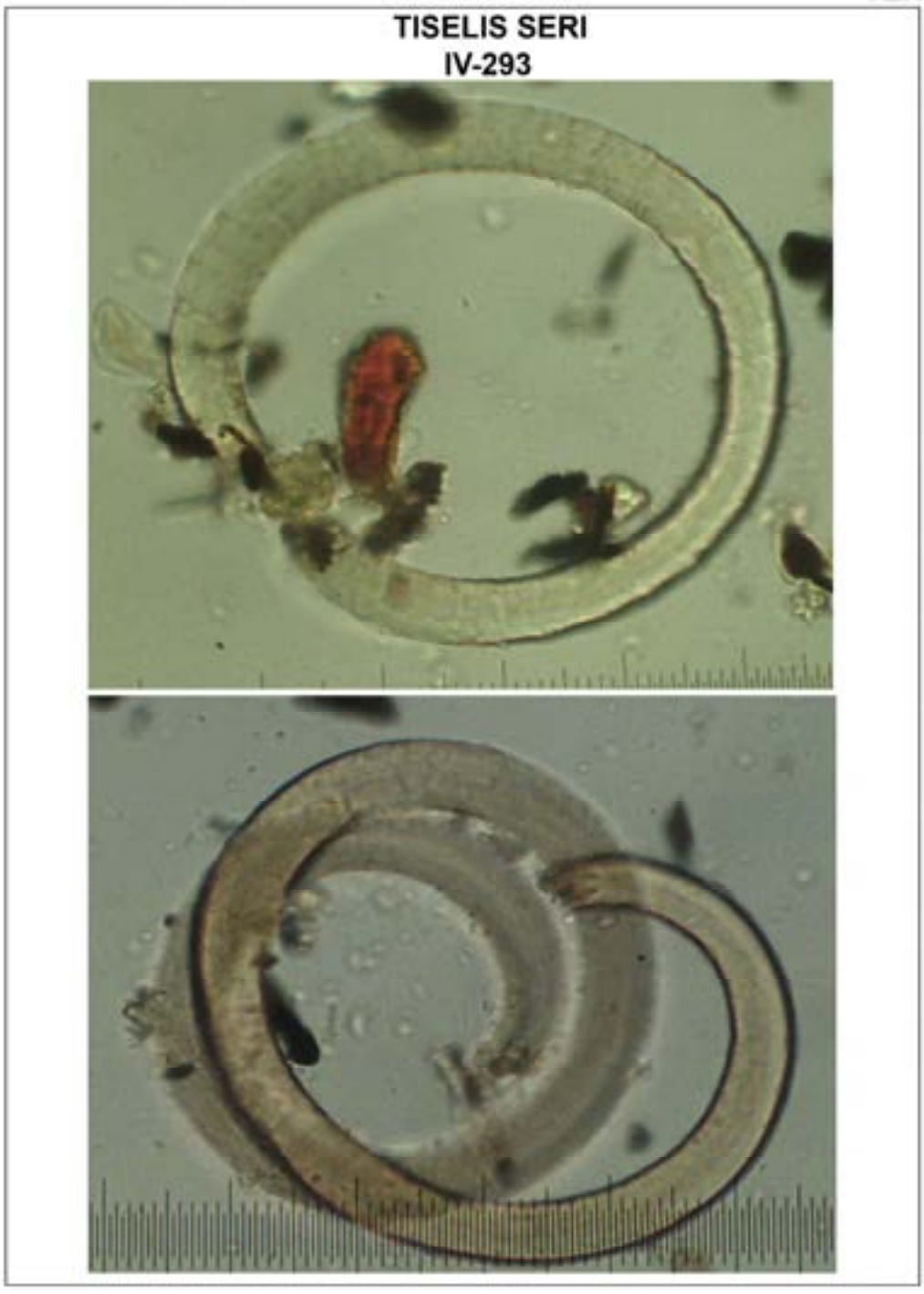


L
TISELIS SERI
IV-293

LI


TISELIS SERI IV-293
193-1
133-3
194
194-1
201
133-2
193
432-1
470
523