Excavations at Bestansur and Zarzi

Autumn 2021 Field Report

Introduction

The Iraq-UK Central Zagros Archaeological Project team conducted a season of excavations at Bestansur in Sulaimani Province, Kurdistan Region of Iraq, during the period 19th September to 30th November 2021. Two days were also devoted to survey and a sounding in the vicinity of Zarzi Cave.

The team from Sulaimani Directorate of Antiquities and Heritage comprised:
Kamal Rasheed Raheem (Co-Director)
Kamal Raeuf Aziz (Directorate Representative)
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The team from the University of Reading comprised:
Roger Matthews (Co-Director)
Wendy Matthews (Co-Director)
Amy Richardson (Assistant Director)
Alessandro Guaggenti (Field Director)
Samantha Walsh (human remains)
Kate Dudgeon (archaeobotany and excavations)
Donna de Groene (zooarchaeology)
Samira Idriss (human remains)

In addition, a team of experienced archaeological workers from the village of Bestansur, averaging 20 men per day, assisted with the project throughout the season. Women of the village were also employed in sorting heavy residues from flotation of selected samples. As always, we were accommodated throughout the season in the houses of Umaid Hama Rashid and Amir Mohammed, for which we are very grateful. We were very pleased to receive a visit from staff and pupils of Bestansur High School and to be honoured with an inspiring visit to their school (Fig. 1).

Fig. 1. Visit of staff and pupils from Bestansur High School.

We are extremely grateful for all the support we have received throughout the season, and beyond, from all colleagues in the Sulaimani Directorate of Antiquities and Heritage, led by the Director, Kamal Rasheed Raheem. We thank also the staff of Slemani Museum including its Director, Hashim Hama Abdullah, and conservator Nyan Nasser for all their support.

The season was funded by a European Research Council Advanced Grant (ERC AdG 787264) for the project MENTICA – Middle East Neolithic Transition: Integrated Community Approaches.

Excavations at Bestansur

The major aim of the 2021 season's excavations at the Early Neolithic site of Bestansur was to expand the exposed area of Neolithic architecture so as to generate major new insights into the neighbourhood scale of occupation at the site. We achieved this aim by excavating Neolithic levels in two areas adjacent to Trench 10 where we have conducted excavations already for several seasons (Fig. 2). The two new areas are Trench 10N and Trench 10W.

Fig. 2. Initial field site plan of 2021 Bestansur excavations

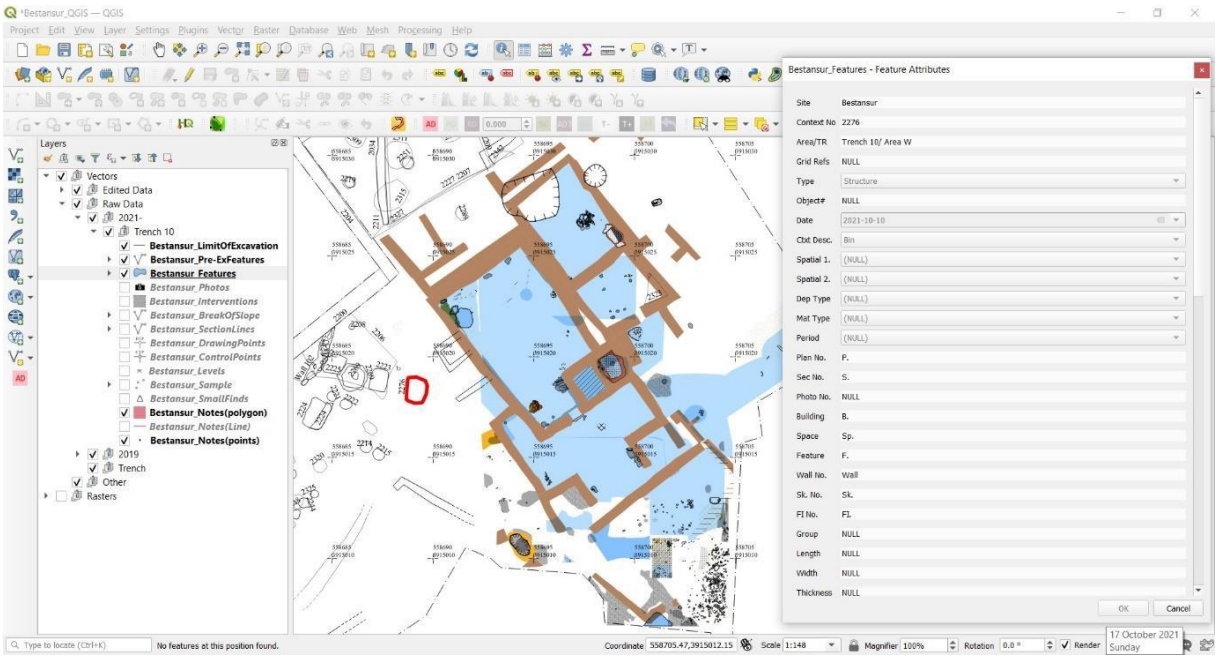

Fig. 3. Bestansur GIS Database

Recording methodology

During the course of excavating at the site of Bestansur in autumn 2021, recording procedures followed established methods of hand-written records, drawing and photography, which were further augmented with integrated digital recording procedures. This included the use of a sub-cm GNSS system and FPV drone, the latter of which was kindly lent to the team by the Sulaimani Directorate of Antiquities and Heritage.

Prior to the excavation season a GIS database had been designed and built using within QGIS, and specifically tailored to CZAP recording procedures (Fig. 3), in line with established archaeological standards and practices. Into this database was added all previous excavation data for the site of Bestansur. On site, a GNSS unit (Emlid Reach RS2) was used to fully record the site and supplement the hand-written record. This included the recording of:

- Limit of excavation
- Features in plan
- Site photos
- Interventions/sondages
- Break of slope
- Section lines
- Drawing points
- Photogrammetry control points
- Levels
- Samples
- Small finds

Each layer was provided with a digital form which was filled out on site, and the handheld used for the GNSS synchronised with the GIS database on a daily basis (Fig. 4).

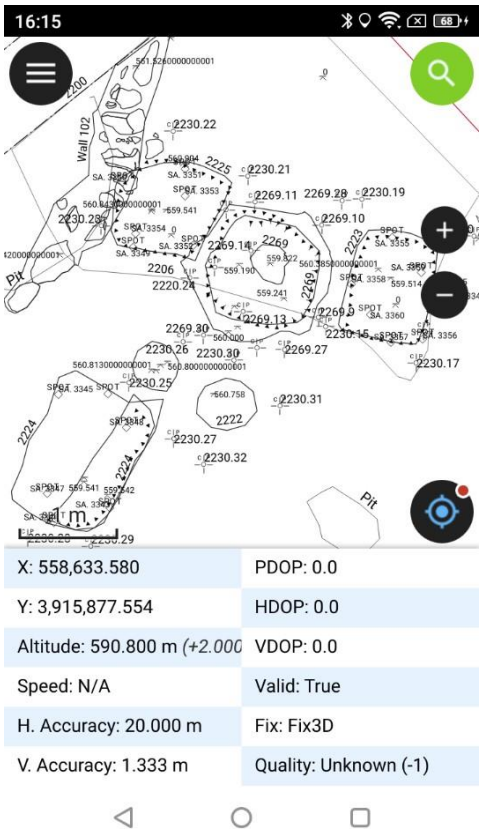

Fig. 4. Screenshot from GNSS handheld unit for onsite recording

An initial drone survey of the mound was undertaken which served to map the site and create a detailed 3D record. A further series of drone surveys were undertaken of the site during the course of the excavation to record major phases of the site. All drone data was processed using Agisoft Photoscan Professional, as too was the standard photogrammetry recording of the site. This latter recording method was undertaken using a DSLR camera. Contexts were photographed and geolocated with control points in order to provide a highly detailed, full 3D model of the site and its excavated features and contexts (Figs. 5-6).

Fig. 5. 3D model of Bestansur mound taken from drone survey

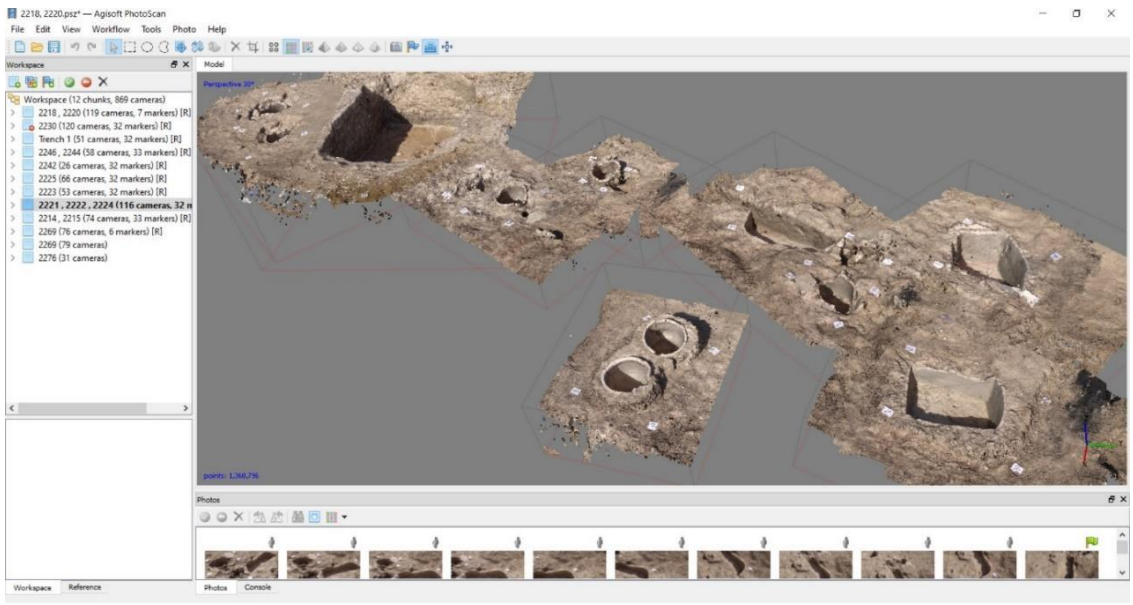

Fig. 6. Example of photogrammetric recording of post-Neolithic features in Trench 10W

Trench 10N

In Trench 10N we excavated Late Islamic levels, including a burnt building radiocarbon dated to the 17th century AD, in order to reach underlying Early Neolithic levels. We also excavated a series of pits of varying depth and date. We distinguished five major levels of Early Neolithic occupation in Trench 10N, here described from the earliest phase upwards:

1). A major phase of sophisticated mudbrick architecture with plastered wall faces, probably contemporary with the Building 8 phase in the central region of Trench 10. This phase remains to be excavated extensively in future seasons.

2). An overlying phase of mudbrick walled spaces, including a large courtyard with suites of small rooms along its inner and outer faces on its northern side. Within and around the courtyard we recovered significant evidence for external area activities, including spreads of ash, deposits of edible *Helix salamonica* land snails, and high quantities of chipped stone tools including sickle blades and discrete deposits of knapping debitage. To the south of this courtyard we uncovered mudbrick walls of red and white material which lie directly north of the red and white walls of Building 5 with which they are at least partly contemporary.

3). Overlying the courtyard deposits of phase 2, we excavated a consistent and extensive spread of black ash which covers most of the trench and extends into Trench 10W. This deposit, which may represent a significant episode of burning across at least this area of the settlement, is rich in charred materials including distinctive spreads of split-reed matting.

4). A small rectangular mudbrick structure in the northwest of the trench overlying the major spread of black ash.

5). Finally for the Early Neolithic of Trench 10N, we excavated stratified lenses of mixed materials, including substantial sequences of packing underlying plastered external surfaces. These levels had been heavily truncated by later pits and by massive terracing of the mound for the Late Islamic structures.

Trench 10W

In Trench 10W we excavated later Islamic levels below stone walls dating to the 17th century AD, including a preceding phase of stone walls, lined pits and activity areas in order to reach underlying Early Neolithic levels. The excavation is described here from the earliest phase upwards.

1). Similar to, and likely contemporary with Trench 10N (phase 2 as described above), a major phase of mudbrick architecture was identified in Trench 10W, corresponding with Building 5 levels. Further buildings and mudbrick walls were identified, separated from Building 5 and the walls abutting its western extent by an extensive external activity area, which included areas of burning, ground stone and molluscs. This phase remains to be fully excavated in future seasons. Mudbrick walls are contemporary with those identified at the base of Trench 1 in 2012.

2). Overlying the architecture, we excavated an extensive burnt phase, which included lenses of dark black ash, and packing layers. The dark ashy material was relatively dense in artefacts (chipped stone) and animal bones, compared with other deposit types sampled at Bestansur. At least two articulated human individuals were identified directly on top of the latest dark burnt surface.

3). Over this burnt horizon, a small mudbrick structure (Building 13) was constructed in the north-westernmost part of the trench. Beneath the floor were two Neolithic burials: an infant associated with a small bead cluster and an adolescent. Building 13 was constructed on a thick packing layer, likely built to compensate for the sloping collapse deposits that form the early mound. Respecting the north wall of Building 13 were two collapsed walls (green bricks with pink mortar and beige bricks with brown mortar). The intact nature of the collapsed walls suggested a relatively rapid destruction event.

4). Following this destruction, an interim, disturbed Neolithic phase was characterised by mixed Neolithic material and collapsed construction debris. This phase was heavily disturbed and cut by numerous later features in phase 5.

5). An extensive activity area characterised by more than a dozen tanours, four large lime and clay storage features and basins. Two large intact storage pithoi, Sasanian in date, were identified and sent to Slemani Museum for reconstruction by Nyan Nasser. Previous dating suggests the immediately overlying deposits including tanours, associated materials and deposits were Ottoman/Baban in date, c. 1650 AD. However, material has been exported for further dating to establish a higher chronological resolution for this phasing.

6). A series of partially collapsed rectilinear stone wall structures and associated tanours were recorded and excavated, having been previously identified during the Spring 2019 field season.

Geoarchaeology and microstratigraphy

The microstratigraphic and geoarchaeological investigations and sampling this season focused on the architecture and occupation sequences from a range of key Neolithic contexts to understand: the history of the site; architectural technology and elaboration; uses of space and the organisation of the settlement and community; and the sustainability of the resources used, notably traces of fuel in discarded ashy deposits in open areas.

The architecture at Bestansur continues to demonstrate considerable knowledge of earthen construction techniques and elaboration. Building 9, the smaller building to the east of Building 5 in Trench 10, was well-constructed and had traces of probable red pigment on the eastern wall of the entrance portico, Space 51, and on at least two of the well-laid multiple floors of the 'reception' room, Space 61. A mudbrick feature in the south-eastern corner of the entrance room to Building 9, Space 53, made from miniature curving mudbricks, was probably a circular or column-like feature, with

traces of a horn core at the base on the north-eastern side. Another circular earthen feature with green plaster was discovered by a surface in a building to the north-west of Building 5, and pending excavation may also be a column-like feature.

We also investigated and sampled the architecture and surfaces of: a large early open space/courtyard in Trench 10N upper Neolithic buildings; later buildings, Buildings 13 and 14; and late extensive black ashy layers in Trench 10W and Trench 10N.

We are very grateful for permission to export 86 samples for geoarchaeological, micromorphological and phytolith scientific analyses at the University of Reading.

Human remains

During the autumn season 2021 further excavation of burials was focused on Space 61 of Building 9 and the extended areas of Trench 10W and Trench 10N. While Buildings 5 and 8 have been the prior focus of human burials, this season increasing amounts of human remains were found in the extension areas of Trench 10. Only one skull and two long bones were excavated from the fill of Building 8, from under Wall 45 of Building 5. Further complex disarticulated remains were also discovered here and left for future seasons.

Within Space 61 (NE quadrant) eight individuals were excavated, and in addition one infant and a highly compact disarticulated deposit were left for future seasons. The majority of the remains from this area of Space 61 were disarticulated and comingled adult bones, with some remaining articulations of limbs, and one complete crania. These appear to have been moved into this comingled state to enable the interment of an articulated skeleton (2373). There were also three infants represented mostly by crania. Towards the end of the season a further two crania were also discovered which were visible in the cut of a late pit.

In Trench 10W, two individuals were found in the newly excavated Building 13. The individuals comprised one infant, aged 10-18 months, with shell beads near the neck and knee, and one adolescent, aged 11-14 years. In external areas of Trench 10W were a further four burials. Two of these were together (2387): one adolescent (SK1) and one young adult male (SK2) deposited above a black ashy layer (2422). Further east were also some cranial fragments on and over the black ashy layer. Of the other two individuals, one (2337) is not likely to be Neolithic due to its context and (2450) is also of questionable date.

In Trench 10N, three articulated, flexed burials were excavated. Two of these were extremely truncated by later prehistoric or historic activity. The third (2286) was slightly lower and so more well preserved.

All the burials in Trenches 10N and 10W were articulated, and most were buried in a flexed position. Overall a total minimum of 18 individuals are represented by the excavated remains from this season. We are very grateful for permission to export samples of bone and teeth for analysis which will include aDNA, health, activities, and lifestyles.

Zooarchaeology

This field season animal bones were recovered from 49 Neolithic contexts. In total, 1034 fragments of animal bone were excavated, with a total weight of 6499 grams. The majority of these bones were handpicked during excavation, and five animal bones were found during dry sieving.

91 mammal bones could be identified. Sheep/goat is the most abundant animal group, with sheep outnumbering goat, followed by deer and wild boar/pig. The sheep/goat and pig are likely to be a mix of managed and completely wild animals. Five fragments of bovid bones were also found, which are all likely to be from aurochs. One jaw of a small carnivore was recovered, which could not be further identified since it was incomplete and missing all its teeth. No roe deer were identified and gazelle was also not found during this field season. Eight bird bones were found, of which six were exported to the UK for further identification. Fragments of tortoise shell were encountered in two different contexts, and freshwater crab shell was found in five different contexts.

A further 219 animal bone fragments were recovered from flotation, with a total weight of 31 grams (not included in earlier counts). The animal bone fragments from flotation were unidentifiable, with the exception of seven fragments of animal bones of microfauna. No fish bones were found during flotation in this field season.

Archaeobotany and flotation

Material was collected from key areas of excavation for flotation. Forty-six samples were collected in total from excavations at Bestansur and two samples from Trench 1 at Zarzi ZS3. A total of 570 litres of soil was floated over the season. At Bestansur, material directly associated with burials was prioritised for flotation to recover human remains and associated artefacts such as beads. In total, twenty-six samples associated with human burials were floated. Twenty additional samples were floated, represented a range of key contexts and areas of the site. Seven samples were recovered from room fill, packing, floors and associated materials. Ten samples were recovered from external activity areas and three samples were associated with Neolithic fire features identified in Trench 10 North.

Two flotation samples were recovered from Trench 1 at Zarzi ZS3, following the identification of potentially in situ Neolithic material. The light flot was scanned and small human remains removed. The light flot has been exported to the UK for further archaeobotanical research. All heavy residue recovered from the flotation has been dried and sieved at 4mm, 2mm and 1mm. The 4mm fraction has been sorted from most samples and the 2mm fraction from priority samples.

Bulk finds

All finds recovered throughout the excavation have been recorded in the Bulk Finds register. The weight (g) for each material type is provided in Table 1.

Material (g)	Animal Bone	Human Bone	Fired Clay	Chipped Stone	Pottery	Molluscs	Ground Stone
Hand Picked	12663	26206	25840	9440	181406	5406	115655
Heavy Residue	7.795	122.85	35.64	39.93	2.74	358.02	0
Dry Sieve	36	0	0	262	3169	122	0
Total (g)	12707	26329	25876	9742	184578	5886	115655

Table 1. Weight in grams of material recovered during the autumn 2021 season.

Small finds

Over the course of the 2021 season, the team recorded 65 individual or groups of small finds. These include a total 121 beads and bead fragments made from stone and shell, which were plotted across the burial deposits in Buildings 8, 9 and 13, and recovered in groups through heavy residue analysis.

A notable cluster of 83 beads (Fig. 7; SF1052) was recovered from an infant burial below the walls of Building 5, Space 50 and within Building 8, Space 66, possibly as a strung necklace or sewn onto fabric. These beads are of the same species as those in later levels (*Theodoxus jordani*), which are present in the local waterways, but are larger and more robust, with dark purple-brown banding surviving on the surfaces. Similar shells are present as far afield as modern Syria, in the Euphrates, and Iran, in the Karun River. Ninety-four percent of the beads recovered over the course of the season were made from perforated *Theodoxus jordani*. The remaining seven beads include a perforated crab claw, a species of *turritella* mollusc, three small disc and cylinder beads, and from later levels, an agate bead and an alabaster bead blank. A further cowrie shell (SF1101) was recovered from an external open area in Trench 10 West, with the dorsum removed and bitumen embedded into the cavity. Similar cowries have previously been found with burials in Building 5, but this is the first to have been found outside Space 50, and not directly associated with a burial context, although skull fragments were located nearby. Two bivalve shell pendants have also been recovered, one of common local *Unio tigridis* type and one not seen elsewhere at Bestansur.

Fig. 7. Cluster of 83 *Theodoxus jordani* beads (SF1052) from a burial in Building 8.

Twenty-two stone tools have been recorded into the Small Finds catalogue, including five stone discs used as weights, two maceheads, a small marble vessel fragment and two axe heads, one from Bestansur (SF1066) and one from excavations at Zarzi Survey site ZS3 (Fig. 8. SF1096). The latter is made from a fine grey-green stone, highly polished and with impact scars. It is similar to an example recovered from Bestansur in 2019, in the bifacial tradition, with parallels at Karim Shahir and Zawi Chemi Shanidar.

Fig. 8. Bifacial axehead (SF1096) from site ZS3.

Twelve examples of worked bone were recovered over the course of the 2021 season, including two points and two needles. Evidence for bone working, including off-cuts have also been included. These materials most commonly come from the external spaces between buildings identified in the northern and western extensions to Trench 10. These areas, and in particular the burnt and ashy lenses in external spaces, have also yielded clay objects. A total of 12 clay objects have been included, ten of which are Neolithic. Amongst the familiar clay balls and squashed discs, two clay objects stand out (Fig. 9): a clay cone (SF1081) with a deeply impressed navel impression, similar to SF498, and a gash in the back, similar to SF329. This new object reinforces the argument that clay cones should be viewed as part of the figurine assemblage, rather than as 'tokens', since anthropomorphic indications have been found on most cones at Bestansur. Furthermore, a small conical figurine was recovered this season, SF1087. This is a simple, abstract figurine, with a stalk neck and divided legs, but highly decorated with incisions around the base, imitating hanging fabric similar to the form of a skirt. The closest parallels for this form are seen at PPNA 'Ain Ghazal and PPNB Tell Aswad, although the form also occurs later at Sarab around 6000 BC. The rarity of this form is significant and suggests experimentation and innovation in the depiction of humans at Bestansur.

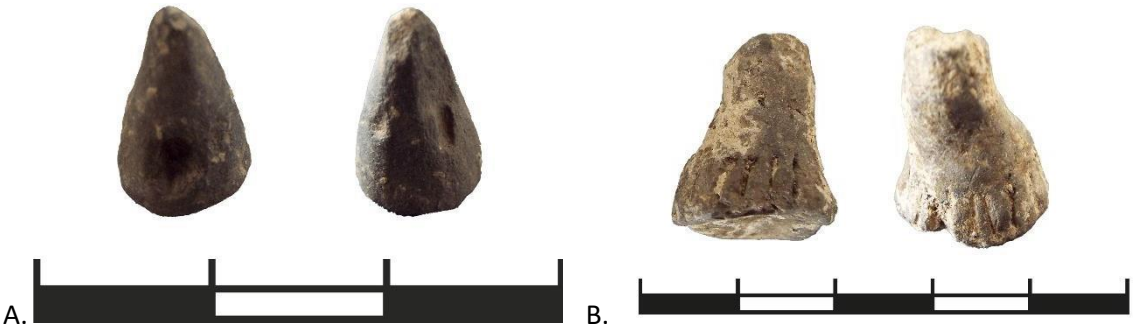

Fig. 9. A. Cone figurine SF1081 and B. Skirted figurine SF1087.

From the excavation of later levels at Bestansur, four bronze and iron items have been recorded in detail, including an almost complete iron cup (Fig. 10; SF1044). This object was recovered from a large clay-lined storage pit, as part of a possibly Sasanian complex of storage pits, tanours and pithoi in Trench 10 West. The cup has survived remarkably well and is missing only one small fragment. It is worth noting that the two large pithoi recovered from this area have been passed on to the museum for conservation and reconstruction.

Fig. 10. Iron cup SF1044 from a clay-lined storage pit.

Zarzi Cave and Site ZS3

We worked in the region of Zarzi Cave for two days. At Zarzi Cave itself we systematically collected chipped stone materials on the cave talus and lower slopes. These lithics all appear to date to the Epipalaeolithic period. Several specimens have been selected for export so that confocal microscopic analysis can be employed to assist in interpreting the use-wear traces on these tools, many of which are fine blades and bladelets. The lithic assemblage is entirely composed of cherts knapped from river cobbles.

Site ZS3 is situated across the Chemi Tabin river from Zarzi Cave on a low knoll overlooking the river (Fig. 11). We located this open-air site during a survey season in January 2013. In the 2021 season we conducted systematic surface survey of the site, sieving 20 litres of surface soil through a 4mm mesh, with samples spaced at 10m intervals in two transects across the site. We recovered a substantial assemblage of chipped stone, including four small pieces of obsidian, almost of which appears to be Epipalaeolithic in date, similar to the Zarzi Cave assemblage. Two sherds of painted Neolithic pottery also indicate some later occupation. Significant quantities of ground stone tools including boulder mortar pieces were recovered across the site.

Fig. 11. View of Zarzi site ZS3.

We excavated a 2 x 2m sounding at site ZS3. A line of stones may be the remnants of a wall (Fig. 12). Lithic finds from this sounding indicate occupation of Epipalaeolithic date. We plan to conduct further excavations at this promising site in the near future.

Fig. 12. Zarzi site ZS3, traces of possible stone wall.