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# Surveys in Lower Sindh: Preliminary Results of the 2021 Season

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## Abstract:

*Surveys carried out in December 2021 around Gharo, Gujo, the Makli Hills, and the terraces of the Khadeji and Mol Rivers have yielded important knapped stone assemblages, which contribute to the study of the Late Pleistocene and Holocene prehistory of Lower Sindh. The surveys were conducted by three persons, and the finds were mapped with the help of a high-precision GPS. Moreover, marine and mangrove shell samples were collected for radiocarbon dating to build a detailed chronology of the prehistoric periods during which the coastal area was settled. Special attention has been paid to the limestone terraces around Gharo, just north of the historical centre of Bhambore, the Tharro Hills, Beri and part of the Makli Hill, close to the city of Kalan Kot. The lithic assemblages recovered during the surveys are not very rich. However, some of them show characteristic technological traits, which attribute them to the Chalcolithic Amri Culture, while others are undoubtedly older. This fact, and the absence of Bronze Age material culture remains, is very important. It shows that some of the terraces which rise from the alluvial plain of the Indus, were settled during the fourth millennium cal BC when the landscape was very different from that of the present, and the limestone outcrops were islands surrounded by Arabian Sea waters or mangrove environments.*

*Key words: Lower Sindh, Indus delta, Lithic assemblages, Radiocarbon dating, Mangroves, Sea-level rise.*

## Introduction

The geoarchaeological surveys carried out in Lower Sindh by Professor Abdul Rauf Khan of Karachi University during the 1970s, led to the discovery of an impressive number of archaeological sites of different ages. During those days, the first chronological definition of the knapped stone assemblages

of the end of the Pleistocene and the beginning of the Holocene found in the region was proposed (Khan, 1979). Thanks to results achieved by these discoveries, many aspects of the prehistory of Sindh greatly improved during those years. However, many of the important finds collected during the 1970s surveys remained unknown to most of the scientific community for decades and unreported by most authors working on the prehistory of Sindh, with very few exceptions (Allchin, 1976).

Thanks to the renewed interest shown by Professor A.R. Khan the surveys were partly resumed in the late 1990s, and some of the important assemblages at present stored in the Museum of Prehistory of the Department of Geography, Karachi University, were published (Biagi, 2003-2004; 2005). However, much work is still to be made to publish all Professor Khan's collections. Thanks to his renewed interest, some of the sites which still existed at the end of the 1990s were revisited. Unfortunately, many of them, the Mulri Hills and Rehri for example, disappeared in those years, while others were being destroyed by increasing urban and industrial development.

The scope of this paper is to describe and discuss the data achieved during the surveys carried out in December 2021 in some important territories of Lower Sindh, some of which, the Tharro Hill for example, had already been visited by one of the present authors (P.B.) more than 20 years ago together with Professor A.R. Khan.

Apart from the impressive work conducted by this author, we have to mention the seminal volume by W.T. Blanford who, already in the 1880s, wrote

the most important and comprehensive report on the geology of Sindh. The volume includes the description of the chert outcrops discovered in different parts of the country (the Rohri Hills, Ongar and Jhimpir, for example), and the first notes regarding the Gaj formation limestone terraces which rise from the alluvial plain of the Indus River, the Tharro Hill for example, and many others (Blanford, 1880). We have to remark that all these terraces have yielded archaeological finds. Their discovery, which is often associated with the presence of datable material (mangrove and marine shells) help us interpret some of the complex problems related with the early Holocene Arabian Sea level rise, the history of the Indus delta advance, and the way it developed at least from the beginning of the metal ages to the present (Wilhelmy, 1968).

### Materials and methods

The December 2021 surveys were conducted on foot by three persons who walked in previously selected areas, systematically checking all the territory covered by the research, taking pictures of the different landscapes and their characteristic woodland cover whenever it was present. The material remains

were recorded thanks to the help of a precision Magellan GPS, positioned on Google Earth maps, marking the points from which lithic findspots were identified and shell samples for radiocarbon dating were collected. It is well known that the radiocarbon dating of the sites is fundamental for the definition of the chronology of the archaeological finds, and, in our case, the interpretation of the sea-level changes that took place from the beginning of the Holocene to the present (see Biagi *et al.*, 2018). We have to remark that the work made by Professor A.R. Khan in the 1970s is very important also from this point of view. This author was the first to report the presence of marine shells from a few locations discovered dozens of kilometres inland, well far from the present coastline, which he correctly attributed to some human activity and not to natural agents (Khan, 1979: 18).

As reported above, the December 2021 surveys covered, from west to east, the terraces around the village of Gharo (Fig. 1, n. 3), The Tharro Hills (Fig. 1, n. 4), Beri (Fig. 1, n. 5), part of the Makli Hill (Fig. 1, n. 6), Pir Pato, where we did not discover any prehistoric artefact, and part of the terraces of the Khadeji and Mol Rivers (Fig. 1, n. 2) (Biagi *et al.*, 2022).

Fig 1 Locations of surveyed sites in lower Sindh





Table 1 Summary of samples found from Gharo

Site name	Coordinates	Altitude (m)	Extension mq	Lithic artefacts	Shells	<sup>14</sup> C Date	Collection date	Figure
Gharo-1	24°45'36.3"N-67°33'17.4"E	25	Single point	None	<i>T. telescopium</i>	GrA-59844	13/08/2013	2, n. 1
Gharo-2	24°45'33.615"N-67°33'22.320"E	26	Single point	None	<i>T. telescopium</i> , bivalves	None	02/12/2021	2, n. 2
Gharo-3	24°45'35.595"N-67°33'18.626"E	25	Single point	None	<i>T. telescopium</i>	In progress	02/12/2021	2, n. 3
Gharo-4	24°45'27.149"N-67°33'04.901"E	20	Single point	None	<i>Turbo bruneus</i>	None	02/12/2021	2, n. 4
Gharo-5	24°45'39.300"N-67°33'52.300"E	33	Single point	None	<i>Anadara rhombea</i>	None	04/12/2021	2, n. 5
Gharo-6	24°45'42.774"N-67°33'52.284"E	33	Single point	None	<i>Turbo bruneus</i>	None	04/12/2021	2, n. 6
Gharo-7	24°45'40.056"N-67°33'53.580"E	33	30.07	1 flakelet	<i>Anadara rhombea</i> , bivalves, Olividae	None	04/12/2021	2, n. 7
Gharo-8	24°45'41.862"N-67°33'55.962"E	35	31.80	2 flakelets	<i>Anadara rhombea</i>	In progress	04/12/2021	2, n. 8
Gharo-9	24°45'41.508"N-67°33'55.734"E	35	29.79	1 borer, 1 retouched blade, 1 rejuvenation, 3 flakelets	<i>Ostreidae</i>	None	04/12/2021	2, n. 9; 4, nn. 8, 9

Table 2 Summary of samples found from Kalan Kot and Beri

Site name	Coordinates	Altitude (m)	Site type	Lab. Number	<sup>14</sup> C Date BP	Material	Lithic artefacts	Munsell Colour	Patina	Figure
KKT-2	24°42'17.3"N-67°52'23.5"E	24	Shell scatter	GrN-32464	6320±45	<i>T. palustris</i>	Unretouched flakelet	7.5YR8/1	Yes	No
KKT-3	24°45'54.8"N-67°52'40.4"E	18	Shell scatter	GrA-50234	5270±40	<i>T. telescopium</i>	None	No	No	No
KKT-4	24°42'15.283"N-67°52'15.429"E	22	Shell mid-den	GrA-59843	5460±60	<i>T. telescopium</i>	Retouched bladelet, flakelet	5YR5/3; 2.5Y7/4	Yes	4, nn. 6 and 7
KKT-5	24°42'11.410"N-67°52'15.233"E	22	Shell scatter	Unavailble	In progress	<i>T. telescopium</i>	Retouched bladelet	2.5Y7/4	Yes	4, n. 5
Beri-1	24°43'00.000"N-67°45'09.000"E	7	Shell scatter	GrN-32166	5960±50	<i>T. palustris</i>	Amri type lithics?	Many	Yes	4, nn. 1-4
Beri-2	24°42'59.880"N-67°45'08.700"E	7	Shell scatter	GrM-	In progress	<i>Scylla serrata</i>	Amri type lithics?	Many	Yes	4, nn. 1-4
THR-1	24°43'45.030"N-67°45'07.350"E	13	Shell layer	GrN-27063	5240±40	Ostreidae	Amri type lithics	Many	Yes	7, nn. 2-6
THR-3	24°43'45.040"N-67°45'07.040"E	13	Shell layer	GrA-47084	5555±35	<i>T. palustris</i>	Amri type lithics	Many	Yes	7, nn. 2-6
THR-2	24°43'27.130"N-67°44'44.780"E	11	Shell scatter	GrN-32119	6910±60	Ostreidae	Unretouched flakelet	7.5YR5/2	Yes	7, n. 1

Table 3 Summary of samples found from Tharro Hill Gharo

Tool n°	Coordinates	Altitude (m)	Tool type	Blade scars	Dimensions (mm: LxWxT)	Weight (gr)	Condition	Platform (mm: LxW)	Cortex %	Munsell Colour	Patina	Collection date	Figure
TH-1	24°43'45.180"N-67°45'08.160"E	13	Rejuvenation	Unifacial: 3	43x23x10	11.77	Complete	<i>Écaillée</i> (4x21)	0	7.5YR6/4	Yes	03/12/2021	7, n. 2
TH-2	24°43'45.720"N-67°45'04.200"E	15	Prismatic core	Unifacial: 6	(56) x43x21	61.58	Proximal fr.	Prepared, inclined (17x43)	20	7.5YR6/4	Yes	03/12/2021	7, n. 3
TH-3	24°43'45.180"N-67°45'08.160"E	13	Prismatic core	Unifacial: 8	74x29x20	61.05	Complete	Prepared, inclined (17x27)	30	7.5YR6/4	Yes	03/12/2021	7, n. 4
TH-4	24°43'44.400"N-67°45'08.760"E	12	Prismatic core	Unifacial: 5	(99) x49x31	121.12	Distal fr.	Missing	20	7.5YR6/4	Yes	03/12/2021	7, n. 6
TH-5	24°43'45.180"N-67°45'07.860"E	13	Prismatic core	Unifacial: 7	91x47x33	119.13	Complete	2 prepared, inclined (30x36; 14x26)	0	7.5YR6/4	Yes	03/12/2021	7, n. 5

## 1) Gharo

The limestone terraces that extend around the village of Gharo were visited for the first time in January 2014. On that occasion, a small spot of *Telescopium telescopium* mangrove gastropods was recorded on the top of one of the mesas. One shell sample from this findspot was radiocarbon dated to  $6320 \pm 60$  BP (GrA-59844: Gharo-1). Due to the importance of the result, which shows that some activity took place in the area during the Neolithic, despite the absence of material culture remains, the region was revisited and all the terraces which elongate north and south of the national road which from Karachi takes to Thatta were surveyed. The surveys led to the discovery of 8 more findspots from which lithic artefacts and/or mangrove or marine shells were recovered (Fig. 2; Table 1). The investigated area, which was extended to a surface of ca 500 m<sup>2</sup>, is located ca 5 km east of the historical city of Bambhore, and one of the north-westernmost active branches of the River Indus.

recovered in 2021 is Gharo-9 (Fig. 3), which yielded evidence of a few knapped stone artefacts and one fragment of Oyster shell. The lithic assemblage from Gharo-9 consists of 6 artefacts obtained from slightly patinated chert of brown colour (7.5YR5/3). The presence of one corticated rejuvenation flakelet (Fig. 4, n. 9) shows that the artefacts were produced on the spot. The thick straight borer obtained from a corticated flakelet by abrupt, deep, direct, bilateral retouch (Fig. 4, n. 8) is worth mentioning as is the medium fragment of a bladelet with semi-abrupt, direct retouch along the left side, although it is difficult to attribute these artefacts to any precise period of prehistory. Though the chronological attribution of these finds is difficult because it is based only on their typological characteristics, we can exclude that they are to be referred to a period preceding the introduction of metal in the region.

Similar observations regard the knapped stone artefacts from Gharo-7 and Gharo-8. The lithic



Fig 2 Locations of findspots from which lithic artefacts and/or mangrove or marine shells were recovered.

Gharo is important because it shows evidence of Neolithic activity and the exploitation of a mangrove environment which flourished just after the middle of the seventh millennium uncal BP (GrA-59844), close to the radiocarbon-dated shell findspot. Other spots of *T. telescopium* shells were retrieved from the terraces that extend south of the national road, while those north of the same road show quite a different archaeological pattern. The most important findspot

assemblages from the two sites are too small to attribute them to a precise period and cultural aspect. However, we can observe that they have been obtained from chert nodules of brown colour (7.5YR5/3), which were extracted from a primary limestone source whose location is at present unknown, and not from river pebbles.





Fig 3 The most important findspot recovered in 2021 is The site of Gharo-9 from the south

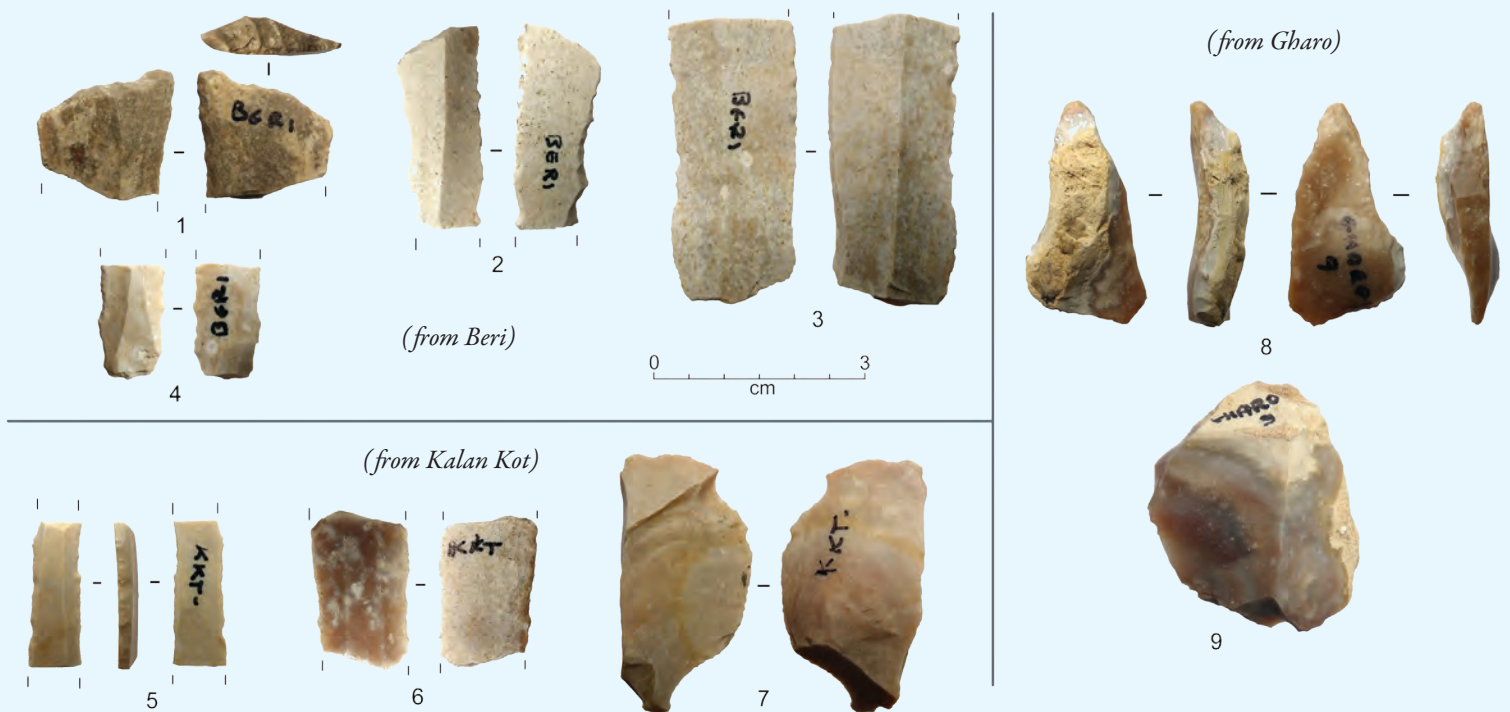


Fig 4 Artefacts found from Gharo including one corticated rejuvenation flakelet (n. 9)



## 2) The Tharro Hill

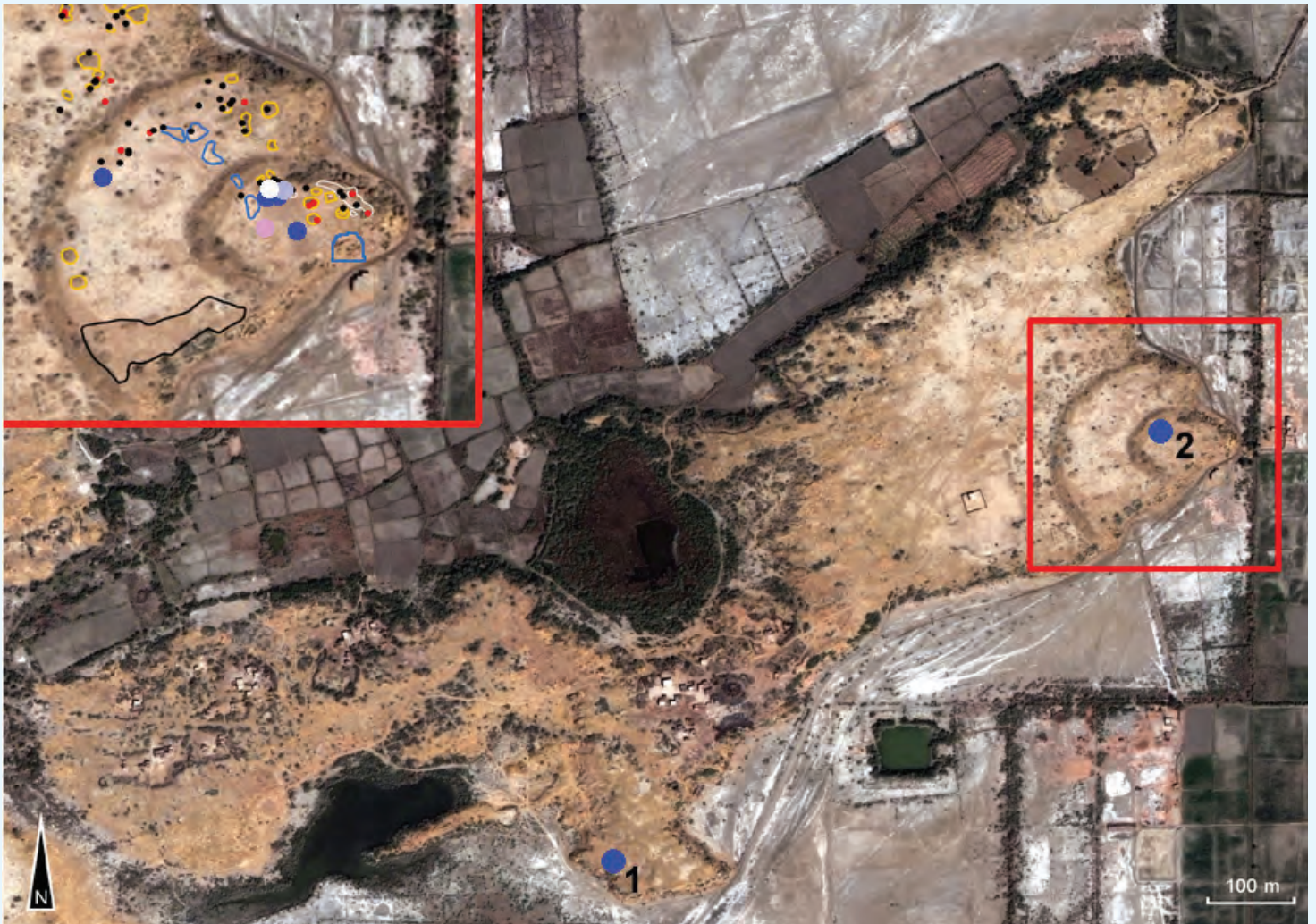
The Tharro Hills are a limestone terrace that elongate in south-west/north-east direction in the western part of the Indus delta region close to the village of Gujo. The Chalcolithic Amri Culture settlement is located in the eastern part of the mesa ca 5 km south of the Gaj limestone formation that marks the ancient coastline (Fig. 5). The site is impressive because of the presence of unique, complex structures among which are two semi-circular, defensive stone-walls (Fig. 6). The site has been reported from many important papers and volumes on the prehistory of Sindh, though different opinions have been put forward regarding its chrono-cultural attribution, function, and the characteristics of its assemblages (Cousens, 1929; Majumdar, 1934; Gordon, 1950; Piggott, 1950; Fairservis, 1975; Allchin, 1985). The material culture remains consist mostly of knapped stone artefacts, which have been collected from the site's surface by several researchers throughout a

period of ca one century. Complete red-slipped pots have been found as well as ceramic potsherds with different types of geometric painted patterns, which closely recall the characteristic Amri fine ware motifs (Casal, 1964).



Fig 5 Location of surveyed sites in Tharro Hill

Fig 6 Stone wall structure





The only collection of lithic finds so far analysed in detail is at present stored in the Museum of Prehistory of Karachi University (Biagi, 2005). The assemblage has been attributed to the Chalcolithic Amri Culture on the basis of the typological characteristics of the knapped stone artefacts, their techno-typological characteristics, which were almost exclusively oriented to the production of regular blades and bladelets with trapezoidal cross-section, and the recurrent presence of specific tools among which are so-called Amri triangles and other semi-abrupt retouched implements, truncations and bladelets for example. Two radiocarbon dates have been obtained from mangrove and marine shells sampled from a spot located just inside the inner stone wall (Fig. 5). They yielded slightly different results, both of which date the site to the Chalcolithic period (GrA-47084: 5555±35 BP on *T. palustris* (THR-3) and GrN-27063: 5240±40 BP on Oyster shells (THR-1).

The complexity of the fortified site, the presence of many small mounds inside and outside the stone walls, and the presence of different types of burials, have been widely discussed by N.C. Majumdar in his seminal volume on the Prehistory of Sindh (Majumdar, 1934). However, the occurrence of large spots of marine and mangrove shells, which cover some of the easternmost parts of the site, has never been taken into consideration by most archaeologists, and their archaeological and environmental significance underestimated or neglected (see Fig. 5).

The site was revisited in December 2021. The main scopes of this visit were to relocate the human bone remains of one individual, most probably a burial, which were well visible already 25 years ago on the site's surface, close to the inner stone wall, and to check the state of preservation of the settlement on which a group of nomads built their camp in 2009. During the 2021 visit, one animal bone sample was collected for radiocarbon dating from an open profile ca 30 cm thick rich in archaeological material culture remains, mainly ceramic potsherds, and five important lithic artefacts were precisely mapped, among which are four cores and one core rejuvenation flakelet.

We have to remark once more that our knowledge of the Chalcolithic Amri Culture knapped stone assemblages is very limited, and that the cores from sites of this cultural aspect are very rare, as they are, for example, from the Tharro Hill village under study (see Biagi, 2005). The location and detailed

description of the recorded cores is provided in Fig. 7 and Table 3. Their recovery locations show that they come from different areas of the site. This fact probably shows that the manufacture of the knapped stone tools took place in several zones, though at present we do not have any information regarding the absolute chronology of the different settlement areas. This fact is important for the study of the distribution of the findspots and the interpretation of the activities which took place within the site during the development of the Chalcolithic Amri Culture (Biagi and Franco, 2008).



Fig 7 Cores/artefacts found from the Tharro Hill (see Table 3).

Apart from the important fortified settlement reported above, traces of an earlier Neolithic location are shown by the discovery a scatter of Oyster shells along the southern edge of the terrace, ca 700 m south-west of the Chalcolithic site, which was radiocarbon dated to 6910±60 BP (GrN-32119). The discovery of one marine shell findspot shows that the terrace was reached most probably by boat during a period predating the flourishing of a mangrove environment around the terrace, when the Tharro Hill were still an island surrounded by Arabian Sea waters. During the December 2021 surveys, one atypical, corticated, unretouched chert flakelet (Fig. 7, n. 1) was collected ca 25 m south-east of the aforementioned marine shell findspot (Fig. 8). This artefact is most probably to be associated with the Oyster shell scatter reported above.





Fig 8 Neolithic marine shell findspot in the Tharro Hills



Fig 9 The archaeological site of Beri (“boat” in Sindhi), an Islamic cemetery covers most of the central part of its surface

### 3) Beri

The archaeological site of Beri (“boat” in Sindhi), is located ca 1.3 km south of the Tharro Hill Chalcolithic site. Beri is an elongated limestone terrace ca 100 m long and 40 wide. The prehistoric site was discovered in 2009 (Biagi, 2010), thanks to the kindness of the Tharro Hill villagers who showed us its location. An Islamic cemetery covers most of the central part of its surface (Fig. 9). All the prehistoric lithic artefacts are fragmented. They were found almost exclusively in the south-western part of the site, where a few marine (Mytilidae and Neritidae) and *T. palustris* mangrove shells were also collected. One mangrove shell sample was radiocarbon dated to  $5960 \pm 50$  BP (GrN-32166) (Biagi *et al.*, 2018: Table 1), while a chela fragment of *Scylla serrata* mangrove crab is currently being dated at Groningen University Radiocarbon Laboratory (CIO). According to the techno-typological characteristics of the knapped stone assemblage and the radiocarbon result, Beri was settled during the last centuries of the fifth millennium cal BC, that is during an advanced moment of the Neolithic, when the terrace was surrounded by Arabian Sea waters. The lithic artefacts consist of semi-abrupt retouched tools, among which are truncated and backed bladelets. They closely resemble those of the Amri Culture, though the Beri specimens were obtained from a few varieties of cherts whose sources are at present unknown (Fig. 4, nn. 1-4).

### 4) Kalan Kot

Mangrove shell findspots were recorded for the first time on the Makli Hills in 2009, during a brief visit around the ancient city of Kalan Kot (Fig. 10). During the following years three shell scatters and one shell midden were GPS-recorded and sampled for radiocarbon dating (Biagi, 2013). So far, three sites have been dated: KKT-2 (GrN-32464:  $6320 \pm 45$  BP on *T. palustris*), KKT-3 (GrA-50324:  $5270 \pm 40$  BP on *T. telescopium*), and KKT-4 (GrA-59843:  $5460 \pm 60$  BP on *T. telescopium*), while the dating of KKT-5 is currently in progress (Biagi *et al.*, 2018: Table 1). According to the available radiocarbon results the shell scatter KKT-2 belongs to the fifth millennium cal BC, while the other two are to be referred to the Chalcolithic fourth millennium cal BC (see Table 2).



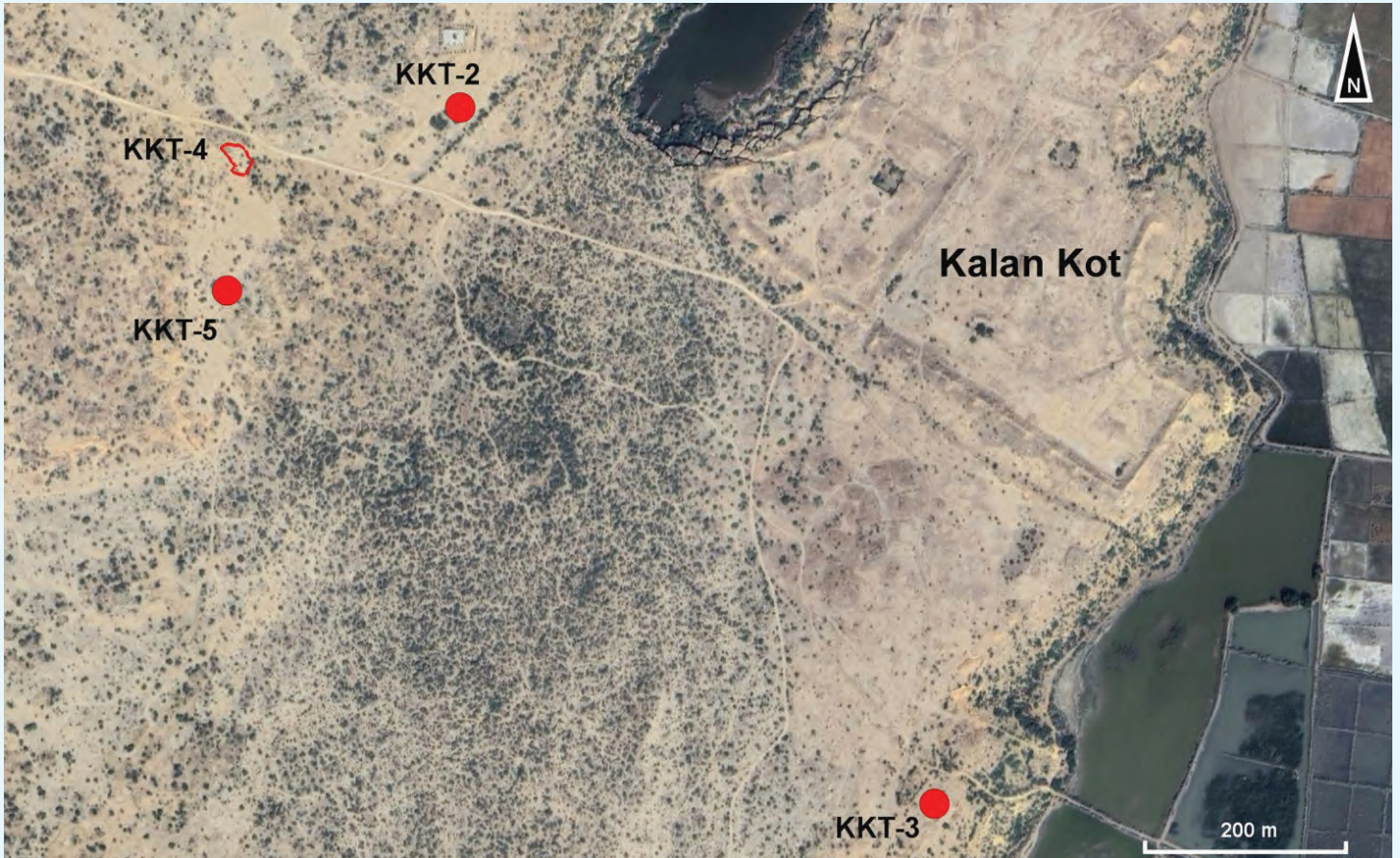


Fig 10 Shell findspots at Kalan Kot

Two characteristic lithic artefacts were collected on the surface of sites KKT-4 (Fig. 4, nn. 6 and 7) and KKT-5 (Fig. 4, n. 5) during the survey conducted in December 2021. Two bladelets show a semi-abrupt retouch along the sides, which is a characteristic trait of the Amri Culture tradition and, as far as we know, it occurs also in the preceding Neolithic aspects of the region, though this period is very badly known all over Lower Sindh. The presence of these artefacts confirms the attribution of the KKT-4 shell midden to the Chalcolithic Amri Culture, while KKT-5 is most probably a few centuries older. Regarding this part of the Makli Hills terrace, we have to remark the presence of both Neolithic and Chalcolithic shell findspots. Moreover, the characteristics of KKT-4 are unique. The site consists of a thin layer of very small fragments of only *T. telescopium* mangrove shells, which all together cover an elliptical surface of ca 100 sqm. We cannot exclude that, given the distribution of the shell spots, the site represents a few, subsequent occupations (Fig. 11).



Fig 11 Layer of very small fragments of only *T. telescopium* mangrove shells



### 5) The Mol and Khadeji Rivers terraces

Some of the terraces located close to the confluence of the Mol and Khadeji Rivers were systematically surveyed in December 2021, though a preliminary visit had already been paid to the area in January 2014 (Fig. 12). This led to the discovery of an important Mesolithic findspot, which was radiocarbon dated to  $8275 \pm 45$  BP (KDJ-1: GrA63862) from a fragment of large marine bivalve. The archaeological importance of the two river terraces was remarked already in the 1970s by the late Professor A.R. Khan in his paper on the archaeology of Karachi region (Khan, 1979; Biagi, 2019-2020). In this paper the author provided a first description of the most characteristic knapped stone artefacts the Upper Palaeolithic and Mesolithic

periods, following the discoveries made during those years in Lower Sindh (Fig. 13 and 14).

The research conducted in December 2021, confirmed many observations made by Professor Khan more than 40 years ago. The two river terraces yielded evidence of lithic scatters attributable to the Upper Palaeolithic, Mesolithic, Neolithic, and Chalcolithic periods, a few of which are being radiocarbon-dated thanks to the recovery of a few fragments of marine shells (Biagi *et al.*, 2022). This territory is very important because of the quantity and variety of archaeological finds, and its location along waterways which connect the regions of the interior to the Arabian Sea coast and the rich mangrove environments which flourish in the area.

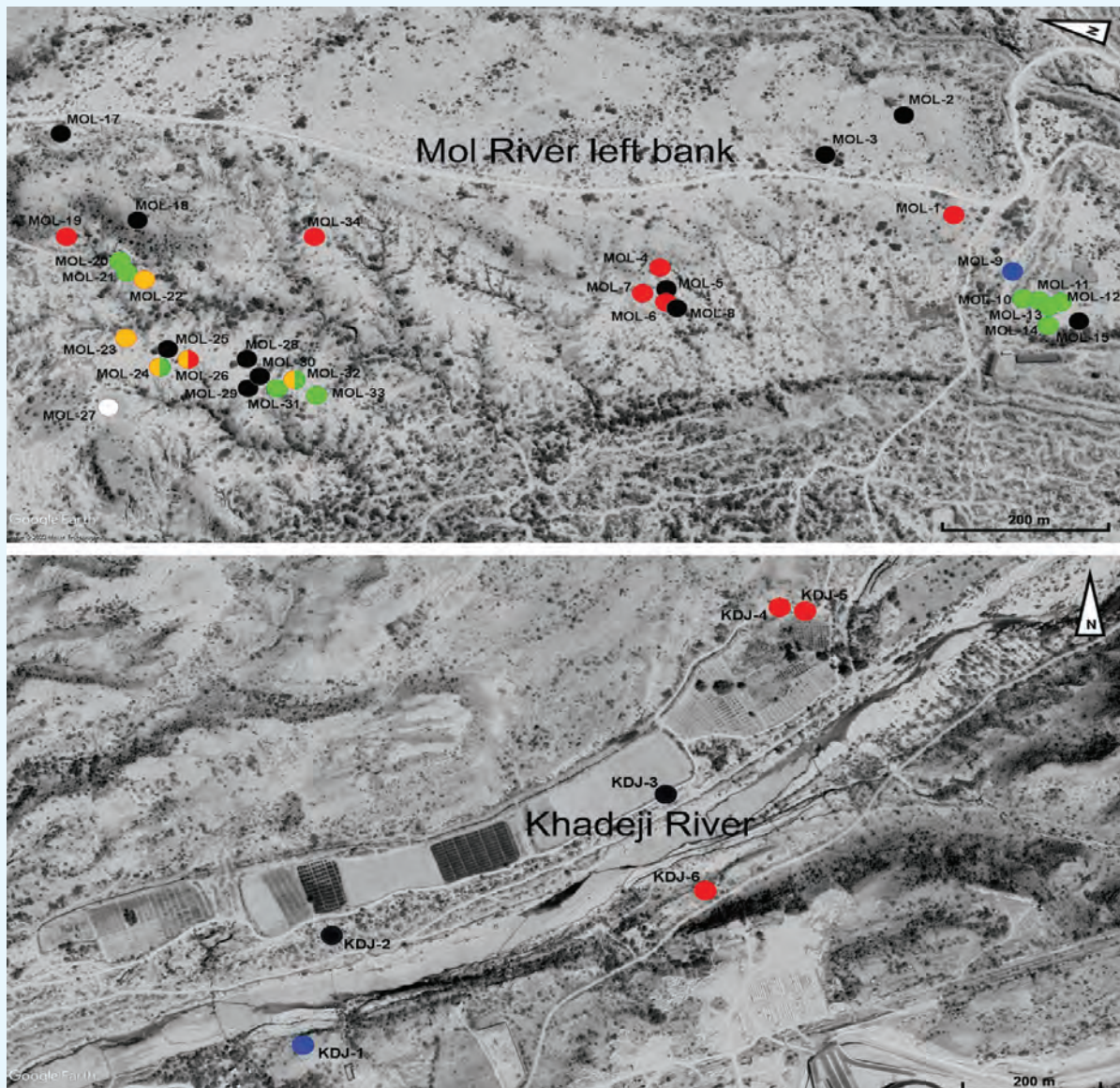


Fig 12 Findspots around the Mol and Khadeji Rivers, Karachi



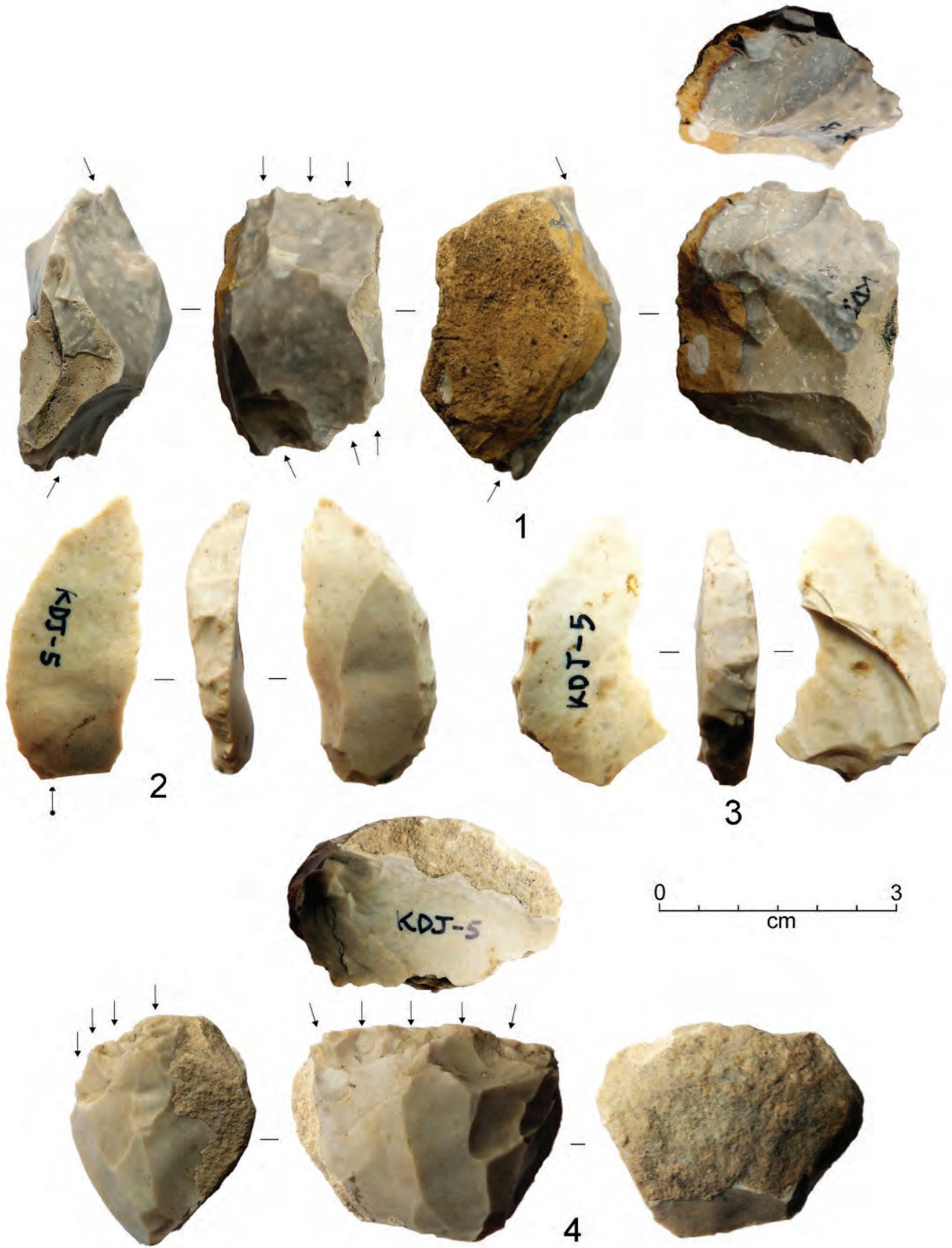


Fig 13 knapped stone artefacts the Upper Palaeolithic and Mesolithic periods found from R and the Khadeji river, Karachi



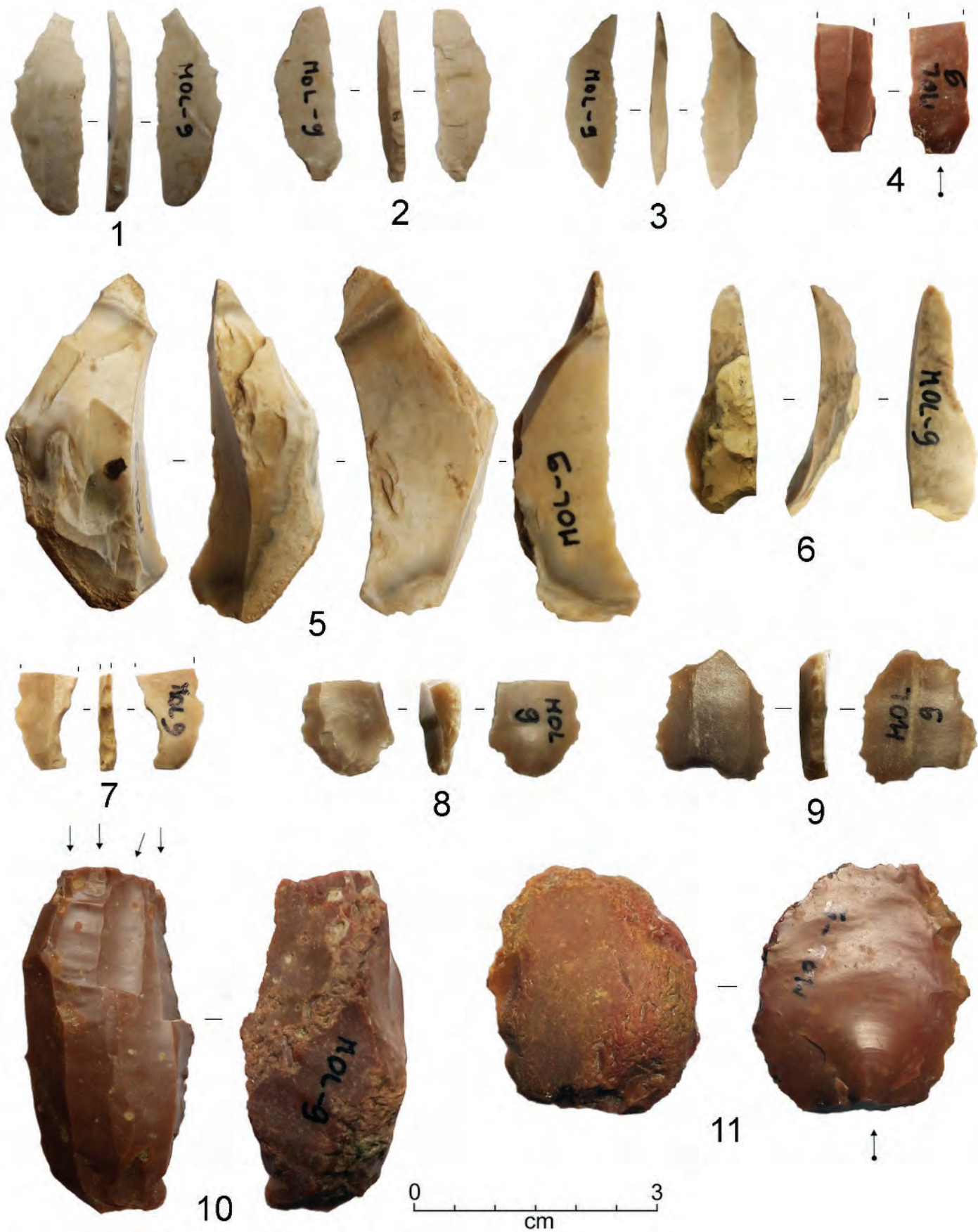


Fig 14 knapped stone artefacts the Upper Palaeolithic and Mesolithic periods found from Mole and Khadeji river, Karachi

## Discussion:

Surveys are a fundamental component of every archaeological research (Navazo *et al.*, 2017). They contribute to the knowledge of the characteristics of the landscape where the archaeological sites are located and provide a reasonable view of the distribution pattern of the sites themselves. Moreover, they can lead to the interpretation of the reason why prehistoric communities choose some specific areas for settling and rejected others (Gargett and Hayden, 1991). This is the case for the territories of Lower Sindh, which were selected to conduct the December 2021 surveys. There are a few important points that are becoming more and more clear as the surveys intensify. The available general pattern shows that the lowermost regions of Sindh were exploited mainly during some periods of prehistory: more precisely the Upper Palaeolithic, Mesolithic, Neolithic and Chalcolithic, while Bronze age sites are almost absent. Moreover, the Neolithic and Chalcolithic sites, which in many cases are represented by shell scatters and shell middens, are closely related to the exploitation of marine and mangrove resources, following the establishment of sites on former small islands located rather close to the coastline, which could be easily reached by boat. Some of these sites consist of seasonal, ephemeral occupations. This is the case for the Kalan Kot middens, those of the Makli Hills in general, and Shah Hussein, on which many *T. telescopium* shell scatters were found and radiocarbon-dated during the surveys conducted between 2009 and 2013 (Biagi *et al.*, 2018: Table 1). For sure other settlements represent much more important centres, the Tharro Hill for example.

Another point relates to the role played by the watercourses which flow into the Arabian Sea from the interior. It regards the relationships between these two territories and the interpretation of the seasonal movements of groups of Late Pleistocene and Early Holocene hunter-gatherers, their exploitation of very different environments, following their mobile subsistence economy (see Garcia-Moreno, 2013). The surveys conducted along some of the watercourses, the most important of which is the Malir River, which originates from the confluence of the Mol and Khadeji Rivers, show that the riverbanks of the latter were settled also during the fifth and the fourth millennia cal BC, although so far we do not have any evidence for third millennium cal BC Bronze Age material culture remains.

The analysis of the sites distribution pattern is very important for the interpretation of the relationships that eventually took place between the Chalcolithic Amri Culture and the following Early Bronze Age Kot Diji aspect (Khan, 2002). The evidence so far retrieved from the Lower Sindh coastal area and the lithic findspots of the riverine interior, up to ca 30 km from the present coastline, does not show any interference or relationship between the fourth and the third millennium cal BC sites simply because so far the latter are not represented in the study area. This is one of the important topics that needs to be analysed in detail, because it is strictly related with the origin and early development of the Indus Civilisation, of which at present we know very little all over the territory on which it later developed and spread (Shaffer, 1992; Biagi and Starnini, 2021: 3-6).

To sum up: detailed surface surveys can provide an impressive quantity of archaeological data that cannot be retrieved in any other way. From this point of view, Lower Sindh presents many microenvironments and a variety of different landscapes that were ideal for settling during different periods of prehistory. Unfortunately, many coastal areas have been destroyed mainly during the last fifty years due to industrial and urban development, and many important archaeological areas have been lost forever, the Mulri Hills, for example. Despite this fact, we know very well that the number and variety of archaeological sites discovered from the 1970s onward, mainly thanks to the geoarchaeological investigations made by Professor A.R. Khan, are of invaluable importance. The coastal area and its immediate interior, which is incised by important (seasonal) watercourses, is the only region of Sindh from which groups of archaeological sites of many prehistoric periods have been discovered within restricted areas, and one of the few of the northern Arabian Sea coast from which a systematic radiocarbon chronology has been set up from mangrove and marine shell samples. The presence of all these sites, some of which look ephemeral to us, is to be interpreted in the wider perspective of the problems related with the sea-level changes and coastal variations which took place from the beginning of the Holocene onward, and the establishment of the present arid conditions around the end of the Bronze Age, when the Indus Civilisation had already begun to decline (Giosan *et al.*, 2012).



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