KARAİN KAZILARI'NDA

Kökten'le 1940'lardan

Yalçınkaya'yla 2000'lere

Işın Yalçınkaya'ya Armağan / Studies in Honour of Işın Yalçınkaya

Bilgin

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Studies in Honour of Işın Yalçınkaya

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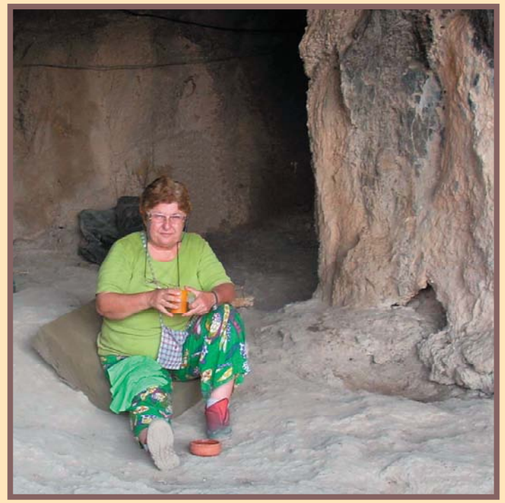

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LATE (UPPER) PALAEOLITHIC SITES AT JHIMPIR IN LOWER SINDH (THATTA, PAKISTAN)

Paolo BIAGI*

Anahtar Kelimeler: İndus, Pakistan, Geç (Üst) Paleolitik, Yontmataş buluntu toplulukları, Çakmaktaşı işlik yeri

Key Words: Sindh, Pakistan, Late (Upper) Palaeolithic, Chipped stone assemblages, Flint outcrop

ÖZET

Bu makale, İtalyan Arkeolojik Araştırma ekibinin 2010 yılının Ocak ve Şubat aylarında Jhimpir'de (Thatta, İndus, Pakistan) gerçekleştirmiş olduğu yüzey araştırmasının ön sonuçlarını yansıtmaktadır. Yüzey araştırmalarıyla, Jhimpir'e 2 km. mesafedeki su kaynaklarına çok yakın olan kalker teraslar üzerinde geç üst Paleolitik dönem çakmaktaşı buluntu toplulukları tespit edilmiştir. Buradaki yontmataş endüstri, yarı konik biçimli mikrodilgi çekirdekleri ve az sayıdaki geometrik mikrolitler tarafından temsil edilmiştir. Söz konusu bu geometrik mikrolitler yarımay biçimli olup, bunların bazıları kullanım kırıkları içermektedir. Bölgedeki buluntu yerleri, iyi kaliteli çakmaktaşı yataklarına çok yakın bir konumdadır. Bu yerleşimler aşağı İndus vadisi için oldukça ünik buluntu yerleridir. Komşu coğrafyalardaki buluntu toplulukları ile yapılan karşılaştırmalar ve yontmataş aletlerin tipolojik karakteristiklerine göre bu yerleşimler, Hindistan'daki Geç Üst Paleolitik Dönem'in son aşamasına atfedilebilirler.

INTRODUCTION

This paper illustrates and discusses the Late (Upper) Palaeolithic assemblages from the limestone terraces south-south-west of Jhimpir (Thatta, Lower Sindh) (fig. 1). The chipped stone artefacts were found during the surveys carried out in January-February 2010 in a region from which W.T. Blandford[1] had already reported the presence of flinty and cherty rocks. The terraces, on which the lithic artefacts were recorded, lie between some 2 and 3 km south-south-west of the above village, about 0.50-0.75 km from the shore of Keenjar (Kalri) Lake, an artificial basin which is the main freshwater reservoir of the region.

The only geological survey of the territory around Jhimpir was made by W.T. Blandford, who described the area were the sites were discovered: *"4 or 5 miles west of Jhimpir, and 1½ miles west-north-west of a water hole called Bhookun*

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1 Blandford, 1880: 153.

on the inch and ½ maps, there is a rather conspicuous scarp of compact limestone about 15 feet thick, yellowish-buff or brown in colour, and having much the appearance of a Nari bed. It rests upon white Khirtar limestone and contains Alveolina *and* Patellina, *so that it must be of Khirtar age… …At a large spring, about a mile south of Jhimpir Railway Station, it is difficult to distinguish the overlying calcareous deposit from the Khirtar limestone, the only lithological difference being that the former contains quartz grains"* [2].

THE CHIPPED STONE ASSEMBLAGES

The most important clusters of Late (Upper) Palaeolithic sites (fig. 2) was found on a limestone terrace that overlooks the depression of Keenjar Lake, some 40-50 m high, 0.25 km south-west of the above spring (fig. 3). The chipped stone artefacts were lying on the surface, in a horizontal position. Only very few specimens were partly embedded in a vertical/oblique position at the top of the reddish soil, some 10 cm thick, that covers the bedrock. This would indicate that they had been slightly removed from their original situation by natural agents.

All the artefacts are obtained from good quality flint the outcrops of which lie some 1 km south-south-west of site JHP1[3] (fig. 4). They are often coated with a dark greyish brown (2.5Y3/2) to dark brown (7.5YR3/3) patina due to exposure and weathering. Some specimens from the lower terraces are patinated in white. Most of the tools look rather "fresh"; concassage detachments are very rare.

Table 1 lists the precise geographic location of the sites, the main characteristics of the chipped stone artefacts, and their probable cultural attribution. It also shows the number and main typological characteristics of the finds from the sites, which might suggest the presence of variable activity areas.

Cores, often of a subconical type with (micro) bladelet detachments, have been collected from 14 sites. Most specimens come from JHP1 (12: 33.3%), which yielded the highest number of retouched tools (6: 33.3%). These latter are known from 10 sites where, in most cases, they are represented by only one specimen. The commonest implements are lunates (4) obtained from bladelets with microburin technique (?): 2 specimens had been hafted, and utilised as armatures (fig. 5, nn. 14 and 15), most probably in the way suggested by Nushniy[4], 1 is unfinished. Other common tools are (atypical) short end scrapers and backed flakelets. One shouldered backed point comes from JHP1 (fig. 5, n. 13).

The presence of technological pieces (primary decortication flakes, rejuvenations, core rejuvenation flakes, crested blades and debitage flakes) suggests that the tools were produced on the spot. Characteristic are exhausted, subconical (micro) bladelet cores, some of which closely resemble bullet types. The characteristics of the typology of both cores and tools are given in Table 2, while Table 3 provides a few measures of the complete, unretouched artefacts from the three richest sites. The data show that the Late (Upper) Palaeolithic Jhimpir debitage is basically normolithic, with a fairly high incidence of both microliths and macroliths. It is characterized by a high presence of flakes and blade-like flakes, while the number/percentage of blades is relatively high, if we consider that they break easily and were utilised also for the manufacture of geometric projectiles (lunates). Bladelets, a small cluster of which was found at point TW (fig. 2, TW), were most probably detached by indirect percussion technique.

2 Blandford, 1880: 152-153.

3 Biagi and Nisbet, 2010.

4 Nushniy, 1992: fig. 44, n. 38.

DISCUSSION

The study of the Late (Upper) Palaeolithic archaeology in the Subcontinent is still in its infancy, although the finds from a few old sequences[5] and the researches at present underway in some regions of India[6] are starting to improve our knowledge on the material culture remains and the environments exploited by the Late Pleistocene communities[7]. Until a few years ago, our knowledge on the Late (Upper) Palaeolithic of the Indian Subcontinent was based mainly on the works by M.L.K. Murty[8] and M.J. Sharma[9]. According to one of the above authors the chipped stone assemblages of this period were *"to be divided into three major techno-typological groupings: (1) flake-blade industries; (2) blade-tool industries; end (3) blade and burin industries, although it is difficult to recognize a succession of regional subcultural phases as elsewhere in the Old World"*[10], ideas reaffirmed also a few years ago[11].

Furthermore the absence of any systematic typological work on the chipped stone assemblages of this period, and their important microlithic components[12] in the Indian Subcontinent, the scarcity, and sometimes the unreliability, of the radiocarbon dates from the Late (Upper) Palaeolithic and Mesolithic sites[13], made the problem difficult to solve.

The situation was even more unclear in the Indus Valley, and more generally in Pakistan (fig. 8), where Late (Upper) Palaeolithic surface sites had been discovered only in two main regions of Sindh: the Rohri Hills and Ongar, otherwise (incorrectly) called Milestone 101[14], and Sanghao cave in the NWFP[15].

Regarding Lower Sindh, apart from the (geological) surveys carried out by A.R. Khan in the 1970s, which led to the discovery of an impressive number of prehistoric sites all over the areas of his investigations[16], no systematic survey has ever been conducted in the country, and even the very important discoveries made by the above author are still almost unknown to the scientific community, or often neglected.

In effect, the industries collected by Professor A.R. Khan from the Mulri Hills (Karachi), Rehri, Mendiari and other sites[17], have shown that Late (Upper) Palaeolithic sites undoubtedly exist in Lower Sindh, and their chipped stone assemblages clearly differ from those of the Mesolithic from the same region[18]. Unfortunately their absolute chronology is still unknown, due to the absence of any datable material from the surface sites. The recurrence of curved backed points, sometimes thick, obtained by abrupt, bipolar retouch, the presence of several types of burins, from Mulri Hills 16, for instance, the variable dimensional and typological characteristics of some geometric armatures, lunates in particular, the typology of the bladelet cores, clearly indicate the Late (Upper) Palaeolithic character of these lithic complexes.

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5 Allchin and Goudie, 1973; Misra, 1974; Sharma and Misra, 1980; Misra and Rajaguru, 1989; Sali, 1989; Misra, 2002.

6 Williams *et al.,* 2006; Clarkson *et al.,* 2009; Petraglia *et al.,* 2009.

7 Murty, 2001; Gibling *et al.,* 2008.

8 Murty, 1969; 1979.

9 Sharma, 1982.

10 Murty, 1979: 303.

11 Raju and Venkatasubbaiah, 2002; Murty, 2003.

12 Misra, 1985.

13 Raju and Venkatasubbaiah, 2002: 101-102.

14 Allchin, 1976; 1979.

15 Allchin, 1973; Ranere, 1982.

16 Khan, 1979a; 1979b.

17 Biagi, 2008: 10-11.

18 Biagi, 2003-2004.

19 Binford, 1982: 15.

The Jhimpir assemblages fall into this complicated picture. Their discovery can contribute to a better understanding of the final stages of the Late (Upper) Palaeolithic in Sindh for the following reasons: 1) they have been found, unexpectedly, in a region from which so far no Palaeolithic site has ever been discovered, 2) they lie in an ideal environmental location, close to both freshwater resources and very good quality raw material outcrops, 3) although they are not from stratified contexts, they are more or less *in situ,* slightly moved due to natural agents, and 4) they are characterised by very few types of well-defined tools among which are subconical cores, bladelets, and geometric armatures (lunates), which suggest the presence of short-lived residential or/and hunting camps in the area[19].

CONCLUSION

The discovery of small clusters of very characteristic chipped stone artefacts on the surface of Jhimpir limestone terraces poses a number of questions, among which are the chronological attribution of the assemblages, and their position in the Late (Upper) Palaeolithic/Mesolithic sequence of Lower Sindh, within the general framework of the end of the Pleistocene/beginning of the Holocene in the Indian Subcontinent, and the Indus Valley in particular.

Although these questions are not easy to answer, the following points are to be considered: 1) the typology of the rich Late (Upper) Palaeolithic and Mesolithic assemblages recovered by Professor A.R. Khan's around Karachi, and the way the finds from Jhimpir can be framed into their sequence, 2) the presence/absence of similar industries in the neighbouring regions, 3) the chronology of the complexes characterised by (different types of) lunates in the Indian Subcontinent, 4) the great variability of the above-mentioned types of armatures, which have never been studied in detail from an analytical point of view.

The rich assemblages from Karachi region collected in the 1970s can be summarily grouped into three main complexes, the first of which is to be attributed to final stages of development of the Late (Upper) Palaeolithic, the other two to the Mesolithic. They are characterised by a) various types of burins, (thick) curved backed points often with a bipolar retouch, backed (micro) bladelets, rare lunates and truncations, b) a high number of lunates of various size, obtained by abrupt, direct or bipolar retouch, c) different varieties of trapezoidal armatures, mainly isosceles or pointed, though transversal specimens also recur and, in a few cases, notched flakelets. The microburin technique is frequently employed, although it is better represented in complex c), while subconical or prismatic (micro)bladelet cores are known from all the above complexes. Assemblages with mixed characteristics also occur.

The above subdivision cannot be applied to the assemblages from the Thar Desert dunes around Thari, which are absolutely different[20]. Most of the microlithic assemblages from Gujarat are also difficult to compare[21], perhaps with the exception of that from the lowermost layer at Oriyo Timbo[22] that shows some traits in common with the Jhimpir finds, although the radiocarbon result form this site is unreliable[23].

While there is an increasing evidence for a very old microlithic technology in Andhra Pradesh[24] and also the Belan-Seoti Valley of north-central India[25], it is still unclear when geometric microliths (lunates) started to be produced by the Late (Upper) Palaeolithic hunters of the two regions. According to the radiocarbon results from Jwalapuram Locality 9

20 Biagi, 2008.

21 Ajithprasad, 2002; Sonatane, 2002.

22 Rissman and Chitalwala, 1990: 70-104.

23 Agrawal *et al.,* 1985: 99.

24 Clarkson *et al.,* 2009: 335; Petraglia *et al.,* 2009 : 4.

25 Jayaswal, 1990; 2002.

rock-shelter, they seem to have been in use already around 34,000 BP[26]. Nevertheless, although the recent discovery of long, radiocarbon-dated sequences can help follow the development of the Late (Upper) Palaeolithic material culture assemblages, apart from a few exceptions[27], little work has so far been conducted on the subsistence and settlement patterns of the last hunters of the entire Subcontinent.

The situation is radically different in south-central Asia, where the few excavations carried out in Afghanistan[28] have shown the absence of geometric tools even at the end of the Late (Upper) Palaeolithic Kuprukian Culture, when narrow bladelets detached from subconical cores of bullet type become common in the lithic inventory[29], just after 17,000 BP[30]. In effect it is necessary to move further to the west, to north-eastern Iran and the Caspian Sea, to find Epi-palaeolithic and Mesolithic sequences with characteristic geometric armatures[31].

The archaeology of Lower Sindh at the Late Pleistocene/Early Holocene boundary falls within the complicated picture summarily described above, at the crossroad of different cultural units, environments and climatic regions that undoubtedly played a very important role, and highly conditioned the life of the last hunters of the entire territory.

Acknowledgments

The author is very grateful to Mir Atta Mohammad Talpur, Mir Ahmed Farooq Talpur, Mir Abdul Rehman Talpur and Mir Ghulam Rasool Talpur for their patronage and for providing every sort of facilities to make the 2010 survey possible, and to Prof. R. Nisbet (Ca' Foscari University, Venice –I) who took part in the research. Particular thanks are due to Drs. Antonella and Sergio Gnutti (Gnutti EURAL, Rovato, Brescia - I), who provided the financial and technological support for the mission, and to Dr. B.A. Voytek (Berkeley University - USA) for the traceological analysis of the chipped stone tools and the revision of the English text.

26 Clarkson *et al.*, 2009: 332,

27 Rao, 1994; Mohanty and Mishra, 2001.

28 Mussi, 1979; Micheli, 2009.

29 Dupree and Davis, 1972: 24-26.

30 Dupree, 1972.

31 Coon, 1951; 1957; McBurney, 1969.

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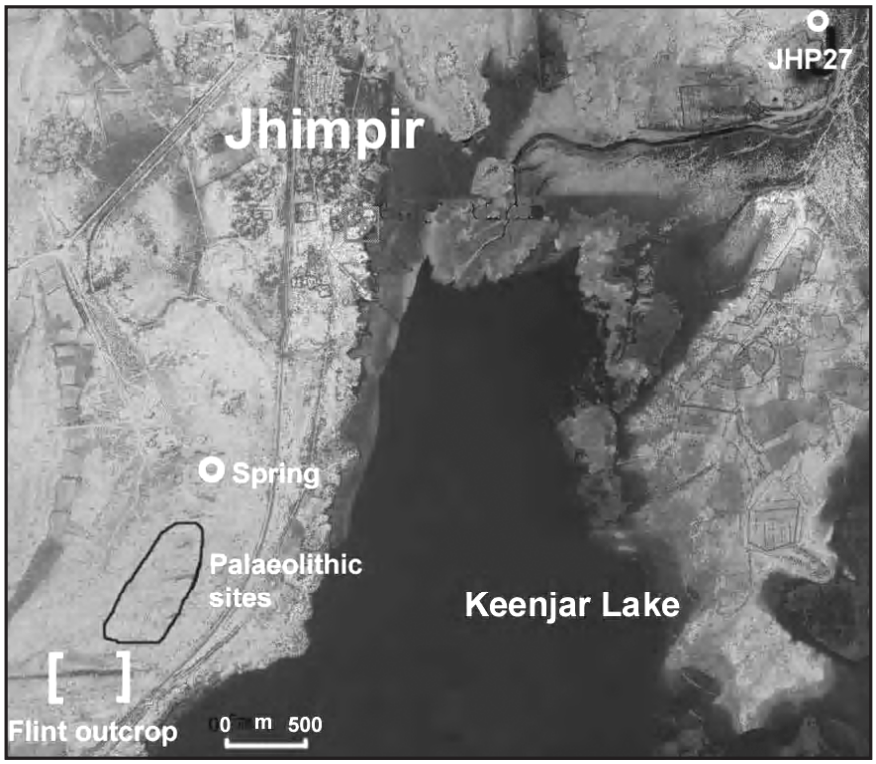

Fig. 1: Jhimpir: location of the clusters of Late (Upper) Palaeolithic sites discovered in January-February 2010, in respect of the spring and the main flint source. JHP27 is located some 3 km east of the present-day village of Jhimpir *(elaboration by C. Franco, drawing by P. Biagi).*

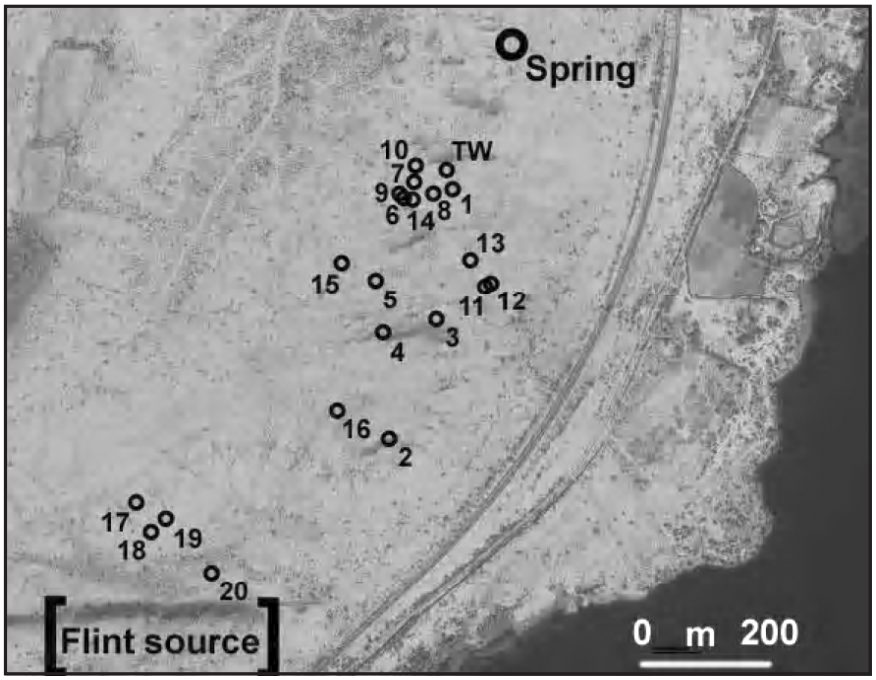

Fig. 2: Jhimpir: distribution map of the JHP (1-20) sites discovered in January-February 2010 on the terraces south-south-west of the village between the spring, in the north, and the good quality flint source, in the south. TW indicates a small scatter of bladelet fragments *(elaboration by C. Franco, drawing by P. Biagi).*

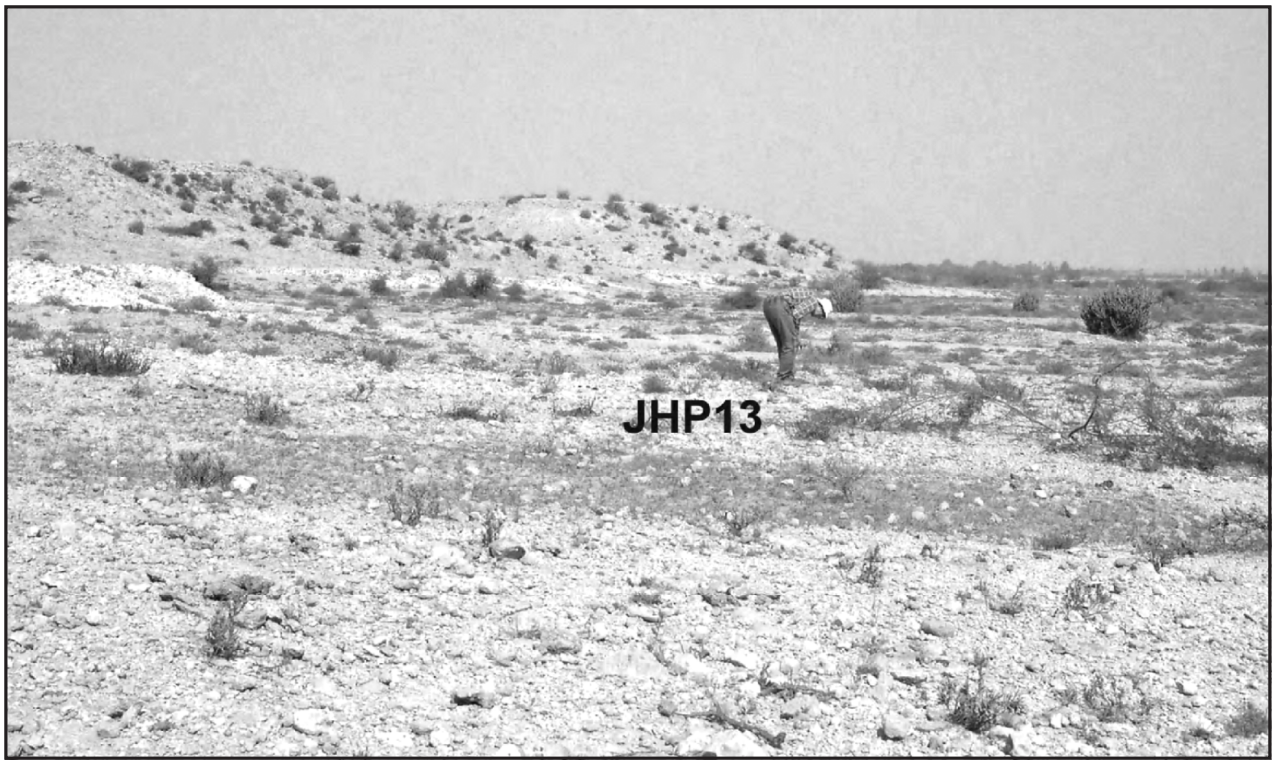

Fig. 3: Site 13 (JHP13), in the foreground, and the higher terraces on which most of the sites have been discovered, in the background *(photograph by P. Biagi)*

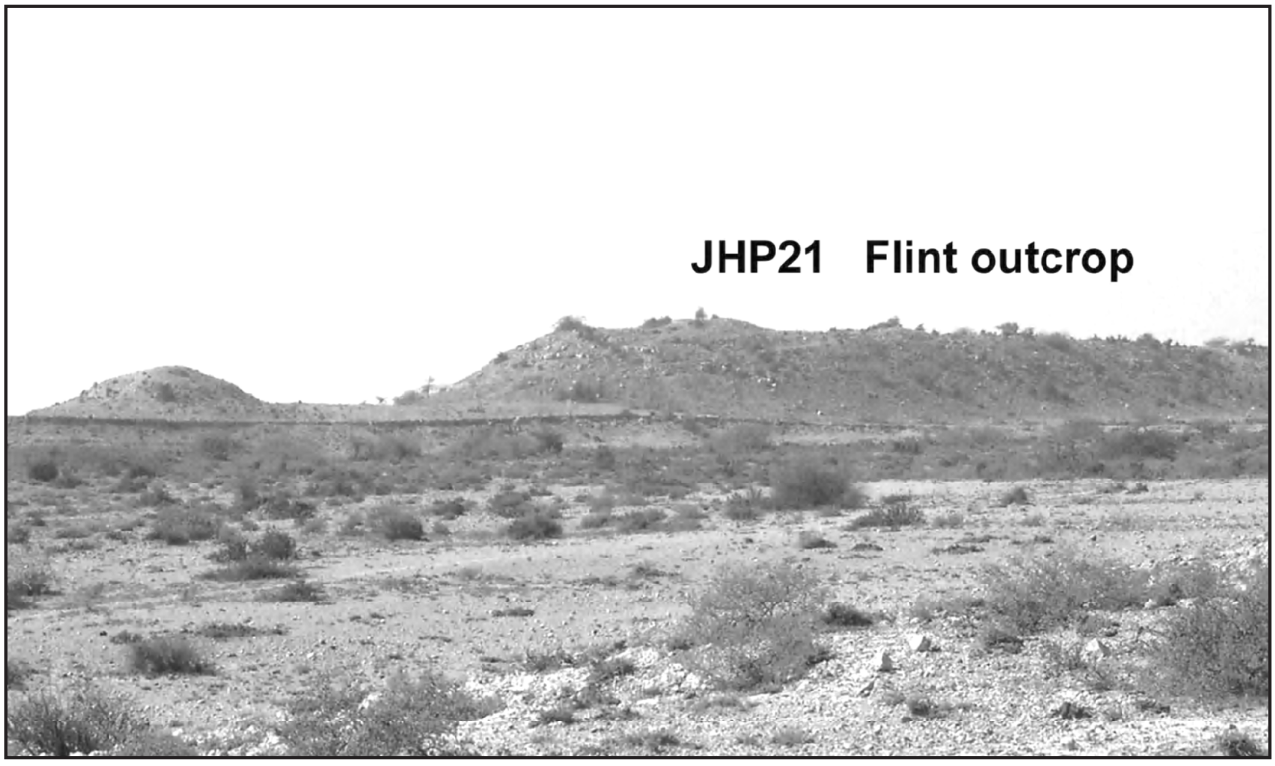

Fig. 4: Site 21 (JHP21): the easternmost part of the flint outcrop from the north-east *(photograph by P. Biagi)*.

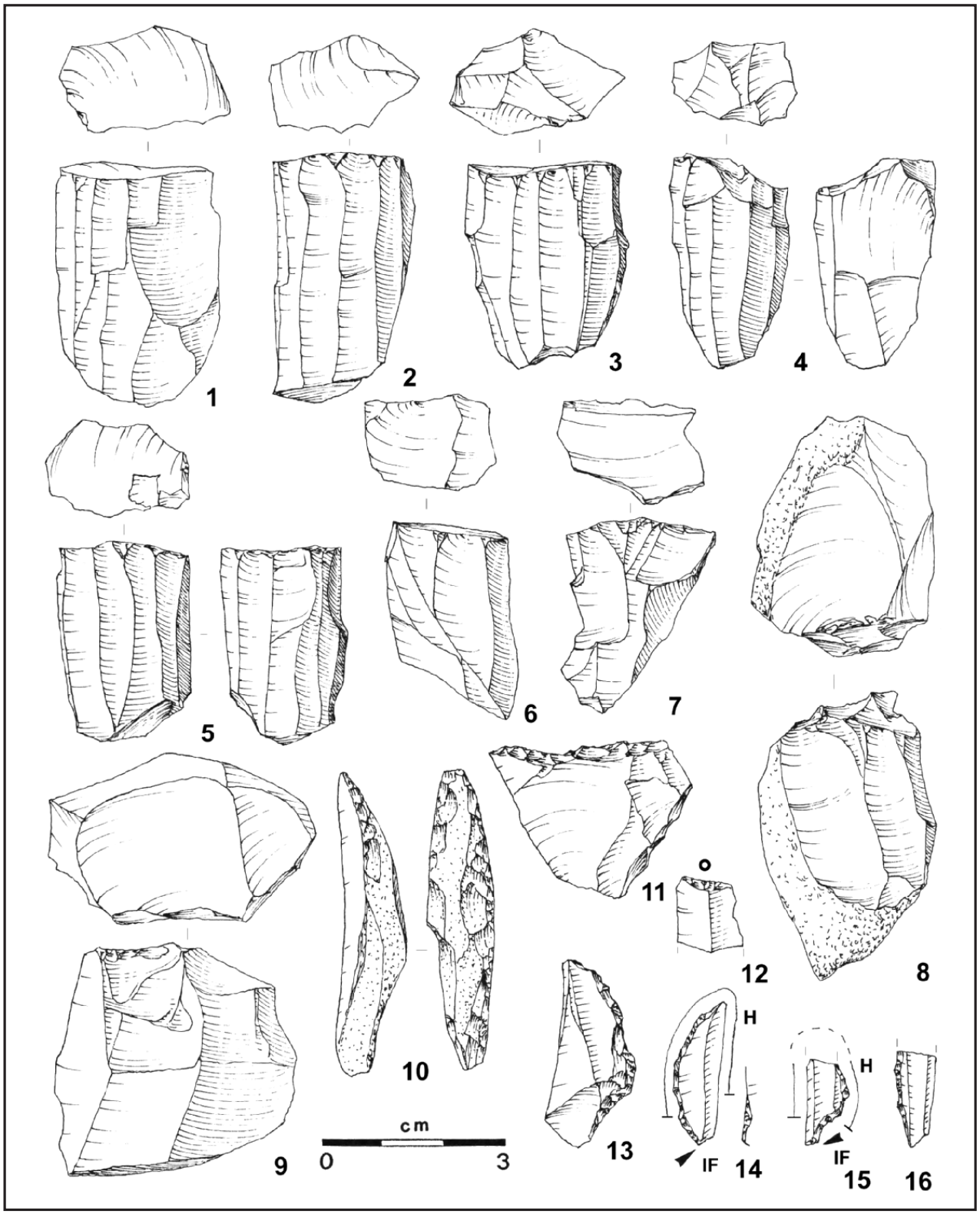

Fig. 5: Chipped stone artefacts from Jhimpir site 1 (JHP1): cores (1-9), core rejuvenation blade (10), backed flakelet (11), truncation (12), backed point (13), lunates (14), backed bladelet (15). Traces of wear: hafting (H), impact fracture (IF) *(drawings by P. Biagi, inking by G. Almerigogna).*

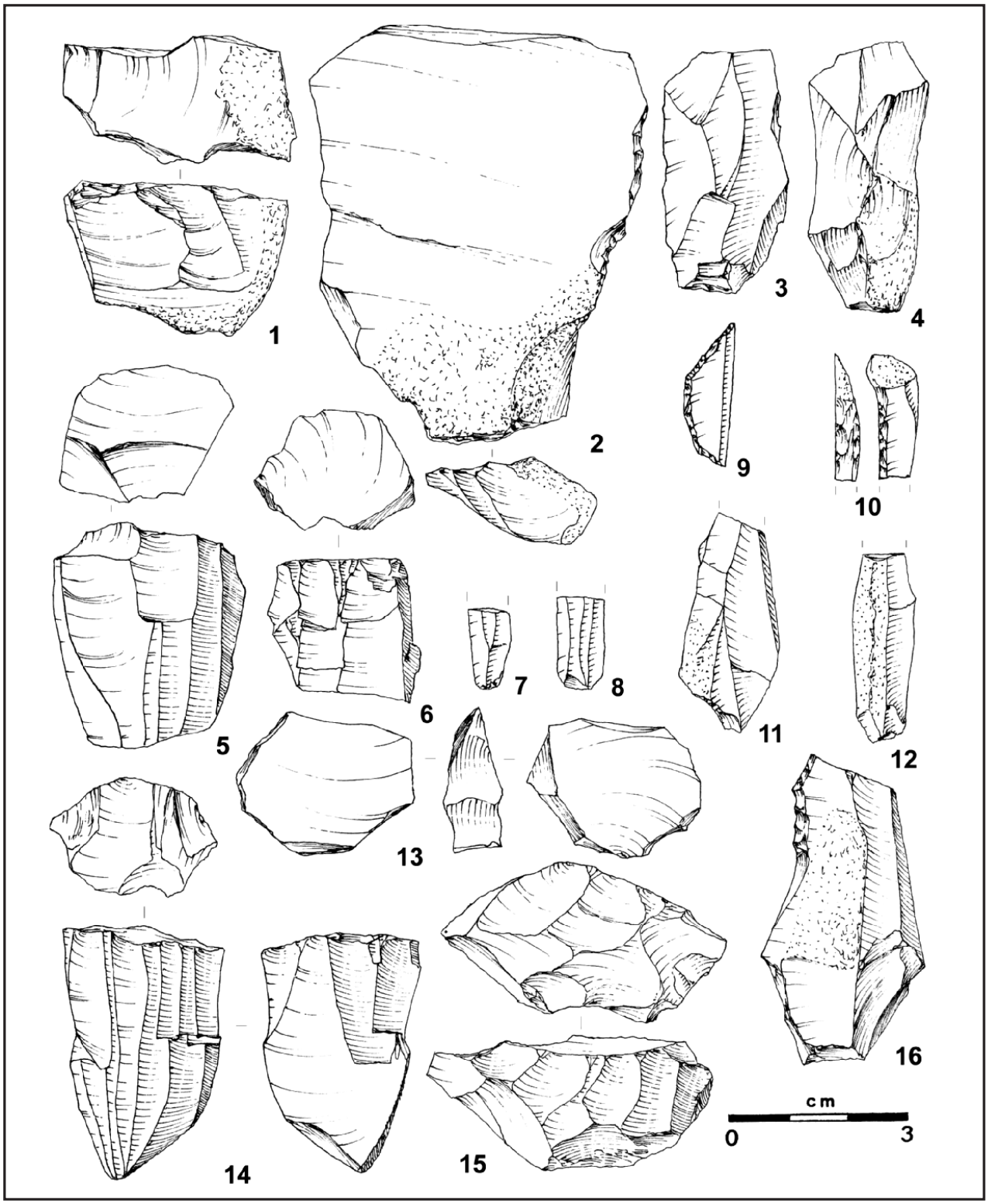

Fig. 6: Chipped stone artefacts from Jhimpir site 2 (JHP2): core (1); site 4 (JHP4): large flake (2); site 5 (JHP5): unretouched blade (3); site 6 (JHP6): crested blade (4); site 7 (JHP7): cores (5 and 6), unretouched bladelets (7, 8, 11 and 12), lunate (9), crested bladelet (10); site 8 (JHP8): core (14), core rejuvenation flake (13), backed flake (16); site 26 (JHP26): core *(drawings by P. Biagi, inking by G. Almerigogna).*

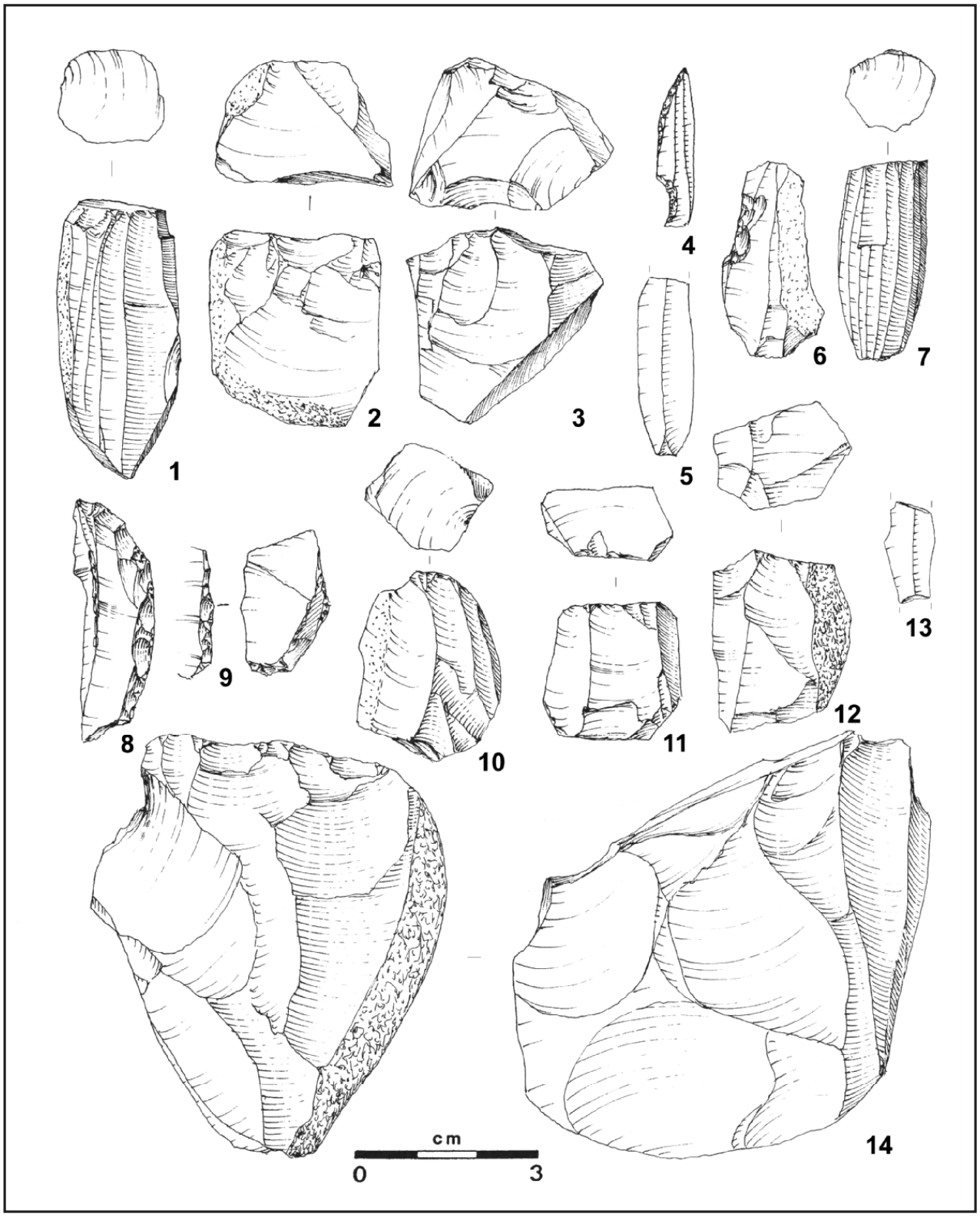

Fig. 7: Chipped stone artefacts from Jhimpir site 9 (JHP9): cores (1-3), unfinished lunate (4); site 10 (JHP10): unretouched bladelet (5), notched blade (6), core (7); site 13 (JHP13): rejuvenation blade (8), backed flakelet (9), cores (10-12); site 14 (JHP14): unretouched bladelet (14); site 15 (JHP15): core *(drawings by P. Biagi, inking by G. Almerigogna).*

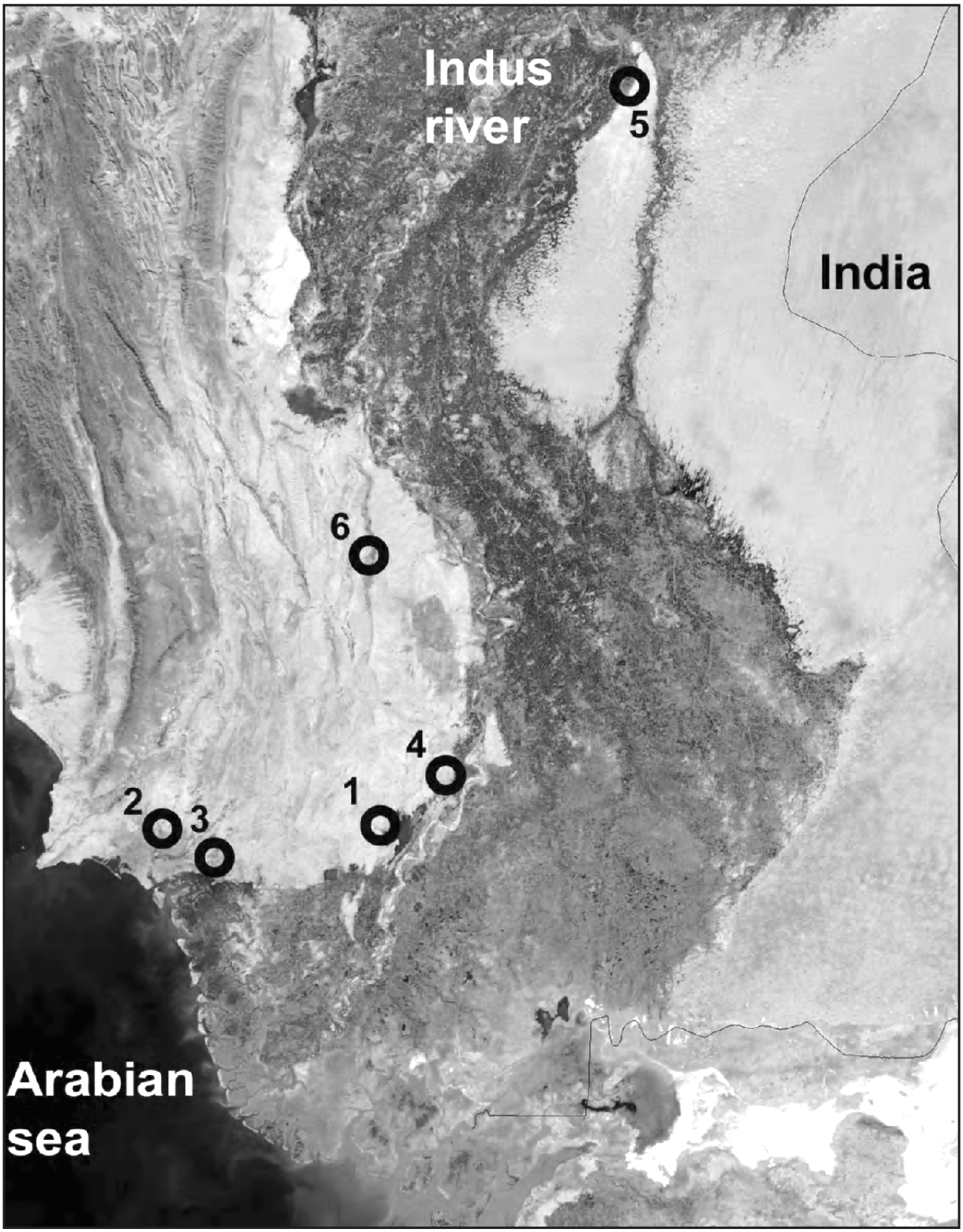

Fig. 8: Distribution map of the Late (Upper) Palaeolithic sites of Sindh: Jhimpir (1), Mulri Hills, Karachi (2), Rehri (3), Ongar (4), Ranikot (5), Rohri Hills (6) *(drawing by P. Biagi)*.

Site number	Coordinates	Diameter (m)	Artefacts	Complete	Fragments	Precores	Cores	Core rejuv. flakes	Attribution
JHP1	25°00'095N - 68°00'437E	10	169	52	87	0	12	1	Palaeolithic
JHP2	24°59''798N - 68°00'363E	1	4	3	0	0	1	0	Palaeolithic
JHP3	24°59'923N - 68°00'408E	Cemetery	0	0	0	0	0	0	Islamic?
JHP4	24°59'901N - 68°00'357E	Isolated find	1	1	0	0	0	0	Palaeolithic
JHP5	24°59'972N - 68°00'381E	Isolated find	1	0	0	0	0	0	Palaeolithic
JHP6	25°00'073N - 68°00'401E	10	9	3	3	0	0	0	Palaeolithic
JHP7	25°00'085N - 68°00'400E	6	72	37	18	2	3	0	Palaeolithic
JHP8	25°00'086N - 68°00'415E	Isolated finds	3	1	0	0	1	1	Palaeolithic
JHP9	25°00'075N - 68°00'404E	5	20	7	7	0	4	0	Palaeolithic
JHP10	25°00'098N - 68°00404E	5	27	9	14	0	1	0	Palaeolithic
JHP11	24°59'965N - 68°00'458E	5	66	31	31	0	0	0	Palaeolithic
JHP12	24°59'974N - 68°00'450E	5	57	18	31	0	3	0	Palaeolithic
JHP13	24°59'981N - 68°00'441E	20	140	60	67	0	3	0	Palaeolithic
JHP14	25°00'084N - 68°00'397E	3	24	9	8	0	1	0	Palaeolithic
JHP15	24°59'978N - 68°00'309E	5	9	7	0	0	1	0	Palaeolithic
JHP16	24°59'818N - 68°00'301E	Isolated finds	4	2	2	0	0	0	Palaeolithic?
JHP17	24°59'736N - 68°00'100E	Isolated find	1	0	0	0	0	0	Undefined
JHP18	24°59'700N - 68°00'105E	3	7	5	2	0	0	0	Undefined
JHP19	24°59'711N - 68°00'110E	5	6	5	0	0	1	0	Palaeolithic?
JHP20	24°59'659N - 68°00'160E	Nomad camp	0	0	0	0	0	0	Subrecent
JHP22	25°05'209N - 68°08'944E	5	26	22	1	0	3	0	Palaeolithic?
JHP23	25°07'095N - 68°11'144E	15	8	5	3	0	0	0	Palaeolithic?
JHP24	25°05'629N - 68°05'632E	Cemetery	3	2	1	0	0	0	Islamic+Pal?
JHP25	25°05'615N - 68°05'555E	10	2	2	0	0	0	0	Undefined
JHP26	25°05'676N - 68°05'369E	10	6	3	1	0	1	0	Palaeolithic?
JHP27	25°01'668N - 68°02'547E	5	10	2	7	0	1	0	Palaeolithic
JHP28	24°58'744N - 67°59'561E	Isolated find	1	1	0	0	0	0	Bronze Age?

Site number	Coordinates	Crested blades	Rejuvenations	Decortications	Tools	Others	Attribution
JHP1	25°00'095N - 68°00'437E	6	4	1	6	No	Palaeolithic
JHP2	24°59''798N - 68°00'363E	0	0	0	0	No	Palaeolithic
JHP3	24°59'923N - 68°00'408E	0	0	0	0	Cist Graves	Islamic?
JHP4	24°59'901N - 68°00'357E	0	0	0	0	No	Palaeolithic
JHP5	24°59'972N - 68°00'381E	0	0	0	0	No	Palaeolithic
JHP6	25°00'073N - 68°00'401E	1	2	0	0	No	Palaeolithic
JHP7	25°00'085N - 68°00'400E	2	7	2	1	No	Palaeolithic
JHP8	25°00'086N - 68°00'415E	0	0	0	1	No	Palaeolithic
JHP9	25°00'075N - 68°00'404E	1	0	0	1	No	Palaeolithic
JHP10	25°00'098N - 68°00404E	1	1	0	1	No	Palaeolithic
JHP11	24°59'965N - 68°00'458E	1	0	0	4	White patina	Palaeolithic
JHP12	24°59'974N - 68°00'450E	0	3	0	2	No	Palaeolithic
JHP13	24°59'981N - 68°00'441E	2	6	1	1	No	Palaeolithic
JHP14	25°00'084N - 68°00'397E	4	2	0	0	No	Palaeolithic
JHP15	24°59'978N - 68°00'309E	0	1	0	0	No	Palaeolithic
JHP16	24°59'818N - 68°00'301E	0	0	0	0	No	Palaeolithic?
JHP17	24°59'736N - 68°00'100E	0	?	0	?	No	Undefined
JHP18	24°59'700N - 68°00'105E	0	0	0	0	White patina	Undefined
JHP19	24°59'711N - 68°00'110E	0	0	0	0	White patina	Palaeolithic?
JHP20	24°59'659N - 68°00'160E	0	0	0	0	Ostreidae shells	Subrecent
JHP22	25°05'209N - 68°08'944E	0	0	0	0	No	Palaeolithic?
JHP23	25°07'095N - 68°11'144E	0	0	0	0	No	Palaeolithic?
JHP24	25°05'629N - 68°05'632E	0	0	0	0	Cist Graves	Islamic+Pal?
JHP25	25°05'615N - 68°05'555E	0	0	0	0	No	Undefined
JHP26	25°05'676N - 68°05'369E	0	0	0	1	No	Palaeolithic?
JHP27	25°01'668N - 68°02'547E	0	0	0	0	No	Palaeolithic
JHP28	24°58'744N - 67°59'561E	0	0	0	1	No	Bronze Age?

Table 1: Jhimpir: geographic coordinates, main characteristics of the chipped stone assemblages, and cultural attribution of the sites.

Site number	Core/Tool	Typology	Platform/Retouch	Dimensions (cm)	Condition	Cortication (%)	Wear traces	Figure
JHP1	Core	Subconical, bladelet	One stroke, concave	40x26x17	Complete	0	N	5 , n. 1
JHP1	Core	Subconical, bladelet	One stroke, concave	41x23x16	Complete	0	N	5 , n. 2
JHP1	Core	Subconical, bladelet	Several strokes, dihedral	34x26x17	Complete	0	N	5 , n. 3
JHP1	Core	Subconical, bladelet	One stroke, dihedral	34x23x16	Complete	0	N	5 , n. 4
JHP1	Core	Subconical, bladelet	One stroke, concave	33x22x16	Complete	0	N	5 , n. 5
JHP1	Core	Subconical, bladelet	One stroke, dihedral	33x20x16	Complete	0	N	5 , n. 6
JHP1	Core	Subconical, bladelet	One stroke, concave	32x24x16	Complete	0	N	5 , n. 7
JHP1	Core	Subconical, bladelet	One stroke, concave	17x17x16	Fragment	0	N	
JHP1	Core	Subconical, bladelet	One stroke, concave	48x30x40	Complete	50	N	5 , n. 8
JHP1	Core	Prismatic, flakelet	One stroke, concave	38x39x28	Complete	0	N	5 , n. 9
JHP1	Core	Prismatic, flakelet	One stroke, concave	36x28x20	Fragment	0	N	
JHP1	Truncation	Straight, proximal	Abrupt, deep, direct	(12)x11x2.5	Fragment	0	N	5 , n. 12
JHP1	Backed point	Curved, shouldered	Abrupt, deep, direct, right	30x13x7	Complete	0	N	5 , n. 13
JHP1	Backed bladelet	Straight	Abrupt, deep, direct, left	(15)x7x2	Fragment	0	N	5 , n. 16
JHP1	Geometric	Lunate	Abrupt, deep, direct, left	22.5x7x2.5	Complete	0	Impact fracture/ haft	5 , n. 14
JHP1	Geometric	Lunate	Abrupt, deep, direct, right	(13)x7x2	Fragment	0	Impact fracture/ haft	5 , n. 15
JHP1	Backed flakelet	Transversal	Abrupt, deep, direct	26x33x4	Complete	0	N	5 , n. 11
JHP2	Core	Prismatic, flakelet	One stroke, concave	26x37x22	Complete	50	N	6 , n. 1
JHP7	Precore	Polyhedric, flakelet	All over	62x54x50	Complete	50	N	
JHP7	Precore	Discoidal, flakelet	All over	42x55x35	Complete	25	N	
JHP7	Core	Subconical, bladelet	One stroke, concave	37x32x23	Complete	0	N	6 , n. 5
JHP7	Core	Prismatic, flakelet	One stroke, dihedral	38x31x25	Complete	0	N	
JHP7	Core	Prismatic, flakelet	One stroke, concave	24x26x19	Complete	0	N	6 , n. 6
JHP7	Geometric	Lunate	Abrupt, deep, direct, left	23x8x2.5	Complete	0	N	6 , n. 9
JHP8	Core	Subconical, bladelet	Three strokes, dihedral	40x25x19	Complete	5	N	6 , n. 14
JHP8	Backed flakelet	Lateral	Abrupt, deep, direct, left	(52)x29x9	Fragment	25	N	6 , n. 16
JHP9	Core	Subconical, bladelet (bullet)	One stroke, concave	47x20x16	Complete	25	N	7 , n. 1
JHP9	Core	Prismatic, flakelet	One stroke, concave	31x30x19	Complete	25	N	7 , n. 2
JHP9	Core	Prismatic, flakelet	One stroke, dihedral	33x33x25	Complete	0	N	7 , n. 3
JHP9	Geometric	Lunate	Abrupt deep, left + notch	25x6x2	Unfinished	0	N	7 , n. 4
JHP10	Core	Subconical, bladelet (bullet)	One stroke, concave	33x14x13	Complete	0	N	7 , n. 7
JHP10	Notched blade	Notch	Simple, deep, direct, left	32x17x6	Complete	25	N	7 , n. 6
JHP11	End scraper	Short end scraper	Simple, deep, direct	18x24x9	Complete	0	N	
JHP11	Backed flakelet	Bi-transversal	Abrupt, deep, direct	12x18x4.5	Complete	0	N	
JHP11	Backed flakelet	Bi-transversal	Abrupt, deep, alternate	16x10x4	Complete	0	N	

JHP11	Backed flakelet	Transversal	Abrupt, deep, mixed	18x14x4	Complete	0	N	
JHP12	Core	Subconical, bladelet	One stroke, dihedral	33x36x30	Complete	0	N	
JHP12	Core	Prismatic, bladelet	One stroke, dihedral	22x30x17	Complete	25	N	
JHP12	Core	Discoidal, flakelet	Centripetal strokes	20x35x33	Complete	0	N	
JHP12	Backed flakelet	Bi-transversal	Abrupt, deep, direct	16x12x4	Complete	0	N	
JHP12	Backed flakelet	Transversal	Abrupt, deep, direct	24x20x8	Complete	0	N	
JHP13	Core	Subconical, bladelet	One stroke, concave	31x24x17	Complete	25	N	7 , n. 10
JHP13	Core	Prismatic, bladelet	One stroke, concave	23x23x12	Complete	0	N	7 , n. 11
JHP13	Core	Prismatic, bladelet	Dihedral	30x23x18	Complete	25	N	7 , n. 12
JHP13	Backed flakelet	Lateral	Abrupt, deep, inverse, left	24x15x8	Complete	0	N	7 , n. 9
JHP14	Core	Tortue?, flakelet	Dihedral	46x51x28	Complete	25	N	
JHP15	Core	Polyhedric, flakelet/ bladelet	Dihedral	67x53x27	Complete	25	N	7 , n. 14
JHP19	Core	Prismatic, flakelet	One stroke, concave	54x43x35	Complete	0	N	
JHP22	Core	Prismatic, bladelet	One stroke, concave	27x22x21	Complete	0	N	
JHP22	Core	Polyhedric, flakelet	Centripetal strokes	36x50x28	Complete	0	N	
JHP22	Core	Polyhedric, flakelet	Two strokes, dihedral	26x39x37	Complete	0	N	
JHP26	Core	Short subconical, flakelet	Centripetal strokes	22x47x24	Complete	0	N	6 , n. 15
JHP26	End scraper	Semi-circular	Simple, direct	31x29x9	Complete	0	N	
JHP27	Core	Subconical, microbladelet	Flat, oblique	25x14x8	Complete	0	N	

Table 2: Jhimpir: main characteristics of cores and tools from the different sites.

Site number		JHP1	JHP1	JHP7	JHP7	JHP13	JHP13
Category	Limits (cm)	Number (52)	%	Number (37)	%	Number (60)	%
Elongation Indexes							
Very narrow blades	<6	0	0	0	0	0	0
Narrow blades	6-3	0	0	0	0	1	1,6
Blades	3-2	5	9,6	3	8,1	5	8,3
Blade-like flakes	2-3/2	9	17,3	10	27	16	26,7
Flakes	3/2-1	27	52	11	29,7	24	40
Wide flakes	1-3/4	9	17,3	6	16,2	10	16,7
Very wide flakes	3/4-1/2	2	3,8	6	16,2	4	6,7
Extremely wide flakes	>1/2	0	0	1	2,7	0	0
Dimension indexes							
Hypermicroliths	<2	0	0	0	0	0	0
Microliths	2-4	16	30,8	8	21,6	9	15
Normoliths	4-6	20	38,5	14	37,8	31	51,7
Macroliths	6-8	12	23,0	11	29,8	16	26,7
Hypermacroliths	>8	4	7,7	4	10,8	4	6,6

Table 3: Jhimpir: elongation and dimension indexes of the complete, unretouched artefacts from JHP1, JHP7 and JHP13.