

Archaeological Explorations around Padri, Bhavnagar District in Saurashtra, Gujarat, Western India

RAJESH, S. V., K. KRISHNAN AND PRABHIN SUKUMARAN

Introduction

The Harappan research in Gujarat although initiated through an accidental discovery of script bearing ceramic at Vallabipur (Heras 1938), became a major area of research in Indian Archaeology through a series of explorations and excavations followed by the analyses of its artefacts through interdisciplinary studies. These researches led to the categorization of this region as the southern region of the Indus Civilization (Possehl 1999), ordering the cultural changes into different phases of Indus Civilization (Vats 1937; Dikshit 1950; Nanavati 1962; Rao 1963; Wheeler 1959; 1966; Malik 1968) and identification of its regional variations (Subbarao 1958; Rao 1956, 1963, 1979, 1985; Mehta et.al. 1971; Nanavati et al. 1971; Joshi 1972; Sankalia 1972; Pandya 1983; Hegde et. al. 1988; Possehl and Raval 1989; Possehl and Herman 1990; Allchin 1990; Shinde 1992a, 1992b; Dhavalikar and Possehl 1992; Sonawane and Ajithprasad 1994; Herman and Krishnan 1994; Bhan 1994; Allchin and Allchin 1997; Ajithprasad 2002, 2008, 2011; Ajithprasad and Sonawane 2011). In addition to these the concept of cultural dichotomy was also put forward to explain the co-existence of 'classical' Indus Cultural sites with that of the regional chalcolithic and Mesolithic traditions (Soundararajan 1980; Sankalia 1965; Possehl and Kennedy 1979). In the light of the above, explorations conducted in and around Padri region, an area that falls along the Shetrunji river, close to the Gulf of Khambhat to determine the intensity of sites along the periphery of a definable geographical sub-region. It was assumed that this exploration would further contribute to the understanding of Padri ware within the Chalcolithic context of Gujarat.

Padri and its surroundings

The study area (from N, E to N, E) falls within Talaja Taluka and parts of Gogha and Palitana Talukas in Bhavnagar District (Figure 1), in the coastal low lands lying between 0 to 75 m contours. The Shetrunji River originates from the eastern side of Saurashtra plateau and flows towards the east to the gulf of Khambhat. The land along the river is

fertile and supports both rabi and kharif crops. The geology and drainage pattern of this region are extensively studied by several researchers (Pappu and Marathe 1977; Marathe 1981; Merh 1995). The land serves as habitats for both wild and domesticated animals.

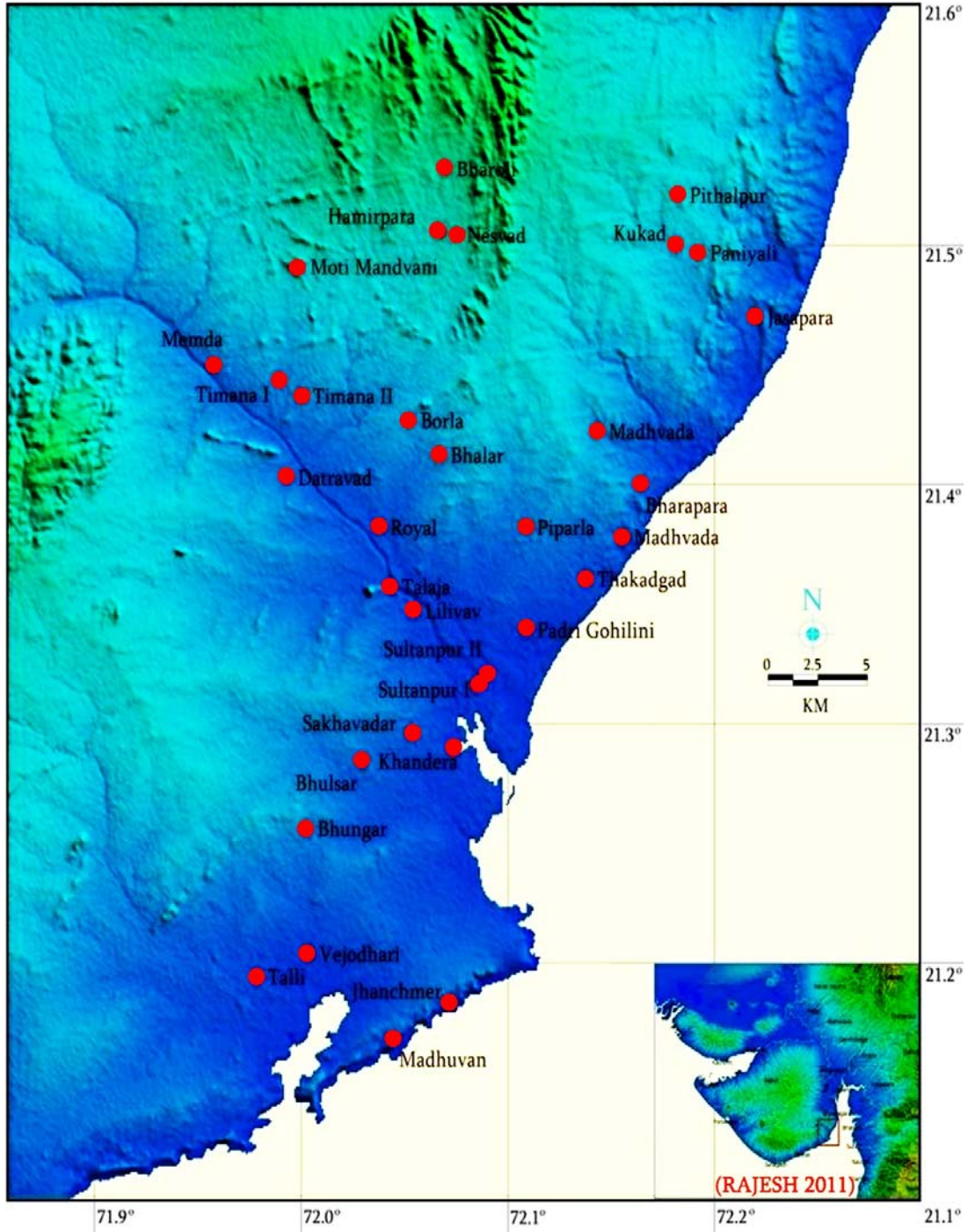


Figure 1: All the Newly Explored/Revisited Sites in and around Padri (Study Area)

Previous Archaeological Researches in the Study Area

Previous workers have carried out a variety of archaeological researches in this area. These have brought to light evidence of human activity in this area during the Prehistoric Period (IAR 1979-80: 17-23; Costa: Personal Communication;), Chalcolithic period (Paul et al. 1997: 53-63; Paul 1999; Paul and Shinde 1998-99: 141-48; Shirvalkar 2008; IAR 1990-91: 8-10, 1991-92: 21-22, 1993-94: 34-35 and 38, 1995-96: 11-12; Shinde 1992a, 1992b, 1994, 1996, 1998, 2006; Shinde and Kar 1992; Shinde and Thomas 1993; Joglekar 1993-94: 32-35, 1996-97: 55-68; Bhagat 2001; Shirvalkar 2008; Rajesh 2011; Ajithprasad: Personal Communication;), Early Historic (IAR 1956-57: 77, 1957-58: 99, 1960-61: 8, 1964-65: 73, 1967-68: 9; Paul et al. 1997: 53-63; Paul 1999; Paul and Shinde 1998-99: 141-48; Paul 1999) and Medieval Period (IAR 1955-56: 67, 1980-81: 89, 1986-87: 117; Shinde 1994). Besides, an ethnographic work carried out in this area is also significant for understanding the cultural processes (Kar et al. 1993: 143-185). The present survey was aimed at understanding the site intensity, intra-site and inter-site interactions within this area and also to examine if there was any strong signature of regional Chalcolithic cultures.

Exploration, Artefact Analyses Methods and Results

Prior to field survey, in addition to literature review, the geo-morphological and archaeological potentials of the area were studied with the help of topographic sheets of 1:250000 and 1: 50000 scale, satellite images, Google earth images and SRTM maps. Field walking was restricted at times to avoid trespassing through private land or land under cultivation. Nevertheless, an area falling under a 25km radius circle with Padri as the centre was surveyed. Overall through this survey, a total number of 146 villages from four talukas were explored; 119 in Talaja, 15 in Ghogha, 10 in Palitana and 2 in Bhavnagar. The sites reported earlier were also revisited. The geo-coordinates of the archaeological sites, rough estimate of the shape and size of the mound were recorded using Garmin eTrex Vista hand held GPS. During the survey it was noticed that due to continuous use of the land for agricultural purposes sites have undergone either partial or complete destruction. The details of each site were recorded on a site recording sheet (Figure 2). Sampling, though random, was done with great care; however difficulties were encountered in categorising them in multicultural sites. Major artefacts recovered

from the sites include diagnostic sherds of pottery, terracotta objects, stone objects, shell objects and some faunal remains. The exploration brought to light 33 sites (Table 1; Figure 1); Urban Harappan/Sorath Harappan (11), Post Urban Harappan/Late Sorath Harappan (9), Early Historic (3) and Late Medieval (24). As this paper is focussing on Chalcolithic period, sites of the Urban and Post Urban Harappan are discussed here. Total number of the explored/revisited Chalcolithic sites are 12 in number and all of them are located in Talaja taluka. These are Padri (Figure 3), Lilivav, Sakhavadar/ Nehda (Figure 4), Vejodhari, Khandera, Sultanpur/ Sartanpur I, Sultanpur/ Sartanpur II, Hamirpara, Borla, Bhalar, Datravad/Dantred and Talli (Figure 5). In the sites except Lilivav, Khandera and Bhalar; Urban Harappan artefacts were found associated with Post Urban Harappan/Late Sorath Harappan artefacts.

SITE RECORDING SHEET

Site Number:
 Site Name:
 Village:
 Taluka:
 District:
 Location of the Site:
 Designation of the Site:
 Co-ordinates of the Site:
 Site Size:
 Shape of the Mound:
 Owner of the Land:
 Owner of the Neighbouring Land:
 Vegetation/Crops:
 Cultivation:
 Nearest Water Sources:
 Land Forms/Soils:
 Erosion:
 Buildings, Roads, etc.:
 Findings:
 Artifacts:
 Shape of the Mound:
 Condition of the Mound:
 Photograph Number:
 Previous Excavations:
 Relative Chronology:
 Remarks:



Figure 2: Site Recording Sheet

Figure 3: General View of Disturbed Archaeological Mound at Padri

Ceramics from the study area were categorized into different wares based on their colour, surface features, form, texture and probable manufacturing techniques. Its colour (Red, Buff, Grey and Black and Red) was determined by identifying its equivalents in the Munsell Soil Colour Chart (1954). Determination of its texture was done by comparing the ‘feel’ of its evenly cut cross-section with the ‘feel’ of different grades of sand paper (Grades: 36, 50, 60, 80, 100 and 120), along with other parameters such as slip-body relationship and visible features of firing. It was found that the feel of coarse wares was equivalent to that of -36, 36, 50; fine wares to 100, 120 and 120+ and the

medium ones to 60 and 80. Based on its typo-technological features ceramics were classified as Chalcolithic, Early Historic and Medieval types. The other artefacts recovered during the explorations are pottery discs, perforated pottery discs/ spindle whorls, ear stud, grinding stones, pestle stones, broken terracotta animal figurines, polisher, shell bangle fragments, animal bones, teeth, horn, shell debris and various types of shells/molluscs



Figure 4: Chalcolithic Site at Sakhavadar, General View



Figure 5: The Pile of Remains of Disturbed Structures, Talli

Discussion

Establishing the relative chronology of sites into various cultural periods (Figure 6) was done through a comparative analysis of the ceramics from explored sites with various excavated sites in Gujarat. The ceramics from the survey regions are comparable to the same from Lothal (A and B), Surkotada (IA, IB and IC), Rangpur (IIA, IIB and IIC), Rojdi (A, B and C) and Kuntasi (I and II) (Figures 7, 8 and 9; Table 2). Thus the explored sites are datable to Urban Harappan and Post Urban Harappan phases; c. 2600-1900 BC and c. 1900-1600 BC, respectively. The recalibrated chronometric dates from the excavated site at Padri are in the range of c. 3800-1750 BC (Table 3) (Possehl 1994). Earlier it was thought that both the Padri Ware (Figure 10) and Sorath Harappan ceramics occur from the middle of fourth millennium BC and continue to the Urban Harappan period (Shinde 1998; Bhagat 2001; Shirvalkar 2008). The reanalysis of the ceramics (Rajesh 2011) from the Pre Urban Harappan phase (c. 3800-2600 BC) at Padri indicated that the Sorath Harappan vessel types encountered at Padri are available in other sites during the Urban Harappan phase (Rangpur II A and II B). A majority of ceramics observed by previous researchers (Shinde 1998; Shirvalkar 2008) during the Urban Harappan phase and the transition phase from Pre-Urban to Urban Harappan phase at Padri are also available in the other Late Sorath Harappan sites of Gujarat.

Among the twelve Chalcolithic sites explained in this article, six are newly discovered by the researchers. The material remains from these sites and also the other revisited sites did not yield Padri ware or other Pre Urban artefacts, though the earlier researchers reported it from Bandi Rohil (Paul et al. 1997). Instead our survey in this site brought out only Early Historic and Late Medieval ceramics. We also noticed that the previous researchers labelled the other sites except Padri as Pre Urban Harappan and Urban Harappan without noticing the Sorath Harappan and Late Sorath Harappan characters of artefacts. Besides Padri, Talli is the only site which gives the evidence of Chalcolithic stone architecture that underwent destruction due to agricultural activities.

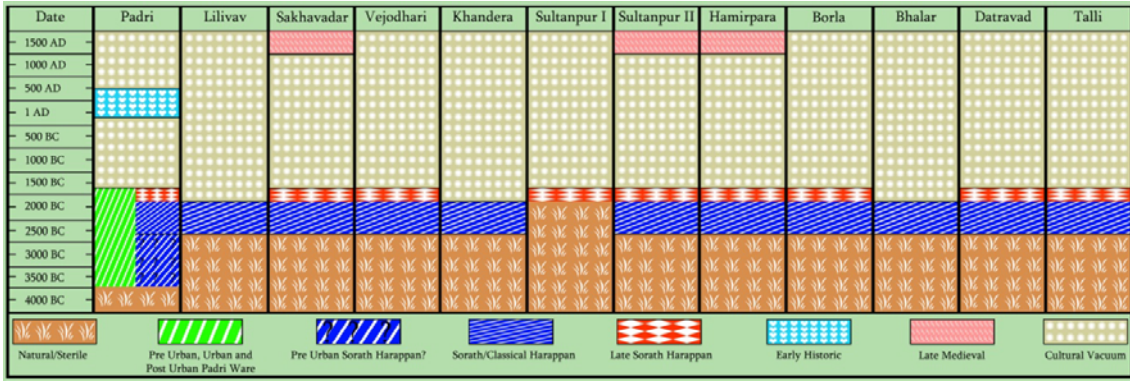


Figure 6: Chronological (Chronometric and Relative) Synopsis of the Study Area

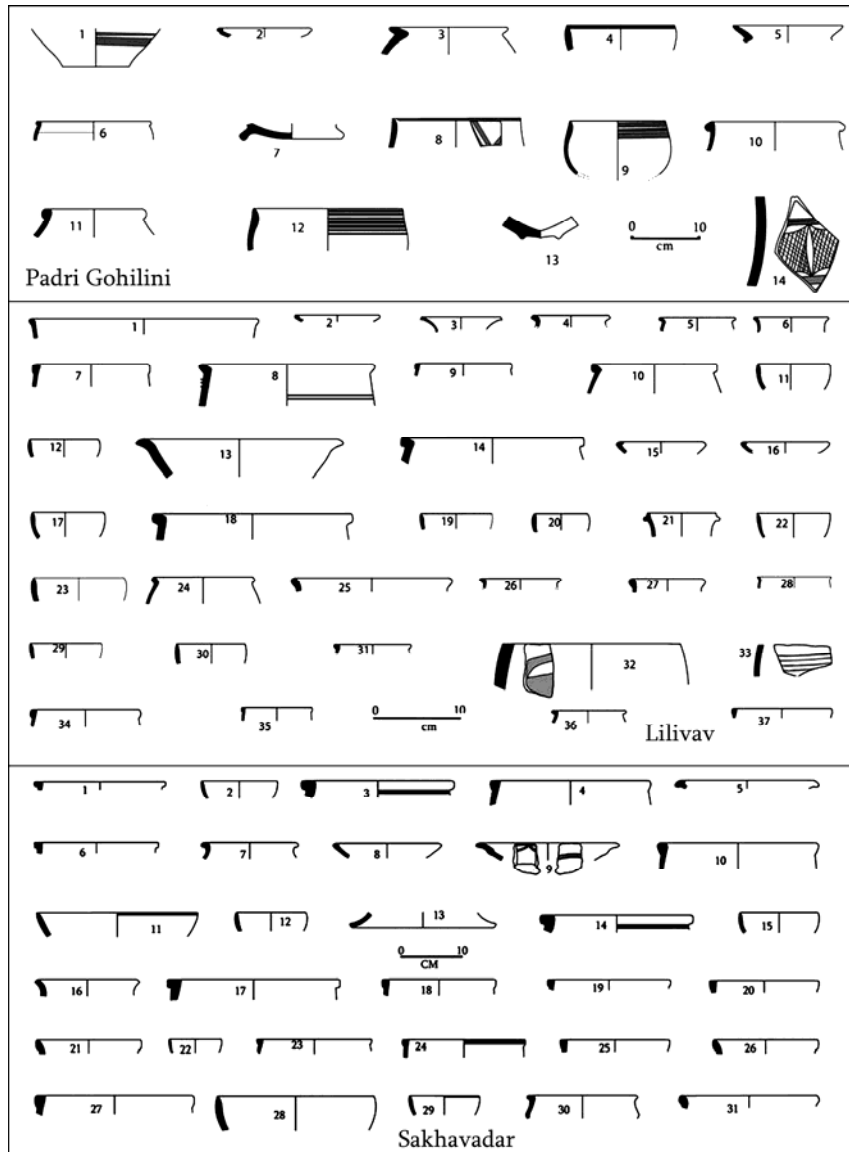


Figure 7: Explored Sorath Harappan and Late Sorath Harappan Ceramics from Padri Gohilini, Lilivav and Sakhavadar

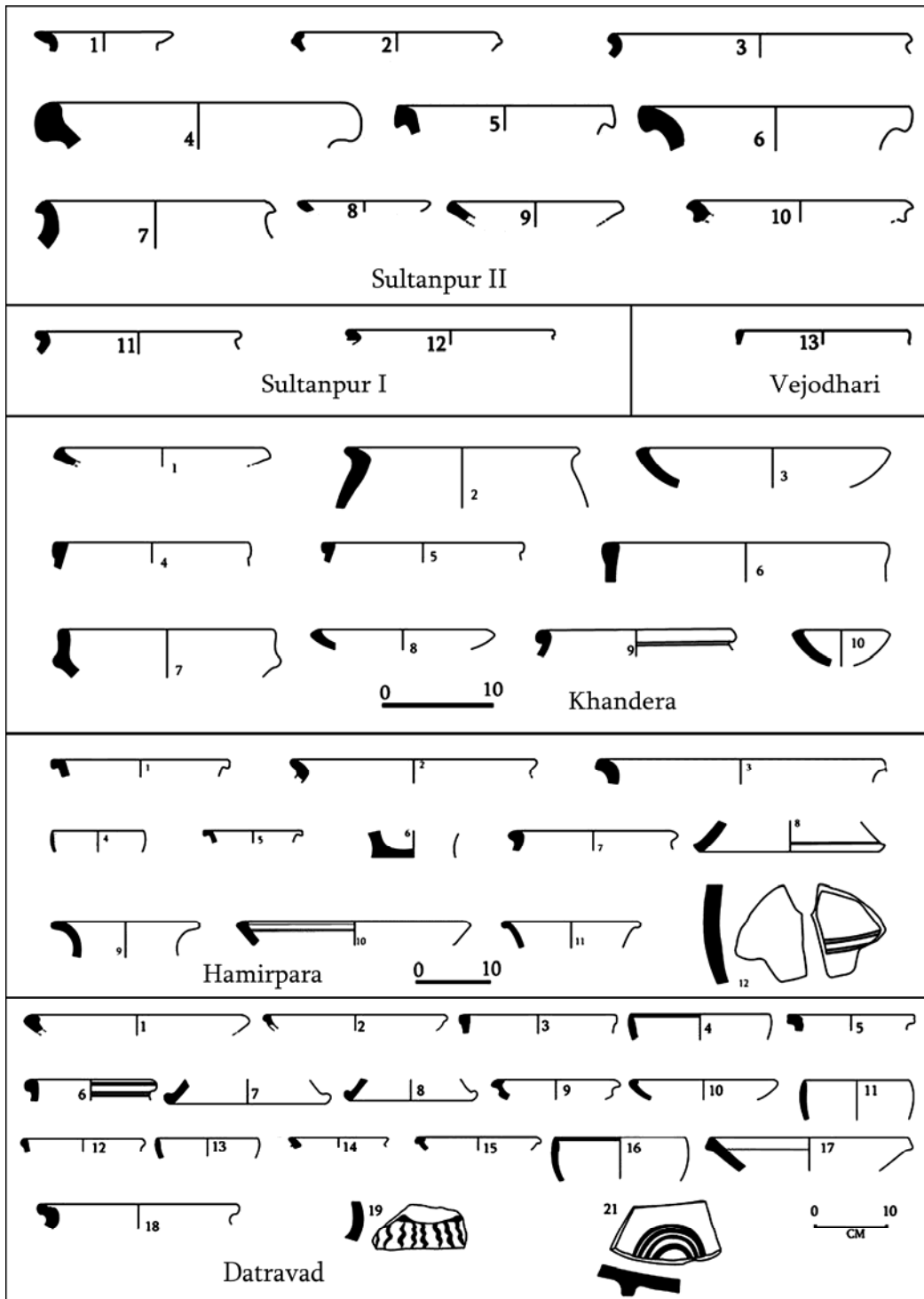


Figure 8: Explored Sorath Harappan and Late Sorath Harappan Ceramics from Sultanpur I, Sultanpur II, Vejodhari, Khandera, Hamirpara and Datravad

The availability of shell bangles and shell debitage, lithic debitage, ceramics and vitrified sherds from the study area suggest that craft activities existed here at a marginal level. It was observed that the distribution of Chalcolithic sites were along the water

bodies, on fertile black cotton soil, whereas the Medieval sites are located on sandy red soil locally known as *Goradumatti*, whose reason is not yet determined. Above all, the contrasting results of different explorations in the study area show that systematic surveys can produce more authentic information regarding the distribution of sites and its nature.



Figure 9: Explored Classical Harappan, Sorath Harappan and Late Sorath Harappan Ceramics from Borla, Bhalar and Talli

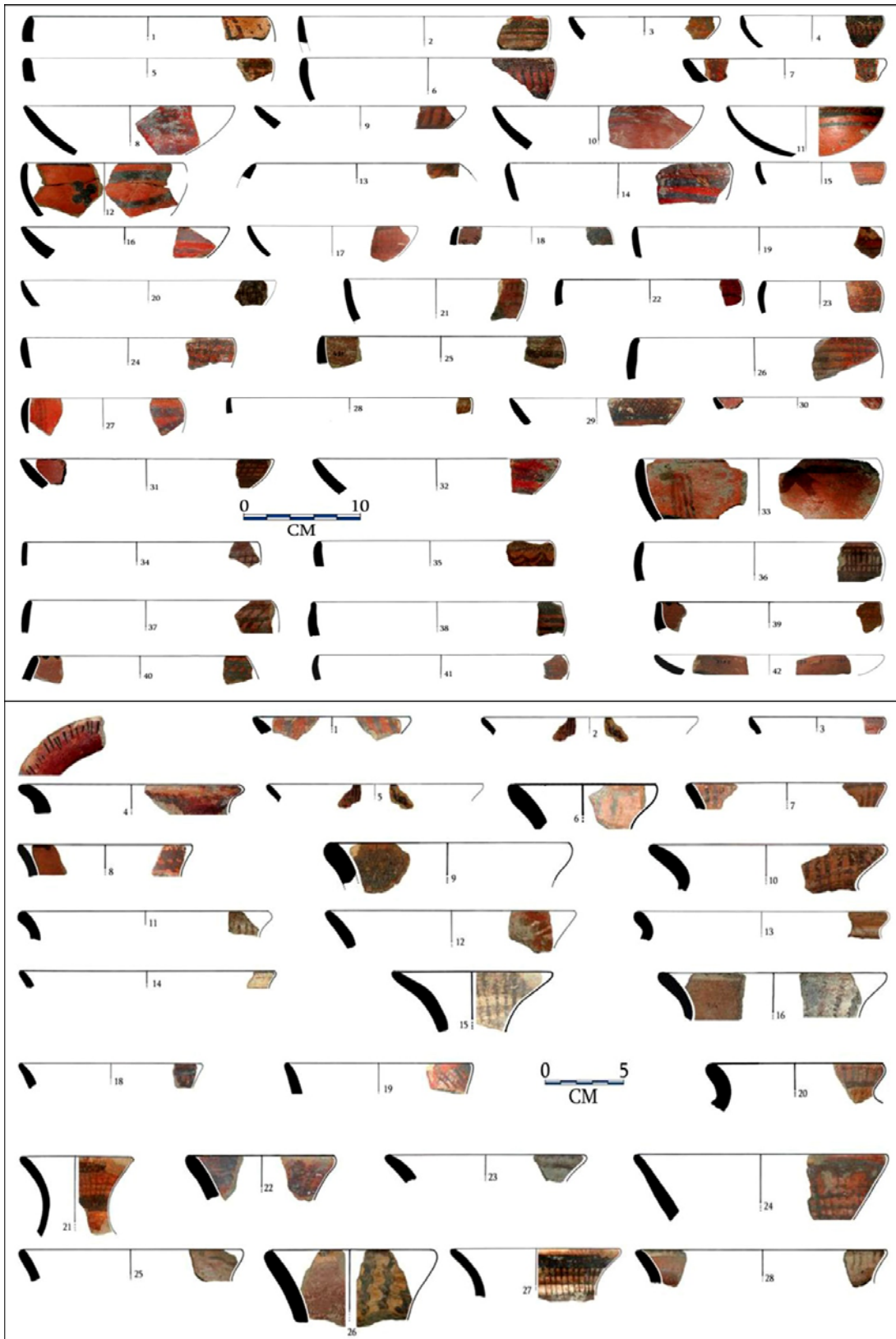


Figure 10: Padri Ware from Padri (Adapted: Shirvalkar 2008)

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Table 1: Newly Explored and Revisited Sites in and around Padri

Sl. No.	Site	Village	Taluka	Latitude	Longitude	Site Size in Hectare	Probable Deposit in Meter	Condition of the Site	Cultural Affiliation
1	Padri (Kerala no Dhoro)	Padri Gohilini	Talaja	21° 20. 37' N	72° 06. 65' E	340x210 = 7.14	3.2	Excavated, Highly Disturbed due to Soil Removal	SH, CH, LSH, CBRW, EH
2	Lilivav (Rakhodi Timbo)	Lilivav	Talaja	21° 20. 50' N	72° 03. 17' E	120x110 = 1.32	0.75	Disturbed due to Agricultural activities	SH
3	Sakhavadar (Nehda)	Sakhavadar	Talaja	21° 17. 46' N	72° 02. 73' E	150x100 = 1.5	0.75	Disturbed due to Agricultural activities, Temple Construction	SH, LSH, LM
4	Vejodhari	Vejodhari	Talaja	21° 12. 14' N	72° 00. 12' E	40x30 = 0.12	0.5	Disturbed due to Agricultural activities	SH, LSH, CBRW
5	Khandera	Khandera	Talaja	21° 17. 22' N	72° 03. 85' E	300x200 = 6	1	Disturbed due to Agricultural activities	SH
6	Sultanpur I	Sultanpur/Sartanpur	Talaja	21° 18. 59' N	72° 05. 06' E	50x50 = 0.25	0.5	Highly Disturbed due to Agricultural activities	LSH
7	Sultanpur II	Sultanpur/Sartanpur	Talaja	21° 18. 72' N	72° 05. 19' E	80x60 = 0.48	0.5	Disturbed due to Agricultural activities	SH, LSH, LM

8	Hamirpara	Hamirpara	Talaja	21° 29. 78' N	72° 03. 63' E	100x90 = 0.9	0.5	Highly Disturbed due to Agricultural activities	SH, LSH, CBRW, LM
9	Borla	Borla	Talaja	21° 24. 96' N	72° 03. 09' E	175x150 = 2.63	0.75	Highly Disturbed due to Agricultural activities	CH, SH, LSH, CBRW
10	Bhalar	Bhalar	Talaja	21° 24. 44' N	72° 04. 01' E	150x150 = 2.25	1	Highly Disturbed due to Agricultural activities	CH, SH
11	Datravad	Datravad	Talaja	21° 24. 10' N	71° 59. 35' E	110x100 = 1.1	0.5	Highly Disturbed due to Agricultural activities	SH, LSH
12	Talli	Talli	Talaja	21° 10. 99' N	71° 58. 43' E	125x125 = 1.5625	0.5	Highly Disturbed due to Agricultural activities, Construction Works	SH, LSH
13	Talaja	Talaja	Talaja	21° 21. 26' N	71° 01. 96' E	150x150 = 2.25	1	Disturbed due to Agricultural activities, Construction Works	EH, LM
14	Junagam (Royal)	Royal	Talaja	21° 22. 55' N	72° 02. 16' E	100x100 = 1	1.5	Disturbed due to Agricultural activities	EH, LM

15	Pithalpur	Pithalpur	Ghogha	21° 30. 75' N	72° 10. 57' E	50x50 = 0.25	0.75	Disturbed due to Agricultural activities	LM
16	Meda (Memda)	Meda/Memda	Palitana	21° 26. 58' N	71° 57. 27' E	250x250 = 6.25	1.5	Disturbed due to Agricultural activities	LM
17	Vadlavali Meladimam no Timbo	Thakadga d/Chopda	Talaja	21° 20. 98' N	72° 07. 76' E	225x225 = 5.0625	1.5	Disturbed due to Agricultural activities	LM
18	Madhvada I	Madhvada	Talaja	21° 22. 41' N	72° 08. 80' E	50x40 = 0.20	0.5	Disturbed due to Agricultural activities	LM
19	Bharapara	Bharapara	Talaja	21° 23. 58' N	72° 09. 51' E	60x60 = 0.36	0.75	Disturbed due to Construction of Road	LM
20	Mahadevpara (Timbo) II	Madhvada	Talaja	21° 24. 80' N	72° 07. 97' E	75x75 = 0.5625	4	Disturbed due to Agricultural activities	LM
21	Sivabhai no Timbo	Piparla	Talaja	21° 22. 55' N	72° 06. 31' E	100x100 = 1	2.5	Disturbed due to Agricultural activities	LM
22	Jasapara	Jasapara	Talaja	21° 27. 72' N	72° 12. 73' E	50x50 = 0.25	0.75	Disturbed due to Agricultural activities	LM
23	Paniyali	Paniyali	Talaja	21° 29. 48' N	72° 11. 33' E	40x30 = 0.12	0.5	Disturbed due to Agricultural activities	LM
24	Ramnath Mandir no Timbo	Kukad	Talaja	21° 29. 60' N	72° 10. 53' E	75x60 = 0.45	0.75	Disturbed due to Agricultural activities	LM

25	Bhulsar (Fulsar)	Bhulsar	Talaja	21° 16. 64' N	72° 01. 46' E	50x50 = 0.25	0.5	Disturbed due to Agricultural activities	LM
26	Junagam	Madhuvan	Talaja	21° 10. 05' N	72° 02. 42' E	60x50 = 0.30	0.75	Disturbed due to Agricultural activities	LM
27	Jhanchmer	Jhanchmer	Talaja	21° 11. 00' N	72° 03. 77' E	100x55 = 0.55	1	Disturbed due to Agricultural activities	LM
28	Bhungar	Bhungar	Talaja	21° 15. 22' N	72° 00. 09' E	50x50 = 0.25	0.5	Disturbed due to Agricultural activities, Road and House Construction	LM
29	Timana I	Timana	Talaja	21° 25. 97' N	71° 59. 22' E	60x60 = 0.36	1	Disturbed due to Road and House Construction	LM
30	Timana II	Timana	Talaja	21° 25. 73' N	71° 59. 61' E	125x125 = 1.5625	1	Disturbed due to Agricultural activities	LM
31	Nesvad	Nesvad	Talaja	21° 29. 75' N	71° 03. 90' E	100x60 = 0.6	0.75	Disturbed due to Agricultural activities	LM
32	Bharoli	Bharoli	Talaja	21° 31. 54' N	72° 04. 11' E	50x50 = 0.25	0.5	Disturbed due to Agricultural activities	LM
33	Moti Mandvani	Moti Mandvani	Talaja	21° 28. 87' N	71° 59. 57' E	30x30 = 0.09	0.5	Disturbed due to Construction of Roads and houses	LM

CH: Classical Harappan; SH: Sorath Harappan, LSH: Late Sorath Harappan, CBRW: Chalcolithic Black and Red Ware, EH: Early Historic, LM: Late Medieval

Table 2. Features of Sorath Harappan and Late Sorath Harappan Ceramics from the Study Area

Site Name	Cultural Period	Ware	Texture In order	Rim Diameter	Vessel Part	Shape	Core Condition	Other Features	Similarity in Shape
Padri	Classical Harappan, Sorath Harappan, and Late Sorath Harappan	Red, Buff, Black and Red, Lustrous Red	Fine, Medium, Coarse	3 to 36	Rim, Base, Body, Stem	Pot, Basin, Bowl, Dish, Perforated Jar, Dish on Stand	Oxidized, Deoxidized	Regular Striations, Finger Marks	Lothal, Rangpur, Surkotada, Rojdi, Kuntasi
Lilivav	Sorath Harappan	Red, Buff	Fine, Medium, Coarse	4 to 44	Rim, Base, Body, Stem	Pot, Basin, Bowl, Dish, Perforated Jar, Jar, Dish on Stand	Oxidized, Deoxidized	Regular Striations, Beating Marks, Finger Marks	Lothal, Rangpur, Rojdi, Kuntasi
Sakhavadar	Sorath Harappan, Late Sorath Harappan	Red, Buff	Fine, Medium, Coarse	5 to 61	Rim, Base, Neck and Shoulder, Body, Stem	Pot, Jar, Basin, Bowl, Dish, Perforated Jar Dish on Stand	Oxidized, Deoxidized	Regular Striations, Finger Marks	Lothal, Rangpur, Surkotada, Rojdi, Kuntasi
Vejodhari	Sorath Harappan, Late Sorath Harappan	Red, Buff, Black and Red	Medium, Fine, Coarse	4 to 42	Rim, Base, Body, Stem	Pot, Basin, Dish, Dish on Stand	Deoxidized, Oxidized	Regular Striations	Rojdi
Khandera/	Sorath	Red,	Fine,	11-42	Rim, Base,	Pot, Basin,	Oxidized,	Regular	Lothal,

Sakhavadar	Harappan	Buff	Medium, Coarse		Body, Stem	Bowl, Dish, Dish on Stand	Deoxidized	Striations, Finger Marks	Rangpur, Surkotada
Sultanpur/ Sartanpur I	Late Sorath Harappan	Red, Buff	Coarse, Medium	25-28	Rim, Base	Pot, Basin	Deoxidized, Oxidized	Regular Striations	Rojdi, Kuntasi
Sultanpur/ Sartanpur II	Sorath Harappan, Late Sorath Harappan	Red, Buff, Gray	Fine, Medium, Coarse	12-36	Rim, Body, Stem	Pot, Basin, Bowl, Lid, Dish, Dish on Stand	Deoxidized, Oxidized	Regular Striations, Beating Marks, Blister	Lothal, Rangpur, Surkotada, Rojdi, Kuntasi
Hamirpara	Sorath Harappan, Late Sorath Harappan	Red, Gray, Black and Red	Fine, Medium, Coarse	5-40	Rim, Base, Body, Stem	Pot, Basin, Bowl, Dish, Dish on Stand	Oxidized, Deoxidized	Regular Striations, Beating Marks, Finger Marks	Lothal, Rangpur, Rojdi, Kuntasi
Borla	Classical Harappan, Sorath Harappan, Late Sorath Harappan	Red, Buff, Gray, Black and Red	Fine, Medium, Coarse	4-43	Rim, Base, Body, Stem	Pot, Basin, Bowl, Dish, Dish on Stand, Lid, Perforated Jar	Oxidized, Deoxidized	Regular Striations, Beating Marks, Finger Marks	Lothal, Rangpur, Rojdi, Surkotada, Kuntasi
Bhalar	Classical Harappan, Sorath Harappan	Red	Coarse, Medium, Fine	7-43	Rim, Neck, Shoulder, Body, Base	Pot, Basin, Dish, Dish on Stand	Deoxidized, Oxidized	Regular Striations, Beating Marks, Finger Marks, Blister	Lothal, Rojdi, Surkotada, Kuntasi
Datradvad/ Dantred	Sorath Harappan,	Red, Buff	Fine, Medium,	4-42	Rim, Base, Body,	Pot, Basin, Bowl, Dish,	Oxidized, Deoxidized	Regular Striations,	Lothal, Rangpur,

	Late Sorath Harappan		Coarse		Neck, Shoulder	Dish on Stand		Beating Marks, Finger Marks	Rojdi, Surkotada, Kuntasi
Talli	Sorath Harappan, Late Sorath Harappan	Red	Fine, Medium, Coarse	6-60	Rim, Base, Body, Stem	Pot, Jar, Basin, Bowl, Dish on Stand, Lid, Lamp	Oxidized, Deoxidized	Regular Striations, Beating Marks, Finger Marks	Lothal, Rangpur, Rojdi, Surkotada, Kuntasi

Table 3: Recalibrated Radiocarbon Dates from Padri

Sample Number	Dated Material	Radiocarbon Age	Recalibration (Calib Rev 6.1.0)	Cultural Association
PRL-1787	Charcoal	4820±100 BP	1Σ [cal BC 3705: cal BC 3515] 0.904194 2Σ [cal BC 3798: cal BC 3366] 0.996563	Pre Urban Harappan: Padri Ware
PRL-1785	Charcoal	4390±90 BP	1Σ [cal BC 3106: cal BC 2903] 0.833982 2Σ [cal BC 3346: cal BC 2887] 1.	Pre Urban Harappan: Padri Ware
PRL-1536	Charcoal	4010±145 BP	1Σ [cal BC 2700: cal BC 2341] 0.847792 2Σ [cal BC 2899: cal BC 2140] 1.	Urban Harappan: Padri Ware SorathHarappan
PRL-1786	Charcoal	3740±100 BP	1Σ [cal BC 2294: cal BC 2016] 0.960737 2Σ [cal BC 2463: cal BC 1910] 1.	Urban Harappan: Padri Ware

PRL-1784	Charcoal	3660±100 BP	1Σ [cal BC 2147: cal BC 1901] 0.920762	Urban Harappan: Padri Ware
			2Σ [cal BC 2309: cal BC 1749] 0.992849	
(Possehl 1994; Shinde 1998; Ajithprasad 2002)			(Rajesh et al. 2012; Reimer et al. 2009)	