
Amudda: An Iron Age Megalithic Habitation Site in the Middle Mahanadi Valley, Odisha

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Abstract: *The present investigation at Amudda located on the right bank of the Mahanadi near Dahiya in Boudh district of Odisha for the first time brings to light Iron Age habitation site associated with megalithic burials in Odisha. Chronologically the habitation site of Amudda belongs to the Iron Age period. However, the site needs to be studied from multidisciplinary perspective to understand foraging/agro-pastoral subsistence system in the region. The ongoing investigation at Amudda will throw light on incursion and development of Iron Age culture in the middle Mahanadi valley region of Odisha.*

Keywords: Megaliths, Middle Mahanadi Valley, Habitation Site, Bed Rock Holes, Amudda, Iron Age, Excavations

Introduction

Until recently, the cultural status of a full-fledged Iron Age phase in the state of Odisha was anybody's guess, though the state is well known for its vast reserves of high-grade iron-ore with average Fe content of over 60% and accounts for about 15.79% of iron ore production in India (GSI 2011: 48). For the first time B. K. Sinha reported remains of a 'Ferro-Chalcolithic' phase during his excavations at Golabai Sasan (Sinha 2000: 322-355). Although not yet scientifically dated, this cultural stage at Golabai is characterised by the continuation of preceding Chalcolithic cultural elements besides, introduction of iron technology. No further attempt has, however, been made to trace the geographical distribution of the *Ferro-Chalcolithic* phase in the Coastal Plains of Odisha. During the last two decades systematic exploration coupled with trial excavations conducted at several sites in the Middle Mahanadi Valley region (Singh 1971: 754-775) of central-western part of Odisha highlands brought to light more than forty early settlements (Figure 1) spanning in date from the Neolithic to the Early Historic periods (Behera 2001: 13-34, Behera 2002-2003: 87-103, Behera & Chattopadhyay 2012: 124-134, Behera 2013: 184-207 & Behera & Thakur 2016: 89-97). Almost all the cultural stages between these two periods are well represented in the region without any discernible occupational hiatus. Of the investigated sites in the region, those with Iron Age-Early Historic cultural deposits are fairly numerous than the earlier cultural phases, *viz.* the

Neolithic and the Chalcolithic. Radiocarbon dates obtained from the excavated Iron Age deposits range from 1648 ± 46 B.C. to 468 ± 76 B.C., while the majority lies between 855 ± 125 B.C. and 617 ± 26 B.C. (Behera *et al* 2007: 41-46).

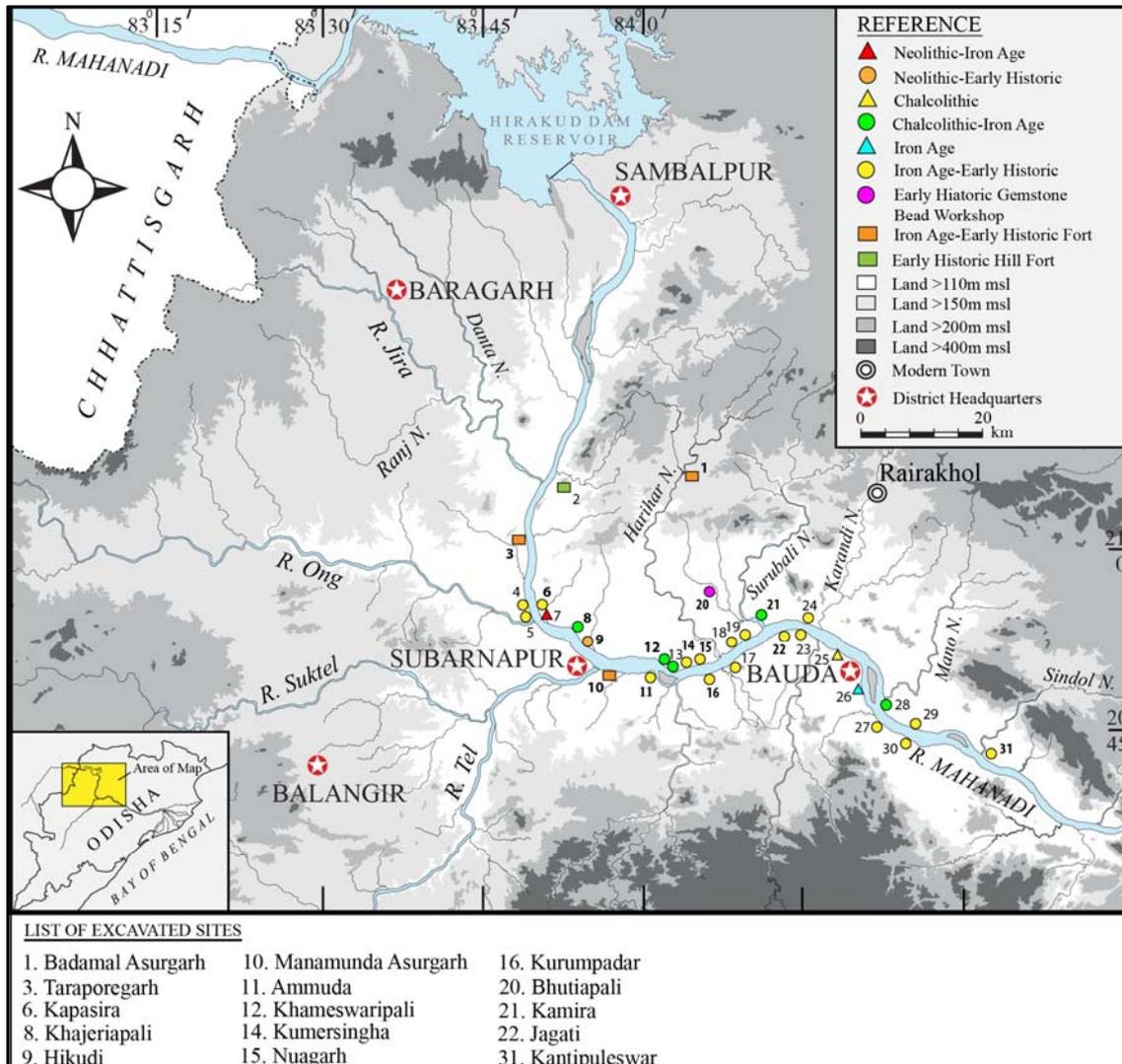


Figure 1: The middle Mahanadi valley showing Explored and Excavated sites associated with Black-and-Red Ware

During our exploration in the Middle Mahanadi Valley region we came across several megalithic monuments, represented mostly by cairn circles, short menhirs with cairns and dolmenoid cists, located very close to/or on the exposed surface of the Iron Age-Early Historic sites, some of which are also found to be associated with bed-rock holes/cupules of varied dimensions and distribution patterns. During seasons trial excavations were conducted at one of such sites, located near the village Amudda in the district Boudh in the Middle Mahanadi Valley region. The habitation area at the site was found to be associated with remains of megalithic structures and bed-rock holes. The present paper briefly discusses the results of our investigation conducted at the site of Amudda.

The Site and Its Physical Settings

The present village of Amudda (Lat. 20° 49' 22.13" N; Long. 84° 0' 47.03" E) is located about 14 kilometers east of Subarnapur district headquarters near Dahiya village in the Kantamal *tehsil* of the Boudh district (Figure 2). The ancient settlement (Lat. 20° 49' 40.06" N; Long. 84° 0' 58.66" E) is situated at a distance of about 600 metres towards the north-eastern part of the present village on the right bank of the Mahanadi and measures nearly 240 meters NW in length and 80 meters SE in width. The north-eastern face overlooking the Mahanadi represents sloppy section rising to a height of about 6 metres from the surrounding plains. Intensive agricultural activities by the villagers along the alluvial tract of the Mahanadi and digging operation for irrigation have already rendered serious damage to the ancient settlement. Massive outcrops of granite bedrock belonging to the Eastern Ghat Supergroup of Archaean era (GSI 2012) are seen on the southern and western parts of the site. While the southern outcrops bear several bedrock holes/cupules (Figure 3), the north-western ones are extensively damaged through quarry activities by the present villagers (Figure 4). However, villagers informed us that nearly ten years back the western ones had numerous bedrock holes. On the other side of the Mahanadi and overlooking Amudda, is located the Chalcolithic-Iron Age site of Khameswaripali. The Chalcolithic levels of this site have been dated between 1065 ± 66 BC and 3520 ± 60 BC. The soils of this area are characterised by deep moderately well drained, fine loamy associated with deep, imperfectly drained, fine swell-shrink soils with clayey surface of grayish colour. The area receives an average annual rainfall of about 1500cm and supports cultivation of rice, wheat, green and black grams, pulses, peas, etc. Besides, the present villagers of Amudda also subsisted on livestock raising, fishing in the Mahanadi and boat building (Figures 5 and 6).

Excavations and Cultural Phases

Our surface exploration in the Middle Mahanadi Valley during 2000 brought to light more than forty early habitation sites ranging from the Neolithic to the Early Historic periods and found to be associated with black-and-red ware and other potteries of different varieties and fabrics. The settlement site of Amudda was located and documented during the above field investigation. Subsequently, trial excavations were conducted at the site to understand the culture sequence and stratigraphic context of the megalithic structural remains noticed on the exposed surface. Two trial trenches (Figures 7 & 8), measuring 2.5m x 2.0m (Trench-I) and 3.0m x 2.5m (Trench-II) were taken on the relatively undisturbed surface on the central part of the ancient habitation. The excavations were carried on to the natural soil, which was struck at 85cm in Trench-I and 167cm in Trench-II. The excavations yielded mainly ceramic and faunal remains, besides a part of a megalithic structure in Trench-II (cairn circle?). Sediment samples were collected 10cm spit-wise and subjected to floatation method for floral remains. On the basis of a detailed intra-regional comparative study and changes in the available cultural assemblages, two broad periods of occupational phases have been identified, viz., Period-I (Early Iron Age) and Period-II (Late Iron Age-Early Historic).

While cultural remains of both the phases are well represented in Trench-II, the Trench-I yielded remains of Period-2 only. Characteristic features of both the cultural periods are presented below.

Period - I (Early Iron Age)

The cultural assemblages of this period were retrieved from 105-110cm thick habitation deposit in Trench-II. The cultural remains recovered from this period comprise ceramic assemblage, viz., Red Slipped Ware (RSW 29.44%), Black-and-Red Ware (BRW 26.57%), Black Slipped Ware (BSW 21.12%), plain Red Ware (RW 12.09%) and chocolate slipped Tan Ware (TW 10.78%); bone tools with cut marks; iron tool and pieces of slag; pottery discs and burnt clay lumps with reed and chaff impressions. Although the limited excavations did not yield evidence for post holes or structural remains of house/huts, at a depth of about 115cm were encountered remains of hearth associated with pottery fragments, ash and a few blocks of unmodified stones (Figure 9). The available burnt clay lumps with reed impressions clearly suggest use of wattle and daub houses by the early inhabitants.



Figure 2: Location of the Site of Amudda and its Micro-level Perspectives



Figure 3: Location of Excavated Habitation Site and Bed Rock Holes



Figure 4: Modern Quarry near the Excavated Habitation Site



Figure 5: Boat Building Tradition in Amudda



Figure 6: Boat Building Tradition in Amudda



Figure 7: Stratigraphy of Trench I

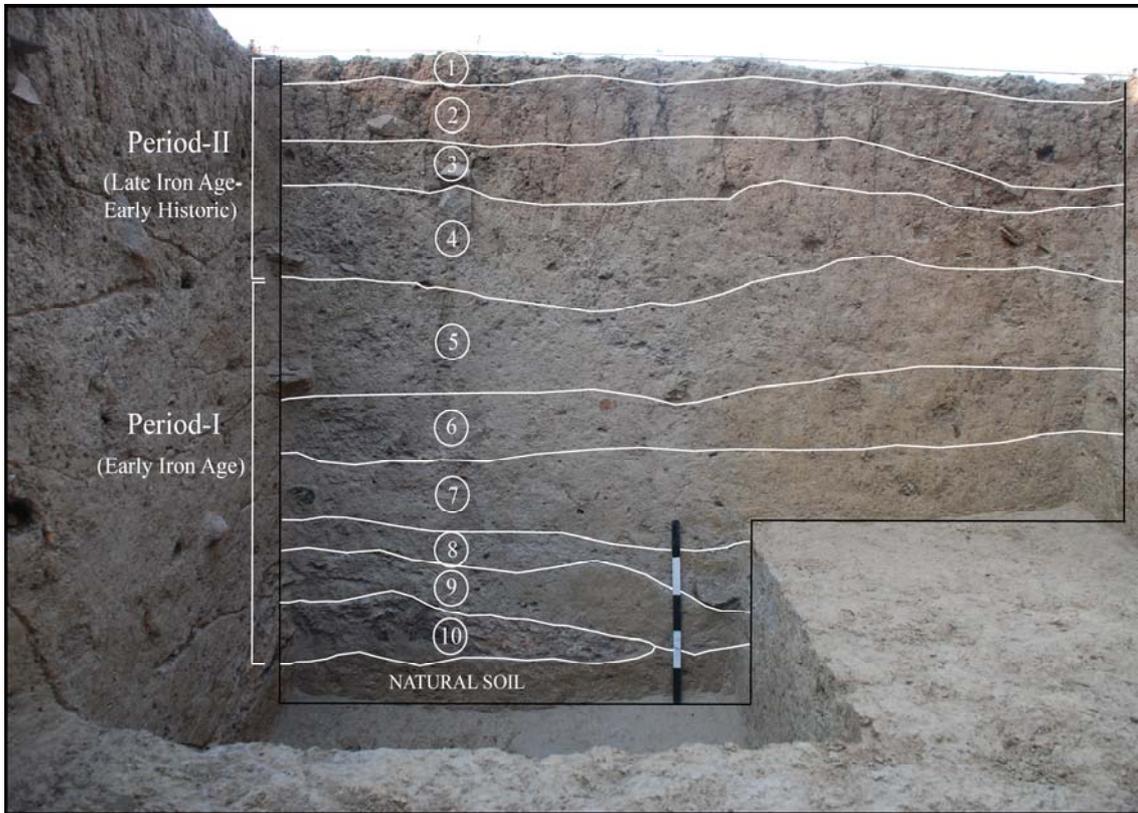


Figure 8: Stratigraphy of Trench II



Figure 9: *In situ* Blocks of Unmodified Stones from Trench II

The ceramic assemblage is predominantly represented by RSW followed by BRW, BSW, RW and TW (Table-1). The fabric of the available pots varies mostly from coarse to medium with organic and in-organic inclusions. Fine fabric pots are few and noticed only in BRW and BSW. Pots are generally thick slipped and burnished.

Table 1: Pottery Data Sheet of Amudda

Period	Depth	Black and Red Ware		Black Slipped Ware		Red Slipped Ware	
		Sherd	Shape	Sherd	Shape	Sherd	Shape
Period- II Late Iron Age- Early Historic	0-10	16	11	12	10	21	11
	10 20	27	12	17	15	113	23
	20-30	23	10	21	17	72	14
	30-40	29	15	32	23	112	37
	40-50	24	12	30	17	109	28
	Total	119	60	112	82	427	113
Period-I Iron Age	50-60	32	14	18	15	52	28
	60-70	54	11	52	18	74	34
	70-80	35	12	17	11	51	26
	80-90	25	13	33	4	24	24
	90-100	70	21	44	14	60	15
	100-110	94	37	64	19	80	18
	110-120	65	27	60	20	51	27
	120-130	39	22	39	45	69	14
	130-140	47	23	27	20	70	24
	140-150	58	13	28	18	38	10
Total	519	193	382	184	569	220	
Grand Total	638	253	494	266	996	333	
Percentage	17.04%	6.76%	13.2%	7.1%	26.61%	8.89%	
Period	Depth	Red ware		Chocolate Slipped Ware		Total	Percent -age
		Sherd	Shape	Sherd	Shape		
Period- II Late Iron Age- Early Historic	0-10	12	14	-	-	107	2.85%
	10 20	29	11	-	-	247	6.6%
	20-30	11	25	-	-	193	5.15%
	30-40	10	10	-	-	268	7.16%
	40-50	16	11	-	-	247	6.6%
	Total	78	71	-	-	1062	28.38%
Period-I Iron Age	50-60	15	17	-	-	191	5.1%
	60-70	17	2	-	-	262	7%
	70-80	11	36	-	-	199	5.31%
	80-90	10	2	-	-	135	3.6%

90-100	8	3	-	-	235	6.28%
100-110	53	5	91	24	485	12.96%
110-120	42	23	75	9	399	10.66%
120-130	-	24	34	21	307	8.2%
130-140	-	-	-	-	211	5.63%
140-150	40	16	19	16	256	6.84%
Total	196	128	219	70	2680	71.61%
Grand Total	274	199	219	70	3742	-
Percentage	7.32%	5.31%	5.85%	1.87%	-	100%

RSW is the dominant ware in the whole assemblage and all the fragments are drab slipped and few specimens are highly burnished and polished to achieve glossy effect. Colours are varied from red, dark red, and brownish red. The available specimens are medium to thick in section and medium to coarse in texture tempered with vegetative remains. The shapes mainly comprise vases, lid with vertical handle, lug handle with fingertip impression (a feature already reported from Khameswaripali), basins, *handis* and bowls. Few vessels are decorated with applique bands on shoulder part, incised strokes on rim edges (Figure 10. 1-7) and in a few cases white paintings occur on the shoulder part of vases and inner rim part of bowls (Figure 11. 7-11). Besides the above, a single specimen of lid fragment is painted with black colour (Figure 11. 6), similar Black-on-Red pottery are also reported from Iron Age level at Taraporegarh (Behera et.al 2015: 178-196), Nuagarh (Pradhan 2006: 62-78) and Bhejidih (Pradhan 2000: 27-42) in the region.

In this phase a dark chocolate coloured ware occurs (Tan Ware), which constitutes 10% of the whole assemblage of period-I. All the specimens of this ware are thickly slipped and burnished. The types are confined to *handis* and medium sized vases only.

BRW constitute the most characteristic pottery types of this phase. The available specimens are medium to thick in section and medium to fine in texture. The exterior surface of the vessels exhibit colour variation from red and dark red to dusky red, while the interior surface is mostly black in colour. Both the surfaces of the vessels are treated with thick slip and highly burnished to achieve a glossy effect. While dishes are absent, the BRW shapes are mostly represented by round based bowls, small sized vases and platters. The rim part of large sized bowls and vases was luted to the body as appears from the fracture pattern of the vessels. Most of the bowls are painted in white pigment, which occurs on the interior surface. Similar painted potteries are also reported from several Chalcolithic and early Iron Age sites in the middle Mahanadi valley region (Behera 2000-01, 2002-03; Pradhan 2006). In almost all the painted fragments only impressions are found rather than the pigment, which suggest that probably the paintings were executed during the pre-firing stage. The painted motifs comprise groups of wavy and zig-zag lines and solid dots (Figure 11. 12-16). The rim parts of few bowls contain post-firing application of red ochre pigments which was

already reported from Khameswaripali, Kumersingha, Kurumpadar and other excavated Chalcolithic-Iron Age settlements of the middle Mahanadi valley. Applique and incised decorations are also noticed particularly on shoulder part of bowls.



Figure 10: Decorated Pottery from Amudda

Red Ware has very limited types, which constitutes vases having splayed out rims, lug handled basins with finger tip impression, plain basin, storage jars etc. Most of the vessels of this ware are medium to coarse in fabric and tempered with grit and vegetative remains.

BSW vessels constitute 21% of the whole assemblage of this phase and are coarse to fine in fabric and medium to thin in section. The representative shapes in this ware are bowls, platters, vases and basins. Most of the vessels are burnished and polished to achieve glossy effect. As in RSW, white paintings also occur in the shoulder part of vases and in some specimens the flaring rim part are also painted with vertical long wavy lines (Figure 11. 1-5). Descriptions of the representative shapes in different wares (Figure 12) from this period are as follows:

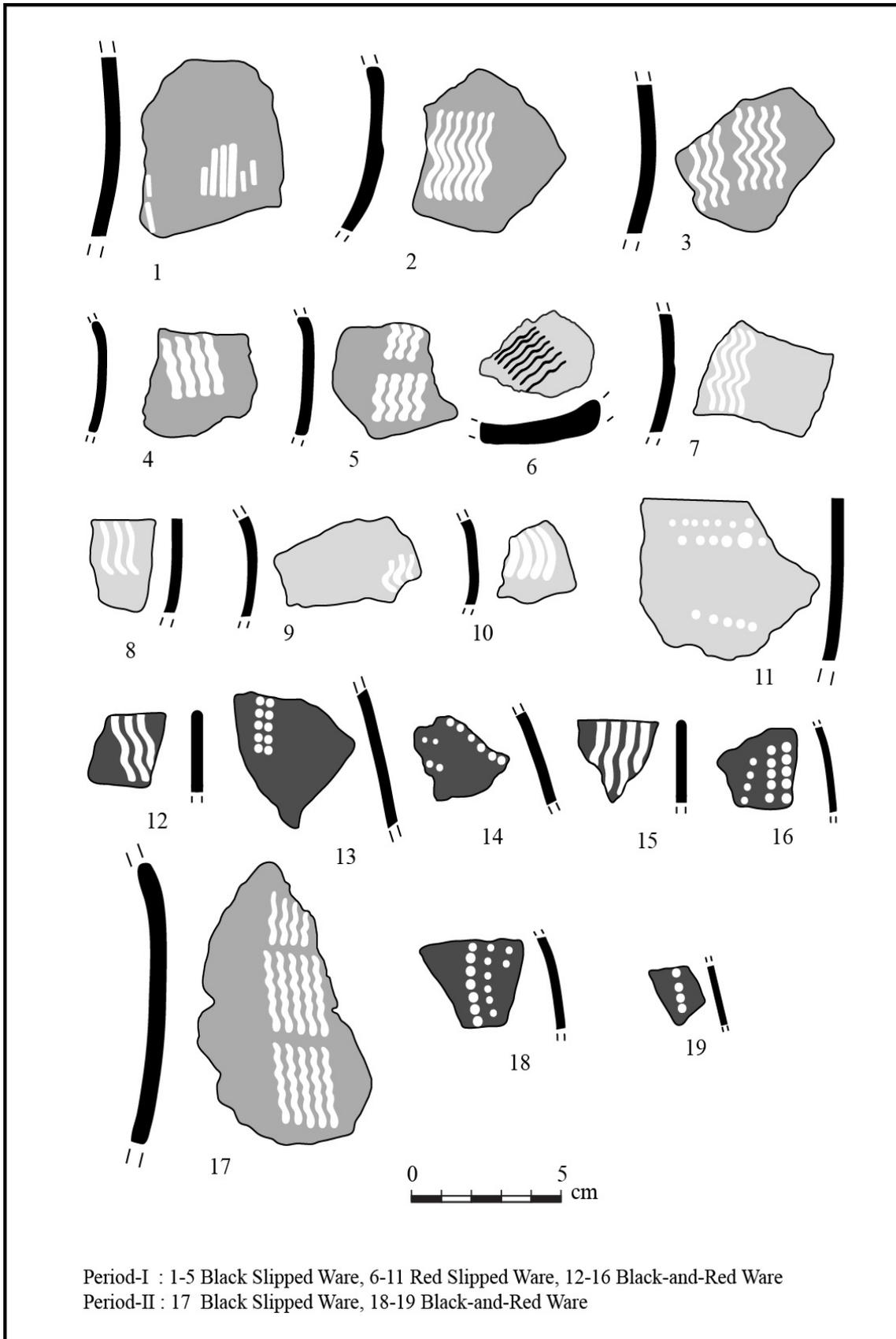


Figure 11: Painted Pottery from Amudda

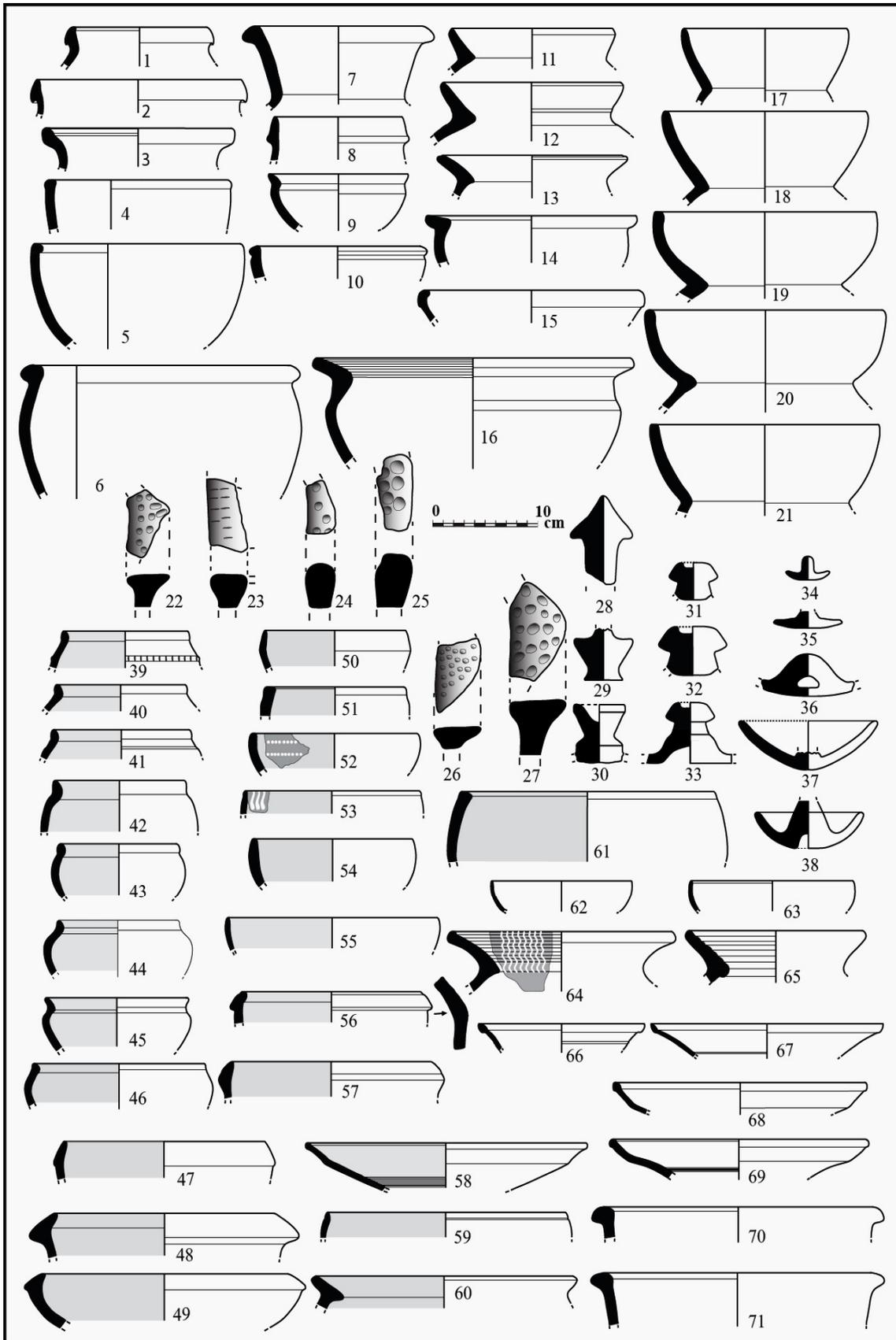


Figure 12: Representative Pottery Shapes from Period – I

Red Ware

1. Fragment of a vase with externally thickened clubbed rim expanding sides of medium fabric.
2. A variant of the above but big in size.
3. Fragment of with out-turned externally thickened collard rim, concave neck of medium fabric.
4. Fragment of basin with short out-turned thickened flattened rim, grooved in the edge of coarse fabric.
5. Fragment of a basin with short in-turned thickened rim rounded body of medium fabric.
6. Fragment of basin with out-turned thickened rim with globular body of coarse fabric.

Red Slipped Ware

7. Fragment of high necked vase beaked out rim of medium fabric.
8. Fragment of a vase with vertical featureless rim and a ridge on the exterior of the neck of fine fabric.
9. Fragment of a bowl with flared sharpened rim and concave neck of medium fabric.
10. Fragment of a bowl with externally thickened rim carinated neck and convex sides of medium fabric.
11. Fragment of vase with out-turned rim, carinated neck of medium fabric.
12. Fragment of vase with splayed out rim, concave neck of medium fabric.
13. Fragment of vase with splayed out rim, carinated neck of medium fabric.
14. Fragment of a basin with out-turned internally beveled rim convex sides of medium fabric.
15. Fragment of a bowl with internally thickened rim and tapering sides of medium fabric.
16. Fragment of *handi*, with corrugation in inner surface of the flaring rim concave neck incurved sides of medium fabric.
17. Fragment of a vase with slightly in-turned splayed out rim of medium fabric.
18. Variant of above but big in size.
19. Fragment of a vase with slightly in-turned splayed out rim of medium fabric (but more in-turned rim and thick section).
20. Fragment of a vase with slightly in-turned splayed out rim of medium fabric (but more in-turned rim and thick section).
21. Fragment of a vase with slightly in-turned splayed out rim of medium fabric.

Lug-Handles

22. Fragment of a lug- handle with finger tip pressed design in Red Slipped Ware.
23. Fragment of a lug - handle with incised design in Red Ware.
24. Fragment of a lug - handle with finger tip pressed design in Red Slipped Ware.
25. Fragment of a lug - handle with finger tip pressed design in Red Slipped Ware.
26. Fragment of a lug - handle with finger tip pressed design in Red Ware.
27. Fragment of a lug - handle with finger tip pressed design in Red Slipped Ware

Lids

28. Fragment of a lid top in Red Slipped ware.
29. Fragment of a lid top in Red Slipped ware.
30. Fragment of a lid top in Black Slipped ware.
31. Fragment of a lid top in Black Slipped ware.
32. Fragment of a lid top in Black Slipped ware.
33. Fragment of lid with broken horizontally splayed out rim having a depression from below and complete handle in Black Slipped ware.
34. Small complete lid in Red ware.
35. A variant of above but broken.
36. Fragment of lid with broken horizontally splayed out rim and complete handle in Red Slipped ware.
37. Lid with horizontally splayed out rim having a depression on the top broken handle on the inner side of the base in Red Slipped ware of medium fabric.
38. Lid with horizontally splayed out rim having a depression on the top and from below broken handle on the inner side of the base in Black Slipped ware of medium fabric.

Black-and-Red Ware

39. Fragment of a bowl with slightly out turned rim constricted neck and expanding sides, incise decoration on outer surface of fine fabric.
40. A variant of above without decoration.
41. A variant of No. 39 with tapering sides.
42. Fragment of a bowl with everted rim and elongated body of fine fabric.
43. Fragment of bowl with beaded rim and convex sides of fine fabric.
44. Fragment of a bowl with everted rim and convex sides of fine fabric.
45. Fragment of convex sided bowl, slightly out-turned rim concave neck of medium fabric.
46. Fragment of bowl with everted beaded rim and convex sides of fine fabric.
47. Fragment of a bowl with collared rim and convex sides of medium fabric.
48. Fragment of a bowl with beaked rim and straight sides of medium fabric.
49. Fragment of a bowl with beaked rim and tapering sides of medium fabric.
50. Fragment of a bowl with vertical featureless thickened rim, sides are equally thickened of fine fabric.
51. Fragment of a bowl with everted rim of medium fabric.
52. Fragment of bowl with vertical featureless rim, tapering sides, two horizontal dotted lines painted in white pigment in the inner surface, fine fabric.
53. Fragment of a bowl with internally sharpened rim fine fabric.
54. Fragment of a bowl with vertical featureless thickened rim and tapering sides of medium fabric
55. Fragment of a bowl with vertical featureless rim and convex sides, medium fabric.
56. Fragment of a bowl with vertical featureless thickened rim, sides are equally thickened of medium fabric.
57. Fragment of a bowl with collared rim and straight sides of medium fabric.

58. Fragment of a carinated platter with everted externally thickened rim, grooved in the inner base of fine fabric.
59. Fragment of a bowl with internally sharpened rim of fine fabric.
60. Fragment of a vase with flaring rim, concave neck and expanding sides of medium fabric.
61. Fragment of a basin with slightly internally bevelled rim convex sides of coarse fabric.

Black Slipped Ware

62. Fragment of a bowl with incurved sharpened rim of fine fabric.
63. Same as above but little thick section and big in size.
64. Fragment of vase with corrugation in inner surface of the flaring rim, painted vertical wavy lines in white pigment, concave neck incurved sides of coarse fabric.
65. Same as above without paintings and small in size coarse fabric.
66. Fragment of a bowl with flaring externally thickened rim of fine fabric.
67. Fragment of a bowl with incurved rim and tapering sides of fine fabric.
68. Fragment of a carinated platter with everted externally thickened rim of fine fabric.
69. Fragment of a deep bowl with everted externally thickened rim grooved in the inner base of fine fabric.
70. Fragment of basin with out-turned thickened rim, straight sides of coarse fabric.
71. Fragment of basin with out-turned thickened rim, tapering sides of coarse fabric.

Other Antiquities

This group contains a total of ten numbers of post-firing graffiti marked potteries (Figure 13), faunal remains, iron slags and iron objects (Figure 14. 1,2,6), and bone tools (Figure 14. 7,8).

Subsistence System

Our knowledge of the subsistence economy of the early settlers of Amudda is based on a large collection of faunal (Figure 15) and floral remains. The studies on both the components are under the process.

Period - II (Late Iron Age - Early Historic)

Without any marked habitation hiatus it seems the early settlement at Amudda slowly develops into second phase of habitation with new cultural components like introduction of megalithic burial practices. In fact we encountered partial remains of a megalithic cairn circle in Tr-II at a depth of 50 cm (Figure16 and Figure17). Due to the repeated flooding in the Mahanadi the habitation deposit of this period is only partially represented and also largely damaged because of modern agricultural activities. Still, remains of several megalithic structures are found here and there in the exposed surface at different location of the site. Here it may be noted that, the local villagers destroyed several such megalithic monuments at the site in search of treasure (Figure18).



Figure 13: Graffiti Marked Pottery from Period – I



Figure 14: Iron slags, Iron Objects and Bone Tools from Amudda

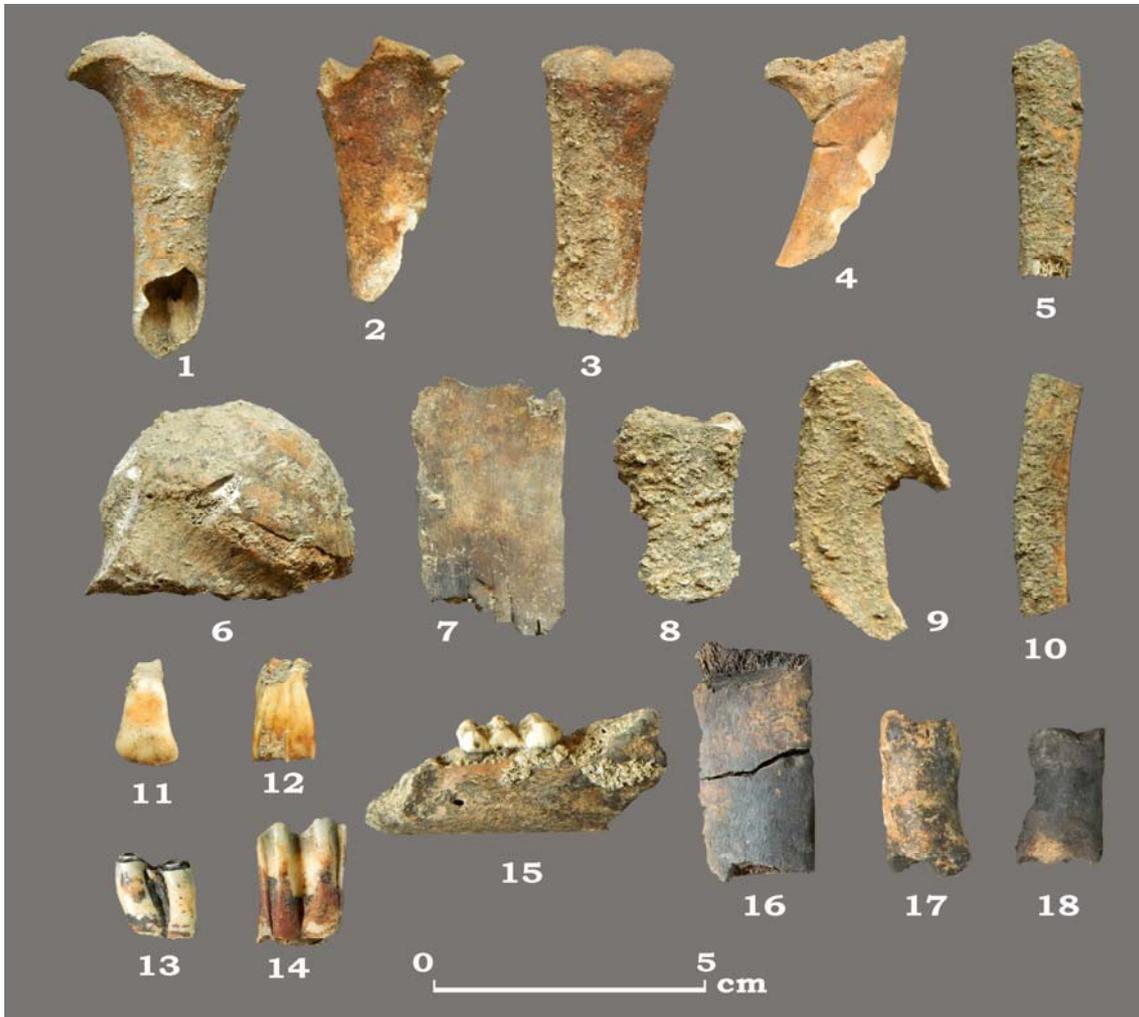


Figure 15: Excavated Faunal Remains from Period-I



Figure 16: View of Cairn Circle from Trench II

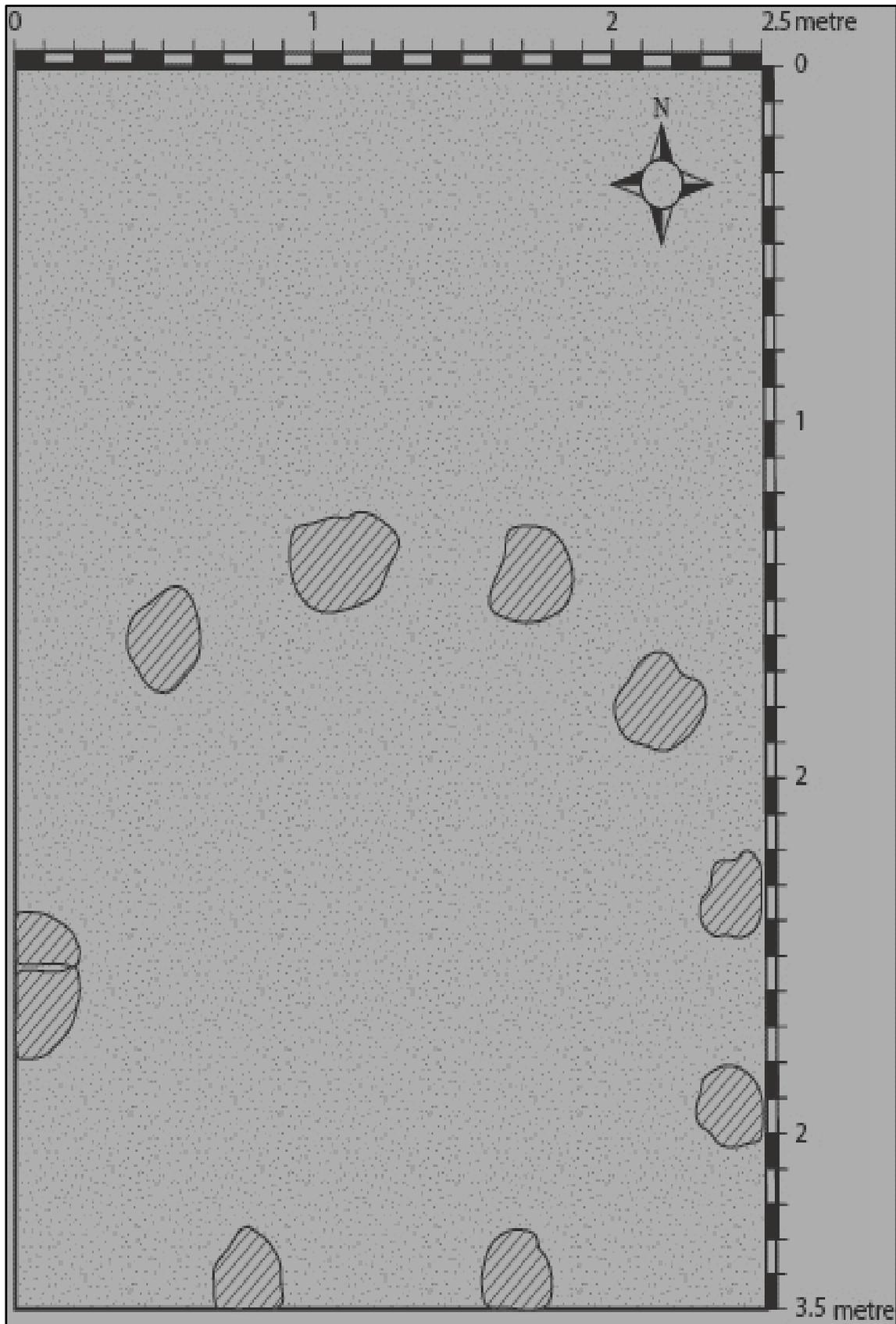


Figure 17: Drawing of Plan View of Cairn Circle from Trench II



Figure 18: Displaced Megalithic Structure near the Babitation Site.

Ceramic Assemblage

With the introduction of some new types, ceramic assemblages of the earlier phase are continued in this period and reveal a general degeneration. Proportionately, RSW (50.84%) is still the dominant pottery of this phase followed by BSW (18.26%), BRW (16.85%) and RW (14.03%) whereas Tan ware is missing and the whole assemblages are devoid of burnishing. Besides the above broken flat bases of BRW bowls bear concentric grooved circles on the inner surface is new feature in this phase (Figure 10. 8-9). Descriptions of the representative shapes in different wares (Figure 19) from this period are as follows:

Red Ware

1. Fragment of a vase with everted thickened rim of medium fabric.
2. Fragment of a vase with out-turned externally thickened collared rim, internally grooved concave neck and expanding sides of medium fabric.
3. Fragment of a bowl with slightly incurved rim of fine fabric.
4. Fragment of a base with expanded sides, ridge on the outside of medium fabric.
5. Fragment of a base with expanded of medium fabric.
6. Fragment of a base with expanded sides, ridge on the outside of medium fabric.
7. Fragment of a vase with constricted neck, flaring rim and expanding sides of medium fabric.
8. Fragment of a vase with out-turned externally thickened collared rim concave neck of medium fabric.
9. Fragment of a bowl with flaring rim and tapering sides of medium fabric.
10. Fragment of a bowl-cum-lid with projected ring lug and tapering sides of medium fabric.
11. A Variant of the above.

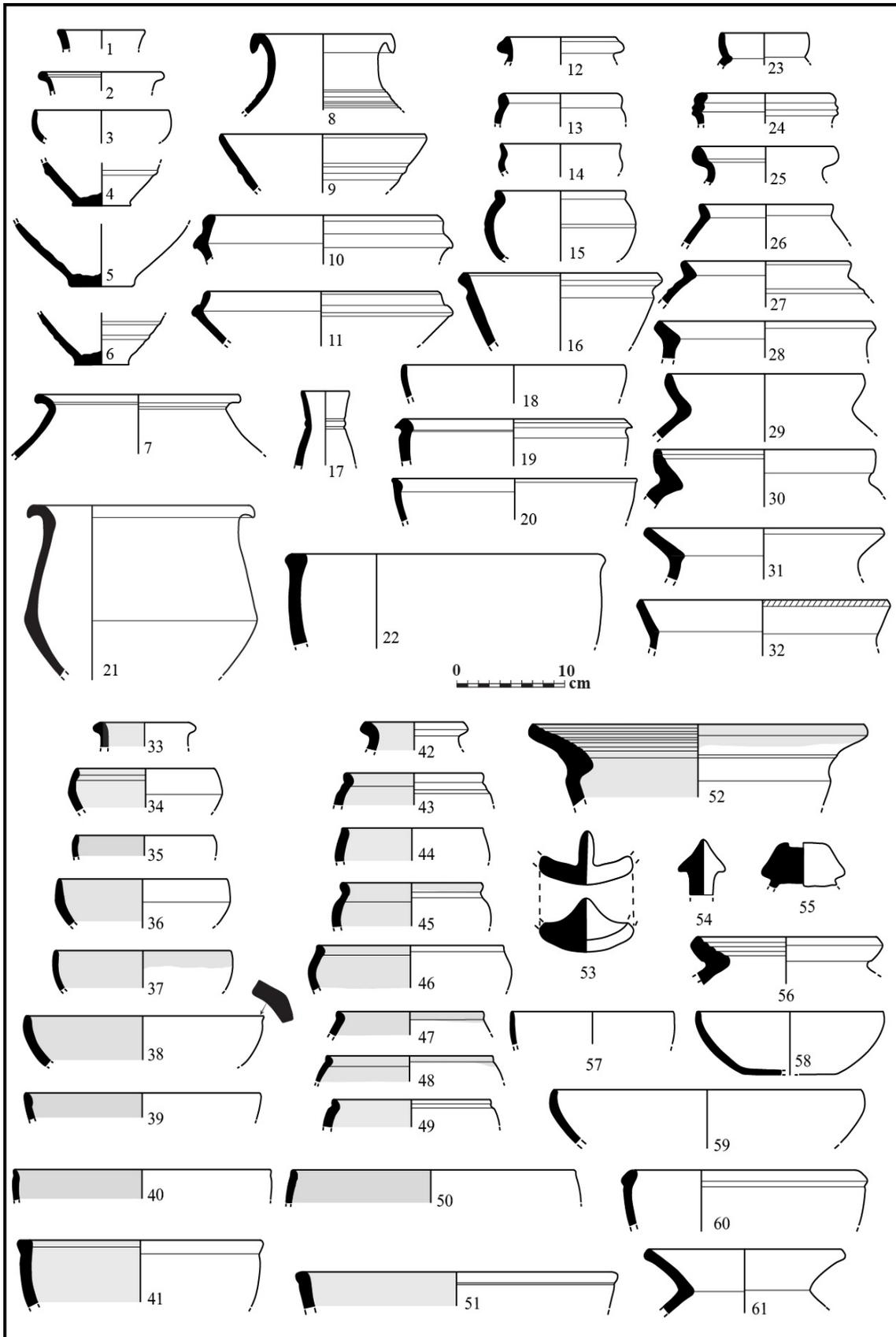


Figure 19: Representative Pottery Shapes from Period-II



Figure 20: Pottery Disc and Finger Impressed Terracotta Cakes from Period II



Figure 21: General view of the Habitation Site in relation to Bed rock holes/Cupules



Figure 22a: View of Bed Rock Holes/Cupules

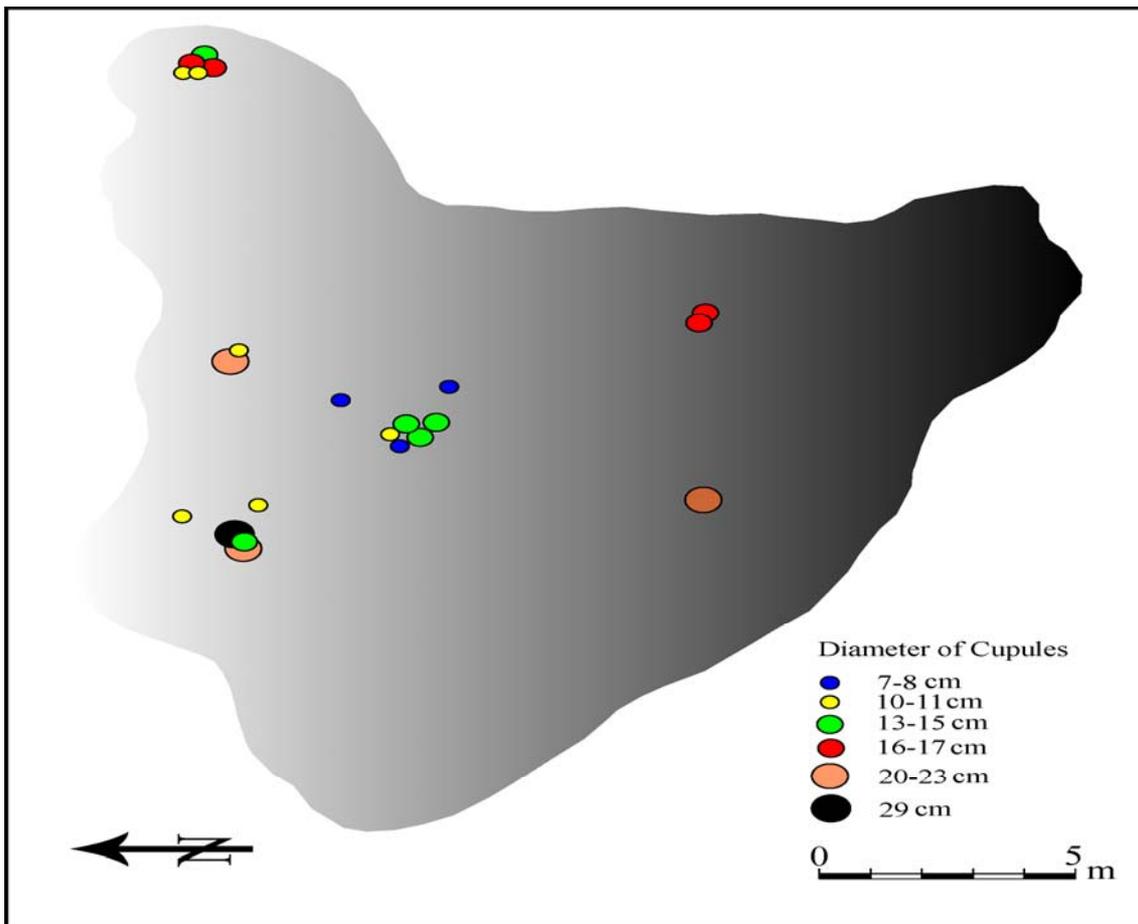


Figure 22b: Distribution of Bed rock Holes/Cupules on the Granitic Rock Surface



Figure 23: Capstone having Cupules near the Site

Red Slipped Ware

12. Fragment of a small vase with externally thickened rim concave neck of medium fabric.
13. Fragment of a bowl with everted rim and internally obliquely cut rim of medium fabric.
14. Fragment of a bowl with flared sharpened rim and concave neck of medium fabric.
15. Fragment of a bowl with everted rim and convex sides of fine fabric.
16. Fragment of a bowl with externally thickened rim concave neck tapering sides of medium fabric.
17. Fragment of a vase (Surei) with flaring rim concave neck and expanding sides of medium fabric.
18. Fragment of a bowl with slightly inturned rim and tapering sides of fine fabric.
19. Fragment of a bowl of out-turned externally thickened and obliquely cut rim, concave neck of medium fabric.
20. Fragment of a bowl with internally thickened rim roughly convex sides of fine fabric.
21. Fragment of a *handi* with concave neck thickened carinated sides out turned rim of fine fabric.
22. Fragment of basin with out-turned thickened rim with globular body of coarse fabric.

23. Fragment of a bowl with inturned rim and carinated neck of medium fabric.
24. Fragment of a vase with externally collared grooved rim and concave neck of medium fabric.
25. A variant of No. 2 with thickened rim.
26. Fragment of a vase with flaring bevelled rim and convex sides of medium fabric.
27. A variant of above with a ridge on outer surface.
28. Fragment of a vase of red ware with splayed out featureless rim and concave neck of medium fabric.
29. Fragment of a vase with inturned splayed out rim concave neck and expanding sides of medium fabric.
30. Fragment of a short necked vase with slightly convex and externally thickened rim and expanding sides of medium fabric.
31. Fragment of a vase with splayed out rim and carinated neck of medium fabric.
32. Fragment of vase with flaring rim carinated neck and expanding sides, incised decoration on the outer edge of the rim of medium fabric.

Black-and-Red Ware

33. Fragment of a vase with out-turned thickened obliquely cut rim and short neck of medium fabric.
34. Fragment of a bowl with convex sides and pointed edge of medium fabric.
35. Fragment of a bowl with incurved sharpened rim of fine fabric.
36. Fragment of a bowl with vertical featureless thickened rim, sides are equally thickened of medium fabric.
37. Fragment of bowl with internally sharpened rim, rounded sides of medium fabric.
38. Fragment of a bowl with wide mouth featureless rim and rounded sides of medium fabric.
39. 39. Fragment of a bowl with slightly everted thickened rim of medium fabric.
40. 40. Fragment of a bowl with internally sharpened rim of fine fabric.
41. A variant of No. 22 but small in size.
42. A variant of No. 33 but with expanding sides.
43. Fragment of a bowl with slightly out turned rim constricted neck and expanding sides of fine fabric.
44. Fragment of a bowl with vertical featureless rim convex sides of fine fabric.
45. Fragment of convex sided bowl, slightly out-turned rim and concave neck of medium fabric.
46. Fragment of convex sided bowl, slightly out-turned rim and expanding sides of medium fabric.
47. A variant of above.
48. A Variant of No. 46.
49. Fragment of a bowl with convex sides slightly out-turned rim of medium fabric.
50. Fragment of a bowl with incurved rounded rim and convex sides of medium fabric.
51. Fragment of basin with out-turned externally thickened rim. Grooved on the outer surface of medium fabric.

52. Fragment of *handi*, with corrugation in inner surface of the flaring rim concave neck incurved sides of medium fabric.

Lids

53. Fragment of a lid of Red Ware.
54. Fragment of the top portion of lid of Red Slipped Ware.
55. Fragment of the top portion of lid of Black Slipped Ware.

Black Slipped Ware

56. Fragment of vase with corrugation in inner surface of the flaring rim, constricted neck incurved sides of coarse fabric.
57. Fragment of bowl with featureless rim, rounded sides of medium fabric.
58. Fragment of a bowl with out-going sides vertical thickened rim and flat base of fine fabric.
59. Fragment of a bowl with wide mouth featureless rim and rounded sides of medium fabric.
60. Fragment of a bowl with inturned, elliptical collared rim and convex sides of medium fabric.
61. Fragment of a vase with splayed out rim carinated neck and expanding sides of course fabric.

Other Findings

Other important findings of this phase are iron slags and iron objects (Figure 14. 3-4-5), a dabber (Figure 10. 13), pottery discs (Figure 20. 1-5) and finger impressed terracotta cakes (Figure 20. 6-15). Despite technological advances there was no marked change in the general lifestyle of the people of this period.

Bed Rock Holes/Cupules on the Site

Nearly 150 meters south of the excavated habitation deposit is located a huge natural granitic outcrops with evidence for bored holes/cupules (Figure 21). A detailed documentation of the bored holes and the pattern of their distribution is given in Figure-22a and 22b. Unfortunately, some of these holes are also damaged by the locals in quarrying process. Similar bed rock holes are also widely distributed in the rock art sites of Odisha (Behera 2000-01: 1-11; Pradhan 2001) and it seems some of these form part of the megalithic culture of this region. In this context it is important to mention here that a huge capstone near the site having a good number of cupules is also noticed (Figure 23).

Concluding Remarks

The investigations conducted at Amudda though limited in nature, for the first time it has brought to light an Iron Age habitation site associated with megalithic remains in the region. The bed rock holes detected on the southern part of the site seems clearly associated with the Iron Age culture of this part of Odisha. As noted above, several bed rock hole/cupules have also been discovered in larger context of Odishan rock art sites,

which bears several engravings and paintings, some of which probably belonged to the Iron Age period. Here particular mention may be made of representation of domestic animals and some herding scenes, indicating a system based on animal husbandry and limited agricultural practices in the upland region of Odisha. Whether the evidence detected at Amudda reflect an offshoot of that system will be determined through multidisciplinary approach with particular emphasis on the analysis of the faunal and vegetative remains collected from the site.

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References

- Behera, P. K. 2000-01. Investigations into the Newly Discovered Rock Art site of Deulga Hills, Orissa. *Pragdhara* 11, pp. 1-11.
- Behera, P. K. 2000-01. Excavations at Khameswaripali - A Protohistoric Settlement in the Middle Mahanadi Valley, Odisha: A Preliminary Report. *Pragdhara* 11, pp. 13-34.
- Behera, P. K. 2002-03. Excavations at Kumersingha and Kurumpadar - the Iron Age Settlements in the Middle Mahanadi Valley, Odisha: Results of the First Season's Work. *Pragdhara* 13, pp. 87-103.
- Behera, P. K. 2013. New Light on the Neolithic and Chalcolithic Evidences from the Middle Mahanadi Valley, Orissa. In *Neolithic Chalcolithic Cultures of Eastern India*, ed. K.N. Dikshit, pp. 184-208. New Delhi: The Indian Archaeological Society.
- Behera, P.K., Ray, D.K., Dutta, K, Ravi Prasad, G.V., Routray, T.R., Choudhury, R.K. 2007. Radiocarbon dates from the middle Mahanadi valley, Odisha. *Man and Environment* XXXII (2), pp. 41-46.
- Behera, P.K. and Chattopadhyay, P.K. 2012. Iron Age – Early historic period in Eastern India. A study in material culture and technology: evidence from the site of Badmal-Asurgarh, District Sambalpur, Odisha, India. In *The World of Iron*, eds. Jane Humphris and Thilo Rehren, pp. 125-34. London: Arche type publications Ltd.
- Behera, P.K., Hussain, S. and Badam, G.L. 2015. Taraporegarh: An Iron Age-Early Historic Circular Fort in the Middle Mahanadi Valley, Odisha, *Puratattva*, 45, pp. 178-196.
- Behera, P.K. and Thakur, N. 2016. Hikudi: A Neolithic Habitation Site on the Middle Mahanadi Valley Region, Odisha. In *Pratna Bharatam Glory of Archaeology; Art, Epigraphy and Protection of Cultural Heritage*, eds. Jeeban Kumar Patnaik and Noor Bano Sattar, pp. 89-97, Kaveri Books, New Delhi.

- Geological Survey of India 2012. *Geology and Mineral Resources of the States of India*. Kolkata.
- Pradhan, S. 2000. Archaeological investigations in the Krandi valley, Orissa. *New Aspects of History of Orissa IX*, pp. 27-42.
- Pradhan, S. 2001. *Rock Art in Orissa*. Aryan Books International, New Delhi
- Pradhan, S. 2006. Excavation at Nurgarh-Asurgarh: A preliminary report. In *Art and Archaeology of Odisha: Recent Perspectives*, ed. S. Pradhan, pp. 63-78. Delhi: Aryan International.
- Sinha, B.K. 2000. Golbai: A Protohistoric site on the coast of Orissa. In *Archaeology of Orissa* eds. K.K. Basa and P. Mohanty, pp. 322-48. Delhi: Pratibha Prakashan.
- Singh, H.H. 1971. Orissa Highland Region. In *India: A Regional Geography* ed. R.L. Singh, pp. 754-75. Varanasi: National Geographical Society of India.