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RECENTLY EXPLORED MICROLITHIC SITES IN THE BAITARANI AND SALANDI RIVER BASIN, KEONJHAR DISTRICT, NORTHERN ODISHA: A PRELIMINARY REPORT

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Abstract: The antiquity of microlithic research in Odisha goes back to the pre-independence era. It has brought to light extensive evidence of lithic assemblages from the late Pleistocene and early Holocene deposits in different parts of the state. All these microlithic sites have been reported from three different types of geomorphologic contexts, viz. along the river banks and its tributaries of different orders, on the raised surfaces with massive exposure of rock outcrops, and the foothills. Some of these sites have also been found to be associated with rock shelter habitats. The present paper is based on the archaeological investigations conducted in the Keonjhar district, mainly in the Salandi and Baitarani River Basin, to understand the cultural landscape, site distribution pattern and nature of sites of this region. Since last year, our fieldwork around the middle tracts of the Salandi and Baitarani River basin, particularly in the Boula-Hadagarh Reserve Forest region, which resulted in the evidence of microlithic tool assemblages, has been found in Sujanapal area near the Chakartritha Hills in the Anandapur Taluk, surrounding areas of Batto village in the Ghasipura block, Gada Singidi and Gada Chandi Hill in the Hatadihi Taluk of Keonjhar district. The preliminary study on these microlithic sites situated in different geomorphological contexts gives some idea about the characteristic features of the lithic assemblages, composition, and different tool technologies used by prehistoric knappers during the time of tool production.

Key Words: Post-Glacial, Geomorphologic, Microlith, debitage, flake, fluted core, cryptocrystalline rock, percussion, sub-triangular, cortex.

I. INTRODUCTION

With the change of environment, as a part of the adaptation to various climatic conditions, our ancestors changed themselves with the evolution of the human body and brain. This led to change within the long-standing human technology, and this evolved through time and space. With the advent of modern humans, not only did they come up with well-developed brains and artistic capabilities, but they also came up with successful Microlithic technology, which patronised advancement in the hunting and gathering of a wide variety of plant and animal foods, led to increase in the rate of population growth, resulting in a widening of their geographical range. The Mesolithic is the most prolific and widely distributed prehistoric cultural period in the Indian subcontinent. It has been found in a wide variety of geographical situations and ecological habitats. The stone industries of the Mesolithic period generally indicate adaptation to the early post-glacial Holocene environment, the period between the final Upper Palaeolithic and the introduction of agriculture. The Mesolithic is characterised by the appearance of small, highly differentiated stone implements, suggesting a foraging economy with an emphasis on small-scale hunting and fishing. This cultural period has a considerable duration, ranging from 10,000 to 4000 B.C. (Jain, 2009). Chronologically, it clearly predates the Neolithic, yet as exemplified by subsistence strategies, Mesolithic adaptations continued well into the Holocene in parts of South Asia (Possehl & Kennedy; 1979: 592-593). As far as the Mesolithic cultures of Odisha are concerned, a huge number of Mesolithic sites and tools are also discovered across the length and breadth of Odisha. The northern part of Odisha, particularly in the Keonjhar and Mayurbhanj districts, also has a huge number of Mesolithic artefacts. Some Mesolithic sites have already been reported, and many have not yet been discovered. The present paper is a result of an intensive survey undertaken around the Chakartritha Hills in the Anandapur Taluk, Bato village in the Ghasipura block, Gada Singidi and Gada Chandi hill regions in the Hatadihi Taluk of Keonjhar district (Fig-1), which resulted in the discovery of microlithic artefacts are added a new chapter in the Mesolithic research of India and Odisha as well.

II. Area and Environmental Settings:

Keonjhar (N 21° 37' 59.88", E 85° 34' 59.88) district is located in the northern part of the state of Odisha. It has an area of 8330 km2 and is surrounded by west Singhbhum district of Jharkhand in the north to Bhadrak and Jajpur districts in the South and Mayurbhanj in the east to Angul and Debagarh districts in the west. The Baitarani River is one of six major rivers of Odisha. It originates from the Gonasika hills in the Keonjhar district of Odisha. The river travels a distance of 360 Kilometers to drain into the Bay of Bengal after joining the Brahmani at Dhamra mouth near Chandabali. As far as the archaeology of Keonjhar district is concerned, the majority of archaeological sites and remains are situated in and around the Baitarani River valley and its tributaries. The favourable physical features of that area provided a home to the primitive man in the past, which is evident from the discovery of prehistoric sites. Keonjhar district itself consists of two physiographic units: Lower Keonjhar, a fertile and densely populated plain, and Upper Keonjhar, a thickly forested and hilly tract intersected by narrow valleys. The latter zone is the habitat of an important ethnographic group, the Juang, who practice shifting cultivation. Geologically, the

area is an extension of the Chhota-Nagpur Region, and it is drained by the Baitarani River and its numerous tributaries. The average annual precipitation is 1500 mm. The vegetation is of the tropical deciduous type, and the climate is characterised by hot during the summers, high humidity, and well-distributed rainfall. The river Baitarani and its catchment areas must have formed an equally important region in the past due to its strategic location, geography and suitable geology for the rise of ancient settlements. Raw materials such as quartzite, limestone, quartz, chert, chalcedony, dolerite, dolomite and others are easily available in the form of river pebbles and cobbles and also in the adjoining hill slopes in the form of blocks and slabs. These must have provided adequate raw materials for the prehistoric settlers in the Baitarani River valley throughout the Pleistocene period. The work was planned within a regional context rather than a particular site or sites because human adaptions, in their ecological components, can only be comprehended from a regional perspective.

III. Previous Research:

Intensive archaeological explorations undertaken by Chakrabarti and Chattopadhyay (Chakrabarti & Chattopadhyay; 1988: 203-8) and by P.K. Mohanty during 1986-1990 in the Champua, Ghasipura, Ghatagaon, Palaspal, Harichandanpur, and Patana taluks resulted in the discovery of 58 Mesolithic sites (Mohanty; 1993: 85-104). S. Sahoo, during 2014-15, a small-scale exploration conducted in and around the Hatadihi Taluk of Keonjhar district, collected microlithic artefacts around the localities of the Podasingidi area (Sahoo, 2019). Most of these sites were associated with and located in the granitic outcrops, while a few were found in the foothills lying close to streams. The surface spread of artefacts at individual sites varies widely. The largest measures about 20,000 m^2; the smallest ones have an extent of only 100 m^2. Most of the sites are located in dense forest. Most sites discovered in the area are primarily in nature and still preserve habitation deposits. Various site features noted during the survey (location away from the river bank, discreteness of scatters of stone artefacts, regular association of raw material blocks and waste products, and lack of certain features, such as surface smoothing of artefacts, associated with river action) indicate that most of the sites are well preserved and are unconnected with any fluvial activity. The occurrence of isolated Mesolithic artefacts on rock outcrops was also observed at quite a few places.

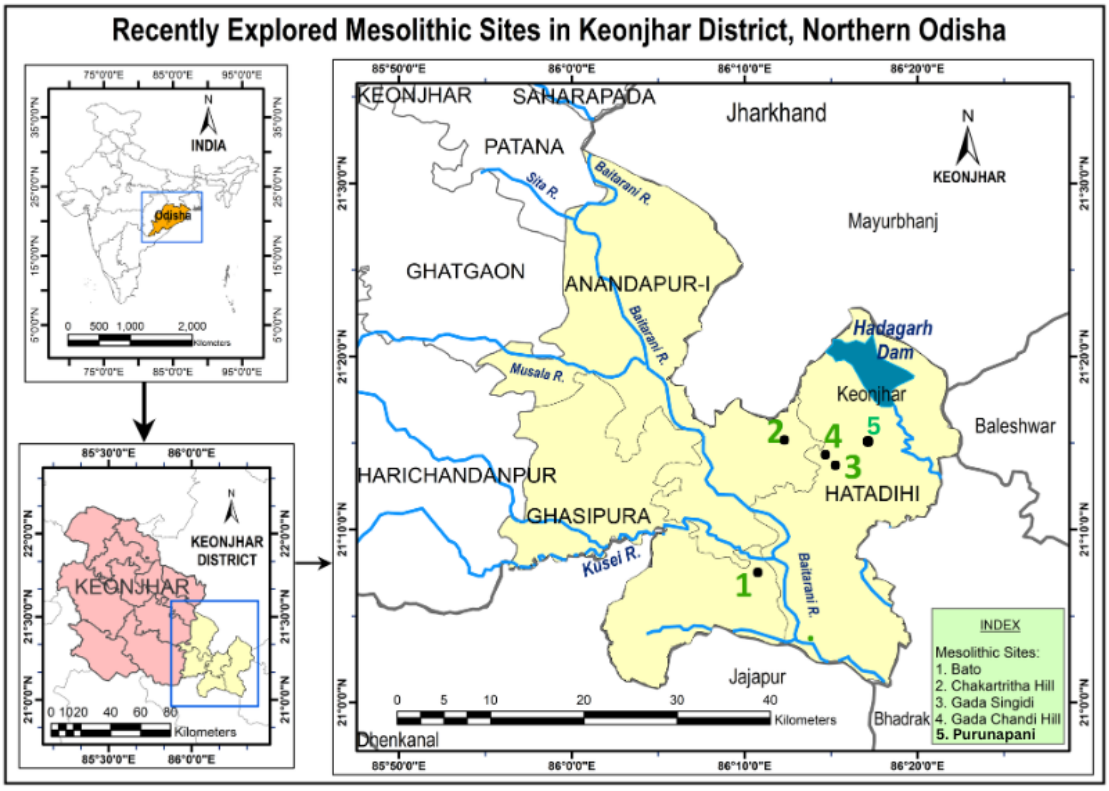

Fig.1- Location of Newly explored Microlithic sites in Keonjhar District, Odisha.

IV. The Newly Explored Sites:

Intensive exploration undertaken over the last two years in the Ghasipura, Anandapur and Hatadihi taluks of Keonjhar district resulted in the discovery of five Mesolithic sites (Table 1). The detailed descriptions of each microlithic site's location, geology and geomorphology are discussed below. Most sites discovered in this area are primary and semi-primary in nature and still preserve habitational deposits. All these newly recovered microlithic sites are open-air sites, and the concentration of microlithic tool assemblages is very high. The prehistoric stone tool knappers of this region used naturally available stones as raw materials for making microliths. Various site features noted during the survey (location away from the riverbank, discreteness of scatters of stone artefacts, regular association of raw material blocks and waste products, and lack of certain features, such as surface smoothing of artefacts, associated with river action) indicate that most of the sites are well preserved and are unconnected with any fluvial activity.

Table: 1- Location and Context of the explored sites.

DISTRIBUTION OF THE NEWLY EXPLORED SITES					
SL NO	**NAME OF THE SITE**	**CULTURAL PERIOD**	**BLOCK**	**DISTRICT**	**CONTEXT OF THE SITE**
1	Sujanapal (Chakartritha Hill)	Microlithic	Anandapur	Keonjhar	The erosional surface on the foothill
2	Bato	Microlithic	Ghasipura	Keonjhar	The erosional surface on the river bank
3	Gada Singidi	Microlithic	Hatadihi	Keonjhar	Rock Outcrop
4	Gada Chandi Hill	Microlithic	Hatadihi	Keonjhar	The erosional surface on the foothill
5	Purunapani	Microlithic	Hatadihi	Keonjhar	Rock Outcrop

1. **Sujanapal (Near Chakratirtha Hill)**

Latitude: 21°15'5.06"N MSL: 120m

Longitude: 86°13'57.93"E

The Sujanapal site is located on a granitic foothill near the Chakartritha area in the Anandapur block of the Keonjhar district. The site is approximately 15kms far away from the subdivisional headquarters of Anandapur. The site lies on the right side of a perennial stream which flows from Chakartritha Hill, which is nearly 2.5 km away from the Salandi River. The site extends over an area of 30 x 40 meters. Microliths in the site are not associated with calcrete (Figure 2). The microliths are scattered on the periphery of the hillslope, and the granite bedrock surface is flat, which yielded 81 microlithic artefacts (Figure 3). Microliths are concentrated in a cluster at the base of the granitic outcrop that is devoid of soil. The outcrop slopes towards the east, and below the slope, the site is heavily destroyed by the impact of modern rice agriculture. Microliths that lie on the top of the outcrop might have been washed down towards the agricultural field.

2. Bato

Latitude: 21° 7'45.31"N MSL- 69M

Longitude: 86° 9'47.38"E

The Bato site is located on the right bank of the Kusei River, a tributary of Baitarani lying a half km from the Bato village in the Ghasipura block of Keonjhar district. The site is exactly situated at the confluence of both Kusei and Baitarani rivers. Microliths were found scattered over about 20 x 30 meters on the erosional slope surface near the river bank. Many blades and scrapers were found at the site and all the artefacts are made on chalcedony, quartz and agate. The association of Microliths with yellowish sandy medium-sized grave silt deposit in the site. A total of 77 artefacts were collected, eroding from the erosional surface and gradually falling into the present river channel (Figure- 3).

3. Gada Singidi

Latitude: 21°13'15.27"N MSL- 94M

Longitude: 86°15'13.91"E

The Gada Singidi site lies on the northeastern side of the village of Rangamatia. This is an open-air microlithic site located 700 meters from the village of Rangamatia, 450 meters away from the southern side of the Gadachandi Hills. The site's extent is over 110 x 30 meters. The microliths artefacts were exposed and found on the *murum* quarry surface. The site has preserved a 5-10 cm thick habitation deposit. The surface layer, i.e. reddish coloured clay, is followed by lateritic *murum*. Artefacts were found above the lateritic gravels mixed with greyish-coloured clay deposits. A total number of 45 artefacts were collected from the surface (Figures 7 & 8). The site was not found to be associated with calcrete. The site is under threat because *murum* quarrying was going on already, and a part of the site has already been destroyed.

4. Gada Chandi Hill

Latitude: 21°13'10.14"N MSL-90M

Longitude: 86°15'38.68"E

The Gadachandi site is located on a granitic foothill near the Gadachandi area in the Hatadihi block of the Keonjhar district. The site is approximately 2 km away from the Rangamatia Village on the North-eastern side. The site lies on the left side of a perennial stream, which flows from Gadachandi Hilltop, which is nearly 6 km away from the Salandi River. The site extends over an area of 30 x 40 meters, and the microliths are scattered on the periphery of the hillslope, having yellowish-coloured clay deposits, which yielded 72 microlithic artefacts (Figures 4, 5, and 6). Microliths are concentrated in a cluster at the base of the granitic outcrop that is devoid of soil. The outcrop slopes towards the east and below the slope, the site is heavily destroyed by the impact of modern rock quarries and also natural erosional activities.

5. Purunapani

Latitude: 21°13'32.44"N

Longitude: 86°17'7.82"E MSL: 82M

The Purunapani site is located on the southern side of the *Purunapani* village in the *Hatadihi* block of Keonjhar district in Odisha. The site is situated on the right side of the Chhenapadi-Hadagarh road near Purunapani locality. The site lies on the right bank of *the Salandi River*, a small seasonal stream that flows in the middle of the secondary lateritic rock outcrop. The artefacts were found lying on an area of 80 x 50 meters over the secondary lateritic rock outcrop with many microliths. A local playground lies close to the laterite rock outcrop and is full of microlithic artefacts. The site is badly disturbed because the present-day villagers occupy the secondary lateritic rock outcrop. The site yielded a large number of core blanks, which were dressed, but no blades were removed from them. A total number of 223 artefacts were collected through random sampling, having a 5m x 5m grid from the periphery of the secondary lateritic rock outcrop. Cores (17.93%), flakes (36.32%) and chips and chunks (10.31%) are collected from the site. Apart from flakes and cores, Blades (10.76%), Backed Blade (02.69%) and Micro-Blades (12.55%), Bladelets (5.38%), Points (1.34%), Burins, Borers and Cresents in each having (0.89%) constitute of the major tool repertoire (Figure-9).

V. The Analysis of the Lithic Industry:

The microlithic tool industry of the Keonjhar Mesolithic consists of two distinct varieties and yet complementary components: microlithic and heavy-duty tools. According to the work of P.K. Mohanty, the lithic assemblages of these components occur separately at 14 and 5 sites, respectively; at the remaining 39 sites, they occur together. These two components distinguish themselves from each other in several aspects regarding raw material types and functional attributes. These distinctive features notwithstanding, these two lithic assemblage types constitute complementary aspects of the area's unitary process of Mesolithic adaptation (Mohanty, 1989). The microlithic tool assemblages from these sites compare well with one another on the basis of both raw material and typo-technological features of stone artefacts. Hence, these may be said to constitute a single relatively homogeneous microlithic stone tool industry. Dolomite and Chert are the most commonly used raw materials exploited for manufacturing microlithic artefacts and for producing shaped tools. Apart from these two major varieties of raw-material types, other raw materials were also used, i.e., quartz and chalcedony. Chert occurs in the secondary form of veins, and it is also found in the river gravels. Quartz also occurs in veins at several places in the Keonjhar district. Sites whose microlithic assemblage is dominated by quartz have a low proportion of shaped artefacts and a high proportion of chips. Well-developed blade technology is the most outstanding feature of microlithic assemblages. The microlithic industry is evident in blades, flakes, and nodules of various shapes and sizes. The flakes and blades of different shapes and sizes have been struck off from a variety of cores. A few cores, especially the fluted ones, indicate that the blades have been removed in one of several ways: in one direction, in two directions,

either from one end and side or from both ends, in three directions, or sometimes in multiple directions. The flake cores generally show irregular scars (Mohanty, 1991).

A few small cores are roughly round in shape and have centrally directed scars, an indication that they were probably prepared before removing the flakes. The blades and flakes have been removed by a soft hammer of bone or wood, punch, or pressure flaking technique. Several blades and flakes have further been worked by various kinds of retouches and converted into tools (Bhattacharya, 1979). The microlithic industry of this region consists of retouched blades, backed blades, blunted back and obliquely truncated blades, blunted back and truncated blades, truncated blades, notched blades, denticulate blades, points, lunates, triangles, trapezes, and burins. All these tools are prepared by both unifacial and bifacial working. The flake tools and the tools made on nodules, such as various types of scrapers, borers, and points, generally have a fine unifacial and bifacial retouch.

Fig.2- Microlithic Cluster from Sujanapal area, Chakartritha Hill, Anandapur, Keonjhar

During the course of exploration, a total number of 275 artefacts were recovered, and they are classified into several types on the basis of their shape, size, working and retouches. They consist of core, flake, blade, scrapers, points, lunate, burin, blade-cum-borer, backed blade, knife, bladelets, chips and worked nodules, etc. (Table-2).

Table: 2- Typological Analysis of the Recovered Microlithic Artifacts, Keonjhar, Odisha

Typological Analysis of the Recovered Microlithic Artifacts			
SL NO	**TOOL TYPE**	**NUMBER**	**PERCENTAGE**
1	Core	68	13.65
2	Flake	129	25.9
3	Blade	42	8.43
4	Bladelets	44	8.83
5	Scraper	10	2
6	Point	18	3.61
7	Lunate	10	2
8	Burin	10	2
9	Blade cum Borer	8	1.6
10	Backed Blade	20	4.01
11	Knife	4	0.8
12	Chips/ Chunks	101	20.28
13	Worked Noudle	2	0.4
14	Micro Blade	28	5.62
15	Borer	2	0.4
16	Cresent	2	0.4
Grand Total		**498**	**99.93**

Among the core varieties found here, the group consists of flake, blade, and micro-blade cores. On the basis of the end, usually, there are two types: 1) chisel-ended and 2) pointed end. Some of the total collection is chisel, and few are pointed-ended. These are made on black chert, green chert, grey chert and cherty quartzites. The shape of the core is cylindrical, conical and irregular. Retouching basically forms a single direction; occasionally, double and tridirectional percussion are also marked on it. Two types of flakes are found, namely side flakes and end flakes (Chakrabarty,1990). They are made on quartzite, black chert, green cherts and grey cherts. Some of these flakes are utilised, characterised by edge damage, probably due to continuous use. All the blades recovered from these sites are parallel-sided, having single and double mid ridges. The Utilization marks on one side have been noticed on one double-sided blade. The cutting edges are almost straight and occasionally irregular. Bladelets are basically broken pieces of blade produced during manufacturing or utilisation. Scrapers are made both on core and flake. In the case of core scraper, a small cortex is marked on the dorsal surface, and flakes are retouched from both sides, whereas in the case of flake scraper, the edge is thinned out by knocked off and then subjected to uniform retouching along the border. These are basically simple points with

minimum retouching at the tip end, made on grey and black chert. Shapes of the points are sub-triangular. These are very small in size and weight (Table 3). Only the round back is thick and blunted by means of intentional retouching. Cross-sections are sub-triangular in shape. Burins are made on both the large flake core.

Fig.3: Microliths recovered from the Bato and Sujanapal site, Keonjhar district, Odisha.

They are basically multiple dihedral burins where a number of spills struck off from opposite directions to prepare a chisel-end. Backed blades are represented by the steep edge. On the basis of the extent of the blunting, these can be divided into three types. Namely light backing, medium backing and heavy backing (Mishra & Nagar, 2009). Unidirectional and bidirectional blunting is noticed on the longitudinal margin. Cross-sections are basically triangular and trapezoidal. Chips and chunks are small, shapeless flakes preserved with no bulb of percussion. The artefacts' approximate lengths and breadths are not more than 5 cm. The worked nodules have a small original cortex present, whereas, on the other side, a few flake scars have been found.

Fig.4: Microliths recovered from Gadachandi Hill, Hatadihi, Keonjhar, Odisha

Fig.5: Microliths recovered from Gadachandi Hill, Hatadihi, Keonjhar, Odisha

Fig.6: Close view of Microlithic cluster from Gadachandi area, Hatadihi, Keonjhar, Odisha

Fig.7: Close view of Microlithic cluster from Gada Singidi area, Hatadihi, Keonjhar, Odisha

Fig.8: Microlithic cluster from Gada Singidi area, Hatadihi, Keonjhar, Odisha**.**

Fig.9: Microlithic Tools found from Purunapani Village area, Hatadihi, Keonjhar

Table: 3- Measurements and weights of the Microlithic artifacts

Mean measurements (in cm.) and weights (in gm.) of the artefacts.							
ARTIFACT TYPE	**LENGTH cm**		**BREADTH cm**		**THICKNESS cm**		**MEAN - WEIGHT (gm.)**
	Range	**Mean**	**Range**	**Mean**	**Range**	**Mean**	
Core	3.4-4.5	4.02	2.2-3.3	2.60	6.4-2.5	1.75	20.25
Flake	2.5-4.5	3.30	1.5-4.8	2.97	0.4-1.2	0.84	12.15
Blade	1.5-3.5	2.80	1.1-1.8	1.42	0.2-0.6	0.43	1.95
Bladelets	1.4-1.6	1.5	0.6-1.2	0.85	0.2-0.3	0.30	0.45
Scraper	2.7-8.5	3.70	2.0-4.4	3.32	0.8-2.4	1.86	23.10
Points	2.4-4.5	2.75	1.1-2.6	1.54	0.3-0.8	0.44	2.04
Lunate	1.8-2.6	2.45	0.8-2.0	1.17	0.2-0.8	0.40	2.10
Burin	3.5-6.5	5.00	1.8-2.2	2.05	0.8-1.9	1.15	9.50

Blade cum Borer	4.2-5.4	4.3	1.5-1.9	1.70	0.8-0.9	0.85	5.75
Backed Blade	1.3-4.8	2.35	0.7-1.1	1.02	0.3-0.6	0.48	1.28
Knife	10.20-8.40	8.60	2.50-3.50	2.50	1.15-1.28	1.15	40.25
Chips/ Chunks	1.02-2.0	1.65	0.6-1.4	1.00	0.1-0.5	0.30	0.35
Worked Noudle	4.8-6.8	5.51	4.0-5.5	5.30	3.2-5.0	4.80	2.18

VI. Raw-Materials:

The Mesolithic people of this region were exploiting locally available crypto-crystalline rocks to manufacture their stone implements. As far as the raw materials are concerned, the major raw-material types consist of dolomite, black cherts, green cherts, grey cherts, milky quartz, cherty quartzite and quartz etc (Chart-1).

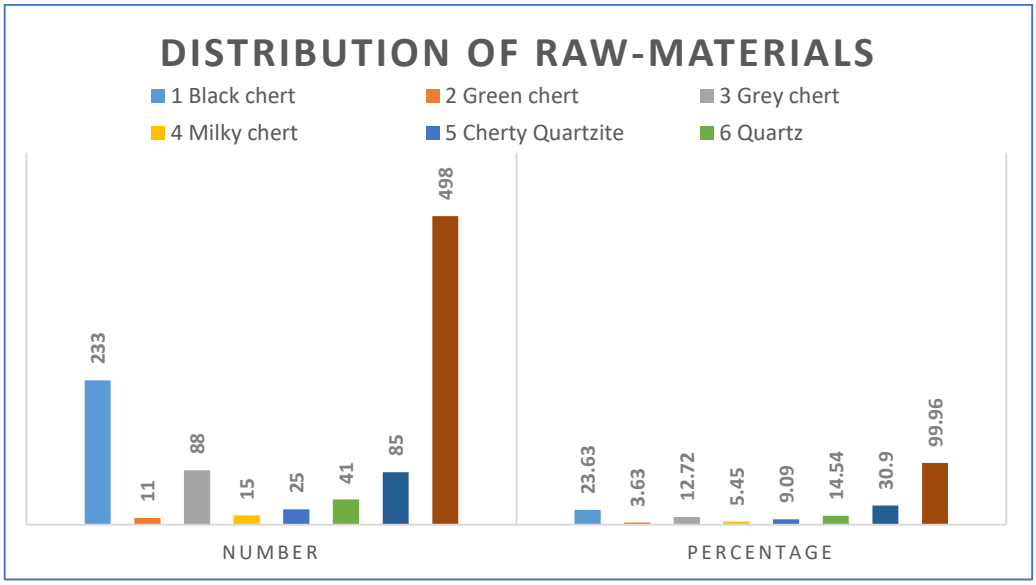

Chart 1: Showing Distribution of Raw Materials types and percentages

Out of the total collection of microliths, dolomite (30.90%), black chert (23.63%) and cherty quartzite 9.09%), Quartz (14.54%) is the prominent raw material varieties of microliths. However, apart from this, green chert and grey chert are also used in very small amounts, respectively.

VII. Discussion and Conclusion:

Among the assemblages of all the recovered sites, many kinds of microlithic technologies were found to be present. The bulk of the ancient microlithic sites that were discovered in the region under investigation were located along the foothills, on the banks of the main river, tributaries of the major river, and minor perineal streams. It has been determined that the microlithic assemblages found in the Keonjhar area are not connected to any other kinds of ceramic assemblages (Mohanty, 1998). This gives a strong indication that all of these sites that have been examined were inhabited before the onset of agriculture and that those sites were solely inhabited by members of the hunter-gatherer community who produced microliths. An effort is being made to get a better understanding of the general circumstances that lead to the organisation of technology and the availability of lithic materials via the study of lithic assemblages from Bato, Chakartritha Hill, Gada Singidi, and Gadachandi Hill. The manufacturing of a wide variety of stone tools by the microlithic stone knappers was significantly influenced by the quality and nature of the raw materials that were derived from this region. Within the realm of lithic technology, one of the most important considerations is the accessibility of their raw materials. Not only does the pattern of prehistoric settlements play a role in the organisation of technology, but other factors, such as the different modes of transportation of materials, the function of the site, the variation in the exploitation of fauna, and the differentiation in the types of artefacts, may also play a role in the organisation of particular technologies (Deep, 2019). Core, flakes, flake blade, scraper, point, lunate, trapeze, burin, blade-cum-borer, backed blade, bladelet, knife, chip, and worked nodules are the major kinds of tools that were recovered from these sites. In order to create the microliths that were found at the site, the primary raw materials that were used were a variety of crystalline and cryptocrystalline siliceous rocks that displayed fine to medium grain sizes. These kinds of raw materials are readily accessible in and around the Salandi and Baitarani River Basin, notably in the Anandapur-Boula region. Several locations within the Keonjhar district include veins and river gravels that contain cherts and quartz. These deposits may be found in veins. Microlithic assemblages of Gada Singidi and Gadachandi Hill are distinguished and particularly unusual in that the bulk of the microliths are formed via the use of black-coloured dolomite stone (Figure 5, 6 & 9). This is one of the aspects that sets them apart from the microlithic sites of other areas. The dolomite has a texture that is essentially quite hard and provides the appearance of black chert. The raw materials are accessible locally on the hills. The surface of the tools manufactured with dolomite stone is very firm, and there are no insignificant flakings on the surface. Therefore, based on the examination of microlithic stone artefacts from this location, it is possible that the microlithic industry of this region demonstrates a transitional phase between the late phase of the Mesolithic era and the early Neolithic period, mainly due to the fact that two Neolithic ground and polished stone celts were discovered previously in the various locations around the site. Regarding raw material and typo-technological features, the microlithic assemblage found at the site is comparable to those found in neighbouring regions of the state. One of the most important characteristics of the microlithic industry is the presence of a blade technology that has been developed to a high level. This is the foundation for the possibility that the site is part of the flake-blade business. In general, these microliths correspond to both the geometric and non-geometric varieties.

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IX. References:

Jain, V. K., (2009). *Prehistory and Protohistory of India; An Appraisal,* D.K. Print world, New Delhi.

Possehl, G., and K.A.R. Kennedy, (1979). "Hunter-gatherer/agriculturist exchange in prehistory: An Indian example", *Current Anthropology:* No. 20, pp. 592-593.

Senapati, N., and N.C. Behuria, (1986). *Keonjhar District Gazetteer,* Gopabandhu Academy, Bhubaneswar, pp. 27-32.

Chakrabarti, S., & Chattopadhyay, (1988). "A note on the Lithic Industries in Mayurbhanj and Keonjhar, Orissa", *Man and Environment,* vol. XII, Deccan College, Poona, pp. 203-08.

Mohanty, P.K., (1993). "Mesolithic Hunter-Gatherers of Keonjhar district, Orissa, India", *Asian Perspective,* vol. 32, no.1, pp. 85-104.

Sahoo, S. R., (2019). New light on microlithic assemblage Recovered from Keonjhar district of Odisha: Site report on Poda Singidi, Hatadihi, *OHRJ,* vol. LVI, no.1 & 2, Bhubaneswar, Odisha State Museum, pp. 71-88.

Mohanty, P. K., (1989). *Mesolithic Settlement System of Keonjhar District Orissa,* Unpublished Ph.D. Dissertation, University of Poona.

Mohanty, P.K., (1991). The Mesolithic Culture of Keonjhar District. *Orissa Review,* September Issue, pp.4-7.

Bhattacharya, D. K., (1997). *Old Stone Age Tools,* Calcutta, K.P. Bagchi & Company, pp.3-54.

Chakrabarti, S., (1990). "The Stone Age Prehistory of Khiching, Orissa", *Man and Environment,* vol. XV, no. 2, Deccan College, Poona, pp. 13-20.

Mishra, V. N. & M. Nagar, (2009). "Typology of Indian Mesolithic Tools" in *Man and Environment,* vol. XXXIV, no. 2, Pune, pp. 21.

Mohanty, P., (1998). The Mesolithic Culture of Keonjhar District, Orissa: A New Perspective. In Dutta, A. (ed.) *New Perspective in History and Archaeology of Eastern India,* Books and Books, New Delhi.

Deep, S., (2019). "Analysis of Microlithic Assemblages from Tentelpali Site, Bargarh, Odisha, India", *Indian Journal of Archaeology*, vol.4, no. 3, Lucknow, pp. 41-57.