

An Initial Assessment of Mesolithic Cultural Investigations in the Suktel River Valley of Western Odisha

Atula Kumar Pradhan^{1*}, Bimal Kumar Bhoi¹, Chudamani Rana¹,
Nirupama Sahoo²

¹School of History, Gangadhar Meher University, Sambalpur, Odisha, India, ²School of Statistics, Gangadhar Meher University, Sambalpur, Odisha, India. *Corresponding Author's Email: atulcgculture@gmail.com

Abstract

The predominant preoccupation of the present disquisition is to assiduously delineate and interrogate the recently discerned Microlithic loci ensconced along the sinuous littorals of the Suktel fluvial system and its confluential matrix within the geomorphological ambit of Balangir and Sonepur districts of Odisha. The Suktel River reverentially esteemed as a principal affluent of the Tel hydrographic complex appears to have constituted a quintessential geomorpho-ecological corridor facilitating an enduring continuum of anthropic occupation. Such habitation as the stratigraphic palimpsest suggests traversed an expansive cultural diachrony extending from the Paleolithic substratum to the Historic horizon. Through the aegis of a scrupulously systematized archaeological exegesis researchers have discriminated five cardinal Microlithic vicinities judiciously dispersed across the examined palaeo-landscape. These locales evince a copious proliferation of lithic artefactual materialities emblemizing the techno-functional ingenuity and adaptive modalities of nascent hominin collectives. The artefactual ensembles exhumed from the Suktel fluvial complex disseminate an invaluable corpus of empiricism pertinent to settlement dynamics, subsistence strategies and the spatio-temporal oscillations of prehistoric demography within this ecologically fecund terrain. Such revelations underscore the sempiternal significance of this geomorphological niche as an ecotonal sanctum congenial to either episodic or perennial human encampment. The ongoing hermeneutic engagement encapsulates a laborious stratigraphic, typo-technical and spatial hermeneutics of the Microlithic palimpsests newly unearthed aspiring toward a reconstitution of Prehistoric cultural morphogenesis through the confluence of empirical precision and theoretical profundity.

Keywords: Balangir, Mesolithic, Microlith, Suktel, Tel.

Introduction

Odisha occupies a unique and significant position in the prehistoric landscape of Eastern India due to its distinctive geological formations and complex river systems. Since ancient times, the seriverine arteries of the subcontinent have since immemorial antiquity, orchestrated the genesis, sustenance and transcendence of civilizational enterprises. Indeed, the annals of global antiquity attest that the most venerable cultural fluorescence's germinated upon alluvial expanses contiguous to perennial waterways whose ecological beneficence engendered both subsistence and sanctity (1-3). Within this hydrological and geomorphic paradigm, systematic reconnaissance throughout the fluvial tracts of Balangir and Sonepur districts has divulged a variegated spectrum of archaeological vestiges, extending diachronically from the Paleolithic substratum to the incipient Historic epoch. The terminological

construct "Microlithic," within the canons of contemporary archaeological parlance, connotes a Mesolithic techno-complex distinguished by infinitesimal lithic implements of geometric morphology customarily inferior to forty millimeters in longitudinal extension and scarcely exceeding four millimeters in laminar thickness (4). The ubiquitous deployment of these diminutive artefacts frequently hafted into perishable matrices of osseous, cervine or ligneous provenance constitutes a resplendent testament to the cerebral and technological acumen of Mesolithic hominins, whose ingenuity heralded a seminal evolutionary juncture in the semiotics of tool production and cognitive symbolism. The present archaeological exploration aims at the archaeological mapping of the lower Suktel region, assessing the palaeo-environment for hominin occupation, site contextualization, and techno-

This is an Open Access article distributed under the terms of the Creative Commons Attribution CC BY license (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted reuse, distribution, and reproduction in any medium, provided the original work is properly cited.

(Received 14th November 2025; Accepted 18th April 2026; Published 26th April 2026)

typological analysis of Microlithic tools, while also examining the cultural landscape, mobility patterns, and chronology of the research area.

Figure 1 provides a general view of the Bahirkhaman site, illustrating the landscape and the formation processes that have shaped it. This

image offers important context for understanding the geomorphological features and environmental factors that influence the preservation and distribution of archaeological materials at Bahirkhaman.



Figure 1: General view of Bahirkhaman Site



Figure 2: Lithic Scatter Artefact of Bahirkhaman Site: (A) Exposed Artefact, (B) Scattered Artefacts

The archaeologically fecund geomorphological scape of the Suktel River basin enunciates an ineffably profound palimpsest of prehistoric articulation, inaugurating with the litho-technical idioms of the Paleolithic continuum. Over the preceding triennium, the present investigators have embarked upon sustained and methodologically rigorous field perquisitions, endeavoring to elucidate the intricate cultural palaeo history embedded within this fluvial palaeo-corridor. The quintet of principal loci such as Muhurundi, Bailsagar, Kulhiamunda, Barpita and Bahirkhaman (Figures 1 and 2) may be construed as nodal epicenters of anthropic sedimentation, whose lithic conspectus exudes a

semiotic resonance of habitation dynamics, techno-morphological progression and the nascent skeins of socio-cultural evolution among primeval hominin collectivities inhabiting this hitherto academically marginalized micro-region of Balangir and Sonapur. Figures 2A and 2B presents images of lithic scatter artefacts at the Bahirkhaman site, offering visual context for their spatial distribution and associations within the landscape. These figures highlight the concentration and arrangement of artefacts on the surface, providing insights into site formation processes, activity areas, and the extent of prehistoric occupation at Bahirkhaman.

Earlier Academic Investigations Pertaining to the Balangir Terrane

During the effluent epoch of the seventh century A.D. the illustrious Sino-Buddhist peregrinator Hiuen Tsang visited the Gandhamardan hills in present-day Odisha and referred to them as Parimalagiri, describing them as an important center of Buddhist learning. He praised the region's natural beauty and rich medicinal plants. Thus, this area received a good attention for many centuries until modern archaeology rediscovered its ancient heritage. By the incipient decades of the twentieth century, erudite savants had commenced discerning vestiges of the Paleolithic, Mesolithic and Neolithic substrata emanating from disparate locales of Odisha an epistemic trajectory inaugurated in the late thirties of the preceding century and perpetuated through the seminal exertions of various prehistorians whose oeuvres collectively fortified the lithic historiography of the region (5-10). In the occidental tracts of Odisha, later Microlithic explorations have further enkindled a reappraisal of the lithic palaeo-landscape endowing the Suktel complex with an epistemic prominence hitherto unattained in the annals of regional prehistory.

For the first time, nascent archaeological surveys carried out in Angul, Talcher, Dhenkanal, and the Sambalpur region of Bhursapali established the initial foundation of archaeological knowledge within the province (11). However, the systematic study of the Palaeolithic period in Orissa only gained proper methodological grounding after 1939. These later investigations greatly enhanced the understanding of Odisha's ancient past and transformed interpretations of its prehistoric stone tool culture. Western Odisha is defined by major river systems, including the Mahanadi, Tel, Ong, Jira, Suktel, and lower Bheden Valley (12-15). Between 2011 and 2015, extensive surveys led to the discovery of numerous prehistoric sites in the Bargarh upland (16). Comprehensive archaeological explorations have revealed prehistoric sites along the Danta, Jira, Ong, and Jhaun rivers, as well as their major and minor tributaries, reflecting various cultural phases. Subsequent studies conducted along the Suktel and Tel rivers have further enriched the understanding of Microlithic and Early Historic remains, particularly in the Suktel and Tel River valleys (17-19).

Methodology Physiographic Matrix and Geoarchaeological Contextualization

The fluvial ensemble comprising the Tel, Suktel, Raul, Lanth, Under and Ong rivers delineates the principal hydrographic architecture of the Balangir district. Among these, the Suktel River an eminent sinistral tributary of the Tel emerges from the sylvan declivities of the Gandhamardan hill complex situated in the north-western part of Balangir, Odisha. It follows a winding and meandering course for approximately one hundred and fifty kilometers through the regions of Patnagarh and Balangir. It consummates its aqueous confluence with the Tel River proximate to Kharjhura village in Sonepur District. Physiographically, the basin is dichotomized into two conspicuous geomorphic units the lofty orographic ramparts in the western and north-western periphery and the undulating denudational plains sporadically ornamented with inselberg like hillocks ascending in heterogeneous orientations. The general physiognomy of the terrain exudes an intricate mosaic of rugose badlands, narrow alluvial corridors and minor to median geomorphic eminences, bounded respectively by the Bargarh uplands to the north, the south-western hill system to the south, the Gandhamardan massif to the west and the Tel River continuum to the east.

Area of Present Study

The hydrographic basin, encompassing an aerial expanse of 2,333.61 square kilometers, geographically extends between 20°34'N to 20°55'N latitude and 82°46'E to 83°45'E longitude. The Suktel manifests as a sixth-order fluvial basin, with its hydrographic network being intricately nourished by subordinate sub-basins such as the Katangi Nala, Mayabati Nadi, Kusangai and Nibruti Nala which collectively constitute the axial foci of the present scholarly reconnaissance.

Geo-morphotectonic and Lithostratigraphic Synthesis

Geologically, the basin is principally an exposition of the Eastern Ghat supergroup, constituted predominantly of Khondalite, Charnockitic and Gneissic-Migmatitic litho-associations. The Khondalite suite an epitome of high-grade metamorphism comprises Quartz-garnet-sillimanite gneiss, Quartzite, calc-silicate facies and leptynite

manifesting as discrete petrographic enclaves. The gneissic assemblage conversely reveals the presence of porphyroblastic granite gneiss and augen gneiss while the Charnockitic facies encapsulate acidic hypersthene granulites and basic pyroxene granulites occurring as sporadic enclaves enmeshed within the gneissic substratum and frequently in petrographic concordance with the Khondalite group.

Archaeological Matrix and Lithic Configuration

Archaeological reconnaissance within the fluvial ambit of the Suktel and its tributary networks has culminated in the discernment of five prehistoric

sites namely Muhurundi, Bailsagar, Kulhiamunda, Barpita and Bahirkhaman. Table 1 highlight about the cumulative inventory of 570 lithic artefact types and percentage. The lithological composition of the assemblage reveals an elaborate technotypological spectrum, encompassing Cores (N is 136; 23.85%), Flakes (N is 269; 47.19%), Blades (N is 43; 7.54%), Bladelets (N is 51; 8.94%) and Chips/Chunks (N is 71; 12.45%). This distribution unequivocally substantiates the preponderance of Flake-based implements, underscoring their quintessential role as the predominant technological substratum within the Microlithic repertoire of the Suktel valley civilization.

Table 1: Lithic Assemblages of the Study Area

Name of the sites	Core	%	Flake	%	Blades	%	Bladelet	%	Chip/Chunk	%	Total	%
Muhurundi	24	20.33	39	33.05	8	6.77	24	20.33	23	19.49	118	20.70
Bailsagar	31	19.37	106	66.25	7	4.37	6	3.75	10	6.25	160	28.07
Kulhiamunda	21	20.19	55	52.88	8	7.69	9	8.65	11	10.57	104	18.24
Barpita	43	38.39	35	31.25	10	8.92	6	5.35	18	6.07	112	19.64
Bahirkhaman	17	22.36	34	44.73	10	13.15	6	7.89	9	11.84	76	13.33
5 sites	136	23.85	269	47.19	43	7.54	51	8.94	71	12.45	570	99.98

A total of 570 artefacts were collected from five sites: Muhurundi, Barpita, Bailsagar, Kulhiamunda, and Bahirkhaman. These artefacts were recovered from secondary, eroded contexts, indicating they were not found in their original depositional settings. Based on tool typology, all sites are attributed to the Mesolithic period, as evidenced by the presence of microlithic and flake-blade assemblages primarily fashioned from cryptocrystalline stones. The distribution of these assemblages across various levels of exposed erosional surfaces suggests complex site histories and repeated human activity over time.

The litho-technological schema delineated across the five explored loci Muhurundi, Bailsagar, Kulhiamunda, Barpita and Bahirkhaman presents an intricate mosaic of techno-typological variability, wherein the quantitative proclivities of the assemblages unfurl a discernible yet complex pattern of prehistoric knapping behavior and occupational intensity. Within this analytical constellation, Muhurundi manifests a moderately diversified lithic repertoire comprising approximately 20.33% Cores, 33.05% Flakes, 6.77% Blades, 20.33% Bladelet and 19.49% chips or chunks culminating in a cumulative proportion of 20.70% within the overall inventory. Bailsagar, conversely, emerges as the most prolific locus,

exhibiting a conspicuous predominance of Flakes (66.25%), followed by Cores and minor elements of the laminar series, culminating in an aggregated frequency of 28.07%, thereby implying an intensive phase of reductional praxis. The technomorphological configuration of Kulhiamunda reveals a more equilibrated index with 20.19% Cores, 52.88% Flakes, and a modest representation of laminar elements, collectively contributing to 18.24% of the corpus. Barpita, by contrast, portrays a lithic milieu characterized by substantial Core frequency (38.39%) and a comparable, though subdued, presence of Flakes (31.25%) and Blades (8.92%) thereby insinuating a localized adaptation of reduction techniques, with its cumulative share measured at 19.64%. Finally, Bahirkhaman exhibits a relatively attenuated lithic concentration comprising 22.36% Cores, 44.73% Flakes, 13.15% Blades and 7.89% Bladelet accounting for 13.33% of the grand total, suggestive of a peripheral yet technologically competent episode of lithic production.

When these discrete entities are synthesized into an integrative comprehension, the grand aggregatum encompassing all five localities comprising 136 Cores (23.65%), 269 Flakes (47.19%), 43 Blades (7.54%), 51 Bladelet (8.94%) and 71 chips/chunks (12.45%), amassing to an almost absolute

99.98% quantitative completeness reveals a quintessential exemplar of Microlithic industriousness within the Suktel River Basin.

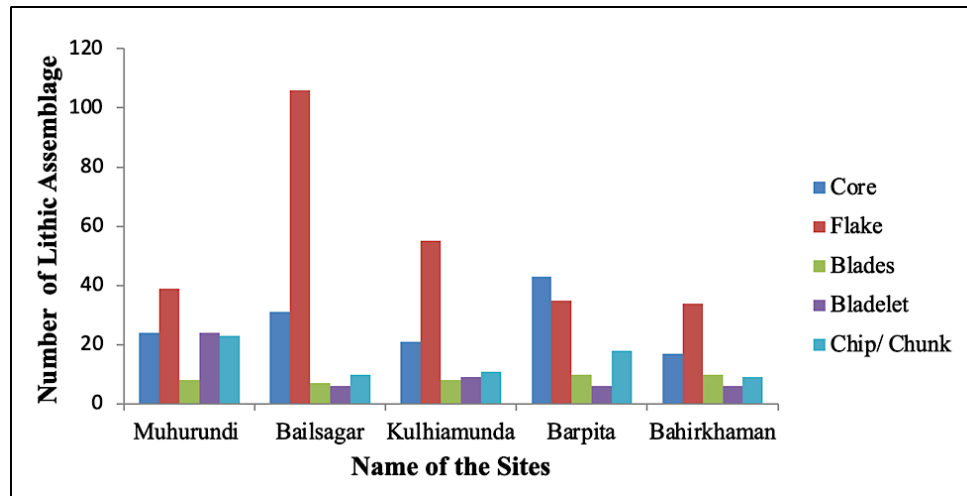


Figure 3: Lithic Assemblage of the Study Area in Numbers

Figure 3 presents a bar graph illustrating the numerical distribution of lithic assemblage types across the study area. It visually compares the total counts of artefact categories including cores, flakes, blades, bladelets, and chips/chunks from

each site, enabling a clear assessment of the relative abundance and variability in lithic production. The graph offers valuable insights into the intensity and scale of prehistoric tool-making activities within the study area.

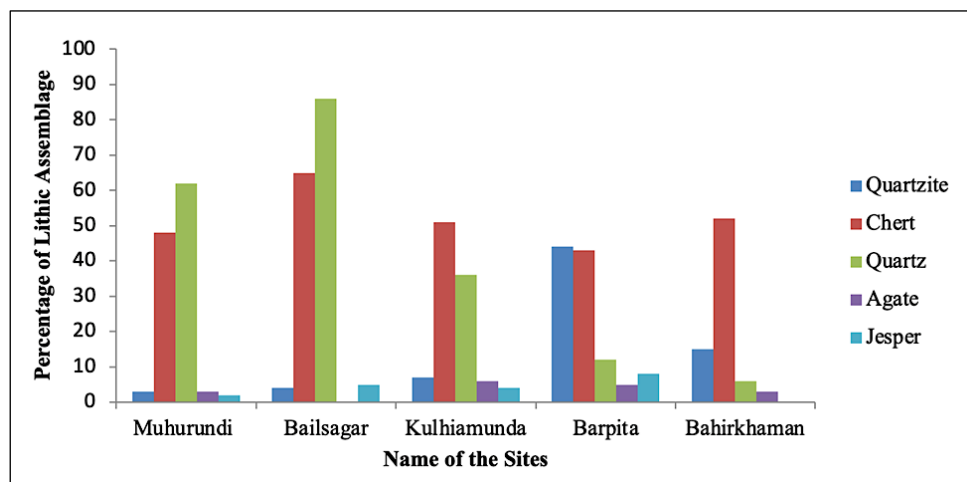


Figure 4: Lithic Assemblage of the Study Area in Percentage

Figure 4 presents a bar graph illustrating the percentage composition of lithic assemblages from each site within the study area. Muhurundi demonstrates a moderately diversified assemblage, comprising approximately 20.33% cores, 33.05% flakes, 6.77% blades, 20.33% bladelets, and 19.49% chips or chunks collectively accounting for 20.70% of the total artefact inventory. In contrast, Bailsagar is the most prolific site, with flakes dominating at 66.25%, followed by cores and minor laminar elements, contributing 28.07% to the total assemblage. This pattern

suggests an intensive phase of reductional activity at Bailsagar. Kulhiamunda exhibits a more balanced lithic profile, with 20.19% cores, 52.88% flakes, and a modest proportion of laminar elements, together making up 18.24% of the overall corpus. Barpita is characterized by a high frequency of cores (38.39%), alongside a significant but lower proportion of flakes (31.25%) and blades (8.92%), indicating localized adaptations in reduction techniques, with a cumulative share of 19.64%. Bahirkhaman displays a relatively lower lithic density, comprising

22.36% cores, 44.73% flakes, 13.15% blades, and 7.89% bladelets, amounting to 13.33% of the overall assemblage. This suggests a more peripheral yet technologically capable phase of lithic production.

Synthesizing data from all five sites provides a comprehensive overview of the assemblage: 136

cores (23.65%), 269 flakes (47.19%), 43 blades (7.54%), 51 bladelets (8.94%), and 71 chips/chunks (12.45%). This near-complete tally (99.98%) exemplifies the microlithic industry characteristic of the Suktel River Basin.

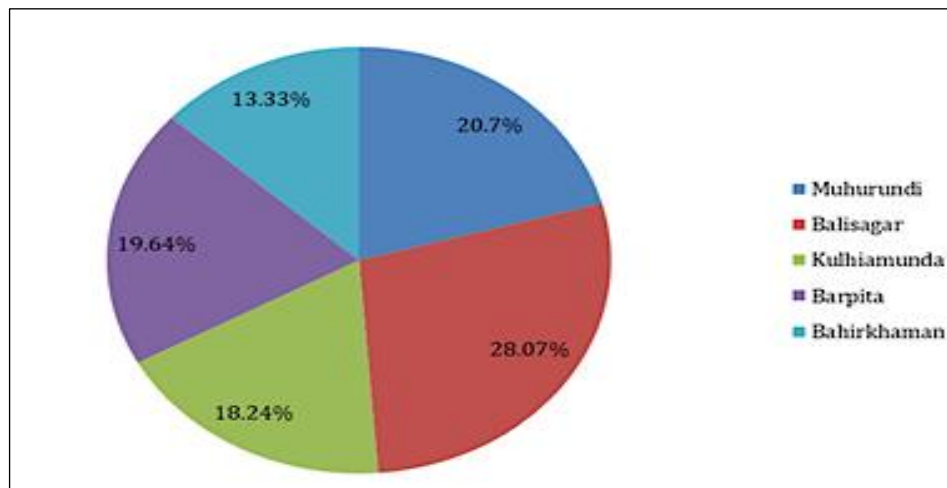


Figure 5: Lithic Assemblage of the Study Area in Percentage

Figure 5 displays a pie chart illustrating the percentage distribution of the lithic assemblage across the study area. The chart indicates that Muhurundi accounts for 20.7%, Balisagar for 28.07%, Kulhiamunda for 18.24%, Barpita for 19.64%, and Bahirkhaman for 13.33% of the total lithic assemblage. This visualization highlights Balisagar as the most dominant site in terms of artefact representation, underscoring its significant role in the microlithic industry of the region.

The cumulative pattern thereby signifies a technological continuum, wherein differential frequencies mirror variegated phases of occupation raw material procurement and reductional strategy collectively underscoring the evolutionary profundity of the lithic enterprise across the surveyed geomorphological transect.

Geo-archaeological Assessment of Lithic Resource Utilization

Archaeological vestiges encompassing both organic and inorganic matrices are quintessentially autochthonous in provenance, emanating from the inexhaustible crucible of the natural milieu rather than from any anthropogenically contrived synthetic genesis (20). The lithological substrata discerned within these archaeological precincts have been heuristically and morpho-

texturally taxonomized into a pentadic gradation predicated upon their granulometric and tactile nuances, namely ultra-fine, fine, coarse, mega-coarse and indeterminate.

The sub structural geomorphotectonic configuration of the terrain manifests a palimpsestic concatenation of lithostratigraphic sequences commencing from the primordial Archean cratonic assemblages, succeeded by Dharwarian schistose formations, Cuddapah sedimentary, Lower Gondwana coaliferous successions, Tertiary fluvio-marine aggregates and culminating in Quaternary alluvio-colluvial veneers. Across this stratigraphic continuum, an exuberant profusion of Quartzite and silicified lithoclasts articulates the topographic physio-gnomy. Supplementary petrographic constituents doleritic intrusives, Quartzose veinlets and Chertiferous laminations further punctuate the geological tapestry (21).

The Gandhamardan hill complex, an eminent geomorphic edifice of considerable lithodynamic significance, functioned as the principal locus of litho-procurement a primordial petro-atelier where prehistoric hominins orchestrated their technological engagements with the mineral substrate. It is epistemologically plausible that these archaic collectives, actuated by perceptive discernment and techno-cognitive acumen, undertook a stratified exploitation of litho-types, thereby

engendering cumulative refinements in their knapping praxis and techno-cultural repertoire. Among the myriad petro-materials, Chert emerged as the quintessentially valorized lithic medium venerated for its plenitudinous local occurrence, microcrystalline uniformity and exemplary con-

choidal fracturability. These attributes conferred upon it an unparalleled knapping finesse, fostering the realization of precise Microlithic morphologies and facilitating adaptive recalibrations amidst the oscillating subsistence paradigms that inaugurated the Holocene threshold of human enterprise.

Table 2: Utilization of the Raw Materials of the Study Area

Name of the Site	Quartzite	Chert	Quartz	Agate	Jesper	Total	%
Muhurundi	3	48	62	3	2	118	20.70
Bailsagar	4	65	86	---	5	160	28.07
Kulhiamunda	7	51	36	6	4	104	18.24
Barpita	44	43	12	5	8	112	19.64
Bahirkhaman	15	52	6	3	---	76	13.33
5 Sites	73	259	202	17	19	570	99.98

The quantitative litho-resource spectrum derived from the five examined archaeological localities namely Muhurundi, Bailsagar, Kulhiamunda, Barpita and Bahirkhaman reveals a discernible pattern of raw material procurement and utilization within the Suktel River basin. Table 2 indicates the litho-types of the present research whereas Chert manifests as the most predominant constituent, with a cumulative count of 259 specimens, followed sequentially by Quartz [202], Quartzite [73], Jesper [19] and Agate [17], collectively amounting to an aggregate of 570 artefactual specimens, representing approximately 99.98% of the total lithic inventory. A closer

scrutiny of the individual site-based distribution underscores a pronounced quantitative preponderance at Bailsagar (28.07%), which exhibits the highest frequency of siliceous artefacts, succeeded by Muhurundi (20.70%), Barpita (19.64%), Kulhiamunda (18.24%) and Bahirkhaman (13.33%). The lithological variability across these sites encapsulates both the technological predilection and adaptive procurement strategies employed by prehistoric communities, who evidently displayed a discerning preference for fine-grained cryptocrystalline siliceous matrices such as Chert and Quartz.

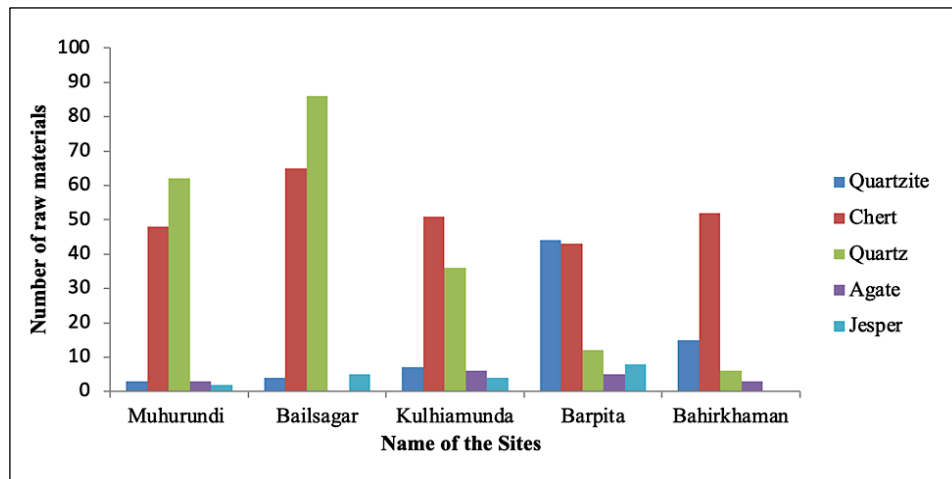


Figure 6: Percentage of the raw materials

Figure 6 presents a bar graph illustrating the percentage distribution of raw materials used in the lithic assemblages from the study area. This chart provides a visual comparison of the relative frequency of each raw material type, offering insights into resource selection, availability, and

technological preferences across the sites. The analysis of raw material percentages further contextualizes the patterns of lithic production and tool-making strategies employed by prehistoric communities in the region.

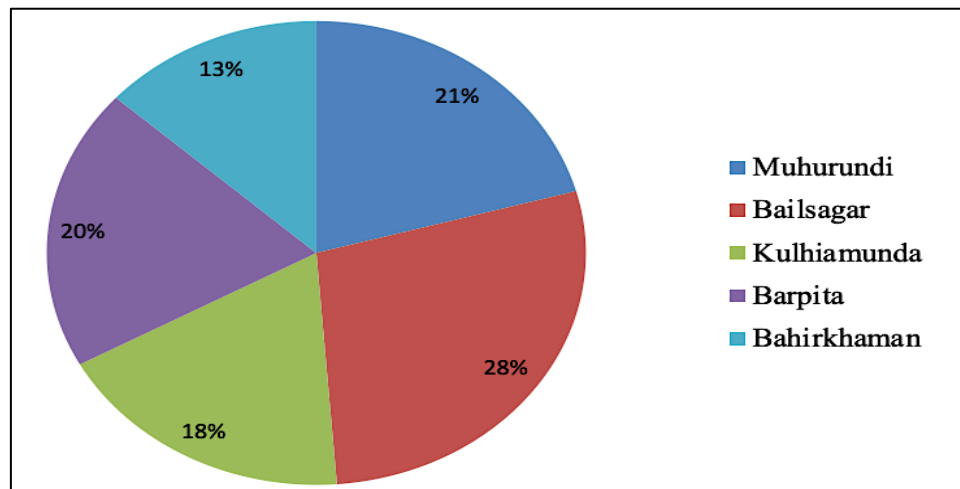


Figure 7: Percentage of the Raw Materials

Figure 7 displays a pie chart illustrating the percentage distribution of raw materials utilized in the lithic assemblages from the study area. This chart visually represents the proportional use of each raw material type, highlighting the preferences and availability that may have influenced prehistoric tool-making strategies. The data show that Muhurundi accounts for 21%, Bailsagar for 28%, Kulhiamunda for 18%, Barpita for 20%, and Bahirkhaman for 13% of the raw material usage. This visualization aids in understanding the dominance or scarcity of specific raw materials, providing additional context for interpreting technological choices and resource management within the study area.

The overwhelming presence of these materials implies a sophisticated understanding of fracture mechanics and tool-making efficiency, reflecting the cognitive and functional dynamism of the lithic artisans. Such an assemblage, with its petro-archaeological consonance, bespeaks a nuanced interplay between geomorphological availability and cultural choice, situating these sites within a broader continuum of regional techno-economic behavior characteristic of prehistoric resource exploitation paradigms.

Archaeometric Discourse on Lithic Taxonomy and Technological Ontogenesis in the Suktel River Basin

The lithic assemblage procured from the geo-cultural expanse of the Suktel River basin manifests a conspicuously Chert-dominated techno-complex; constituting N is 259 (45.43%) specimens. This is sequentially followed by Quartz artifacts (N is 202; 35.43%), Quartzite implements (N is 73; 12.80%), Jesper specimens (N is 19;

3.33%) and Agate derivatives (N is 17; 2.98%). A visual elucidation in the form of a pie diagrammatic representation effectively delineates the proportional exploitation of lithological resources by prehistoric communities inhabiting this geomorphic-cultural corridor. The predominance of Chert, coupled with the substantial utilization of Quartz and Quartzite, delineates a discriminatory selection strategy grounded in accessibility flaking quality and tool efficiency parameters.

Measurement Analysis

Furthermore, a substantial number of diverse research artefacts have been discovered at this site, each varying considerably in size. The demographic data reveal a wide range in the dimensions of the lithic assemblage. Specifically, cores exhibit lengths ranging from 23 mm to 86 mm, with an average length between 40 mm and 80 mm and a standard deviation of 14.23 mm. The breadth of the cores spans 18 mm to 74 mm, with an average of 35.66 mm, while thickness ranges from 13 mm to 48 mm, averaging 22.14 mm.

For flakes, the length, breadth, and thickness (L/B/T) range from 20–90 mm, 13–67 mm, and 7–42 mm, respectively, with average values of 42.04 mm (L), 33.62 mm (B), and 7.0 mm (T). Blades exhibit L/B/T measurements of 35–74 mm, 12–30 mm, and 6–12 mm, with mean sizes of 50 mm (L), 20.11 mm (B), and 9.11 mm (T). Bladelets range from 14–34 mm in length, 7–15 mm in breadth, and 1.21–9.03 mm in thickness.

Notably, the average size of the cores is smaller than that of the flakes, suggesting that prehistoric flint knappers repeatedly utilized cores, resulting in their reduced dimensions. This pattern is

consistently observed in the material from these significant archaeological sites.

Results

The technological trajectory discernible within the lithic assemblage of the present study epitomizes a palpable metamorphosis from a primordial Core biface and chopper chopping tool tradition toward a more intricate Flake-oriented technological schema, fundamentally governed by the principles of the Levallois reduction strategy. Within the typological corpus of lithic artefacts, diagnostic morphotypes such as choppers, chopping implements and side scrapers manifest a refined and dynamically evolving lithic industry, signifying a paradigm shift in cognitive and technological aptitude. The silhouette of this transformative continuum from rudimentary Core biface or chopper-chopping instruments to a meticulously orchestrated Flake-based technological canon

underscores the progressive sophistication of hominin craftsmanship underpinned by the Levallois methodology within the subcontinental lithosphere. The technological repertoire thus encapsulates a repertoire of choppers, chopping tools and side scrapers emblematic of an evolving techno-cultural milieu.

Techno-lithic Genesis and Morpho-structural Taxonomy of Core Artefacts

The Core industry of the Suktel assemblage attests to a significant technological continuum that anticipates the transition from bifacial Core, chopper-chopping tool industries towards Flake-based reduction systems, eventually culminating in Levalloisian conceptual frameworks within the South Asian subcontinent. The Core, regarded as the primary nucleus of lithic reduction, embodies both a functional and conceptual cornerstone in the chained operatoire of prehistoric knapping behavior.



Figure 8: Core tools of the Study Area: A, B, C, D, G, J and N are Flake Cores, E, H, K and M are Blade Cores; and F, I and L represent Flake-Bladelet Cores

Figure 8 showcases examples of core tools recovered from the study area. These core tools represent the primary lithic implements from which flakes and blades were detached, reflecting the initial stages of the stone tool production sequence. Figure 8 highlights the diversity in size, shape, and reduction techniques employed by prehistoric communities, providing valuable insight into their technological knowledge and adaptive strategies within the region. It illustrates several varieties of core tools: specimens A, B, C, D, G, J and N are Flake Cores; E, H, K and M are Blade Cores; and F, I and L represent Flake-Bladelet Cores. The core tools also indicate that B, C, D, E, I, K, L and N are made on Chert, while F, H and J are made on Jasper. A and G are made on Quartzite and M is made on Agate.

These Cores occur in multifarious morphologies and dimensional gradations, representing the terminal phase of successive Flake detachment sequences a palimpsest of cumulative extraction, rejuvenation and depletion episodes (22, 23). The present investigation enumerates N is 136 (23.85%) Core artifacts, inclusive of typological categories such as Flake Cores, Blades Cores, Flake-Blades Cores and Blades-Bladelet Cores, reflecting an evolutionary trajectory in knapping techniques in Figure 8.

Cores play a prominent role in lithic assemblages, serving as the primary sources from which flakes and blades are detached. Their analysis provides critical insight into the technological strategies, reduction sequences, and overall organization of prehistoric stone tool production in the study area. The present study identifies several core tool types within the assemblages, including Flake Cores, Blade Cores, Flake-Blade Cores, and Blade-Bladelet Cores. A total of 136 core tools were documented during exploration. Of these, Flake Cores are the most prevalent, numbering 77 and representing 56.61% of the total. Blade Cores account for 11 specimens (8.08%), Flake-Blade Cores for 27 specimens (19.85%), and Blade-Bladelet Cores for 21 specimens (15.44%). This diversity in core types reflects varied reduction strategies and technological approaches adopted by prehistoric communities in the study area.

A detailed analysis of scar direction on the core tools reveals three principal patterns: unidirectional, bidirectional, and multidirectional flake removals. Among the 136 core tools

examined, 22 (16.17%) display unidirectional scars, indicating flake removal from a single direction. Bidirectional scars are observed on 17 cores (12.5%), reflecting flaking from two opposing directions. Most cores 97 specimens (71.32%) exhibit multidirectional scars, suggesting frequent rotation and varied approaches during reduction. The prevalence of multidirectional scar patterns indicates flexible reduction strategies and adaptive raw material utilization by prehistoric toolmakers in the study area. The raw material spectrum for these Cores encompasses Chert, Quartz, Quartzite and Jesper underscoring the resource-specific selection dynamics that shaped the lithic reduction strategies of prehistoric artisans.

Petro-Techno-lithic Facets and Functional-typological Configuration of Flake Implements

Flakes constitute the epistemic fulcrum of Middle Paleolithic lithic industries, representing a pivotal stage in the technological and functional metamorphosis of prehistoric tool typologies. This techno-cultural phase exhibits a high degree of spatio-temporal coherence, suggestive of a standardized operational schema that privileges Flake production as the principal mode of lithic exploitation.

A Flake, in typological terms, is defined as a detached lithic fragment whose longitudinal dimension does not exceed twice its transverse breadth, often displaying variable dorsal scar patterns and edge morphologies. The lateral margins may present parallel, convergent or divergent configurations, contingent upon Core geometry and knapping precision. Functionally modified Flakes often exhibit secondary retouching to enhance their utilitarian efficacy, thereby generating a diversified toolkit that includes scrapers, awls, points and Blades each a derivative manifestation of the broader Core-reduction continuum.

Empirical documentation from the Suktel basin registers a total of N is 269 (47.19%) Flake artifacts, predominantly recovered from the fluvial and peri-fluvial depositional contexts. The lithic substrates employed Quartzite, Quartz, Chert, Agate and Jesper affirm a multi-material technological adaptation that harmonizes raw material availability with functional exigency and

cultural preference in Figure 9. Figure 9 illustrates various types of flakes: specimens A, B, D, E and F are made on Quartzite; C, H, N, O and P are made on Chert; G and I are made on Quartz; L is made on Jasper; and J, K and M are made on Agate. The scar

directions observed in Figure 9 indicate that the flakes exhibit Unidirectional, Bidirectional, and Multidirectional patterns, as well as cortex on the ventral surface.



Figure 9: Flake tools of the Study Area: A, B, D, E and F are made on Quartzite, C, H, N, O and P are made on Chert, G and I are made on Quartz, L is made on Jasper, J, K and M are made on Agate

Blades

In accordance with the typological parameters articulated, a Blade is archaeologically defined as an elongated, slender lithic fragment characterized by acute lateral margins produced through the intentional detachment from a meticulously prepared Core, typically employing controlled percussion techniques. Technologically, blades were classified as flakes with a length-to-width ratio of at least 2:1 and a width-to-thickness ratio greater than 2:1, with less than 20% dorsal cortex,

exhibiting one or more dorsal ridges running roughly parallel to the percussion axis (24). The dimensional criterion necessitates that the artifact's length be at least twice its width. A Blade may function autonomously as a utilitarian implement or serve as a blank for subsequent refinement into bifacial tools such as knives, burins, or perforators. Figure 10 illustrates the Blade tools of the study area: specimens A, C, E, F, G, H, I, J, K, L and M are made on Chert; B, N and O are made on Quartz; and D is the only specimen made on Quartzite.



Figure 10: Blades tools of the Study Area: A, C, E, F, G, H, I, J, K, L and M are made on Chert, B, N and O are made on Quartz, D is the only specimen made on Quartzite

Diagnostic attributes include limited dorsal cortex coverage and the presence of one or more longitudinal dorsal ridges aligned parallel to the axis of percussion (25). Morphologically, Blade exhibits sub-parallel lateral margins with consistent dorsal scar patterning, reflecting high degrees of technological standardization and intentionality.

The ongoing archaeological investigations within the Suktel River Valley, particularly in Blades Complex N-43 (7.54%), have yielded a substantial assemblage of lithic artifacts. Preliminary petrographic analyses indicate that the Blades were predominantly manufactured from locally procured Chert varieties. The recovered specimens display minimal evidence of surface weathering, implying a relatively fresh depositional context in the Figure 10. The lithic assemblage primarily comprises Blades fashioned from black, green and brown Chert exhibiting

acute working edges and precise morphological definition. These characteristics underscore their functional significance particularly in tasks involving cutting, slicing and other fine manipulative activities.

Bladelet

The term Bladelet denotes diminutive counterparts of Blades, defined by a maximum length of less than 50 mm and a width not exceeding 12 mm. Typically, Bladelet measure between 15–45 mm in length and 5–11 mm in width. These miniature lithic forms were generally detached from conical or wedge-shaped micro-Cores through refined techniques such as punch-striking or pressure-flaking. Figure 11 illustrates twenty Bladelet specimens from the study area: A, B, C, D, E, F, G, H, I, J, P, Q, R and T are made on Chert, occurring in green, black, yellow and red varieties; K, L, M, N and O are made on Quartz; and S is made on Agate.



Figure 11: Bladelet tools of the Study Area: A, B, C, D, E, F, G, H, I, J, P, Q, R and T are made on Chert, occurring in green, black, yellow and red varieties, K, L, M, N and O are made on Quartz; and S is made on Agate

In numerous instances, Bladelet underwent secondary modification or marginal retouching to produce Microlithic implements that served as integral components in composite tool systems. The present assemblage records a total of N-51 (8.94%) Bladelet primarily fabricated from Chert, Quartz, Agate and Jesper. The technological finesse and material variability observed within this category attest to the advanced knapping proficiency of the prehistoric artisans and the functional diversity of the tool repertoire in Figure 11.

Chips and Chunks

The residual byproducts of lithic reduction, conventionally classified as Chips and Chunks, constitute a substantial proportion of the assemblage. Chips are defined as minute lithic fragments, generally under 15 mm in maximum dimension, characterized by irregular morphology and limited functional potential. Chunks, though larger, similarly lack diagnostic features indicative of tool use or deliberate shaping. Collectively termed debitage, these lithic fragments represent the detrital residue of tool production sequences and

Core reduction activities. Systematic fieldwork conducted along the Suktel River has documented N-71 (12.45%) such fragments, further substantiating the interpretation of the site as a lithic workshop or production locus. The quantitative

and qualitative characteristics of this debitage assemblage illuminate the intensity and organization of lithic manufacturing behaviors within the region.

Table 3: Techno – typological Analysis of Microlithic of the Study Area

Tool Type	Debitage Type				Total	Percentage
	Core	Flake	Blades	Bladelet		
Awl	---	2	---	---	2	6.66
Backed Bladelet	---	---	---	3	3	10
Concave Side Scrapper	1	---	---	---	1	3.33
Convex End Scrapper	---	2	---	---	2	6.66
Convex Side Scrapper	---	1	1	---	2	6.66
Denticulate	---	2	1	---	3	10
End Scrapper	---	2	1	---	3	10
Lunate	---	---	---	2	2	6.66
Marginally Retouched	---	2	---	---	2	6.66
Notch	---	1	1	---	2	6.66
Partially Retouched	---	1	1	2	4	13.33
Retouched Point	---	---	1	---	1	3.33
Side Scrapper	---	2	---	---	2	6.66
Trapeze	---	---	---	1	1	3.33
Grand total	1	15	6	8	30	99.94

Table 3 indicates various stone tool types listed in the first column, followed by several columns with numerical values, and a final column showing percentages. The tool types indicate Awl, Convex End Scrapper, Convex Side Scrapper, Lunate, Marginally Retouched, Notch and Side Scrapper all are equally represented two in number and 6.66%. Whereas Backed Bladelet, Denticulate and End Scrapper has classified into 3 in number and 10%. Concave Side Scrapper, Retouched Point and Trapeze are based on single in number which represents 3.33% in nature. Lastly Partially Retouched is the dominating tool types in Table 3. Where the grand total indicates a near-total representation of 99.94% with a total count of 30 stone tools across the categories.

Discussion

The unearthing of five Microlithic sites along the Suktel River and its contiguous hinterlands constitutes a seminal advancement in the comprehension of Prehistoric human habitation dynamics within the Balangir–Sonepur confluence of Western Odisha. The spatial congregation of these loci in proximity to a principal tributary of

the Tel River delineates a deliberate and strategic selection of ecologically propitious niches by early hominin collectives for habitation, subsistence procurement, and possibly cyclical transhumance. The Suktel River valley, functioning as a geomorphological conduit, ostensibly facilitated a continuum of occupation or recurrent reoccupation spanning multiple cultural epochs most conspicuously from the Mesolithic through the Early Historic phases (1). This fluvial alignment corroborates pan-archaeological tendencies wherein adjacency to perennial hydrological systems constituted a cardinal determinant in the locational calculus of prehistoric settlement (18). The artefactual repertoire, encompassing diagnostic Microliths such as elongated Blades, meticulously retouched scrapers, and geometric points, bespeaks a lithic tradition of consummate technological finesse and adaptability. These artefacts insinuate a subsistence regime predicated upon foraging and hunting, exhibiting both technological persistence and adaptive recalibration consonant with environmental contingencies. The occurrence of such artefacts in both alluvial plains contiguous to the riverine corridor and in

the elevated hill tracts of the Suktel terrain intimates a polyvalent utilization of the landscape plausibly contingent upon seasonal, functional, or ritualistic imperatives (25).

Moreover, the documentation of these nascent sites effectuates the bridging of a significant lacuna within the Prehistoric archaeological cartography of Western Odisha a region hitherto underrepresented within microlithic scholarship (26). These revelations not only amplify the spatial ambit of Microlithic cultural manifestations across Eastern India but also augment our comprehension of intra-regional variability in lithic typology, techno-economic organization, and settlement behaviour. Comparative analyses in relation to adjacent cultural matrices, notably those of Chhattisgarh and the Central Indian Plateau, may elucidate overarching paradigms of cultural diffusion, interactional symbiosis, or parallel evolution. Future interdisciplinary explorations integrating paleoenvironmental reconstruction, sedimentological profiling, and archaeobotanical analyses possess the potential to unravel the intricate nexus between climatic vicissitudes, ecological dynamics,

and the adaptive ingenuity of Prehistoric human populations in this geomorphologically and culturally liminal zone.

Conclusion

The cardinal endeavour of the present research has been to elucidate the cultural palaeogeography and techno-complex configuration of the Microlithic horizon within the Suktel River basin, encompassing the Balangir and Sonepur districts of Western Odisha described in Table 4. The typo-technological spectrum of the lithic repertoire comprising polyhedral and prismatic Cores, elongated Blades, diminutive Bladelet, and formally retouched geometric implements unequivocally affiliates the assemblages to the broader pan-Indian Microlithic cultural milieu. The spatial cartography of these sites manifests a discernible pattern of proliferation, predominantly aligned along fluvio-geomorphic corridors and basal orographic declivities, wherein erosional pediment exposures have yielded stratified lithic deposits of significant archaeological import.

Table 4: List of the Exposed Microlith and Sites of the Study Area

Name of the Sites	River/Hill	Context	Findings	Cultural Period
Muhurundi	Suktel	River Bed	Core, Flake, Blades and Bladelet	Mesolithic
Bailsagar	Suktel	River Bed	Core, Flake, Blades and Bladelet	Mesolithic
Kulhiamunda	Suktel	River Bed	Core, Flake, Blades and Bladelet	Mesolithic
Barpita	Suktel	River Bed	Core, Flake, Blades and Bladelet	Mesolithic
Bahirkhaman	Suktel	River Bed	Core, Flake, Blades and Bladelet	Mesolithic

The ecological amenability of the Suktel basin, characterized by diversified resource zones and perennial water regimes, ostensibly functioned as an attractor for prehistoric forager groups engaging in cyclical or seasonal mobility strategies. These Mesolithic populations appear to have adopted a semi-nomadic subsistence schema predicated upon hunting, foraging, and opportunistic raw material procurement, gradually transiting toward more systematized and territorially defined mobility frameworks. Although numerous surface scatters have been documented, the preponderance of these loci occurs within redeposited or secondary geomorphic contexts, thereby necessitating methodical stratigraphic excavation to establish an absolute chronological horizon for the Microlithic manifestation in this ecological niche.

Despite perceptible typological variability, the collected assemblage exhibit marked stylistic and

technological coherence, bespeaking a shared operational schema within the lithic chained operatoire. Future archaeological enterprises should thus be directed toward the identification of primary-context stratified deposits, the construction of a refined chrono-cultural framework, and the elucidation of subsistence modalities, techno-economic adaptations, and spatial mobility paradigms of the early Holocene forager communities that once animated the Suktel River landscape and other related issues.

Abbreviations

None.

Acknowledgement

The authors sincerely thank the reviewers and the editor for their constructive comments and valuable suggestions, which have helped improve the quality of the manuscript.

Author Contributions

Atula Kumar Pradhan, Bimal Kumar Bhoi, Chudamani Rana: conceptualization, methodology, investigation, resource acquisition, data curation, manuscript preparation, Nirupama Sahoo: data analysis and interpretation. All four authors critically reviewed the final manuscript.

Conflict of Interest

The authors declare that they have no conflict of interest to report regarding the present study.

Data Availability

All data presented in this study are primary in nature and were obtained through field exploration of the Lower Suktel Valley. The dataset comprises artifacts and associated records collected directly from the study sites.

Declaration of Artificial Intelligence (AI) Assistance

The authors declare that no generative AI or AI assisted technologies used in the manuscripts.

Ethics Approval

Not Applicable.

Funding

None.

References

- Hussain S. Archaeological Investigations in the Suktel River, District-Bolangir and Subarnapur, Odisha. A Preliminary Report. *Indian Journal of Archaeology*. 2017;2 (2):1203-1209. https://www.academia.edu/35459974/Archaeological_Investigations_in_the_Suktel_River_District_Bolangir_and_Subarnapur_Odisha_A_Preliminary_Report <https://ijarch.com/ija-vol-2-number-2/>
- Jhankar S. Prehistoric Occupation and Lithic Assemblages in the Khadga River Valley: Insights from Recent Field Investigations in Odisha. *Indian Journal of History and Archaeology*. 2024;6(4):36-56. <https://www.ijha.in/Jul-Aug%202024/5.Dr.Sudam.pdf>
- Rana K, Rana N. Early Historic Cultures of Sunder River valley, Odisha. *Indian Journal of Archaeology*. 2020;5(1):117-131. <https://ijarch.com/ija-vol-5-number-1/> https://www.academia.edu/105799359/EARLY_HISTORIC_CULTURE_OF_SUNDAR_RIVER_VALLEY_ODISHA
- Burdukiewicz JM. Microlithic Technology in the Stone Age. *Journal of the Israel Prehistoric Society*. 2005;35:337-351. <https://www.jstor.org/stable/23383568>
- Barik K, Sabale PD. A Preliminary Report on Prehistoric Investigation in the Middle Ong River Basin with Particular Reference to the Uttali and the Ghensali Stream, Southern Bargarh, Upland, Odisha. *Ancient Asia*. 2021;12(11):1-20. doi: <https://doi.org/10.5334/aa.245>
- Behera PK, Barik K. Recently discovered Middle Palaeolithic foothill site at Kundakhai in the Southern Bargarh Upland of Odisha: A preliminary report. *Ancient Asia*. 2022; 13(8):1-24. <https://doi.org/10.5334/aa.270>
- Behera PK, Barik K. Recent Investigation into the Probable Late Palaeolithic Rock-Art Sites in the Northern Bargarh Uplands, Odisha. *Journal of Historical, Archaeological and Anthropological Studies*. 2023;1(1):63-80. [https://www.pbjournals.com/image/catalog/Journal%20Papers/JHAAS/2023/No%201%20\(2023\)/6_Pradeep%20K.pdf](https://www.pbjournals.com/image/catalog/Journal%20Papers/JHAAS/2023/No%201%20(2023)/6_Pradeep%20K.pdf)
- Deep S, Mendaly S. Microlithic Settlements in Lower Ranj Stream, District Bargarh, Western Odisha: A Preliminary Report. *Heritage: Journal of Multidisciplinary Studies in Archaeology*. 2016; 4:293-311. <https://www.heritageuniversityofkerala.com/JournalPDF/Volume4/18.pdf>
- Patra B. Early Historic Urban Centres of Western Odisha: An Archaeological Study. *Man and Environment*. 2007;XXXII(2):27-36. <https://dn720002.ca.archive.org/0/items/dli.calcutta.06860/H06314.pdf>
- Behera PK, Hussain S, Badam GL. Taraporegarh: An Iron Age-Early Historic Circular Fort in the Middle Mahanadi Valley, Odisha. *Puratattva*. 2015;45,178-196. https://www.researchgate.net/publication/319287959_Taraporegarh_An_Iron_Age-Early_Historic_Circular_Fort_in_the_Middle_Mahana_di_Valley_Odisha
- Ball V. On Stone implements found in the tributary states of Orissa. *Proceedings of Asiatic Society Bengal*. 1876;12:122-123. <https://ia801504.us.archive.org/1/items/in.ernet.dli.2015.7677/2015.7677.Proceedings-Of-The-Asiatic-Society-Of-Bengal-1876.pdf>
- Thakur N, Tracing the Palaeolithic Footprints in Western Orissa: Insights and Discoveries. *International Journal of Research in Academic World*. 2025;4(1):89-99. <https://academicjournal.ijraw.com/media/post/IJR-AW-4-1-24.1.pdf>
- Behera PK, Sinha P, Thakur N. Barpadar: An Acheulian Site in the Upper Jira River Basin, District Bargarh, Odisha. *Man and Environment*. 2015;40 (1):1-3. https://www.researchgate.net/publication/330337534_Barpadar_An_Acheulian_Site_in_the_Upper_Jira_River_Basin_District_Bargarh_Odisha
- Deep S. Explorations of the Rocky Outcrops of Lower Jira Valley of Bargarh Upland, West Odisha, India. *Ancient Asia*. 2018;9(8):1-10. [https://ancient-asia-journal.com/upload/1/volume/Vol.%209%20\(2018\)/Paper/160-1-1660-1-10-20181130.pdf](https://ancient-asia-journal.com/upload/1/volume/Vol.%209%20(2018)/Paper/160-1-1660-1-10-20181130.pdf)
- Naik JS. New Discovery of Mesolithic Sites in Lower Bheden Valley, Orissa. *Puratattva*. 2005;35: 164-166. <https://dn790006.ca.archive.org/0/items/in.gov.ignca.88233/88233.pdf>

16. Behera PK, Thakur N. Late Middle Palaeolithic Red Ochre Use at Torajunga, an Open-Air Site in the Bargarh Upland, Odisha, India: Evidence for Long Distance Contact and Advanced Cognition, *Heritage: Journal of Multidisciplinary Studies in Archaeology*. 2018;(6):129-147.
<https://www.heritageuniversityofkerala.com/JournalPDF/Volume6/6.pdf>
17. Deep S. Stone Tool Antiquities in Danta Stream, Bargarh Odisha. *Indian Journal of Archaeology*. 2017;2(3):23-35.
https://www.researchgate.net/profile/Dr-Lone-3/publication/322024181_Politics_of_Heritage_The_state_of_Archaeology_in_Kashmir_1846-1947/links/64475f19017bc07902d9409f/Politics-of-Heritage-The-state-of-Archaeology-in-Kashmir-1846-1947.pdf
18. Deep S. A study on Chopper-Chopping tool tradition of Palaeolithic settlements in Tel river valley, West Odisha. *Odisha Unveiled, Temporal Dimensions From Early to Contemporary Times*. Pacific Books International, New Delhi: E-Publishing Inc; 2025:116-136.
 ISBN: 10-9348285106
 ISBN: 13-978-9348285102
19. Barik K, Padhan T, Jhankar S, Mishra B, Nayak SR. A Study of Microlithic Assemblage from Kalangapali Site, Middle Ong Valley, Odisha, Eastern India. *Journal of Archaeological Studies in India*. 2023;3(1): 1-24.
[https://www.arfjournals.com/image/catalog/Journals%20Papers/JASI/2023/No%201%20\(2023\)/1_Kshirasindhu%20Barik.pdf](https://www.arfjournals.com/image/catalog/Journals%20Papers/JASI/2023/No%201%20(2023)/1_Kshirasindhu%20Barik.pdf)
20. Herz N, Garrison EG. *Geological methods for Archaeology*. Oxford University Press, Newyork. 1998.
 ISBN: 13 978-0195090246
 ISBN: 10 0195090241
21. Singh RL. *India: A Regional Geography*. Varanasi: National Geographical Society of India. 1971.
<https://archive.org/details/dli.scoerat.2120indiaaregionalgeography>
22. Mendaly S. Techno-Typological Study of Lithic Components: Prehistoric Hominin Settlements in the River Rukuda, Bonaigarh Subdivision, District Sundargarh, Odisha. *Heritage: Journal of Multidisciplinary Studies in Archaeology*. 2019;7: 426-449.
<https://www.heritageuniversityofkerala.com/JournalPDF/Volume7/25.pdf>
23. Mendaly S, Hussain S. Microlithic Industry of Odisha with Particular Reference to Bhalugarh, District Jharsuguda, Odisha: A Preliminary Report. *Heritage: Journal of Multidisciplinary Studies in Archaeology*. 2015;3: 346-369.
<https://www.heritageuniversityofkerala.com/JournalPDF/Volume3/19.pdf>
24. Petraglia M, Korisettar R, Boivin N, Clarkson C, Ditchfield P, Jones S, Koshy J, Lahr MM, Oppenheimer C, Pyle D, Roberts R, Schwenninger JL, Arnold L, White K. Middle Paleolithic Assemblages from the Indian Subcontinent Before and After the Toba Super-Eruption. *Science*. 2007;317: 114-116.
https://www.researchgate.net/publication/6223267_Middle_Paleolithic_Assemblages_from_the_Indian_Subcontinent_Before_and_After_the_Toba_Super-Eruption
25. Deep S, Rohidas A. Open Air Palaeolithic Occupations in the Lower Tel River Valley, Subarnapur District, Odisha. *Heritage: Journal of Multidisciplinary Studies in Archaeology*. 2023-24;11(2): 878-898.
<https://www.heritageuniversityofkerala.com/JournalPDF/Volume11.2/51.pdf>
26. Deep S. An observation on the use of Chert and their distribution in Prehistoric sites of Tang River Valley in west Odisha, India. *Indian Journal of Archaeology*. 2020; 5 (1):1-16.
https://www.researchgate.net/publication/374805891_An_observation_on_the_use_of_Chert_and_their_distribution_in_prehistoric_sites_of_Tang_River_Valley_in_west_Odisha_India_Sudam_Deep

How to Cite: Pradhan AK, Bhoi BK, Rana C, Sahoo N. An Initial Assessment of Mesolithic Cultural Investigations in the Suktel River Valley of Western Odisha. *Int Res J Multidiscip Scope*. 2026; 7(2): 1656-1672. DOI: 10.47857/irjms.2026.v07i02.09182