



# JOURNAL ON COMMUNICATIONS

ISSN:1000-436X

**REGISTERED**

Scopus®

[www.jocs.review](http://www.jocs.review)

## Evidence of the Mesolithic Cultural Phase in the Lower Suktel River Basin: A Study on Early Technological and Cultural Advancement

Atula Kumar Pradhan<sup>1</sup>, Bimal Kumar Bhoi<sup>2</sup>, Chudamani Rana<sup>3</sup> and Nitesh Kumar Mishra<sup>4</sup>

<sup>1</sup>Asst. Professor, School of History, Gangadhar Meher University, Sambalpur, Odisha, India

<sup>2&3</sup>Research Scholar, School of History, Gangadhar Meher University, Sambalpur, Odisha, India

<sup>4</sup> Associate Professor, School of Studies in Ancient Indian History, Culture and Archaeology, Pt. Ravishankar Shukla University, Raipur, Chhattisgarh, India

<sup>1</sup>ORCID: <https://orcid.org/0000-0001-9024-871X>

### Abstract

The main focus of this study is to clearly examine and explore the recently discovered Microlithic sites along the winding coasts of the Suktel River system and its joining areas within the landforms of Balangir and Sonepur districts in Odisha. The Suktel River, regarded as a major tributary of the Tel hydrographic system, seems to have created a vital ecological corridor that supported long-term human settlement. Evidence from the layers of soil shows that these settlements span a broad cultural timeline, from the Paleolithic period to the Historic era. Through a carefully organized archaeological analysis, researchers have identified five main Microlithic prehistoric sites spread across the area studied. These sites reveal a rich collection of stone tools, reflecting the technical skills and adaptive strategies of early human groups. The artifacts found in the lower Suktel River area provide important insights into settlement patterns, ways of living, and the shifts in population over time in this fertile environment. These findings highlight the lasting importance of this geographical area as a space suitable for either temporary or long-term human habitation. The ongoing analysis involves a detailed study of the layers, types, and locations of the Microlithic sites that have been uncovered, aiming to reconstruct aspects of prehistoric cultural development through a blend of careful observation and thoughtful interpretation.

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

### 1. Introduction

The Balangir and Sonepur region is a geographically and culturally significant zone within Odisha, with evidence of continuous human occupation from the prehistoric period through the early historic phase and into the present. This continuity is largely attributed to the region's distinctive landforms, favorable geographical position, and well-developed river system. As is well established in the archaeological record, early civilizations tended to develop along riverbanks, where fluvial systems provided essential resources for human settlement and subsistence. Within this context, the lower Suktel River valley stands out as a site of considerable archaeological importance. Artefacts recovered from the confluences of the lower Suktel River and its tributaries both major and minor span the Palaeolithic, Mesolithic, and Neolithic periods, making the region a valuable focus for prehistoric research (Pradhan *et al*, 2026).

This study presents an intensive archaeological survey of the Suktel River valley and its tributary systems within the districts of Balangir and Sonepur, Odisha. The study area contains

a substantial number of archaeological sites representing a broad cultural sequence, spanning the Mesolithic through the Early Historic periods. Several sites also preserve remains of temple architecture and colonial-era structures along the banks of the Suktel River. The region is additionally home to a number of tribal communities, lending it further anthropological and cultural relevance. Together, these elements point to a long and uninterrupted history of human occupation and cultural development in the area.

The Suktel River basin is an archaeologically rich landscape that preserves a deep record of prehistoric occupation, beginning with the lithic traditions of the Palaeolithic. Over the past three years, the authors have conducted systematic field surveys aimed at reconstructing the cultural prehistory of this fluvial corridor. Five principal sites Athgaon, Agalapali, Khari, Kharjura, and Sialjuri have been identified as key concentrations of human activity (Fig. 1, Fig. 2 and Fig. 3). Their lithic assemblages offer important insights into settlement patterns, technological development, and the early social and cultural trajectories of prehistoric communities in the largely understudied micro-region of Balangir and Sonepur.



**Figure. 1 - General view of Kharjura Site**



**Figure. 2 - Lithic Scatter from Khari Site**



**Figure. 3 - Lithic Scatter from Athgaon Site**

The term “Microlithic” in contemporary archaeological usage refers to a Mesolithic techno-complex characterized by small, geometrically shaped stone tools typically less than 40 mm in

length and rarely exceeding 4 mm in thickness. These diminutive artefacts were commonly hafted into handles or shafts made from bone, antler, or wood a practice that reflects the considerable technological sophistication of Mesolithic peoples and marks a significant turning point in the development of tool production and symbolic cognition (Orliac 1988). This study focuses on the lower Suktel region, with the aims of archaeological mapping, palaeo-environmental assessment for hominin occupation, site contextualization, and technotypical analysis of Microlithic tools, alongside an examination of the area's cultural landscape, mobility patterns, and chronology.

## **2. Earlier Microlith research on Western Odisha**

By the early decades of the twentieth century, researchers had begun identifying traces of Palaeolithic, Mesolithic, and Neolithic occupation across various parts of Odisha a scholarly trajectory that had its origins in the late 1930s and was carried forward through the contributions of numerous prehistorians whose work collectively built the lithic record of the region. In western Odisha, more recent Microlithic investigations have further advanced understanding of the prehistoric landscape, bringing the lower Suktel complex to a level of scholarly prominence it had not previously achieved in regional prehistory.

The historiography of prehistoric investigations in Odisha can be traced back to the pioneering surveys of V. Ball, a geologist whose systematic documentation of lithic artefacts from Angul, Talcher, Dhenkanal, and the Bhursapali area of Sambalpur in 1876 established the foundational stratum of archaeological awareness in the region. Ball's findings published in the Proceedings of the Asiatic Society of Bengal represented the first formal record of Palaeolithic stone implements from Odisha, and the significance of this contribution cannot be overstated: it constituted the inaugural empirical engagement with the deep prehistoric past of a region geologically rich in Archaean meta-sediments and granites, which rendered it exceptionally favourable for the preservation of paleoanthropological data in eastern India (Ball 1876).

Systematic Palaeolithic research in Odisha, however, achieved methodological consolidation only after 1939, paving the way for a succession of rigorous empirical inquiries in subsequent decades (Mendaly 2019). These investigations progressively expanded the geographic and chronological scope of prehistoric knowledge across the state. Subsequent research brought to light more than 150 Lower Palaeolithic sites from districts including Mayurbhanj, Dhenkanal, Keonjhar, Angul, Sundargarh, Sambalpur, Bargarh, Bolangir, Kalahandi, Nuapada, Phulbani, Jajpur, and Nayagarh, with the majority of sites concentrated in Mayurbhanj, Angul, Dhenkanal, and Sambalpur. Middle Palaeolithic cultures have similarly been reported from Mayurbhanj, Dhenkanal, Sundargarh, Keonjhar, Bolangir, Bargarh, and Kalahandi districts, while microlithic industries have been documented across a wide arc of the state's river valleys and upland zones.

Collectively, these investigations have prompted a paradigmatic shift in the understanding of Odishan prehistory, fostering interpretive frameworks sensitive to the region's deep chronology, lithic traditions, and the ecological contexts that shaped early human settlement in these regions.

The geomorphology of Western Odisha is principally shaped by the confluence of interconnected river systems, including the Mahanadi, Tel, Jhaun, Ong, Jira, Danta, Girsul, Kuliari, Uttali, and Ghensali. Within this intricate hydrological matrix, the first systematic

reconnaissance of Microlithic sites along the Jira River was undertaken by Mishra (Mishra, 1998), whose delineation of lithic localities in the vicinity of Bargarh town marked a significant advance in the prehistoric studies of the region. Seth subsequently extended the scope of inquiry downstream toward the Mahanadi confluence, documenting seven sites of notable significance for their Microlithic assemblages (Seth 1995). The Ong valley emerged as a further focus of methodological and interpretive research through the sustained contributions of S. Panda (Panda 1996) and K. Barik (Barik and Sabale 2021; Barik, 2022; Behera and Barik, 2022, 2023; Barik *et al.*, 2023). Complementary stratigraphic investigations were conducted in the lower Jira basin by K. Seth (Seth 1995), in the upper Jira reaches by S. Mishra (Mishra 1998), and in the lower Bheden valley by J. Naik (Naik 2005).

Between 2011 and 2015, P. K. Behera and Neena Thakur undertook extensive systematic surveys across the district, identifying numerous archaeological sites that have substantially enriched the prehistoric map of the Bargarh upland (Behera *et al* 2015; Behera and Thakur 2015; Thakur, 2015). Parallel research endeavours in the Girsul valley (Mendaly 2012) and the lower Jira catchment (Deep 2016), encompassing lithic resource analyses in the Danta (Deep 2017), Ranj (Deep 2021; Deep 2020 and Deep and Mendaly 2016), and Jhaun River (Rana 2018, Pradhan and Rana 2025; Rana and Acharya 2019; Pradhan *et al*, 2025; Pradhan and Rana 2025; Rana 2025; Pradhan and Rana 2026) corridors, have collectively expanded the empirical knowledge base pertaining to the prehistoric stratigraphy of Western Odisha.

The present research aims to conduct a comprehensive archaeological exploration of the Lower Suktel River valley, situated within the Balangir and Sonepur districts of Odisha. Preliminary surveys have revealed an exceptional palimpsest of cultural remains, spanning a continuous chrono-cultural sequence from the Microlithic to the Historic periods, distributed widely across the Suktel's riparian terraces. The valley's dynamic geomorphological character and abundant lithic resources offer considerable potential for advancing scholarly understanding of the cognitive, adaptive, and techno-cultural dimensions of early human habitation in Western Odisha.

### **3. Objectives of the Study**

The present study is guided by the following principal objectives:

1. To systematically map and document the archaeological sites distributed along the Lower Suktel River valley.
2. To assess the contemporary environmental and geomorphological conditions of the study area in order to evaluate the ecological parameters that may have governed hominin occupation and settlement.
3. To analyze the nature and composition of material culture recovered from identified sites, with particular emphasis on prehistoric tool-making practices as understood through site contextualization.
4. To conduct a rigorous techno-typological analysis of the Microlithic assemblages identified within the study area, encompassing tool typology, raw material utilization, and reduction strategies.

5.

To reconstruct the cultural landscape, mobility patterns, and chronological sequence of prehistoric human activity within the Lower Suktel River valley.

#### **4. Materials and Methodology**

##### **4.1 Geophysical Setting of the Study Area**

The fluvial ensemble comprising the Tel, Suktel, Raul, Lanth, Under, and Ong rivers delineates the principal hydrographic architecture of the Balangir district (Deep 2025). Among these, the Suktel River a prominent left-bank tributary of the Tel originates from the forested slopes of the Gandhamardan hill complex in the northwestern quadrant of Balangir district, Odisha. Pursuing an undulating and meandering course of approximately 150 kilometres through the territorial subdivisions of Patnagarh and Balangir, it ultimately confluences with the Tel River near Kharjhura village in Sonepur district. The total basin area of the Suktel extends over 2,333.61 square kilometres, and the river constitutes a sixth-order drainage system exhibiting a dendritic pattern with an elongated basin configuration and coarse drainage texture.

Physiographically, the Suktel basin is divisible into two conspicuous geomorphic units: the lofty orographic ramparts of the western and northwestern periphery, and the undulating denudational plains of the interior, sporadically punctuated by inselberg-like hillocks ascending in heterogeneous orientations. The terrain exhibits an intricate mosaic of rugged badlands, narrow alluvial corridors, and minor to median geomorphic eminences, bounded respectively by the Bargarh uplands to the north, the southwestern hill system to the south, the Gandhamardan massif to the west, and the Tel River continuum to the east. The highly concave hypsometric curve and low integral values recorded for the basin and its sub-basins indicate that the system is in the monadnock phase of geomorphic development, characterised by subdued relief and extensive flattening of the terrain conditions that would have rendered riparian terraces particularly amenable to prehistoric human settlement and resource exploitation (Jhankar 2018).

##### **4.2 Present Study Area**

The hydrographic basin encompasses an aerial expanse of 2,333.61 square kilometres, extending geographically between 20°34'N to 20°55'N latitude and 82°46'E to 83°45'E longitude. The Suktel constitutes a sixth-order fluvial system, its drainage network sustained by a series of subordinate sub-basins namely the Katangi Nala, Mayabati Nadi, Kusangai, and Nibruti Nala which collectively form the principal hydrological foci of the present study.

##### **4.3 Geological Setting**

Geologically, the Suktel basin is primarily an exposition of the Eastern Ghats Supergroup, constituted predominantly of Khondalitic, Charnockitic, and Gneissic-Migmatitic litho-associations among the oldest rock groups exposed in the region. The two prominent rock suites constituting the lithology of the Eastern Ghats Mobile Belt are the Khondalite suite, representing the metapelites, and the Charnockite suite, with later intrusive comprising ultramafic sequences, anorthosites, and granitic gneisses (Singh 1971).

The Khondalite suite, an epitome of high-grade metamorphism, is characterised by quartz–garnet–sillimanite gneiss, quartzite, calc-silicate facies, and leptynite, manifesting as discrete petrographic enclaves. The chief structural element of the Eastern Ghats rocks is a planar fabric

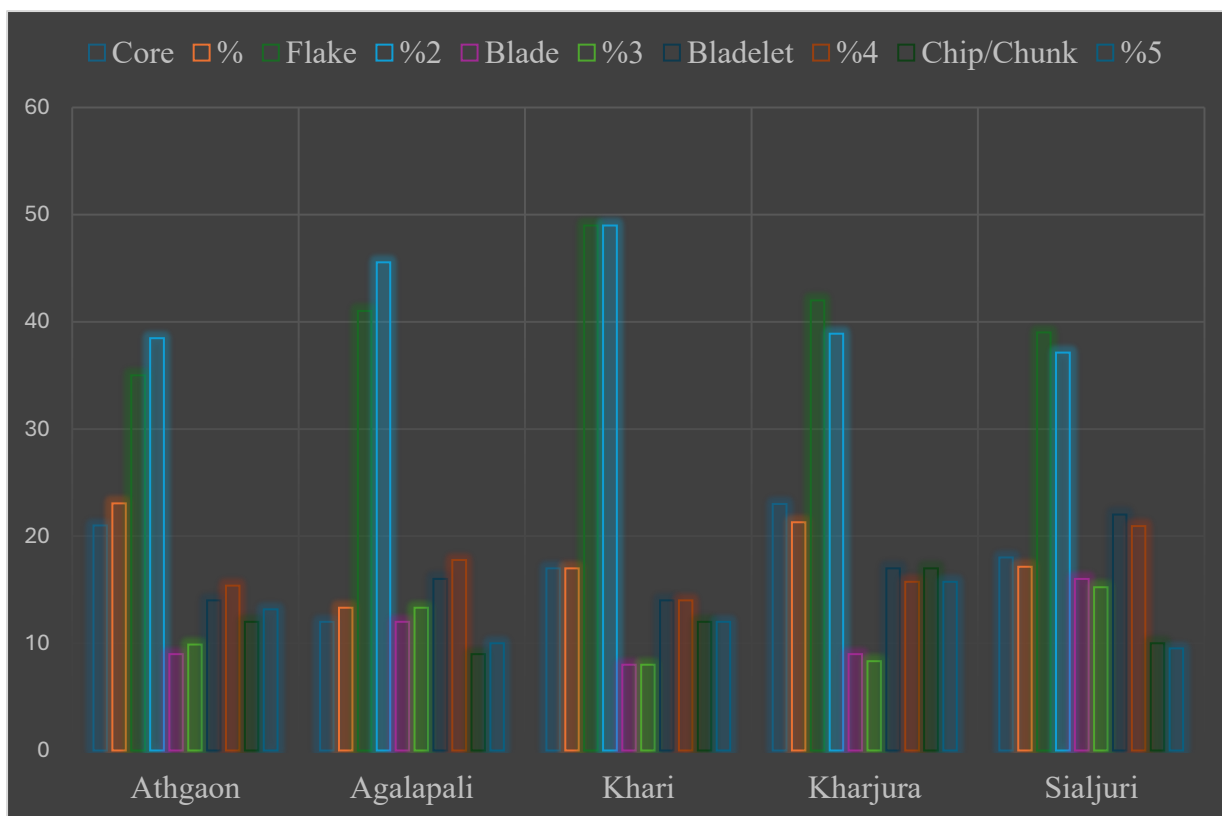
gneissosity defined by the alignment of platy minerals such as flattened quartz, garnet, sillimanite, and graphite, with the parallelism between foliation and lithological layering attributable to isoclinal folding. The gneissic assemblage further reveals the presence of porphyroblastic granite gneiss and augen gneiss, while the Charnockitic facies encapsulates acidic hypersthene granulites and basic pyroxene granulites occurring as sporadic enclaves enmeshed within the gneissic substratum. Field evidence indicates that pyroxene granulites post-date the Khondalite suite but pre-date the Charnockites and granitic gneisses, reflecting a polyphase metamorphic history correlatable with successive periods of tectonic deformation. The Charnockitic and Khondalitic assemblages are often found in petrographic concordance, a relationship consistent with the broader petrogenetic model of partial melting operative within the Eastern Ghats Belt during the late Proterozoic (Balangir district gazetteer 1968).

### 5. Lithic Assemblage of the Study Area

Five archaeological sites have been identified in the study area, namely Athgaon, Agalapali, Khari, Kharjura, and Sialjuri, during archaeological investigations conducted along the major and minor branches of the lower Suktel River. A total of 494 antiquities were recovered from these five sites. The lithic collection from the current research comprises the following categories: Cores (n = 91, 18.42%), Flakes (n = 206, 41.70%), Blades (n = 54, 10.93%), Bladelets (n = 83, 16.80%), and Chips/Chunks (n = 60, 12.14%). The findings of the present research indicate that Flakes represent the dominant tool type within the lithic assemblage (Table. 1 and Fig. 4).

**Table. 1 - Lithic assemblage of the Study area**

Name of the Sites	Core	%	Flake	%	Blade	%	Bladelet	%	Chip/Chunk	%	Total	%
Athgaon	21	23.07	35	38.46	9	9.89	14	15.38	12	13.18	91	18.42
Agalapali	12	13.33	41	45.55	12	13.33	16	17.77	9	10	90	18.21
Khari	17	17	49	49	8	8	14	14	12	12	100	20.24
Kharjura	23	21.29	42	38.88	9	8.33	17	15.74	17	15.74	108	21.86
Sialjuri	18	17.14	39	37.14	16	15.23	22	20.95	10	9.52	105	21.25
Total	91	18.42	206	41.70	54	10.93	83	16.80	60	12.14	494	99.98



**Figure. 4 - Bar graph of the Lithic Assemblage of the Study Area**

### 6. Utilization of the Raw Materials

The Gandhamardan hill complex, a prominent geomorphic feature of considerable lithodynamic importance, functioned as both a primary source of lithic raw materials and a primordial workshop where prehistoric hominins engaged in sustained technological interactions with local rocks. These early communities, driven by perceptive judgment and growing technological acumen, likely practiced a stratified exploitation of different rock types, resulting in continuous refinements to their knapping techniques and broader technological repertoire (Table. 2 and Fig. 5).

Among the lithic raw materials identified in the study area, Chert (65.38%) emerges as the most significant, owing to its wide local availability. It can be broadly classified into several categories based on texture and quality, distinguished by its fine-grained microcrystalline structure and excellent conchoidal fracturing properties. During the early Holocene, chert served as the primary raw material for tool manufacture, as its superior knapping properties facilitated the production of microliths.

**Table. 2 - Raw Materials of the Study Area**

Name of the Sites	Quartzite	%	Chert	%	Quartz	%	Agate	%	Jesper	%	Total	%
Athgaon	14	15.38	56	61.53	9	9.89	6	6.59	6	6.59	91	18.42
Agalapali	9	10	60	66.66	11	12.22	5	5.55	5	5.55	90	18.21
Khari	13	13	65	65	8	8	9	9	5	5	100	20.24
Kharjura	16	14.81	75	13.88	7	6.48	4	3.70	6	5.55	108	21.86
Sialjuri	13	12.38	67	63.80	9	8.57	11	10.47	5	4.76	105	21.25
Total	65	13.15	323	65.38	44	8.90	35	7.08	27	5.46	494	99.98

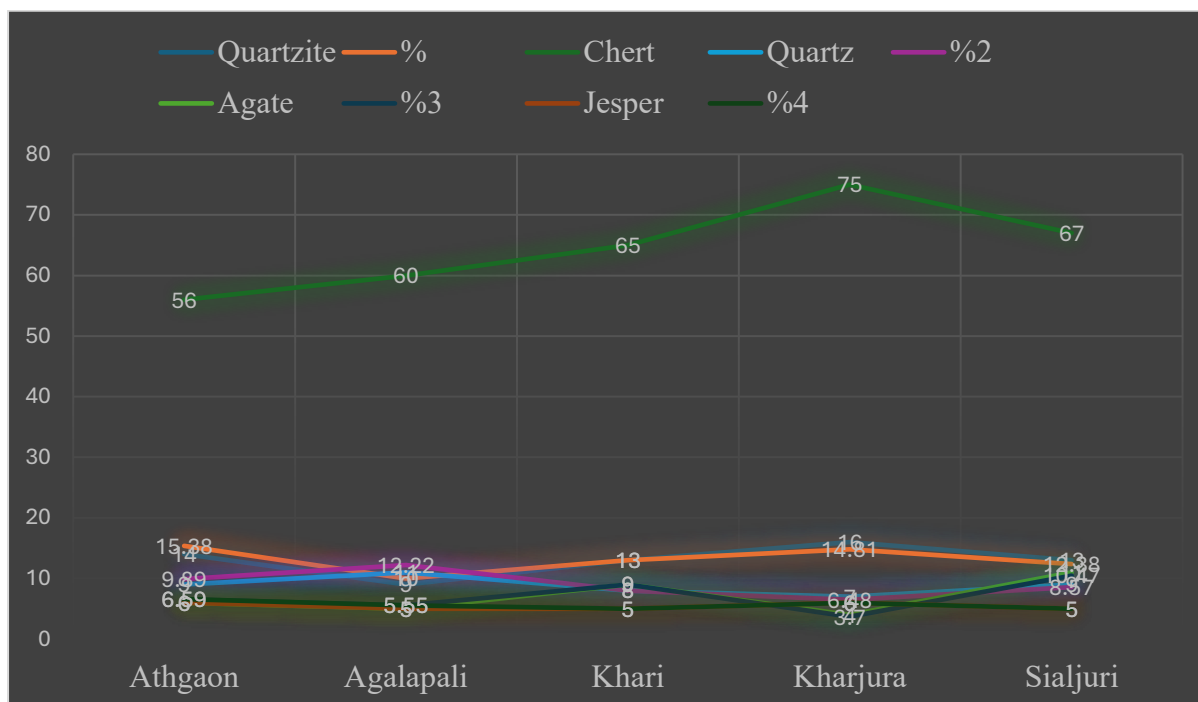


Figure. 5 - Line Chert of the Study Area

## 7. Result

The tool typology of the assemblage points to a clear technological transition from core, biface, and chopper-chopping tool traditions toward a more complex flake-oriented technological system, fundamentally shaped by the Levallois reduction strategy. Diagnostic types such as choppers, chopping implements, side scrapers, lunates, and pointed tools reflect a refined and evolving lithic industry, marking a discernible shift in cognitive and technological capabilities. This progression from simple core and chopper-chopping tools to a sophisticated flake-based toolkit demonstrates the increasing technological sophistication of hominin groups employing the Levallois method across the subcontinent.

## 8. Morpho-structural taxonomy of Prehistoric Artefacts

### 8.1 Core

Cores are the main lithological substrates. They usually consist of flint nodules or slabs. These cores are classified based on their shape and the technology used to create products like blades, bladelets, and flakes. Cores are the main source of lithic waste and come in many shapes. They show the end result of a process that includes the removal of material, tool making, and the use of resources (Mendaly 2019). The archaeological survey found 428 core tools in the area. The types identified include flake cores, blade cores, blade-bladelet cores, and flake-blade cores. The main materials used were quartzite, quartz, chert, agate, and chalcedony (Fig.6).



**Figure. 6 - Core tools of the Sialjuri Site**

**8.2 Flake**

Flakes are crucial for prehistoric people and are key in their transition process. Many scholars define the Middle Paleolithic and late Middle Paleolithic as times of flake-based industries. These periods show notable stability in tool types. They remained surprisingly uniform both geographically and chronologically, with varied tool production where flake tools were essential (Delagnes and Meignen 2006; Boëda 1994; Mendaly and Hussain 2015).

This study records a total of 203 flake artifacts, accounting for 41.34%, primarily found in the Lower Suktel River basin. The lithic materials present in the collection consist of Quartzite, Quartz, Chert, Jasper, and Agate, indicating both local sourcing and intentional procurement methods (Fig. 7).

### **8.3 Blade**

Blades are defined by a length-to-width ratio of no less than 2:1 and less than 20% dorsal cortex, often displaying one or more dorsal ridges that run approximately parallel to the percussion axis (Petraglia *et al*, 2009).

Archaeological investigations in the Lower Suktel River valley, especially at site N - 49 (9.97%), have produced a significant collection of Blades. Initial evaluations of raw materials suggest that Blades were mainly crafted from locally obtained Quartzite and Chert, with artifacts showing limited weathering and an exceptional level of preservation. The majority of the items are made from black, green, and brown Chert, characterized by sharp edges and precise morphology, highlighting their effectiveness in various functional applications, particularly for cutting and slicing tasks (Fig. 8).

### **8.4 Bladelet**

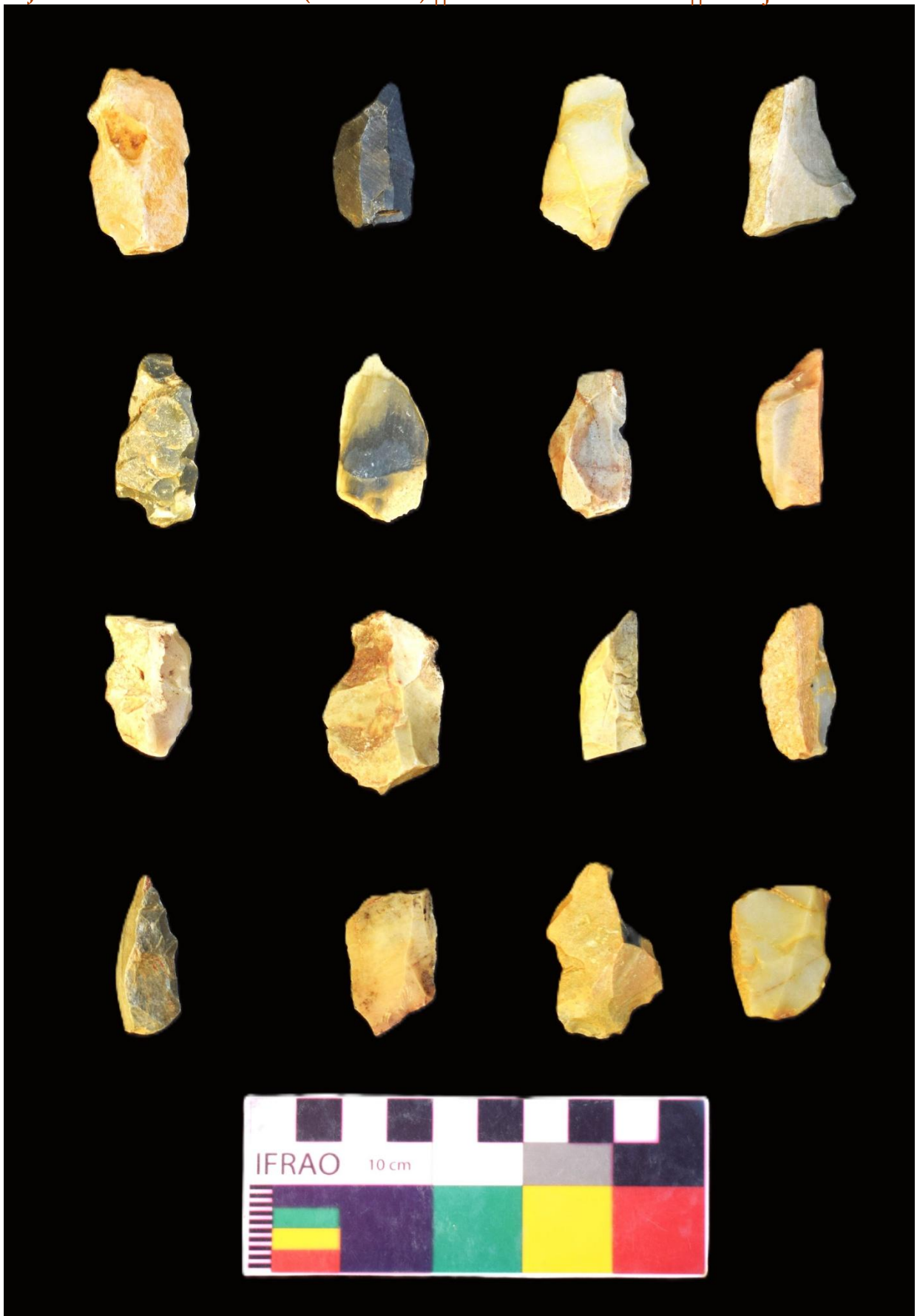
The term Bladelet refers to a category of Blades that measures less than 50 mm in length and has a maximum width of under 12 mm (Tixier 1963). Bladelets are defined as small, slender stone micro-Blades, typically ranging from 5 to 11 mm in width and approximately 15 to 45 mm in length (Mendaly 2019 and Mendaly and Hussain 2015). The survey recorded a total of 80 (16.29%) Bladelets, primarily made from Chert and Agate, indicating advanced lithic reduction techniques (Fig. 9).

### **8.5 Chip/Chunk**

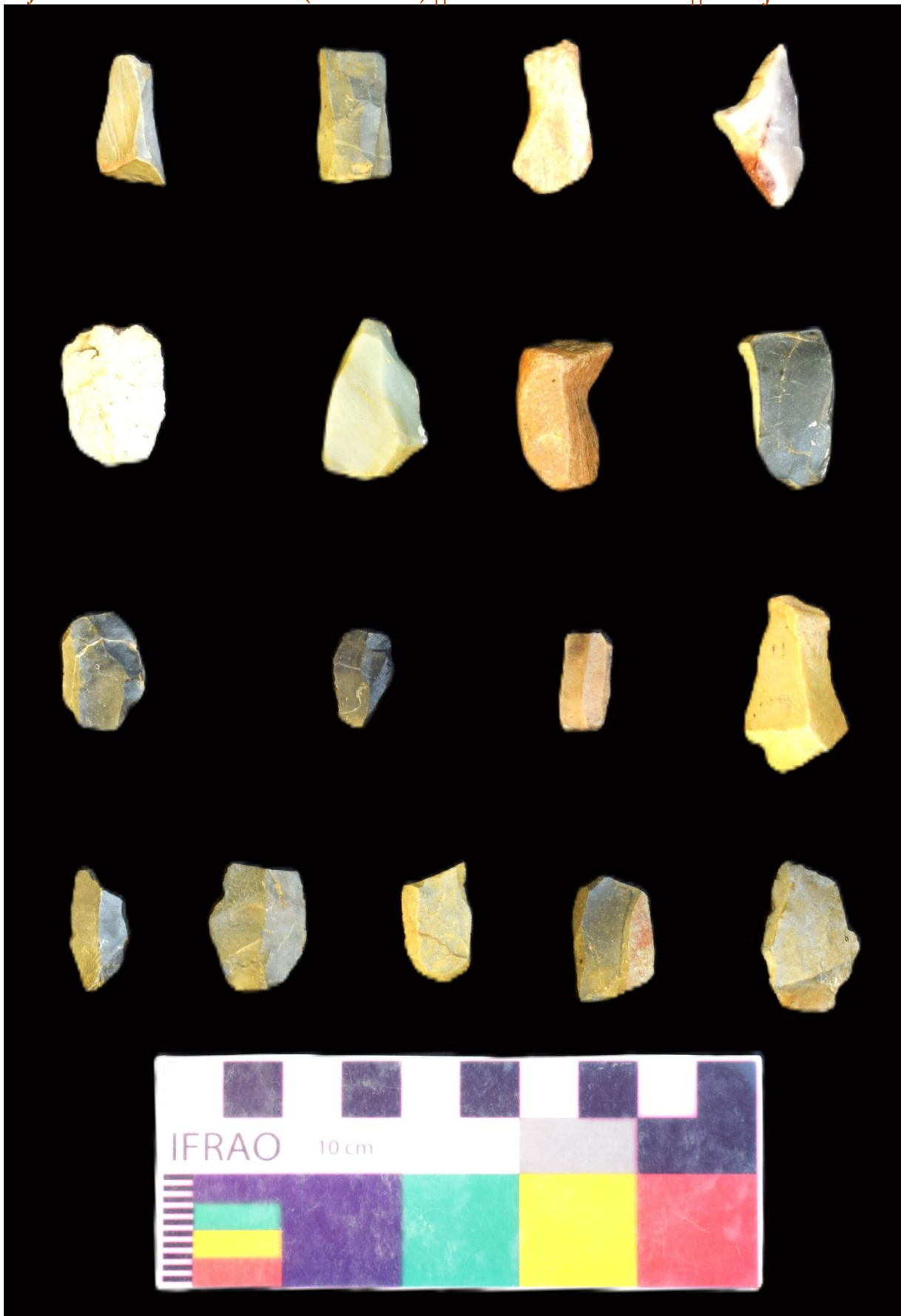
Specimens that did not belong to any group, such as Core, Flake, Blade, or Bladelet, were frequently discovered during artefact categorisation; these were referred to as Chips or Chunks. Not every specimen could be classified as a particular artefact, despite the fact that prehistoric people made a wide range of tools using various techniques. These pieces occasionally looked to be big objective pieces that could not be categorised, or they were thinner, measuring less than 2 cm. These particles are referred to as non-Flake debitage in morphological typology (Anderfsky 1998). During the survey, 54 chips and chunks were found in the study area's lithic assemblage.



**Figure. 7 - Flake tools of the Sialjuri Site**



**Figure. 8 - Blade Tools of the Sialjuri Site**



**Figure. 9 - Bladelet Tools of the Sialjuri Site**

### **9. Techno – Typological Analysis**

For the techno-typological analysis of the current research, four debitage categories are followed: Core, Flake, Blade, and Bladelet. Their respective counts and percentages are

**Journal on Communications(1000-436X) || Volume 21 Issue 4 2026 || www.jocs.review**  
detailed in Table 3. A total of 38 tools were selected for techno-typological analysis. Table 3 represents the techniques and methods used to shape them, with the following debitage breakdown: Core (N - 1), Flake (N - 21), Blade (N - 7), and Bladelet (N - 9).

Various tool types are represented in Table 3. Partially Retouched, Denticulate, and Backed Bladelet each account for N - 6 (15.78%), followed by Notch (N - 4, 10.52%) and Notches (N - 6, 6.74%). Tools such as Side Scraper, Marginally Retouched, End Scraper, and Awl are also well-represented. Rare tool types, including Levallois Core, reflect the presence of prepared core technologies alongside geometric forms. The assemblage composition revealed through the techno-typological analysis of the study area indicates a microlithic complex characterized by secondary retouching and flake-based production strategies. These production patterns likely reflect a well-adapted toolkit developed in response to specific functional requirements.

**Table. 3 - Techno – Typological Analysis of the Study Area**

Sl.no	Tool type	Debitage Type				Total	Percentage
		Core	Flake	Blade	Bladelet		
1	Awl	---	3	---	---	3	7.89
2	Backed Bladelet	---	---	---	6	6	15.78
3	Denticulate	---	4	2	---	6	15.78
4	End Scraper	---	2	1	---	3	7.89
5	Lunate	---	---	---	2	2	5.26
6	Marginally Retouched	---	3	---	---	3	7.89
7	Micro Burin	---	1	---	---	1	2.63
8	Notch	---	4	---	---	4	10.52
9	Partially Retouched	---	4	1	1	6	15.78
10	Side Scraper	---	---	3	---	3	7.89
11	Levallois Core	1	---	---	---	1	2.63
	<b>Total</b>	1	21	7	9	38	99.94

## 10. Discussion

Recent field investigations have brought to light five principal prehistoric sites in the lower reaches of the Suktel River valley, underscoring the significance of early human occupation in the Balangir and Sonepur districts of western Odisha. The identification of prehistoric sites within the fluvial system suggests that early inhabitants deliberately selected ecologically favorable locations for habitation, making use of locally available raw materials and natural resources, and likely engaging in seasonal migration. The river valley also served as a natural corridor, facilitating repeated multi-phase occupation from the Paleolithic to the Mesolithic periods. The observed settlement pattern further reflects a well-documented archaeological tendency, wherein proximity to freshwater sources played a decisive role in the selection of suitable habitation zones.

The lithic assemblage and techno-typological analysis of stone tools from the study area, encompassing microliths such as blades, scrapers, and points, indicate a technologically sophisticated tradition. These tools reflect a subsistence economy centred on hunting and food gathering, demonstrating both technological continuity and adaptability over time. Their predominant occurrence in open-air settings along the river valley further highlights a nuanced pattern of landscape use, likely associated with seasonal movements and task-specific functional activities.

## 11. Conclusion

The primary objective of this study has been to illuminate the cultural palaeogeography and technological configuration of the Microlithic phase within the Lower Suktel River basin of the Balangir and Sonepur regions of western Odisha. The techno-typological spectrum of the lithic collection, encompassing polyhedral and prismatic cores, elongated blades, small bladelets, and retouched geometric pieces, firmly situates these assemblages within the broader pan-Indian Microlithic tradition. The spatial distribution of sites reveals a consistent pattern of settlement, predominantly along riverine corridors and basal slopes, where erosional exposures have yielded stratified lithic deposits of considerable archaeological significance.

The ecological richness of the Lower Suktel basin, characterized by diverse resources and perennial water availability, likely attracted prehistoric forager groups practicing cyclical or seasonal mobility. These Mesolithic populations appear to have adopted a semi-nomadic lifestyle centred on hunting, foraging, and the opportunistic procurement of raw materials, gradually transitioning toward more organized and territorially defined movement patterns. While numerous surface artefact scatters have been recorded, the majority occur in redeposited or secondary contexts, underscoring the pressing need for systematic stratigraphic excavation to establish an absolute chronology for the microlithic occupation of this region.

Despite observable typological diversity, the assemblage of the study area displays strong stylistic and technological coherence, reflecting a shared operational approach to stone tool production. Future research, including scientific dating methods, should prioritize the identification of primary-context stratified deposits of cultural significance, the construction of a robust chronological framework, and the clarification of subsistence strategies, technological adaptations, and mobility patterns of the early hominin foragers who once inhabited the Lower Suktel River valley, along with other related aspects of their behavioural and cultural repertoire.

## Reference

- Pradhan, A.K., B.K. Bhoi, and C. Rana. (2026). Archaeological Exploration of Lower Suktel River of Western Odisha: A Preliminary Observation, *AHURI*, 19 (2), 128-148.
- Orliac M. (1988). Microlithe. In Leroi-Gourhan A. (ed.), *Dictionnaire de la préhistoire* Paris: Quadrige/PUF.
- Ball, V. (1876). On Stone implements found in the tributary states of Orissa. *Proceedings of Asiatic Society Bengal*, 120-121.
- Mendaly, Subodha. (2019). Techno-Typological Study of Lithic Components: Prehistoric Hominin Settlements in River Rukuda, Bonaigarh Subdivision, District Sundargarh, Odisha. *Heritage: Journal of Multidisciplinary Studies in Archaeology* 7: 426-449.
- Mishra, S. (1998). *Archaeological Investigation in the Upper Jira valley, Orissa with particular Reference to the Mesolithic Industries*. Unpublished M. Phil. thesis, P.G. Department of History, Sambalpur University.
- Seth, K. (1995). *A study Of Mesolithic Sites of High Land Odisha, With Particular Reference to Lower Jira Valley*. Unpublished M.Phil. thesis, Post-Graduate Department of History, Sambalpur University.
- Panda, S. (1996). *A Survey of Archaeological sites of Ong valley, Orissa with Special Reference to the Mesolithic Industries*. Unpublished M.Phil. thesis, Post-Graduate Department of History, Sambalpur University.
- Barik, K. and P.D. Sabale. (2021). 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*. 12: (11). 1–20.
- Barik, K. (2022). *Prehistoric Investigation in Southern Bargarh Upland with Special Reference to the Meddle Ong Valley, Odisha*, Unpublished Ph.D. Thesis. Pune: Deccan College.
- Behera, P. K. and K. Barik. (2022). Recently Discovered Middle Palaeolithic Foothill Site at Kundakhai in the Southern Bargarh Upland of Odisha: A Preliminary Report, *Ancient Asia*, 13(8): 1-24.
- Behera, P.K. and K. Barik. (2023). Recent Investigation into the Probable Late Palaeolithic Rock- Art Sites in the Northern Bargarh Uplands, Odisha. *Journal of Historical, Archaeological and Anthropological Studies*. 1(1): 63-80.
- Barik, K. T. Padhan, S. Jhankar, B. Mishra, and S. R. Nayak. (2023). A Study of Microlithic Assemblage from Kalangapali Site, Middle Ong Valley, Odisha, Eastern India, *Journal of Archaeological Studies in India*, 3(1): 1-24.
- Naik, J.S. (2005). New Discovery of Mesolithic Sites in Lower Bheden Valley, Orissa, *Puratattva*, 35, 164-66.
- Behera, P.K. P. Sinha, and N. Thakur. (2015). Barpadar: An Acheulian site in the Upper Jira River Basin, District Baragarh, Odisha, *Man and Environment*. XL (1):1-13.
- Behera, P.K. and N. Thakur. (2015). Middle Paleolithic Red Ochere Use at Torajunga, an Open-air site in the Bargarh Upland, Odisha, India: Evidence for Long Distance Contact and Advance Cognition, *Heritage journal of multidisciplinary studies in Archaeology*, 6, 129-147.

Thakur, N. (2015). *A study of Acheulian industries of Bargarh upland with special reference to the Jira river valley Orissa*, Ph.D. thesis, Post-Graduate Department of History, Sambalpur University.

Mendaly, S. (2012). *A Study of Microlithic Assemblage in Girisul River stream, With Particular Reference to Bargarh Upland in Orissa*, Unpublished M.Phil. thesis, Post-Graduate Department of History, Sambalpur University.

Deep, S. (2016). *A study of Microlithic industries in the Bargarh upland, Dist-Bargarh, Orissa with special reference to river Jira*, Unpublished Ph.D. Thesis, Sambalpur University.

Deep, Sudam. (2017). Stone Tool Antiquities in Danta Stream, Bargarh, Odisha, *Indian Journal of Archaeology*, 2, 23-35.

Deep, Sudam. (2021). Lithic Materials Utilization for Microlithic Tool Production in the Ranj River Valley of West Odisha, *Journal of Archaeological Studies in India*, 1 (1), 46-61.

Deep, Sudam. (2020). Techno-typological Study of Microliths recovered from the Jira valley of Bargarh Upland, Odisha, *Recent Development in Historical and Archaeological Research in Orissa*. (Edited by Sakir Hussain and Subodha Mendaly), Walnut Publication, Bhubaneswar. 32-54.

Deep, S. and S. Mendaly. (2016). Microlithic Settlements in Lower Ranj Stream, District Bargarh, Western Odisha: A Preliminary Report, *Heritage: Journal of Multidisciplinary Studies in Archaeology*, 4, 293-311.

Rana, C. (2018). *Recently Explored Prehistoric Rock Shelters in Bargarh District*, Unpublished M.Phil. Thesis, Ravenshaw University, Cuttack.

Pradhan, A.K. and C. Rana. (2025). Preliminary archaeological survey on the Barapahad hill foothill and Jhaun river valley: an exploratory study, *IJMER*, 14, 2 (3), 13-26.

Rana, C. and S.K. Acharya. (2019). Recently explored Prehistoric Rock Shelters of Bargarh District, Odisha, *Indian Journal of Archaeology*, 4, 12-31.

Pradhan, A.K. C. Rana. And N. Sahoo. (2025). Palaeoecological Insights and Techno-Typological Characteristics of Microlithic Assemblages in the Barapahad Hill and Jhaun River Valley of Bargarh Upland, Odisha, *International Research Journal of Multidisciplinary Scope*, 6(3), 1366-1378.

Pradhan A.K. and C. Rana. (2025). A Techno-Typological Analysis of Microlithic Sites in the Jhaun River Valley and Barapahad Hill, *Puratattva*, 55, 9-19.

Rana, C. (2025). *Archaeological Investigation of the Prehistoric cultures of Bargarh district: A Case study of Barapahad hill and Jhaun river Valley*, Unpublished Ph.D. Thesis, School of History, G.M. University Sambalpur.

Pradhan and Rana. (2026). Deciphering the Cognitive Genesis of Early Humans: Techno-Typological Insights from Microlithic Assemblages of the Lower Jhaun River during the Late Pleistocene to Early Holocene Epoch, *KRONIKA*, 26 (3), 402-428.

Deep S. (2025). A study on Chopper-Chopping tool tradition of Palaeolithic settlements in Tel river valley, West Odisha. In Sasmita Rani Sasini Eds, *Odisha Unveiled, Temporal Dimensions From Early to Contemporary Times*. Specific books international, New Delhi: E-Publishing Inc, 116-136.

Jhankar, S. (2018): Archaeological investigation on the Suktel valley, with special reference to early historic sites, Unpublished M.Phil. Thesis, Sambalpur University, 1-63.

Singh, R.L. (1971). *India: A Regional Geography*, Varanasi: National Geographical Society of India.

Balangir District Gazetteer, 1968.

Mendaly, S. (2019). Techno-Typological Study of Lithic Components: Prehistoric Hominin Settlements in River Rukuda, Bonaigarh Subdivision, District Sundargarh, Odisha, *Heritage: Journal of Multidisciplinary Studies in Archaeology*, 7, 426-449.

Delagnes, A., and L, Meignen. (2006). Diversity of Lithic Production Systems During the Middle Paleolithic in France Are There Any Chronological Trends? In *Transitions Before the Transition*. Erella Hovers and Steven L. Kuhn (edited), *Springer*, USA, pp-85-107.

Boe'da, E. (1994). *Le concept Levallois: variabilite' des me'thodes*. Paris: CNRS.

Mendaly, S. and S. Hussain. (2015). Microlithic Industry of Odisha with Particular Reference to Bhalugarh, District- Jharsuguda, Odisha: A Preliminary Report, *Heritage: Journal of Multidisciplinary Studies in Archaeology*, 3, 346-369.

Petraglia, M., Clarkson, C., Boivin, N., Haslam, M., Korisettar, Chaubey, R. and Ditchfield, P. (2009). Population increase and environmental deterioration correspond with microlithic innovations in South Asia ca. 35,000 years ago. *Proceedings of the National Academy of Sciences of the USA*, 12261-12266.

Tixier, J. (1963). Typologie de l'Acheuleen nord-africain. Notes Typologiques. In: *Congress Prehistorique de France*, erae session, Poitiers, Angouleme, XV.

Andrefsky, Jr. William. (1998). *Lithics: Macroscopic Approaches to Analysis*, Cambridge. Cambridge University Press.