

PRELIMINARY OBSERVATION AT THE PREHISTORIC SITE OF KHAIRI-BHANDAN RIVER BASIN, MAYURBHANJ, ODISHA



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GEOGRAPHICAL CONTEXT

- Northern Odisha is an extension of the **lowest step of the Chotanagpur Plateau**, characterized by **hilly and broken terrain**.
- The **Similipal National Park** is centrally located in **Mayurbhanj district**, Odisha recognized as one of **India's key biodiversity, National Park zones**.
- It acts as a **biogeographical bridge** between the **Chotanagpur region** of the Deccan Peninsular plateau and the **Mahanadi east coast area** of the Oriental realm.

GEOLOGICAL BACKGROUND

- The **Similipal complex**, forming the core geology of Mayurbhanj, belongs to the **Archaean age** and lies over **Singhbhum Granite** and **Banded Iron Formation (BIF)**.
- This complex features a **volcano-sedimentary basin** composed mainly of **mafic volcanic rocks and quartzite**.
- Key geological units include, **Lulung Formation** (quartzite-phyllite heterolith), **Barehipani Formation** (volcanic rocks with peridotite-gabbro), **Jurunda Formation** (quartz arenite).

RIVER SYSTEMS

- Several rivers originate from Similipal National Park: Budhabalanga, Khadkhai, Deo, Palpala, **Khairi**, **Bhandan**, Salandi, etc.
- Rivers flow in different directions, shaping the region's hydrography.

NATIONAL PARK

- 1,078 plant species recorded in the Similipal National Park.
- Includes 94 species of orchids.

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Valentine Ball
(1876)
Angul, Talcher,
Dhenkanal & Sambalpur

Paramananda
Acharya
(1923-24)
Baidyapur, MBJ

E.C. Worman Jr. &
Acharya
(1939)
Kuliana, MBJ

Mishra, S.K.
(1987-88, 1990)
Jashipur, MBJ

Thapar, B.K.
(1961-62)
Kuchai, MBJ

N.K. Bose & D. Sen
(1948)
Kuliana

Basa, K.K.
(1984, 1994)
Similipal area, MBJ

D. Mitra &
S. Chakravarti
(1958-59)
Banaikakla, MBJ.

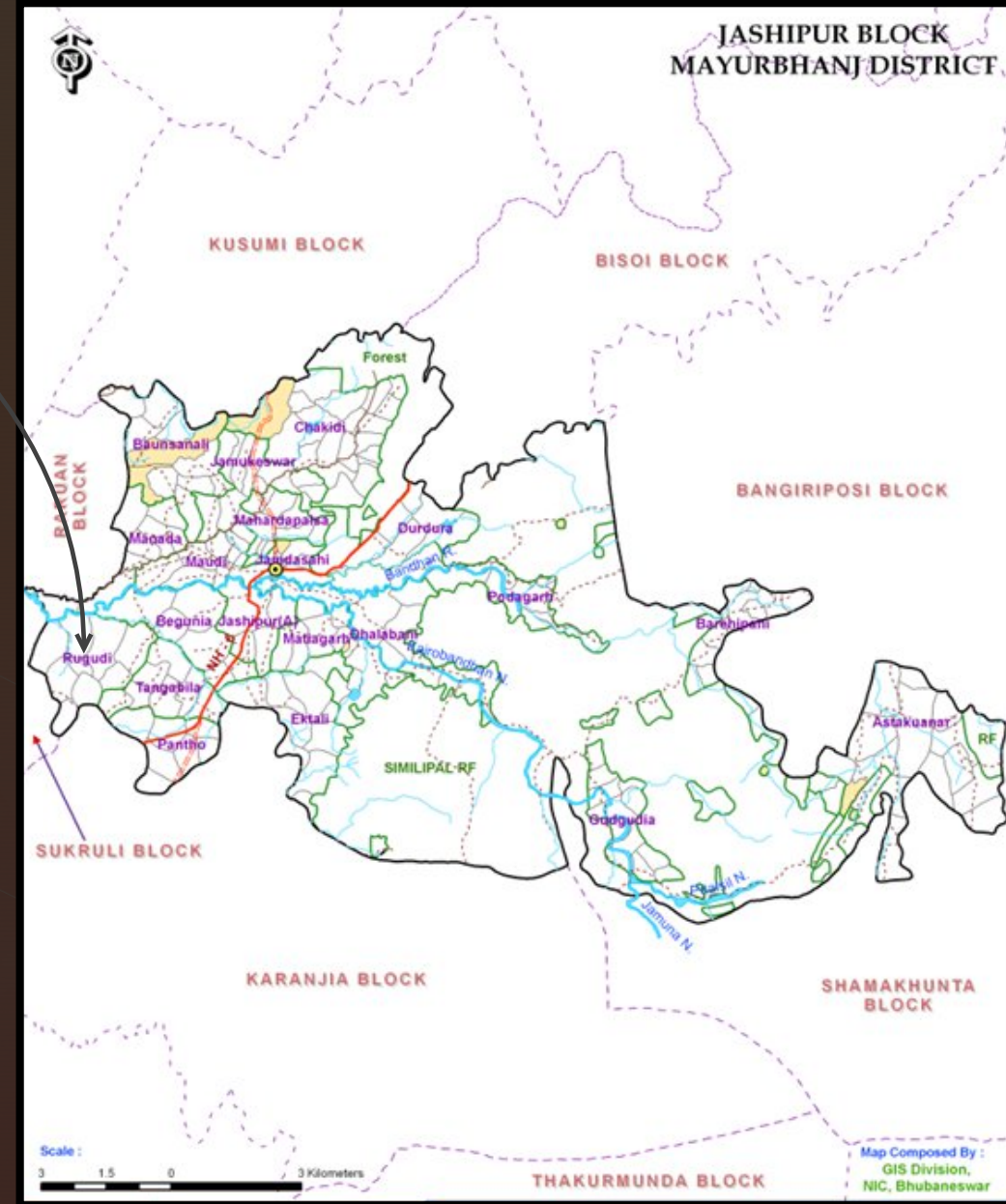
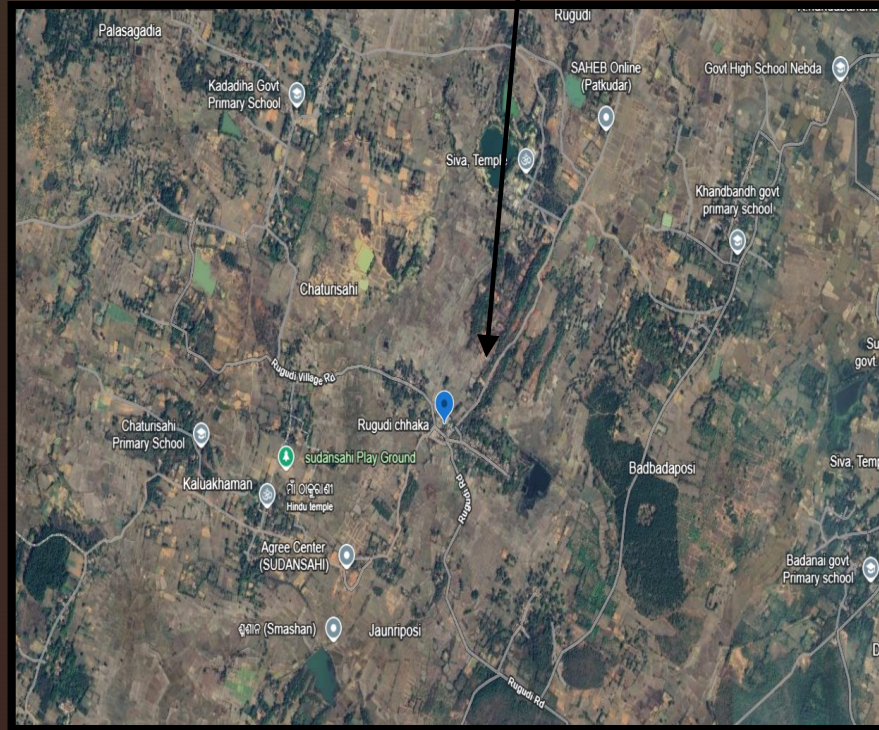
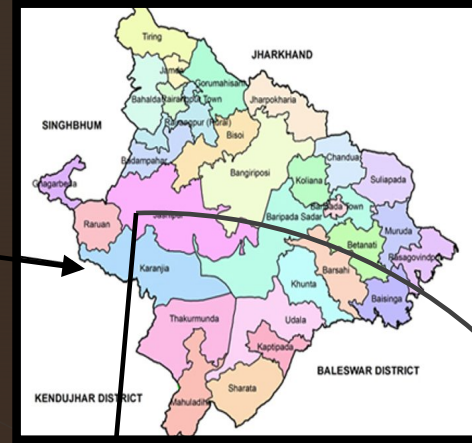
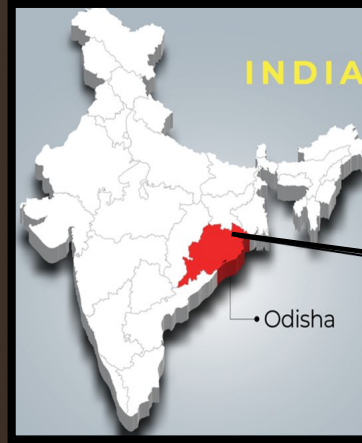
Basa, KK &
Mohanty, PK
(2000)
Kuliana

Garnayak, DB
(2018)
Similipal region, MBJ

Ambuj, M.
(2016)
General Survey in
Archaeology

Mohanta, B.
(2000, 2005, 2013)
Neolithic tools, Iron
Smelting, MBJ

- A major gap exists in the **Panchpir subdivision** of Mayurbhanj, which includes **Karanjia, Jashipur, Thakurmunda**, and other areas.
- Panchpir is strategically located at the **northern fringe of the Similipal Biosphere Reserve**, offering ideal prehistoric conditions due to:
 - Rocky outcrops
 - River valleys
 - Dense forests
- Despite the ecological suitability and **anecdotal evidence** (e.g., microliths and habitation remnants shown to the author), **systematic archaeological work** in Panchpir is lacking.
- There is strong **cultural and geological continuity** between Panchpir and other well-researched prehistoric sites in Northern Odisha, suggesting a need for **comparative and synthetic research**.
- **The absence of fieldwork in the present study area of Panchpir:**
 - Leaves a significant gap in Odisha's prehistoric archaeological record
 - Prevents full understanding of **regional human adaptation and cultural development**



Location of Jamda (After Google Earth map; Not to the Scale, GIS map in Scale)

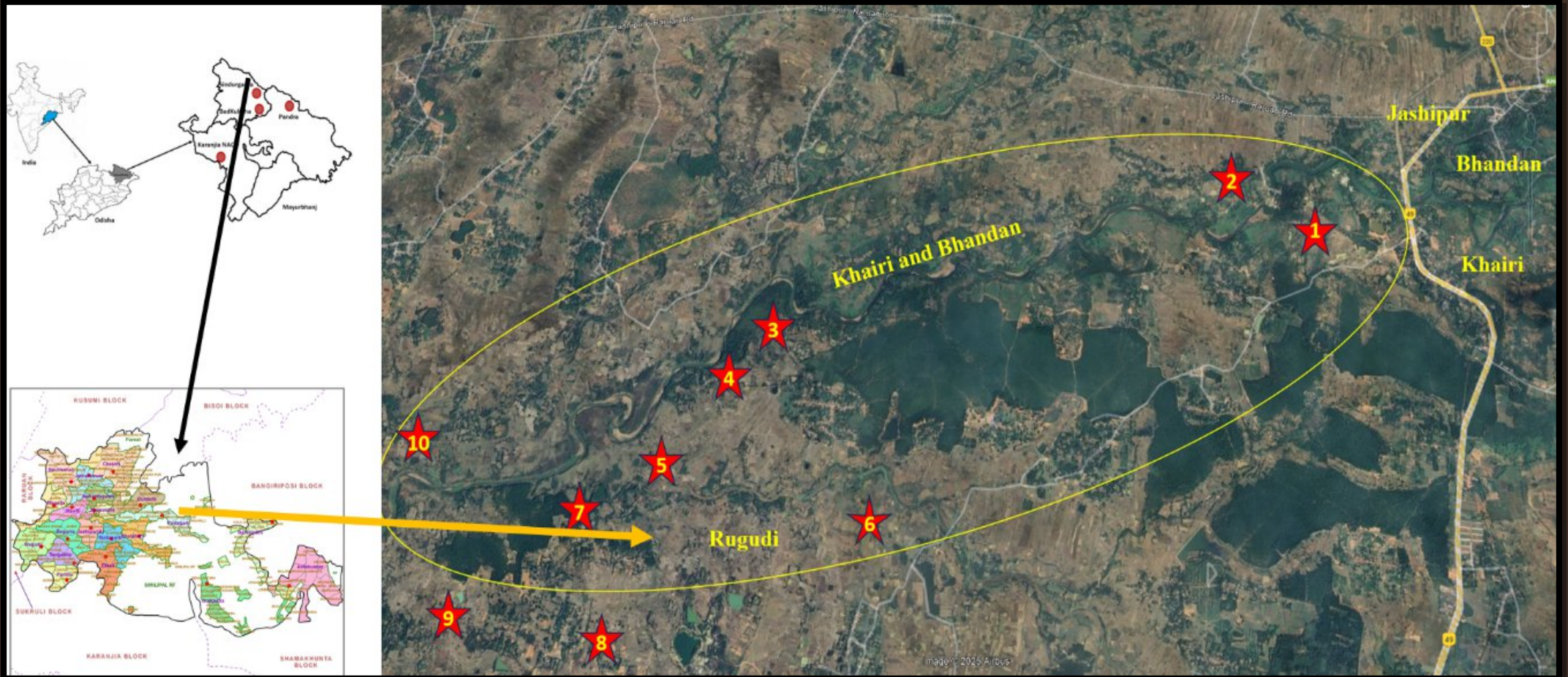
The main² objective of the present research was to locate prehistoric sites in their various geological contexts to develop a regional archaeological picture to understand the nature, occurrences and expansion of prehistoric settlements.

1. To understand the geology, geomorphology, and geo-archaeology of the Khairi-Bhandan River basin.
2. To locate and discern the prehistoric raw material exploitation.
3. To develop an understanding of the lithic assemblages by analysing various means of statistical methods in order to understand the typo-technological and morphological variability.
4. To understand the inter-regional and intra-regional variability in the lithic assemblages.
5. To get some idea about the relative chronology of the Stone Age cultures in this region.

- This study utilized a multidisciplinary approach, employing both traditional archaeological fieldwork and geospatial technologies in the study of the prehistoric cultural landscape of the Khairi-Bhandan River basin in Mayurbhanj, Odisha. For more than two weeks, cumulative and systematic exploration on foot, over erosional surfaces and riverbeds, facilitated investigations of possible prehistoric areas of habitation and tool-bearing layers

The location of all identified sites and artefacts spatially using

- Google Earth imagery,
- GPS (Global Positioning System)
- Mobile GPS Camera to capture GPS coordinates and elevation information.
- Toposheet study (1:50,000 Scale)
- Site photography
- On site photography of the artifacts with geocoordinate
- 3D Photography and Photo editing of artifacts with Adobe Photoshop-7
- Typo-Technological and Raw-material Analysis
- Matric analysis with MS-Excel and SPSS-20 software
- Use of GIS Maps to identify the sites, location and drainage systems
- Use of IFRAO / ASI Scale



Distribution of Sites in Khairi Bhandan basin (1. Jamda, 2. Ramatirtha, 3. Jaunriposi, 4. Rugudi-1, 5. Rugudi-2, 6. K. Handabandha, 7. Kadadiha-1, 8. Kadadiha-2, 9. Kaluakhman, 10. Jethama)

GEOMORPHOLLOGY

No. Of
Tools

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Location of Jamda (After Google Earth map;
Not to the Scale)



Geomorphology of Jamda site with its
Geo-coordination

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Location of Ramatirtha (After Google Earth
map; Not to the Scale)



Geomorphology of Ramatirtha site

61

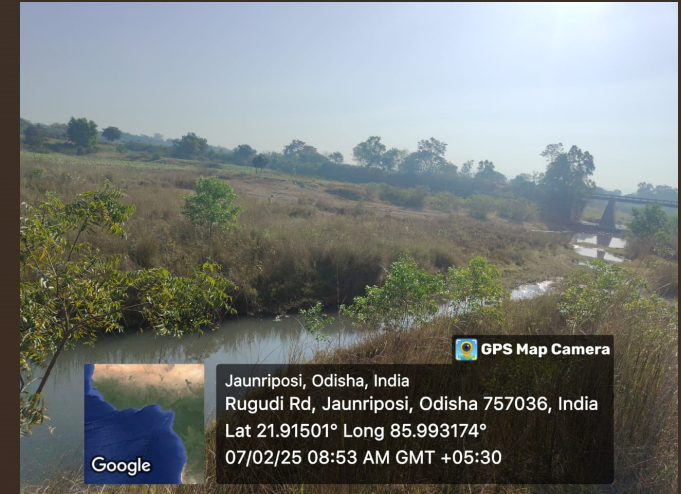
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Location of Jaunriposi (After Google Earth map; Not to the Scale)



Geomorphology of Jaunriposi site with its Geo-coordination



Drainage System at Jaunriposi site with its Geo-coordination



Location of Rugudi-1 (After Google Earth map; Not to the Scale)



Seasonal stream at Rugudi-1 with its Geo-coordination



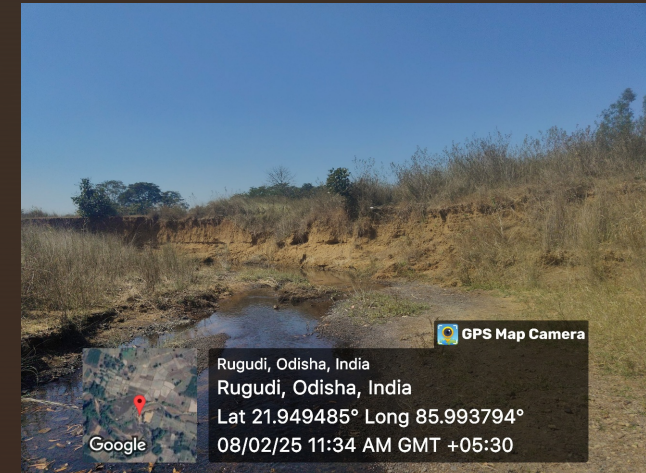
River Section at Rugudi-1 site with its Geo-coordination



Location of Rugudi-2 (After Google Earth map; Not to the Scale)



Erosional sections and mounds at Rugudi-2 site with its Geo-coordination



Geo-coordination of the River Section at Rugudi-2



Location of K. Handabandha (After Google Earth map; Not to the Scale)



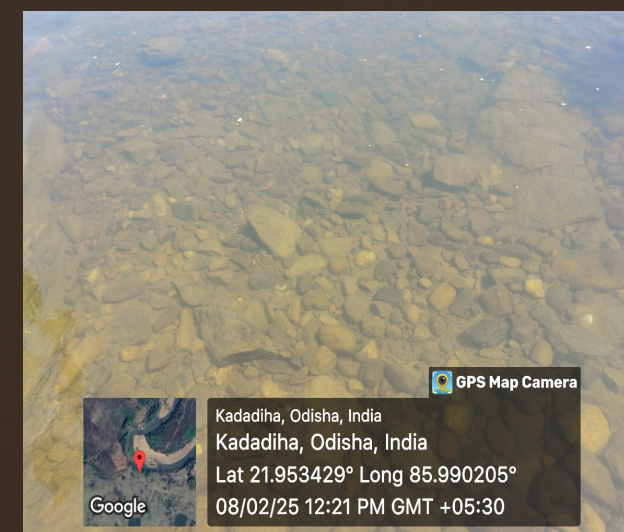
Geographical and Geo- Morphological Landscape of Site



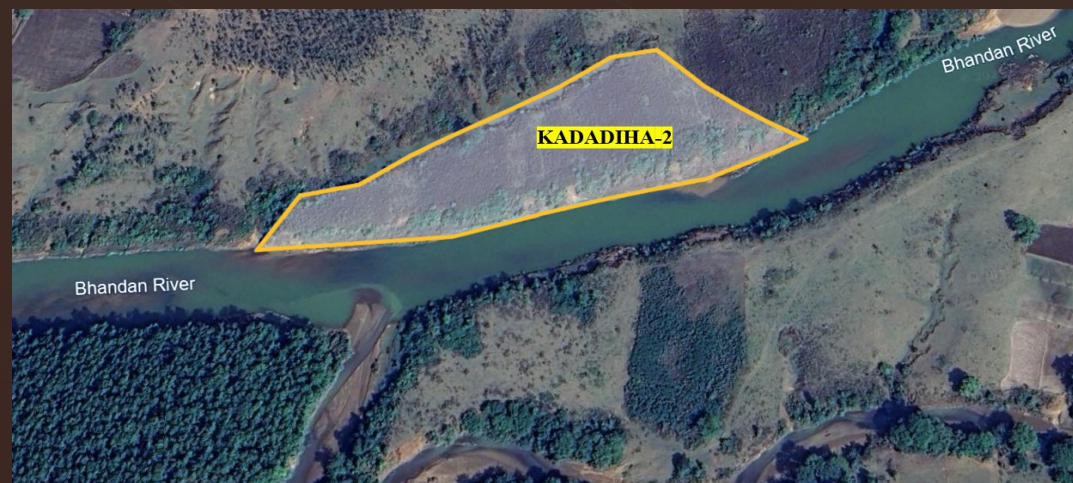
Location of Kadadiha-1 (After Google Earth map; Not to the Scale)



Drainage System in Kadadiha-1



Distribution of Microliths inside the water body at Kadadiha-1



Location of Kadadiha-2 (After Google Earth map; Not to the Scale)



Location of Kaluakhman (After Google Earth map; Not to the Scale)



Geomorphology of Kaluakhman site with its Geo-coordination



Location of Jethama (After Google Earth map; Not to the Scale)



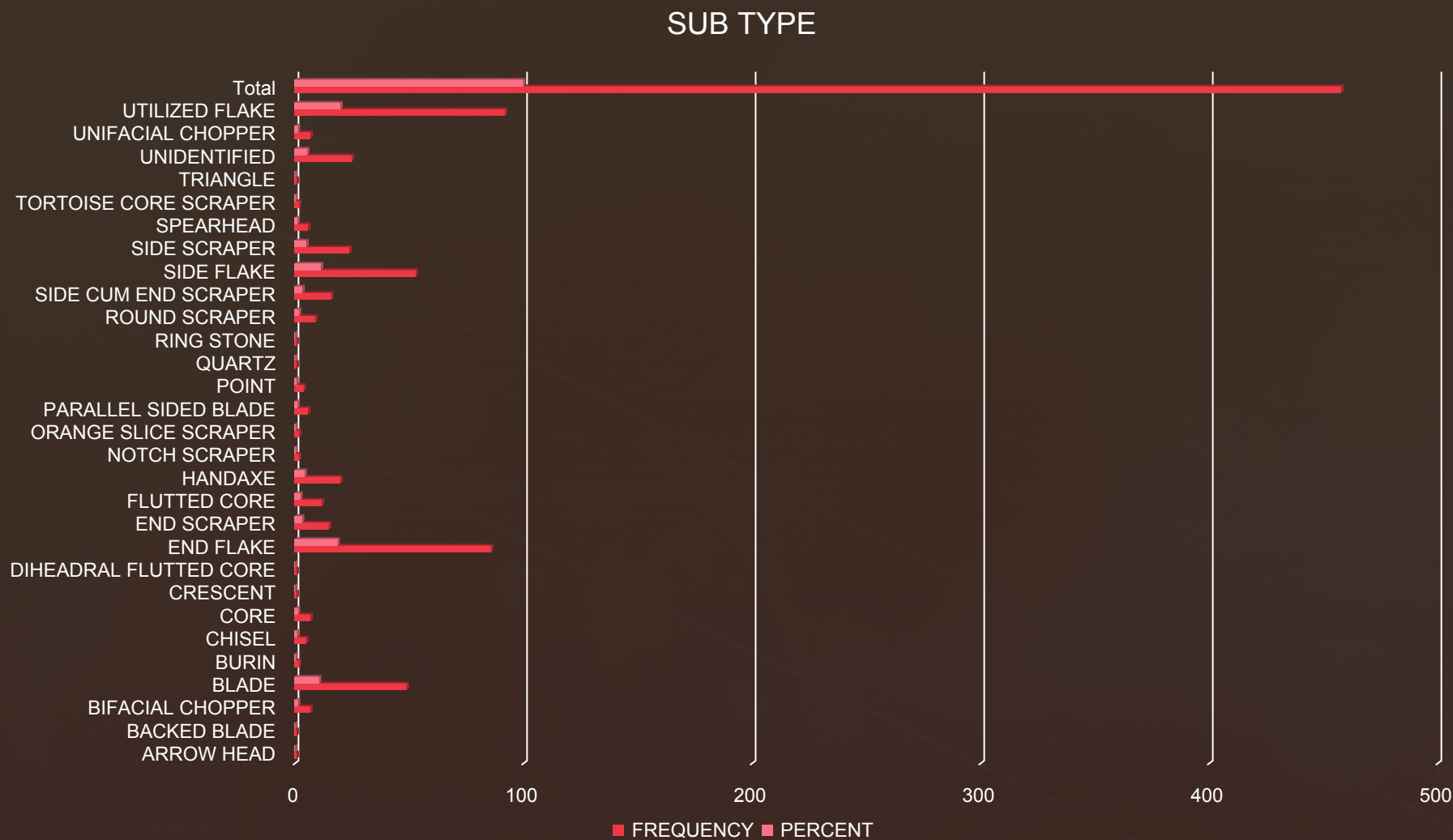
River bed and Erosional slop at Jethama



Rocky out crop at Jethama

Distribution of Typology and their frequencies

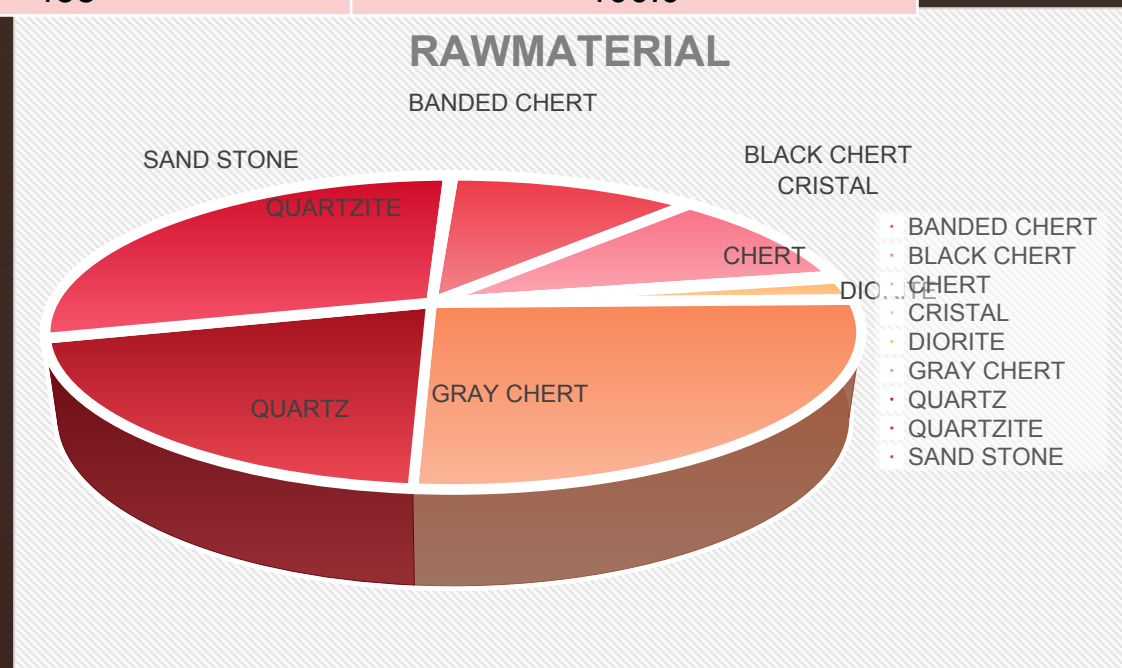
TYOLOGY	FREQUENCY	PERCENT
ARROW HEAD	1	.2
BLADE	57	12.4
BURIN	2	.4
CHISEL	5	1.1
CHOPPER	14	3.1
CORE	20	4.4
CRESCENT	1	.2
FLAKE	238	52.0
HANDAXE	20	4.4
POINT	4	.9
RING STONE	1	.2
SCRAPER	63	13.8
SPEARHEAD	6	1.3
TRIANGLE	1	.2
UNIDENTIFIED	25	5.5
Total	458	100.0



Frequency Distribution of Sub-Typologies

Distribution of artifacts on the basis of Raw Material		
RAW MATERIAL	FREQUENCY	PERCENT
BANDED CHERT	12	2.6
BLACK CHERT	73	15.9
CHERT	1	.2
CRISTAL	1	.2
DIORITE	17	3.7
GRAY CHERT	131	28.6
QUARTZ	92	20.1
QUARTZITE	130	28.4
SAND STONE	1	.2
Total	458	100.0

Raw Material basis
Distribution of Artifacts

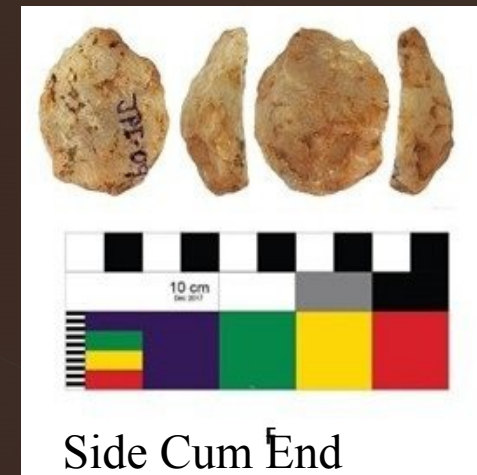
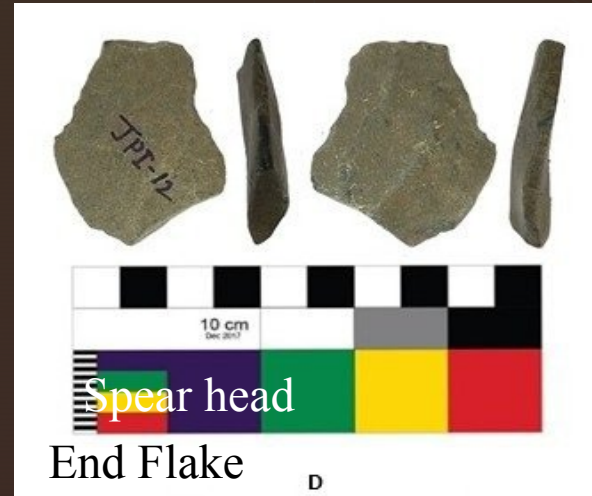
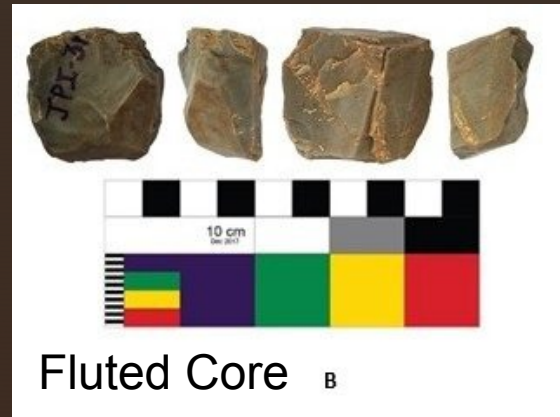
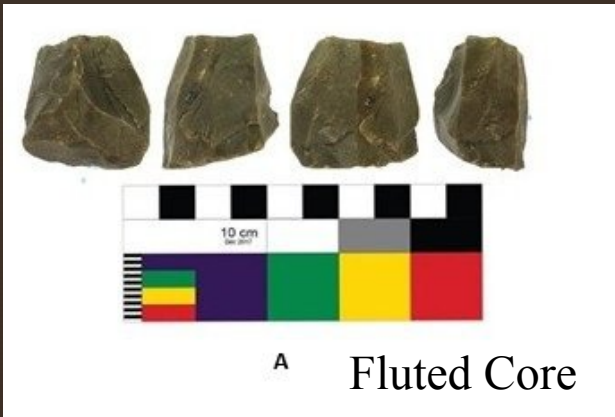


Distribution of artifacts on the basis of Implement on		
IMPLEMENT ON	FREQUENCY	PERCENT
BLADE	52	11.4
CORE	69	15.1
FLAKE	332	72.5
UNIDENTIFIED	5	1.1
Total	458	100.0

Distribution of artifacts on the basis of artifacts

3D

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Spear head

Broken
Flake

PHOTOGRAPHY



PHOTOGRAPHY



The Khairi - Bhandan River Basin in Mayurbhanj, Odisha, presents a significant yet previously underexplored prehistoric archaeological landscape. This study, through systematic fieldwork, mapping, and lithic analysis of 458 artefacts, reveals human adaptation, technological strategies, and settlement patterns from the Lower Paleolithic to the Neolithic. The region's geological diversity rich in quartzite, chert, and quartz and its ecological richness within the Similipal National Park supported sustained prehistoric occupation. The predominance of flake tools and the presence of specialized implements indicate evolving technological practices. Rare Neolithic tools hint at transitions toward settled life and early subsistence. The study addresses gaps in Odisha's archaeological record, particularly in the Panchpir subdivision, and draws connections with present-day tribal ecological knowledge, suggesting long-standing human-environment interaction. These findings underscore the importance of the region in understanding eastern India's prehistory and lay the foundation for future archaeological, ethnographic, and environmental research, enhancing inter-regional and interdisciplinary explorations of India's ancient human past.

