The Researchers' - Volume X, Issue II, July-December 2024
International Research Journal (Double-blind peer-reviewed)

ISSN : 2455-1503

Impact Factor - 5.882

Date of Acceptance : 15 May 2024

DOI - 10.21276/tr.2024.10.2.AN7

7. TIRILDIHI: A PALAEOLITHIC SITE IN THE WESTERN MASSIF OF SIMILIPAL BIOSPHERE RESERVE, NORTHERN ODISHA

Basanta Kumar Mohanta,[1*] Jayashree Prusti,[1] Manu Naik,[1] Samir Maharana[1,] Chandramani Sahu,[2] Yudhisthir Behera,[3] Sadija Sahu,[1]

[1]Department of Anthropology and Tribal Studies, MSCB University, Baripada, Mayurbhanj, Odisha
[2]Tata Foundation, Jashipur, Mayurbhanj, Odisha
[3]PHC, Tiring, Mayurbhanj, Odisha

**bkmohanta.mscbu@gmail.com*

Abstract

This study explores the prehistoric site of Tirildihi, located near the Similipal Biosphere Reserve in Mayurbhanj, Odisha, India, through the analysis of 58 stone tools from the Middle and Upper Palaeolithic periods. The tools, predominantly flakes and scrapers, were collected from exposed surfaces and erosional slopes near the Machakandana Hill. The artifacts, made from various raw materials such as Black Chert, Grey Chert, Quartz, and Quartzite, are classified based on typology, technology, and raw material. Flaking is the primary technology used, and the majority of tools belong to the Upper Palaeolithic, reflecting advances in stone tool technology. The analysis indicates a preference for tools like flakes and scrapers, with specialized tools such as spearheads being rarer. The study also presents detailed measurements of tool dimensions and weight, revealing significant variability in size, which suggests a range of uses. The findings highlight the technological complexity of the Upper Palaeolithic period and the adaptation of prehistoric communities to their environment.

Key Words: Prehistory, Palaeolithic, Similipal, Artifact

Introduction

The Similipal Biosphere Reserve is one of India's mega biodiversity zones, spreading over an area of

Citation : Dr. Basanta Kumar Mohanta, Jayashree Prusti, Manu Naik, Samir Maharana, Chandramani Sahu, Yudhisthir Behera, Sadija Sahu (2024). TIRILDIHI: A PALAEOLITHIC SITE IN THE WESTERN MASSIF OF SIMILIPAL BIOSPHERE RESERVE, NORTHERN ODISHA, **The Researchers** –July-December 2024, 10(2): 53-66. doi - 10.21276/tr.2024.10.2.AN7

The Researchers' - Volume X, Issue II, July-December 2024 ISSN : 2455-1503
International Research Journal (Double-blind peer-reviewed)
Impact Factor - 5.882

Date of Acceptance : 15 May 2024 DOI - 10.21276/tr.2024.10.2.AN7

© Dr. Basanta Kumar Mohanta, Jayashree Prusti, Manu Naik, Samir Maharana, Chandramani Sahu, Yudhisthir Behera, Sadija Sahu

2750 sq km. It is located in the central part of the Mayurbhanj district, northern Odisha, India. The landscape of Similipal and its peripheral areas contains many rolling hills covered with northern tropical semi-evergreen forest, northern tropical moist deciduous forest, dry deciduous hill forest, high-level sal forest, grassland and savannah (Rath 2012:40). Rivers like the Burhabalanga, Kharkai, Deo, Khairi, Bhandan, etc flow in different directions of the district after origin from this Similipal. This geomorphological location of Northern Odisha is very suitable for human habitation during the past when the entire basic requirements for their survival, the water, game, plants, etc are available. Probable, this ideal location was the driving force to attract the Palaeo people to occupy and exploit the region for a long period which is evident from the findings of various prehistoric artifacts from different places.

These prehistoric artifacts are reported from different river banks and foothill areas since the early part of the 20th century which belong to different periods. The Badampahad (Badampahar) hill, located on the western side of the Similipal Biosphere Reserve-known for its rich iron ore deposits, comes under the greater Chota Nagpur plateau which is known for its rich archaeological cultural heritages from where the prehistoric site belongs to different cultural periods, preindustrial iron smelting evidence, early -medieval sites are reported (Acharya, 1923–24; Bose and Sen, 1948; Basa; Chakrabarti, 1993; Mitra, 1987; Mohanta, 2000; Ambuj; Behera; Mohanta and Behera; Basa, 2000 *et.al.*).

Considering this archaeological importance and to understand the micro geomorphology of the site, an exploration has been made close to a tribal village Tirildiha at Machakandana ghat, near Jhaldhungri chhok, Badampahar, Mayurbhanj, Odisha (Fig. 01) and collected 58 stone artifacts belong to Middle Palaeolithic and Upper Palaeolithic cultures.

Citation : Dr. Basanta Kumar Mohanta, Jayashree Prusti, Manu Naik, Samir Maharana, Chandramani Sahu, Yudhisthir Behera, Sadija Sahu (2024). TIRILDIHI: A PALAEOLITHIC SITE IN THE WESTERN MASSIF OF SIMILIPAL BIOSPHERE RESERVE, NORTHERN ODISHA, **The Researchers** –July-December 2024, 10(2): 53-66. doi - 10.21276/tr.2024.10.2.AN7

The Researchers' - Volume X, Issue II, July-December 2024 ISSN : 2455-1503
International Research Journal (Double-blind peer-reviewed)

Impact Factor - 5.882

Date of Acceptance : 15 May 2024 DOI - 10.21276/tr.2024.10.2.AN7

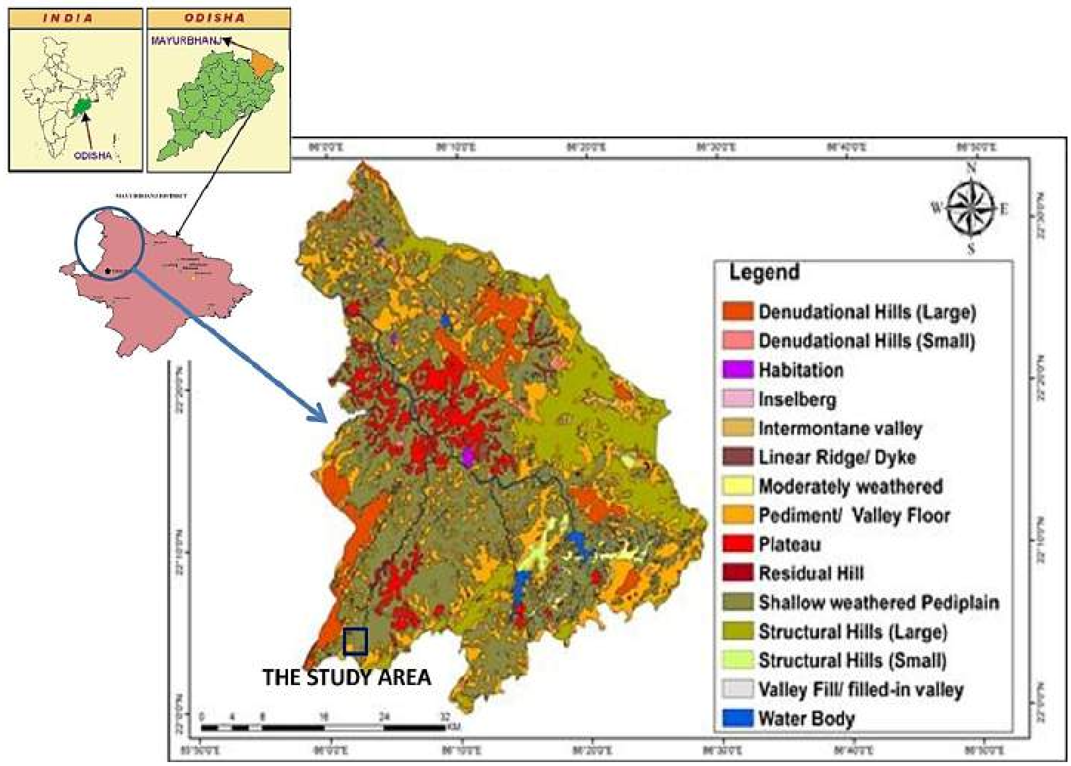


Fig.01: Location of the study area of Tirildihi in the Geomorphological Map of Bamanghaty Subdivision, Mayurbhanj, Odisha, India

Methodology

During field exploration, the geomorphologic features are analysed with the help of Google Earth map, Topo sheet reading, geo-coordination of artifacts is made with geotag photographs, and onsite and off-site photography of collected artifacts are done to understand their various features, measurements and weight of the artefacts are taken with sliding calliper with one millimetre least count and electronic weighing scale respectively. The deposition of the site is understood by studying soil stratigraphy present on the stream section and the chronology is determined based on the typo-technological analysis and stratigraphic deposition.

Citation : Dr. Basanta Kumar Mohanta, Jayashree Prusti, Manu Naik, Samir Maharana, Chandramani Sahu, Yudhisthir Behera, Sadija Sahu (2024). TIRILDIHI: A PALAEOLITHIC SITE IN THE WESTERN MASSIF OF SIMILIPAL BIOSPHERE RESERVE, NORTHERN ODISHA, **The Researchers** –July-December 2024, 10(2): 53-66. doi - 10.21276/tr.2024.10.2.AN7

The Researchers' - Volume X, Issue II, July-December 2024
International Research Journal (Double-blind peer-reviewed)

ISSN : 2455-1503

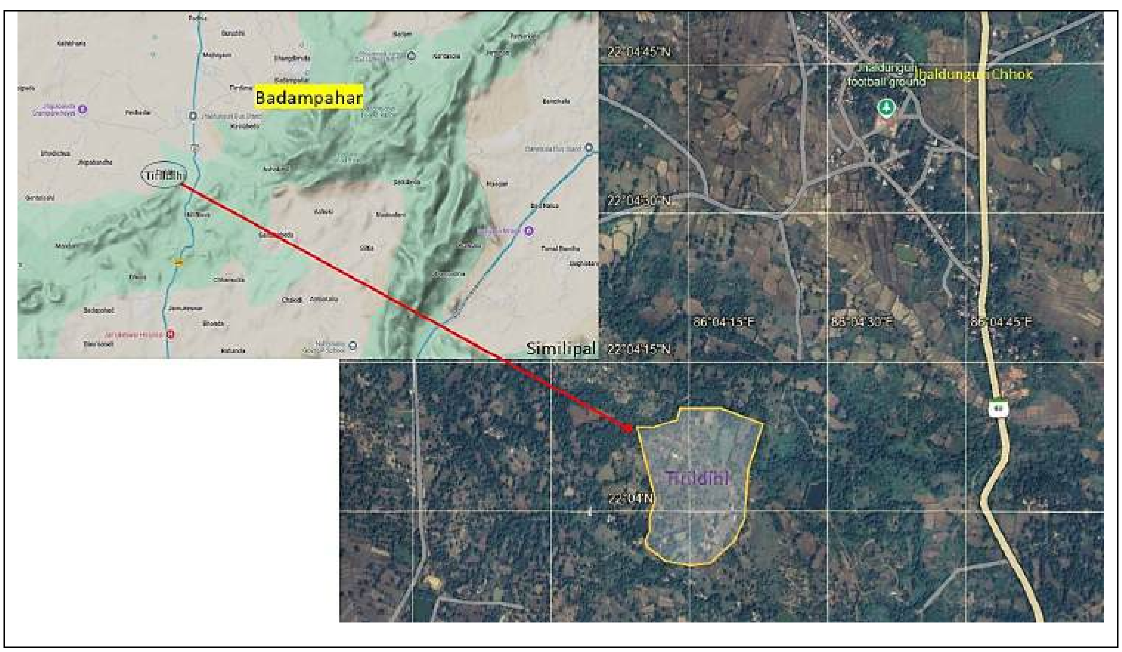
Impact Factor - 5.882

Date of Acceptance : 15 May 2024

DOI - 10.21276/tr.2024.10.2.AN7

Study Area and the Present Environment

The prehistoric site of Tirildihi ($86^{0}04'09"$- $86^{0}04'22"$ EL and $22^{0}03'54"$ - $22^{0}04'10"$ NL) is located on the northern side of the village, about one km north of the foothill of Machkandana Hill as well as almost at the same distance to the west of the Rairangpur - Jashipur section of NH-220, on the left bank of a small stream named after the hill Machkandana. The perimeter of the study area is about 1,508.19 m and the area is approximately 138,063.16 meter square. This micro area possesses shallow weatherd pediments, both the large and small structured hills, moderately weathered, pediment/valley floor and both the large and small denudational hills (Fig. 02). The entire area is almost a flat land consisting of stone outcrops mixed with secondary laterite. The area is also covered with a thick erosional mound bearing small noodles, pebbles, and stone artifacts. The site has partly been converted into an agricultural field and the stone artifacts are exposed due to the recent filling of land. However, tools are sporadically distributed on the exposed surface and present on the section of the river (Fig.03). This land was suitable for human settlements, also this land is suitable for iron smelting.



Citation : Dr. Basanta Kumar Mohanta, Jayashree Prusti, Manu Naik, Samir Maharana, Chandramani Sahu, Yudhisthir Behera, Sadija Sahu (2024). TIRILDIHI: A PALAEOLITHIC SITE IN THE WESTERN MASSIF OF SIMILIPAL BIOSPHERE RESERVE, NORTHERN ODISHA, **The Researchers** –July-December 2024, 10(2): 53-66. doi - 10.21276/tr.2024.10.2.AN7

Fig.02: Topographic location of the site (After Google Earth Map)

Fig.03: The Deposition of site and the Distribution of Findings

Findings

The artifacts are collected from the open-air site and erosional slopes, except a few from the exposed section. The findings of the site are classified based on the typology, technology, and raw material. The total collection includes 05 middle palaeolithic and 53 upper palaeolithic tools.

Typology

The dataset outlines the distribution of various artifact types, categorizing 58 items according to their typology (Fig. 04). The Blade and Burin Cum Scraper each account for 1.7% of the total, with one artifact in each category. The Core, which serves as the raw material for other tools, represents 5.2% with 03 occurrences. Flakes are typically fragments produced during tool-making. The largest portion (making up 39.7% with 23 occurrences) of the collected

The Researchers' - Volume X, Issue II, July-December 2024 ISSN : 2455-1503
International Research Journal (Double-blind peer-reviewed)
Impact Factor - 5.882

Date of Acceptance : 15 May 2024 DOI - 10.21276/tr.2024.10.2.AN7

© Dr. Basanta Kumar Mohanta, Jayashree Prusti, Manu Naik, Samir Maharana, Chandramani Sahu, Yudhisthir Behera, Sadija Sahu

artifacts comprise flakes. The scraper category follows closely, with 22 artifacts (37.9%). Smaller proportions of the collection include handaxe (3.4% with 02 occurrences), point (1.7% with 01 occurrence), Point cum Scraper (1.7% with 01 occurrences), and Spearheads, with 04 occurrences (6.9%).

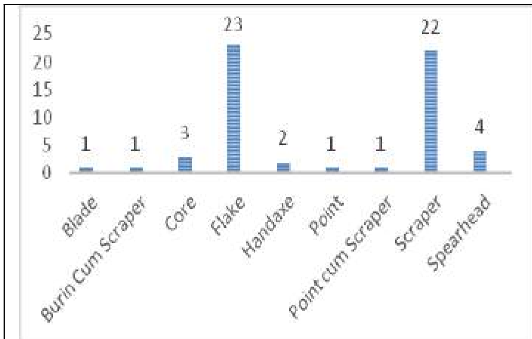


Fig. 04: Distribution of Tool Typology

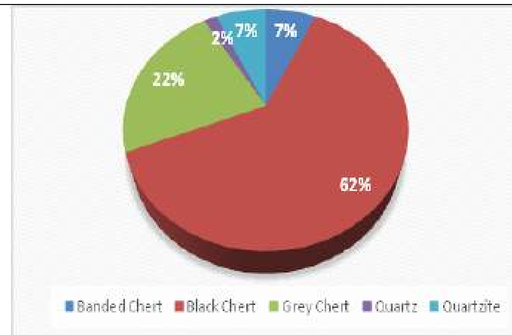


Fig. 05: Distribution of raw materials

Technology

Flaking is a major technology used for preparing these artifacts. Flake tools are manufactured through knapping with a hard hammer process, soft hammer process, or pressure flaking techniques, either independently or one after another, based on the requirement to give the desired shape of the tool. The presence of a positive bulb at its lower surface indicates the location of the blow that was struck and the direction of the flow.

Raw Material

The data provides an overview of the distribution of different raw materials used in a certain context, likely related to geological or archaeological studies. A total of 58 samples were analyzed, and these were categorized into five distinct raw materials: Banded Chert, Black Chert, Grey Chert, Quartz, and Quartzite (Fig-05). Black Chert dominates the distribution with 36 occurrences, making up 62.1% of the total sample. This suggests that Black Chert is

Citation : Dr. Basanta Kumar Mohanta, Jayashree Prusti, Manu Naik, Samir Maharana, Chandramani Sahu, Yudhisthir Behera, Sadija Sahu (2024). TIRILDIHI: A PALAEOLITHIC SITE IN THE WESTERN MASSIF OF SIMILIPAL BIOSPHERE RESERVE, NORTHERN ODISHA, The Researchers –July-December 2024, 10(2): 53-66. doi - 10.21276/tr.2024.10.2.AN7

the most prevalent material in this dataset. Grey Chert follows with 13 samples, accounting for 22.4%, indicating it is the second most common raw material. Both Banded Chert and Quartzite are tied with 04 occurrences each, contributing 6.9% to the total, indicating their relatively lower presence. Quartz, with just 01 occurrences, represents 1.7% of the samples, marking it as the least common material in the study.

The collected artifacts are made either on the core or flake. Out of the total, 06 tools (10.3%) are categorized as Core tools, while the remaining 52 tools (89.7%) are classified as Flake tools. The cumulative percentage reaches 100%, indicating that all 58 tools are accounted for. Core tools, which are typically larger and used as a base for further tool production, make up a small proportion of the total sample, while Flake tools, which are generally smaller fragments or chips removed from the core during toolmaking, dominate the collection.

Chronology

The dataset categorizes the 58 prehistoric stone tools according to their cultural period, with two distinct periods: Middle Palaeolithic and Upper Palaeolithic. Out of the total tools, 05 (8.6%) belong to the Middle Palaeolithic period, while the remaining 53 tools (91.4%) are attributed to the Upper Palaeolithic period. The cumulative percentage reaches 100%, meaning all tools are accounted for within these two periods. The overwhelming majority of the tools belong to the Upper Palaeolithic period, reflecting the predominance of this cultural phase in the dataset. The Upper Palaeolithic is characterized by more advanced stone tool technologies and a shift towards specialized tools, while the Middle Palaeolithic is often associated with earlier, less refined tool-making techniques. This distribution suggests that the majority of the tools in this collection are from a later, more developed phase of prehistory, indicating a likely increase in technological complexity and adaptation during the Upper Palaeolithic era.

The Researchers' - Volume X, Issue II, July-December 2024
International Research Journal (Double-blind peer-reviewed)
ISSN : 2455-1503
Impact Factor - 5.882
Date of Acceptance : 15 May 2024
DOI - 10.21276/tr.2024.10.2.AN7

Measurements

The dataset presents measurements of stone tools from prehistory, with four key attributes—Length, Breadth, Thickness, and Weight—recorded for 58 tools. The Length of the tools varies from 3.0000 cm to 17.3000 cm, with an average length of 6.3345 cm and a standard deviation of 2.6152 cm, suggesting a moderate variation in tool size. The Breadth ranges from 1.7000 cm to 13.2000 cm, with a mean of 4.5828 cm and a standard deviation of 2.0111 cm, indicating that the breadth also exhibits significant variation. Thickness values range from 0.9000 cm to 8.4000 cm, with an average of 2.2034 cm and a standard deviation of 1.3252 cm, reflecting less variability compared to the other dimensions. The Weight of the tools spans from 04 grams to 1386 grams, with a mean weight of 98.90 grams and a high standard deviation of 200.768 grams, suggesting a large range in the weight of the tools, possibly due to differences in the material used or the type of tool.

Measurements	N	Minimum	Maximum	Mean	Std. Deviation
Length	58	3.0000	17.3000	6.334483	2.6151751
Breadth	58	1.7000	13.2000	4.582759	2.0111215
Thickness	58	.9000	8.4000	2.203448	1.3251899
Weight	58	4	1386	98.90	200.768

Flake

The provided dataset comprises measurements of flakes, with each measurement indicating four distinct characteristics: length, breadth, thickness, and weight. Each characteristic has been recorded for a total of 23 samples, enabling statistical analysis of these properties. For length, the minimum recorded measurement is 3.8 units, while the maximum reaches 12.8 units, resulting in a mean of approximately 6.27 units and a standard deviation of about 2.53 units. This indicates a significant

Citation : Dr. Basanta Kumar Mohanta, Jayashree Prusti, Manu Naik, Samir Maharana, Chandramani Sahu, Yudhisthir Behera, Sadija Sahu (2024). TIRILDIHI: A PALAEOLITHIC SITE IN THE WESTERN MASSIF OF SIMILIPAL BIOSPHERE RESERVE, NORTHERN ODISHA, **The Researchers** –July-December 2024, 10(2): 53-66. doi - 10.21276/tr.2024.10.2.AN7

ISSN : 2455-1503
Impact Factor - 5.882

Date of Acceptance : 15 May 2024 DOI - 10.21276/tr.2024.10.2.AN7

variability in the lengths of the flakes, suggesting a broad range of sizes within the sample. In terms of breadth, the values range from a minimum of 1.7 units to a maximum of 7.9 units, with a mean of approximately 4.29 units and a standard deviation of 1.64 units. Thickness measurements show a narrower range, spanning from 0.9 units to 3.3 units, with a mean thickness of 1.7 units and a standard deviation of 0.61 units. Lastly, the weight of the flakes varies widely, from 04 units to 293 units, with an average weight of about 59.04 units and a standard deviation of 71.36 units, indicating considerable diversity in mass among the samples.

The data of sub types of Flakes provides a breakdown of the subtypes of flakes, detailing their frequency and percentage distribution. Out of the 23 flakes in total, the majority (17 flakes, or 73.9%) are categorized as "End Flakes," (Fig-06) making this the most common subtype in the dataset. The next most frequent subtype is the "Side Flake," (Fig-07) with 03 flakes, which represents 13.0% of the total. "Utilized Flakes" are relatively less common, with only 02 flakes (8.7%) falling into this category. The "Parallel Sided Flake" is the rarest subtype, accounting for just 01 flake, or 4.3%. The cumulative percentage column shows how each subtype contributes to the overall distribution, with the cumulative total for each category progressing from 73.9% for "End Flake" to 100% for "Utilized Flake." This distribution indicates that the majority of flakes in the dataset are End Flakes, with the other subtypes being much less common.

The survey of raw materials used for flake tools highlights the predominance of Black Chert, which represents 65.2% of the total sample with 15 occurrences. This material emerges as the most favoured choice for crafting flake tools, indicating its potential advantages in functionality or availability within the studied context.

Grey Chert is the second most common raw material, contributing 21.7% with 05 total instances. While significantly less frequent than Black Chert, it still holds a notable share of the dataset, suggesting its relevance in tool production. In comparison, both Banded Chert and Quartzite show minimal representation, with Banded Chert accounting for 4.3% (01 instances) and Quartzite comprising 8.7% (02 instances), which indicates their limited use in this context.

Citation : Dr. Basanta Kumar Mohanta, Jayashree Prusti, Manu Naik, Samir Maharana, Chandramani Sahu, Yudhisthir Behera, Sadija Sahu (2024). TIRILDIHI: A PALAEOLITHIC SITE IN THE WESTERN MASSIF OF SIMILIPAL BIOSPHERE RESERVE, NORTHERN ODISHA, **The Researchers** –July-December 2024, 10(2): 53-66. doi - 10.21276/tr.2024.10.2.AN7

The Researchers' - Volume X, Issue II, July-December 2024 ISSN : 2455-1503
International Research Journal (Double-blind peer-reviewed)
Impact Factor - 5.882
Date of Acceptance : 15 May 2024 DOI - 10.21276/tr.2024.10.2.AN7

© Dr. Basanta Kumar Mohanta, Jayashree Prusti, Manu Naik, Samir Maharana, Chandramani Sahu, Yudhisthir Behera, Sadija Sahu

Overall, the total number of raw material instances amounts to 23, demonstrating a diverse range of materials employed in flake tool creation. The cumulative percent reveals that over 91% of the materials are concentrated among the three noted types, with Black Chert standing out as the most utilized resource, thereby influencing the overall landscape of flake tool production in this study.

	
Fig-06: End flake	**Fig-07: Side flake**

Scraper

The analysis of scraper dimensions reveals detailed descriptive statistics across several measured variables: length, breadth, thickness, and weight. For the length of the scrapers, a total of 22 samples were recorded, with values ranging from a minimum of 3.4 to a maximum of 11.8, resulting in a mean length of approximately 5.96. The standard deviation of 2.02 indicates considerable variability in scraper lengths, suggesting a diverse array of tool sizes.

In terms of breadth, the data also comprises 22 samples, with measurements spanning from 2.7 to 13.2, yielding a mean breadth of 4.90. The associated standard deviation of 2.19 reflects a significant spread in breadth measurements, which may impact the scrapers' application and functionality. The thickness measurements show a minimum of 01 and a maximum of 8.4, with a mean thickness of about 2.53 and a standard deviation of 1.86, further illustrating the diversity in this dimension.

Citation : Dr. Basanta Kumar Mohanta, Jayashree Prusti, Manu Naik, Samir Maharana, Chandramani Sahu, Yudhisthir Behera, Sadija Sahu (2024). TIRILDIHI: A PALAEOLITHIC SITE IN THE WESTERN MASSIF OF SIMILIPAL BIOSPHERE RESERVE, NORTHERN ODISHA, **The Researchers** –July-December 2024, 10(2): 53-66. doi - 10.21276/tr.2024.10.2.AN7

The Researchers' - Volume X, Issue II, July-December 2024 ISSN : 2455-1503
International Research Journal (Double-blind peer-reviewed)
Impact Factor - 5.882

Date of Acceptance : 15 May 2024 DOI - 10.21276/tr.2024.10.2.AN7

Fig-08: Round Scraper

Lastly, the weight of the scrapers varies significantly, ranging from 13 grams to 1386 grams, with a mean weight of 132.59 grams and a standard deviation of 288.38 grams. This substantial variability in weight indicates that the scrapers are likely utilized for various purposes, reflecting distinct design choices and functional requirements.

The dataset provides a detailed distribution of different subtypes of scrapers, including their frequency and percentage representation. Out of the 22 scrapers in total, the "Side Scraper" is the most common subtype, accounting for 08 scrapers, or 36.4% of the total. The next most frequent subtype is the "End Scraper," with 07 scrapers, representing 31.8% of the total. "Round Scrapers" (Fig-08) make up 05 units, or 22.7%, of the dataset, while "Notch Scrapers" and "Side cum Notch Scrapers" are less common, each accounting for 01 scraper, or 4.5%. The cumulative percentage column shows how each subtype adds to the overall total, progressing from 31.8% for "End Scraper" to 100% for "Side Scraper." This distribution reveals that the most prevalent scraper types are the "Side Scraper" and "End Scraper," while the other subtypes are relatively rare in comparison.

The dataset presents the distribution of raw materials used for scrapers, detailing their frequency and percentage representation. Out of the 22 scrapers, the most commonly used raw material is "Black Chert," which accounts for 17 scrapers, or 77.3% of the total. This makes Black Chert the dominant material in the dataset. The next most common materials are "Banded Chert" and "Grey Chert," each representing a smaller proportion. Banded Chert is used in 03 scrapers, making up 13.6% of the total, while both Grey Chert and Quartz are used in 01 scraper each, representing 4.5% of the total. The

Citation : Dr. Basanta Kumar Mohanta, Jayashree Prusti, Manu Naik, Samir Maharana, Chandramani Sahu, Yudhisthir Behera, Sadija Sahu (2024). TIRILDIHI: A PALAEOLITHIC SITE IN THE WESTERN MASSIF OF SIMILIPAL BIOSPHERE RESERVE, NORTHERN ODISHA, **The Researchers** –July-December 2024, 10(2): 53-66. doi - 10.21276/tr.2024.10.2.AN7

The Researchers' - Volume X, Issue II, July-December 2024 ISSN : 2455-1503
International Research Journal (Double-blind peer-reviewed)
Impact Factor - 5.882

Date of Acceptance : 15 May 2024 DOI - 10.21276/tr.2024.10.2.AN7

© Dr. Basanta Kumar Mohanta, Jayashree Prusti, Manu Naik, Samir Maharana, Chandramani Sahu, Yudhisthir Behera, Sadija Sahu

cumulative percentage column shows how each material contributes to the total distribution, with Black Chert alone comprising 90.9% by the time the data reaches the second-to-last category. This indicates that the majority of scrapers are made from Black Chert, with the other materials being much less common.

Fig. 09: Point made on flake

Fig. 10: Spearhead made on flake

Fig. 11: A thin handaxe with broken working end

Discussion and Conclusion

The overwhelming majority of the tools of this Tirildihi belong to the Upper Palaeolithic period, reflecting the predominance of this cultural phase in the dataset. The Upper Palaeolithic is characterized by more advanced stone tool technologies and a shift towards specialized tools, while the Middle Palaeolithic is often associated with earlier, less refined tool-making techniques. This

Citation : Dr. Basanta Kumar Mohanta, Jayashree Prusti, Manu Naik, Samir Maharana, Chandramani Sahu, Yudhisthir Behera, Sadija Sahu (2024). TIRILDIHI: A PALAEOLITHIC SITE IN THE WESTERN MASSIF OF SIMILIPAL BIOSPHERE RESERVE, NORTHERN ODISHA, **The Researchers** –July-December 2024, 10(2): 53-66. doi - 10.21276/tr.2024.10.2.AN7

The Researchers' - Volume X, Issue II, July-December 2024
International Research Journal (Double-blind peer-reviewed)
ISSN : 2455-1503
Impact Factor - 5.882
Date of Acceptance : 15 May 2024
DOI - 10.21276/tr.2024.10.2.AN7

© Dr. Basanta Kumar Mohanta, Jayashree Prusti, Manu Naik, Samir Maharana, Chandramani Sahu, Yudhisthir Behera, Sadija Sahu

distribution suggests that the majority of the tools in this collection are from a later, more developed phase of prehistory, indicating a likely increase in technological complexity and adaptation during the Upper Palaeolithic era.

The typology shows a clear preference for tools such as flakes and scrapers, with specialized items like spearheads and points comprising a smaller portion of the dataset. The cumulative percentages demonstrate the diversity of the toolset, with 93.1% of the items falling into the primary categories of flakes, scrapers, and cores, while the remaining 6.9% represent more specialized, weapon-related tools. This distribution reflects the practical needs of the population in question, emphasizing tool types for processing materials, with some emphasis on weapons for hunting or self-protection. The predominance of Flake tools in this dataset reflects their common use in prehistoric toolkits, suggesting they were likely more versatile and widespread in daily activities, like cutting or processing materials. This distribution also highlights the importance of flaking techniques in the production of stone tools during prehistoric times. The importance of scrapers in the tool types likely used for tasks such as hide processing or woodworking. This distribution of scraper` reveals that the most prevalent scraper types are the "Side Scraper" and "End Scraper," while the other subtypes are relatively rare in comparison. On the other hand, the smaller proportions of the dataset are dedicated to handaxe (02 specimen), one of the handaxe lokks like a typical acheulian type (Fig-11) suggesting these types were used less frequently but may have had specialized functions related to hunting or self-protection. The presence of spearheads (Fig-10) shows the presence of projectile weaponry, though these items were also relatively rare. Another important tool point (Fig-09) made on a flake is important as it highlights early human craftsmanship and resourcefulness, enabling the creation of effective tools for hunting and survival.

Overall, the data of raw materials highlights the dominance of Black Chert in this sample set, with a significant presence of Grey Chert, while Quartz and Quartzite are relatively scarce. These measurements provide insight into the diversity of stone tool sizes and weights in prehistoric times, highlighting the range of shapes, sizes, and functions these tools could have had in ancient societies. The dataset presents the distribution of raw materials used for scrapers, detailing their frequency and

Citation : Dr. Basanta Kumar Mohanta, Jayashree Prusti, Manu Naik, Samir Maharana, Chandramani Sahu, Yudhisthir Behera, Sadija Sahu (2024). TIRILDIHI: A PALAEOLITHIC SITE IN THE WESTERN MASSIF OF SIMILIPAL BIOSPHERE RESERVE, NORTHERN ODISHA, **The Researchers** –July-December 2024, 10(2): 53-66. doi - 10.21276/tr.2024.10.2.AN7

percentage representation. The cumulative percentage column shows how each material contributes to the total distribution, with Black Chert alone comprising 90.9% by the time the data reaches the second-to-last category. This indicates that the majority of scrapers are made from Black Chert, with the other materials being much less common.

The measurements of stone tools with four key attributes— length, breadth, thickness, and weight suggest a large range in the weight of the tools, possibly due to differences in the material used or the type of tool. These measurements provide insight into the diversity of stone tool sizes and weights in prehistoric times, highlighting the range of shapes, sizes, and functions these tools could have had in ancient societies. This measurement of flakes suggests a broad range of sizes within the sample.

Acknowledgements

The authors would like to express their sincere gratitude to Ms. Bhagyabati Behera and Mr. Saumya Ranjan Nayak for their support during the field study, whose help in data collection and exploration proved essential to the success of this research. The authors are also thankful to Mr. Pravat Ranjan Mohanta for his assistance in the photography of the artifacts, which greatly contributed to the documentation of this study.

References

1. Acharya, P. 1923-24. Annual Report of the Archaeological Survey of India. New Delhi: 100 -101.
2. Ambuj M.J. 2016. Stone Age Cultures of Odisha: A Case Study of Stone Age Sites in Mayurbhanj District, PhD thesis.
3. Basa, K.K and P. Mohanty (ed), 2000, Archaeology of Odisha, New Delhi, Pratibha Prakashan.
4. Bose, N. K., & D. Sen. 1948. Excavations in Mayurbhanj, Calcutta: University of Calcutta.
5. Chakrabarti, S. 1993b. Kalapathara: An Upper Palaeolithic site from Mayurbhanj.
6. Mohanta, B.K., 2000. Archaeology of Bamanghaty, Mayurbhanj**,** Orissa**.** The Orissa Historical Research Journal, Vol.XLV. No.1-4.
7. Rath, Sakti Kanta. 2012. *Bioactivity Screening and Anticarcinogenic Studies of Selected Medicinal Palnts from Similipal*. A thesis submitted to the North Orissa University for the Degree of Doctor of Philosophy in Life Sciences, p.40.