Radiocarbon (2024), **66**, pp. 664–675
doi:10.1017/RDC.2024.93

CAMBRIDGE UNIVERSITY PRESS

RESEARCH ARTICLE

AMS ^{14}C Dating of the Sites of Digaru-Kolong River Valley, Assam-Meghalaya Foothills, India

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Received: 09 July 2023; **Revised:** 05 June 2024; **Accepted:** 20 June 2024; **First published online:** 08 October 2024

Keywords: accelerator mass spectrometry (AMS); ground and polished stone tools; potsherds; radiocarbon dating; sediment

Abstract

The present study aims to determine the chronology of the past settlement of the different archaeological sites of the Digaru–Kolong River valley (Assam-Meghalaya Foothills), India, based on accelerator mass spectrometry (AMS) ^{14}C dates of seven charcoal samples, five potsherds, and five sediment samples. The archaeological record of the study area consists of ground and polished stone axes and adzes, pottery, and standing or buried megaliths. The samples analyzed were excavated from test pits, and an attempt has been made to correlate the findings with the chronology of the neighboring archaeological region. A site reported in the vicinity of the study area is primarily Neolithic. However, the results from our excavations indicate a time frame for the analyzed artifacts of ca. 240 CE to 1379 CE.

Introduction

Northeast India has long been considered a significant region for archaeological research. Geographically, it connects with other parts of Southeast, South, and East Asia. The geographical setting, biodiversity, ecology, and traces of ancient settlement are crucial for creating a dynamic landscape of Northeast India, where Assam and Meghalaya are crucial regions for archaeological research. The present study area lies between 26°0'N to 26°15'N and 91°50'E to 92°30'E and comprises parts of the Kamrup, Morigaon, Karbi Anglong districts of Assam, and the Ri-Bhoi district of Meghalaya state, referred as the Digaru–Kolong river valley (Figure 1). Based on the archaeological evidence, the sites could belong to the Neolithic or Late Neolithic. However, the AMS dates from the study area make it fascinating and complex to understand the context and relation with the other archaeological sites of Northeast India.

The Eastern Asiatic Neolithic assemblage of cord-marked pottery and double-shouldered celts was reported from the earlier and first reported site of Daojali Hading in the Dima Hasao district of Assam, along with other evidence like querns, tools made of jadeite, and fossil wood (Goswami and Sharma 1963; Sharma 1967). Sarutaru (Neolithic) and Marakdola (Post-Neolithic) are the only reported and excavated sites in the study area (Rao 1973). Similar evidence has been reported from the sites of the Khasi Hills. The sites of Lawlongthroh and Myrkhan in Meghalaya have been recently excavated and finished and broken stone celts, flakes, pottery, iron fishhooks, and domesticated varieties of cereals have been reported from these sites (Mitri and Neog 2016).

The archaeological records of the Digaru–Kolong River valley consist of stone tools, pottery, and standing or buried megaliths. Edge ground, chipped and polished axes and adzes have been reported in large numbers from the study area (Figure 2), including the previously reported sites of Sarutaru and

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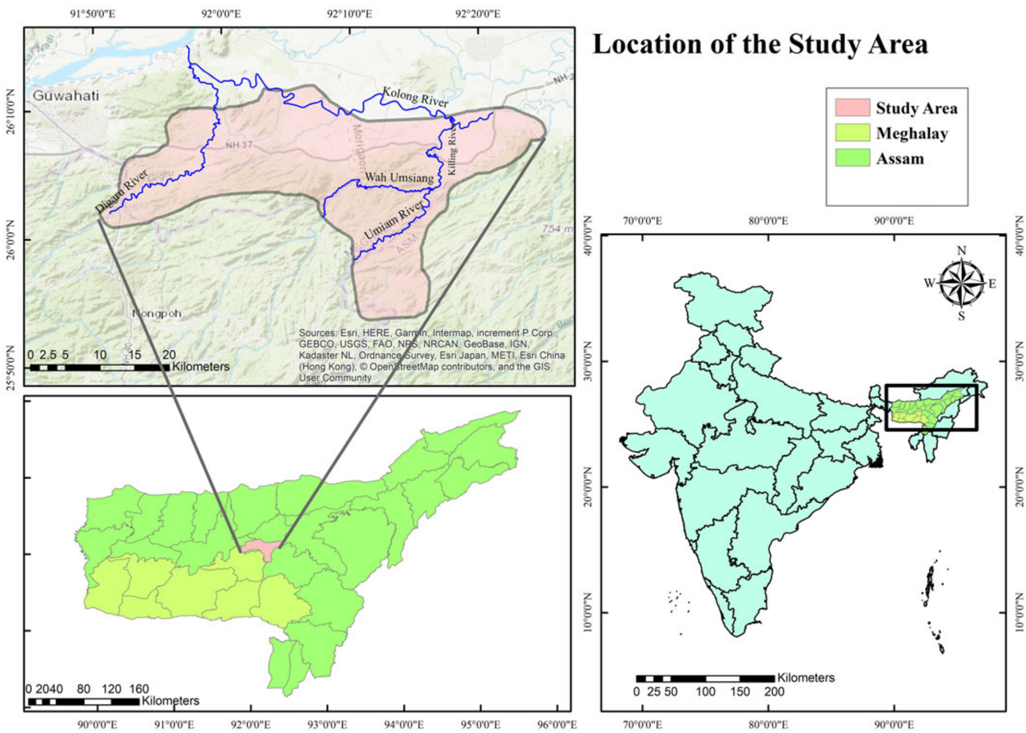

Figure 1. *Location of the study area.*

Marakdola, as well as the new sites of Bagibari, Shankargog, and Silchang. Sporadic finds or accidental discoveries of stone axes, adzes, and potsherds by local people are common during cultivation, soil quarrying, and house construction. Megaliths have been reported in buried as well as standing conditions.

Neolithic culture is a Stone Age culture, and the primary trait that sets it apart from other Stone Age cultures is intentional food production instead of mere food-gathering as a means of subsistence. This occurs in the form of agriculture, animal husbandry, or a combination of the two. Pottery and ground and polished stone tools are other characteristic features frequently, but not always, connected with Neolithic culture (Worman 1949). Ground and polished axes and adzes are the sole characteristics of the study area that can be definitely attributed to the Neolithic. Pottery and megaliths cannot be linked to Neolithic culture only.

The AMS method represents a revolution in radiocarbon dating and today is one of the most popular methods in archaeological research. A key advantage of this method is the smaller sample size required. This has been of particular help in the present study because charcoal was recovered in only small quantities from the sites. As people are still living on these sites, there are complications in conducting full-scale excavations as the land belongs to individual owners. Of course, the paucity of men and material resources is also an issue that makes it difficult for researchers to undertake large-scale excavations in the area. The buried context of the archaeological evidence has been ascertained only by using trial trenching and section scraping, and these sites could only be dated by the AMS ^{14}C method. Previously, charcoal was recovered from the archaeological contexts in this area, but it could not be used for dating as the conventional radiocarbon method required more charcoal than was found in the sites.

This paper presents the results of the radiocarbon dating carried out on the archaeological materials from the Digaru-Kolong River valley using accelerator mass spectrometry (AMS), and an effort is made to understand the chronology of ancient settlements in the Digaru-Kolong River valley, where archaeological remains are found.

https://doi.org/10.1017/RDC.2024.93 Published online by Cambridge University Press

Figure 2. *Stone celts reported from the study area.*

Materials and methods

A considerable part of the study area is flat with sporadic hills except for the southern boundary outlined by the Shillong plateau. An archaeological reconnaissance survey and test pit excavations were conducted to gather archaeological evidence from the study area. Several sites with ground and polished axes, adzes, megaliths, potsherds, charcoal, and sediment samples have been reported (Figure 4). Seven charcoal, five potsherds, and five sediment samples have been analyzed using the AMS technique at the Inter-University Accelerator Centre (IUAC), New Delhi. Descriptions of the sites are presented below.

Site descriptions

Marakdola (MRK)

Marakdola (26°4'3.52"N and 91°53'33.92"E) is located 28 km southwest of Guwahati city on the northern bank of the Digaru River and occupies a mound at an elevation of 62 m above mean sea level (AMSL). The site is located on a low mound in a foothill position, and seasonal and perennial water channels cut through the deposits. Marakdola and Sarutaru are located a kilometer apart (Rao 1973); however, the excavated site of Sarutaru is untraceable today. Potsherds and stone axes and adzes have been reported from eroded surfaces, slopes, and sections made by water channels crossing the village. A test pit (2 × 1 m) was dug to a depth of 130 cm from the surface, and archaeologically sterile deposits were reached at a depth of 115 cm. The charcoal, sediment, and potsherd samples were collected at different depths.

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Figure 3. *Selected potsherd samples.*

Bagibari (BGI)

Bagibari (26°11'24.23"N and 92°3'33.18"E) is located 10 km from Tetelia at NH37 and around 50 km from Guwahati city at an elevation of 60 m AMSL. The village is on a river terrace, and the Kolong River flows along the northern side. Water channels regularly cut the sporadic river terraces or mounds in the Bagibari region. The frequent floodwater deposits sediments annually. Stone celts and potsherds are occasionally found by the villagers when they dig. A test pit of 2 × 1 m revealed 30 cm of cultural deposits, with potsherds, a stone adze, sediment, and charcoal as the archaeological record.

Shankargog (SKG)

Shankargog (26°7'12.92"N and 92°4'40.06"E) is located ca. 50 km east of Guwahati city near Dimoria College at an elevation of 57.08 m AMSL. The village is located on a river terrace with dense deposits of potsherds. A test pit of 2 × 1 m was dug to a depth of 90 cm from the surface, and sterile deposits were reached at 63 cm. Sediment, charcoal, and potsherds were recovered from the test pit.

Silchang (SLG)

Silchang (26°7'19.12"N and 92°21'1.90"E) is 75 km eastward from Guwahati city in the Morigaon district of Assam at an elevation of 70 m above mean sea level. The site occupies a foothill position, and water channels cut through it and recycle the sediments annually. The locals have removed the upper layer of these low hillocks for various purposes, mainly for cultivation. Stone axes, adzes, and potsherds

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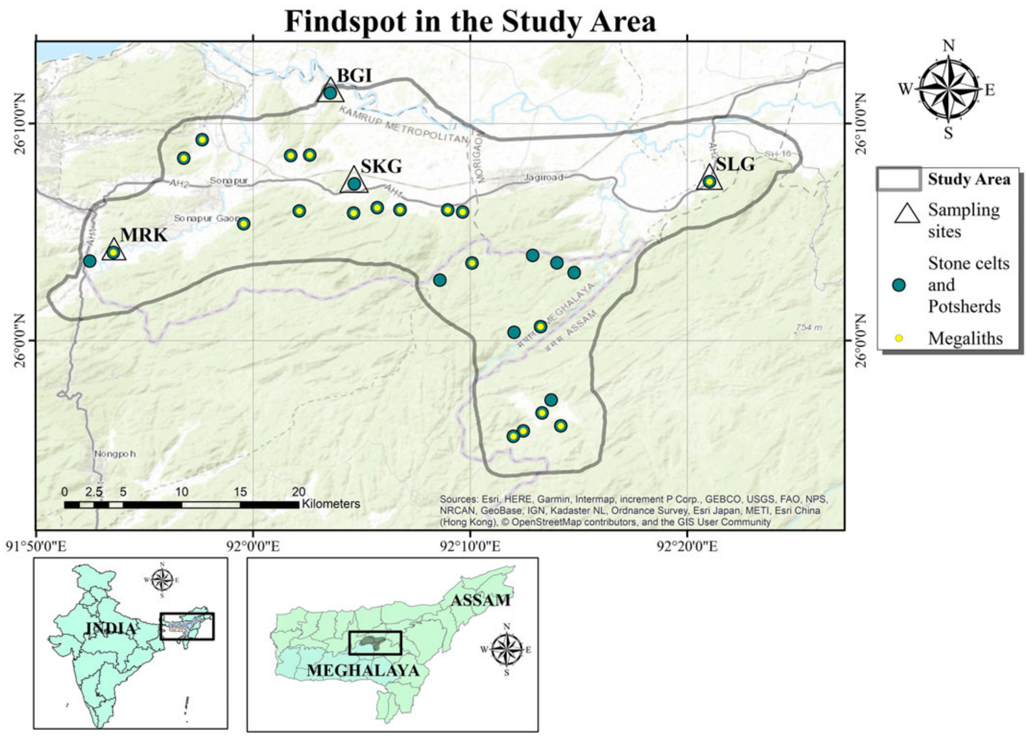

Figure 4. *Archaeological sites in the study area.*

have been found sporadically on the slopes, terraces, and cultivated lands. A test pit of 1 square meter was dug to a depth of 70 cm, and sterile deposits were reached at a depth of 45 cm. Potsherds and sediment samples were collected from the pit.

Charcoal samples were found in small concentrations in isolated fragments. The extraction and storage of the analyzed charcoal samples were done in the field immediately after excavation to avoid any contamination. Pottery can contain carbon in the form of contemporary residues incorporated during manufacturing or from the absorption of soot or smoke during firing. The carbon may have already been present in the potsherd material (Hedges et al. 1992). Potsherds exhibiting soot marks or charcoal on the body were selected for the present analyses (Figure 3). Despite the inherent complexities associated with pottery dating, it remains a prominent choice for AMS dating due to its potential to yield significant insights into ancient civilizations and cultural customs (Janz et al. 2015). The rationale behind the selection of pottery for AMS dating in this study is grounded in the persistence of organic carbon surviving in the firing process. Targeting potsherds displaying soot marks or burn spots for sampling is a methodologically sound approach, as these regions are presumed to harbor elevated levels of organic carbon. Furthermore, these samples have sufficient carbon content for AMS dating, which is determined using an elemental analyzer (EA) before and after chemical treatment, as shown in Table S1 in the supplementary information. The potsherd samples have basket/mat impression on the outer surface, and significant minerals identified through X-ray powder diffraction (XRD) were quartz, kaolinite, hematite, goethite, microcline, and aragonite.

The color of the sediments was assessed using a Munsell Soil chart; the sediments from MRK, BGI, SKG, and SLG were dark brown (10YR 3/3), brownish-yellow (10YR 6/6), pale brown (10YR 7/4), and brownish-yellow (10YR 6/6), respectively. The texture class of the sediment samples from BGI, SKG, and SLG is loamy fine sand, whereas MRK is loamy soil with a medium texture. All the sediment samples analyzed are medium acidic with a pH value of 6. The significant minerals identified in all sediment samples analyzed by XRD were quartz, kaolinite, halloysite, microcline, albite, anorthite, hematite, goethite, dolomite, calcite, and aragonite.

Sample preparation and ^{14}C measurement

The outer surface of the selected samples was cleaned using a brush to remove extraneous materials that had been mixed during excavation, and further pre-treatment was done using the protocol adopted by the IUAC laboratory (Sharma et al. 2018). Briefly, samples underwent acid-alkali-acid (AAA) based chemical treatment after physical screening for visible contaminations like roots, hair, and threads. Samples were first treated with 0.5M HCl to remove carbonates and then reacted with 0.1N NaOH base to remove humic acids. Further, they were treated with 0.5M HCl acid again in the final step to remove absorbed CO_2 from the atmosphere during the base step. Samples were washed with deionized water to neutralize pH after each step in AAA treatment and dried in a freeze-dryer. After pre-treatment, samples were converted into graphite using automated graphitization equipment (AGE), and graphite samples were measured for ^{14}C using a 500kV Pelletron-based accelerator mass spectrometer. $^{14}C/^{12}C$ ratios measured using the AMS system were normalized using the OXII standard, and AMS $\delta^{13}C$ values were utilized for isotopic fractionation corrections. Radiocarbon ages (BP) were calculated using the method described by (Stuiver and Polach 1977).

Calibration and Bayesian age depth modeling

The measured ^{14}C ages were converted into calendar ages using the IntCal20 calibration curve (Reimer et al. 2020) in the OxCal 4.4 calibration program (Bronk Ramsey 2009). Calibrated dates (2σ range and median value) are given in Table 1, along with their corresponding radiocarbon ages. We have also performed Bayesian age-depth modeling using a deposition model in OxCal for the Marakdola (MRK) and Bagibari (BGI) sites. We must exclude two dates at depths of 60 and 65 cm for the MRK site due to poor agreement. After excluding these two dates, the model and overall agreements were 93.3% and 93.5%, respectively. For the Bagibari (BGI) site, all four dates are included in the model, and model and overall agreements were 73% and 72.9%, respectively. The age depth model for both sites is shown in Figure 5 and 6, and the modeled dates are given in Table 1.

Results and discussion

Seventeen AMS dates from the study area give us a time frame for the archaeological evidence ranging from 240 CE to 1379 CE. The sediment sample taken at 105 cm from Marakdola (MRK) is dated to 1801 ± 25 BP, and the modeled median age (calibrated) is 287 CE. The median calibrated age (unmodeled) of the potsherd sample at a depth of 65 cm is dated to 1101 CE. From the Marakdola site, five charcoal samples were taken, of which the radiocarbon was measured. The modeled median age of the samples at 25, 35, 70, and 75 cm depth are dated to 1379 CE, 1319 CE, 1220 CE, and 1210 CE, respectively. However, the calibrated median ages of a charcoal sample at a depth of 60 cm and a potsherd at a depth of 65 cm, dated 977 CE and 1101 CE, respectively, are unsuitable for the Bayesian modeling. Therefore, these two samples are excluded from the modeling.

Nevertheless, the early dates of these samples suggest that natural or human activity may have brought ancient materials such as potsherds or charcoal to their new positions. The soil acquired for pottery manufacturing is generally from the upper part of the profile. However, such soil excavation can result in material mixing from different parts of the profile. Similarly, the calibrated median ages of potsherd samples from depths of 10 and 15 cm at Bagibari (BGI) dated 1193 CE and 925 CE do not align with the depth model and are therefore excluded from the data modeling.

The calibrated modeled median ages of charcoal samples retrieved from depths of 10 and 15 cm correspond to 1159 CE and 1067 CE, respectively. The modeled median ages of sediment samples at 25

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Table 1. *Results of radiocarbon analyses: measured calibrated ^{14}C age, corresponding calibrated unmodeled and modeled age range, and median age. The S.N. 1–7 from Marakdola (MRK), 8–13 from Bagibari (BGI), 14–15 from Shankargog (SKG), and 16–17 from Silchang (SLG)*

						Calibrated age range (unmodeled BCE/CE)		Modeled age (BCE/CE)	
S. N.	Sample name	Site name	Material	Depth (cm)	Radiocarbon age (BP)	From–to (2σ range)	Median age	From–to (2σ range)	Median age
1.	MRK1	Marakdola	Charcoal	25	585 ± 28	1304–1413 CE	1348 CE	1305–1416 CE	1379 CE
2.	MRK2	Marakdola	Charcoal	35	667 ± 32	1276–1394 CE	1320 CE	1277–1395 CE	1319 CE
3.	MRK3	Marakdola	Charcoal	60	1072 ± 33	892–1026 CE	977 CE	Not included in the model	
4.	MRKc16	Marakdola	Potsherd	65	931 ± 24	1033–1169 CE	1101 CE	Not included in the model	
5.	MRK4	Marakdola	Charcoal	70	840 ± 29	1163–1265 CE	1214 CE	1175–1264 CE	1220 CE
6.	MRK5	Marakdola	Charcoal	75	829 ± 29	1169–1269 CE	1226 CE	1165–1255 CE	1210 CE
7.	MRKs1	Marakdola	Sediment	105	1801 ±25	206–338 CE	255 CE	207–339 CE	287 CE
8.	BGI1	Bagibari	Charcoal	10	1006 ± 31	991–1154 CE	1031 CE	1117–1077 CE	1159 CE
9.	BGIc8	Bagibari	Potsherd	10	862 ± 24	1053–1258 CE	1193 CE	Not included in the model	
10.	BGI2	Bagibari	Charcoal	15	914 ± 30	1040–1210 CE	1119 CE	1031–1130 CE	1067 CE
11.	BGIc9	Bagibari	Potsherd	15	1141 ± 27	774–991 CE	925 CE	Not included in the model	
12.	BGIs3	Bagibari	Sediment	25	1761 ±31	232–383 CE	303 CE	240–400 CE	319 CE
13.	BGIs4	Bagibari	Sediment	30	1805 ±29	133–340 CE	249 CE	130–329 CE	240 CE
14.	SKGc3	Shankargog	Potsherd	45	795 ± 22	1220–1274 CE	1246 CE	No modeling is done for this site	
15.	SKGs1	Shankargog	Sediment	50	693 ±31	1270–1389 CE	1296 CE		
16.	SLGc6	Silchang	Potsherd	15	480 ± 25	1411–1452 CE	1433 CE	No modeling is done for this site	
17.	SLGs1	Silchang	Sediment	40	1456 ±27	570–649 CE	614 CE		

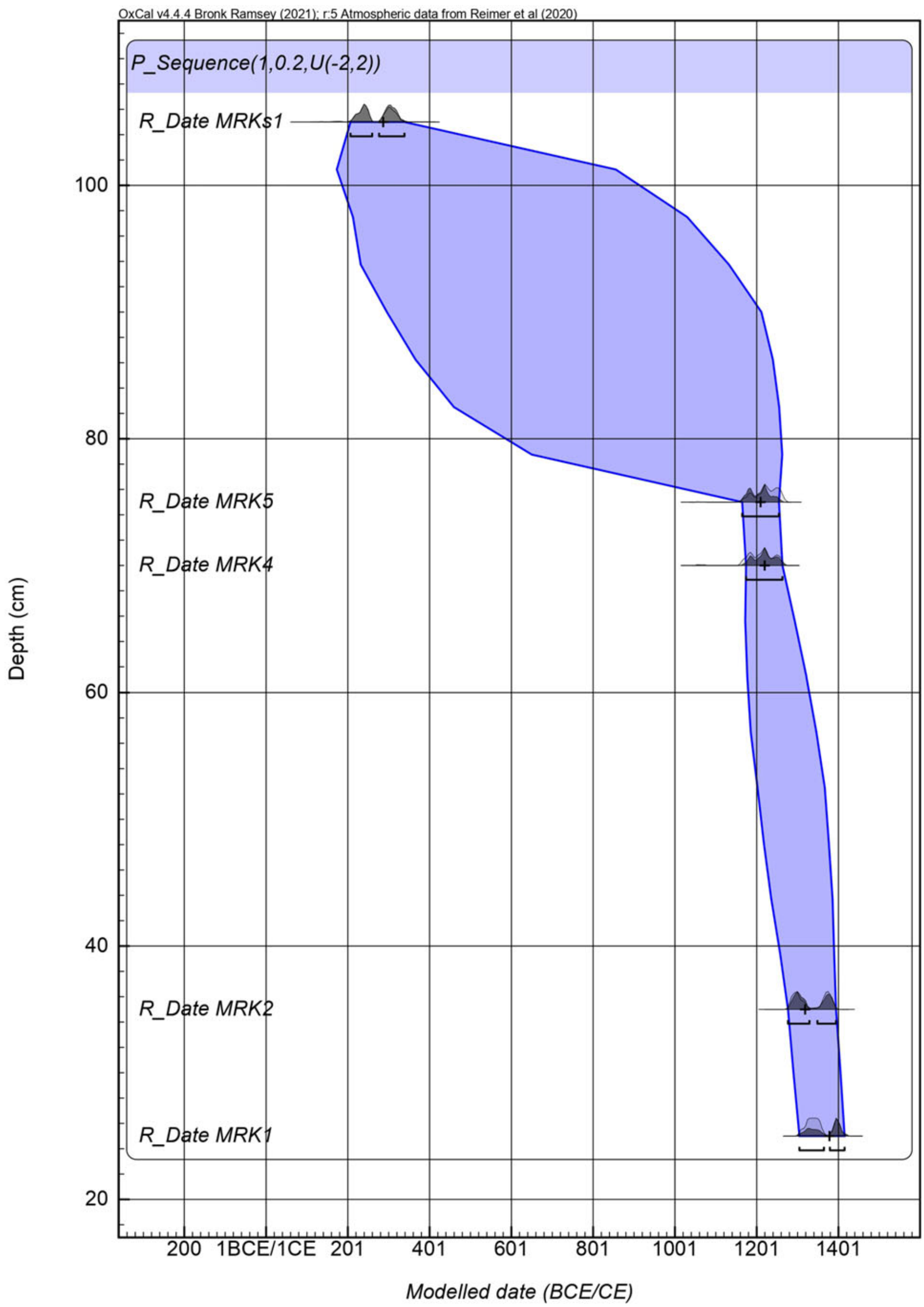

Figure 5. *Age depth model for the Marakdola (MRK) site.*

and 30 cm depths are 319 CE and 240 CE, respectively. The calibrated median age (unmodeled) of a potsherd from a depth of 45 cm at Shankargog (SKG) is 1246 CE, and that of a sediment sample at a depth of 50 cm is 1296 CE. The results indicate that natural or human activity may have translocated the pottery from the bottom cultural layer. This time interval further shows the duration of the settlement of the site. The median ages (cal. unmodeled) of the potsherds and sediment samples at 15 and 40 cm depth from Silchang (SLG) are 1433 CE and 614 CE, respectively, indicating that the sediment was older than the cultural material.

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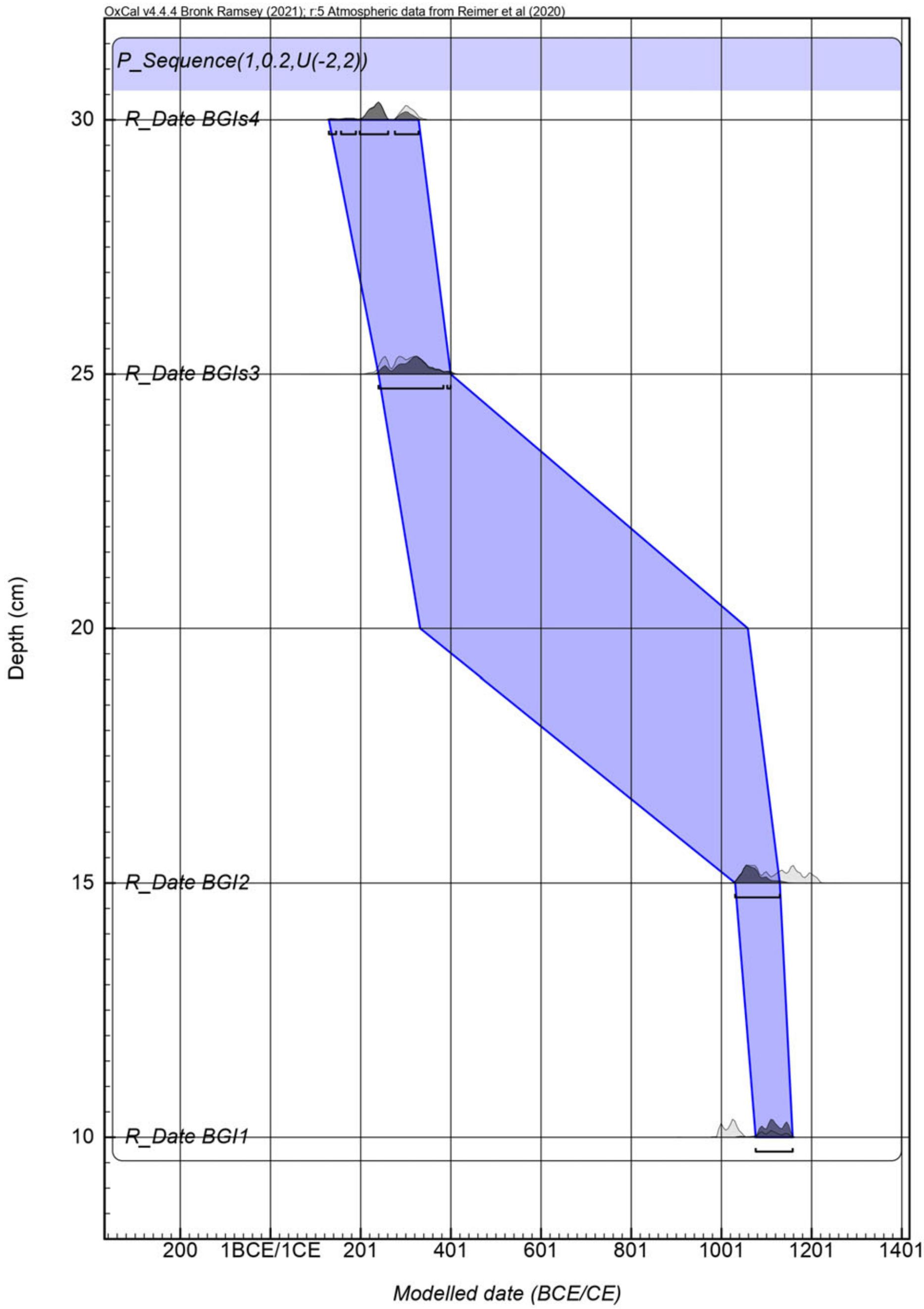

Figure 6. *Age depth model for the Bagibari (BGI) site.*

The ^{14}C dating of pottery presents challenges due to potential material mixing during manufacturing. The discrepancy between charcoal and pottery dates at the Bagibari site underscores this issue. Despite finding both charcoal and potsherds at the same depths, the dates obtained differed, leading to a preference for charcoal dates in the Bayesian model due to their perceived reliability. Furthermore, the inconsistency in potsherd dates at other sites, such as Marakdola, Shankargog, and Silchang, highlights the importance of corroborating findings from pottery with other archaeological evidence. In this

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instance, where potsherd dates do not align with the stratigraphy or show unreliability, the conclusion has been derived from the sediments and charcoal dates.

The river terraces of the study area are a young geomorphic unit that displays many relics of flood features or the fluvial system. The hilly terrain on the southern margin of the study area rises from ca. 200 m to ca. 750 m AMSL. The inselbergs and isolated hills also reach 60 to 300 m AMSL. Studies from inland basins indicate continuous fluvial sedimentation from the Late Pleistocene to the Holocene. During periods of high rainfall, the sediment load of the river might increase periodically, while during periods of lower rainfall, the river would lose its capacity to carry the sediments further down in a particular year. Rivers that debouch from high terrain to an alluvial plain also lose their load due to the flat relief, which reduces the stream force. This has resulted in the formation of rounded-top low hillocks or dense river terraces near the foothills of the Meghalaya plateau. These can result from landslips by the river immediately after reaching the Brahmaputra River (Kar et al. 1997).

The present-day villages are on these rounded-top low hillocks. The top cultural layers of many of these terraces have been removed, and these have been either converted to homestead land or agricultural fields. While removing the upper cultural layers, villagers have reported finds of ground and polished axes, adzes, and pottery. The sediment samples analyzed were collected from a depth of half a meter or slightly less than a meter. The average height of an entire terrace section in the area is 35–40 m, of which almost 30 m on average have already been removed. Pottery and tools are found in the remaining 5 m at a depth of 45 × 50 cm. Thus, the cultural layer sits on a deposit of at least 4 m thick, formed approximately 2000 years before present. These deposits or the river terraces were the most attractive spots chosen by people for habitation as frequent stray finds of artifacts are reported from the terraces. Due to their height and fertility, the river terraces provided people with a safe location for settlement.

According to the dates of the cultural materials, people inhabited the region after 1000 years (approximately) of the formation of the landscape and created an archaeological record comprising ground and polished tools, pottery, and megaliths. During the same period (8th to 12th century CE), much was happening in the surrounding areas. In Daojali Hading (Assam), ca. 150 km south, and Lawlongthroh (Meghalaya), 50 km south of the study area, approximately 3000–3500 years ago, people were using stone querns and pestles, making tools of jadeite and semi-precious stones, weaving, using iron fishhooks, and eating domesticated varieties of cereals (Mitri et al. 2015; Sharma and Singh 2017). In Cherrapunjee, people began smelting iron and making iron tools approximately 2000 years ago (Prokop and Suliga 2013).

In the immediate vicinity of the area, an urban way of life developed. The evidence from the Ambari excavation site speaks of a flourishing atelier of the craftsmen of the ancient state of Kamarupa, which had developed into a stable polity (Ansari and Dhavalikar 1970; Dhavalikar 1973). The Brahmaputra Valley was populated and had a powerful monarchy, a developed education system, and a trade and agriculture-based economy (Barpujari 1990). Some 24 inscriptions provide an epigraphical record of the formation of a polity and refer to land donations, horse sacrifices, paddy cultivation, and temple construction. Inscriptions were written by kings in Sanskrit, the eastern variety of the Gupta script, the eastern variety of the Brahmi script, and the eastern variety of the North Indian alphabet of the 9th century (Sharma 2023). Evidence of this period is also found in the Digaru–Kolong river valley.

In Nazirakhat, sculptures and ruins of a stone temple dated to 1100 CE and sculptures and a rock inscription dated to the 10th century CE in Hatisila are found (IGNCA 2015).

With all this activity happening in the Digaru–Kolong River valley and its surroundings in the ca. 500 years under study, a group of people lived for whom ground and polished stone axes and adzes were still relevant. They used pottery, erected megaliths, and perhaps practiced shifting cultivation. However, iron was available and used in temple construction, dating to the 10th to 12th century CE in the vicinity. The question then is, were these people using stone axes and adzes when other groups in the same area were using iron tools?

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Conclusions

There are various concepts and beliefs associated with the ground and polished axes and adzes. The artifacts are understood as "charms" by the people of the area. They are part of the village medicine men's kit. People in the region believe that stone tools fall from the sky during thunder strikes and call them "thunderbolts" or "thunderstones." The axes and adzes have traveled in time through these beliefs or traditions. AMS ^{14}C dates were obtained from carbon samples found on the same archaeological horizon as the axes and adze in the Digaru–Kolong River valley. During this period, the occurrence of the menhirs and pottery can be explained, but the occurrence of the ground and polished axes and adzes is intriguing.

Owing to the significant socio-religious memory and beliefs associated with the ground and polished tools, locals collect stone axes and adzes in their houses. In many Indian homes today, the stone mortar and pestle or stone grinder exist together with iPhones, high-end computers, and other advanced electronic gadgets. Continuity of certain cultural traits is common and defined as a real phenomenon. Since human action is based on cognition, decisions as to causal linkages will inevitably be grounded in and bounded by past knowledge and current perceptions. The past is often "repeated." A large part of a cultural complex might be replaced, while some traits, like mortar and pestle, might survive and travel in time—a Neolithic cultural trait found in the present. The ground and polished axes and adzes found in the study area also traveled in time.

Supplementary material. To view supplementary material for this article, please visit https://doi.org/10.1017/RDC.2024.93

Acknowledgments. We thank the Archaeological Survey of India (ASI) for permission to conduct the archaeological survey. Authors are thankful to IUAC for extending AMS facility for ^{14}C funded by Ministry of Earth Science (MoES), Govt. of India with reference numbers MoES/16/07/11(i)-RDEAS and MoES/P.O.(Seismic)8(09)-Geochron/2012. We further thank Dr. Sangay Tamang and Mr. Sonam Dukpa for their help and support in the exploration.

References

Ansari ZD and Dhavalikar MK (1970) Excavations at Ambari (Gauhati). *Journal of the University of Poona* **30**, 79–97.

Barpujari HK (1990) *The Comprehensive History of Assam: From the Pre-Historic Times to the Twelfth Century A.D*. Guwahati: Guwahati Publication Board.

Bronk Ramsey C (2009) Bayesian analysis of radiocarbon dates. *Radiocarbon* **51**(1), 337–360. doi: 10.1017/S0033822200033865.

Dhavalikar MK (1973) Archaeology of Gauhati. *Bulletin of the Deccan College Post-Graduate Research Institute* **31**, 137–149.

Goswami MC and Sharma TC (1963) A Brief Report on the Investigation into Prehistoric Archaeology in the N.C. Hills. *Journal of Gauhati University* **13**, 63–66.

Hedges REM, Tiemei C and Housley RA (1992) Results and methods in the radiocarbon dating of pottery. *Radiocarbon* **34**(3), 906–915. doi: 10.1017/S0033822200064237.

IGNCA (2015) The Rock Art Sites of Brahmaputra Valley in Western Assam, Assam (IInd Phase of Field Documentation) (23rd–30th March, 2015) Indira Gandhi National Centre for the Arts New Delhi. ignca.gov.in. [accessed 2023 Jan 1]. http://ignca.gov.in/rockart_2015/Rockart_AssamReport2015.pdf.

Janz L, Feathers JK and Burr GS (2015) Dating surface assemblages using pottery and eggshell: assessing radiocarbon and luminescence techniques in Northeast Asia. *Journal of Archaeological Science* **57**, 119–129. doi: 10.1016/j.jas.2015.02.006.

Kar SK, Prasad S and Kumar G (1997) Quaternary sediments of Indo-Gangetic, Brahmaputra and adjoining inland basins and the problem of demarcation of Pleistocene-Holocene Boundary. *Journal of Palaeosciences* **46**(1–2), 196–210. doi: 10.54991/jop.1997.1340.

Mitri M, Kharmawphlang D and Syiemlieh H (2015) A preliminary report on the excavation of the Neolithic site at Law-Nongthroh (SohpetBneng Hill), Khasi Hills, Meghalaya. *Man and Environment* **40**, 33–42.

Mitri M and Neog D (2016) Preliminary report on the excavation of Neolithic sites from Khasi Hills Meghalaya. *Ancient Asia* **7**, 1–17.

Prokop P and Suliga I (2013) Two thousand years of iron smelting in the Khasi Hills, Meghalaya, North East India. *Current Science* **104**, 761–768.

Rao SN (1973) The Neolithic Culture of Sarutaru, Assam. In *Bulletin of the Department of Anthropology*. Dibrugarh University.

Reimer PJ, Austin WEN, Bard E, Bayliss A, Blackwell PG, Bronk Ramsey C, Butzin M, Cheng H, Edwards RL, Friedrich M, et al (2020) The IntCal20 Northern Hemisphere radiocarbon age calibration curve (0–55 cal kBP). *Radiocarbon* **62**(4), 725–757. doi: 10.1017/RDC.2020.41.

Sharma R, Umapathy GR, Kumar P, Ojha S, Gargari S, Joshi R, Chopra S and Kanjilal D (2018) AMS and upcoming geochronology facility at Inter University Accelerator Centre (IUAC), New Delhi, India. *Nuclear Instruments and Methods in Physics Research B* **438**, 124–130.

Sharma S (2023) Assam from Prehistory to History. In *Northeast India Through the Ages: A Transdisciplinary Perspective on Prehistory, History, and Oral History*. Routledge: Taylor & Francis Group, 27–61.

Sharma S and Singh P (2017) Luminescence dating of Neolithic pottery in North East India. *Current Science* **113**(3), 492–496.

Sharma TC (1967) A note of the Neolithic pottery of Assam. *Man New Series* **2**, 126–128.

Stuiver M and Polach HA (1977) Discussion: Reporting of ^{14}C data. *Radiocarbon* **19**(3), 355–363. doi: 10.1017/S0033822200003672.

Worman EC (1949) The "Neolithic" problem in the prehistory of India. *Journal of the Washington Academy of Sciences* **39**, 181–201.

Cite this article: Kumar J, Sharma S, Sharma R, and Chopra S (2024). AMS ^{14}C Dating of the Sites of Digaru-Kolong River Valley, Assam-Meghalaya Foothills, India. *Radiocarbon* **66**, 664–675. https://doi.org/10.1017/RDC.2024.93