

The Submerged Palaeo-Yare: New Middle Palaeolithic Archaeological Finds from the Southern North Sea

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The Palaeolithic archaeological record from current dryland contexts informs on activity across only a fraction of occupied Pleistocene landscapes. Now-submerged contexts, such as those preserved beneath the southern North Sea, allow past human activity to be considered at a more representative scale. Previous investigations have recovered internationally significant Middle Palaeolithic archaeology associated with submerged Pleistocene landscapes in the southern North Sea. Discovered through aggregate dredging in marine aggregate licence Area 240, the archaeology is associated with Pleistocene deposits of the Paleo-Yare river system. Subsequent studies have demonstrated that the Palaeo-Yare catchment extended across adjacent aggregate areas, leading to the implementation of a regional monitoring programme at aggregate wharfs to monitor, manage, and assimilate new archaeological data.

This paper reviews all new Palaeolithic lithic finds recovered between 2011 and 2022 from Area 240 and adjacent licence areas. Most are Middle Palaeolithic artefacts from Area 240. These new Middle Palaeolithic discoveries are related to previous finds and the combined collections placed within their wider Middle Palaeolithic British context. Middle Palaeolithic activity within the Palaeo-Yare catchment included multiple phases of occupation associated with different favoured technological repertoires, indicating that two groups of artefacts are present: Levallois artefacts likely to date to the early Middle Palaeolithic (MIS 8–7–6) and handaxes dating to the Late Middle Palaeolithic (MIS 5d–3).

Keywords: Middle Palaeolithic, Pleistocene, lithic artefacts, North Sea, aggregates, Levallois

Discoveries in 2007–2008 of Middle Palaeolithic artefacts amongst aggregate dredged from licence Area 240 demonstrated that submerged terrestrial Pleistocene deposits beneath the North Sea can preserve significant Palaeolithic archaeology. Much work has been done to contextualise this archaeology, which has demonstrated that it originates from submerged terrestrial sediments of the Palaeo-Yare (Tizzard *et al.* 2014; 2015). The discoveries led to a programme of wharf monitoring of aggregate dredged from licence areas within the Palaeo-Yare catchment (Wessex Archaeology 2015; 2021). This monitoring has recovered additional Palaeolithic archaeology and here we report on new finds made between

2011 and 2022. We assess the context and chronology of Palaeolithic archaeology from the Palaeo-Yare, its implications for the Middle Palaeolithic settlement history of the region, and the place of the archaeology within the Middle Palaeolithic of Britain.

ORIGINAL FINDS

Between December 2007 and March 2008, 88 Palaeolithic lithic artefacts (including 33 handaxes) and over 100 fragments of vertebrate fauna were recovered during aggregate dredging from licence Area 240, located 11 km from the nearest point on the East Anglian coast at Great Yarmouth (Fig. 1). Material was recovered from oversize aggregate stockpiles at SBV Flushing Wharf in Vlissingen, Netherlands. The discoveries were reported to English Heritage (now Historic England) through the *Marine Aggregate Industry Protocol for*

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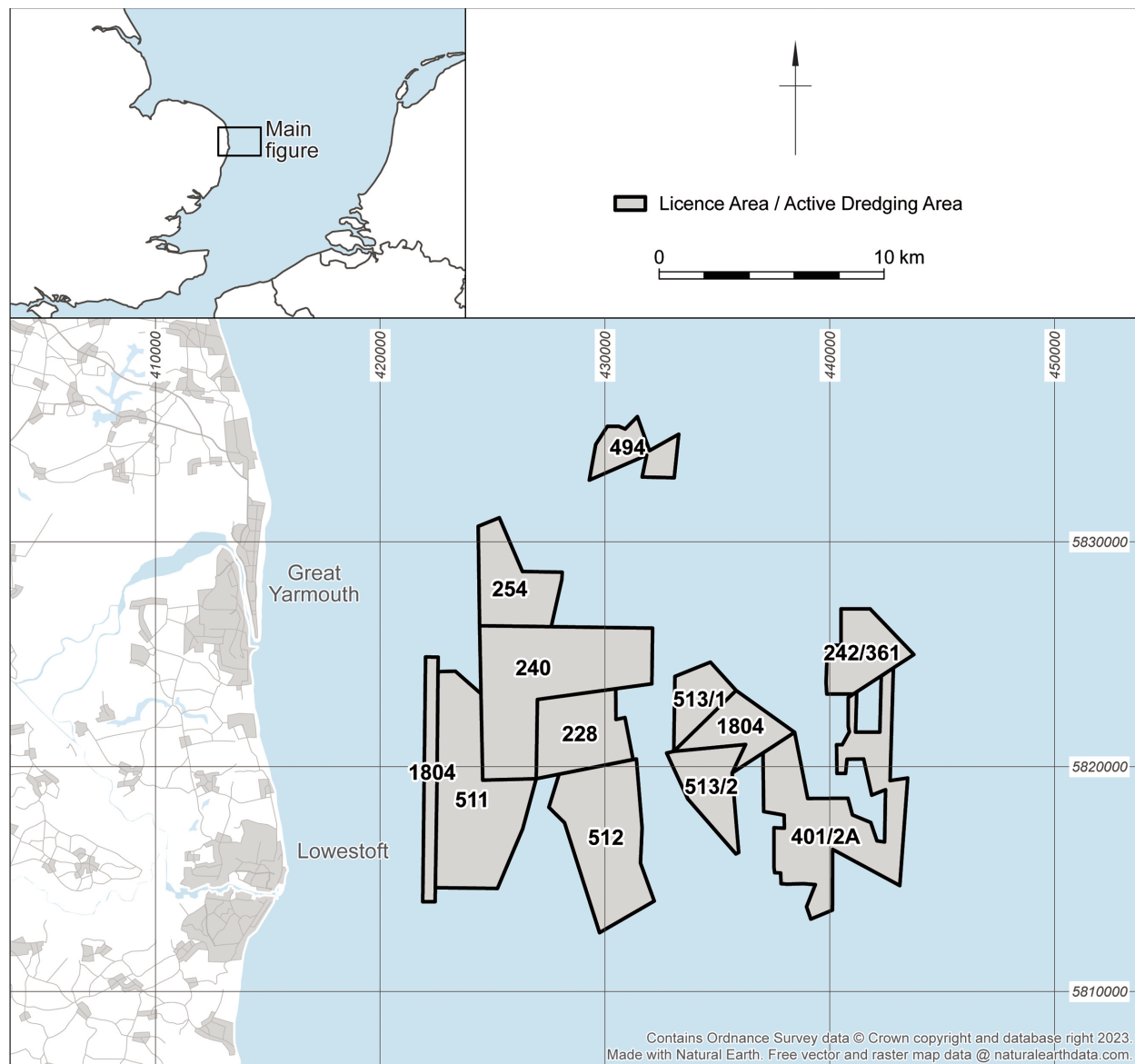


Fig. 1.
Location plan

Reporting Finds of Archaeological Interest (MAI Protocol).

A 3.5×1.0 km area on the eastern side of Area 240 was identified as the source of this material. To prevent further impact on the archaeology, the operator holding the marine licence (regulatory consent) to extract sand and gravel (Hanson Aggregates Marine Ltd) voluntarily implemented Archaeological Exclusion Zones (AEZ) covering this area (Fig. 2). The lithic artefacts were

subsequently analysed by De Loecker (De Loecker 2010; Tizzard *et al.* 2015) and vertebrate fauna by Glimmerveen (Tizzard *et al.* 2015).

Between 2008 and 2013, Wessex Archaeology undertook the Seabed Prehistory Project to understand the palaeogeography and archaeological context of the Palaeolithic material (Wessex Archaeology 2010a; 2010b; 2011). The results were published by Tizzard *et al.* (2015).

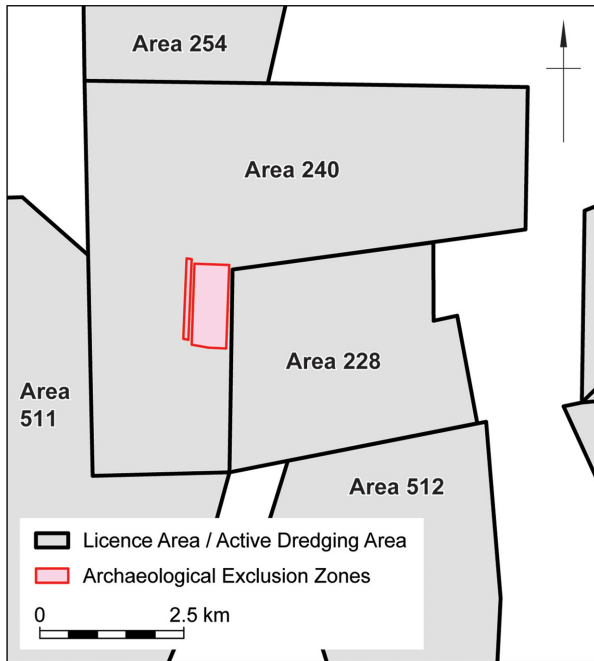


Fig. 2. Area 240 plan

Investigations included assessment of geophysical and geotechnical data, palaeo-environmental assessment and analysis, and scientific dating. Techniques for targeted artefact recovery were also trialled which included sampling using clamshell grabs, still photographic survey, and beam trawling. This work was followed in 2011 by a programme of archaeological wharf monitoring of dredged aggregate (Wessex Archaeology 2011). The Project demonstrated that Quaternary deposits of the Palaeo-Yare were present across Area 240. Subsequently, aggregate dredged from licence areas covering the Palaeo-Yare catchment has been subject to archaeological sampling through wharf monitoring (Fjodr 2015; Wessex Archaeology 2015; 2021), which has recovered the further lithic artefacts assessed in this paper.

NEW DISCOVERIES: ANALYSIS OF NEW PALAEO-LITHIC ARTEFACTS FROM AREA 240

The new finds comprise 88 flint artefacts and a further 14 possible flint artefacts (Table 1). Additional material is present within the collection which, while exhibiting evidence for conchoidal fracture of flint clasts, are not considered to be humanly modified.

TABLE 1: PALAEO-LITHIC ARTEFACTS RECOVERED FROM WHARF MONITORING 2011–2022

	Area 212	Area 228	Area 240	Area 319	Area 401/2	Area 473	Area 511	Area 512
Handaxes/roughouts	1	1	19	1	1	1	1	1
Possible handaxe roughouts	1	1	1	1	1	1	1	1
Possible Levallois cores	1	1	1	1	1	1	1	1
Blade cores	1	1	1	1	1	1	1	1
Cores	1	1	1	1*	1	1	1	1
Core fragments	1	1	1	1	1	1	1	1
Handaxe thinning flakes	1	1	2	1	1	1	1	1
Possible handaxe thinning flakes	1	1	3	1	1	1	1	1
Definite Levallois flakes	1	1	8	1	1	1	1	1
Probable Levallois flakes	1	1	4	1	1	1	1	1
Possible Levallois flakes	1	1	1	1	1	1	1	1
Discooidal flakes	1	1	2	1	1	1	1	1
Retouched flakes	1	1	3	1	1	1	1	1
Other flakes	2	1	36	1	1	1	2	3
Possible other flakes	1	1	7	2	1	1	1	1
Possible artefacts	1	1	1	1	1	1	1	1
Total: definite artefacts (possible)	2 (0)	0 (1)	83 (7)	0 (2)	0 (1)	1 (0)	2 (0)	0 (3)

*This artefact may be from a cross-contaminate sample from several aggregate areas.

Artefacts are now known from the Palaeo-Yare catchment in Licence Areas 212 (within 494), 240 and 511, with possible artefacts noted from Areas 228, 319 (within 511), 401/2 and 512 (Fig. 1). Nevertheless, most new finds (94.3%) are, like the original 2007–2008 discoveries, from Area 240.

Analysis of the new lithic collection has comprised taphonomic, techno-typological, and spatial study to consider whether a single, uniform, or multiple/diverse assemblage(s) is present, to assess the likely original lithostratigraphic context, to consider how the material relates to 2007–2008 discoveries, and to place all the archaeology within the context of the wider British Palaeolithic record. The methodology applied is provided in Appendix S1.

Techno-typology

The techno-typological characteristics of most chronologically diagnostic artefacts are indicative of an earlier (Lower or Middle) Palaeolithic date. An exception is a bipolar blade core (Fig. 3) which is consistent with a late Upper Palaeolithic (Creswellian), Terminal Upper Palaeolithic (Long Blade) or early Mesolithic date. This core has a different taphonomic history to the earlier Palaeolithic pieces: it is moderately abraded, with much battering on the aretes. The raw material used is also distinct, being a heavily rolled and battered cobble likely obtained from a beach. This blade core is notable as it is the first clear evidence for Upper Palaeolithic/Mesolithic activity within the submerged Palaeo-Yare catchment. The bulk of the chronologically diagnostic artefacts are handaxes (alongside a small number of flakes potentially reflective of handaxe working) and Levallois flakes (Table 1).

Handaxes: The assemblage contains 17 whole, finished handaxes and a butt fragment, along with a roughout and a possible roughout abandoned during manufacture. All except four of the pieces were available for study; photographs and detailed descriptions were available for these four pieces.

Comparison has been made between the new finished examples and 20 complete handaxes recovered in 2007–2008 and analysed by De Loecker (2010). Metrical data have been used to compare handaxe planform utilising methodological criteria developed by Bordes (1961) and Roe (1964; 1969).

Following the criteria of Roe (1964; 1969), the handaxes in both collections are refined, well-made

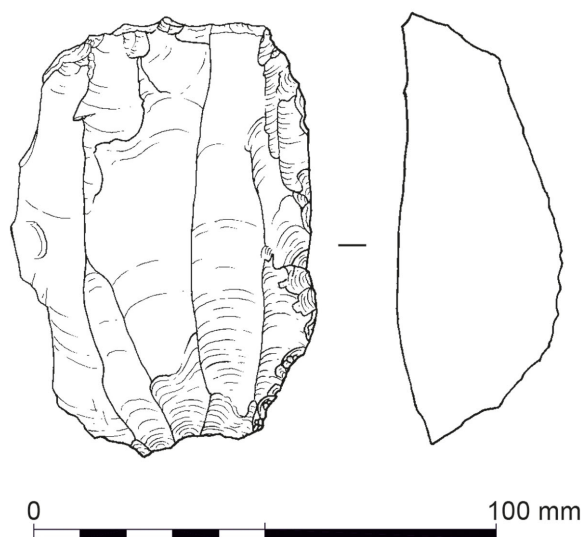


Fig. 3.
Bipolar blade core, Area 240

examples with a weak tendency to having pointed tips. For the new material, the data also indicate high levels of cross-sectional uniformity (this information is not available for the earlier collection). The planforms of the handaxes coalesce close to Roe's metrical division between ovate and pointed groups. The specific ranges in handaxe planforms are illustrated in Figure 4. Proportionally, more handaxes tend towards the pointed end of the spectrum of variation within the new material.

Following Bordes (1961) methodological criteria, the handaxes from the two collections are highly consistent, being flat (as opposed to thick) and

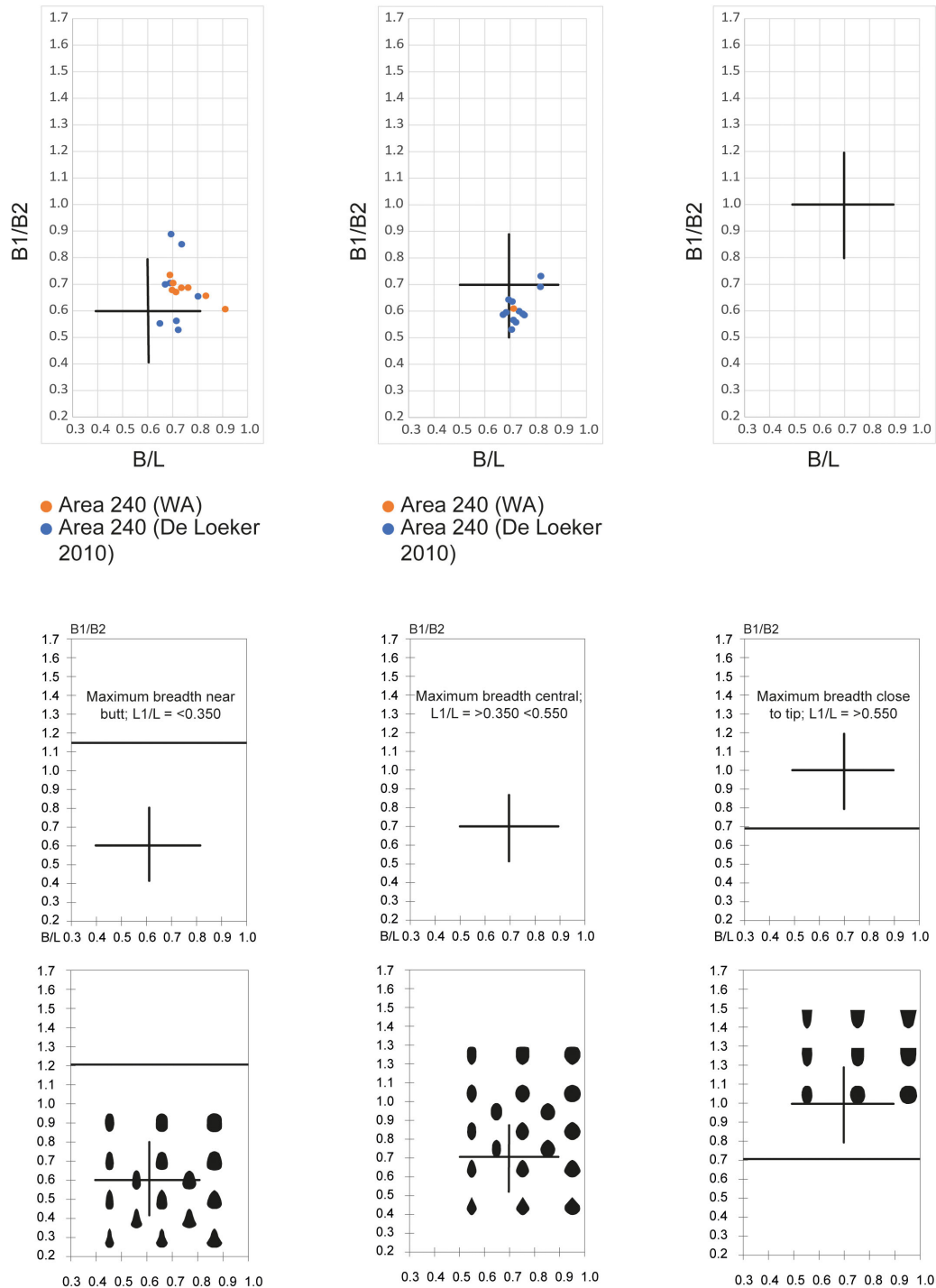


Fig. 4.
Area 240 handaxe planforms (following Roe 1964; 1968)

cordiform in planform (Fig. 5). This uniformity is particularly marked amongst the new material.

Metrical data demonstrate that both new and original finds from Area 240 are highly homogeneous in form, being refined, thin handaxes that have a consistent cordiform planform. Although the data do not demonstrate that the handaxes are a single assemblage from a single lithostratigraphic context, a highly consistent approach to handaxe manufacture is indicated.

Detailed study of the new material provides additional insights into their technology. These handaxes have been produced through extensive flaking using a soft hammer (88.9%), leaving little cortex (all but one example = <10%, with 46.7% retaining no cortex) and resulting in extensive cutting edges around most edges (77.8% all round or most edges). It is generally not possible to determine the original blank due to the intensity of flaking but, where this is apparent (n=4), this was a large flake. One piece on a flake is a large roughout which, along with a further possible example, indicates that handaxe blank selection and manufacture was being carried out in the immediate landscape within Area 240. That handaxes were at least being modified locally is further demonstrated by the presence of two thinning flakes (one soft and one likely soft hammer) and three possible examples.

A particularly striking feature of the handaxes is a consistent approach to manufacture, with initial phases of invasive removals designed to thin the blank, followed by phases of less invasive scars around the margins, which shaped the artefact. Additionally, three pieces exhibit secondary reworking and modification that post-dates initial phases of thinning and shaping. In at least one case this reflects secondary reworking of a broken handaxe.

These technological characteristics are similar to those reported for the original Area 240 handaxe finds (De Loecker 2010, 10) which were extensively worked, removing most cortex, thinned, and shaped using soft hammers, and frequently preserved evidence of a phase of shaping after thinning (referred to as 'continuous retouch'). The only notable difference from the new material is that the original finds include examples with tranchet removals to resharpen the tip (De Loecker 2010, 10); no examples with tranchet blows were recorded amongst the new finds.

Levallois artefacts: The new collection includes eight definite and four probable Levallois flakes, along with

a further possible example; all but one definite flake was available for direct analysis. The Levallois flakes are all large (average maximum dimension = 87.0 mm) and all but one is complete. Only the possible example retains any cortex. The flakes generally reflect centripetal preparation (66.7%, 54.3%), a feature often displayed by large Levallois flakes detached early in reduction from large cores (Scott 2011). Many can only be classed as single removals but a significant number retain dorsal scars that reflect a series of preferential removals made during a phase of core exploitation. Generally, exploitation was through unipolar (n=4), and less frequently centripetal (n=2), recurrent methods. No definite Levallois cores were identified in the new collection but a core fragment may relate to Levallois reduction, with indications of a flaking surface that has been subject to centripetal preparation and lineal exploitation.

The 2007–2008 collection contained ten Levallois flakes, termed Levallois *sensu stricto*, whilst a further ten were termed 'extended' Levallois, possibly reflective of Levallois core working (De Loecker 2010). It is not possible to assess whether they reflect similar or different approaches to Levallois reduction as those in the new collection. The 2007–2008 sample included two Levallois and one 'Levallois extended' cores (De Loecker 2010); the latter would broadly conform to a simple prepared core according to our methodological criteria (Appendix S1). The Levallois methods of preparation and exploitation applied to these cores are unknown.

Other artefacts: The only whole core in the new collection, aside from the late Upper Palaeolithic/early Mesolithic blade core, is an example abandoned early in reduction due to the exposure of a large flaw in the flint. The remainder of the new artefacts are flakes. These are generally large (average maximum dimension = 85.2 mm) and removed using a hard hammer (86.4%). Two flakes are detached from discoidal cores. The original 2007–2008 collection included three 'disc' and one 'disc/discoidal' core (De Loecker 2010) which may also reflect discoidal core working. Three flakes in the new collection are retouched.

Taphonomy

To assess the taphonomic history of the new artefacts from Area 240, physical characteristics comprising levels of surface abrasion, edge damage, patination, staining, battering, and surface scratching have been

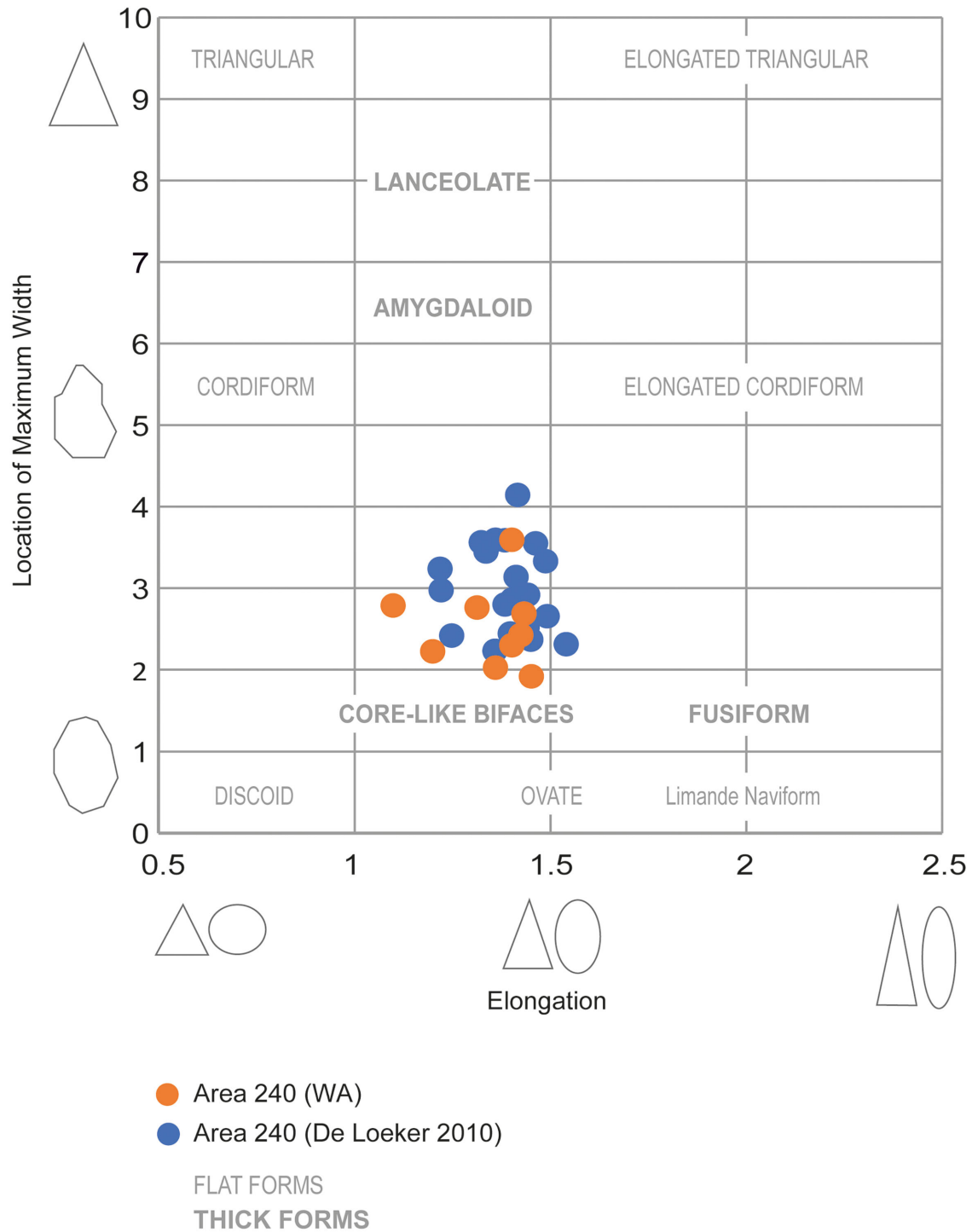


Fig. 5.
 Area 240 handaxe planforms (following Bordes 1961)

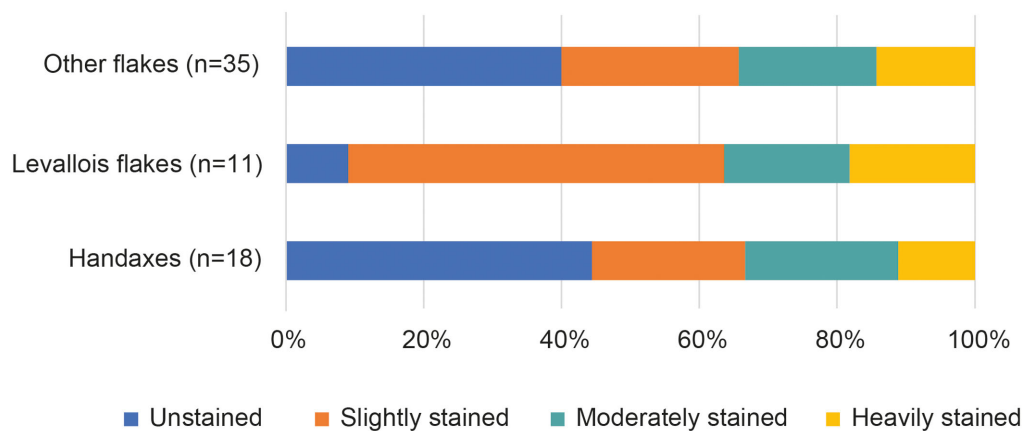
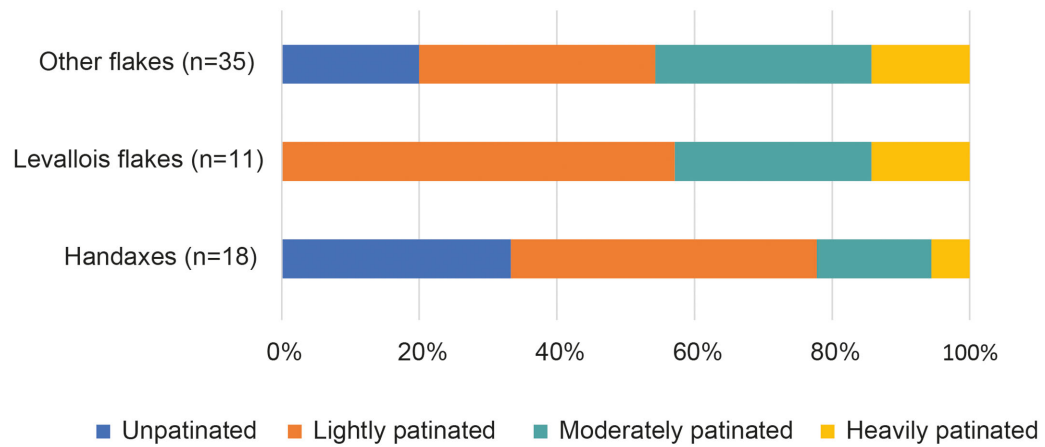
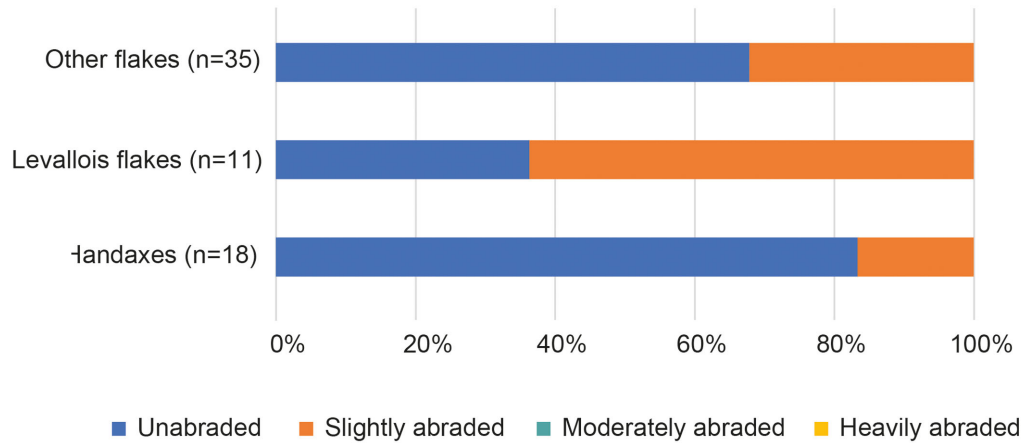


Fig. 6.
Area 240 artefact condition

assessed (Fig. 6). Edge damage has been excluded from the analysis as most artefacts exhibit fresh edge damage likely relating to the dredging recovery process. This masks any earlier damage that may have been present.

The collection exhibits low levels of surface abrasion, battering, and surface scratching, demonstrating that, whilst not necessarily *in situ*, the artefacts have not undergone extensive post-depositional reworking. Although the sample size is limited, the analysis has shown that within this broad pattern there are notable differences between handaxes and Levallois flakes.

Although there is a continuum of condition states, the Levallois material contains proportionally more slightly abraded examples than the handaxes. Additionally, the Levallois artefacts are generally more patinated and more stained (Fig. 6). This suggests that the handaxes and Levallois flakes in the new collection have had different taphonomic histories prior to recovery. The taphonomic data presented for the 2007–2008 discoveries (De Loecker 2010) does not allow for similar analysis. Consequently it is unclear whether similar taphonomic differences between techno-typological artefact classes apply to the original material.

Spatial distribution

It is possible to consider the broad spatial distribution of the new lithic artefacts from within Area 240. For 72 pieces, data is available to establish the individual aggregate loads from specific dredge lanes from which pieces were obtained. This can be tied to GPS coordinates for the dredge plot recording the specific route taken by the dredge vessel. Centre points of dredge lanes have been used to plot to the spatial distribution of the artefacts recovered (Fig. 7). Although there are limits to the accuracy of this data, it nevertheless provides the first indication of specific recovery areas for individual artefacts within Area 240.

The data demonstrate that the new artefacts mostly originate from two sub-zones in the south of the licence area. One is immediately to the west of the Archaeological Exclusion Zones covering the area of the 2007–2008 discoveries, the other sub-zone is further to the south-west (Fig. 7). This demonstrates that multiple locations within Area 240 have produced Palaeolithic artefacts.

The distribution of techno-typological classes of Palaeolithic artefacts are also revealing. Handaxes, handaxe roughouts, and flakes from handaxe manufacture have only been recovered from the northern sub-zone, in the area adjacent to where similar material was recovered in 2007–2008 (Fig. 7). In contrast, Levallois flakes are more widespread. Although these were recovered from within the northern sub-zone, they also occur within the southern sub-zone. The late Upper Palaeolithic/early Mesolithic blade core also originates from this southern sub-zone.

THE MIDDLE PALAEO-LITHIC OF THE PALAEO-YARE

Lithostratigraphic and palaeo-landscape context

Perhaps the greatest challenge in analysing the Palaeolithic archaeology from Area 240 is attributing the material to original contexts. No artefact can be directly attributed to a single, specific sedimentological unit reflecting a discrete period of deposition, all material being recovered *ex situ*. However, vibrocore logs and geophysical data have enabled a lithostratigraphic and palaeo-landscape framework for the Palaeo-Yare to be developed, both specifically for Area 240 (Tizzard *et al.* 2014; 2015) and for the wider submerged Palaeo-Yare catchment (Wessex Archaeology 2013; Table 2). This framework can be related to the much less well understood lithostratigraphy of on-shore sediments of the Palaeo-Yare catchment, in which deposits are divided between the Holocene Bredon Formation and Pleistocene Yare Valley Formation (Arthurton *et al.* 1994). The latter subsumes poorly defined separate Pleistocene fluvial sediment bodies.

The lithostratigraphic and palaeo-landscape framework for the Palaeo-Yare summarised in Table 2 provides a base dataset for considering the lithostratigraphic context of the Middle Palaeolithic archaeology from Area 240. Chronology for this framework is provided by luminescence dating of sediments and through AMS radiocarbon dating of organic material. These dates have been tied to the Marine Isotope Stage (MIS) record. All available direct dates for the Palaeo-Yare deposits are summarised in Table 3.

Tizzard *et al.* (2015) assessed the possible lithostratigraphic contexts of the 2007–2008 Palaeolithic artefacts. This concluded that Units 3b and/or 5 were the likely original context(s). Three scenarios to account for their taphonomic histories and the



Fig. 7.
Spatial distribution of Palaeolithic artefacts from Area 240

techno-typological characteristics of the artefacts were provided (Tizzard *et al.* 2015; Fig. 8). These are:

1. The handaxes and some of the Levallois material have been reworked through Units 3b, 5 and, potentially, 8, with some of the Levallois material being contemporary with, and originating from, Unit 3b (Fig. 8A).
2. Both the handaxes and the Levallois material are contemporary with, and originates from, Unit 3b, with potential for some material from both groups to have been reworked into later deposits (Fig. 8B).
3. The Levallois material is contemporary with, and originates from, Unit 3b and the handaxes

TABLE 2: QUATERNARY LITHOSTRATIGRAPHIC FRAMEWORK

<i>Unit</i>	<i>Interpretation</i>	<i>MIS</i>	<i>Description</i>	<i>Onshore deposits</i>
8	Marine deposits post-dating marine transgression in the Holocene.	1	Shelly, gravelly medium-coarse sand.	
7	Basal fill of shallow under-filled channel feature. Equivalent to onshore lower Breydon Formation of River Yare & tributaries.	Early MIS 1	Channel fill (Channel B). Basal unit of peat <i>c.</i> 0.2 m thick overlain by unit of sandy or shelly clay.	Lower Bredon Formation (inc. Basal Peat Formation)
6	High energy fluvial deposits.	Unknown. Possibly MIS 3–4.	Sandy gravel. Only identified in Area 240.	Yare Valley Formation (?‘Low terrace’ & beneath floodplain)
5	Possibly estuarine or near coastal depositional environment.	Unknown. Possibly MIS 3–4. Possibly contemporary with Unit 6.	Slightly gravelly, slightly silty, fine-medium grained sand infilling depressions.	
4	Low energy fluvial & estuarine sediments.	MIS 5a–d.	Comprised of fine-grained sediments (sands, silts, & clays) deposited in low-energy environment such as river or estuary. Generally associated with the buried channel feature in N of Area 240 interpreted as infilling of cut sequence. Similar aged sediments also identified in Area 401/2.	Yare Valley Formation (?‘Low terrace’ & beneath floodplain)
3b	Fluvial deposits including coarser grained & finer grained sediments.	MIS 6–8	Comprised finer sands & coarser sands & gravels in sequences deposited through fluvial processes within lower Palaeo-Yare catchment. Sequences often coarsen upwards. Identified throughout Palaeo-Yare catchment.	Yare Valley Formation (?‘Terrace 1–3’)
3a	Coarse high energy fluvial/ glaciofluvial sediments.	Unknown. Likely MIS 8–10.	Basal channel fill (Channel A). Comprised coarse sands & gravels reflecting high energy fluvial &/or glaciofluvial deposition. Channel cut into Unit 2. Incision suggested to have incurred during Late-Anglian glaciation (late MIS 12) Only identified in Area 240.	Yare Valley Formation (?‘Terrace 1–3’).

(Continued)

TABLE 2: (CONTINUED)

Unit	Interpretation	MIS	Description	Onshore deposits
2	Delta plain sediments of Yarmouth Roads Formation.	MIS 13–19	Delta plain sediments deposited prior to Anglian glaciation (MIS 12) & relating to pre-Anglian river systems. Unit pre-dates Palaeo-Yare drainage system. Generally comprises silty, gravelly, fine-coarse sands. Observed throughout region overlying Unit 1. To S of Area 240 & East of the region Unit 2 is more complex & comprises silty sand with very frequent thin beds & laminae of firm-stiff clay & peaty organic clay. Identified across the region.	
1	Westkapelle Ground Formation.		Marine clays & sands. Unconformably overlain by Unit 2. Identified across the region.	

are contemporary with, and originate from, Unit 5, with paths of reworking of some of the material through later deposits (Fig. 8C).

Of these possible scenarios Tizzard *et al.* (2015) concluded that scenario 2 was the most likely and that the handaxes and Levallois artefacts were broadly contemporary in age. This conclusion was based on both groups of artefacts being in similar physical condition states, indicative of shared taphonomic histories, and the presence of artefacts relating to Levallois flaking reflecting the chronology of Unit 3b, this technique being typical of MIS 8–7–6 early Middle Palaeolithic assemblages in the Thames Valley (Scott 2011).

The new Palaeolithic artefact collection from Area 240 allows this interpretation to be revisited utilising a dataset with greater spatial information. Analysis of the physical condition of the new material has demonstrated that, whilst different techno-typological classes of artefacts do exhibit a similar continuum of surface modifications, quantitative differences are apparent between handaxes and Levallois material, demonstrating that these two groups have different taphonomic histories.

These different taphonomic histories suggest that they are not likely to reflect a single contemporary phase of activity. Additionally, the spatial distribution of artefacts in the new collection can be mapped on to the lateral distribution of different units of the Palaeo-Yare lithostratigraphy (Figs 9–10). This demonstrates that handaxes have only been recovered from locations where both Unit 3b and Unit 5 have been identified (Fig. 9), while Levallois artefacts have been recovered from areas where both Unit 3b and 5 are mapped, and from areas where only Unit 3b is known to occur (Fig. 10). This combined evidence raises the possibility that the Levallois material in the new collection is from Unit 3b, while the handaxes may be from Unit 5.

Dates for Unit 3b (Table 3) generally cluster around MIS 8–7–6 (Tizzard *et al.* 2015; Marshall *et al.* 2020). No direct dates are available for Unit 5. However, as they have been observed to stratigraphically overlie Unit 3b, while vertebrate remains obtained alongside artefacts recovered in 2007–2008 have produced MIS 3 radiocarbon ages and are most likely to be from Unit 5 sediments, or post-MIS 6 sediments within the top

TABLE 3: PUBLISHED RADIOMETRIC DATES FOR SEDIMENTS AND VERTEBRATE FAUNA FROM AREA 240

Lab. no.	Area	Core	Unit	Material	Radiocarbon age (BP)	Luminescence age (Ka)	Reference
GL 10040	240	VC3b	2			735 ± 134	1
GL 10039	240	VC3b	3b – base			418 ± 78	1
GL 10038	240	VC3b	3b – below level from which handaxes probably dredged			243 ± 33	1
GL 10043	240	VC9b	3b – base			283 ± 56	1
GL 10043	240	VC7b	3b			207 ± 24	1
–	254	VC1	3b – upper (bank structure)			175 ± 23	2
–	511	VC29_2	3b (base of bank structure)			206.5 ± 29.5	3
–	511	VC29_2	3b (middle of bank structure)			222 ± 28.7	3
–	511	VC29_2	3b (upper bank structure)			188 ± 19.7	3
–	511	VC29_2	?3b			57 ± 5.6	3
–	254	VC1	4			116.7 ± 11.2	2
GL 10037	240	VC7b	4			109 ± 11	4
GL 10041	240	VC7b	4			96 ± 11	4
GrA-39965	240		?Unit 3b or 5	Woolly rhinoceros (<i>Coelodonta antiquitatis</i>) mandible frag.	>45,000		4
GrA-39962	240		?Unit 5	Woolly mammoth (<i>Mammuthus primigenius</i>) cervical vertebra	37,240+280/–260		4
4GrA-39966	240		?Unit 5	Reindeer (<i>Rangifer tarandus</i>) antler	31,460+160/–150		4
GrA-39964	240		?Unit 5	Horse (<i>Equus</i>) metacarpal	42,960+500/–420		4
GrA-39518	240		?Unit 5	Steppe bison (<i>Bison priscus</i>) metacarpal	39,900+850/–650		4
GL 10045	254	VC9b	6			36 ± 5	4
HAR 2535	Breydon Water		Breydon Formation – basal peat	Unknown	7580 ± 90		5
SUERC-32234	240	VC8c1_2010	7 – base of intertidal mudflats/saltmarsh	<i>Phragmites</i> sp.	8595 ± 35		1
SUERC-32233	240	VC8c1_2010	7 – top of intertidal mudflats/saltmarsh	<i>Phragmites</i> sp.	7820 ± 30		1
SUERC-11978	240	GY13_2005	7 – base of intertidal mudflats saltmarsh	Unknown	10,470 ± 35		6

(Continued)

TABLE 3: (CONTINUED)

Lab. no.	Area	Core	Unit	Material	Radiocarbon age (BP)	Luminescence age (Ka)	Reference
SUERC-11975	Area 240	GY13_2005	7 – base of intertidal mudflats/saltmarsh	Unknown	8370 ± 25		6
SUERC-30759	S of 251	REC_V C18_2009	7 – upper gravelly sands	Veneridae	9030 ± 35		3
SUERC-30758	S of 251	REC_V C18_2009	7 – outer estuarine sediments	Organic sediment	7900 ± 35		3
SUERC-30754	S of 251	REC_V C18_2009	7 – outer estuarine sediments	Organic sediment	7625 ± 35		3

References: 1. Wessex Archaeology 2011; 2. Wessex Archaeology 2008; 3. Limpenny *et al.* 2011; 4. Tizzard *et al.* 2015; 5. Arthurton *et al.* 1994; 6. Hazell pers. comm. (in Tizzard *et al.* 2015).

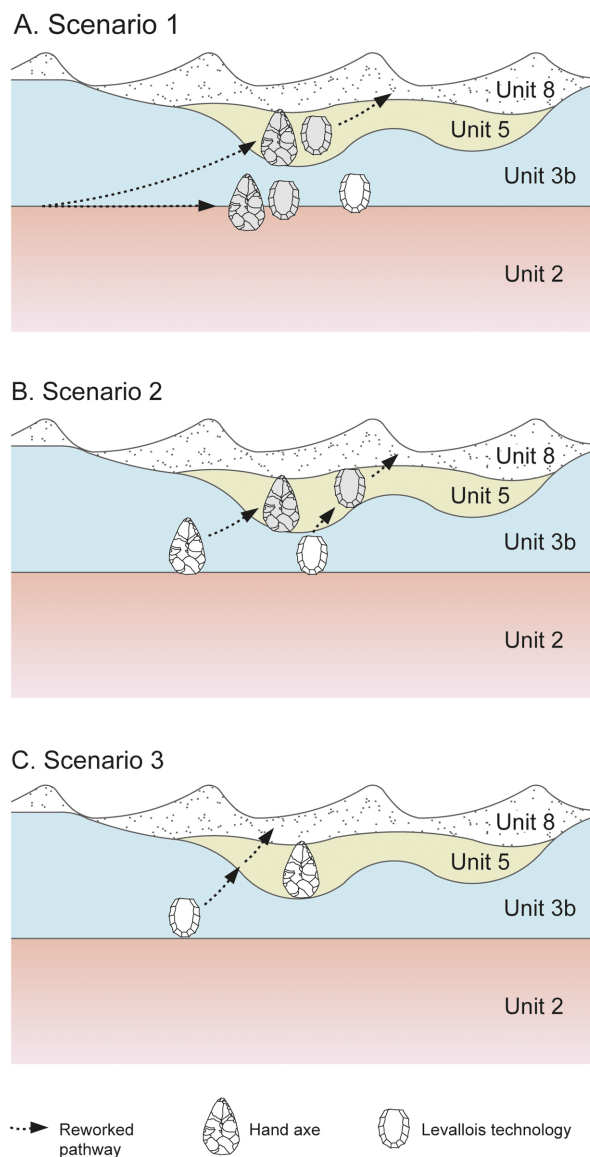


Fig. 8. Proposed scenarios for depositional histories of Area 240 Palaeolithic artefacts

of Unit 3b. One caveat with the radiocarbon dates is that radiocarbon ages from the North Sea can underestimate dates when carried out following the standard dating methods applied to this material (Briant & Bateman 2009; Hijma *et al.* 2012).

Review of all lines of evidence indicates that the new Palaeolithic artefacts from Area 240, as well as those

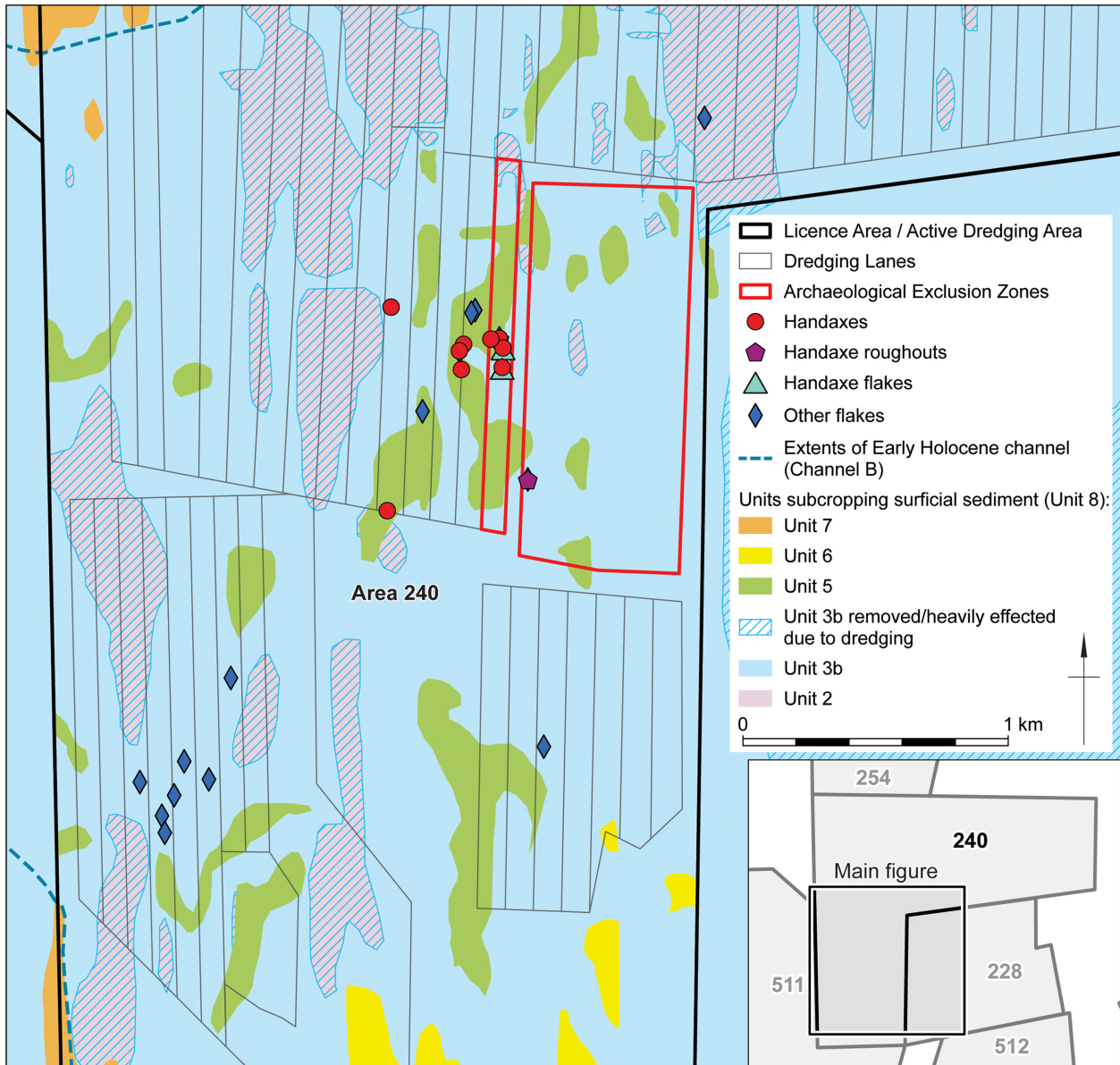


Fig. 9.
Spatial distribution of Palaeolithic handaxes from Area 240

previously recovered in 2007–2008, contain three distinct groups of artefacts:

- a group containing Levallois artefacts, likely from Unit 3b with deposits dated to MIS 8–7–6;
- a group containing handaxes that may be from Devensian deposits (MIS 5d–3); and

- late Upper Palaeolithic/Early Mesolithic material, represented by a single blade core.

Archaeological context

The conclusions drawn from the new Area 240 Middle Palaeolithic archaeology can be further considered

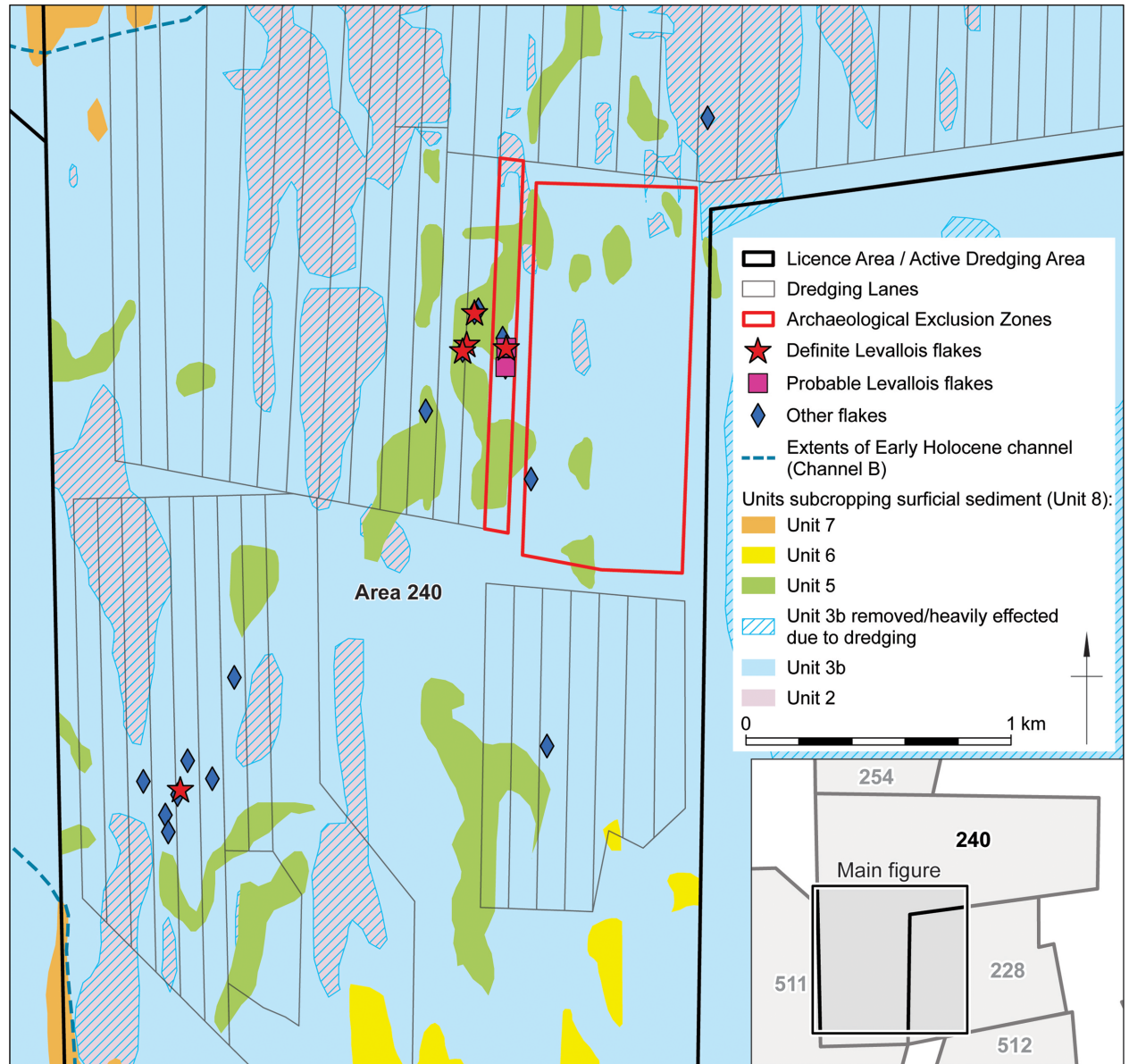


Fig. 10.
Spatial distribution of Palaeolithic Levallois artefacts from Area 240

from the perspective of the broader Palaeo-Yare catchment (both submerged and terrestrial) and the Middle Palaeolithic record of the wider region.

PALAEO-YARE

In addition to the small number of artefacts from wharf monitoring of aggregate from locations beyond Area 240 (Table 1), over 1000 artefacts have recently

been documented dredged from the offshore Palaeo-Yare catchment and redeposited as part of the Bacton to Walcott Coastal Management Scheme (Davies *et al.* 2023). Although there is some uncertainty regarding which licence area, or areas, that these are from (multiple areas were dredged to provide the aggregate) data indicate that they may be largely from Areas 511 and 512. These areas are to the south and west of Area 240 (Fig. 1).

Although most artefacts in the Bacton to Walcott collections are undiagnostic hard hammer flakes, they include handaxes ($n=34$) and soft hammer flakes ($n=28$), possibly from handaxe thinning, and Levallois cores ($n=12$) and Levallois flakes ($n=71$). Some of this material displays notable similarities with the Area 240 artefacts.

Many of the handaxes are similar to those from Area 240, being cordiform/ovate with comparable measurements of elongation and planform (Davies *et al.* 2023; Appendix S1), extensively thinned and shaped, and on flake blanks. Although detailed comparison between the methods of working of the Area 240 and Bacton to Walcott handaxes is not possible based on the available data, the latter are described as extensively shaped, which suggests a similar focus on the imposition form. The cordiform/ovate handaxes from Bacton to Walcott occur alongside others that are morphologically different from the Area 240 examples being less refined and more elongated (Davies *et al.* 2023; Appendix S1).

The data suggest that the Bacton to Walcott handaxes include examples which may belong to the same repertoire of handaxe manufacture as Area 240 (the cordiforms/ovates) but which are from different locations in the Palaeo-Yare catchment. The outliers from Bacton to Walcott may be part of a wider continuum of similar handaxes or indicate a distinct approach to their manufacture.

The lack of Levallois cores from Area 240 prevents meaningful comparison with the Bacton to Walcott examples but there are similarities in the Levallois flakes. As with those from Area 240, they are large (average maximum dimension = 94.2 mm) and indicative of centripetal preparation (54.3%), with many examples part of unipolar, recurrent exploitation sequences (36.6%). These similarities may simply reflect the common exploitation of large cores but also imply similar technological approaches to Levallois core working which may reflect a uniformity in landscape-use practices. For example, the exploitation of raw material sources that were close to where large flint nodules were available and/or transport of large Levallois products.

As with Area 240, similar differences in condition between the handaxes and Levallois material from Bacton to Walcott have been noted (Davies *et al.* 2023) but interestingly this pattern of difference is inverse. Most of the Bacton to Walcott artefacts are at least slightly rolled but handaxes tend to be more

abraded than Levallois pieces. These observations suggest that the handaxes and Levallois artefacts from both Area 240 and Bacton to Walcott have distinct taphonomic histories but that the specific patterns differ for equivalent groups of artefacts.

Deposits assigned to Units 3a, 3b, 7, and 8 of the Palaeo-Yare lithostratigraphy are mapped within Licence Areas 511 and 512 (Wessex Archaeology 2013; 2020). This may imply that all the Middle Palaeolithic artefacts from Bacton to Walcott are from Unit 3b. However, other units could occur, particularly where the licence areas abut Area 240 and more localised occurrences of Units 5 and 6 are recorded (Fig. 9).

There are also indications from vibrocore data of complexity in deposits mapped as Unit 3b in Areas 512 and 513. A vibrocore (VC29_2) in Area 511 was assessed as part of the East Coast Regional Environmental Characterisation (Limpenny *et al.* 2011). These comprised a basal shelly sand with an interbedded sandy clayey silt further up the profile that contained microfossils (foraminifera and ostracods) indicative of probably cold estuarine/shallow marine conditions. These deposits were overlain by sand interbedded with finer silt clay laminae. Optically Stimulated Luminescence (OSL) dates within MIS 7–6 were obtained for the shelly sand and interbedded sandy clayey, whilst a date of 57 ± 5.6 ka (MIS 3) was obtained from the upper sand. This younger date for the uppermost deposits was dismissed on the grounds that the sediments could have been subaerially exposed in the Devensian, with a fall in sea level indicated by oxidisation. Whether this is indeed the case is not known, but it is worth noting the sample was taken 0.41 m below the top of these sediments, which were truncated and overlain by recent marine deposits. This evidence, at the very least, implies the presence of mid-Devensian terrestrial landscapes in this area.

The combined archaeological evidence from Area 240 and Bacton to Walcott illustrate that Middle Palaeolithic archaeology occurs in different locations across the offshore Palaeo-Yare and that there is a re-occurring pattern of differences in taphonomic histories between handaxes and Levallois artefacts. Additionally, similar and repeated approaches to handaxe production are evident (refined, extensively worked and shaped cordiform handaxes on flake blanks). The Bacton to Walcott Levallois artefacts and handaxes may reflect artefact assemblages from different Unit 3b deposits dated to MIS 8–7–6, but a division between early Middle Palaeolithic Levallois

artefacts and cordiform/ovate handaxes from younger, potentially Devensian, contexts, as suggested for Area 240, is also possible.

Archaeologically the closest point of reference for the submerged Middle Palaeolithic record of the Palaeo-Yare is the now onshore Yare catchment. Unfortunately, terrestrial outcrops of Pleistocene Yare deposits have been minimally investigated and extant archaeology from them is poorly understood.

Aside from chance individual surface finds, known Lower/Middle Palaeolithic archaeology divides between two groups. The first consists of fresh to minimally abraded flakes and handaxes from fluvial deposits of the River Yare, situated above the current floodplain. The principal examples are large artefact assemblages from Whitlingham Sewage Farm, Kirby Bedon (Sainty 1927; Wymer 1985; 1999) and Mill Gravel Pit, Keswick (Sainty 1933; Wymer 1985; 1999). The ages of these sites are unknown but the handaxe assemblages from both are distinctive and similar, comprising elongated pointed handaxes with large numbers of cleavers (Wymer 1985). No similar handaxes or any cleavers have been recovered from the offshore Palaeo-Yare.

The second group of artefacts consists of small numbers of fresh, minimally disturbed finds, principally of handaxes, from low river terraces on the edge of the current floodplain of the Yare catchment. Examples include a fresh handaxe from amongst more abraded artefacts from Yare deposits at Carrow Works, Norwich (Sainty 1933; Wymer 1985; 1999) and a mint handaxe from a low terrace of the Upper Waveney at Homersfield (Wymer 1985; 1999). These may be younger than the Whitlingham and Keswick assemblages and could relate chronologically to Palaeo-Yare Middle Palaeolithic archaeology, but there is no evidence to directly link them.

BEYOND THE PALAEO-YARE

The suggestion that the Middle Palaeolithic artefacts from Area 240 include two chronologically distinct groupings, an earlier one containing Levallois artefacts and a later one containing handaxes, can be further interrogated through consideration of the Middle Palaeolithic archaeological record from the wider region.

Association between the Levallois artefacts and Unit 3b sediments dated to MIS 8–7–6 would be consistent with the Middle Palaeolithic archaeological record from terrestrial contexts in southern

England, particularly in the Thames Valley (Scott 2011). Additionally, Levallois material of a similar date has also been identified from now submerged contexts of the lower reaches of Thames–Medway systems from aggregate licence Area 447 (Bynoe *et al.* 2022).

The Palaeolithic artefacts from Area 447 are from aggregate redeposited as part of the Clacton-on-Sea to Holland-on-Sea, Essex beach replenishment programme. The archaeology includes 121 Levallois flakes and 21 Levallois cores which, generally, have slightly rolled edges, with some more moderately rolled pieces (Bynoe *et al.* 2022). This condition is indicative of some, but not extensive, reworking of the material within their original lithostratigraphic context. The Levallois artefacts are suggested to be from sands and clays forming part of sequences of freshwater/estuarine terrestrial deposits, cut by later Pleistocene fluvial channels (Bynoe *et al.* 2022). The freshwater/estuarine deposits have been dated through luminescence to MIS 7/early MIS 6.

Evidence for extensive early Middle Palaeolithic hominin activity associated with now submerged contexts around Britain is also documented in the English Channel region. A prime example of this is the large archaeological assemblage from several stratigraphic units at La Cotte de St Brelade, Jersey, which reflects repeated periods of early Middle Palaeolithic activity focused in now submerged MIS 7 and early MIS 6 landscapes (Shaw *et al.* 2016; Bates *et al.* 2023; Shaw & Scott 2023).

This emergent picture of hominins being present in both the upper, now terrestrial, and the lower, now submerged, catchments of river systems during the early Middle Palaeolithic is highly significant for Palaeolithic settlement histories. It is particularly important for debates relating to hominin demographics and presence and absence (White & Schreve 2000; Ashton & Lewis 2002; Ashton *et al.* 2011; Roebroeks *et al.* 2011).

Conclusions based on assessments that do not consider periods of lowered sea levels, when terrestrial landscapes extended across now submerged areas, are questionable. This is particularly so given that the low-lying landscapes associated with the lower reaches of river systems and the estuaries would include resource-rich environments that would have been particularly attractive to hominin populations. During such periods, hominin activity could be expected to be concentrated in these now submerged areas.

The new evidence suggests that the handaxes from Area 240 may be younger than the Levallois artefacts, with Unit 5 of the Palaeo-Yare lithostratigraphy suggested as a possible context. This implies a late Middle Palaeolithic date within the period from after MIS 5d to MIS 3.

The late Middle Palaeolithic archaeological record of Britain is poorly understood. For the most part identification of late Middle Palaeolithic activity is based on findspots of individual techno-typologically distinctive handaxes, generally with limited contextual information. Such handaxes are termed *bout coupés*. Definitions of *bout coupés* vary and are principally based on typological criteria. A strict definition of 'classic' *bout coupés* was provided by Tyldesley (1987) who defined such handaxes as refined, fully bifacial, medium sized, cordiform or rectangular with a symmetrical planform, with a straight or slightly convex butt edge, slightly convex sides, and a rounded tip. Both the butt and the tip are well worked, principally through soft-hammer removals, and they possess a cutting edge around the full circumference of the piece.

White and Jacobi (2002) have reviewed the lithostratigraphic and chronological context of 'classic' *bout coupés* handaxes. This demonstrated that examples with secure contextual information and chronological information are from deposits dating from within the period MIS 5d to MIS 3. White and Jacobi (2002) further suggest a specific association with MIS 3. Although none of the handaxes from Area 240 can be classed as 'classic' *bout coupés* as defined by Tyldesley (1987), several approach this planform (Fig. 11) and most share approaches to their manufacture with 'classic' *bout coupés*.

Beyond individual finds of *bout coupé* handaxes, there are very few well contextualised archaeological British assemblages dated to the late Middle Palaeolithic. The principal example is that from Lynford Quarry, near Munford, Norfolk (Boismier *et al.* 2012). Here, Palaeolithic artefacts were recovered from organic sediments within a palaeo-channel. Vertebrate fauna dominated by woolly mammoth (*Mammuthus primigenius*) was also recovered from these deposits (Schreve *et al.* 2012).

The artefacts and vertebrate fauna were interpreted as having been incorporated into the channel fill through periodic bank collapse, with artefacts recovered from three units (B-i, B-ii, and B-iii). While not *in situ*, their fresh condition indicates that the artefacts

were discarded on nearby channel edges which have been periodically incorporated into the channel fill (White 2012). OSL dates suggest that the channel sequence dates to between 65 and 57 ka (MIS 4–3) (Schwenninger & Rhodes 2012).

In total, 2720 artefacts, including 41 complete and six broken handaxes, are provenanced to the Lynford palaeo-channel. The Lynford handaxes, the largest assemblage of which was from unit B-ii (n = 38), provide the best contextualised late Middle Palaeolithic handaxe assemblage from Britain. Data provided by White (2012) enables techno-typological comparison between them and those from Area 240.

Figure 12 compares the planform of the handaxes from Area 240 (De Loecker 2010) and the current study) and from Lynford B-ii (White 2012). This demonstrates that the handaxes from these assemblages share similar and highly consistent planforms, generally being cordiform in shape and transcending Roe's (1964; 1969) divide between points and ovates. As White (2012) notes, this range in planform is similar to those provide by Roe (1968) for handaxes from Great Pan Farm, Isle of Wight, and from the Oldbury area, Kent, collections which may also be dominated by late Middle Palaeolithic handaxes.

Table 4 compares key metrical attributes between the assemblages from Area 240 and Lynford and clearly demonstrates similarities in levels of refinement, elongation, tip section, and cross-section. They demonstrate that the handaxes in all three are generally highly refined and uniform in cross section.

Comparison between the technological features of Area 240 handaxes and those from Lynford (White 2012) demonstrates further similarities. These include the use of flakes as blanks, a lack of cortex, extensive thinning, final phases of less invasive scars around the margin which shaped the handaxes (termed 'edge retouch' by White (2012)), and a high proportion of handaxes with working edges around the entire circumference. Additionally, the Lynford handaxes are notable for their high levels of recycling with examples of reconfiguring of broken and fragmentary handaxes, use as a core for laminar removals, the addition of scraper retouch, and the imposition of notches on handaxe margins. Recycling practices, particularly the reconfiguring of broken handaxes, was also observed on several of the Area 240 examples. This pattern is characteristic of tools that have been curated, carried around as personal items, and subjected to multiple phases of reworking, rather



Fig. 11.
Cordiform handaxes from Area 240

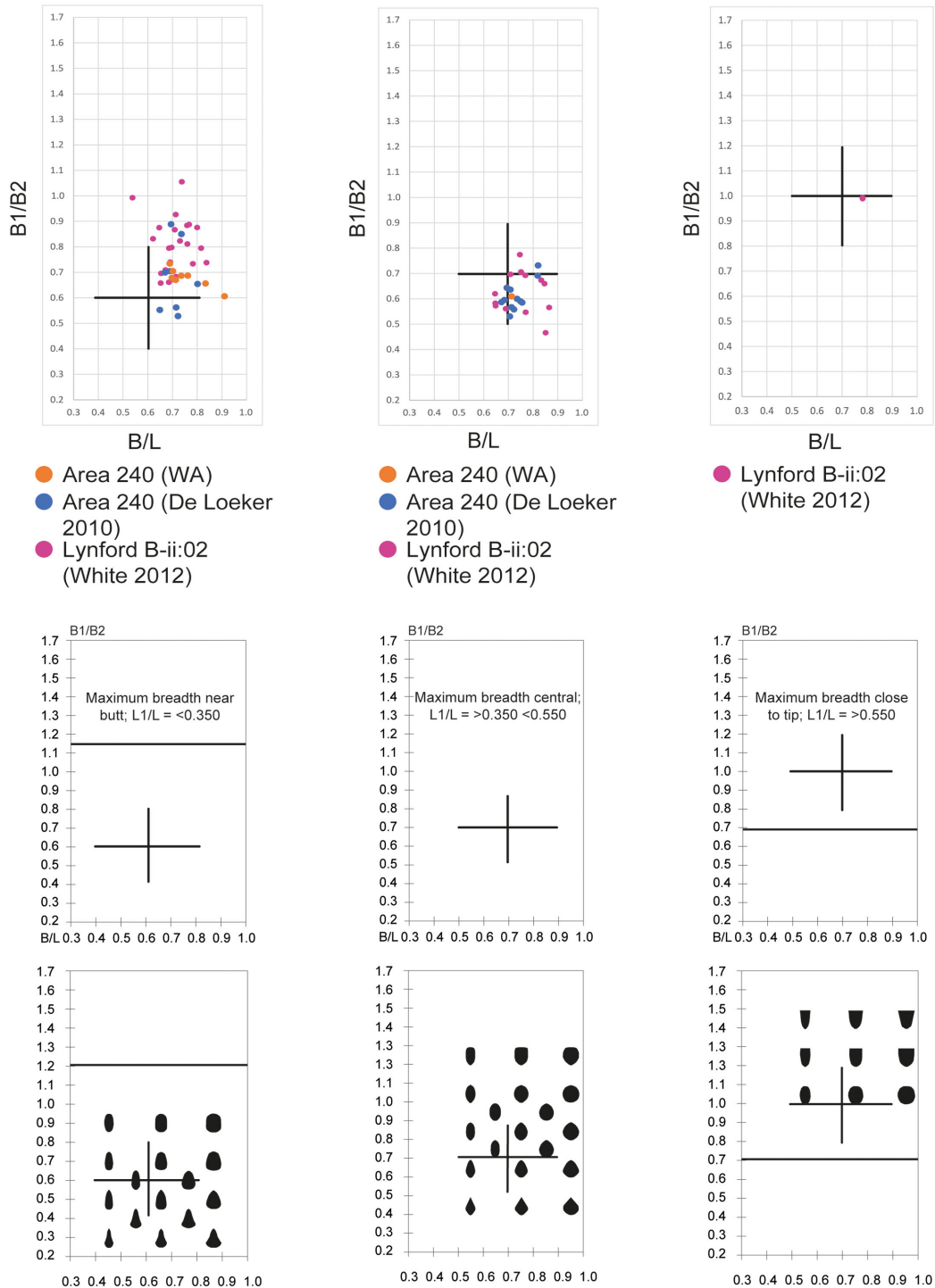


Fig. 12. Area 240 and Lynford Quarry, Norfolk, handaxe planform (following Roe 1964; 1968)

TABLE 4: QUANTITATIVE VARIABLES FOR HANDAXE COLLECTIONS FROM AREA 240 AND LYNFORD B-II

<i>Assemblage</i>	<i>Average refinement</i>	<i>Average elongation</i>	<i>Average tip shape</i>	<i>Average cross-section</i>
Area 240 (WA)	0.281	0.750	0.670	0.805
Area 240 (De Loecker 2010)	0.338	0.722	0.638	–
Lynford B-ii (White 2012)	0.354	0.728	0.745	0.892

than tools produced for a specific activity, retained for limited periods, and discarded.

The evidence demonstrates that the Area 240 handaxes share many characteristics with the late Middle Palaeolithic handaxes from Lynford. Characteristics are evident that reflect a focus on extensive thinning and shaping of handaxes on flake blanks to produce refined products with a clear focus on the imposition of particular forms that have undergone multiple phases of use and maintenance.

The handaxes from Area 240 sit alongside those from Lynford as technologically characteristic of Late Middle Palaeolithic handaxes associated with Devensian (MIS 5d–3) contexts. This suggests the Area 240 examples are unlikely to be from Unit 3b sediments dated to MIS 8–7–6, but are from younger deposits, either sediments within Unit 3b, post-dating MIS 6, or from Unit 5. The Area 240 handaxes, and potentially those from Bacton to Walcott (Davies *et al.* 2023), demonstrate the lower, submerged reaches of the Palaeo-Yare were a major focus for Devensian Late Middle Palaeolithic human activity. The fact that this is a poorly understood period, often considered associated with an impoverished archaeological record, may at least partially reflect that it was these now submerged Devensian landscapes were those most extensively occupied during this period.

CONCLUSIONS

Analysis of a new Middle Palaeolithic lithic artefacts from Area 240 of the Palaeo-Yare, comparison with previous finds from the licence area (Tizzard *et al.* 2015), and consideration of the material in local and regional contexts, suggests that two distinct sets of artefacts are present: one dominated by Levallois cores and flakes and one by handaxes. The data suggest that much of the Levallois material is likely to be early Middle Palaeolithic and from deposits within Unit 3b of the Palaeo-Yare lithostratigraphy dated to MIS 8–7–6. The handaxes form a well-defined group that constantly display techno-typological features indicative of a late Middle Palaeolithic date, with

evidence indicating they are likely from younger deposits in the top of Unit 3b, potentially including Unit 5 sediments. A date within the period from MIS 5d to 3 is indicated.

Although Middle Palaeolithic artefacts have been recovered from points across the licence area, the new artefacts mostly originate from two sub-zones in the south of Area 240: one immediately to the west of the original discoveries (Tizzard *et al.* 2015), the other situated further to the south-west. The Area 240 finds, alongside comparable material potentially from adjacent licence areas (Davies *et al.* 2023), demonstrate that the lower reaches of the Palaeo-Yare were a major focus for Middle Palaeolithic humans during periods of lowered sea levels.

The Levallois material contributes to an emergent picture of now submerged landscapes around southern Britain as key contexts for the early Middle Palaeolithic (MIS 8–7–6). The handaxes demonstrate that the general paucity of late Middle Palaeolithic (MIS 5d–3) archaeology from Britain may at least partially reflect now submerged landscapes being important areas in which humans were active; a general lack of investigation of terrestrial contexts of this age is also a likely factor. The evidence for recurrent occupation of the same low sea level landscapes adds to a growing picture that these areas may be favoured landscapes for activity, potentially providing a greater focus than upland, now terrestrial, locations.

This, and other recent studies, demonstrate that investigation of submerged terrestrial landscapes is fundamental to considering the Palaeolithic settlement history of Britain. These contexts provide an opportunity to assess major research topics and observations that are largely based on the terrestrial archaeological record alone; including for example, suggestions that MIS 8–7–6 saw declining early Middle Palaeolithic population levels and that humans were absent from Britain from MIS 6 through to early MIS 4.

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SUPPLEMENTARY MATERIAL

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RÉSUMÉ

La Paléo-Yare submergée : nouvelles données archéologiques sur le Paléolithique moyen du sud de la mer du Nord, par Andrew Shaw, Daniel Young, et Hayley Hawkins

Les données archéologiques paléolithiques dont nous disposons à partir des terres émergées actuelles ne nous informent que sur une fraction des activités qui se sont développées au sein des paysages pléistocènes. Les territoires actuellement submergés, tels que ceux recouverts par la mer du Nord, nous permettent d'envisager les activités humaines passées à une échelle plus représentative. Des recherches précédentes ont mis au jour des vestiges archéologiques du Paléolithique moyen d'importance internationale en lien avec les paysages pléistocènes submergés du sud de la mer du Nord. Découverts lors de dragages d'agrégats effectués dans la Zone de Licence 240 d'agrégats marins, ces vestiges sont associés aux dépôts pléistocènes du réseau fluvial de la Paléo-Yare. Des études ultérieures ont démontré que le bassin versant de la Paléo-Yare s'étendait à d'autres zones d'agrégats adjacentes, entraînant la mise en place d'un programme régional de surveillance sur des quais d'agrégats afin de surveiller, gérer, et assimiler de nouvelles données archéologiques.

Cet article examine l'ensemble des productions lithiques paléolithiques découvertes entre 2011 et 2022 dans la Zone 240 et dans les zones de licence adjacentes. Il s'agit pour la plupart d'industries du Paléolithique moyen provenant de la Zone 240. Ces nouvelles découvertes du Paléolithique moyen sont mises en rapport avec des découvertes précédentes, et l'ensemble de ces séries est placé dans son contexte plus large du Paléolithique moyen britannique. Les activités du Paléolithique moyen dans le bassin versant de la Paléo-Yare se manifestent à travers plusieurs phases d'occupation associées à différents répertoires technologiques privilégiés, indiquant la présence de deux groupes d'outillage : des outillages Levallois datant certainement du début du Paléolithique moyen (MIS 8–6) et des bifaces datant du Paléolithique moyen récent (MIS 5d–3).

ZUSAMMENFASSUNG

Der versunkene Paläo-Yare: Neue archäologische Funde des Mittelpaläolithikums aus der südlichen Nordsee, von Andrew Shaw, Daniel Young, und Hayley Hawkins

Die archäologischen Daten zum Paläolithikum aus heutigen Trockenböden geben nur Aufschluss über Aktivitäten in einem Bruchteil der genutzten pleistozänen Landschaften. Jetzt versunkene Kontexte, wie sie unter der südlichen Nordsee erhalten sind, ermöglichen es, die vergangenen menschlichen Aktivitäten in einem repräsentativeren Umfang zu betrachten. Bei früheren Untersuchungen wurden international bedeutende mittelpaläolithische Funde in Verbindung mit versunkenen pleistozänen Landschaften in der südlichen Nordsee entdeckt. Die archäologischen Belege, die bei Baggerarbeiten im Lizenzgebiet 240 für marine Zuschlagstoffe entdeckt wurde, stehen im Zusammenhang mit pleistozänen Ablagerungen des Paläo-Yare-Flusssystemes. Nachfolgende Untersuchungen haben gezeigt, dass sich das Einzugsgebiet des Paläo-Yare über angrenzende Abbaugelände erstreckt, was zur Einführung eines regionalen Überwachungsprogramms an Zuschlagstoffwerften führte, um neue archäologische Daten zu beobachten, zu verwalten und zu verarbeiten.

In diesem Beitrag werden alle neuen lithischen Funde des Paläolithikums vorgestellt, die zwischen 2011 und 2022 im Gebiet 240 und den angrenzenden Lizenzgebieten geborgen wurden. Bei den meisten Funden handelt es sich um mittelpaläolithische Artefakte aus Gebiet 240. Diese neuen mittelpaläolithischen Funde werden mit früheren Funden in Beziehung gesetzt und die kombinierten Funde in den weiteren mittelpaläolithischen britischen Kontext eingeordnet. Die mittelpaläolithischen Aktivitäten im Paläo-Yare-Einzugsgebiet umfassten mehrere Besiedlungsphasen, die mit unterschiedlichen bevorzugten technologischen Repertoires verbunden waren, was darauf hindeutet, dass zwei Gruppen von Artefakten vorhanden sind: Levallois-Artefakte, die wahrscheinlich in das frühe Mittelpaläolithikum (MIS 8–6) zu datieren sind, und Faustkeile, die in das späte Mittelpaläolithikum (MIS 5d–3) datiert werden.

RESUMEN

El Paleo-Yare sumergido: nuevos hallazgos del Paleolítico medio en el sur del Mar del Norte, por Andrew Shaw, Daniel Young, y Hayley Hawkins

El registro arqueológico paleolítico de los actuales contextos de tierra firme nos informa sobre la actividad en sólo una fracción de los paisajes ocupados del Pleistoceno. Los contextos actualmente sumergidos, como aquellos preservados bajo el sur del mar del Norte, permiten considerar la actividad humana pasada a una escala más representativa. Las investigaciones previas han registrado una realidad arqueológica internacionalmente significativa adscrita al Paleolítico Medio y asociada a los paisajes pleistocenos sumergidos en el sur del Mar del Norte. Descubierta gracias al dragado de una serie de agregados marinos en el área 240, estos hallazgos arqueológicos están asociados a los depósitos pleistocenos del sistema fluvial del Paleo-Yare. Los estudios subsiguientes han demostrado que el sistema de captación del Paleo-Yare se extendía a lo largo de una serie de áreas agregadas adyacentes, lo que llevó a la implementación de un programa de monitoreo regional en muelles agregados para monitorear, gestionar y asimilar nuevos datos arqueológicos.

En este artículo se revisan todos los nuevos hallazgos de industria lítica paleolíticos documentados entre 2011 y 2022 en el Área 240 y áreas de licencia adyacentes. La mayor parte son artefactos del Paleolítico medio del Área 240. Estos nuevos descubrimientos del Paleolítico medio están relacionados con previos hallazgos y las colecciones que aparecen en el contexto del Paleolítico medio británico. La actividad del Paleolítico medio dentro de la zona de captación del Palaeo-Yare incluye múltiples fases de ocupación asociadas con diferentes repertorios tecnológicos privilegiados, indicando que dos están presentes dos grupos de artefactos: los artefactos Levallois que probablemente se datan en el Paleolítico medio inicial (MIS 8–6) y las hachas de mano que datan en los momentos finales del Paleolítico medio (MIS 5d–3).