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Small Research Grants Final Reports Received 2022 - 2023

May 2023

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The Small Research Grants Scheme is highly valued by our research community and is a very important element of the funding we provide. There is no other comparable funding scheme available for scholars in the humanities and social sciences. The scheme enables us to provide meaningful support to researchers at any stage in their careers in a way which suits their research needs. Researchers find the flexibility of the scheme and the level of funding awarded to be invaluable. For some it acts as seed funding; for others it provides the means by which they can conduct entire projects or complete research already in train. We are delighted and proud to partner with Honor Frost Foundation in the provision of this scheme.

Since 2014 we have appointed 14 British Academy/Honor Frost Foundation award holders.

On top of Independent Scholars, your generosity has also enabled us to support researchers from a diverse range of institutions including: Universities of the Highlands and Islands; Sheffield; and Birmingham. Some of the projects you helped facilitate research for include - The History of the Defence of the Earth; The maritime context of Nani Rayan: overseas port in Kutch, Gujarat; and The Keros – Naxos seaways and the costal hinterland of the Kavos sanctuary.

These awards contribute generously towards advancing not only the areas of research prioritised by you, but those of SHAPE (a collective name for social sciences, humanities and arts for people and the economy) subjects as a whole, and for that we are so grateful.

I hope you enjoy reading through some of the final reports of your funded award-holders. They show the true impact your support has had on both their research and individual careers, enabling them to advance knowledge in important ways.

HBLL

Professor Julia Black CBE FBA President



£120,151 Funding



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10-11 Carlton House Terrace London SW1Y 5AH

Research Project:

Investigating submerged Pleistocene archaeology off Happisburgh, UK

Name: Dr Rachel Bynoe University: University of Southampton Research start date: 17 July 2021 Research end date: 31 December 2022 Ref: SRG1920\101515 Grant awarded: £8,005.00



Project Summary

Account of research carried out

As set out in the original research application, this project had the following aims:

- To get a better understanding of the nature and chronology of the south-easterly palaeochannel systems identified through collected sub-bottom data;
- To clarify the relationships between key deposits at Site OC.

These were to be carried out through the following objectives:

- Targeted diving at locations identified through the geophysics;
 - Swimming transects east west across palaeochannel locations to search for outcropping deposits
- Palaeoenvironmental sampling and subsequent analysis of these deposits;
- Dives and test pitting at Site OC.

The diving

Diving took place over six days from the 17th – 22nd July 2021, having been postponed for a year due to covid restrictions. This was a period of neap tides and within the summer months when weather is more predictable. Despite this, there were still a few days that were cut short due to high winds and an unworkable sea state. In total, 31 dives (two divers per dive) were conducted, totalling 33.7 hours of time underwater. Depths ranged from 2m – 16m and a maximum distance of 1km offshore. The team consisted of six divers: three professional archaeologists, two avocational archaeologists and a University of Southampton PhD student researching submerged landscapes on the south coast.

This part of the North Sea coastline is dynamic, with regular movement of mobile sand banks both on the beach and underwater. Unfortunately, during this period the sand levels within ~800m of shore were high, burying many previously identified CFbF exposures and areas of interest to the south-east. Several dives were carried out on identified targets, but only mobile marine sands were encountered. To work around this, the locations of channels seen in the sub-bottom data were extrapolated out to sea, and successively deeper dives were conducted along these transects. During search dives, reworked organic-rich silty clays were repeatedly seen mixed in with these mobile sands, hinting at the presence of intact deposits nearby. However, nothing of this kind was located in situ. During dives on July 21st and 22nd, two separate areas of exposed, laminated silt/sand deposits were found. These were sampled by hammering 0.1m diameter by 1m length tubes into the seabed, marking orientation, retrieving, wrapping and lifting by hand to the surface. Only sample <25>, from waypoint 238, recovered material suitable for sub-sampling, the palaeoenvironmental analyses of which are described below. At waypoint 254, a large mass of compressed organics was found, visually similar to-although much larger than-organic lumps that are regularly washed onto the beaches in this area, the subject of previous recording by the project team. This did not appear to be in its original context, as it was lying on-top of what looked like modern, marine sand, but is another indication that organic deposits are in relatively close proximity. This was also the first time such a deposit had been seen underwater.

With significant shoreward sand cover, site OC was similarly buried and had associated poor visibility, although several dives were carried out to search for any eroding archaeology or deposits. These dives included targeted circular searches around previously taken GPS points of interest, as well as transect dives from east to west. Further dives were then carried out at Site OA, but the visibility here



was zero and divers were forced to abort the dives. Unfortunately, this lack of visibility was a problem for the entire week.

As a result of these conditions both of the main aims had to be amended, forcing dives to take place in less targeted locations and losing time to searching. As a result, sediment cores were recovered, but the relationships of deposits at site OC remain obscure. With a beach replenishment scheme at Walcott completed in 2019, it is likely that the high sands seen at Happisburgh are related to this increased sediment budget (Davis et al. In review).

Advances in knowledge or understanding

4. Palaeoenvironmental analyses

The cores were taken to BOSCORF at the National Oceanography Centre, Southampton, where they were split. Only core <25> had successfully retained sediment. This was assessed, photographed and sampled for ostracods, foraminifera, pollen and particle size analysis. This compliments previous cores that have been recovered from the aforementioned sites: OA, OAb and OB. The deposits at OC have yet to be successfully sampled, owing to the presence of concreted sediments preventing successful coring.

The following is a brief summary of the palaeoenvironmental analyses to-date and how this current work fits in.

4.1 Microfauna

Microfaunal analyses (forams, osracods and molluscs) were undertaken by Dr John Whittaker.

Previous analyses:

OB: The common presence of pyrite in all samples may indicate decalcification to varying extents. This is supported by the lack of ostracods, which are structurally more vulnerable to decay than foraminifera.

By far the most common foraminifera is Elphidiella hannai which according to Funnell (1989) is the most common and ubiquitous species in littoral and inner sublittoral environments of the early Pleistocene of the North Sea basin. It is not known from the British Isles area after the Anglian. Elphidiella-dominated assemblages are typical of all post-Ludhamian (post c.2.4 Ma) – pre-Anglian (pre c.0.5 Ma) stages and may indicate a temperate stage. On the basis of this evidence, Site OB appears to have been deposited in a marine, nearshore littoral environment within an interglacial.

OA/OAb laminations: These fine organic-rich silts contain some brackish agglutinating foraminifera belonging to Jadammina macrescens, which is a detritivore on decaying leaves in mid-high saltmarsh. These are not common, however, meaning that the saltmarsh was peripheral at best to this estuarine location. A pebbly subsample from lower down in a core from OAb suggests higher energy, possibly as the main channel changed course.

Azolla is noted in two subsamples from Site OA, which indicates salinites lower than c. 2‰ and the absence of severe cold with long frosts.

Sample <25>:



The sample taken as part of this was completely decalcified, so no microfaunal analysis was possible.

4.2 Pollen

Pollen analyses were undertaken by Dr Michael Grant (Coastal and Offshore Archaeological Research Services)

Previous analyses:

Previous results indicate two main pollen zones:

1. LPAZ HapOff1: Including samples from sites OA and OAb, this pollen assemblage suggests a mixed deciduous woodland, with areas of damp ground. There is evidence of some coniferous pollen but these species are likely to be within the wider area, possibly non-local. High values of shrubs and grasses are also present. This profile shows strong similarities to the pollen assemblage from the laminated clays at Happisburgh 3 Bed A (Peglar and Lewis 2010) and West's (1980) Borehole HC deposits.

2. LPAZ HapOff2 – This assemblage is less distinctive than HapOff1 and is represented by sediments at site OB. It is differentiated from HapOff1 by high pinus and picea values, well represented heathland and aquatic taxa, and deciduous species present in low amounts. This may indicate either the end of an interglacial stage or reworking from earlier deposits. This assemblage has similarities to Happisburgh 3 Bed F and deposits recorded in West's (1980) Borehole HC.

Sample <25>:

Although 3km to the south-east, the pollen signature from this sample aligns with the HapOff2, indicating a late temperate stage with lower temperatures, heathland and coniferous woodland.

4.3 Particle Size Analysis

PSA was undertaken in 2018 by Dr Peter Hoare and Prof Simon Lewis (Queen Mary University of London). For this work it was undertaken by Dr Hachem Kassem and James Barlow (National Oceanography Centre, Southampton).

Previous analysis:

Previous PSA analysis has been carried out on cores retrieved from sites OA, OAb and OB. This has indicated:

- Two main facies exist: grey sands and grey laminated silts.
 - o The laminated sediments at OA and OAb are rich in organics
 - OAb has an organic horizon underlying the laminations.
- Both locations show low to moderate energy depositional environments, possibly marine, with laminations suggesting an intertidal setting.
- Sediments at OA are texturally and visually similar to both those seen at depth in borehole BH12 at Site 1 (proved to -8.8m OD) and at Site 3.

Correlation of the offshore sites with those onshore is complicated by the lack of information about sediments at these depths, with the majority of information coming from BH12 at Site 1 (Lewis et al. 2019) and borehole HC (West 1980). It is therefore impossible to draw any firm conclusions about how these sediments relate to one another based on current evidence.



Sample <25>:

Within this sample laminated silts and sands range from very poorly to moderately well sorted. The mud fraction varies in quantity and size throughout the sequence but with an overall decreasing trend down-sequence. The mud content potentially indicates the presence of intertidal/tidally influenced sediments, in alignment with previous interpretations.

5. Discussion

Across several years of diving off Happisburgh significant progress has been made. We now know that there are preserved Pleistocene deposits underwater that were laid down across a range of environments and span a broad period of time. Some of these sediments are yielding archaeology and, although the location has not been found, palaeoenvironmental analyses are helping to indicate at least one likely location of this. The acquisition of sub-bottom data has demonstrated the presence of palaeochannels and associated deposits offshore Sites 1 and 3, as well as previously unknown palaeochannels to the south-east of Happisburgh, off Eccles North Gap. Significantly, these hitherto unrecognised channels are located in an area of seabed shown to be of high archaeological potential (Bynoe et al. 2021).

The work reported here aimed to groundtruth the identified south-easterly palaeochannels as well as clarify the relationships at OC, immediately offshore Site 1. As stated, the build-up of sand cover and through-water visibility issues prevented the original plans from being carried out, forcing the dives into deeper water and to areas where palaeochannel extents had been extrapolated from known points.

Analyses from the resulting sample <25> indicates that the deposits located are of a late temperate stage, when temperatures are beginning to cool and the environment is relatively open; the laminations point to an intertidal setting.

Whilst there are indications from the palynology that this may be earlier than the onshore Early Pleistocene Site 3, based on biostratigraphy alone it is not possible to say conclusively. Given that the location of sample <25> was an extrapolation to deeper water (so lower elevation), however, and that there are no strong indications that the sediment are fluvial in nature, it is possible that what has been sampled are hitherto unrecognised facies within the earlier Crag sediments. With so little known about these crag deposits, these new data are potentially very significant. They provide evidence of warm climate conditions in what was previously considered a cold interval, improving understanding of earlier Pleistocene environments in the southern North Sea basin and the wider context for the earliest human occupation of Britain.

Impact of research

Publications and Dissemination

The underwater fieldwork carried out at Happisburgh is aiming to locate and investigate underwater remnants of previous landsurfaces, since drowned by sea level changes. Throughout the period of human occupation of Britain-- around 1 million years--, large areas of what is now the Southern North Sea was terrestrial land, joining us as a peninsula to the continental landmass. Archaeologists have long been fascinated by what these landscapes looked like, the affordances they provided our early ancestors, and how and when they were inhabited.

By working with local collectors, research has been carried out on large collections of Pleistocene animal bones and stone tools that have been found on beaches at and near Happisburgh, which has indicated areas of seabed that these are likely to be deriving from. This project funded a group of archaeological divers to search these locations, retrieve seabed sediment samples and carry out palaeoenvironmental analysis.

Sadly during the diving there was a lot of sand cover and many of the key areas were not visible. The water was also unusually murky for the time of year, which further complicated things. Despite this, the divers located new areas of exposed Pleistocene deposits and retrieved samples, which have provided evidence for previously unrecognised temperate environments potentially associated with the earliest occupation of northern Europe.

Future work hopes to gain a better understanding of the way these covering sands are moving, so that future dives can spend more time searching for the all-important archaeological traces at identified high-potential areas on the seabed.

Media Interest

I have spoken with Digging for Britain who were interested in using the research, but we will be waiting for the next season (as this request came through after the July fieldwork!).

Nature journal have also asked to do a feature, but again, this came through post-July and we will need to wait for the next season (they wanted to take photos).

Audiences

I was invited to speak at a public conference in Great Yarmouth about this work, which was very busy and had lots of interested people - these were mainly locals but also non-academics from offshore industry were in attendance. I have given several public lectures on this work, including online seminars, and continue to work with the collectors who find material on beaches.

There is a lot of interest from industry, particularly Vattenfall who are bringing windfarm energy onshore at Happisburgh, so we have been working together to mitigate against any impact on the archaeology, as well as using their data to further understand the archaeology.

The talks and interaction with local collectors has been great for the local community, and there is always good engagement there.

In terms of policy, the recent beach replenishment to the north, at Bacton, is having an impact at Happisburgh (as discussed in the discussion - increased sand budget but also, not discussed, these sands contained a younger archaeological signature) and, as such, we have been in discussions with HE and industry about strategic marine policy moving forwards.

Publications

Harris, C.R.E., Bynoe, R. & Lewis, S.G. 2021. Collecting Mammoths: a lost world on the Norfolk Coast. British Archaeology. July/August 2021

Davis, R., Ashton, N., Bynoe, R., Craven, J., Ferguson, R., Gardiner, I., Grimmer, T., Harris, C., Hatch, M., Johnson, C., Leonard, J., Lewis, S., Nicholas, D., and Stevens, M. in review. Middle Palaeolithic



occupation of the southern North Sea: evidence from the sandscaping sediments emplaced on the beach between Bacton and Walcott, Norfolk, UK. Journal of Quaternary Science

Bynoe, R. et al. Underwater archaeology offshore Happisburgh, forthcoming

Future Plans and Other Outcomes

One of the key points to come out of this season is the need to better understand seabed movement in this area. Anyone working underwater will be familiar with how rapidly conditions can change and how quickly an exposed site can become covered. This is very much the case at Happisburgh, with mobile sands regularly covering and uncovering the deposits of interest. The shore-parallel sea defences to the south, from Sea Palling to Eccles (built in 1995), have increasingly led to the northwards build-up of sands immediately offshore Eccles North Gap, and the beach replenishment north of Happisburgh, from Bacton to Walcott in 2019, has hugely increased the sediment budget in the area. These replenishment sands are gradually moving south-eastwards with the dominant sediment transport direction, covering the study area (Davis et al. forthcoming). This is a pattern that can even be seen onshore, where beach levels can rise and fall with alarming rapidity.

Given this recent sediment input and the impact of the sea defences to the south, limiting sediment movement, we are faced with an ever more difficult and unpredictable task. Because of this, whist each diving season has yielded useful results, these results are increasingly (and frustratingly) not from the intended area or addressing the intended questions. As such, the next stage of this work is going to step back from higher-risk diving fieldwork and focus on gathering data that will enable us to gain a longer-term understanding of the pattern of seabed change. This will require high-resolution multibeam bathymetry data at regular intervals to carry out time-step analysis, which will ultimately allow us to target particular locations on the seabed at useful points in time. The aims of this will be two-fold:

1. Through a better understanding of the movement of the seabed in the local study area, target Pleistocene deposits of high archaeological potential at points when they are reliably exposed;

2. Long-term assessment of seabed changes to determine rates of erosion of exposed Pleistocene deposits

a. The combination of onshore lidar with multibeam bathymetry will allow assessment of the effects of exposure on deposits that are intertidal, surf-zone and near-shore.

b. This will provide crucial information on the nature of preservation in highly dynamic areas of seabed and determine how rapidly this unique and internationally important archive is being lost.

Conclusion

The fieldwork undertaken in 2021 provided new evidence for late temperate deposits offshore Happisburgh, which contributes to the poorly understood record from the region. However, with the majority of target locations either wiped out through zero visibility or thick sand cover, it also highlighted the need for greater control over where and when these diving projects take place. Future funding will look to address questions regarding sand movement, and the resulting patterns of exposure and burial of Pleistocene deposits in the study area. This will facilitate greater control over when and where to dive in the future, bringing the ultimate aim of locating submerged archaeology associated with the earliest occupation of Britain ever closer.



There is a well established group of people working on this, but I am in discussions with a maritime group at the University of Southampton, led by Stephanie Jones, that I hope to collaborate with in future. This will expand on the community side of this work, which, given the constant impact of high energy events on this coastline, is really important.

As described above I am hoping to put in for a large grant to look at quantifying change - tying in with archaeology but also erosion and burial rates and their impact on the deposits - as well as thinking about this in a qualitative way in terms of community impacts.

I have been approached to write a book, but this is something that I can't fit in with my other responsibilities at the moment. It's something I would like to revisit in the future.