

Chapter 8

Preliminary Report on 2014
Fieldwork in Southwest Saudi
Arabia

by the DISPERSE Project: (2) Un-
derwater Research in the
Farasan Islands

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Preliminary Report on 2014 Fieldwork in Southwest Saudi Arabia by the DISPERSE Project: (2) Underwater Research in the Farasan Islands

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8.1 Introduction

8.1.1 Background

This report describes underwater fieldwork carried out over a period of 2 weeks in the Farasan Islands between 2nd and 15th March, 2014. This work was planned as the culmination of a sequence of underwater investigations that began in 2006 with experimental deep diving in the inshore waters of the Farasan Islands (Bailey et al., 2007a,b; Bailey et al., 2014a) and continued with shallow-water diving in 2008 and 2009 (Alsharekh et al., 2014; Bailey et al., 2014b). A deep-water survey with a specially equipped ocean-going research vessel (R/V AEGAE0) with acoustics, coring and the use of an ROV was also carried out in 2013 over outlying areas of the continental shelf around the Farasan Islands (Sakellariou et al., .., Chapter 6).

The underlying rationale for the underwater research lies in the existence of an extensive area of shallow continental shelf in the southern Red Sea, and the fact that much of this area was exposed as dry land for long periods during the Pleistocene and early Holocene as prime territory for human occupation. This submerged landscape was finally drowned by sea level rise at the end of the last glaciation, a process of inundation that was completed by about 6000 years ago. It follows that if we wish to know about earlier human activity in the landscape, and especially if we wish to know about the deeper history of coastal settlement and exploitation of marine resources, investigation of this submerged landscape is essential, and new research along these lines is now being pursued in many parts of the world (Bailey, Sakellariou et al., 2012; Evans et al., 2014). This research demonstrates that archaeological material and features of the original terrestrial landscape can often survive the process of inundation, sometimes with unusually good conditions for the preservation of organic materials compared to their terrestrial counterparts. Equally, this research demonstrates that there is still a great deal that we do not know about the taphonomy of underwater material – the conditions that determine its preservation and the chances of its discovery.

Throughout the sequence of investigations carried out in Saudi Arabia, the underwater work has been carried out alongside terrestrial survey on land, both on the mainland, where the survey has concentrated on the search for Palaeolithic sites, and on the Farasan Islands, where attention has focussed on the extensive shell mounds that date back to about 6000 years ago. The assumption underlying

this combined approach is that the study of sites on land can give indications of the type of material we might expect to find under water, its geomorphological associations and hence where to look for similar finds under water, and the likelihood of its survival during and after inundation by sea-level rise.

A key focus of research on the Farasan Islands is the shell mounds, which are a dominating archaeological feature of the present-day coastal landscape, and which mark the presence of earlier coastal societies. Our previous investigations demonstrate that these were sites used by people who not only collected large quantities of marine molluscs as food but also carried out fishing and hunting of gazelle on land. The key question is whether similar sites might have existed when sea level was lower than the present. These sites are typically associated with shorelines that have an undercut notch created by marine erosion at the land-sea interface, and we have established that similar features can be identified under water, marking the position of palaeo-shoreline formed when sea level was lower than the present. These are an obvious target for underwater exploration.

8.1.2 An Iterative Approach

At the outset of the submarine investigations the submerged geology and geomorphology around the Farasan Islands was virtually unknown. The best data sources were hydrographic charts that were designed to aid navigation rather than interpret underwater landscapes. Despite these limitations, the charts were very informative. They denoted many large circular hollows dropping deep into the coastal shelf between and around the islands. These were diapirs, a product of salt tectonics, that were formed when salt domes collapsed. Many measured over 500 m deep, a number of which had the potential to hold fresh water at times when sea levels dropped below the level of their upper rim. When this happened, the contents could be gradually replaced by fresh water run off from the land. For several of the diapirs the rim was only around 50-60 m below current sea level. These would have been free from marine ingress for thousands of years and it was also a time when the islands were linked to the mainland by dry land. Any fresh water features would have been attractive to animals and humans.

Knowledge of prehistoric archaeological material was also limited although a register of Palaeolithic find spots catalogued by Zarins indicated a strong presence of early hominins in the region (Zarins 1981). Many of the worked lithics recorded by Zarins were made from basaltic material and associated with wadi's or relict

water sources. One of the main tasks for the first stages of fieldwork was to inspect the landscape above and below water on the Farasan Islands to find comparable geological and geomorphological characteristics to those indicated by Zarins. It was believed these would be favourable for early human occupation.

The first phase of fieldwork in 2006 successfully characterised the submerged landscape within the sheltered Qumar Bay and the open strait that ran between the Farasan and Zufaf islands. The operation took place on board the MV Midyan that was kindly provided as a floating platform by Saudi ARAMCO. The submerged morphology was identified in a number of places but it was covered by a layer of sand that masked fine details. Even so, submerged wave cut platforms, terraces and undercuts could be found. A well defined, laterally consistent terrace was identified between 80–60 m below sea level immediately east of Zufaf Island and a wave cut notch in 10–14 m of water below Slick Point was also recorded. Wave cut platforms in 6m were found at both sites. These features would have been incised by the sea during periods of lower sea level and as such they indicated sea level at the time of their formation.

It was also noted that the wave and solution cut features below the water mirrored the stratigraphic alignment of the overlying geology. This was particularly evident in Qumar Bay where distortion of the wave cut platforms aligned with distortions in the raised strata above, signifying that the features must have been cut into the rock before being uplifted. One particular notch in Qumar Bay was incised several metres back into the rock face. It was now approximately 20 m below sea level and was calculated to have been formed during a still stand around 90,000 years ago. The date of formation meant these undercuts would have provided shelter and been accessible to human exploitation for long periods when sea level was lower.

In 2008, the second season built on the experience gained during the 2006 fieldwork. The aim was to characterise more sites around the archipelago and identify the site or sites with the greatest potential. During this period of fieldwork, diving support was provided by the Farasan Coastguard which enabled the team to access remote sites. In 2008 the diving was with air rather than mixed gas and it was restricted to shallow waters along the coastline. In 2008, rather than just focusing on older Palaeolithic rock shelters, the objectives included a search for submerged shell middens. This objective had grown from a developing understanding of the

shell middens that were primarily situated along the edges of shallow bays.

During the two week period of fieldwork, 15 sites were dived and recorded. These were located on the east, west, north and south of the Farasan Islands. All the sites had submerged features that indicated fluctuations in sea levels. The results of the diving surveys concluded that the sites offering the greatest potential for submerged archaeological evidence were located in the Sulayn Archipelago and below the western peninsular of Qumar Bay. In 2009, these two areas became the target of more detailed investigation.

The Sulayn al Janub archipelago is situated on large shallow plateaux that would have been dry land 7,000 years ago when sea levels were 5-6 metres lower than today (notwithstanding local uplift or submergence). Shell middens visible on the islands demonstrated occupation and the availability of marine resources. The area under investigation was a ria basin surrounded by three islands. There are three entrances to the basin. It was decided to search and sample an area of the seabed next to the channel that flowed out the basin to the east. This was 5 m deep and was the narrowest channel. Water passing through it was strong enough to clear fine sand from the centre of the channel making the underlying palaeo-land surface more accessible. A 10 m long trench was excavated from north to south and samples were collected. The samples were analysed for evidence of human activity. The concentrations of different species were compared to the assemblages from terrestrial middens. However, the spectrum of different shell types indicated a natural collection, although, a fragment of charcoal was recovered during analysis. The charcoal came from a securely stratified deposit suggesting the presence of humans when sea level was lower. Accordingly this warranted further investigation in 2014.

The site chosen for detailed investigations beneath the inner side of the western peninsula in Qumah Bay was 8 m–18 m under water. Here, a series of distinct wave cut notches protrude from the side of the bay which is relatively free from sand cover. The location sits around the interface between deep sediment and scoured exposures.

A principal feature at this site is a notch with a large overhang in 10 m of water. It has a 2 m high opening with a sloping roof that tapers to the back of the cave. The back of the cave is 3.5 m from the entrance. When sea level was lower, this would have formed a rock shelter overlooking a large circular basin dipping to over 100 m below sea level to the south east of Qumah Bay. This was a diapir that had

the potential to hold fresh water and be a focal point for resources that could support life when sea levels were considerably lower and the climate was more temperate.

Within the 10 m wave cut crevice, the sediment was thin unconsolidated sand. Available evidence indicated the cave was formed before the marine regression thereby making it available for occupation prior to the last transgression. Even so, any objects left within the cave would have been washed out as the sea level rose past it c. 8000 years ago. Accordingly, efforts were concentrated in gullies at the bottom of a steep slope in front of the shelter. Samples were collected that proved to be archaeologically sterile, but the task was not complete as the fieldwork was interrupted by a shark that settled in a nearby cave.

8.1.3 2014 Objectives

The aim of the 2014 investigations was to complete the exploration of two areas that we have previously identified as suitable targets for underwater excavation, on Qumah Island to the south of the main island of Farasan, and on the Sulayn archipelago to the north of the modern port (Figure 8.1). Our objectives were to complete excavations at these locations, to continue to develop methodologies for the investigation of seabed sites, and to collect a larger sample of bulk shell and sediment samples for laboratory analysis and the search for indicators of human activity. We also carried out some additional survey on land to fill in gaps in the survey of on-land shell mounds and coastal sites. The work was undertaken by a combined team of marine archaeologists from the University of York, the Maritime Archaeological Trust and the Saudi Commission for Tourism and Antiquities (Figure 8.2). Below we describe the different elements of the fieldwork in chronological order, with a concluding summary.

8.2 Underwater Work

8.2.1 Preliminary Setting-up

The British dive team arrived in Farasan Town in the evening of the 2nd November 2014, and met with Colonel Faisal Al Johany of the Farasan Border Guard to establish the necessary protocols for local work and the availability of technical support including support boats and facilities for refilling diving tanks with compressed air. The Colonel offered the maritime team all the help he could to facilitate the smooth running of the project, including a ridged inflatable boat for safety cover in the project and the offer to fill the diving cylinders at the end of each day's

work. Lieutenant Abdullah Rifa'i was assigned the task of looking after the dive team and assisting with logistical arrangements. On the following day, the team met the Governor of the Farasan Islands, Hussain D. Aldajani, who offered his support for the education programme on underwater archaeology, which had been prepared in case the opportunity arose to teach in a local school, and he offered to assist the project team where he could as guests on the Farasan Islands. In addition, Abdul Aziz Al Sha'bi the Farasan Municipal Engineer offered the use of the Municipality boat for diving on the 9th and 13th March. Because of dive logistics, variable availability of boats, and interventions of bad weather, work alternated between the two main dive areas

8.2.2 Sulayn Archipelago I

Diving began on 4th March at the Sulyan Archipelago. Abdu Aqeeli led the dive team in two boats to the dive site. The dive team consisted of Garry Momber, Brandon Mason, Christin Mason, Jan Gillespie and Lauren Tidbury. The aim of the diving operation was to relocate the area where charcoal was found in 2009 and recover more samples to aid our investigations to see if we could discover evidence of human activity. The dive team located the area, set out an underwater grid and opened small evaluation trenches (Figure 8.3).

On 5th, 6th and 7th March, the same dive team, with the addition of Matthew Meredith-Williams and Niklas Hausmann continued the diving operation to extend the underwater excavation and collect samples (Figure 8.4). The Border Guard boat joined us each day with the filled tanks and to provide support as needed.

Diving was aborted on Friday the 8th due to a mechanical fault with the dive boat. On Saturday, diving resumed at Sulayn with the addition of Geoff Bailey, who entered the water with dive equipment for an inspection of the fieldwork. Three trenches had been excavated to open up sections in the area of interest and 34 samples had been collected. Sandy overburden was cleared from an area measuring 6 m² in preparation for further sample recovery.

8.2.3 Qumah Bay I

On Sunday 10th March Waleed Mozayen, Abdullah Al Haiti, Faris Hamzi and Juma Al Sadiq from the Saudi Commission for Tourism and Antiquities joined the British group to form the Saudi-British Dive Team for excavation in Qumah Bay

(Figures 8.5, 8.6 and 8.7).

An airlift, which was built in Farasan by the dive team on Friday, was used to remove cover from the seabed to expose the submerged land-surface in an area that had the potential to hold archaeological material (Figure 8.8). The covering sediment was removed to show the underlying seabed geology, comprising a relict coral platform. Three samples of mixed shells were recovered for assessment.

By the end of the first week, the dive team had conducted 5 days diving. Twelve divers and nine supporting team members had been involved in the diving operations, resulting in 59 dives in 28 diving operations, and recovery of 37 samples for sieving and assessment.

8.2.4 Sulayn Archipelago II

The second week of diving began with underwater survey and sampling at Sulayn archipelago on Tuesday. The diving on Monday was aborted due to bad weather. The grid was expanded to cover an area of 70 m² with four 10 m baselines and 1.5 m corridors in between. The grid was used as the reference framework around which sampling was conducted, and, where warranted, areas were excavated to the underlying bedrock.

Over the next two days the joint Saudi-British dive team worked together to collect samples and expand the excavation within the survey area (Figure 8.9). Three diving boats supported the excavation. One was provided by Abdu Aqeeli, one by Mafari Aqeeli and the third was a Farasan Border Guard safety vessel (Figure 8.10).

8.2.5 Qumah II

On Thursday, fieldwork was carried out at Qumah for the second time. The entrance of a small underwater cave was targeted for sampling. A base line was set up running for 7m from the cave, down slope to the east. The air lift was deployed to help remove the sediment overburden. Divers from the British and Saudi team worked together enabling the Saudi archaeological divers Faris Hamzi, Abdullah Al Haiti and Jumah Al Sadiq to gain supervised experience with the air lift (Figure 8.11). A total of 15 samples was recovered, some of which contained a large amount of shells from edible shellfish while one contained a dark coloured irregular-shaped lithic (Figure 8.12).

8.2.6 Sulayn III

The last day of diving was back in the Sulayn Archipelago. The trenches were extended and further samples were collected. Areas that showed potential were excavated to the underlying bedrock (Figures 8.13 and 8.14). In two places, along the northern baseline, patches of seabed were stained dark grey with flecks of black material embedded in the old coral surface. It is possible that these patches are marks left by burning (Figure 8.15). Samples of the seabed were recovered for analysis and additional samples of the surrounding sediment were collected (Figure 8.16).

A further day's diving to investigate the palaeo-channel that runs below the main channel from Farasan Port was planned. However, it was aborted due to bad weather conditions. The aim of the dive was to inspect the edges of the channel that had been dredged to see if there were any exposures of the buried land-surface. This is an area of investigation that would benefit from shallow water geophysical survey if the equipment and time were made available.

8.3 Terrestrial Report

The terrestrial, on-land 2014 field season has focused on filling in gaps in the dataset, and tying up loose ends from last year's field season.

The first task was to revisit known sites to show the dive team examples of sites they might come across underwater (Figure 8.17). Following the familiarisation exercise, the fieldwork began with Total Station Theodolite survey to measure in the limits of the excavations carried out last year at 18 sites. This was accomplished in a morning's work from two stations, one for Janaba East located on JE0086 and one located on JW1807 for all sites in Janaba West.

A number of gaps in the survey were also addressed, particularly an area in the centre of Janaba Bay, overlapping research areas in Janaba East and West – approximately located between the desalination plant and a stand of trees in Janaba West. These sites had not been visited, and many are not visible on satellite images. It was therefore necessary to investigate this section of coastline and record any sites present. We located 24 new sites in this previously un-surveyed area. Site characteristics recorded included dimensions and surface composition.

Sites located along the east side of Saqid Island were another group that had not been observed in the field. This area was visited to ground-truth the satellite obser-

variations and confirm the presence of sites (Figure 8.18). The position and existence of 50 sites was confirmed. The opportunity was taken to record the characteristics of a number of these sites, and some samples were also taken for further analysis.

8.4 Results and Conclusions

Two dive sites were investigated during the underwater fieldwork, involving 94 individual dives to inspect, survey and sample the seabed. The methodology developed at Sulayn focussed on sampling spatially and horizontally within the sediment matrix across a well-defined area. Excavations to the underlying bedrock were conducted in selected areas to show variations in colouration and taphonomy, but primarily to find evidence of human activity such as charcoal, food shells or artefacts. The samples showed a top layer of sandy sediment, a lower layer of shells, another lower layer of coral and a hard basal, coral terrace. Organic inclusions were recorded at various locations around the sand and shell interface. An airlift was used to remove overburden and collect samples from gullies within the coral basement rocks.

In the deeper water, to the east of the surveyed area, the sediment cover of sand and shell was thinnest while the coral horizon that was found below the shell but above the basement/bedrock was thickest. Further upslope – about 5m – towards the west, the covering sediment was thicker but the concentration of coral immediately above the bedrock was thinner. On the northernmost baseline, dark grey stains or patches were recorded at 5m and 6m. These ‘stains’ extended below heads of coral that must have grown after the ‘stains’ were formed. It is possible that these ‘stains’ were formed when the sea level was dry land and are the result of localised fires/hearths. Samples of the seabed surface were collected for analysis. The areas of stained coral were localised and were not found in the other trenches that were opened to expose the bedrock.

At Qumah, a similar method was developed to collect samples from an excavated trench. The trench was excavated with mattocks and the airlift. The sand cover was thin on the slope in front of the cave and the underlying bedrock was exposed beneath 20–30cm of sand cover, 1.5–7m from the cave entrance. However, immediately in front of the cave, the sediment was thicker. Here, the samples collected from 30–50cm below the surface contained a mixture of shells and an incongruous lithic. Both will be subject to further analysis.

On land, 50 new shell mounds were located in the north of Saqid while additional survey was carried out around Janaba Bay (west side of Janaba East). This revealed another 24 new middens.

At the conclusion of the fieldwork, the dive team had conducted 9 days diving, 2 days spent in surveying shell middens on land and three days sorting the samples. Twelve divers from the British and Saudi teams worked and trained together and learnt from each other. Eleven supporting team members were involved in the diving operations, including three members of the Farasan Border Guard and two boat crew from the Municipality, involving six different boats. In total there were 94 dives in 64 diving operations and 102 samples were recovered for sieving and assessment.

Bulk samples recovered from underwater excavation were laid out to dry and subjected to preliminary sorting and analysis. Subsamples were bagged for export to the UK for detailed analysis was then carried out in the laboratories at the University of York.

The spectrum of shells analysed from both sites indicated a natural assemblage. Another piece of charcoal was found within the samples from Sulyan but it was not substantive enough to conclude that we were near a site of human activity from a submerged landscape. These negative results do not prove that archaeological material does not exist at the locations investigated, particularly as relatively small areas were sampled and any midden deposits would have been reworked. In addition, terrestrial survey on the Farasan Islands found very little material that could be attributed to the Palaeolithic and the tools discovered were made of the local coral. Unfortunately, this material is subject to degradation in the marine environment and therefore very difficult to locate underwater. By comparison, searches for lithics near the basaltic geology on the mainland, north of Jizan, near Al Birk, proved very successful. Many hand tools were found on coral terraces near wadis. Here, the darker basalt made the tools relatively easy to locate.

The results of the work on the mainland confirmed widespread and extensive prehistoric human activity at times when sea level was lower. Accordingly, it is inconceivable that archaeological material would not have been deposited on land that is now underwater. The experience of searching for underwater landscapes that has been gained by the University of York dive team over the last four fieldwork seasons is unparalleled in the region. Now this can be complemented by the

knowledge gained from the terrestrial team that has resulted in a better informed understanding of the prehistoric archaeological resource.

Terrestrial survey has established that the basalt, lithic material found in the Al Birk area is more robust, easier to locate and prolific. Consequently, discovery rates have proved to be much greater than on the Farasan Islands. Therefore, it is highly probable that the same would be true in comparable sites below sea level.

Acknowledgements

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Appendix 8.1. List of participants

Saudi and British Diving Archaeologists

Garry Momber – University of York and Maritime Archaeology Trust

Jan Gillespie – Maritime Archaeology Trust

Brandon Mason – Maritime Archaeology Trust

Christin Mason – Maritime Archaeology Trust

Lauren Tidbury – Maritime Archaeology Trust

Waleed Mozayen – Saudi Commission for Tourism and Antiquities

Faris Hamzi – Saudi Commission for Tourism and Antiquities

Juma Al Sadiq – Saudi Commission for Tourism and Antiquities

Abdullah Al Haiti – Saudi Commission for Tourism and Antiquities

Terrestrial Team and Volunteer Diving Archaeologists

Geoff Bailey – University of York

Muzna Bailey – University of York

Matthew Meredith-Williams – University of York

Niklas Hausmann – University of York

Abdu Aqeeli – Saudi Commission for Tourism and Antiquities

Mohammed Mofta – Saudi Commission for Tourism and Antiquities

Figures

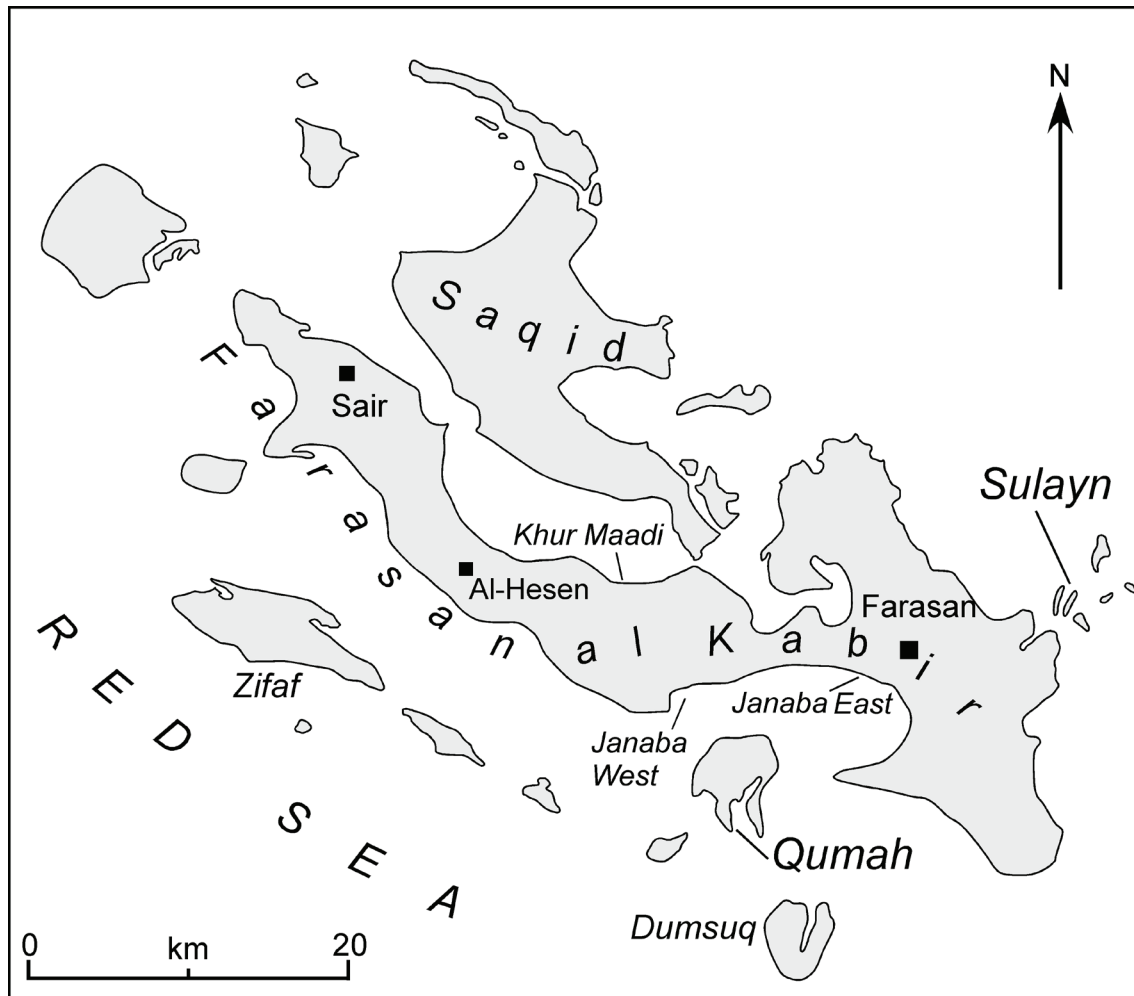


Figure 8.1. Map of the Farasan Islands showing the location of target areas for underwater investigation at Sulayn and Qumah.



Figure 8.2. Members of the Dive Team heading for the Sulayn dive site.



Figure 8.3. Christin Mason clearing a trench for sampling.



Figure 8.4. Brandon and Christin Mason recording a section through the shell deposit at Sulayn. Lauren Tidbury behind camera. The full-face masks enable divers to communicate with each other and talk to the dive supervisor on the boat.



Figure 8.5. Saudi-British Dive Team prior to their first collaborative dive. Top row. Waleed Mozayen, Garry Momber; Middle row. Brandon Mason, Janet Gillespie, Christin Mason, Lauren Tidbury, Geoff Bailey; Bottom row. Faris Hamzi, Abdullah Al Haiti, Jumah Al Sadiq.



Figure 8.6. Members of the Saudi–British team being briefed by Chief Maritime Archaeologist Garry Momber before leaving port.



Figure 8.7. Members of the diving team preparing to dive from the Municipal Engineer's boat.



Figure 8.8. Brandon Mason working with Jumah Al Sadiq and Garry Momber (behind camera), to excavate seabed sediments.



Figure 8.9. Faris Hamzi and Jumah Al Sadiq collect samples from the excavation trench at Sulayn.



Figure 8.10. Local boats and the Border Guard safety vessel (back left).

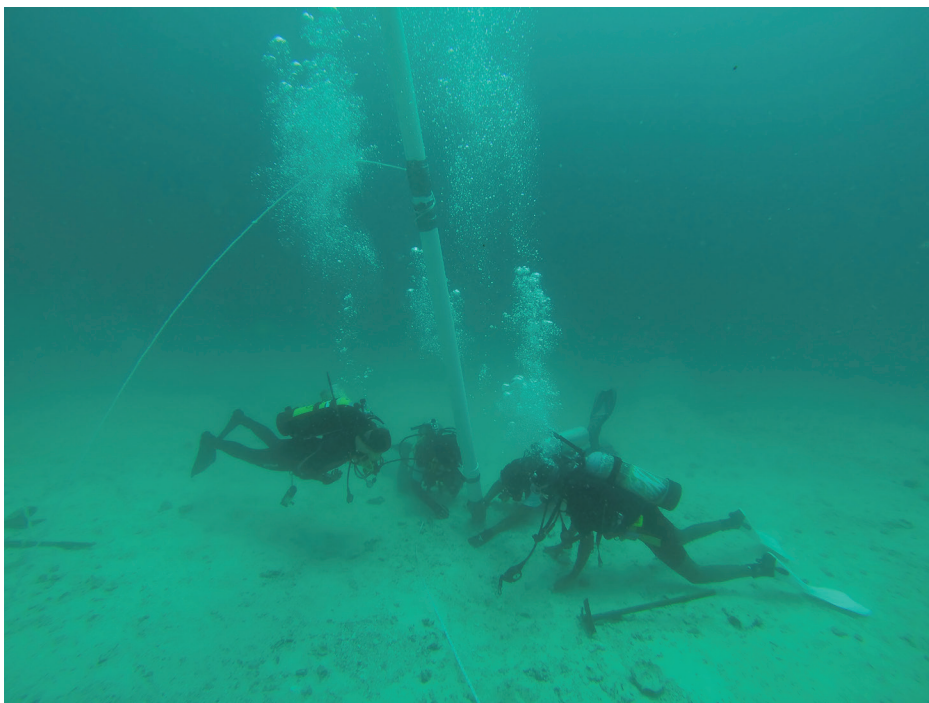


Figure 8.11. Faris Hamzi, Abdullah Al Haiti and Jumah Al Sadiq excavate with an airlift in 18 m of water at Qumah under the supervision of Christin Mason.

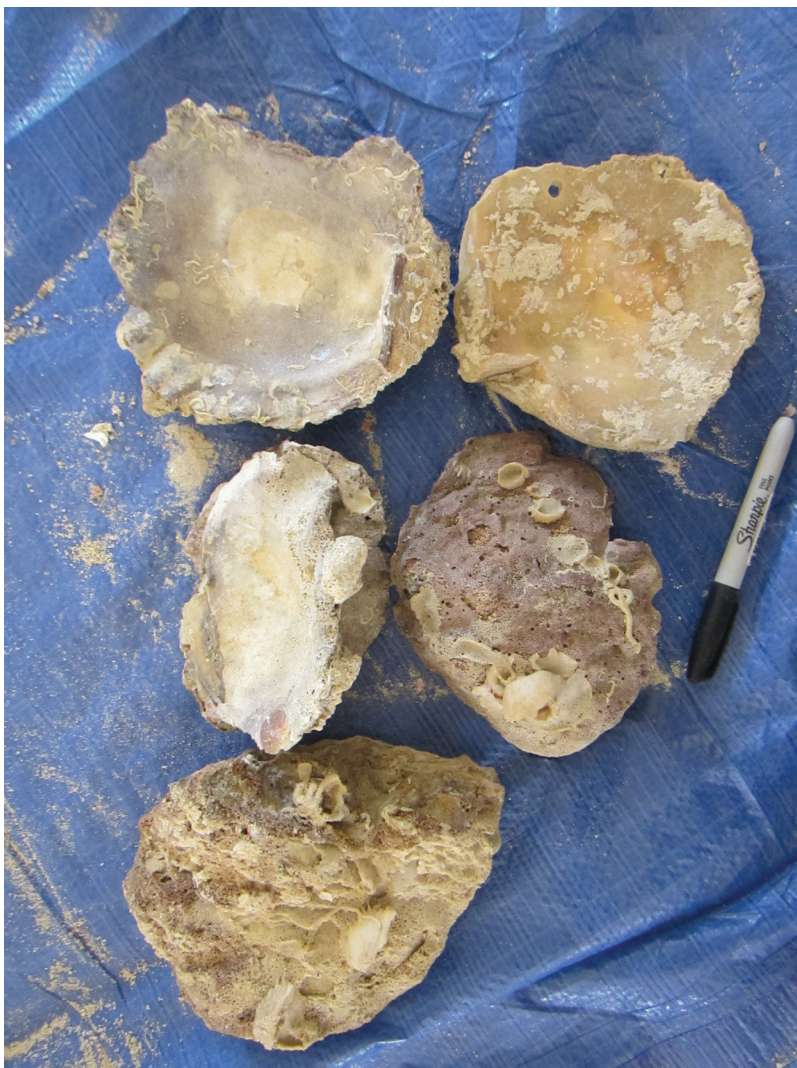


Figure 8.12. The sorted finds included an assemblage of edible shells from Qumah, which were found alongside a lithic piece (not illustrated).



Figure 8.13. Jan Gillespie and Lauren Tidbury recover samples from the seabed in Qumah Bay.

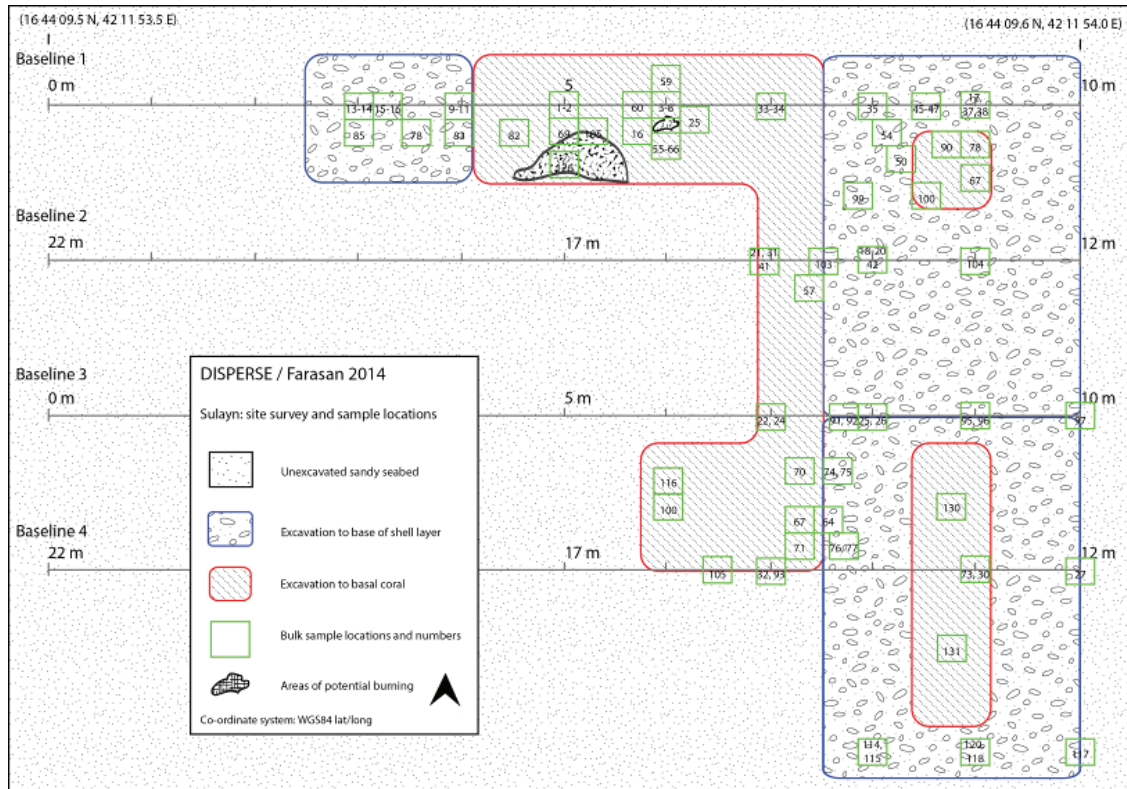


Figure 8.14. Plan of the survey and sampling area at Sulayn. The trenches were widened and deepened in areas which had more interesting and complex stratigraphy (Brandon Mason and Garry Momber).

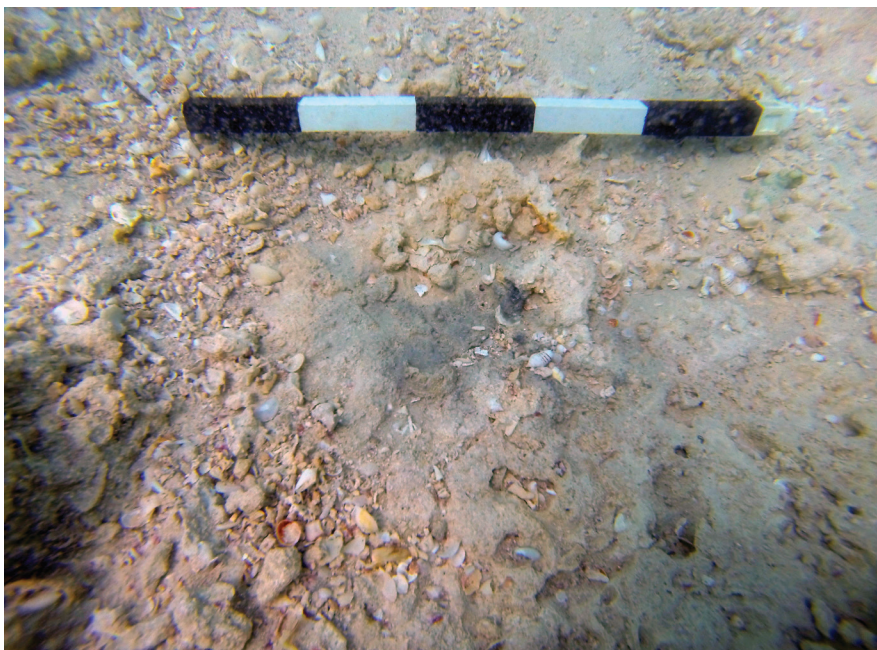


Figure 8.15. An area of dark staining exposed on the coral bedrock, 5 m along the Baseline



Figure 8.16. Processing samples in the Governor's compound, Farasan.



Figure 8.17. Geoff Bailey, Mathew Meredith-Williams and Niklas Hausmann point out salient features of on-land shell middens to members of the archaeological dive team.



Figure 8.18. Some of the North Saqid shell mounds during ground truthing and recording.