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Excavations at Wādī al-Sail, Bahrain 2015–2019

Takeshi Gotoh, Kiyohide Saito, Masashi Abe & Akinori Uesugi

Summary
The archaeological site of Wādī al-Sail in Bahrain is a large-scale graveyard of the early phase of the Early Dilmun period (*c.*2250–2050 BC). This site is remarkably important for our understanding of the emergence of the tribal society and the succeeding developments of a kingdom on the island along with the flourishing maritime trades. This paper provides a preliminary account of five seasons of excavations conducted by the Japanese team. In the northern part of the site that was permitted for our excavations, 266 possible burial mounds were identified, among which fifteen burial mounds were excavated by the Japanese and eleven by the Bahrain Authority for Culture and Antiquities between 2015 and 2019. While all the excavated burial mounds represented cairn burial mounds, several types, which seem to reflect diachronic changes of mound types, were defined based on the construction methods of the mounds and the shapes of the chambers. Eight ^{14}C dates from the excavations indicate a time span between 2300 and 1900 BC. Grave-goods recovered from some of the mounds included a few Mesopotamian and Umm an-Nar pottery and stone beads, indicating that the island was part of the maritime trade by the end of the third millennium BC. This evidence from the recent excavations has updated our understanding of Early Dilmun society.

Keywords: Wādī al-Sail, Early Dilmun period, late third millennium BC, cairn burial mounds, maritime trades

Introduction

The site of Wādī al-Sail is a graveyard of the Early Dilmun period (*c.*2250–1700 BC) (Fig. 1). The Early Dilmun period is divided into early (*c.*2250–2050 BC) and late (*c.*2050–1700 BC) phases (Højlund 2007: 136). A number of burial mounds of the late phase represented by the Barbar Type (Lowe 1986) or Early Type (Frohlich 1986) have been excavated and reported (Srivastava 1991; Mughal 1983; Ibrahim 1982; Højlund 2007; Laursen 2017), suggesting that this phase witnessed the emergence of a highly complex society that can be called a kingdom, as attested by the presence of extra-large burial mounds representing elite graves at A'ali and Janabiyah. The archaeological evidence is supported by several literary references to the kings who ruled the island during the early second millennium BC (Højlund 2007: 123–127; Laursen 2017: 377–396).

However, very little information has been available on the Early phase burial mounds termed the Rifa'a Type (Lowe 1986) or Late Type (Frohlich 1986), although numerous mounds of this phase have been extensively excavated in Rifa'a (P. Lombard, personal communication) and Madinat Hamad (Karzakkan) (Lowe 1986; Frohlich 1986; Srivastava 1991), making it difficult to understand the society of this phase. It is therefore important to reveal the features of graveyards of this phase in order to gain a better understanding of the formation process of the complex society that was established during the early second millennium BC (Højlund 2007: 123–127; Højlund et al. 2008; Olijdam 2016: 221). As a result of large-scale land developments since the 1970s, the graveyard of the early phase was preserved only in Wādī al-Sail.

Excavations of burial mounds at Wādī al-Sail were conducted by the authors between 2015 and 2019 with permission and support from the Bahrain Authority for Culture and Antiquities. This paper gives a brief report on the excavations and discusses the significance of this site for our understanding of the Early Dilmun society.

Distribution patterns of burial mounds at Wādī al-Sail

The graveyard of Wādī al-Sail spreads over the bank of a large wadi running south-east–north-west through the north-western part of the hills in the centre of the island (see Fig. 1). A number of burial mounds are located

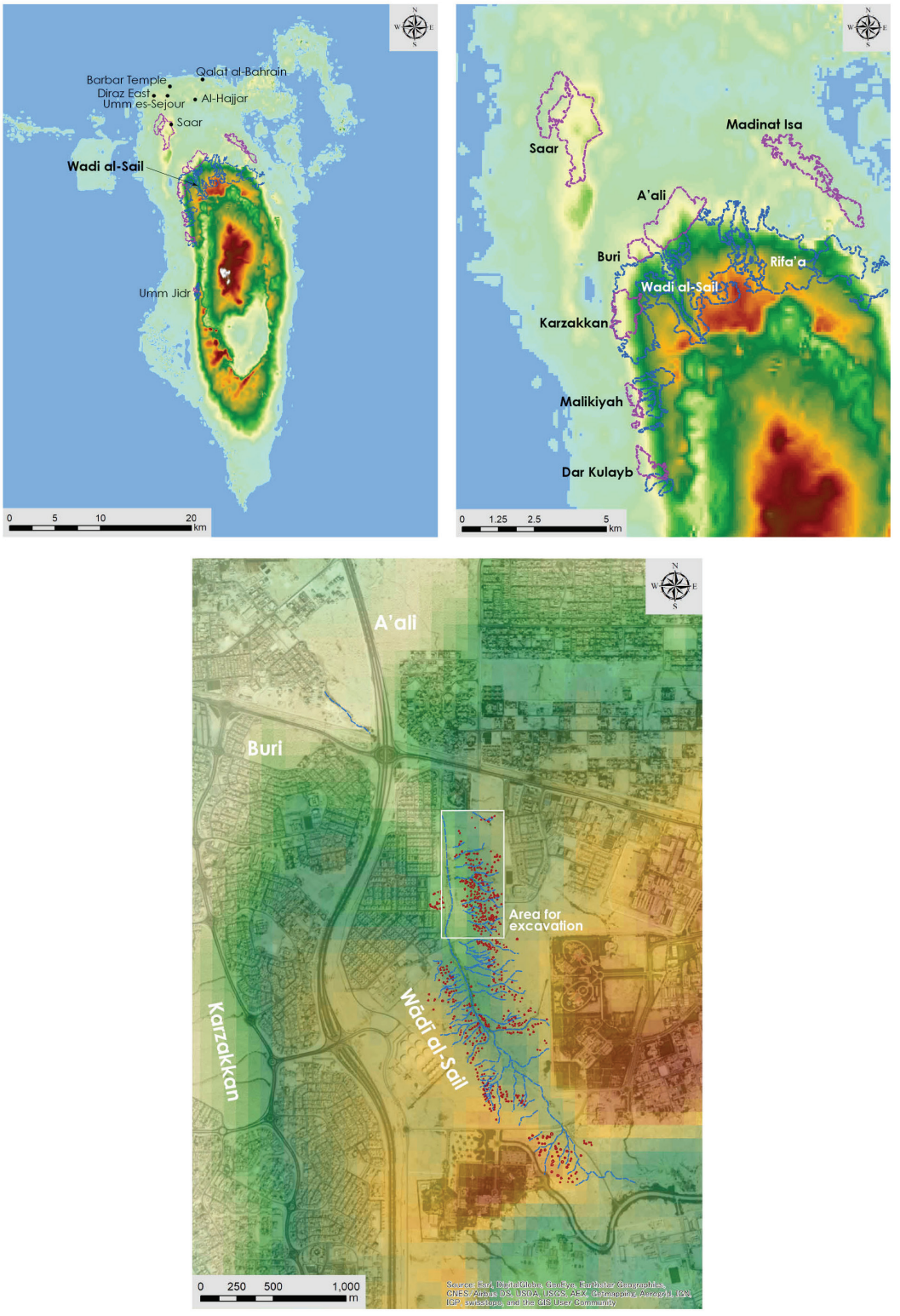


Figure 1. *The location of the site of Wādī al-Sail.*

on both sides of the wadi over a distance of 3.6 km. As access to the southern part of the site, which is occupied by the military camp and royal palaces, is not permitted for archaeological research, an area measuring 880 m from north to south and 410 m from east to west in the northern part was the subject of our research. While mounds today are preserved only on the eastern side of the wadi in our research area, they existed in great numbers on the western side until the 2000s. Most of them have now been destroyed to make way for the construction of houses. Thus, the original distribution of mounds at this site has been greatly modified by land developments. Nevertheless, survey and excavation of the preserved mounds on the eastern side of the wadi are still vital for understanding the distribution patterns and features of mounds at this site.

In total, 266 possible burial mounds were identified by UAV-SfM (unmanned aerial vehicle-structure from motion) — effectively creating both a 3D model and a terrain model of an extensive area — and by ground-level survey, but no evidence of habitation was identified (Figs 2 & 3/top). Among them, those with diameters of 5.01–7.0 m were predominant, followed by those with diameters of 3.01–5.0 m and 7.01–8.0 m. Those measuring less than 2 m and more than 8.01 m were limited in number. This trend in size was commonly observed in each cluster discussed below, although the clusters with mounds larger than 8.01 m were limited in number.

Minor wadis, narrow and wide, run from east to west across the slope on the east side of the major wadi. The eastern end of the research area was the highest, and the major wadi occupied the lowest part. The minor wadis accentuated the terrain of the slope and the distribution patterns of mounds, indicating that the minor wadis existed at the time of the formation of the graveyard at this site. Furthermore, the limestone outcrops that formed the bedrock could be observed at various points along these minor wadis. Some of these outcrops revealed cut surfaces, which suggests intentional quarrying, most probably for the construction of mounds.

As will be described below, mounds commonly had a stone circle at their base constructed of large stones (30–50 cm in width). It can be assumed that the distance from minor wadis was one of the important factors for the distribution patterns of mounds, as transportation of large stones from sources required a great amount of labour. In relation to this point, it is noteworthy that the mounds of Cluster 10 were not close to wadis that might have been the stone source for them, indicating a peculiar location of this cluster compared to the others.

The mounds in our research area were divided into fifteen clusters based on the locations of the minor wadis, which can be regarded as a factor affecting the locations of mounds as discussed above. The numbers and sizes of the mounds in each cluster are listed in Figure 3 (top), showing different patterns between clusters. Although it must be admitted that some clusters, such as Clusters 1 and 15, had already lost some of the mounds that were originally included, most of the clusters did not show any traces of complete removal of mounds in the past, suggesting that the number and distribution patterns of mounds, which could be observed in the present, preserved the primary or undisturbed compositions of mounds in the clusters.

While examining the arrangements of mounds, curvilinear and linear alignments of mounds were observed in various parts of the research area (Fig. 3/lower left). For example, five mounds on the highest part were found to be in a curvilinear alignment across the flat area between minor wadis. The presence of the two largest mounds measuring 8.01–10.0 m in diameter in this group of five mounds and their location on the highest part of the slope indicate an intentional arrangement of these five mounds in a curvilinear pattern. The existence of a wide empty space around this group also suggests the intentional peculiar arrangement of this group. The mounds in Cluster 10, which also occupied the highest part of the slope, were in a curvilinear pattern. Similar curvilinear alignments were also found in Clusters 1, 2, and 7. Moreover, the mounds of this pattern were placed across the flat area between the wadis.

Examples of the linear pattern, which could be seen in various parts of Clusters 1, 2, 4, 8, and 9, were key to locating mounds along wadis. This locational feature, which seems to have been related to the proximity to stone quarries along wadis for the construction of mounds, showed a clear difference from the examples of the curvilinear pattern. As the examples of the latter tended to be placed across the flat area between the wadis, the mounds that were situated in the centre of the alignments were more distant from wadis or stone quarries, suggesting that more labour was needed for transporting stones from quarries along the wadis. For

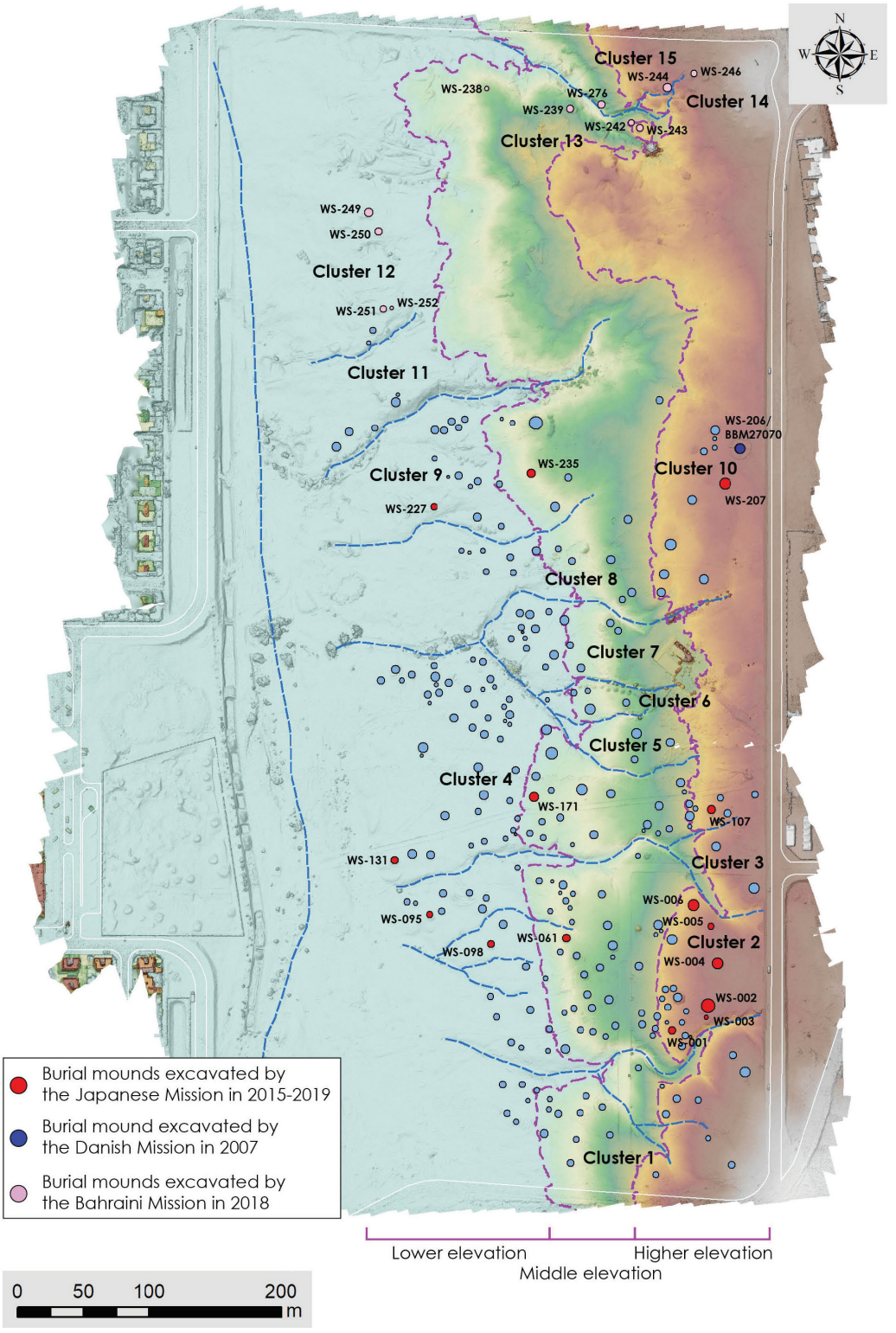


Figure 2. *Distribution of excavated burial mounds at Wādī al-Sail.*

Size (m)	Total number	Cluster														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2.01-3.0	10		3		2			1	1	2		1				
3.01-4.0	23	2	6		9		1			1	2		2			
4.01-5.0	46	6	18		13		1	2	2	2	1			1		
5.01-6.0	73	13	21		14		1	6	4	6	2	1	1	2		1
6.01-7.0	64	4	18		21	2	1	4	5	5		1	2	1	1	
7.01-8.0	32		6	1	10			3	4	3	2	2	1			1
8.01-9.0	12	1	2	1	4	1	1				1					
9.01-10.0	4				1				1		1					
10.01-11.0	2									1						
11.01-12.0			1													
12.01-13.0			1													
Total	266	26	76	2	74	3	5	16	17	20	9	5	6	4	1	2

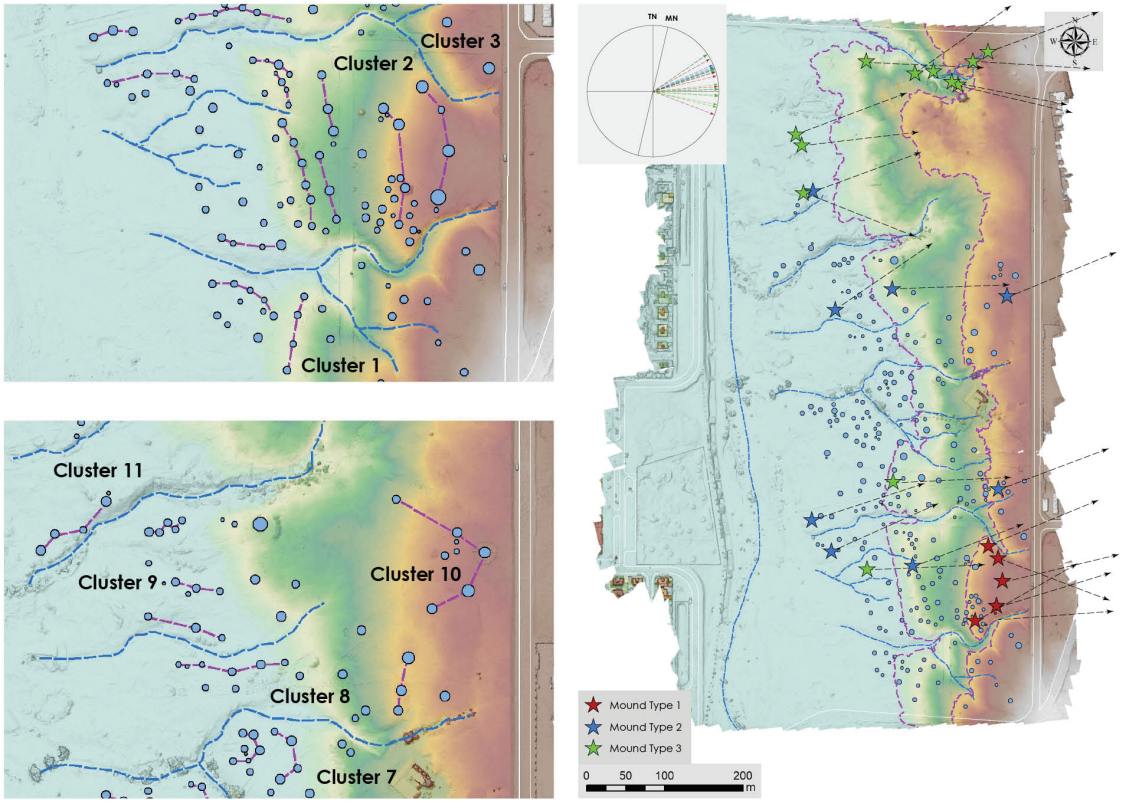


Figure 3. Top: *size distributions of burial mounds at Wādī al-Sail;* **lower left:** *examples of alignments of burial mounds;* **lower right:** *the orientations of excavated burial chambers.*

instance, two large mounds situated in the middle of a curvilinear alignment at the highest part of Cluster 2 that were built with large stones must have required much more labour (the amount of stones × the distance from quarries) than the others that were situated near the wadis. Similarly, the mounds in other clusters situated far from wadis appeared to have required more labour than those closer to the quarries. Therefore, it would seem that the curvilinear pattern and the linear pattern of mounds reflect completely different principles behind their patterns. It can be presumed that various factors, such as the distance from quarries, size of mounds, amount of labour, cost of construction and so on, played a significant role in creating different distribution patterns of mounds at this site.

Another noteworthy fact when examining the distribution patterns of mounds is that the minor wadis become shallower towards the bottom of the slope of the major wadi showing no trace of quarrying. It might be that the quarrying activities were more intensively conducted in the higher elevated part of the slope, but taking into consideration that the lower parts of the slope were also occupied by a number of mounds, it is not unlikely that the strategy of acquiring stones for constructing mounds differed between the higher and lower parts of the slope.

Excavated burial mounds at Wādī al-Sail

Two mounds at Wādī al-Sail were excavated by the Danish expedition in 2007 (Højlund et al. 2008). Our Japanese team excavated fifteen mounds between 2015 and 2019 (Figs 2 & 4). In our project, three bands were demarcated across our research area based on the elevation of the slope — the higher, middle, and lower elevations; the mounds for excavation were selected in order to cover the entire range of our research area. In addition, the Bahrain Authority for Culture and Antiquities conducted rescue excavations on eleven mounds in December 2017 and January 2018 because housing construction had started in the northern part of our research area.

Based on the evidence from twenty-eight mounds excavated in total, a classification was made for the burial mounds in terms of the construction methods and the plans of the burial chambers (Figs 2 & 5).

Mound type
- A) constructed only with stones
- B) constructed with earth containing small stones

Chamber type
- A) rectangular chamber built with large stones
- B) oval chamber built with relatively smaller stones

By combining these mound and chamber types, three types were defined:

Burial Mound Type 1: Mound Type A + Chamber Type A
Burial Mound Type 2: Mound Type A + Chamber Type B
Burial Mound Type 3: Mound Type B + Chamber Type B

Overall, the features of the burial mounds excavated conform to the examples reported from Madinat Hamad defined as the Rifa'a Type by Lowe (1986) or the Early Type by Frohlich (1986). Below is a discussion of the mound classifications, features of mounds and chambers, preservation of human skeletons, grave-goods, distribution pattern of each burial mound type, and ^{14}C dates.

Mounds

All the excavated mounds were found to have a ring-wall at the base of the mound, regardless of the burial mound types. Stones or earth were filled in the space between the ring-wall and the chamber in the centre of the mound. The heights of excavated mounds varied from 0.08 to 0.80 m. In the case of the examples of Mound Type A, two to three courses of stones were observed in the mounds. The stones of the mounds were laid up to the level of the top of the chambers. No trace of stone courses to cover the chamber was observed. This seems to be related to the absence of capstones in all the excavated mounds as discussed below. Mound Type B was distinct in using earth for filling the space between the ring-wall and the chamber, although some large stones were sporadically found at the base level of the mounds in some cases. One mound (WS-171) was found to have roughly built stone walls placed in a radiating arrangement although in an irregular way. The filling comprised earth and small stones. This example can be regarded as a variant of Mound Type B.

The subsidiary small mound attached to the main mound was an additional trait for classifying the burial mound types. Three examples with subsidiary small

Burial no	Cluster	Mound			Direction (Deviation from TN to E; degrees)	Chamber				Main material of mounds	Pottery	Bead
		Diam (m)		Height (m)		Plan	L (m)	W (m)	D (m)			
		NS	EW									
WS-001	2	5.60	5.40	0.55	60.38	Rectangular	1.55	0.71	0.70	Stone	0	0
WS-002	2	10.4	10.30	0.80	72.92	Rectangular	1.45	0.94	0.60	Stone	0	0
WS-003	2	3.37	3.34	0.36	85.78	Oval	0.75	0.49	0.51	Stone	0	0
WS-004	2	8.60	8.50	0.65	76.48	Rectangular	1.39	0.63	0.77	Stone	0	0
WS-005	2	4.50	4.60	0.33	110.75	Rectangular	1.35	0.74	0.58	Stone	0	0
WS-006	2	8.30	7.80	0.69	67.61	Rectangular	1.84	0.95	0.53	Stone	0	0
WS-061	2	6.35	6.45	0.58	68.70	Oval	1.53	0.70	0.66	Stone	0	0
WS-095	2	5.10	4.80	0.35	65.83	Oval	1.34	0.91	0.66	Stone	2	2
WS-098	2	5.90	5.50	0.30	87.49	Oval	1.32	0.76	0.51	Stone	0	0
WS-107	4	6.10	6.40	0.15	69.38	Oval+alcoves	1.50	0.85	0.22	Stone	0	2
WS-131	4	5.59	5.95	0.73	71.86	Oval	1.22	0.90	0.63	Stone	0	4
WS-171	4	6.77	6.70	0.08	87.36	Uncertain	1.59	0.96	0.05	Earth?	1	0
WS-207	10	8.70	8.30	0.62	67.44	Oval	1.50	1.10	0.70	Stone	0	0
WS-227	9	4.70	4.80	0.66	55.64	Oval	1.23	0.79	0.69	Stone	0	0
WS-235	9	5.90	6.44	0.20	88.03	Oval	1.36	0.89	0.31	Stone	1	0
WS-238	13	3.60	3.70	0.48	92.70	Oval	0.70	0.40	0.66	Stone	0	0
WS-239	13	5.29	5.40	0.31	54.89	Oval	1.20	0.70	0.59	Earth	0	0
WS-242	13	5.30	4.90	0.24	101.15	Oval	0.87	0.52	0.89	Earth	0	0
WS-243	13	5.80	5.50	0.29	103.31	Oval	0.75	0.57	0.67	Earth	0	0
WS-244	15	6.30	6.40	0.70	93.62	Oval	0.88	0.76	0.64	Earth	0	0
WS-246	15	5.40	4.70	0.72	69.92	Oval	0.94	0.72	0.58	Earth	1	1
WS-249	12	6.35	6.55	0.78	69.41	Oval	1.37	1.07	0.70	Earth	0	0
WS-250	12	5.86	5.81	0.39	83.33	Oval+alcoves	1.13	0.75	0.52	Earth	0	0
WS-251	12	5.00	4.90	0.43	111.60	Oval	1.13	0.71	0.60	Earth	0	0
WS-252	12	2.95	3.03	0.45	69.91	Oval	1.05	0.63	0.52	Stone	0	0
WS-276	15	4.90	5.50	0.31	83.64	Oval	1.68	1.17	0.27	Earth	0	0

Figure 4. *Features of the excavated burial mounds at Wādī al-Sail.*

mounds were unearthed among the mounds excavated by the Japanese and Bahraini teams (WS-095, 107, and 243). WS-107 had one subsidiary mound on the south side of the main mound. WS-095 and 243 were found to have two subsidiary mounds on the south-south-eastern side of the main mound. In terms of the mound types, WS-095 and 107 belong to Mound Type A and WS-243 to Mound Type B.

Burial chambers

All the excavated mounds were found to have a chamber in the centre of the mound. Except for WS-171, the chambers were built with stones. In WS-171, which had radiating stone walls at the base of the mound, no clear walls of the chamber were uncovered, while a complete human skeleton was unearthed in the centre of the mound. Based on the good condition of the skeleton, it is unlikely that the grave had been disturbed by later activity. No burial pit was identified around the skeleton and it is therefore not clear how the body was placed and the mound built over it in this case.

The two different plans of chambers, rectangular and oval, were related to the sizes of stones used. While relatively large stones were required for a rectangular chamber, an oval chamber was built using smaller stones. As will be discussed below, Chamber Type A, or the rectangular chamber, was found only in the mounds on the highest part of Cluster 2. The others had an oval chamber of Type B. Taking into consideration the fact

Figure 5. *Burial mound types at Wādī al-Sail.*

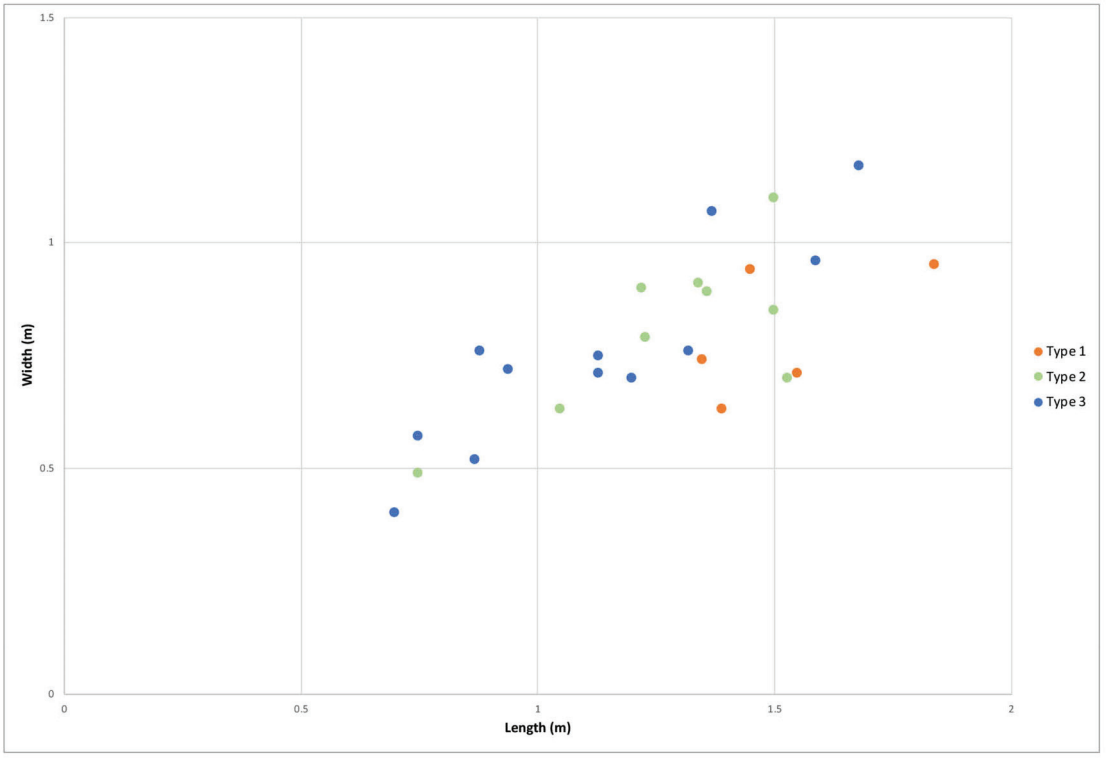


Figure 6. *Dimensions of the excavated chambers.*

that the mounds on the highest part of Cluster 2 included the largest ones in this site and that a deep and wide wadi, which was suitable for quarrying stones, was close to this group, it seems that Chamber Type A was quite peculiar to this part of the site where large stones were easily available. All the chambers excavated consisted of two to three courses of stones. Two examples (WS-107 and 250) had a chamber with alcoves. Both had two alcoves at the eastern end of an oval chamber.

No capstones were uncovered in any of the excavated mounds, not even large fragments of stones on and/or around the mounds that might have been used for covering the chamber. As human skeletons were found in their original positions in many of the excavated mounds, although in a highly weathered condition, it is unlikely that the chambers had been plundered or disturbed on a large scale. The stratified deposits inside the chamber also did not indicate extensive plunder. This circumstantial evidence might suggest that the chambers were not covered by capstones.

The chambers had dimensions varying between 0.74 and 1.80 m in length, 0.40 and 1.17 m in width, and 0.22 and 0.89 m in depth (Fig. 6). The stones used for the construction of chambers were generally larger than those for mounds and ring-walls, some of which measuring 1 m in length. The chambers of Burial Mound Types 1 and 2 were built with larger stones than the chambers of Burial Mound Type 3. This trend can be correlated with the sizes of the chambers; the size distributions of three burial mound types indicates a general tendency of decrease in the size of chambers from Burial Mound Type 1 to Type 2 and Type 3 (Fig. 6).

In terms of the orientations of the chambers, all the excavated chambers were mostly oriented to the east; the bodies of the deceased also had the same orientation (Fig. 3, lower right). However, there was a deviation between TN-54.89°-E and TN-111.60°-E showing variations in determining the orientation of a chamber at the time of the construction of the mound.

Human skeletons and animal bones

Fourteen of the fifteen mounds excavated by the Japanese team yielded human bones. The conditions of preservation of the human bones were diverse (Fig. 7): 1) a few bones found in scattered positions inside the chamber; 2) most parts of a complete skeleton kept in the original position but in a very deteriorated condition; and 3) a complete skeleton in a relatively well-preserved condition. It can be assumed that the body was exposed to the wind and rain for some time before it was covered by wind-blown sands and by stones collapsed from the side walls of the chamber, resulting in the highly weathered condition of the bones (there do not appear to have been any capstones to cover the chamber, as stated above). The filling deposits inside the chambers comprised a thin layer of fine wind-blown sand covering the skeletons, and stones collapsed from the side walls of chambers also covered by fine wind-blown sand. No traces of robber pits were observed in the deposits (in a few cases, small pits were found in the filling deposits, suggesting that small-scale disturbance had occurred, though it seemingly did not reach the floor level). However, there is a possibility that disturbance to skeletons and robbery of grave-goods could have taken place before the formation of the filling deposits inside the chambers, as attested by some examples (WS-095 and 235) in which potsherds were retrieved in the filling deposits.

In eight mounds (WS-001, 002, 004, 005, 006, 061, 207, and 271), sheep/goat bones, which showed traces of burning were retrieved, along with human bones.

WS-004

WS-095

WS-061

WS-171

Figure 7. *Human skeletons exposed in the excavated chambers.*

They were generally found on the north side of the human skeleton. Like human bones, their conditions of preservation were not good, but some limb and cranial bones with teeth were identified among them. In WS-207, the cranial bones were found to be placed over limb bones. These sheep/goat bones clearly suggest that cooked meat with bones was offered to the dead (cf. Frohlich 1986: 54; Kveiborg 2007).

Grave-goods

Among the grave-goods (Fig. 8), stone beads were retrieved from five burial mounds (WS-095, 107, 131, 171, and 246) and pottery from four mounds (WS-095, 171, 235, and 246).

Only a few stone beads were recovered from each mound: four from WS 131, two each from WS-095, 107,

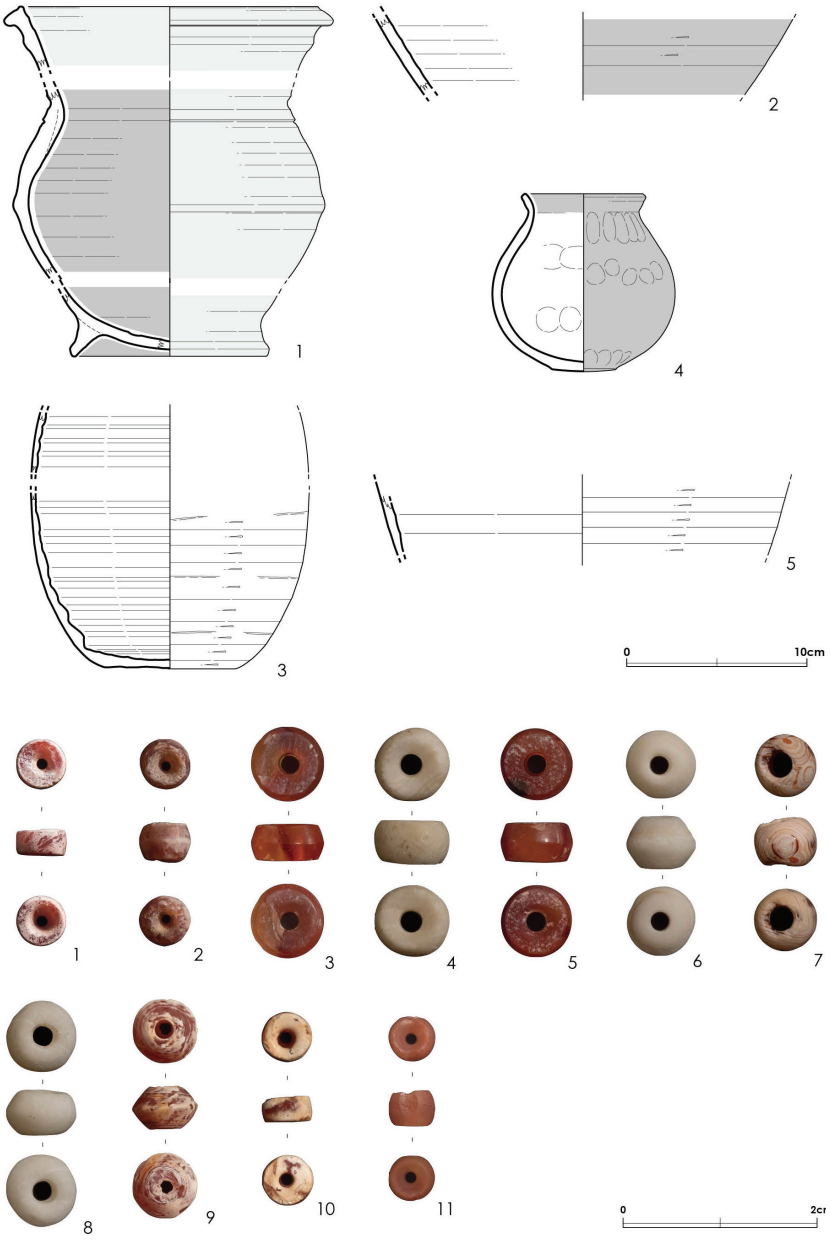


Figure 8. Top: *potsherds* — **1, 2.** *WS-095;* **3.** *WS-131;* **4.** *171;* **5.** *WS-227);* **bottom:** *stone beads* — **1, 2.** *WS-107;* **3–6.** *WS-131;* **7, 8.** *WS-095;* **9, 10.** *WS-171;* **11.** *WS-246.*

and 171, and one from WS-246. They were all found on the floor level of the chambers. Moreover, the stone beads made of carnelian and agate were all short beads of less than 6.5 mm in length and 9 mm in diameter, which reflects the nature and scale of the trading activities on Bahrain Island during the late third millennium BC.

Of the pottery, except for one complete pot from WS-171, it was all discovered as potsherds, some of which were found in the filling deposits of the chamber (WS-095 and 227), suggesting that they were moved from their original contexts and redeposited in secondary positions due to disturbances in the course of the deposition of the filling deposits. Some of the refitted potsherds included an Umm an-Nar-style[1] pot from WS-131 (Fig. 8/3; Laursen 2009) and a Mesopotamian-style pot from WS-095 (Fig. 8/1; Laursen 2011). A complete pot from WS-171 (Fig. 8/4), with a short neck, globular body, and rounded base, was neither of the Umm an-Nar style nor the Mesopotamian style. It is also different from the local Barbar pottery. Further evidence and analysis are needed to specify the origin of this pot.

Radiocarbon dates

One charcoal sample from BBM 20907 excavated by the Danish team dating to 2234–2110 cal BC (2σ: 62.0%) (Højlund et al. 2008: 152) provided the only date available for evaluating the chronological position of mounds at Wādī al-Sail before our excavations. Eight tiny charcoal samples collected from the floor levels of chambers of eight mounds excavated by us have been dated to a time range between 2300 cal BC and 1900 cal BC (Fig. 9). The charcoal samples that were charred wooden pieces seemed to have been associated with charred animal bones offered to the dead. Eight tiny charcoal samples from wood that seemed to have been associated with charred animal bones offered to the dead were collected from the floor levels of the chambers of eight mounds. These samples have been dated to a time range between 2300 cal BC and 1900 cal BC (Fig. 9). It was noted that all the dates fit the chronological position of the burial mounds at Wādī al-Sail proposed by the Danish team (Højlund et al. 2008). The date from WS-107, which is remarkably later than the others, might have been derived from a later intrusion or actually belonged to a later phase. Further discussions with more ^{14}C dates are needed to assess the chronological relationship between the types of mounds and the absolute dates.

Spatial distribution of the features of excavated burial mounds

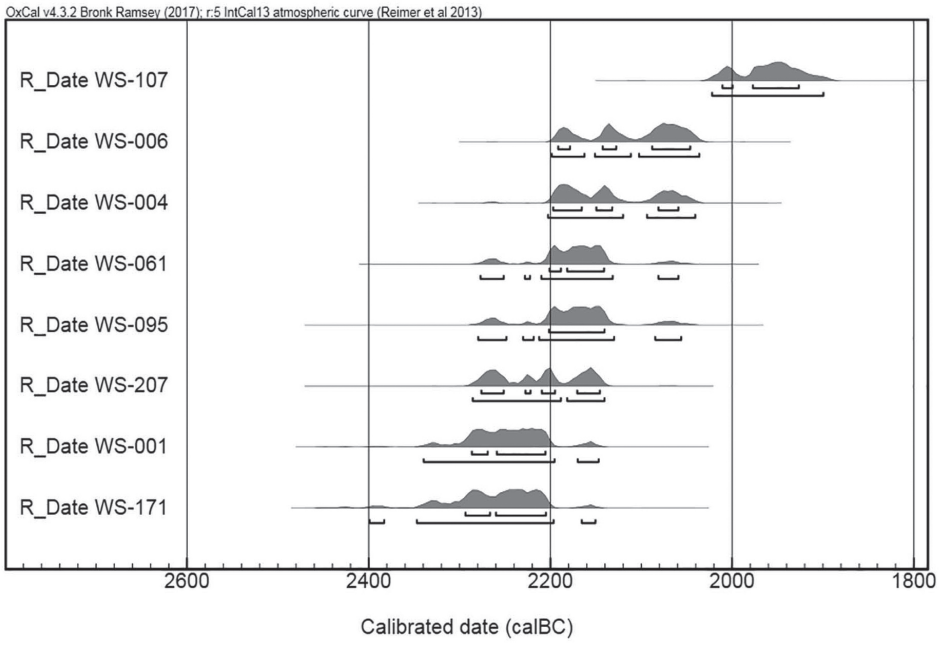
Burial Mound Type 1 was identified only at the highest part of Cluster 2. All the six mounds excavated in this part belonged to Burial Mound Type 1. No grave-goods were recovered from them. WS-004 yielded a date of 2203–2121 cal BC (2σ: 64.9%); WS-001, a date of 2340–2196 cal BC (2σ: 91.1%); and WS-006, a date of 2089–2047 cal BC (2σ: 42.8%).

Burial Mound Type 2 was found in the middle (WS-061) and lower (WS-095) parts of Cluster 2, the lower parts of Cluster 4 (WS-131), the highest part of Cluster 10 (WS-207), and the middle part of Cluster 9 (WS-227). WS-003, a small mound accompanying the large mound WS-002, had a small oval chamber. Two stone beads and many potsherds were retrieved from WS-095 (at least two pots can be counted), four stone beads from WS-131, and one potsherd from WS-227. One ^{14}C date of 2211–2132 cal BC (2σ: 83.5%) was obtained from WS-061, one of 2213–2131 cal BC (2σ: 78.0%) from WS-095, and one of 2286–2189 cal BC (63.0%) from WS-207.

Burial Mound Type 3 was widely attested in the lower part of Cluster 2 (WS-098), the highest part of Cluster 4 (WS-107), the middle parts of Cluster 4 (WS-171), the middle part of Cluster 9 (WS-235), Cluster 12 (WS-249, 250, 251, and 252), Cluster 13 (WS-238, 239, 240, 242, 243, and 246), and Cluster 15 (WS-244). Two stone beads were unearthed in WS-107, two stone beads and one complete pot in WS-171, and one stone bead and potsherds in WS-246. Furthermore, all the excavated mounds in Clusters 12–15 belonged to this type suggesting that Burial Mound Type 3 was dominant in the northern part of the research area.

Three mounds with subsidiary mounds (WS-095, 107, and 243), which were probably intended for the burial of infants, were in the lower part of Cluster 2, the highest part of Cluster 4, and the middle part of Cluster 13 (Fig. 10). In addition to these, eighteen mounds seemed to have subsidiary mounds, as the

[1] The term 'style' is used in this paper based on the morphological similarity to specific ceramics, such as Mesopotamian style and Umm an-Nar style because, due to a lack of provenance analysis it is not possible to determine their place or area of production.



Sample no context Sample type	δ13C (‰)	Conventional radiocarbon age (not rounded) (yrBP±1σ)	Conventional radiocarbon age (rounded) (yrBP±1σ)	Caribrated dates	
				1σ	2σ
PLD-29457 WS-001 charred wood	-23.86±0.14	3813±23	3815±25	2287-2270 cal BC (16.5%) 2260-2206 cal BC (51.7%)	2340-2196 cal BC (91.1%) 2171-2148 cal BC (4.3%)
PLD-37608 WS-004 charred wood	-21.97±0.22	3736±20	3735±20	2198-2166 cal BC (33.8%) 2150-2133 cal BC (16.8%) 2082-2060 cal BC (17.7%)	2203-2121 cal BC (64.9%) 2094-2041 cal BC (30.5%)
PLD-37609 WS-006 charred wood	-21.76±0.25	3722±19	3720±20	2192-2179 cal BC (11.1%) 2143-2128 cal BC (14.3%) 2089-2047 cal BC (42.8%)	2199-2163 cal BC (20.0%) 2152-2112 cal BC (23.6%) 2103-2037 cal BC (51.8%)
PLD-37610 WS-061 charred wood	-21.31±0.22	3760±19	3760±20	2202-2189 cal BC (15.1%) 2182-2142 cal BC (53.1%)	2278-2252 cal BC (7.3%) 2229-2223 cal BC (0.8%) 2211-2132 cal BC (83.5%) 2082-2060 cal BC (3.8%)
PLD-37665 WS-095 charred wood	-24.21±0.35	3760±22	3760±20	2202-2141 cal BC (68.2%)	2280-2249 cal BC (9.5%) 2231-2219 cal BC (2.0%) 2213-2131 cal BC (78.0%) 2085-2057 cal BC (6.0%)
PLD-37611 WS-107 charred wood	-23.29±0.22	3602±19	3600±20	2011-2000 cal BC (10.6%) 1978-1927 cal BC (57.6%)	2023-1900 cal BC (95.4%)
PLD-38124 WS-171 charred wood	-23.15±0.21	3822±24	3820±25	2294-2267 cal BC (21.2%) 2261-2206 cal BC (47.0%)	2400-2384 cal BC (1.7%) 2348-2197 cal BC (91.9%) 2166-2151 cal BC (1.9%)
PLD-37612 WS-207 charred wood	-21.03±0.21	3783±19	3785±20	2277-2252 cal BC (24.1%) 2228-2223 cal BC (4.1%) 2210-2196 cal BC (15.1%) 2171-2146 cal BC (25.0%)	2286-2189 cal BC (63.0%) 2182-2141 cal BC (32.4%)

Figure 9. *Radiocarbon dates from the excavated burial mounds.*

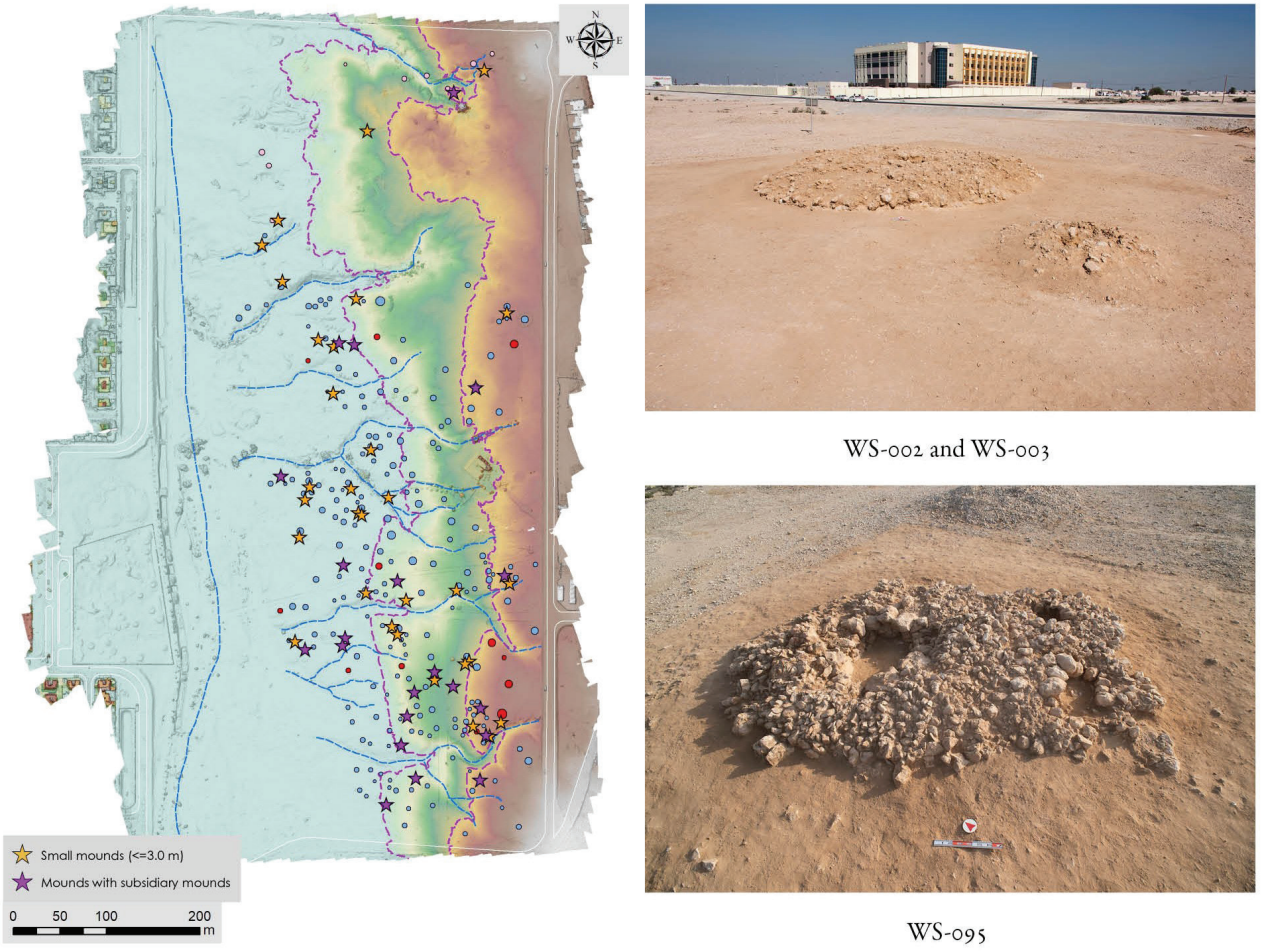


Figure 10. *Distributions of small mounds and mounds with subsidiary mounds.*

topographic features indicated. No specific distribution pattern could be seen; however, Cluster 2 had more frequent occurrences of subsidiary mounds while the other clusters had more scattered distributions. All the subsidiary mounds were situated on the south side of the main mounds.

Also noteworthy in this connection was the presence of small mounds that were less than 3 m in diameter and were built separately from larger mounds (Fig. 10). Many of them were located to the south of larger mounds, as in the case of subsidiary mounds. Moreover, a small mound (WS-003) was associated with WS-002 belonging to Burial Mound Type 1, while subsidiary mounds occurred on the mounds of Burial Mound Types 2 and 3 (WS-095, 107, and 243). It is noted that the custom of constructing subsidiary mounds continued to the Late phase of the Early Dilmun period.

How should we interpret the distribution patterns of the features summarized above? Burial Mound Type 1 was confined to the highest part of Cluster 2, Type 2 was distributed in the middle part of Cluster 2 and in the area to the north of Cluster 2, and Type 3 was predominant in the northern part of the research area. As the variations in the shapes of chambers and the construction methods of mounds seemed to be related to the availability of stones used in mounds, it appears that the locational relationships to the stone sources from mounds were relevant to these variations. For instance, the chambers of Burial Mound Type 1, which included the largest mounds, were built with large

stones, while the examples of Burial Mound Types 2 and 3 were predominantly made of smaller stones or even earth. The fact that the highest part of Cluster 2 was accompanied by a deeper part of the wadis as the source of large stones and the examples of Burial Mound Types 2 and 3 were generally situated in the areas in which shallow wadis dominated, reinforces this observation. However, it can also be observed that Burial Mound Types 2 and 3 were found even in the areas in which deeper wadis developed (Clusters 9 and 11) suggesting that the locations of the mounds of Burial Mound Type 1 on the highest part of Cluster 2 were not only due to the availability of larger stones but also due to other factors, such as the preference of the higher location for a construction of this type.

Cluster 10, which included a large mound with an outer ring wall (WS-206/BBM 27070), had locational features like Cluster 2 that occupied the highest part of the slope and had a wide empty space around it. WS-206/BBM 27070, which was interpreted as a social elite by Højlund et al. (2008), belonged to Burial Mound Type 2 showing features different from Burial Mound Type 1 of Cluster 2. The chamber of WS-207 in Cluster 10 excavated by us was also found to have an oval chamber. Furthermore, no wadis that could be used as a stone source for the construction of burial mounds of Cluster 10 were located near this cluster. This is also one of the remarkable differences between Clusters 10 and 2.

In summary, as Burial Mound Types 1 and 3 were distinctly different from each other with regard to the shapes and sizes of the chambers, the construction methods of mounds, and their distributions, it appears that Type 3, which predominantly occurred in the northern part of the research area, was of a distinct type later than that of Type 1. Type 2, which had an oval chamber like that of Type 3, may also typologically or chronologically be placed between Types 1 and 3 based on the differences in the construction methods of mounds and in the sizes of chambers. The ^{14}C dates available to date cannot prove this hypothetical chronology, but the distinct types discussed above can be a clue to a better understanding of the diachronic developments of burial mounds, which eventually led to the emergence of Late Type burial mounds of the early second millennium BC at the nearby graveyards of A'ali, Buri, and Karzakkan.

Conclusions

The results of the excavations at Wādī al-Sail can be summarized as follows:

1. In total, 266 mounds were identified by the aerial and ground surveys in the research area. They were divided into fifteen clusters lying near small wadis running from the top of the slope to the bottom of the major wadi at the lower level. Different distribution patterns were observed in these clusters that must be better understood through excavations.
2. To date, twenty-eight mounds have been excavated, indicating that all the excavated mounds can be categorized as cairn burial mounds built with stones, although earth was used along with stones in some of them. Based on the typological classification focusing on the chamber plans and the construction methods of mounds, three types were distinguished: Burial Mound Type 1, a rectangular chamber and a mound built with large stones; Type 2, an oval chamber and a mound built with stones; and Type 3, an oval chamber of especially small size and a mound built with earth, including small stones. Eight ^{14}C dates available so far indicate that the excavated burial mounds fell within the time span between 2300 and 1900 BC,[2] roughly corresponding to the early phase of the Early Dilmun period.
3. It can tentatively be hypothesized that Burial Mound Type 1 was the earliest one followed by Type 2 and then Type 3. Each of them had a different distribution area and pattern: Type 1 was found only in the highest part of Cluster 2, Type 3 had a higher frequency in the northern part of the research area, and Type 2 was widely distributed between Types 1 and 3. Further excavations on burial mounds of each type must be conducted to

[2] The date of 1900 BC for the end date of the early phase is quite late, when the cross-dating between burial mound sites and Qala'at al-Bahrain based on specific artefacts (Højlund 2007: 11–15) is considered. Nevertheless, it should be mentioned that the 14C dates from burial mounds are still limited in number and the transformation process from the Rifa'a Type or the Early Type mounds to the Barbar Type or the Late Type mounds is still not well understood. The 14C dates presented in this article need further examination and discussions with more dates.

clarify the chronological relationship between the types along with ^{14}C dates.

4. Six burial mounds yielded potsherds, which included as grave-goods an Umm an-Nar pot and a Mesopotamian pot, and carnelian and agate beads, all of which were a short type. Moreover, they were found only in Burial Mound Types 2 and 3, which might be indicative of their chronological positions, that is, the later phase of mounds at Wādī al-Sail.
5. The burial mound type attested in the excavated mounds was represented by cairn mounds suggesting that the burial mound tradition at Wādī al-Sail was similar to that in the inner desert area of the Arabian Peninsula, the Sinai Peninsula, Jordan, and Syria (Abe et al. 2017; Laursen 2017) and not to the one in the Oman peninsula in which tower tombs were dominant. This poses a question regarding the origin of the cairn mounds at Wādī al-Sail, seemingly having its connection to the west, which must be further examined.
6. The presence of exotic items in some of the mounds at Wādī al-Sail, such as the Umm an-Nar pottery, Mesopotamian pottery, and stone beads, suggests that Bahrain Island was already part of long-distance maritime trade networks at the end of the third millennium BC, which might have given an impetus to the emergence of a complex society during the early second millennium BC.
7. It is clear that the burial mounds at Wādī al-Sail, although the number of excavated mounds is still limited, are of great importance to better understand the emergence of cairn burials on the island and the developments of a complex society along with the involvement of the island in maritime trade. Further excavations must be conducted to reveal various aspects of social evolution on the island, not only to reconstruct the history of this island but also to understand better the dynamic nature of maritime trade and social developments in the neighbouring regions including Mesopotamia, the Arabian Peninsula, Iran, and the Indus Valley, all of which constituted this extensive trading network (Laursen 2009; 2011; Olijdam & David-Cuny 2018; Uesugi 2019).

This article focused on providing preliminary evidence from our excavations at Wādī al-Sail. A very limited discussion was therefore undertaken, based on the evidence, especially regarding the chronology of the burial mounds based on ^{14}C dates and ceramic evidence that should be compared with that from other sites in Bahrain and the Oman peninsula. Our project will continue and different aspects and issues will be examined in further papers.

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References

Abe M., Uesugi A., Saito K. & Gotoh T. 2017. The origin of Dilmun: A comparative study of the burial traditions in Dilmun and neighboring regions. *Journal of West Asian Archaeology* 18: 1–15. [In Japanese.]

Frohlich B. 1986. The human biological history of the Early Bronze Age population in Bahrain. Pages 47–63 in Shaikha Haya Ali Al Khalifa & M. Rice (eds), *Bahrain through the ages: Archaeology*. London: Routledge & Kegan Paul.

Højlund F. 2007. *The burial mounds of Bahrain: Social complexity in Early Dilmun.* (Jutland Archaeological Society Publications, 58). Aarhus: Moesgaard Museum/Bahrain: Ministry of Information.

Højlund F., Hilton A.S., Juel Ch., Kirkeby N., Laursen S.T. & Nielsen L.E. 2008. Late third-millennium elite burials in Bahrain. *Arabian Archaeology and Epigraphy* 19: 144–155.

Ibrahim M. 1982. *Excavations of the Arab expedition at Saar el-Jisr, Bahrain.* Bahrain: Ministry of Information.

Kveiborg J. 2007. Appendix 2: Animal bones from the Aali, Saar and Dar Kulayb mound cemeteries. Pages 149–154 in F. Højlund, *The burial mounds of Bahrain: Social complexity in Early Dilmun*. (Jutland Archaeological Society Publications, 58). Aarhus: Moesgaard Museum/Bahrain: Ministry of Information.

Laursen S.T. 2009. The decline of Magan and the rise of Dilmun: Umm an-Nar ceramics from the burial mounds of Bahrain, *c.*2250–2000 BC. *Arabian Archaeology and Epigraphy* 20: 134–155.

Laursen S.T. 2011. Mesopotamian ceramics from the burial mounds of Bahrain, *c.*2250–1750 BC. *Arabian Archaeology and Epigraphy* 22: 32–47.

Laursen S.T. 2017. *The royal mounds of A'ali in Bahrain: The emergence of kingship in Early Dilmun*. Aarhus: Jutland Archaeological Society/Moesgaard Museum/ Bahrain Authority for Culture & Antiquities.

Lowe A. 1986. Bronze Age burial mounds on Bahrain. *Iraq* 48: 73–84.

Mughal M.R. 1983. *The Dilmun burial complex at Sar: The 1980–82 excavations in Bahrain*. Bahrain: Ministry of Information.

Olijdam E. 2016. Humble beginnings? A closer look at social formation during Early Dilmun's formative phase (*c.*2200–2050 BC). *Proceedings of the Seminar for Arabian Studies* 46: 211–226.

Olijdam E. & David-Cuny H. 2018. Dilmun-Meluhhan relations revisited in light of observations on Early Dilmun seal production during the City IIa-c Period (c. 2050–1800 BC). Pages 406–432 in D. Frenez, G.M. Jamison, R.W. Law, M. Vidale & R.H. Meadow (eds), *Walking with the unicorn: Social organization and material culture in ancient South Asia*. Oxford: Archaeopress.

Srivastava K.M. 1991. *Madinat Hamad: Burial mounds, 1984–85*. Bahrain: Ministry of Information.

Uesugi A. 2019. A note on the interregional interactions between the Indus Civilization and the Arabian Peninsula during the third millennium BCE. Pages 337–355 in S. Nakamura, T. Adachi & M. Abe (eds), *Decades in deserts: Essays on Near Eastern archaeology in honour of Sumio Fujii*. Tokyo: Rokuichi Shobo.

Authors' addresses

Takeshi Gotoh, Tokyo National Museum, 13-9 Ueno Park, Taito-ku, Tokyo, Japan.
e-mail qqwa4bb9k@circus.ocn.ne.jp

Kiyohide Saito, Archaeological Institute Kashihara, Nara Prefecture, 65 Unebi-cho, Kashihara, Nara, Japan.
e-mail kiyohide@kashikoken.jp

Masashi Abe, Tokyo National Research Institute for Cultural Properties, 13-43 Ueno Park, Taito-ku, Tokyo, Japan.
e-mail abe05@tobunken.go.jp

Akinori Uesugi, Center for Cultural Resource Studies, Kanazawa University, Kakuma-cho, Kanazawa, Ishikawa, Japan.
e-mail southasia.ua@gmail.com