## Reassessment of Northern Kuwait Bay's Dry-Stone Tombs: Insights into Architecture, Burial Practices, and Socio-Economic Dynamics

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**Abstract.** This paper examines the Late Neolithic, Chalcolithic, and Bronze Age dry-stone funerary monuments discovered along the northern coast of Kuwait Bay. The latter are studied in terms of funerary architecture, burial practices and socio-economic dynamics. Kuwait Bay appears to be situated at the crossroads between the influences of northern Arabian Neolithic tribes, as well as of Mesopotamian – and later – Dilmun trade networks. As such, its populations might have been part of a translocal economic scheme based on the trade of goods, either bound for, or originating from within these different realms. Accordingly, we aimed to assess the impact of these socio-economic and socio-cultural dynamics on a micro-regional scale, focusing on the imprint they might have left on Al-Subiyah's communities and their architectural traditions, funerary behaviours and material cultures.

Keywords: Dry-stone architecture; Funerary Archaeology; Protohistory; Kuwait

#### Introduction

The northern coastal region of Kuwait Bay shows evidence of thriving human occupation dating back to the 6th millennium BCE (Bieliński 2019; Carter 2019; Pieńkowska 2019). The presence of settlement sites displaying certain Ubaid cultural<sup>8</sup> traits, along with necropolises consisting of dry-stone tombs used over a period of several millennia, underscores this region's insertion into transregional trade networks (Al-Duweish 2003; Steimer-Herbet *et al.* 2017, 2019; Al-Duweski 2018). These findings also prompt questions about the subsistence strategies and the socio-economic organisation of the local populations, particularly regarding the transition from the first sedentary communities with established settlements to mobile groups with distinct funerary practices.

Archaeological evidence stemming from communities in this region remains relatively limited until the local development of the said Ubaid period settlements (mid-6th to 5th millennium BCE) and of the dry-stone tomb necropolises at Al-Subiyah (5th millennium BCE onwards) (Rutkowski 2015a, 2015b). Notably, the emergence of these features coincides with a surge in economic activity across the Arabo-Persian Gulf. It has thus been suggested that the adoption of such a distinct funerary architecture on part of these communities, was facilitated by increased wealth circulation generated through expanding trade networks (Thomason 2017; Steimer-Herbet 2022).

This article summarises the archaeological research conducted along the northern coastline of Kuwait Bay, focusing on the study of dry-stone funerary architecture, its origins, and its evolution within this specific historical, socio-economic and cultural context (Figure 1).

<sup>8</sup> The Ubaid culture developed around the eponymous site as early as the middle of the 7th millennium BCE. While most evidence regarding its occurrence outside of southern Mesopotamia proper is dated to the beginning of the 5th millennium BCE (Carter et al. 2010; Oates 2012: 476-481), recent fieldwork – e.g. in Al-Subiyah – suggests a date as early as the mid-6th millennium (Bieliński 2018, 2019; Butterlin 2018; Pieńkowska 2019).

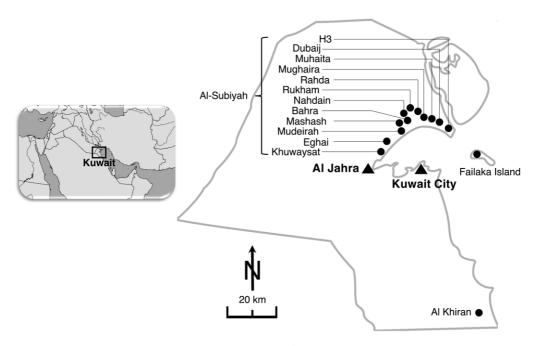


Figure 1. Map of Kuwait presenting the main sites. T. Hofstetter

#### Chronological framework

Current research suggests that from the mid-6th millennium BCE, Al-Subiyah was exposed to different cultural inputs. On the one hand, that of southern Mesopotamia during the Ubaid period (c. 6500-3900 BCE), of which cultural traits have been identified within the sites of Bahra 1 and H3 (Al-Mutairi 2011; Magee 2014; Bieliński 2018, 2019; Carter 2018, 2019; Pieńkowska 2019). On the other hand, that of northern Arabian pastoral tribes, characteristic of the Neolithic, which practised caprine based pastoralism and intensive hunting (Drechsler 2009; Makarewicz 2020). Around this time, oasis systems also began to emerge, eventually leading to the settlement of various groups (Gebel 2024). Subsistence strategies amongst northern Arabian Neolithic groups however, continued to rely on hunting, pastoralism, gathering, and coastal marine resource exploitation (Beech 2005; Zazzo et al. 2014; Munoz 2017; Al-Asmari 2019). Early ceramics appear in regions interacting with Mesopotamia, such as coastal sites like Dosariyah or Ain as Sayh (Kainert & Drechsler 2014; Magee 2014; Al-Asmari 2019). The existence and some implications of these socio-cultural and economic interactions are materialised in the archaeological record along the Al-Subiyah coast (Carter et al. 1999; Al-Mutairi 2011;; Rutkowski 2015a).

During the Uruk period (c. 3900-3000 BCE), southern Mesopotamia again appears to play a translocal economic, cultural, and political role, with traces of its influence documented in Upper Mesopotamia and southern regions like Al-Subiyah (Al-Mutairi

2011; Selz 2020: 181-185). By the 3rd millennium BCE, Ur III traders settled on modern-day Failaka Island in Kuwait Bay (Højlund 2016: 15-30; Laursen and Steinkeller 2017). The early 2nd millennium BCE marked a time of political instability and fragmentation, followed by a temporary unification of the region under the Kassites (Potts 1990: 298-314; Højlund 2016: 260; Wagensonner 2022: 281-289) around the mid-2nd millennium BCE (Højlund 2016: 243; Dorso 2024).

Furthermore, Al-Subiyah might also have been influenced by the Dilmun culture, a trading complex centred on present-day Bahrain, and mentioned in Mesopotamian written sources as early as the 4th millennium BCE (Potts 1990; Højlund et al. 1994; Laursen and Steinkeller 2017; Højlund 2019; Dorso 2024). From the 3rd millennium onwards, The Dilmun cultural complex acted as a distribution network (via maritime trade in the Arabo-Persian Gulf) and a transshipment centre (transfer and storage of goods such as copper, gemstones, and pearls) connecting regions like the northeastern margins of the Arabian Peninsula, Oman, and the Indus Valley (Eidem and Højlund 1993; Rice 1994; Méry 1998; Crawford 2005; Dorso 2024). Indeed, several distinct archaeological features suggest that the Dilmun complex may have extended towards Kuwait Bay (Potts 1983; Laursen and Steinkeller 2017; Dorso 2024). The latter include the discovery of material remains traditionally associated with Dilmun, as well as the diffusion of specific productions (local ceramic traditions) and burial practices (elite burials and associated tumuli with animal and gemstone offerings) along the southwestern Arabo-Persian coastline and into the Arabian mainland (Højlund et al. 2008; Laursen 2008; Rutkowski 2018; Laursen and al-Otaibi 2022); as far as the Al-Khiran area in southern Kuwait, Failaka Island, and the Al-Subiyah coast (Al-Mutairi 2011; Rutkowski 2015b; Steimer-Herbet et al. 2017, 2019; Al-Duweish 2018).

Communities in Al-Subiyah seem to have indeed taken part in these interactions through indirect or low-intensity socio-cultural exchanges, as indicated by material findings and funerary practices (Bonnéric and Pétriat 2022). Between 1800 and 1720 BCE however, several factors reshaped the Arabo-Persian Gulf's economic fabric. Dilmun seems to disappear from Mesopotamian sources, Ur (southern Mesopotamia's main port at that time), was gutted, while the dependent local market dried up, notably due to newly available cheaper copper sources (in Anatolia and Cyprus) (Crawford 1996; Dorso 2024). All these elements point to a contraction in the Gulf's economy (Crawford 1996; Dorso 2024). Further, by the mid-2nd millennium BCE, the Kassites had expanded their influence towards Dilmun itself, possibly further reducing the need for smaller intermediary commercial partners in the process (Potts 1990; Dorso 2024). These changes in the overarching economic networks likely impacted Al-Subiyah's communities, and thus, might have contributed to the eventual abandonment of the dry-stone tomb necropolises by the end of the Middle Bronze Age (Steimer-Herbet *et al.* 2017).

#### Sites Location and the Archaeological Data Regarding the Al-Subiyah Region

The Al-Subiyah littoral area has been methodically investigated by various scientific institutions, collaborating under the supervision of the National Council for Culture, Arts and Letters of the State of Kuwait (NCCAL). Ever since the late 1990's, Kuwaiti and foreign researchers have undertaken large scale surveying activities and carried out excavation work in this area (Carter *et al.* 1999; Rutkowski 2015b; Steimer-Herbet *et al.* 2017, 2019). This emphasis on the Al-Subiyah area is due to the fact that a substantial part of the region is located within the scope of a large-scale urban development project called 'Silk City', and thus to be massively urbanised and industrialised in the coming years. The Al-Subiyah coastline has yielded many exceptional finds, ranging from dry-stone tomb necropolises, settlements, and campsites to wells and shell middens. Most of these structures date back to the Late Neolithic, Chalcolithic, Early and Middle Bronze Age, and they span several loosely defined micro-regions known as Bahra, Dubaij, Eghai, Khuwaysat, Mashash, Mudeirah, Muhaita, Mughaira, Nahdain, Radha and Rukham (Figure 2) (Al-Duweish 2003; Al-Mutairi 2011; Rutkowski 2013, 2015a, 2015b; 2018; Steimer-Herbet *et al.* 2017, 2019).

Between 2007 and 2012 the Kuwaiti-Polish Archaeological Mission (KPAM), under the direction of P. Bieliński and Ł. Rutkowski, thoroughly documented, and when necessary, proceeded to salvage excavations of tumuli and other archaeological structures (Rutkowski 2013, 2015a, 2015b). In Bahra, an important settlement, dating back to the Ubaid period, was documented. The latter was dubbed Bahra 1 (Bieliński 2015, 2016). In 2010, two separate sub-projects within the KPAM team were initiated: the first one focused on the surveying and identification of desert wells and dwellings while the second one dealt with the further surveying and excavation of threatened stone structures (Rutkowski 2013; Bieliński 2016).

From 2015 onwards, a Kuwaiti-Georgian research team, headed by G. Kvirkvelia, focused on the Bahra and Muhaita micro-regions (Kvirkvelia *et al.* 2018), while in 2017, a Swiss team under the supervision of T. Steimer-Herbet, started investigating the Mudeirah, Mashash and Eghai micro-regions (survey and excavation work) (Steimer-Herbet *et al.* 2017).

#### Structural inventory: funerary and ritual monuments

The remains of 150 dry-stone tombs have been identified along the Al-Subiyah coastline (Al-Duweish *et al.* 2004; Al-Mutairi 2011; Softysiak 2011; Rutkowski 2015b; Steimer-Herbet *et al.* 2017, 2019; Bonnéric and Pétriat 2022). These tombs extend over a coastal area of 5 km by 25 km and are organised in small, clustered necropolises. Around 100 dry-stone tombs have been partially or completely excavated. A tentative typological classification of 63 tombs is summarised in Table 1, comprising structures built from unworked or roughly squared stones, with no trace of mortar. Some tombs,



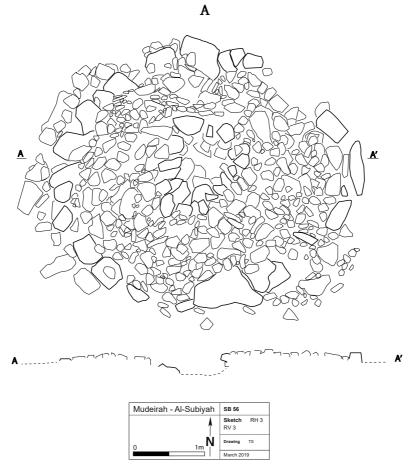


Figure 2a. Archaeological diversity in Mudeirah, Al-Subiyah region. Dry-stone tomb SB 56. Author: T. Steimer-Herbet



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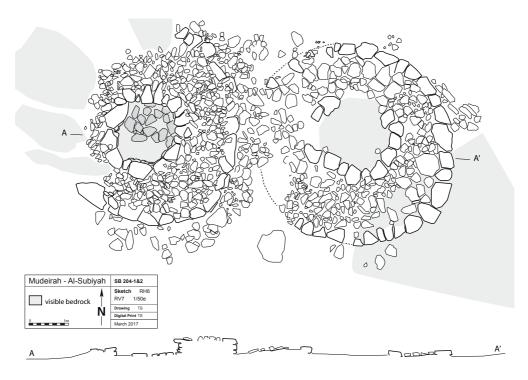


Figure 2b. Archaeological diversity in Mudeirah, Al-Subiyah region. Dry-stone tomb SB 204-1 and SB 204-2. Author: T. Steimer-Herbet

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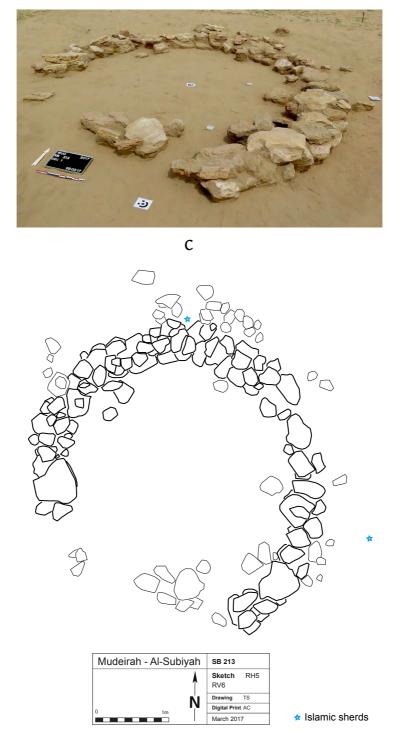


Figure 2c. Archaeological diversity in Mudeirah, Al-Subiyah region. Dwelling site SB 213. Author: T. Steimer-Herbet



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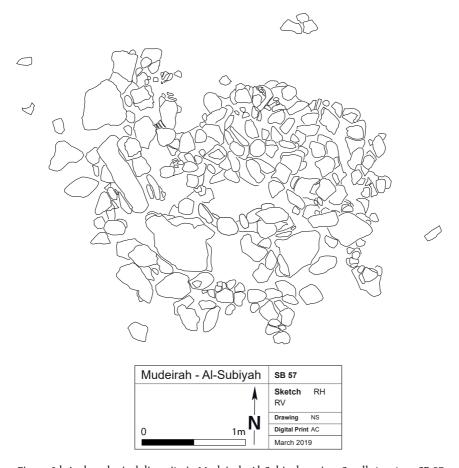


Figure 2d. Archaeological diversity in Mudeirah, Al-Subiyah region. Small structure SB 57. Author: T. Steimer-Herbet

such as tumuli SB 70, SB 100, SB 102 and SB 208, include large enclosure walls and burial chambers.

Excavations uncovered human remains in several tombs, suggesting single, double, or multiple burials. Burial artefacts were also found in certain cases (e.g., SB 65, SMQ 30, SMQ 38, SMQ 49). However, many tombs have been looted or reused, complicating the interpretation of the original burial practices. Despite these challenges, a preliminary chronology was established, while evidently emphasising its tentative nature, pending further discoveries and refinements.

The emergence of these dry-stone tomb necropolises appears to roughly coincide with the onset of settlement activities, themselves spanning the 6th to 5th millennia BCE (Bieliński 2019; Carter 2019), while the necropolises continue to be used all the way down to the 2nd millennium BCE (Rutkowski 2015b), thus highlighting their lasting significance in the region's funerary landscape.

In addition to graves, numerous ritual monuments have been unearthed. The site of Bahra 1 has also revealed the remains of a potential ceremonial and/or cult centre, provisionally dated to the 6th millennium BCE, possibly ranking it amongst the oldest known ritual structures in the northern Arabo-Persian Gulf region (Bieliński 2015, 2016, 2018, 2020). Several other religious or votive structures have been identified in Al-Subiyah, including similar complexes within the Bahra micro-region. One such structure, known as SBH 34 (Rutkowski 2015b), is bipartite, consisting of a 'long structure' and a burial site on its northwestern side. The long structure forms a 'corridor' that widens and is flanked by vertical stone slab walls. At the west end, the corridor opens onto an altar made of three rows of stone slabs. The altar wall features several vertical slabs decorated with curved geometric motifs and two narrow upright slabs forming a votive column. One slab is adorned with spherical convex designs separated by deep grooves, and its upper section ends with a stylized animal figure, possibly a lion or dragon.

In front of the altar, artefacts such as ostrich eggshells, shell ornaments, pottery fragments, bronze pieces, stone beads, coral threads, ochre, multicoloured stones, a limestone cone seal, and a steatite bowl rim fragment were found. Behind the altar, a Kassite-period goblet was also discovered, indicating links to Mesopotamia (Bieliński 2015, 2018). Radiocarbon dating yielded a dating between 1770 and 1620 BCE (Kvirkvelia *et al.* 2018).

Less than a kilometre away, another similar complex with four rounded stone structures was found, aligned along a north-south axis with horseshoe-shaped features. Stone boxes against their eastern sides contained various objects, including a Mesopotamian cylinder seal from the late 3rd millennium BCE and two bronze styluses (Figure 3 - Kvirkvelia *et al.* 2018). These ritual complexes display architectural and morphological links with contemporary dry-stone tombs in Al-Subiyah's necropolises.

Table 1. Excavated and surveyed structures organised by typological categories and chronological phases.

	References				Makowski 2013 Rutkowski 2015b					
ai piiases.	Comments	Excavated: grave goods date: 6 <sup>th</sup> – 3 <sup>rd</sup> millennium BCE	Excavated	Excavated	Excavated: grave goods date: 4 <sup>th</sup> – 3 <sup>rd</sup> millennium BCE	Excavated: grave goods date: Early Bronze Age (?); objects similar to SMQ 30 (Type 1)	Excavated	Excavated	Excavated	Excavated
ia criroriologia	Grave goods	600 beads and adornments	1 shell and metal wrought	1 mitra shell with metal inside	Two beads / fragments of copper	Shell and stone adornments	_	1	1	I
iabie 1. Excavateu and surveyeu structures organiseu by typological categories and chronological phases.	Bioanthropological observations	1	-	_	-	_	_	_	_	-
sed by typolos	Human remains		1 young adult: sex unknown	1	1 individual: age / sex unknown	ı	ı			
es organii	Sector		1	1	ı	North	North			
eyeu structur	Migro-region		Mughaira	Mughaira	Muhaita	Radha	Radha			
ated arid surv	Survey code	SB 52.2	SB 52.1	SB 52.4	SB 51	_	_	-	PSRD 66	PSRD 67
Iaule 1. Excav	Excavation code	SMQ 30	SMQ 31	SMQ 32	SMQ 35A	SMQ 45	SMQ 1	SM 18	SRG 7	SRG 10
	Туре				TYPE 1 simple type, undistinguished by its external	appearance				

Туре	Excavation code	Survey code	Migro-region	Sector	Human remains	Bioanthropological observations	Grave goods	Comments	References
	SB 10	ı	Mashash	ı	-	ı	1	Excavated	
	SB 70	PSBH 23	Bahra	North	1	-	9 regular and semi-precious stone beads / 9 shells	Excavated: structural similarity to SB 101 (Type 2)	
	SB 73	PSBH 25	Bahra	North	Small fragments of unidentifiable origin	Human or animal?	2 carnelian beads	Excavated: grave goods similar to SMQ 35 A (Type 1)	
TVDF 2	SBH 18	PSRD 28	Bahra	-	2 adults: 1 male / 1 sex unknown	Broken left ulna	1	Excavated	Sołtysiak 2008, 2009-2011 Rutkowski
orderly type built on flat rock, having an accentuated chamber and an outer edge	SMQ 35 B	ı	Mughaira	I	1 adult: sex unknown	-	1	Excavated: geograph. proximity to SMQ 35 A (Type 1)	2015b Steimer- Herbet <i>et al.</i> 2017
	SMQ 48	ı	Mughaira	I	ı	1	1	Excavated	Stenner - Herbet <i>et al.</i>
	SB 101	PSRD 7	Nahdain	ı	1 adult: sex unknown	ı	2 shell pendants / fragment of a Sumerian cosmetic container (?)	Excavated: grave goods date: late 3rd – early 2rd millennium BCE Primary burial / NE-SW orient. / dorsal decubitus (7); proximity to SB 102 (Type	2019

	Excavation	Survey code	Migro-region	Sector	Human remains	Bioanthropological observations	Grave goods	Comments	References
	KHG 4	ı	Khuwaysat	I	1 adult (35-40): male	Spondylosis / vertebral osteoarthritis / injured distal end of 1st right metatarsal	ı	Excavated	
	КНІ	-	Khuwaysat	_	2 adults (young and mature): 1 male / 1 sex unknown	-	1	Excavated	
	SB 204-1	1	Mudeirah	North	ı	I	1	Excavated	
TYPE 2 orderly type built on flat rock, havina	SB 204-2	1	Mudeirah	North	1 individual: age / sex unknown	Very fragmented	1	Excavated: radiocarbon date: transition 3 <sup>rd</sup> – 2 <sup>rd</sup> mill. BCE	Softysiak 2008, 2009-2011 Rutkowski 2015b Steimer
	SB 205	ı	Mudeirah	West	ı	1	1	Excavated	Herbet <i>et al.</i> 2017
	SB 207	ı	Mudeirah	West	1 individual: age / sex unknown	Very fragmented	1	Excavated	Steimer- Herbet et al.
	SB 208	ı	Mudeirah	West	1 adult: male (?)	Ante-mortem tooth loss	ı	Excavated: radiocarbon date: transition 3rd - 2rd mill. BCE. Primary burial / E-W orient. / right lateral decubitus and flexed lower limbs (?)	6107
	SB 56	1	Mashash	Central	ı	1	1	Excavated	

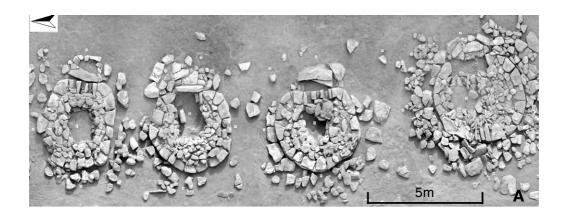
References		Rutkowski 2015b Steimer-	Herbet <i>et al.</i> 2019		Rutkowski 2015b		Soltysiak 2008;	2011; 2009- 2011; 2009- 2011; Rutkowski 2015b Steimer-	Herbet <i>et al.</i> 2017; 2019
Comments	Excavated	Excavated	Excavated	Excavated	Excavated: grave goods date: late 3rd – late 2rd millennium BCE	Excavated	Excavated: geograph. proximity to SB 60 (Type 6)	Excavated: structural similarity to SB 42.1 (Type 6)	Excavated
Grave goods	ı	Shell and stone adornments	1	1	Beads / 11 chopped alloyed copper pieces / shells / several sheep/goat remains	21 tusk shells / 2 seashell disks / 2 beads (carnelian and bitumen?)	Some animal bones	1	1
Bioanthropological observations	1	1	1	-	ı	-	1	1	Human or animal?
Human remains	ı	1 young adult: sex unknown	ı	1	2 adults: sex unknown	1	1	1 adult: sex unknown	Small fragments of unidentifiable origin
Sector	North	1	1	1	North	North	North	North	North
Migro-region	Bahra	Mughaira	Mudeirah	Mudeirah	Bahra	Bahra	Bahra	Bahra	Bahra
Survey code	PSBH 22A	SB 49	ı	1	PSBH 17	PSBH 24	PSBH 13	PSBH 18	1
Excavation code	SB 71	SMQ 38	SB 57	SB 58	SB 65	SB 72	SB 61	SB 66	SBH 4
Type		TYPE 3 "small" and oval-	shaped tumuli		TYPE 4 type with chamber sunk partially in bedrock and	reduced oval opening		TYPE 5 type with chamber raised above ground and outer vertical kerb	

References					Soltvsiak 2008;	2007-2008; 2011; 2009- 2011; Rutkowski	20156 Steimer- Herbet <i>et al.</i> 2017; 2019						
Comments	Excavated	Excavated	Excavated	Excavated: grave goods date: Early Bronze Age	Surveyed	Excavated: structural similarity to SM 23 (Type 5)	Excavated: structural similarity to SM 20 (Type 5)	Excavated	Surveyed	Excavated	Excavated	Excavated	Excavated
Grave goods	1	1	1	20 shell and stone adornments and beads	ı	Cowry shell	Stone mortar and shells	ı	-	-	1	I	1
Bioanthropological observations	Very fragmented	Human or animal?	Very fragmented	1	-	-	Human or animal?	ı	1	_	Dental attrition / vertebral osteoarthritis	1	1
Human remains	1 individual: age / sex unknown	Small fragments of unidentifiable origin	1 individual: age / sex unknown	1 adult: female	ı	1	Small isolated unidentifiable bone fragments	-	_	1	3 adults (young, 25-30 and 35-40): 2 males and 1 sex unknown	1 adult: sex unknown	1 young adult: sex unknown
Sector	North	North	Central	ı	ı	1	I	I	East	ı	1	I	ı
Migro-region	Bahra	Bahra	Eghai	Mughaira	Mughaira	Muhaita	Muhaita	Dubaij	Radha	Nahdain	Rukham	Rukham	Rukham
Survey code	PSRD 28	PSRD 25	1	SB 52.5	ı	1	1	ı	PSRD 86	PSRD 13	1	1	1
Excavation code	SBH 7	SBH 10	SBS 70	SMQ 33	SMQ 55	SM 20	SM 23	SB 20	-	SNG 4	SR E	SR F	SR G
Type						TYPE 5 type with chamber raised above	grouna ana outer vertical kerb						

References		Carter et al. 1999	Rutkowski 2015b		
Comments	Excavated: skeletons placed long after initial construction, re-use between 1500 – 600 BCE (?)	Excavated	Excavated: grave goods date: Ubaid period	Excavated: grave goods date: 5 <sup>th</sup> millennium BCE	Excavated: grave goods date: 5 <sup>th</sup> millennium BCE
Grave goods	Bronze arrowhead / trilobed metal object / bead / stone mortar / tusk and cowry shells / 2 sheep/goat bones	3 tusk beads	Pottery and seashell rings	Ubaid filiated pottery sherds	Ubaid filiated pottery sherds
Bioanthropological observations	ı	Human or animal?	ı	1	1
Human remains	2 adults: 1 female / 1 sex unknown	Small fragments of unidentifiable origin	ı	1	1
Sector	North	North	ı	1	ı
Migro-region	Bahra	Bahra	Dubaij	Dubaij (H3)	Dubaij (H3)
Survey code	PSBH 14	PSBH 22	1	-	_
Excavation code	SB 60	SB 69	SB 42.1	SB 1.6	SB 7
Type		TYPE 6	chamber (or virtually unchambered)		

References						Soltysiak 2008;	2011; Rutkowski 2015b Steimer- Herbet <i>et al.</i> 2017; 2019	
Comments	Excavated	Excavated	Excavated	Excavated	Excavated	Excavated: Re-used tomb in Hellenistic times	Excavated: radiocarbon date: (late 4 <sup>th</sup> (?)) – mid 3 <sup>rd</sup> millennium BCE	Excavated: grave goods date: early 2nd mill. BCE: Primary burial / E-W orient. / right lateral decubitus / flexed upper limbs; proximity to SB 101 (Type 2)
Grave goods	ı	_	ı	_	Tanged copper blade	Perforated seashell / double-handled narrow-necked Hellenistic jug	393 beads	Pottery vessel / carnelian bead / bitumen bead
Bioanthropological observations	I		ı	1	1	1	ı	1
Human remains	ı	1	1	1	1 adolescent: sex unknown	1	1 individual: age / sex unknown	1 adult: sex unknown
Sector	North	North	ı	South	North	East	1	1
Migro-region	Bahra	Bahra	Mughaira	Radha	Radha	Radha	Nahdain	Nahdain
Survey code	PSRD 80	PSBH 6	ı	_	1	1	PSRD 6	PSRD 8
Excavation code	SBH 14	ı	SMQ 11	SRG 1	SRG 6	SRC	SB 100	SB 102
Type							TYPE 7 type with outer ring wall	

Туре	Excavation code	Survey code	Migro-region	Sector	Human remains	Bioanthropological observations	Grave goods	Comments	References
	SNG 6	PSRD 17	Nahdain	I	I	1	I	Surveyed	Soltvsiak 2008:
TYPE 7	SB 9	1	Mashash	Central	1	ı	1	Excavated	2011; Rutkowski
type with outer ring wall	SB 71B	-	Eghai	Central	1	1	-	Excavated	2015b Steimer- Herbet <i>et al.</i>
	SRG 9	PSRD 67	Radha	North	1	1	1	Excavated	2017; 2019
DIACHRONIC STRUCTURE(S)	SMQ 49	SB 54	Mughaira	I	17 individuals: 12 adults / 4 immatures / 1 age unknown / 6 females / 5 males / 6 sex unknown	2 set of individuals found in close association, osteodegenerative lesions observed	Onager skel. / sheep, goat bones / shells / beads / lithic, bone tools / stone mortars / flint arrowheads	Excavated: grave goods date: Late Ubaid (?); 3 phases: prim. burial, second. burial, prim. burial / lateral decubitus with flexed lower limbs / NW-SE orient.	Rutkowski 2015b



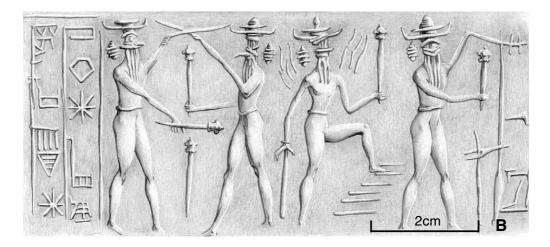


Figure 3a-b. A. Quadripartite cult. B. Votive complex of Bahra and Mesopotamian seal (Kvirkvelia *et al.* 2018: 207).

## Structural inventory: settlements

During the Late Neolithic, only a few isolated remains of campsites and hearths are to be found, indicating the presence of semi-nomadic communities living of hunting, pastoralism, and local marine resource exploitation (Al-Mutairi 2011; Bieliński 2016). However, this situation shifted during the 6th and 5th millennia BCE with the establishment of sites displaying a number of Ubaid cultural traits, such as Bahra 1 and H3 (Al-Duweish 2008; Carter *et al.* 2010; Al-Mutairi 2011; Bieliński 2015; Carter 2019).

Excavations at Bahra 1 (Figure 4) revealed the presence of imported Mesopotamian pottery typical of Ubaid phases II and III, dating from around 5500 to 4900 BCE (Bieliński 2016; Smogorzewska 2020), alongside 'Red Coarse Ware', a ceramic type characteristic of northern Arabian Neolithic traditions (Al-Mutairi 2011; Bieliński 2016; Pieńkowska

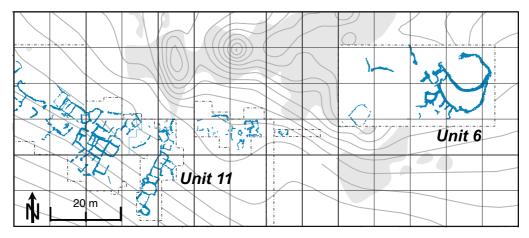


Figure 4. Plan of Bahra 1 dwelling site displaying partial extension only (T. Hofstetter, modified by Bielinski 2019).

2020; Smogorzewska 2020). The site's inhabitants exploited marine resources for food, as well as shells for crafting ornaments and prestige items, such as pendants and fine beads.

Spatially, the layout of Bahra 1 reflects Ubaid cultural traits, featuring an orthogonal urban pattern with large, multi-room residential units built on sturdy stone foundations (Bieliński 2018). This arrangement suggests an adaptation of Ubaid settlement practices, and thus pointing to cultural interactions between Mesopotamia and local communities, which must have contributed to the region's social and economic landscape evolution during the Ubaid period (Bieliński 2018).

The Bahra 1 site, covering at least 1 hectare, contains workshops dedicated to stone tools and ornament production, alongside remains of marine mollusks, snail shells (e.g., Conomurex persicus, Lunella coronata, and further representatives of the Veneridae, Pinctada, and Pteriidae families), bitumen, and date palm wood (*Phoenix dactylifera*) (Białowarczuk 2015). Copper artefacts found on-site hint at trade contacts with copper-producing regions, such as the Oman Peninsula (Goy et al. 2014; Bieliński 2016). These findings suggest the existence of a broader transregional trade framework, that also stimulated the Al-Subiyah region (Potts 1990; Rice 1994; Bibby 1996; Vanzin 2015; Carter 2018).

Excavation data, however, do not directly link the Ubaid-period inhabitants of Al-Subiyah with nearby funerary monuments, raising further questions about the region's occupation dynamics. Indeed, by the first half of the 4th millennium BCE, nomadic camps organised around a central campfire emerge, although this new architectural tradition did not entirely replace the existing urban fabric, emerging towards the end of the Ubaid influenced period (Bieliński 2015, 2016, 2018, 2020; Vanzin 2015).

In this sense, researchers propose two hypotheses regarding the region's occupation. According to Bieliński (2020), local communities likely organised into small seminomadic groups with connections to agricultural societies of southern Mesopotamia, adopting elements of Ubaid tradition in the process (Bieliński 2018). Conversely, Carter argues that the settlement at Bahra 1 may have been founded directly by settlers from Mesopotamia who also had close ties with local Arabian Neolithic groups (Carter 2018, 2019; Bieliński 2019).

#### Typo-chronology of dry-stone tombs

Regarding the dry-stone tombs proper, we propose a renewed typo-chronological approach based on the previous work by Ł. Rutkowski (Rutkowski 2015b). Currently, three relatively distinct phases of use, from the Late Neolithic and Chalcolithic to the Middle Bronze Age, have been identified.

Building on this work, 41 typologically well-defined dry-stone tombs were retained (Rutkowski 2015b). This typology was expanded by including 8 monuments excavated by the first Kuwaiti mission since the early 2000s (Al-Duweish *et al.* 2004; Al-Duweish and Al-Mutairi 2006; Sołtysiak 2011; Rutkowski 2015b), 2 excavated by the British archaeological expedition in Kuwait, and 12 investigated by the Kuwaiti-Swiss team between 2017 and 2019 (Steimer-Herbet *et al.* 2017).

As previously mentioned, this brings the updated total of typologically attributed dry-stone tombs to 63 structures (Table 1).

The oldest funerary structures identified at Al-Subiyah – which form the initial core of the dry-stone tomb necropolises – seem to be represented by types 1 and 6 monuments (Figure 5), as described by Ł. Rutkowski (2015b). Note that for convenient comparison, the numbering and terminology used below corresponds to that exposed in Rutkowski's 2015 monograph (Rutkowski 2015b).

• Type 1 ('simple type') describes modest dry-stone tombs, about 8 metres in diameter and 0.5 metres in height, which lack distinct stone edging around their perimeter. Their interiors are irregularly filled with stones, sometimes covering a burial chamber of approximately 1.5 by 2 metres, constructed with larger stones that may not be visible from the surface. This type appears at sites such as Mughaira, Muhaita, and Radha, with nine structures studied in detail (e.g., SM 18, SMQ 1, SMQ 30, SMQ 31). Variations include features like paving, internal frames (SMQ 30), a square enclosure (SMQ 32), and a rectangular chamber (SMQ 45). Some chambers are built at ground level, while others are slightly sunken. Generally, these tombs contain few grave goods or human remains, except for SMQ 30, which yielded valuable beads and shell jewellery typical of the Upper Chalcolithic, Early Bronze, and Early Dilmun periods. These structures emerged between the 5th and 4th millennia BCE, with sporadic reoccupations through the 3rd and 2nd millennium BCE.

-Type 1 "simple type, undistinguished by its external appearance" [n = 9] Type 6 "type without chamber (or virtually unchambered)" Characteristic structures:

- Type 1: Mughaira [n = 6], Radha [n = 2] and Muhaita [n = 1] - Type 6: Bahra [n = 2] and Dubaij [n = 3]

Represented micro-regions:

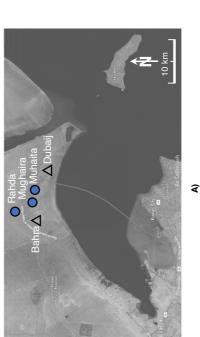
- Type 1: Beads, adornments, shells and some metallic (copper) unidentifiable objects Grave goods: Type 6: Bronze arrowhead, trilobed unidentified metallic object, beads, shells, stone mortar

and pottery productions

- Type 1: Single and multiple burials containing up to 4 individuals (SMQ 35A (SB 51))

- Type 6: Multiple burials (?)

Inhumation modus:



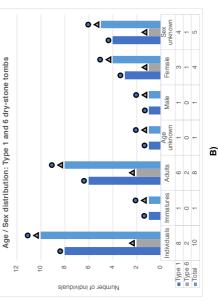


Figure 5a. Initial phase A) Represented micro-regions and associated monument type(s): site presenting type 1 monuments (circle), site presenting type 6 monuments (triangle); B) Age and sex distribution of the individuals according to monument type. a-b Author T. Hofstetter.

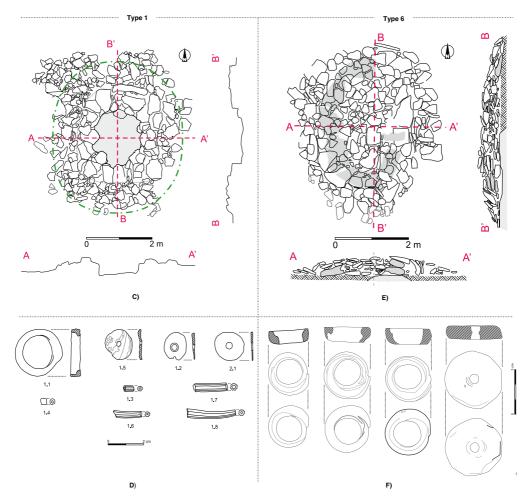


Figure 5b. Initial phase C) Dry-stone tomb SMQ 32 (SB 52.4); D) Beads and plaques from SMQ 45; E) Dry-stone tomb SMQ 60 (PSBH 14); F) Shell rings and perforated pottery disk from SB 42.1. Author c-d-e-f L. Rutkowski.

• Type 6 ('chamberless type') structures comprise five dry-stone tombs (SB 60, SB 69, SB 42.1, SB 1.6, and SB 7) examined in detail at Bahra and Dubaij. These tombs are relatively small, about 5 to 6 metres in diameter and 0.7 metres high. Excavations highlight an absence of architectured burial chambers, with interiors filled by layers of gravel and sand. The presence of funerary objects and human bones (SB 60 and SB 69), however, confirms their sepulchral function. Akin to type 1 structures, type 6 tombs appear as contemporaneous to the Ubaid period, as associated pottery finds date them from the 5th to 4th millennium BCE.

A second phase of use, characterised by the introduction of two new typological categories, was identified through the study of the available data record. Those two categories are types 4 and 5 (Figure 6).

- Type 4 ('type with a partially sunken chamber and narrow oval opening') structures represent large dry-stone tombs, measuring about 9 to 12 metres in diameter and standing nearly one metre in height. Two tombs of this type, SB 65 and SB 72, have been investigated at Bahra and Mughaira. A key feature is their burial chamber cut into the bedrock. In cross-section, these monuments resemble a truncated cone with a wide, slightly concave top near the chamber opening. The oval opening sits on top of a narrow, inverse-funnelling ellipsoidal shaft that narrows towards the surface. The chamber itself is spacious and deep, about 2 by 2 metres, and bell-shaped in profile. Beads and shells found during excavations date these tombs to the late 3rd millennium BCE.
- Type 5 ('type with chamber raised above ground and outer vertical kerb') dry-stone tombs represent medium-sized structures, approximately 6 to 7 metres in diameter with a preserved height of 0.5 metres. Their shallow, circular burial chambers, about 1.7 metres in diameter, sit on an artificial platform in the centre of the structure. So far, 16 tombs of this type (e.g., SB 61, SB 66, SM 20, SMQ 33, SR E) have been identified across various micro-regions such as Bahra, Eghai, and Dubaij. These tombs are marked by an outer perimeter rimmed with vertical slabs, providing them with a uniform exterior and reinforcing the structure to support its weight. The tombs typically feature flat tops with gentle slopes, resembling low domes, with the burial chamber walls occasionally capped by large flat slabs. Chronological analyses suggest they date back to the late 3rd millennium BCE, though further evidence might be of use, as to confirm this dating.

The final phase of use of the Al-Subiyah dry-stone tomb necropolises is characterised by two categories of monuments, which are **types 2 and 7** (Figure 7).

• Type 2 ('ordered type built on flat rock, with an accentuated chamber and outer edge') account for 15 funerary monuments in the Al-Subiyah region, including tombs such as KHI, KHG 4, SB 10, SB 101, and SB 208. Located in Bahra, Khuwaysat, and Nahdain, these tombs are approximately 6.5 metres in diameter and 0.5 metres in height. Constructed on rocky outcrops or promontories along mountain terrace edges, the bedrock serves as the floor for the burial chambers. These structures feature well-built side walls, organised interior filling, defined burial chambers, and an outer perimeter with two concentric rings visible from above. The burial chambers are typically circular, about 1.5 metres in diameter. Excavations of 14 tombs have yielded numerous grave goods and human remains, especially in SB 101 and SMQ 35B. Based on material finds and bioapatite radiocarbon dating from human remains in SB

- **Type 5:** Bahra [n = 5], Rukham [n = 3], Mughaira [n = 2], Muhaita [n = 2], Dubaij [n = 1], -Type 4: Beads, chopped alloyed copper, shells, animal remains (onager (?), sheep and - **Type 4** "type with chamber sunk partly in bedrock and reduced oval opening" [n=2]- Type 5 "type with chamber raised above ground and outer vertical kerb" [n = 16] - Type 5: Beads, shells, adornments, shells and animal remains goat), lithic and bone tools, stone mortars and flint arrowheads - **Type 4:** Bahra [n = 1] and Mughaira [n = 1]Radha [n = 1], Eghai [n = 1], Nahdain [n = 1] Represented micro-regions: Characteristic structures: Grave goods:

- Type 4: Single and multiple burials containing up to 3 individuals (SR E)

- Type 5: Single burials

Inhumation modus:

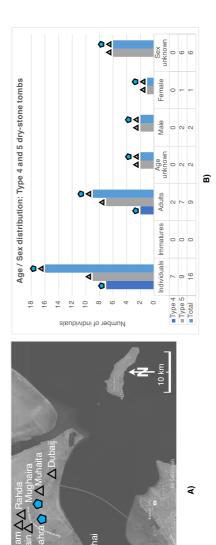


Figure 6a. Second phase A) Represented micro-regions and associated monument type(s): site presenting co-occurrence of type 4 and 5 monuments (pentagon), site presenting type 5 monuments (triangle); B) Age and sex distribution of the individuals according to monument type. a-b Author T. Hofstetter.

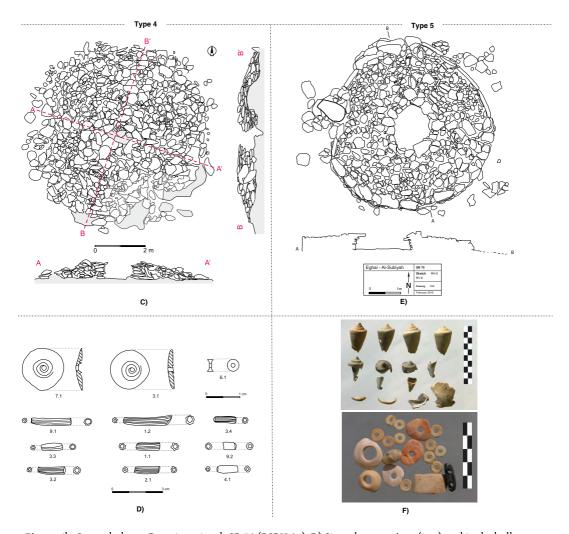


Figure 6b. Second phase. Dry-stone tomb SB 72 (PSBH 24); D) Strombus persicus (top) and tusk shell beads (bottom) from SB 72 (PSBH 24); E) Dry-stone tomb SBS 70; F) Shell and adornments from SMQ 33 (SB 52.5). Author c-d-e-f L. Rutkowski.

204-2 (2113-2101 BCE) and SB 208 (1691-1639 BCE), this type is tentatively dated from the late 3rd millennium to the early 2nd millennium BCE.

• Type 7 ('type with outer ring wall') comprises 12 investigated dry-stone tombs (SB 9, SB 71B, SB 100, SB 102, SNG 6, SBH 14, PSBH 6, SMQ 11, SRG 1, SRG 6, SRG 9, and SR C) located in the Bahra, Eghai, Mashash, Mugheira, Nahdain, and Radhah micro-regions. These are large structures, approximately 8 to 10 metres in diameter and around 1 metre in height. They feature an independent annular wall built around the tomb at a 1 to 2 metre distance, creating a composite structure with three distinct elements: the tomb itself with a 1.7-meter square burial chamber, the outer annular wall made of large stone

- Type 2 "orderly type built on flat rock, having an accentuated chamber and an outer edge" [n = 15] Characteristic structures:

- Type 7 "type with outer ring wall" [n = 12]

Represented micro-regions: – **Type 2:** Mudeirah [n = 5], Bahra [n = 3], Khuwaysat [n = 2], Mughaira [n = 2],

Mashash [n = 2], Nahdain [n = 1]

- **Type 7:** Nahdain [n = 3], Radha [n = 4], Bahra [n = 2], Eghai [n = 1], Mughaira [n = 1], Mashash [n = 1]

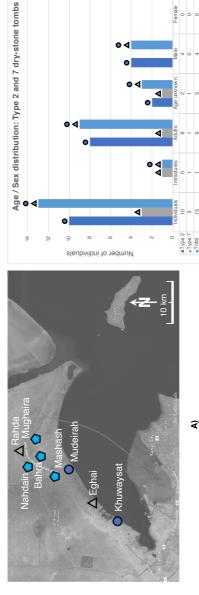
- Type 2: Beads (in regular or semi-precious stones), adornments, shells and cosmetic container fragment (?)

- Type 7: Tanged copper blade, perforated shells, Hellenistic jug (in reused tomb), beads and potteries

- Type 2: Single and multiple burials containing up to 3 individuals, East-West or Northeast-Southwest body Inhumation modus:

orientation, dorsal decubitus or right or left lateral decubitus (?) with flexed lower limbs (?)

- Type 7: Single burials, East-West body orientation, right lateral decubitus, flexed upper limbs



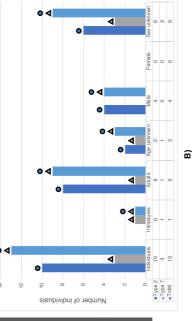


Figure 7a. Late phase; A) Represented micro-regions and associated monument type(s): site presenting type 2 monuments (circle); site presenting type 7 monuments (triangle), site presenting co-occurrence of types 2 and 7 monuments (pentagon); B) Age and sex distribution of the individuals according to monument type. a-b Author T. Hofstetter.

Grave goods:

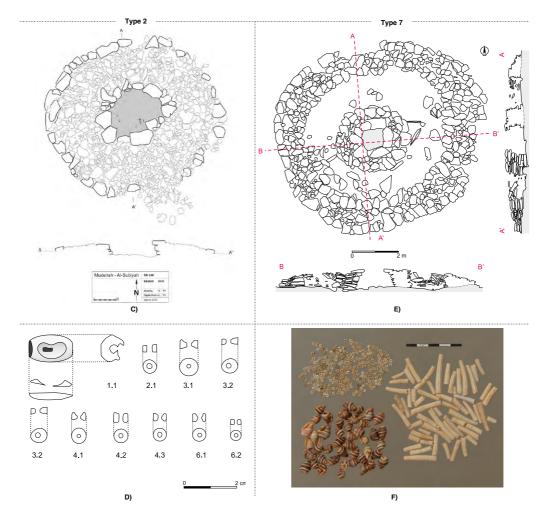


Figure 7b. Late phase. C) Dry-stone tomb SB 208; D) Beads collection from SB 70; E) Dry-stone tomb SB 100; F) Beads collection from SB 100. Author c T. Steimer-Herbet; d-e-f L. Rutkowski.

blocks, and an 'empty ring' filled with gravel, sand, or loosely packed slabs between the two. Unlike other types, these tombs often have a separate burial chamber structure, typically cylindrical with clean edges and a robust inner framework of large blocks, reflecting architectural complexity and an emphasis on ostentation. This type is dated to the late 3rd to early 2nd millennium BCE, as evidenced by radiocarbon dating from SB 100 (2598–2384 BCE). Grave goods, including steatite, soft stone, bitumen, carnelian beads, shell pendants, and pottery, suggest links to Early and Middle Dilmun traditions.

A last category of stone structures has been identified. It totals four structures and none of them has yielded any readily interpretable chronological data. Hence, it only presents a limited typological interest for the time being. This is type 3.

• Type 3 ("small" and oval-shaped tumuli') structures have been identified in the Mudeirah, Bahra and Mughaira micro-regions (SB 57, SB 58, SB 71A, SMQ 38). As the name of this category suggests, it includes four structures of small dimensions (measuring roughly 3 to 4 metres in diameter for less than 0.3 metres of preserved elevation) with small quantities of interior stone filling and oblong burial chambers measuring around 1.5 metres by 1 metre. In this regard, the excavation of structure SMQ 38 uncovered the skeletal remains of a young adult, validating its funeral function. However, no additional information regarding this type of monument is available at this stage of research.

Further of interest is the case of dry-stone tomb SMQ 49, which has been originally attributed, on strictly typological grounds to type 4, but whose complex architecture and scheme of use renders its precise typo-chronological attribution rather complicated (Rutkowski 2015b). Indeed, this structure presents with a somewhat intricate building scheme, and a long-term occupation divided into at least three successive layers of burials, interspersed by phases of grave robbing. As such, diagnostic material finds point to an occupation stretching from the 5th millennium all the way down to the 3rd millennium, roughly corresponding to the main phases of use identified in the other monuments. A total of 17 individuals (adult males and females as well as children) were laid to rest in lateral decubitus within this structure (Rutkowski 2015b).

Regarding material finds, as compiled by Ł. Rutkowski (2015b), the Al-Subiyah littoral area yielded many interesting archaeological artefacts, including:

- A collection of tools and ornaments made out of bones (SMQ 49);
- A series of small objects such as adornments (made of mineral or organic components), perforated pearls, beads of semi-precious stones (such as carnelian, agate, lapis lazuli or even chrysoprase) and pottery (SB 70, SB 72, SB 102, SB 65, SB 73, SMQ 35A, SR E, SMQ 30, SB 42.1, SB 49 and SB 65;
- A barbed and tanged flintstone arrowhead displaying characteristic bifacial retouch (SMQ 49), which dates back to the Late Neolithic or Chalcolithic period (5th 4th millennium BCE);
- A bronze tanged arrowhead, reinforced with a flat midrib (SB 60) which is dated between 1500 and 900 BCE (even though the original tomb construction is probably much older, according to the excavators;
- A circular shell plaque with geometric decoration and dotted circle motives (SMQ 30), which appears to be characteristic of the Arabian Peninsula Umm an-Nar and Dilmun material production;
- A rare ceramic vessel from the 3rd or 2nd millennium BCE (SB 102), which finds
  parallel in the Early and Middle Dilmun periods, early 2nd millennium BCE
  Mesopotamia (Isin-Larsa site levels 4 and 5) and Failaka island (period 3A);
- Stone mortars (SB 60, SMQ 49 and SM 23);
- A rare goblet which dates back to the Kassite period, retrieved from the elongated

- cult structure described above (Kvirkvelia 2016; Kvirkvelia et al. 2018);
- A Mesopotamian cylinder seal which dates back to the 23rd century BCE, retrieved from the above presented quadripartite cult structure (Kvirkvelia 2016; Kvirkvelia et al. 2018);
- Ostrich egg fragments, bronze plates and wiring, precious stone beads, and a fragment of a steatite bowl also retrieved from the said elongated cult structure (Kvirkvelia 2016; Kvirkvelia et al. 2018);
- The entire skeleton of an equid accompanying a human burial (SMQ 49).

These artefacts highlight the exchange networks in which the protohistoric communities of Al-Subiyah participated. Copper and bronze items indicate that the Al-Subiyah communities were linked, through Mesopotamia and Dilmun, to metal-producing regions known in the Levant or, later, in the Oman Peninsula (Begemann *et al.* 2010; Goy *et al.* 2014). Similarly, the diverse range of ceramics discovered at Al-Subiyah suggests interactions extending from Arabia to Mesopotamia and the Dilmun sphere over several centuries (Al-Mutairi 2011; Rutkowski 2015b; Laursen and al-Otaibi 2022).

Carnelian beads, often considered imports from India, with workshops also identified at Tayma (Saudi Arabia), in Afghanistan, and eastern Iran, further reflect the existence of such interactions (Frifelt and Mortensen 1991; Hausleiter 2013; Wygnańska 2015). Lapis lazuli ornaments attest to trade networks reaching as far as the Indus Valley (Wygnańska 2015).

Finally, the presence of beads, shells, mollusks, and livestock (onagers, sheep, goats, etc.) in the burial deposits showcases the significance of maritime and pastoral economies developed by the Al-Subiyah communities.

Bioarchaeological information is scarce. Indeed, such stone funerary structures, highly visible in the landscape, have been looted since their construction, and the collapse of tumuli along with repeated water infiltration has destroyed or severely damaged most human remains within these tombs (Figure 8). Nonetheless, this section provides an overview of the skeletal sample from Al-Subiyah, allowing for some observations on burial practices, which show little variation across the three phases of tomb use.

In absolute numbers, the first phase includes two individual and two multiple burials. In the second phase, there are at least six instances of individual burials and two examples of multiple burials, while the final phase shows nine individual and two multiple burials. Further, during the second phase, at least two individuals were placed in the chambers in a right lateral position, with flexed arms and/or legs, typically oriented along an east-west axis (n = 7). A single uncertain case of strictly supine burial, along a northeast-southwest axis, has been recorded.

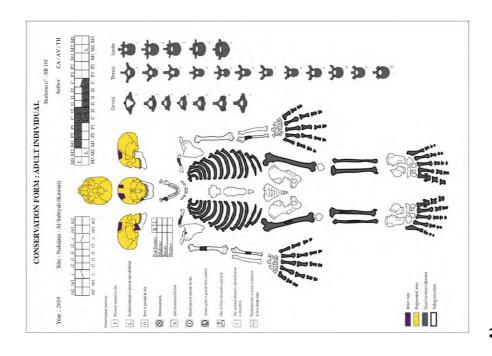
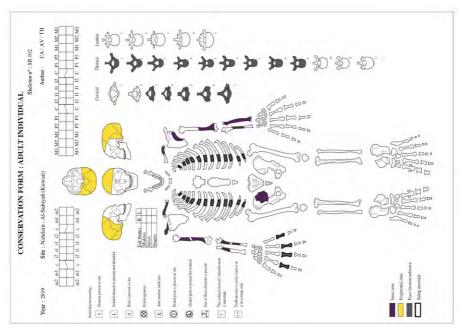


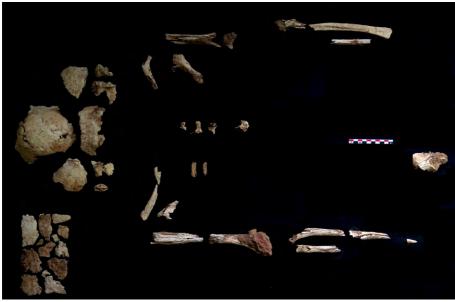


Figure 8a. Bioanthropological study of initial, second and late phase of use of the dry-stone tombs; left: photo of the skeletal remains, right: conservation form; SB 101 (indiv. 1). T. Hofstetter

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Individuals of all ages and sex are represented. The first phase includes one juvenile and eight adults (one male, four females, and three indeterminate). The second phase yielded no juveniles and 16 adults (two males, one female, and six indeterminate), while the last phase included one juvenile and nine adults (four males and five indeterminate). Taphonomic issues aside, the low number of identified burials contrasts with the extended period of necropolis use, suggesting that only a subset of the Al-Subiyah population had access to these tombs (Steimer-Herbet *et al.* 2017, 2019; Rutkowski 2018), the absence of juveniles during the second phase, might also reflect a temporary change in funerary recruitment criteria during this interval.

The paleopathological study (Figure 9) was necessarily tributary of the state of preservation of human remains, as well as of the low number of finds. Nonetheless, it concerned individuals uncovered from all phases of use at Al-Subiyah (n = 41). Taphonomic issues aside, it points towards a population with few markers of metabolic stress, minimal dental enamel hypoplasia, and a low prevalence of cribra orbitalia (orbital roof porosity), along with a relatively low rate of osteodegenerative lesions (affecting less than 10% of the sample) (Rutkowski 2015b). The low prevalence of non-specific metabolic stress markers and osteodegenerative lesions might suggest a relatively wealthy population, who likely did not experience major episodes of nutritional deficiency or harsh working conditions. Further, severe skeletal pathologies are rare, further reflecting that the interred population might have indeed belonged to healthier and wealthier socioeconomic strata (Sołtysiak 2011; Rutkowski 2015b).

Additionally, the near absence of dental pathologies—only one case of *ante-mortem* tooth loss was documented among approximately 70 teeth (e.g., monument SB 208) (Steimer-Herbet *et al.* 2017)—suggests a diet based on marine resources and/ or pastoralism rather than agriculture (Potts 1993; Al-Mutairi 2011; Sołtysiak 2011; Rutkowski 2015b). Date palm consumption, known to be highly cariogenic, appears largely absent from this population's diet, which aligns with evidence from other similar studies (Kunter 1981; Lonnee et al. 1990; Littleton & Frohlich 1993; Blau 2007; Sołtysiak 2011; Munoz 2017).

# Changes in the livelihoods of the people of Al-Subiyah and the continuity of funeral rites

For the protohistoric communities of Al-Subiyah, the establishment of significant settlement sites likely represented an important economic opportunity. Mesopotamia, being resource-poor in terms of exploitable materials (except for agricultural and clay resources), had to import vast quantities of supplies essential for its development (Cleuziou 1988; Chahoud 2009; Goy *et al.* 2014). The establishment of colonies on the periphery of the Mesopotamian influence zone likely correlates with the rise of profitable long-distance trade networks. This trade coincides with the onset of the first



Figure 9. Paleopathological findings; A) SB 208: ante-mortem left 3rd molar loss; B) SMQ 49 (SB 54): osteophytic and osteoarthritic evidence on a cervical vertebra; C) SMQ 49 (SB 54): osteophytic evidence on a right clavicular acromial extremity; D) SMQ 49 (SB 54): osteophytic and osteoarthritic evidence on a right rib head; E) SMQ 49 (SB 54): osteoarthritic evidence on a left ulnar distal end; F) SMQ 49 (SB 54): osteophytes on a right ilium. T. Hofstetter

phase of use of Al-Subiyah's dry-stone tomb necropolises (5th-4th millennium BCE), located in the vicinity of the newly founded sites of Bahra 1 and H3 (Bahra, Mughaira, Muhaita, and Dubaij micro-regions). Evidence suggests that, from this point on, local populations accumulated sufficient wealth to develop a distinctive form of funerary architecture marked by widespread dry-stone tombs. This architectural investment likely reflects the accumulation and display of wealth by Al-Subiyah's protohistoric elites.

The diverse remains in Al-Subiyah's settlement sites—including orthogonal dwellings, vernacular architecture, cultic centres, adornment objects, Ubaid inspired pottery, varied shells, bitumen, silicified palm wood, and date stones—capture some of Al-Subiyah's socio-economic and cultural interactions with Mesopotamia and Arabia.

After a hiatus of roughly 500 years, the northern coast of Kuwait Bay re-emerged as a settlement zone in the early 3rd millennium BCE. This second use phase of the Al-Subiyah necropolises may reflect shifts in power and trade dynamics, including the collapse of the Uruk trade network (Sasson 1995; Tenu 2016), desert aridification (Kuzucuoğlu 2007), and the transition to decentralised power. Tombs from this period, larger and more elaborate with corbelled or elevated chambers, often include standing stone borders. Notable spatial redeployment appears in areas like Nahdain, Rahda, and Eghai, where tombs are positioned along the first ridge overlooking Kuwait Bay, seemingly to highlight funerary monuments within the landscape. The influence of Dilmun also grows during this period, as seen in the selection and origins of burial goods and the adoption of specific burial practices (Sasson 1995; Højlund and Johansen 2007; Porter and Boutin 2012; Rutkowski 2015b; Thomason 2017; Laursen and al-Otaibi 2022).

Unlike the first phase, no settlements are directly linked to the necropolises of the second phase. In a well-studied region like Al-Subiyah, the continuity of funerary architecture without corresponding settlements, might suggest that local populations maintained these traditions despite shifting subsistence strategies.

The transition between the second and final phases of use of the Al-Subiyah drystone necropolises remains somewhat unclear. Current chronological data neither support a gradual shift from one phase to another nor confirm a hiatus in funerary activity. Nonetheless, from the late 3rd millennium BCE to the first half of the 2nd millennium BCE, complex funerary structures, known as types 2 and 7, emerged and developed. These intricate constructions feature well-structured masonry in both tomb peripheries and burial chambers, with some even built independently. Spatially, the necropolises' expansion initiated in the previous phase—extending westward and onto mountainous ridges—continued. The micro-regions of Dubaij and Muhaita were abandoned, while rock ridges in Rukham became covered in monuments. Westward, tombs were noticeably placed on ridges like Mashash, Mudeirah, and Khuwaysat.

Chronologically, this phase coincides with the Third Dynasty of Ur, the Amorite dynasties, and the Old Babylonian Empire (Amiet 2009; Witzig 2016; André-Salvini 2019). It also parallels the rise of Dilmun as a kingdom and the establishment of trade outposts on Failaka Island, at the entrance of Kuwait Bay (Højlund and Johanse 2007; Porter and Boutin 2012).

As with the second phase, no contemporary settlements have been identified on the Al-Subiyah coast in this final phase. Remains on Failaka Island offer some clues (Calvet and Salles 1986; Kjaerum and Højlund 2013; Højlund 2019). This raises questions about the builders' lifestyles—whether they were nomadic, semi-nomadic, or sedentary. However, we currently rely on limited data, as coastal surveys in Al-Subiyah have yet to yield evidence of later settlement or cultivable oasis remains (Rutkowski 2015b). Tentatively, bioarchaeological indicators, such as dental and skeletal health, suggest a lifestyle incompatible with agriculture. Given the lack of stronger arguments or concrete evidence, we might cautiously exclude a sedentary, agricultural mode of life, favouring instead a hypothesis of communities living from maritime and pastoral resources in a nomadic or semi-nomadic manner.

A comparable pattern emerges in eastern and southeastern Arabia, regions once vibrant at the crossroads of Arabian pastoral tribes and the Dilmun influence zone. Around the 3rd to 2nd millennium BCE transition, archaeological indicators suggest political instability, cessation of settlement and necropolis use, and a collapse of local economic networks, particularly the trade route with the Indus Valley (Boivin and Fuller 2009). Drawing on these observations, two scenarios to explain the decline of Al-Subiyah's populations and their funerary architecture can be proposed. One model suggests these communities faced dwindling resources, exploited to unsustainable limits, combined with environmental aridification (Parker et al. 2006; Boivin and Fuller 2009; Gregoricka 2016). Another socio-economic hypothesis by Magee (2014) proposes that the import of prestigious personal items echoes a growing social hierarchization, promoting values that fractured social cohesion. This more individualistic and exclusion-based scheme may have driven remaining populations to turn their backs on the elite-driven lifestyles of locally established socio-economic leaders (Parker et al. 2006; Boivin and Fuller 2009; Gregoricka 2016).

Broadly speaking, starting from the 5th millennium BCE, the peripheries or margins of major state entities appear to have evolved into high-value 'trading territories.' S. Cleuziou first described this economic concept as a dynamic reality in Arabia (Cleuziou 2003; Cleuziou and Tosi 2021). According to him, local tribes acted as essential trade partners for acquiring valuable local resources (food networks and rare products). These communities developed and transformed alongside neighbouring state entities, engaging in trade while maintaining control over their commercial positioning and growth (Steimer-Herbet 2018). This interaction between exchange networks and local

populations implies the notion of control. From the Late Neolithic and Chalcolithic down to the Bronze Ages, to effectively trade their resources, Arabian tribes needed a network and means to signal their adherence to it. For merchants, territorial security is crucial; access to extraction sites, water points, *etc.*, needed to be guaranteed (Potts 1988).

We can thus see how wealth acquisition through trade impacts social structure, internal organisation, and the functioning of communities. For Late Neolithic and Bronze Age communities along the Al-Subiyah coast, a mobile subsistence strategy based on gathering and hunting gradually evolved into a semi-nomadic or horticulture lifestyle, if and when sufficient relevant resources (pasturages, oasis) were available. Securing trade routes, resources, and territories became essential to maintaining their place within the economic circuit in which they participated. Furthermore, as members of a broader transregional trade system, many of these nomadic and semi-nomadic Arabian communities had to interact. The choice to adopt a stone architecture for the deceased can be interpreted as an ostentatious means of demonstrating their adherence to a socio-economic system extending beyond specific tribal interests. The tribes' adoption of standardised dry-stone tombs and stone-related beliefs (litholatry) likely reflects the wealth generated by trade, symbolically understood across socio-cultural and regional boundaries.

Consequently, the relationship of the builders of circular dry-stone tombs with the landscape should not be seen strictly as the marking ofterritorial boundaries, but rather as landscape management, secured access to resources, and the exchange of goods. This is demonstrated by the fact that the erection of prominent stone structures goes beyond funerary use and also serves to mark cult sites, important valley landmarks, communication routes and vital resources (such as water sources, copper mines and salt deposits). In essence, the display of a 'stone architecture' identity enabled these communities to strengthen their cohesion and ensure adequate access to resources and markets (Steimer-Herbet 2022). This was crucial in a context where new social, economic, and political pressures emerged as a result of long-distance interactions (Munoz 2019).

## Conclusions and future perspectives

This study not only provides a synthesis of the archaeological data available on the dry-stone monuments builders of the northern coast of Kuwait Bay, but also offers a proposal for the interpretation of the origins, development and decline of these communities. The proposed scenario for the origin and evolution of the dry-stone monuments of northern Kuwait Bay highlights the specific socio-economic factors that influenced the emergence and development of this type of architecture within this particular region.

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#### **Author contributions**

TSH, TH, ŁR, CA, AV and SAD conducted the fieldwork which provided the presented data. TH, CA and AV analysed the human remains and funerary practices. TSH, TH, ŁR, IA and SAD wrote the archaeological part of the manuscript. TH, CA and AV authored the bioanthropological part. TSH, TH, IA, ŁR, CA, AV, MB and SAD co-authored the conclusions, and further corrected, amended and expanded the manuscript.

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