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# Shadow States: The Archaeology of Power in the Marshes of Southern Mesopotamia

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Abstract of the Dissertation

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Ancient states and early complex societies emerged in areas where urban settlements had the resources to house large populations and where economic and political centers and institutions could be established to run the society. By contrast, marshes, isolated deserts, extreme mountain peaks and thick forests served as refuges for those who wanted to escape from the state. Moreover, taking these examples into consideration, scholars seem to share the assumption that it is unexpected to find urban centers and central political organizations of isolated refuge areas in the ancient world.

This dissertation examines the hypothesis that under certain historical and environmental circumstances, the marshes of southern Iraq, which are normally considered places of refuge, could become centers of political power and develop a political organization independent of that associated with irrigated areas. The focus of this dissertation will be on the archaeological evidence for an example of political independence in the marshes during the first Sealand dynasty (1739 -1340 BCE). Specifically, the objective is to understand how the archaeological record reflects the existence of this dynasty, and helps explain its success in these exceptional conditions. The data will also help us to understand the archaeology of the Sealand during this time of political centralization in the southern Mesopotamian marshes. To date, all information concerning this dynasty has been based on textual sources unsupported by archaeological data.

From 2003 to 2009, I conducted surveys in both the alluvial plain and also the marshes of southern Iraq. The data I collected during that time will test the hypothesis that the people of Mesopotamia's ancient marshes exploited specific political and economic circumstances, through the use of their unique environmental setting, to create their own independent political structure, the first Sealand Dynasty. It will further test the idea that this dynasty took on the shape of a shadow state that confronted the primary state in Babylon.

**To the souls of my parents who tought me the first letter**

**My uncle, Hajj Salih, who established a school in our village in Hawr al-Ḥammmar**

**My cousin, Abdulmahdi, who provided me the first school-dress and backpack**

**My wife, Batool, and the two wonderful boys, Hayder and Uruk**

**To the soul of Dr. Donny George Youkhanna**

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## Chapter 1

# CHAPTER ONE: INTRODUCTION

Ancient states and early complex societies emerged in areas where urban settlements had the resources to house large populations and where economic and political centers and institutions could be established to run society (Childe 1950, Adams 1969, Carneiro 1970, Flannery 1972, Engels 1972, Service 1975, Wright and Johnson 1975, Wright H 1977, Cohen and Service 1978, Claessen and Skalník 1978, D'Altroy et al.1985, Trigger 1993, Crumley 1995, Marcus 1998, Rothman 2001, Lui 2003, Grinin et al 2004, Kenoyer 2008, Spencer 2010). By contrast, marshes, isolated deserts, mountain peaks and thick forests served as refuges for those who wanted to escape from the state. For instance, all ancient Egyptian centers are clustered in a strip alongside the Nile River, whereas the large western desert was empty of any indication of sustainable settlement except some tiny isolated oases (Trigger 1993). A similar example is the Indus valley where the settlements are distributed alongside its river valley, which is surrounded by extreme deserts in the east and mountains in the west and north (Chakrabarti 2004, Wright R 2010). Another example comes from South America where the ancient Peruvian settlements were located in a coastal strip that is sandwiched between mountains and the Pacific Ocean (Willey 1953).

Moreover, taking these examples into consideration, scholars seem to share the assumption that it is unexpected to find urban centers and central political organizations in isolated refuge areas in the ancient world, from Mesopotamia to China and the Indus River Valley to the Nile valley, as well as in the Americas of the New World, with the exception of the Mayan case (Willey 1965).

The question that needs to be answered is whether the assumption that refuge areas never have their own political structures and always depend on the central political institutions in

urban areas is indeed generally true or if there are more exceptions. Did refuge areas and the margins of urbanized centers ever have the central socioeconomic and political institutions and organizations that are typically associated with state societies? What happens when people in refuge areas decide to develop political and economic centers?

Most of the southern Mesopotamia alluvial plain from Baghdad down to the Arab-Persian Gulf was dotted by permanent and temporary marshes. These marshes were, and still are, subject to expansion and shrinkage depending on the amount of water that is taken from rivers and canals for irrigation. When irrigation is extensive, marshes will shrink, and they reach maximum expansion when agricultural and irrigation activities are limited. But in addition to serving as refuge areas, the marshes also provided key resources needed by the residents of the local cities throughout Mesopotamian history(al-Maqdisi1887 [died in 991CE], Ibn Khurdādhbih 1889 [died in 912 CE], al-Ya'qubi 1890 [died in 898 CE], al-Balādhurī 1901 [died in 892 CE], Dougherty 1930, Ionides 1937, Field 1949, Thesiger 1954, Salim 1962, Wright 1969, al-Masoūdī 1973 [died in 956 CE], al-Ḥamawi 1977 [died in 1229 CE], Young and Wheeler1977a, al-Idrisi 1979 [died in 1161 CE], Sousa 1983, Beaulieu1988, Zarins 1992, Brinkman 1993, De Mieroop 1993, Pournelle 2003a, Ochsenschlager 2004, Algaze 2008, Dalley 2009, Ur 2013, Steinkeller 2013).

Textual and historical data show that Mesopotamian marshes played a significant role in several political events from the early Ubaid and Uruk periods until the Islamic era (al-Samer 1973, Moroney 1982, Brinkman 1984, Hansman 1984, Steinkeler 2007, Dalley 2009). However, the residents of the marshes have generally left little to no archaeological remains. The exception is the time of the Sealand Dynasties. The marshes of southern Iraq have witnessed times of political independence; the oldest known example was emerged during the Old Babylonian period (1830-1595 BCE). These independent polities were: a) the first Sealand dynasty (1739 -1340 BCE), b) the second Sealand dynasty (1025-1004 BCE), c) the

Sealand dynasty of Bit Yakin (796-703 BCE), d) the Sealand during the Neo-Babylonian period (650-539 BCE), e) the state of Characene/ Maysān (ca.140 BCE-220 CE), and f) the Shahinid Principality (949-1021 CE). The data from these dynasties show that the marshes of southern Iraq had political and economic independence. These data are supported by ethnographic data from Iraq during the twentieth century, which demonstrate that large urban centers can exist within the southern marshes (Raymond 1926, Maxwell 1957, Philby 1959, Saleem 1962, Thesiger 1964, Young 1977, Ochsenschlager 2004).

Despite the presence of the primary state as a central administration in urbanized areas, a secondary state would emerge in the margins as a shadow state. A shadow state is a state that emerges in the margins of urban societies, as a secondary phenomenon in response to the central primary state. A shadow state arises in the time when the primary state faces political and economic difficulties. Although a shadow state is considered as a secondary, it is also a self-sustaining state in terms of economic resources (Barfield 2001: 10, 28, and 33).

For Mesopotamia, the first Sealand dynasty (1739-1340 BCE) was a shadow state opposed to the primary central state in Babylon, the first Babylonian dynasty (1830-1595 BCE). The Shahinid Principality (949-1021 CE) was also a secondary in opposition to the Abbasid Caliphate (750-1285 CE), the central state in Baghdad.

### 1.1. **The hypothesis**

This dissertation examines the hypothesis that under certain historical and environmental circumstances, the marshes of southern Iraq, which are normally considered places of refuge, could become centers of political power and develop a political organization independent of that associated with the irrigated area. The focus of this dissertation will be on the archaeological evidence for an example of political independence in the marshes during the first Sealand dynasty (1739 -1340 BCE). Specifically, the objective is to understand how the

archaeological record reflects the existence of this dynasty and helps explain its success under these exceptional conditions. These data will also help us to understand the archaeology of the Sealand during this time of political centralization in the southern Mesopotamian marshes. To date, all information concerning this dynasty has been based on textual sources unsupported by archaeological data.

The hypothesis to be tested is that people of the ancient southern Mesopotamian marshes made use of specific political circumstances, and exploited the economic and environmental sources of the marshes to practice political and economic independence and create their own political structure, the first Sealand dynasty, as a shadow state that confronted the primary state in Babylon.

### 1.2. Questions and objectives

1.2.1. How were independent state institutions that are typically associated with state societies developed in the marshes of southern Mesopotamia?

1.2.2. What is the archaeological imprint of this development?

- Does the settlement system in the marshes differ from that in other areas?
    - Does the settlement pattern show a linear distribution of settlements alongside elevated river levees and canal systems similar to the pattern that can be seen in the irrigated area?
    - Or, does it show isolated turtleback islands within marshes and intensive "bird's foot" deltas?
    - Or, do we find a combination of both linear systems and turtlebacks?
- Does the settlement system indicate the existence of large and sustainable settlements with centralizing institutions similar to those in urbanized areas, or

does it indicate the dominance of small isolated and remote mobile villages and hamlets?

- In what ways was the settlement system impacted during the time that the marsh area was important politically?
    - Were more sites in the marsh areas occupied?
        - Did the marshes experience a high density of population?
        - In what ways was the settlement pattern different during the Sealand and marsh dynasties compared to the preceding and the subsequent periods?

1.2.3. How does ethnographic data from the contemporary marshes help us understand the settlement system, landscape, and the economic resources of the ancient marshes?

- How do people live in the marshes and what economic resources allow them not only to survive but also to establish a governmental structure similar to that in the more urbanized communities?
- How do they manage the environment, lands, food resources, and internal trade and exchange?
- How are settlements distributed in the landscape of the marshes?
    - How do people find places to build their settlements? What materials are used to build dwellings? What construction materials might survive archaeologically?

    - How do people manage lands within and at the edges of the marshes for purposes of dwelling and cultivation?

These questions can be approached using a mixture of ethno-historical and ethnographic data to evaluate the economy and ecology during times of centralization in the marshes. What are the resources in the marshes that might allow people to practice political and economic independence or at least autonomy?

    - Economic resources
    - Supplies of agricultural products
    - Land management
    - Control over navigation, transportation and internal trade

- How can we use our understanding of more recent episodes of independence in the marshes to understand the earliest episode, the first Sealand dynasty?
    - What were the internal and external actor(s) that impelled people of the marshland to create their own independent state, as a shadow state in the face of the primary state, and what were the circumstances behind moves toward centralization?
    - Did this only happen when there was no dominant political center immediately at the edges of the marshes forcing them to create their own center, albeit with some continuity of interaction with the settled population in more urbanized centers?
    - Can refuge areas develop state institutions on their own, or do they do this only under the influence of other state organized societies?

- What was the nature of the relationship between people living in irrigated areas and those who lived in the marshes? And finally, what was the impact of these political changes on the archaeological record?

Current knowledge about the first Sealand dynasty comes almost entirely from cuneiform texts, and no research based on archaeological data has been conducted in order to understand the archaeological landscape and settlement system of the dynasty. The exact geographic location of the first Sealand dynasty, as well as its territories, borders, extensions, and capital city are currently under debate. For instance, Assyriologists have suggested several different archaeological sites for the potential location of the first Sealand dynasty's capital city. Wilfred G. Lambert suggested Tell al-Hiba, the ancient city of Lagash (Lambert 1974:210), whereas Stephanie Dalley argues that one of the following cities might have housed the capital city (Dalley 2009:5-7): Nippur, Bad-Tibira, Uruk, Larsa, Eridu, or Ur.

## 1.3. Methods of Investigation

### 1.3.1. Previous and recent surveys and excavations

The published and unpublished results of survey and excavation projects in southern Iraq serve as a guide to determine whether these sites have settlements of the first Sealand dynasty, and to identify the locations of the territories and settlements of this dynasty in the southern alluvial plain. This determination is based on the types of ceramics that are associated with the dynasty in the southern Mesopotamian plain.

They are fundamental resources for collecting data to study the first Sealand dynasty. More specifically, this project uses the data of the surveys that were conducted in southern Iraq (Roux 1960, Adams and Nissen 1972, Adams 1981, Wright 1981). Also included are the results of a recent archaeological survey that was conducted by the author in southern Iraq

from 2003 to 2009 in areas that were not covered in the previous surveys, which includes the southern marshes (al-Hamdani 2008).

Moreover, reports of the excavated sites in southern Iraq serve as a guide to examine whether these sites have settlements belonging to the first Sealand dynasty. The major excavated sites from north to south are Nippur, Isin, Tell Willaya, Adab, Shuruppak, Tell Shmit, Umma, Zabalam, Tell Um al-Aqarib, Uruk, Larsa, Girsu, al-Medaien, Lagash, Ur, Eridu, and Tell Lehem. For instance, recent excavations in five sites in southern Iraq have yielded pottery from Late Old Babylonian and Early Kassite, the time frame of the first Sealand dynasty. Two of these sites, *Tell Sakhariya* and *Tell Khaiber* are located near to Ur (Zimansky and Stone in press, Campbell at el. forthcoming), and three, *Tell al-Thahab*, *Tell al-Tizel* and *Tell Abu Rubab are* in al-Hammar marsh east of Ur (Abood 2012, , al-Maliki 2013, al-Ahdeb 2013, Salih 2014). Since the first Sealand dynasty is mostly known from cuneiform documents, textual and historical data can be used to identify the political history of the dynasty (Dougherty 1930, Gadd and Thompson 1936, Leemans 1958, Lambert 1974a, Brinkman 1993b, Van Lerberghe and Voet 2009, Dalley 2009, 2013, Zadok 2014).

### 1.3.2. Ethnographic evidence

Ethnographic data are used to answer archaeological questions that relate to how people live in the marshes and to determine what economic resources allowed them not only to survive but also to establish a governmental structure similar to that in the more urbanized communities. These ethnographic data are based on both historical sources from the Medieval Age and contemporary sources, including the author's personal experience of living in the marshes of southern Iraq for more than two decades in the 1970s and 1980s. The ethnographic data from villages in and next to the marshes of southern Iraq will be useful for answering questions that are aimed at understanding the settlement system, material culture

and economy of the Sealand and marsh dynasties in antiquity. Moreover, both ethno-geographic and ethno-historic data that concern the marshes of southern Iraq are used to build models of settlements in a marshy environment, and to study the relationship between ecology and economy (Maxwell 1957, Saleem 1962, Thesiger 1964, Young 1977, Ochsenschlager 2004).

### 1.3.3. Ethnohistorical records

The textual and historical data from the Abbasid period (750-1285 CE) are used to understand the political and economic circumstances that permitted the dwellers of the marshes in southern Iraq (*al-Baṭāeiḥ*) to establish their own independent polity, the Shahinid Principality (ca. 949-1021 CE). These data are also useful to understand the settlement system and the landscape during this time of independence, as well as the economic resources that encouraged the population to develop a governmental structure in the time of the Abbasid Caliphate in Baghdad. Muslim and Arab historians, biographers, lexicographers, explorers, polymaths, and geographers from the mid tenth century CE provided geographic, historical and socioeconomic information on the Shahinid Principality. Villages, towns, fields and their yields, canal systems and water routes, marshes and their economic resources, and land management, as well as people, their occupations and ethnicity, were intensively described.

The description of the canals and settlements will be examined against the satellite images and the result of the ground survey that has been carried out by the author in 2004-2005 in the area that housed the archaeological remains. The surveyed area is located between the current lower course of the Tigris in the south and east and the Shatt al-Gharraf in the west while the Islamic city of Wasit marks its northern edge. All of these historical sources are in Arabic, and the data necessary was translated by the author. These ethnohistorical and geographic

data are useful to understand the emergence, growth, and collapse of a marsh state, as well as to determine its settlement system, and economic resources. Since these data come from a pre-industrial society, they can be used to understand the marsh states in antiquity.

### 1.3.4. Remote sensing imagery of archaeological sites

Satellite imagery has proven to be a tremendously valuable tool because many undocumented sites now appear with great clarity. Two remote-sensing datasets will be used to identify traces of possible surface architecture. The base map for my research is derived from the Digital Globe Quick Bird satellite image of the settlement complex. The declassified American CORONA intelligence satellite program will be used to map and reconstruct the landscape, including settlements, ancient features and watercourses, and areas of mounding (Parcak 2007, Hritz 2010, Ur et al 2011). The maps of *the Atlas of the Archaeological Sites in Iraq* record all archaeological sites in Iraq known from surveys conducted before its 1971 publication data. Other useful resources are the maps that were created in 1970s and updated several times until 2002 by the Iraqi military. All maps and imagery were georeferenced to the UTM system, Zone North 38 and brought together into a GIS.

# CHATER TWO: HUMAN ADAPTATIONS TO MARSH ENVIRONMENTS IN MODERN ETHNOGRAPHY

## 2.1. The use of ethnographic data

The main archaeological aim of this thesis is to shed light on the economic and social circumstances that made it possible for people in the marshes of southern Iraq to practice and develop an independent polity in ancient times. The available archaeological and textual data about the first Sealand dynasty (1739 -1340 BCE) is insufficient to answer questions that are related to the settlement system and its relationship to the broader landscape, economy and ecology, and material culture. Before this dissertation the available information of the first Sealand dynasty as a marsh state came from two sources: texts and modern ethnography. This chapter will discuss the information on marsh adapted lifestyles available from modern ethnography, which can aid our understanding of the economy and settlement system of the first Sealand dynasty.

Many of the key questions regarding the conditions and causes of the emergence of the first Sealand dynasty, its archaeology, and its settlement systems, remain unresolved. Ethnographic data can provide models whose application can aid the interpretation of the more fragmentary archaeological remains and can be used to develop models which can help bridge gaps in the archaeological record.

### 2.1.1. Economy

What are the environments and resources that marshes provide that could motive people to practice political and economic independence? How could they use these resources to build large political centers and governmental structures, and enable us to judge whether these structures were similar to those in the more urbanized communities or unique to marsh

societies? How do people manage these resources? What sort of life is possible using these resources?

#### 2.1.2. Settlement

What materials are used to build dwellings and which of these survive archaeologically? Where do people decide to live? How do people manage lands for purposes of dwelling and cultivation? How do they choose places to build their settlements? What kind of settlement distribution does this result in? How are settlements distributed in the landscape of the marshes?

Because these questions cannot be addressed by relying on archaeological data alone, ethnographic data must be used to gain insight into the underlying factors that contributed to shaping these archaeological phenomena. Initially, in order to understand how the economic and social organization of ancient people in the marshes made it possible for them to develop centralizing governmental structures, we need to understand what marsh environments in general are like, what resources they provide, and how people use them. Therefore, the use of ethnographic data is necessary to clarify the sources of socioeconomic life that are possible in marsh environments.

### 2.2. Criteria for forming ethnographic analogies

Employing ethnographic data as an analogical source can allow more detailed reconstructions or modelling of ancient lifeways than by using archaeological data alone. The term “analogy”, according to Colin Renfrew and Paul Bahn (2000: 182), is the assumption that where certain processes or materials resemble each other in some respects, they may also resemble each other in other ways. Thus, it may be possible to use details from one body of information to fill gaps in another body of information from which those details are missing.

Richard Gould and Patty-Jo Watson argue that an interpretive bridge must be built in order to fill the gap between past and present societies and cultures (Gould and Watson 1982:362).

In general, archaeological data alone cannot shed light on cultural and social practices in ancient societies without the support of ethnographic and ethnoarchaeological data. Indeed, the use of ethnographic data as a source of analogies to assist in the interpretation of archaeological and textual information is an indispensable tool in investigating the incomplete record of the past. Moreover, as Robert Ascher has argued, given environmentally similar conditions, valid analogies can be sought between the present and the past (Ascher 1961). However, which analogies are considered appropriate, relevant and strong, and how they should be employed in the interpretative process have been the subject of considerable debate (Binford 1967, 1968; Hodder 1982).

Gould and Watson determine two approaches of using analogy, the direct historical analogy approach, and the relational analogy approach. The direct historical analogy, or folk-culture approach, requires long-term cultural continuity. The direct historical analogy approach should work perfectly when applied to societies that experience a cultural continuity, or to those that have not suffered significant changes in terms of their social and cultural systems. Thus, this approach can be applied, for example, to the Greek, Indian, and Chinese societies, where cultural, ethnic, and social fabric remains without any serious discontinuity. The relational, or general comparative approach, can be applied anywhere in time and space if relationship between source and subject is clearly established for the relevant attributes (Gould and Watson 1982:357, Winter 2000:153). Ascher says that this kind of analogy works successfully in cultures that manipulate similar environments in similar ways if the economy and environment are the analytical targets (Ascher 1961:319).

There is no modern population in the mashes of southern Iraq that has provable direct historical connections to my archaeological subject because there have been big changes in culture, religion, and ethnicity in the marshes. The populations of the first Sealand dynasty were very diverse. An examination of the Sealand dynasty's royal names indicates a considerable Sumerian influence and may thus indicate that they were consciously archaic and of Sumerian origin (King 1907:154). Other indigenous ethnic groups from southern Mesopotamia, including those from Eshnunna and Der to the north of Babylon, were present as well. Small numbers of non-Mesopotamian groups such as Elamites, Kassites, Hurrians, and Tilmunites were present in the Sealand (Dalley 2009: 13, Zadoc 2014:224-229). Because of cultural, religious, and ethnic differences between the archaeological subject--the people of ancient Mesopotamian Sealand and marshes and the ethnographic source--the contemporary populations of the marshes in southern Iraq, it is impossible to apply the direct historical approach of analogy. Therefore I have no choice but to rely on a relational analogy.

Lewis Binford was felicitous in using the concept of "adaptation" as a tool or a method to examine the uniformity and relation between human behavior and the immediate circumstantial elements. It is the generic uniformity for present and past cultural systems that led Binford to argue that it is circumstance, not culture that determines human behavior (Binford 1978a). This means that to be adapted to the environment, for instance, people will behave similarly despite social differences and cultural discontinuity. After conducting ethnographic research for 25 years at the contemporary villages in the marshes near the ancient city of Lagash in southern Iraq, Edward Oschsenschlager has amplified this point: "Useful ethnoarchaeological parallels for evaluating archaeological discoveries usually arise from people's exploitation of similar material resources in a similar environment, not necessarily from continuity of tradition" (Ochsenschlager 1998a:103). Ochsenschlager also posits that given similar environmental constraints, particularly with respect to available raw

materials, there is much continuity in material culture production which proceeds from antiquity directly to the present. At the same time, there are probably also similarities in the processes of culture change itself, with allowances for the particular nuances imposed by each epoch, which also transcend time (Ochsenschlager 1974, 1992, 1993a, 1993b, 1998a, 1998b, 2000, 2004, 2007). In addition, Mary Strong argues that cultures are recreated over millennia if the environmental setting of these cultures is similar (Strong 1998:1).

Relational analogies extend beyond pure environmental comparisons, however, and require considering more than merely environmental attributes. In fact, the validity of relational analogies depends on the strength of multiple *relevant* links between past and present – the relevance being shaped by the archaeological questions under discussion (Wylie 1985). My archaeological questions – economy and settlement – are the relevant attributes that will shape my choice of an ethnographic source culture. Because my study concerns the ways that marsh environments shape economy and settlement, selecting a source population from a wetland context is crucial to a sound relational analogy.

### 2.3. Potential ethnographic sources

The criteria of selecting ethnographic source that has relevant attributes that could help build a relational analogy that allows one to understand the economy and settlement system during the first Sealand dynasty are the following: 1. It must be a marsh, 2) It should be near enough to a major state (now or in historically recorded times) to either be incorporated into that state or, if independent, form a rival locus of power, 3) there must be evidence that a Shadow State actually occurred there, and 4) the environmental traits and economic resources must be as close as possible to the ancient case. There are many wetland areas all over the world which furnish possible ethnographic sources for this study. The brief review below shows that most are far from southern Iraq, lie in different environmental zones, and are

situated in very different cultural and economic contexts from the Sealand and Marsh Dynasties in Mesopotamia that form the archaeological subject of this study.

### 2.3.1. Sundarbans, Bangladesh, Asia

The Sundarbans is the largest littoral mangrove belt in the world spreading across Bangladesh and West Bengal in India. The name Sundarban can be literally translated as "beautiful jungle" in the Bengali language. During the Mughal period, many people of Bangladesh took refuge in the Sundarbans from the advancing armies of Emperor Akbar (1556-1605 CE). Sundarbans was also a refuge area for the local population to avoid the Portuguese pirates in the seventeenth century, and the armed robbers of dacoits in the middle of the twentieth century (Khan 1981).

### 2.3.2. The Nile Delta

The flooded Nile Delta is a marshy environment that exists on the not-quite-periphery of a major state, ancient Egypt. As it is located on the northeastern corner of Africa, Egypt is part of the Palearctic realm linked to the north by the Middle East and the Mediterranean Sea, but also connected to sub-Saharan Africa by the Nile River. The Nile Delta is a vital stopover place for millions of birds making their annual migration between the Palearctic and Afrotropical realms, despite the fact that agriculture and dams have inextricably altered the floodplain delta ecosystem within the last century. The Nile Delta Flooded Savanna ecoregion extends along the River Nile from the Aswan High Dam, 1,100 km downstream to the mouth of the Nile as it enters the Mediterranean Sea. The delta is about 175 km long and 260 km wide (Hughes and Hughes 1992). Since the construction of the Aswan High Dam, the riverine floodplains and delta are no longer subject to annual flooding, and papyrus swamps that used to exist in the wettest areas have largely disappeared.

The Nile Delta area in ancient Egypt provided habitat for many types of plant and animal life, including some that no longer dwell there. Larger animals such as hippopotamuses and crocodiles lived in riparian areas and swamps. Fish abounded in the Nile's waters, including Nile perch, tilapia, eels, catfish and even sharks. Soft wood trees such as palm trees and sycamores grew along the water's edge, while reeds and papyrus grow in swampy Delta regions. Much of the flora and fauna of the ancient Nile Delta disappeared as Egyptians used the area for increasingly heavy agriculture and domestication. The Nile Delta's features translated into many invaluable uses as a source of hunting, fishing and fertile land for crops. The clay deposited by the Nile over the centuries was used as a raw material for pottery. Most of the major Egyptian cities existed in close proximity to one of the major distributaries of the Delta, including Alexandria and Hermopolis. Cities in the Delta served as ports for river traffic from Upper Egypt as well as markets for traders, who entered ancient Egypt from the Mediterranean (Hughes and Hughes 1992).

### 2.3.3. Lake Chalco, Valley of Mexico

Lake Chalco was an endorheic lake formerly located in the Valley of Mexico and was important for human development in central Mexico. The lake was named after the city of Chalco on its eastern shore. Lake Chalco and the other Mexican great lakes (the brackish lakes Texcoco, Zumpango and Xaltocan and the freshwater Xochimilco) formed the ancient Basin of Mexico lake system. These lakes were home to many Mesoamerican cultures including the Toltecs and the Aztecs. Lake Chalco itself had a fresh water hydrologic structure due in large part to the artesian springs lining its south shore. This allowed extensive chinampa beds to be cultivated through the Aztec era. After the Spanish conquest of Mexico these beds fell into disuse and were largely abandoned. Starting during the Aztec era and continuing into the 20$^{th}$ century, efforts were made to drain Lake Chalco and her sister lakes

in order to avoid periodic flooding and to provide for expansion. The only one of these lakes still in existence is a diminished Lake Xochimilco.

The valley has been inhabited for at least 12,000 years, attracting humans with its mild climate (average temperatures between 12 and 15 °C, or 54 and 59 °F), abundant game and ability to support large-scale agriculture. Civilizations that have arisen in this area include the Teotihuacan (800 BCE to 800 CE), the Toltec Empire (10th to 13th century) and the Aztec Empire (1325 to 1521). When the Spaniards arrived in the Valley of Mexico, it had one of the highest population concentrations in the world with about one million people. After the Conquest, the Spaniards rebuilt the largest and most dominant city here, Tenochtitlan, renaming it Mexico City. The valley used to contain five lakes called Lake Zumpango, Lake Xaltoca, Lake Xochimilco, Lake Chalco, and the largest, Texcoco covering about 1,500 square kilometers (580 sq. mi) of the valley floor. As the Spaniards expanded Mexico City, they began to drain the lakes' waters to control flooding. Although violence and disease significantly lowered the population of the valley after the Conquest, by 1900 it was again over one million people. The 20$^{th}$ and 21$^{st}$ centuries have seen an explosion of population in the valley along with the growth of industry. Since 1900, the population has doubled every fifteen years. Today, around 21 million people live in the Mexico City Metropolitan Area which extends throughout almost the entire valley into the states of Mexico and Hidalgo.

### 2.3.4. Southern Iraqi marshes today

Finally, as a potential source I turn to southern Iraq. Ethnographic accounts of southern Iraq's marshes contain historical and geographic data collected by ethnographers, anthropologists, sociologists, historians, geographers, travelers, naturalists, and explorers who visited and studied the marshes in the ninetieth and twentieth centuries (Olearius1669, Loftus 1850, Jones 1857, Bewsher 1867,Willcocks 1910, Budge 1920, Beazeley 1920,Maxwell, D

1921, Levy 1924, Wilson 1925, Fulainain1928, Dougherty 1930, Ionides 1937, Drower 1949, Field 1949, Smeaton 1949, Thesiger 1954, Salim 1955, 1962, 1964, Maxwell, G 1957, Philby 1959, al-Feel 1968, Fernea, E 1969, Fernea, R 1970, Young and Wheeler1977a, 1977b, Sousa 1983, Loudon 1988, Nissen 1968, Ochsenschlager 1998a, 1998b, 2000, 2004,2007, Adriansen 2006, Wheeler 2007, al-Hamdani 2008, Alwash et al. 2010). I can also use my own experience living in a village in Hawr al-Hammar in southern Iraq for almost 20 years in the 1970s and 80s. Moreover, I have conducted several ethnographic studies in the marshes since 2003; all of which, with one exception, remain unpublished (Rost and al-Hamdani 2011).

Although the marshes of southern Iraq constitute an environment that has faced some modification and change over time, their environmental attributes remain closer to those of ancient Mesopotamian marshes than any other place we can hope to find in the world. However, one can't just assume that is a perfect analogy; we have to examine the marshes today and evaluate the strength of their connection to the past.

## 2.4. Strengths and weaknesses of modern Iraqi marshes as an analogical source.

### 2.4.1. The environment

In their lower courses, the Tigris and Euphrates Rivers have created a vast network of wetlands which comprise a complex of interconnected shallow freshwater lakes, marshes, and seasonally swamped floodplains. However, it is critical to determine whether there are similarities or differences between the ancient and contemporary marshes in respect to the environment and its effect on human social, cultural, and economic adaptation to this environment. Earlier studies demonstrate a tendency to infer that similarity does exist in most aspects, including the ecosystem, types of plants and animals, water sources, input and output water systems, as well as the ways of adaptation and exploitation of environments in the

marshes by both ancient and contemporary people (Willcocks 1910, Maxwell D 1921, Buringh 1957, Maxwell G 1957, Salim 1962, Thesiger 1964, al-Ali 1971, Young 1977, Sousa 1983, De Mieroop 1993, Oriel 1993, Maltby 1994, Ochsenschlager 1998a, 1998b, 2000, 2004, 2007, Nicholson and Clark 2003, Pournelle 2003a, Richardson et al. 2005, Bedaira et al. 2006, Wheeler 2007, Algaze 2008, Dalley 2009, Touili and al-Hamdani 2011).

Nevertheless, there have been some environmental changes, both natural and anthropogenic, which have affected this environment. From the 1970s onwards, the Ba'ath regime in Iraq built earthen dikes, embankments, and sluices to drain areas at the edges of the marshes in order to extract oil. In addition, the water flowing down the Tigris and Euphrates was impacted by the dams on the Tigris and the Euphrates in Turkey and Syria, new irrigation projects constructed since the 1980s, and drainage on the fringes of the marshes for agricultural purposes. As a result, the marshes shrank, and some of the water became salty and polluted (Spencer 1982:33, Sluglett 2001:122, Adriansen 2006:215). In the 1990s, for political reasons, Saddam Hussein's regime started a campaign to dry the marshes. A few days after the end of the second Gulf war in February 1991, uprisings against the Iraqi regime broke out both in southern Iraq and in the Kurdistan region in the north. After the insurrections in southern Iraq, some of the rebels took refuge in the marshes. As a result, the Iraqi regime laid siege to the area, and movement in and out of the marshlands was forbidden. Two huge canals were gradually constructed and a number of rivers diverted in a deliberate attempt to drain the marshes so as to make them uninhabitable (Sluglett 2001:123, Abd al-Jabbar 1994:79). By the early 2000s most of the populations had left the marshes (al-Bayati 1994; 141). Since 2003, however, the marshes have been partially refilled and almost 70% of those who left the marshes have come back (Lawler 2005:1186, al-Hamdani 2008:229).

Although the pattern of life in the marshes is changing rapidly, certain aspects appear to have remained remarkably constant over the millennia that separate ancient Mesopotamia

from our own time. Archaeological evidence reveals striking parallels in the economic bases of life in the ancient Mesopotamian marshes and contemporary marshes of southern Iraq, such as material culture, transportation, home building, and the weaving of mats and making of baskets. Moreover, there are even some reasons to suppose that the general ecology of the area was little different in ancient times from what it is before the drought of the marshes in 1990s (Ochsenschlager 1974:149). Despite all of the natural and anthropogenic changes in the marshes described above, the overall structure of the environment of the marshes has not been completely erased or altered. The connection between modern marsh dwellers before the drainage of the marshes during the 1990s and the people of ancient Mesopotamian clearly exist. Both the ecological setting and the use of the same methods and ways of life remain largely unchanged. Agriculture and irrigation practices, materials and methods of house construction, boat building, and textile and food production have experienced little change (Ochsenschlager 2007: xii). Thus, environmental and anthropogenic aspects of the marshes can be used to compare the past and present of human adaptation and exploitation of the marshes; one can also examine the human behavior that is associated with the various environments within the marshes.

### 2.4.2. Human populations: Genetics, language, religion, and ethnicity

The people of the contemporary marshes of southern Iraq and the people of the ancient Mesopotamian marshes live in very similar ecological settings, use the same methods and tools, and have similar ways of life best seen in their agricultural and irrigation practices, materials and method of house construction, boat building, and textile and food production (Ochsenschlager 2007:xii). Modern villagers in southern Iraq and the ancient Mesopotamian population had adapted in a similar fashion: both used the same locally available raw materials to make similar artifacts, tools, houses, and objects.

People living in the marshes today may or may not be the direct descendants of the people of the ancient Sealand dynasties in southern Mesopotamia. However, a new survey of Y-chromosome and mtDNA variation of people in the marshes of southern Iraq in comparison with human remains from archaeological sites of southern Iraq shows that they are likely descendants of the ancient Mesopotamians, who themselves were most likely indigenous to southern Iraq (Al-Zahery et al. 2011:1, 12).

The two populations, the ancient Mesopotamians and the contemporary dwellers of the marshes of southern Iraq, follow different religious faiths and culture, and there is some cultural discontinuity between the two societies. Nevertheless, they both live lifestyles that are embedded in this environment in terms of economic resources and social adaptation. For instance, the decisions of whether they are going fishing or hunting, how to build a platform of reed and mud as an artificial island, ways and methods of taming the environment, and what materials that they use to build their houses out of are similar (Buringh 1957, Salim 1962, Thesiger 1964, Wright 1969,Sousa 1983, Ochsenschlager 1998b, 2004). Moreover, the way of life in the marshes of southern Iraq is considered by scholars to be one of the oldest cultures, and for centuries their self-sufficient way of life has hardly changed (Dougherty 1930, Drower 1949, Maxwell 1957, Salim 1962, Thesiger 1964, Young 1977, Ochsenschlager 2004, Adriansen 2006).

In addition, the artistic and textual data from ancient Mesopotamia have shown very strong parallels to what scholars have observed in the contemporary marshes of Iraq. Indeed, illustrations depicted on cylinder and stamp seals, steles, plaques, jars, and votive objects have depicted the people of ancient Mesopotamian marshes, their daily life, their environment and ways of economic adaptation to this environment (Fig.1).

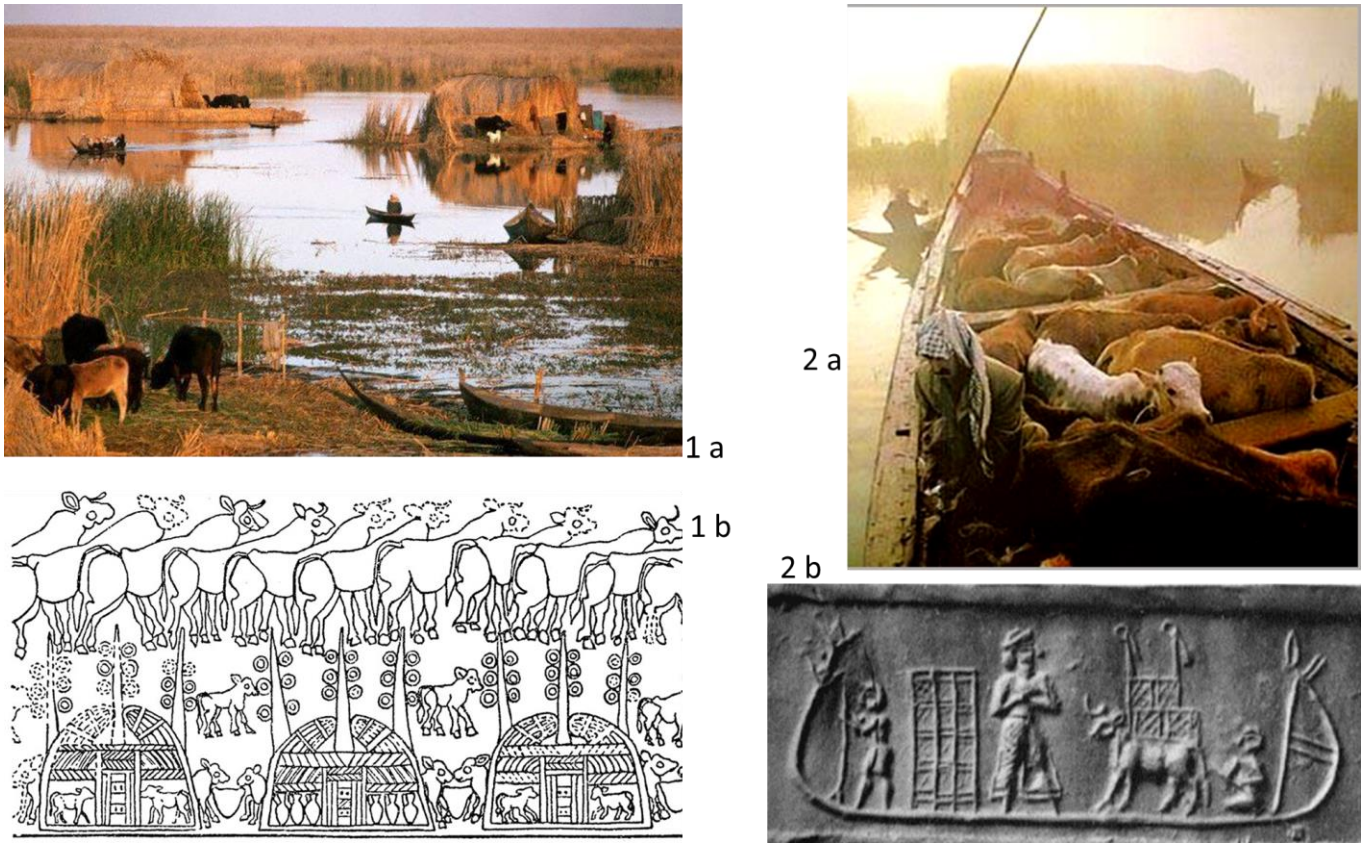



Fig.1 shows parallels in the daily life of people of the ancient Mesopotamian marshes and those of the contemporary marshes of Iraq. 1 a: A scene from the contemporary marshes of southern Iraq showing reed houses and cattle. 1 b: A cylinder seal from the fourth millennium BCE engraved with a continuous design in two registers, combining cattle with reeds houses. 2 a: A group of cattle in a boat that are transported from the village of *Abu Mughairfat* in the central marshes (After Kevin Young 1977). 2 b: A cylinder seal from Late Uruk period (ca. 3300-3100 BCE) showing an animal (probably a bull) in a boat with a priest and two people in a marsh scene.

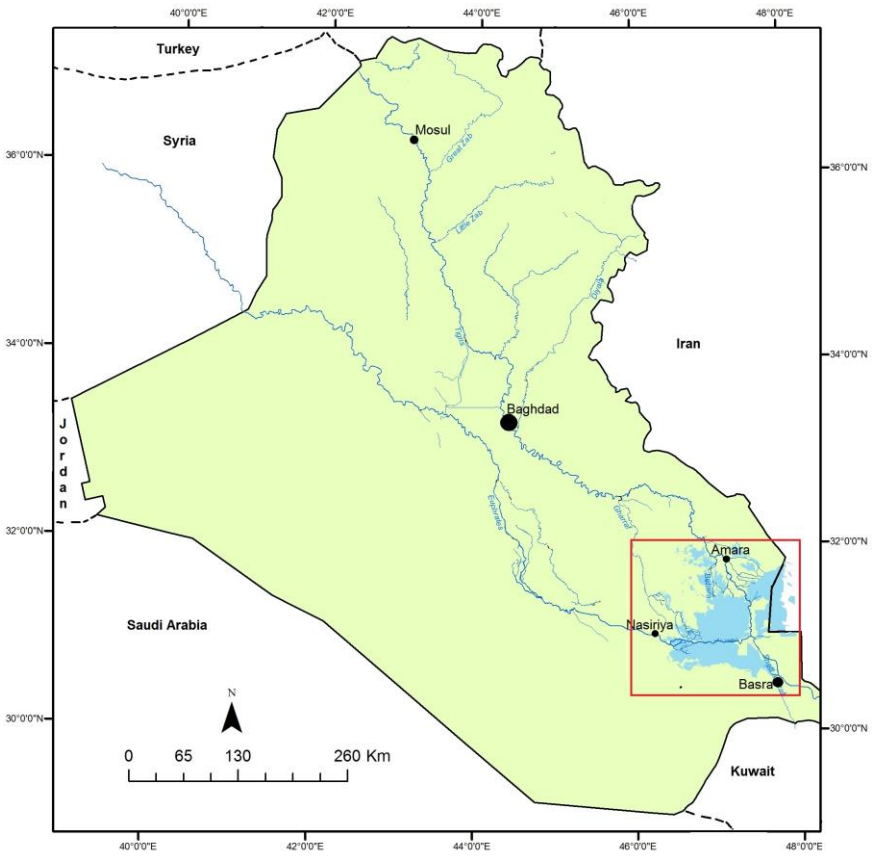
Moreover, cuneiform tablets from earlier Mesopotamian periods, and textual documents in Aramaic and Arabic from classical and Islamic eras have economic and cultural data which show parallels with Iraq's marshes in the early to late-mid twentieth century CE (Kramer 1944, Drower 1949, Kantor 1966, Ali 1973, Pollock 1999, Collon 2005, Algaze 2008, Touili and al-Hamdani 2011, Winter 2010). For instance, the marshes and construction of reed-houses were mentioned in a Sumerian poem entitled "Gilgamesh, Enkidu, and the Nether World". The poem is the introduction to a composition and furnishes the most significant material for the Sumerian concepts of the creation of the universe. It reads:

> Nanna, the god of moon:
> He gave him, Enlil gave him,
> To Ur he went.
> In the river he gave him overflow,
> In the field he gave him much grain,
> In the Marshes he gave him grass for feed animals, and reeds for building houses.
> In the palace he gave him long life (Kramer 1944:19).

These parallels suggest that despite the fact that it is not an exact direct historical relation, there is a strong continuity in human behaviors and adaptations to these marsh environments, demonstrated through these various ancient illustrations and textual references. Thus, it is possible to see that modern human behaviors and motivations for the behaviors and implications of these behaviors in social structure also may follow some of these parallels. Therefore, taking these parallels into consideration, it seems that the contemporary marshes of southern Iraq are the best source from which to obtain ethnoarchaeological data to better understand the socioeconomic circumstances that permitted people in ancient Mesopotamian marshes to develop a type of governmental structure on their own. Although this study is not a direct historical analogy, attempts will be made to use a general comparative approach in order to draw relational analogy.

### 2.5. The physical geography and environments of the contemporary marshes

The marshes of southern Iraq are a vast network of wetlands created by the Tigris and Euphrates Rivers (al-Naqib 1967). Covering nearly 20,000 square miles (Sluglett 2001:121), they are considered as one of the largest in the world and the most extensive wetland ecosystem in West Asia. They are located between and alongside the lower courses and basins of the Tigris and Euphrates (30° to 33° N, 45° to 48° E) (Map 1); they lie at an elevation near sea level to approximately 30 m above sea level (Bedaira et al. 2006: 103). In the flood season when the water level in the Tigris and Euphrates is high, about 4,000 square miles are inundated and become connected into one body of water bordered by shallower parts of the marshes. When the water subsides, these shallow marshes become dry land, and the original water body becomes a marsh, with large permanent lakes. The size of the permanent marshes is no more than three-quarters of the marshes at times of flood (Salim 1962:7).




Map.1 The location of the marshes of southern Iraq

These marshes eventually drain south-eastwards into the Arab-Persian Gulf. The two rivers pass through the marshes and emerge from the marshes to form the Shatt Al-Arab. The rivers and their unified course are what bring the marshes' water into the Gulf.

Water level in the marshes reaches its maximum in early spring (March through May) at four meters above the bottom of the marshes and then falls by as much as two meters or little less during the hot dry summer (August and September) (Willcocks 1910:10). By August, some temporary marshes are covered with a growth of sedges and grass and ready to welcome the herds of sheep that take advantage of the pasturage afforded. The waters reach their lowest point in September and October. At this time of the year, the marshes are turned into part marsh, part lake, and part dry land (Sluglett 2001:121). In November the water level rises slightly, and, with the rainy season in late December or early January, sudden transient floods may occur (Ochsenschlager 1998a:106). The average depth of water in the main marshes during the flood season was about 1.0-1.5 m (3.2-4.9 ft.) and the maximum about 2.0-3.5 m (6.5-11.4 ft.), although a depth of approximately 6 m (20 ft.) has been recorded in *Hawr al-Ḥuwaiza* (Salim: 1962). People use various ways of observing the depth of the water, one of which is to look to the traces that water leaves on the reeds as it increases and decreases. The other is to use a long wooden stick to move boats as well as to measure the depth. The measurement unit is an adult's arm, which is almost a half meter. The intensive network of water passages and linkages within the marshes serve as pathways and routes for transportation and communication.

Except in the deep clear water, the marshes are thickly covered with clumps of reeds, papyrus, bushes, water weeds, and floating aquatic plants, which can grow vigorously in the freshwater. Many animals inhabit this rich environment, including cattle, water-buffalo, wild boar (*Sus scrofa jerus*), foxes, dogs, wild cats, weasel, otters, dogfish sharks, snakes, turtles, and porcupines. Marshes are also the permanent habitat for millions of birds and a flyway for

millions more migrating between Siberia and Africa (Salim 1962, Maltby 1994, Porter et al. 1996, Nicholson and Clark 2003, Richardson et al. 2005:1307). They are crucial as incubators for fish and invertebrates (Bedaira et al. 2006: 100). Iraq's marshes, therefore, play a vital role in the maintenance of biodiversity in Iraq and the Middle East, primarily because of their large size, the richness and diversity of their aquatic vegetation and birds and their isolation from other comparable systems (Bedaira et al. 2006: 99).

### 2.5.1. Climate

The characteristic feature of the climate in the marshes is a long dry summer, with an air temperature often exceeding 115°F during July and August and probably much higher on the ground during September. As in all semi-arid regions, the range in temperature is wide. Although 115°F is normal in the marshes during the summer, the highest recorded temperature was 129°F during July 1946 (Field 1949). On the other hand, frost is often experienced in the cold season, the minimum recorded temperature being 40 °F in January, which can seem bitterly cold. Cold winds sweeping down from the Iranian plateau make the atmosphere of the marshes cold (Field 1949:243).

During August and September, the date-ripening season, the wind comes from the south, bringing with it a moist atmosphere. The normal speed of the wind rarely exceeds three miles per hour, although sudden gales are not unknown. The rainy season begins in November, reaching its maximum in December and January. The average amount of rain in the marshes is 1.08 cm, and is restricted to autumn, winter and early spring. Except in years when the rain starts late, or is below the average, little falls after the middle of April. Hail is rarely encountered in these parts. Snow has never been recorded, but some small canals, streams, and wetlands in the marshes can freeze in early morning and melt at mid-morning. The maximum relative humidity is in the range of 46-48% in summer and 70-80% in winter.

Evaporation is very high from free water surfaces and irrigated land, often exceeding 16 times the rainfall (Al-Mousawi 1984:112).

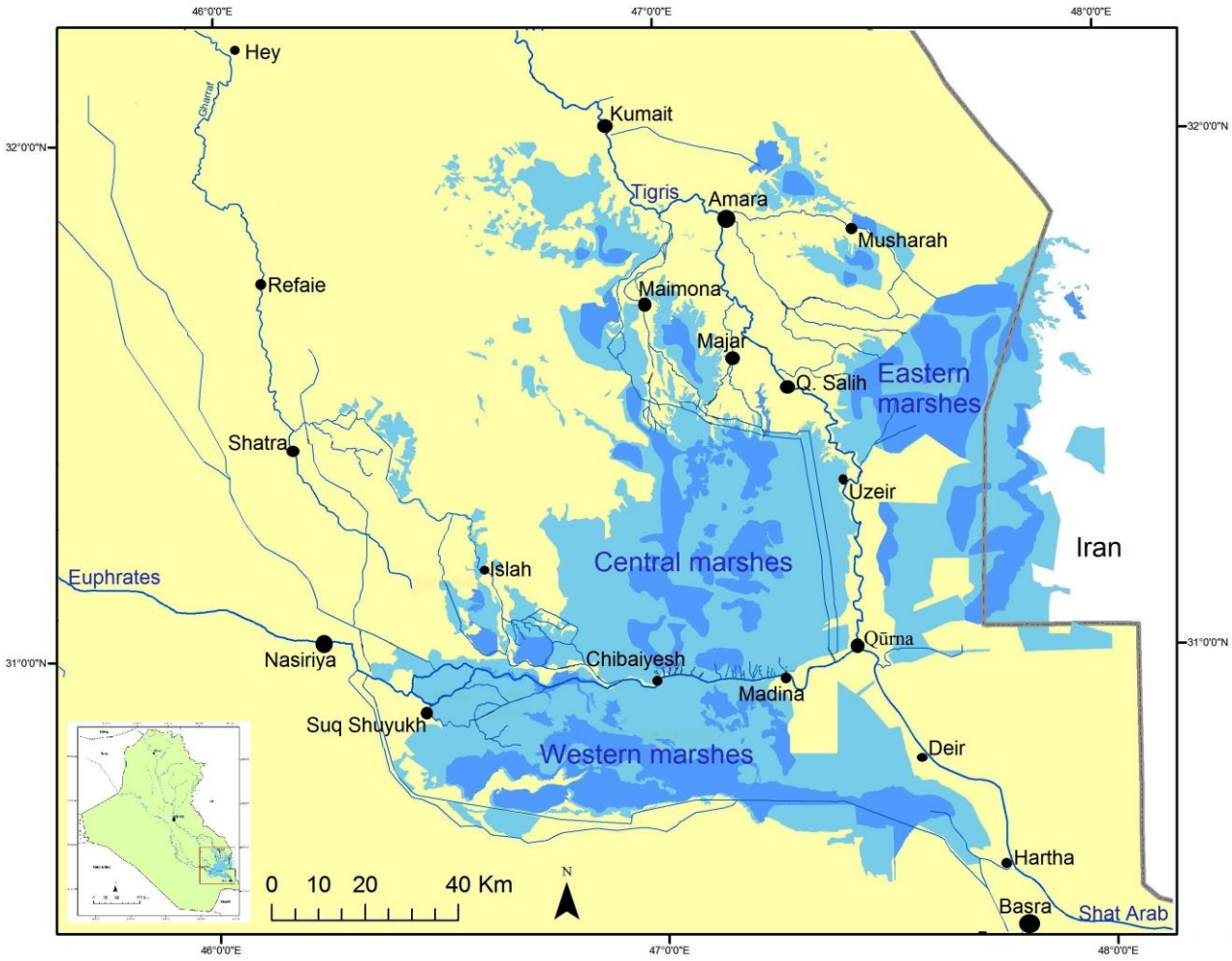
### 2.5.2. Major marsh areas in southern Iraq

Southern Iraq has three great marshy areas: the eastern marshes, the central marshes, and the western marshes (Thesiger 1954: 272) (Map 2, Appendix 1). The eastern marshes lie east of the Tigris; most of them are located in Iraq and take water from the overflow and dispersal of the Tigris and its distributaries of *al-Musharraḥ* and *al-Kaḥla* (Alwash et al. 2010:17). A portion of the eastern marshes is located in Iran known as *Hawr Al-Uḍaim* and is fed by the Karkheh River (Richardson et al. 2005:1307). These marshes are divided into deep permanent and shallow seasonal types, and are separated by networks of canals and rivers, and sometimes strips of dry land.

The central marshes lie between the Tigris in the east and the Euphrates in the south, between the town of al-Qūrna in the south, the city of Amara in the north, and the towns of Shaṭra and Islaḥ at the lower reaches of Shaṭṭ al-Gharraf in the west. They get water from the Tigris and its distributaries, the Shaṭṭ al-Maimunah, Shaṭṭ al-Betaira and Majar-al-Kabeer south of Amara, as well as from Shaṭṭ al-Gharraf and its distributaries south of al-Shaṭra. Like the eastern marshes, the central marshes are separated from each other by canals and agricultural fields that are located along the Tigris and the Shaṭṭ al-Gharraf and their distributers.

The western marshes are located south of the Euphrates around Hawr al-Ḥammar, and take water primarily from the Euphrates below the city of Nasiriya where numerous canals disperse water gradually into Hawr al-Ḥammar and thence into the Shatt al-Arab by the channel of Qarmat Ali a few miles above Basra. They take water from the central marshes during the spring flood (Thesiger 1954: 272). The western marshes are bordered by Nasiriya

on the west, the Shatt al-Arab on the east and the southern desert on the south. Unlike the eastern and central marshes, these marshes are connected to each other, and become almost one water body during the flood season (Thesiger 1954: 3, Salim 1962:7). Some patches of land in or beyond the southern edge of Hawr al-Hammar have a rich growth of grass, which are used as sheep pastures (Salim 1962:84).



Map 2. Distribution and locations of seasonal (light blue) and permanent (dark blue) marshes in southern Iraq

### 2.5.3. Environmental Habitats within the marshes

Geographically, there are two environmental habitats in the marshes: the shallow seasonal marshes, and the deep permanent marshes (Map 2). The permanent marshes undergo large cyclic expansion during the flood seasons leading to the formation of seasonal marshes and swamped floodplains at their periphery.

2.5.3.1. The seasonal marshes

Seasonal marshes are located mostly between the edges of the dry lands and the deep permanent marshes, and sometimes they extend among permanent marshes. They are formed during the rising of waters in the Tigris and Euphrates in April and May. A considerable portion of the seasonal marshes dry up when the flood recedes and is exploited for summer and sometimes for early winter cultivation. The summer cultivation today includes rice, maize, millet and vegetables, whereas winter cultivation includes vegetables, wheat and barley. River banks, levees and shores, as well as natural and artificial islands within the marshes, are utilized for the cultivation of cereals and vegetables.

Seasonal marshes have different names and different conditions: *Ghamera* (inundated area) when inundated, *Ṭar* when exposed above the water level and muddy, and *Ḥimada* when dry. Plants in these seasonal marshes include reed, papyrus, seasonal aquatic weeds, bottom-dwelling plants, and mud-bank plants (appendix 2). Moreover, orchards of fruit trees, specifically date palms, are intensively grown on visible mounds and islands close to dwellings.

Dwellings are mostly built of mud-blocks upon levees and stable islands (*Khiooṭ* singular *Khaiṭ*); the mud-house is called *bayt ṭeen* and *kūber*. Reed huts are also used as residential houses (*bayt gusab*, *sarifa, and shagas*) and guest houses (*Mudhif* and *rab'a)*. The peoples of the marshes are organized into families (*bayt*), lineages (*fakhith, baṭn*), clans (*il-ḥamūla, ṭaifa*), and tribes (*a'shira-qabila*) (Salim 1962:34-49, Baali 1966:46, Sluglett 2001:116). Since the early twentieth century, tribes have had leaders (*shaykhs*), who are responsible in a juridical and fiscal sense for their tribesmen, as well as for political and socio-economic issues (Longrigg 1953:23, Sluglett 2001:116). The first generation of those leaders was chosen by the community, but this leadership has been inherited by the following generations.

The inhabitants of the marshes are all nominally Shi'i Muslims, with a few Sunni Muslim and Mandaean (*Subba*) families (Field 1949: 257, Salim 1962:69, Sluglett 2001:121). People who have settled or live in stable and permanent dwellings of mud are called *Ḥaḍer*, which means settled and sedentary farmers (*fellahīn*) (Field 1949:252, Smeaton1949:331, Sluglett 2001:115, Farouk-Sluglett and Sluglett 2008:4), who do not live in tents and do not breed sheep or water buffalo. The term also means the civilized people.

After harvesting crops, marsh dwellers often rent their lands as pastures to sheep owners who usually live in the nearby deserts. Since these sheep owners or shepherds are a mobile population and reside in tents, they are mistakenly called Bedouin by foreign travelers; their local name is Arabs, but, as used here, this term does not refer specifically to the Arabs, the known ethnic group. Those who live in farming societies and reside in stabilized houses that are mostly made of mud are called *ḥaḍer,* which means civilized, for *ḥaḍer* in Arabic is derived from the verb *ḥḍr* and the noun *ḥaḍara*, civilization; whereas Arabs refers to the mobile sheep herders who reside in tents at the edges of cultivated areas. Bedouins are camel herders who also live in tents but deep in the deserts. *Ḥaḍer*, specifically grain- not vegetable-cultivators, come first in terms of social hierarchy, then Arabs, and Bedouin at the bottom. Cattle are the main animals in this habitat since they do not need large areas and can be tied and fed or can be sent to feed on the nearby reed clumps and bushes. Water buffalo, goat, and sheep are also present but on a small scale. The inhabitants of the seasonal marshes are involved in various economic activities such as cultivation and animal husbandry, fishing, bird hunting, local trade and exchange, and reed gathering.

2.5.3.2. The permanent marshes

Permanent marshes are distributed among the three marshy areas: the eastern marshes, the central marshes, and the western marshes. Thick forests of reeds are interspersed with lakes,

lagoons, and open-water areas called *bergat* (singular *berga*), as well as stretches of open water *gewahin* (singular *gahin*). Most of the permanent marshes are surrounded and separated by seasonal marshes. Reeds in these areas are strong and tall and are used in the construction of houses and sometimes boats.

Dwellers in the permanent marshes live in reed huts (*bayt gusab*) constructed mainly on floating artificial platforms (*Chabaish* singular *Chibasha*) that are formed by the accumulation of layers of reeds and mud. Local people who are heavily involved in breeding water-buffalo, as well as fishing, gathering reeds, and hunting birds are called *M'adaan*. The term *M'adaan* applies to all keepers of water-buffalo (Levy 1924:130), and those who depend mainly on fishing are called *Berbera*. Cultivation is very limited in the permanent marshes because of the limitation of land. Rather, the population relies mostly on cattle breeding and reed gathering. The plants are also limited to reeds, papyrus, aquatic floating plants and weeds, and bottom-dwelling plants. Animals are mainly water-buffalo, but cows do exist in small numbers; wild boars live in reed clumps away from the dwellings.

The main economic activities of the dwellers of the permanent marshes, the *M'adaan*, are breeding water-buffalo, fishing, and making reed mats, but some of them tend to evacuate their villages during the height of the floods and to settle on islands in the flooded areas outside the permanent marshes. The *M'adaan* can be divided into nomads and villagers. The nomads consist of certain sections of the tribes. All of them regulate their lives according to the needs of their buffaloes but there are many marked and surprising variations in their seasonal movements (Thesiger 1954: 274). The majority of the *M'adaan* however is settled in villages. These settled villagers differ from the nomads in possessing few buffaloes, but these few animals are the most important thing in their lives. They spend much time cutting shoots of reed and papyrus as fodder for their animals (Thesiger 1954: 275).

Besides ecological classification as seasonal and permanent, the marsh habitats can be also classified depending on the economic activities that take place in them. Therefore, they are classified broadly into the agriculture region, the reed region, and the buffalo region (Al-Taee 1961: 267, Sousa 1983:410) (Fig. 2). These regions encompass three occupational categories: sedentary cultivators, the reed-gatherers, and buffalo-breeders, respectively, and are distributed in all geographical/ecological ranges of the marshes. However, it is also possible to find the three divisions in one of three regions (Salim 1962:9). Some of the larger tribes have members in all three categories. For example, the tribe of '*A'bada* in Hawr al-Hammar have cultivators (*'abada al-ḥaḍer*), the reed-gatherers (*'abada al-'arab*), and buffalo-breeders (*'abada al-m'adaan*), but the cultivators are the most socially prestigious (personal observation). It is notable that cultivators and farmers live in the agriculture region where they practice cultivating grain, vegetables, and date palms. The reed region follows the agriculture region; its dwellers, the reed-gatherers, practice cutting and collecting reeds and making reed mats to be sold for the cultivators as materials for construction. Buffalo-breeders live in the buffalo region and are involved mainly in breeding water-buffalos, which produce a high quantity of dairy products. The dwellers of these three occupational groups exchange products with each other.

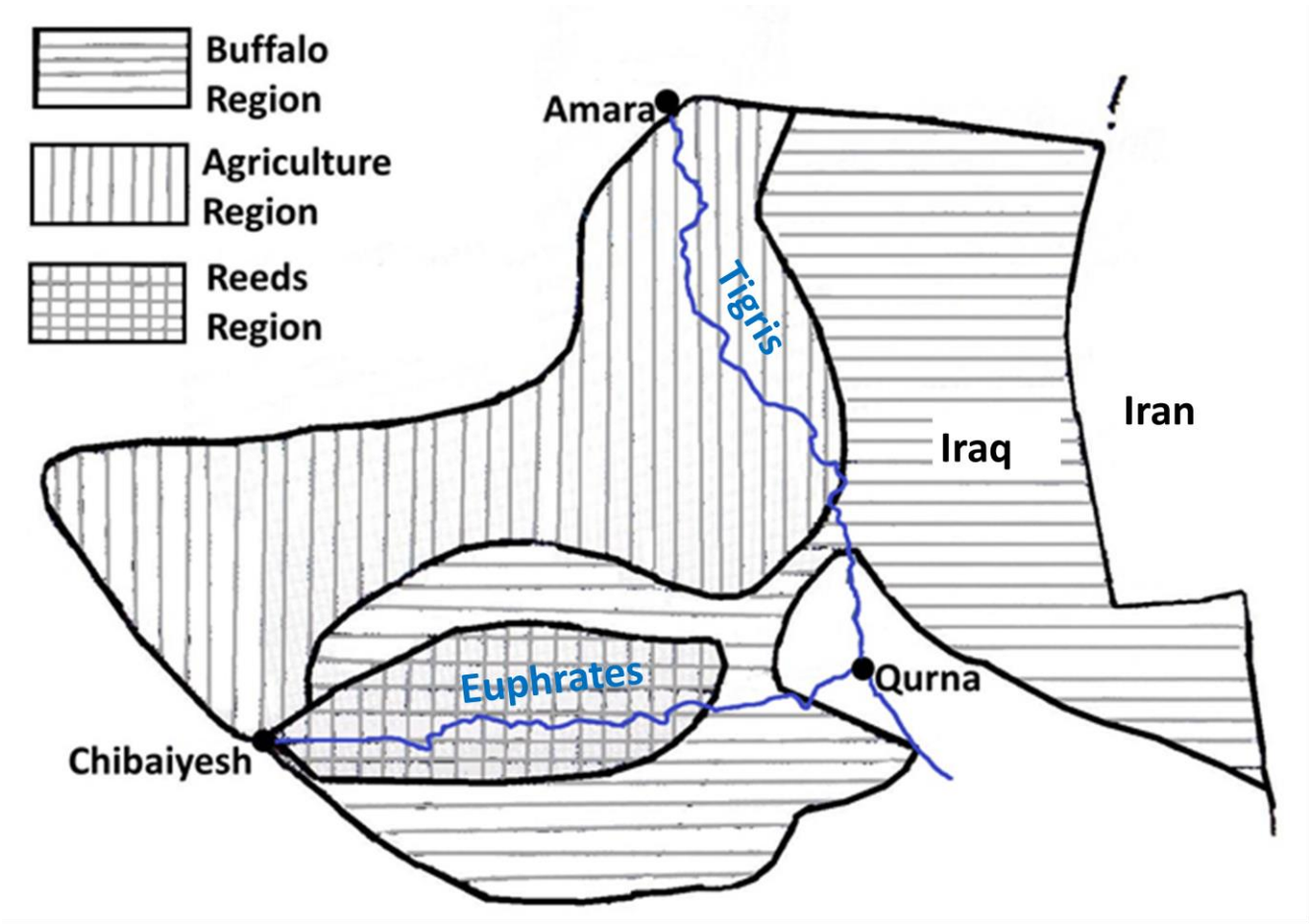



Fig. 2: A map showing the three regions in the marshes of southern Iraq.

In the first half of the twentieth century, the marshes provided a natural place of refuge for those who fled from conscription, or from the tax-collector, as well as being the home of a number of highly independent-minded tribes, who remained largely independent from the central state in Baghdad. For long periods, some of these tribes were out of state control; examples of these were the *al-bu-Saliḥ* tribe under the leadership of *Shaykh Badr al-Rumaieḍ*, *Bani Assad* under *Shaykh Ḥassan al-Khayūn*, *Bani Lam* under *Ghaḍban ibn Bunaiya*, and *al-bu-Mohammed* under *Shaykh Khazal ibn Faliḥ* (Field 1949: 235.250, Salim 1962:30)

## 2.6. Economic resources in the marshes

The aim of providing the detailed ethnographic data in the following sections of the chapter is to demonstrate that the marshes of southern Iraq are able to provide the substantial resources necessary to allow people to establish their own governmental structure without depending completely on external factors and resources. As we can see in the following data, as a water-based rural economy, the economic activities in the marshes depend on the abundance of animal and plant resources, as well as on controlling the internal trade routes between the Gulf and the rest of Iraq. The traditional occupations in the marshes are cultivation and husbandry, fishing, hunting, trade, labor services, and the manufacturing of handicraft articles of reed. Marshes can provide not only abundant food resources, but also a surplus of food products that can be traded with other nearby regions. Marshes also provide revenues by controlling water-routes of internal trade between Iraq, Iran, and the Gulf. The traditional economy of the marshes in the second half of twentieth century not only was the basis for subsistence of more than one million residents of the marshes, but was increasingly integrated into the national economy of the southern provinces and Iraq as a whole (Tkachenko 2002:41). Records show that in selected years between 1982 and 1990, crops and animal products in the marshes and their related vicinities reached a maximum (Tkachenko 2002:45-46). In 1990, for instance, 1.8 million tons of barley, 1.1 million tons of wheat, 244,000 tons of rice, and 121,000 tons of maize were produced in the marshes. The harvest of vegetables, which are an important part of the population's diet, was 3 million tons during1982-1983. In addition, animal husbandry, an important sphere of agriculture, led to a high production level of meat, milk, and eggs in 1990. The harvest of dates, an export crop and an important part of the nourishment of many marsh dwellers, combined with rice and fish, was 650,000 tons in 1987.

### 2.6.1. Bovine husbandry

#### 2.6.1.1. Cattle

Cattle are valued for food and manure. When mixed with straw their manure provides an important fuel, the dung cakes. Their milk is sold fresh and as sour milk, butter, and curds. It is never sold as cream or cheese as is water buffalo milk. Cattle are also valuable as a reservoir of wealth, for they can be sold as needed. Cattle are usually kept in stockades during the winter. These range from little more than the owner's courtyard to a fairly large area of land enclosed in a high fence of reeds. If the latter, they must be rebuilt each year to make sure they are strong enough to hold the cattle. In the villages of Hawr al-Ḥammar, this was usually a reed lean-to structure built against a section of the courtyard wall, a portion of which was always included in even the largest cattle pen.

Marsh dwellers provide feed for cattle in the winter; stalks of grain raised in the marshes are collected and preserved for winter forage. It is usually possible for a herdsman to barter for the forage left in a neighbor's field after the crops have been harvested which gives the herdsman a larger supply of forage than that obtainable from his own fields. Often part of the agreement calls for the cattle to pasture for a certain length of time after the crop stems have been cut and carried off. This leads to a natural manuring of the field which is extremely beneficial for the farmer's next crop and an additional supply of manure for making dung patties. The arrangement may also call for a daily portion of specified milk products to be paid to the owner of the field.

As soon as possible in the spring the herdsmen collect new reed shoots and rushes from within the marsh to help supplement their cattle's diet. When the marsh waters begin to recede in late summer, ample pasture emerges along its borders and cattle will sometimes wade a short distance into the marsh for a particularly choice mouthful of shoots and young reeds.

Cattle are butchered for meat, but more rarely than one might suspect for beef is not a common staple in the people's diet. They are butchered by people for major celebrations, for a sacrifice pledged in the fulfillment of a prayer wish, or because an animal is sick or dying. In the last situation the meat is usually eaten at home and distributed free to clan members and friends rather than being sold. Most animals destined for the table are sold to butchers in the market towns.

#### 2.6.1.2. Water-buffalo

The water buffalo of Iraq are river type buffalo (*bubalus bubalis*). Some scholars think they are most closely related to the water buffalo of India, but a white patch, which is rather common on the foreheads, indicates some influence of the Nile breed. This latter influence, of course, could be quite recent. A well-cared for animal can live for about 18 to 20 years, and several have lived to be 25 years or older.

Marsh dwellers keep water buffalo primarily for milk, dung, and hides. Of the three, dung is the most important. Dung is mixed with straw or crushed reed, patted into thin disks, and then allowed to dry in the sun. These disks are used for fuel when one desires to maintain a fairly even temperature over a period of time: for cooking, baking food or pottery, and providing heat in cold, rainy weather. During summer dung patty fires provide an acrid smoke that keeps mosquitos and fierce biting flies at bay for both owners and their animals. The dung is also used for repairing leaks in a reed structure and for both waterproofing and sealing storage containers in the courtyard. Applied fresh, it dries to a cement-like hardness in the sun. It is applied to the forehead for headaches and used as a healing agent for burns. For cuts and wounds it is used to stop the flow of blood as well as for healing. Water buffalo milk is served at room temperature, either fresh or sour, as well as heated or sweetened with sugar.

Water buffalo exist almost entirely on grasses, sedges, and young reeds from within or on the edge of the marsh. For most of the year they forage for themselves during the day while their owners collect fodder to feed them when they return from the marshes. Most of the forage collected comes from either within or on the edges of the marshes, but some comes from the nearby fields of farmers. These farmers make arrangements with the buffalo breeders (the *M'adaan*) to rent out their harvested fields for fodder and pasture. The *M'adaan*, like the cowherds, cut down the stalks of the harvested grain for storage and pasture their animals in the field for a certain number of days; part of the rental price is likely to be a share of dairy products. During the rainy season the marshes are sometimes too deep for the water buffalo to reach the grasses, and their owners and the owners' families must collect enough to feed them during the day as well. If the water is very high, the forage must be carried to the banks of the marsh or to the owner's house for the water buffalo to eat.

Some scholars believe that water-buffalo was introduced to Mesopotamia from India as far back as the Akkadian dynasty (2340-2120 BCE) or even the Early Dynastic Period III-b (2500-2340 BCE) (Zeuner 1963, Kantor 1966, Cockrill 1977, Sousa 1983, Potts 1997, Alsaedy 2007). Others argue that water buffalo was one of the essential elements in the economy of Characene/Maysān, which was established in the marshes of southern Iraq (ca. 140 BC-220 EC) (Nodelman 1960, Hansman 1970, al-Salihi 1986, Potts 1988). However, Muslim historians and geographers indicate that water-buffalo was largely spread in the marshes during the Abbasid period (750-1258 CE) (al-Maqdisi1887 [died in 991CE], Ibn Khurdādhbih 1889 [died in 912 CE], al-Ya'qubi 1890 [died in 898 CE], Ibn Rustah 1892 [died in 898 CE], al-Balādhurī 1901 [died in 892 CE], Al-Mustawfī 1915 [died in 1239 CE], al-Masoūdī 1973 [died in 956 CE]).

### 2.6.2. Sheep and goat

People of the marshes do not keep goats because they do not do well in such a wet, humid, hot environment, and are subject to many diseases, especially in the summer. Beside local sheep, large flocks of sheep and goats owned by Bedouin tribes regularly arrive at the edges of the marshes at the end of September and during the month of December they move out to the nearby semi-deserts that turn into meadows. The Bedouin's sheep appear to have a significantly higher rate of fertility than the local strain. However, the people of the marshes never purchased breeding stock from the Bedouin because the Bedouin sheep would not do well on the diet of the local sheep, for they prefer grasses of desserts and not wetlands.

For most of the year sheep secure their sustenance from the grasses and sedges available at pasture, but during the winter there is a period of up to four months when little or no pasturage remains and they must be fed grain. This period can be shortened to two or three months for those who have land on the edge of the marsh or those who own a piece of irrigated land. The receding of the marsh during the late summer and early fall causes new grazing land to appear up to the time of the first winter rains. Some of this grass is cut and stored for winter feeding, as are some of the more tender late-growing reeds and rushes. This is usually stacked on the roof of the house if the structure is made of mud. If the house is made of reeds the grass is stacked against its side. Growth of grasses can be forced on irrigated land in late summer sufficient to carry small flocks of sheep into the early winter. An individual sheep without sufficient pasturage is fed two handfuls of barley twice a day. If the barley is in short supply, dried reeds from the marshes can be rubbed between one's hands to break into small pieces or chopped with a knife, and a certain proportion of this added to the grain. It is not as nourishing as the grain but in temporary circumstances can help satisfy the sheep.

During the day sheep are guided and guarded at pasture. Extended families usually pasture their sheep together, and the shepherding duties are rotated. The shepherd's duty is to guard the sheep against predators and guide them to the more succulent patches of growth available without trespassing on pasturage claimed by one's neighbor. A sheikh or religious figure usually mediates conflicting pasturage claims among residents of the same village and seeks a solution rooted through consensus. Shepherds are usually assisted in their duties by one or more dogs. In spite of the dogs' lowly position in the marshes, some become quite adept at the simple guiding of sheep. Dogs are also useful as they fiercely guard their own sheep from would-be predators and give loud warning at the approach of strangers. Common predators include other dogs and foxes which prey especially on the lambs. Most herds of sheep belonging to an individual owner are rather small, consisting of 3 to 4 ewes and a ram. On the other hand, families may have their own individual herds, which are given to a herdsman, who gathers them all together to graze in the countryside at the edges of the marshes.

Sheepskins can be sold to commercial leather makers or processed at home for use as containers for liquids, churns, covers for drums, straps, and belts. Sheep manure in the form of sun-dried pellets plays an important role as fuel in the ordinary household. The householder usually has three fuel choices: reeds, sun-dried dung cakes, and sun-dried pellets. Sun dried pellets collected from the pasture are especially used for making coffee and tea. The intestines of dead sheep, taken fresh from the carcass, are much sought after for the permanent binding of one object to another such as the heads of spears or other tools to their shafts, or pieces of wood or reed to each other in the making of tripods, and baby cradles. As the sinews dry they contract and grow rigid, giving a much stronger and longer-lasting bond than does bitumen for example, which is also used for similar purposes.

Blood from a freshly slaughtered animal is considered to have important power in warding off evil. It is absolutely necessary that new rooms be marked with this blood either administered from the severed head or, preferably, by hand in such a way as to leave a bloody hand print on the wall and door posts. Such treatment is said to prevent evil dreams (nightmares) among the inhabitants. It is also sometimes applied by finger to the ailing part of an animal or human being in order to aid recovery.

### 2.6.3. Pigs

In the ancient history of Mesopotamia, people were dependent for their meat on four domestic ungulates: sheep, goats, cattle, and pigs, and the latter played a major role in the economy of Mesopotamian cities, specifically in the south where pigs were abundant within and near marshes and the countryside (Grigson 1982). Pigs in ancient Mesopotamia were kept in the marshes (Fig. 3 a, b) and before they were killed for meat they would be driven to the settlements to be kept in orchards for a while to dig around trees exposing roots to breathe (Fig. 3 c, d). Pigs were actively herded in Mesopotamia as far back as the Late Uruk period (ca. 3500-3100 BCE) (Postgate 1994:16). Domesticated pigs were usually slaughtered when young, while wild boar (Sus scrofa) were hunted in the marshes (Potts 1997:41), as numerous depictions in the glyptic of various periods attest (Amiet 1961:Pls. 39.604, 607; 40.609) (fig 1 e). Faunal remains of domesticated pigs and wild boars were found in most of the excavated sites in southern Iraq (Parrot 1948, Wright 1969, Woolley and Mallowan 1976, Clutton-Brock and Burleigh 1978, Safar et al. 1981, Hrouda 1981, Mudar 1982, Boessneck et al. 1984, Huot 1985, Martin 1988, Postgate1994, Matthews and Postgate 1994, Stone and Zimansky 2004)


Fig. 3 a, and b: Pigs in a private wildlife refuge in a marsh near the town of al-Shatra, Iraq (www.nasiriyah.net), c and d: two terracotta plaques from the Old Babylonian period (1830-1595 BCE), each shows a pig tied to a tree in an orchard (Kadhim unpublished report, personal communication), and e: a cylinder seal shows a person in a boat hunting a wild boar (*Sus scrofa*) in a marsh (after Amiet 1961: Pl. 40.609- no provenience).

However, despite the advantages of pigs, after the Islamic conquest to Iraq in 633 CE, the consumption of pigs became taboo in Iraq and the Middle East (Field 1949, Salim 1963, Thesiger 1964, Diener and Robkin 1978, Morony 1984, Ochsenschlager 2004). Pigs are perhaps one of the most iconic but also paradoxical domestic animals. On the one hand, they are praised for their fecundity, their intelligence, and their ability to eat almost anything, but on the other hand, they are unfairly derided for their apparent slovenliness, unclean ways, and gluttonous behavior. In complete contrast, their ancestor (the wild boar) is perceived as a

noble beast of the forest whose courage and ferocity were famed and feared throughout human history.

Pigs provide fat-rich protein, though little else. They breed very fast, which means that most can be slaughtered at a very young age without endangering herd security, so they have a potential role in risk management, since even in lean years they can be relied upon to replenish their numbers in a shorter time than sheep, goats, and especially cattle. They are thus an easily renewable resource. One of their most important attributes is that, as urban scavengers, they are able to feed on rotting food waste that would otherwise pose a distinct bacteriological threat to humans. This conversion of food waste into edible animal protein can be an important source of human nutrition (Miller 1990:130, Grigson 2007:83). One major advantage of pigs is that, provided there is enough food available in the form of vegetable and animal waste, they do not need to be driven to pasture. They can forage around settlements. Pigs cannot be driven far and therefore are not part of nomadic systems of animal husbandry. Indeed, their presence argues against nomadism (Grigson 1982:297).

The relationship of wild boar and pig with humans has been a long and varied one. Archaeological evidence clearly shows that pigs were an important source in the Mesopotamian economy. In Mesopotamia, large-scale pig-keeping would have been severely constrained by both ecological and maintenance factors (Mount 1968:65). The animals' high water requirements, poorly suited to semi-arid regions where shade is limited, and an inability to utilize cellulose-rich pasture plants, meant that pigs would have been best kept close to or within settlements. Domestic pigs die quickly when exposed to temperatures in excess of 36C unless they can compensate for their inability to sweat by wallowing in water or mud (Mount 1968:47). Even when water and mud are available in hot climates pigs will seek the shade of trees, bushes, or tall reeds during the heat of the day emerging only in the early morning and evening to forage for food (Diener and Robkin 1978:499).

### 2.6.4. Grains: rice, wheat, barley, and other grains

The water in the marshes is highly calcareous and probably typically mesotrophic. The soil gradually dries out when the water recedes and reaches minimum levels in October. The soil in the rice-fields, for instance, consists of very fine loamy sand, silt and clay deposited by the rivers. After the harvest of rice plants in November, the land is sometimes ploughed (Buringh 1960). The same land may also be planted with other crops during the winter such as wheat, barley and oats.

The soil in the marshes is mainly loam of great potential fertility. It is porous and friable, and fairly free of sterilizing salts. The presence of a large amount of lime in the soil makes it easy to work, and there is a considerable quantity of fine sand which is an advantage for drainage and washing (Salim 1962: 86). The arable lands in the marshes are divided into estates (*nagshāt*) and the allotment of the rich, silt-bringing flood water that irrigates the crops needs careful adjustment. Irrigation in large areas is chiefly by means of flooding for rice and run-off for other grains. In such places the engine-worked pump is unnecessary. The water wheel (*nā'ūr*) and the charid (*karid*), a contrivance for filling water skins and lifting and emptying them by a pulley (Field, 1940, PL 48), are little used in low-lying lands and not at all in the marshes themselves. Water-lifting devices such as the *dalia* and *minzaha* are usually used to irrigate orchards and small cultivated areas. *Dalia* in Iraq is better known in the west by the Egyptian term *shaduf*; it consists of a support structure on which a movable pole is placed (Rost and al-Hamdani 2011:208). The pole has a weight on one end and a rope with a bucket on the other. The bucket is pulled down into the canal, filled with water and lifted by means of the weight on the other end of the pole (Rost and al-Hamdani 2011). The *minzaha* is a popular method of irrigating patches in cultivation near the banks of a river, stream, or canal. Two men are required, and a shallow basket daubed with pitch, called the *'arāwi*, is swung down into the stream by means of ropes and hauled up to the bank, where it is emptied

at the top of the swing into a water channel. The men work with extraordinary rapidity. The water is let in from a shallow gutter (*mishrab*), and fed from a small channel (*'ibra*), which in turn is supplied by a canal (*garma*) (Drower 1949: 372). Some of these methods and tools are probably no longer in use, and the point here is to give a glimpse of the marsh life that might change rapidly as world technology changes.

Today, the most important product of the marshes is rice, the easily flooded land of the marsh country being especially adapted to its cultivation, but rice was only introduced to Iraq at the end of the second millennium BCE. The best rice is the variety called *'anbar*; other varieties are *shitāl*, *herfi*, and *hewāizawi*. Rice (*shilib*) is grown in seed beds; when the young shoots have come up they are transplanted into the mud left by the last year's floods (Al-Mousawi 1984:112). This area is protected by ridges of earth sufficient to keep the water standing at a depth of a few inches above the roots of the young rice. Thus, the *shilib* is transplanted in early spring and is ready for harvest about June or July, according to the quality of the rice and the local conditions (Drower 1949: 372,373). Rice fields are covered by water during the peak of the flood (March-May); standing water typically remains until late August or September (Maulood et. al 1979, Al-Saadi et al.1981)

In the cultivation of rice a triangular harrow (*marāza*) is used. An isosceles triangle is formed of three strong reeds, two slightly overlapping at the apex of the triangle. To the two angles of the base two ropes are fastened. This light harrow is held, apex upward, by one man, while a second man drags it across the rice field by means of the two ropes, thus levelling the mud and dragging out the shallow-rooted weeds (*daghl*), leaving the rice shoots unharmed. Rice may grow as early as May during the floods (*harfi*), or planted in small pots in July (*afli*). It can be planted by sowing seeds or by transplanting new shoots in June (*shital*) (Field 1949:244). The rice is threshed with the help of oxen, the resulting rice straw (*būh*) being used for fodder, for mixing with clay when making pots or mud walls, or for

export into other parts of the country. The rice is stored in a large, round basket-bin (*maṭbuga*), which, when full, is covered over with mud. From time to time the mud cap is broken open, the rice sifted, and new cap added. There are often a number of these rice bins in an enclosure fenced about with reeds or with a mud wall (Drower 1949: 372,373).

Other crops are wheat (the varieties, *guraiṭa* and *shāfṭya*), barley (*sha'īr aswad* and *sha'īr 'Irāqī*), yellow maize (*uḍra safrā*), sorghum (*uḍra baiḍa*), and finger millet (*dukhun and māsh khaḍrāwī*). Millet is grown in mud that cannot be watered after the floods recede and is reaped by hand during September. However, except for wheat, barley, and millet, the rest of the crops did not exist in Iraq during the first Sealand dynasty.

The earliest harvests are those of wheat and barley in May. Plowing the ground for the sowing of winter grain takes place in October. It is performed by oxen drawing a simple plow (*fiddān*), which consists of a straight tree trunk, usually willow, fitted into a curved cross-piece, one end of which is pointed and shod with iron. The yoke (*nīr*) for the oxen is fitted into holes in the straight piece. The furrow made by plowing is called a *sikka*. The spade (*misḥā*), which is used throughout Iraq, is shaped to a rounded point and is fitted to a long wooden handle (Rost and al-Hamdani 2011:211). A wooden cross-piece is inserted just above the iron blade, so that the bare foot can thrust on it when digging.

### 2.6.5. Date Palms and other fruit trees

The date, or date palm (Arecaceae: *Phoenix dactylifera*), is called *nakhla* (plural *nakhl* or *nakheel*) in Iraq and the Middle East (al-Dabbagh 1969, Ibrahim 2008). It belongs to the *PALMEAE* family, to the genus *Phoenix*, and to the species *dactylifera* (Dowson 1921:1, Postgate 1980:100, Chao and Krueger 2007:1077). The date palm is a diploid, perennial, dioecious, and monocotyledonous plant adapted to arid environments. It has unique biological and developmental characteristics that necessitate special propagation, culture, and

management techniques (Nixon 1951: 249). Dates in Iraq, and other countries in the Middle East, are a major food source and income source for local populations, and play significant roles in the economy, society, and environment. In addition to serving directly as a food source, dates are packed and processed in a number of ways, and other parts of the tree are used for various purposes (Chao and Krueger 2007:1077). The date palm grows in Iraq in a variety of soils, in the rocky, limey loam of the Diyala Basin near Baghdad, in the silt of the southern alluvial plain and the marshes, and in the western desert sands. It is more tolerant of salt than any other cultivated crop in Iraq. Water-logged soils and soils which are too dry are unfavorable, though palms will withstand both these adverse conditions for many years (Maxwell 1921: 22, Dowson 1921:2, 1949:407). The date palm is one of the oldest fruit crops grown in the arid regions of the Middle East, and the most probable area of origin of the date palm was in or near Iraq (Baqir 1952a, 1952b Landsberger 1967, Wright 1969).

Date palm trees in Iraq are distributed in the alluvial plain from Baghdad downward to the Gulf, but are concentrated along the lower courses of the Tigris and Euphrates near and around the marshes of southern Iraq (al-Dabbagh 1969, Salim 1962, Ibrahim 2008). For instance, William Loftus described the density of date palms along the Euphrates in the area from the ancient city of Ur southward to the Gulf "*From this point* [Ur] *commence the date groves, which extend in uninterrupted line along the river's course to its entrance into the Persian Gulf"*: (Loftus 1856:149).

In maturing, the date passes through four distinct stages, called *chimri*, *khalal*, *ratab*, and *tamar*. The *chimri* is small, more or less spherical, hard, green, bitter, and unfit for food. The *khalal* is of the same shape as the matured fruit, though the skin is never crinkled. The color of *khalal* is either yellow, red, or yellow ground with many very fine red spots, giving the whole a clouded red appearance. *Khalal* are sweet, juicy, and pleasant to eat, and are esteemed a delicacy amongst dwellers. The *ratab* form of the date is reached when the apex

becomes soft and, as its name denotes, moist. The skin usually becomes translucent, and, as a rule, wrinkled, owing to the shrinking of the flesh. Some varieties are hardly wrinkled, while some are deeply wrinkled. Some varieties are eaten generally as *ratab*, because their flavor in this form is considered better than in that of *tamar*, and because the total crop of all these kinds is so small that it can readily be disposed of locally. *Ratab* dates are too squishy to transport far. All the dates in the *ratab* stage are edible, though some are less pleasant than others, but most are allowed to ripen completely, because it is only in the *tamar* or final stage that dates can be marketed easily. Some varieties can be picked as *ratab* and left on the ground to ripen into *tamar*, but most are left on the palm until they arrive at the latter stage. The *tamar*, or perfect date, is that stage in which the fruit is familiar in Western markets. The whole of the date as a rule is of a dark color; the flesh is generally toffee-like in flavor and consistency; and the skin is usually dry and wrinkled. There are, however, many exceptions. Dates, as a rule, ripen fairly evenly. Those, however, which ripen before the majority, and before September, the main harvesting month, generally fall to the ground, whence they are collected daily by children (Appendix 3).

2.6.5.1. Uses of a date palm and its products

Palms provide shade and shelter for fruit trees planted beneath them. Without some such protection fruits would get “sun burn", and the hot winds and sun of the middle of the summer would scorch and shrivel fruit trees as well (Stringer 1988:565). The usual way in which dates (*tamar*) are eaten is uncooked, often together with unleavened bread. There are, however, a variety of ways in which dates may be eaten. Dates sometimes are cooked, but raw they are more pleasant. Dates can be roasted with fat to make seedless blocks (*sh'aeth*). Unripened dates (*khalal*) are boiled until they become brown, then dried in the shadow to be hard and stored for winter. Specific kinds of hard dates are smashed and mixed with sesame

or date syrup and stored in woven baskets to be used in the winter. Also a jam is made of them. Cattle and sheep are fed on dates occasionally.

From the fruit is obtained date syrup (*dibis*). The fruit is heaped in mud-walled enclosures (*Madabsa*) and the syrup is expressed from the lower dates by the weight of the other dates on top. One or more outlets are provided at the bottom of the enclosure through which the syrup runs into containers placed for it. Generally the floor of the enclosure is grooved in such a manner that the syrup flows towards the exit, and occasionally the floor is also covered with hard pitch so that no loss may occur. After being squashed, and having lost some of their juice, the dates are less appetizing and nutritious. Nevertheless, they are packed in baskets to be used for feeding animals. From the fruit also is distilled a spirit and alcohol called *araq*, as well as vinegar.

Date seeds (*fusama*, pl. *fusam)* occasionally are collected from roads and gardens by young children who sell them to charcoal makers. The resultant charcoal is suitable especially for the use of silversmiths, because they retain heat longer than other charcoal. Date seeds are mainly used to plant new date palm trees. In addition, they are ground to feed cattle and sheep, or strung together as necklaces. Palm trunks (*jidhaa*) are used as timber in the construction of walls, roofs, palm bridges, water regulators, earthen platform, artificial islands, embankments and dams, steps, and stairs. When trunks are split into two hollowed pieces, they are used as water pipes and drains. They are also an important fuel in the date-growing districts. Palm stumps (*boros*) and small pieces of broken trunks (*shilakh*) are preferred to use as fuel because they are not useful for construction.

The growing point (*jummar, yummar, lib*, or *galb*) of the crown of the date palm is sweet, and when the date palm is cut down the succulent growing-point is cut out and eaten. In the marshes they are given as gifts at happy events such as weddings and child birth. The fiber

(*leef*), which surrounds the bases of the flower and leaf stalks, is woven into an inferior rope. It is used also to wrap the hearts of newly planted shoots (*nashw*) to protect them from heat and cold. It is used as fuel, but it is chiefly used to clean containers and dishes, as well as in baths. Date fronds (*sa'af*) are used for fuel, roofing, and fencing. The main use of the frond bases (*karib*) is for fuel. They are of convenient size, split up easily, and burn well. They are used also by fishermen as floats, and by small boys learning to swim in the place of water-wings (Postgate 1980:100). The leaflets are stripped from the fronds and the straight midribs (*jarida*) are used in the construction of a variety of items such as beds, chairs, cradles, bird-cages, food-bins, containers, and baskets. The straight mid ribs of the fronds might be woven together and used for roofing. The baskets in which dates are packed are made entirely of date leaflets (*khoos*). These baskets (*hillna, goasera, hindal,* and *zibeel*) are used to store dates and for carrying dates from the orchards to the packing shed. Small mats (*bel*), which are used to catch the dates thrown from the palms, are woven out of frond leaves. A rough rope is sometimes made out of the fruit stalks or primary axes of the spadices (*ethig*), but such ropes are used only for temporary work. The fruit bunches (*sharmūkh*), from which the dates have been picked, are used as brooms and as fuel, or are made into twine and rope. The secondary axes (*Sharmookha*) of the spadices are laid in small boxes of dates in order to give the latter the appearance of still being on the peduncle. Spines (*shauk* or *sulla*) are used occasionally as pins, as needles for extracting thorns, and as forks for eating dates. From the spathes (*tal'a*) a perfume called "*tal'a* water" (*malaqah*) is distilled and mixed with water to give it a favorite flavor (Dowson 1949: 410).

2.6.5.2. Cultivation of date palms

Although a date palm will live and grow for fifty years with no tillage, it will only give a good crop if the surrounding land is thoroughly cultivated. The best tillage is given in the edges of the marshes alongside the Euphrates and Shatt al-Arab, where, every fourth year, the

land is dug with the long-stick spade (*Misḥa*) to a depth of about two feet. Ploughing between the palms is not always practicable at the marshes because of the numerous deep-water channels, which run through and intersect the orchards. Farmers dig down the date palms to make holes (*bis*), old roots are removed, and organic manure is added, collected from the debris of old dry reed (*dibin*), often at the rate of a basket-full to each palm. In ancient Mesopotamia, domestic pigs did this work of digging, where pigs were brought from the arshes to be kept in orchards near settlements for a while before killing them for meat. Although a palm can live for a long time without being irrigated, in such circumstances it does not bear well, and may not bear at all. For the maximum yield, the roots of the palm must be supplied very plentifully with water, especially during the hotter part of the year. The date palm appears able to flourish not only under widely differing conditions of soil, but also when irrigated by very different waters. Water is provided by tidal inundation, by gravitation flow, or by lift. A balanced water-joist (*dalw*) is used to irrigate small date gardens (Maxwell 1921: 53). It consists of a scoop of leather or beaten-out kerosene tin fastened to a vertical pole. This, in turn, is attached to one end of a swinging beam, which is weighted at the other end and tied, between the center and the weighted end, to a cross pole supported on two adobe or palm-log pillars (Dowson 1949: 408). The date palm is the only crop which is normally pollinated by hand. In April, the male inflorescences (*ṭal'a*) are cut from the male palms (*faḥhl* or *ḍakar*) just before the pollen (*liqaḥ*) is ready to be shed. They are divided into about twenty small sprigs (*i'lb*), one of which is inserted by an orchard's owner into each of the female inflorescences on the female date-palms.

### 2.6.6. Waterfowl

The marshes are alive with the activity of wild birds (appendix 4), particularly in fall and winter: flocks of ducks, geese, waders, ibises, egrets, pelicans, herons, cranes, eagles, owls, kingfishers, swallows, grouse and quail abound (Ochsenschlager 1998a:106). Marsh dwellers

net birds, especially coot, wild ducks, and teal, for family consumption, but they never eat domesticated ducks. During the winter birds are so abundant that netting is easy work. Some families sell live netted birds quite profitably in the market towns, but the majority of bird netters consider selling birds repugnant to their traditions (Ochsenschlager 2004:140).

### 2.6.7. Fish

Marshes provide a variety of freshwater fish, and marine fish will also enter the marshes in large numbers (appendix 5). Fish play a major role in the diet of Iraq since most of the population lives in the countryside and semi-desert environments, thereby making up for a deficiency in some vital nutrients. A variety of marine species have been reported as entering the marshes from the Gulf through the Shatt al-Arab (al-Hassan and Hussein 1985, Coad 1991). Fishery traditionally has been an important sector of the economy for the marsh dwellers, and the yearly catch of fish during 1970s was 17,000 tons (Tkachenko 2002:49). Fishers in the marshes are called *Barbara*. They beat tins and smack poles on water in order to drive the fish into their nets. Fishers generally fish with seine nets, but also use drift nets on rivers and long fixed nets attached to poles. They also catch fish by spears (*fala*) and scoop nets, shaped like a stretcher, and by casting nets on the banks of the river. During spring when fish is abundant, fishers camp for days on small islands. Buyers, known as *saffata*, buy their fish, salt it and transport it to the nearby towns. As the water level in the lower Tigris and Euphrates rivers and the distributors falls during the summer, the water warms up and the fish migrate downstream into the deepest parts of lakes and marshes to reach cooler conditions (Banister 1980:98). Villagers living on the edge of rivers often erect small mats in the water below their houses, to provide a shelter or a small basin for fish to be collected. In spring, before the water rises, fishermen with spears (*fala*) are collected in parties of forty or fifty canoes in lines some four or five yards apart to fish. In summer fishermen spear fish at night by the light of reed torches. But the most effective way to catch

fish is to poison them with Datura seeds, a poisonous plant from Solanaceae family that grows in India (Thesiger 1964:208-209).

### 2.6.8. Reed and papyrus

The marshes of southern Iraq provide an ideal environment for reed (*qasab*), a local term that can best be translated into English as "reed". Taxa in this category include some grasses (*Phragmites communis*), and *Typha* spp.; rushes (Juncaceae); sedges (*Yperaceae* and *Cyperus laevigatus*); and other grasses such as *Typha*, *Juncus*, *Phyla nodifera*, and *Scirpus*. It is difficult to describe or identify the many species of the plants that exist in the marsh environment because of their extraordinary variety and the similarities of their basic structures, although the inhabitants clearly know what kind of growth each plant will produce.

People eat certain reeds and rushes. The tender young shoots of reed are chewed like sugar cane to which their taste bears a distant resemblance. Young shoots have a kind of licorice taste, and a hard yellow cake is made from rush pollen in the springtime. The pith from yet another rush is eaten raw and is also cooked in a sweet pudding.

The importance of reeds in everyday life is indicated by the many names identifying their developmental stages. The reeds begin to grow in January with a soft green growth called *ḥashish*. In about three months the growths are called *ūnger*. It is during these two stages, and until the reeds are about six months old, that the reed beds furnish the best fodder for sheep, cattle and water buffalo. At about ten months of age the reed still retains its green color and softness but is stronger and taller and is called *shahaf*. At this stage it can first be used for making mats although most weavers prefer reeds of about one to one and a half years old-*jiniba*, which is of thicker texture, dry and yellow in color. Once the reeds reach 18 months they are called *rubakh* and are dry and crumbly, suitable only for fuel.

Reeds played a vital role in the ancient Mesopotamian economy, especially for building purposes, for household utensils and containers, for various crafts, and as fuel or fodder. The data provided by texts is the most informative (Postgate 1980: 101, De Mieroop 1992: 147, Oriel 1992:171). Reed was used to build houses, not only in the countryside, but also in the main urban centers. For instance, Neo-Babylonian texts show the frequent occurrence of place names containing the element *ḫuṣṣetu* and the *E-ḫu-uṣ-ṣu* "reed huts or houses", even in the main towns like Babylon and Borsippa, and this an indication of the importance of reed. Furthermore, inventories of household goods list items, like beds, tables and chairs made of reed (Oriel 1992:174).

2.6.8.1. The uses of reed

Reeds are used in many ways, from construction of houses, to form platforms, to make objects and tools, to be used as fuel, and to feed animals. Reeds are used to make the following objects and tools: plaited mats, woven mats, plaited baskets, double-reed pipes, reed boats, reed cradles, reed pens, bird blinds, cords of twisted reeds, lavatories, temper, handles, pestles, poles, spear shafts, spindles, amulets, toys, looms, bandages, scarecrows, reed ashes, and coffins (Drower 1949,Salim 1954,1962, Thesiger 1954,1964, Maxwell G 1957,Young and Wheeler 1977b, Postgate 1980, Horne 1982,Oriel 1992, Ochsenschlager 2004, personal observation).(Appendix 6)

2.6.8.2. Construction of reed structures

The guest house, the *mūḍīf,* literally the place of hospitality, is made totally of reeds. *Mūḍīfs* are found throughout the marshes, but they are less common and smaller in size in the eastern marshes than in the western, where the tribes of the western marshes more likely maintain traditions and customs. The *mūḍīf* is used mainly as a place of hospitality and occasionally a war council chamber, but it is also considered to be a social club where

tribesmen get together every day to hold their courts of justice and ceremonies, and where hospitality to strangers is only occasionally offered (Farouk-Sluglett and Sluglett 2008:4). In terms of labor organization the *mūḍīf* plays an important role since a majority of male adult members assemble there on a daily basis. Thus plans and decisions on labor division and reports concerning projects such as dam construction, digging an irrigation canal, facing the seasonal floods, and the massive harvest can easily be exchanged and news spread among the rest of the community. If the decision is made to construct a new head-dam, the male heads of each family of the village are invited for a dinner at the *mūḍīf*, to be followed by a discussion of the upcoming project.

The guest house is a huge hut built of bundles of stout reeds and reed mats. The bundles, made of reeds tied with ropes of plaited and twisted reeds, are set at regular intervals in two rows, and the heads of each facing pair are bent over and interwoven carefully to form a perfect arch (Fig 4). Thin transverse bundles are bound to the arches, covering the whole structure and ending at a height of about three feet from the ground on each side (al-Dujaili A. 2012**)**. A latticework of reeds is then inserted and tied to cover the opening between the lowest transverse bundle and the ground, to admit air and keep the building cool in summer. Finally, the whole framework is covered by large overlapping reed mats. The two end walls are constructed of strong palm trunks covered with reeds and strengthened by vertical bundles with matting and latticework. At each end wall there is a small door-less entrance in the middle and two other smaller openings at its side. Such guest houses, towering over the smaller dwelling huts of the village, vary from 24 to 98 feet in length and from 10 to 15 feet in width. The number of arches ranges from 7 to 17. Traditionally they should be an odd number.

Clan guest houses are usually bigger than the others and act as political and social centers. Coffee is served in them every morning by the *mūḍīf*'s owner, and it is offered repeatedly

among village's *mūḍīfs*; tea is also offered after coffee, but only if there is an outside visitor. At sunrise, coffee is ready and tribesmen begin to arrive to spend an hour or two before beginning their daily work. The clan head should attend the morning session every day, and if he is prevented by sickness or other reasons from attending, the guest house must be kept open and coffee served, a brother or a son deputizing for him. Anyone, clansmen or non-clansmen, even strangers, can attend and drink coffee.

Large guest houses are usually rebuilt about every 15 years and must be repaired twice in the second half of this period. Smaller ones may stand longer, unless there is a succession of high floods. Clan guest houses are built by all adult males in the clan, and the clan head decides the date on which building should begin. If all adult males cannot attend and contribute to certain stages of the building, such as the day of pitching the arch bundles or the day of binding and tying them at least one member from each family should contribute instead of them. On occasions when fewer men are needed, the clan head asks for labor only from those who live nearest to him, from his particular friends, or from men who have fewer economic responsibilities. The enormous amount of reeds needed for the huge arches and long transverse bundles have to be cut and brought from distant places in the marsh. The extra-large mats are specially woven and offered by each of the families of the clan. All the local raw materials are provided by the clan, and money is not paid to all labor, except that of the artisan who supervises the building.

For instance, constructing of a reed house over 5 arches needs the supervision of a specialist. Candidates for the job of building a reed house all had a fairly sizable *mūḍīf* of their own, and the details of building reed houses had been passed from father to son in their families. The specialized supervisor gets support of approximately 20 men. Women engage in the process of cutting and collecting reed; they strip the reeds of their leaves and carry them or transfer by boat from the marshes to the building site, as well as weave and plait reed mats

and bring them to the building site. It took three days to build a five arched *mūḍīf* from start to finish. Finding the best location for cutting reeds is fundamental since not all species of reeds are useful for construction. Reeds should be dried so that they are tall, tough, and strong.

When a reed house is about to collapse, it would be repaired by digging a hole outside and up against the arch bundles, one side at a time. One bundle at a time is pulled into the new hole, its bottom cut off, and the new bottom of the arch pushed back into the old hole and tamped firmly in place. At times the reed house falls into serious disrepair and its future is called into doubt. Although its survival is important to the village, neither the village nor the sheikh has sufficient money to repair it. Without repair it will surely collapse as more water leaks from the rotting roof and weakens the arches, but older men still use it daily as a social gathering place.

Finally when a reed house ends up to collapsing, people can use its fragments of torn reed mats to make floors or windbreaks, ribs for the roofing of mud-brick houses, or posts. Some of the arch bundles were sold to form the center of new arch bundles, and the rest were used for roofing or fencing material. Even unusable fragments and debris were piled to one side to be used as a sort of quarry for fuel. In the end, nothing remained but the refilled holes from which the arch bundles had been pulled and a layer of chaff.

2.6.8.2.1. The social fabric

The *mūḍīf* plays a major role in the society as a social organization where people deal with challenges and threats such as the seasonal flood, digging and cleaning irrigation canals, agricultural land borders, dividing, and sharing, and armed conflicts. It is also a place where problems and difficulties among villagers could be solved. A more pretentious reed house is built by many a sheikh to be used as a general reception and entertainment hall for strangers.

In the *mūḍīf* everyone has his proper place according to his rank or status and seats himself accordingly. The sheikh or his representative will escort the guest to his proper place. When someone enters the *mūḍīf* he greets everyone. If the person entering has higher rank than you, you must rise on your feet when you greet him. For people of significantly higher rank you should stand completely upright and for those only a little above you it is sufficient to rise a few centimeters off your haunches. All local men know the exact standing of everyone else and treat them accordingly. For an outsider it is more difficult as there is also age status. That means that an old man with lesser social status may outrank a young man of higher social status. Modesty is not allowed. If you choose to sit in a place of lower rank, those of lower rank seated above you will abandon their position to find a place below you. A *mūḍīf* is also sleeping places at night for guests passing through the village. In addition to being a social center, a *mūḍīf* is sometimes used as a religious center, particularly during the month of fasting (Ramadan), and the month of Muharram. In most villages schools and health centers have been built with reeds. Reed houses are also used as grain silos and stores, and as a byre for animals.

As reed houses can be easily whisked away as a fragile, crumbling organic material, and erected at some more convenient place if the inhabitants decide to move, it might be hard to identify the remains of a reed house in the archaeological record. Moreover, people reuse the reeds of old reed houses to construct a new house, or use the old reeds as fuel. This could explain why there are empty spots in the neighborhoods of ancient cities. Therefore, it might be reasonable for archaeologists who dig in the archaeological sites in southern Iraq to investigate the empty spaces and spots within urban centers to find the remains of reed houses.

The dwellers in the contemporary villages and even rural towns in southern Iraq still build reed houses as a *mūḍīf* despite using modern materials such as brick and cement in

constructing their dwellings. This could indicate the social, ritual, and ceremonial function of read houses over millennia.

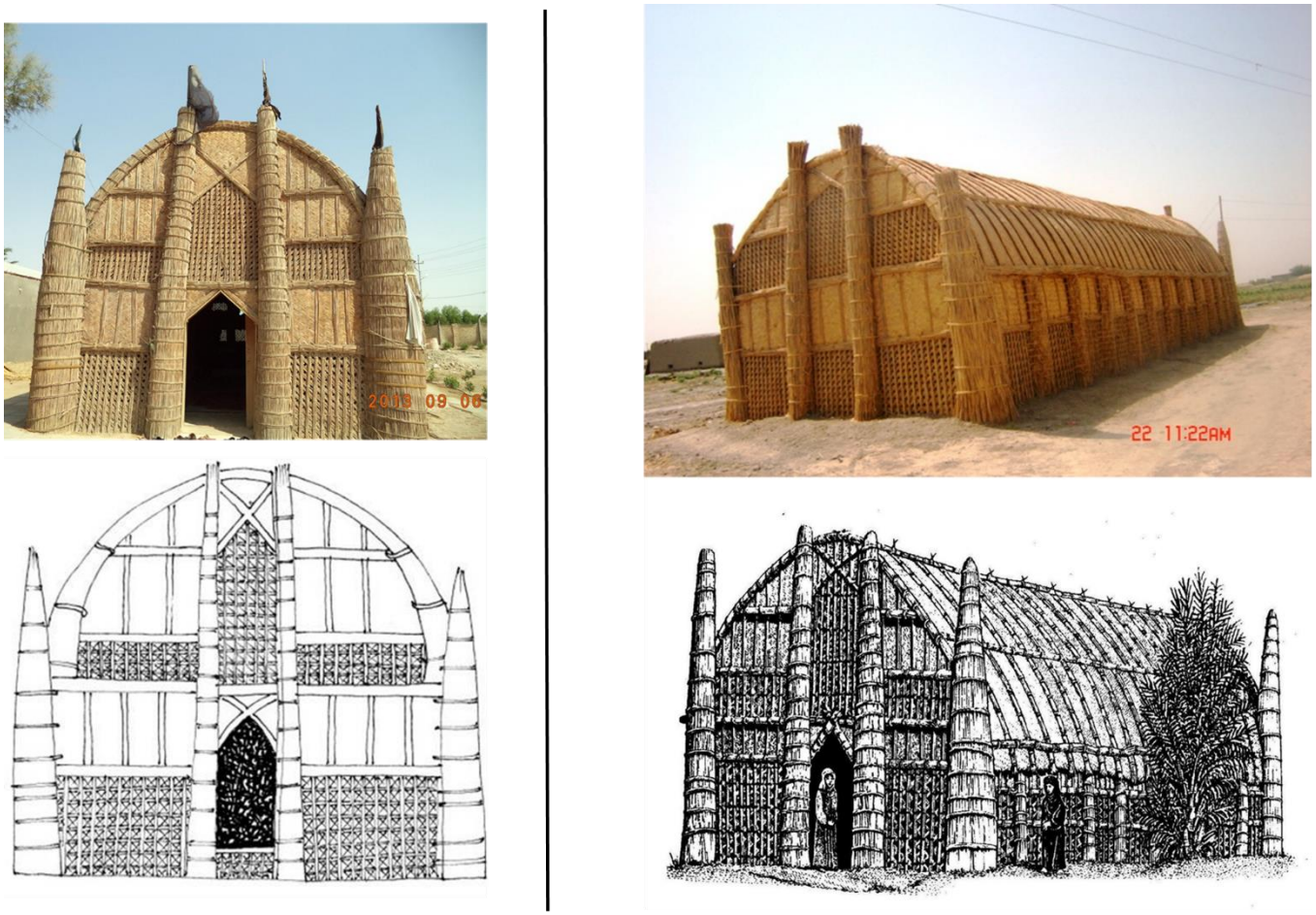



Fig. 4: A guest house, *mūḍīf,* made of reed. Left: the front face. Right: a completed *mūḍīf.*

### 2.6.9. Commerce and transportation

Commerce in the marshes has developed involving mostly local trade between villages and towns, supported by the use of small boats for transportation. However, in the twentieth century, big ships were navigating from the Gulf through the Shatt al-Arab, passing through marshes, reaching the southern cities and Baghdad, and perhaps traveling as far north as Mosul. For instance, in May 1855, a ship laden with two hundred cases of antiquities that were found by British expeditions in Khorsabad, Nineveh, and Nimrud was able to navigate

the Tigris from Mosul down to Basra, before it was attacked and sunk in the marshes near Qurna at the confluence of the Tigris and the Euphrates (Egami 1972:4). The point here is that bigger ships are possible to navigate through the marshes of southern Iraq and would have also been in earlier times.

### 2.7. Land management: Natural and artificial islands and platforms

There are many forms of land within the marshes or on their edges, some of which rise above the water level almost all the year, and some only seasonally. Their usages vary from dwelling and husbandry to economic and social centers. In the ethnographic studies of the twentieth century that dealt with life in the marshes, few of these lands were mentioned (Raymond 1926, Maxwell 1957, Philby 1959, Salim 1962, Thesiger 1964, Young 1977, Ochsenschlager 2004). The reason for this is that the researchers visited and observed only the central marshes where permanent marshes are extensive and land is limited, and because these studies were restricted mostly on the people and their culture. Therefore the data presented here are based on my observations while living deep in the marshes for almost 20 years in 1970s and 1980s and also from studies I conducted surveying the marshes in 2003-2009. My father had a motorboat (*rika*) that used to transfer people and goods all over the Hawr al-Ḥammar among the rural towns of Sūq al-Shūyūkh, Garamt Bani Saeid, al-Ṭar, al-Fūhūd, al-Islaḥ, al-Ḥammar, al-Chibaiyesh, al-Howair, al-Madina, and al-Qūrna. During the summer vacation, he used to take me on his journeys which allowed me to spend a considerable time observing the people, environment, and the lands in the marshes. In my survey from 2003-2009, I was able to visit Hawr al-Ḥammar, most of the central marshes, and the eastern side of the eastern marshes alongside the Tigris. These natural and artificial islands and platforms include *Al- khaiṭ* and *al-Jemda, Chibasha, Datcha, al-Ishan, al-Jand* and *al-Harid, al-Alwa, al-Shati, al-Chiffa* and *al-Tifuf*, and *al-Tar*. Some of these lands are for dwelling while others are for cultivation.

### 2.7.1. Land used for dwellings

These lands are used mostly for housing. However, cultivation on small scale lands can take place next to the settlement. Whether the land is used totally for dwelling, cultivation or both depends on availability or its size.

#### 2.7.1.1. *Al-khaiṭ*

*Al-khaiṭ* means a white, dry, dusty ground. It is a longitudinally ridged area that consists of dryland belt. It is formed as a result of yearly and deliberate accumulations of silt hemmed in by an embankment of reed bundles. It could take several years for the accumulation of the silt to be raised enough to turn the area into an island of dry land of approximately 75-100 hectares. The main usage of *al-khaiṭ* is residential; houses are built over the high peak, while its slopes and edges are used for orchards of date-palm trees and other fruit trees. *Al-khaiṭ* also means a thread because it consists of a chain of islands, either separated by creeks or linked to each other.

For instance the *khaiṭ Bani Musharraf*, a village that my family and other families of our tribe used to occupy during the nineteenth century before moving to a new location because of land conflict with another tribe, is located in the middle of Hawr al-Ḥammar; it consists of 200 islands, each one an average of 1,200 square meters, stretching in a long narrow belt for a kilometer or so in length but only 50 to 150 meters in width. The islands are small and their size varies considerably following changing water levels or the seasonally changing water levels; the smallest island is about 60 square meters in size, while the large island may be as big as 200 square meters. The islands are separated by little streams, ditches, and creeks that run from the nearby *Hawr Abu Ajaj* through *al- khaiṭ* to the depression of *al-Ugbiya*. *Shatt al-Machriyah*, the main stream of the *al-khaiṭ* that is used for wind-navigable transportation, flows from the Euphrates downward to *al- khaiṭ* through a seasonal marsh. During the low

water season many groups of these islands form continuous stretches of land and there is water only in the main channels, while the small streams and creeks are shallow or even dry. I have visited the village of *khaiṭ Bani Musharraf* many times in the 1970s, and surveyed the remains of the village in 2003, searching for an ancient settlement beneath the village.

The same description is applied for the nearby village of *al-Midag*, the new location that my tribe moved to in the nineteenth century. The name *al-Midag* is another meaning of *al-khaiṭ*, for it means a high ground battered by waves. These waves have exposed deposits of ancient occupations dating back as early as the Sassanian period, and when water recedes, terracotta tombs, sherds, glass, and human bones are visible. *Al-Mida*g consists of almost 120 islands separated by small streams and creeks (Fig.5a and 5b). The eastern end of *al-Midag* is used as a harbor (*Shiriea*) and to collect the harvested crops to be threshed (the so called *Mahalla*), whereas the western end had mills for rice and barley. The public building of the village, *Mudhif al-Ayyal*, and the school were located in the middle of the village. This public building served as a social and religious center, and sometimes as an educational center in the times of flood when the school, which was built of reeds on a floating island (*Chibasha*), floated away from the village. An analysis made by Elizabeth Stone of the satellite image of Tell al-Hiba, which houses the remains of the ancient city of Lagash, suggests that it consisted of 33 islands. Moreover, much movement between those islands must have been by boat; there are lots of inlets and harbors, and the street system is all oriented towards the water (personal communication Elizabeth Stone). This scene is similar to the spatial structure of *khaiṭ Bani Musharraf* and *al-Midag* of *Al-Buhamdan* as well as to most villages in the marshes.

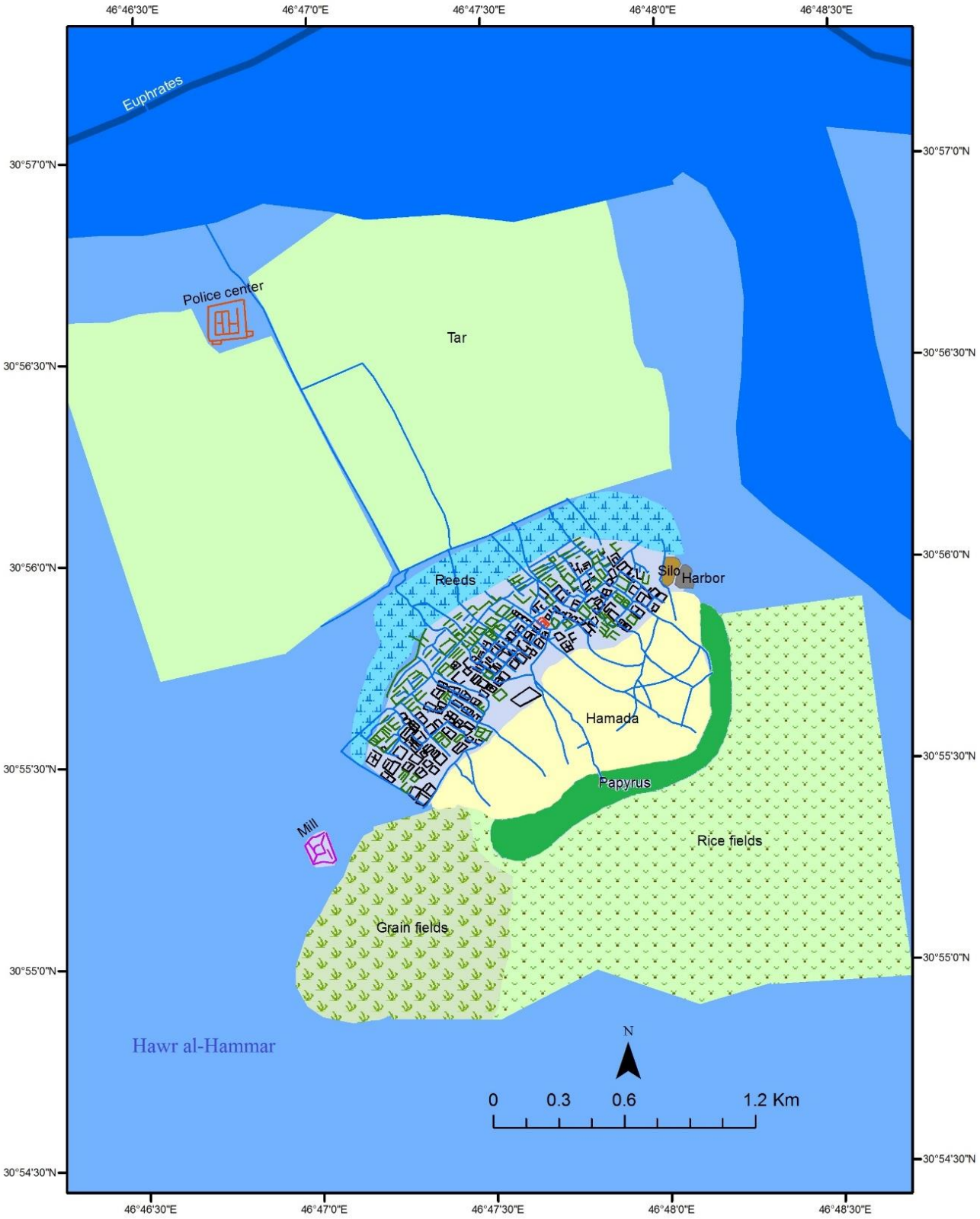



Fig. 5a: The spatial structure of the village of *al-Midaq* in Hawr al-Hammar and its surrounding landscape.

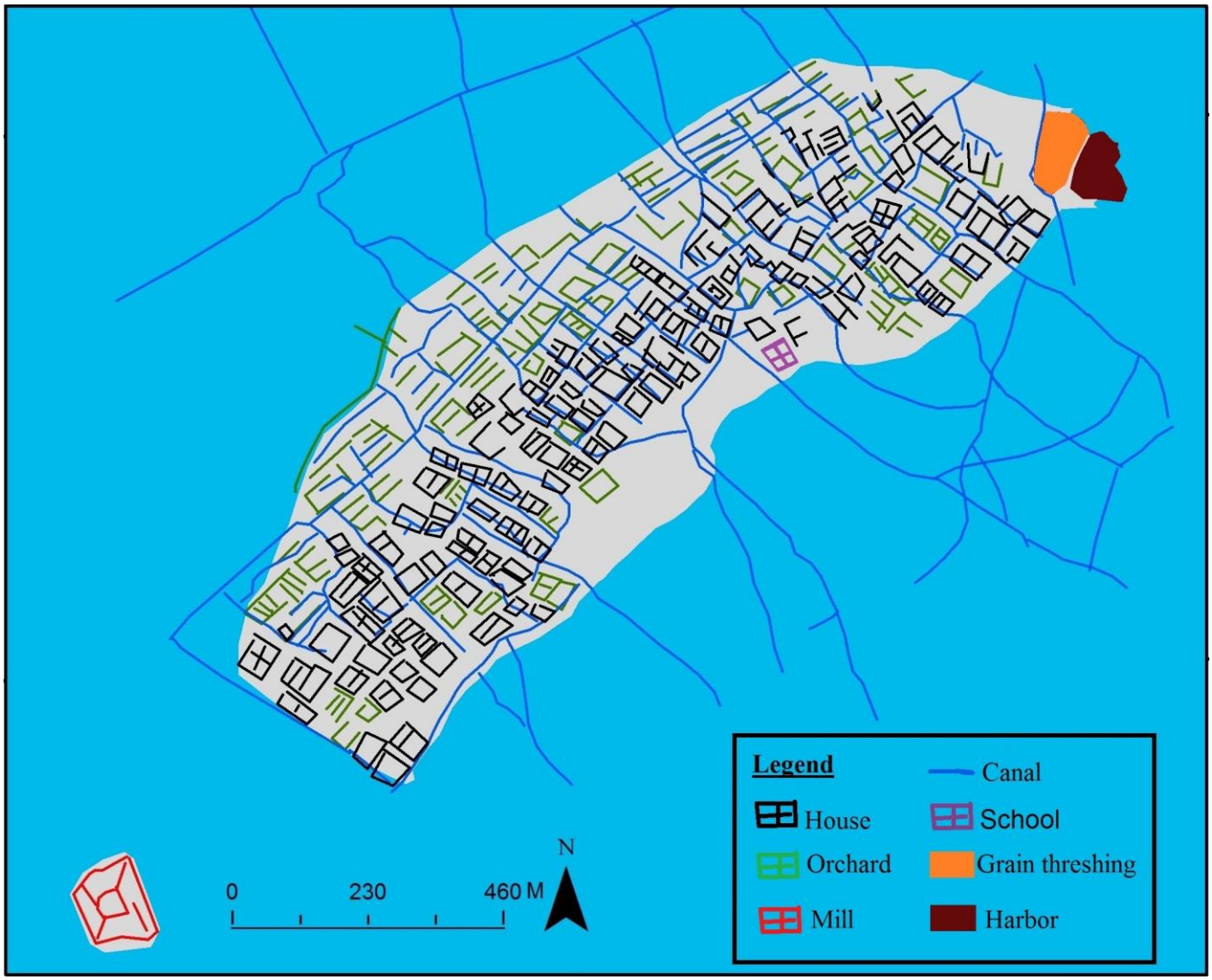



Fig.5b: The spatial structure of *al-Midaq*.

Historically, *al- khaiṭ* in the Abbasid period and onward was called *al-Jāmida*. For example al-Maqdisī, an Arab geographer from the 10th century wrote that “towns and villages of al-Bāṭiḥa, which was located between Wāsiṭ, al-Baṣra, and Ahwaza, are situated on top of *Jawāmid* (mounds)" (1887:119), whereas al-Ḥamawi, a biographer and geographer from the 12th century, has mentioned *al-Jāmida* as "artificially dried land for dwelling in the swamps" (al-Ḥamawi 1977 (died in 1229 CE):II. 10 and IV. 217). Linguistically, Ibn Manḍūr, an Arab

lexicographer from the 13th century, described *al-Jāmida* as "a high thick place that is narrowed and widened"; it is called *al-Jāmida* because it is too dry (Ibn Manḍūr 1968:674). In addition, al-Firouzabadi, an Arabic lexicographer from the 14th century said that *al-Jāmida* is what rose from the ground (al-Firouzabadi 2005 (died in 1414 CE):274). *Jemda* or *al-Jemda* is another name of *al-khaiṭ*; the term *Jemda* is used by societies that live at the edges of marshes. An example of this is Jemdet Naser, the modern name of an archaeological site near Babylon which has a settlement from the late Uruk period (ca. 3100 BCE) (Matthews 1989:225). Another example is *Tell al-Jemda* which is located southeast of Lagash, and is a potential location of the capital town of al-Baṭāeḥ Emirate from the 10th century CE (al-Hamdani 2014:18).

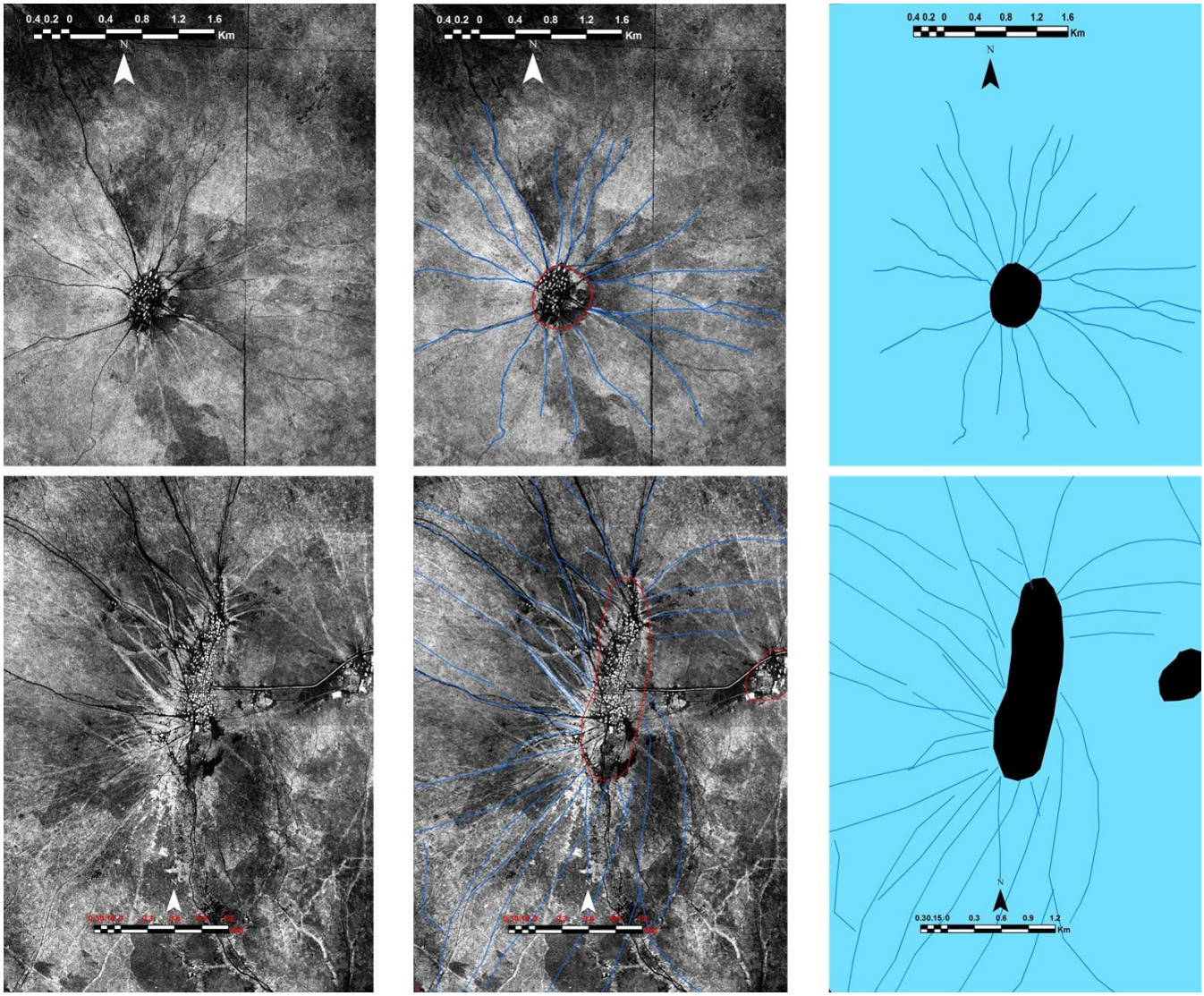



Fig.6: Upper: *Dibin*, a village located near the rural-town of *chibaiyesh* in Hawr al-Hammar; an example of a village made of floating platforms. Lower: *Umm al-Shuwaich*, a village near the rural-town of *al-Hawair* in the central marshes, an example of *al- khaiṭ*.

### 2.7.1.2. *Chibasha*

*Chibasha* (plural *chibaiyesh*) is an island made of stacks of reeds, papyrus, and a little mud, packed behind a low reed fence to form a sodden floating platform like a big woven nest. This platform constantly subsides and its level is constantly being replenished by adding new layers of reeds and papyrus. During the floods the water sometimes rises inside *chibasha* (Drower 1949: 398, Thesiger 1954:276, Philby 1959:5). *Chibasha* is basically used as a

dwelling for the seminomadic buffalo herders, and for keeping animals (Smith et al. 1969:25); it is called *dibin* when it is used to keep cattle and water buffaloes (Drower 1949:374). *Chibaiyesh* do exist as clusters often close together in the deep permanent marshes. Because of the water depth, which could be up to six meters, *Chibasha* is tied by sticks and reed bundles. During the flood seasons and strong storms that are active in spring, these sticks and reed bundles cannot withstand the water and sometimes the *Chibasha* will be washed away from its original location. Most of the *Chibaiyesh* are located at the northern extension of Hawr al-Ḥammar and within the central marshes where a rural town took its name *Chibaiyesh* because the intensive presence of these artificial floating islands.

#### 2.7.1.3. *Datcha*

Unlike *Chibasha*, *Datcha* is a stable island that exists in the shallow marshes or at the outer edges of the permanent marshes. It is built by extracting soil to make a rounded or square foundation to support a reed or mud house. The extraction of soil will create creeks and small ponds, the so called *Shugla* and *Daob*, respectively, around the platform that will be filled by water during the flood season. These creeks will serve as routes for communication between the islands. When the water rises, the possibility of flooding the island will increase; therefore, extracting more mud from the creeks will be used to raise the surface of the island.

#### 2.7.1.4. *Ishan*

*Ishan* (pl. *ishin* or *ishanat*) are islands within the marshes; most of them are archaeological sites that contain ancient villages and towns, and many are believed by the local dwellers to conceal buried treasures (Thesiger 1954:276). On the slopes of several mounds (*Ishin)* lie many sherds and broken bricks, which would seem to indicate former

large settlements (Drower 1949: 368). Many *Ishin* are dwelling places of fishermen and water-buffalo breeders.

An example of *ishin* in the central marshes is *Ishan Ghadban*, an island that stretches within *Bargat al-Baghdadia* in the central marshes for 300 meters by 150 meters and is almost 6 meters high and therefore remains dry even in the flood season. The shaikh's family of *Bani Asad*, the so called *Ahl Sheikh*, made it their village for years before they moved to the rural town of al-Chibaiyesh (Salim 1962). Other examples of *Ishin* in the central marshes are *Abu Shathir* and *al-Agor* in *Hawr al-sehain*; both are large islands that have two villages (Thesiger 1964, Young 1977). The three *ishin* have archaeological evidence for ancient occupations dating back to the Parthian (140 BCE-224 CE), Sassanian (224-627 CE), and Abbasid Periods (750-1258 CE) (al-Hamdani 2014). These ancient settlements are covered by a thick layer of contemporary occupation of villages of fishers and water-buffalo breeders. Most of *Ishin* are also used as cemeteries to bury children, and sometimes even adults, although adults are more often buried in the central cemetery in the holy city of An-Najaf.

One of the largest *ishin* in Hawr al-Ḥammar is *Ishan al-Jilea* (the fort) (62 hectares), which lies south of the rural town of al-Chibaiyesh. It had a large village that was built near a mud-brick towered fort which had been used by the *Bani Asad*, one of the biggest tribes in Hawr al-Ḥammar. The fort and the village were built on top of the island, and archaeological remains of a Neo-Babylonian settlement can be seen in one part of the island, as a layer beneath the remains of what have been left from the modern village (al-Hamdani 2014: 16).

### 2.7.2. Lands for cultivation

The soil of these lands is porous and friable, and fairly free of sterilizing salts, and has a considerable quantity of fine sand which is an advantage for drainage and washing (Salim 1962:86). Except in large areas of arable land that are located at the edges of the marshes (*al-*

*Chiffa* and *al-Tifuf*), ploughs have not been used to cultivate the land within the marshes. Instead, a long-handled spade is used since the fields are small and only one or two people are needed.

#### 2.7.2.1. *al-Jand* and *al-Harid*

*Al-Jand* is a high earthen barrier or dike that stretches straight longitudinally for a distance of 10 to 50 meters. The high points of the dike, which stay above the water level even during flood seasons, are used for cultivating palm trees (straight rows of evenly spaced palms) and other fruit trees; the water must not reach the top of the trees' roots, since that will kill the trees. The intermediate points of the dike are used for cultivating summer vegetables; where water covers the dike during the flood, it leaves a layer of rich silt. The dike would be constructed when the water recedes; soil is extracted from the flat land in order to form a dike, and that turns the flatland into a straight ditch or creek that extends along the dike. Repeating the process of building dikes and digging creeks creates a parallel set of dikes separated by small streams. In many cases people build intersecting dikes at both ends of the parallel dikes, but leave controlled gaps. The purpose of the two intersecting dikes is to reduce the speed of the water that flows in the streams, and to prevent the strong waves that could wash away the soil. In Hawr al-Ḥammar it is called *Jand* (pl. *Jnood*), and *Harid* (pl. *Hrood*) in the central marshes. In Arabic lexicon, *Jand* means a thick piece of land or a stone-like mud (Ibn Manḍūr 1968 (died in 1311 CE):698, al-Firouzabadi 2005:274), whereas *Harid* means the red dirt or clay, which means a rich soil (al-Firouzabadi 2005:328).

#### 2.7.2.2. *al-Alwa*

People of the marshes sometimes build four dikes (*Jand)* to form a square, and they fill the inside of the square with mud and dust to raise it to water level. When the water recedes in summer, weeds, grass and bushes grow on the internal square. While dikes are used to

plant trees and vegetables, the internal square is used as a pasture for sheep and cattle. It is called *al-Alwa*, which means a projecting cultivated patch of land; when the trees grow up it would be called *bustan* (an orchard). The best description of these cultivated patches was made by William Willcocks in one of his visits to the marshes north of Basra in 1910. He wrote:

> On the lower Euphrates and on the Basra River [Shaṭṭ al-Arab] are luxuriant date groves and gardens mingled with wheat and clover. The lower Euphrates, past Nasiriya and Sūq al-Shūyūkh, is veritable gardens surrounded with water (Willcocks 1910:10).

A comparative case from Mexico

The point of giving an example from the New World is to show that similar environments would produce similar material culture. For instance, the technique and method of making artificial pitches for cultivation within wetland areas might be the same.

The system of making *Jand* and *Alwa* is a similar to the ancient Aztec empire in Mexico in the sixteenth century, the so called *Chinampas*. The method and techniques are the same. In the Valley of Mexico, the *Xochimilco Chalco* Basin extends to the south of the valley, consisting of about 200 square kilometers of flats. In the early twentieth century, the completion of drainage works caused the desiccation of most of the area, a continuous tract of marshes, swamps, and lagoons extending from the eastern head of the basin to the natural outlet that led into Lake *Tezcoco* through the narrows situated between *Culhuacan* and *Huitzilopochtli*. Since pre-Columbian times, garden plots raised above water, the so called *Chinampas*, have been built on these swamps (Armillas 1971:653).

Plots were constructed by staking out a rectangular enclosure approximately 30 m in length by 2.5 m wide, into the swampy lakebed. The stakes were joined by wattles and the fence thus formed was filled with mud and decaying vegetation. Another plot was then

constructed parallel to the first, leaving a narrow canal in between for the passage of canoes. In this way, long lines of *chinampas* could be extended in a regular pattern. It was important to control the level of water in order to avoid flooding during the rainy season, and to maintain moisture during the dry season. In the dry months, irrigation of plants was done by hand, water being carried in containers from the canals to the seedbeds on the *chinampa* platform. To stabilize *chinampa* plots, tall slender willows were planted around the perimeter. In time these willows developed a dense root system that anchored the retaining walls, and constant pruning kept the trees from casting excessive shade (Townsend 1992:167).

#### 2.7.2.3. *al-Shaṭi*

*Al-Shaṭi* (pl. *al-Shiwaṭi*) is a name given to the edges of the islands that happen to be visible and semi-dry throughout most of the year; it is also given as a name to a strip of land that borders river banks and levees. Moreover, it is also given to the edges of the marsh that are adjacent to the dry land; when the water recedes, it leaves large amounts of silt. *Shaṭi* soil is often a fertile mixture of sand, silt, and soft clay, exploited for summer cultivation, especially for watermelon, beans, and cucumber. After the agricultural season, it will be exploited as pastures. Unlike *al-Jand* and *al-Alwa*, *al- Shaṭi* is not a good place to plant date-palm and other trees since it will be washed out by the flood. One of the examples of *al-Shaṭi* is *Shaṭi al-Shuw'airiya* that is located at the western part of Hawr al-Ḥammar east of Tell Lehem; it extends inside the marsh for almost 26 km length and in an average of 3 km width. *Shaṭi al-Shuw'airiya* is owned by the farmers of the tribes of *Bani Asad*, *al-Ḥesan*, and *al-Bu Ḥamdan*, and is used to cultivate winter and summer crops and vegetables (Salim 1962).

#### 2.7.2.4. *al-Chiffa* and *al-Tifuf*

*Al-Chiffa* is high ground and flat plateau that rises above the edges of the marshes. It consists of flat land which runs parallel with the marshes, and sometimes extends into the

marshes as strips and peninsulas. Historically, it was called *al-Ṭef* (pl. *al- Ṭefūf*), and has been mentioned by Arab geographers as *Ṭefūf al- Baṭāeiḥ*, and was described as dry and solid lands at the edges of the marshes (*al-Baṭāeiḥ*). During Shahinid Principality (ca. 949-1021 CE) *Ṭefūf al- Baṭāeiḥ* were exploited by the marsh's people for grain cultivation and pastures after the harvest (Ibn Manḍūr 1968:300 [died in 1311 CE]). Of the most important examples of *Chiffa* is *Chiffat al-Chirbasi*, which is located at the southern end of Hawr al-Ḥammar bordering the western desert.

2.7.2.5. *al-Tar* , *al-Ramla*, *al-Shalha*, and *al-Ḥemada*

In most of the shallow seasonal marshes water recedes at the beginning of the summer, leaving huge amounts of rich silt, which turns into islands stretching for large areas. In Hawr al-Ḥammar it is called *al-Tar* because as it dries out its silt and the non-cohesive soft clay cracks dividing the soil into small blocks, which will be suitable for rice and other summer crops. Examples of these in Hawr al-Ḥammar are *Tar Albu-Hamdan*, *Tar Abad*a, and *Tar al-Amaira*, which produce the best rice in the southern marshes. When summer crops are harvested, *al-Tar* will be given to sheep owners as pastures, allowing the land owners to obtain sheep products. Sheep eat all the grass and weeds and leave the land clear from vegetation, which then is called *hemada* before it sinks again in water during winter. In the central marshes it is called *ramlah* because its soil is filled with sand; in some parts of the marshes it is called *shalha* because it is very shallow and boats cannot move easily without towing. *ramle* and *shalha* produce large amounts of vegetables such as tomatoes and melon.

## 2.8. Ethnographic models of settlement patterns

In this section, an attempt is made to describe the ethnographically-documented settlement patterns of the contemporary marshes to which the archaeological settlement

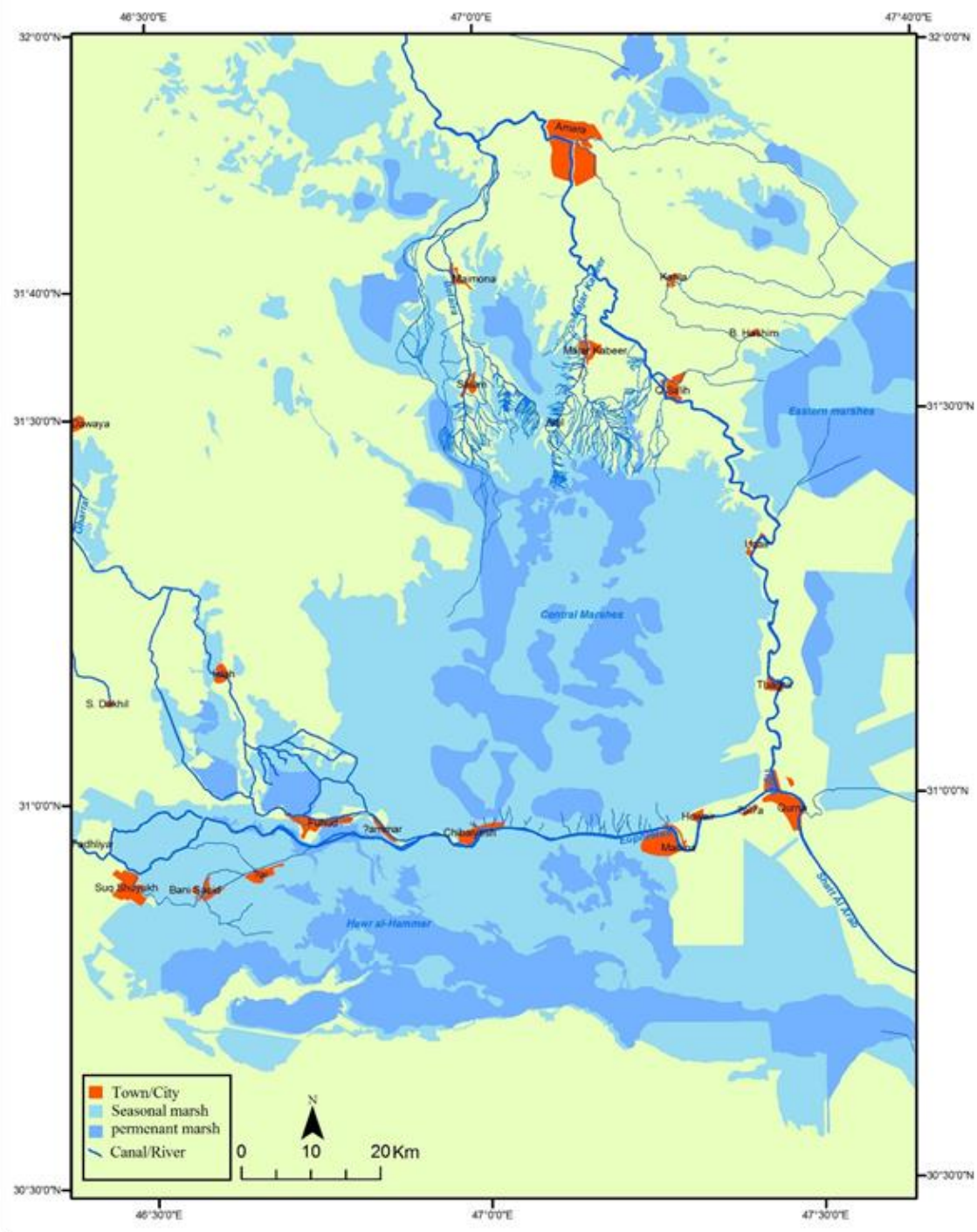
patterns of the ancient marshes can be compared for better understanding. Two distinct patterns can be identified, although in some instances we find a combination of the two.

2.8.1. Pattern one: a linear pattern (beads on a string)

The linear pattern is common in Iraq as they always appear on the major watercourses. Settlements are clustered in a linear pattern alongside banks and levees of canals and rivers. The locations of the settlements are selected so as to be as close as possible to the canal systems. The major settlements can be seen on major canals; medium settlements on secondary canals, and small settlements on tertiary canals. The canal system is used for cultivation where arable lands are stretched within the canal and settlement systems.This system can be seen in the irrigated areas in the alluvial plains (Map 8).

The linear pattern of settlement is existed in the marshes, but only on levees of primary canals where levees of tertiary and even secondary canals disappear under into the marshes. These canals in the marshes are used for transportation and communication, and not for irrigation and cultivation as it is the case in the rest of the alluvial plain. The settlements that are located on major canals are established for special purposes, such as rural market-towns, administrative centers and district capitals. Examples of these are the rural towns and markets that are located along the Euphrates from *Sūq al-Shūyūkh* eastward to *al-Qūrna* in Hawr al-Ḥammar. These are the district-capital towns of *Sūq al-Shūyūkh* (2,000 hectáreas), *al-Fūhūd* (1,375 ha.), *al- Chibaiyesh* (1,300 ha.), *al-Madina* (2,100 ha.), and *al-Qūrna* (2,400 ha.), and the small rural towns of *'Ukaika* (175 ha.), *Garamt Bani Saeid* (655 ha.), *al-Ṭar* (231 ha.), *al-Ḥammar* (389 ha.), *al-Howair* (421 ha.), and *Ṭalḥa* (183 ha) (Map 3). The same linear pattern of rural towns can be found in the central marshes along the Tigris and its distributors of *al-Majar al-Kabeer* and *al-Betaira*. The settlements in the linear pattern run parallel to the

water-passages and canals; they are mostly rectangular in shape with an average size of 1,835 hectares for towns, and 340 hectares for rural towns.

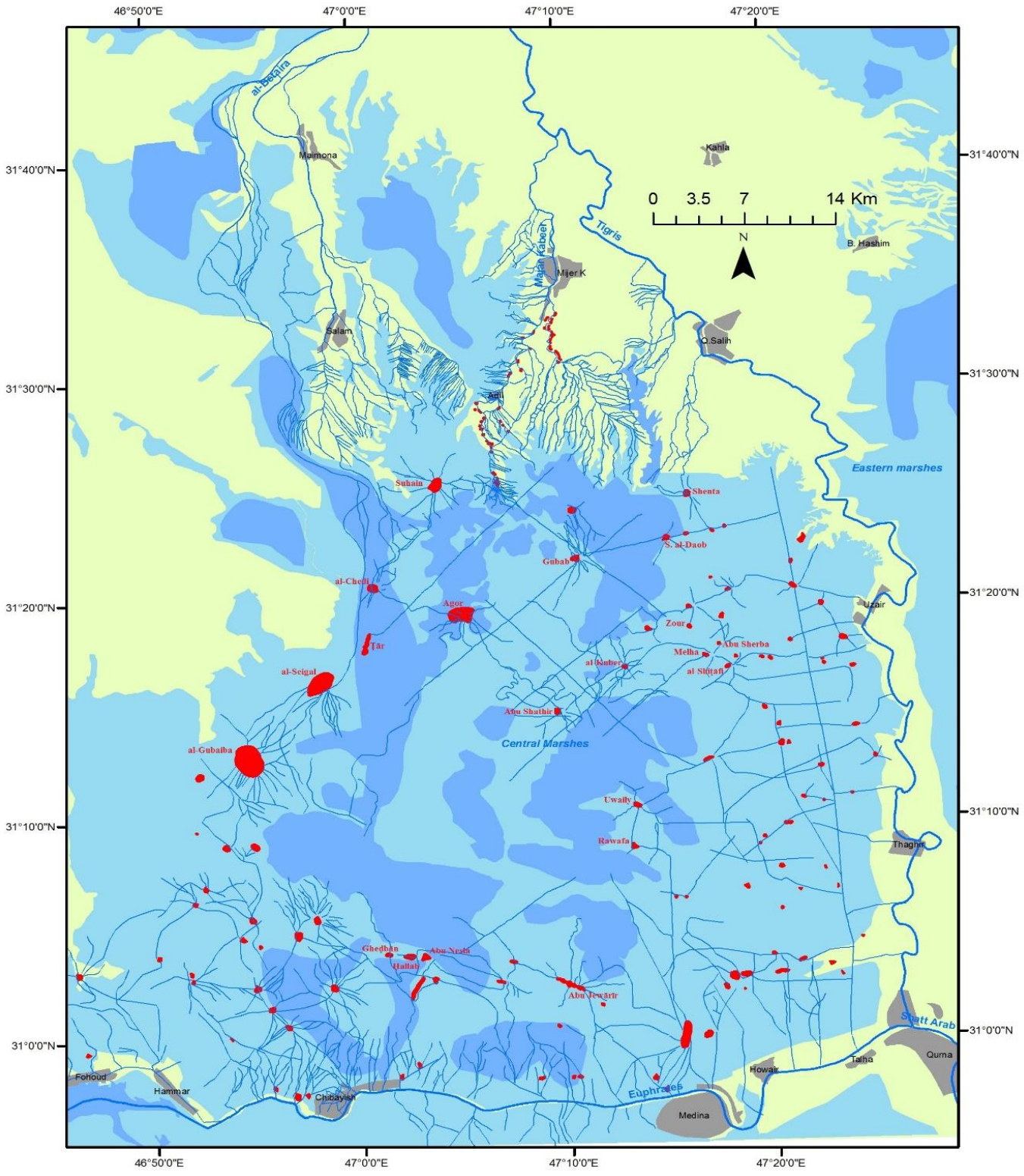



Map 3: The distribution of towns along the lower parts of the Tigris and Euphrates in southern Iraq; examples of the linear pattern

### 2.8.2. Pattern two: a radial pattern

Settlements, which are mostly villages, are distributed within the marshes and their margins based on the availability of economic resources that marshes provide, and are located away from the actual main channels. Selecting places to build settlements depends on the presence of natural islands, either natural or artificial, that are close enough to the available resources. Notably, this pattern of settlement can be mostly found in areas of the marshes that dwellers depend on reed-gathering, buffalo-breeding, and fishing. If natural mounds are not available, people create patches of dry land by alternating layers of mud quarried from the marsh bottom with reed mats. These islands are surrounded entirely by water, and sometimes by reeds; therefore, within this setting of water and reeds, they look isolated. However, water-passages (*gahin* pl. *guwahin*) existed through the reed forests to connect these settlements with each other and with the external world. They could be reached by bitumen-covered wooden boats which were propelled through the water with long poles. The pattern is radial in two ways; it is radial in terms of the distribution of small settlements that are clustered in a group around a medium-sized settlement (Map 4), and it is radial because settlements are connected with each other by a radial system of waterways (Fig. 7). Examples of this distribution are seen in all the three marshes in southern Iraq, the central, the eastern and the western marshes. In order to understand the structure of this pattern, one can look to the villages in the central marshes such as *Abu Shathir* (16 hectares.), *al-'Agor* (50 ha.), *al-'Uwaily* (20 ha.), *al-Rawafa* (16 ha.), *al-Suhain* (77 ha.), *Shenta* (23 ha.), *al-Zour* (11 ha.), *al-Melḥa* (14 ha.) *al-Gubāb* (25 ha.), *Selef al-Chedi* (42 ha.), *al-Ṭār* (49 ha.), *Suwaij al-Daob*

(18 ha.),*al-Kuber* (12 ha.) *Abu Sherba* (6 ha.), *al-Shiṭāfi* (11 ha.), *al-Seigal* (104 ha.), *al-Gubaiba* (81 ha.) *Ishān Gheḍbā*n (21 ha.), *Abu Nesla* (50 ha.), *Ḥallāb* (30 ha.), and *Abu Jewārīr* (24 ha) (Map 4). They are all connected by wide water-linkages (*sabil* pl. *sboul*) with the nearby rural-market towns of *al-Mijer* and *al-Salām* in the north and *al-Chabaish* in the south. The preferred shape of these turtle-back settlements is mainly round, so as to better resist the impact of water waves which will erode any sharp angles on the settlement . The average size of the settlements is 33 hectares.




Map 4: A map shows the ethnographic models of settlement patterns in the marshes of southern Iraq; example of the radial pattern.

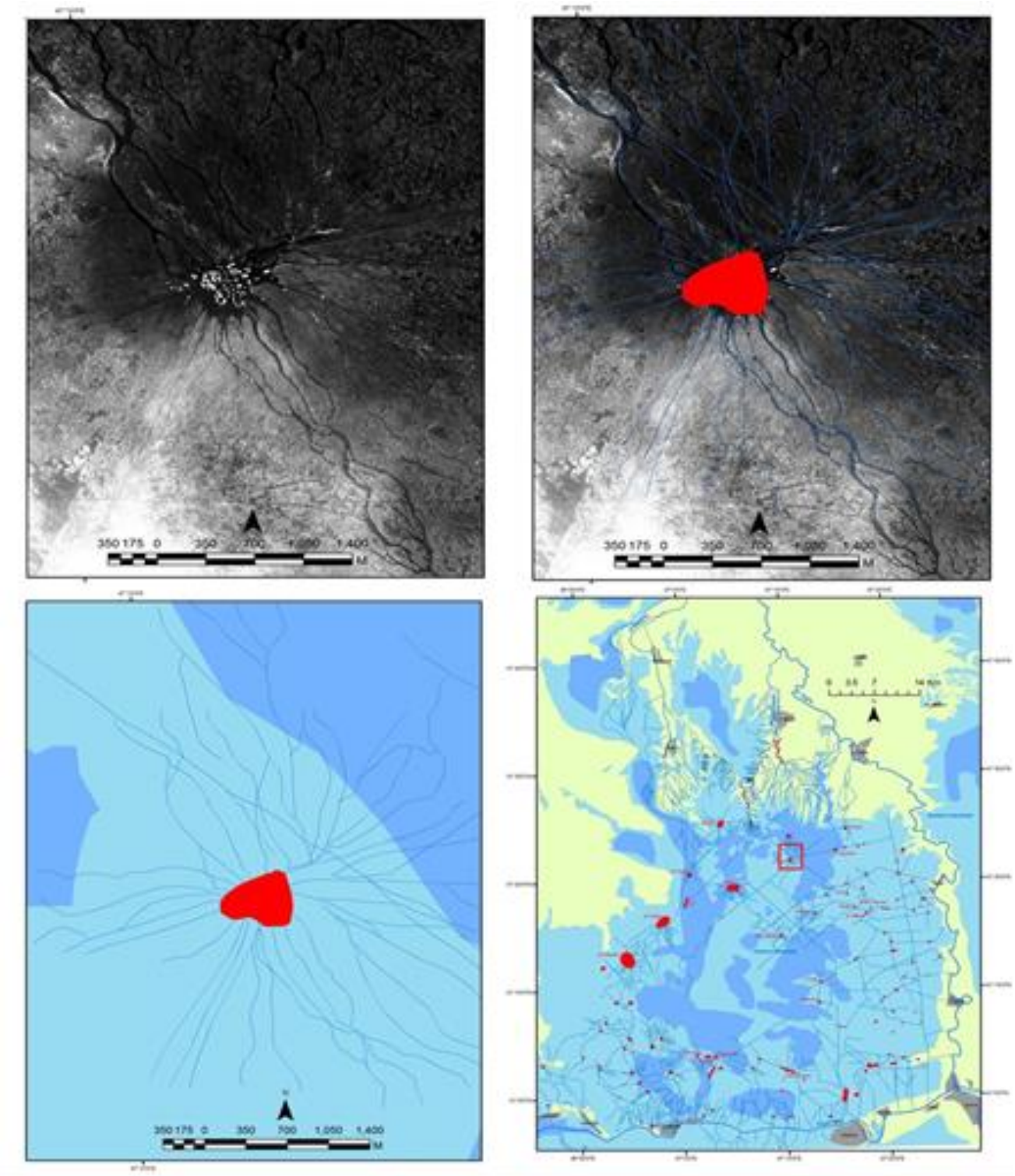


Fig.7: *Al-Gubāb* (25 ha.), a village in the central marshes; an example of the radial pattern

The overall picture of the presented ethnographic data shows that marshes of southern Iraq provide plenty of food supplies and sustainable economic resources that exceed the needs of the populations. The economic prosperity and stability of the marshes permit the dwellers to practice social and even political independence. These data can be used to understand the powers and elements behind the emergence of the first Sealand dynasty during the first half of the second millennium BCE. In regards to the settlement system, the ethnographic models will be significant to infer the system of occupation in the marshes in antiquity; land management and transportation routes in the contemporary marshes of southern Iraq can be found in the ancient marshes of Mesopotamia.

Moreover, one can argue that the marshes of southern Iraq provide everything one need for survival of a community in a much decentralized system. This has enormous political significance for powers that can otherwise unite the rest of Mesopotamia because of dependencies that sites have on each other in most of the area—they need trade, they need to be part of a larger irrigation system, and so forth. The economy of the marshes provides a strong alternative to this.

# 3. CHAPTER THREE: ETHNOHISTORICAL DATA FROM THE MARSHES OF SOUTHERN IRAQ DURING THE MEDIEVAL PERIOD

## 3.1. Introduction

Ethnohistory is defined as a diachronic approach to research "uniting archaeology, ethnology, history, and linguistics" (Axtell 1979:2). One of the aspects of the ethnohistorical approach is the use of historical methods and materials where historical materials might be equated with written documents (Baerreis 1961:49).

Historical sources from the Abbasid period (750-1258 CE), specifically from the tenth century CE, contain significant and detailed information about the marshes of southern Iraq, the so called *al-Baṭiḥa*. They describe in detail the economic resources that enabled the dwellers of the marshes to repeatedly establish their governmental structures in opposition to the central administration in Baghdad, the Abbasid Caliphate. The longest and strongest period of independence was during the second half of the tenth century CE when the marshes, and other parts of southern Iraq fell under the control of the Shahinid Principality (ca. 949-1021 CE). Muslim and Arab historians, biographers, lexicographers, explorers, polymaths, and geographers described towns, villages, and canal systems, land and water management systems, economic resources, social relations, and protection methods in al-Baṭiḥa, as well as how they controlled water routes, internal trade and transportation between Baṣra ,Waṣiṭ and Baghdad. These historical sources also give details about the political structure of the Shahinid Principality and its relationship with the central institution in Baghdad (al-Maqdisi1887 [died in 991CE], Ibn Khurdādhbih 1889 [died in 912 CE], al-Ya'qubi 1890 [died in 898 CE],Ibn Rustah 1892 [died in 898 CE], al-Balādhurī 1901 [died in 892 CE], Al-Mustawfī 1915 [died in 1239 CE], al-Masoūdī 1973 ,1981[died in 956 CE], al- Ṭabarī 1937 [died in 923 CE], Al-Tnokhi 1955 [died in 1058

CE], al-Esṭakhrī 1961 [died in 957 CE], al-Dīnawarī 1960 [died in 896 CE], al-Hamadāni 1961 [died in 1127 CE], al-Ḥamawi 1977 [died in 1229 CE], Qūdāma 1986 [died in 948 CE], Ibn al-Athīr 1987 [died in 1233 CE], Ibn Ḥawqal 1992 [died in 969 CE], Ibn Manḍūr 1968 [died in 1311 CE], Ibn Baṭṭūṭa 1992 [died in 1368 CE], Ibn Miskawayh 2003 [died in 1030 CE], Ibn Kathir 2004 [died in 1373 CE], al-Firuzabadi 2005 [died in 1414 CE].

The historical sources of the 70-year long Shahinid Principality describe an independent polity in the marshes of southern Iraq that can serve as a model to help us understand earlier periods of political independence in the marshes. Moreover, these data demonstrate some elements that are not clearly available from either the ethnographic or the archaeological records, including the factors behind the emergence, development, and collapse of this marsh-based polity. Historical sources also provide data about the economy and settlement system of this pre-industrial society, one that is more similar to the ancient situation than ethnographic data of contemporary societies. The historical data of the Shahinid Principality can, therefore, serve as a model to help understand the first Sealand dynasty (1739-1340 BCE).

### 3.2. The geography of al- Baṭiḥa

Al-Baṭiḥa (Marshes in Arabic) is the name for a basin, or a flat plain, that is almost constantly filled with water and aquatic vegetation due to the almost constant flooding throughout the year. This constant flooding over time created various water bodies such as lakes, marshes, swamps and lagoons. In the Middle Ages Arab authors employed the term al-Baṭiḥa and its plural al-Baṭāeḥ specifically to designate the southern Iraqi marshes (Al-Maqdisī 1887, Ibn Khūrdādhbih 1889, Ibn Rustah 1892, al-Balādhurī 1901,al-Masoūdī 1973, Sihrāb1929, al-Deynūrī 1960 (died in 896 CE), al-Ḥamawi 1977, al-Idrisi 1979,Ibn Ḥawqal 1992, Ibn Abdul Haq 1992 (died in 1338 CE), Qūdāma 1986, Ibn Manḍūr 1994, al-Firuzabadi 2005). According

to a map that was created by Ibn Ḥawqal, a geographer from the tenth century EC, the time of the Shahinid Principality, al-Baṭiḥa was located along the lower course of the Tigris, roughly between Kufa and Wāsiṭ in the north and Baṣra in the south (Ibn Ḥawqal 1992: 209, image of Iraq) (Fig. 8).

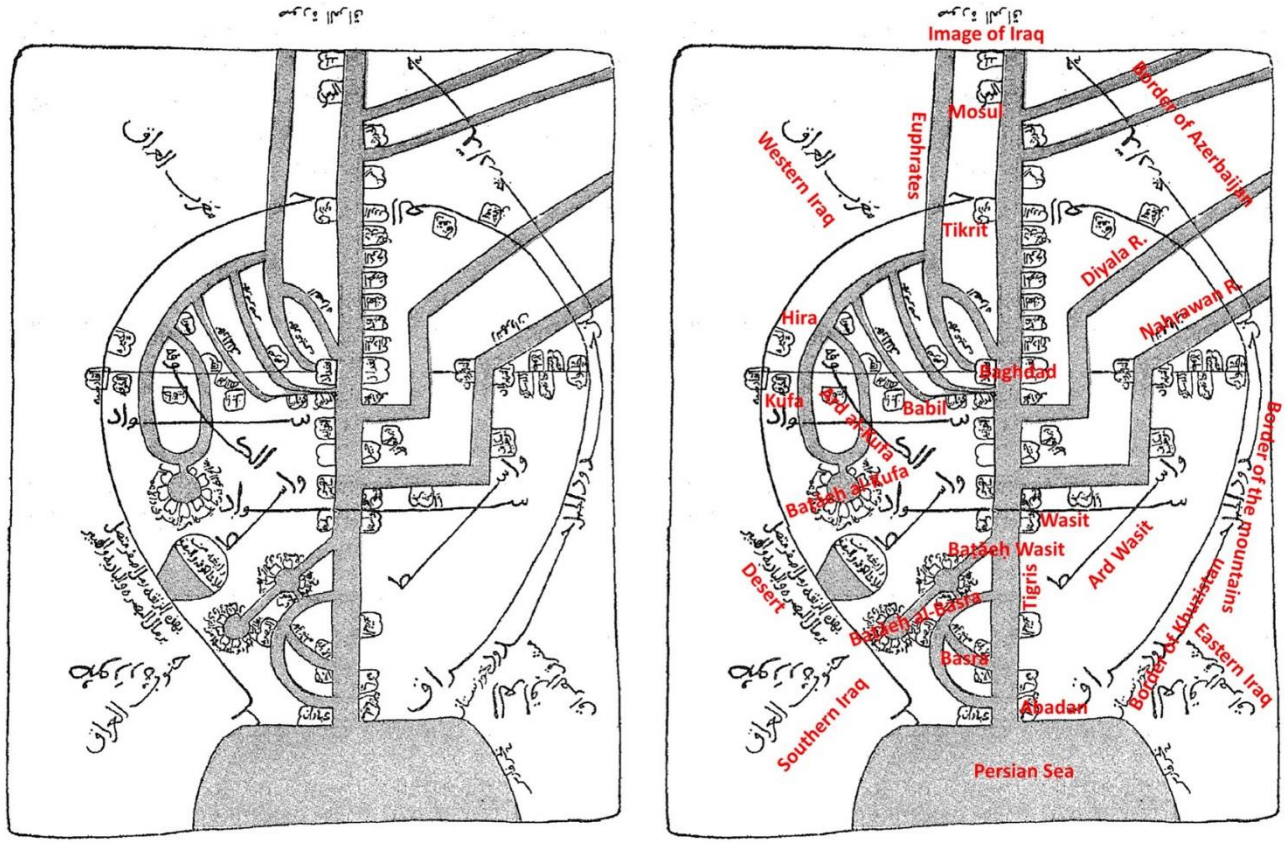



Fig. 8: A map showing the location of Iraq, including al-Baṭiḥa, in the tenth century CE, the time of the Shahinid Principality (after Ibn Ḥawqal 1992:209, died in 969 CE).

The Arab and Muslim geographers and historians referred repeatedly to an intensive, complex system of canals that traversed through the alluvial plain from the Euphrates to the Tigris, forming marshes and swamps in southern Iraq (Eger 2011:58). These marshes were the result of the annual flooding that is caused because the waters of the Tigris and the Euphrates frequently overran the extremely flat terrain and often changed course. Al-Baṭiḥa had large rivers

crossing it, facilitating navigation and transport and, along with caravan routes, the hundreds of canals that linked up the waterways favored intense movement of people and goods (Safar 1953, Jamāl al-Deen 1957, al-Ali 1970, 1971, al-Māḍidi 1983, Sousa 1983).The Sassanians and Arabs had built dams, dikes, and canals in the region, but a stable hydrographic network was impossible in the extensive flatlands of southern Iraq where there was no elevation to offset the malleability of alluvial-formed soil, all the more so since the system of irrigation canals was subject to economic and political fluctuations. Moreover, the enormous growths of reeds and rushes, often several meters tall, covered the vast water surface leaving only man-made channels. These could be narrow or sometimes wide, but were often very shallow canals. Most of the time, they could be navigated only by small, flat-bottomed boats, which made access to al- Baṭiḥa very difficult. As a result, the region was a perfect location for rebels and malcontents who needed observation posts from which they could keep an eye on trade and other activities.

Al-Balādhurī argued that the emergence and formation of Bāṭiḥat Wāsiṭ happened in the late Sassanian period. A study of the available sources suggests that far more than natural causes, man has been the primary factor in influencing the shifting of the course of the lower Tigris in the late Sassanian period. According to al-Balādhurī, during the reign of the Sassanian king, Kavad I (488-531 CE) , the water of the lower part of the Kaskar channel, which was the main course of the lower Tigris, made great holes in the dykes. This caused serious flooding in much of the bottom land of the Sassanian district of Kasker. Little was done to restore the dykes by Kavad, but his successor Khusro I (531-579 CE) ordered partial repairs. Most of the flooded area was drained and the land put back under cultivation. Then in 629 CE the Tigris and Euphrates rose to a height that it had never reached before. The floods opened great breaches in the existing levees. Khusro II, who ruled at that time, rode out in person to direct the repairs of the dykes.

Many workers were used and a lot of money and effort was spent in the attempts to repair the dykes. The project, however, was only partly successful. Some breaches could not be plugged and extensive areas of bottom land remained under water (al-Balādhurī 1901: 358). Attempts to drain these new swamps during the succeeding Islamic period were also only partly effective. In addition, new floods on the rivers posed a serious threat to the lands which had been reclaimed. Ibn al-Jawzī, for example, relates that devastating floods on the Tigris and Euphrates in 900 CE caused many deaths and the wide-scale destruction of crops (Ibn al-Jawzi 1990 (died in 1200 CE):184). Al-Hamawi has provided a brief history and geography for al-Baṭiḥa from the Sassanian period up to the late Abbasid period.

> In the Sassanian times, it was a wide, fertile, and prosperous land that was located between where Wāsiṭ and al-Baṣra stood later, with villages and urban spots. During the reign of Khosrau II (591 –628 CE), the Tigris had increased excessively and the Euphrates also had unusually increased to the degree that rivers couldn't be controlled. As a result, the water had flooded farms, agricultural lands, and villages, forcing people to leave to the nearby dry areas. When the water had decreased and the king wanted to reconstruct and reurbanize the land, he died. Kavadh II (628 CE), his son, was not able to do anything, and he had ruled for a very short time when the Muslims appeared in the scene. The Muslims were preoccupied by conquests and wars in Iraq, and they were not familiar with construction and farming. By the time [almost two centuries], the wars had ended and Muslims got settled, *al-Baṭiḥa* had become extremely delapidated, and new holes had emerged in the rivers' banks; the water had flooded new lands. The collectors of *al-kharaj* (taxes and levies) were forced to entere al-Baṭiḥa by ships and found high dry mounds within *al-Baṭiḥa* where they built villages; then the people started inhabiting *al-Baṭiḥa* and planting rice. In the early days of the Buyid dynasty in Iraq (945–1055 CE), indigenous people from al-Baṭiḥa, led by Ịmrān Bin Shahīn, controlled *al-Baṭiḥa* and made it a fortified stronghold. Al-Baṭiḥa ceased to obey the Abbasid caliph in Baghdad and stayed out of Baghdad's control during the Buyid dynasty and Seljuk dynasty (1055–1135 CE). After that the Abbasids restored *al-Baṭiḥa* to their obedience (al-Ḥamawi 1977: 450-451 [English translation by the author]).

Al-Baṭiḥa in the ninth and tenth centuries was very large. Ibn Ḥawqal, a geographer, and chronicler from the tenth century CE, and al-Idrisi, a geographer, cartographer, and traveler from the twelfth century CE, mentioned al-Baṭiḥa as a vast flooded land which ranged between

shallow marshes filled with reeds and other marshy vegetation to deep marshes that could be used for navigation; the deep marshes were called *hawr* or *hawl* (al-Idrisi 1979: 385, Ibn Ḥawqal 1992:214). Al-Balādhurī estimated the size of al-Bāṭiḥa in the ninth century as 150 km in length and 100 km in width (al-Balādhurī 1901: 358). Ibn Rusta has identified the location of al-Bāṭiḥa to the south of Wāsiṭ:

> It is located roughly south of Wāsiṭ, south-eastward to al-Maḍār and Maysān on the lower Tigris. Its northern part was called *Baṭiḥa Wāsiṭ* because it was stretched close to Wāsiṭ, its middle part that was located next to al-Maḍār was called Bāṭiḥa Dast-Maysān (the plain of Maysān), and *Bāṭiḥa al-Baṣra*, for the southern end (Ibn Rustah 1892: 182).

In addition, the marshes between Kūfa and Baṣra were called the *Nabati Baṭiḥa* (the Aramean marsh), but this was only mentioned by Ibn Manḍūr in the thirteenth century "*the Nabati Baṭiḥa was located between the two Iraqs* (the urbanized centers), *al-Kūfa and al-Baṣra*" (Ibn Manḍūr 1968:300). Its high-earthen edges and dry silty coasts were called Ṭefūf al- Baṭāeiḥ; where they were fertile they were used for cultivation (Ibn Manḍūr 1994:300). Sihrāb, a geographer from the tenth century, has described al-Baṭiḥa in the times of the Shahinid Principality (ca. 949-1021 CE). He mentioned that its northern edge was located at a place called al-Qatr south of Wāsiṭ and its southern edge was at the mouth of the Shaṭṭ al-Arab north of al-Baṣra

> The beginning of *al-Baṭiḥa* is at *al-qaṭr*, this place is a strait of water growing with reeds". Then he listed all parts of *al-Baṭiḥa* from north to south until reaching the Shaṭṭ al-Arab "Next to this [*al-qatr*] comes what is called *hawr*; which is a great (large) sheet of (clear) water where no reeds grow. The name of this first *hawr* is *baḥsa*. Following this is a strait full of reeds, and then the second *hawr* that has the name of *bakmasi*. Next comes another strait growing with reeds, and then the third *hawr*, the name of which is *baṣrayātha*. Then another strait with reeds, and next the fourth *hawr*, the name of which is *al-mohammadiya*, on which is a tower called Minarat Hassan. This last is the largest of all the *hawr*. Finally there is the last strait with reeds, which extends down to a channel called *Nahr Abi al-Asad*. This stream passes by *al-ḤaIa* and the village of *al-kawānin*, and it finally falls out into

*Dijla al-'Awra* (the Blind Tigris, which is the Shaṭṭ al-Arab) (Sihrāb1929:135 [English translation by the author]).

Other Arab geographers confirm that *al-Qaṭr* is the last station on the road between Wāsiṭ and al-Baṣra before entering into al-Baṭiḥa (Ibn Khūrdādhbih 1889: 59, Ibn Rustah 1892: 182, Sihrāb 1929:118, Qūdāma 1986:194). Al-Masoūdī said that at *al-Qaṭr* the Tigris is divided into three branches and that all of them flow into al-Baṭiḥa, and one is the major course within al-Baṭiḥa along which ships from Baghdad and Wāsiṭ sail to Baṣra (1927:105). Al-Ḥamawi describes *al-Ṣaleeq*, the heartland of al-Baṭiḥa:

> It was the ruling house of several political leaders, including Ịmrān Bin Shahīn (949-980 CE) and Mohathab al-Dawla (987 CE), but now (in his time, the 12th century) it is ruined. It was a refuge for everyone who was afraid and a shelter for all those who were disqualified. If a fearful person fled from Baghdad, which is ruled by the house of Bani al-Abbas (the Abbasids), Buyids and Seljuks, his destination will be al-Baṭiḥa where is no way to reach him even with armed force (al-Ḥamawi 1977:415).

The inaccessibility, a readily available food supply, and the climate of al-Baṭiḥa made it an ideal location for the insurgents to evade Abbasid troops, who, for decades, tried unsuccessfully to control the Shahinid Principality in the second half of the tenth and the first quarter of the eleventh centuries.

The populations of al-Baṭiḥa during the Shahid Principality (ca. 949-1021 CE) were mostly Arabs, with native Mesopotamian people such as Arameans (Nabateans), Mandeans, and Jews. Foreigners such as Persians, Jahts (*al-Zuṭṭ*), and Africans (*al-Zanj*), who had been imported from the eastern coast of Africa as slaves to work in orchards and lands of Basra in the Abbasid period), were also present (al-Maqdisi 1887: 25, Drower 1937: 25, al-Ṭabarī 1939 Vol. III: 1760, al-Sāmer 1954, Ibn Manḍūr 1968 vol.VII:411, Jawad 1968:105,Grunebaum 1970:105, Akbar 1993:78, 1994:5).

### 3.3. The political history of the Shahinid Principality

Describing the political situation of the caliphate before the emergence of the Shahinid Principality can shed light on some of the factors contributing to the decline of the Abbasid caliphate. The fourth Islamic century (the tenth century CE) witnessed a strange transformation in the Abbasid caliphate. The strongly centralized government, which had held the strings of control stretching from Persia to the Mediterranean and from Azerbaijan to Egypt and Yemen, collapsed suddenly. Cut off even from areas in Iraq, the government was reduced to impotence and penury, hardly controlling its own center in Baghdad; princes and military leaders were competing to seize power (Donohue 2003: xiii).

During this century, several political events happened in Iraq and in its neighboring countries that had a great impact on the Abbasid Caliphate (Table 1). Daylamites seemed to be pouring out of the southern Caspian area, Zaidīs were establishing themselves in Yemen, the Fātimids were about to seize Egypt from their center in North Africa, and the Qarmatians had temporarily overrun Basra, Kufa, and Bahrain, and stood on the outskirts of Baghdad (al-Hamadāni 1961:84, al-Suyuti 2003:420). Moreover, the Hamdānids had emerged in Mosul and extended their influence west to the Levant and south to Tikrit, north of Baghdad, while the Berīdīs dominated Basra and Wāṣiṭ. The Eastern Roman Empire was suddenly awakening to the weakness of Islam and regaining positions it had conceded centuries before in the heart of the Levant.

| **Date in Islamic and Gregorian calendars** | **Political event** |
|---|---|
| 255 AH / 868 CE | The Zanj rebellion |
| 282 AH/ 891 CE | The Qarmatian state established at Bahrain |
| 284 AH/ 893 CE | Zaydi Imamate is established in Yemen by al-Hadi Yahya ibn al-Husayn ibn |

| | |
|---|---|
| | al-Qasim |
| 289 AH/ 898 CE | Qarmatians sack Basra |
| 300 AH/ 909 CE | The Fatimid rule in North Africa |
| 320 AH/ 929 CE | Qarmatians sack Mecca and carry away the Black Stone from the Kaaba |
| 325 AH/ 934 CE | Imad al-Dawla establishes Buwayhid power in Fars |
| 332 AH/ 943 CE | Al-Baridi captures power. The Abbasid Caliph al-Muttaqi is forced to seek refuge with the Hamdanids. Nasir al-Dawla captures power at Baghdad and the Caliph returns to Baghdad. Power is captured by Tuzun and Nasir al-Dawla retires to Mosul |
| 334 AH/ 945 CE | Mu'izz al-Dawla captures power and establishes the Buwayhid dynasty in Iraq |
| 335 AH/ 946 CE | Sayf al-Dawla, the Hamdanid, establishes himself at Aleppo |
| 338 AH/ 949 CE | Imran Bin Shain established the Shahinid Principality in the marshes of southern Iraq |
| 358 AH/ 969 CE | Byzantines occupy Antioch and force Aleppo to become a protectorate. The Fatimids conquer Egypt |
| 362 AH/ 973 CE | Shi'a Sunni disturbances in Baghdad; power captured in Baghdad by the Turkish General Sabuktigin |
| 367 AH/ 978 CE | The Hamdanids of Aleppo overthrown by the Buwayhids |
| 370 AH/ 981 CE | End of the Qarmatian rule at Bahrain |
| 388 AH/ 999 CE | Turks capture Bukhara. End of the Samanids |

Table 1: The timeline of the political events of the Abbasid Caliphate during the late third and fourth centuries AH, the late ninth and tenth centuries CE.

In 946 CE Baghdad itself fell into the hands of the Buwayhids, a dynasty of mercenary soldiers from the Caspian province of Daylam, who controlled western Iran and Iraq from the mid-tenth to the mid-eleventh century CE (Grunebaum 1970:104, Tholib 2002:41). It did not appear that the Abbasid caliphate could survive the sudden upsurge of the new contestants for power, and the Caliph al-Muti' (946-974 CE) had no authority (Ibn al-Athīr 1987 VIII: 131). Indeed, in Baghdad, the role of the Caliph was reduced to maneuvering among the palace powers and playing off external forces, north and south, which coveted the capital (al-Masoūdī 1973

VI:477). In the north, the Hamdānids, Nāṣir al-Dawla and Sayf al-Dawla established a kingdom in Mosul and Aleppo (Donohue 2003: 4). In the south the Berīdīs, tax farmers in southern Iraq, were attempting to create their own kingdom in 325 AH /936 CE (Ibn Miskawayh 2003:378). Economically, Iraq was subject to famine because of the unrest, drought and floods.

Thus, in the period before the emergence of the Shahinid principality, the Abbasid caliphate had reached its lowest ebb. The caliph himself was powerless to stop this gradual process. Internal anarchy resulting from ethnic and religious conflicts and even calls for independence were widespread throughout the Abbasid Empire. All this brought about a wave of inflation of prices and a decline of the economic conditions of the common people (Munaymanah 1987:80, Tholib 2002:46). Under the influence of these political and economic conditions, people in the south started several revolutions and rebellions against the central government in Baghdad. The most important rebellion was led by ‘Ịmran Bin Shahin in the southern marshes (al-Baṭiḥa). Ịmran established in 338 AH/949 CE a principality and made it a shelter not only for the people of the marshes, but also for those who had escaped from Baghdad, Baṣra, Waṣiṭ and other southern cities.

In 334 AH/946 CE Abu aI-Hasan Ahmad Bin Buwayh (334-356 AH/ 946-967 CE) marched from the Caspian into Baghdad and gave his oath to the Caliph al-Mustakfi (333 AH/944 CE-334/-946), who gave him the title Mu'izz al-Dawla, which means supportive of the state (Ibn al-Athīr 1987 VIII: 83). Mu'izz al-Dawla inherited the military, political and financial problems which had plagued the capital for years. Four months after his arrival in the capital Mu'izz al-Dawla had to march out to fight Nāṣir al-Dawla al-Hamdāni north of Baghdad, and the Hamdānids defeated the Buwayhid army (Bikhazi 1981:535). Once the settlement with Nāṣir al-Dawla had been secured, Mu'izz al-Dawla turned towards Basra and in 336 AH/ 948 CE, he

completely routed al-Berīdī (Ibn Miskawayh 2003 II: 112). With this the main centers in Iraq were in control, for Wāṣiṭ and Kufa had offered no resistance.

The one area in Iraq which remained outside the grasp of the Buwayhids was the marshes. Imrān Bin Shāhīn, characterized as a brigand and a Nabataean, had established a secure state there among the maze of canals and marshland. In 338 AH /950 CE, the armies of Mu'izz al-Dawla tried to flush him out, but other concerns and factionalism in the army cut short the campaigns. Baghdad was forced to settle for peace and a payment (al-Hamadāni 1961:162). This island kingdom of Imrān Bin Shāhīn, more a nuisance than a threat, remained, like the Hamdānid territory, a constant reminder of the limits of Buwayhid power.

In 344 AH/956 CE when Mu'izz al-Dawla was taken sick, Imrān asserted his claim for the spoils by seizing a rich caravan from Ahwāz. When Mu'izz al-Dawla recovered, part of the plunder was returned, but the Buwayhid was irritated by the autonomy of this area. His last campaign was directed at the marshes, but the sickness which forced him to postpone the attack in 355 AH/967 CE proved fatal (Ibn Miskawayh 2003:158 159, 217 218, al-Hamadāni 1961:170, 190). The subsequent preparation and dispatch of expeditions against the Marshes occupied Mu'izz al-Dawla's last days. Abū al-Faḍl, the military administrator of Mu'izz al-Dawla, was assigned to lead the campaign against Imrān Bin Shāhīn, but Mu'izz al-Dawla died before any significant offensive was mounted in the marshes (al-Hamadāni 1961:183,294).

The military campaigns of the central administration in Baghdad against the Shahinid Principality had failed. For instance, in 360 AH/ 972 CE 'Izz al-Dawla (ca. 356-367 AH/967–978 CE) sent an expedition to Wāṣiṭ to prepare for the war against Imrān Bin Shāhīn, and 'Izz al-Dawla was forced to leave Baghdad and lead the campaign, which ended in abject failure. Imrān Bin Shāhīn offered 'Izz al-Dawla five million dirhams to prevent the campaign. After the

Abbasid army failed to seize him, he offered only two million, then refused to pay even that (Ibn Miskawayh 2003:295,296). As a result of the fighting to control Baghdad in 366H between the two Buwayhid princes, Rukn al-Dawla (935–976 CE) and 'Izz al-Dawla (966–978 CE), the latter was defeated and forced to take refuge and seek help from Imrān Bin Shāhīn in the Marsh.

Every attempt made by the Buwayhids to defeat Imrān Bin Shāhīn had failed. Nevertheless, in 369 AH/980 CE Imrān died and his death encouraged 'Aḍud al-Dawla (367-372H / 978-983 CE) to move against his son and successor, Hassan, to assert his authority over the Marshes. However, the marshes proved as impervious as it had to Mu'izz al-Dawla and 'Izz al-Dawla before him (Ibn al-Athīr 1987 IIIV: 232, 234, Ibn Miskawayh 2003 II: 409, 411,414). The large Buwayhid army assembled for this purpose was commanded by one of 'Aḍud al-Dawla's Wazirs, al-Muṭahhar, who adopted the same policy repeatedly tried by his predecessors, namely, the damming up of the channels discharging water into the marshes in order to dry them up, and building causeways whereby the army could approach the enemy fortress on foot. This enterprise required great sums of money and brought navigation on the Tigris to a standstill with the result that no dues were forthcoming from merchandise usually transported by the ships in question. At the season of the spring floods, Hassan, like his father before him, contrived to breach some of the dams so that the marshes again became full of water (Kabir 1974:51). Al-Muṭahhar was of an impatient temper and, as a commander, used only frontal attacks with decisive results. He accordingly tried to defeat Hassan in the open field, but equally without success. This failure so vexed al-Muṭahhar that he committed suicide. 'Aḍud al-Dawla was indeed much put out by his ill-success but to save his face he sent Abu'l-'Ala to conclude a truce with Hassan. A final settlement was left for further discussion, but in the meantime Hassan was to make an immediate money payment.

Within Iraq, the marsh remained isolated and impervious to Buwayhid attempts at conquest since the emergence of the Shahinid Principality (338 AH /949 CE). All attempts to subdue the area- and there were many- ended in peace settlements and nominal payments until 394H when an upstart soldier of fortune, named Abu'l-'Abbas Bin Wasil seized Basra, Ahvvaz, and the marshes. He was awarded the title (*laqab*) Mu'in al-Dawla (the supportiveof the state –the Caliphate) in 364 AH /975 CE (Ibn al-Athir 1987 II: 354), and died in 369 AH /980 CE (II: 367). Imrān was succeeded by a son, Hassan, then by another son, Muhammad (II: 409). The latter was killed in 373 AH/984 CE by Muzadeffer Bin Ali, who established himself as Amir (al-Khatib a-Baghdadi 2001 died in 1071 CE: 87). On his death in 376 AH/ 987 CE the rulership passed to his sister's son, Abu'l-Hassan Ali Bin Naser, who became powerful and renowned as Muhaḍḍab al-Dawla, ruling til his death in 408 AH/ 1019 CE and offering shelter to political prisoners, including the Caliph al-Qāder Billāh (Tholib 2002). In 370 AH/981 CE 'Aḍud al-Dawla arrested his minster (vazeir), Muhammad Bin Umer, because he was suspected of complicity with the enemy in the campaign against the ruler of the marshes (Ibn Miskawayh 2003 II: 412).

In 384 AH/995 CE, Baha al-Dawla was forced to solicit a loan from Muhuaḍḍib al-Dawa in the marshes (al-Khatib al-Baghdadi 2001: 201). The minister of Baha al-Dawla, Abu 'l-Qasim Ali, was fled to the marshes in 386 AH/ 997 CE to escape the impending financial crisis (al-Khatib al-Baghdadi 2001: 255). Abu Ghalib bin Khalaf (Fakhir al-Malik), the other minister of Baha al-Dawla, was also exiled in the marshes. Abu Tahir Yaghma al-Kabir, the Turkish Chamberlain who was the governor of Baduraya (the region between Baghdad and Babylon) (Morony1984: 146), plotted to take over Baghdad in 408 AH/1019 CE with the aid of Muhaḍḍab al-Dawla (Al-Sabi 1958 [died in 1059 CE]: 374). In 384 AH/995 CE a double marriage tie was arranged between Baha al-Dawla and Muhaddib al-Dawla. The latter married a daughter of the

former, and the son of Baha al-Dawla married a daughter of Muhaddib al-Dawla. In addition to the dowries exchanged, Muhaddib al-Dawla sent an amount of money and produce to Baha al-Dawla to aid his financial plight. In 394 AH/1005 CE, Muhaḍḍab al-Dawla sent Abu'l-Abbas Bin Wasil to seize Basra, Siraf, and Ahwaz; but Bin Wasil then returned to the marshes and usurped the rule there. He was the first to lay hands on the marshes since the Buwayhids came to power in Iraq in 334 AH/945 CE. The marshes were retaken from his hands (Ibn al-Athīr 1987 IX: 62-64).

### 3.4. General descriptions of economy and production of al-Baṭiḥa during the Shahinid Principality

Al- Baṭiḥa's inhabitants engaged in cultivating plots of land, and their chief crops were dates, rice, barley, wheat, maize, sorghum, finger millet, lentils, watermelons, and onions. Reeds and rushes growing wild in the region were also gathered and put to many uses. Fish of various kinds were plentiful; fauna included water buffalo, sheep, and cows; as well as various types of waterfowl: gulls, wild duck, geese, and swans. Lions, leopards, jackals, wolves, lynx, wild boar, and wildcats were also found (al-Hamadāni 1961: 286, al-Ḥamawi 1977 X: 405).

Arab Historians and geographers mentioned that in the Abbasid period, southern Iraq, including al-Baṭiḥa, was a continuous forest of verdure "*Arḍ al-Sawad*". Agriculture prospered as a result of both sophisticated canal systems near al-Baṭiḥa, and the annual deposition of silt (Van Aart 1974:11). Furthermore, the abundance of water, the intensity of the heat in the summer, high relative humidity and cold and lack of rain in the winter has made it a distinctive environment for certain types of plants (al-Maqdisi1887:119). Al-Masoūdī’s description of plants and cultivation in al-Baṭiḥa is a measurement of economic prosperity:

> Summer cropping increased and more crops planted, winter cropping intensified, oilseeds and fodder crop cultivation strongly spread, vegetables were grown on higher soils in the vicinity of population centers, orchards were established on the levee soils, and date cultivation expanded (al-Masoūdī 1981:52).

Al-Ḥamawi says that the soil of al-Baṭiḥa was fertile, its yields were abundant, and its grains and legumes were plentiful (al-Ḥamawi 1977 II: 496). Moreover, al-Jaḥiḍ, an Arabic prose writer from the ninth century CE, told the people of al-Baṭiḥa when he saw them in al-Basra that "Your barley, rice, fish, goats, geese, ducks, and chickens, are wondrous" (al-Jaḥiḍ 1965, died in 868 CE, II: 496, III: 295, IV: 15, V: 248). Al-Tha'ālibī says that the chickens of al-Baṭiḥa are characterized by good quality and plumpness, and are mentioned as a delicious food; perhaps a hen is as heavy as a goat or a lamb (Al-Tha'ālibī 1965 died in 1038 CE: 536).

Peasants dominated the population of al-Baṭāeḥ during the fourth century AH / tenth CE. Arab historians called the peasants of al-Baṭāeḥ "Nabateans", and the term Nabati in Iraq was associated with the term farmer in this region (Ibn Manḍūr 1968 VII: 411, item *nbt*).The Nabateans were Christian and were described as Arameans of ancient Babylonia, who sought refuge in the marshes during the Islamic conquests of Iraq (al-Masoūdī 1981:49). The numbers of Nabateans in al-Baṭāeḥ increased (Akber 1994:4). Because of the long experience of the Nabateans in agriculture and irrigation, and the safe haven that the Shahinid Principality provided them, they started doing repairing, reclamation, and agrarian reform for the land within al-Baṭāeḥ and alongside canals that fed it. Thus, the agricultural yields of al-Baṭāeḥ increased many times in comparison with neighboring regions (al-Maqdisi 1887:128). Plenty of fertile arable lands were located within and at the edges of al-Baṭāeiḥ, as well as along the canals that fed it. The edges of al-Baṭāeiḥ were called *al-Ṭefūf*, (Singular: *al-Tef*), and have been mentioned by Arab geographers as *Ṭefūf al- Baṭāeiḥ*, and were described as the high edges of the marshes

(al-Baṭāeiḥ) that during Shahinid Principality (ca. 949-1021 CE) were exploited by the marsh people for grain cultivation and pastures after the harvest (Ibn Manḍūr 1994:300).

The marshes are a suitable environment for cows. The residents of al-Baṭāeḥ were intensively breeding cows, and they were called "the cow knights" (Akber 1994:5). Moreover, because oxen are useful for agricultural activities such as plowing and threshing, they were not killed to provide beef; sheep were the alternative. Therefore, the number of cows significantly increased and their products became the major economic source of wealth (Ibn Rustah 1892:105, al-Balādhurī 1901:172).

The land surrounding al-Baṭiḥa was called Sawad al-Baṭiḥa (plain or countryside of al-Baṭiḥa), and sometimes Sawad Wasit. Sawad al-Baṭiḥa was described as "wide evergreen and fertile lands that have meadows, irrigated plains, many orchards and trees, and filled with palm trees; it supplies crops for Waṣiṭ, Baghdad, and Basra in the days of scarcity, wars and famine (al-Maqdisi 1887:118, al-Ya'qubi 1890: 232, al-Dujaili 1950:23, al- Dīnawarī 1960 III: 250, Ibn Baṭṭūṭa 1992 I: 114, Ibn Taghri Bardi 1992, died in 1470 CE, I: 45). The western Sawad of al-Baṭiḥa was the most fertile arable land for grain cultivation in southern Iraq. It stretched from the western edges of al-Baṭiḥa through Nahr al-Gharraf westward to Besma (ancient Adab) and the vicinity of Nuffer (ancient Nippur), southward to al-Muqayyer (ancient Ur), and southeastward to Tell Hawara (ancient Girsu) (Al-karmali 1927:66, Serkis 1931:5, Awaad 1949:78, Ibn al-Athīr 1987 XII:233,al-Tanūkhi 1995 VIII:101), and was fertile arable lands for grain cultivation ( Awaad 1949:67, Maskony 1949: 299). There were many workshops in the countryside of al-Baṭiḥa for producing goods and objects. For example weaving workshops produced plenty of textiles, and the famous rugs, carpets, curtains, and precious fabrics were traded to all regions of the Caliphate (Maskony 1949: 303).

The description of al-Ḥamawi when he visited al-Baṭiḥa and its countryside in the twelfth century was a summary of al-Baṭiḥa's prosperity

> There are many villages, orchards, and countless palm trees. Everything was cheap. I saw a big jar of butter sold for two dirhams, but a dozen of chickens, twenty-four small chickens, twelve pounds of margarine, forty pounds of bread , one hundred and fifty pounds of milk, and hundred pounds of fish, each one for a dirham (al-Ḥamawi 1977 VII:283 [English translation by the author]).

The late Sassanian/early Islamic name of al-Baṭiḥa could give an indication for the high agricultural productivity. The region al-Baṭiḥa, and its countryside, was called Arḍ Kasker from the late Sassanian period up to the time of establishing Wāsiṭ during the Umayyad Caliphate (Ibn Khūrdādhbih 1889, Ibn Suliman1899, al-Ali 1971, Qūdāma 1981, Morony 1982). “Kasker” is derived from Kashtkar, a Persian term meaning agriculture and arable lands (al-Bakrī 1983 II: 250), or lands of wheat and barley in Persian of Herat (al-Ḥamawi 1977 VII: 251). In the Abbasid period, the region was called Baṭiḥa Wasit. Ibn Ḥawqal tells that the region was one of the six regions of the Abbasid Caliphate that paid taxes to Baghdad of twelve million dirhams, which equals the taxes that were paid by all of Iraq's other regions (Ibn Ḥawqal 1992 I: 239.247)

### 3.4.1. Canal systems of al- Bāṭiḥa

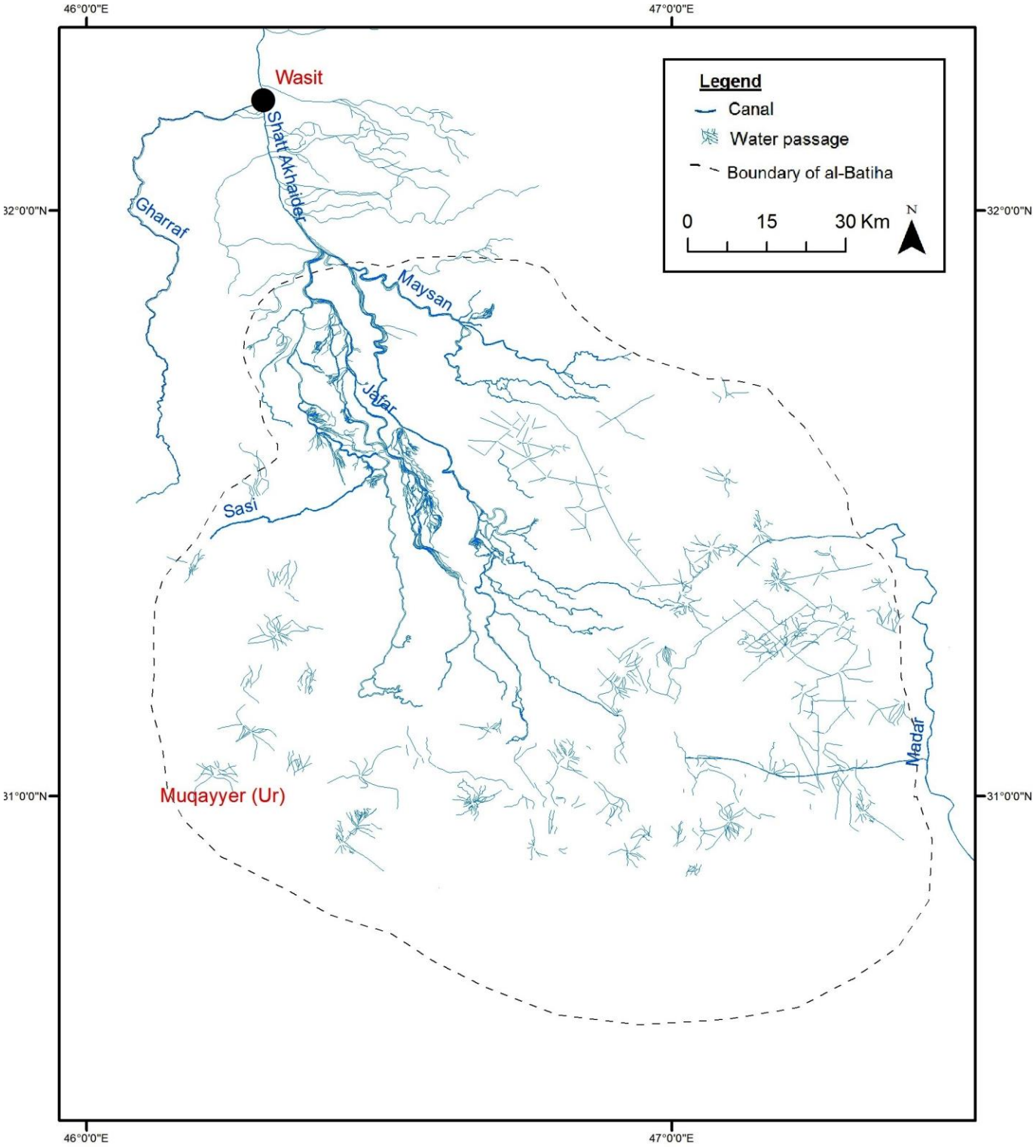
The point of providing detailed information about the canal and settlement systems, as well as the economic resources, of the marshes during the Shahinid Principality, is to show how a canal system runs in a wetland environment, how settlements are distributed in the landscape, and what economic resources marshes provide. The models and examples that ethnohistorical data demonstrate can be applied in understanding the environmental and economic dynamics that caused the emergence of the first Sealand dynasty in the second millennium BCE.

For millennia, the lower Tigris has frequently changed its course. The southern reaches of this river, therefore, cannot be meaningfully discussed in historical perspective until it is understood which path or paths were used by the Tigris. To determine the course of the Tigris and its relevant canals in al- Bāṭiḥa during the Shahinid Principality, the descriptions in historical sources are examined against satellite images and ground survey. The major channels and its distributors which separate from the lower Tigris at the Islamic city of Wasit are clearly visible on the relevant images.

Historical sources indicate that the lower course of the Tigris in the Abbasid period passed next to Wasit. Al- Masoūdī and Sihrāb confirm that after leaving Wāsiṭ, the Tigris split into several canals that flowed into al-Baṭiḥa" (al- Masoūdī 1973 I: 105, Sihrāb 1929 III: 1167). Al-Ḥamawi gave some details about the extensions and names of these canals:

> When the Tigris traverses Wāsiṭ, it divides into five great canals that carry ships from Baghdad through Wāsiṭ and al- Baṭiḥa downward to al-Baṣra. The main canal [arm] of the Tigris is called Diqla, and at the town of al-Maḍār, it is called Nahr al-Maḍār. The other four canals are Maysān, Jāfar, Sāsi, and al-Gharrāf. These canals then meet all together and join the Euphrates at al-Maṭṭāra, a village near Baṣra" (al-Ḥamawi 1977 II: 553).

The satellite imagery shows the courses of these canals in al-Baṭiḥa from Wāsiṭ downward to the lower arm of the Tigris before its confluence with the Euphrates at al-Qurna (Maps 5, 6, and 7). In the coming paragraphs, I will list what the historical records said of the canals of al-Baṭiḥa and examine that against the declassified American CORONA intelligence satellite program images from 1950s and 1960s.




Map 5: Canal system in the marshes during the Shahinid Principality.

#### 3.4.1.1. Diqla, the Tigris in the Abbasid period

The imagery demonstrates a course of an ancient major river that crosses the current Tigris at 6 miles (9.6 km) below the modern city of Kut and runs downward to the ruins of Wāsiṭ (Safar 1945:4, fig.1, Hansman 1970: 35, fig.3).The considerable width, which is nearly equal in size to that of the natural Tigris channel, and natural meander-bends which characterize this channel would indicate that it is the Tigris of the Abbasid period. The upper extent of the canal is called Dujaila (mini Tigris), and its lower extent within al- Baṭiḥa south of Wasit is called Shaṭṭ al-Akhaḍer (al-Ali 1971:165, Hansman 1970: 36).

At the site of Fārūth, 30 km south of Wāsiṭ, two distributaries split from Dujaila. One goes to the west and the other one runs east then south, but the course of Dujaila runs in the middle with a name of Shaṭṭ al-Akhaḍer. The location of Tell Fārūth, as the starting point of the canal divisions, marks the northern edge of al-Bâṭiḥat; historical sources support this notion. Ibn al-Athīr stated that Mu'izz al-Dawla unsuccessfully tried to overcome the Imrān Bin Shāhīn by damming up the channels discharging water into the marshes at the town of Fārūth in order to dry them up (Ibn al-Athīr 1987 IIIV: 232).

From the site of Fārūth, the canal of Shaṭṭ al-Akhaḍer passes nearby many villages and towns that show indications of the Shahinid Principality, such as *Tell Umm Tanānīr, Tell Hanāies*, *Telūl Abu Khamīs*, and *Tell al-shambichī.* At the site of *Telūl Abu Khamīs,* 45 km south of Fārūth, a distributary takes off from Shaṭṭ al-Akhaḍer, flows west and then south for 58 km. Shaṭṭ al-Akhaḍer continues its course until reaching *Tell al-shambichī,* 20 km south of *Telūl Abu Khamīs*, where the canal splits into two branches. The first branch is the large one that bends abruptly to the south-east for 47 km until approaching Tell al-Ạqor in the middle of the Central Marshes where its course disappears and is erased by modern canals and marshes before

supposedly reaching al-Maḍār at the present lower course of the Tigris. The trace of the canal from Wāsiṭ downward to Fārūth eastward to al-Maḍār confirms the description of Ibn Rusta for the course of the Tigris in the early Islamic period. According to Ibn Rusta, at the time of the Islamic conquest, the Tigris shifted its Sassanian course from the east to the west to flow down to where Wāsiṭ afterwards stood, then moved eastward towards al-Maḍār (Ibn Rustah: 94,) It is stated by al-Ḥamawi that the Tigris flows in the direction of al-Maḍār and that ships from the Gulf were able to pass along that channel en route to Baghdad (al-Ḥamawi 1977 I: 669). The second branch stretched south at the southern edges of the Central Marshes passing near *Tell al-Jāmida*, the capital-city of the Shahinid Principility, then it turned east to pass Telūl al-Mūsaiḥib and ended at Tell Aṣlān before the current Tigris-Euphrates's confluence point at al-Qurna.

3.4.1.2. Maysān, the eastern canal

As indicated earlier, at Fārūth Dujaila, the Tigris splits into two canals, the eastern and western canals. The eastern one runs from Fārūth southeastward to Telūl al-Qaṭṭārāt for 28 km, and then divides into two branches. These two branches meander together in a generally easterly direction for almost 45 km until they join with the present Tigris course immediately below the town of Kumait. These canals could be the Nahr Maysān. Al-Ḥamawi said that the Nahr Maysān takes water from the left bank of the mina arm of Dijla (the Tigris) at Fārūth and runs east (al-Ḥamawi 1977 II: 553).

3.4.1.3. Jāfar and Sāsi, the western canal

The western canal takes water from the major river, the Dujaila, at Fārūth and runs west and then south for 150 km. It goes west to reach Telūl al-Raṣāfa, then turns south to the east of Lagash and Nina, and then disappears in al-Baṭiḥa. The canal could be the course of Nahr Jāfar;

al-Ḥamawi refers to a canal that is called Nahr Jāfar that takes water from the Tigris after leaving Wāsiṭ (al-Ḥamawi 1977 II: 553). Al-Ḥamawi also said that "many towns and villages are located alongside Nahr al-Jaęfar, among them was *al-Raṣāfa* (al-Ḥamawi 1977 IV: 838). The southern extension of the canal below the ancient city of Lagash is still in use and has the name "Jāfari". Another canal takes water from the western canal and runs west to the north of Lagash and ends at a site called Sāsi. The course of this canal could be Nahr Sāsi. Al-Esṭakhrī mentions a Sassanian village called Sāsi that was located alongside the canal of Sāsi that takes its water from the Tigris or one of its distributaries (al-Esṭakhrī 1961:190). Lagash itself was mentioned as a village at the edges of al-Baṭiḥa during the Shahinid Principality and it was called Lehban or Lihban (Jamāl al-Deen 1957:144), a name from which the modern local name of the ruins, Telūl al-Hiba, might be derived.

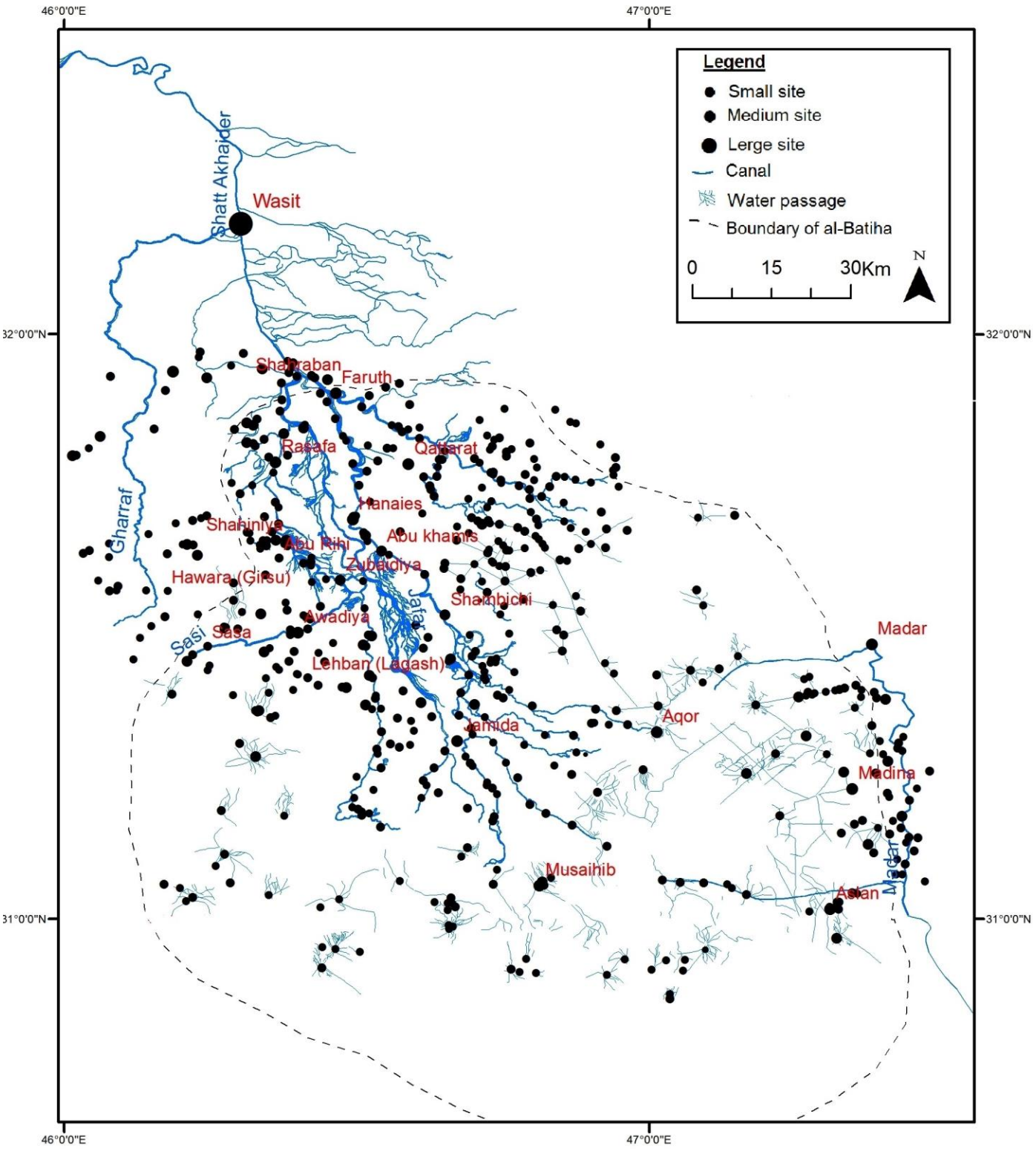
3.4.1.4. al-Gharrāf

The Abbasid course of the Al-Gharrāf, according to Jamāl al-Deen, was taking water from the main canal of the Tigris south of Wasit and ran southwest in the plain of al-Baṭiḥa until reaching Tell Hawara, the Arabic name of Girsu during the Abbasid era (Jamāl al-Deen1957:145). Al-Tanūkhi called the southern extension of the al-Gharraf as Nahr al-Faḍl, and says that after 10 km (literary for two leagus/ *fersekh*) from Tell Hawara, the course debouched into al-Baṭiḥa (al-Tanūkhi 1995 VIII: 102). The dry bed of the canal is visible in the satellite images, and its length from the point of taking water from the Tigris, 2 km south of Wāsiṭ, to the point of disappearing into al-Baṭiḥa, is 112 km. It is called Shaṭṭ al-Āemā (the blind canal) to distinguish it from the current course of Shaṭṭ al-Gharrāf, which is called Shaṭṭ al-Ḥey (the live canal) (Al-Ali 1970: 250). The natural levees of the canal are most strikingly seen in a swamp

through which the canal's lower extension, the so called Shāṭṭ al-Ḥammar, passes before it merges with the Euphrates (Olearius 1669:101, Jamāl al-Deen1957: 124, Hansman 1970:35).

### 3.4.2. Controlling internal trade and transportation routes

In addition to being a productive agricultural area, al-Baṭiḥa was also of considerable importance commercially. Navigable rivers passed through al-Baṭiḥa and linked it to an easy reach of the sea. Al-Baṭiḥa also formed a point of convergence for water-highways leading from the Gulf, Basra, Ahwāz, Wāsiṭ, Baghdad, and beyond (Safar 1945:4), and considerable amounts of taxes were paid by merchants from all over Iraq, including Baghdad, to the administration of the Shahinid Principality in order for the goods to pass through water routes of al- Bāṭiḥa. Ships bound for Baghdad passed through al-Baṭiḥa, and a type of river-craft known in Iraq as *Wāsiṭiya* probably commemorates the industry of al-Baṭiḥa ship builders (Serkis 1927:463).




Map 6: The settlement system in the marshes during the Shahinid Principality.

### 3.4.3. The settlement system of the Shahinid Principality

The Muslim and Arab geographers and historians have described the settlement system in al-Baṭiḥa at the time of the Shahinid Principality. Ibn Rūsta says that "in the Sassanian time, al-Bāṭiḥa was irrigated plains, but later water overcame the lowlands except the highlands within al- Bāṭiḥa, which emerged as hills and mounds. One [in the time of Ibn Rūsta, the tenth century CE] can see ancient traces of villages and towns underwater in al- Bāṭiḥa" (Ibn Rūsta 1892 VI: 94). Al-Maqdesi wrote that towns and villages of al-Bāṭiḥa during the fourth century AH/the tenth century CE were situated on top of hills and mounds (Jawāmid, single Jāmida) (al-Maqdesi 1887:119).

### 3.4.4. Major sites in al-Bâṭiḥa during the Shahinid Principality (Maps 6 and 7)

The archaeological sites of the Shahinid Principality are located roughly from the Islamic city of Waṣiṭ in the north to the confluence between the Tigris and Euphrates at the end of the central marshes in the south and from Shāṭṭ al-Gharrāf and the ancient city of Lagash eastward to the Tigris. A few of the sites were described by Ahmad Jamal Aldeen, who also provided the Islamic names of some of them besides the modern local names (Jamal Aldeen 1957). In 2005 I led a team from the Iraqi State Board of Antiquities and Heritage to conduct a survey in this region. The sherds we collected belonged to the typical Abbasid pottery of the fourth century AH/ tenth CE of southern Iraq (Hobson 1932, Reitlinger 1935, Dimand 1936, Safar 1945, Adams 1970, Rosen-Ayalon 1971, Fehervari 1973, Grube 1976, al-Janabi 1983, Mason and Keall 1991, Jenkins 1992, Meyer 1996, Mason 1997, 2004, Gibson et al. 1998).

The following is a description of selected major sites that were mainly occupied during the Shahinid Principality. The data presented are mostly from the author's surveys, accompanied by

Abbasid historical data and satellite imagery. Sites are selected from different environments that existed in al-Bâṭiḥa, such as marshes, canal levees, and irrigated fields.

3.4.4.1. Tell Shahrabān is located about 30 km south of Wasiṭ. The oval shape of the 24 hectare site of Shahrabān was surrounded by a wall, the bricks of which are scattered all over the site, together with the sherds of glazed pottery and fragments of glass which indicate a small Sassanian settlement and large Abbasid settlement dating back to the fourth century AH. Al-Ḥamawi 1977 described it as

> A Sassanian fortified town that has a Christian monastery and its inhabitants [the fifth century AH/eleventh CE) are Arameans. When al- Ḥajjāj built the city of Wāsiṭ (697 CE), he had shipped doors, wooden roofs, and bricks of Tell Shahrabān to be used in building his palace and the mosque (al-Ḥamawi 1977: 256).

3.4.4.2. The 20 hectare circular site of Tell Fārūth is located 20 km south of Shahrabān. It dates back to the Sassanian period, but was reoccupied in the Abbasid period. It is situated at a nexus between what were once a series of watercourses. Al-Esṭakhrī described it as a rural town that had a market (Sūq) (al-Esṭakhrī 1961:185).

3.4.4.3. *Telūl al-Raṣāfa* or *Raṣāfat Wāsiṭ* (meaning the harbor of Wāsiṭ) is located 16 km south-west of Tell Fārūth. It is located 48 km south of Wāsiṭ, which equals 10 leagues (Farāsikh), exactly as Qūdāma mentioned in his book (Qūdāma 1981:194). The western canal (Nahr Jāfar) divides the settlement into two mounds. The western mound, the largest and highest, is 24.4 hectares in size and rises almost 5 meters above the plain. It has extensive traces of architecture. The foundations of many buildings and rooms cover the central part of the mound. The surface is blanketed with Islamic glazed pottery and glass of the third and fourth centuries AH, while Sassanian pottery is only found on the southern part of the mound, indicating a small Sassanian settlement. The eastern mound (8.4 hectares) appears to have been a harbor where

plenty of pithos and bitumen were scattered alongside the edge that was facing the canal. Tell al-Raṣāfa has been mentioned by Islamic historians as a place where the Abbasid Caliphs were interested in building palaces and digging canals.

3.4.4.4. Telūl al-Qaṭṭārāt is located 17 and 52 km southeast of Tell Fārūth and Wāsiṭ respectively; it consists of seven mounds scattered over an area of 3 square kilometers. In one of the mounds, al-Qaṭṭār al-Janūbī, there is the shrine of Aḥmed al-Rifāẹī (1118–1182 A.D.), who was the founder of the Rifāẹī Sūfī order. Ibn Baṭṭūṭa visited it in the 14th century; it was inhabited and urbanized at the time, and called Qaryat Umm Ūbeida. He wrote:

> Umm Ūbeida is a group of villages located south of Wāsiṭ; the tomb of Ahmed Al-Rifai is located in one of them. There are two routes from Wāsiṭ to reach Umm Ūbeida, one an overland and one along a river. There are a plenty of trees and orchards at the villages of Umm Ūbeida (Ibn Baṭṭūṭa 1992:488).

3.4.4.5. Telūl Khamīs or Abu khamīs is located 65 km southeast of Wāsiṭ and 26 km east of Lagash, and situated on the western bank of Shaṭ al-Akhaḍer. The site consists of four mounds; they extend in a shape of a crescent for 800 m. Its 120 hectares surface is covered with sherds of Abbasid glazed pottery, especially the typical pottery of the fourth Islamic century. According to al-Esṭakhrī, Qariyat Sūq al-Khamīs was located along one of the Tigris branches below Wāsiṭ (al-Esṭakhrī 1961). The village had been rebuilt after it was destroyed by Znaj in 257 AH/871 CE (al-Samir 1945).Telūl al-Jāmida is located 104 km south of Wāsiṭ and 17 km south east of Nina, and situated at the lower part of Shaṭ al-Akhaḍer before its course entered the current central marshes. The surface of the 42 hectare settlement is covered with sherds of pottery, blue glazed pottery, and glass of the third Islamic century. Baked-bricks are also scattered, specifically at the southern part of the settlement, which rises 8 m above the plain, where traces of walls are visible on the surface as well as the remains of an Islamic baked-brick arch (Jamal al-Deen 1957:144). Al-

Ḥamawi mentions al-Jāmida, which means land artificially drained and reclaimed from the swamps, as a large village in Bâṭiḥat Wāsiṭ, that he had himself often visited (al-Ḥamawi 1977 II:10, IV:217). Al-Eṣṭakhrī describes al-Jāmida as a large integrated village between al-Baṣra and Wāsiṭ; its location is known in al- Baṭāeiḥ (al-Eṣṭakhrī 1961:188). Al-Ḥamawi adds that Ụmrān Bin Shāhīn was from al-Jāmida (al-Ḥamawi 1977 II: 11), which was also confirmed by Ibn al-Athir (Ibn al-Athir 1987 II: 119, IX: 62)

3.4.4.6. Tell al-Maḍār: al-Maḍār was a city of much importance at the time of the Arab conquest, being the capital of the Dast-Maysān region. Al-Balādhurī described it as a city that was located on the course of the Tigris (al-Balādhurī 1901:342). Al-Ḥamawi stated that al-Maḍār was still inhabited [in the thirteenth century CE], and pointed out that it is situated on a distance that takes a journey of four days from al-Baṣra towards Wāsiṭ (al-Ḥamawi 1977 IV: 468). The city was celebrated for its beautiful mosque and venerated for the tomb of Ạbdullah, one of the sons of the Imam Ạli, who was killed in 687 by the army of Mus'ab bin al-Zubair and buried in al-Maḍār. The shrine of Ạbdullah Bin Ạli, 20 km south-east of Qalāt Ṣalih, is situated at the east bank of the Tigris, on top of a 42 hectare archaeological site that contains the remains of al-Maḍār. Al-Ḥamawi confirms the location of al-Maḍār on the eastern bank of the lower Tigris. He wrote “the road from Wāsiṭ to al-Baṣra is that on the right hand where the water flows out; while to the left is the road leading to al- Maḍār” (al-Ḥamawi 1977 III: 603). He calls al-Maḍār the *Qaṣaba* of Maysān (the capital town of Maysān), and states that it was a mint-designation town for post-reform dirham. Al-Jaḥiḍ (Al-Bukhalā: 38) points out that it was famous for making terracotta jars of high quality. According to Ibn Rūsta, which is confirmed by al-Ḥamawi, the last six leagues of the Tigris course above al-Qūrna was the channel referred to as the Nahr-al-Maḍār,

which had been dammed up towards Ābdāsi and al-Maḍār (Ibn Rūsta 1892: 669 al-Ḥamawi 1977 II: 553).

3.4.4.7. *Tell Madina* is located half way between al-Maḍār and the confluence of the Tigris and the Euphrates (25 km each), and 8 km west of the Tigris. The surface of the 40 hectare settlement is covered mostly by pottery of the third and fourth AH / ninth and tenth CE centuries, but the typical Sassanian pottery covers the eastern part of the settlement. Its name means a town, which could have been the capital city of the *Zanj* revolution and the Qarāmiṭa (873-907 AD). Arab Historians have mentioned a very important village called Medina alongside the Tigris that was surrounded by dense date-palm orchards (al-Samir 1945: 85).

3.4.4.8. *Tell al-Ạqor,* an 87 hectare late Sassanian, early Islamic and Abbasid site, is located 32 km southwest of al-Maḍār and 15 km west of the Tigris on an island within the central marshes. When I visited the site in 2009, an elder from the nearby village told me that people used to collect lead from the surface of the site to make cartridges for hunting birds. In 2011, the director of the expedition that excavated the site for a year as a part of the salvage excavation project informed me that a large public building, and bowls inscribed with Aramaic-texts have been found. But the most interesting discovery are the Aramaic texts engraved on lead tablets (the so called Mandaic lead rolls), in a way that is similar to the writing on clay tablets by pressing the writing tool on the surface of the lead tablet (personal communication with Basim al-Hamdani, the excavation director). Al-Ạqor was mentioned by Arab historians as Ukr, Aqr, and Uqr; there are some linguistic similarities between these words and al-Aqor. Al-Ḥamawi described a place called Ūḳr or Ạqr Al-Sādan (the Veil), as a village that lies between Wāsiṭ and al-Baṣra that was situated on the right (i.e. to the south-west) of one travelling down the Tigris (al-Ḥamawi 1977 II: 275, VI: 697). Ibn Rusta refers to the same place under the name of Ūqr-as-Ṣayd (Fishing, or

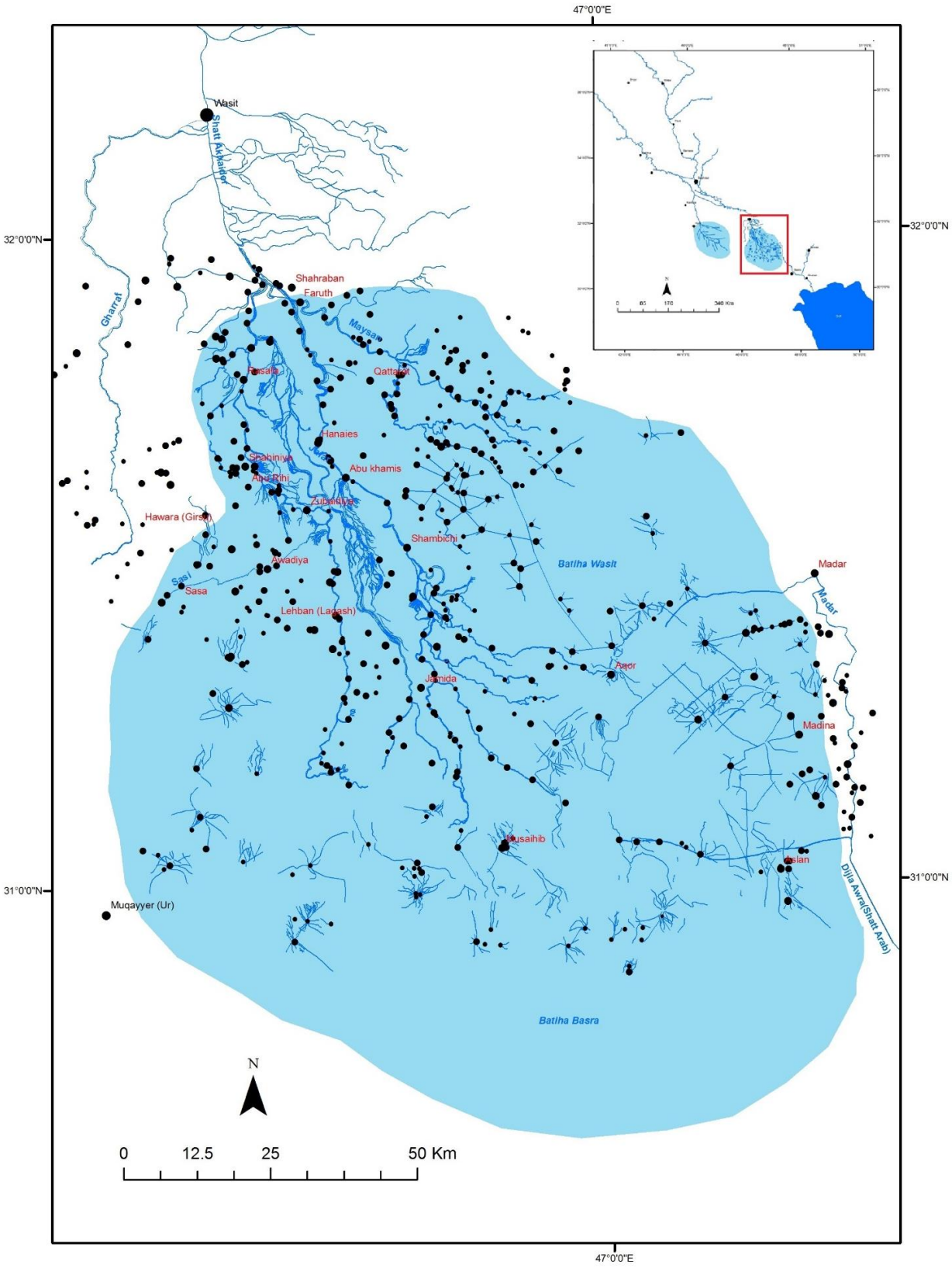
Hunting) that in his days, the early tenth century CE, was occupied by the people called Az-Zuṭṭ, that is the Indian Jhats who emigrated to the gulf in the early 9th century and were known to the ancient Arabians as Qayn and regarded as a low status-group largely due to being of non-Arab descent (Ibn Rūsta 1892:95).

3.4.4.9. Telūl al-Mūsaiḥib is situated on the western end of *al-Khyūṭ*, the long island that has Tell Aṣlān on its eastern end (see below). The site is located 70 km southwest of al-Maḍār, 30 km south east of Telūl al-Jāmida, 42 km west of Tell Aṣlān, and 22 km north of the Euphrates. Its location marks the confluence of the ancient courses of Nahr al-Jaẹfar and Shaṭ al-Akheḍer. The site contains four mounds and has an area of 200 hectares. The northern and largest mound (80 hectares) rises 6 m above the plain with broken and intact 20x20x4 cm yellow and buff baked-bricks scattered all over its surface. This marks the location of a potential public building of the Sassanian settlement. Typical Sassanian pottery of stamped-geometrical shapes on thin fine-made jars, fragments of thick glass vessels relatively modest in decoration, thin transparent colored glass, and blue glazed pottery are scattered all over the mound. The surface of the 50 hectare eastern mound is covered by baked-bricks and sherds of typical Abbasid glazed pottery, specifically blue; yellow; and green shiny porcelain with geometric and floral decoration. A salvage excavation conducted by the Iraqi State Board of Antiquities and Heritage revealed the foundations of a square mosque with a gypsum relief in Arabic writing indicating that the mosque was built in the Abbasid period (personal contact with director of the expedition). The density of kiln remains, deposits of triple-spacers, terracotta and glazed nails, and molds for making slipper-shaped coffins all indicate that the southern 28 hectares mound was an industrial district. Al-Ṭabarī (p.525) writes that in the year 66/685 al-Mūkhtār al-Thaqafī started a campaign in Kufa against the killers of Imam Hussein. Shamar al-Ḍabābī, who was one of the killers, escaped from

Kufa to his tribe, which, according to al- Ṭabarī, lived in al-Baṭiḥa in a village called al-Kaltāniya, which was a large village that had a mosque and market for ceramic pots and jars. Telūl al-Mūsaiḥib is the most likely candidate to be al-Kaltāniya since the Bani Ḍabba tribe still lives near al-Mūsaiḥib.

3.4.4.10. *Tell Aṣlān* is located 50 km southwest of al-Maḍār, 5 km north of the Euphrates, and 12 km west of its confluence with the Tigris. Its location marks the southern end of Shaṭ al-Kheḍer, and the site is situated on top of a long island that forms the southern levee of Shaṭ al-Kheḍer. The local population called this long island *al-Khyūṭ* (means a dried high and long island within a marsh or water body). It extends for 42 km from Telūl al-Mūsaiḥib in the west to Eshān Ghaḍbān, Eshān Abu Jiwārīr, and Tell Aṣlān in the east; it contains 20 archaeological sites of different sizes that date back to the late Sassanian through Abbasid periods. The lower course alongside the long islands is called Nahr Abu Narsi, which could be related with Narsi; who was the governor of Kasker and the nephew of Khusraw Parviz (Jamal al-Deen 1957, al-Ali 1971). The site of *Tell Aṣlān* consists of two mounds. The small mound is a 20 hectare round settlement, rising only 1.5 m above the plain since it was occupied for one single period, which is the Parthian. The eastern oval-shaped mound extends from northeast to southwest in length of 800 m; its highest point is 4 m. When visited, the lower part of the site was covered up to 2 meters by water, and has been eroded to the degree that brick walls, sherds, and terracotta coffins are exposed. In the large mound, the small Parthian settlement (4 hectares) lies underneath a large Sassanian one (10 hectares), whereas the early Islamic through Umayyad settlement (3 hectares) extends on the southern part of the site. The Abbasid pottery distributed almost all over the site marks the remains of a large Abbasid occupation (almost 50 hectares). Al-Ḥamawi refers to place called Balās. He wrote “Balās is a village and district that is situated on a river between Baṣra and

Wāsiṭ, inhabited by Arabs, their horses are known for quality and originality" (al-Ḥamawi 1977 II: 258). Tell Aṣlān could be the old Abbasid village of Balās since there is a modern small canal running next to it, which still carries the old name of Nahr Balāsa.




Map 7: The canal and settlement system in al-Bâṭiḥa during the Shahinid Principality, and its location within Iraq.

The ethnohistorical data presented above show that marshes of southern Iraq witnessed a political and economic independence in the tenth century CE. A governmental structure, the Shahinid Principality, emerged and ruled the marshes and its vicinities from Wasit to Basra in spite of the presence of the central administration in Baghdad, the Abbasid Caliphate. The Caliphate faced political and economic instability; most of the Caliphate's regions in the East and in North Africa were split up. Iraq was controlled by the Buwayhids, and Baghdad and most of Iraq witnessed a severe famine: canals dried up, the size of arable lands decreased, and economic resources lacked. The only region in Iraq that stayed away from these political and economic instabilities was the marshes. As a reaction against both the unjust policy of the Abbasid administration toward the people of the marshes, and the provocative behavior of the Buwayhids, who were a foreign power, the marsh dwellers started a sequence of rebellions that ended with independence and establishing their own political structure which lasted for almost a century.

Besides the political and economic instability of the central administration in Baghdad, what motivated the dwellers of the marshes to experience a political independence were a) the impregnable fortified environment of the marshes, which the Abbasid and Buwayhid armies found it impossible to be controlled, b) the economic prosperity in the marshes, and c) the valor and courage of the marsh inhabitants and the presence of an outstanding leadership.

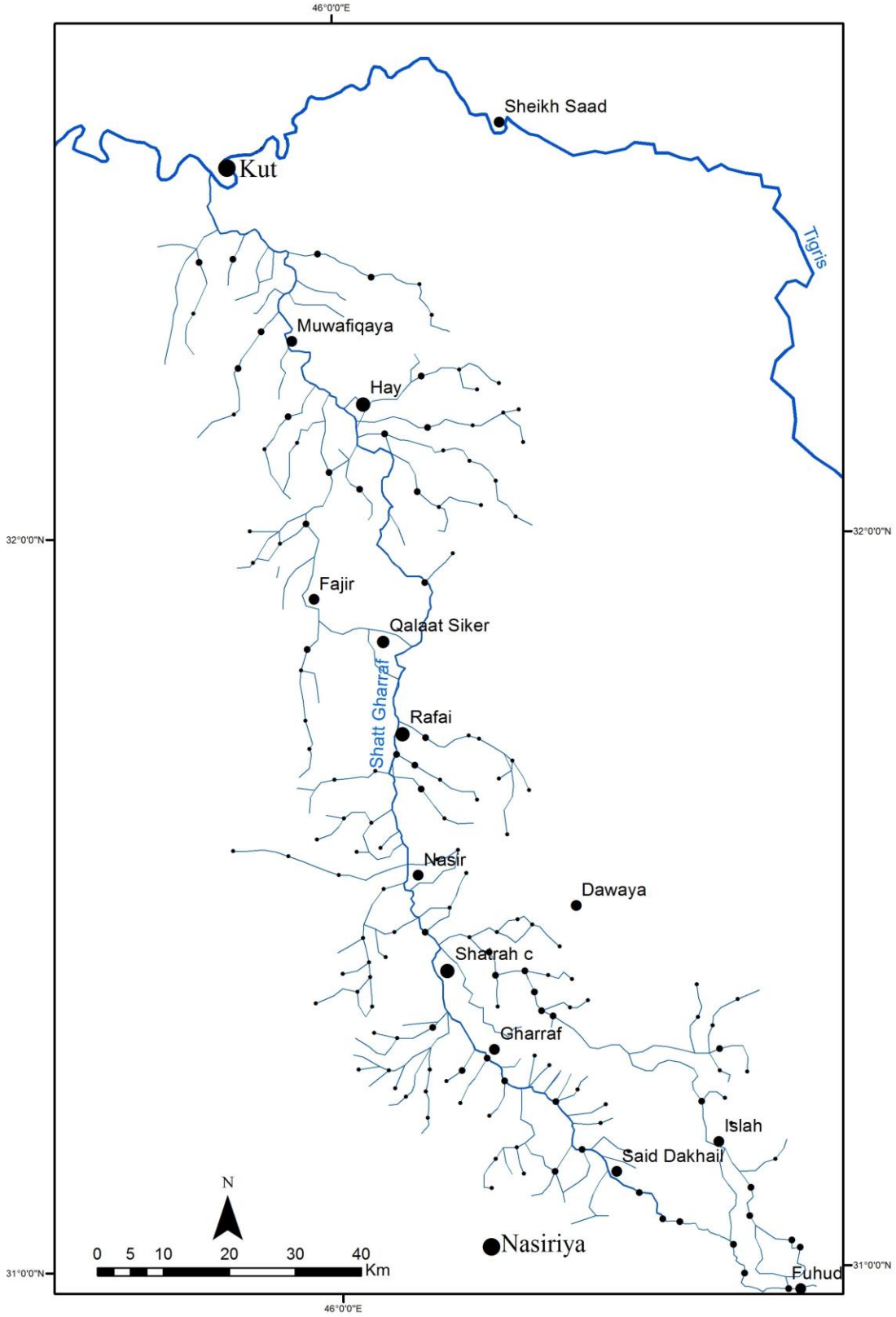
In addition, the ethnohistorical data also show that marshes emerged in the south at the time when there was a decline in irrigation and cultivation in the central and upper parts of Iraq, so there was abundance in the lower parts of the canals that run in flat areas, and where marshes appear. Settlements were established both on old levees and river banks, and within marshes away from the canal system. The canal system within the marshes was not used for irrigation; rather it served as a network of water passages for transportation.

## 3.5. Models of settlement patterns in the marshes based on ethnographic and ethnohistorical data

This section deals with the settlement pattern in the marshes that ethnographic and ethnohistorical data provided in an attempt to understand the settlement pattern during the first Sealand dynasty. The section also shows the pattern of settlement that one expects to find them archaeologically in wetland environments.

### 3.5.1. The settlement system outside of the marshes

The typical known and well-documented pattern of settlement in Mesopotamia is that of settlements located along rivers and canals, either natural or artificial canal systems. In this pattern, major urban centers are located on rivers and major canals, whereas small rural towns and villages are located on secondary canals. These canals are used for irrigating arable lands and for internal trade and exchange. This settlement and canal system can be seen in the Mesopotamian alluvial plain through millennia (Safar 1950, Jacobsen 1969, Adams 1981, Wright 1981, Sousa 1983, Wilkinson 1990a, Zarins 1992, Steinkeller 2007, Hritz 2010, Ur 2013, al-Ḥamdani 2014a) (Map 8). This linear pattern is common in flat arable lands around the world, and they always appear along the watercourses, where settlements cluster in linear patterns alongside banks and levees of canals and rivers.




Map 8: Cities, towns, villages, and hamlets along the Shaṭṭ al-Gharraf and the Tigris.

### 3.5.2. The settlement system within the marshes during times of dependence

The marshes mostly emerged in the south at the time when irrigation and cultivation activities in the upper and central of the alluvial plain declined. Ethnohistorical data show that during the time that marshes were part of the central administration and were dependent on states of urbanized areas, people often built temporary dwellings to collect marsh resources. These dwellings cannot be found archaeologically because they were temporary and made of reeds.

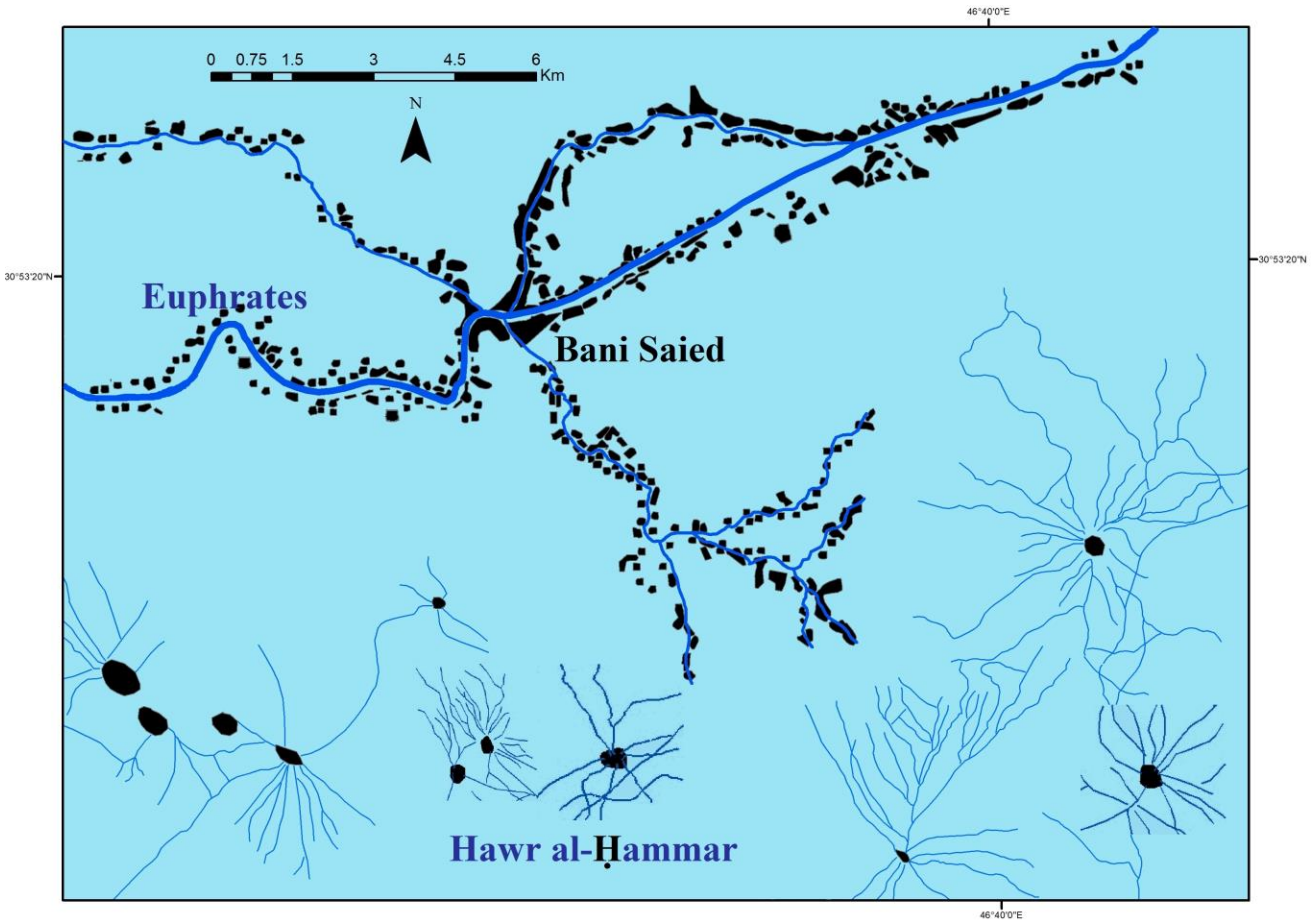
### 3.5.3. The settlement system in the marshes during times of independence

As indicated above, the marshes of southern Iraq expand when no more water is taken for irrigation at the upper portion of the alluvial plain; thus, the water level in the Tigris and Euphrates increases. Historically, the decline of cultivation activities in the plain was associated with times of political and economic instability in the central administration, where the irrigation system collapses and arable lands shrinks. In addition, historical records from the tenth century AD, for instance, indicated that when the central administration in the primary state in Baghdad, the Abbasid Caliphate, was weak politically and economically, the marsh dwellers started establishing their own administration, the Shahinid Principality, as a shadow state.

At this point marshes emerge and expand to cover most of the southern portion of the plain. Moreover, a considerable number of the canal and settlement systems that used to be within arable lands were now be surrounded by marshes. The levees and canal banks will still be visible and dry that could be used for dwelling. These canal systems are no longer used for irrigation,

but are used as transportation routes. Ethnographic and ethnohistorical data show that settlements can be seen on top of the levees of the old canals (Map 9).

In addition to the pattern of settlement on old levees and canal banks, there is another pattern that characterizes the marsh settlement, the radial pattern. In this pattern, settlements, which are mostly villages, are distributed within the marshes based on the availability of economic resources that marshes provide, and are located away from the main channels. Selecting places to build settlements depends on the presence of islands, either natural or artificial, that are close enough to the available resources. Notably, this pattern of settlement can be mostly found in areas of the marshes where dwellers depend on reed-gathering, buffalo-breeding, and fishing. If natural mounds are not available, people create patches of dry land by alternating layers of mud quarried from the marsh bottom with reed mats. These islands are surrounded entirely by water, and sometimes by reeds; therefore, within this setting of water and reeds, they look isolated. However, water-passages (*gahin* pl. *guwahin*) existed through the reed forests to connect these settlements with each other and with the external world. They could be reached by bitumen-covered wooden boats which were propelled through the water with long poles. The pattern is radial in two ways; it is radial in terms of the distribution of small settlements that are clustered in a group around a medium-sized settlement (Map 9), and it is radial because settlements are connected with each other by a radial system of waterways.




Map 9: Villages along the levees of the Euphrates, and within Hawr al-Ḥammar in southern Iraq.

# CHAPTER 4: THE ARCHAEOLOGY AND SETTLEMENT SYSTEM OF THE FIRST SEALAND DYNASTY

## 4.1. Introduction

In this chapter, an attempt will be made to understand how archaeological facts relate to political facts at the time when the marshes of southern Mesopotamia witnessed governmental structures and independence, the first Sealand dynasty (1739 -1340 BCE). I will also examine whether the archaeological data support the hypothesis that the settlement system in the ancient marshes likely indicates the existence of large and sustainable settlements with centralizing institutions similar to those in the urbanized areas. In addition, this chapter aims to determine whether the settlement pattern shows a linear distribution of settlements alongside river and canal levees or if instead there is a pattern of isolated islands within marshes or a combination of both of the settlement patterns. The final objective is to see whether the landscape during the first Sealand dynasty is dominated mostly by towns or small settlements, whether more sites in the marsh areas were occupied, whether the marshes experienced a high density of population, and whether the settlement pattern was different during the first Sealand dynasty compared to the preceding and the subsequent periods.

The history of the first Sealand dynasty (1739 -1340 BCE), which emerged in the ancient marshes of southern Mesopotamia is useful to help reconstruct the ancient landscape and understand the settlement structure. For instance, the political and economic role played by particular cities could relate to their spatial and geographic importance in the settlement system. Moreover, the locations of cities, towns, villages as well as canals were mentioned in many historical and political accounts, and sometimes they were described in detail.

The settlement patterns and landscapes of ancient marshes can be reconstructed through ethnographic, ethnohistorical, and archaeological data. The ethnographic models of settlement systems in the marshes of southern Iraq can also be applied to understand the settlement systems of the first Sealand dynasty (1739 -1340 BCE). Ethnographically, two types of settlement patterns can be expected within the marshes:

1. Rural towns and villages clustered along rivers and canals that supply marshes with water; these riverine systems are considered to be part of the marshes (al-Samir 1945, Sousa 1983, Muhsin 1988). Towns and villages stretch along levees and canals' banks forming a linear strip of settlement. Villages are distributed in linear chains between towns, and are separated by date orchards and arable land. Communication is through both land and riverine transportation.

2. Villages are distributed in the marshes; their locations depend on the presence of marsh resources. Villages are connected with each other, and with the nearby rural towns, through an extensive network of water passages. Village groupings are both within and separated by unoccupied areas of marshes, and consist of detached chains of raised land separated by creeks and streams. These villages are mostly round or oval in shape so as to minimize the impact of erosion caused by water waves.

The marshes of southern Iraq are a major ecological resource for settlement and subsistence. They provide resources and materials for construction, such as the annually renewed reeds and rushes, and for subsistence either gathered wildlife resources, such as abundant fish and waterfowl, or cultivated resources such as grain from the irrigable alluvial edges of the marshes, and fruit and dates from cultivated gardens and orchards at the levees of rivers or on islands within the marshes (Pournelle 2003a: 251–52, Algaze 2005:10, Spencer 2010:7123, Eger

2011:70). In addition, by late summer early autumn, some temporary marshes are partially dry, covered with a growth of sedges and grass, and become extensive pasture ready to welcome herds of sheep, goats, and cattle, providing an ample supply of protein-rich dairy products. Pastures could also be created on fallow and recently harvested grain fields at the edges of the marshes (Salim 1954, 1962, Sousa 1983, Ochsenschlager 2004, Algaze 2005).

The first Sealand dynasty is mostly known from cuneiform documents, but these provide little information on its settlement system despite the mention of major urban centers in southern Mesopotamia (Dougherty 1930, Gadd and Thompson 1936, Leemans 1958, Lambert 1974a, Brinkman 1993b, Van Lerberghe and Voet 2009, Dalley 2009, 2013, Zadok 2014).

The archaeological data of the first Sealand dynasty come from excavation and survey projects that have been conducted in southern Iraq. The surveys that were conducted in the lower alluvial plain of southern Iraq serve as a guide to determine the settlements of the first Sealand dynasty, and to identify its geographic extent (Adams and Nissen 1972, Adams 1981, Wright 1981, al-Hamdani 2008, 2014a, 2014b). The first survey for the archaeological sites in the marshes was conducted by George Roux in 1952 (Roux 1960), but no further survey was conducted in this area until 2003 when my team and I surveyed most of the marshes between 2003-2010 (al-Hamdani 2008, 2014a, 2014b). In addition to investigating the marshes east of Tell Leḥem, this survey also covered areas in southern Iraq that had never been included in any of the earlier surveys by Robert Adams and his colleagues. The data recovered by this survey (2003-2010) covers the plain between Larsa (T*ell Senkara*), Ur (*Tell Mugayyer*) and Eridu (*Abu Shahrain*) eastward to Tell Leḥem and beyond in the Hawr al-Ḥammar, and the plain between Lagash (*Telūl al-Hibā)* and Ur. It also examined the plain between Girsu (*Tell Tello*) and Lagash southeastward to Nina (*Tell Sūrghol*). In addition to the results of these surveys, the

archaeological data obtained from the excavated sites of southern Iraq, Uruk (*Telūl Warka*), Larsa (*Tell Senkara*), Girsu, al-Medaien, Lagash, Ur, Eridu, Nina, and Tell Leḥem, play a role in determining whether these sites have settlements of the first Sealand dynasty. Moreover, recent excavations in five sites in southern Iraq have yielded pottery from Late Old Babylonian and Early Kassite periods, which is the time frame of the first Sealand dynasty. Two of these sites, Tell Sakhariya and Tell Khaiber, are located near Ur (Zimansky and Stone in press, Campbell et al. forthcoming), and three, Tell al-Thahab, Tell al-Tizel and Tell Abu Rubab are located in the al-Hammar marsh east of Ur (Aboud 2013, al-Maliki 2013, al-Ahdeb 2013, Salih 2014). The ceramics from these sites have been compared with the new typology and classification that James Armstrong and Hermann Gasche created as a guide for the pottery of southern Mesopotamia during the second millennium BCE (Armstrong and Gasche 2014). The new chronology that is associated with this typology pushes the dates of Mesopotamia forward almost a century; this applies to the late third and the second millennia BCE. For instance, in the new chronology, the first year of SamsuIluna, the seventh ruler of the first Babylonian dynasty, is 1654 BCE instead of 1750 BCE in the Middle Chronology that has been the most broadly followed by scholars. I will be following the new chronology for the first Sealand dynasty because this chronology is relevant to the pottery, which is the fundamental standard of identifying the settlements of this dynasty.

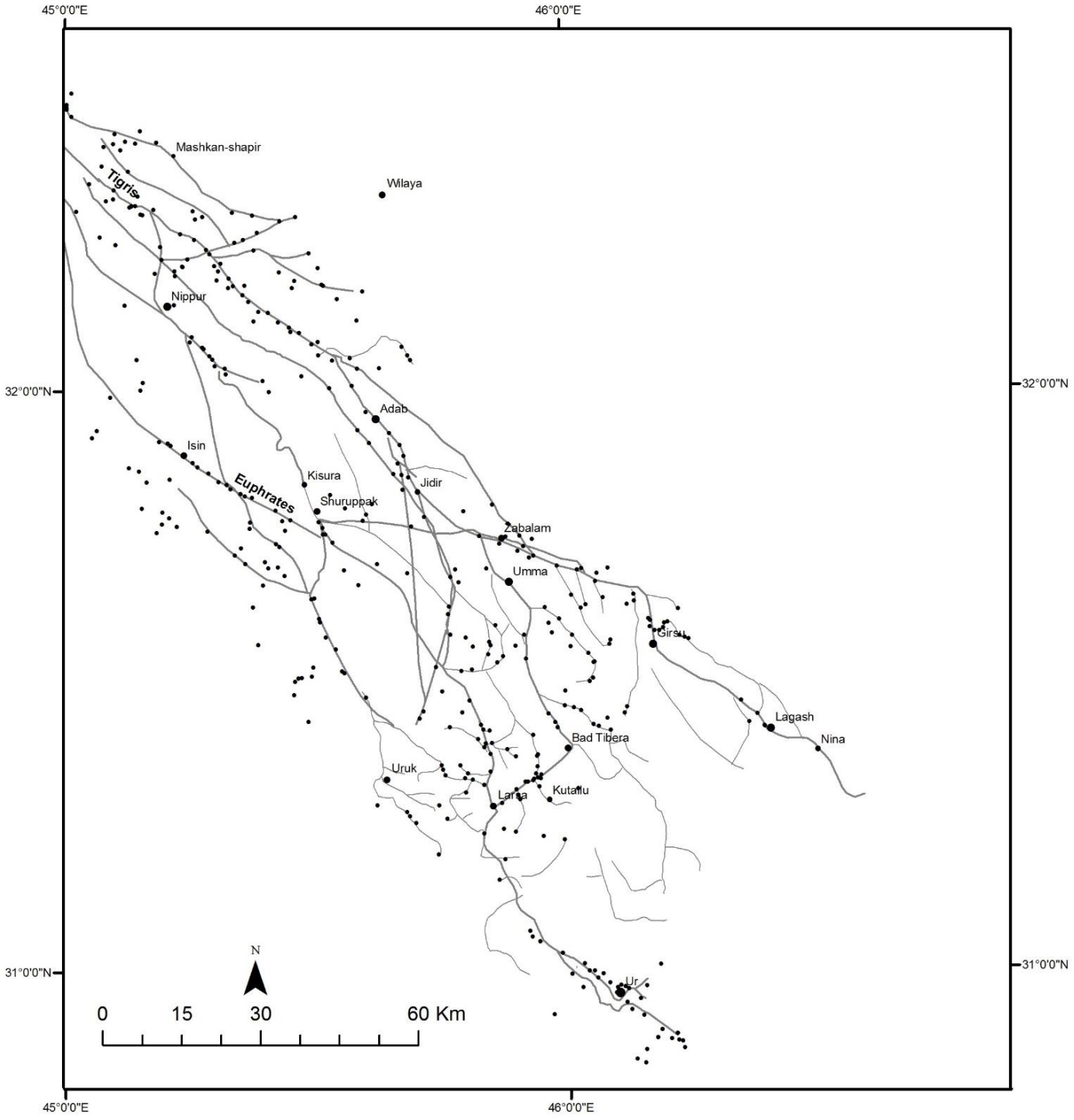
*Archaeological Sites in Iraq* and the *Atlas of the Archaeological Sites in Iraq*, which were issued by the Iraqi Directorate General of Antiquities in 1970 and 1976 respectively, were used to determine the locations and periods of occupation of the archaeological sites that likely belong to the three marsh dynasties. Two remote-sensing datasets were used to identify traces of possible surface architecture (Stone 2014). The base map for my research is derived from the

Digital Globe Quick Bird satellite image of each settlement complex. The declassified American CORONA intelligence satellite program was  used to map and reconstruct the landscape, including settlements, ancient features and watercourses, and areas of mounding (Parcak 2007, Hritz 2010, Ur et al. 2011).

### 4.2. dThe settlement and canal systems before the first Sealand dynasty

Before describing the settlement system during the first Sealand dynasty one should look to the settlement system at the period that preceded the dynasty, that is the Third dynasty of Ur (ca. 2013-2006 BCE), to determine whether there was similarity or differentiation.

The settlements in the heart of the alluvial plain, as well as at the region of Ur, experienced an an increase in the number of small sites compared with previous periods (Adams 1981: fig. 25, Wright 1981:330, fig. 20, Zarins 1992: 58, fig.1, Steinkeller 2007:188, Ur 2013: 143, fig.7.6) (Map 10). The dynasty witnessed the development of intensive irrigation systems, including major rivers and secondary canals (Adams 1981: 164–165, Ur 2013:145). Major administrative centers and urban centers were situated along rivers and canals in the heart of the alluvial plain between Nippur and Uruk; these included the cities of Nippur, Adab, Tell Willaya, Isin, Umma, Zabalam, Bad-Tibira, and Larsa. The Tigris and the Euphrates ran parallel each other in the center of the plain. The Tigris flowed next to the city of Adab downward to Umma, and southeastward to the Girsu-Lagash region, while the Euphrates ran near Nippur and Isin cutting the plain all the way south to Ur, the capital-city of the dynasty.




Map 10: The settlement and canal system during the Third dynasty of Ur (ca. 20113-2006) (after Adams 1981, Wright 1981).

### 4.3. The definition of the Sealand

The Sealand was a largely marshy area in southern lower Mesopotamia. It was called KUR-A-AB-BA in Sumerian, *māt tâmti* (*m*) in Akkadian during the second millennium BCE (Dougherty 1930:2, Brinkman 1963:234, 1993: 6, George 2011:171, Zadok 2014:222), and *bab-marrati* during the first half of the first millennium BCE (Zadok 1982:59). According to the Babylonian King Lists A and B, it was also called ŠEŠ-ḪA or BALA ŠEŠ -KÚ-KI (Lambert 1974:208), and BALA URU.KU.K[I] (Kinglist B), BALA URU.KU6 (Kinglist A), and E-URU-KU-GA ki (Kinglist BM 35572+) (Brinkman 1993:6). The region of the Sealand was the seat of power for at least three dynasties from the middle of the second millennium BCE (Brinkman 1993:6, Hurowitz 1997:39), but the region had no independent political status before the late Old Babylonian period (Zadok 2014:222). The geographic name of the dynasty associated with the Sealand was given in the king-lists, which were written much later, during the first millennium BCE. The first time that the title "king of the Sealand" LUGAL.A.AB.BA, appeared independently was in the reign of Samsuiluna (ca. 1750 - 1712 BCE, 1654- 1616); this is now known as the first Sealand dynasty (Dougherty 1930:2, Gadd and Thompson 1936:87, Saggs 1957:193, Lambert 1974:208, Yoffee 1978:22, Beaulieu1988:36, 2002: 101, Brinkman 1993: 6, Crawford 1996: 17, Dalley 2009:1, 2013:177, Koppen 2010:456, George 2011:171, Zadok 2014:222) or the Sea Country (Unger 1933a:2, 1933b:311).

### 4.4. A brief review of the political history and the governmental structures in the Sealand

The marshy area of southeastern lower Mesopotamia, the Sealand, was mentioned as having had a governmental structure of its own, and it occasionally served as a focal point for resistance to the monarchs ruling from the northern part of the alluvium. The high points of Sealand power

seem to have been attained three times: first, in the mid seventeenth century, when Illuma-ilu successfully resisted Samsuiluna and Abi-ešuḫ, and established the first dynasty of the Sealand (ca. 1740-1475 BCE) from that time through the early Kassite period (Brinkman 1993:10). The second time was during the Second Sealand dynasty (ca.1025-1005 BCE), which succeeded the second dynasty of Isin (ca. 1155-1025 BCE). The third time was the Bit-Yākin dynasty between 720 and 640 BCE, when Mardukapla-iddina II and his tribal descendants repeatedly thwarted the territorial ambitions of the Assyrian empire at its height.

It is perhaps no coincidence that these times corresponded roughly with high-water phases in the hydrological history of the marshes and the Arab-Persian Gulf (Kassler 1973: 15, Kennett et al. 2006: 69), when the area would have been more than usually inaccessible to land-bound armies and would have fully deserved the appellation "Sealand." The region prospered from its own agricultural produce (dates, grain, pigs, and cattle), as well as from transit trade from the Gulf, Euphrates, Elam, and the Arabian desert. The Sealand retained its importance as long as Babylon maintained its independence, but the area declined politically after the close of the last Babylon dynasty in 539 BCE (Zadoc 1982: 226-227, Beaulieu 2002:109).

The first Sealand dynasty is mentioned in the Mesopotamian *King lists* as having had 11 rulers (Appendix 6), but there is little if any archaeological material which can definitely be associated with them and they are only known from a few inscriptions. One of the earliest of these is an inscription of one of the first kings of the dynasty from Nippur in about the 30th year of SamsuIluna, just before the city was deserted (Gasche 1989:138). One of the latest records the defeat of the dynasty by a Kassite ruler of Babylonia, Agum III (ca.1450 BCE). Between these dates there is only negative evidence for the extent of their kingdom in that cities like Ur seem to have continued in a semi-abandoned and economically depressed state for almost all this period

of time. Very little is known of the structure of the kingdom, of its extent, or of its material culture.

### 4.5. The location of the Sealand and the major cities in the south based on textual data

The first Sealand dynasty is mostly known through textual data; however, these are rare. The first textual evidence that has mentioned the Sealand came from a secondary archaeological context. Two inscribed commemorative objects from the early Kassite period mentioned the Sealand. The first text was written on a mace-head that was part of a hoard found in a Parthian-period house in Babylon and names "Ula (m)-burariaš, son of king Burna-burariaš (ca. 1410 BCE), as "king of the Sealand" (Marzahn and Schauerte 2008:112 Abb. 44 left). The second was inscribed on an agate stone weight in the shape of a frog with the name of "Ulam-burariaš, son of king Burna-burariaš". This was found in an early Iron Age tomb at Metsamor, in Armenia, in the Ararat plain west of Yerevan (Kohl 1992:128). These objects are genuine and were manufactured for Ulam-buriaš, the "brother of Kaštiliaš," who according to the ABC 20 Chronicle of Early Kings conquered the Sealand (Grayson 1975:152–156, Glassner 2004:56). In addition, a tablet found at Tell Umar (ancient Seleucia) on the Tigris, refers to *gul-ki-šār*. Gulkishar was the sixth ruler of the first Sealand dynasty after Illuma-ilu, the founder of the dynasty (Yoffee 1978:22, Koppen 2010:456). The tablet is considered to be the earliest known record of the formulae for the making of glazes (Gadd and Thompson 1936:87, 91).

Raymond Dougherty concluded that the Sealand was located at the northern end of the Arab-Persian Gulf, for it was mentioned in the campaigns of Sargon of Agade in the middle of the third millennium BCE when Sargon brought home the captured booty by a way of the Sealand (*Šal-la-su-nu ina ma-a-ti timâti ú-še-bi-ra*) (Dougherty 1930:2, 24). This statement could

indicate that the Sealand was a district which could be traversed during part of the journey of Sargon on his way home. This assumption was supported by a Late Babylonian unbaked-clay tablet (BM 92687) that contains a sketch of the earth's surface that was known during the dynasty of Bit Yakin (796-703 BCE). The sketch and its related textual information, which is commonly called "The Babylonian Map of the World", shows the location of marshes, a canal system, and Bit Yakin in the south of Babylon and to the west of Susa (Horowitz 1988 148,155,fig.1, Smith 1996:210, figs.1 and 2) (Fig.9).

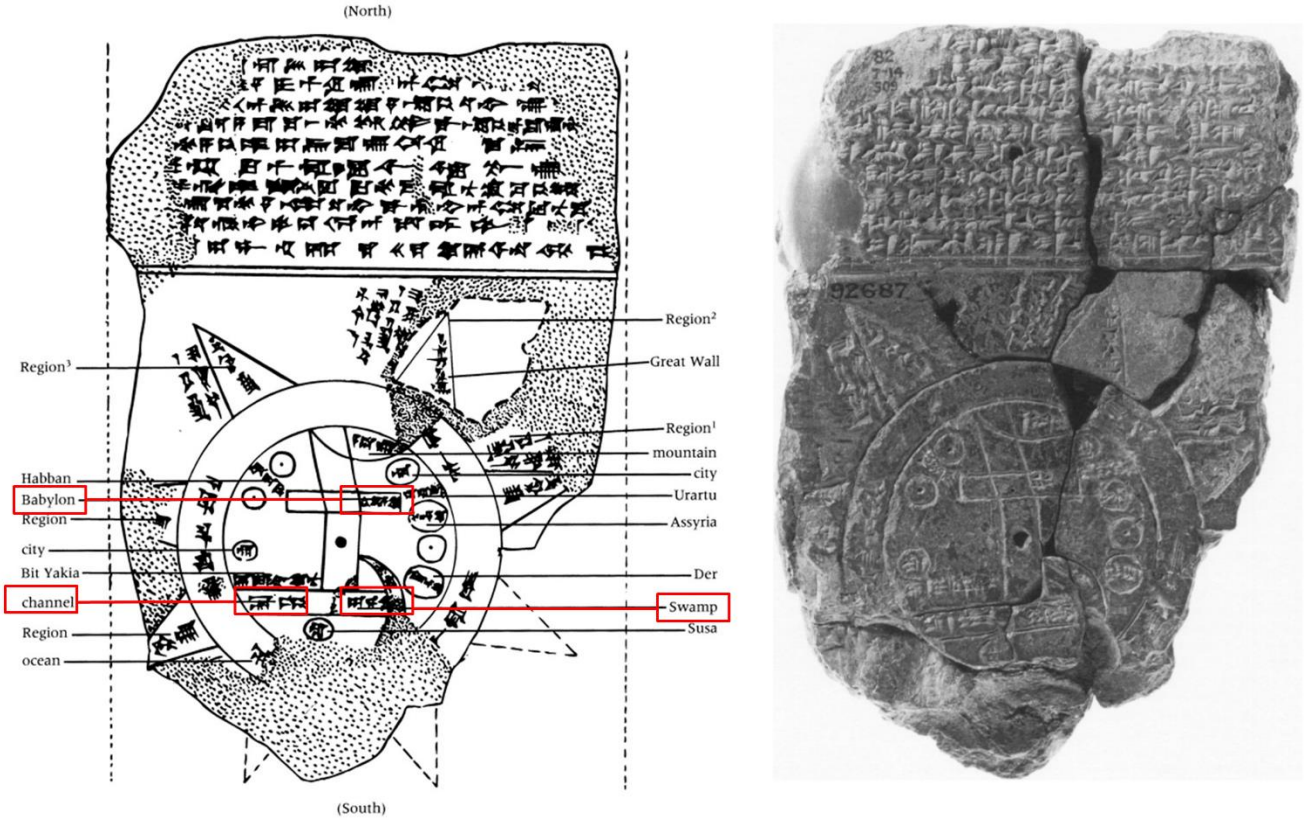



Fig. 9: An unbaked-clay tablet (BM 92687) containing a sketch of the earth's surface showing the locations of marshes and canal system during the dynasty of Bait Yakin (796-703 BCE) (after Horowitz 1988 148, 155, fig.1, Smith 1996:210, figs.1 and 2).

More important are the two kudurrus (boundary stones) from the Middle Babylonian period (the Kassite dynasty through the second dynasty of Isin) that indicate the relations between Uruk, Larsa, and the Sealand; they recorded grants of land located in the vicinity of Larsa, at the border of the Sealand province (Arnaud 1972b:167, Nashef 1982: 132, Beaulieu 1991:77). As Uruk and Larsa are located close to each other, this could suggest that the two cities and their related settlements were part of the Sealand province during that period, or that their territories bordered on it. These relations between Uruk and the Sealand are also suggested by the name of the governor of the Sealand at the time of Enlil-nadin-apli (ca. 1103–1100 BCE), the 5th king of the second dynasty of Isin. The governor's name, Eanna-šum-iddina, bears a theophoric name celebrating the main sanctuary at Uruk (Beaulieu 2002: 112). Another indication for the geographic association between the Sealand and Uruk comes from the archive of the Eanna temple at Uruk at the end of the second millennium and might indicate that Uruk was located at the northern edges of the Sealand. The governor of the Sealand, Kaššu-bēl-zēri, made a donation of land to the goddess Usur-amassa of Uruk, and the text indicates that the piece of land in question was located in both Uruk and the Sealand (Thureau-Dangin 1919: 118, Brinkman 1993:8, Spa and Lambert 2005:8). According to Paul-Alain Beaulieu, the text reads:

> (A field with a) sowing capacity of twelve (kurrus), (calculated) at the ratio of three seeds per a certain area of land measured by the large cubit, from the arable land located at the gate of Adad in Uruk on the bank of the royal canal in the province of the Sealand (Beaulieu 2000:29-30, 2002: 112).

The repeated mention of the Sealand in the archive of the Eanna temple in Uruk suggests that the geographic location of the Sealand was close to Uruk. In addition, as observed by John Brinkman, a kudurru of king Marduk-zakir-Sumi I (ca. 850 BCE), which records an estate granted to the Eanna temple in Uruk, indicates that Uruk was part of the Sealand (Thureau-

Dangin 1922: 86, Brinkman 1993:8, Beaulieu 2002: 113). The Neo-Babylonian archival texts from Uruk show that the high officials of the Sealand interacted with the authorities and private citizens of Uruk (Spa and Lambert 2005:9). Administratively, Uruk was under the domination of the Sealand administration, and judicially, Uruk was at least sometimes subordinate to the Sealand authorities. There are two examples of this relationship: a group of officials of the Sealand acted as judges in a case concerning the status of a slave dedicated in the Eanna temple, and the governor of the Sealand appears to preside over a panel of judges which includes other Sealand officials as well as the governor of Uruk, an official from Larsa, and other southern officials (Beaulieu 1991:65, 200 2002: 113). Another piece of evidence which might support the potential location of the Sealand beyond Uruk in the extreme south of Mesopotamia comes from the Babyloniaca of Berossus (Burstein 1978:26), which indicates that the Assyrian king Sin-sar-iskun had sent Nabopolassar to suppress a rebellion in the Sealand province (Beaulieu 1997:377, 1998:201).

Using a fragment of a later chronicle which he joins to K 8532, W. G. Lambert has restored the relevant line of the fragment as: *e2-uruku3- g[aki hlu-ma-ilu lugal-e mu ... in-aka*]). Based on this, he identifies the capital of the first Sealand dynasty as either Uruk (g) or E'uruku (g), with a tentative identification with modern *Telūl al-Hibā*, the ancient city of Lagash (Lambert 1974:209-210**,** Selz 2015:497). The site of al-Hiba has been identified with the ancient *uru.ku* from a brick inscription found on the site (Biggs 1976:2, Nashef 1982: 276, Brinkman 1993:6). Lambert argues that when the government of Babylon was weak a dynasty in al-Hiba could have controlled the Sealand to their south. This site, he argues, would have had the advantage of being both difficult to conquer and unnecessary to control if one wished to maintain access to the gulf (Lambert 1974:209-210). However, neither the excavations nor the survey (which collected

somewhat less than 1% of the diagnostic surface sherds) at al-Hiba recovered any remains later than the Isin-Larsa period (2025-1894 BCE), which preceded the first Sealand dynasty (Hansen 1970: 250).

However, the most useful group of texts is an archive that was produced by a palace administration in an as yet unidentified city; the archive contains 463 tablets dating to the seventh and eighth kings of the First Sealand dynasty. The archive documents a span of little over ten years, covering the end of the reign of Pešgaldaramaš and the early years of Ayadaragalama (Dalley 2009). In her study and analysis of the Sealand archive, Stephanie Dalley argues on the basis of the mention of various deities associated with known cities for the geographic location of the first Sealand dynasty's sphere of control. These include Nina, Nippur, Ur, Uruk, Eridu, and Larsa, all of which except Nippur are located in the lower part of southern Mesopotamia. Stephanie Dalley suggests that Nina, which lay within the city-state of Girsu-Lagaš, is the most likely provenance of the capital city of the first Sealand dynasty. She built her argument upon the frequent occurrence of the patron deity of the dynasty, the goddess Nazi (Nanse), on individual supply records in the archive of the dynasty (Dalley 2009:4). The recognition in some of the archive's texts that Enlil was the god who bestowed kingship on Ayadaragalama, the eighth king in the first Sealand dynasty, which highlights the importance of the Nippur cult, might suggest that Nippur (*Telūl Nuffer*) was the capital city of the dynasty. However, the long-term excavations at Nippur have yielded no evidence for the site being occupied during this period.

Ur is another potential provenance for the capital city of the dynasty. After the destruction of the city between ca. 1739-1737 BCE in the 9$^{th}$ and 11$^{th}$ years of the reign of Samsuiluna, king of Babylon, Ur was not completely abandoned, as is suggested by several scholars (Adams 1981:

165, Gasche 1989, Ur 2013:147). Moreover, Sir Leonard Woolley, based on his excavations at Ur, concluded that there was not a period of abandonment (Woolley 1976:14). Dalley says that the letter (no.6) in the Sealand archive that refers to Ur as "the Holy city" could suggest that Ur was regarded as the capital city of the dynasty (Dalley 2009:6, 24). However, Elizabeth Stone sees that there was a decline in written documents at Ur after 1740 BCE, which she interprets as an indicating that the city was mostly abandoned (Stone 1977:271, fig.1). This was partially confirmed when recent soundings in Area AH encountered no ceramics that would post-date Samsuiluna (recent excavation at Ur by a team from SUNY at Stony Brook). At a minimum this suggests a quite limited occupation at Ur during this time, perhaps focusing only on the sacred area. Unfortunately, this has been completely excavated with somewhat limited publication of the ceramics. In general it appears that the excavations at Ur did not uncover features dating to the first Sealand dynasty, and at best the pottery of the first Sealand dynasty is rarely found at Ur, scattered near the Old Babylonian settlement (Woolley and Mallowan 1976:23).

The presence of Uruk's deities, Belet-Eanna and Ninurta-of-Uruk in the Sealand archive, could indicate that the dynasty felt loyalty to Uruk, or that Uruk was the dynasty's capital (Dalley 2009:6). In addition, four texts in the archive also mention sacrifices to the goddess Inanna as well as Belet-Eanna, who dwells in Uruk, by Ayadaragalama, the ninth king of the dynasty, who controlled Uruk (Dalley 2009: 6, 24, 60, 65, 66, 74, 80). This could suggest that Uruk was the capital. Nevertheless, the archaeological remains of the late Old Babylonian and early Kassite periods, the time frame of the first Sealand dynasty, are rare (Van Ess 1991: 91).

In the archive, one text refers to a dedication to the god Enki, whose main cult center was at Eridu, and in another text, Damgalnuna and Asarluḫi, the consort and son of Enki respectively, were mentioned, followed by a list of deities based in Eridu and Ku'ara, a nearby city (Dalley

2009: 6, 81). Once again the site of Eridu has little ceramic evidence for settlement at the time of the first Sealand dynasty, though sherds that would date to this time period were recovered from the sounding in the palace (Safar et al. 1980:302,303, fig. 158,159). The city of KI.Sl.GA (probably *Tell al- Lehem*) is mentioned in the archive in two texts as giving offerings to the dead, which could indicate the presence of a royal cult (Dalley 2009:6 93,236). The great temple of Šamaš at Larsa, which was built during the early Old Babylonian period and was restored by Burna-Burias II in the fourteenth century, was also mentioned in the archive. The goddess Inanna/ Ištar of Larsa is listed in three texts (Dalley 2009:6, 61, 64, 80). However, in none of these sites has much Sealand pottery been found, suggesting a different geographic location of the capital of the first Sealand dynasty than those suggested by Dalley.

In addition, the textual evidence from the Early Dynastic period- III (ca. the twenty-fifth century BCE) from Girsu indicates the presence of the Sealand as a marsh-like environment at the head of the Gulf (Donbaz and Foster 1982: no. 36). According to Cyril J. Gadd and Robert Biggs, the evidence suggests that during the Early Dynastic period Nina/Sirara may have functioned as a seaport (Gadd 1971: 130, Biggs 1974:54). Cuneiform texts, as old as the Third dynasty of Ur (ca. 2113-2006 BCE) and the Akkadian period (ca. 2334-2193 BCE), referred to *A-ab-ba* as an area that was located south of Lagash, where the ancient city-port of *Gú-ab-ba*$^{ki}$ was located (Michalowski 1989:lines 168-170 with notes, Vermaak 2008: 463, 2012:93) . The term *Gú-ab-ba*$^{ki}$ means "sea-shore", and was often listed in texts of the Third dynasty of Ur with two other places, *Ni-na*$^{ki}$ and *Ki-nu-nir*$^{ki}$ within the region of Girsu/Lagash (Vermaak 2008: 465). Guabba has been interpreted as a harbor town under the jurisdiction of Girsu/Lagash (Sjöberg and Bergman 1969:109, notes 64 and 65, Jacobsen 1969: 104, 105, 109, Heimpel1976:527-528, Foster 1982:162, note 18, Zarins1992:66-67, Cooper 2006:41, Vermaak 2008: 467, 2012:93).

Since pre-Sargonic and Sargonic times, there are references to large boats that reached Gú-ab-ba$^{ki}$ for trade (Michalowski 1989, Vermaak 2008: 467). In pre-Sargonic texts, people from villages around Girsu, who placed themselves as clients at the disposal of the temple household of the goddess Bau in Girsu, were sent to Guabba (Gelb 1979:61, Vermaak 2008: 465, 2012:93). Guabba in the Ur III period was a village at a distance from the seashore, and could be reached by boats moving up the river. Several texts refer to fresh water fish in association with Guabba (Vermaak 2008: 468, 2012:93). The town of Guabba was the site of a temple-household of Ninmar, and constituted the largest religious and economic institution in that area of *a-ab-ba*; Ninmar's temple household owned extensive tracks of arable land, orchards, tree plantations, and flocks of sheep (Steinkeller 2013, Appendix 1:40). The distance of the location to and from Guabba is uncertain despite that fact that some texts refer to the distance as twelve days travel by boat from Guabba to Puzrish-Dagan (*Tell Draihem*), and five towing days from Girsu to Guabba to the south. According to I.M. Diakonov (1969:527) and Juris Zarins (1992: 67), a crew could tow a boat for about ten kilometers per day, so the total distance would have been some fifty kilometers. However, W. Heimpel (1976:528) identifies it with *Ishan Hoffa*, sixty-five kilometers east of Girsu, and Zarins (1992:67) associates Guabba with *Tell Ijdaiwah*, 63 kilometers south of Girsu. On the other hand, Piotr Steinkeller has recently located Guabba at a distance of 58 kilometers south-east of Girsu (Steinkeller 2013:431, fig.3). However, none of the proposed sites fits with the potential location of Guabba. The site of *Ishan Hoffa* is entirely an Islamic settlement; *Tell Ijdaiwah* is a small site, only eight hectares, which is inconsistent with the likely size of Guabba given its importance as a port-city. Nevertheless, the site dates back to the appropriate time period, the late third and early second millennia BCE.

The proposed location of Guabba by Steinkeller is also problematic since the location is occupied by an Islamic site (*Archaeological Sites in Iraq*). The new survey data that have been conducted by the author can therefore be useful for identifying the location of Guabba, given its significance for determining the location of the Sealand (al-Hamdani 2014a, 2014b). More details about the potential location of the ancient port-town of Guabba can be found on pages 146 and 147.

Another issue is the question of whether the Sumerian term A-AB-BA and its Akkadian version *māt tâmti* (*m*) means a sea, as it is commonly translated, or if it means a marshland. Robert Adams suggests that *a-ab-ba* refers to a large body of open water like the current Hawr al Ḥammar (Adams 1981: 15, 31). The ethnographic data support the notion that the term A-AB-BA could mean a marshland or water body--not necessarily a sea or a gulf. Even today people in southern Iraq describe the open-water areas either as a "marsh-sea" or sometimes as "the sea", despite the fact that they are located in the marshes (Philby 1959:5). The reason behind this is that these open-water areas in the marshes are deep, mostly free of vegetation, and large enough that their edges cannot be seen, so it is more like a sea. An example of this is the marsh next to Eridu, the al-Sulaibiya depression, which is called the lake or the sea (*bahr al-Sulaibiya*) (personal observation). Another example is the early twentieth century marsh (now is mostly dry) next to al-Najaf that is called al-Najaf sea (*bahr al-Najaf*), and was 60 miles long and 30 miles across (Ionides 1937:89). Moreover, historical data also indicate that A-AB-BA could be referred to as a lake, not necessarily a sea. The Neo-Assyrians called both Lake Van and Lake Urmia in Anatolia A-AB-BA although one can often see across them (Paul Zimansky personal communication).

## 4.6. The settlement system and the archaeological landscape during the first Sealand Dynasty.

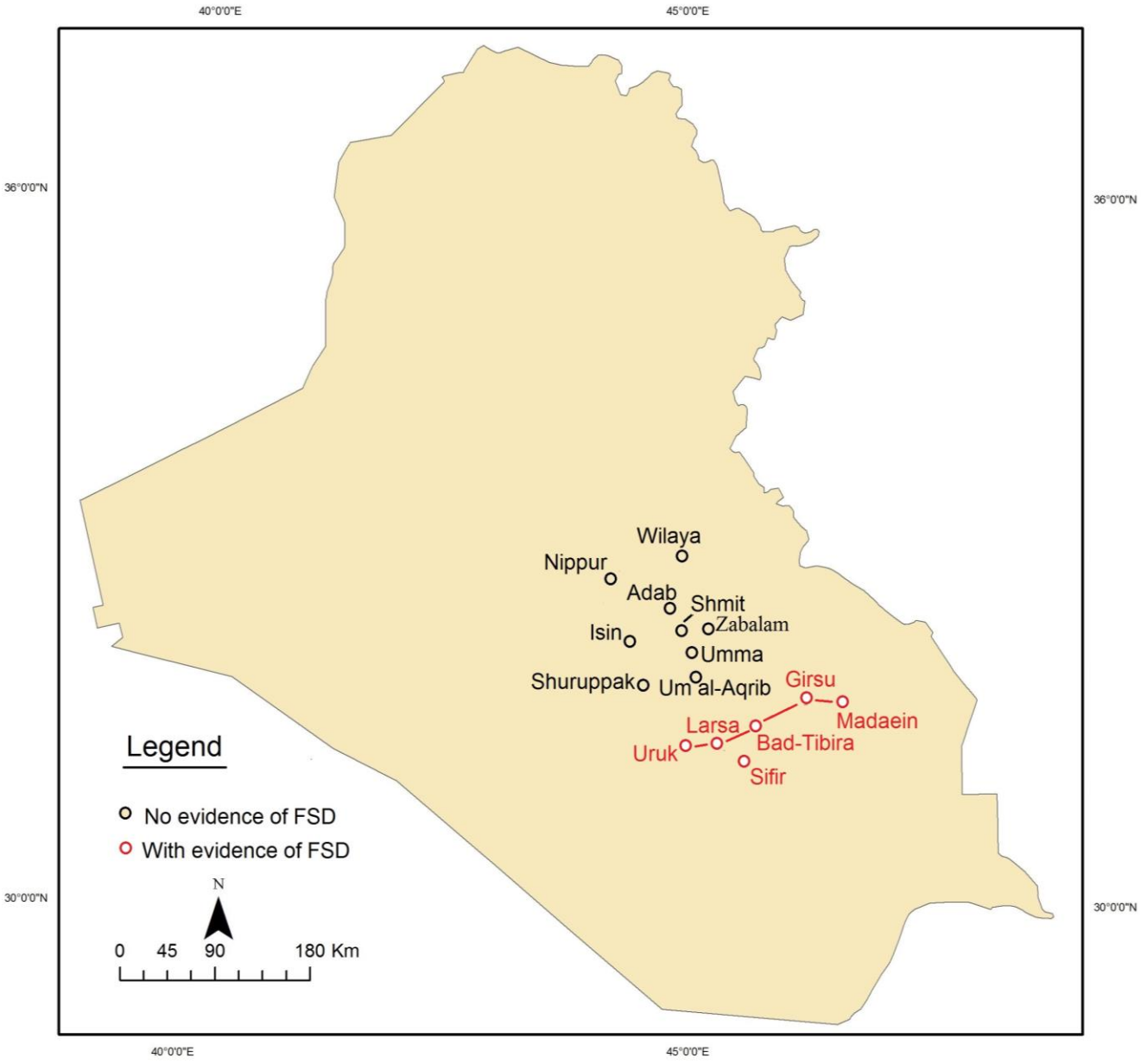
### 4.6.1. Identifying the extensions and boundaries of the settlement of the first Sealand dynasty

As indicated in the previous section, scholars have argued that the location of the sealand was in the southernmost part of Mesopotamia. They have also suggested that some of the southern cities might have served as the capital city of the first Sealand dynasty; but these reconstructions remain imprecise because they are based primarily on textual data. However, archaeological data suggest that northern extension of the first Sealand settlement did not go farther north than the ancient cities of Uruk, Larsa, and Girsu.

#### 4.6.1.1. The northern extension of the first Sealand dynasty

In order to determine the northern extension of the first Sealand dynasty in the alluvial plain of southern Iraq, one has to examine the pottery found either through excavation or through survey projects conducted as far north as Nippur. There are two reasons for selecting Nippur as a northernmost point for examining the presence of the first Sealand dynasty settlements. First, we know that the kings of this dynasty did penetrate to the north, since there are five legal documents excavated at Nippur which bear year-names mentioning Illu-ma-ilu, the founder of the dynasty (ca.1720 BCE) (Vedeler 2006:90). Second, Stephanie Dalley suggests that the first Sealand Dynasty archive that she studied came from a place somewhere in the vicinity of Nippur (Dalley 2009:9). It is obvious that the excavations at the ancient city of Isin (*Ishan Behriyat*) did not reveal pottery of the first Sealand dynasty (Hrouda 1977); moreover, Isin had a cessation of text production since the 22$^{nd}$ year of the SamsuIluna's reign (ca. 1728 BCE), which likely indicates a settlement decline or a population displacement (Stone 1977:271, fig. 2). This

conclusion, and all the coming discussions and conclusions are based on examining the collected pottery against Armstrong and Gasche's new classification (Armstrong and Gasche 2014). Like Isin, excavations at the ancient cities of Adab (*Telūl Bismaya*)(Banks 1912,Zhi 1988, Wilson 2001, Wilson et al. 2012) Shuruppak (*Tell Fara*) (Martin 1988), Umma (Tell Choukha) (Al-Mutawalli 2009), Gisha (*Tell Um al-Aqarib*) (Almamori 2004, 2014, Youkhanna and Almamori 2002), Zabalam (*Tell Bzaikh*) (Alsabihawi 2004), *Tell Shmit* (Abdulraheem 2004), and *Tell Wilaya* (Hussein 2004) did not have any pottery dating to the first Sealand dynasty. On the other hand the excavations at Uruk (Boehmer 1972, Schmidt 1978, Duda 1979), Larsa (Margueron 1970, Huot 1983, 1989. 2003, Bachelot and Castel 1989, Lecomte 1989, Calvet 2003 Calvet, et al. 2003, David 2003, Thalmann 2003), Girsu (De Sarzec 1894, Parrot 1933, 1948, 1968, Cauvin 1979), and Madaein (De Genouillac 1936) have produced pottery forms that are associated with the first Sealand dynasty. In addition, the surface diagnostic sherds at both the south-eastern mound of *Telūl al-Medina* (ancient Bad-Tibira), and the main mound of *Tell Sifir* (ancient Kutallu), indicate a settlement of the first Sealand dynasty (al-Ḥamdani 2008). Therefore, the absence of the Sealand pottery in the excavated and surveyed sites north of the cities of Uruk-Larsa-Girsu, and the presence of such pottery in these cities makes it possible to infer the northern geographic extension of the political administration, but not necessarily the political influence, of the first Sealand dynasty (Map 11). It also could determine the northern edges of the marshes at the time of the first Sealand dynasty, despite the fact that such determination is not absolute since it is based only on ceramics.




Map 11: A map showing the northern extension of the first Sealand dynasty: Sites in black show no evidence of the Sealand occupation, and sites in red show such evidence.

#### 4.6.1.2. The southern extension of the first Sealand dynasty

The surveys in the southern marshes that were conducted in 2003 indicate that the oldest occupation of the Hawr al-Hammar dates back to the Isin-Larsa period; sites of this period are

concentrated east of Tell el-Leḥem, and are distributed alongside the very clear traces of an ancient river (Roux 1960, al-Ḥamdani 2008, 2014a, 2014b). This was the extension to the south of the watercourse which passed to the east of Eridu and past Tell el-Leḥem. As was the case with most of the sites surveyed by Henry Wright in its northern extensions, most of those alongside it dated back to the first half of the second millennium BCE (Jacobsen 1969, Wright 1981, Zarins 1992). Following the Isin-Larsa sites, a group of sites of the Old Babylonian period-the first Babylonian dynasty-are also located alongside the same ancient canal. A group of sites of different sizes, which were located about 30-50 km east of Tell el-Leḥem, came about immediately after the Old Babylonian period. George Roux visited them in 1952, along with other sites in the eastern part of Hawr al- Hammar, and dated them to the Old Babylonian/ Kassite periods based on the pottery (Roux 1960:27-30). However, the drawings of the pottery collected by Roux and pottery collected during the 2003 survey provide evidence of the first Sealand dynasty occupation at these sites. Moreover, salvage excavations that have been conducted by the Iraqi State Board of Antiquities and Heritage from 2011-2012 in three of these sites, namely *Tell Abu Thabi*, *Tell al-Ṭizel*, and *Tell Abu Rūbab*, have yielded data which have confirmed that the sites belong to the first Sealand dynasty. These data include pottery, and, more importantly, written tablets, specifically those from *Tell Abu Thahab*. The tablets were initially studied by the expedition members who indicated that they were mostly economic texts (personal communication), but they are not yet published (Aboud 2013, al-Maliki 2013, al-Ahdeb 2013, Salih 2014). Some of these first Sealand sites are distributed alongside the ancient canal, whereas other sites are located deep in a marsh area away from the canal (al-Hamdani 2014:17, Fig. 6.2). The Neo-Babylonian sites are located close to the eastern end of the ancient canal. The most important Neo-Babylonian site that is located 70 km south-east of Tell el-Leḥem

is Tell Abu Ṣalābīkh; it is situated on a rectangular island located at the eastern end of the watercourse. Tell Abu Ṣalābīkh was one of the sites that George Roux visited; he noted that the mound had pottery and architecture dating to the Neo-Babylonian period. Roux found at Tell Abu Ṣalābīkh a shoulder of a pot inscribed with a cuneiform phrase in Akkadian transliterated by Adam Falkenstein as SHA.BIT-IA-KIN (Roux 1961:27). Bīt- Yākin was the most powerful of the Chaldean tribes in the eighth century BCE during the reign of Marduk-apla-iddina II (ca. 722 -710 BCE), who was called son of Yākina, and king of the Sealand (*šar tamtim*) (Smith 1954:20, Roux 1961:27, Al-Ahmed 1968: 85, Brinkman 1984a:15, 46, Beaulieu 2002: 109). As the term *tamtim* was continuously used to refer to the Sealand from the Old Babylonian period up to the post Neo-Babylonian period, one can assume that the extension of the Sealand during the both Sealand Dynasties was probably rather comparable. The locations of Tell Abu Rūbab and Tell Abu Ṣalābīkh and their related sites can be used to determine the southern end of the first Sealand dynasty settlement. It is notable that there is evidence for occupation older than the end of the first millennium BCE beyond Tell Abu Ṣalābīkh.

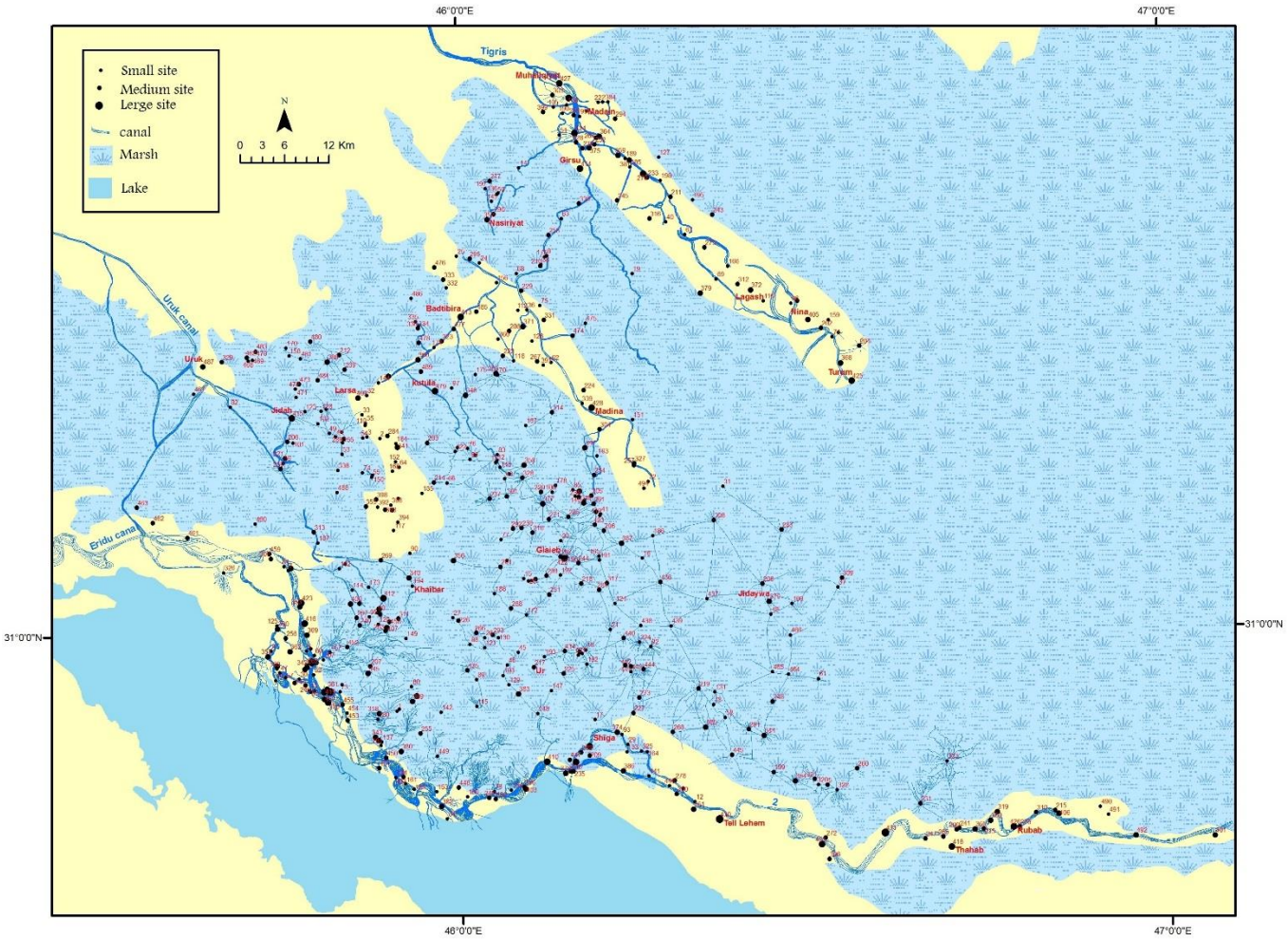
#### 4.6.1.3. The eastern extension of the first Sealand dynasty

Having determined the northern and southern edges of the settlement of the first Sealand dynasty occupation area, it is possible to determine its eastern and western extensions. The eastern extension is likely to be found at a line of sites that are located from Girsu and Lagash all the way south to Nina and its vicinity. The excavations of Girsu and its eastern neighbor, Tell al-Madaien, show that both sites were occupied during the first Sealand dynasty (De Sarzec 1894, Parrot 1933, 1948, 1968,De Genouillac 1936, Cauvin 1979), and the surface of the extreme south-eastern mound of Lagash shows diagnostic sherds of typical Sealand pottery (personal observation in summer 2010). In addition, the survey of Thorkild Jacobsen in the region of

Girsu-Lagash-Nina indicates that there is no older occupation at the sites that are located to the east of Lagash (Jacobsen 1969). This is confirmed by a recent survey to the region and eastward to the Sassanian-early Islamic course of the Tigris (al-Ḥamdani 2014a), the so called *Shaṭṭ al-Akhḍar* (Safar 1945: 4, fig.1, Hansman 1970:38, fig.1, Morony 1982:30, 34, fig.10).

4.6.1.4. The western extension of the first Sealand dynasty

The western extension of the first Sealand occupation area can be suggested by a group of sites that are located at the eastern edge of the Eridu depression far to the west of Ur. *Telūl al-Deḥaila*, or site (EP-43) in Henry Wright's survey (Wright 1981: 330, fig. 21), which is almost 57 hectares in size, shows typical first Sealand dynasty pottery. This also applies to the 30 sites of different sizes that are associated with *Telūl al-Deḥaila* (al-Ḥamdani 2014a, 2014b). The western edge of the Eridu depression forms a natural barrier that prevented the settlement of southern Mesopotamia to expand westward; it stretches from *'Ayn al-Seid* at the west of Uruk in the north, southward to the west of the Eridu plain and Tell Leḥem, and south-westward into the southern desert (Wright 1966:101, 1981:300, Zarins 1992:58, fig.1, Abid 2011:12, map 6) (Map 12).




Map 12: The landscape, settlements, canals, and marshes during the first Sealand dynasty

### 4.6.2. The marshes during the first Sealand dynasty

During the late Old Babylonian period, the settlement system in the central alluvial plain from Nippur all the way down to Uruk collapsed. The settlement from Isin to Uruk collapsed in the eleventh year of SamsuIluna reign (ca. 1739 BCE), and in the thirtieth year of the same ruler's reign (ca.1712 BCE), the settlement between Isin and Nippur collapsed (Ur 2013:146, fig.7.7). Elizabeth Stone and Jason Ur see that the cessation of text production at the major cities of Nippur and Isin could indicate a regional depopulation (Stone 1977, Ur 2013), and Adams argues that cities declined 40 percent in their urban areas (Adams 1981: 165). The people in the

south had rebelled against Babylonian rule; and survey evidence shows little evidence of resurgence anywhere on the plain. There were a series of revolts under another king of Larsa, Rim-sin II, against Samsuiluna by the old cities of the southern plain. The rebellions were suppressed with considerable ferocity and Samsuiluna's 11th year is named after the destruction of the walls of both Ur and Uruk (De Mieroop 1992:67-70). It appears that as a kind of punishment for the rebellious south, SamsuIluna and his successor Abi-eshukh (1711-1684 BCE) dammed the Tigris somewhere south of Mashkan-shapir in an unsuccessful attempt to apprehend Illuma-ilu, the founder of the first Sealand dynasty (Leemans 1957:217, Brinkman 1993:6). The result was that dwellers of the central plain abandoned their settlements and moved away; agricultural and irrigation activities ceased as the canal systems collapsed and canals filled in as a result of the accumulation of silt and sand. If cultivation and irrigation declined in the southern alluvial plain between Nippur and Uruk, as the major rivers and their distributors moved away from the heart of the plain towards the east and west, the water that was once spread out across the plain in irrigation channels would now create large marshes in the area south of Uruk, Larsa and Girsu. The marshes of southern Iraq always expand when agricultural and irrigation activities in the central alluvial plain are limited, in the process increasing the waters in the Tigris and Euphrates (Schilstra 1962). This has also occurred during the nineteenth and early twentieth centuries when again the northern extension of the marshes reached as far north as Larsa, Uruk, and Girsu (Loftus 1850, Peters 1897, Fisher 1905, Dougherty 1926, Parrot 1933, Field 1949, Salim 1962, Ochsenschlager 1974, Young and Wheeler 1977a, Adams 1981). Moreover, CORONA declassified high resolution satellite imagery from 1950s and 1960s show that the ancient sites of Girsu, Lagash, Nina, Bad-Tibira, Umma, Larsa, Uruk, and Eridu were surrounded by marshes at that time. That, indeed, was the time before the construction of dams

upstream of the two rivers in Turkey and on the middle Euphrates in Syria. That this took place is confirmed by the survey data which show that there was a significant shift in the Euphrates-Tigris system in the second millennium, as the two rivers and their major distributaries have shifted to the western and eastern portions of the plain (Adams 1981, Wilkinson 1990b, Zarins 1992, Gasche and Tanre 1998, Stone 2003, Hritz 2010).

#### 4.6.3. The canal system

Written documents that were contemporary with the first Sealand dynasty indicated big shifts in the canal system, including the major rivers, in the heart of the alluvial plain. The canal shifting was caused by the dams that were built by the central administration in Babylon in order to block the Tigris and Euphrates in the area north of Nippur. Therefore, as a result of building dams, the two rivers pushed their courses east and west away from the central portion of the alluvial plain. This situation impacted the alluvial plain in the form of desertification in the central portion and the formation of marshes in the lower portion. In the following section, a description of shifting canals will illuminate the causes of the emergence of the intensive marshes in the south during the first Sealand dynasty.

##### 4.6.3.1. The Eridu canal

Robert Adams mentioned that the main course of the Euphrates that had previously been flowing from north-west to south-east had turned almost directly south to the west of Uruk during the first half of the second millennium BCE. This is confirmed by texts and archaeological investigations, and Adams sees this essential change in the Euphrates course as having been the result of losing water in the center of the alluvial plain between Nippur and Uruk (Adams 1981:16). This course can be traced through CORONA imagery from 50 km. northwest

of Uruk where it splits into eastern and western branches. The eastern one, the Uruk canal, can be seen to flow southeast to reach Uruk and then turns southward to merge with the main western branch, the Eridu canal, to enter the Eridu basin 54 km north of Eridu. After merging with the Uruk canal, the Eridu canal divided into two branches; both ran south for 32 km where they merged at Tell Dehaila (25 km north of Eridu). From this, a channel flowed southwest along the southern edge of Eridu, and then southeast for 38 km to Tell Leḥem. After Tell Leḥem the Eridu canal flowed eastward in the Hawr al-Ḥammar for 57 km after which its course can no longer be followed. Fuad Safar and Henry Wright date the course of the Eridu canal to the late Old Babylonian period/Early Kassite period (Safar 1950, Wright 1981). The majority of the sites along the canal show pottery of the first Sealand dynasty. The bed of the Eridu canal is almost 160 km long, and its average width is 150 m. Arable land would have been located alongside the canal in a band sometimes as narrow as 10 km in width, but in most areas the arable lands would have extended to 30 km from the canal (Maps 12, 13,16,17,and 20).

Fuad Safar conducted soundings and excavations at a number of sites that are located northwest of Eridu alongside the Eridu canal. Based on the soundings, Safar was confident to date the canal to the second millennium BCE.

> At the same time, several small mounds, situated at the flat depression of Eridu and not far from the ruins of the city, where also sounded and carefully examined. These mounds were found to lie on the banks of the bed of a wide canal which, in ancient times, undoubtedly connected with the River Euphrates. The recognition of this canal and the tracing of its course are now extremely difficult, as it has been filled with sand and soil drifting in from the surrounding plain. The course of the canal crosses the flat depression of Eridu from north-west to south-east, and its nearest point to Eridu is about 3 kilometers from the south-west of the site. The mounds were not very high and carried surface pottery dating to no later than the second millennium B.C. A number of them, however, were covered by burials of a later period, though in a few, there were burials of the Kassite period or even earlier, near the surface (Safar 1950:28).

This canal could be Id-Edin-Eriduga(NUN)ki "the canal of the Eridu plain", which was mentioned in the Myth of Inannak's Journey to Eridu as a canal the goddess Inanna travelled back to Uruk with the many and varied divine offices which she had obtained from the god Enki at Eridu. The text mentions seven points, from Eridu upstream to the quay of Uruk, in which Enki tried to stop the boat during the journey (Jacobsen 1970:181).

4.6.3.2. The Tigris

As the result of desertification and silt accumulation in the heart of the alluvial plain, the Tigris in the Old Babylonian period shifted its course north-east of Nippur and ran south-east of Tell Willaya (Jacobsen 1960, Armstrong 1989, Wilkinson 1990a, 1990b, Zarins 1992, Gasche and Tanre 1998, Adams 1958, 1981, 2009, Stone 2003, Hritz and Wilkinson 2006, Hritz 2010, Steinkeller 2010, 2011, Jotheri and Allen 2015). A tablet that was found in Bad-Tibira mentioned that Mashkan-shapir was located along the Tigris at the time when the city revolted against SamsuIluna (Leemans1958: 218). The temple archive from Dur-Abieshukh that is housed at Cornell University indicates that the Tigris shifted its course east from Nippur during the reign of SamsuIluna (1750-1712 BCE). The archive describes that in the year 22 of Samsuiluna's reign (ca. 1728 BCE), the city of Nippur was mostly abandoned, the majority of its population left the city, its religious institutions were transferred north-east to Dur-Abieshukh, and a new fortress town was established on the Tigris, where the clergy of the old Enlil temple created a new religious center and built a new Ekur dedicated to Enlil (Lerberghe and Voet 2009:1).

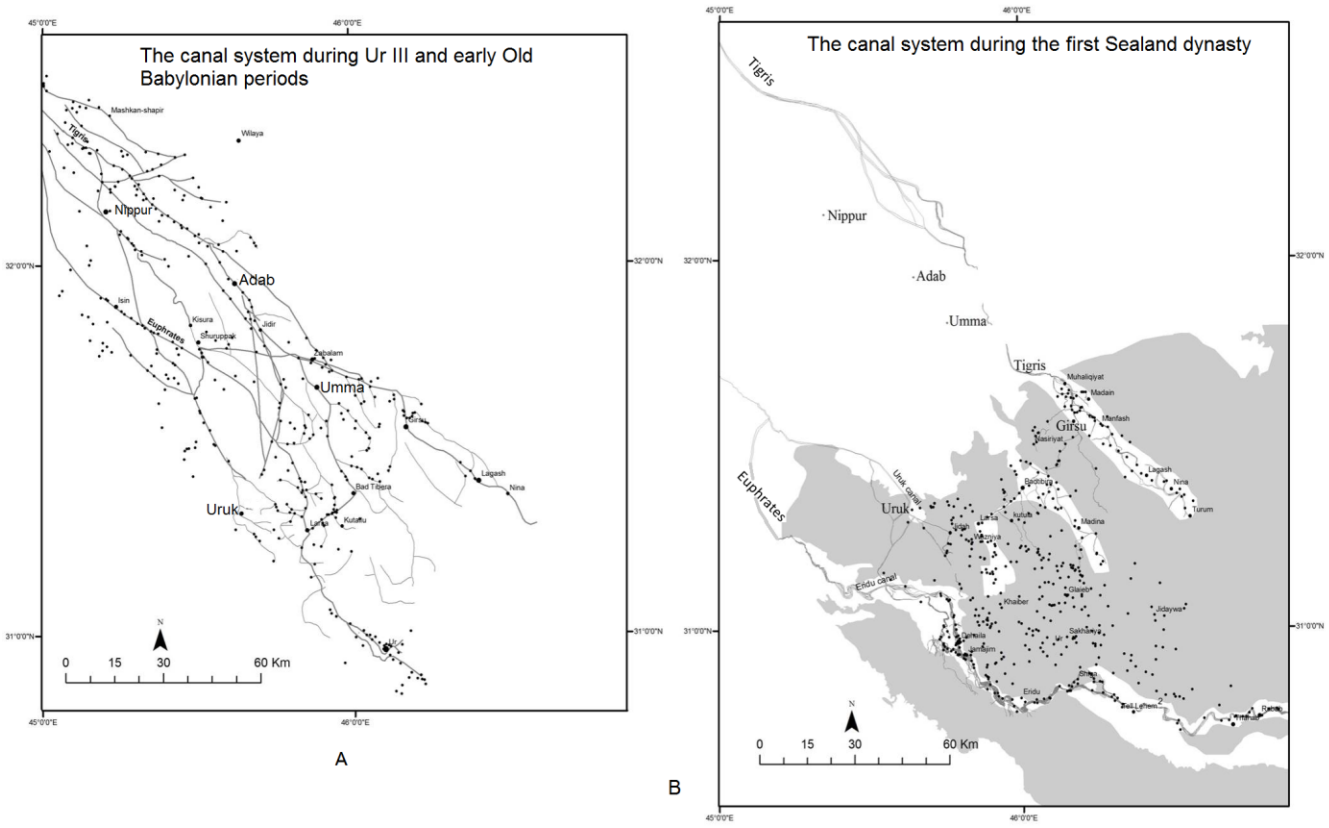
Adams has argued that the meanders that are visible in images to the north east of Nippur and east of Mashkan-shapir could be interpreted as the relict course of the Tigris (Adams 1981:18); this is also confirmed by Elizabeth Stone (2003:157). Carrie Hritz was able to trace this course until it was submerged in the Hawr al- Dalmaj (Hritz 2010: 187, fig. 4). Adams suggested that

the ancient course of the Tigris was located 30 km southwest of the current course of the river, which is the distance between the modern town of Numaniya and the ancient course of the river that is visible on CORONA imagery from 1950s and 60s.

The CORONA imagery shows that at 25 km south east of Mashkan-shapir the course splits into two branches, with the eastern branch flowing 11 km south of Tell Wilaya. The two branches merge at 20 km east of Adab and then disappear amidst the modern intensive canal system of the Shaṭṭ al-Gharraf. The distance of the Tigris from Mashkan-shapir to the point where it disappears within the cultivated areas of the al-Gharraf basin is 86 km. The course then appears again at 10 km to the east of Umma, turning east passing the current bed of Shaṭṭ al-Gharraf to reach Tell Mehaliqyyat (the ancient town of Apishal). At Tell Mehaliqyyat, the course divides into several reaches and distributaries, which then branch into many streams and small canals, from which marshes and lakes were created. Pioter Steinkeller and Stephanie Rost mentioned that a main barrage was established at Apishal to control transportation and internal trade during the Ur III period (Steinkeller 2007, Rost 2015). Imagery confirms the existence of such barrage at Tell al-Mahaliqyyat. The main canal of the Tigris goes from Apical southward to the north of Girsu, passing towns and villages for 57 km to reach Lagash and Nina; the course can no longer be followed at 10 km south of Nina at a site called Tell al-Ṭurum. Besides the main canal of the Tigris, a canal takes off from Girsu and flows south and then southwest for 30 km to feed marshes south of Bad-Tibira and Kutallu (Maps 12 and 14).

In summary, the data show that during the reign of SamsuIluna (1739-1712 BCE) and his successors, the central portion of the alluvial plain suffered desertification caused by rivers and canals shifting towards its eastern and western edges, which caused population displacement. The Tigris course(s) and its distributaries moved to the east of its Ur III-Old Babylonian bed,

which was running by Nippur, and pushed farther east to run by Mashkan-shapir and Tell Wilaya. The Euphrates, on the other hand, pushed its courses far away to the western portion of the plain to run to the west of Uruk instead of bllowing in its Ur III-Old Babylonian course, which ran in the heart of the alluvial plain. While the heart of the alluvial plain between Nippur, Adab, Umma, and Uruk witnessed a very severe decline in irrigation and farming activities, the areas beyond Uruk, Larsa, and Girsu became marshes. Moreover, while the settlements between Uruk and up north to Nippur were abandoned, the regions of Girsu- Lagash-Nina, Larsa - Bad-Tibira, and Uruk- Eridu- Tell Lehem prospered.




Map 13: The shifting of the Tigris and Euphrates from the heart of the alluvial plain (A) to the edges of the plain during the first Sealand dynasty (B).

In the following sections, detailed descriptions will be provided of the settlement system and the landscapes of the first Sealand dynasty in the southernmost portion of Mesopotamia, namely the area from Uruk-Larsa-Girsu southward to the south of Nina and to the southeast of Tell Lehem. The description will be based on ground survey data and satellite imagery. The survey data are mainly diagnostic sherds of pottery belonging to the dynasty and are distinguished from the pottery of the preceding and succeeding periods.

### 4.6.4. Settlement system during the first Sealand dynasty

In order to classify sites of different sizes, I used a typology based on Adams's research (Adams 1981), which I have modified to address site sizes. Small sites of less than two hectares are hamlets and those between 2-4 hectares are small villages. Medium sites between 4-8 hectares are large villages and sites of 8-16 hectares are small towns. Large sites of 16-25 hectares are towns, and 25-45 hectares are substantial towns while those of more than 50 hectares are cities.

#### 4.6.4.1. Site sizes

The total number of sites with evidence of occupation during the first Sealand dynasty is 495 (Appendix 7). Their sizes vary; 65% are small (0.5-4 hectares), 31% are medium in size (4.1-16 hectares), and only 4% are large sites (Table 2, Fig. 10). It is noteworthy that the average size of the sites that were located along canals on dry lands is larger than those that were situated within marshes.

| **Type** | Small sites | Medium sites | Large sites |
|---|---|---|---|
| **Class** | Hamlets and small villages | Large villages and small towns | Medium towns, substantial towns, and cities |
| **Size** | 0.5 - 4 hectares | 4.1 - 16 hectares | 16.1 – 50 hectares |

| | | | |
|---|---|---|---|
| **Sub-total** | 319 | 155 | 21 |
| **Percentage** | 65% | 31% | 4% |
| **Total** | 495 sites | | |

Table 2: Classifying site sizes during the first Sealand dynasty

Among the 495 sites of the first Sealand dynasty 204 sites (41%) with a total area of 1274.9 hectares (52.7%) are located on dry lands; these include 122 small, 63 medium, and 19 large sites. In addition, 291 sites (59%) with a total area of 1143.9 hectares (47.3%) are located within marshes; these include 224 small, 65 medium, and 2 large sites.

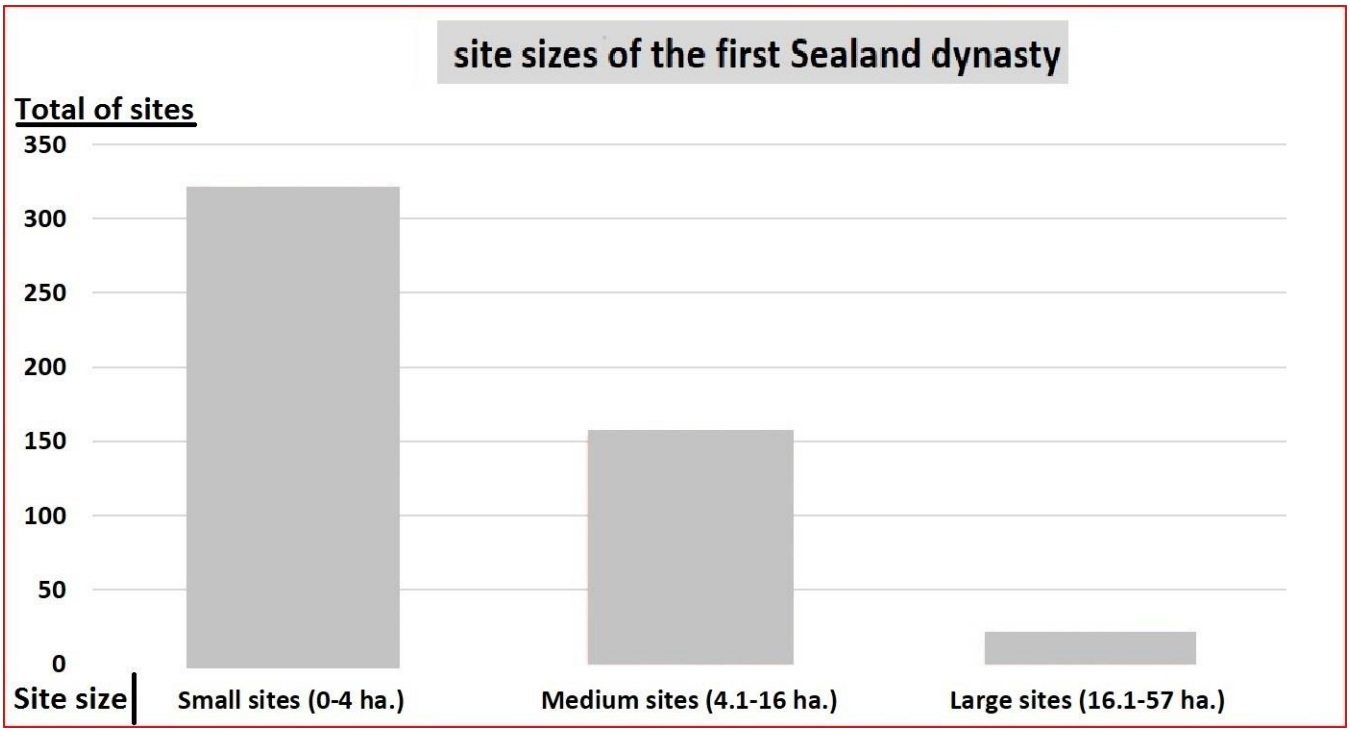



Fig. 10: Size of the settlements of the first Sealand dynasty

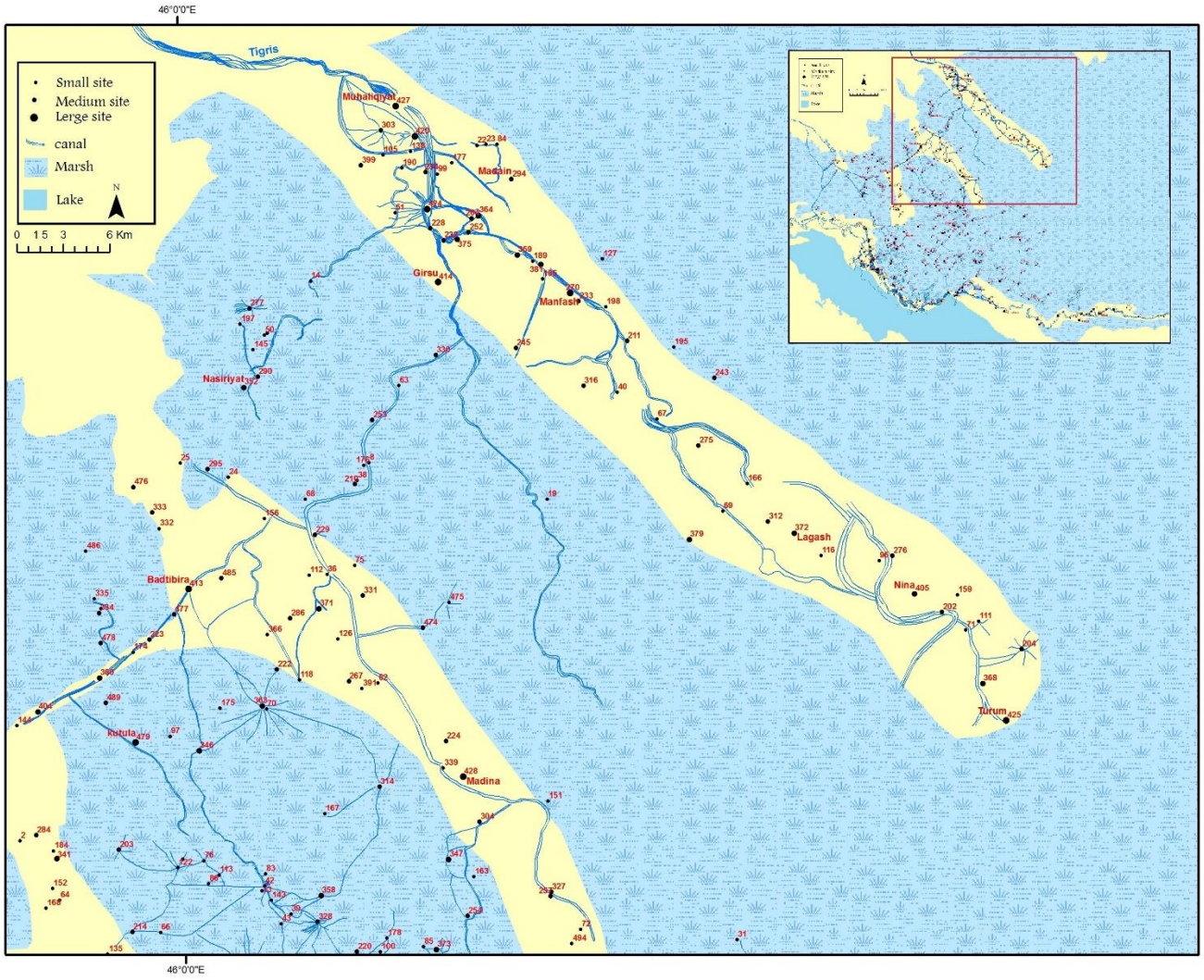
4.6.4.2. Site distribution

The distribution of sites shows that most large and medium-sized sites were situated along canals, while small sites were scattered within marsh areas (Map 12). Marsh sites were mostly

small and distributed in groups; each group was clustered around a medium-sized site, and connected with each other by canals and water passages. This medium-sized site could have served as a small rural town or market-town where goods, products, and services were exchanged. Some small sites were established as special-purpose sites. Special activities away from inhabited sites can be important in shaping regional economic systems for special economic, political, social, and ritual purposes; these included small manufacturing centers, temples, palaces, administrative centers, harbors, and silos. The survey and soundings at Tell Sakheriya, a small first Sealand site of 4 hectares near Ur, suggest that it was located within a marsh area. Its location, the many royal inscriptions found at the site, and clay platforms all suggest that it was probably the ancient Ga'esh, where the kings of Ur and other neighboring cities came to celebrate the Akitu festivals during the equinoxes, but it lost its religious importance after the Old Babylonian period (Zimansky and Stone, in press). This site, presumably, was hardly an agricultural village (Map 21). Moreover, the satellite images of Tell Khaiber, a small Sealand site of 2 hectares that is located 30 km northwest of Ur, is dominated by a large rectangular public building. It has been recently confirmed during the excavation at the site that this was an administrative center designed to control transportation and internal exchange between the region of Eridu and the upper areas of the Sealand around Larsa and Uruk (Campbell et al. forthcoming). The presence of the public building could indicate that the Sealand actually had a need for an administrative center for the first time.

#### 4.6.4.2.1. Sites along the main course of the Tigris in Girsu-Lagash plain

The plain of Girsu-Lagash has 52 sites which were distributed along the Tigris from Tell Mehaliqyyat, 12 km north of Girsu, downstream to Tell al-Turum, 10 km south of Nina (Map 14).




Map 14: Sites along the main course of the Tigris in Girsu-Lagash plain, and sites along the western canal of the Tigris, west of Girsu

The sites vary in the size; 6 of them are large, 15 medium, and 31 small. The major third millennium cities of Lagash province, Girsu, Lagash and Nina, have settlements of the first Sealand dynasty, but they have evidence for only small occupations within these large earlier cities. Girsu (site 414) has a 15 hectares settlement to the east of the temple area out of its total size of 370 hectares (Parrot 1933, 1948, 1968, Cauvin 1979), Lagash (site 372) has an 8 hectare settlement in the southeast portion of the 600 hectares site, and Nina (site 405) has a 12 hectare

settlement at the southern portion of the site (personal observation in 2010). The most important sites of the first Sealand dynasty in the plain of Girsu-Lagash are the following:

4.6.4.2.1.1 Tell Mahaliqiyat (site 427)

Tell Mahaliqiyat is a medium-sized Sealand settlement of 15 hectares. The first Sealand dynasty sherds, together with a high density of baked-bricks, are scattered around what seems to have been a square public building that was exposed by recent looting and soil extraction. The site is a potential candidate for the location of the late third and early second millennium BCE town of Apishal, which was the last of Umma province's towns between Umma and Girsu (Steinkeller 2007:206). It is located on the main canal of the Tigris at the upper portion of the Girsu-Lagash province, and the presence of a barrage nearby indicates that the town played a role in controlling transportation, internal trade, and water distribution.

4.6.4.2.1.2 Tell al-Medaien (site 294)

The 6 hectare Sealand settlement at Tell al-Medaien is situated at the southern portion of this 25 hectare site, which is located 8 km northeast of Girsu along a small canal that flowed from the Tigris north of Girsu. The French expedition that worked at the southern mound of the site discovered pottery similar to that of the first Sealand dynasty types (De Genouillac 1936:140, Pl.137-2 a and b).

4.6.4.2.1.3 Tell Manfesh (site 270)

Tell Manfesh is another first Sealand settlement of 25 hectares that is situated on the western bank of the main course of the Tigris at 8 km southeast of Girsu.

4.6.4.2.1.4 Tell Turum (site 425)

About 10 km south of Nina there is a first Sealand site, now called Tell Turoum, a 30 hectares town, which could represent the remains of the port-town of Guabba, the most important port during the third and early second millennia BCE. The geographical location of Tell Turum as the last ancient settlement south of Nina indicates that it was probably a port situated at the northern shore of a water body or a marsh. The survey that was conducted in the area in 2005 shows that all sites that are located beyond this point date to later Mesopotamian periods: the late second half of the first millennium BCE through the first millennium CE.

The location of the site at the shore of a water body below Nina (47 km southeast of Girsu, and 18 km southeast of Lagash), its size of 30 hectares, and the extensive baked-brick and pottery on the surface allows us to suggest that it was probably the port-town of Guabba (*Gú-ab-ba*$^{ki)}$. Guabba was an important economic center during the Early Dynastic III period (2500-2340 BCE) and the Third dynasty of Ur (2113-2006 BCE).

4.6.4.2.2. Sites along the western canal of the Tigris, west of Girsu

A line of 30 Sealand sites are clustered along a canal that takes water from the main channel of the Tigris south of Girsu and flows first west, then south for 55 km. This canal feeds the marshes west and southwest of Girsu, as well as the marshes south of Bad-Tibira. Some of these sites were located on dry land and some within marshes. As is indicated previously, dry land sites are larger than marsh sites. Those within the marshes are Tell Brediya, a 6 hectare site located 14 km southwest of Girsu, and Tell Ziglab, a 4 hectare site located half way between Girsu and Tell Brediya. Seven sites that were located on dry land are Tell Hulail (5 ha., 4 km southwest of Tell Brediya), Tell Sa'abiya (8 ha., 5 km south of Tell Hulail), Tell al-Mala'ab (5 ha., 6 km south of Tell Sa'abiya), and al-Madina al-Kabira (23 ha., 10 km southeast of Tell al-Mala'ab), Tell al-Shamkhiya (6 ha., 3 km south of al-Madina al-Kabira), Abu Salabikh (6.7 ha.,3

km southwest of Tell al-Shamkhiya), and Tell Umm al-Milih (4.3 ha., 7 km east of Abu Salabikh) (Map 14).

A group of six small sites with an average of 3 hectares in size were clustered near the 10 hectare site of Tell al-Nasiriyat within a marsh that was located in about 12 km. to the west of Girsu. This could indicate that Tell al-Nasiriyat was a rural-market town (Map 14). The site of the ancient city of Bad-Tibira (site 413) contains a 15 hectare settlement dating to the Sealand dynasty and is located almost 25 km. south-west of Girsu on a canal that takes water from the western canal of the Tigris and flows south-westward for almost 15 km to reach Tell Abla (site 360), a 7.5 hectares Sealand site. After flowing another 5 km, the canal of Bad-Tibira ends at Tell Abbas al-Kurdy (site 404) and a 12 hectares site that is located 5 km northeast of Larsa.

Two canal-distributors flow from the Bad-Tibira canal and move south to feed a massive marsh. The first flows from 1.5 km south of Bad-Tibira for 22 km, and the other canal runs for 12 km. Tell Sifir (site 479) which is the ancient town of Kutulla, is a 22 hectares site located along this canal. Within these marshes, 80 sites of different sizes are distributed; each group of 5-6 small sites of 1-3 hectares is clustered around a medium site of 4-8 hectares, and connected to each other by ancient water-passages.

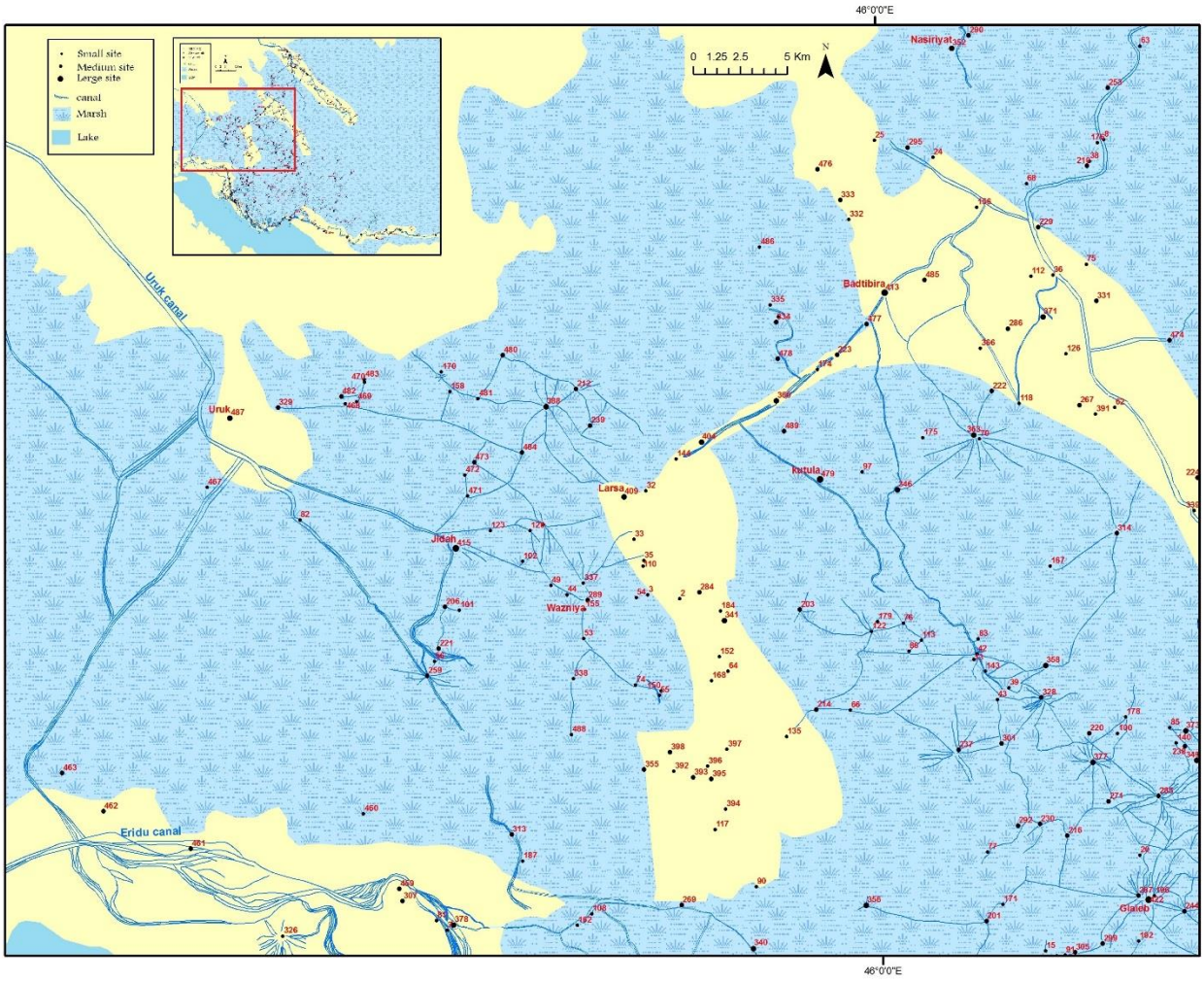
4.6.4.2.3. Sites of Uruk-Larsa area (Map 15)

At a distance of 3 km south of the city Uruk (site 487), the canal of Uruk divided into three distributaries that created marshes; these marshes extended to all the areas west, east and south of Uruk and Larsa. The marshes of Uruk-Larsa were separated from the Bad-Tibira marshes by a strip of a solid land which stretches from Larsa southward for an average of 22 km length and 7 km width, but small streams crossed the strip to make it arable. Twenty-one small and medium

sites were scattered along this strip. Larsa (site 409), itself, had a 13 hectare Sealand settlement in its eastern portion, while Tell Tabrat (site 341) is another medium-sized Sealand site of 6.6 hectares located 8 km. southeast of Larsa. The longest one of the three distributors from the Uruk canal flowed southwest through marshes for 25 km to merge with the Eridu canal, while the other two distributaries flowed southeast for 15 km to feed the marshes between Uruk and Larsa.

Thirty-three small sites were situated within the Uruk-Larsa marshes; as with the case of the Bad-Tibira marshes, each group of sites was clustered around a medium-sized site. Twelve small sites surrounded the 10.5 hectare site of Tell Gatae (site 388), 9 small sites were near the 5.3 hectare site of Tell Wazniya (site 289), 4 small sites near the 4.4 hectare site of Tell Abid (site 259) , and 8 small sites are scattered near near the 15 hectare site of Tell Abu Jidaḥ (site 415). A fragment of a stamped brick that was found at Tell Abu Jidaḥ during the 2005 archaeological survey shows that the area around Larsa rebelled against the ruling of Larsa during the reign of Gungunum (1932-1905 BCE), and that the old name of the site was Bad3.A/AN. This text was translated by Dr. Franco D'Agostino of Sapienza University of Rome, and it reads:

> [Gungunum, king of Larsam, king of Sumer and Akkad], powerful heir of Sami'um, made its bricks and built the great wall o[f] Larsam, whose name i[s]: 'God Utu/ Shamash overcomes the rebellious land' at BAD3.A/AN, in only one year (personal communication from Dr. Franco D'Agostino).




Map 15: Sites in the area between Uruk-Larsa

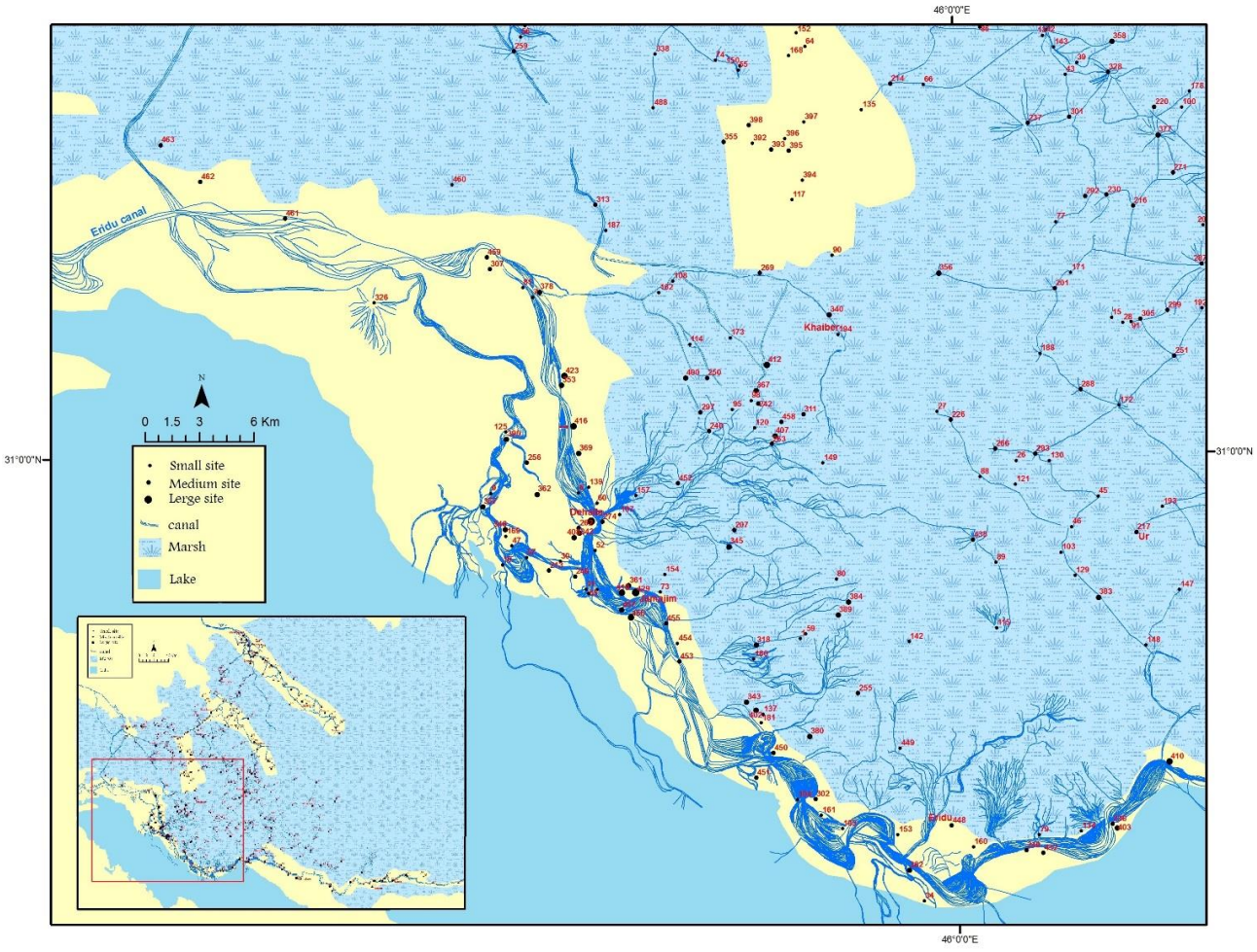
#### 4.6.4.2.4. Sites in Eridu plain

##### 4.6.4.2.4.1. Sites along Eridu canal

A strip of solid land stretches alongside the Eridu canal over a length of 161 km. The width varies from 23 km. in some places to no more than 3 km in others. It extended from Tell Ahmer (site 461), 54 km northwest of Eridu (site 448), to Tell Lehem (site 430), 36 km southeast of Eridu, and from Tell Lehem for 71 km eastward to reach Tell Jelea (site 401).

#### 4.6.4.2.4.1.1. Sites north of Eridu

Fifty-one sites are located north of Eridu along a solid land strip along the Eridu canal. Twenty-eight of these are small sites, 18 are medium, and 4 are large. The large sites are Tell Dehaila (site 433) at 57 hectares (see below), Tell Um Jamajim3 (site 429) at 34 hectares, Tell Um Jamajim1 (site 456) at 25 hectares, and Tell Abu Darahim (site 423) at 20.5 hectares. The important medium-sized sites are Tell Wahashiya (site 416) at 16.3 hectares, Tell Buhaira (site 402) at 11.7 hectares, Tell Houmor (site 390) at 10.7 hectares, Tell Eridu Jinubi (site 382) at 9.2 hectares, and Tell Munbasit (site 378) at 8.8 hectares. (Map 16)

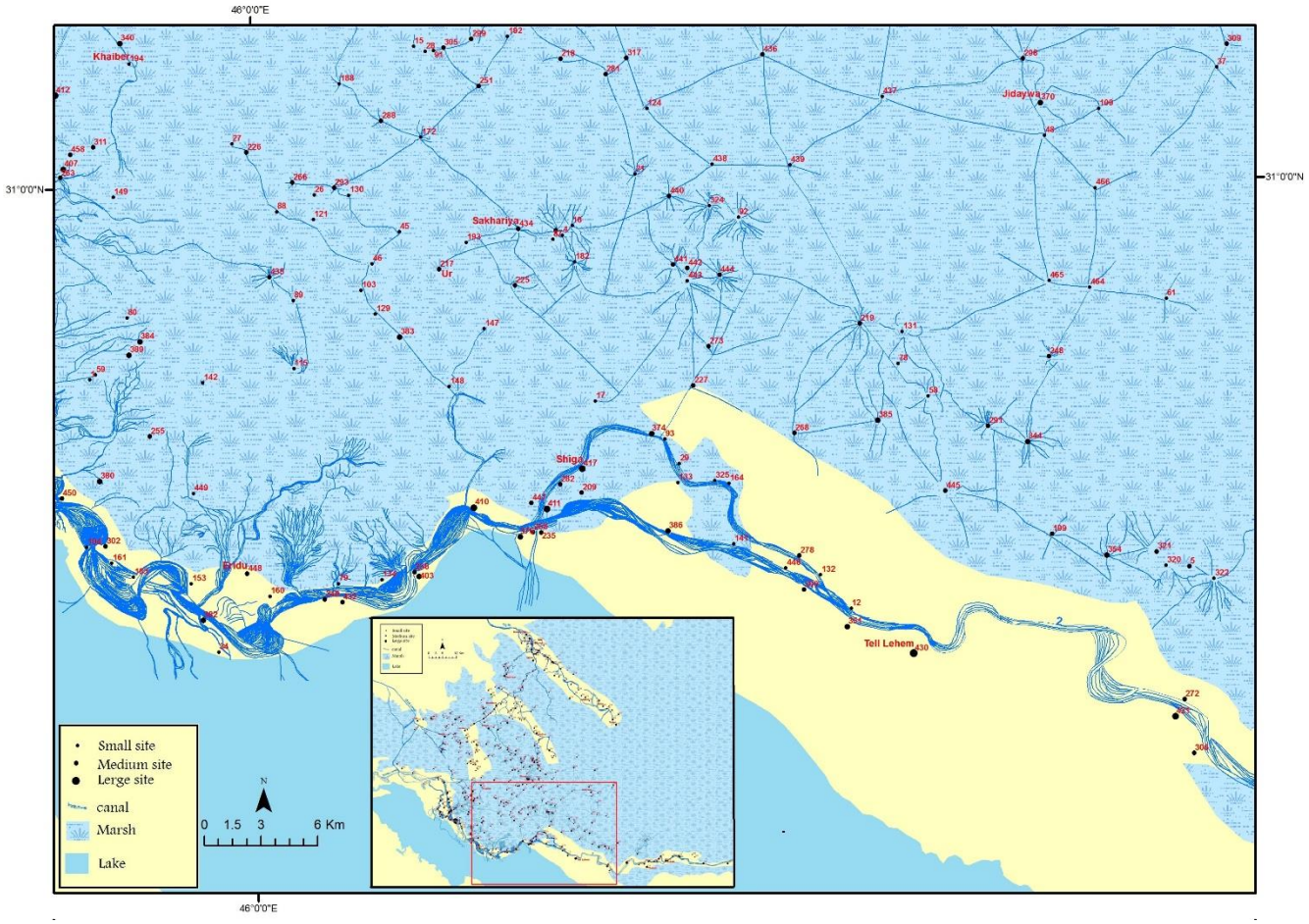



Map 16: Sites north of Eridu along the Eridu canal

#### 4.6.4.2.4.1.2. Sites between Eridu and Tell Lehem

Between Eridu and Tell Lehem, 18 sites of different sizes are located alongside Eridu canal but the only large site in the area is Tell Lehem (site 430) itself, some 33 hectares in size. There are 9 medium-sized sites and 8 small ones (Map 17). The important medium-sized sites are Ishan Qabr Maziad (site 410), 14 hectares, Tell Abu Salabeekh (site 386), 10.4 hectares, and Tell Salabiyat (site 376), 8.7 hectares in size.

Tell Salabiyat is located 14 km east of Eridu, on the southern bank of the Eridu canal, and along the northern shore of Eridu depression (the lake of Salabiyat). The site has been excavated for one season in 2001 by the Iraqi Department of Antiquities where Sealand pottery was recovered.



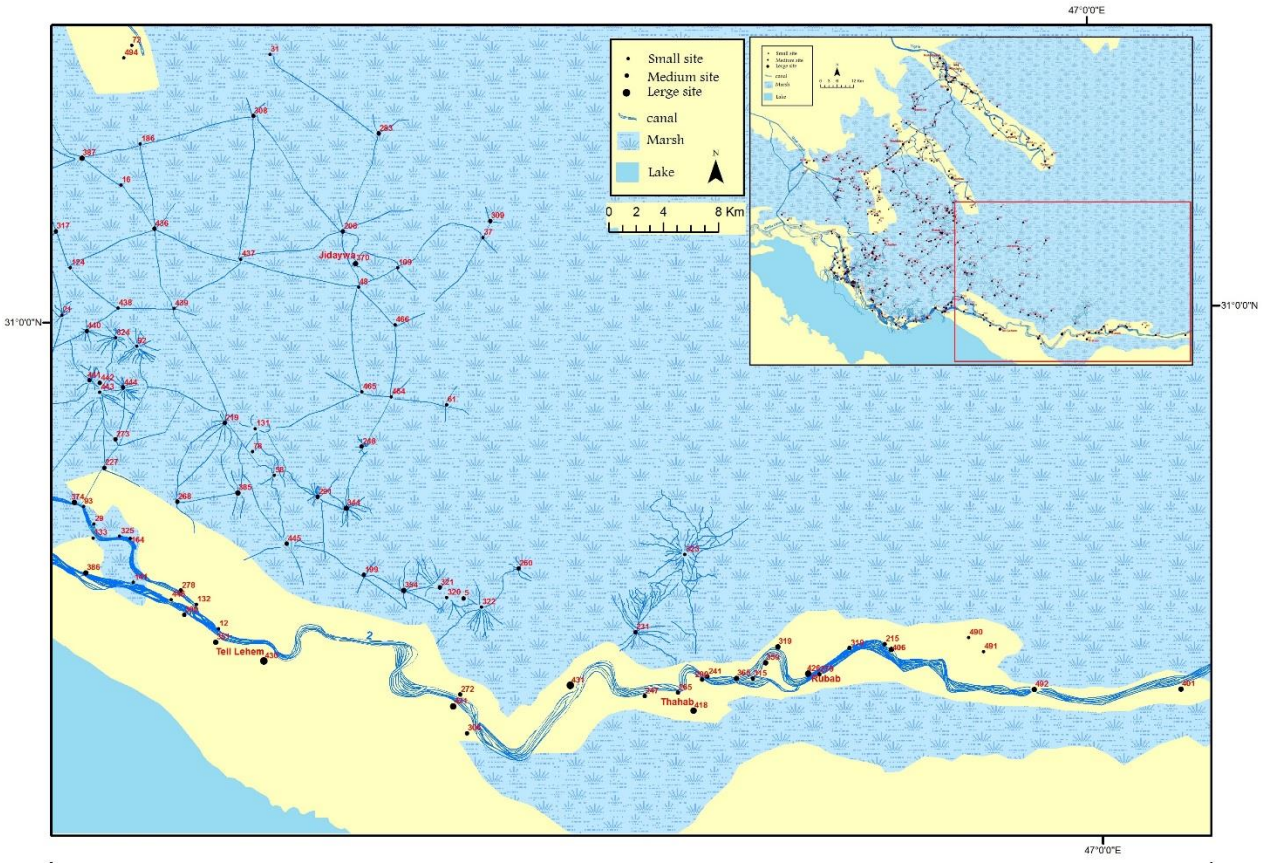

Map 17: Sites between Eridu and Tell Lehem

### 4.6.4.2.4.1.3. Sites east of Tell Lehem

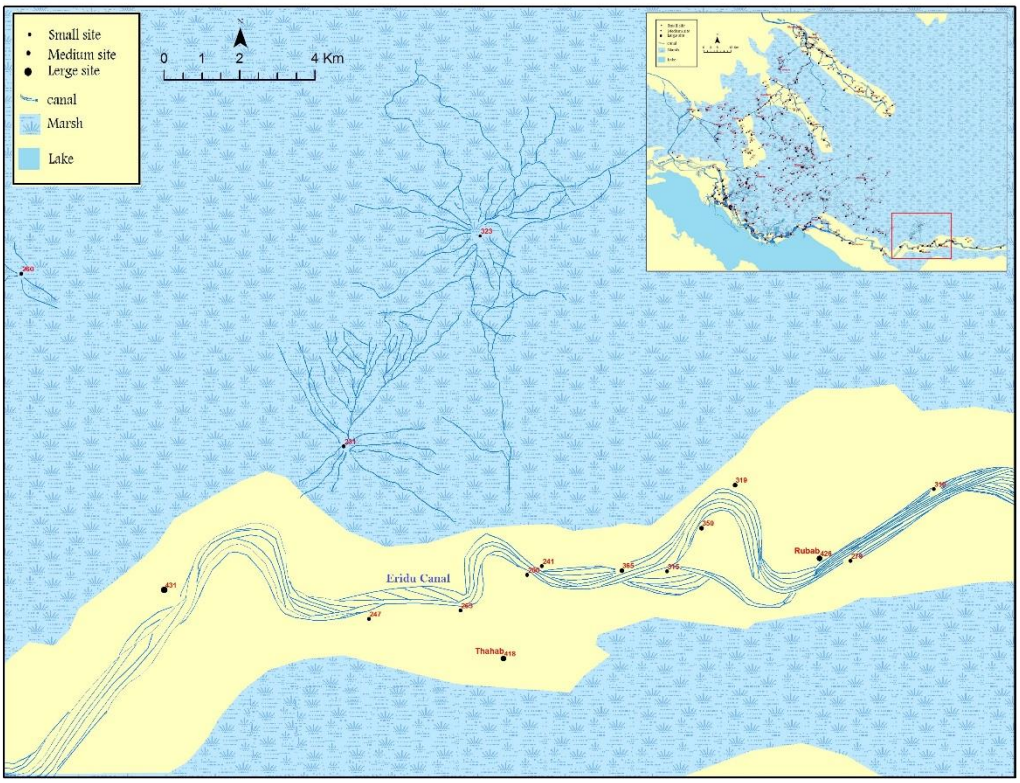
In the area east of Tell Lehem, 22 sites are located at the eastern end of the Eridu canal; 4 are large, 11 medium, and 7 small (Maps 18, and 19). The four large sites are Tell Jadida (site 431) of 36 hectares, Tell Abu Rubab (site 426) of 23 hectares, Tell Qasr Thamer (site 421) of 18.4 hectares, and Tell Abu Dhahab (site 418) of 17.5 hectares. The location of the 11.5 hectare Tell Jelea (site 401) of 71 km east of Tell Lehem marks the eastern end of Eridu canal.

Qasr Thamer is located 13 km east of Tell Lehem and consists of two mounds. On the larger, southern mound, foundations of public building are visible. Abu Thahab is located 30 km east of

Tell Lehem which itself has an important public building. Tell Abu Rubab is located 38 km east of Tell Lehem, and is divided into two mounds by eastern extension of the Eridu canal. Besides the result of the 2003-2005 survey in the marshes (al-Hamdani 2014a, 2014b), a recent salvage excavation project within Hawr al-Hammar uncovered archaeological and textual data that are relevant to the first Sealand dynasty (al-Ahdab 2013, Abood 2013, Salih 2014).




Map 18: Sites east of Tell Lehem



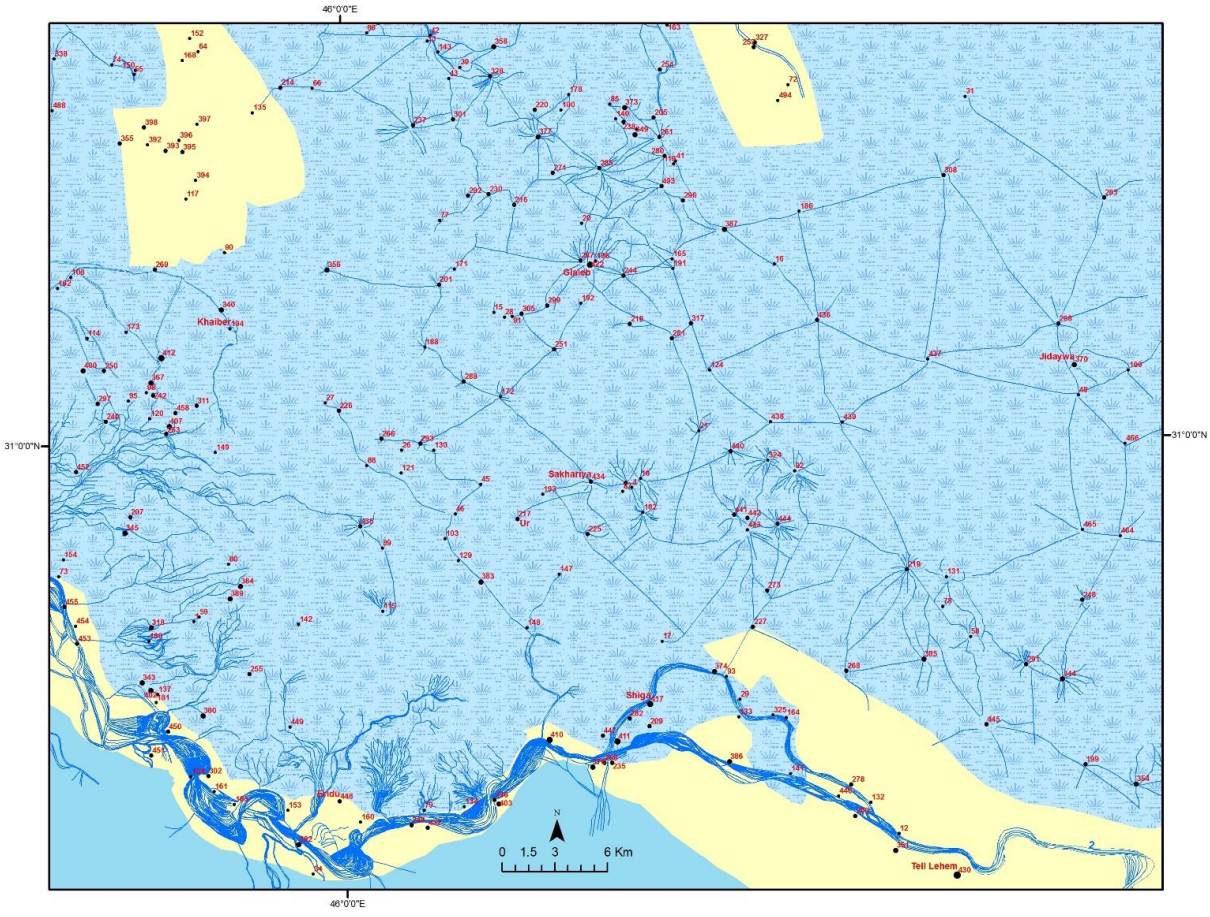

Map 19: Sites east of Tell Lehem

4.6.4.2.5. Marsh sites east of Eridu and Tell Lehem

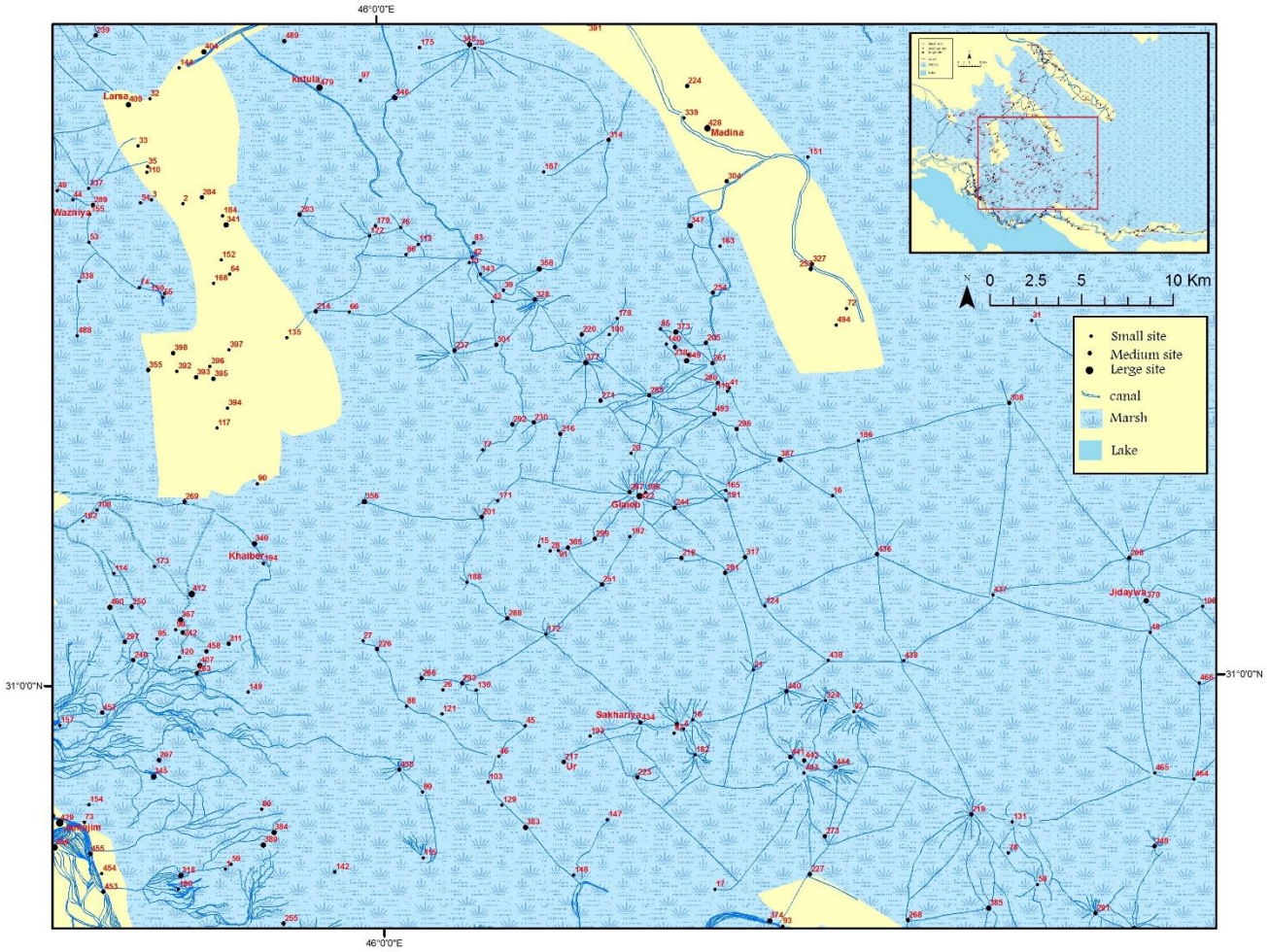
The satellite images show many streams and small canals branching off the Eridu canal, some of which flow west to feed the sites in the Eridu depression, but the majority flow east to feed extensive marshes that extended between the Eridu canal and the lower main course of the Tigris south of Nina. The Eridu depression itself has no indication of occupation; it was probably used primarily as a source of fish and fowl.

These marshes contained many small settlements located nearby a medium-sized settlement or two, and connected one with the other by many short and narrow water passages and linkages. There were also a few long and wide passages that served as highways for long-distance transportation.

Eighty-five small sites clustered in the vicinity of 18 medium-sized sites (Maps 20 and 21). Twelve small sites are located near the 15 hectare Tell Hazim (site 411), 6 near the 9.7 hectare Tell Um Atel (site 385), 6 near the 9.3 hectare Raghla Janubiyah 1 (site 383), 3 near the 8 hectare Tell Jidaywa (site 370), 8 near the 9.3 hectare Tell Glaieb (site 422), 4 near the 7.2 hectare Tell Adhem (site 354), 8 near the 7,2 hectare Tell Sabeta (site 356), 6 near the 6 hectare Tell Abu Salabikh (site 445), 5 near the 5.9 hectare Tell Bidwi (site 305), 7 near the 5.7 hectare Tell Sakhariya (site 298), 5 near the 5.7 hectare Tell Fadha (site 299), 4 near the 5.4 hectare Tell Sakhairy 1 (site 293), 7 near the 5.3 hectare Tell Sheikha (site 288), and 4 near the 5.4 hectare Tell Haisama (site 5).




Map 20: Marsh sites east of Eridu and Tell Lehem




Map 21: Marsh sites east of Eridu and Tell Lehem

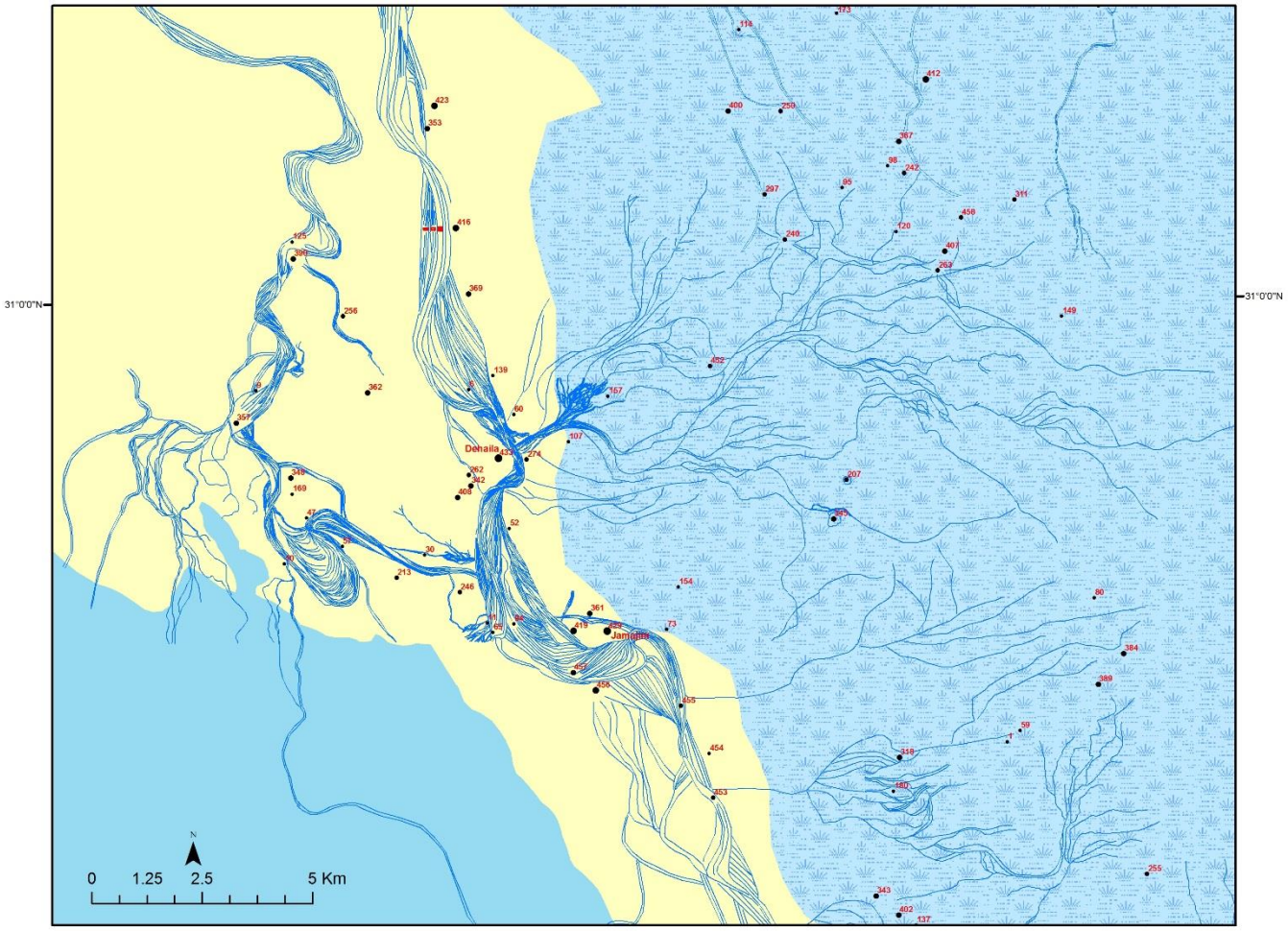
### 4.6.4.2.6. Special purpose sites

Small sites of a hectare or less were established in the hinterlands for special economic, political, social, and ritual and ideological purposes: these included small manufacturing centers, palaces, administrative centers, harbors, silos, storage houses, and temples. Special activities away from habitation sites can be important in shaping regional economic systems (Kowalewski 2008: 240). It is common to find evidence of public buildings, architectural complexity, manufacturing installations, trade facilities, and indications of wealth in towns and cities, but

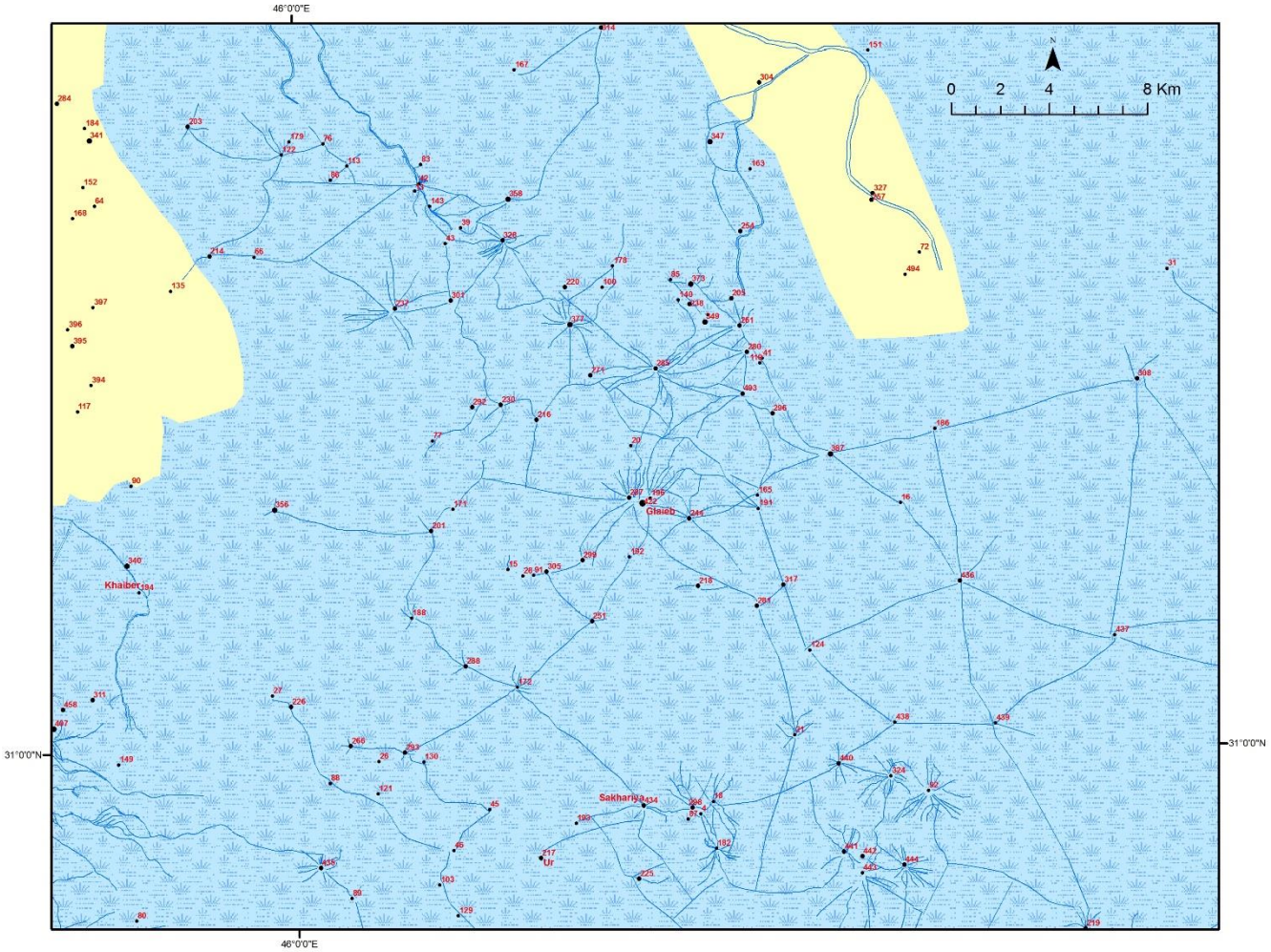
finding the same evidence at smaller sites is the fundamental indication to evaluate the economic, political, and ritual roles of small sites in the landscape.

Special-purpose sites existed both on land and within marshes. For instance, in the Eridu plain, a group of 5 one-hectare sites are situated in a marsh nearby Tell Dehaila; they were mainly established for making pottery and bricks, and building boats (sites 73,107,154, 157, and 452). Another group of 6 small sites are located on a canal that takes water from the Eridu canal and flows west and southwest for 25 km. Two of these sites, Tell Kharita 1 (site 108) of 1.7 hectares, and Tell Khaiber (site 194) of 2.8 hectares show evidence of controlling facilities for internal trade and transportation, while Tell Kharita (site 162) of 2.3 hectares shows evidence of storage including many pithos and the foundations of a building with small rooms.

But tiny sites of special economic and social purposes, of less than a hectare, also exist in the Eridu plain. These include sites 6, 9, 10, 11, 30, 47, 52,60, 65, 94, and 139, which are clustered near Tell Dehaila; some of these likely included small manufacturing facilities such as kilns to produce pottery and baked-brick, and workshops to produce tools and artifacts, and to build boats. Some of these sites also served as administrative centers to collect taxes and to control commerce, while some had indications of harbors, silos, and storage area. For example the location of site 47 (0.8 hectare) was in close proximity to a major watercourse, and had a harbor and a building with many rooms that covers almost a half of the sites, a strong indicator of commerce. The same scenario can be seen at site 94 (1.5 hectare), but it is a bit larger than site 47 (Maps 22 and 23, Figures 11 and 12).




Map 22: Special purpose sites in the Eridu plain and its marshes




Map 23: Special purpose sites in the Eridu plain and its marshes

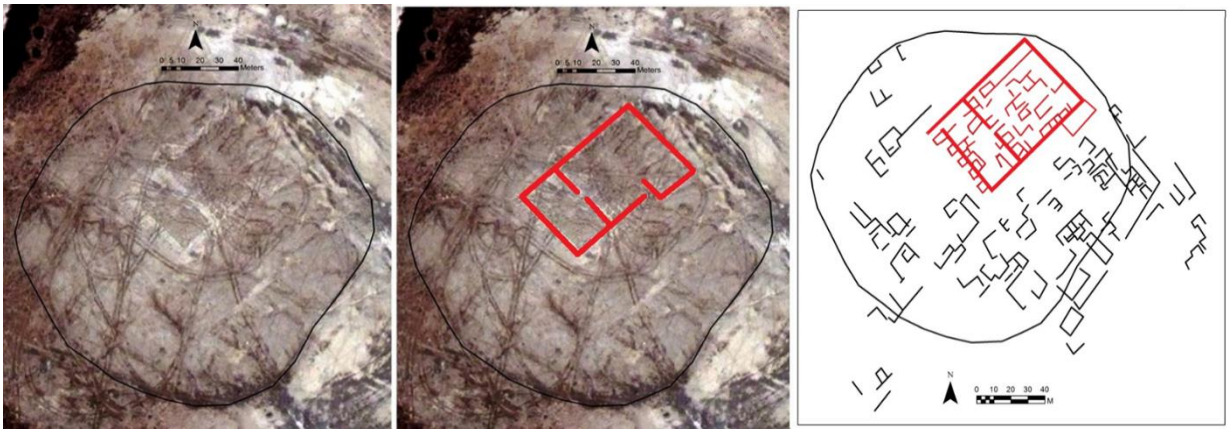


Fig. 11: An administrative center at Tell Khaiber (site 194) in the marshes of Eridu

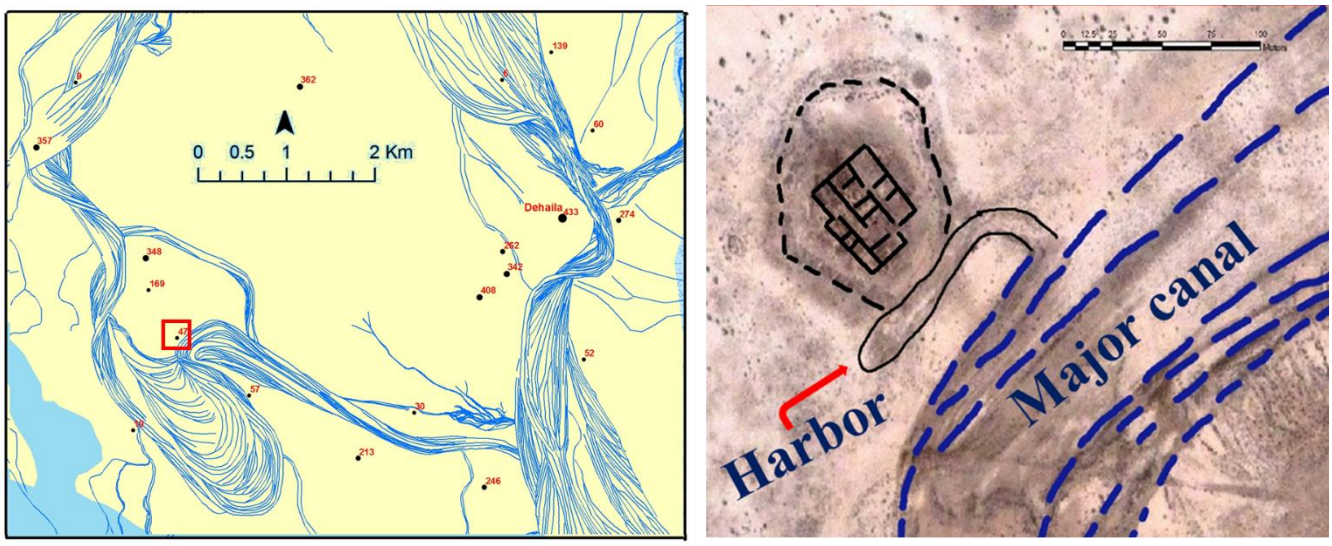



Fig. 12: A harbor and a storage building at site 47 near Tell Dehaila in the Eridu plain.

4.6.4.3. Tell Dehaila as a potential location of the capital-city of the Sealand

An oval-shaped site of 57 hectares, 37 of which were urbanized, is situated along the Eridu canal (site 433) (Fig. 13). It is located almost 26 km northwest of Eridu 30 km west of Ur, 42 km south of Uruk, and 35 km south-west of Larsa. The local name of the site is Tell Dehaila. Its size and the city-wall surrounding it could indicate that it was the key urban center in the Eridu plain. From a distance of 200 meters of the western edge of Tell Dehaila, three settlements stretch one after another for a distance of 800 meters; they are 4.5, 6.6, and 12.5 hectares respectively from east to west (Map 24). Across the 190 meter-wide course of the Eridu canal, a site of 5 hectares is directly located at the eastern bank and contains a public building of 113x137 m. This could have served as the control center for transportation and collecting taxes, similar to that which has been discovered at Tell Khaiber, a 2 hectares Sealand site that is located 16 km northeast of Tell Dehaila and recently excavated by an expedition from Manchester University (Campbell et al. forthcoming). The imagery shows that the four sites were all part of the main site of Dehaila, but

erosion, natural phenomena, and modern agricultural activities created the separation between them.

Henry Wright visited the site in 1965 and examined its sherds; he dated the site to the late Old Babylonian period, with indications of occupation for a single period, high population density, and industrial, commercial, and administrative facilities. He wrote

> The exceptionally large site mentioned above is an unnamed town site on the west edge of the survey area (EP-34). Since it is low and does not appear clearly on the air photographs, it is difficult to measure; however, it covers more than 45 hectares. On the ground, wind erosion has emphasized small canals within the settlement, drains lined with baked brick in former streets, building foundations of both baked and mud brick, and localized concentrations of basalt, copper, ceramic slag, and other items perhaps indicating workshops. Regrettably, no inscribed pieces were found, and we have no idea of the ancient name of this short-lived but substantial town. The ceramics from the site seem to have somewhat finer decoration and appendages than those on other sites of the period, and it is possible that the site represents a late occupation during the Old Babylonian period proper. Certainly this was a period in which there was ample excuse for resettling populations in new areas. If this site is later, perhaps some of the small settlements contributing to the marked density of sites near EP-34 are of the later part of the period as well (Wright 1981:330-331, fig.21).

The notion that the site was one of the locations of population resettling, and that it was occupied for a single period triggers questions such are who were these people? Where did they come from? And what happened to the population of the major urban centers like Ur, specifically following the destruction of the city by Samsuiluna in the eleventh year of his reign (ca.1739 BCE) (Leemans 1957:217, Stone 1977:267)? Besides the destruction of Ur by Samsuiluna's troops, the other reason that the dwellers of Ur were forced to abandon their city was likely the sudden shifting of the canal systems that fed the arable fields that were used to provide Ur with food supplies.

The archaeological and textual data show that the city of Ur was abandoned just after Samsuiluna's devastating attack (Woolley et al. 1965, Stone 1977, Wright 1981, Ur 2013). It is reasonable to quote Leonard Woolley's description for the destruction of Ur by SamsuIluna, from which one could not only imagine the degree of the damage, but also could suggest that the dwellers of the city would have escaped to settle somewhere.

> But in the twelfth year of his son and successor, SamsuIluna, the Sumerian spirit seems to have revived for the last time; at any rate the south rose in revolt against their Babylonian overlord, and in the struggle Ur evidently played a leading part, for when SamsuIluna crushed the rebellion, as he did within twelve months, the year was known not as that in which the south country was conquered but as that in which the king destroyed the walls of Ur. The boast did less than justice to the facts. Not only were the great walls of defense dismantled so that not one brick was left upon another, but the whole city was given over to fire and destruction; of its public monuments not one was left, and even the houses of the private citizens were involved in the common overthrow (Woolley et al. 1965:1).

One of the indications that might suggest that the dwellers of Ur moved to Tell Dehaila to build their new settlement is the similarity between the designs of the public buildings to those at the holy area of Ur, the E-Gish-Shir-Gal. The other indication is the site size; the size of Ur at the Old Babylonian period was 60 hectares (Wright 1981), which is almost identical to the size of Tell Dehaila (Fig. 14).

Ceramics are intensively distributed on the surface of the site and the diagnostic bases and rims indicate Sealand pottery styles. Satellite images clearly show architectural traces of public buildings and private houses (Fig. 15). The city wall and streets can be seen from images, as well as a barrage stretching for 130 m from a group of facilities at the eastern edge of the city through its wall to end in the middle of Eridu canal. This barrage and its associated facilities could have been used to control transportation and internal trade, as well as collecting taxes. Examples of these barrages are also seen in the Eridu canal north of Tell Dehaila at site 416 (Fig.16). The goal

of building barrages was not only for controlling and raising water, but also controlling transportation and internal trade (Jacobsen 1970, Rost 2015). Baked-bricks are scattered throughout the site but concentrated in the east. Fragments of tools of copper, and pieces of terracotta figurines and plaques are visible throughout the surface of the site, while artificial basalt blocks are found in the middle of the site. These data indicate that the site of Tell Dehaila was a major center during the first Sealand dynasty and it is likely that Tell Dehaila was the location of the capital-city of the dynasty where the dwellers of Ur resettled after they were forced to leave their city.

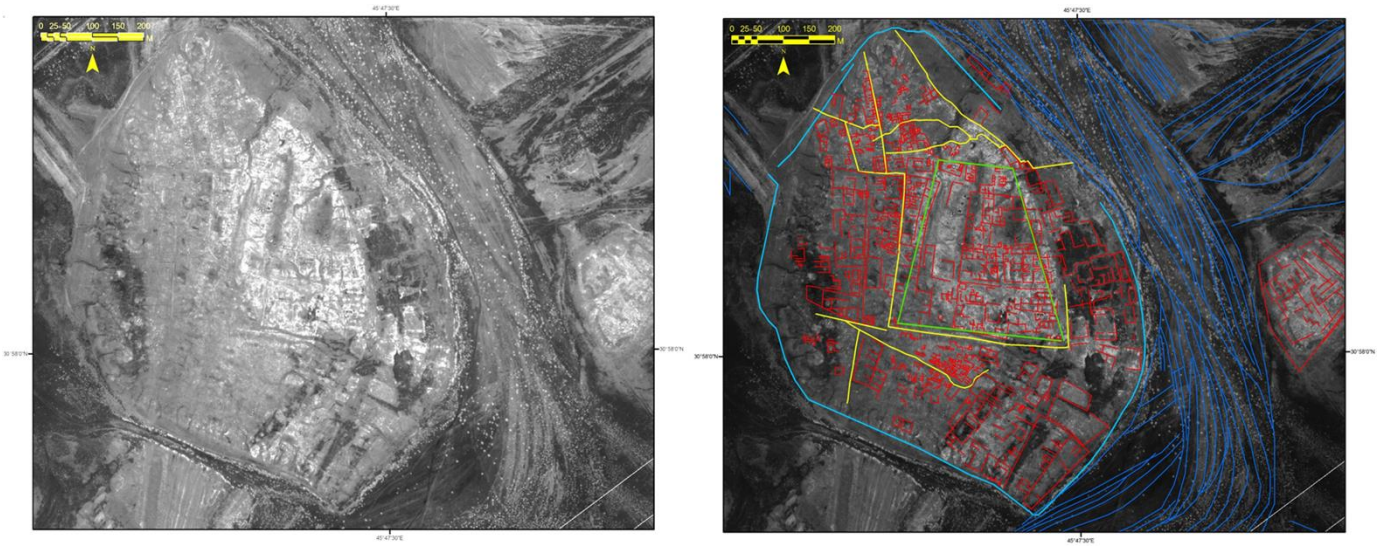


Fig. 13: The internal structure of Tell Dehaila

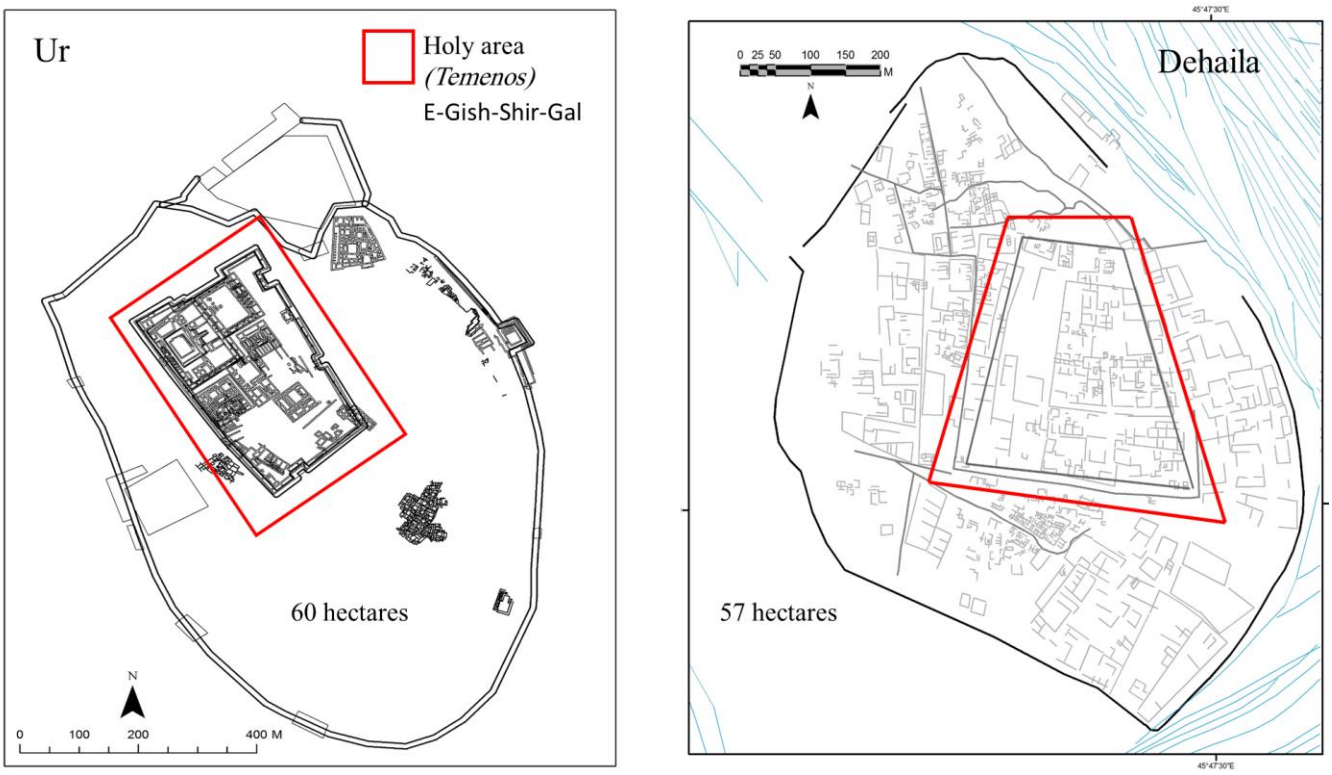
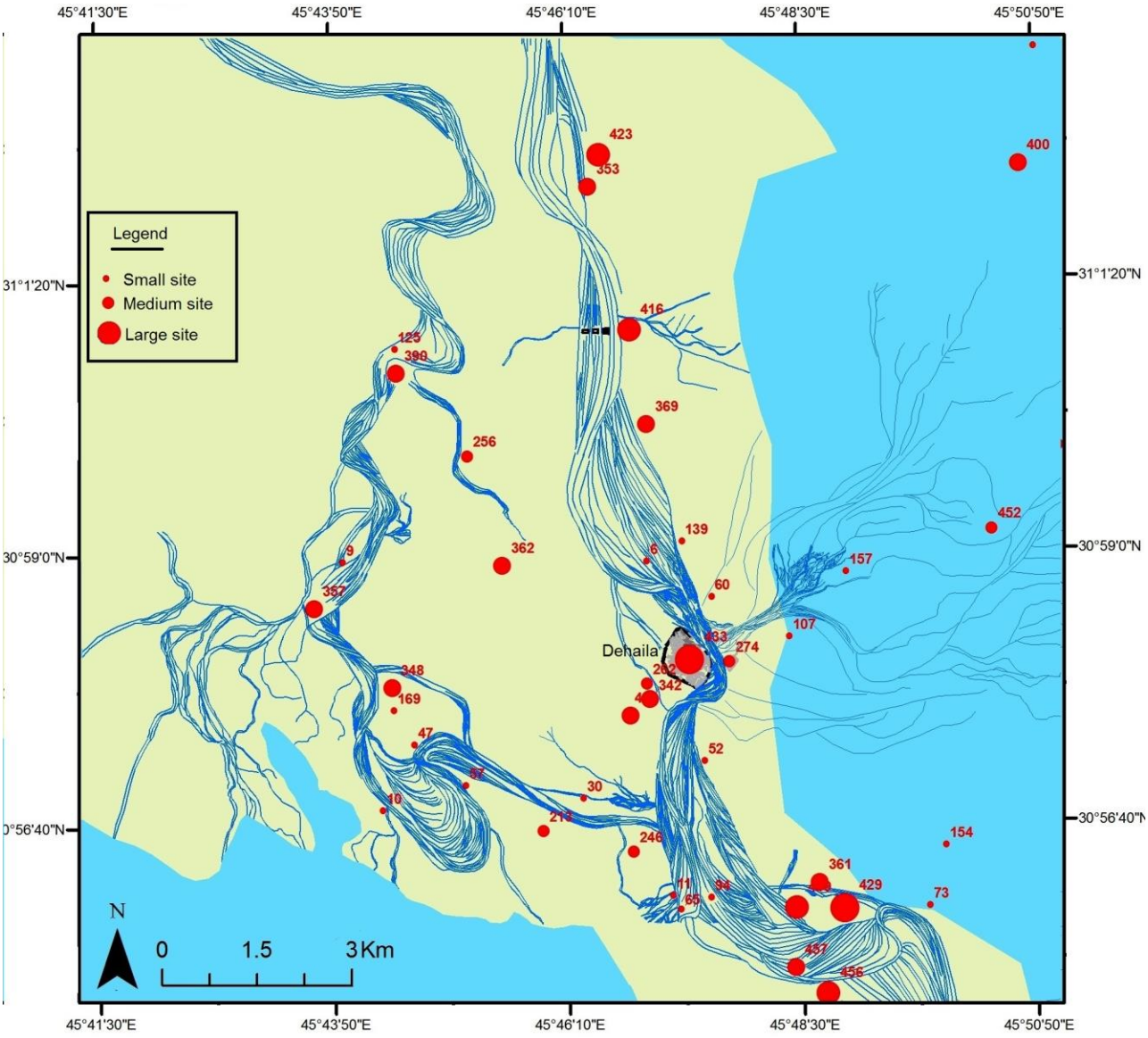



Fig. 14: The internal plan and city-wall of Ur and Tell Dehaila




Map 24: Tell Dehaila and its associated sites

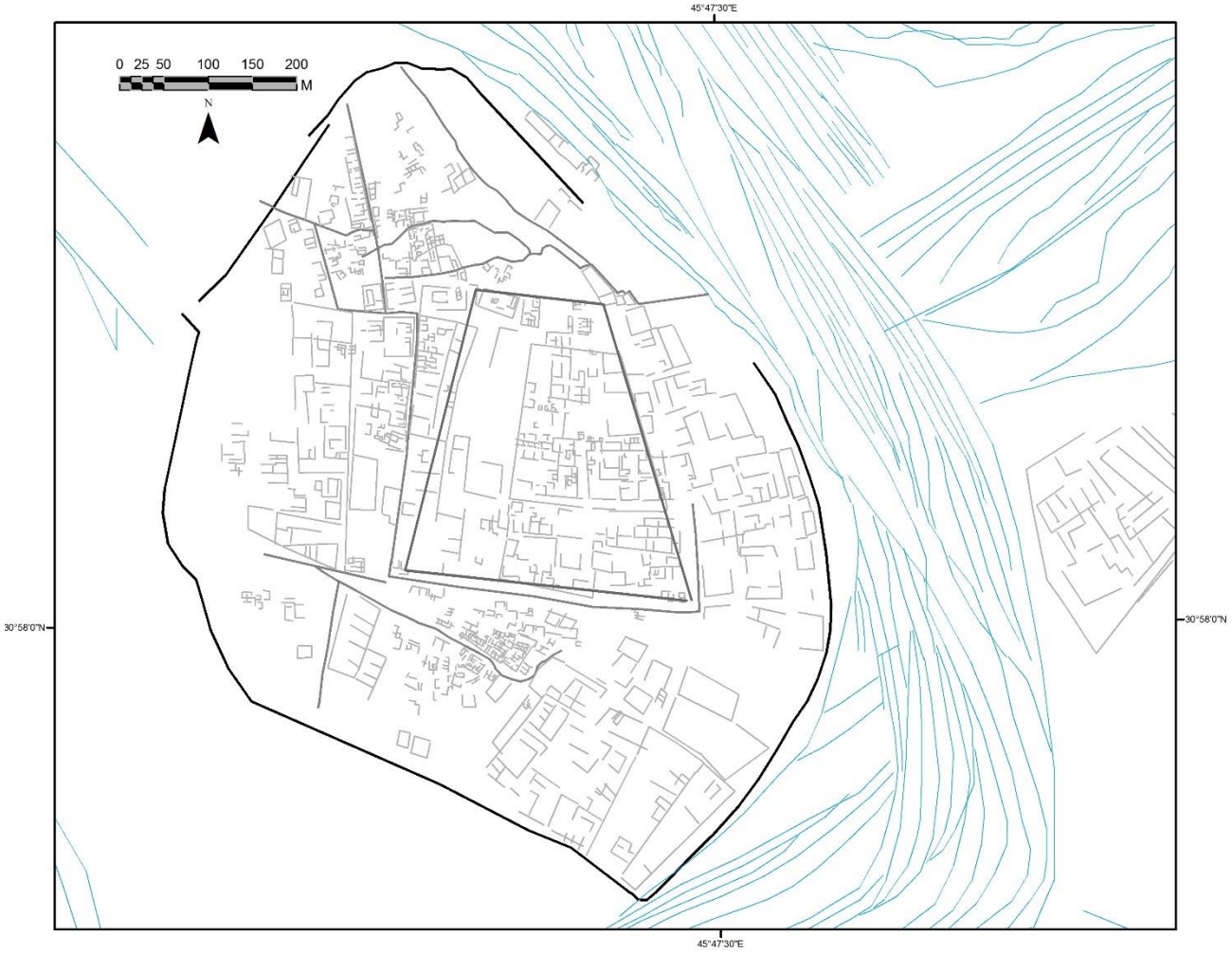



Fig. 15: The internal structure of Tell Dehaila

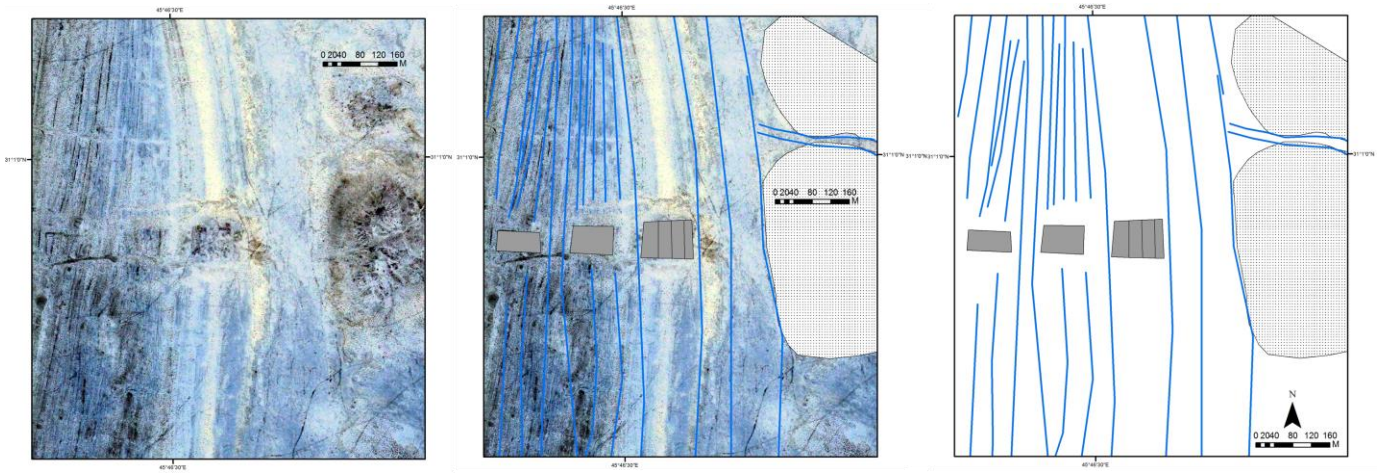



Fig. 16: A barrage at site 416 on the Eridu canal, north of Tell Dehaila

# CHAPTER 5: CONCLUSION

## 5.1. Economic resources and political opportunities

Despite that fact that the marshes of southern Iraq are considered to be refuge areas that provide shelter for the opponents of the central-state, they also provide resources and opportunities for the local populations to practice political and economic independence and develop political structures over the millennia of Mesopotamian history.

The marshes of southern Iraq provide not only plenty of food supplies, but also sustainable economic resources that exceed the population's needs; this can provide an opportunity for the marsh dwellers to practice political independence. The marshes were and remain abundant in readily available necessities, from which they maintained independence from larger Mesopotamian state structures. The combination of economic prosperity in the marshes at times when the central administration of Iraq suffered from political and economic instability was the key element that enabled political independence in the marshes. Their inaccessibility, the readily available food supplies and economic resources, the lack of dependence on anything from outside, and the climate of the marshes made it an ideal location for the opponents to the central government to be both independent from the central administration, and, more importantly, to establish their own governmental structures. Ethnographic, ethnohistorical, ethnogeographical and archaeological data demonstrate that the marshes of southern Iraq could be politically and economically independent.

This pattern of independence has happened many times since the first half of the second millennium BCE. These include the first Sealand dynasty (1739-1340 BCE), during the late Old Babylonian and Early Kassite periods, the second Sealand dynasty (1025-1004 BCE), during the

post Kassite period, the Sealand dynasty of Bit Yakin (796-703 BCE), during the Neo-Assyrian period, the Sealand dynasty during the Neo-Babylonian period (650-539 BCE), the state of Characene/Maysān (140 BCE-220 CE) during the Parthian and early Sassanian periods, and the Shahinid Principality (949-1021 CE) during the Abbasid Caliphate. The two cases studied in this dissertation arose during a time of political and economic crisis in Babylon during the First Sealand dynasty and in Baghdad during the Shahinid Principality.

### 5.2. The settlement systems

The ethnographic, ethnohistorical, and archaeological data show that several patterns of settlement existed in the marshes. The major settlements were largely located in a pattern of linear distribution along major canals in the irrigated fields at the vicinity of the marshes and marsh deltas, but a few also existed along canals within the marshes.

But most of the settlements within the marshes are hamlets and small villages, which were clustered around a medium-sized site which perhaps served as a small market town. Like the sites along the canals, this settlement pattern is quite distinctive. The distribution of these small settlements shows a second pattern, a radial pattern. These clusters were then interconnected by an intensive network of water passages. In the case of the linear pattern, the canals existed before the settlements were built, whereas the settlements that were part of a radial pattern were established on mounds based on the availability of marsh resources, and the water-passage were then created artificially. There is also a third pattern: non-residential sites. Small sites of a hectare or less were established within the marshes or on dry lands near or far from residential sites for special economic and social purposes, such as small manufacturing centers and workshops, temples, palaces, administrative centers, harbors, internal trade and transportation

control facilities, storages, and silos. These sites with special activities away from habitation sites must have been important in shaping regional economic systems.

### 5.3. The archaeology of the First Sealand dynasty

The archaeological data consist of datable ceramics recovered from my surface survey combined with satellite imagery that provides evidence for the larger settlement system. These data show that the first Sealand territories extended from the cities of Uruk-Larsa-Girsu towards the south and south west of the city of Lagash, and to the southeast of the city of Eridu.

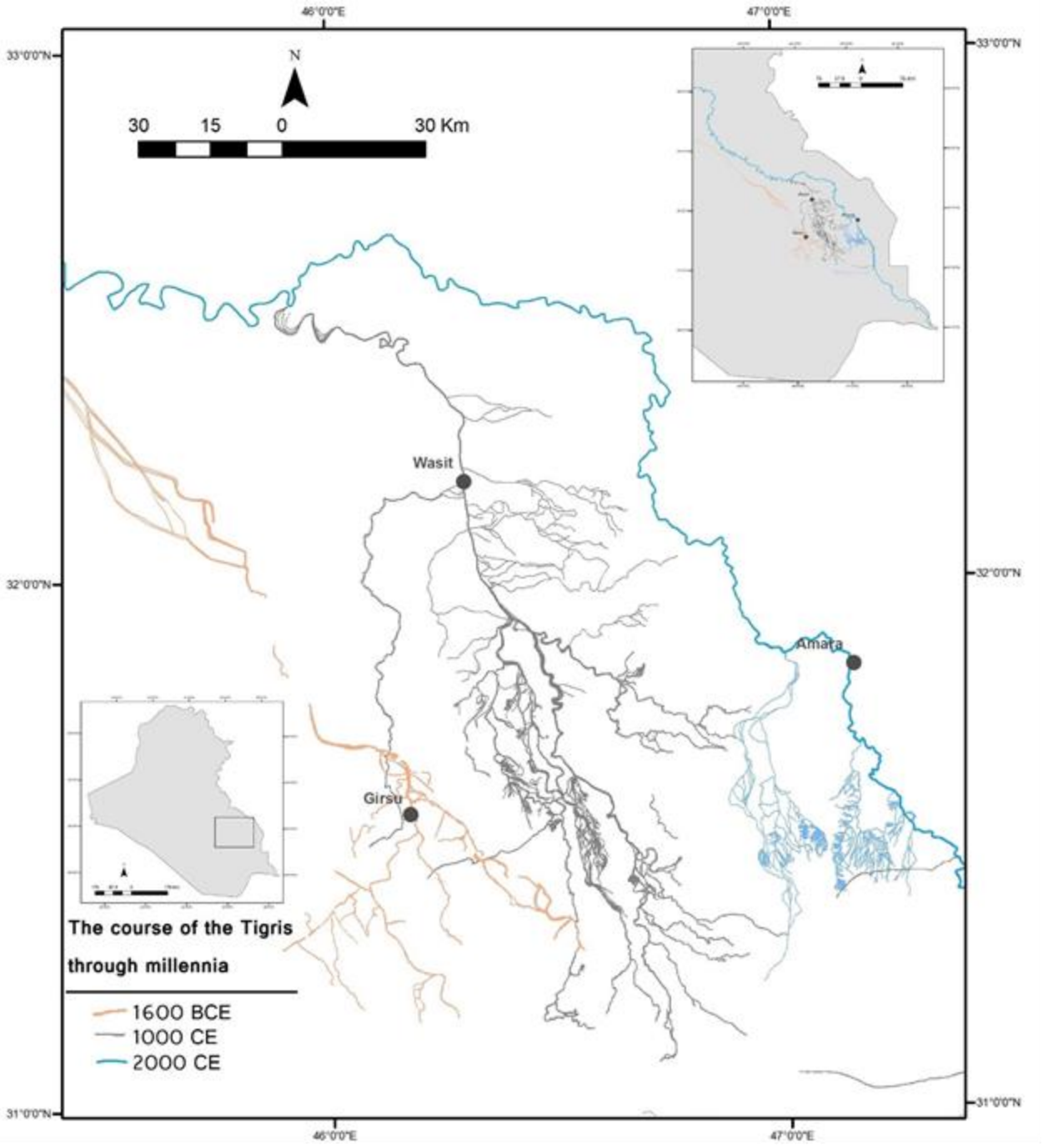
The marshes during the first Sealand dynasty reached its maximum extent such that most major known cities in the south were surrounded by water bodies. These water bodies must have formed a very extensive marsh during a time where no irrigation and cultivation activities were conducted in the heart of the alluvial plain between Nippur and Uruk. It is safe to suggest that that this very large water body was a marsh, like the Hawr al-Hammar in the first half of the twentieth century CE, and not a sea or a marine gulf, as it has been suggested based on the translation of the Sumerian term A-AB-BA, and its Akkadian copy, *māt tâmti*(*m*) (Dougherty 1930:2, Brinkman 1963:234, 1993: 6, George 2011:171, Zadok 2014:222).

The river system during the first Sealand dynasty witnessed dramatic changes. Because of the rebellions in most southern cities against the Babylonian throne, the Babylonian rulers led destructive and violent campaigns against the people in the south. One of the ways that the central administration in Babylon punished the rebellions was to divert the water that was needed to irrigate the arable fields in the heart of the alluvial plain, an event that was similar to what Saddam Hussein did in the end of the last century when the Euphrates and its distributaries that fed the marshes in the south of the city of Nasiriya were either dammed or shifted to the western

desert beyond Eridu away from villages and towns that rebelled against his regime immediately after the 1991 war. At both times, as a result of the harsh punishment, the population was forced to leave their settlements in the heart of the alluvial plain between Nippur and Uruk during the first Sealand dynasty and in most of southern Iraq during and after the uprising of the 1991. The population displacement eventually caused a decline in cultivation and large-scale desertification, hence a decline in using water for irrigation purposes. It was under this circumstance that the Tigris and the Euphrates riverbeds moved away from the heart of the alluvial plain. The Tigris moved to the east of Nippur and ran in a new course, while the Euphrates flowed at the extreme western portion of the plain and flowed to the west of Uruk and Eridu.

The shifting of the canal system caused desertification in the heart of the alluvial plain and extensive marshes in the southern portion of the plain. The data suggest that the boundary between the areas that were turned into desert and those which became marshes was located at Uruk-Larsa-Girsu.

Ethnographic and ethnohistorical models indicate a major canal and its associated distributaries in a largely flat plain would create an extensive network of streams that would form deltas and result in marshes at the ends of the streams. For instance, over the millennia, the Tigris has shifted its course several times from flowing in the heart of the alluvial plain during the twentieth century BCE to move east to its current course; the river created marshes in each one of these movements (Fig. 17, Map 25). This model can be applied to understand the landscape during the first Sealand dynasty, especially given the fact that the ground survey and the imagery of the areas that are located between Uruk-Girsu in the north and Eridu-Lagash in the south support the presence of such a landscape.




Map 25: The course of the Tigris through millennia

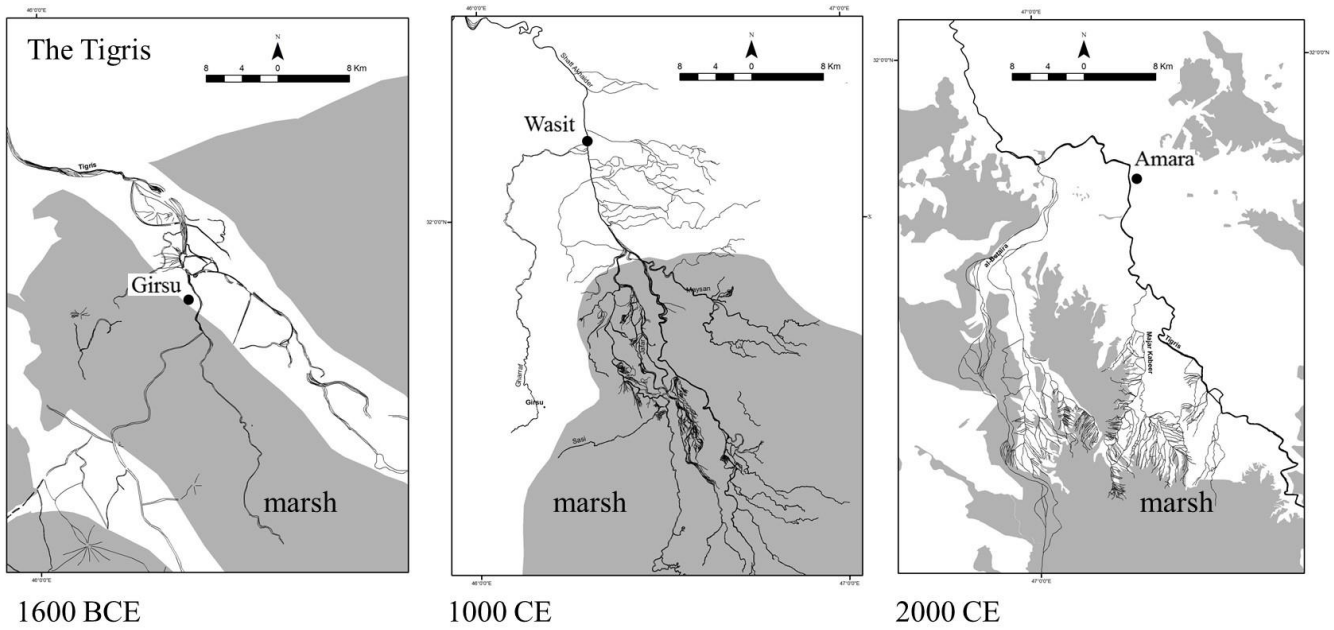



Fig. 17: The shifting of the Tigris's course through millennia created marshes

Statistics show that most of the settlements are situated within or at the edges of the marshes but they are small in size in comparison with those on dry land. Among the 495 sites of the first Sealand dynasty 204 (41%) sites of total area of 1274.9 hectares (52.7%) are located on dry land; these are 122 small, 63 medium, and 19 large sites. In addition, 291 sites (59%) with a total area of 1143.9 hectares (47.3%) are located within marshes; these are 224 small, 65 medium, and 2 large sites. There are also 30 special purpose sites (6%), out of the total sites of the first Sealand dynasty, are special purposes sites covering a total of some 41 hectares (1.7 %).

Tell Dehaila is most likely the potential location of the capital-city of the first Sealand dynasty. It is the largest site, and has public buildings, harbors, storage areas, workshops, streets, private houses, and a city wall.

In conclusion, the marshes of southern Iraq provided resources and opportunities for the dwellers to practice political and economic independence and develop their own political

structures over millennia of Mesopotamian history. The marshes always have a lot to offer not only as refuge areas but also often as a place to establish states. The marshes of southern Iraq have witnessed times of political independence; with the oldest known example during the Old Babylonian period (1830-1595 BCE). These independent polities were: a) the first Sealand dynasty (1739 -1340 BCE), b) the second Sealand dynasty (1025-1004 BCE), c) the Sealand dynasty of Bit Yakin (796-703 BCE), d) the Sealand during the Neo-Babylonian period (650-539 BCE), e) the state of Characene/ Maysān (ca.140 BCE-220 CE), and f) the Shahinid Principality (949-1021 CE). The data from these dynasties show that the marshes of southern Iraq had political and economic independence.

The first Sealand dynasty was an example of a shadow state that emerged in southern Mesopotamia based on a marsh economy. It developed during a time of political and economic instability at Babylon, the central administration of Mesopotamia.

Finally, the dissertation provides models of settlement that can be used to distinguish between the settlement system in the marshes and the settlement system and that in the irrigated areas. These models can be useful in undersanding the settlement patterns in the wetlands of Mesopotamia and alse where.

## Appendices

### Appendix 1: Major, primary, and secondary marshes in southern Iraq

| Major marsh areas | primary marshes | secondary marshes |
|---|---|---|
| The eastern marshes | *Hawr al-Ḥuwaiza, Hawr al-Saniya, Hawr al-Aḍaim, Hawr al-Sinaf ,Hawr Umm al-Nieag, and Hawr Oda* | Hawr Umm al-Beq, Hawr al-Chikka, Hawr al-Ụruga, Hawr Ẹasawi, Hawr al-Chibaisa, Hawr al-Jezra, Hawr Ḥelfawi, and Hawr Majnoon |
| The central marshes | *Hawr al-Zichri, Hawr Umm al-Benni, Hawr al-Saigel, Bergat al-Baghdadia, Hawr al-Saffar, and Hawr al-Ghumoga* | From north to south are: *Hawr al-Dujaila, Hawr al-Mesaindeḥ, Hawr Burhan , Hawr Sekhery, Hawr al-Sedaifa , Hawr Abu Ẹjool , Hawr al-Shaọora, Hawr al-Mezlag, Hawr al-Daima , Hawr Umm al-Fishag, Hawr al-Ḥisouna, Hawr Umm al-Buger, Hawr Abu Zuwaira, Hawr al-Murrana, Hawr al-Nowạiem, Hawr Umm al-Faras, Hawr al-Beḥra, Hawr Umm Guffa, Hawr al-Jifjafa, Bargat Faṭma , Hawr Abu Zoroug, Hawr al-Shaṭṭaniya, Hawr al-Ạbid, Hawr al-Mesaiḥib, Bargat Umm al-Qṭeen,Hawr Um Chidisha , Hawr al-Wadiya, Hawr Umm al-Ạbeed,Hawr Abu Mughairfat, Hawr al-Gubab, Hawr al-Seḥain, Hawr al-Ạgor, and Hawr Abu Shathir* |
| The western marshes | *Hawr al-Ḥammar, Hawr Selaiyen, and Hawr al-Sinaf* | Hawr Abu Ạjaj, Hawr Shawoosh, Hawr Laqeeṭ, Hawr al-Chiffa, Hawr Gatāt Rashid, Bargat Wana, Hawr al-Jafer, Hawr al-Niwashi, Hawr al-Dibin, Hawr al-Helaf , Hawr al-Shafi, Hawr Bani Khaigan, Hawr al-Mezleg |

Appendix 2: Plants in the southern marshes of Iraq

| Family name | *Latin name* Common name | Arabic name Transliteration | Description and References |
|---|---|---|---|
| | | | |
| Acanthaceae | *Jussisea diffusa* | Kwaikban كويكبان | *Justicia* is a genus of flowering plants in the family Acanthaceae. It is native to tropical to warm temperate regions of the Americas, India and Africa. Common names include water-willow and shrimp plant, the latter from the inflorescences, which resemble a shrimp in some species. |
| Amaranthaceae | *Alternanthera sessilis* | Abu ruqba أبو رقبة | *Alternanthera sessilis* is an aquatic plant known by several common names, including sessile joyweed and dwarf copperleaf. |
| Apocynaceae | *Trachomitum venetumm* | Kumbar كُمبار | It is a plant species in the dogbane family, poisonous but used as a source of fiber and medicine. |
| | Oxystelma esculenta | Hiliblab حلبلاب | Oxystelma is a genus of flowering plants of the family Apocynaceae. It is native to |

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| | | | Africa and Asia. |
| Asteraceae | *Pluchea sp.* | Shebabik<br>شبابك | Pluchea is a genus of flowering plants. There is variation in the morphology of leaves and flowers. |
| | *Sonchus maritimus* | Murrair<br>مُرَّير | Sonchus is a genus of flowering plants. Most of the species are annual herbs, a few are perennial, and a few are even woody. All are characterized by soft, somewhat irregularly lobed leaves that clasp the stem and, at least initially, form a basal rosette. The stem contains milky latex. Flower heads are yellow and range in size from half to one inch in diameter; the florets are all of ray type. Sow thistles are common roadside plants, and while native to Eurasia and tropical Africa, they are found almost worldwide in temperate regions. |
| Ceratophyllaceae | *Ceratophyllum submersum* | Shumbilan, Shinbilan<br>شُمبلان أو شِنبلان | *Ceratophyllum* is a cosmopolitan genus of flowering plants, commonly found in ponds, marshes, and quiet streams in tropical and in temperate regions. They are usually called hornworts, although this name is also used for unrelated plants of |

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| | | | the division Anthocerotophyta. *Ceratophyllum* grows completely submerged, usually, though not always, floating on the surface, and does not tolerate drought. The plant stems can reach 1–3 m in length. At intervals along nodes of the stem they produce rings of bright green leaves, which are narrow and often much-branched. The forked leaves are brittle and stiff to the touch in some species, softer in others. The plants have no roots at all, but sometimes they develop modified leaves with a rootlike appearance, which anchor the plant to the bottom. The flowers are small and inconspicuous, with the male and female flowers on the same plant. |
| Cyperaceae (Sedges) | *Scirpus brachyceras* | Chaulan چولان | Sedge: Robust perennial with a short thick and woody rhizome; stems 50–300 cm long and 2–8 mm thick, terete and pith-filled. Leaf-sheaths often splitting to give a fine filigree pattern across the split, the upper ending in short lobes; blades absent. |

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| | | | Inflorescence a lax anthela with clusters of spikelets on very unequal branches; largest branches 2–12 cm long; major inflorescence bract usually 1–2 cm long, sometimes stem-like or flattened and boat-shaped. Spikelets 3–8 x 1.5–2.5 mm, ovoid, acute, light to dark brown. |
| | *Cyperus rotundus* | Sijail سِيجَّيل/ سِيِيَّل | It is a species of sedge (Cyperaceae) native to Africa, and is a perennial plant, that may reach a height of up to 140 cm (55 inches). As in other Cyperaceae, the leaves sprout in ranks of three from the base of the plant, around 5–20 cm long. The flower stems have a triangular cross-section. The flower is bisexual and has three stamina and a three-stigma carpel, with the flower head having 3-8 unequal rays. |
| | *Cladium mariscus* | Halfa, Jerraih حَلفا، جِرَّيح | Cladium mariscus is a species of flowering plant in the sedge family known by the common name saw-sedge or saw tooth sedge. It grows in base-rich boggy areas, marshes, and lake sides. It can be up to 2.5 meters (8 ft 2 in) tall, and has leaves with |

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| | | | hard serrated edges |
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| Hydrocharitaceae | *Najas marina* | Suwaika<br>سُوَيكة | Najas marina is a species of aquatic plant known by the common names spiny water nymph and holly-leaved naiad. It is an extremely widespread species, reported across Europe, Asia, Africa, Australia, the Americas and many oceanic islands. It can be found in many types of freshwater and brackish aquatic habitat, including bodies of alkaline water. |
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| Lamiaceae | *Lycopus sp.* | Mkharib<br>Algae<br>مخرّب<br>علكة | *Lycopus* (*Gypsywort* or *Bugleweed*) is a genus in the family Lamiaceae. They are all herbaceous plants native to Europe, Asia, Australia, and North America. The species are most often found in wetlands, damp meadows, and stream banks. Some of the wetland species have become endangered. |
| Marsileaceae | *Marsilea quadrifolia* | Zamra<br>زمرة | Aquatic fern bearing 4 parted leaf resembling '4-leaf clover' (Trifolium). Leaves floating in deep water or erect in |

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| | | | shallow water or on land. |
| Menyanthaceae | *Panicum repens* | Murran<br>مُرّان | *Panicum repens* is a species of grass known by many common names, including torpedograss, creeping panic, panic rampant, couch panicum, wainaku grass, quack grass, dog-tooth grass, and bullet grass. Its exact native range is obscure. Sources suggest that the grass is native to Africa and/or Asia. It is present in many places as an introduced species and often a noxious weed. It has been called "one of the world's worst weeds. |
| | *Nymphoides peltata and indica* | Geaiba<br>كعيبة | *Nymphoides* is a genus of aquatic flowering plants in the family *Menyanthaceae*. The genus name refers to their resemblance to the water lily *Nymphaea. Nymphoides* are aquatic plants with submerged roots and floating leaves that hold the small flowers above the water surface. Flowers are sympetalous, most often divided into five lobes (petals). The petals are either yellow or white, and may be adorned with lateral wings or covered in |

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| | | | small hairs. The inflorescence consists of either an umbellate cluster of flowers or a lax raceme, with internodes occurring between generally paired flowers. |
| Onagraceae | *Epilobium Parviflorum* | Ethan alfar إذان الفار | *Epilobium parviflorum*, commonly known as small flower hairy willow herb, is an herbaceous perennial plant belonging to the Onagraceae family. |
| Plantaginaceae | *Limnophila* | Tablik تبلك | *Limnophila* is a genus of flowering plants in the plantain family, Plantaginaceae. It is distributed in tropical and subtropical regions of Africa, Asia, Australia, and the Pacific Islands. Species are known commonly as marsh weeds. |
| Plumbaginaceae | *Zeylanica* | Urmuṭ عرمط | *Plumbago zeylanica*, commonly known as Ceylon Leadwort or Doctorbush, is a species of plumbago with a pantropical distribution. |

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| Poaceae | *Phragmites communis* | Qasab<br>قَصَب | A giant reed sometimes 20 feet in height. It is the predominant vegetation in the permanent marsh, and flourishes in dense reed beds often forming floating islands in the lagoons.<br>*Phragmites*, the common reed, is a large perennial grass found in wetlands throughout temperate and tropical regions of the world. *Phragmites australis* is sometimes regarded as the sole species of the genus *Phragmites*, though some botanists divide *Phragmites australis* into three or four species. |
| | *Cyperus alopecuroides* | Housan<br>هوسان | *Crypsis* is an African and Eurasian plant in the grass family sometimes referred to as pricklegrass. |
| | *Paspalum distichum* | Hew, heliyan, or al-ghareeb<br>حَوْ ، حليّان أو غريب | *Paspalum distichum* is a species of grass known by the common name knotgrass. Other common names include couch paspalum, eternity grass, gingergrass, and Thompson grass. Its native range is |

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| | | | obscure because it has long been present on most continents, and in most areas it is certainly an introduced species. Its native range probably includes parts of the tropical Americas.<br>This is a perennial grass forming clumps and spreading via rhizomes and stolons. It grows decumbent or erect to a maximum height near 60 centimeters. The inflorescence is usually divided into two branches lined with spikelets. |
| | *Polypogon* monspeliensis | Thail aletwi<br>ذيل العتوي | *Polypogon monspeliensis*, commonly known as annual beard-grass or annual rabbitsfoot grass, is a species of grass. It is native to southern Europe, but it can be found today throughout the world as an introduced species and sometimes a noxious weed. It is an annual grass growing to heights between 5 centimeters and one meter. The soft, fluffy inflorescence is a dense, greenish, plumelike panicle, sometimes divided into lobes. The spikelets have long, thin, |

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| | | | whitish awns, which give the inflorescence its texture. |
| Polygonaceae | *Polygonum senegalense* | Qaat<br>قات | Vigorous perennial herb that can reach 3m in height. |
| | *Polygonum* | Shbiṭbaṭ<br>شبيطباط | Common names include knotweed, knotgrass, bistort, tearthumb, mile-a-minute, and several others. *Polygonum* species are occasionally eaten by humans, and are used as food plants by the larvae of some Lepidoptera species |
| Potamogetonaceae | *Potamogeton lucens* | Khowaisa / lisan althour<br>خويسة/ لسان الثور | *Potamogeton lucens*, or shining pondweed, is an aquatic perennial plant native to Eurasia and North Africa. It grows in relatively deep, still or slow-flowing, calcareous freshwater habitats. |
| Ranunculaceae | *Ranunculus sphaerospermum* | Zeiar albeṭṭ<br>إزعير البط | *Ranunculaceae* (buttercup or crowfoot family; Latin *rānunculus* "little frog", from *rāna* "frog") are a family of about 1700 species of flowering plants in about 60 genera, distributed worldwide. |
| Rosaceae | *Rubus sp.* | Alga<br>عَلْگة | Rubus is a large genus of flowering plants in the rose family. Most of these plants have woody stems with prickles like roses; |

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| | | | spines, bristles, and gland-tipped hairs are also common in the genus. |
| Salicaceae | *Salix sp.* populus euphratica | Ghrab غَرَبْ | *Salix alba* (white willow) is a species of willow native to Europe and western and central Asia. The name derives from the white tone to the undersides of the leaves. It is a medium-sized to large deciduous tree growing up to 10–30 m tall, with a trunk up to 1 m diameter and an irregular, often-leaning crown. |
| | *Populus euphratica* | Hawr forati حوار فراتي | *Populus euphratica* The Euphrates Poplar is a medium-sized deciduous tree that may grow to a height of about 15 m and a girth of 2.5 m where conditions are favourable. The stem is typically bent and forked; old stems have thick, rough, olive-green bark. While the sapwood is white, the heartwood is red, darkening to almost black at the center. The roots spread widely but not deeply. The leaves are highly variable in shape. The flowers are borne as catkins, those of the male are 25–50 mm long, those of the female 50–70 mm. The fruits |

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| | | | are ovoid-lanceolate capsules, 7–12 mm long, containing tiny seeds enveloped in silky hairs. It grows well on land that is seasonally flooded and is tolerant of saline and brackish water. |
| Salviniaceae | *Salvinea nataus* | Ghezaiza<br>إغزَيزة | *Salvinia natans* (commonly known as floating fern, floating water moss, floating moss, or commercially, Water Butterfly Wings) is an annual floating aquatic fern, which can appear superficially similar to moss. It is found throughout the world where there is plentiful standing fresh water, sunlight, and humid air, but is especially common in Africa, Asia, central Europe, and South America. |
| Samolaceae | *Samolus valerandi* | Ḥas alhawr<br>خص الحور | *Samolus valerandi* is a species of water pimpernel native to a very wide area across Europe, Africa, Asia, Australia, and the Americas. Common names include Brook weed, Thin-Leaf Brook weed, Water Cabbage, and Water Rose. |
| Sphenocleaceae | *Sphenoclea* | Breibija<br>بريبيجة | *Sphenoclea* is a genus of succulent erect annual herbs. They occur in damp habitats |

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| | | | throughout the tropics. |
| Tamaricaceae | *Tamarix* | Athil, ṭarfaa<br>أَثَل، طرفة | The genus *tamarix* (tamarisk, salt cedar) is composed of about 50–60 species of flowering plants in the family Tamaricaceae, native to drier areas of Eurasia and Africa. The generic name originated in Latin and may have referred to the Tamaris River in Hispania Tarraconensis (Spain) |
| Typhaceae | *Typha angustata*<br>papyrus | Berdi<br>بَردي | A bulrush usually about 8 feet in height. The plant's leaves are flat, very narrow, and 3’-6' tall when mature. At maturity, 12-16 leaves arise from each vegetative shoot. The plant has distinctive stalks that are about as tall as the leaves; the stalks are topped with brown, fluffy, sausage-shaped flowering heads. The plant has sturdy roots that can extend 27". |

Appendix 3: Types of dates palms in the southern marshes of Iraq

| Translation | Name in Arabic | Color of *khalal* |
|---|---|---|
| Aṣabi'aat al-'Aroos | إصبيعات العروس | Yellow |
| As-ḥag | أسحاق | Yellow ground with red spots |
| Ashgar | أشگر | Yellow |
| Ashrasi | أشرسي | Yellow |
| 'Aṭri | عطري | Yellow |
| 'Awaidi | عويدي | Yellow |
| Barban | بربن | Yellow or red |
| Barḥi | برحي | Yellow |
| Bint As Sab'a | بنت السبع | Red |
| Bobak | بوبك | Red |
| Braim | بريم | Yellow ground with red spots |
| Chibchab | چبچاب | Yellow |
| Dairi | ديري | Red |
| Digal (of different types) | دگل | Yellow, red, or Yellow ground with red spots |
| Doowaich | دويچ | Yellow |

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|---|---|---|
| Farsi | فارسي | Red |
| Ganṭar | گنطار | Yellow |
| Ḥabsi | حابسي | Red |
| Hadal | هَدَلْ | Yellow ground with red spots |
| Ḥalawi or Ḥillawi | حلاوي أو حِلّاوي | Yellow |
| Ḥamrawi | حمراوي | Red |
| Ḥasawi | حساوي | Yellow |
| Ḥawaizi | حويزي | Yellow |
| Ḥelya | حلية | Yellow |
| Ista'umran | إستعمران | Yellow, or Yellow ground with red spots |
| Jozi | جوزي | Red |
| Khadhrawi | خضراوي | Yellow |
| Khaṣab | خصاب | Red |
| Khastawi | خستاوي | Yellow |
| Khinaiz | خنيز | Red |
| Khlaṣ | خلاص | Yellow ground with red spots |
| Lilwi | ليلوي | Yellow |

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|---|---|---|
| Maktoom | مكتوم | Yellow, or Yellow ground with red spots |
| Midad | مداد | Yellow |
| Nagsh al-Mabrad | نگش المبراد | Yellow ground with red spots |
| Shirani | شيريني | Yellow |
| Shookar | شُكّر | Yellow |
| Shwaidi | شويدي | Yellow ground with red spots |
| Swaidan or Bin al-Sawda | سويدان أو بن السودة | Yellow |
| Sikkari | سكّري | Yellow |
| Taburzal | تبرزل | Yellow |
| Umm al- Dihin | أم الدهن | Yellow ground with red spots |
| Umm al- Bakhoor | أم البخور | Yellow |
| Zahdi | زهدي | Yellow |

Appendix 4: Fish in the marshes southern of Iraq

| Family | Species | |
|---|---|---|
| 1. Fresh water fish | | |
| ARIIDAE | *Aclyptosternon coum* | |
| | *Arius cous* | |
| BAGRIDAE<br>عائلة أبو الزمير | *Mystus colvilli* | |
| | *Mystus pelusius* | أبو الزمير العميق |
| BALITORIDAE<br>عائلة اللخ | *Barbatula frenata* | اللخ |
| | *Barbatula tigris* | لخ دجلة |
| | *Nemacheilus insignis* | |
| | *Paracobitis malapterura* | اللخ |
| BELONIDAE | *Strongylura strongylura* | |
| CICHLIDAE<br>عائلة البلطي | *Oreochromis aureus* | البلطي اوريا |
| | *Oreochromis niloticus* | |
| | *Sarotherodon galilaeus* | |
| | *Tilapia zilli* | البلطي زيلي |
| CLUPEIDAE | *Alosa sapidissima* | |
| | *Tenualosa ilisha* | صْبُورْ |
| COBITIDAE | *Cobitis aurata* | |
| | *Cobitis taenia* | |
| | *Noemacheilus angorae* | |
| | *Noemacheilus argyrogramma* | |

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|---|---|---|
| | *Noemacheilus frenatus* | |
| | *Noemacheilus insignis* | |
| | *Noemacheilus panthera* | |
| | *Noemacheilus malapterurus* | |
| | *Noemacheilus tigris* | |
| | *Sabanajewia aurata* | |
| | *Turcinonoemacheilus kosswigi* | |
| CYPRINIDAE<br>عائلة الشبوطيات | *Acanthobrama arrhada* | السمنان العريض |
| | *Acanthopagrus berda* | |
| | *Acanthobrama centisquama* | |
| | *Acanthobrama lissneri* | |
| | *Acanthobrama marmid* | |
| | *Acanthalburnus microlepis* | |
| | *Acanthobrama orontis* | |
| | *Acanthobrama telavivensis* | |
| | *Acanthobrama tricolor* | |
| | *Alburnoides bipuncrarus fasciatus* | |
| | *Alburnus caeruleus* | اللصافة |
| | *Alburnus capito* | |
| | *Alburnus mossulensis* | السمنان الطويل |
| | *Albumus oronris* | |
| | *Alburnus pallidus* | |
| | *Albumus schejtan* | |

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| | *Alburnus sellal* | |
| | *Aphanius dispar dispar* | |
| | *Aphanius mento* | |
| | *Aphanius sophiae* | |
| | *Aristichthys nobilis* | |
| | *Aspius vorax* | الشلك |
| | *Barbatula frenata* | |
| | *Barbatula panthera* | |
| | *Barbatula tigris* | |
| | *Barbus rajanorum* | أبو براطم |
| | *Barbus belayewi* | |
| | *Barbus canis* | |
| | *Barbus canis* | |
| | *Barbus esocinus* | البز |
| | *Barbus euphrati* | |
| | *Barbus sharpeyi* | |
| | *Barbus grypus* | |
| | *Barbus capita* | |
| | *Barbus grypus* | الشبوط الاعتيادي |
| | *Barbus plebejus* | |
| | *Barbus longiceps* | |

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|---|---|---|
| | *Barbus sharpeyi* | البني |
| | *Barbus grypus* | |
| | *Barbus capita* | الجصان |
| | *Barbus grypus* | |
| | *Barbus lacerta* | الشبوط المرقط |
| | *Barbus lorteti* | |
| | *Barbus luteus* | الحمري |
| | *Barbus mystaceus* | |
| | *Barbus orontis* | |
| | *Barbus pectoralis* | |
| | *Barbus plebejus* | |
| | *Barbus scheich* | |
| | *Barbus subquincunciatus* | عجزان |
| | *Barbus xanthopterus* | الكطان |
| | *Barilius mesopotamicus* | |
| | *Barynotus albus* | |
| | *Caecocypris basimi* | |
| | *Capoeta barroisi* | التيلة باروز |
| | *Capoeta capoeta* | |
| | *Capoeta (Varicorhinus) damascina* | التيلة الدمشقية |
| | *Capoeta (Varicorhinus) trutta* | التيلة المرقطة |
| | *Carasobarbus luteus* | |

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| | *Carassius auratus* | (الكرسين (السمكة الذهبية |
| | *Carcharhinus leucas* | |
| | *Chondrostoma nasus* | |
| | *Chondrostoma regium* | البلعوط |
| | *Clarias gariepinus* | |
| | *Ctenopharyngodon idella* | الكارب العشبي |
| | *Cyprinion kais* | |
| | *Cyprinion macrostomum* | بني صغير الفم |
| | *Cyprinion tenuiradius* | بني كبير الفم |
| | *Cyprinus carpio* | الكارب الشائع |
| | *Gambusia affinis* | |
| | *Gambusia holbrooki* | |
| | *Garra gymnothorax* | |
| | *Garra lamta* | |
| | *Garra obtusa* | |
| | *Garra rufa* | كركور |
| | *Garra variabilis* | كركور |
| | *Garra variabilis* | |
| | *Hemiculter leucisculus* | |
| | *Hemigrammacapoeta nanus* | |
| | *Hemigarra elegans* | |
| | *Hypophthalmichthys molitrix* | الكارب الفضي |
| | *Hypophthalmichthys nobilis* | الكارب ذو الرأس الكبير |

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| | *Leuciscus berak* | |
| | *Leuciscus cephalus* | |
| | *Leuciscus lepidus* | |
| | *Leuciscus zeregi* | |
| | *Phoxinellus zeregi* | |
| | *Rutilus tricolor* | |
| | *Squalius (Leuciscus) cephalus* | البرعان |
| | *Squalius (Leuciscus) lepidus* | البرعان الابيض |
| | *Tylognathus elegans* | |
| | *Typhlogarra widdowsoni* | |
| | *Varicorhinus damascinus* | |
| | *Varicorhinus trutta* | |
| | *Varicorhinus umbla* | |
| CYPRINODONTIDAE<br>عائلة البطريخ | *Aphanius dispar* | البطريخ |
| | *Aphanius mento* | البطريخ |
| | *Aphanius mesopotamicus* | |
| HETEROPNEUSTIDAE<br>عائلة الجري اللاسع | *Saccobranchus fossilis* | |
| | *Heteropneustes fossilis* | الجري اللاسع (أبو الحكم) |
| MASTACEMBELIDAE<br>عائلة المرمريج | *Mastacembelus hallepensis* | |
| | *Mastacembelus mastacembelus* | المرمريج |
| MUGILIDAE<br>عائلة البياح | *Liza abu* | الخشني |
| POECILIIDAE | *Gambusia holbrooki* | الكمبوزيا |

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| عائلة الكمبوزيا | *Poecilia latipinna* | المولي |
| SALMONIDAE | *Oncorhynchus mykiss* | |
| SILLAGINIDAE | *Sillago sihama* | |
| SILURJDAE<br>عائلة جري المياه العذبة | *Aclyptostemon coum* | |
| | *Euglyptostemum coum* | |
| | *Silurus glanis* | |
| | *Silurus triostegus* | الجري الآسيوي |
| SJSORIDAE<br>عائلة الصقنقور | *Glyptothorax armeniacum* | |
| | *Glyptothorax cous* | |
| | *Glyptothorax kurdistanicus* | الصقنقور |
| | *Glyptothorax steindachneri* | |
| SPARIDAE | *Spondyliosoma cantharus* | شَانَگْ |
| STROMATEIDAE | *Pampus argenteus* | زُبَيْدي |
| 2. Marine fish entering mkmarshes | | |
| | | |
| CLUPEIDAE | *Ilisha filigera* | |
| | *Ilisha Valenciennes* | |
| | *Ilisha megaloptera* | |
| | *Nematalosa nasus* | |
| ENGRAULIDAE | *Thryssa hamiltoni* | |
| | *Thryssa malabarica* | |

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| | *Thryssa purava* | |
| | *Thryssa setirostris* | |
| CHIROCENTRUS | *Chirocentrus nudus* | |
| ARIIDAE | *Arius thalassinus* | |
| PLOTOSIDAE | *Plotosus lineatus* | |
| HEMIRAMPHIDAE | *Hemiramphus* | |
| | *Rhynchorhamphus* | |
| BELONIDAE | *Stronglura strongylurus* | |
| SERRANIDAE | *Epinephelus tauvina* | |
| *SPARIDAE* | *Acanthopagrus berda* | |
| | *Acanthopagrus latus* | |
| | *Petrus belayewi* | |
| SCIAENIDAE | *Argyosomus amaoyensis* | |
| | *Johnius carutta* | |
| | *Otolithes ruber* | |
| EPHIPPIDDIDAE | *Drepane punctata* | |
| SCATOPHAGIDAE | *Scatophagus argus* | |
| MUGILIDAE | *Liza macrolepis* | |
| | *Liza oligolepis* | |
| | *Liza subviridis* | |
| | *Liza vaigiensis* | |
| | *Mugil cephalus* | |
| POLYNEMIDAE | *Eleutheronema tetradactylum* | |

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| GOBIIDAE | *Acentrogobius dayi* | |
| | *Periophthalmus* | |
| | *Periophthalmus weberi* | |
| | *Scartelaos* | |
| CYNOGLOSSIDEA | *Cynglossus arel* | |
| | *Cynoglossus* | |
| SOLEIDAE | *Euryglossa* | |
| | *Solea* | |
| STROMATEIDAE | *Pampus argenteus* | |
| | *Pampus chinensis* | |

Appendix 5: The use of reed in the southern marshes of Iraq

| No. | Object/ tool/use | Description |
|---|---|---|
| 1. | Plaited mats | Practically most of the adults in the villages of the reed region in the marshes are capable of plaiting a mat and will do so from time to time, especially when a special size is needed. Several families who possess little land or few animals supplement their income solely by either plaiting mats or fishing with nets. Men harvest the reeds with a sickle-shaped (*minjel*), toothed knife and cut off the tops and bottoms. Wives, sons, or daughters tie bundles of reeds together and either bring them to the edge of the marsh or load them aboard a boat in which they will be |

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| | | transported to shore. On the shore each reed is skinned, split with a short, curved knife (*dekra*), and peeled. Women then lay ten to twenty sections flat on the ground and pound them with mallets, heavy wooden sticks, or even bitumen-covered pestles until they are pliable. Each stem produces three to six connected strands that can be stored and still retain their flexibility. Anyone can freely collect reeds from anywhere in the marsh, but an individual or a group of individuals may cut a swath around a stand of reeds and thus earn the right to cut everything within that circle without interference from others.<br><br>When enough material is collected, both men and women plait the mats. They lay out the requisite number of flattened reed strands next to each other on the ground and plait a weft of the same material across them at right angles in a twill pattern of either over two, under two or over three, under three. The ends of the weft are sometimes pointed with a small knife and always turned to create extremely sturdy borders. Mats are plaited in several sizes. The usual commercial size is about 1 x 2-3m. From cut reed to finished mat takes a little more than two hours.<br><br>Mats are often sold or bartered to a local merchant whose stock, aside from mats, consists only of basic household necessities. The mat weaver usually receives less from the village merchant in a barter deal, and the merchandise the weaver gets in exchange is usually overpriced. |

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| | | Collectors of mats, who regularly ply the waterways in boats, buy the finished mats either from the local merchants or directly from the weavers. They often advance money to the weaver who promises a certain quantity of mats in a certain period of time. It is not unusual for the weaver to over-estimate the number of mats he can produce and fall behind in his obligation, thus increasing his indebtedness. Collectors in turn sell mats to dealers who ship them to market towns throughout Iraq.<br><br>Mats are used as both floors and roofs, sometimes topped with unwoven reeds, dung, or mud in most houses. For receiving guests or on special occasions the mats are covered with carpets and pillows. Mats are used between the ground and a mud brick wall or between layers of mud brick since they are thought to inhibit the passage of salt. They are also used for making fences as well as for storage bins for grain and sometimes fodder, usually of a temporary or seasonal nature. A small plaited mat or reed tray serves as the bottom. The sides are formed of reed matting, and the top is covered with another tray or section of reed mat. The top and sometimes the sides are sealed with buffalo dung plaster. |
| 2. | Woven mats | Woven mats are made by finely splitting sedges (*Scirpus brachyceras*, *chaulan* in Arabic) twisted into cord for the warp. The loom consists of two beams set about 2 m apart and tied to stakes driven into the ground. |

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| | | Each cord of the warp was separately tied to each of the two beams under tension. Finely split sedges were used for the weft, which was passed alternately over and under the successive warp cords by hand, for there was no heddle. Each course was pressed in (rather than beaten in) with a toothed comb similar the one used by carpet weavers. These are used over reed mats as a kind of tablecloth on which the food is placed and around which the diners sit. |
| 3. | Plaited baskets | Plaited baskets (*silal*) are made by women and kids. Baskets are made from split sedges, split reeds, and date leaflets (*khoos*), and the plaiting is done in a strip. |
| 4. | Double-reed pipes | The double-reed pipe (*mūtbag*) is a music instrument consisting of two reed-tubes of approximately 20 cm in length with an outside diameter of approximately 13 mm, and two slightly smaller tubes for the mouthpiece with an outside diameter of approximately 7 mm. The pieces for the body are cut to size and tied together temporarily with string. A fire is made in a portable hearth (*manqala*), and a small portion of bitumen is heated in an old tin can. A small amount of oil is added to give the bitumen the right consistency. This bitumen preparation is used to fill the crack between the two adjacent reeds and is extended over both reeds in the areas where holes will not be made. This process binds the two wide reed tubes permanently together and helps create an airtight seal between the mouthpiece (narrow tube) and |

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| | | the wide tube. Holes are now made in the two reeds forming the body with a nail heated over the portable hearth fire. The vibrating tongue is cut out of the mouthpiece (narrow tube) itself. The ends of these mouthpieces are slit and tied open with a thread. These pipes usually accompany song and dance and are made and played by men. |
| 5. | Reed boats | Simple reed boats (*shasha*) can easily be made. A bundle of reeds is tied tightly at the top and then bent upward. The bundle is then fanned out somewhat in the center where two or three strong reeds or a piece of wood are wedged across the width of the boat to hold this spread-out shape. The stern of the boat is also tied. Children use these boats for both fun and fishing. Informants claim that larger and more comely boats were once made entirely of bundled reeds and covered on the outside with a layer of bitumen. These boats seldom lasted as long as a year. With increased prosperity, everyone who needs one can afford a wooden boat. |
| 6. | Reed cradles | Two kinds of baby cradles are made from reeds. One consists of a bundle of reeds tied together at both ends and hung from the rafters so it can be moved back and forth. The reeds in the central part of the bundle are spread apart to create a well that is lined with cloth or raw wool. The second resembles a box made of reed sticks that are laid one on top of the other where the ends meet. The end of each reed stick is tied to the ends of the sticks which rest above and below it with a cord. |

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| | | This cradle is usually lined with hay and topped with cloth or raw wool. |
| 7. | Reed pens | Reed pens (*qalam* pl. *aqlam gusab*) are made from reed sections about 20 cm long with one end sharpened with a knife. These are regularly employed by people who can write, but are also used for drawing sketches or plans in the dust. People who can both read and write are kept very busy helping their neighbors carry on necessary correspondence and helping them fill out public documents. |
| 8. | Bird blinds | In the deeper parts of the marsh, a man can stalk birds holding a bunch of reeds to screen his body. This of course requires timing and a certain coordination to allow him to drop the reeds and raise his gun before the birds escape. More efficient by far is the simple device of tying two short bundles of reeds together in a V-shape with a wedge at the point of juncture to keep the two sides from coming together. A forked stick above the point of juncture provides a place for him to rest his gun. Stems of rushes and grasses are stuck in the bundled reeds to give the whole a natural appearance. Stationary blinds (*nosha* pl. *noshat*) are built of reeds for the netting of birds. Two or three small reed poles are dug into the mud to a depth of ca. 30 cm. Sometimes, poles support a short wall of reed mats, with all kinds of rushes, grasses, and fringed reeds tied to their front to give them the look of dense marsh foliage. Two holes are made at convenient height for eye and hand: one for viewing the trapping area, one for the cord that will trip the net. |

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| 9. | Cords of twisted reeds | Ropes and twisted reed segments are quite usable for a variety of tasks, from construction of reed houses to building artificial platforms to tying goods and objects. |
| 10. | Lavatories | Lavatories are built of reed in a connection with the houses. A hole is dug in the ground and mats wound around them in nautilus fashion to make a passageway. Posts made of bound reeds support the mats. A hole cut in the mat makes it possible to see someone else coming down the entrance passageway and so signal to them that the facilities are occupied. The excavated holes were very deep and had two planks laid across them to provide a place for one's feet. Lavatories are preferred to be built on the side of a canal; their holes are shallow and are designed so that the contents could be flushed into the canal periodically with a pail of water. |
| 11. | Temper | The ubiquitous reed is a very popular source of temper. Dried reed stalks can be easily crushed in the palms of hands and are often used for temper in making sundried mud objects, bricks, and mud structures. The seed of reeds and its hairy appendages (*ethab*) and the flower of papyrus (*niffash*), which cause it to disperse from air currents, are used widely in making baked pottery, mud toys, and musical instruments, and can be used as temper in anything else as well. Often the temper used is determined by what is closest to hand or more readily available at the moment of manufacture. Broken reeds are often used in place of |

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| | | straw in making dung patties, especially when straw is in short supply. |
| 12. | Fuel | Reeds are the primary fuel, and papyrus is the secondary, in the marshes. Reeds are especially necessary when a high, quick heat is needed in order to warm the mud-oven (*tannūr*) walls or to start less flammable substances. The old, dried reeds closest at hand are chosen for both fuel and temper. During the winter, the reeds that covered the outside bed are recycled. In the late summer or fall when reed fences or structures are repaired, the old reeds are carefully set aside in a pile somewhere in the courtyard where they can be accessed easily. |
| 13. | Handles and Pestles | Reed sticks are often used for mace and pestle handles (*midigga*). Especially sturdy reeds from other parts of the marshes can be brought in the town markets and are preferred, but they are too expensive for most. An hour or so search through the nearby marshes is likely to yield a reed of sufficient diameter and strength to make a good substitute, though it will not last long. The reed tends to become friable and weak long before the bamboo. Few pestles are made, but every man carries a reed-stick, sometimes a reed stick capped with a bitumen knob (*mugwar*), everywhere he goes for defense against dogs, sometimes wild boar, and even occasionally against other men. |
| 14. | Poles | Poles (*merdī*, pl. *merādī*) for moving boats through the water are also made of reed. They are never made of wood, which is considered too heavy and too hard to balance because the usual form in which it is |

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| | | readily available is a somewhat irregular tree branch. It is also far too expensive. Pushing a boat through the water with a pole is not an easy task, nor is it monotonous as the kind of muscular activity varies with the depth of the water. These poles are always capped with a bitumen knob which is designed to help balance the pole as well as provide a stop for the boatman's hands when he retrieves it after a long push. |
| 15. | Spear Shafts | Shafts of fishing spears are usually made of reed although straight pieces of wood are preferred. Finding reed sticks which are strong enough and are of proper diameter is not easy. The best solution is to use the split section of a giant reed and with knife or adze work it into a shaft of oval cross-section. |
| 16. | Reed ashes | Ashes (*ramād* or *khafit*) from a reed fire are a necessary ingredient in making soap. A hand-full of ash can be used to wash hands after a meal. When fat is added to ash, the mixture can make a high heat to make fire and smoke to protect cattle from flies and mosquitoes. This kind of fire can be seen from a considerable distance to guide guests and stray herds, and can also be used during night fishing (*srai*). |
| 17. | Spindles | Both shafts and whorls of the small spindles used for twisting thread and the large spindles used for twisting yarn are usually made of freshly harvested reed. Although the shafts are sometimes made of reed sticks of the appropriate diameter, the usual practice is to split a large |

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| | | reed stick down the middle and modify one side by stripping with a knife to the diameter of the stick considered desirable. The whorl, too, is made from the half section of a split reed by cutting such a section to the length desired. The stick is notched with a knife in the appropriate place. A hole is made in the whorl just big enough to force it down the shaft a little over 1/3 of its length. As the two pieces dry, the juncture becomes all but immovable. |
| 18. | Amulets and toys | Certain kinds of amulets are made on a reed stick frame. The frame seen most often is of crossed sticks bound together at their juncture with thread or yarn. Less often they are made of four sticks bound together in the same way to form a square frame. All of these have apotropaic powers and most are designed to avert a particular evil threatening the individual or the family of the owner. Children made animal toys, mostly camel and donkey, from reed. The cores of yarn-covered boxes are always made of reed. |
| 19. | Looms | Reed is sometimes substituted for the wooden loom parts on those looms used for making smaller woven objects. They are cut from split sections of reed and shaped into appropriately rounded weft and warp beams, heddle rods, shed sticks, and stakes for holding them in the proper position. Many households have a set of these, tied together with yarn, stored in some part of their house where they can be easily retrieved should their use be required. For belt making and the like, the |

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| | | heddle rod and shed stick are sometimes omitted and the cords separated by hand. |
| 20. | Bandages | Strips of reed or sedge are often used to secure bandages over wounds. The basic material is made from split sections of small reeds or rushes, which are placed in the water until thoroughly soaked and then beaten with mallets until soft and pliable. Once they have been wrapped around the injury several times, the ends can be tied or woven closed. If the bandage is applied while the strips are still moist, keeping the patient from moving for a short time will allow the bandage to dry. The bandage then becomes so tight that it is impossible to remove it without something sharp like a knife. |
| 21. | Scarecrows | Human-shaped scarecrows are made of reeds and installed in grain fields to deter birds from eating seeds during the sowing time, as well as before and during harvest. |
| 22. | Coffins | Reeds and reed mats are used as coffins (sharija). Bundles of reeds are put underneath and on the sides of the dead body to be tied together at the head and feet. Reed mats also are used to cover graves from inside. |

Apendix 6: A list of kings of the first Sealand dynasty

| King name | Kinglist A | Kinglist B | Synchronistic Kinglist A. 117 | Kinglist BM 35572+ |
|---|---|---|---|---|
| Illu-ma-ilu | $^{m\text{ı}}$'DIN=GIR$^{?}$ma$^{?}$ ' | ÙRU.KÙ.KI $^{m}$NGIR-ma-an LUGAL | | É-uru-kù-ga-ki $^{\text{'m'}}$[ ] |
| KI-DINGIR-ni-bi | $^{m\text{ı}}$'KI?-i?' | $^{m}$KI-DINGIR-ni-bi | | $^{m}$'KI-DINGIR-ni'-bu [ ] |
| Dam-qi-i-li-šu | $^{m\text{ı}}$'SIG$_5$ ?-DIN=GIR?' | $^{m}$Dam-qí-ì-lí-šu | | $^{\text{'m}}$Dam'-qí-ì-lí-š[u] |
| Iš-ki-bal | $^{m\text{ı}}$'Iš?-ba?' | $^{m}$Iš-ki-bal | $^{m}$X X X[ ] | [$^{m}$I]š-ki-bal [ ] |
| Šu-uš-ši | $^{m\text{ı}}$'Šu?-uš?-ši?' | $^{m}$Šu-uš-ši | $^{\text{'m'}}$Šu-ši | [ ] X X X [ ] |
| Gul-ki-šar | $^{m\text{ı}}$'Gul?'-ki | $^{m}$Gul-ki-šár | $^{m\text{ı}}$'Gul?'-ki- 'šár?' $^{m}$DIŠ+U-EN | |
| Peš-gal-dara-maš | $^{m\text{ı}}$'Peš?'-gal | $^{m}$Peš-gal-dàra-maš DUMU $^{m}$KI.MIN | $^{m\text{ı}}$'Peš-gál'-dàra-meš | |
| A-dara-kalam-ma | $^{m}$A-'a?'-dàra | $^{m}$A-dàra-kalam-ma DUMU $^{m}$KI.MIN | $^{m}$A-a-dàra-kalam-'X ' | |
| A-kur-du-an-na | $^{m}$É -kur-'du$_7$?' | $^{m}$A-kur-du-an-na | $^{m}$E-kur-du-'an-na' | |
| Me-lam-kur-kur-ra | $^{m}$Me-lám(NE)-mà | $^{m}$Me-lám-kur-kur-ra | $^{m}$Me-lám-kur-'ra' | |
| Ea-ga-mil | $^{md}$BAD-ga | $^{md}$Éa-ga-mi[l] | $^{md}$DIŠ-ga-mil | |

Apendix 7: The settlements of the first Sealand dynasty

| Id | name | sitesize | Id | name | sitesize | Id | name | sitesize |
|---|---|---|---|---|---|---|---|---|
| 1 | Buhaira 7 | 0.4 | 40 | Abu Atresh | 0.9 | 76 | Ishan Awaj 3 | 1.3 |
| 2 | Abu Roos 2 | 0.5 | 41 | Uhaimer | 0.9 | 77 | Mebayteh | 1.4 |
| 3 | Towaim 1 | 0.5 | 42 | Abu Kinbara 1 | 0.9 | 78 | Milaha | 1.4 |
| 4 | Abu Baroura 2 | 0.6 | 43 | Guwaite | 0.9 | 79 | Ghour 1 | 1.4 |
| 5 | Haisama | 5.2 | 44 | Uwaid | 0.9 | 80 | Ubaidi | 1.4 |
| 6 | Dehaila 4 | 0.6 | 45 | Faidha | 1 | 81 | Aabid | 1.4 |
| 7 | BS | 0.6 | 46 | Raghala Gh 1 | 1 | 82 | Umm Naeem | 1.4 |
| 8 | Sebaikh 2 | 0.6 | 47 | Dehaila 8 | 1 | 83 | Abu Kinbara 3 | 1.4 |
| 9 | Houmor 5 | 0.6 | 48 | Abu Rubakha | 1 | 84 | Mazrea | 1.4 |
| 10 | Dehaila 17 | 0.6 | 49 | Youza | 1 | 85 | Tell Wawiyah2 | 1.4 |
| 11 | Umm Jamajim 9 | 0.6 | 50 | Mukhatter | 1 | 86 | Ishan Awaj 2 | 1.4 |
| 12 | Zalla 2 | 0.6 | 51 | Kardamish | 1 | 87 | Abu Baroura 3 | 1.5 |
| 13 | Abu Kinbara 2 | 0.6 | 52 | Umm Jamajim 13 | 1 | 88 | Abu Theyaba 1 | 1.5 |
| 14 | Yaser | 0.6 | 53 | Abu Durram | 1 | 89 | Raghala Gh 3 | 1.5 |
| 15 | Abu Simaich | 0.7 | 54 | Towaim 2 | 1 | 90 | Abu Khamis | 1.5 |
| 16 | Abu Dalaf | 0.7 | 55 | Esam | 1 | 91 | Abu Hadida 2 | 1.5 |
| 17 | Muraychib S | 0.7 | 56 | Jarat Abid | 1 | 92 | Abu Tubaira | 1.5 |
| 18 | Mutlaq | 0.7 | 57 | Dehaila 7 | 1.1 | 93 | Tashmana 2 | 1.5 |
| 19 | Abu Groof | 0.7 | 58 | Twaimat | 1.2 | 94 | Umm Jamajim 4 | 1.5 |
| 20 | Dihla | 0.7 | 59 | Buhaira 6 | 1.2 | 95 | Dima 4 | 1.5 |
| 21 | Medhaihi 1 | 0.7 | 60 | Dehaila 3 | 1.2 | 96 | Lilwa | 1.5 |
| 22 | Abu Jeziz 2 | 0.7 | 61 | Umm Halfa | 1.2 | 97 | Abu Fidin | 1.5 |
| 23 | Abu Jeziz 1 | 0.7 | 62 | Banat Basha | 1.2 | 98 | Dima 3 | 1.5 |
| 24 | Hamra | 0.7 | 63 | Ziglab | 1.2 | 99 | Abu Gubbara | 1.5 |
| 25 | Zowair | 0.7 | 64 | Umm Tuyor | 1.2 | 100 | Abu Fehool 2 | 1.5 |
| 26 | Sakhairy 2 | 0.8 | 65 | Umm Jamajim 8 | 1.2 | 101 | Samra | 1.5 |
| 27 | Abu Thib 2 | 0.8 | 66 | Abu Khisheb | 1.2 | 102 | Diham 2 | 1.5 |
| 28 | Abu hadida 1 | 0.8 | 67 | Abu Towabij | 1.2 | 103 | Raghala J 3 | 1.6 |
| 29 | Homa | 0.8 | 68 | Thigal | 1.2 | 104 | Buhaira 24 | 1.6 |
| 30 | Dehaila 10 | 0.8 | 69 | Seaib | 1.3 | 105 | Umm Zomair | 1.6 |
| 31 | Maqbarat Jalaliya | 0.8 | 70 | Asi | 1.3 | 106 | Touma | 1.6 |
| 32 | Hammodi | 0.8 | 71 | Duwaima | 1.3 | 107 | Dehaila 5 | 1.7 |
| 33 | Hadida | 0.8 | 72 | Qabr Sbahi | 1.3 | 108 | Kharita 1 | 1.7 |
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