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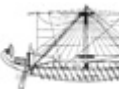
Zeitschrift für Unterwasserarchäologie

12. Jahrgang 2012 Heft 1



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## Titelmotiv

*Großes Koggensiegel von Stralsund, 1329.*

Aus: Christian Peplow,  
"Hansische Seekriege des 14. und 15. Jhs",  
Abb. 5.

# Emerging Maritime Paradigms for the Bronze Age in Lebanon

Ralph K. Pedersen

**Abstract** – During the first decade of this century archaeology in a revitalized Lebanon has made new inroads into our understanding of the past. Archaeological investigations on land and under the sea at the Middle Bronze Age Tell el Burak and at the Early Bronze Age Tell Fadous-Kfarabida have yielded insights into late prehistoric and early historic settlement and seafaring in Lebanon. These studies, combined with general underwater archaeological surveying along the Lebanese coast have led to greater, albeit nascent, understanding of the maritime aspects of Lebanon in the Bronze Age. The research in the sea at the Bronze Age tells, the „sunken city of Yarmuta“, and other areas will be presented.

**Inhalt** – Während des ersten Jahrzehnts dieses Jahrhunderts hat der Libanon nach seiner Erholung neue Zugänge zu unserem Verständnis der Vergangenheit eröffnet. Archäologische Forschungen zu Lande und unter Wasser bei dem mittelbronzezeitlichen Tell el Burak und dem frühbronzezeitlichen Tell Fadous-Kfarabida haben Erkenntnisse zur spät-vorgeschichtlichen und frühgeschichtlichen Besiedlung und Seefahrt im Libanon geliefert. Diese Untersuchungen haben in Verbindung mit einer allgemeinen unterwasserarchäologischen Aufnahme längs der libanesischen Küste zu einem größeren, wenn auch noch in Entwicklung befindlichen Verständnis der maritimen Aspekte des Libanons in der Bronzezeit geführt. Die Untersuchungen im Meer bei den bronzezeitlichen Tells, der „versunkenen Stadt Yarmuta“ und an anderen Stellen werden hier vorgelegt.

During the civil war in Lebanon, archaeology, particularly that under water, was virtually non-existent. Since the cessation of hostilities in 1991, archaeology has experienced a rebirth beginning with the excavation of Beirut's city center (Elayi 2010). After this large-scale project, archaeology expanded to other areas of the country, including Bronze Age tells bordering the Mediterranean Sea (Genz 2010; Sader – Kamlah 2010). Investigations at seaside tells have yielded new information on the formative years of the Lebanese Bronze Age, and has led to insights on the relations between humans and the sea. Underwater surveys were conducted in conjunction with the excavations at Tell Fadous-Kfarabida and Tell el-Burak (Fig. 1). The objectives of both surveys were to ascertain the existence of associated harborages; to discern reasons for the placement of settlements as they relate to the maritime environment; and to examine the evidence of seafaring activities in the vicinity of the sites to further our understanding of

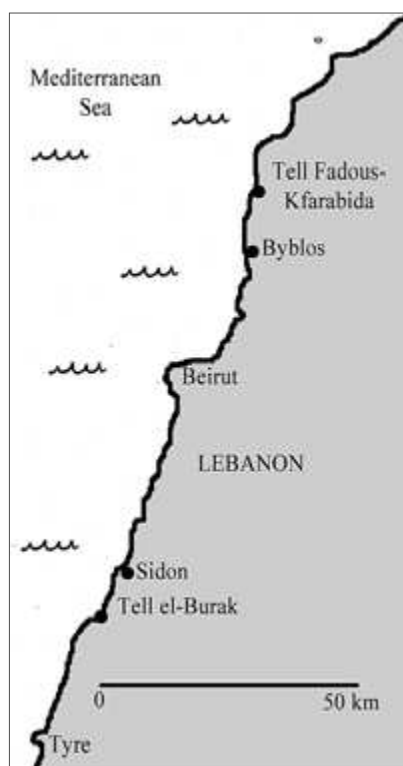


Fig. 1: Map of the Lebanese coast.

the ancient maritime exploitative strategies of the Levantine peoples.

## On harborages and harbors

Beginning around 6000 years ago, harborages began to serve as the nexus between the terrestrial component and the maritime aspects of life (Marriner et al. 2010, 21). Harbors are, of course, havens – safe places for watercraft. Such places include bays behind a headland or in the lee of islands (Frost 1963, 69, 89, fig. 19); river estuaries (Vann 1997, 315); shelter in lee of a promontory (Muckelroy 1980, 162-163); and deltas and lagoons, both of which are low lying, low-energy zones often accompanied by marshland (Blue 1997, 32, fig. 2). Determinations for harbor placement vary but these usually include the availability of potable water, suitability for the anchoring and passage of ships, an accessible shore, an economic base of industry or agriculture, routes linking the harbor to the interior, and a defensible or at least fortifiable area, which can be a paramount consideration depending on the social stability of a place or period (Vann 1997, 308-309).

Safe harborage relies on various geophysical factors, among which are not only water depth, but protective shelter from wind, waves, and currents.

Depth of sea is critically important to harborages. Shallow areas are unusable by large ships due to their greater draft, while smaller craft with their lesser draft can access shallower areas. Bronze-Age texts, such as those from Ras Shamra, give us an idea of the size of ships in the eastern Mediterranean although determinations are debatable (Monroe 2007). Iconography from Egypt and Greece give ideas of the styles, shapes, and sizes of Early (EBA) and Middle Bronze Age (MBA) watercraft but interpretation is problematic as the artists created representations and not technical models or depictions (Guttandin 2009; Johnston 1985, 5-34; Wachsmann 1998, 9-38). It is probably a safe assumption, however, that there was an overall trend towards larger ships over the course of the Bronze Age culminating in watercraft such as that which met its end at Uluburun (Bass et al. 1989). If ships of the EBA and MBA were indeed smaller than ones of later eras, then the harborages of the time may have been shallower than their later counterparts, permitting less than ideal areas and settlements to be utilized for maritime activities.

The need for harbors where none existed – or perhaps nominally so – eventually led to the modification of the seascape and shore to improve an area. Through construction techniques an area only marginally acceptable for watercraft and their attendant activities can be made safe and usable for ships and trade. The Phoenicians in the Early Iron Age are traditionally viewed as the first to modify the natural shore-scape to protect their anchorages through the cutting of rock walls, as evidenced at Sidon and Batroun (Frost 1963, 81-82; Pedersen 2011), although recent research at Sidon suggests some landscape modification began in the Late Bronze Age (LBA)<sup>1</sup>.



Fig. 2: The cobble beach, looking north toward the tell.

### Tell Fadous-Kfarabida

As part of the excavations at the EBA Tell Fadous-Kfarabida by Helen Sader and Hermann Genz of the American University of Beirut, an underwater archaeological survey was conducted of the coastal waters (Pedersen 2007). The survey goals were to determine whether there existed subaquatic archaeological materials relating to the tell; to ascertain if there were indications of harborworks, harborages, or anchorages related to the site; and to discover whether shipwrecks of any period lay off the shore of Fadous-Kfarabida.

The coast in the vicinity of the tell is lined with rock faces reaching several meters high that continues down into the water, yielding few areas of accessible beachfront. The shore is crenellated by small westward-facing coves reaching from the nearby town to the north and giving way to a long cobble beach to the south (Fig. 2). The entire zone is subject to strong waves and surges, abating at times to perfect calmness. As such, there is little siltation, and the area is free from the deposition of sand and coastline progradation prevalent in many areas of the Mediterranean (Marriener et al. 2010, 24). This, combined with the depth of sea at the shore, indicates there is likely little change in the location of the shoreline over time despite possible changes in relative sea level. The high-energy

of the zone indicated that artifact preservation in the area would be poor, and indeed, the cove bottoms are mostly scoured to bare bedrock. Rolling pebbles and cobbles pushed back and forth by the sea have carved gullies into the sea floor.

The southern edge of each cove sits in the lee of the rocky peninsulas that separate the coves from one another. These partially protected places have less wave action and were specifically targeted for survey. Each cove was examined for easy access points that may have been utilized by the ancient inhabitants. Neither of the two northernmost coves were easily accessible – it is assumed similar difficult access existed in antiquity. The cove directly in front of the tell was different. While subject to the same wave action affecting the other coves, this one contained more plant life, more fish, and areas of thin sand deposits. Abundant underwater springs created zones of fresh water within the cove in periods of calm. The northern extremity of this cove was barer of marine life, and the sea floor consisted of exposed bedrock. On the cove's southeast corner where the rock outcrop provided a semi-protected area, the shore slopes gently into the water creating an easy access point. This sector is logically the seafront utilized by the inhabitants of the tell for their fishing and related activities as the abundance of fish, the fresh-water springs, the proxim-



Fig. 3: Tell el Burak from the sea.

ity to the tell, and the easy access to the sea make this place the best nexus between sea and land in the area. Indeed, one artifact was found there: a section of a stone knife blade. The date of this artifact cannot be determined, but it would not be out of place in the EBA or earlier.

Farther out to sea are the modern fishing grounds. At 13 to 14 m of depth this area is regularly fished by boat and by divers armed with spear guns. Ancient ceramics and anchors in this area would long ago have been salvaged, as even in antiquity fishermen could free-dive to such depths. Nevertheless, a small number of pottery sherds were found there. These sherds were small, encrusted with marine growth, and probably survived as they are of no intrinsic or aesthetic value. Most of the pottery sherds appear to be Late Roman. These finds do not represent shipwrecks, but are probably discards from fishing boats. A number of anchors, both stone and iron, were found but these were all modern as seen in the remains of synthetic ropes tied to them. The finds indicate, however, that the modern fishing grounds are the same as those used in late antiquity.

### Tell el-Burak

In 2004, an underwater archaeological survey was conducted at Tell el-Burak, a MBA site 10 km south

of Sidon (Pedersen in press). Under investigation by the American University at Beirut and the University of Tübingen, the excavations there have revealed five occupations beginning in the EBA through the Ottoman Period, with the MBA being the „most impressive“ (Sader – Kamlah 2010, 131). There are no occupation levels of the LBA, during which time Sarepta, 4 km to the south, grew to be the predominant local LBA harbor city, while Burak was seemingly abandoned (Kamlah – Sader 2003, 145). Unlike many, if not most, mounds in the Near East, the tell is not the result of accumulated debris of collapsed settlement. The mound was purposely built as the base for a mud-brick fortified palace (Kamlah – Sader 2003, 165-166). Excavations have revealed the walls and bases of the structure, which includes a chamber with a fresco of trees and a gazelle. The complex was evidently a center of power in the MBA IIa and IIb periods (Kamlah – Sader 2003, 166; Sader – Kamlah 2010, 132).

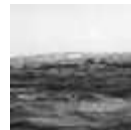
Tell el-Burak stands at the edge of the sea on an agricultural plain backed by a range of hills (Fig. 3). The mound rises above the surrounding land approximately 19 m (Kamlah – Sader 2003, 147) and it is readily visible from both land and sea. From its summit, Sidon is seen to the north, while to the south Sarepta, the Biblical Zeraphath, at Ras el-Qantara is visible (Kamlah – Sader 2003, 166). The area of the tell

is bracketed by two freshwater streams, one north of the tell and the other to the south, that run through the farmlands into the sea.

As a seafront structure, one expects it to be maritime or to have at least functioned in some manner as linking land and sea activities. The shore at Tell el-Burak, however, displays few of the necessary characteristics for maritime activities specifically the sheltering and anchoring of seacraft, as outlined above.

Determinations of the maritime aspects of Tell el-Burak need to take into consideration the depth of sea and the natural forces that affect the area. The sea at Burak is a high-energy zone with waves rolling steadily from the west, while the prevailing current runs south to north. The dynamics of the Burak seafront have been disturbed by a modern groin that traps sand to its south. This sand hangs in the water in clouds of silt, eventually settling and blanketing the seabed. North of the groin, the sand-starved beach is eroding, shifting the shoreline eastward. Wave action produces a pulsating surge throughout the area affecting the gently-sloping sea bottom to depths of at least 4 m at some 150 m from shore in normal weather. The sea floor consists mainly of bedrock broken in many places by rocky outcrops, boulders, ledges, and gullies.

A large reef lies immediately in front of the tell. Extending out to sea about 50 m, at its seaward edge the reef drops suddenly to the sandy sea floor at least 1 m or more below. The sea breaks over the reef edge creating an area of whitecaps and turbulence. The top of the reef lies under less than half a meter of water with a few knobs and rocks protruding above the surface. The reef-top breaks up the sea preventing normal wave action from reaching the base of the tell. Erosion along its base, however, indicates that waves from storms reach the mound, but the attrition is minimal. A few large slabs of sedimentary rock lie to the north of the reef close to shore, and a number of



rocks and reefs are found throughout the area but few come close to the surface. Scatterings of pottery sherds were found in the area north of the reef and groin. Whether they were the remains of whole vessels dropped into the sea or if they were pieces of trash cast into the water is not possible to establish. Whole pottery cannot survive long in the high-energy environment at Burak. The artifacts found in the northern area appear to be Late Roman, scattered about in areas over 400 m from shore and in depths down to 4 m.

The southern strand when viewed from the tell appears to be a poorly defined bay terminating at a cape, but this is actually only part of the undulating shoreline where the land turns gradually west before again stretching south. The sandy southern shoreline eventually yields to a narrow cobble-strewn shore. Off this strand, the sea floor is littered with cobbles accompanied by a number of rocks and boulders. The whole of the southern area gently slopes into the sea with no sudden depth changes. At least five cut blocks, ashlars, lie in the water here, either purposely placed in the sea or simply dumped from the adjacent farmlands. There is no pattern to their positions, and they do not appear to be part of any construction.

No ceramics were found in the southern zone, possibly due to the obscuring silt. However, a stone anchor (Fig. 4) was found close to the shore in water less than 1 m deep. Heavy concretions on the anchor indicate it has been in the sea for a long period, but whether

Fig. 4: The stone anchor discovered in 2004.

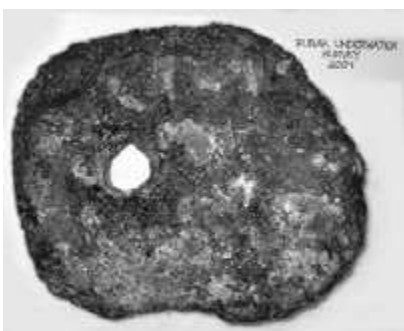


Fig. 5: The L-shaped mole recorded by the Pennsylvania expedition.

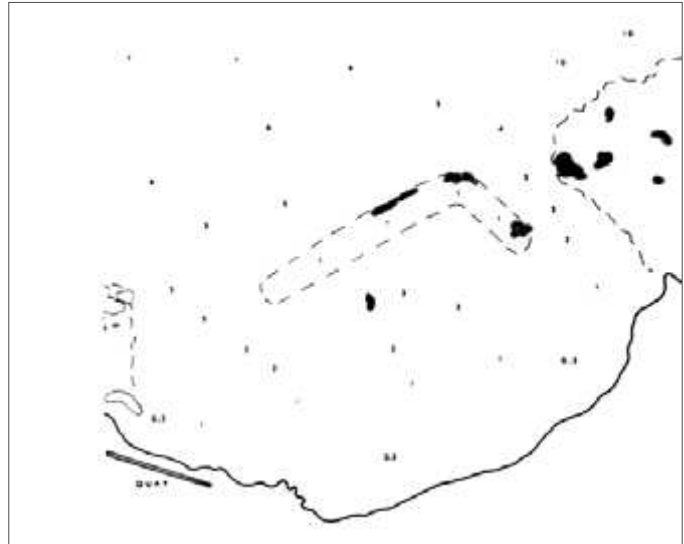


Fig. 6: The actual layout of the natural reef structure.



it belongs to the MBA is not known. The anchor's weight after partial cleaning is approximately 22 kg and due to its single hole it is classified as a weight anchor, relying on its heaviness rather than any grabbing capabilities (Wachsmann 1998, 255). A similar anchor was found in 2008 just north of the groin. These two finds indicated the use of the seafront, but as the anchors are small they do not represent sea-going craft, only local smallish ones.

### Sarepta

Comparative analysis of the geographical subaquatic environment of Sarepta was conducted to aid in the defining of the maritime situation at Burak. It was reported that the sea bottom has a depth of approximately 3 m close to the en-

trances of the two harbors of Sarepta. Our investigations confirmed this, particularly for the area outside the „Roman Harbor“. Part of the associated Roman quayside was excavated by the University of Pennsylvania in the early 1970s (Pritchard 1978). The Pennsylvania team excavated substantial Roman quay features, including a system of purifying pools for supplying ships with drinkable water, and a stone mooring ring. One particularly interesting underwater feature recorded by the Pennsylvanians was an L-shaped mole across the harbor's mouth (Fig. 5). My investigation, however, reveals the mole does not exist: There is no trace of a mole, and there are no indications of any man-made construction in the vicinity. Instead, there is a natural reef complex apparently mistaken for an artificial construction by Pritchard's team (Fig. 6). Whether

the reefs protruded above the water in antiquity is unknown, but changes in the relative sea level are evident. The Roman quayside is now on dry land, and a stone jetty apparently of earlier date is submerged. Further investigation of Sarepta is clearly needed.

### The „Sunken City“ of **Yarmuta**

Lying to southwest of Tell el-Burak is a shallow area of the sea. Occasionally, the highest points of the undersea rocks protrude above the waves. The area was noticed by sport divers in the opening years of the 21<sup>st</sup> century and was proclaimed by them to be Yarmuta, an ancient Levantine city yet to be located. The area was said to contain plazas, streets, stairways, and walls. Investigations were conducted to ascertain the presence of man-made structures, and to see whether the area was an offshore anchorage for Tell el-Burak.

The theory of offshore anchorages is a central one for understanding how vessels arriving in the Levant accessed settlements that had few natural features for the protection of watercraft at anchor. Offshore anchorages have been postulated for Byblos where some strata are contemporaneous with Tell el-Burak (Jidejian 2000, 7). While the small harbor at Byblos affords more than adequate protection, the shorelines north and south of the city, Saqiet Zaidane and the bay of El Skhiny respectively, are postulated to have borne most of the maritime commerce of the city. Yet these places are unprotected and exposed (Semaan 2007, 88-89). Hence, the proposition that features underwater provided the necessary protection for anchoring. Surveys undersea have revealed a submerged cape fronting El Skhiny, and farther out, at approximately 2 km from shore, an underwater ridge at approximately 30 m of depth have been claimed to be an anchorage for Bronze-Age ships waiting to load cedar logs for transport to Egypt (Collina-Girard et al. 2002; Frost 2002; Semaan 2007). This idea is

based, at least in part, on the presence on the farther ridge of an unknown number of stone anchors. Thus, suggested parallels between poor anchoring conditions at Byblos and Tell el-Burak led to the investigation of the shallows near Tell el-Burak for indications of a possible offshore anchorage. The survey, however, revealed no evidence of offshore anchoring by ancient ships near Burak, particularly at the shallows of the supposed „sunken city“: there were no stone anchors, or even anchors of other more modern types, nor were there the expected scatterings of ceramics one finds at anchorages.

Investigations into the „sunken city“ aspect of the shallows revealed undersea features that are decidedly curious but are properly interpreted as geological formations. Reported „pavers“ in the „plazas“ are without pattern, „streets“ start and lead nowhere, and „steps“ are uneven and lead into blank rock faces. The „walls“ sometimes made of cobbles in rough stacks up to 50 cm high and in lengths of 1 or 2 m have no adjoining walls and exhibit no pattern in their occurrence. Other so-called walls that appear to be cut blocks are actually just the smooth, worn upper surfaces of limestone split into natural patterns. Similar geological features can be found along the nearby shoreline, farther inland, and under the sea outside Sarepta's Roman Harbor<sup>2</sup>. None of these features are man-made constructions and the area is not a sunken settlement.

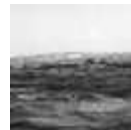
### Conclusions

Nautical archaeology is in its infancy in Lebanon and proceeds in fits and starts. The surveys conducted serve to illustrate how much is unknown, but also bring to light emerging patterns of seafaring both in the physical and theoretical sense.

We know that since the Neolithic period Egypt and Lebanon were closely linked by sea via the trade for cedar (Frankenstein 1979, 264).

Undoubtedly, the ships of the cedar trade passed the shores of Burak, which lies on the sailing route between Egypt and Byblos, and the presence of such ships were probably known to the people of Fadous-Kfarabida. But, these two places were most likely not directly involved in international trade. Burak probably existed at a practical level as royal compound and a protective element for Sidon, the key political entity in the region (Sader – Kamlah 2010, 139). The two small anchors found at Burak attest to the use of small boats at the site, which may have been craft for fishing. These did not require harborage – they were either simply moored off shore or pulled up on the beach. The lack of any harborage yet found, or indeed any maritime facilities, argues that Burak did not exist as a maritime center.

Likewise, Tell Fadous-Kfarabida, which the excavations have demonstrated to be an administrative center (Genz – Sader 2008, 158)<sup>3</sup>, is not primarily maritime in nature. The lack of a natural harborage indicates that the settlement was not founded to be a component of the maritime trading system of the eastern Mediterranean. The settlement was probably founded where it was for the geographical advantages of a fresh water supply from the wadi on its north, the access to the sea for subsistence, and that the spot was an open flattish piece of real estate between hills and sea. Such a seaside settlement would of course use boats, but these may not have been for much more than fishing. In future investigations of sea-side settlements in the early period of Lebanon, **it should thus be kept in mind that just because a settlement occurs near the sea, it does not necessarily mean that a settlement is maritime in nature or that a harbor existed.** The *raison d'être* of a seaside settlement may not necessarily be seafaring: It could be there for other reasons.





## Notes

<sup>1</sup> As per a geoarchaeological study at Sidon, which sees a possible modification of a sandstone ridge in the Late Bronze Age (Marriner – Morhange – Doumet-Serhal 2006, 1520).

<sup>2</sup> As observed by the author.

<sup>3</sup> While in 2008 an administrative center at the site was expected, by 2012 this could be confirmed. H. Genz, personal communication, May 2012.

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## Abbreviations

NEA = Near Eastern Archaeology

BAAL = Bulletin d'archéologie et d'architecture Libanaises

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## Address

Prof. Dr. Ralph K. Pedersen  
Philipps-Universität Marburg  
Archäologisches Seminar  
Biegenstr. 11  
D-35037 Marburg, Germany  
Tel.: 06421-28 22340 Fax.: 06421-28 28977  
rkpedersen@yahoo.com