From Stadium to Harbor: Reinterpreting the Curved Ashlar Structure in Roman Tiberias

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A salvage excavation in the modern city of Tiberias in 2002 exposed the remnants of a wide, curved ashlar structure. Based on its curved shape, its construction date, and its location, various scholars have identified this structure as the foundation wall of the Roman stadium mentioned by Josephus in relation to the First Jewish Revolt (66–67 C.E.). However, neither Josephus nor the later rabbinic sources imply the presence of a stone-built monumental stadium at the location of this site, nor does all of the exposed evidence related to the structure fit with the stadium theory. Therefore, a different interpretation for this structure is proposed. Based on the presence of a mooring stone projecting outward from the structure's waterside and the complex's strong similarities in structural characteristics and in elevation to the nearby late Hellenistic to Roman harbor of Magdala, it is argued that the remains should be identified as those of a quay, a stone platform built along the lakeshore to accommodate the loading and unloading of boats. If this interpretation is correct, it suggests the existence of a harbor structure in the northeast area of Roman Tiberias.

Keywords: Tiberias; Roman; quay wall; mooring stone; Sea of Galilee; lake-level fluctuation

In 2002, the Israel Antiquities Authority conducted a salvage excavation in the modern city center of Tiberias, on the grounds of the Galei Kinneret Hotel, to facilitate the construction of a new wing ca. 50 m west of the modern coastline of the Sea of Galilee (Hartal 2008). At the northern end of the excavated area, below building remains from the Byzantine and Umayyad periods, the remnants of a curved ashlar structure were found.[1] The excavator identified this structure as part of the semicircular southern end (*sphendonē*) of a Roman stadium that was situated directly along the town's ancient coastline. Based on 1st-century C.E. material found in a deposit abutting this structure, the excavator further suggested that this stadium should be identified as the one mentioned by Josephus (*JW* 2.21.6 §619, 3.10.10 §539; *Life* 92.331) in relation to events occurring at Tiberias during the First Jewish Revolt (66–67 C.E.). Most scholars today accept this identification (e.g., Jensen 2006: 144–45; Stepansky 2008: 2050; Meyers and Chancey 2012: 120; Miller 2013: 430–31; Cytryn-Silverman 2015: 196). Some even date its construction to the town's foundation by Herod Antipas in the early 1st century C.E. (Weiss 2007: 390; 2014: 49–50; Patrich 2009: 208).

The identification of the curved ashlar structure as the foundation wall of a stadium's *sphendonē*, possibly that of the 1st-century C.E. stadium mentioned by Josephus, is not without problems. This article, therefore, suggests a different interpretation. It is argued here that the exposed structural remains are to be identified as an ancient quay, a stone platform built along the lakeshore to accommodate the loading and unloading of boats. This reinterpretation is supported by the presence of a probable mooring stone projecting outward from the structure and a thick lacustrine clay deposit facing the same side of the structure. Additionally, the curved ashlar complex presents strong similarities in structural characteristics and in elevation to the recently exposed, nearby harbor of Magdala.

[1] Since the excavated area was backfilled and built over soon after excavations concluded, the exposed archaeological remains were not accessible to the author.

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The Curved Ashlar Structure of Tiberias

The Roman settlement of Tiberias was, according to Josephus (*Ant* 18.2.3 §36–38; *JW* 2.9.1 §168) and numismatic finds (Kushnir-Stein 2009: 106–7), founded in 18–20 C.E. by the tetrarch Herod Antipas as the new capital of Galilee. Abundant literary sources, architectural evidence, and artifacts demonstrate that Tiberias grew steadily after its founding and was, for most of the Roman, Byzantine, and early Islamic periods, a sizable, prosperous, and important urban settlement in that region. Most of the ancient city's architectural remains supporting this view, such as a north–south colonnaded street (*cardo maximus*), a monumental arch, and a theater, are today found to the south of the modern city (**Fig. 1**).[2] The present city center of Tiberias, on the other hand, is erected upon and around the remains of a Crusader fortress, dating from the 12th century C.E., situated to the north. The curved ashlar structure is located along the ancient coastline of the Sea of Galilee just south of the Crusader settlement. Whether it would have been located inside or outside the Roman city is debatable, as its precise northern limits remain unclear.[3]

Due to the salvage nature of the investigation, the curved ashlar structure discovered in 2002 could only be partially exposed. Outside the excavation area, it continues for an unknown distance toward the west and the northeast (**Figs. 2–4**).[4] Because of its curved shape, the exposed remains of the ashlar structure differ in length: 6.1 m as measured along its inner curve (northwest) and 19.2 m along its outer curve (southeast). The structure's width also varies: from 9.2 m in the west, tapering to 7.8 m in the northeast. Only the structure's upper 2 m were exposed, while the rest is still buried in the lacustrine beach gravel into which the structure was originally set (cf. Hazan, Stein, and Marco 2004: fig. 4; Hartal 2008: The Early Roman period). The masonry consists of 20–40-cm thick basalt ashlars, laid in courses of headers along the outer edges, with stone chips filling the interstices and a fill of rubble in the center. The structure was held together by a "hard bonding material" (Hartal 2008: The Early Roman period), probably a tenacious mortar.

The lowermost visible courses of the masonry differ from those above them in terms of stone size, construction technique, and course alignment. The structure's lower courses are constructed much more crudely, with smaller, roughly hewn stones that are irregularly ordered (**Fig. 5**). Along the outer face of the structure (**Fig. 6**), the lower courses seem to protrude slightly from the plain curved shape formed by the upper courses. These differences in workmanship may have been due to the lower courses having been concealed, possibly functioning as a sub-lacustrine foundation, while the upper ones were part of the superstructure that was visible above the ancient surface level. However, as the lower and upper courses appear to be built of the same basalt stone, there is no reason to believe that the differences are the result of different phases of construction.

Set in the uppermost preserved course of the shorter, inner face of the structure, with at least three courses visible below it, was a finely dressed, rectangular stone block projecting ca. 35 cm outward (see **Fig. 5**). The stone block, made of local basalt and lying exposed for 80–85 cm of its length, is still partly secured in the structure's rubble core and thus appears original. The top of this stone was rounded off along the side that projects outward, while a single bead molding decorates that side's lower edge. Its most distinct feature, though, is a round hole with a diameter of ca. 12–14 cm pierced horizontally through the upper part of the projecting portion of the stone.

Abutting the outer face of the structure, a deposit was found with ceramic material reportedly dating as early as the 1st century C.E. Against the inner face, a thick deposit of lacustrine clay from the Sea of Galilee had accumulated, which contained pottery datable to the 3rd century C.E. A heavily corroded bronze statuette of a winged male figure, identified as Cupid, together with 3rd-century C.E. ceramic material, was lying on top of the curved structure. During the Byzantine period, a long arched hall (9 × 4.8 m) of unknown function, of which only the eastern part could be exposed, was founded on top of the preserved remains of the curved structure (see **Figs. 2–4**). This hall was renovated and enlarged with several halls to its south (9 × 35 m) in the Umayyad period. It

[2] For an overview, see Stepansky 2008; Miller 2013; and Cytryn-Silverman 2015.

[3] On the basis of a lack of other building remains in the area, some have suggested that the curved structure was located outside of the Roman city (Jensen 2006: 144–45; Hartal 2008: The Early Roman period), though some late Roman building remains have been exposed to the north of this area (Stepansky 2008: 2050–52). Furthermore, as this area of Tiberias has seen almost continuous development from Crusader times onward, earlier structures here are more likely to have been obliterated by later construction than those to the south. In general, Roman stadia, hippodromes, and amphitheaters are usually found directly outside of the city (Weiss 2014: 77–78), though it should be noted that Caesarea Maritima's 1st-century "hippo-stadium," a multipurpose complex adjacent to Herod's palatial complex, is situated within the city (Weiss 2014: 40; on the structure's identification and function, see Porath 2013: 21–29). A quay wall does not necessarily need to be situated within a city, though a more substantial harbor supported by inland facilities, as might be suggested from the width of the curved structure, is more likely to be located there.

[4] It has been suggested, based on a general resemblance in construction method, that the two Roman wall sections, which were found 100–150 m to the north during more recent salvage excavations, belong to the same building as the curved structure (Hartal 2013: Area B; Hartal and Har'el 2013: Stratum 6). But no proof is given for this identification, and little of either wall was revealed in these excavations.

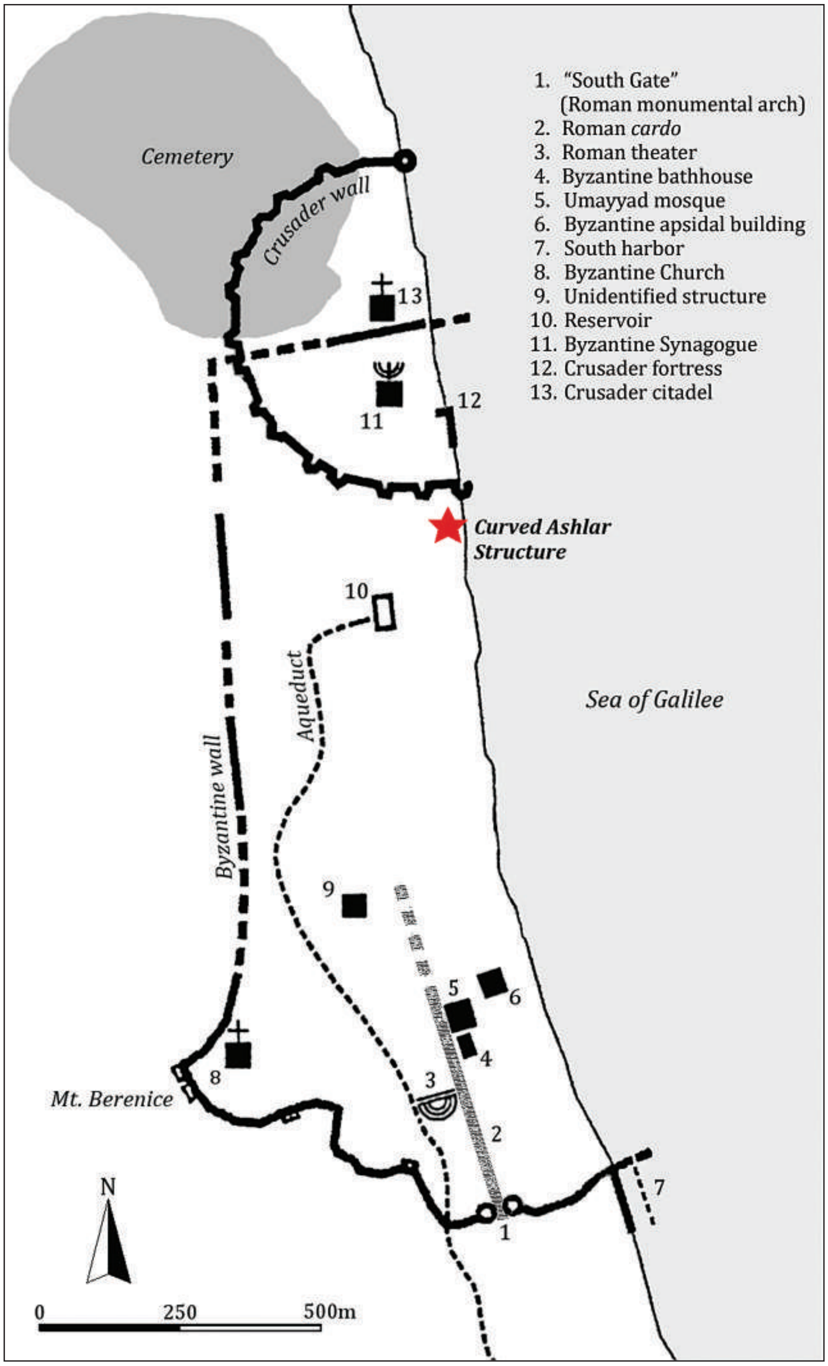

Fig. 1. Location of the curved structure within the environs of Tiberias (after Hirschfeld 1992: 50). (Courtesy of the Israel Antiquities Authority)

was eventually destroyed in the earthquake of 749 C.E. (Hartal 2008: The Umayyad period).

A 1st-Century C.E. Stadium?

The excavator has argued, based upon the structure's particular plan and construction technique, that the curved ashlar structure should be identified as the foundation wall of a *sphendonē*, that is, the semicircular end of a Roman stadium (Hartal 2008). This *sphendonē* would have formed the stadium's southern end, the whole building being aligned on a north–south axis directly along the Sea of Galilee. Based on the earliest datable pottery found along the supposed stadium's outer

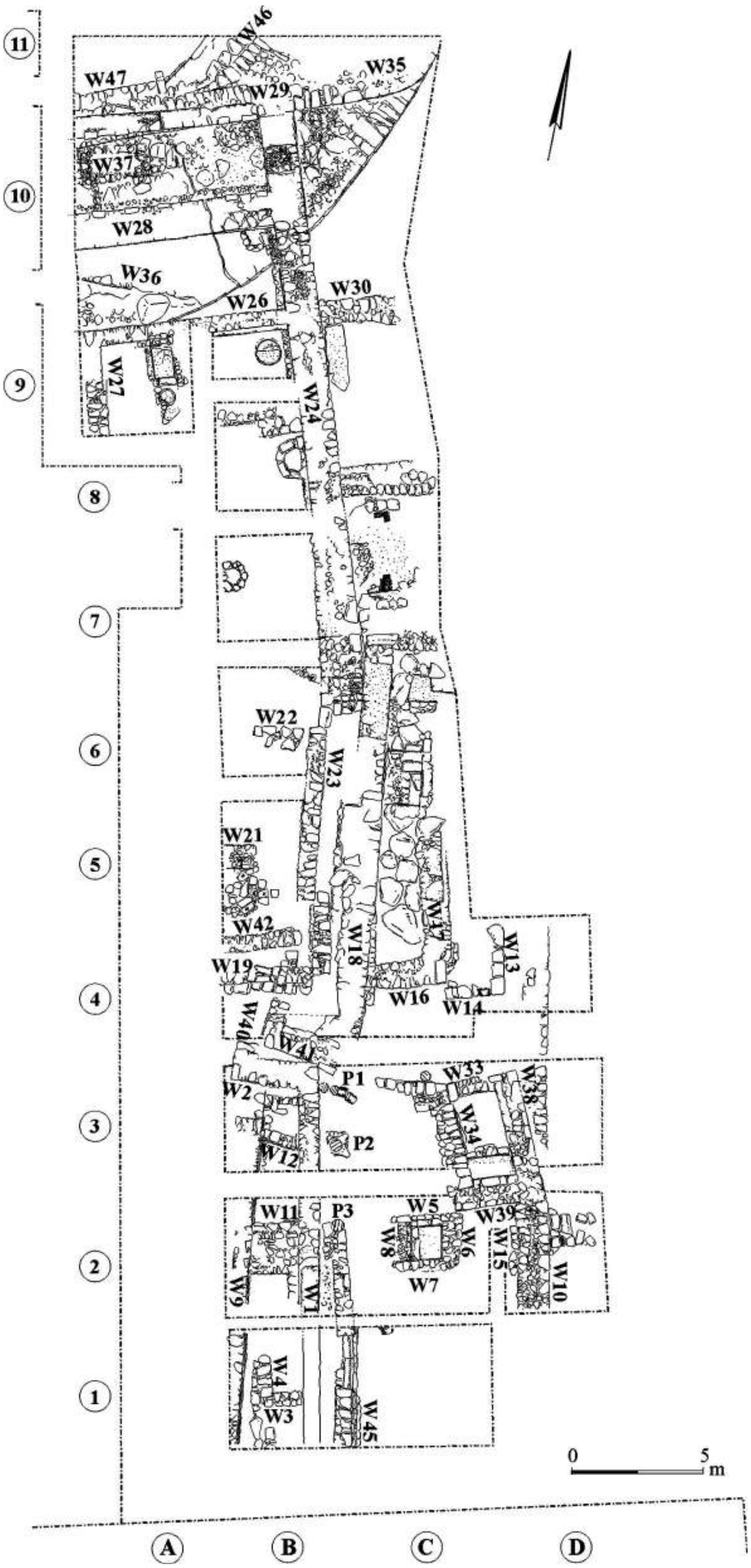

Fig. 2. Plan of the excavations at the Galei Kinneret Hotel in Tiberias. The curved structure is situated in the northernmost extent (Squares 9A–11C) (from Hartal 2008: fig. 1). (Courtesy of the Israel Antiquities Authority)

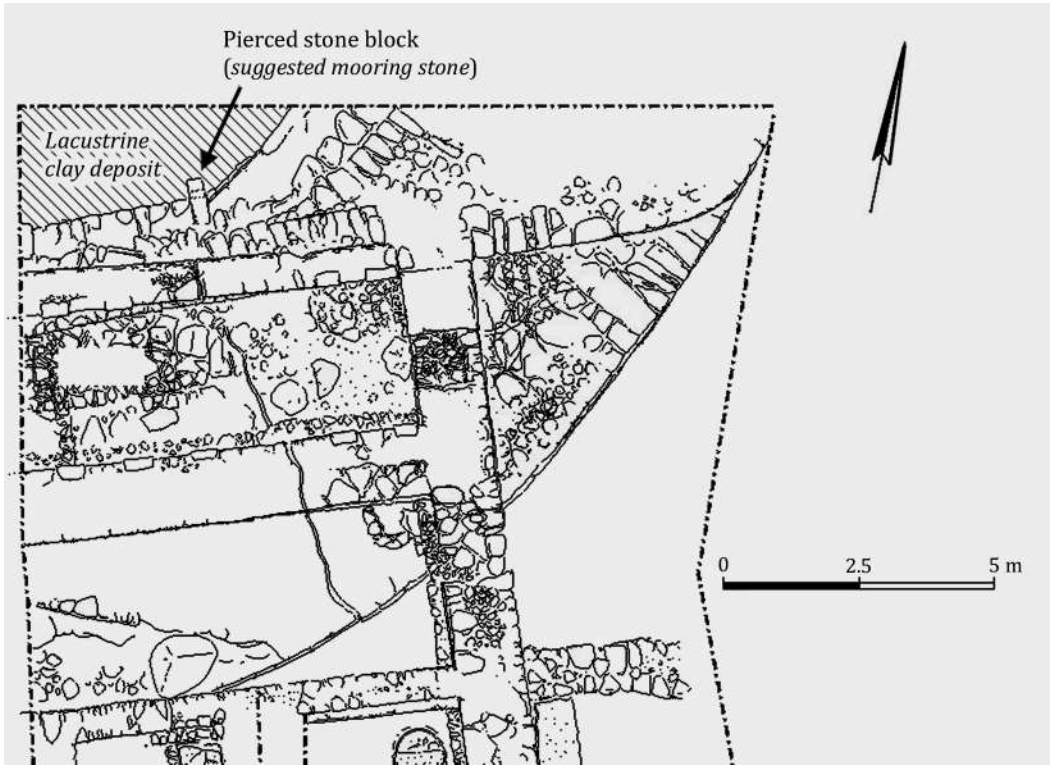

Fig. 3. Detailed plan of the curved structure at the Galei Kinneret Hotel in Tiberias (after Hartal 2008: fig. 1). (Courtesy of the Israel Antiquities Authority)

Fig. 4. The curved structure of Tiberias, looking east. (Photo by T. Sagiv; courtesy of the Israel Antiquities Authority)

Fig. 5. The curved structure of Tiberias with projecting pierced stone block, looking southeast. (Photo by T. Sagiv; courtesy of the Israel Antiquities Authority)

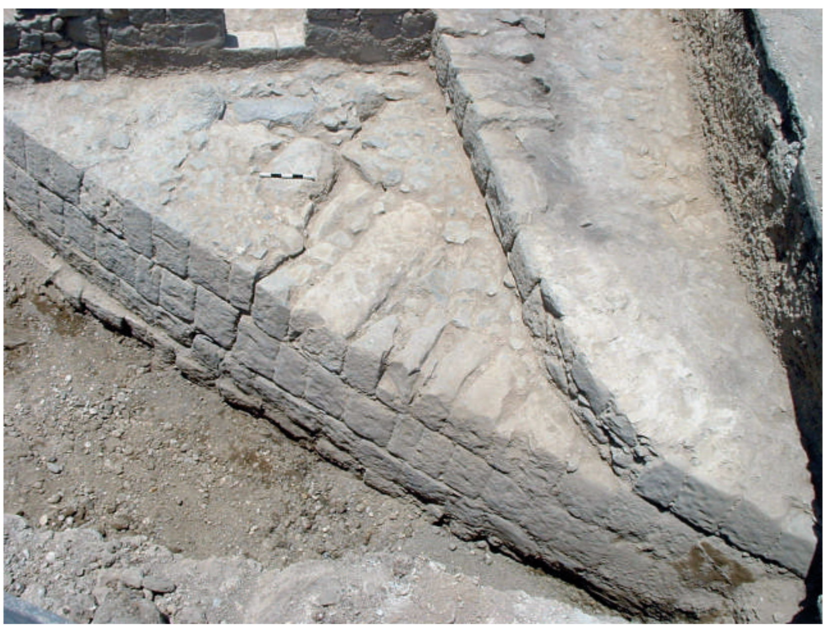

Fig. 6. The curved structure of Tiberias, looking west. (Photo by T. Sagiv; courtesy of the Israel Antiquities Authority)

face, the excavator placed its construction in the 1st century C.E. This date, together with the stadium identification, paved the way for interpreting the remains as those of the Tiberian stadium that is mentioned by Josephus (*JW* 2.21.6 §619, 3.10.10 §539; *Life* 92, 331). This stadium supposedly went out of use in the 3rd century C.E. or the beginning of the 4th, after which its upper part was dismantled. This date is based on the 3rd-century C.E. pottery found against the supposed stadium's inner face (i.e., inside its arena), as well as on top of it. Explaining how the lacustrine clay with this pottery could have been deposited inside the stadium's arena, the excavator suggested that this was "probably due to flooding from the Sea of Galilee after the structure was no longer in use" (Hartal 2008: The Early Roman period).

The proposed identification of this structure as the 1st-century C.E. stadium mentioned by Josephus, however, leaves various issues unresolved. First, Josephus's own description of the stadium does not necessarily suggest the existence of a stone-built structure at Tiberias as is assumed by the excavator. When describing the stadium in his *Jewish War*, Josephus refers to "a hillock six cubits high" (2.21.6 §619; βουνός is "a hillock, a hill, a mound" [see Liddell, Scott, and Jones 1968: 326; and Bauer et al. 2000: 182]; 6 Roman cubits [1 cubit = 44.4 cm] equals ca. 2.66 m). For reasons unknown to us, in a description of the same event in his later-completed *Life* (92), his wording has changed to "a certain high wall" (Mason 2001: 70; τριγχός is a late form of θριγχός, meaning "topmost course of stones in a wall, cornice, coping" [see Liddell, Scott, and Jones 1968: 806, 1818]). Based on the observed difference in the two accounts, several scholars have argued, following Josephus's wording in *Jewish War*, that the stadium of Tiberias to which Josephus refers was most probably a structure with a grass-covered bank of earth around its tracks (Lämmer 1976: 43–50; Humphrey 1986: 530; Mason 2001: 70, n. 478). This would follow Pausanias's observation that Greek stadia typically consisted of a "bank of earth" (χῶμα [*Descr.* 2.27.5, 9.23.1]).

However, Josephus and Pausanias use different words to describe their stadium sites. Pausanias chose χῶμα, which was commonly used among classical authors to indicate a man-made earthen mound (e.g., a dike, a pier, a burial mound, a stadium [see Liddell, Scott, and Jones 1968: 2014]). βουνός, on the other hand, which Josephus chose to describe the stadium of Tiberias, occurs almost exclusively in reference to a natural mound, including in the works of Josephus (cf. Liddell, Scott, and Jones 1968: 326; Rengstorf 1973: 339; Hatch and Redpath 1998: 228; Bauer et al. 2000: 182; Muraoka 2009: 122).[5] This poses the question: Was the stadium of Tiberias actually a man-made earthen structure or rather a locale near a small natural mound, where regular sporting events were held? Another possibility is that the stadium to which Josephus refers—or perhaps only the mound on which Josephus is said to have stood—was demarcated by a heap of field-stones. In any case, Josephus's work cannot be used as support for the existence of a stone-built stadium at Tiberias as monumental in appearance as the excavator appears to envision.

In addition to Josephus, the Jerusalem Talmud, redacted in the late 4th or early 5th century C.E., also refers to the existence of a stadium at Tiberias. It preserves a discussion attributed to Rabbi Simeon ben Laqish, who reportedly lived during the second half of the 3rd century C.E., on the Sabbath boundary limits of Tiberias, in which a stadium is said to have been located just outside Tiberias along the way to Beth Maʿon (*y. ʿErub.* 5:1, 22b). The latter settlement has been identified with modern Nasr ed-Din, which is located ca. 3 km west of ancient Tiberias.[6] It follows from this identification that the exposed curved structure cannot be the stadium in this discussion, because the one mentioned in the Jerusalem Talmud lay a considerable distance from the lakeshore, to the west of ancient Tiberias (Leibner 2009: 290).

Aside from the problems of associating the exposed building remains with the textual evidence, there are also issues concerning the archaeological evidence itself. For instance, no ancient surface level has been identified inside the supposed stadium. It is true that one would usually expect an arena's surface level to be situated higher than the foundation level of a *sphendonē*. Still, the excavator reports that lacustrine clay accumulated *inside* the stadium's arena after the building had gone out of use (Hartal 2008: The Early Roman period). Following the excavator's argumentation, this would imply that the lacustrine clay accumulated *on top of* the surface level of the stadium's arena.[7] Nevertheless, the lacustrine clay deposit extended for ca. 2 m down without any indication of a surface. But if the arena's surface level was indeed located higher than the foundation wall (as seems more likely), then the building chronology of the stadium, as suggested by the excavator, becomes untenable. It would imply that the lacustrine clay deposit with 3rd-century C.E. material is older than the stadium's arena, which is the opposite of what the excavator argues.

In addition to these considerations, there are further issues concerning the proposed construction date and identification of this structure. First, the earliest pottery found along the foundation's outer face only provides a terminus post quem for the curved structure's construction. Hence, the link between the archaeological evidence for the structure's construction date and the literary account of Josephus remains essentially unproven. Second, no evidence is reported of any loose building blocks

[5] Only three exceptions exist: Two are found in the Septuagint—an artificial "cairn of stones" (Gen 31:46, 48, 51–52 [LXX]) and a "pile of heads of human corpses" (4 Kgdms 10:8 [LXX])—and one in Josephus's version of the narrative in 4 Kingdoms (*Ant* 9.6.5 §128). All other occurrences of βουνός in Josephus (*Ant* 1.19.10 §324, 6.6.2 §107–8, 6.8.1 §156, 6.12.4 §251, 7.1.3 §17) refer to a natural mound, such as a hill or a mountain.

[6] For a discussion, see Leibner 2009: 286–94.

[7] Another explanation could be that the arena's surface matrix mixed completely with the floodwater and, hence, was difficult to recognize in the field. However, nothing is mentioned about this in the excavation report.

or architectural elements from the superstructure that would have rested on top of the supposed foundation of the stadium's *sphendonē*. While later building activity in the surrounding area surely reused some of the material of the superstructure, it seems unlikely, considering the sheer size of a stone-built stadium, that all evidence would have disappeared from the area. Likewise, no recognizable building material from the stadium is reportedly found reused in any of the later structures that were built on top of or near to it. Even the hippodrome of Neapolis, where evidence of extensive robbing activity exists, has wall courses preserved above its foundation, and indicative building material (e.g., seat fragments) reused in later structures (Magen 2009: 181). Third, the width of the exposed curved structure tapers considerably from the west to the northeast. This is something unexpected and, to my knowledge, unattested in the case of a foundation of a stadium's *sphendonē*, which had to be uniform in width.

The above-noted issues raise serious concerns regarding the excavator's hypothesis that the exposed curved ashlar structure represents part of the 1st-century C.E. stadium mentioned by Josephus. This is not the same as saying no stadium could have existed at Tiberias, since our textual evidence does indicate the presence of such a structure in the city. But we do not know with any precision either what it looked like or where it was located.

A Mooring Stone

The strongest evidence against the curved structure's identification as being part of a Roman stadium is the projecting stone block with a pierced hole incorporated in its uppermost preserved course (see **Fig. 5**). While noting that "something was probably meant to be tethered to this stone," the excavator identified the stone block as a console protruding from the wall (Hartal 2008: The Early Roman period; see also Cytryn-Silverman 2015: 196). This identification is highly unlikely for two reasons: First, the presence of a console, which is used in architecture to support the weight of some overlying structure (e.g., a cornice, an arch, or a statue), is inconsistent with the structure's suggested identification as a stadium's foundation wall. Second, the presence of a pierced hole is a highly uncommon feature in consoles. No other explanation for the function of this stone has, to my knowledge, been suggested so far. However, considering the character and location of this pierced stone block, its function seems important to our understanding of the purpose of the curved structure as a whole.

In a considerable number of theaters, amphitheaters, stadia, and circuses in the Roman Empire, consoles with either pierced holes or mortises were used as part of an awning (*velum*) that was stretched over the seating area to provide shade for spectators (Graefe 1979: 4–96). Visible in such well-preserved theaters as Orange, Aspendos, and Bostra (Graefe 1979: 22–40, pls. 1–26; Weiss 2014: 89–90), these consoles were set in pairs (a console with a pierced hole above and one with a mortise below) at regular distances from one another, along the upper part of the exterior wall of the building. But, since the pierced stone block found at Tiberias was affixed to the structure's interior side and close to the ancient surface level, it is highly unlikely that it would have supported the mast of an awning. Moreover, the holes of the consoles that supported a mast were always pierced vertically—not, as in the case of the stone block at Tiberias, horizontally.

Another awning-related possibility is that the pierced stone block was used for anchoring a guy-rope to brace a *velum* mast. To my knowledge, however, no parallels to the projecting stone block at Tiberias have been found in any other Roman entertainment structure (see also Graefe 1979: 20–142). In fact, whether guy-ropes were used in the ancient world in the construction of awnings remains highly uncertain, as no clear evidence for their existence has been found at present in any theater, amphitheater, stadium, or circus (Graefe 1979: 61, 95, 147–69; Bomgardner 2000: 5, 49; Rose 2005: 103; cf. Sear 1982: 143–44). Moreover, if the pierced stone block from Tiberias had anchored guy-ropes to brace a *velum* mast, traces of wear on the hole's upper surface—currently not attested—would have been expected. All this suggests that the pierced stone block from Tiberias was not part of a stadium's awning support.

Some entertainment structures do have a series of cuttings in the first row of seats. The most interesting of these are narrow, regularly spaced holes (with wear traces from a rope) that are cut diagonally through the front of the seats, from the seat's top surface to its front face. Such holes can be found, for instance, in the theaters of Arles, Dougga, Leptis Magna, and Stobi, as well as in the stadia of Aphrodisias and Caesarea Maritima (Graefe 1979: 53–55; Gebhard 1975: 52–53, fig. 5; Ros 1996: 464; Welch 1998: 559, figs. 11, 12; Porath 2013: 131–33, fig. 5.8). Scholars commonly identify these cuttings as part of a system of posts and nets used to protect the audience from wild animals during *venationes* (Graefe 1979: 95; Gebhard 1975; Welch 1998: 559).

Instead, the distinct shape of the projecting stone block, and its location high up in the curved structure, with three courses still visible below it, suggest that this object functioned as a mooring stone. Pierced mooring stones are common attributes of ancient harbors. They are used to moor a ship or boat with ropes or chains to

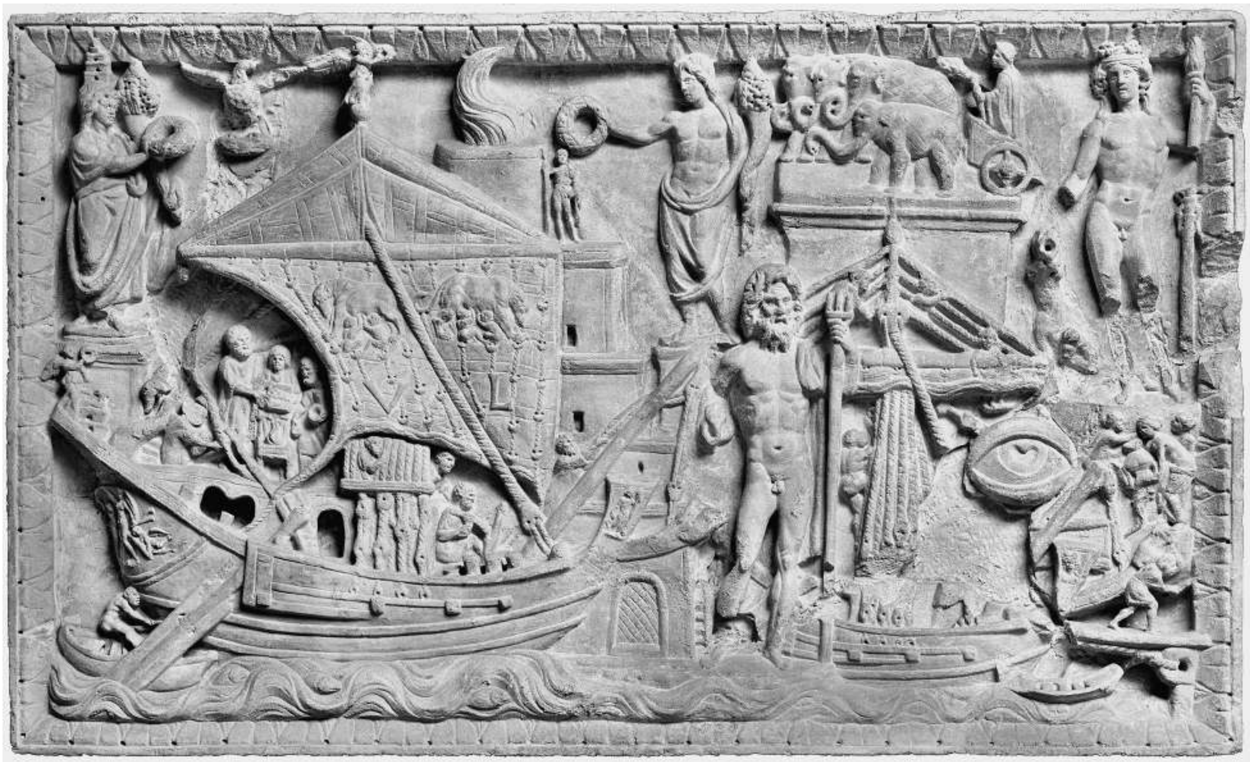

Fig. 7. Torlonia Relief, a stylized representation of Portus, ca. 200 C.E. A cargo vessel tied up to a mooring stone is depicted in the lower right corner (Rome, Museo Torlonia, inv. 430). (© D-DAI-ROM-33.1326)

a quay.[8] As is the case at Tiberias, mooring stones are normally set in or just below the upper course of the quay, with the side of the pierced hole projecting toward the water. The shape and size of these mooring stones vary widely, depending, for instance, on the availability of building material and the character of the harbor. Because of the larger size of seagoing vessels, moorings at sea harbors are generally larger than those found at lake or river harbors. Pierced mooring stones still incorporated in ancient quays have been identified at various sea, river, and lake harbors across the Roman world, such as along the banks of the River Tiber in Rome, in the Trajanic harbor at Portus, and in the Severan harbor at Leptis Magna (Blackman 1988: 9–12; 2008: 651). The Torlonia Relief from Portus, dated to ca. 200 C.E., depicts how an actual seagoing vessel was moored to such a pierced projecting stone block (Casson 1995: 368–69) (**Fig. 7**). Closer to Tiberias, pierced mooring stones have been discovered—for instance, at the Mediterranean harbors of Caesarea Maritima (Raban 1992: fig. 14) and Dora (Kingsley and Raveh 1994: 292–93), as well as at the mooring place of Rujm el-Bahr, located at the northern end of the Dead Sea (Hadas 2011: 163–66, pls. 3b–4b; 2012) (**Fig. 8**).

However, the closest comparison to the projecting stone at Tiberias, both stylistically and geographically, comes from Magdala, a late Hellenistic–Byzantine settlement located along the northwest shore of the Sea of Galilee, only 6 km northwest of Tiberias. Recent excavations at this site by the Studium Biblicum Franciscanum's Magdala Project have exposed the remains of two successive quays ca. 250 m west of the modern coastline; the earliest was built sometime between the mid-2nd and mid-1st centuries B.C.E. but was entirely rebuilt and extended in the mid-1st century C.E. (De Luca 2009: 417–20; Sarti et al. 2013; Lena 2013; De Luca and Lena 2014) (**Fig. 9**). The Roman quay itself consists mainly of medium-sized roughly hewn ashlars along the outer edges, with a rubble fill in the center, all bound together using a tenacious hydraulic mortar.[9] But, the quay at Magdala is considerably

[8] Not every ancient harbor had pierced mooring stones. Some were instead equipped with bollards—that is, short vertical posts set along the quay (Blackman 1988: 9).

[9] As in the curved structure of Tiberias, the masonry of Magdala's quay is laid in courses of headers at certain points (e.g., near the find spot of MS 3 [see **Fig. 9**]). A similar style of construction, with long

Fig. 8. The quay with incorporated mooring stone at Rujm el-Bahr, looking west (from Hadas 2011: pl. 3b). (Courtesy of G. Hadas)

narrower (3.6 m wide) than the curved structure at Tiberias (7.8–9.2 m wide).

Given the little that has been exposed of Tiberias's curved structure, the reasons suggested for the difference in width can only be speculative. It should be noted, however, that along the north (in the area of MS 3 [see **Fig. 9**]), Magdala's quay is built along a large, artificially raised, open space that still formed part of the harbor area, while on its south, direct access was provided to a square courtyard lined with porticoes and a stepped fountain in its center (the so-called *quadriporticus*), which served as a monumental access point for travelers and merchants to the town. The actual surface area of the harbor at Magdala thus appears to have extended farther than the mere 3.6 m-wide quay itself. If the curved structure at Tiberias was surrounded by water on both sides, then only the wider quay wall itself could have been used for the loading and unloading of boats.[10] On the other hand, the difference in width may be an indication of the overall size of the harbors, suggesting that the one at Tiberias was larger than that of Magdala.

In total, seven pierced mooring stones were found at Magdala, six of which are still set in the quay's upper course facing the lake (**Figs. 9, 10**) (De Luca and Lena 2014: 128, 131, 133, 136). Two of the six preserved mooring stones (MS 1–2) were part of Magdala's earliest quay, while four mooring stones aligned in a row (MS 4–7) were part of the later quay constructed in the 1st century C.E. These mooring stones were ca. 70 cm in length, with pierced holes measuring 8.5–14 cm in diameter.[11] The diameter of these holes is thus roughly comparable to that of the hole in the pierced stone block found at Tiberias (ca. 12–14 cm). In addition, the mooring stones at Magdala are all made of local basalt, like the one at Tiberias (Lena 2013; De Luca and Lena 2014: 131, 133, 136). Another similarity is that the mooring stones at Magdala also jutted out roughly 30 cm from the quayside.[12] Finally, in terms of the shape of these mooring stones, it should be noted that two of them (MS 2, 3) were carved in a manner generally comparable—with a

ashlar headers along the outer edges, has also been attested in the Roman breakwater at Kursi (Raban 1988: 326, figs. 15, 16) and in the Herodian quay and jetty at Caesarea Maritima (Raban 1992: 115, figs. 6, 7).

[10] A parallel can perhaps be drawn here with the semicircular ashlar breakwater of the Roman anchorage at Kursi, on the east side of the Sea of Galilee, which gradually tapers in width from 6 m at the start of the shore to a mere 3 m at the entry point for boats from the lake (see Raban 1988: figs. 15, 16).

[11] Stefano De Luca and Anna Lena (2014: 128, 133, 136 n. 120) provide the following measurements: MS 1: 14 cm; MS 2: 10 cm; MS 4: 9 cm; MS 5: 8.5 cm; MS 6: 9 cm; and MS 7: 11 cm. No measurements are given for MS 3.

[12] De Luca and Lena (2014: 128, 136) provide the following measurements: MS 1: 36 cm; MS 4: 26.5 cm; MS 5: 29.5 cm; MS 6: 29 cm; and MS 7: 25 cm. No measurements are given for MS 2, 3.

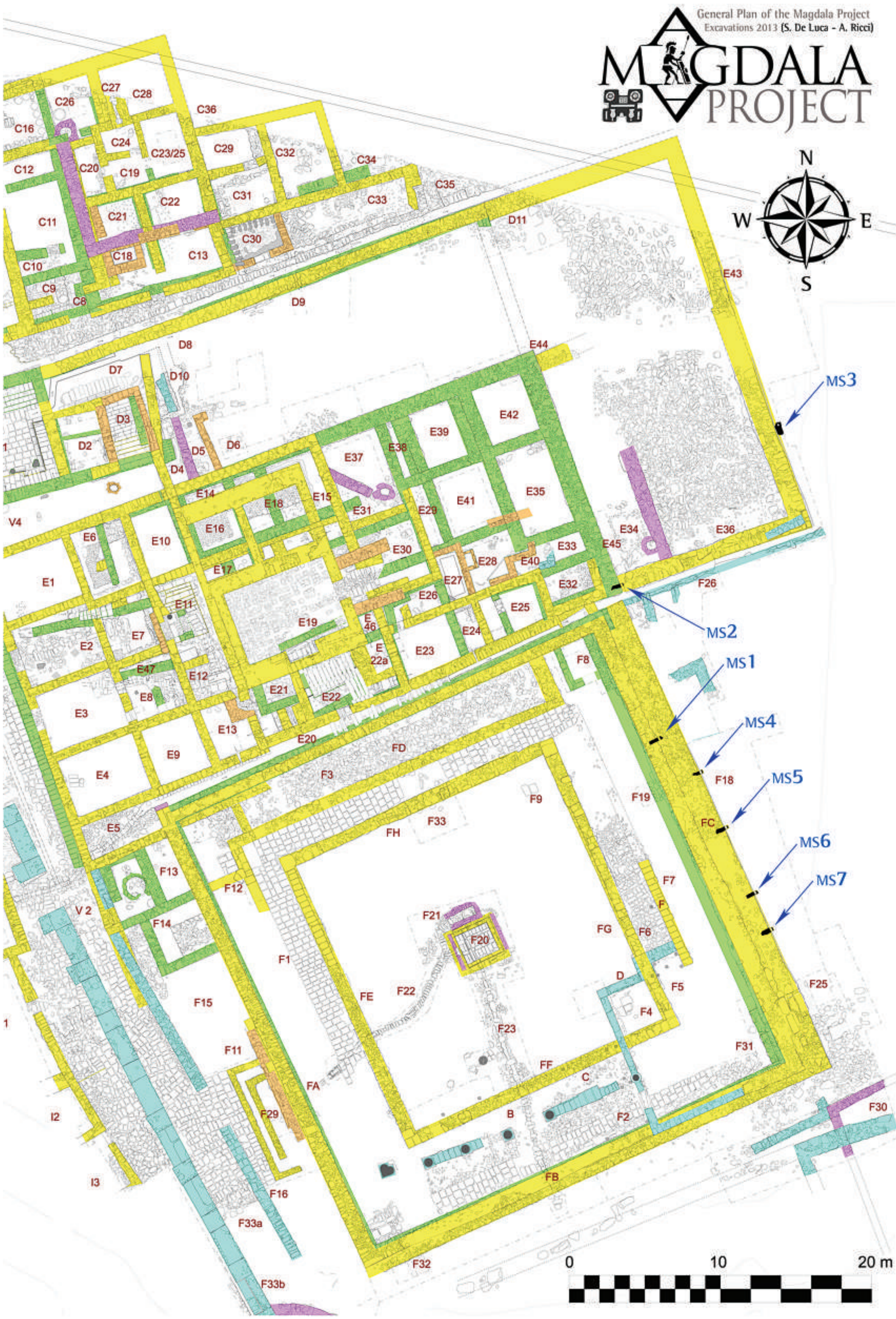

Fig. 9. Ground plan of the harbor area at Magdala. (Drawing by S. De Luca and A. Ricci, © Magdala Project; courtesy of S. De Luca)

Fig. 10. View of the Roman quay at Magdala with MS 1 and 4–7 in situ, looking northwest. (Photo by V. Sedia, © Magdala Project; courtesy of S. De Luca)

rounded-off upper part projecting lakeward—to the one from Tiberias (De Luca 2009: 425; De Luca and Lena 2014: 133, fig. 14).

Aside from their resemblance in structural characteristics, the original elevation of the harbor at Magdala also corresponds well with the curved platform at Tiberias. The latter was discovered at an elevation of 212 m below mean sea level, on top of which lake sediments lay up to 208 m below mean sea level (Hazan, Stein, and Marco 2004: 203–4). The excavation also revealed a geological fault related to the 749 C.E. earthquake running through the excavation area, which offset those structures built before the earthquake (including the curved platform) but not the later ones (Marco et al. 2003: 665–66, fig. 2). Based on an examination of the fault ruptures found on site, Shmuel Marco, Moshe Hartal, Nissim Hazan, Lilach Lev, and Mordechai Stein (2003: 665–66) initially suggested that before the 749 C.E. earthquake, the water level of the Sea of Galilee was at approximately the same elevation as the exposed structures—that is, 212 m below mean sea level[13]—but that as a result of the earthquake, the water level suddenly rose to 208 m below mean sea level, thereby burying the curved platform and other structures.

Hazan, Stein, and Marco (2004: 204), however, later showed that their initial explanation is contradicted by palaeo-climatic data for the periods in question. For the region around the Sea of Galilee, these data show that the late Hellenistic through the Roman periods were in fact "a wet, rainy period," during which the lake was probably at a very high level. During the early Islamic period, on the other hand, when data show that "the climate was relatively dry," the lake level appears to have dropped considerably (Dubowski, Erez, and Stiller 2003: 76). These observations are supported by palaeo-climatic data from

[13] The idea that the lake level of the Sea of Galilee was ca. 212 m below mean sea level was further substantiated by Mendel Nun's earlier survey (1999; 2001: 57–99) of several landing places and anchorages around the lake that supposedly date back to the 1st centuries C.E. at this elevation. But, as De Luca and Lena (2014: 119) note, none of these sites has been stratigraphically excavated, which makes their suggested date uncertain. As discussed below, there is now strong evidence to suggest that the Sea of Galilee's lake level in the 1st centuries C.E. was considerably higher than 212 m below mean sea level and hence that the structures that Nun had found at an elevation of 212 m below mean sea level presumably date to a later period (see Sarti et al. 2013: 121; and De Luca and Lena 2014: 116–19).

the Dead Sea region, which indicate a high water level during the period of 200 B.C.E.–400 C.E. (with a brief interruption during 200–300 C.E.), followed by a severe drop in the lake level during the period of 400–900 C.E. (Bookman et al. 2004: 570, fig. 8a). In short, the observed climatic changes and related lake-level fluctuations in the Sea of Galilee and the Dead Sea from the Roman to early Islamic periods run precisely opposite to Marco et al.'s (2003) initial suggestion.

Taking the observations from the palaeo-climatic data into account, Hazan, Stein, and Marco (2004: 204, fig. 4) have suggested that the curved platform and other Roman–Umayyad structures uncovered in the excavation at Tiberias "were constructed at a higher level and subsided tectonically to their present elevation at 212 m bmsl. [. . .] Assuming that the Roman stadium [i.e., curved platform], which is the lowest building at the site, was built above the high stand level of Roman times (> 208 m bmsl), it appears that the tectonic subsidence of the Roman–Umayyad structures was more than 4 m."

The original elevation for the curved platform at Tiberias at the time of its construction, as suggested by Hazan, Stein, and Marco, corresponds with that observed in the harbor at Magdala, where six preserved mooring stones of the late Hellenistic and early Roman quays are set at an average level of 208.135 m and 208.28 m below mean sea level, respectively.[14] Based on the evidence from Magdala, De Luca and Lena (2014: 144–6; see also Sarti et al. 2013: 123) have suggested that the water level of the Sea of Galilee during the late Hellenistic through Roman periods was between 208 and 209.5 m below mean sea level. This corresponds with the above-mentioned observations from the palaeo-climatic data, as well as the suggested original elevation of the curved platform at Tiberias.

To summarize, there is no evidence to suggest that the pierced stone block, projecting outward from the curved platform, was used as either a console or support for an awning. Instead, the typical form and style of this stone, its placement high up in the curved platform, its suggested elevation in relation to the lake level of the Sea of Galilee during the late Hellenistic through Roman periods, and its close resemblance to mooring stones recently found at the nearby site of Magdala, all suggest that it was used as a mooring stone. This adds further doubt to the identification of the structure as the foundation wall of a Roman stadium. Instead, the evidence of a pierced mooring stone suggests that the exposed curved platform served as an ancient quay, a stone platform lining a body of water, where boats docked for loading and unloading.

A Quay Wall

There is, aside from the pierced mooring stone, further support for the curved structure's identification as a quay. As noted earlier, a thick lacustrine clay deposit from the Sea of Galilee was found along the curved structure's northwest face. This is the same side from which the mooring stone projects (see **Fig. 3**). It was argued originally that the lacustrine clay sediment accumulated here as a result of flooding (Hartal 2008: The Early Roman period). This argument is problematic, though, because there is no mention of similar lacustrine clay sediment having been found against the curved structure's southeast face, which, according to the excavator's interpretation, would have been the stadium's outer face directly along the lakeshore. Yet, since the Sea of Galilee lay directly east of the curved structure, one might expect that, in the case of flooding, clay sediment would have also accumulated against the stadium's outer wall. But, when identified as part of a quay, the location of the lacustrine clay deposit—on the side of the mooring stone—makes sense, as this would have been the waterside of the structure. It is therefore reasonable to expect a natural process of sedimentation of lacustrine clay along this side of the curved platform.[15]

Considering that the Sea of Galilee is to the east of the curved platform, the locations of the mooring stone and the lacustrine clay deposit at first glance seem at odds with where both would be expected. Their locations, however, are probably both related to the particular curved shape of this quay wall and to the still-unrevealed layout of the harbor area as a whole. We have to remember that the 2002 salvage excavation exposed only a small section of this structure, thereby leaving open the question of how its shape should be reconstructed. From the exposed remains (see **Figs. 2, 3**), it seems reasonable to assume that the part of the quay continuing beyond the excavated area in a northeastern direction at some point would have ended, leaving open an entry point for boats from the lake into a more sheltered area, where they could have moored. The part that continues westward, on the other hand, is more difficult to reconstruct, and it remains unclear in which direction it would have run beyond the excavated area. When taking into account the location of the town to the west of this structure, though, it seems reasonable that the quay would connect at some point to a north–south wall along the then-coastline of Tiberias.

[14] De Luca and Lena (2014: 131–33, 136) provide the following elevations, all below mean sea level: MS 1: 208.10 m; MS 2: 208.17 m (both of the late Hellenistic quay); MS 4: 208.32 m; MS 5: 208.29 m; MS 6: 208.23 m; and MS 7: 208.28 m (all four of the early Roman quay). Mooring stone MS 3 was not preserved in place.

[15] The thickness of the reported clay deposit suggests that the sedimentation took considerable time and would not have happened on this scale in the case of a mere flood taking place.

The particular curved form of the exposed quay may be related to an indentation of the ancient shoreline at this location, chosen for its strategic position to provide shelter from prevailing winds. In summer, the area of the Sea of Galilee is characterized by a (sometimes strong) prevailing westerly wind during the afternoons, with stronger wave action along the lake's eastern shore. The winters are in general less windy, though occasional easterly storms (so-called *sharqiya*) result in strong and high waves on the western shoreline, including that of Tiberias (see Ziv et al. 2014: 87–9, with earlier literature). While the westerly winds in summer pose little problem, the sheltered area to the west of the quay wall would have protected boats during the occasional easterly storms in winter.[16]

One possible argument against the interpretation of a quay wall is the fact that no remains of aquatic flora or fauna were found attached to the suggested waterside face of the curved platform.[17] In marine environments, hard substrates such as natural rocks or man-made structures are ideal surfaces for certain aquatic animals and plants to attach themselves. However, in the freshwater environment of the Sea of Galilee, while calcified remains of bivalve mollusks and (under anoxic conditions) organic material of macrophyte vegetation would survive in the archaeological record, their remnants are not expected to be found on such hard substrates as the suggested quay wall. This is because in the Sea of Galilee, both macrophyte vegetation and bivalve mollusks are found exclusively in soft sediments (Gafny and Gasith 1999: esp. fig. 2; Zohary and Gasith 2014: 525); they do not attach themselves to hard littoral substrates.[18] Indeed, in no other excavation or survey of harbor structures along the Sea of Galilee's shoreline, such as Magdala (Sarti et al. 2013: 121), Kursi (Raban 1988: 323–28; Galili et al. 2007), and the southern harbor of Tiberias (see below), have remnants of aquatic animals or plants been found attached to them.[19]

If the identification of the curved quay wall is correct, this would not be the first attestation of an ancient harbor structure at Tiberias. During recent periods of severe drought, remnants of another harbor have occasionally surfaced along the lakeshore directly south of the Byzantine wall's southeastern end (see **Fig. 1, No. 7**) (Hirschfeld 1992: 27–30; Nun 2001: 75–83; De Luca and Lena 2014: 119 n. 34). The remains include a 150 m section of an ashlar shoreline quay (roughly comparable, in terms of the dressings of the stones, to the curved platform) with a parallel breakwater running 40–50 m to the east, as well as various stone anchors, net weights, and mooring stones spread around the shoreline. Based on the fact that the breakwater consists of reused building material, and that both the quay and the breakwater run neatly perpendicular to the 6th-century C.E. fortification wall, it has been suggested that this harbor area was in use during the Byzantine period.

The Dating of the Quay Wall

When was the curved quay that was exposed farther to the north built and in use? An approximate date can be determined by comparing the suggested elevation of the platform (ca. 208 m below mean sea level) with the attested lake-level changes of the Sea of Galilee from the Hellenistic through Umayyad periods.

The elevation of the mooring stones in the two successive quays at Magdala suggests that from the 1st century B.C.E. up to the 3rd century C.E., when this harbor was in use, the lake level fluctuated between 208 and 209.5 m below mean sea level. As pointed out by De Luca and Lena (2014: 145–46, nn. 163–65), this level is consistent with that of the Roman anchorage at Kursi (208.5 m below mean sea level) on the northeastern shore of the Sea of Galilee (see also Raban 1988: 325–27), as well as with the floor levels of contemporary buildings at Capernaum and Tiberias that stood near the lakeshore (ca. 208 m below mean sea level). However, by the second half of the 3rd century C.E., the lake level appears to have dropped to ca. 210 m below mean sea level, as indicated by the evidence of simple landing facilities at Magdala that were built a little east of the earlier harbor (Sarti et al. 2013: 127, 129). Later archaeological evidence from Magdala and Kursi suggests that the lake level of the Sea of Galilee continued to drop even further. The remains of a late Byzantine–Umayyad-period open dock and sheltered basin at Magdala, which were found even farther to the east, suggest that during this period the lake level had dropped to an elevation of ca. 212 or 213 m below mean sea level (De Luca and Lena 2014: 141–42, 146–47). The recent discovery of a small square building near Kursi along the

[16] That this quay wall was likely not able to protect the moored boats during the most severe storms is exemplified by the easterly storm of March 1992, when, due to the rise of the lake level and the high waves, the harbor of modern Tiberias was substantially destroyed (see Saaroni et al. 1998: 72–73; and Ziv et al. 2014: 89).

[17] I thank Niko Nappu and Riikka Tevali for discussing this possibility.

[18] Macrophytic and bivalve remains may have been preserved, though, in the thick lacustrine clay deposit lining the quay's waterside. This also holds for microscopic remains of calcified plankton, which may even have been present in the wall crevices of the quay. It is not reported whether this deposit was examined for these kinds of remnants.

[19] For other harbor structures, see De Luca and Lena 2014: 116–19. At Magdala, ostracod assemblages were preserved in soft sediments deposited near the harbor (see Rossi et al. 2015).

eastern lakeshore of the Sea of Galilee, dating to 530–660 C.E., suggests an even lower lake level of ca. 214 to 215 m below mean sea level for this later period (Galili et al. 2007). The archaeological evidence thus indicates that the lake level gradually dropped from a high water level of ca. 208 to 209.5 m below mean sea level during the late Hellenistic through middle Roman periods (100 B.C.E.–250 C.E.) to a low level of 212 to 215 m below mean sea level during the late Byzantine through Umayyad periods. This corresponds well with the lake-level changes for these periods as suggested by the palaeo-climatic data.

Thus, only during the late Hellenistic through middle Roman period would the lake level have been sufficiently high for the quay at Tiberias to operate properly. Such an approximate date for when the quay was in use agrees with the reported stratigraphic evidence. The 1st-century C.E. ceramic material deposited along the quay's southeast face provides a terminus post quem for its construction. And, although the lacustrine clay deposit lining the quay's waterside remains an unreliable indicator of date, due to its natural and unsealed character, it is interesting that its 3rd-century C.E. pottery corresponds well with the period when the lake level dropped to ca. 210 m below mean sea level. It is possible that around the second half of the 3rd century C.E. or somewhat later, a regression of the lake caused the shoreline to shift so far eastward that the harbor dried up and went into disuse. This agrees with the excavator's observation that in the Byzantine period, after the curved quay had lost its principal function, its surface was reused as a foundation for a long arched hall. It also closely corresponds with the reported siltation of the Roman harbor at Magdala, indicated by a thick accumulation of lacustrine sand, covered by gravel conglomerates with 3rd-century C.E. pottery, and the end of harbor activities there (De Luca and Lena 2014: 139).

Conclusions

This study has raised doubts about the proposed identification of the wide, curved ashlar platform unearthed in Tiberias as part of a Roman stadium. Not only does this identification reduce the complex textual accounts of a stadium in Tiberias in order to reconcile the excavation's findings, it also resorts to some unnecessarily forced explanations as to how a thick matrix of clay could accumulate within a stadium's arena and leaves the presence of a projecting pierced stone block unsatisfactorily explained.

Here, it has been proposed that this ashlar platform is a remnant of a curved quay with a mooring stone facing the sheltered waterside still preserved in its upper course. Our knowledge about ancient harbors along the Sea of Galilee has recently received a considerable boost with the extensive research that was carried out on such structures at nearby Magdala. The mooring stones that were preserved show a remarkable resemblance, both in style and in elevation, to the one found at Tiberias. Moreover, archaeological evidence of lake-level changes, palaeo-climatic data, and stratigraphic evidence suggest that the quay at Tiberias was built as early as the 1st century C.E. (though a later construction date is also possible) and went out of use during or sometime after the second half of the 3rd century C.E. as a result of water-level regression. Thereby, the quay appears to predate the earlier exposed Byzantine harbor structure found farther to the south.

The discovery of a quay in what would once have been the northeast area of Roman Tiberias suggests the existence of an ancient harbor structure at this location, though, due to the limited nature of the salvage excavation, it remains difficult to determine the structure's precise plan. The curved structure represents the first clear archaeological evidence for a harbor within Tiberias during Roman times. Nonetheless, the presence of such a harbor structure during the 1st through 3rd centuries C.E. is to be expected, considering the fact that during this precise period, after Tiberias's foundation in 18–20 C.E., the settlement shows evidence of considerable growth as an urban center. Moreover, if the quay wall's substantial width can be used as an indication for the harbor's overall size, then it may have been a rather substantial harbor that presumably would be supported by various inland facilities, such as warehouses, workshops for fish production, and markets.

Although Roman Tiberias was the largest and most important town directly along the lakeshore, its activities in relation to the lake seem to be only sporadically mentioned in textual sources. Later rabbinic sources (*y. Šeb*. 38a; *Gen. Rab*. 31:13, 32:9) make mention of regular boat-crossings between Hippos, situated on the other side of the lake, and Tiberias, as well as note the presence of a professional association of fishermen there (*y. Pesaḥ* 4.30d; *y. Moʿed Qaṭ*. 2.81b). Josephus, in connection with the First Jewish Revolt, is aware of "a rebel faction of sailors and ingrates" in Tiberias (*Life* 66), while the gospels refer to some boats coming from Tiberias (John 6:23). The proposed identification of the curved structure as part of an ancient harbor, possibly the city's main one during the Roman period, thus adds to our understanding of the increasing influence of Tiberias around the Sea of Galilee in the 1st centuries of the common era in terms of trade, transportation, and the fishing industry.

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