

## The Roman Lighthouse at Akko, Israel

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During Roman rule Akko, in Israel, was a major Levantine seaport. Historical, numismatic and archaeological evidence shows that often Roman maritime-associated activities, in the Levant and elsewhere, included the building or maintenance of lighthouses. No clear indications of a Roman lighthouse in Akko are known. Re-examination of navigational considerations, coastal archaeological surveys, underwater investigations and numismatic evidence supports the proposition that a Roman lighthouse existed there. It is suggested that the lighthouse was situated on an islet near the harbour entrance.

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The city of Akko, in northern Israel, has been serving watercraft continuously from the Bronze Age to the present, for over 3300 years (Galili *et al.*, 2004; Vidal, 2006; Wachsmann, 2009: 334; Galili *et al.*, 2010) (Fig. 1). This article aims to present and discuss evidence for the possible existence of a lighthouse at Akko harbour during the Roman period. Akko was situated in the Roman province of Phoenicia, and also served Galilee and north Judea (Tsafrir *et al.*, 1994: 14–15, 204–05). Literary evidence suggests that its harbour functioned as a base for Roman political and military activities in the Levant, starting with the Roman invasion of Phoenicia and Judea by Pompey *c.*64 BC (Kashtan, 1988). In about 51–54 AD a colony of Roman veterans was founded there (Kadman, 1961: 52). During the first Jewish Revolt (66–70 AD) Rome used Akko, and presumably its harbour, as a base, even after the building of the new, spacious, harbour at Caesarea in the 1st century BC. Ships carrying Egyptian grain to Rome sailed for several hundred years past Akko harbour, which could have served them regularly or in an emergency. Numismatic evidence indicates long-lasting Roman Imperial interest in the city (Kadman, 1961: 52–6). Archaeological discoveries on land and under water indicate that the port of Akko acted as a major entrepôt handling cargoes from the whole Mediterranean (Galili and

Rosen, 2008; Galili *et al.*, 2010). Certainly those governing Roman Akko had a lasting interest in ensuring the functionality and safety of the city's harbour and its approaches.

It has previously been suggested that a lighthouse could have existed at Akko in Antiquity (Inman, 1974: 2049–51). Based on archaeological explorations and numismatic evidence it has recently been suggested that there was a Roman lighthouse there (Galili *et al.*, 2002; 2004; 2010). However the issue was not investigated further. This article will integrate the nautical, archaeological, numismatic and historical evidence in order to examine the possibility that a Roman lighthouse did exist at Akko, at least during the 3rd century AD.

It is not easy to substantiate unequivocally that a lighthouse existed on a given site prior to the documentation of lighthouses by pre-modern and modern charts and lists. Remains of purposefully-constructed buildings, specialized light sources and optical systems can help such a claim, but such aids to coastal navigation appeared only in the 18th century (Francois, 1981: 37). Before this the existence of a lighthouse was not based on optical equipment and structural engineering, but depended on erecting a suitable building and maintaining a permanent fire on top. From Antiquity to the 18th century a temporary

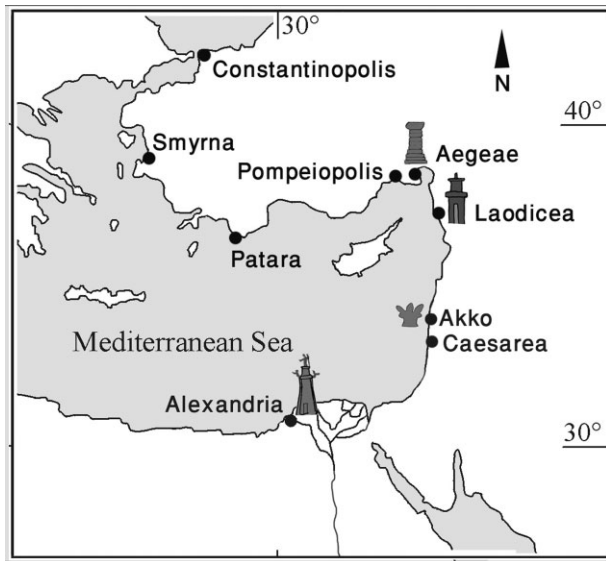


Figure 1. Location map of sites in the Eastern Mediterranean mentioned in the text. (E. Galili)

fire, lit atop a hill or a building, was as efficient for nautical purposes as one lit atop a structure termed a 'lighthouse' (Aeschylus *Ag.* 285–310; Quincey, 1963). The abuse of such occasional fires is recorded in a Greek myth: 'Nauplius lit a fire-signal on Mount Caphereus (south Euboea) and thinking that it was from some of those who had been saved they put in for the shore and wrecked their ships on the Capherian rocks' (Apollodorus 12: 6; Simpson, 1976: 272). That maliciously caused wreck was in revenge for a deed done during the war on Troy. But the myth's subtext indicates that when and where it was told beach-fires were commonly used to guide ships to safe havens. It also indicates knowledge of that place, its name and its navigational importance. Even today a lighthouse exists on that headland, directing ships on the historic sea-lanes from the east and the north to Athens. In Antiquity, as now, any distinguishable structure visible from the sea could have served as a daytime navigation aid.

For night navigation, keeping a permanent fire, emitting navigationally meaningful light all year around, was expensive in both labour and materials. The upkeep of a lighthouse demanded a regular allocation of resources for structural maintenance and for firewood. These expenses could have been covered by taxing ships served by such lighthouses. Such arrangements, known historically, existed only in organized societies where owners had the law on their side when collecting lighthouse-dues (Coase, 1974: 357–76). Generally such expenses were paid for by political systems, justifying such practices as doing a good deed for the general public, the lighthouse(s) serving as a symbol of such benevolence (Blake, 2007: 1). In Antiquity that was in some way analogous to daily communal sacrificial fire, also lit for the benefit of the whole commu-

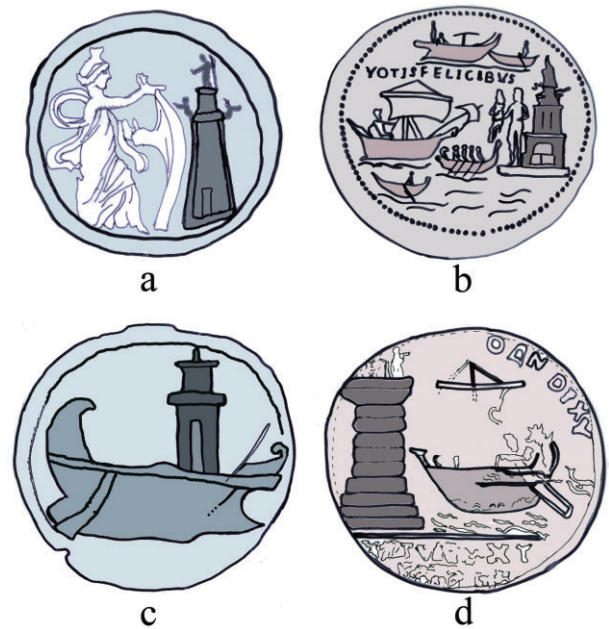


Figure 2. Lighthouses on Roman coins (all figures composed from several sources): a) coin of Hadrian (117–138 AD), Alexandria in Egypt, Isis Pharia holding a billowing sail, 'sailing' toward a lighthouse, the Pharos; b) medallion of Commodus (177–192 AD) depicting the port of Ostia including the lighthouse; c) coin of Septimus Severus and Caracala (193–117 AD), Laodiceia ad Mare in Syria (Seleucus Pieria), a ship passing under the lighthouse; d) coin of Trajan Decius (249–251 AD), Aegeae in Cilicia, a ship sailing towards a lighthouse. (E. Galili)

nity. This may be one of the reasons why holy sanctuaries and lighthouses were combined on coastal promontories (Semple, 1932: 613–37). Such a sanctuary, traditionally functioning as a navigational aid, perhaps also a lighthouse, beckoning ships approaching Akko from afar, existed during Roman times on the Carmel headland overlooking Akko Bay (Tacitus *Hist.* II 78.3; Suetonius *Vesp.* 5.6).

Because the remains of ancient lighthouses are hard to identify, evidence for their existence must be derived from several sources: nautical needs, contemporary historical documents, iconographic depictions (coins, mosaics, reliefs) and archaeological exploration on land and under water. The best model for the proven existence of an ancient lighthouse, based on a range of sources, is the archetype, the Hellenistic lighthouse of Alexandria, the Pharos (Fig. 2a). On the featureless, low-lying coast of Egypt, ships aiming to reach Alexandria had a pressing need for such an artificial navigation aid; there are numerous contemporary literary sources furnishing evidence for its existence for more than 1000 years, from Hellenistic times to the Early Islamic Period (Quet, 1984; Deppmeyer, 2006). Such documents even tell us about its maintenance: 'Ammenius, who is the father of our Emperor, re-erected me by his labour when, borne down by the loud-roaring

gales, I was about to fall' (AG 9, epigram 674). These sources are reinforced by numismatic and archaeological evidence.

Similarly, nautical, literary, numismatic, and archaeological data are available for the Roman lighthouse(s) at the harbour of Ostia (Meiggs, 1985: *passim*) (Fig. 2b). However, generally it is impossible to assemble such comprehensive information about ancient lighthouses. Studying and understanding the available fragmentary data necessitates the combining of complementary pieces of meagre evidence from several sources. One example is the single written record about the Roman lighthouse on Capri (Suetonius *Tib.* 74.2). It must have been navigationally important for sailors in the Gulf of Puteoli and may be associated with the short-lived naval Portus Julius (built by Marcus Vipsanius Agrippa in 37 BC) and the later naval base at Misenum (McKay, 1967: 3–5). The lone literary mention and the apparent nautical needs helped archaeologists to identify its scanty remains (Fitzpatrick, 1949: 69–70; Houston, 1985: 179–96).

In summary, to establish the existence of an ancient lighthouse, the primary governing argument is an obvious nautical need. That should be supported by historical, iconographic and archaeological evidence, preferably all three, as in Alexandria. When all that can be found are isolated bits of information, the archaeologist must ascertain the presence of nautical needs and then fill the gaps by complementary evidence.

### Known Roman provincial lighthouses

In the western provinces of the Roman Empire, such as Britannia, Roman naval-military activities, involving a large-scale crossing of the channel, were associated with building and maintaining lighthouses on Britain's shores, as at Dover and perhaps also at Richborough and Folkestone (Peacock, 1977: 235–48); Frere and Fulford, 2001: 45–55). A 'complementary' Roman lighthouse existed at Boulogne (Gesoriacum) on the opposite side of the channel (Goodchild, 1956). The tendency of rulers of Levantine cities, provinces and client states, in the expanding Roman Empire, to build and maintain complex harbours with all the ancillary structures and institutions is seen, for example, in the port of Alexandria and its lighthouse. Going north from there it is exemplified by Herod the Great who built Caesarea harbour (Hohlfelder, 1996: 77–104). One of the temples there served as a day-time navigation aid (Josephus *Antiq.* 15: 339). It was suggested that another structure there acted as a lighthouse (Vann, 1991).

Roman coins show the existence of lighthouses at Laodiceia ad Mare (modern Syrian Latakia) (Seyrig, 1952) (Fig. 2c) and Aegeae (Ayas/Ymurtalik, in Iskanderun Bay) (Seyrig, 1952) (Fig. 2d), a place which had some importance in seafaring during Roman times (Magie, 1950: 275; Robert, 1973). Pompeiopolis (Soli) also has a small lighthouse shown on a Roman coin (Boyce, 1958; Brandon *et al.*, 2010: 392). Two man-

made moles there, similar to the depiction on the coin, survived until just before 1826 (Purdey, 1826: 307). The presence of a lighthouse at Roman Patara (Kalkan, Turkey) has been suggested (Magie, 1950: 520, 1380–81). Later a lighthouse from the Roman Imperial period, bearing a dedicatory inscription, was excavated there (Yildirim and Gates, 2007: 315). Contemporary literary evidence mentioned that Smyrna (Ismir) had a lighthouse during the Roman period (AG 9, epigrams 671, 675). The lighthouse of Constantinopolis appears on the Peutinger map, based on information which probably originated in the late Roman Empire (Reddè, 1979: 854). In all these Levantine coastal cities an examination of nautical considerations will show a need for a navigational aid, preferably a lighthouse. Thus finding an additional lighthouse in an active Levantine port during the Roman period should not be unexpected.

### Did a lighthouse exist in Roman Akko?

The possibility that a lighthouse existed at the harbour of Roman Akko was evaluated in the light of the parameters mentioned above. Given the location and layout of the Roman harbour and its marine environment there is a clear need for a navigation aid, preferably a lighthouse, to mark the complicated approaches to the entrance. This is shown by the presence of such aids in the recent, and not-so-recent, history of this harbour (Fig. 3) (Taylor, 1971: 107–08). There are no ancient literary sources which suggest that a lighthouse existed in Akko, but there is both iconographic and archaeological evidence that such a structure could have existed, as will be demonstrated here.

#### *The navigational need for a lighthouse*

Probably since the start of navigation along the Israeli coast, and surely by the Bronze Age, a reef south of Akko, depicted on early and modern charts, was a major navigational hazard for watercraft using the harbour (Fig. 3). As ships became bigger, with deeper draught, the danger of that reef increased. Remains of the lead sheathing of a Roman ship which scraped that reef have been recovered by underwater archaeologists (Fig. 4). Avoiding the reef was critical for ships using the port. That is apparent in an early sailing direction: *Lo Compasso da Navigare* (c.AD 1250), which contains entry directions, 'And when you have the Constable house in direct line with the Tower of Flies you can make straight for the harbour ... and when you steer ... have the Tower of Flies on mid-prow' (Taylor, 1971: 107–08). The bay has not changed much in the last 2000 years. Akko harbour was (and is) entered from the south-east and east. The entry is obscure, not visible to ships arriving from the open sea. Obviously in the 13th century AD the Tower of Flies functioned not as an indicator to ships on the high sea (that was done by Carmel Head as mentioned above) but rather as a local control-point and navigational aid marking the harbour approaches and entrance.

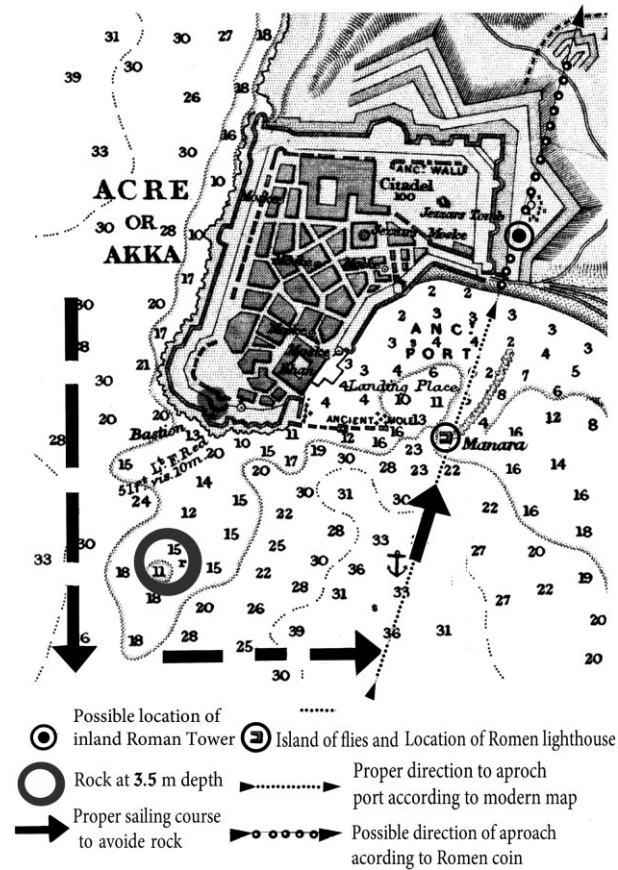


Figure 3. A chart showing the approaches to Akko Harbour. (E. Galili)

**The supporting numismatic evidence**

Structures shown on Akko coins from the Roman period furnish visible, material, man-made evidence for a lighthouse. As shown above, Roman cities used coins to broadcast the existence of their harbours, and included representations of basic elements, whether symbolic and real: sea- or river-god; ship(s); light-house(s); piers, quays, store-houses and other waterfront buildings. Some coins show a number of these elements, some just a few (Boyce, 1958; Reddé, 1979; Quet, 1984). The structures on such coins are either in the sea, on the waterfront, or further back in the city but visible from the sea. Often coins represented real scenes, at times practically miniature maps of the ports that they advertised (Fig. 2) (Boyce, 1958; Reddé, 1979; Quet, 1984). The representations of lighthouses vary (Fig. 5), their towers being shown as square, round or stepped pyramids, some apparently solid, others with windows and doors.

Akko coins showing maritime scenes relevant to this article are included in catalogues of the city's coins (Kadman, 1961; Meshorer, 1985). The most important coins for the present discussion are nos 175, 178, 198 and 208 (Kadman 1961 *passim*), which were minted during the first half of the 3rd century (Fig. 6). The coins



Figure 4. A lead section from a Roman ship's keel, lost after scraping the Akko reef. (E. Galili)

are relatively well-known and several tentative interpretations of the scenes on them have been suggested (Kadman, 1961: 126–8; Meshorer, 1985:12–15). Recently a few more type-175 coins were recovered from a shipwreck site dated to the 3rd century AD (Galili *et al.*, 2004; 2010; Meshorer, 2010). Their pristine condition enabled a re-examination and re-interpretation of the scenes and a better understanding of the whole picture (Fig. 6). To this re-examination may be added three coins from a burial cave in the village of Hurfeish,

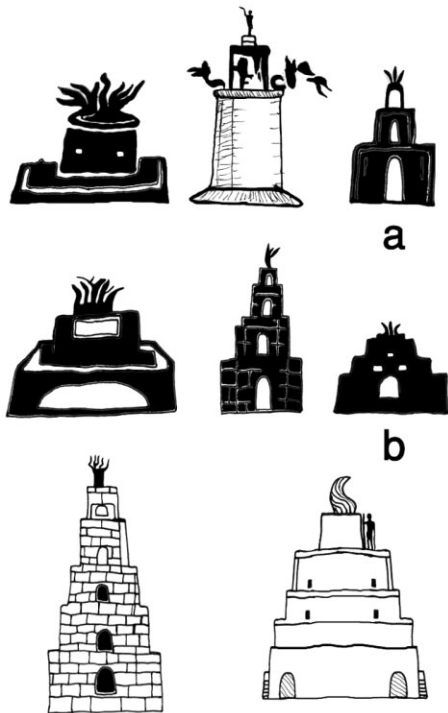


Figure 5. A drawing of different Roman lighthouse-types as they are depicted on coins and on mosaics in Roman Ostia. (E. Galili)



Figure 6. A coin (27 mm diameter) depicting the Roman port of Akko; the small lighthouse on the lower part of the coin is depicted separately, and so is a tower (lighthouse?) from the top right of the coin (Elgabalus Caesar). (E. Galili)

in Akko's hinterland. One of these, of a type rarely encountered previously, is not listed in the catalogues of Akko coins (Syon, 2002: 172–173).

Previously a small, box-like structure depicted at the bottom of coin no. 175, and on other coins, bearing three leaf-like protrusions on top, was identified as an altar (Meshorer, 1985: 13–14). Also, on coins from Hurfeish such an object was identified as a most unusual altar, 'not attested, as far as I am aware, on any other coinage' (Syon, 2002: 172–3). The identification as an altar, not accepted here, is based on seeing

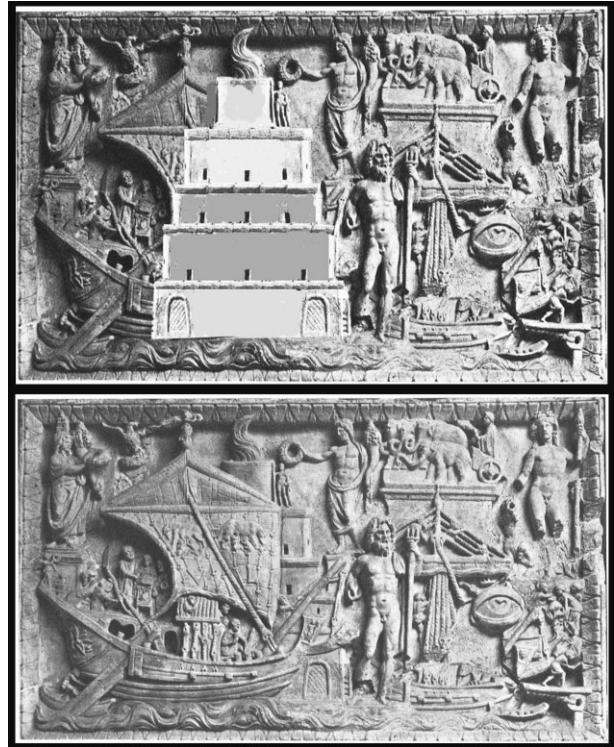


Figure 7. A reconstruction of the Ostia lighthouse appearing on a Roman sarcophagus. (E. Galili, modified after several sources)

the protrusions at the top of the structure as flames, and the whole scene as showing a cult site. It is here suggested that the three protrusions represent flames atop a small lighthouse. Often in depictions of Roman lighthouses on mosaics and coins their tops are decorated by various devices including human figures, some blowing horns (Figs 2–3). At times such presentations include additional, abstract symbols, most probably indicating light and fire (Fig. 7).

Several lighthouse depictions on Ostian floor mosaics had on top thin branching lines meant to symbolize a fire (Fig. 5a). In the Akko coin the three leaf-like shapes topping the small structure are analogous to these abstract symbols of fire. Thin lines on mosaics were hardly reproducible on a coin die, and if engraved would soon have worn off. The engraver of the Akko coin die did his best, within his professional constraints, to produce a symbolic fire that would have been visible and long-lasting. But even with a flame symbol it is an atypical lighthouse. Generally lighthouses are perceived, and depicted in art, as tall towers. However, such a small, atypical lighthouse on a Roman coin depicting a harbour, minted in the Levant, was dealt with while discussing differences between an altar and lighthouse as seen on coins, the same problem discussed here. It was concluded that a small structure on the end of a quay on a coin depicting the port of Roman Pompeiopolis (Solis) could have been a small lighthouse (Boyce, 1958: 68; Brandon *et al.*, 2010: 392).

That tentative, careful interpretation of a scene on a coin, and the present discussion are mutually supportive and should indicate that such small lighthouses, near the entrance, existed at some Roman harbours.

The situation shown on Akko coin no.175 depicts, perhaps intentionally, a ship already in Akko bay, sailing toward the low-lying lighthouse, 'having the tower in mid-prow' (Taylor, 1971: 107–08). A previous interpretation, not accepted here, saw the ship as a decoration (Kadman, 1961:126), as part of a conventional harbour scene in Roman art. Ship-lighthouse combination appears frequently in Roman art, as in the Ostia mosaics, and on coins depicting harbour scenes (Boyce, 1958; Reddé, 1979). On a coin minted at Laodicea ad Mare, for example, the image of a ship passing a lighthouse while entering the harbour was claimed as typically local, thus enabling an estimation of the location of that lighthouse (Seyrig, 1952: 59; Fig. 2c). Such a ship-lighthouse scene appeared also on the coin of Aegeae mentioned above by Seyrig (1952). The ship on the Akko coin symbolized the overall harbour-like character of the scene, and sailing toward the small lighthouse, could have hinted at the specific role of that lighthouse.

#### *Supporting archaeological evidence*

A search in the port of Akko for a small isolated structure which may have had past associations with the small lighthouse depicted on the coin, directed us to the Isle of Flies (Tower of Flies, el-Manara) mentioned in the 13th-century sailing direction as a navigational aid (Taylor, 1971: 107–08) (Fig. 8). That small islet, completely artificial, was excavated by the Underwater Exploration Society of Israel between 1968 and 1972. Its base was constructed by huge headers (3 × 0.8 × 0.8 m) at a depth of 4–5 m. (Linder and Raban, 1965; Flinder, 1985: 91–6). Such a structure could have served as a part of a protective security system. Armed guards, with some shooting ability, stationed on it, could have protected the harbour entrance from intruders. Additionally, and no less important, it could have functioned as a lighthouse, aiding navigation by directing local and non-local watercraft safely into the port. Today there is, on top of the ruined structure, a light beacon directing craft into the harbour, and it is common for navigational aids to be located at the same site for generations.

The structure shown on the coins is quite low, even considering the wide variety of Roman lighthouse images. But it is similar in size to a few other Roman lighthouses (Fig. 5) and to structures identified as possible Roman lighthouses in the west of the Empire (Hague, 1973: 303). Its small size could have been caused by a lack of space on the coin die. But could have also represent an attempt to depict accurately its functional design in that specific location. There are such low-lying modern lighthouses, build to suit the navigational needs of mariners entering harbours where visibility from a distance is not critical. This could have been the case in Antiquity. A similar small square artificial island, in the middle of a port, was described from the

now-silted harbour at Lechaem, the western port of ancient Corinth. That structure had a square or rectangular base with massive foundations of clamped limestone blocks. It was suggested 'that if there were a light here, it would have been used for guiding ships through the channel and into the inner harbor at night. A lantern might have hung there, and sailors approaching the channel could see the light only if they were exactly on course' (Shaw, 1969: 370–72). The small square structure at Akko harbour could have fulfilled such an important service to mariners entering that port.

An additional outstanding element in the coin is a long line bisecting it, as if stretching from land into the sea. In the past it was considered to be a path leading to an acropolis atop a hill, called now Tel Napoleon, c.2 km east of the older core of present Akko (Kadman, 1961: 79; Meshorer, 1985: 13). However no such Roman acropolis was identified there. It is interpreted here as a quay extending from the land into the sea, almost reaching the lighthouse. It could represent a ruined elongated rampart, composed mostly of rubble, lying underwater, whose remnants were surveyed by archaeologists. There is no agreement about its function. It was suggested that it was an eastern breakwater, an artificial barrier against silting by sand, a protection against eastern winds, or a barrier against ships invading from the east. Recently it was suggested that it served as a road on which building materials for the structure on the Isle of Flies were transported (Galili *et al.*, 2010: 192–193).

The terrestrial structures on the Akko coins: a building with a sloping roof (a temple?), buildings on a quay (storehouses?) and a tower, are meant to convey urban scenes like those on coins of other Roman ports (Boyce, 1958; Handler, 1971; Reddé, 1979). It was proposed in the past that structures shown on coin no. 175 were parts of the as-yet-unlocated site, perhaps on the previously mentioned tel. It is suggested here that some of these buildings were situated in the city, presently covered by the old part of the modern city, while others were on the waterfront. Possibly the tower may also have served as a navigational aid, like other distinctive buildings on land, like a certain building functioned in the 13th century AD (Taylor, 1971: 107–08). Sailing in and aligning it with the small lighthouse assured a safe entrance. That interpretation supports the claim that the scenes on the Akko coin present a working harbour including: navigational aids, ship(s), wharves and notable buildings.

#### **Conclusions**

In the light of demonstrated navigational need, supporting numismatic and archaeological discoveries and comparative studies of antique lighthouses, it is suggested that a lighthouse existed in Roman Akko. That lighthouse was a small structure erected on an artificial island, presently the Isle of Flies, near the port entrance. It functioned as a navigational aid, directing vessels into harbour, helping to avoid a dangerous reef lying south of the city. Depictions on

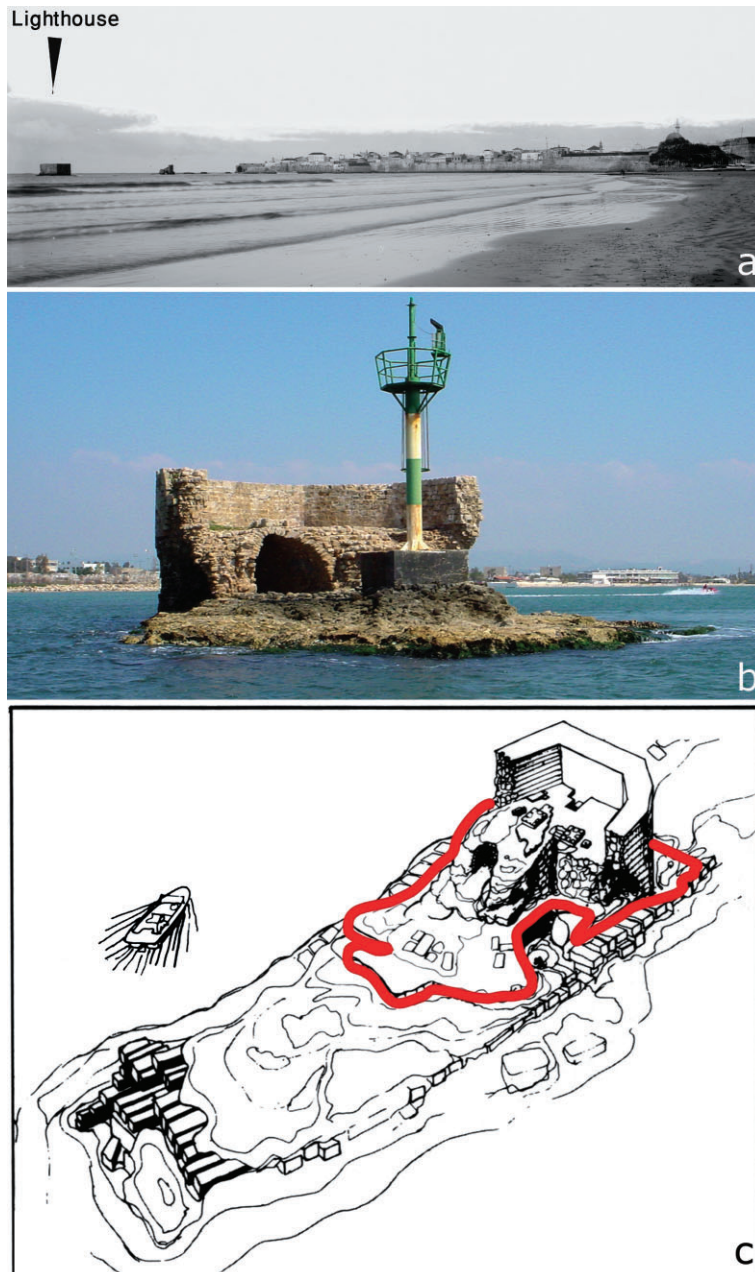


Figure 8. The Island of Flies: a) seen from the coast looking west. b) seen from the sea (D. Zviely); c) isometric plan of the Island of Flies. (modified after Raban, 1982: 193, fig. 9)

Roman coins minted in Akko included that lighthouse and other local structures, similarly to such scenes on other Roman coins depicting harbours.

Political entities putting lighthouse(s) on coins did it for a complex set of reasons, besides advertising their ports. Lighthouses broadcast universal social-symbolic messages: hope, salvation and power over darkness, as well as the power of those erecting them. Allocating

means to design, build and maintain such a structure, purposefully intended to be a lighthouse, was and is a meaningful, non-trivial, political statement. The symbolism of lighthouses is amplified by their aesthetic value and their high visibility. Probably more Roman lighthouses are yet to be discovered and investigated along the shores of the Roman Empire, and they are structures worth studying.

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