

## A reassessment of the northern harbour of Dor, Israel

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### Introduction

Until recently, a statement by Josephus Flavius was unreservedly accepted as a focal point concerning the maritime significance of Roman Dor on the coast of Israel (situated 13 km to the north of Caesarea). As a prelude to a detailed account of Herod's construction of Sebastos, the port of Caesarea, both Dor and Jaffa are described as poor harbours because problematic sand movement impeded landing operations and compelled merchants to anchor offshore (Marcus, 1980: 333). This testimony strongly contributed to the condemnation of the maritime dimension of Roman Dor to the realm of obscurity, without informing the reader by which artificial or natural processes the Caesarea shoreline advantageously contrasted with the coastal landscape of these older cities. In reality, all three sites exist along a sedimentologically uniform classical littoral cell (Carmel, Inman & Golik, 1984: 1282).

### Recent research

The present programme of land excavations on Tel Dor, initiated by the Hebrew University's Institute of Archaeology and the Israel Exploration Society under the direction of Prof. E. Stern, provides ample evidence of extensive Roman occupation across much of the 16.2 ha site. Well-preserved remnants of the Roman city include a sophisticated sewer system, temple, public bath-house, public building/basilica, and a quarter on the eastern edge of the site comprising a piazza, streets, and a large building of uncertain function surrounding a courtyard (Stern, 1985; Stern & Sharon, 1987; Stern, Gilboa, & Sharon, 1989; Stern & Sharon,

1993: 130). Half a kilometre to the east of Tel Dor a wine-press abandoned in the late 2nd or early 3rd century AD has recently been uncovered (Kingsley & Raveh, 1994). A piscina hewn from rock on the northernmost islet south of the city, dated between the 1st century BC and 1st century AD, is considered the most complex example of its type along the Israel coast (Raban, 1981: 22)<sup>[1]</sup>.

Although the fieldwork indicates a community thriving until the first third of the 3rd century AD (Stern *et al.*, 1992: 36), the city excavations yielded little direct evidence of Dor's maritime character, and its economic ability to co-exist alongside neighbouring Caesarea remains, for the moment, unexplained. Unequivocal proof, however, that maritime activity was firmly embedded within the city's economy is manifested in the form of groups of coinage struck at Dor between 64/3 BC and AD 211/2, some issues of which depict a galley, an aphlaston, a ship's rudder or a naval standard (Meshorer, 1986–87: 67–69).

One particular coin of Trajan, minted in 111/112 AD, seems to show that Dor continued as a major harbour in the Roman era. The reverse of the coin depicts a bust of Doros, son of Poseidon and legendary founder of Dor, above whom 'Year 175 of Dora, holy, city of asylum, autonomous, ruler of the seas' is inscribed. Similar titles, extremely rare, only appear on coins from especially large harbour cities like Tripolis and Sidon in Phoenicia (Meshorer, 1985: 16). Although these coin issues have received little interpretive attention, at least one authority has expressed the opinion that the title was bestowed on the city of Dor

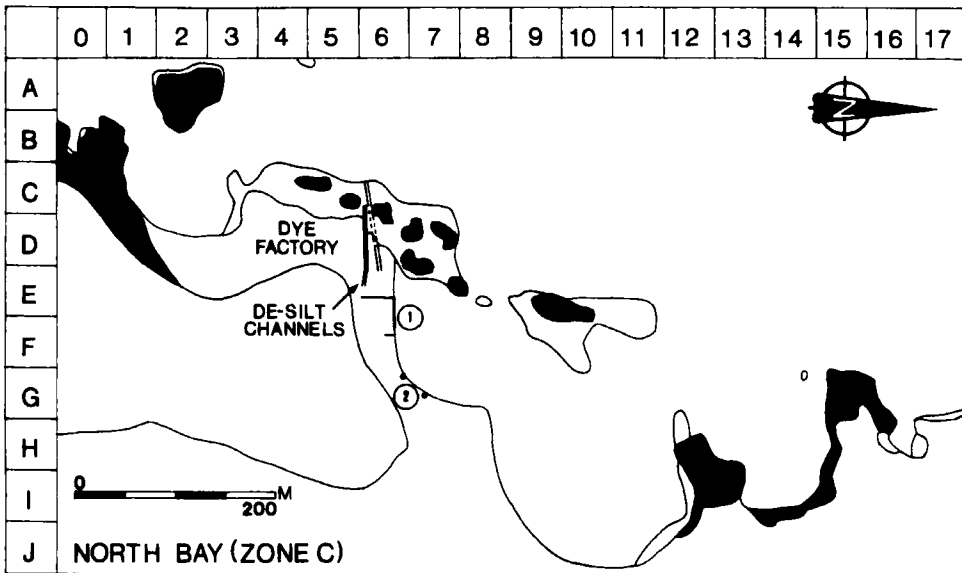


Figure 1. Plan of the North Bay at Dor. 1: Location of the rectangular Roman structure; 2: location of the mooring stones. (Plan: S. A. Kingsley.)

because of its function as a convenient naval station and the chief port in its respective district (Dahl, 1915: 91).

At the beginning of the 20th century George Dahl accumulated and examined the available archaeological and historical sources for the existence of a formal harbour facility at Dor, the present study area. In *The Materials for the History of Dor*, which has much relevance for modern fieldwork, he recognized vestiges of a port to the north of the ancient promontory, including a wharf, small jetty, and a large building which 'was probably for the accommodation of sailors and traders, used doubtless as a storehouse and a market' (1915: 11).

#### Fieldwork in the North Bay

The waters surrounding the northern quarter and the remains of a harbour described by Dahl (Fig. 1) have been surveyed by the Israel Department of Antiquities (now the Israel Antiquities Authority), the Center of Nautical and Regional Archaeology Dor, and more recently by the Dor Maritime Archaeology Project. A small islet and elongated reef, which protrudes above the water line at low tide partially shelter the North Bay from the open sea (Fig. 2). This attracted the attention of

mariners despite underlying reefs and a shallow depth limiting the usable area of the bay. Today the greatest depth is only 3.5 m.

Between 1976 and 1991 only 7.3% of the total time invested in the underwater survey programme at Dor focused on the small North Bay, a figure which reflects the paucity of artefactual deposits exposed in this zone. Although the sediments overlying the seabed are much less mobile than elsewhere at Dor, to the extent that marine vegetation can occur, experience has shown this bay to be archaeologically sterile in comparison with the Main and South Bay beyond the city. None of the iron and lead anchors from the site originate from here, and vestiges of wreckage are non-existent. The pottery record is meagre, consisting of amphora sherds dating between the Persian period (6th–4th century BC) and the Byzantine era, plus some additional Crusader plates. Only three of the 213 stone anchors and net weights from Dor were recorded in the Northern zone (Fig. 3).

Despite the lack of artefactual contamination, whose abundance typifies the underwater terrain in the South and Main Bays (Wachsmann & Raveh, 1980: 256–261; Raveh & Kingsley, 1992), the variety of maritime



Figure 2. The southern corner of the North Bay is sheltered by a shallow submerged sandstone ridge which remains uneroded in areas to form surface platforms. The bay measures  $275 \times 185$  m in dimension. Note the remains of the large rectangular Roman structure on the shorelines. (Photo: S. A. Kingsley.)

installations along the shoreline of the North Bay are amongst the most intriguing in Israel. Between 1983–4 Dr. Raban, from the Center

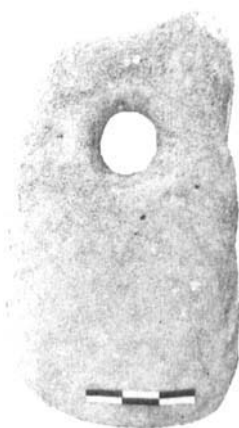


Figure 3. One of only three stone anchors retrieved from the North Bay. The frontal surface of the grey limestone anchor was originally vaguely rectangular in shape. Length: 59 cm, width: 33 cm, thickness: 16 cm. Inner piercing is bi-conic and measures  $75 \times 91$  mm. Scale on anchor is 15 cm long. (Photo: S. A. Kingsley.)

for Maritime Studies at Haifa University, examined the majority of archaeological features visible in the south-eastern corner, including what is almost certainly the large building referred to by Dahl. This rectangular structure, dated to the 2nd–3rd century AD and also interpreted as a probable public storage place, is considered to be the side of a  $30 \times 40$  m inner harbour which served small freighters and fishing boats from at least the 5th century BC until the Byzantine era. A silt-free environment within this basin was maintained from the Hellenistic period to Late Antiquity by the construction of three successive de-silting channels, each of which corresponds with sea-level changes (Raban & Galili, 1985: 339–341).

Immediately south of the channels a series of shallow tanks hewn out of the sandstone rock and related structures produced purple dye during the 2nd–3rd century AD (Raban, 1981: 20–21; Raban & Galili, 1985: 343). The importance of this facility justified the expense of constructing a low-level aquaduct principally for this factory (Raban & Galili, 1985: 341). Both this facility and the city's main aquaduct

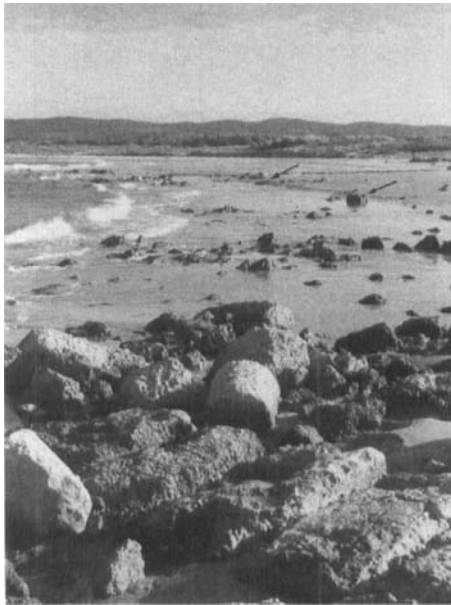


Figure 4. The positions of the two protruding mooring stones are indicated with arrows. The ashlar blocks and column remains in the foreground delineate the north-east corner of the large rectangular structure. (Photo: S. A. Kingsley.)

conveyed fresh water to Dor from sources about 4 km away (Peleg, 1984: 13–15).

Recent evidence confirms the existence of a formal harbour, as opposed to an anchorage, within the bay. In February 1988 the mantle of sand overlying the shoreline was partially eroded revealing a mass of both structured and incoherent masonry stretching northward from the corner of the rectangular structure toward the centre of the bay. Two mooring stones, lying 25.6 m apart on a north–south axis (Fig. 4), appeared amongst the rubble (Raveh, 1988–9: 50). The upper section of the southern example, 101 × 93 cm in diameter, was no longer intact, but had clearly been of the same type as the other.

The northern example, 107 × 98 cm in diameter, was also quarried out of a local *kurkar* rock boulder; the sides were roughly squared beneath the piercing, and the apex was rounded (Figs 5 & 6). A 75 × 10 cm rectangular mooring hole had been pierced horizontally through the apex, parallel to the shoreline. Foundation stones were tightly packed around two sides of the mooring stone. Two column drums and



Figure 5. The two mooring stones are the only exposed remains of a quay whose foundations are assumed to underlie the sand. Photograph faces south. (Photo: K. Raveh/Center of Nautical & Regional Archaeology, Dor.)

another huge boulder, possibly another mooring stone, lay directly behind<sup>[2]</sup>.

Although little of the area around the mooring stone bases was uncovered, it is inconceivable that both are free-standing entities. In addition to the need to base such a heavy architectural element on a sound foundation to prevent downward dislocation, the masses of stones fronting the shoreline appear to be the front of a quay behind which the massive moorings were inserted. The packing around the northern stone and the numerous *kurkar* and marble columns scattered in the immediate vicinity denote a quay of considerable magnitude and elegance underlying the mooring stones. An extensive concentration of ashlar

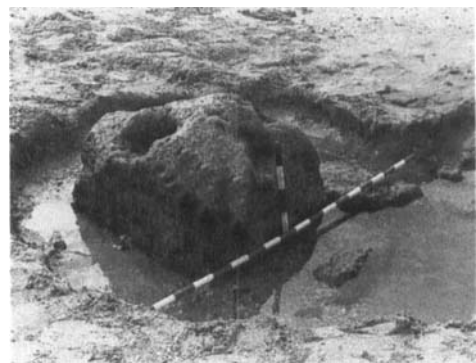


Figure 6. Close-up view of the northern mooring stone and ashlar packing around the edges. (Photo: K. Raveh/Center of Nautical & Regional Archaeology, Dor.)

masonry extends at right angles to the northern end of the quay into the middle of the bay, apparently forming a jetty with the base of a tower at the end. Large marble columns surround this submerged feature at a depth of about 1 m. The available evidence thus indicates the presence of a linear docking facility, about 65 m long<sup>[3]</sup>.

Pending possible future excavation, it is tentatively suggested that the mooring stones are one element of a harbour facility constructed in the sheltered south-eastern corner of the North Bay during the 2nd or 3rd century AD. This interpretation is based on three pieces of evidence:

1. The first is the level of the mooring stones which relate to the rectangular Roman structure, similarly dated and located 39 m south-west of the southern mooring stone. During the 2nd century BC the sea level at Dor was 0.3–0.4 m below present MSL and rose to +0.1–0.2 m in the 1st century AD. By the early 3rd century AD the sea had reached a level of +0.7–0.8 m (Raban & Galili, 1985: 348–9). This would have resulted in flooding of both the floor of the rectangular structure and the mooring stones, both of which seem to be elements of the same harbour plan. Consequently, the mooring stones may be assumed to have become inoperative by this date.
2. If the construction of the northern harbour was conditioned by the city-planning of Roman Dor, then the orientation of buildings within the principal settlement may be relevant to the dating scheme. Structures in Area F within the city were significantly reorientated late in the Roman period. During the Persian, Hellenistic, and early Roman era orientation was directed north by north-west. In the late 2nd or early 3rd century AD the layout was altered in accordance with the north by north-east orientation of the temple in Area F (Stern & Sharon, 1987: 211). The axis between both mooring stones in the North Bay is similarly north by north-east, with the orientation 35° off direct north–south. Future fieldwork is required to assess the value of this point.
3. The precise date of construction of the North Bay harbour remains open to debate. Since the city would hardly have been in a position to function as a ‘ruler of the seas’, announced on coins in AD 111/112, without controlling some kind of formal protective haven, at least part of the harbour would almost certainly have been operational by this date.

Typologically, the mooring stones are dissimilar to the repertoire of published examples (Blackman, 1988). Those from Terracina, the port of Rome on the Tiber dated to 180 BC (Coetlogen Williams, 1976: 76), and the single illustration in the Torlonia relief of c. AD 200 (Blackman, 1982: 83) typify the standard form of Roman mooring stone which retained a basic rectangular shape and a horizontal (or, occasionally, a vertical) piercing over at least four centuries. The presence of a mooring stone located in the eastern quay of the inner harbour of Sebastos, which functioned from the 2nd century BC to not long after AD 67/8 (Raban, 1992: 117), and a similar example from the port of Sarepta in Lebanon (Prichard, 1971: pl. 2), show that the peculiar mooring stones from North Dor did not exemplify a purely regional Roman tradition.

With the exception of possible examples from post AD 69–79 contexts on the southern breakwater at Seleucia Pieria (Erol & Pirazzoli, 1992: 326), the Dor mooring stones are amongst the crudest documented in the Mediterranean basin. Since the form is extremely robust and in terms of durability no less efficient than the classic rectangular form, crudity should not be mistaken for inferiority in this case. Securing a ship's position by fastening cables to simple iron rings, a feature reported from at least thirteen small harbours in the Roman provinces (Coetlogen Williams, 1976: 76), is acknowledged as the simplest and probably most cost-effective method of mooring vessels.

### Conclusion

The present study rejects the traditional opinion that from the Roman period onward Dor was an insignificant maritime entity and merely a minor provincial outlet (Baly, 1974: 127; Peleg, 1984: 10). Josephus' description of Dor

precedes a lengthy in-depth glorification of the construction and setting of Sebastos, the port of Caesarea. An unfortunate misconception stemming from this statement is a conviction that if the harbour was ineffective in the late 1st century BC, then the same set of conditions must have prevailed throughout the entire period of Sebastos' prosperity and existence: separate trade-based economic compatibility was assumed impossible.

The remains of the formal harbour revealed in the North Bay are very modest when compared with the sophistication and grandeur of Sebastos. Irrespective of the close juxtaposition

between the two cities, the port of Caesarea may have dominated the regional circulation of imported and exported commodities, but the present study shows that the harbour complex did not occupy a position of splendid isolation along the local coastline. The probability that the development of the formal harbour at north Dor was conditioned and financed by the construction and profitability of the purple dye factory is a logical assumption. However, confirmation of this theory must await future fieldwork and the final publication of the excavations of this industrial complex.

### Notes

- [1] A far more intricate series of cuttings is located on the western flank of the Roman theatre at Caesarea. Though the feature has been convincingly described as a piscina (Flinder, 1985), the opinion that the cuttings were in fact an inclusive part of Herod's Promontory Palace is gaining more popular favour.
- [2] By 1989 bulldozer activity on the shore of the North Bay had succeeded in decapitating the single preserved mooring stone. In 1991 part of the western wall of the large coastal rectangular Roman structure was similarly destroyed, in this case to procure raw material to block access to the bay's beach during summer. Both criminal acts remain uninvestigated.
- [3] The length of the quay believed to underlie the mooring stones excludes the distance between the northern wall of the large rectangular Roman structure and the southernmost de-silting channel.

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