

## Marble Disc Ophthalmoi from Two Shipwrecks off the Israeli Coast

Ehud Galili & Baruch Rosen

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- Martin, C. J. M., 1998, *Scotland's Historic Shipwrecks*. London.
- Martin, C. J. M., 1992, The wreck of the Dutch East-Indiaman *Adelaar* off Barra in 1728, in R. Mason, and N. Macdougall (eds), *People and Power in Scotland: Essays in Honour of T. C. Smout*, 145–69. Edinburgh.
- Martin, C. J. M., 2005, The *Adelaar*: a Dutch East-Indiaman wrecked in 1728 off Barra, Outer Hebrides, Scotland. *IJNA* 34.2, 201–3.
- McCarthy, J., 2012, *Unknown Wreck, Drumbeg (undesignated site assessment)*, Unpublished fieldwork report for Wessex Archaeology on behalf of Historic Scotland. <http://canmore.rcahms.gov.uk/en/details/1319887/>
- McCarthy, J. and Benjamin, J., 2013, *SAMPHIRE Scottish Atlantic Maritime Past: Heritage, Investigation, Research & Education Non-Technical Report (2013)*. <http://www.wessexarch.co.uk/reports/88900/samphire-annual-report-2013>
- McCarthy, J. and Benjamin, J., 2014, Multi-image Photogrammetry for Underwater Archaeological Site Recording: an accessible, diver-based approach. *Journal of Maritime Archaeology* 9.1, 95–114.
- Pluis, J., 1997, *The Dutch Tile: designs and names*. Leiden.
- Prescott, R. G. W., Atkinson, D. and Liscoe, S., 2008, *Preliminary Survey and Assessment of a wreck on the island of Fuday, Barra, Western Isles*. Unpublished report for Headland Archaeology.
- Price, R., 1975, Shetland: 1974 expedition to the Dutch wrecks of Out Skerries, the South Mouth site (*Kennermerland* 1664), the Benelip site (unidentified Dutch ship) [and] Dregging Geo (Liefde 1711). *IJNA* 4, 388–9.
- Price, R. and Muckelroy, K., 1974, The *Kennermerland*, 1971. *IJNA* 2.2, 291–300.
- Price, R. and Muckelroy, K., 1977a, The Second Season of Work on the *Kennermerland* site, 1973. *IJNA* 3.2, 257–68.
- Price, R. and Muckelroy, K., 1977b, The *Kennermerland* site. The Third and Fourth Seasons 1974 and 1976. *IJNA* 6.3, 187–218.
- Price, R. and Muckelroy, K., 1979, The *Kennermerland* site, the Fifth Season 1978. *IJNA* 8.4, 311–20.
- Price, R., Muckelroy, K. and Lynn, Willes, 1980, The *Kennermerland* site, a report on the Lead Ingots. *IJNA* 9.1, 7–25.
- Schaap, E. with Chambers, L. H., Hendrix, M. L. and Pierpoline, J. (eds), 1984, *Dutch Tiles in the Philadelphia Museum of Art*. Philadelphia.
- Sténuit, R., 1974, Early Relics of the VOC Trade from Shetland: the wreck of the flute *Lastdrager* lost off Yell 1653. *IJNA* 3.2, 213–56.
- Van Sabben, C. and Hollem, J., 1987, *Antieke Tegels*. Rockanje.

## Marble Disc *Ophthalmoi* from Two Shipwrecks off the Israeli Coast

Previous studies have suggested that ships' eye decorations (*ophthalmoi*) were thought to provide divine guidance and protection, or were apotropaic, warding off harmful forces such as envy or the 'evil eye' (Carlson, 2003: 594–6, 2009, 359; Nowak, 2006, 2–3). Such bow decorations are still widely used on watercraft by traditional fishermen in many locations around the Mediterranean. Evidence for the use of *ophthalmoi* in antiquity in the eastern Mediterranean includes both ship iconography and finds from archaeological excavations. Six marble *ophthalmoi* depicting a whole human eye—pupil, iris, cornea, sclera, eyelid and caruncula—were discovered in the 19th-century excavations of Zea harbour, and a further three from excavations from the Agora in Athens, while one is displayed in the Berlin Staatliche Museum (Carlson, 2009). Four marble discs representing the cornea, pupil and iris only have been recovered in shipwreck assemblages (Nowak, 2006: 28–36). All four were intended to be attached to the hull, using a single metal nail or spike. Two of the discs were recovered from a 5th-century BC shipwreck in the Aegean, off Tektaş Burnu in south Turkey (Carlson, 2003, 2009: 354–6; Van Duivenwoorde, 2014: 11). Two additional discs, the focus of this article, have been discovered separately, at two different shipwreck sites along the

Israeli coast; Megadim, on the northern Carmel coast, and Yavneh-Yam natural anchorage (Fig. 1). The two find-sites, like most shipwreck sites in the region, are near shore, in the shallow-water breaker zone (at a depth of 2–4 m), and no physical remains of the ships that carried the *ophthalmoi* have been found.

This report describes and discusses the two artefacts, the sites where they were found and their archaeological contexts, and compares them with the Tektaş Burnu finds.

### The Megadim shipwreck site

The shipwreck site of Megadim, some 6 km south of Haifa (32° 56' 42.7" E; 32° 43' 39.3" N) is about 50–120 m off the Megadim coast which is straight and sandy with no shelter or anchorages. Assemblages of shipwreck-related artefacts from several periods have been discovered in this area at 2–4 m depth (Fig. 2). One of these is a well-defined Hellenistic assemblage which yielded dozens of silver and bronze coins, numerous fragments of life-size bronze statues, a basalt mortarium, bronze figurines and a re-used wine amphora containing hundreds of whole and broken bronze artefacts (Misch-Brandel, *et al.*, 1985; Raban and Galili, 1985; Syon, *et al.*, 2013). Artefacts related

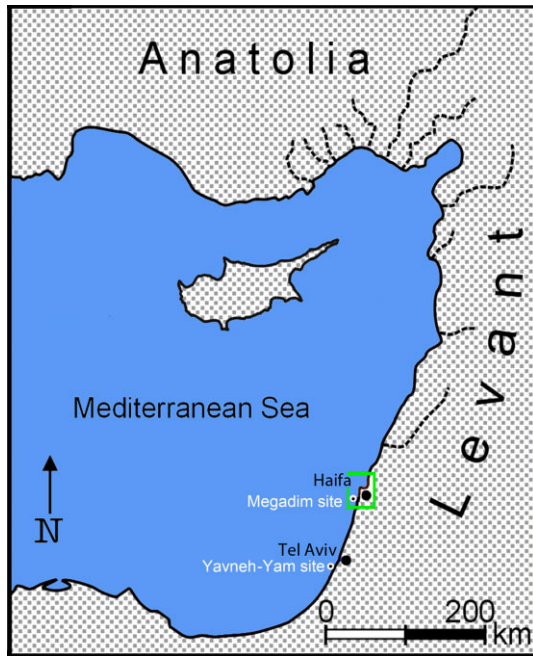


Figure 1. Location map showing the Megadim and Yavneh-Yam sites. (E. G.)

to navigation and fishing have been associated with the ship, included a lead sounding-weight, the removable lead stock of a wooden anchor, and two five-holed stones used in harvesting red coral (Galili and Rosen, 2008). All artefacts were scattered on the hard, clayey sea-bed. The sea-bed is usually covered by a layer of loose quartz sand that is occasionally removed by storms. The main concentration of the Hellenistic artefacts spans an area of 25 x 25 m. Other small and light

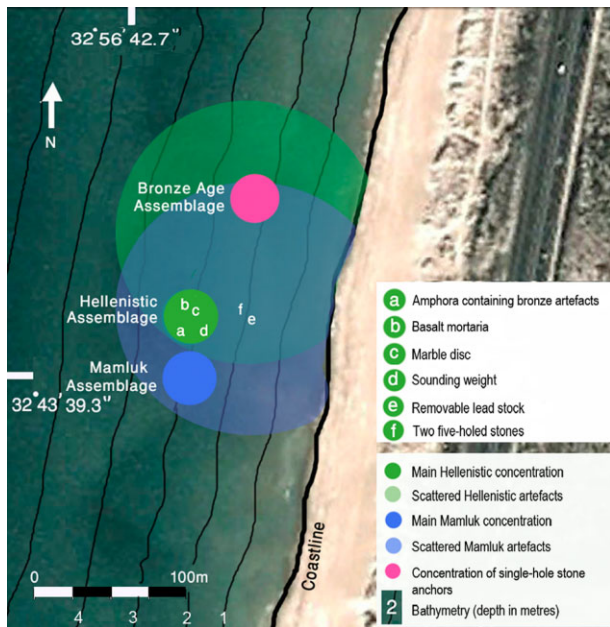


Figure 2. The Megadim site. (E. G.)

artefacts were scattered to the north and north-east at a distance of up to 100 m from the main concentration. The assemblage was dated to the beginning of the 1st century BC by the latest coins found dated to 100–99 BC, providing a firm *terminus post quem* for the shipwreck (Syon, *et al.*, 2013, coin No. 61). The *ophthalmos* was found at 3 m depth, some 80 m off the beach within the perimeter of the Hellenistic assemblage.

Other well-defined assemblages discovered on the same coast include: 15 one-holed stone anchors dated to the Late Bronze Age; a 15th-century AD Mameluk assemblage (bronze coins and metal artefacts, Misch-Brandel, *et al.*, 1985; Raban and Galili, 1985) and a 17th-century-AD Spanish assemblage (swivel guns, bronze vessels and silver coins). The marble *ophthalmos* is most likely associated with the Hellenistic assemblage because such ship decorations are not known to have been used during the Late Bronze Age, the Mameluk or the medieval periods. In contrast, all known marble *ophthalmoi* and *ophthalmoi* fragments have come from Hellenistic contexts. Comprehensive underwater surveys carried out on the site revealed no alternative remains that are likely to have been associated with the *ophthalmos* other than the discussed Hellenistic shipwreck assemblage.

**Marble disc from Megadim**

The Megadim *ophthalmos* was discovered by E. G. during underwater survey in the main concentration area of the wreck-site. This discoid artefact (Fig. 3) was carved of white marble. It weighs 4050 g, its diameter is 234 mm and its maximum thickness is 44.7 mm. The external face is slightly convex and well-polished. The back, which would have been attached to the hull, is flat and crudely worked leaving denticulate chisel marks. The sides (24 mm thick) are crudely polished and show traces of chisel marks. They are straight and perpendicular to the back. The central hole is 10 mm in diameter and has straight, smooth sides with no visible tool marks; it is c. 3 mm off centre. On the external face, the hole has a truncated-cone shape (21 mm base diameter x 5 mm height), which probably served to retain the head of a nail or rivet. The centre of the cone is 2.5 mm off the artefact centre. There are no signs of incised or painted decorations on the artefact. There are three irregular scars on the edge of the back, two large (28 x 10 x 3 mm) and one small (7 x 5 x 2 mm). No clear pattern in the locations and shape of the scars was discerned; probably they were left after unintended strikes removed flakes from the rim. A few spots of green copper-corrosion products are visible on both sides of the disc; these are likely the result of contamination from adjacent metal artefacts.

Sampling this rare, perfectly preserved artefact for isotopic or petrographic analysis was not possible. However, visual analysis of the marble crystals indicates that they are relatively coarse (more than 2–3 mm in size). This suggests that the marble could be from the Cape Vati or Aliko quarries on the Greek island of

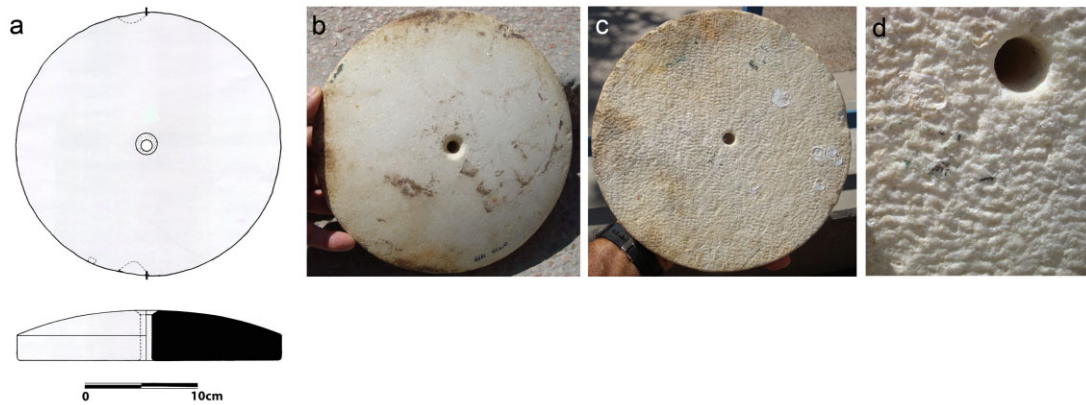


Figure 3. The marble disc from Megadim a) drawing; b) convex side c) flat side; d) detail of chisel marks. (E. G.)

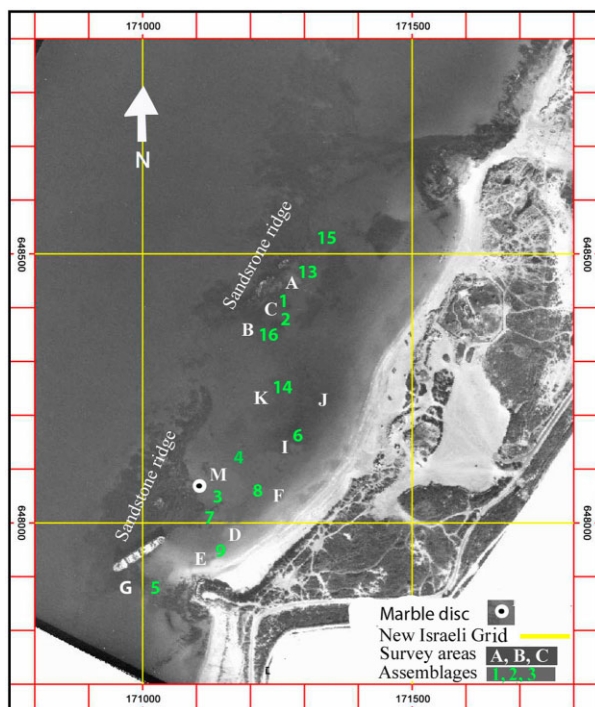


Figure 4. The Yavneh-Yam anchorage and location of the shipwreck assemblages. (E. G.)

Thassos. Testing with hydrochloric acid produced a negligible reaction, which indicates that the stone is composed of dolomite, and suggests that it could have originated from the Aliki quarry (D. Segal., pers. comm., 2014).

### The Yavneh-Yam anchorage site

The Yavneh-Yam anchorage (Fig. 4) has been surveyed intensively, though intermittently, since 1980 (Raban and Galili, 1985; Galili and Sharvit, 2005). In antiquity this anchorage was the only shelter for sea-going ships along the coast from Jaffa to north Sinai. Underwater finds in the anchorage area included

several defined shipwreck assemblages as well as hundreds of isolated artefacts, including stone and metal anchors, ship remnants, and items of cargo. The *ophthalmos* was recovered from the south-western section (Area M), about 80 m north-west of the nearest beach, at a depth of 3.5 m (34° 41' 30" E, 31° 55' 30" N). A defined shipwreck assemblage has been identified in its vicinity (Assemblage 3), that includes dozens of 'Persian' basket-handle amphoras dated to the 4th–5th century BC (Bar Natan, *et al.*, in press), a cylindrical lead bottle (imitating a Phoenician alabaster vessel), a bronze fibula and an archaic-style bronze figurine (bust only) of a headless male with hands held forwards as if in prayer. Alternatively, a wreck assemblage dated to the Hellenistic period has been discovered in the south area of the anchorage (Assemblage 4). It includes bronze nails, marble plates and Ptolemaic and Seleucid bronze coins (3rd–2nd centuries BC), thus is dated to the 2nd century BC (Galili, in press; Kool, in press). Other assemblages in this part of the anchorage (7: Byzantine and 8: Late Bronze Age) are unlikely to have been the origin of the marble disc.

### *Ophthalmos* from Yavneh-Yam

The *ophthalmos* (Fig. 5) was recovered by a local life-guard who donated it to the Israel Antiquities Authority (Sharvit, 2010: 54) and provided the find location. The *ophthalmos* is a circular disc carved of white marble with a hole in the centre. It weighs 1475 g, its maximum diameter of the external face is 194 mm and the maximum thickness is 26 mm. The external face is slightly convex, and well-polished. The back is flat, has a few abraded traces of denticulated chisel marks, and measures 192 mm in diameter. The sides are 11 mm thick and slightly curved. The central hole is slightly biconical (12.7, 12.2, 12.6 mm) and its sides are smooth, indicating that it was drilled from both sides. The lip of the hole is slightly rounded and has small cracks on both sides.

The external face of the Yavneh-Yam disc has traces of several painted concentric marks arranged around the central hole. No engraved marks, as seen on the

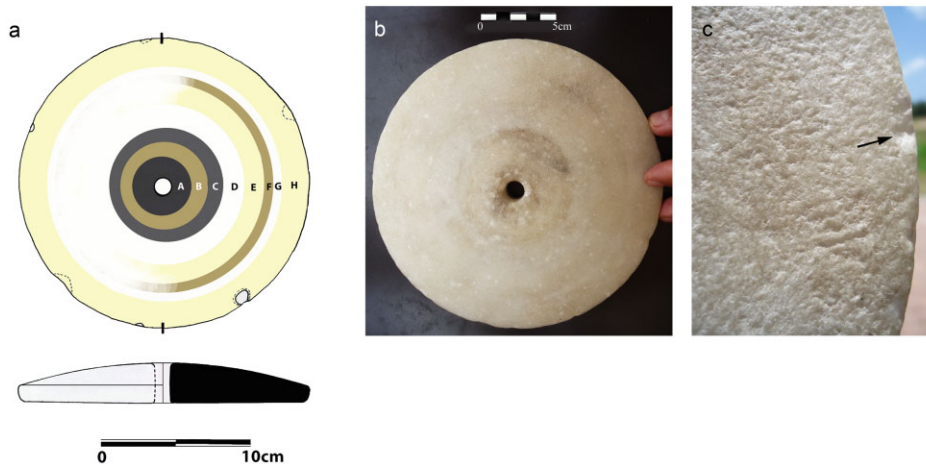


Figure 5. Marble disc from Yavneh-Yam *a*) drawing; *b*) convex side; *c*) detail of chisel marks and scar (marked with an arrow) on the flat side. (E. G.)

Tektaş Burnu discs (Carlson, 2009: 355, 356), were observed. However, seven lines delimiting the eight circular coloured bands are visible between the hole-edge and the disc-edge (A-H); three dark, two bright (with no traces of paint) and three bright yellowish to bright grey. Generally the lines and the coloured bands are concentric with an inaccuracy of up to five mm, relative to the centre.

On one side of the disc face the lines and the colours are better preserved than the other. Variation in preservation of the paint has probably resulted from post depositional degradation at the wreck-site. The darkest (Munsell, 2010; 5y1/2 to 5y5/2), band A adjacent to the hole, may represent the pupil while bands B-H, alternating between dark and light shades, from bright yellowish to bright grey (Munsell, 2010; 5y 9/4 to N/10), probably represent the iris. Reconstructing the original colour of the bands is highly speculative except for the darkest zone A—the pupil, which should have been black. X-ray spectrometry, used to test the pigments, failed to identify the paint components (Sharvit, 2010: 54). The painted disc, probably depicted a pupil and an iris and would have been installed on a seagoing vessel, either by itself, or as a part of a painted eye which decorated the bow.

Altogether five visible scars were observed on the back and two on the external sides of the marble disc. The larger is 19 x 7 x 3 mm. No clear pattern in the location and shape of the scars was discerned; they are generally irregularly placed and seem to have no functional use. However, in one case a medium-size scar (10 x 9 x 3 mm) on the face is opposite a similar scar on the back of the disc. Probably they were left after unintended strikes removed flakes from the rim.

Visual analysis of the marble crystals indicates that they are relatively coarse (more than 2–3 mm in size), which suggests that it could also be Thassos marble, from the Cape Vati or Alikı quarries. However, testing with hydrochloric acid gave a strong positive reaction,

indicating that it is not dolomitic marble and thus, could not have come from the Alikı quarry (Segal D. pers. comm., 2014).

### Comparison with Tektaş Burnu finds

A comparison of the two marble discs from Israel with those recovered from the Tektaş Burnu shipwreck (Table 1) indicates that the Megadim and Yavneh-Yam ship eyes diameters (234, 194 mm) exceed the diameters of the Tektaş Burnu pair (138, 132 mm). However, the proportions of all four are similar (diameter/width = 5.4 to 7.4). No anatomical reason for such similarity is apparent thus this may reflect a fabrication tradition. Carlson has suggested that merchant ships were adorned with the marble disc eyes, while larger, oared galleys were equipped with the larger, almond-shaped marble eyes, such as those found at Zea (Carlson, 2009: 357) (Fig. 6). It is possible that the discs from Tektaş Burnu and Yavneh-Yam were installed on smaller merchant ships—the Tektaş Burnu wreck is estimated at c. 12–14 m (Van Duivenwoorde, 2014: 12)—while the Megadim disc was probably intended to be used on a relatively larger merchant ship.

Despite the differences in dimensions of the four discs, the characteristics of the central holes are very similar (drilled, round and straight-sided or slightly biconical holes), as are the dimensions (10–13 mm diameter). The *ophthalmoi* recovered from the Tektaş Burnu shipwreck, were discovered with lead spikes inserted, most probably indicating that they were attached to the hull (Carlson, 2003; 2009; Nowak, 2001; 2006, Van Duivenwoorde, 2014: 11, 21). However, neither the Megadim nor the Yavneh-Yam *ophthalmos* has traces of fasteners. Moreover the Megadim *ophthalmos* is undecorated; it could have been a spare intended to be installed on the hull when necessary, or it could have been trade cargo. The artefacts in the Megadim assemblage were covered by sand and protected from

**Table 1.** Dimensions and attributes of the Tektaş Burnu, Yavneh-Yam and Megadim ophthalmoi

Disc No.	Site	Outer diameter (mm)	Max thickness (mm)	Hole diameter (mm)	Hole shape and flair	Thickness at edge (mm)	Decoration	Convex surface marks	Flat surface marks	Weight (g).	diameter/ thickness
T1 (TB7)	Tektaş Burnu wreck	138	21	13	Straight, no flair	15	4 incised rings + pigment traces	Rounded and polished	Flat, many coarse chisel marks	770	6.57
T2 (TB222)	Tektaş Burnu wreck	132	23	13	Straight, no flair	12	3–4 incised rings	Rounded and polished	Flat, some coarse chisel marks	650	5.74
IAA	Yavneh-Yam anchorage	194	26	12.7, 12.2	Slightly biconical, no flair	11	8 bands + pigment traces	Rounded and polished	Eroded, few chisel marks	1475	7.4
IAA	Megadim wreck-site	234	43	10	Straight with external flair	24	—	Rounded and polished	Flat, many coarse chisel marks	4050	5.4

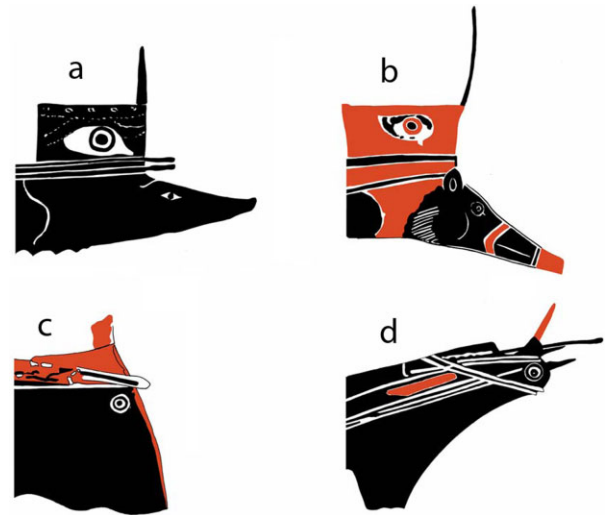


Figure 6. a) and b) Depictions of Late Archaic warship prows adorned by almond-shaped *ophthalmoi*; c) and d) merchant ship prows adorned by circular *ophthalmoi*. (With permission, Nowak, 2006: 86, fig. 3.7, after: a) Morrison and Williams, 1968: 111, pl. 20d; b) Morrison and Williams, 1968: 98, pl. 15b; c) Casson, 1995: fig. 82; d) Casson, 1995: fig. 91)

destructive marine erosion. All stone artefacts recovered (*ophthalmos*, mortarium and a figurine base) show no signs of erosion. Also the silver coins recovered were in good condition and were identifiable (Syon *et al.*, 2013). Given its good preservation it is most unlikely that paint and other signs of use have been removed by the shifting sand at the wreck-site. Thus it is most unlikely that it had been attached to the ship hull.

One of the Tektaş Burnu discs (No. 11) carried faint painted decorations somewhat similar to the decorations on the Yavneh-Yam disc. At the centre of the surface of this disc were the remains of a circular patch of dark pigment and a very faint outer ring bordered by incised lines. The other Tektaş Burnu disc (No. 12) had faint incisions and traces of pigment suggesting a similar painted outer ring. Neither the Yavneh-Yam nor the Megadim discs have circular incisions.

## Conclusions

Artefacts associated with cult, magic and apotropaic rites are often recovered from underwater sites along the Israeli coast. They include symbols marked on stone or lead anchor parts, bronze figurines, and miniature, votive metal models of nautical appliances, such as sounding leads, steering oars and anchors. All were intended to assure safe voyages, successful navigation and proper ship handling (Galili and Rosen, 2007: 14). The *ophthalmoi*, associated with looking for the right way and offering protection against envy, also fall within this category.

The *ophthalmoi* discussed here have been associated with datable shipwreck assemblages: the Megadim disc with a late 2nd–early 1st-century-BC shipwreck

assemblage; the Yavneh-Yam-anchorage disc with a 4th–5th-century-BC shipwreck assemblage, or, less likely, a 2nd-century-BC wreck. The Megadim ship carried Ptolemaic, Seleucid and Lycian coins from the south Anatolian coast, Cyprus and Egypt, indicating the ship was probably engaged in east Mediterranean cabotage.

These artefacts demonstrate the Hellenistic influence and maritime presence in south and north Israel during the Hellenistic period. Although the finds from Megadim and Yavneh-Yam are larger than the pair found at Tektaş Burnu, the proportions of all four are similar (Table 1). No anatomical justification for

such similarity is apparent. Moreover, the nail-hole characteristics of all four are similar in shape and size. This may suggest that in the east Mediterranean, over several centuries, some of these artefacts were being produced according to an established tradition.

Ehud Galili

*Israel Antiquities Authority and Zinman Institute of  
Archaeology, University of Haifa, POB 180 Atlit  
30300 Israel, udi@israntique.org.il*

Baruch Rosen

*Israel Antiquities Authority*

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## References

- Bar Natan, R. Zilberstein, N. and Galili, E., forthcoming, The pottery from Yavneh-Yam anchorage, 'Atiqot.
- Carlson, D. H., 2003, The Classical Greek shipwreck at Tektaş Burnu, Turkey, *American Journal of Archaeology* **107**, 581–99.
- Carlson, D., 2009, Seeing the Sea, Ships' Eyes in Classical Greece, *Hesperia* **78**, 347–65.
- Galili, E., forthcoming, Yavneh-Yam Anchorage, finds from underwater surveys, final report. 'Atiqot.
- Galili, E. and Rosen, B., 2007, One Armed Anchors from Israel. *Archaeologia Maritima Mediterranea* **3**, 99–114.
- Galili, E. and Rosen, B., 2008, Ancient remotely operating instruments recovered underwater off the Israeli Coast. *IJNA* **37**, 283–94.
- Galili, E. and Sharvit, J., 2005, Underwater archaeological remains at Yavneh-Yam. in M. Fischer (ed.) *Yavneh, Yavneh-Yam and their Neighborhood*, 303–14. Tel Aviv.
- Kool, R., forthcoming, Coins finds from Yavneh Yam, 'Atiqot.
- Misch-Brandel, O., Galili, E. and Wachsmann, S., 1985, *From the Depths of the Sea*. Exhibition Catalogue, Israel Museum, Jerusalem.
- Munsell, 2010, Munsell Soil Color Charts. Munsell Color Company, Grand Rapids.
- Nowak, T. J., 2001, A Preliminary Report on *Ophthalmoi* from the Tektaş Burnu shipwreck, *IJNA* **30**, 86–94.
- Nowak, T. J. 2006, *Archaeological evidence for Ship Eyes, an Analysis of their form and Function*. MA thesis submitted to Texas A&M University, College station Texas.
- Raban, A. and Galili, E. 1985, Recent maritime archaeological research in Israel—A preliminary report. *IJNA* **14**, 321–56.
- Sharvit, J., 2010, A rare 2,500 Year-old Marble Discus (Ophthalmos) from the sea of Yavneh-Yam. in F. Vukosavovic (ed.), *A catalog of exhibition Angels and Demons* 54. Jerusalem.
- Syon, D., Lorber, C. and Galili, E., 2013, Two Underwater Ptolemaic Coin Hoards from Megadim, 'Atiqot **74**, 1–8.
- Van Duivenwoorde, W., 2014, The 5th-Century BC Shipwreck at Tektaş Burnu, Turkey: evidence for the ship's hull from nail concretions. *IJNA* **43**, 10–26.