Newly discovered ship-landing site serving the Etruscan coastal temple in Punta della Vipera, Santa Marinella, Rome (Italy)

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Abstract

In a recent underwater archaeological survey conducted along the coast north of Rome, near Santa Marinella, at a depth of 1.5 meters and 90 meters from the shoreline, we identified a significant assemblage of organogenic sandstone (macco) ashlar blocks. These blocks were arranged in a double parallel row extending approximately 5 meters in a NW-SE orientation, parallel to the coastline. The arrangement of the blocks delineates an internal space filled with stones, forming a structure reminiscent of a mole. The ashlar blocks were positioned in two distinct manners: the stretchers (Greek: διάτονοι) were placed with their longer sides facing outward, while the headers (Greek: ρθοστάτης) were arranged with their shorter sides facing outward, contributing to the structural reinforcement. Midway along the structure, a narrow canal formed by a double row of ashlars provides a connection between the internal space and the exterior, facilitating water circulation and mitigating the risk of silting in the port basin. The external mole continues northwest, incorporating additional blocks and natural rocks, which together form an L-shaped configuration. The area protected by these moles covers approximately 3,000 square meters and is located in close proximity (130 meters) to the sixth-century B.C. Etruscan temple at Punta della Vipera. These findings represent the earliest known evidence of a utility landing site associated with the Etruscan temple.

1 Introduction

The Tyrrhenian coast, particularly the region north of Rome, is rich in Roman-era archaeological remains, including fish ponds, ports, and other structures that are now submerged beneath the sea. In contrast, evidence of the impressive maritime infrastructure constructed by the Etruscans, which supported their maritime dominance (thalassocracy), is scarce. Despite ancient literary references to Etruscan naval prowess (Diodorus Siculus, *Bibliotheca Historica* 5.40.2, 11.51.1; Livy, *Ab Urbe Condita* 5.33.7; Cherici [1]; Nardò [2]), very little remains of these early coastal structures. The combined effects of coastal erosion, historical transformations, and rising sea levels have rendered Etruscan coastal works exceedingly rare, often destroyed or repurposed in subsequent periods.

Underwater surveys conducted by the Centro Studi Marittimi (C.S.M.) over the years have focused on the stretch of coastline between the Punta della Vipera fishpond and Capo Linaro (see Figure 1-a). These investigations primarily aimed to identify Roman maritime structures associated with the colony of Castrum Novum, situated between the present-day cities of Civitavecchia and Santa Marinella. These Roman remains have been extensively studied by various scholars and have been further explored in our recent research [3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13]

In this paper, we report the results of our latest underwater fieldwork, conducted just offshore and approximately 800 meters north of the ancient settlement of Castrum Novum. During these investigations, we uncovered the remains of an Archaic-period landing place, situated in proximity to the Etruscan temple at Punta della Vipera. This temple complex was excavated and studied by M. Torelli [14] in the 1960s, who dated it to the late 6th century B.C. . Based on the construction techniques and the proximity to the temple, it is highly likely that these remains represent a ship landing site that served the temple complex itself (Figure 1).

2 Results

2.1 Inland Mole

The remains of the maritime structure extend southwest from the shoreline, beginning near the enclosure wall of a modern private villa. The structure is characterized by a series of both emergent and submerged natural rocks, which likely provided an initial mooring system for small cabotage vessels. The structure continues into the water, maintaining visibility above the surface (Fig. 1-b, Fig. 2). At a distance of 25 meters from the shore, the first blocks of *macco* (organogenic sandstone) of irregular dimensions become visible. Further along, at 36 meters from the shore, a long and narrow block measuring 2.2 x 0.35 meters (Figure 2-C: ashlar A) marks a slight change in the direction of the mole. At this point, a series of aligned boulders emerges, indicative of a well-organized coastal structure, as corroborated by detailed aerial imagery obtained via drone. Beyond this, five aligned blocks, with average dimensions of 1.3 x 0.5 x 0.5 meters, are observed. Despite a disruptive event that displaced them, these blocks remain in alignment (Fig. 2-I). Following a gap with a single isolated ashlar, the structure concludes with an additional series of four blocks (Figure 2-H).

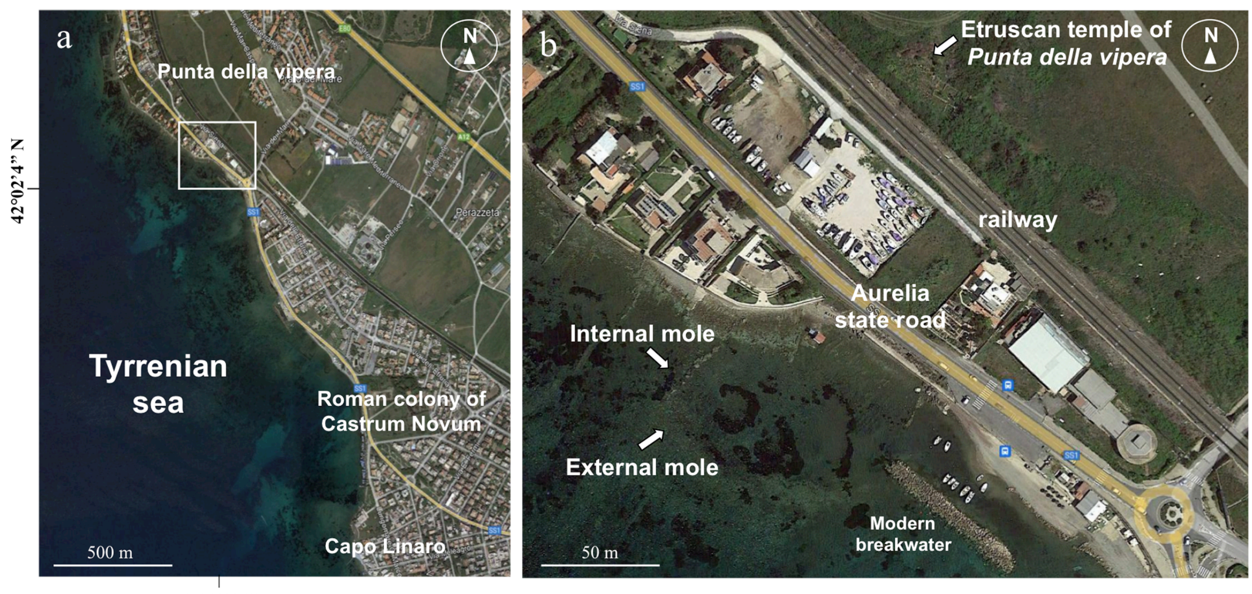

Figure 1: **Localization maps** (a) Tyrrenian coast between Punta della Vipera and Capo Linaro (Santa Marinella, Rome, Italy); (b) detailed map of the area of interest in the box. Modified from Google Earth original pictures.

Notably, no squared ashlars were found on the interior side of the inland mole. However, at a distance of 52 meters from the shore and a depth of -0.4 meters, a conglomerate of pebbles bound together by organogenic limestone was identified (feature D in Figure 2). This conglomerate forms a distinct step approximately 0.8 meters high (Figure 3), which may represent remnants of the cobblestone infill that once existed after the removal of the squared containment ashlar blocks. The inland mole exhibits a variable width, measuring 3 meters wide at this point. The total length of this internal mole is 38 meters, though most of the ashlar blocks originally used in its construction have been removed, likely repurposed elsewhere. The mole's current visibility is primarily due to the presence of its internal core composed

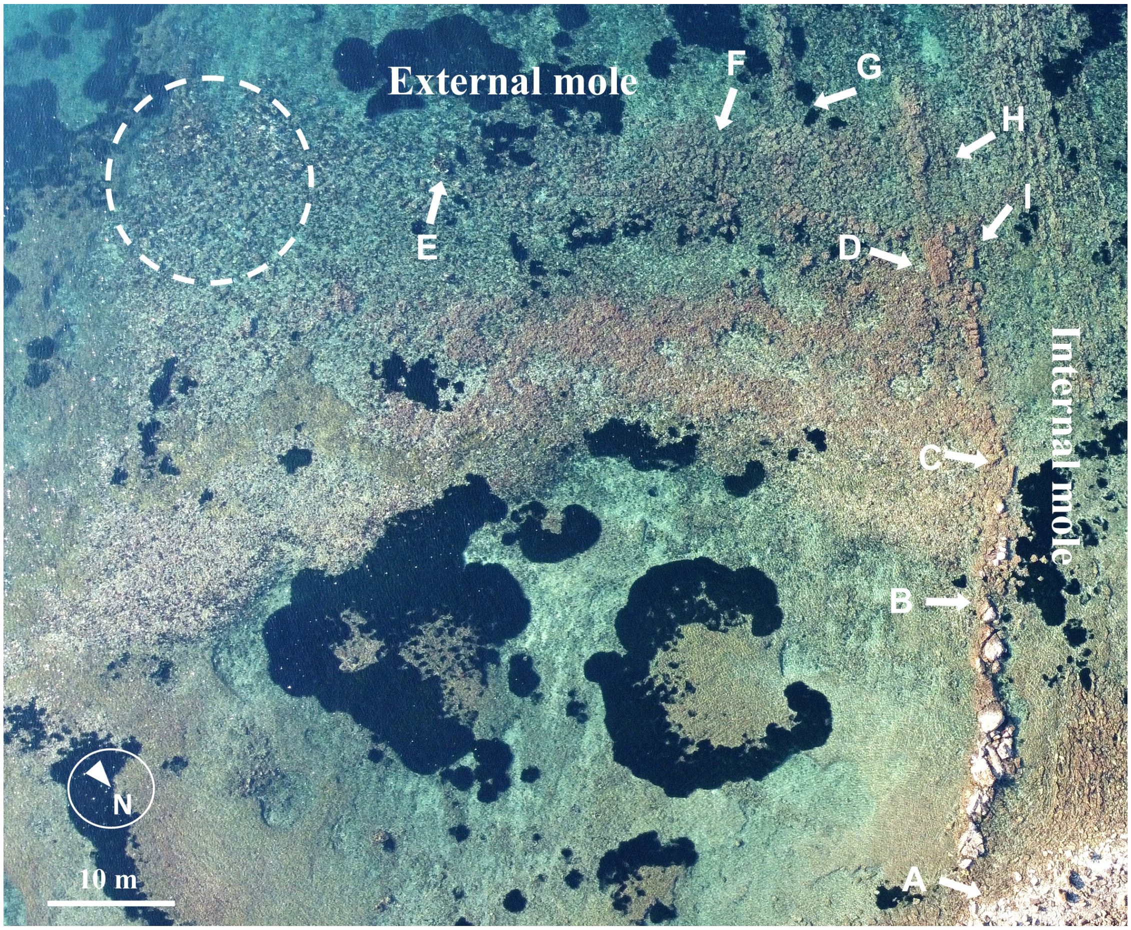

Figure 2: **Aerial photography of the Etruscan port area taken by a drone** A) Coastline; B) Edge of the emerging cliff; C) Ashlar a ; D) Conglomerate A; E) Conglomerate B; F) Canal; G) Natural rock; H) Four ashlars lined up; I) Fallen ashlars. In the dotted circle: irregular accumulation of ashlars in which there are 5 off-site ashlars. The dark areas are *Posidonia Oceanica* meadows

of natural rock. The structure extends to a maximum depth of -0.90 meters at its outermost point. The blocks, however, are not easily distinguishable either in drone imagery or through visual inspection, as they are thoroughly camouflaged by a dense covering of *Halopteris Scoparia* algae.

2.2 External Mole

The external mole, oriented perpendicularly to the internal mole along the seaside, retains a significant number of its original ashlar blocks forming the lowest course of the structure. These blocks, averaging 1.00 x 0.50 x 0.50 meters in size, show varying degrees of preservation; some are heavily eroded, while others have been displaced a few meters by wave action (Figure 4). Identification of these blocks is hindered by extensive algal overgrowth. The arrangement typically consists of two or three stretchers placed adjacently, followed by a header that reinforces the retaining wall of the mole.

On the landward side, 25 boulders remain in situ, arranged with a similar pattern of headers and stretchers as observed on the seaside. Notably, in one area, as many as five stretchers are positioned between two headers. These blocks form two parallel rows, spaced approximately 5-6 meters apart, running in a NW-SE direction parallel to the coastline. The rows enclose an internal area filled with stones, forming the core of the mole (Figure 4). Within this structure, the double row of ashlars is interrupted by a series of transverse ashlars, which create a small canal, 0.6 meters wide, connecting the interior and exterior of the mole (see Figure 4). This canal likely served to facilitate water circulation, preventing silting within the port basin.

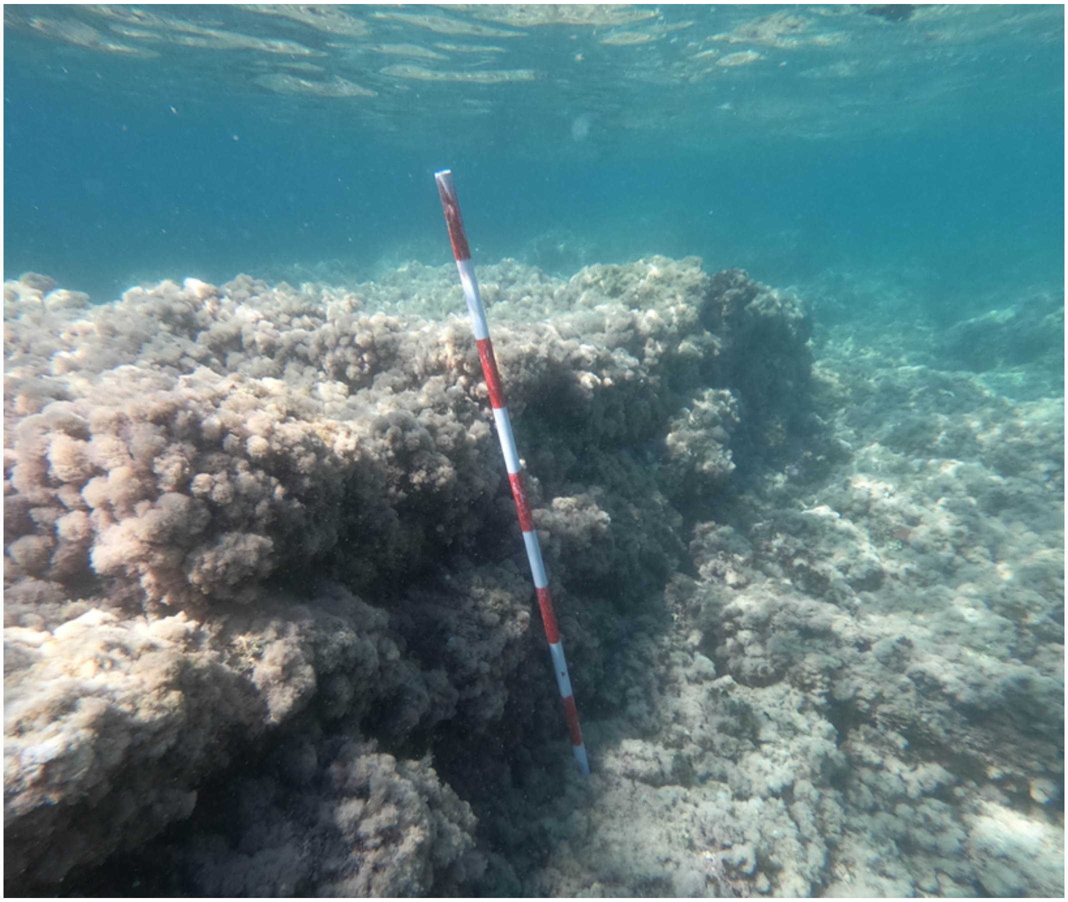

Figure 3: **Pebbles bound together** (conglomerate A) forming a step that could represent the remains of the cobblestone filling the inside of the mole, following the removal of the squared containment ashlars.

At the junction between the internal and external moles, on the NW limit of the structure, a distance of 23 meters separates the boulders of the internal mole from the aforementioned canal. Approximately midway along this section, a natural geological formation extends 33 meters offshore. This formation, composed of significant rock structures arranged diagonally (at approximately 30° to the SW/NE orientation), appears to form a humpback-like feature that originates from the row of squared boulders cutting across it. Despite its natural appearance, this formation seems to integrate with the broader maritime structure complex, branching directly from it (natural rock Figure 2). Adjacent to the canal on the seaside (Figure 4), a heavily eroded boulder is positioned, likely functioning to reduce the velocity of incoming seawater.

On the landward side of the small canal, a heavily eroded ashlar, precariously balanced, is observed. This is the only ashlar found in the second layer of the structure. Beyond this point, extending NW, the landward side of the mole continues with a series of large, rough-hewn, aligned boulders. These boulders may represent the remains of the structure's infill, or perhaps, due to the relative shelter of this internal section, the use of freshly hewn ashlars was deemed unnecessary. Further evidence of construction in the external mole is indicated by a structure composed of stones cemented by organogenic concretions (conglomerate B), which may represent either a natural formation or remnants of the original infill of the mole. This conglomerate layer lies at a depth of -1.8 meters and rises to -1.2 meters below the water's surface.

The alignment of the ashlars forming the external mole is not perfectly parallel. At the canal, the mole's width measures 5 meters, while near conglomerate B, the width increases to over 6 meters. Additionally, the external mole exhibits a slight slope, with the depth of the uppermost portion of the first boulder in the canal ranging from -1.3 meters to -1.8 meters near conglomerate B. Beyond conglomerate B, towards the SE, the ashlars are irregularly arranged, heavily eroded, and challenging to interpret. At least ten more ashlars can be identified before reaching a large accumulation of shapeless boulders, forming a roughly circular feature (the head of the mole). This accumulation includes five large, displaced ashlars similar in dimensions to the others (Figure 2). The base of this accumulation is at a depth of -1.9

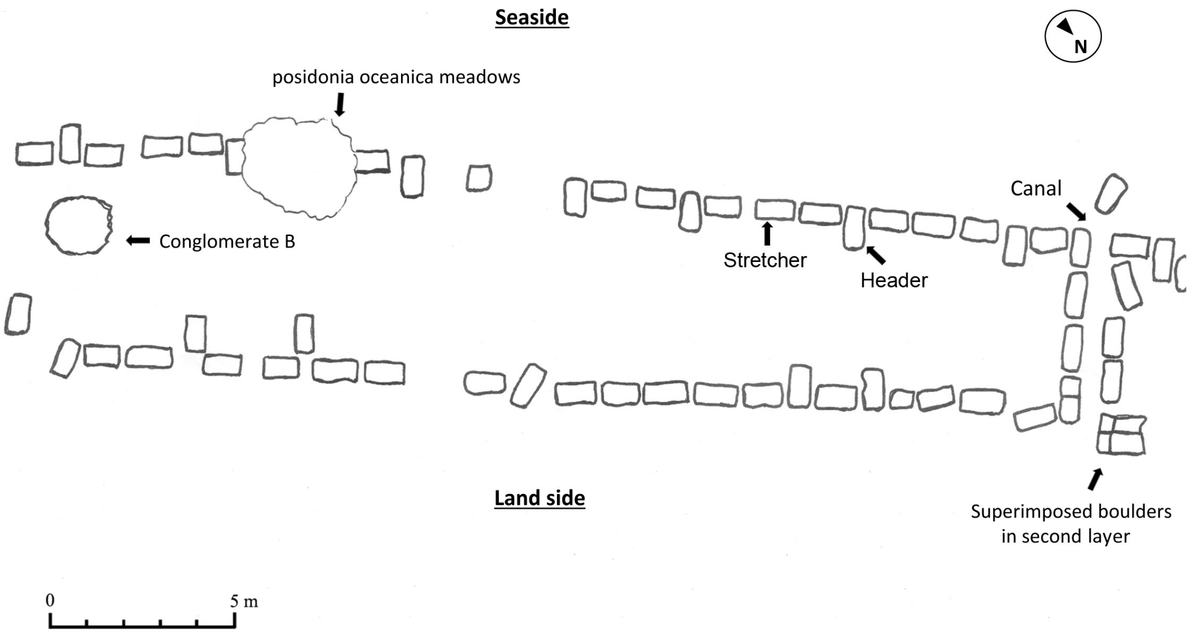

Figure 4: **Plan** of the best-preserved area of the outer mole. The canal for water recirculation is on the right.

meters, rising to -0.9 meters from the water's surface. Further southeast, the depth increases sharply to 4-4.5 meters, with the area covered in sand and dense seagrass, corresponding to the bed of a small river that once flowed into the area.

2.3 Inside Quay Area

Within the quay area, near its outer edge, there is a concentration of large, irregular stones, likely utilized as infill for the mole. These stones appear to have been displaced landward by wave action following the removal of the original ashlar blocks. Closer to the shore, a significant accumulation of small gravel has raised the seabed by approximately 0.4 to 0.5 meters. In the central portion of the area, a seagrass meadow (*Posidonia Oceanica*) forms a semicircular pattern, as visible in the aerial photograph (Figure 2). A thorough examination of the surrounding area and the entire quay structure revealed a fragment of red clay tile, suggesting that other remains may be buried beneath the sea floor.

3 Discussion

The majority of the port structure has been dismantled, likely due to the removal and subsequent reuse of the ashlar blocks that once formed its core. The moles, which originally contained pebbles as internal fill, are now largely devoid of this material. However, larger and more concretioned pebbles have remained in place due to the dynamic action of the sea, which, in the absence of perimeter protection, redistributed the smaller stones within the port area. The external mole, which functioned as a breakwater, extends over 60 meters in length and exceeds 5 meters in width. This structure protected an area of at least 3,000 square meters, allowing sufficient space for the maneuvering of vessels ranging from 15 to 20 meters in length, including the typical 24-25 meter biremes of the 5th century B.C. The removal of ashlar blocks was more extensive in areas where it was easier to carry out, particularly in the internal mole and the inner section of the external mole. Only the basal layer of blocks, likely more difficult to extract, remains intact.

The presence of concretioned filling pebbles still in situ indicates that the harbor was fully constructed and actively utilized. The concentration of blocks at the terminus of the external mole may represent the remnants of a tower, though no circular structures are currently discernible, or alternatively, it could be the roughly constructed end of the mole designed to mitigate wave diffraction. This issue, particularly prevalent in L-shaped harbors, arises as the external edge of the mole diffracts waves, allowing them to enter the port basin and compromise its safety. Modern ports address this issue by curving the mole at the end. Vitruvius advocated for the construction of ports in naturally favorable locations (Vitruvius, *De Architectura*, 5.12.1), and in this case, the internal mole's ashlar blocks appear to have been used to regularize a natural rock formation extending from the shore to the corner where it meets the external mole. Conversely, the external mole is entirely artificial, as no geological formations run parallel to the coastline (Fig. 2).

Due to the scarcity of ceramic material within the port area—aside from fragments of red clay tile with abundant inclusions of shiny black micaceous granules, identical to those discovered during the excavation of the temple (Torelli[14])—dating the port structure remains challenging. However, technical aspects of the construction, along with the proximity to an Etruscan temple, provide important contextual clues. The structural characteristics of the mole resemble techniques employed in the construction of Greek ports, such as those at Athens, Mounychia, and Zea in the 5th century B.C., which utilized headers and stretchers to reinforce the structures. Additionally, the nearby Etruscan temple at Punta della Vipera, now located near the railway tracks of the Rome-Civitavecchia line and the Via Aurelia, dates to 540-530 B.C. (Figure 1). Along with the smaller temple near the Marangone Creek (6th century B.C.), it was undoubtedly connected to the Etruscan settlement at Castellina del Marangone, a fortified hill inhabited since the Middle Bronze Age (ca. 1400 B.C.), located less than 2 km from the port area (Gran-Aymerich and Domínguez-Arranz, [15]).

It is also possible that a small village may have existed around the temple, likely dependent on the settlement at Castellina. However, no systematic research has been conducted to confirm its existence. Part of the sanctuary was destroyed during the construction of the railway in 1859, and the first official excavation of the site was published in 1967 (Torelli [14]). The temple complex, which spans approximately 500 square meters, was later occupied by a Roman villa rustica. The entrance to the sanctuary, located to the south towards the seashore, was composed of a nearly square temenos, with two or four limestone columns coated in plaster at the entrance, leading to a *pronaos* constructed of *opus signinum*. Within the temenos, architectural terracottas, coins from the Punic period dating to the 4th century B.C., and numerous votive offerings, including anatomical votives, were discovered (Commella, [16]).

On the eastern side of the temple, a sacred well was found containing various ceramic fragments and a lead plate inscribed in Etruscan on both sides, though its interpretation remains challenging (Torelli, [14]). The temple was dedicated to the goddess Minerva (the Greek Athena), revered for her healing and purifying powers, and it was founded in the third quarter of the 6th century B.C. The temple was most likely destroyed in the 4th century B.C. during Roman military campaigns along the coast, including those in 387 and 383 B.C., and particularly the devastating incursions led by C. Sulpicius Peticus in 354 B.C. (Diodorus of Sicily, 11.88.4-5). Dionysius of Syracuse sacked the temples at Pyrgi in 384 B.C., and it is plausible that the Etruscan temple at Punta della Vipera was also targeted during this time (Strabo, 5.2.8). In the 3rd century B.C., the temple was likely renovated when the nearby Roman colony of Castrum Novum was founded in 264 B.C.

The temple remained active, though in gradual decline, until the late 2nd century B.C., after which it fell into disuse. It was likely demolished in the 1st century B.C. to make way for a Roman villa rustica, which continued to function until around the 2nd century A.D. The villa was constructed partly on the foundations of the temple, reusing material from the temple walls, though the stones of the sacrificial altar were left intact (Torelli, [14]). Given these findings, it is plausible that the harbor structures were constructed either at the time of the temple's founding in the 6th century B.C. or during its reconstruction in the 4th century B.C. (Torelli, [14]).

Archaeological evidence suggests that the harbor was dismantled to reuse the ashlar blocks, with the demolition likely coinciding with the construction of the villa rustica in the 1st century B.C. A recent investigation of the villa rustica, made possible by a cleaning intervention by the GACT (Archaeological Group of the Cerite Territory), revealed the presence of at least two macco ashlar blocks of similar dimensions to those used in the maritime structure. It is also possible that a larger number of blocks were repurposed for the construction of the nearby Castrum Novum fishponds, located only 800 meters away. This maritime structure represents a unique example along the entire Etruscan coast and in the broader Aegean-Anatolian region, where ancient port structures dating to the 6th and 5th centuries B.C. are still visible, though L-shaped harbors such as this one are rare (Hunt, [17]). In most cases, natural bays were used, with additional protection provided by breakwaters composed of rough stones.

In many ancient ports, internal basins (*cothons*) did not require double walls filled with stone due to their sheltered locations (Giaimea et al., [18]; De Graauw, [19]). Similarly, adaptations of natural lagoons or river mouths often followed this pattern (Oleson and Hohlfelder, [20]; Marriner et al., [21]). One of the few other examples of an L-shaped port is found at Wadi al-Jarf on the Red Sea coast of Egypt. This port, constructed of small rough stones held together by the rocky substrate on its sides, forms an elongated L-shape about 5-6 meters wide and dates to approximately 4,500 years ago (Tallet, [22]). The invention of concrete during the Roman period, however, revolutionized port construction, leading to the development of the grand harbors of the Roman imperial era (Scrinari, [23]; Lugli, [24]).

Finally, it is important to consider the temple's entrance, inferred from the position of the altar and the buildings located at the rear of the temple (*pars postica*) (Torelli, [14]). The entrance to the sacred area did not face the road leading to Castellina, which must have been the main center at the time and later became the route of the Roman Via Aurelia (approximately 70-80 meters inland). Instead, it faced the sea and the port facilities, through which sailors arrived and made votive offerings to the deity. The road from the port to the sanctuary likely served as a sacred path, overcoming a height difference of approximately 8-9 meters from sea level. Unfortunately, this road has been disrupted by the construction of the modern railway, the Via Aurelia, and, near the port entrance, by the wall of a private villa.

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References

[1] A. Cherici. Talassocrazia: aspetti tecnici, economici, politici con un brevissimo accenno a novilara nesazio e ai feaci. In *Gli Etruschi e il Mediterraneo, Commerci e Politica*. Annali della Fondazione per il Museo "C. Faina", Roma, 2006.

[2] L. Nardò. Il commercio etrusco arcaico nel tirreno settentrionale: l'evidenza archeologica dei relitti navali, dell'isola del giglio alla francia meridionale, 2017. Degree in Etruscology and Italic antiquities.

[3] P.A. Gianfrotta. *Castrum Novum*. Forma Italie, Regio VII. Roma, 1972.

[4] S. Giorgi. Le peschiere romane di castrum novum. In F. Enei, editor, *Castrum Novum, Quaderno 1*, pages 29–30. 2011.

[5] E. Bruni and E. Iatta. *Le prospezioni sottomarine in Castrum Novum*, pages 24–27. 2011.

[6] F. Enei. *Una spada dell'età del bronzo dal fondale di Capo Linaro*, page 28. 2011.

[7] F. Enei and S. Giorgi. *Il relitto della nave romana di Capo Linaro*, pages 83–85. 2013.

[8] S. Giorgi and M. Giorgi. Novità sugli impianti ittici di castrum novum: La peschiera absidata. In F. Enei, editor, *Castrum Novum, Quaderno 2*, pages 86–89. 2013.

[9] F. Enei. La frequentazione dell'area portuale dell'antica castrum novum: nuove testimonianze dal fondale. In F. Enei, editor, *Castrum Novum, Quaderno 2*, pages 72–78. 2013.

[10] S. Giorgi. Un paraguance di elmo romano. In F. Enei, editor, *Castrum Novum, Quaderno 2*, page 81. 2013.

[11] S. Giorgi. Le peschiere di castrum novum: le ultime acquisizioni. In F. Enei, editor, *Castrum Novum, Quaderno 3*, pages 141–144. 2016.

[12] S. Giorgi. Novità dalle peschiere di castrum novum. In F. Enei, editor, *Castrum Novum, Quaderno 4*, pages 188–191. 2020.

[13] G. Sapio. *Una statuetta votiva magnogreca dal fondale di Capo Linaro*, pages 145–147. 2016.

[14] M. Torelli. Terza campagna di scavi a punta della vipera (s. marinella). *Studi Etruschi*, XXXV:331–355, 1967.

[15] J. Gran-Aymerich and A. Domínguez-Arranz, editors. *La Castellina a sud di Civitavecchia: origini ed eredità: origines protohistoriques et évolution d'un habitat étrusque*. Bibliotheca archaeologica 47. 'L'Erma' di Bretschneider, Rome, 2011.

[16] A. Commella. *Il santuario di punta della vipera. Santa Marinella Comune di Civitavecchia; i materiali votivi*. Bretschneider, 2001.

[17] I.A. Hunt. Design of sea-walls and breakwaters. *Trans. Am. Soc. Civil Engineers*, 126:542–570, 1959.

[18] M. Giaimea, N. Marriner, and C. Morhange. Evolution of ancient harbours in deltaic contexts: A geoarchaeological typology. *Earth-Science Reviews*, 191:141–167, 2019.

[19] A. De Graauw. Ancient port structures: parallels between the ancient and the modern. *J. Mediterranean Geography*, 2022.

[20] J.P. Oleson and R.L. Hohlfelder. Ancient harbors in the mediterranean. In B. Ford, D.L. Hamilton, and A. Catsambis, editors, *The Oxford Handbook of Maritime Archaeology*, pages 809–833. Oxford University Press, 2011.

[21] N. Marriner, C. Morhange, C. Flaux, and N. Carayon. Harbors and ports, ancient. In Gilbert, editor, *Encyclopedia of Geoarchaeology*, pages 382–403. Springer, 2017.

[22] P. Tallet. Ayn sukhna and wadi el-jarf: Two newly discovered pharaonic harbours on the suez gulf. *British Museum Studies in Ancient Egypt and Sudan*, 18:147–68, 2012.

[23] V. Scrinari. Porto. In *Enciclopedia dell'arte antica*, volume 6, pages 390–393.

[24] G. Lugli. *La tecnica edilizia dei romani*. Bardi, Roma, 1957.