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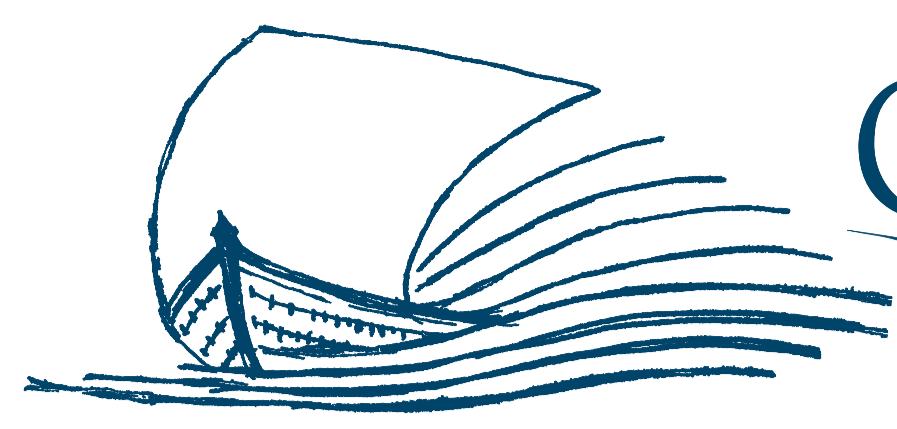
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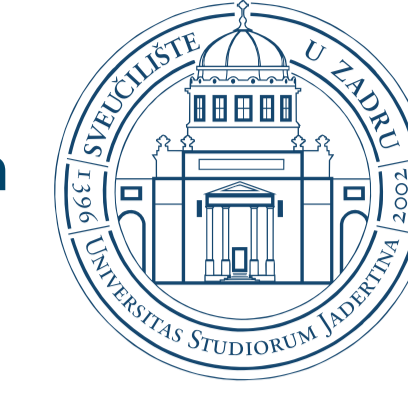
**CISSANTIOQUA**  
Maritime Archaeology of Ancient Cissa  
Bay of Caska, Island of Pag, Croatia

# ANCIENT SHIPS FROM CISSA (island of Pag, Croatia) in their cultural and historical context

The international interdisciplinary research project *Cissa Antiqua* focuses on the study of the coastal, partly submerged site of Caska (island of Pag, Croatia), and its historical and geographical context. The project is supported by the Ministry of Culture of the Republic of Croatia, the Croatian Science Foundation, the University of Zadar and the Municipality of Novalja, the French Ministry of Foreign Affairs (MAEDI), the Aix-Marseille University and the French National Centre for the National Research (CNRS).



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## GEOGRAPHICAL AND HISTORICAL CONTEXT

During the time of the Roman conquest a Liburnian population inhabited the island of Pag. In the 1st c. AD, Pliny the Elder mentioned it under the name of *Cissa portunata* (*Hist. Nat.*, 3, 140). The island was called Cissa until the 14th century, when the centre of power moved to the town of Pag. Linguistic research confirms that the name Cissa is preserved in the modern toponym Caska, referring to the bay which abounds in numerous traces of life from the Roman period. The local legends talk about the splendid city of Cissa that, punished by God, sunk into the sea due to the evilness of its inhabitants. According to the results of the recent research campaigns, it is evident that the bay of Caska preserves notable remains of a multi-stratified settlement, whose important phase seems to be identifiable with a big and well-organized maritime villa property of the senatorial family *Calpurnii Pisones*. In the framework of the project *Cissa Antiqua*, the systematic topographical documentation and study of the coastal and underwater structures continue to reveal interesting archaeological features.

## THE HARBOUR STRUCTURES

The harbour zone is situated in the shallow waters along the NE edge of the bay of Caska, in front of an impressive terrace wall that belongs to the remains of a monumental maritime façade related to the Roman Imperial phases of the site. In order to facilitate the description of work in progress, the area was divided into four zones (A-D).



Fig. 1: The 19th c. tuna watchtower marks the maritime landscape of the Caska cove (photo: Ph. Groscaux)

In the zones A-B, excavated between 2009 and 2012, the first shipwreck, named Caska 1, was found. It was reused, after being filled with stones, to fortify some pier-like wooden coastal structure, composed mainly of wooden pilings and raw stone material.

Moving to the west, zone C was excavated in 2012 and 2013, revealing the presence of an impressive wooden structure forming the base of a second pier-like structure. It is composed of rectangular caissons, made of horizontal logs kept in place by vertical poles driven through rectangular openings, then filled with stones. Further westwards, zone D, excavated from 2013 to 2015, lies at the southern extremity of a breakwater protecting a mooring area from the southern winds. In the rich cultural layer of this area, a Roman wooden anchor was discovered in 2005. In this zone, the remains of a second reused ship, Caska 2, were found. This ship was filled with stone blocks and sunk on purpose, forming the fundament of a jetty.

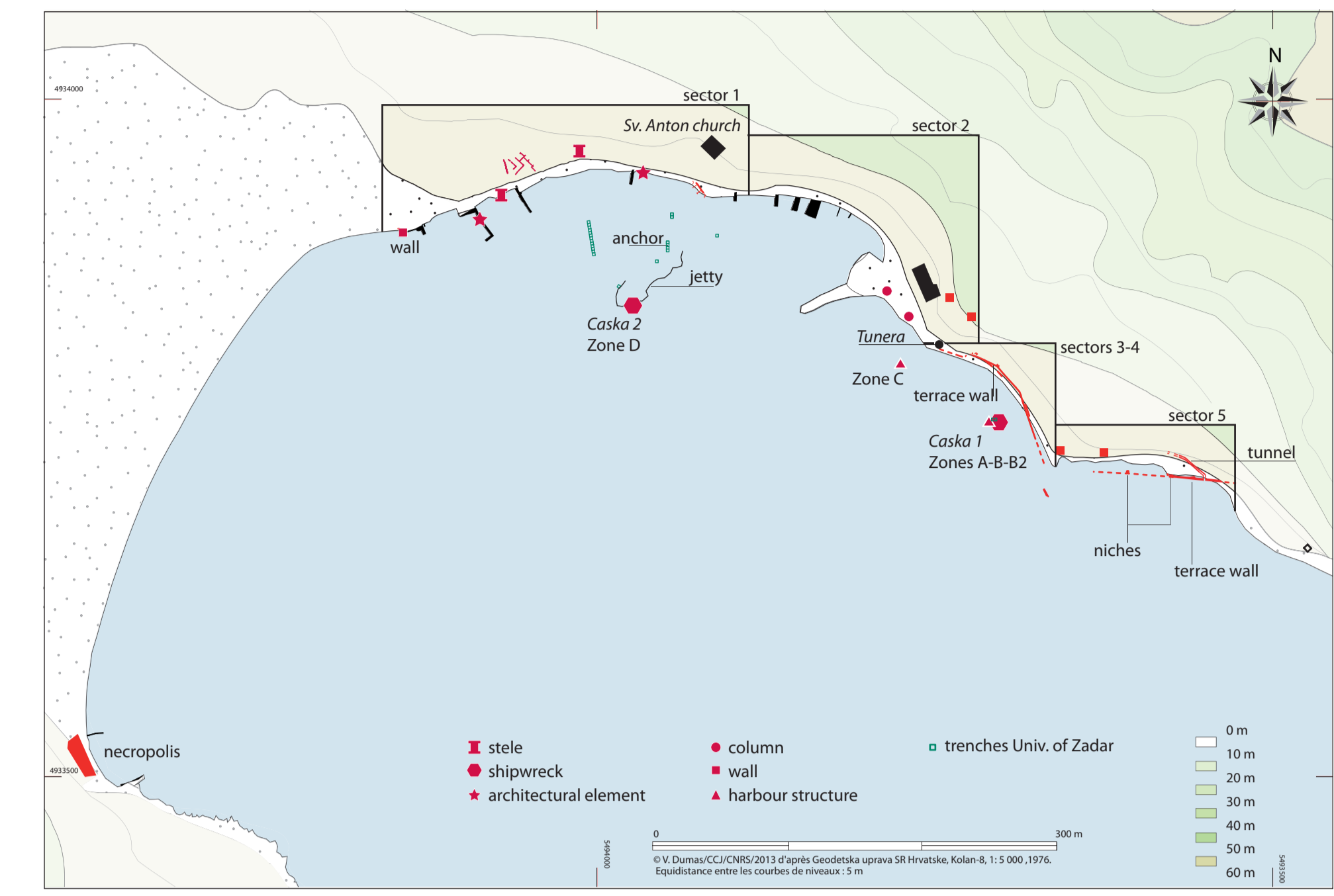


Fig. 2: Site plan of the archaeological evidence in the bay of Caska (V. Dumas)



Fig. 3: The Caska 1 shipwreck after retrieving the stone filling (photo: L. Damelet)

## CASKA 1

The remains of the laced boat Caska 1 are 8 m long and 1.66 m wide. The transverse section at the main frame has a flat frame with a round turn of the bilge. The longitudinal section is flat. A keel, six strakes on each side and seven floor-timbers were found in situ. Several loose pieces belonging to the boat structure were found displaced around the shipwreck. Due to the lack of some indicative elements, it was not possible to establish the position of stem and stern.

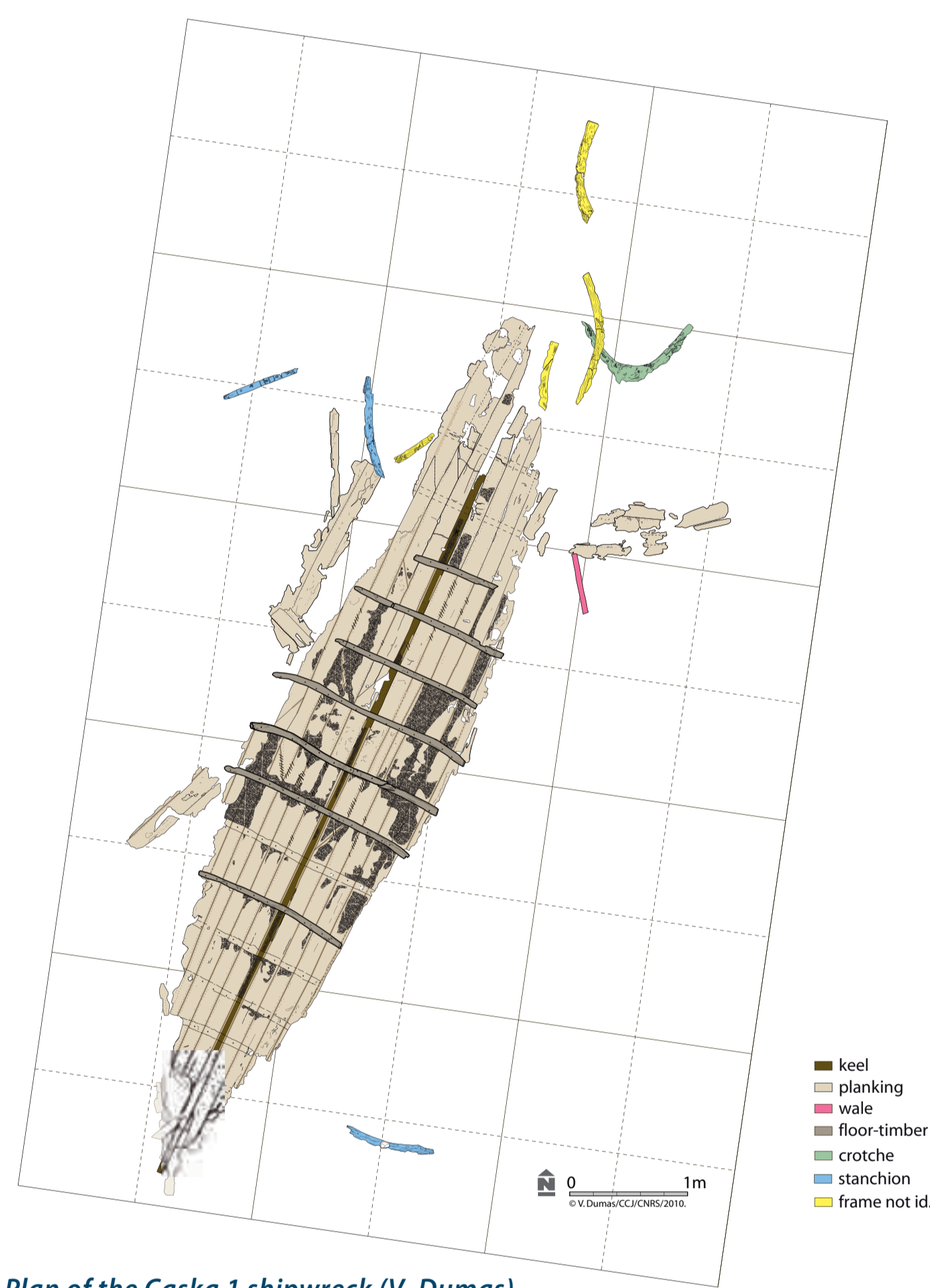


Fig. 4: Plan of the Caska 1 shipwreck (V. Dumas)

The keel was made of evergreen oak (*Quercus ilex* L.). It was scarfed on the extremities, in order to accommodate the stem and the stern knees. The 2.5 cm thick garboards were laced to the keel.

Two planks connected by an oblique scarf composed each garboard strake. Planks were 1.5-2 cm thick, with a maximum width of 16 cm. Eleven planks connected by oblique scarfs composed the five strakes of the west side.

A repair was observed on the east side. Planks were all made of beech (*Fagus sylvatica* L.) and were laced to each other. The stitching pattern was similar to that observed on the shipwrecks found at Nin/Zaton and Pula. The seams were blocked by small tapered pegs, mostly made of fir (*Abies alba* Mill.). The pegs were driven from the inner side of the hull at an average space centre-to-centre of 2.4 cm. The lacing channels were perpendicularly drilled through the thickness of the planks. The outer internal edges of the planks bear the traces of small rectangular recesses for protecting the lacing cords. A wadding pad was placed at the top of the junctions between planks, inside the hull, and held tightly by the lacing cords. A thick layer of pitch completed the watertight system.

Seven floor-timbers survived in place, and traces of an additional seven were identified. The general framing-pattern was of a sequence of floor-timbers with probable half frames on the extremities. These frames were made of deciduous oak (*Quercus* sp.). Rectangular in section, they were spaced 39.5 cm.



Fig. 5: A. The stitching pattern is simple (forecast seams). A braid made from 3 strands tightly held the wadding pad; B. Cross seams reinforce the stitching at the level of the oblique scarfs; C. Recesses cut on the thickness of the planks to follow the passage of the seams; D. The grooves to house the stitching on the outer of the hull (photo: L. Damelet)



Fig. 6: The floor-timber F112 showing the flat shape of the boat (photo: L. Damelet)

The frames were connected to the planking by tapered treenails driven from the outer side of the hull. The lower face of the frames was modelled with a series of openings above the seams, in order to avoid crushing of the wadding pad. The openings at the level of the bottom were quadrangular in shape and oversized, having the additional function of limber holes.

From the turn of the bilge and along the sides, the openings were rounded or triangular in shape, and rested tight on the wadding pad. The most interesting pieces among the displaced frames were the three sculpted futtocks, which can be compared to the similar features on the *Herculeum* boat (Italy, 1st c. AD). These futtocks rested on the gunwale, while their lateral grooves housed washboards. Hypothetically, we can assume that these sculpted futtocks were placed in the room-and-space between the floor timbers.

The hull-structure was based on a shell first concept, and its shape was based on a longitudinal strake-oriented concept. The boat was probably propelled using both oars and sail, although no trace of propulsion or steering devices has been discovered on the shipwreck. The construction of the boat Caska 1 has been dated between 42 and 102 AD (AMS Radiocarbon dates Ly-9267 to Ly-9272).

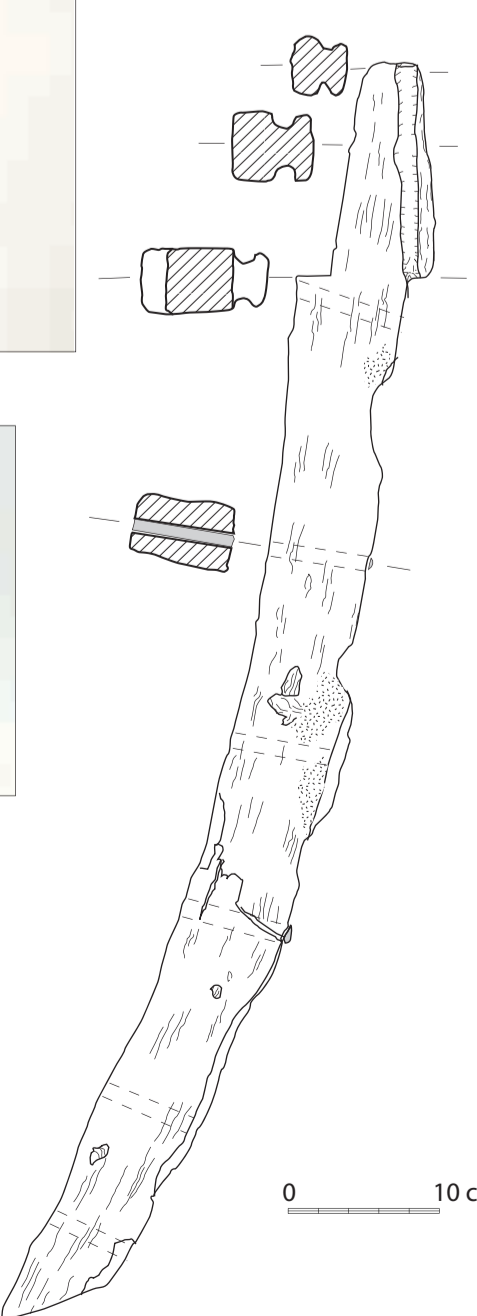


Fig. 7: The profiled futtock (78) (drawing: G. Boetto, photo: L. Damelet)

## CASKA 2

The remains of the ship built with a typical Roman mortise-and-tenon technique are 13 m long and 4 m wide. The ship rests on the keel, inclined to starboard (east). The transverse section at the main frame is flat, with a round turn of the bilge. The preserved structure consists of the keel and ten strakes on each side (the tenth strake is a wale), flush laid and assembled by pegged tenons, twenty-four composite frames, a keelson with mast-step and some stringers. Several planks were repaired by patch tenons, and the frames present some repairs too.

Exceptionally, the hearth used for cooking was found in the forepart of the ship.

The hold of the ship was filled with loose wooden pieces, mostly planks, but also some interesting elements, such as eight thwarts, one stanchion with forked extremity, and a fragment of planking belonging to another sewn boat similar to Caska 1 (designated Caska 3).

It can be assumed that most of the loose wooden elements from Caska 2 are related to the reuse of the ship in the construction of the pier, and were thrown into the hold of Caska 2 in order to reinforce the hull before it was filled with big stone blocks.



Fig. 9: The rabbeted stern gripe. Planks are assembled to it only by nails (photo: Ph. Groscaux)



Fig. 10: The mast-step and the square stanchion recesses on the keelson (photo: T. Seguin)



Fig. 12: The tenon at the base of the forked stanchion found in 2013 in the stern area (photo: Ph. Groscaux)



Fig. 8: Orthophoto of the Caska 2 shipwreck at the end of the 2015 excavation campaign (T. Seguin and V. Dumas)



Fig. 11: View from the bow of the kitchen hearth. A thick layer of mortar, bricks and at least one tile compose the structure which rested on some wooden planks not in direct contact with the ship structures (photo: T. Seguin)

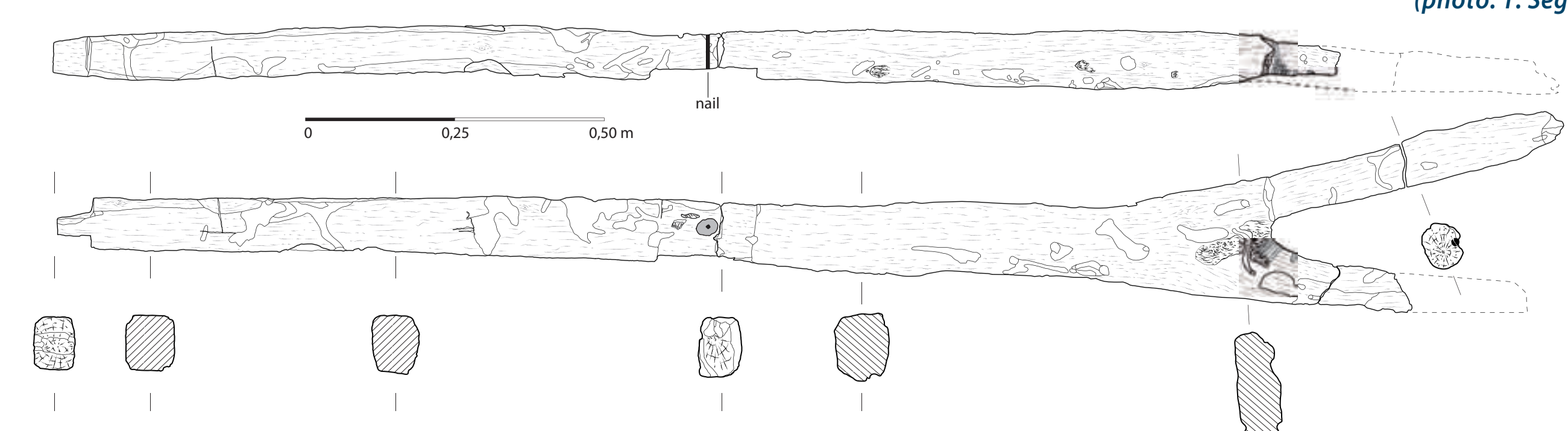


Fig. 13: The forked stanchion, a mast support? (drawing: P. Poveda)