

Wreck of an Unknown Three-Masted Sailing Ship, Gulf of Finland

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2 Introduction

This report briefly describes the first observations from a wreck of an unknown, three-masted wooden ship, located in excess of 60m depth in the Finnish coastal waters in the Gulf of Finland.

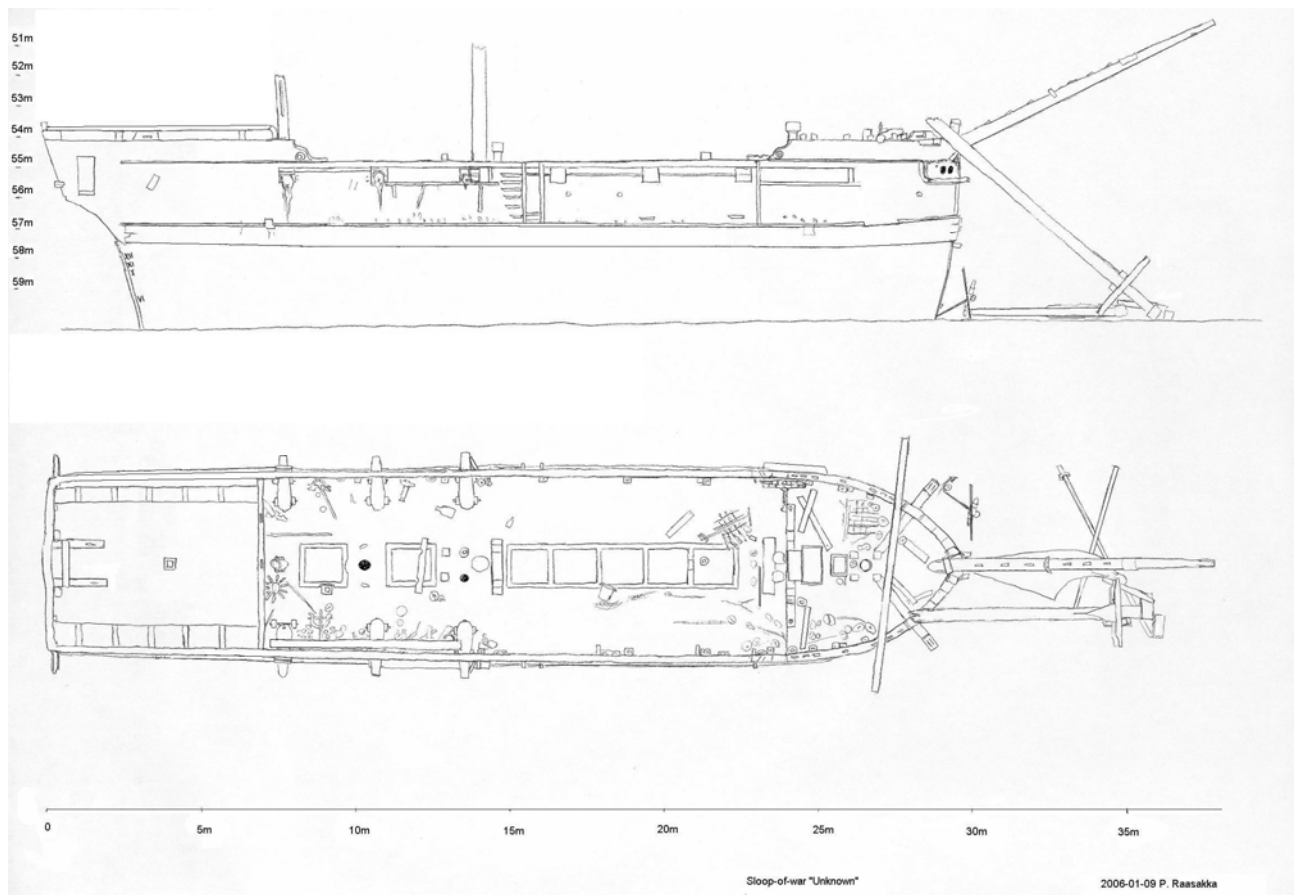
The wreck was detected in routine seabed surveys conducted by hydrographic survey vessel Suunta in 2003. Survey chief, **captain Jukka Mikkola** noticed a wreck-like figure in the sea bottom survey data, and wrote a report about the finding for the Finnish Maritime Administration, and contacted also the Maritime Museum of Finland.

The wreck is lying on the seabed in an upright position.

The length of the shipwreck is 29.5m, measured from the upper edge of the transom to the stempost.

The width of the shipwreck is 6.3m on the gunwale level. The ship is wider at the level of main wale, but maximum width has not been measured.

The following sketch represents the shipwreck in its current condition:



The shipwreck viewed from the starboard side and from above.

The ship has 12 gunports on a single deck. 6 guns are still present in their original locations.

The structure, size, rigging, materials, guns and fittings of the ship would suggest that the ship is most likely a sloop-of-war from 18th century.

3 Divers

The following divers have participated at the diving operations on the wreck:

Juha Flinkman
 Jussi Kaasinen
 Timo Niemi
 Tuomas Pensala
 Jouni Polkko
 Pasi Raasakka
 Reima Rätty
 Sten Stockmann

All dives have been led and organized by **Jussi Kaasinen**.

4 General information about the dives

All dives on the wreck have been conducted by the above-listed team of volunteer technical divers. The primary objective has been to gather photo and video material from the wreck for **documentation and identification purposes**, without touching the wreck or any objects in it.

Total number of man-dives done on the wreck by the team so far is 45.

First dives on the wreck were made during the summer 2003. The next set of dives was made during the year 2005. All dives were made with the permission and under the supervision of the Maritime Museum of Finland.

Because of the depth involved, bottom times on the wreck have been limited to 15-18 minutes. All dives have been carried out with proper trimix mixtures to overcome problems associated with depth narcosis. Besides minimizing narcotic effects of breathing gas and therefore enabling more efficient and productive documentation work, the main reason for using mixed gas diving techniques is the increased safety level.

All dives have been carried out with self-contained open-circuit diving equipment.

The following table lists detailed information about the dives:

Date	Divers	Total number of dives	Tasks
13 th July 2003	J. Kaasinen, T. Niemi, T. Pensala, J. Polkko, P. Raasakka	5	JP photos, TN light PR video, TP, JK light
22 nd July 2003	T. Niemi, T. Pensala, J. Polkko, S. Stockmann	4	TP, SS visual notes JP photos, TN light
24 th August 2003	J. Kaasinen, T. Niemi, T. Pensala, J. Polkko, P. Raasakka, R. Rätty	6	TP, PR measurements JP photos, TN light RR video, JK light
24 th April 2005	J. Flinkman, J. Kaasinen, T. Niemi, P. Raasakka, S. Stockmann	5	SS photos, TN light JF video, PR light, JK light

16 th June 2005	J. Kaasinen, T. Niemi, P. Raasakka, R. Rätty	4	RR, TN visual notes PR video, JK light
18 th June 2005	J. Kaasinen, T. Niemi, P. Raasakka, R. Rätty, S. Stockmann	5	SS photos, RR light, TN light PR video, JK light
18 th June 2005	J. Kaasinen, J. Polkko, P. Raasakka, R. Rätty, S. Stockmann	5	SS photos, RR light, JP light PR video, JK light
30 th August 2005	J. Kaasinen, T. Niemi, J. Polkko, P. Raasakka	4	JP photos, TN light PR video, JK light
10 th September 2005	J. Kaasinen, T. Niemi, J. Polkko, P. Raasakka, S. Stockmann	5	JP photos, TN light PR video, JK light, SS photos
17 th September 2005	J. Kaasinen, S. Stockmann	2	SS photos, JK light

Table 1. List of dives, divers and respective tasks for each dive.

5 General information about the collected photo and video material

The diving team has collected a substantial amount of photo and video material from the wreck.

All material produced by the diving team on the wreck has been delivered to the Maritime Museum of Finland.

Most of the pictures attached to this document have been extracted from DV or HDV video material, and highly compressed to retain portability of this document. This results also in a deliberately low resolution and quality of the attached pictures.

All material in this document is copyrighted by Jussi Kaasinen, Jouni Polkko, Pasi Raasakka and Sten Stockmann. Copying and re-distribution of the pictures is not allowed without authors' permission.

Photo and video material of higher accuracy and quality is not attached in this document. This photo and video material is possessed and copyrighted by the dive team members.

The visibility on the wreck has been roughly 2m at its best. The visibility has also varied a lot even during the same day. The bad visibility in the water has required use of short focal lengths in the photo- and videography, which in turn weakens the applicability of the visual material e.g. for measuring and estimating angles and curves.

6 Some detailed observations

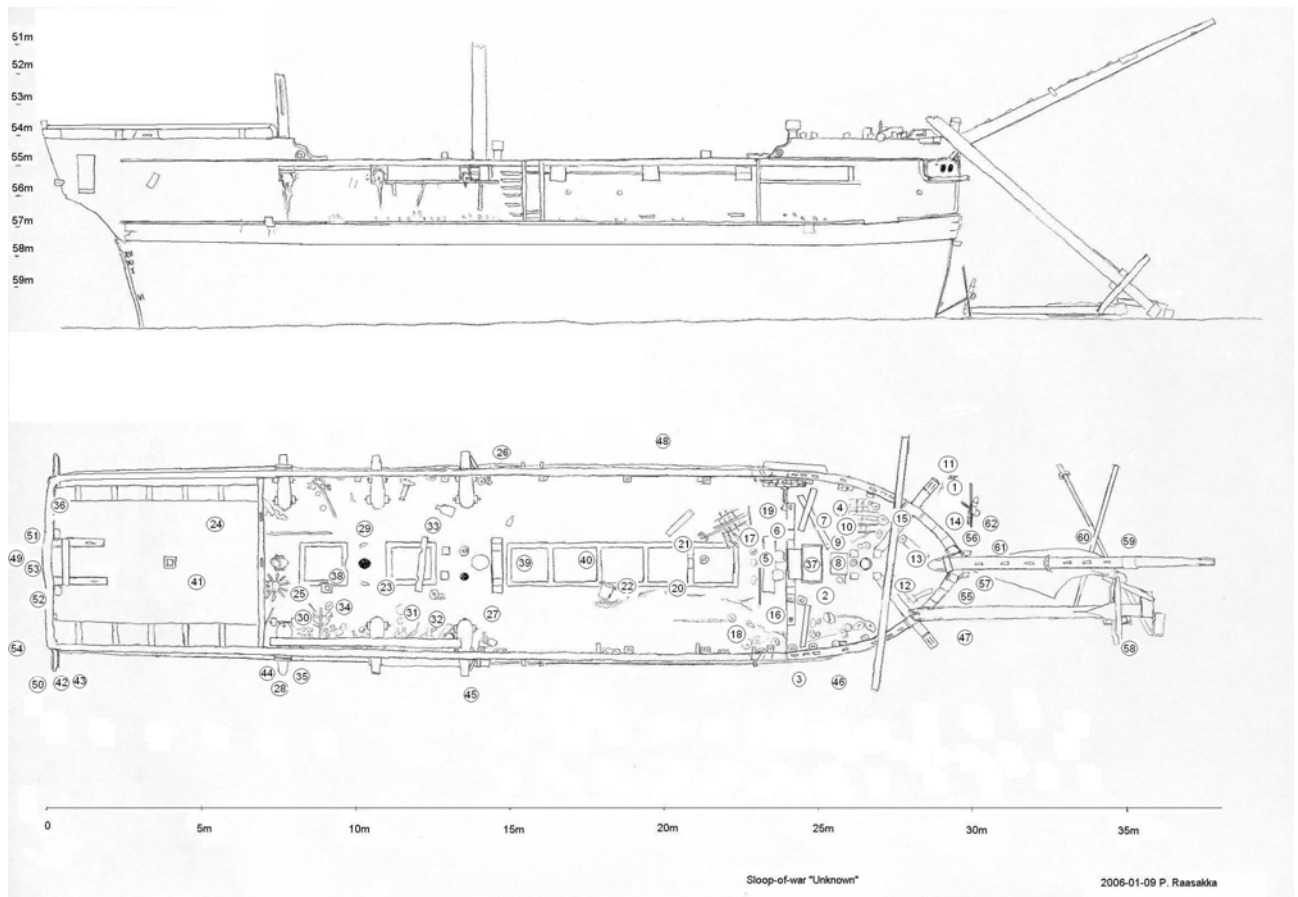
This chapter briefly describes some of the most important observations concerning each area of the shipwreck.

62 low-resolution pictures have been attached to visualize some details in the wreck. Most of the pictures have been extracted from DV or HDV video material taken by P. Raasakka and J. Kaasinen. A few are digital still photos taken by S. Stockmann and J. Polkko.

6.1 Chart of the camera locations for the pictures attached

The pictures shown in this document are numbered.

The circled numbers in the following chart show the location of the camcorder or camera when taking the picture indicated by the number.



A chart showing the camera location for each picture attached in this document.

6.2 Forecastle and bow

The deck in the forecastle of the ship is on a uniform level; it does not contain any steps or stairs. The deck planking in the forecastle is completely intact.

6.2.1 Forecastle gunwale

The gunwale in the forecastle area is on a uniform level from the aft end of the forecastle to the catheads. On top of the cathead on each side, there is a snatch block on the gunwale. Between the catheads and the bow, the gunwale is slightly lower, and it has a low sawtooth-like shape.



Picture 1. Gunwale between the bow and the cathead, seen from the port side, from outside of the ship (a snatch block on top of the cathead can be seen on the right). Photo by P. Raasakka & J. Kaasinen.

On top of the forecastle gunwale, between the cathead and the aft end of the forecastle, there are seven timberheads on each side. These are marked in the drawings describing the shipwreck.



Picture 2. Starboard side of the forecastle (gunwale timberheads between the cathead and forecastle break). A lot of deadeyes and blocks and some remains of ropes can be seen on the deck. Photo by P. Raasakka & J. Kaasinen.

The elevation of the forecastle gunwale is less than one metre from the gun deck gunwale. At the break of the gunwale there is a carved round ornament on the side. The break of the gunwale is protected on the topside with metal lining.



Picture 3. Starboard gunwale at the break of the forecastle, viewed from outside of the ship. Forecastle area on the right. Photo by P. Raasakka & J. Kaasinen.

6.2.2 Aft end of the forecastle deck

On the level with the forecastle deck, in line with the break of the forecastle deck, there is a wooden crossbeam that has grooves at both ends. The grooves are apparently made for spare topmasts, which have been placed to lie flat, one end on the beam on the forecastle deck, and the other end on a crossbeam attached to the bits in front of the main mast on the gun deck. The port side groove on the crossbeam on the forecastle deck is rounded, and the starboard side groove is rectangular. The spare topmasts are not in their places.

A loose beam with similar grooves lies flat on the left side of the forecastle deck, close to the crossbeam. The loose beam has apparently been used to lock the spare topmasts to the crossbeam.



Picture 4. The forecastle deck on the port side, close to the forecastle break. A rounded groove of the crossbeam can be seen close to the centre of the picture. A loose beam diagonally in the front. Stocks of two spare anchors can be seen on the right. Photo by P. Raasakka & J. Kaasinen.

There are horizontal planks of less than 1m length in both ends of the crossbeam. These planks start on top of the crossbeam and continue towards the sides of the ship, elevated approximately 20cm on top of the forecastle. The planks are supported by wooden rectangular timberheads from the other end.

Just behind the port side corner of the forecastle, there are two stocked anchors. The arms of these anchors are on the gun deck. Shanks of the anchors are almost vertical, and the stocks are slightly above the forecastle deck level.

6.2.3 Belfry and the bell

The belfry is located on the break of the forecastle, in the middle of the crossbeam on the forecastle deck. The belfry has two wooden pillars with carved vertical grooves, on top of which there is an arched canopy with metal lining. The headstock of the bell is half-way between the canopy and the deck. The bell lies in its normal position right below the horizontal headstock, but it is apparently no longer attached to the headstock; it has fallen on the deck. There are no visible recognizable writings on the bell.



Picture 5. Belfry on the break of the forecastle, seen from the aft side. Photo by P. Raasakka & J. Kaasinen.



Picture 6. Belfry seen from the port side. Photo by P. Raasakka & J. Kaasinen.

6.2.4 Hatchways on the forecastle deck

Right fore of the belfry, there is a hatchway with approximate dimensions of 1m x 0.5m. The hatchway apparently provides access to the galley. Fore of this hatchway, there is a smaller opening in the deck.



Picture 7. Forecastle hatchways and the belfry. Photo by P. Raasakka & J. Kaasinen.



Picture 8. Looking down through the foremost opening on the forecastle. Photo by S. Stockmann.

6.2.5 Foremast stub

The foremast stub is right fore of the hatchways of the forecastle deck. The foremast is broken on the deck level. The foremast stub is surrounded by four bitts. Each bitt has two sheave holes with sheaves close to the deck level. The bitts have no carvings, and their cross-section is square.



Picture 9. Bitts around the foremast stub on the forecastle deck. Photo by P. Raasakka & J. Kaasinen.

6.2.6 Catheads

Cat-tails of the straight, diagonal catheads are attached to the bitts on the fore side of the foremast.



Picture 10. Cat-tail of the port side cathead, attached to the port side bitt (the bitt on the right side of the picture). Loose blocks and deadeyes on the forecastle deck in front. A loose yard can be seen on top of the cathead. Photo by P. Raasakka & J. Kaasinen.

The outboard ends of the catheads have two vertical slots fitted with sheaves.

The port side cathead has a lion's head figure attached to the outboard end of it. The starboard cathead end is flat, without any ornaments. Presumably the ornament has fallen to the seabed.



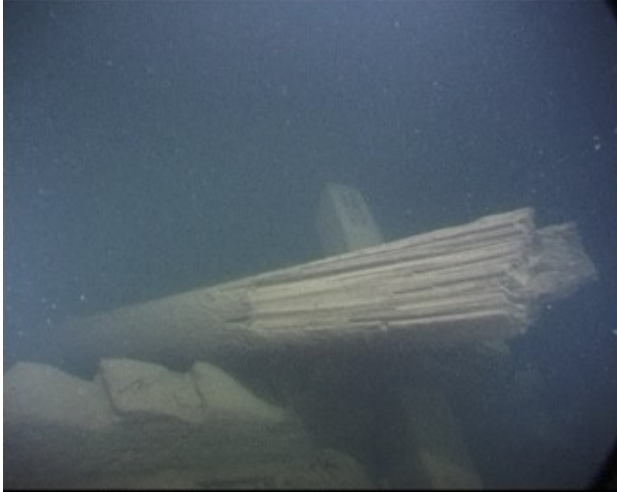
Picture 11. A lion's head figure in the end of the port side cathead. Photo by P. Raasakka & J. Kaasinen.

6.2.7 A loose yard on the forecastle

There is a loose yard lying slightly diagonally on the forecastle, right fore of the bitts around the fore mast stub. The mid part of the yard is slightly squared, while both ends of the yard are round. Both ends of the yard go over 1m overboard the ship.

6.2.8 Foremast

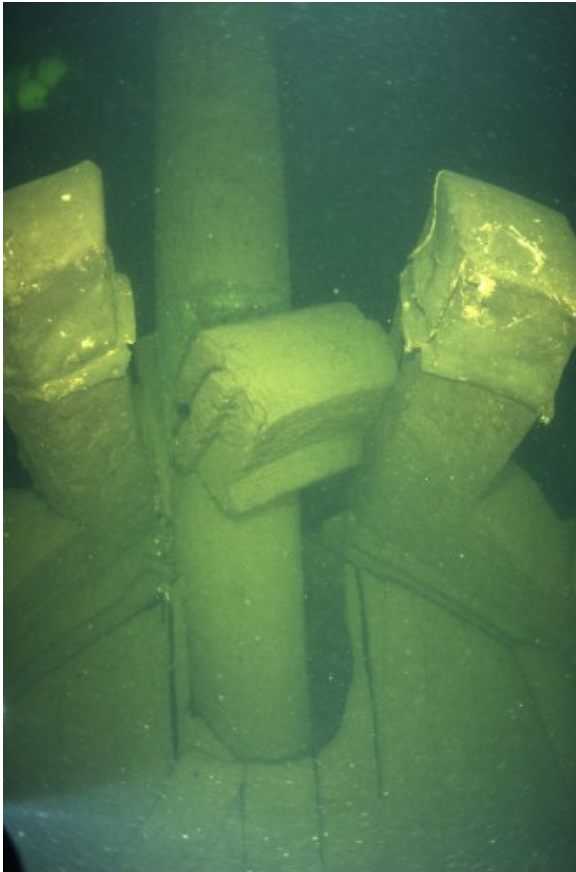
The heel (breakpoint) of the broken foremast lies diagonally on top of the snatch block on top of the starboard side cathead. The head of the foremast lies on the bottom of the sea in front of the bow of the ship.



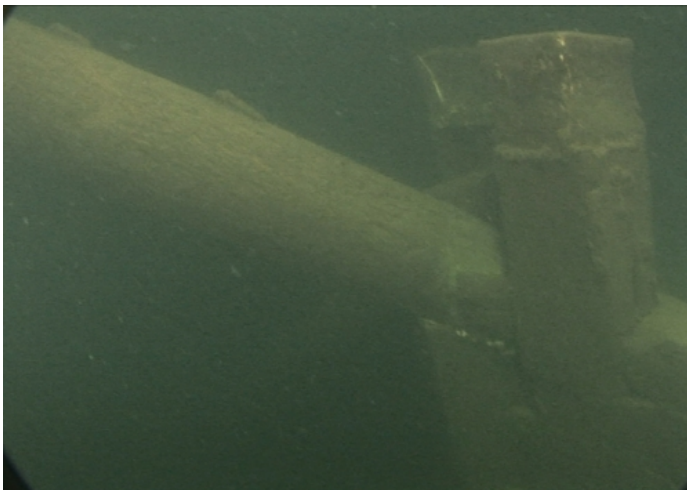
Picture 12. The heel of the broken foremast lies diagonally on top of the snatch block on top of the starboard side cathead. Photo by P. Raasakka & J. Kaasinen.

6.2.9 Bowsprit

The bowsprit rises through the forecastle deck from the peak of the bow in an angle of approximately 30 degrees. There are almost vertical bitts on both sides of the heel of the bowsprit. The top side of the bitts has metal lining. There is a short loose beam on top of the bowsprit heel between the bitts.



Picture 13. The bowsprit rises from the deck between two bitts (seen from aft towards the bow). Photo by S. Stockmann.



Picture 14. The bowsprit rises from the deck between two bitts (seen from the port side). Photo by P. Raasakka & J. Kaasinen.

When going towards the head of the bowsprit, there are first three wedge-shaped steps on top of the bowsprit. These are followed by an inverted U-shaped wooden block that has some holes in it (fairlead saddle?). After this, there are again three wedge-shaped steps, after which there is some metal lining on top of the bowsprit, at about 0.5m length. After the lining, the

bowsprit is more tapered towards its head. At the head of the bowsprit, there is some kind of a small seating (seating of bees?).

6.2.10 Hull shape in the bow

The angle of the bow seen from above is rather sharp when compared with commercial vessels of the same era. The angle has not been measured.

6.2.11 Objects in the forecastle area

A number of wooden deadeyes and blocks are scattered on the forecastle deck. Remains of a wooden grating also lie on the forecastle deck, on the port side of the hatchway and the fore mast stub. Some remains of ropes are located on the starboard side of the forecastle deck.



Picture 15. Remains of a wooden grating on the port side of the forecastle deck (seen from the bow towards the foremast break). Photo by P. Raasakka & J. Kaasinen.

There are no guns, tools or dishes on the forecastle deck.

6.3 Gun deck

The term “gun deck” here refers to the only deck mounted with guns in the shipwreck.

The deck planking of the whole gun deck is mostly intact, with the exception of a small area on the starboard side close to the foremast break, where one deck plank is displaced from the fore end.

6.3.1 Gunwale on the gun deck

There are no major differences in the elevation of the gunwale between the forecastle and the poop deck area.

Right abaft the forecastle break there are wooden blocks of approximately 1m length and 20cm height on top of the gunwale. On top of these blocks there is a diagonal groove, whose outer end is abaft the inner end.

The inclination of the gunwale has not been measured at any point. For simplicity, the gunwales are assumed to be straight in the drawings made from the shipwreck. In practice, the gunwale is most likely curved so that it is lower at mid-ship area than in the bow or stern.

6.3.2 Break of the forecastle

In the break of the forecastle, there is a vertical wooden bulkhead. There are openings in the bulkhead both on the port and starboard side. No capstans or windlasses can be seen from the openings below the forecastle deck.



Picture 16. A view from the gun deck towards the bow, below the forecastle deck on starboard side. Photo by P. Raasakka & J. Kaasinen.

On the gun deck, abaft the break of the forecastle, there are large round riding bits made of wood. A large wooden, rectangular crossbeam is right abaft the riding bits.



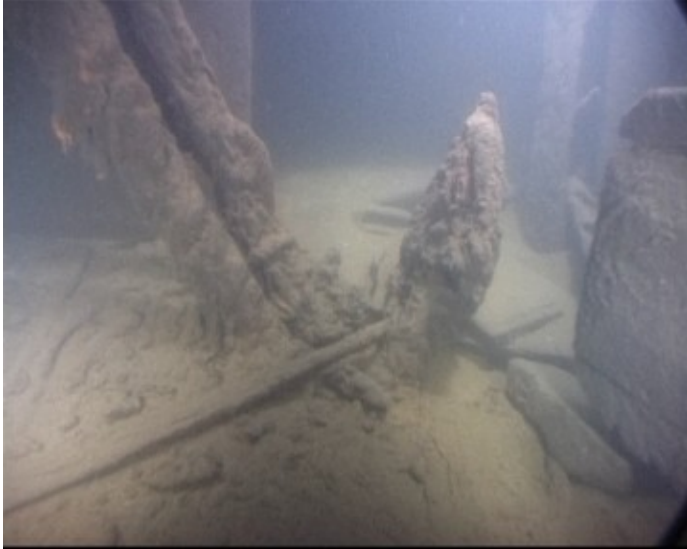
Picture 17. Riding bitts and a crossbeam on the gun deck abaft the forecastle break. Photo by P. Raasakka & J. Kaasinen.

There are a lot of remains of ropes and blocks on the starboard side of the riding bitts, in the corner of the gun deck.



Picture 18. The fore starboard corner of the gun deck, abaft the forecastle break. Photo by P. Raasakka & J. Kaasinen.

On the port side of the riding bitts, there are arms and shanks of two stocked anchors. The stocks of these anchors are above the forecastle deck level.



Picture 19. Spare anchor arms on the gun deck, on the port side of the riding bitts. Photo by P. Raasakka & J. Kaasinen.

6.3.3 Hatchways on the gun deck afore the main mast

Between the riding bitts and the main mast on the gun deck, there are **five** hatchways of similar size in a line. The width of the hatchways is roughly 1m (not measured).

A wooden, vertical pump tube with a hole in its side is located in the foremost hatchway, slightly on the port side of the centreline.



Picture 20. A wooden pump tube rises from the foremost hatchway on the gun deck (viewed from the starboard aft corner of the hatchway, diagonally towards the bow). Photo by P. Raasakka & J. Kaasinen.

Remains of a wooden grating lie on the gun deck on the port side of the foremost hatchway.



Picture 21. Remains of a wooden grating lie on the gun deck on the port side of the foremost hatchway. Photo by P. Raasakka & J. Kaasinen.

A large, round bucket or tub lies on its side on the starboard side of the third hatchway on the gun deck. There are some remains of ropes on the gun deck close to the bucket.



Picture 22. A large, round bucket or tub lies on its side on the starboard side of the third hatchway on the gun deck (viewed towards the aft). Photo by S. Stockmann.

The frame of the fifth hatchway (the closest hatchway to the main mast) is slightly thicker than that of the other hatchways on the gun deck between the main mast and the forecastle. There is a small glass bottle on the gun deck on the port side of the aft edge of the fifth hatchway.

6.3.4 Bitts with a crossbeam for spare topmasts afore the main mast

Afore the main mast, there are two bitts, of approximately 1.5m height. On top of the bitts there is a wooden crossbeam that has grooves at both ends. The grooves are apparently made for spare topmasts, which have been placed to lie flat, one end on this crossbeam, and the other end on a similar beam on the forecastle deck. The port side groove on the crossbeam afore the

main mast deck is rectangular, and the starboard side groove is round (exactly the opposite order than the grooves on the crossbeam on the forecastle).

6.3.5 Main mast and fittings abaft the main mast

The main mast is right abaft the bits with a crossbeam. The mast is broken, and rises a few metres above the gun deck level.

Right abaft the main mast there are two round openings in the gun deck. A wooden, vertical pump tube is located in the opening on the port side. Apparently there has been a similar pump tube in the starboard opening as well, but it is no longer in its place.

Abaft the round openings, there are two bits. Both bits have two sheave holes with sheaves close to the deck level. The bits have no carvings, and their cross-section is square.

6.3.6 Hatchways on the gun deck abaft the main mast

Abaft the bits, there are two hatchways of similar size on the gun deck. Between the hatchways, there is a round hole in the centre line of the gun deck.

A loose beam with similar grooves as the loose beam on the forecastle deck lies athwartships flat on the foremost hatchway.

Right on the starboard side of the aft hatchway, there is a small rectangular opening in the gun deck. One side of the opening is inlaid to the frame of the hatchway.



Picture 23. The aftmost hatchway, viewed towards the aft. A small rectangular opening can be seen on the left side of the big hatchway. There is a round hole in the deck between the two aftmost hatchways (in the lower right corner of the picture). Photo by P. Raasakka & J. Kaasinen.

6.3.7 Mizzen mast

The mizzen mast is located abaft the aft hatchway. The mizzen mast is broken, and it rises roughly three metres above the gun deck. Carved wooden planks (bees?) with curved shape and holes are attached to both sides of the mizzen mast, slightly above the poop deck level.



Picture 24. The breakpoint of the mizzen mast afore the poop deck fore edge, viewed from the poop deck towards the bow. Two vertical planks can be seen on the poop deck fore edge. Photo by P. Raasakka & J. Kaasinen.

6.3.8 A loose capstan on the gun deck on the starboard side of the mizzen mast

A broken, loose capstan is located on the gun deck, on the starboard side of the mizzen mast. Short capstan bars are attached to the capstan. The capstan has apparently broken loose from the round hole between the hatchways between the main mast and the mizzen mast.



Picture 25. A loose capstan lying on the gun deck on the starboard side of the mizzen mast. Photo by P. Raasakka & J. Kaasinen.

6.4 Gunports and guns

There are twelve gunports on the gun deck. The foremost gunports are located right abaft the break of the forecastle. The aftmost gunports are located close to the mizzen mast.

The gunport lids of the aftmost gunports have hinges on the upper edge. The gunport lids of other gunports have hinges on the side (where the lids are in place). No carvings or other decoration can be seen in the gunport lids.



Picture 26. The foremost gun on the port side in its gunport (third gunport from the aft), viewed from the bow towards the aft. Photo by P. Raasakka & J. Kaasinen.



Picture 27. The butt of the foremost gun on the starboard side. Photo by P. Raasakka & J. Kaasinen.



Picture 28. The aftmost gun on the starboard side in its port. Photo by P. Raasakka & J. Kaasinen.



Picture 29. The butt of the middle gun on the port side. Photo by P. Raasakka & J. Kaasinen.

No gunports are visible below the forecastle deck or poop deck.

There are guns only in the six aftmost gunports.

The butt of the aftmost gun on the starboard side has risen up from its carriage, and the muzzle of the gun points downwards from the gunport.



Picture 30. The butt of the aftmost gun on the starboard side has risen up from its carriage.

The length of the guns is roughly two metres (not measured).

The guns are made of iron, as they are covered by a very thick layer of rusty crust, especially on the starboard side.

No text or symbols of any kind are visible in the guns.

6.4.1 Objects in the proximity of the guns

A plank has fallen on the starboard guns. The size and length of the plank would indicate that it can be one of the missing poop deck planks.



Picture 31. The butt of the middle gun on the starboard side. Photo by P. Raasakka & J. Kaasinen.

A large number of various objects are located in the proximity of the starboard guns. The objects are mostly related to the rigging of the ship (blocks, deadeyes).

Abaft the foremost gun on the starboard side, there is a round, lipped metal plate on the deck.



Picture 32. A round, lipped metal plate on the aft side of the foremost gun of the starboard side. Photo by S. Stockmann.

There is a large bottle on the deck behind the foremost gun on the port side.



Picture 33. A large bottle on the gun deck behind the foremost gun on the port side. Photo by S. Stockmann.

Behind the second and third gun on the starboard side, there is a wooden unknown object; possibly a kevel made in a finger-and-thumb fashion.



Picture 34. A wooden object on the gun deck between the second and third gun on the starboard side. Photo by P. Raasakka & J. Kaasinen.

A similar object in a corresponding location on the port side is broken into parts.

6.4.2 Gunports and gunport lids on lower decks

The dive team did not identify any gunport lids on lower deck levels.

Apparently the ship has had only 12 guns on a single gun deck.

There are some lid-like insertions that look a bit like an edge of a gunport lid in the upper edge of the main wale, close to the location of the aftmost gunports. However, these are more likely to have something to do with attachment of shrouds.

A small lid-like opening is visible in the main wale on the starboard side, close to the location of the foremast. The purpose of this lid is unclear.

6.5 Poop deck area

6.5.1 Gunwale in the poop deck area

The gunwale in the poop deck area is less than 1m above the level of the gunwale in the gun deck area. The break of the gunwale is over one metre fore the break of the poop deck. At the break of the gunwale there is a carved round ornament on the side (similar carving as the one in the break of the gunwale in the break of the forecastle). The break of the gunwale is protected on the topside with metal lining.



Picture 35. The gunwale break on the starboard side near the fore edge of the poop deck (viewed from outside of the ship). Photo by P. Raasakka & J. Kaasinen.

There is a narrow, low wooden railing on the gunwale of the poop deck. Close to the midpoint of the railing there is a wooden block with a sheave.

6.5.2 Poop deck

The poop deck level is less than 2m higher than the gun deck level. On top of the beam in the break of the poop deck, there are two low vertical planks, one in the centreline of the ship, and the other on the port half.

The leftmost (=port side) deck plank of the poop deck is still in its place, but two planks by its side are missing. Apparently three rightmost deck planks are missing from the starboard side of the poop deck. Otherwise the planking of the poop deck is intact.

Close to the centre of the poop deck in the centre line of the ship there is a small rectangular opening, lined with metal.



Picture 36. The poop deck viewed from the aft port side corner. A rectangular opening can be seen in the middle of the poop deck. A port side transom knee can be seen in the forefront. Photo by P. Raasakka & J. Kaasinen.

The topmost beams of the square transom (taffrail) are thick and curved. They rise a little over the poop deck level. The stern is also stiffened by thick, long knees whose top side is a little above the poop deck level.

6.6 Below the forecastle deck

The galley of the ship is below the forecastle deck, in the centreline of the ship. A picture shows a kettle-like object below the forecastle deck, right below the fore side opening. Two wooden blocks are located in the kettle.



Picture 37. A kettle lying below the forecastle deck, below the small opening abaft the fore mast location. Photo by S. Stockmann.

The purpose of the areas below the forecastle deck on the port side and starboard side is unknown. No objects are visible on the starboard side or port side below the forecastle deck.

6.7 Below the gun deck

The hatchways that provide access below the gun deck are rather large, and the height of the room below the gun deck would be sufficient for diving. However, the research group has not penetrated belowdecks, as this has not been agreed on with the museum staff. Some photo and video material of the rooms below the gun deck is taken from the hatchways of the gun deck.

Some lockers or other largish, box-like objects can be seen from the aftmost hatchway between the main mast and the mizzen mast.



Picture 38. A box visible from the aftmost hatchway. The mizzen mast can be seen in the top left corner. Photo by P. Raasakka & J. Kaasinen.

Below the foremost hatchway between the main mast and the mizzen mast, there is another opening, to the room below the next deck.

A large metal ring can be seen in the room below the aftmost hatchway between the forecastle and the main mast. The ring is possibly attached to lid on top of a scuttle.



Picture 39. A large metal ring seen belowdecks, from the aftmost hatchway between the main mast and the forecastle. Photo by S. Stockmann.

Loose stairs are lying in the room below the third hatchway between the forecastle and the main mast.



Picture 40. A view belowdecks (towards two-o-clock direction) from the fourth hatchway between the forecastle and main mast. Photo by P. Raasakka & J. Kaasinen.

A ridge is formed from silt to the port side below the gun deck in the area between the forecastle and the main mast. The ridge blocks the visibility to the port side below the gun deck in this area.

6.8 Below the poop deck

Some loose planks reside below the poop deck. Remains of a stove or fireplace of some kind are in the middle of the area below the poop deck.



Picture 41. Remains of a stove-like object below the poop deck. Photo by J. Polkko.

A layer of silt covers the port side of the area below the poop deck, close to the break of the forecastle.

No dishes, guns, tools or other objects have been detected below the poop deck.

6.9 Starboard side (outer side)

The starboard side has been superficially examined above the level of the main wale.

6.9.1 Starboard side, stern

Close to the stern in the side, there is a rectangular door-like opening. The size of the opening is roughly 0.5m x 1.5m, and it provides a view below the poop deck. The lower edge of the opening is on the gun deck level.



Picture 42. A rectangular opening in ship's side close to the transom above the gun deck level (viewed from the starboard side). Photo by P. Raasakka & J. Kaasinen.

A horizontal, wooden rail is attached on the side of the ship. It starts close to the top fore edge of the opening, and goes towards the aft end of the gunwale of the gun deck, where the rail ends.

There is a wooden block in the ship's side roughly 1.5m below the poop deck, at the same point where there is a block on the poop deck gunwale.

6.9.2 Gunports

The gunport of the aftmost gun is close to the location of the mizzen mast. The gunport lid is intact and open, and it is hinged from its top edge.

Going fore, the gunport lid of the next gun is missing on the starboard side.

The gunport lid of the next gun is intact. It is intact and open, and it is hinged from its foremost edge.

The lids of the two next gunports on the starboard side are missing.

The gunport lid of the foremost gunport is in its place and closed.

The top edge of the gunports is right below a rail on the side of the gunwale.

6.9.3 Main wale

The height of the main wale is over 0.5m. The main wale is mostly constructed from three rectangular strakes, with one rounded strake on the top, and one rounded strake below. Close to the stern, the main wale is narrowed, and it consists of only two strakes there.



Picture 43. The main wale at the stern. Photo by P. Raasakka & J. Kaasinen.

The top edge of the main wale is roughly 2m below the gunwale of the gun deck.

6.9.4 Attachment of the shrouds in the main mast area

There are some lid-like insertions that look a bit like an edge of a gunport lid in the upper edge of the main wale, close to the location of the aftmost gunports. However, these are more likely to have something to do with attachment of shrouds.



Picture 44. The upper edge of the main wale close to the aftmost gun on the starboard side. An insertion in the wale can be seen close to the centre of the picture. Some crust hanging from the gun (on the right). Photo by P. Raasakka & J. Kaasinen.

There are a lot of remains of iron bolts and rings in the upper edge of the main wale in the area of the aftmost guns. The attachment points of the shrouds of the main mast have apparently been in this area. Aft of this area, similar iron fittings are visible too. These are probably related to the shrouds of the mizzen mast.

6.9.5 Channels in the main mast area

Below the second and third gun from aft, there is a channel, whose length is roughly 4m. The channel is supported by knees. This channel is probably for the shrouds of the main mast.

Afore the channel, there are seven short rails like stairs between the gunwale and the main wale on the side of the ship. The stair rails are attached to a vertical timber that reaches between the gunwale and the main wale. A similar vertical timber is located afore this timber at a less than 1m distance. There are two horizontal strakes between these timbers.



Picture 45. The channel below the foremost gun on the starboard side. Stairs can be seen on the right. Photo by P. Raasakka & J. Kaasinen.

6.9.6 Between the main mast and the forecastle

Small openings of lined scuppers (from the gun deck) can be seen on the ship's side between the main mast and forecastle area.

There are short horizontal rails below two foremost gunports, a little above the upper edge of the main wale.

6.9.7 Attachment of the shrouds in the foremast area

Afore the foremost gunport, there is a vertical timber that reaches between the gunwale and the main wale. Afore this vertical timber, there has apparently been a channel, right below the gunports' level. A knee to support this channel is located a couple of metres afore the vertical timber, but the channel itself is no longer in its place on the starboard side. The channel is still in its place in a similar location on the port side.



Picture 46. A knee for attachment of a channel on the starboard side close to the fore mast area. The channel is missing. Photo by P. Raasakka & J. Kaasinen.

A small lid can be seen in the main wale below the channel attachment point. No other lids can be seen in the main wale area.

6.9.8 Main wale in the bow area

At the bow of the ship, the fore ends of the main wale strakes have become loose from the stem and the side of the ship, except for the uppermost, rounded strake. The uppermost, rounded strake is still attached to ship's side and stempost.



Picture 47. The main wale on both sides has become loose from the stempost. Picture taken from the starboard side. Photo by P. Raasakka & J. Kaasinen.

6.9.9 The hull shape

Looked from above, the side of the ship is remarkably convex. The ship is possibly about 0.5 metres wider at the main wale level than at gunwale level. Therefore, the maximum width of the ship is close to 7m. No measurements for definition of the width of the ship's hull on the main wale level have been made.

6.10 Port side (outer side)

The port side has been examined only partly, mostly below the main wale, at very bad visibility.

The fore ends of the main wale strakes have become loose from the stem and the side of the ship also on the port side.

Several side planks on the port side have become loose from their fore end below the main wale level. However, the vertical timbers of the hull are not visible under the loose planks; only horizontal planks can be seen. This seems to be an indication of existence of **a second layer of planking below the main wale level.**



Picture 48. Loose planks on the port side below the main wale in the mid-ship area (view from the bow towards the aft). Photo by P. Raasakka & J. Kaasinen.

Near the fore mast area, there is a channel still in its original position on the port side of the ship, whereas the channel in the same location on the starboard side is missing.

However, a channel below the gunports in the main mast area is missing on the port side, whereas this channel is still in its original position on the starboard side.

6.11 Stern profile (from the side)

The stern profile is examined by videotaping the stern directly from the side. The upper part of the transom is straight (square stern) above the curved mid-part (wing transom). The angle of the transom in the square stern area is roughly 20 degrees from vertical (not measured).

The break of the square stern is on the gun deck level. Below the break point, the angle of the wing transom is over 45 degrees from vertical. The wing transom is curved, and its angle becomes more vertical when going downwards, to the upper point of the stern post.

The angle of the stern post is less than 20 degrees from vertical.

The lower edge of the main wale on the side is at the level of the top of the stern post (i.e. the lower edge of the wing transom above the sternpost).

6.12 Upper section of the stern (square stern)

The topmost beam of the stern has 3 curved sections. The mid-section of the taffrail is highest, having its highest point at the midline of the ship.



Picture 49. The curved top of the transom. Photo by P. Raasakka & J. Kaasinen.

Below the taffrail there is a horizontal, straight beam. There are 5 openings between the taffrail and the straight horizontal beam. The openings closest to ship's sides are triangular. The middle opening has a circular upper edge and square lower edge.

Below the horizontal beam, there are 5 window-like openings in the transom. This means that the ship has 6 vertical stern timbers in the square stern area. The lower edge of these windows is on the gun deck level. The windows closest to ship's sides are narrower than the 3 others.

Roughly 0.5m above the gun deck level, there is a horizontal, slightly curved beam. The ends of this beam are slightly less than 1m over the ship's sides. The width of this beam is roughly 20cm. The mid-section of the beam seems to be slightly higher than the ends of the beam (not measured).



Picture 50. The starboard end of the crossbeam in the transom, slightly above the gun deck level (picture from the starboard end of the beam). Photo by P. Raasakka & J. Kaasinen.

A part of the width of the beam is outside the transom level.

The aft ends of the gun deck planks are clearly visible in the break of the square stern.

The square stern has apparently been covered by a carved wooden framework. This framework has become loose and lies now in pieces on the seabed behind the stern.

6.13 Mid-section of the stern (wing transom)

The mid-section of the stern is of wing transom type. It has a curved profile, as explained in the chapter 5.8.3 "Main wale".

Also the wing transom has 5 window-like openings, with 6 vertical timbers (counter pieces). There are horizontal beams in the middle of the wing transom windows.

The top of the stern post is in the middle of the middle window of the wing transom. On top of the stern post, there is a large, wooden tiller. The tiller is still in its original position, even though the rudder is lost.



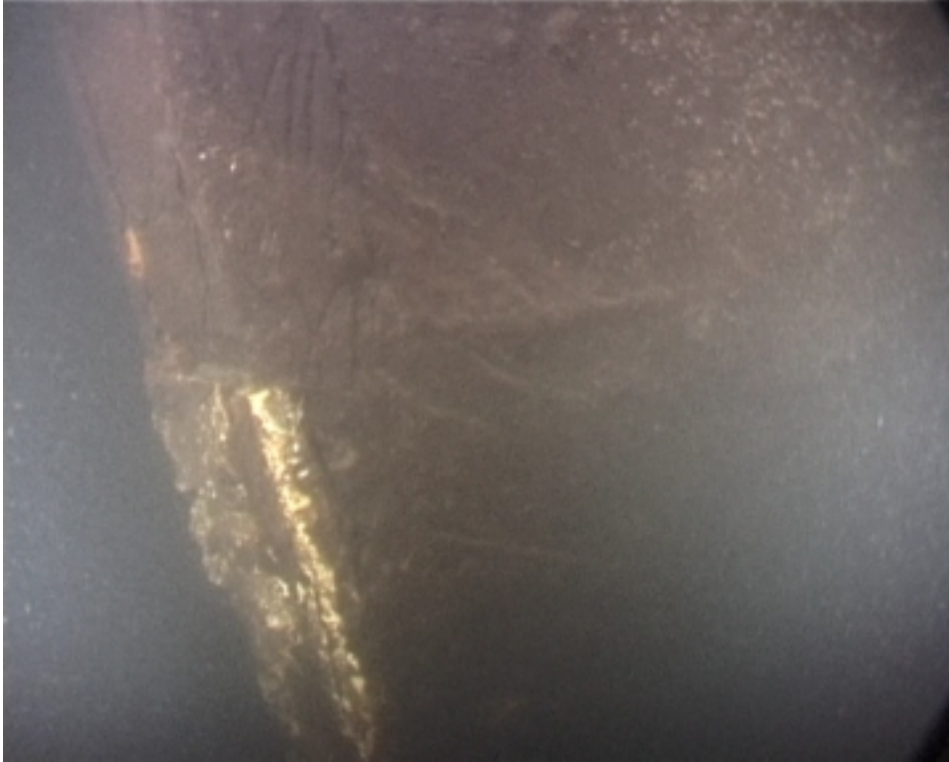
Picture 51. The tiller at the stern below the gun deck. Photo by P. Raasakka & J. Kaasinen.

The aft ends of the bottom planks are attached to the lowermost beam of the wing transom.

6.14 Stern post

The rudder is no longer in its original position.

There are Roman numbers carved on the stern post, on top of each other. Markings "XII", "XI", and "X" are most clearly visible in the upper section of the stern post. The markings apparently indicate the draught in feet.



Picture 52. The top of the stern post with Roman numbers. Photo by P. Raasakka & J. Kaasinen.

The edge of the stern post (where the rudder has been located) is lined with copper plating.

6.15 Planking in the bottom section of the stern

The planking of the ship is not covered with any plating, at least in the stern area.

6.16 Objects on the seabed behind the stern

Some pieces of copper plating lie on the seabed right behind the stern post.



Picture 53. Some objects on the seabed behind the stern. Photo by P. Raasakka & J. Kaasinen.

There are a lot of loose planks on the seabed behind the stern. Some of the wooden artifacts on the seabed on the starboard side behind the stern have carved ornaments in them. Apparently these are from the framework of the square stern.

A horn-like object made of metal lies also on the seabed behind the stern, to the starboard from the centreline.



Picture 54. A horn-like object on the seabed behind the stern. Photo by S. Stockmann.

6.17 Profile of the stem post (bow)

The profile of the stem post in the ship's bow is very close to vertical. The angle of the stem post has not been measured.

6.18 Upper section of the bow

From the catheads to the bow, the gunwale of the ship has a low sawtooth-like shape. There are large wooden bitts on both sides of the bowsprit. The bitts are lined with metal plating on the top side.

Roughly one metre below the forecastle deck level, there are two hawse holes lined with metal on both sides of the stem post.

The main wale is roughly 1m below the hawse holes.



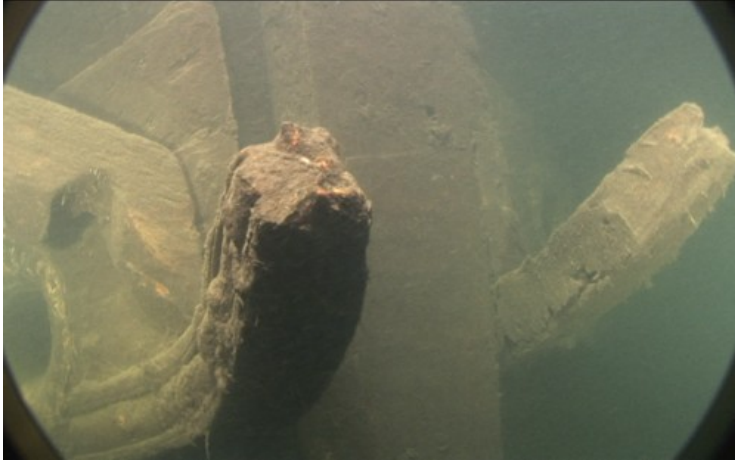
Picture 55. Hawse holes on the starboard side. Photo by P. Raasakka & J. Kaasinen.



Picture 56. Hawse holes on the port side. Photo by P. Raasakka & J. Kaasinen.

There is a lining plank surrounding the hawse holes. The upper edge of this plank has rectangular teeth in it. A couple of small bars perpendicular to the ship side are attached to the starboard side hawse hole lining plank. Close to the stem post there is also a supporting bar at around 45 degrees angle upwards. There has apparently been a horizontal plank on top of the hawse hole lining plank.

Curved strakes (of compass oak?) are attached to the lower edge of the hawse hole lining planks. These strakes on both sides are curved so that their fore ends point outside of the ship, roughly towards the direction of ship's travel. The fore ends of these strakes are broken. They have apparently been attached to the ship's head and figurehead that have become lost and dropped on the seabed.



Picture 57. Curved strakes attached to the lower edge of the hawse hole lining planks. Photo by P. Raasakka & J. Kaasinen.

6.19 Lower section of the bow

A loose, curved strake hangs below the fore ends of the main wale strakes (that have become loose from the stem post).

The stem post remains seemingly close to vertical at its all visible sections.

6.20 Foremast

The heel (breakpoint) of the broken foremast lies diagonally on top of the snatch block on top of the starboard side cathead. The head of the foremast lies on the bottom of the sea in front of the bow of the ship. The mast is at an angle of approximately 45 degrees.

Close to the seabed, in the head of the foremast, there are 3 trestletrees still attached to the mast, and one trestletree that has become loose. In the end of the mast, there is a rectangular mast cap, fallen into two pieces. The trestletrees are supported by cheek planks attached to the sides of the mast.



Picture 58. Trestletrees at the head of the foremast. The head of the mast is in the lower right corner. A cheek plank supporting the trestletrees is close to the centre of the picture. Photo by P. Raasakka & J. Kaasinen.

6.21 Objects on the seabed in front of the bow of the ship

A loose trestletree lies on the mast cap in the bottom. The other end of the loose trestletree lies on top of the neck of a figurehead lying on the seabed.

The figurehead is attached to the top end of a large, curved head that lies on the seabed below ship's bowsprit. The head itself has become loose from ship's stempost and dropped on the seabed. The figurehead represents a bearded man. The figurehead's face is towards port.



Picture 59. The figurehead is lying on its side on the seabed, facing towards port. Photo by P. Raasakka & J. Kaasinen.

The attachment surface of the head towards the stempost is almost straight. The attachment surface is towards the starboard side.



Picture 60. The side of the figurehead. The straight attachment surface is barely visible in the background. Photo by P. Raasakka & J. Kaasinen.

Some unknown, curved wooden objects are located on the seabed between ship's stempost and the figurehead.



Picture 61. Objects in front of ship's stempost (viewed towards the stempost). Photo by P. Raasakka & J. Kaasinen.

The figurehead lies on top of two loose spars. One of these has a u-shaped attachment in its other end.

On the port side of the ship's bow, close to the location of the cathead, there is a stocked anchor on the seabed. The anchor stock points diagonally upwards, the shank is fore and aft, and the ring of the anchor is towards the direction of travel of the ship.



Picture 62. The ring of the stocked anchor lying on the seabed, close to the location of the port side cathead. A wooden rail is lying diagonally against the anchor stock. Photo by P. Raasakka & J. Kaasinen.

Close to the arms of the anchor, there is a wooden block on the seabed. This has probably been used for catting.

A loose wooden rail has become loose from the ship's side, and lies now diagonally against the anchor stock.

7 Terminology references

The following documents have been used as a source for terminology used in this document:

Peter Goodwin: Construction and Fitting of the English Man of War 1650-1850 (Naval Institute Press, 1987. ISBN 0870210165)

James Lees: The Masting and Rigging of English Ships of War 1625-1860 (Naval Institute Press; 2nd Rev edition, 1984. ISBN 0870219480)