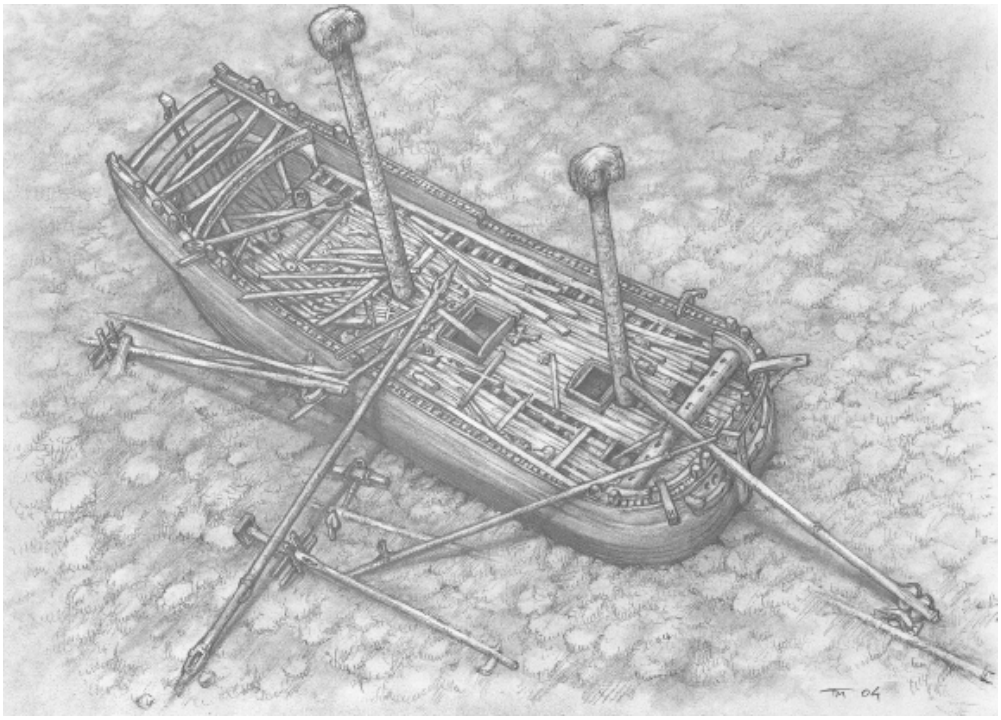
Management plan of the wreck of Vrouw Maria



The Department of Archaeology / Section for Maritime Archaeology 2004

Education and Culture
Culture 2000

Index

0. Administrative details

0.1. Date

9th June 2004

0.2. Executed by (contractor)

The National Board of Antiquities / The Department of Archaeology / Section for Maritime Archaeology
The plan is made by:
Sallamaria Tikkanen, senior researcher, Section for Maritime Archaeology
Riikka Alvik, researcher, Section for Maritime Archaeology
Stefan Wessman, researcher, Section for Maritime Archaeology
Minna Leino, researcher, Section for Maritime Archaeology
Ismo Malinen,researcher, Maritime Museum of Finland
Ulla Klemelä,conservator, Maritime Museum of Finland
Anna Hokkinen, referendary for legal matters, Department of Administration

0.3. Approved authorities

- The Ministry of Education and the National Board of Antiquities / Department of Archaeology / Section for Maritime Archaeology
Contact information: Section for Maritime Archaeology, Hylkysaari, FIN-00570 Helsinki
Role: Responsible for the protection of underwater cultural heritage (Antiquities Act 295/1963)

-The National Board of Forestry, The Archipelago National Park
Contact information: Metsähallitus, Etelä-Suomen luontopalvelut, Virasto-keskus, FIN-21660 Nauvo
Role: The owner of the waters

-The Frontier Guard, Archipelago Sea Coast Guard District
Contact information: Länsi-Suomen merivartiosto, PL 16, FIN-20101 Turku. Phone +358 20 410 7000 Fax +358 20 410 7099
Role: Guards the waters as executive assistance to the National Board of Antiquities

0.4. Regulations

In May 2000, The National Board of Forestry (the owner of the waters) and the National Board of Antiquities (responsible for the underwater cultural heritage) agreed on the boundaries of a protected area around the wreck. On the protected area, it is forbidden to anchor or dive unless it is due to a sea rescue operation or research work conducted by the National Board of Antiquities. Diving on the area is subject to license. At the National Board of Antiquities, it is the Section for Maritime Archaeology that treats the license applications.

0.5. Central registration number and class

Registration of underwater relics: 1658
The Maritime Museum's registration for wrecks: SMM 25:22
First class archaeological site

0.6. Location research area

The district of Trunsjö in the municipality of Nauvo, in the Archipelago National Park
Registration number 533-893-2-1

0.7. Coordinates

Topographical map 1033 01 Smedskären 1:20 000, Helsinki 1993
Nautical chart: The Baltic Sea 25, Jurmo-Rosala 1:50 000, Helsinki 1995

0.8. Environmental context

Coastal Geology

The wreck of Vrouw Maria is located in the outer archipelago of Finland. It lies at the edge of the Baltic basin. To the west there is the third Salpausselkä lateral moraine, forming islands of sand and pebbles with long reefs. It is difficult to navigate safely on the area because of the changing bottom topography. The wreck lies in a deep that is surrounded by rocky islets. The maximum depth of the sea at the site is 41 meters. The sea bottom consists of clay on which there is a thin layer of sand and moraine.

Climate

The main factor influencing Finland's climate is the country's geographical position between the 60th and 70th northern parallels in the Eurasian continent's coastal zone. The climate shows characteristics of both a maritime and a continental climate, depending on the direction of airflow and the position and strength of high and low pressure systems. The average temperature in Finland is several degrees higher than that of other continental areas in these latitudes. There are four seasons in Finland: spring, summer, autumn, and winter. Ice covers the sea for 0 –3,5 months in a year. In 1961-2001 the sea was covered by ice for three months in a year on average. In 1990-2003 there were 60 days of high wind (over 14 m/s) per year on average.

Flora and Fauna

The archipelago is an area of brackish water, the salt content of which is only 6 per mill. There are a few species that have adapted there but the number of individuals is great. The most important mammal is the seal. In 2003, researchers started a survey of the flora and fauna on the site area. According to preliminary results there are the bladder wrack (Fucus vesiculosus), the marine bryozoan (Electra crustulenta), and the common mussel (Mytilus edulis).

Human impact

Because the area is protected, there have not been any unlicensed divers at the site. It is unlikely that there are any fishing nets either since the wreck lies in a deep that is surrounded by shallows.

0.9. Size of research area

The area of the site is app. 2000 square meters (app. 40 x 50 m). The area is determined by the help of a side-scan sonar and a mini robot camera. The wreck is approximately 26 meters long and 7 meters wide. Parts of the frame and the rigging lie on the sea bottom around the wreck.

0.10. Depth

The depth of the sea at the site is 41 meters. The masts of the wreck rise to the depth of 22 - 24 meters.

0.11. Owner of the terrain

The waters on the area are state-owned. The area is managed by Metsähallitus (The National Board of Forestry).

0.12. Reported by

Rauno Koivusaari / Pro Vrouw Maria Association 1999
(The National Board of Antiquities 15/306/1999)

0.13. Periods of research

From the 28th of June 1999 on (see chapter 1.1).

0.14. Site definition

The wreck is located in the Archipelago National Park, in the outer archipelago of Finland. The wreck lies close to an islet called Namnlösan. Movement within the area is limited. The rules of the Archipelago National Park must be obeyed on the area.

0.15. Deposition of archives

Studies and reports concerning the wreck

The National Board of Antiquities / The Department of Archaeology / Section for Maritime Archaeology / the wreck archives at the Maritime Museum of Finland

Archive material concerning the ship and the shipwreck

The National Archives of Finland, Helsinki
The King's letters to the provincial offices of Turku (kgl bref, landshöfd. I Åbo)
The National Archives of Sweden, Stockholm
Diplomatica, Muscovitica

Skrivelser till konungen
Kabinetten, Huvudarkivet, Inkomna handlingar, Huvudserie
Handel och sjöfart 37 (National Archives mf 133)
Russian State Historical Archives, St. Petersburg
The St. Petersburg port customs (F. 138)
Customs transactions (Op. 6) 1771-1772
The Emperor's Cabinet (F. 468)
Imperial ukases (Op. 1, z. 2) 1770-1773
The Danish National Archives, Copenhagen
Sundtoldsregnskabet 1771
von Ostens bind
The National Archives of Sweden, Stockholm
Amiralitetskollegium, Lotskontoret
E VI Dykerihandlingar 1771-72
The City Archives of Turku (Information center)
Turun maistraatin pöytäkirjat 1771 (A I a 9)
Turun huutokauppakamarin pöytäkirjat 1771-1772 (PI a 17-18).
The City Archives of Amsterdam (Gemeentearchief), Amsterdam
Notary Archives, 5075
Not. Thierry Daniel de Maroller (inv. 11474)
Not. Isaäc Pool, (inv. 12724)
Not. Salomon Dorper (inv. 10859-10860)
Not. Engelbertus Marinus Dorper (inv. 15696)
Not. Abraham Coijmans (inv. 12043)
Board of directors of the Moscow-trade (P.A.6, inv. 60)
Registration certificates, 5036 (vv. 1765-1771)
Waterschout (P.A. 38)
Registration of the 40th penning, 5047
Sales of ships through brokers, 5071
Court archives, 5061
The department of Russian history at the Russian Academy of Science, The Archives of the Department of St. Petersburg (F. 115)
Collection of manuscripts, op. 1 D.429a. L.10-13

0.16. Legal status

The wreck of Vrouw Maria is located within the limits of Finland's territorial waters and therefore the Finnish law protects the wreck. The wreck is a first class archaeological site, that is, a wreck that is significant in the view of cultural history. The National Board of Forestry and the National Board of Antiquities agreed that the site area is restricted. Diving on the area is subject to license. The Section for Maritime Archaeology treats the license applications.
In the district court of Turku there is a pending lawsuit about sea rescue and the ownership of the wreck. The parties involved are the State of Finland/The National Board of Antiquities and Rauno Koivusaari, Mikael Martikainen and Top Shark Finland Ltd. According to the interlocutory judgement by the Turku

district court in the autumn of 2002, the maritime law regulations of sea rescue operations can in this case be applied together with the Antiquities Act. The interlocutory judgement is not final. The decision is not appealable until a final judgement is made. The trial will continue in the spring of 2004.

0.17. Recognized threats

When it comes to human impact, the wreck is very safe because it lies deep on the sea bottom, there are no shipping routes nearby, and the coast guard has the area under constant surveillance. The biggest threat now is the diving due to the research work. The degradation process caused by natural forces is going on all the time. Currents cause the greatest changes and parts of the wreck may collapse because of them.

0.18. Date of re-assessment/re-evaluation

The Ministry of Education will receive a report on the future of the wreck in December 2004.

1. Introduction

1.1. Previous studies

Previous archive research

-Christian Ahlström, archive research in Finland, Sweden and Holland from the 1970's to the 1990's
-Pieter Iterzen, archive research in Holland in 1999
-Ismo Malinen, archive research in Finland, from 1999 on
-Pavel A. Krotov, archive research in St. Petersburg in 2000
-Oscar Gelderblom, archive research in Amsterdam in 2002
- Philip Kelsall, archive research in Denmark in 2002

Previous field research

-The wreck was found 28th June 1999, The Pro Vrouw Maria Association, by side scan sonar search
-The identification of the wreck 28th June – 9th July 1999, Rauno Koivusaari from The Pro Vrouw Maria Association and Maija Fast from the Maritime Museum of Finland
- Field research th June - 7th July 2000, Matias Laitinen, The Maritime Museum of Finland
-Control trip 28th May – 30th May 2001 Matias Laitinen, The Maritime Museum of Finland and the Finnish Navy
- Field research th June – 6th July 2001, Matias Laitinen, The Maritime Museum of Finland
-Soil surveying 2001, Jyrki Rantataro, The Geological Survey of Finland
-Topographical surveying 2001, The Finnish Maritime Administration
-Control trip 12th – 14th February 2002, Minna Leino, The Maritime Museum of Finland, The Finnish Institute for Marine Research and The Archipelago Sea Coast Guard
- Field research st June – 20th June 2002, Minna Leino, The Maritime Museum of Finland
- Field research th September –12th September 2002, Stefan Wessman, The Maritime Museum of Finland
-Control trip 10th December – 14th December 2002, Stefan Wessman and Minna Leino, The Maritime Museum of Finland, The Finnish Institute for Marine Research and The Archipelago Sea Coast Guard
- Field research th May – 6th June 2003, Stefan Wessman, The Maritime Museum of Finland
-Control trip 26th August 2003, Stefan Wessman, The Maritime Museum of Finland
-Control trip 9th October 2003, Stefan Wessman, The Maritime Museum of Finland, The Finnish Institute for Marine Research and The Archipelago Sea Coast Guard
-Control trip 3rd of May – 7th of May 2004, Minna Leino and Stefan Wessman, The Section for Maritime Archaeology, The Finnish Institute for Marine Research and The Archipelago Sea Coast Guard

Publications and articles

Ahlström, Christian 1979: Sjunkna Skepp, Lund.
Ahlström, Christian 1997: Looking for Leads. Shipwrecks of the past revealed by contemporary documents and the archaeological record. Suomalaisen Tiedeakatemian toimituksia. Humaniora 284. Saarijärvi.
Ahlström, Christian 1999: Fru Maria på Östersjöns botten. Skärgård 3/1999.
Ahlström, Christian 2000a: Venäjän keisarinna ja hollantilainen koffi-laiva Vrouw Maria. Nautica Fennica 2000.
Ahlström, Christian 2000b: Viestejä syvyyksien sylistä. Hämeenlinna.
Ahlström, Christian 2000c: The Vrouw Maria of 1771: an example of documentary research. The marine archaeology of the Baltic Sea area (III) ed. Carl Olof Cederlund. Newsletter 1/2000, Södertörns högskola, Sweden.
Ahlström, Christian 2002: Aspects of Maritime History of Finland and the Eastern Baltic. Carol V. Ruppé - Janet F. Barstad (eds.), International Handbook of Underwater Archaeology. Kluwer Academic/Plenum Publishers, New York, 2002. (347-366).
Fast, Maija 2000: Vrouw Maria on saanut suoja-alueen. Sukeltaja 4/2000.
Gelderblom, Oscar 2003: Coping with the perils of the Sea. International Journal of Nautical History, December 2003.
Koivikko, Minna 2001: Kenttätutkimuksia Vrouw Marialla. Sukeltaja 6/2001.
Laitinen, Matias 2000a: Vrouw Maria -hylyn suunnitteilla olevat tutkimukset - näkymiä 1700-luvun kauppaan ja merenkulkuun Itämerellä. Uudenkaupungin merihistoriallisen yhdistyksen vuosikirja 1999-2000.
Laitinen, Matias 2000b: Vrouw Maria -hylyn suunnitteilla olevat tutkimukset - uusia näkymiä 1700-luvun kauppaan ja merenkulkuun Itämerellä. Juhani Vainio (toim.); Studia Maritima. Lukuvuoden 1999/2000 yleisöluentoja Turussa ja Raumalla. Turun yliopiston merenkulkualan koulutus- ja tutkimuskeskuksen julkaisuja B115.
Laitinen, Matias 2000c: Vrouw Maria -hylky ja 1700-luvun hollantilaiset purjealustyypit kirjallisissa lähteissä. SKAS 4/2000.
Leino, Minna 2002: Vedenalaisen ultraäänipaikannuslaitteen Aqua-Metre D100 käyttökokemuksia Vrouw Maria -hylyllä vuosina 2001-2002. ICOMOS 4/2002 s. 25-32.
Leino, Minna 2003: Introduction of the Wreck of Vrouw Maria. MoSS Newsletter 1/2003.
Leino, Minna and Klemelä, Ulla 2003: The Field Research of the Maritime Museum of Finland at the wreck Site Vrouw Maria in 2001-2002. MoSS Newsletter 1/2003.
Malinen, Ismo 2003: Research in the history of the Snow Vrouw Maria. MoSS Newsletter 1/2003.
Mellanen, Jaana 2003: Clay tobacco pipes from the Vrouw Maria. MoSS Newsletter 1/2003.
Verweij, Albert: De laatste reis van de Vrouw Maria. Een geval van zeeschade in 1771. Tijdschrift voor zeegeschiedenis 21 (2002).
Wessman, Stefan 2003, The Documentation and Reconstruction of the Wreck of Vrouw Maria. MoSS Newsletter 1/2003.

Course works

Holappa, Maija. 2003: Sinkki 1700 –luvulla. 15.4.2003 Helsinki University, a seminar on sea history

Karjalainen, Mari 2003: Vrouw Maria –hylyn elohopealasti, 25.4.2003 Helsinki University, a seminar on sea history

Tulonen, Essi 2003: Vrouw Marian lasti ennen ja nyt, 23.4.2003 Helsinki University, a seminar on sea history

1.2. Historical context

Vrouw Mariawas a part of the European merchant shipping of the end of the 18th century, when the routes for transporting goods, money, and know-how had established. The ship represents the Dutch trading practices and trade of works of art. Dutch merchant vessels transporting miscellaneous goods were very typical sailing ships at the Baltic Sea at the end of the 18th century even though the majority of the vessels already were of English origin. Denmark got the customs duties on cargoes. The customs were registered at the Sound Customs House. When Vrouw Maria sank, its cargo consisted, typically, of miscellaneous goods. In this case, however, the cargo was exceptionally valuable since there were art treasures that were bought in an auction in Amsterdam and were on their way to Catherine the Great.

2. Assessment of the site

2.1. Description of research assignment

2.1.1. Reference to working standards

The working standards of the National Board of Antiquities, the European Community Culture 2000 Programme / The MoSS Project, the general principles of the UNESCO agreement and the ICOMOS principles for underwater cultural heritage (International Council for Monuments and Sites).

2.1.2. Research objectives

The aim of the research is to get a general view of the wreck and its cargo, the condition of the wreck and the nature and size of the site area, and to have both a proper monitoring system and a safeguarding plan for the wreck.

2.1.3. Expected results

As a result of the research there will be enough information for the experts to find out the different possibilities relating to the wreck's future. Furthermore, the aim is to determine the need to protect the wreck physically.

2.1.4. Aims / wishes of the purchaser

There is no purchaser.

2.1.5. Imposed research conditions

The field research is limited by high costs and difficult working conditions. At the site there is often hard wind and swell, and diving is not safe if the swell is heavy.

2.1.6. Evaluations in between

The first phase of the research is yet not finished and decisions concerning the future of the wreck have not been made.

2.2. Working procedure

2.2.1. Research methods

The site area, which is surrounded by rocky islets and rocks, was surveyed with a side-scan sonar, a multi-beam sonar and a robot camera (ROV). In addition to this, the area around the wreck and some of the interior of the wreck were surveyed with a smaller robot camera. The site is documented mainly by photographing and videotaping. The shape of the hull was recorded with a Goniometer. The other parts of the wreck were measured and recorded in many different ways. An ultrasound positioning system (Aqua Metre D100) was also tried out at the site. There are now several sketches and drawings of the wreck that are based on the gathered information.

Within the MoSS Project, Vrouw Maria has a monitoring strategy the aim of

which is to monitor the environmental variables that act on the site. The researchers use the research methods of physics, chemistry, and biology. The methods of biology are used when examining the affect of bacteria and marine fungi and the changes caused by wood boring animals and human activity. The methods of chemistry are used when investigating water quality and the chemistry of the sediment. The physical aspect will focus on sediment and water movements, and erosion of timbers and artefacts in the wreck. In addition to these, there are data loggers at the site that collect information of the physical conditions of the surrounding seawater. (See the MoSS Project /The Monitoring Theme.)

2.2.2. Imposed working conditions

The wreck is located in the outer archipelago, that is, by the open sea. Winds tend to create a swell that hampers the research work. The fact that the wreck lies at the depth of forty meters shortens the time the divers can be submerged and affects the dive safety, because of nitrogen narcosis, for example. The outside of the wreck is easy to scrutinise but inside only the top of the cargo and some of the structures related to deck construction can be seen.

2.2.3. Modus operandi

After the identification of Vrouw Maria, all the research work has been done solely by the research group of the Maritime Museum of Finland. The group consists of fourteen persons at a time. The persons are not the same every time but there are always at least two archaeologists and one conservator in the group. The coast guard vessels made the control trips. (See the Vrouw Maria research reports 2000-2001.)

2.2.4. Natural sciences, applied sciences and other research

The composition of loose algae is examined, and the species and number of spineless animals are defined. Artefacts that were raised from the wreck are analysed. Archive research has been done in Russia, Holland, Denmark, Sweden, and Finland.

Scientific analyses:
- Element analysis of the metal ingot, 1999, Seppo Hornytzkyj
- Bacteria sample 9th July 2001, PhD Harri Kuosa
-Analysis of mercury in the sediment 17th June 2002, Hanna Kahelin
- Sample of sediment, the MoSS Project 2003, MRAS, unfinished
- Wood and textile samples, the MoSS Project 2002 - 2004, The Mary Rose Archaeological Services, unfinished
- Preliminary biological survey, 2002, Ari Ruuskanen
- Biological survey, 2003, Ari Ruuskanen, Niko Nappu and Veijo Kinnunen,
- Data loggers for collecting information about the physical conditions of the water (ADCP, CTD and Seamon Mini), 2001 – 2004, the MoSS Project and the Finnish Institute for Marine Research

2.3. Research results

2.3.1. Environmental research

A topographical survey was made on the area around the wreck. The wreck lies in the deepest spot of the area, in the middle of rocky shallows. The currents at the sea bottom have formed a terrace next to the wreck. A soil analysis of the area reveals that the sea bottom consists of clay and gyttja clay on which there is a thin layer of sand and moraine.

Data loggers were placed at the site to collect information about the physical conditions of the surrounding seawater (temperature, dissolved oxygen, suspended solids, pH, currents and Redox). We now know

-the temperature from 18th June to10th November 2001

-the temperature, dissolved oxygen, Redox, pH, suspended solids and currents from12th September to 14th December 2002, from 15th December 2002 to 26th May 2003, and from 8th June to 26th of August 2003

The data collecting goes on (from the 9th October 2003 on).

(See the reports made by the Finnish Institute for Marine Research.)

At the site, there are both aerobic and anaerobic wooden samples that were kept at the bottom for different monitoring lengths. The samples were analysed in Portsmouth by the Mary Rose Archaeological Services. The results of those samples that were at the bottom for three months are analysed. In the samples there were bacteria, antinomycetes, and fouling organisms: dinoflagellates and diatoms. No fungi were found.

2.3.2. Physical condition

2.3.2.1. Finds visible on surface

Approximately 1 – 1,5 meters of the lower part of the hull is within the sediment but otherwise the wreck is entirely visible. Most of the parts of the rigging as well as the missing parts of the escutcheon are lying visible on the sea bottom. Since the sea bottom is hard clay, the wreck parts have not made their way into the bottom. There are merely some algae that may cover some of the wreck parts at the bottom.

2.3.2.2. Completeness (how much the wreck resembles the original state, quantity)

2.3.2.2.1. Completeness of the wreck parts

The ship is still standing on her keel in a sailing position. It seems as if Vrouw Maria had been in the same position from the time she sank. The lower parts of the masts are standing up. Other parts of the rigging have fallen down on the deck and on the sea bottom on the starboard side of the wreck. The downfallen parts of the rigging have crushed the deckhouse behind the main mast. Some of the deck planks are loose or missing. Parts of the roof of the captain's cabin and the escutcheon are lying behind the wreck and parts of them are missing. Some of the deck beams have fallen down. Thanks to the captain's protest we

know that the rudder and a part of the escutcheon fell at the time of the shipwreck.

2.3.2.2.2. Stratigraphy intact

The stratigraphy at the site is intact. To ease the identification of the wreck, a few artefacts from the top of the cargo and the deck were raised. Also a glass bottle was raised because it was in danger of breaking, and a tack block that fell down after the wreck was found was raised as well. In 2000, visual monitoring was started at the site. Due to the research work and diving, there are some items that have come off: the arm of the pump from the port side, the tack block from the starboard side, the remains of metal fasteners of the sternpost and the stool of the windlass.

2.3.2.2.3. Mobilia in situ

A part of the cargo and equipment was salvaged at the time of the shipwreck. The rest of the things are in the wreck, practically in those places were they were when the ship sank. Almost all mobilia is still in situ (see 2.3.2.2.2.). Excavations have not been made in the wreck.

2.3.2.2.4. Relation between mobilia and wreck parts

See above.

2.3.2.2.5. Relation between mobilia

See above.

2.3.2.2.6. Stability natural environment

The natural environment is stable. The currents may, however, deteriorate the wreck. Because of the currents there is not any protecting layer of sediment on the wreck. Thanks to the depth of 40 meters, the wreck is protected from ice and wave movement. The temperature in the water is between 0 and +13ºC. There are no wood boring animals on the area, and the fungi and bacterial activity is slow.

2.3.3. State of preservation

According to archive information, there is a many-sided cargo in the wreck. The cargo's state of preservation is not known. A general evaluation of the state of preservation is made by plain visual observation. The state of preservation is better known when it comes to the raised and conservated artefacts and the tack block.

2.3.3.1. Organic wreck parts

Vrouw Maria was a wooden ship and therefore the wreck is mainly wood. The top layer of the wood is worn but otherwise the wood is hard and it looks as if

it is in good condition. There seem to be no remains of paint. There are no wood-boring shipworms on the area.

2.3.3.2. Inorganic wreck parts

The iron parts that are visible are mainly bolts that are corroded. There is very little metallic iron left in the bolts and it is likely that the bolts are not good fasteners any more. The ship's oven, which is made of brick, seems to be intact.

2.3.3.3. Organic mobilia

The wooden artefacts and equipment that are visible lack the original top layer but otherwise they seem to be in good condition.

2.3.3.4. Inorganic mobilia

In the wreck there are two anchors that have metal arms and palms. A layer of crust covers the metal parts but there is some metallic iron left under the crust. The surface of the zinc ingots is corroded but the metal is in good condition (no analysis of the corrosion has been made). In general, zinc bears well in seawater. The lead seal is badly corroded, probably because there was organic material, such as textile, near the seal. On the deck of the wreck there is a lead that appears to be in good condition. The clay tobacco pipes on the top of the cargo are in good condition and the majority of them are still whole. The raised glass bottle has glass disease but it is unbroken.

2.3.4. Cultural-historic and archaeological data

2.3.4.1. Identification

The ship is a Dutch Snow-ship that was used as a merchant vessel. On the base of archive information and the objects that were raised form the wreck it is known that the ship is the sailing ship Vrouw Maria. The very first documents about the history of Vrouw Maria were found by Dr. Christian Ahlström in the Finnish National Archives as early as at the end of the 1970's. The search for the wreck was restarted in the 1990's when researches started systematically look for information about the sinking position and the cargo. The wreck was found in a side scan sonar search that was organised expressly to find the wreck of Vrouw Maria. The wreck was identified as Vrouw Maria since it lacked the rudder and its stern was damaged – just like it was said in the captain's protest. A metal ingot was raised. It was zinc, which according to the registers of the Sound Customs House was a part of the ship's cargo. Lead seals in the hold indicate that there had been clothes in the cargo. Clothes were also mentioned in the Sound Customs registers.

2.3.4.1.1. Cultural context

Vrouw Maria was a part of Dutch sea trade. The Dutch trading company of East India brought goods from the Far East to Holland and from there the goods were spread to other parts of Europe. A part of traders heading for Russia

used the Baltic Sea and thus went via the Danish Straits.

2.3.4.1.2. Century

The end of the 18th century.

2.3.4.1.3. Exact dating

The exact year of the building of the ship is not known. The ship sank on 8th - 9th of October in 1771.

2.3.4.1.4. Function

A merchant vessel.

2.3.4.1.5. Type

A Snow ship.

2.3.4.1.6. Operating area

Europe.

2.3.4.1.7. Propulsion

A sailing ship.

2.3.4.1.8. Size

The length from the stem to the stern on the main deck is 26,34 meters. The width of the ship at its widest is 7,10 meters from railing to railing. Parts of the wreck can be found on an area that is 40 x 50 meters.

2.3.4.1.9. Material

The wood has not been analysed. It is likely that the hull is of oak and the masts are of larch.

2.3.4.1.10. Building tradition

A carvel-built ship. The building place or the technique is not known.

2.3.4.1.11. Inventory

A part of the cargo and equipment (the rowing boat and the ship's bell, for example) were salvaged at the time of the shipwreck. Some of the equipment is still in the wreck. On the deck there is for example the lead and its line. One of the ship's anchors is still hanging in its place on the port side of the railing and the other lies next to the starboard side of the wreck on the bottom of the sea.

2.3.4.1.12. Cargo

According to the list of the salvaged things the cargo consisted of coffee, tea, books, tobacco, figs, brandy, corn, vinegar, flower bulbs, seeds, and mineral

water. According to the Sound Customs lists the ship had typical trading goods such as sugar, pigments, cloths, cotton, and metals. There were codfish, herring, cheese, butter, sewing thread, and paper as well. In addition, there were miscellaneous goods, the customs duties of which were considerably high. The upper parts of the cargo are partly visible in the wreck and the following objects have been identified: clay pipes, zinc ingots, a box of glass lenses, lead seals and possibly the remains of cloths. Some of the boxes still have the covers in their place.

2.3.4.1.13. Personal belongings

The ship was kept on the surface for five days after the wrecking and some of the objects were salvaged. It is nevertheless probable that some of the crew's personal belongings are still in the ship. The divers have not yet seen any such things.

2.3.4.2. Constructional features

The site is an 18th century Snow ship with an intact hull. Of a ship of this kind there are some drawings and paintings left. Ships in these pictures are far more decorative than Vrouw Maria. Because of a misinterpretation of a document, the wreck was first incorrectly identified as a Koff ship.

2.4. Risk assessment

2.4.1. Natural impact

The major changes at the site are caused by currents that erode the wreck. This in turn may cause the wreck parts to loosen and collapse.

2.4.2. Human impact

The site is far from human settlement and there are no sailing routes on the area. In other words, the human impact was practically non-existent until the wreck was found. Because of the protected area, the impact is now minimised. At the moment, the biggest threat is the wearing down that is caused by the research diving.

3. Cultural valuation of Vrouw Maria

3.1. Experience aspects (quality)

3.1.1. Aesthetic values

3.1.1.1. Visibility

3.1.1.1.1. Visibility as a landscape element

The wreck is at the depth of forty meters which means that it is not in sight. The shipping route to St. Petersburg went closer to the Estonian coast and therefore did not use the area in question unless in special circumstances.

3.1.1.1.2. Visibility as an exposition element

Thanks to its completeness, the wreck looks very much like the sailing ship that sank in 1771. Because of its small size the wreck could be exposed in a museum. It would also make a good site for visualising a wreck in situ (underwater filming, for example). The wreck is very delicate and there are a lot of small items in there so that for the time being, it cannot be opened for the diving public.

3.1.2. Memory value

3.1.2.1. Historical value

The local people have no oral tradition left that would tell us about the shipwreck but the number of written documents is great. Based on the documents it is obvious that the wrecking of Vrouw Maria was a notable event. The ship represents the lively Dutch trading of the end of the 18th century. It is a reminder of the technological standard and the immensity of trade of its time. It also tells us about the shipwreck itself, the salvage operations, and art trade.
The wreck has a legendary reputation among skin divers. Because of archive information, its story was known for over twenty years before the wreck was finally located.

3.2. Physical quality

3.2.1. Structural integrity

3.2.1.1. Presence of ship construction

The presence of ship construction can be evaluated only by surveying the outer covering of the wreck because the original building tradition is not known. So far it is impossible to try to find out the building tradition since the wreck is full of various things. From the outside, the deck stringers that work as longitudinal stiffeners are in good condition. Of those parts that provide lateral strength only the deck beams can be seen. Some of them have already come off their place. It is likely that the iron nails that were originally used contain healthy metal very little and the strength of them is therefore nonexistent. The deck cabin behind the main mast collapsed when parts of the rigging fell over it. The cover of the captain's cabin at the stern and the escutcheon are lacking and

some of the deck beams have twisted out of their place, which weakens the strength of the stern. In general, the ship construction seems to be whole.

3.2.1.2. Completeness of the wreck parts

The completeness of the wreck parts is evaluated visually. So far there is only one wreck part that has been raised: the tack block. The parts of the wreck are mostly whole. The rigging has fallen to pieces but the breaking has taken place in the course of years, when the fasteners have decayed, and the loose parts are on the deck and on the sea bottom on the starboard side of the wreck. For example the deck cabin has collapsed when parts of the rigging have fallen on it. Smaller parts have loosened at the joints when falling and for example the handrail is in many pieces on the deck.

3.2.1.3. Stratigraphical conditions

The stratigraphy is complete since no excavation has been done.

3.2.1.4. Mobilia (portable antiquities) in situ

There are very few objects on the deck. Most of the portable antiquities are in the hold.

3.2.1.4.1. Relation between mobilia and ship parts

Nothing has been moved in the wreck, which means that the mobilia is in its original place, in the main hold mostly.

3.2.1.4.2. Relation between mobilia

Thanks to the Sound Customs lists and the catalogue of the salvaged things we know the main contents of the cargo. Since only the top of the cargo has been surveyed (with a mini robot camera and a video camera) we do not know much about the relation between mobilia. It looks as if the cargo moved when the ship sank. At least the zinc ingots have spread all over the hold and some of the ingots can be seen on the top of the cargo. However, in the hold there are also hundreds of unbroken clay pipes, a box of glass lenses in neat piles, and barrels and packing cases in rows. In other words, all the cargo did not move in the course of the shipwreck. None of the objects inside the wreck is separate. The objects are closely related to one another.

3.2.1.5. Stability of the natural environment

The currents reach the interior of the wreck mainly through the cabin in the stern. Based on the organic sediment on the top of the cargo we believe that the currents inside the wreck are not significant. The interior of the wreck is very stable.

3.2.2. State of preservation

3.2.2.1. Wreck parts

3.2.2.1.1. Organic material

The wood of the wreck is in good condition. For example, the tack block that was raised is hard oak. See chapter 2.3.3.1.

3.2.2.1.2. Inorganic material

The iron parts are corroded and a layer of crust covers them. See chapter 2.3.3.2.

3.2.2.1.3. Composite material

Not yet known.

3.2.2.2. Artefacts

The artefacts in the wreck seem to be in fairly good condition. See chapter 2.3.3.3.

3.2.2.2.1. Organic material

There appear to be some cloths in the wreck but the condition of them is not yet known.

3.2.2.2.2. Inorganic

The zinc has worn well except for the top layer. The clay pipes are well preserved.

3.2.2.2.3. Composite

Not yet known.

3.3. Quality of archaeological information

3.3.1. Representative value

3.3.1.1. Chronological information

The wreck of Vrouw Maria represents a typical merchant vessel of the end of the 18th century. The artefacts in the wreck were manufactured before October 1771 (before the ship sank). Because the building year is unknown we do not know when the ship had been equipped. It is likely that usable equipment was recycled, which means that even in a new ship the equipment was not necessarily brand new. All in all, it can be said that the wreck represents the 18th century up till the year 1771.

3.3.1.2. Regional information

The wreck represents the European trading tradition and especially the Dutch sea trade. The cargo symbolizes global trading since the goods came from different colonies and from the Far East, for example. Small merchant vessels transporting miscellaneous goods were very typical sailing ships at the Baltic

Sea at the end of the 18th century. The building place of the ship is unknown but the ship represents Dutch ship building tradition. Based on archive information we know that this is a Snow ship. Of Snow ships, there are only a few drawings left, which means that the wreck of Vrouw Maria gives us new information about the ship building history of the end of the 18th century.

3.3.2. Significance of information

3.3.2.1. Geographical significance

The wreck represents European sea trade and global trading. The goods came first to Amsterdam from different colonies and the Far East, and then they were taken to other parts of Europe.

3.3.2.2. Historical or archaeological significance

In the historical sense the wreck is extremely appealing because due to its exceptional cargo, there is very much information about the ship in various archives. By the help of Vrouw Maria we can learn the ways Dutch merchants organised transportation and protected the goods against the hazards of transport by sea. In addition, the 18th century shipwreck procedures can be studied. What also makes the events of Vrouw Maria fascinating is the fact that they are connected to prominent persons of the time, such as Catherine the Great.

Archaeologically the ship is of great interest because of its good condition and intactness. This makes the research work easier. Although a large part of the cargo was salvaged there still are a lot of things in the hold. According to the customs documents there is a considerable amount of valuable miscellaneous goods in the cargo. Only archaeological excavations can help us to solve the nature of the goods. Vrouw Maria represents the typical Dutch merchant vessel of its time but its cargo is a unique combination of different goods. The knowledge we have on the 18th century procedures of packing and transport are based solely on different guidelines and directions. The question of how all this was done in practise can be answered only by the means of archaeological research.

The cargo is especially interesting because of its works of art, the art historical value of which is outstanding. Regardless of the state in which the paintings and pieces of art are after being at the sea bottom for over two hundred years, the mere locating of them is extremely significant. Among the paintings there is for example a triptych by Gerard Dou (1612-1675). The painting is one of Dou's masterpieces and its value can be compared to that of Rembrant's Nightwatch.

3.4. Conclusion

Vrouw Maria represents the technical knowledge and consumer habits of its time as well as the procedures of trade and salvage operations. The shipwreck

of Vrouw Maria shows us how information spread in the 18th century and how the authorities in different countries proceeded in a case like this. In addition, the ship demonstrates the international legal praxis of its time. The wreck of Vrouw Maria is a very complete and intact whole. Its history is very thoroughly known. Because of the cultural historical and scientific values, the wreck of Vrouw Maria is globally significant.

4. Site management

4.1. Cost-benefit analysis and general conclusion

The research funding from the European Union and the National Board of Antiquities enabled principal scientific research at the wreck during the years 2001 - 2004. The results of the project can be presented by visualizing the wreck in a museum, and entrance fees can be collected. The safeguarding of the site will ensure that valuable cultural heritage is preserved for the future.

Now that the public has seen the wreck from outside, the next phase is to start the archaeological diggings inside the wreck and find out what is left of the valuable cargo. This phase of the investigations is very time consuming and for that reason expensive as well. Without the engagement of the Ministry of Education, this kind of an operation, which can be compared to the investigation of the Mary Rose in the UK, is not possible.

4.2. Site management agenda

Because of the still on-going investigations, the site management plan for Vrouw Maria is at the moment only short-term. The National Board of Antiquities will give its opinion and report on the further studies and the possibility of raising the wreck to a museum by the end of the year 2004. The report will be given to the Ministry of Education in Finland. The future of the wreck depends on the decision of the Ministry of Education and on the available resources.

4.2.1. Safeguarding

4.2.1.1. Legal safeguarding

According to the Antiquities Act (295/1963), the wrecks of ships and other vessel discovered in the sea or in inland waters, which can be considered to be over one hundred years old, or parts thereof, are officially protected.

The regulations concerning underwater cultural heritage were altered at the end of the year 2002. The section number 20, which is about discovered ships and vessels, was altered by law (941/2002). The law came into force the 1st of December 2002. The first subsection was modified so that, instead of the age of the wreck or its part, the protected wrecks are defined by the sinking date. According to the altered subsection, the wrecks of ships and other vessels discovered in the sea or in inland waters, which can be considered to have sunk over one hundred years ago, or parts thereof, are officially protected.

The section number 20 got a new subsection at the same time: a wreck or a wreck part belongs to the state if in view of the external circumstances it is obvious that the owner of the wreck has abandoned it. The alteration was made in order to specify the definition of protected wrecks. The new subsection was added in order to clarify the legal state of affairs that prevailed earlier. Although

it was not directly said in the law text, the original intention of the legislators had been to make sure that historical wrecks belong to the state.

Objects discovered in wrecks or wreck parts or objects evidently originating from such contexts, shall go to the state without redemption. In other respects the provisions concerning movable ancient objects shall apply where relevant.

4.2.1.2. Physical safeguarding

In May 2000, The National Board of Forestry (the owner of the waters) and the National Board of Antiquities (responsible for the underwater cultural heritage) agreed on the boundaries of the protected area. The area is circular and its diameter is 1500 meters. On the protected area, it is forbidden to anchor or dive unless it is due to a sea rescue operation or research work conducted by the National Board of Antiquities. Diving on the area is subject to license. The Section for Maritime Archaeology treats the license applications.

The Frontier Guard watches the waters as executive assistance to the National Board of Antiquities. The Archipelago Sea Coast Guard monitors the site area all the time using a surveillance camera that is placed near the site. The wreck is located in the Archipelago National Park and in addition to the regulations mentioned above, the rules of the National Park must be obeyed on the area.

4.2.2. Monitoring

The wreck and its condition are monitored both by visual means and by the analysis within the MoSS Project. Since the year 2000, control pictures have been taken of certain parts of the wreck. The samples connected to the MoSS monitoring plan are analysed in Portsmouth by the Mary Rose Archaeological Services. The analysis helps us to find out how the bacteria and microbes act in wooden structures. In co-operation with the Finnish Institute for Marine Research, the MoSS researchers examine also the environmental factors (ADCP/ CTD data) at the site. Researchers from the University of Helsinki examined the flora and fauna at the site in 2003. Preliminary plans for the continuing of the monitoring will be made by the end of 2004. (The MoSS Project ends 30th June 2004.) The plans will be defined more closely when the Ministry of Education in Finland has made its decision on the future of the wreck.

4.2.3. Visualizing

According to the plans of the MoSS Project, a three-dimensional virtual model of the wreck will be finished in 2004. There is a lot of picture material that is and will be shown in various exhibitions, on the Vrouw Maria Homepage, and in many publications. In the spring of 2004, a diorama model of the Vrouw Maria field research was made. Overview drawings, which are based on slides and videotapes of the wreck, were made as well. The writing of the book on Vrouw Maria goes on. The wreck is shown in the MoSS publications and in a

publication that is part of an IKUWA series and is expected to be published in 2006. The wreck will be presented at the Maritime Museum of Finland, at the Maretarium aquarium in Kotka in the summer of 2004, and in the Post Museum in Helsinki in the autumn of 2004. The wreck will be presented at the new Maritime Museum in Kotka in 2007 or later.

4.2.4. Finance

Decisions on the future financing will be made in the autumn of 2004.

4.3. Date of re-assessment / re-evaluation

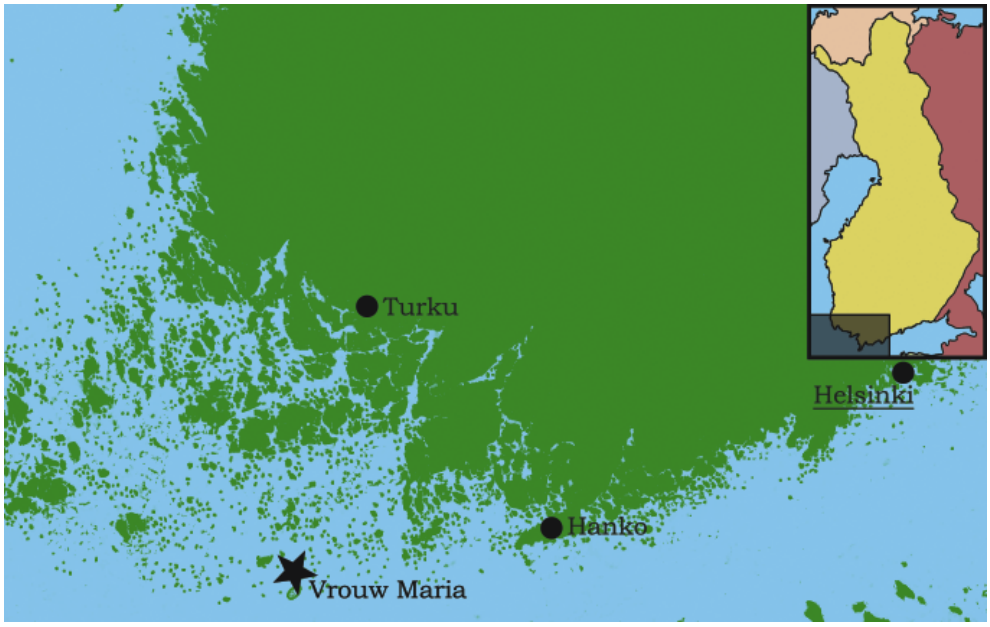
The Ministry of Education will be given a report on the future of the wreck by the end of 2004. The date of re-assessment will be after the Ministry's response.

Attachments

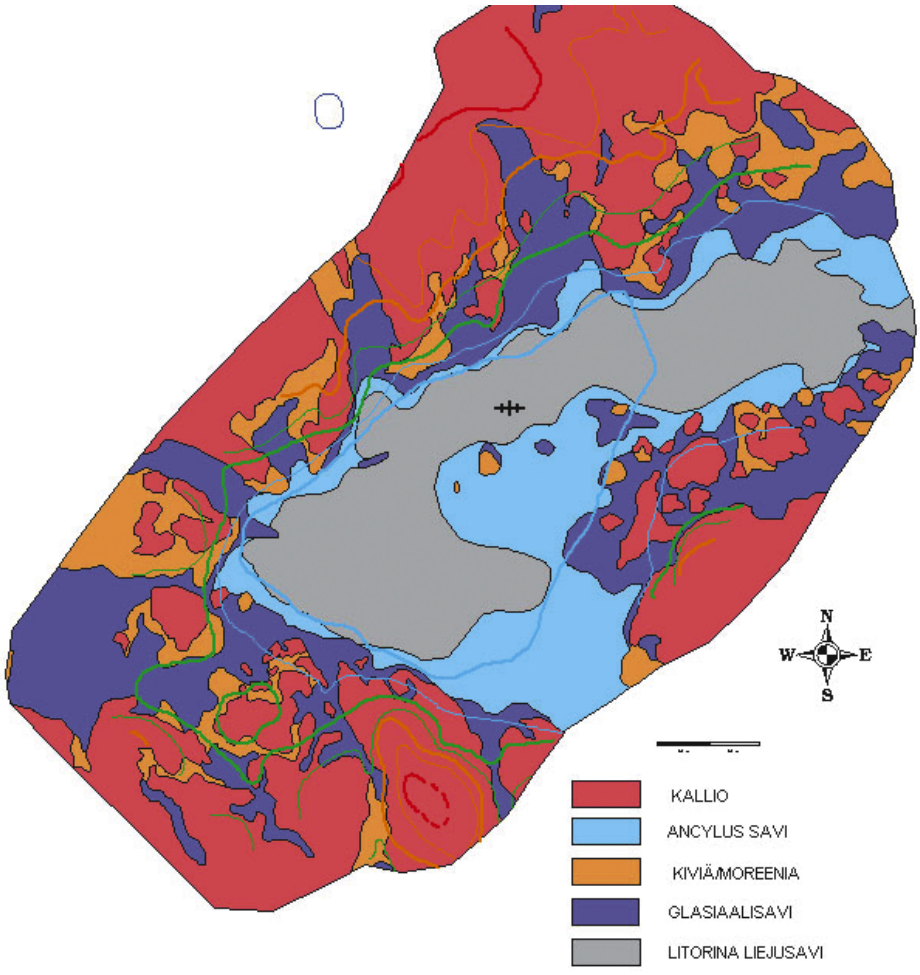
1. Maps of the research area.
2. General views of the wreck
3. Objects raised from the wreck of Vrouw Maria

Appendix 1

Map of the research area



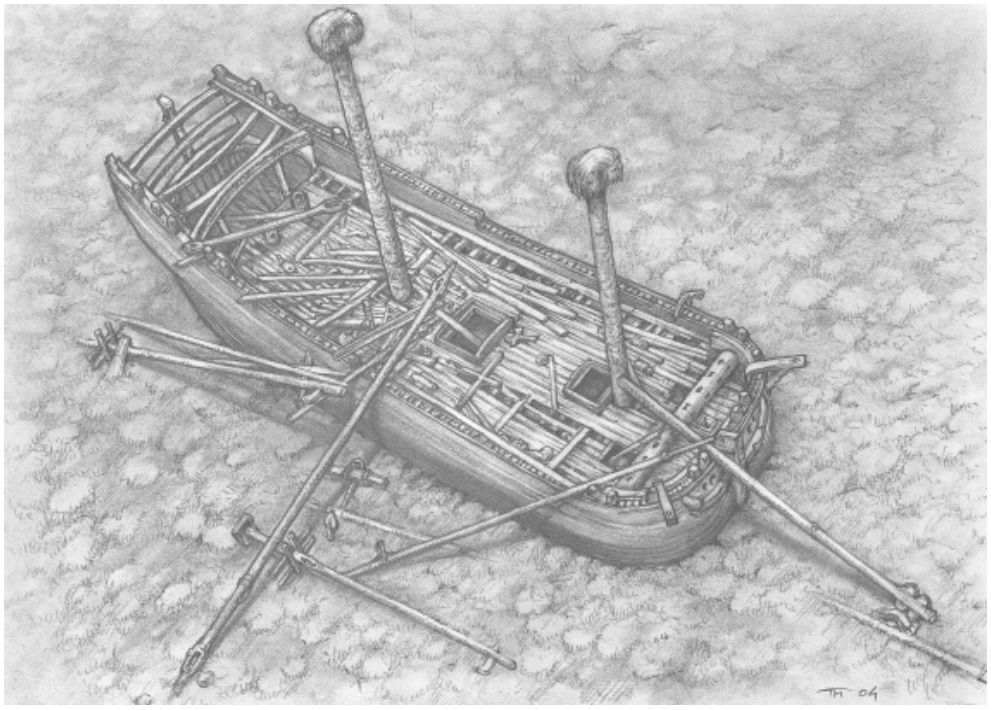
1 A. The location of the wreck of Vrouw Maria.



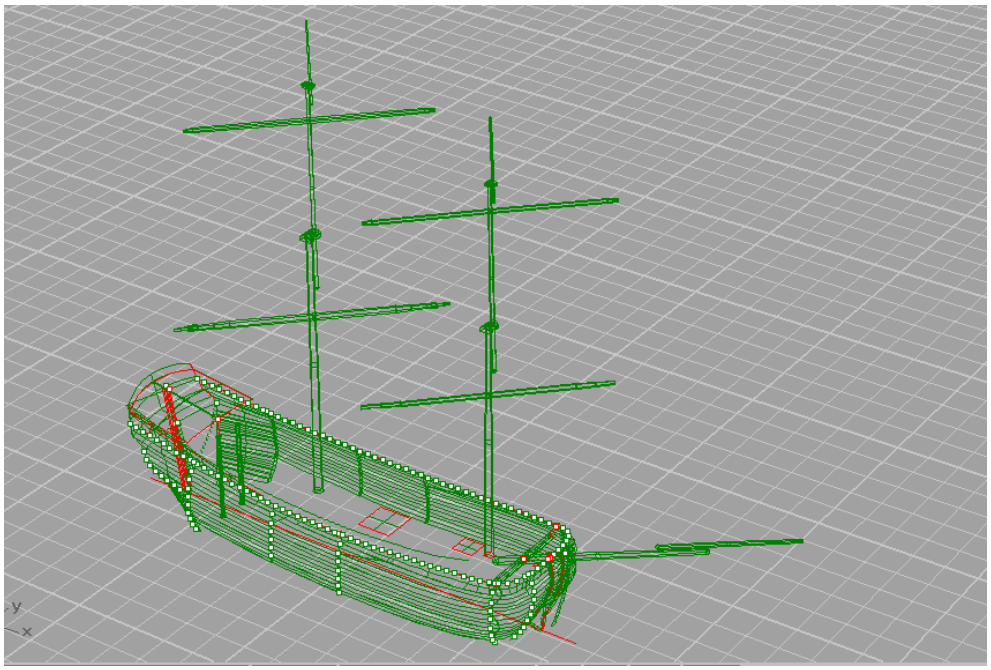
1 B. A soil map of the Vrouw Maria wreck site. Geological Survey of Finland, Jyrki Rantataro, 2001.

Appendix 2 (1 / 2)

General views of the wreck



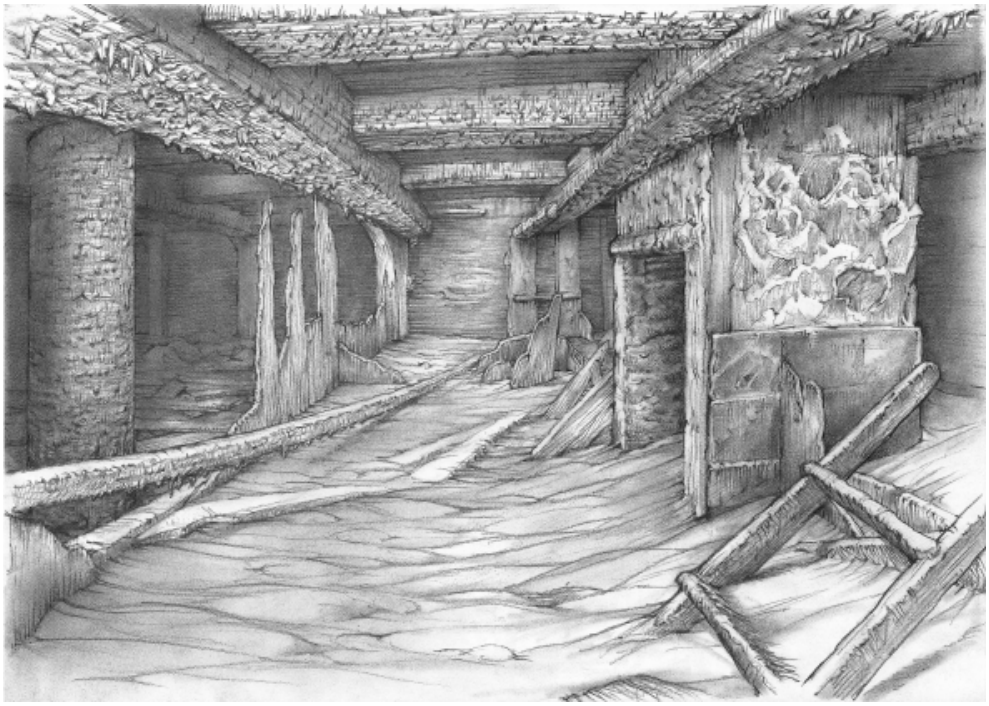
2 A. An artist's impression of the wreck of Vrouw Maria. Drawn by Tiina Miettinen, The National Board of Antiquities, 2004.



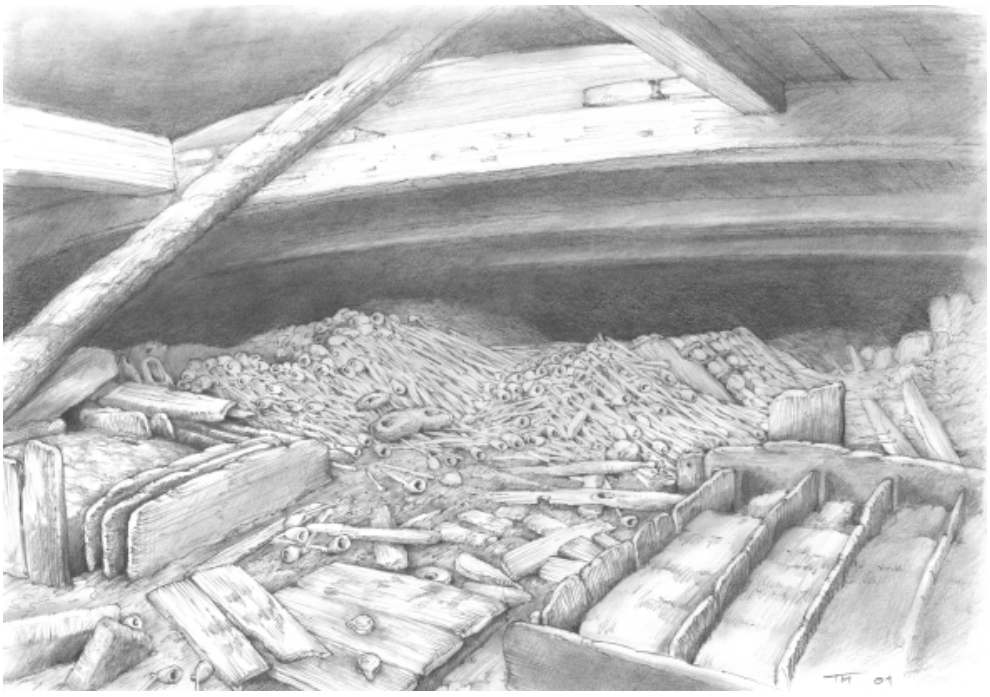
2 B. 3-D model of the wreck of Vrouw Maria. The reconstructions are based on precise measurements. Model by Stefan Wessman, The National Board of Antiquities/The Section for Maritime Archaeology, 2004.

Appendix 2 (2 / 2)

General views of the wreck



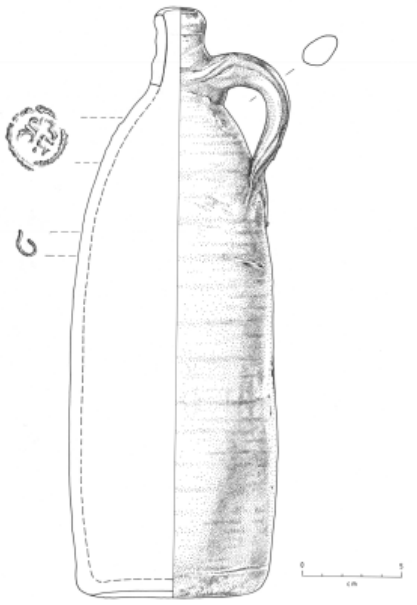
2C. The interior of the bow of Vrouw Maria. To the right there is the ship's oven. Drawn by Tiina Miettinen, The National Board of Antiquities, 2004.



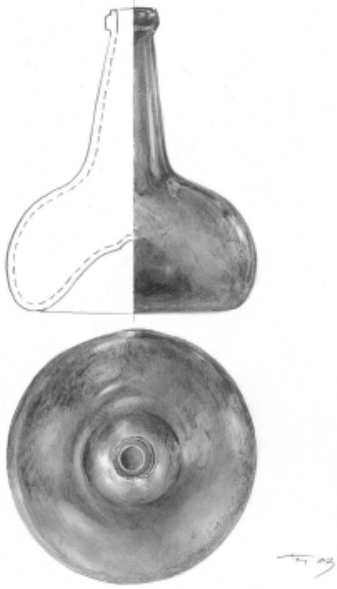
2 D. The Vrouw Maria cargo hold with clay pipes, zinc ingots and packing cases. Drawn by Tiina Miettinen, The National Board of Antiquities, 2001.

Appendix 3 (1 / 2)

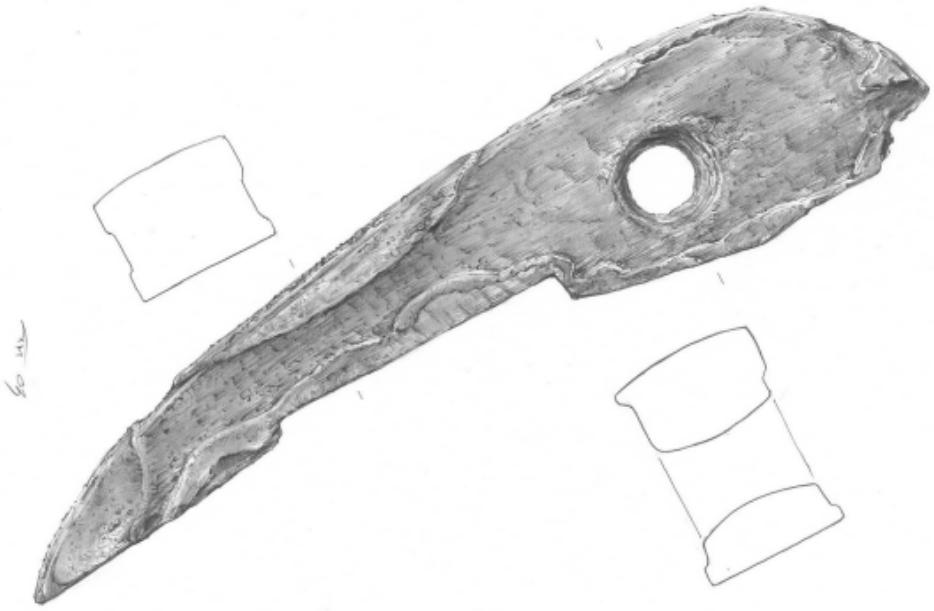
Objects raised from the wreck of Vrouw Maria



A clay bottle (SMM 01599:6). Drawn by Tiina Miettinen, The National Board of Antiquities, 2001.



A glass bottle (SMM 82002:2). Drawn by Tiina Miettinen, The National Board of Antiquities, 2003.

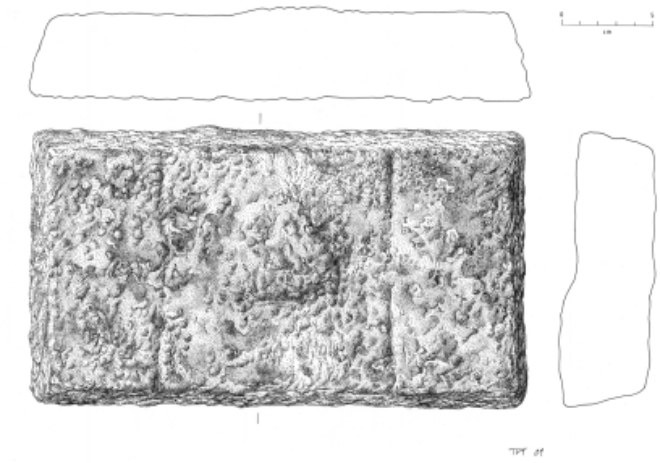


A tack block (SMM 82002:3). Drawn by Tiina Miettinen, The National Board of Antiquities, 2003.

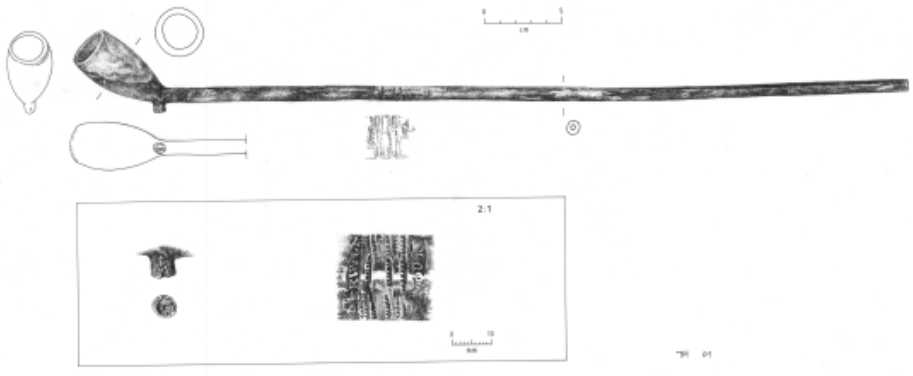
Appendix 3 (2 / 2)

Objects raised from the wreck of Vrouw Maria

A lead seal from a packing of cloth (SMM 01599:2). Drawn by Tiina Miettinen, The National Board of Antiquities, 2001.



A zinc ingot (SMM 01599:1). Drawn by Tiina Miettinen, The National Board of Antiquities, 2001.



A clay pipe (SMM 01599:3). Drawn by Tiina Miettinen, The National Board of Antiquities, 2001.