Monitoring, Safeguarding and Visualizing North-European Shipwreck Sites: Common European Underwater Cultural Heritage - Challenges for Cultural Resource Management

1/2002

MoSS Newsletter

A shipwreck research project funded by the European Union Culture 2000 Programme

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Introduction

This is the first issue of the MoSS Newsletter. The project will produce and distribute nine issues of the Newsletter all in all. The first issue and the last issue are more extensive while the ones in between have the character of information leaflets.

The first issue presents the project, its background, aims, and motives. The next four issues will each present one of the wreck sites of the project in detail and give information about the development of the work done on each site both within the project and in general. The following three issues will each deal with one of the themes of the project. The last issue of the Newsletter will introduce the results of the project.

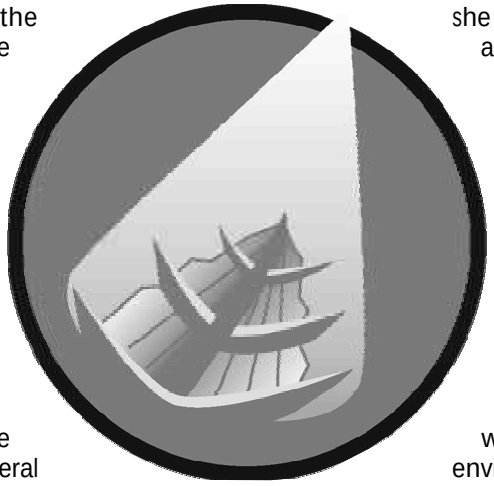
Carl Olof Cederlund
Editor

Education and Culture
Culture 2000

Sallamaria Tikkanen

What Is MoSS?

The project is set up with the aim of monitoring, safeguarding and visualizing shipwrecks. When monitoring the condition of the wrecks, our objective is to develop and improve the methods used in monitoring the physical and environmental conditions of shipwrecks. In the course of the project, three different wrecks get devices that measure environmental conditions. The safeguarding of the wrecks includes outlining and developing models to protect shipwrecks so that also the needs of different public groups are taken into account. When visualizing the shipwreck sites, the aim is to inform the European public about the shipwrecks of the project in many languages and many ways, and special attention is given to different visual aids.



The project consists of fieldwork, Internet sites, publications, posters, leaflets, reports, articles, meetings, and seminars. Information on the wrecks will be sent out in various ways. One of our objectives, which are both short and long term, is to produce information not only to the general public but also to the experts in the area of protecting the cultural heritage.

The aim is to awaken European peoples' interest to our common underwater cultural heritage and to have the general public participate in protecting the heritage. The project acts as an underwater window to four significant European shipwrecks in the Netherlands, Germany, Sweden, and Finland.

The main organizer of the project is the Maritime Museum of Finland, which is answerable for the project as a whole. The co-organizers are the Mary Rose Archaeological Services Ltd. (UK), the Netherlands Institute for Ship- and Underwater Archaeology (The Netherlands), the Centre for Maritime Archaeology (Denmark), the Archaeological State Museum of Mecklenburg-Vorpommern (Germany), and Södertörns högskola, University college (Sweden).

The project is based on four shipwrecks, all of which are of great significance from a European point of view. The wrecks are located in the Netherlands, Germany, Sweden, and Finland. The wreck in the Netherlands is an unknown merchant vessel that has been dated to the middle of the 17th century. It may be that the ship originates from the areas that now belong to Germany. In the wreck, divers have found ceramic pots from the Iberian Peninsula (now Spain and Portugal). The wreck is located in the western part of the Wadden Sea. The wreck in Germany is an unknown cog from the 13th century. The wreck is at the mouth of Prerowstrom in the state of Mecklenburg-Vorpommern. The wreck in Sweden is a paddle steamer called E. Nordevall that suffered shipwreck in 1856. The wreck is in lake Vättern. The wreck in Finland is a merchant vessel called Vrouw Maria. The Snow ship was on her way from Amsterdam to St. Petersburg in 1771 when she suffered shipwreck and sank in the archipelago in the most southwestern parts of Finland. All the wrecks have lasted extremely well: two of them are almost intact and two of them have lower parts of the hull left.

The four wrecks are in different kinds of underwater environments: in an inland sea by the Atlantic, in brackish waters in the southern and northern parts of the Baltic Sea, and in a fresh water lake. In other words, we get many-sided information when we monitor the physical and environmental conditions of the wrecks.

The project results are registered regularly, and the Project Evaluation Board gives an annual report to the European Commission. In the board there is also an outside evaluator.

The MoSS Project is funded by the European Community Culture 2000 Programme. The Culture 2000 Programme is a European Community programme that supports transnational cultural co-operation projects that involve organizers from several countries. The objectives are among other things to encourage co-operation, to promote the common European cultural heritage, and to disseminate the knowledge of the history and culture of the peoples of Europe. In 2001, it was the first time projects on underwater archaeology were called to take part in the program. Our project is the first international shipwreck project that was taken within the Culture 2000 Programme.

More Information

General information on the project will be given by Sallamaria Tikkanen, Project Leader, The Maritime Museum of Finland. Phone +358 9 4050 9057, e-mail sallamaria.tikkanen@nba.fi

Carl Olof Cederlund

Background and Future Perspectives of the MoSS Project

In a historical perspective, the introduction of human activity and human society in its different forms into the marine environment is closely related to the development of diving and underwater techniques. The interest in history and archaeology, long inherent in the human society, has been introduced into the underwater world – and all the archaeological remains there - successively and in step with the development of the techniques.

Historical interest was expressed through diving and salvaging operations, although very rarely, even before the times when the diving apparatus and the diving suit were introduced in the 19th century. One then used diving bells and early diving equipment with a simple, technical design – or free diving.

The Introduction of the Heavy Diving Suit

The same historical interest can be seen to expand in the middle of the 19th century. This was evidently connected with the introduction of the heavy diving suit that enabled divers to stay and work longer periods of time underwater. The different types of diving suit designs that were developed in the 19th century were bought and used by several European nations and their navies. However, the suits were used not only for the underwater technical needs of the navies, but also for diving and salvaging for example old wreck sites, especially old naval vessels. This was an apparent activity in Sweden already in the 1840's.

Not only the big navy organizations but also private salvaging companies took the heavy diving suit as a part of the technical means for salvage operations. When one dived on or salvaged items from old shipwrecks it was not seldom for commercial reasons. One wanted to look for and, if possible, salvage historically interesting objects in order to sell them.

The commercial and historical interests were thus combined with each other. Using traditional salvage equipment such as cranes, for example, historically interesting objects were salvaged from old shipwrecks and sold then to those interested in naval or seafaring history - either museums or private collectors. It was also possible to donate such finds to museums.

The Introduction of the Scuba Diving Technique

A big leap forward in this development took place about a century after the invention and the introduction of the heavy diving suit. Due to the development of light diving equipment in the years between the World Wars and the use of such during the Second World War by the nations taking part in the naval warfare, the scuba diving equipment was introduced world wide. It is this equipment that today makes it possible for hundreds of thousands of individuals to dive down into and study the underwater world and the archaeological remains there, among which the wrecks of old ships take a special place.

The scuba diving is an activity that now has been expanding for half a century and that seems to continue to do so. At the beginning, scuba diving was to a high degree an idealistic sports movement, but since then it has successively been turning into a more and more commercial-related activity. In the center of this there are several important and dominant factors such as the selling of diving education, diving traveling and trips, not least to wreck sites, and the selling of diving equipment.

While scuba diving has attracted a growing number of people in Europe, also professional diving has developed methods that enable us to visit and work deeper than ever before. Underwater techniques of different types, for example for underwater work in the offshore industry, and instruments for searching, surveying and documentation have become more refined and resourceful. Especially the new, different acoustic and electronic instruments for underwater recording have come into use.

The Present and the Future

The underwater and diving techniques will of course continue to expand and develop in the future. It is challenging to try to follow the trends in this field up till today and into the future. This is a subject that has attracted the interest of many, especially the interest of fiction and science fiction writers. Few who have read Jules Verne's stories about captain Nemo and his submarine Nautilus, published already in the 19th century, easily forget the images of the underwater world or the then very futuristic underwater technique that Verne designed in his novels.

In the 1960's and 1970's, the French naval officer and underwater explorer J. Y. Cousteau expanded this subject both in his futuristic writings and films on diving and the underwater world and in his experiments with habitats and explorations of the underwater environment.

Homo sapiens was developed on the African savannah and is basically a result of adaptations to the surroundings there. Very few species on this planet are as adaptable to new environments as this primate.

Assisted by this capacity, we have now spread and "taken over" – for good and for bad - most of the land areas of Tellus.

When we will be able to integrate for real into the much larger areas of Tellus, the areas constituted by the marine and limnological environments, is very difficult to foresee. When it comes to our establishment and activities underwater, it is of course to a part a question of definition. What would such a situation or integration imply?

The development towards such a situation where Homo sapiens integrates into the underwater world has all the same started. Not least the offshore industry today and its retrieving of oil is evidence of this. Also other types of drilling and mining for natural resources already have and will be established in the underwater world.

The Care for the Submerged Cultural Heritage

While the underwater techniques have successively developed since the middle of the 19th century, another trait in human behavior has became more evident and stronger in the Western, not least in the European, society. This is the interest and will to care for the cultural heritage and environment - a movement which was initially nearly solely realized on land and directed towards the protection of historical monuments and environments as well as many types of prehistoric remains.

The underwater world contains a very big array of cultural and historical values in a material form, in the shape of wrecks of ships from earlier times, for example. As the diving technique took a new turn in the middle of the 20th century and the broad general interest in diving was established through scuba diving, also the interest to preserve the submerged cultural heritage came into focus.

Divers interacted with cultural heritage underwater in such a way that the heritage was disturbed or destroyed. During the last 50 years, with the growing interaction between humans and the underwater world, the interest in preserving and protecting the underwater cultural heritage in its many forms has been put on the national agenda of countries in Europe and elsewhere. It has also resulted in the enlargement of the Ancient Monuments Acts of different nations to encompass the underwater world, as well as in the creation of international agreements on protecting the underwater cultural heritage.

At the same time it is quite clear that one in the present time has very few real possibilities either to overview or protect the underwater heritage in its many material forms. One is today not able to survey them, even less to control what is happening to them, when it comes to the influence that either the natural environment or human activities have on them. To be able to master this situation, a broad spectrum of protective and preservative measures has to be planned and realized. This, if it comes into being, has to be done in step with the human integration into the underwater world. With all probability, it will take generations before a procedure like this is realized in any fuller scope.

Challenges of the Future

As is evident for all of us, this time perspective and the striving and evaluation we as humans express on these matters contain an array of issues and questions to be dealt with in a sincere and qualified way. Let me give a few examples:

Our restricted capacity to perceive the underwater world of today - especially in North-European waters where the visibility is low - makes it impossible or very difficult to observe systematically the remains of historical or archaeological interests underwater. It is for the same reason very difficult to protect them or to hinder the disturbance of them.

Will we ever be able to overcome this situation? If so, to what extent? Will the technical development in the future make it possible to perceive and take measures in the underwater world to such a degree that we can say we can protect the underwater cultural heritage in a meaningful way?

One giant research task is still awaiting its treatment, namely the study of the relations and the interaction between the material, cultural remains underwater and the natural environment there with its many differing elements. The underwater environment contains a wide range of variables due to the different natural conditions and the different types of archaeological remains in that landscape.

The scientific study of underwater archaeological remains, here named marine archaeology, has hitherto been very object oriented. It has concentrated its research activity on the study of chosen, highly evaluated cultural and historical objects underwater. It is necessary that marine archaeology leaves this attitude and assaults the task to study the relationships between the archaeological remains and their environment and the different types of cultural landscapes and archaeological remains underwater.

Today we have often - when we want to engage in or illustrate archaeological material underwater - lifted remains up to the surface to preserve them there for researching and exhibitions. Is this a meaningful approach or is it a destructive one? Would the remains be better preserved underwater, or are they really more endangered there because of natural deterioration or human interference? Is it meaningful to raise objects of an unusual or unique value to the surface to preserve them there? Do we have the preservation techniques to follow this line today and tomorrow?

Will, finally, the future offer us the possibility to visit underwater sites with highly interesting historical remains and experience them there - in a protected condition as for example in underwater museums? The last of these questions for further consideration is whether it will be possible to preserve underwater cultural heritage in a satisfying way underwater and to visually project it from there to terra firma? Will it be possible for the general audience and for the scientists to experience and engage in the underwater cultural heritage with the help of virtual or digital techniques? Is it for example a meaningful idea to develop virtual museums above water to project underwater sites for a bigger audience on land?

Presentation of the Partners of the MoSS Project and Their Representatives

DENMARK — Associate Partner

The Centre for Maritime Archaeology at the National Museum of Denmark
-A Centre funded by the Danish National Research Foundation.

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The centre was established on 1st September 1993 on the basis of a five-year grant from the Danish National Research Foundation, a grant which was renewed in 1998. The centre is continuing and developing the maritime archaeological research that has been carried on at the National Museum since 1962 and the Viking Ship Museum since 1969.

The centre for Maritime Archaeology is housed in Havnevej 7, DK-4000 Roskilde, and works in close cooperation with the National Museum's Institute of Maritime Archaeology and the Viking Ship Museum. It also has close links with other units under the National Museum and with other museums and universities at home and abroad.

It is the aim of the work at the centre to bring the maritime perspective into focus within Danish and Northern European archaeology. In the coastal lands of Northern Europe, transport across water has been of decisive significance for the structure and development of the societies concerned. The maritime conditions have left their mark on the way of life, the settlement patterns, trade and technology, communication, and beliefs.

The research plan at the centre for Maritime Research points to four wide-embracing archaeological fields of research on which attention will be concentrated in the period 1998-2003:

- ***Man and sea in the Stone Age and Bronze Age***
- ***Seafaring and society in the Iron Age, Viking Age and later medieval period***
- ***Ships and boats from the Stone Age to more recent times***
- ***Technology and auxiliary sciences in Maritime archaeology***

Work at the centre takes its starting point in the Southern Scandinavian area but we are eager to promote corresponding research in other parts of Northern Europe. We therefore arrange international conferences for scholars and publish a great number of books and articles. There is also a significant contingent of foreign scholars working at the centre at all times.

Staff of the MoSS Project at the Centre for Maritime Archaeology at the National Museum of Denmark

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David Gregory worked as an analytical chemist in the pharmaceutical industry for six years. Thereafter he studied for a Bachelors of Science in archaeology at Leicester University (1991). This was followed by a Masters degree in Maritime Studies at St. Andrews University (1992). He obtained his PhD from Leicester University in 1996 (Formation processes in underwater archaeology: A study of the deterioration of archaeological materials in the marine environment) during which time he qualified as a commercial diver (1993). Since 1996 he has been employed as a researcher at the Centre for Maritime Archaeology at the National Museum of Denmark researching the development of robust methods of managing archaeological sites on land and underwater in situ.

FINLAND — Project Leader

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The Maritime Museum of Finland acts under the National Board of Antiquities, which falls within the authority of the Ministry of Education in Finland. The National Board of Antiquities is responsible for the preservation of Finland's material cultural heritage and environment and it collects and distributes knowledge about them.

The Maritime Museum of Finland is located in Helsinki on the island of Hylkysaari ("Wreck Island") in a former pilot house that was built in 1910. The permanent exhibitions of the Maritime Museum present the history of shipbuilding, life on a ship, merchant shipping, steam technology, winter navigation and the history of diving. The displays include material raised from sea. Fishing and pleasure boats are exhibited in the Museum's boat hall, and at the quay outside the Museum there is a restored lightship called Kemi. The ship was built in 1901. The Museum has maritime archive collections that include old nautical charts, log books, photographs, etc. The Museum also has a reference library and a conservation laboratory.

The Maritime Museum of Finland has been involved in the management of underwater cultural heritage since the Museum was first established as a maritime archaeological unit in 1968. During the last four decades, the Museum has been responsible for protecting, investigating, researching, maintaining and registering different types of underwater sites. In addition to this, the Museum is responsible for the conservation of waterlogged material. The staff of the Museum has developed the education of maritime archaeology in Finland and it gives lectures to students of underwater archaeology as well as to volunteer divers.

To do successfully the many tasks in the field of underwater cultural heritage, the Museum is in active co-operation with other governmental institutions, other museums, universities and with non-governmental and volunteer organizations. The staff of the Maritime Museum of Finland is continually involved in the research and development work concerning underwater heritage, maritime history and other maritime affairs. The museum has also organized various national and international meetings and seminars. The Museum participates in maritime archaeological and historical co-operation projects with the other Baltic and Scandinavian countries. In addition to these, the Museum participates in the work of the Common European Maritime Heritage Council and The International Congress of Maritime Museums.

The Museum has earlier experience in two projects financed by the European Union. The projects were funded by the Interreg IIA-program. During the projects the Museum co-operated with the Estonian Maritime Museum, the Pärnu City Museum of Estonia and the Forum Marinum Museum in Turku, Finland. The Maritime Museum operated as a coordinator.

In June 2000, the Museum opened the first underwater archaeological park in Finland and in the Baltic Sea region. At the park, sport divers can get acquainted with the wreck site of Kronprins Gustav Adolf. Kronprins Gustav Adolf was a Swedish ship of the line that suffered shipwreck outside Helsinki in 1788.

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Sallamaria Tikkanen serves as a maritime archaeologist at the Maritime Museum of Finland. At the Museum she is responsible for the field of underwater archaeology and underwater cultural heritage in Finland generally. Her work includes, for example, general management and development work and future planning, supervising and consulting underwater archaeological fieldwork and projects in Finland, research work, and fund raising. She has also worked as a visiting teacher at the courses of maritime archaeology at the University of Helsinki.

Tikkanen has been involved in the field of underwater archaeology in Finland since 1990, and she has been responsible for underwater archaeological fieldworks, such as the wreck sites of the early 17th century Mulan wreck and the late 18th century wreck of the Kronprins Gustav Adolf. Tikkanen took her postgraduate diploma in maritime studies at the Scottish Institute of Maritime Studies at the University of St Andrews in 1994 -1995. In 1993, she took her MA degree in ethnology at the University of Helsinki. Tikkanen is a member of the International Council on Monuments and Sites (ICOMOS), The International Committee on Underwater Cultural Heritage, Australasian Institute for Maritime Archaeology Inc., and the Cultural Heritage in the Baltic Sea States and its sub-group on Underwater Cultural Heritage. Tikkanen and her team at the Maritime Museum of Finland were responsible for designing and writing the MoSS application to the European Commission in the spring of 2001.

Minna Leino was born in Oulu in 1969. From 1991 to 1999 Leino studied at the University of Helsinki. She majored in archaeology and her minor subjects were museology, geology, and marine history. In 1999, Leino completed her master's thesis that dealt with underwater dwelling places from the Stone Age at Lake Saimaa.

Leino is a certificated research diver. When she took the degree in 1995, she in fact became one of the first research divers in Finland. From 1995 to 2000 Leino worked part-time at archaeological excavations that were subject to the archaeological unit of the National Board of Antiquities in Finland. The excavations took Leino to various places in Finland and introduced her to sites from different eras. Leino has participated in the fieldwork of the Maritime Museum of Finland since the year 1995. As a researcher of the Lahti City Museum, Leino took part in the rescue excavations of a wreck in lake Kirkonlahti in Hollola in 1998. In the investigations of the wreck of the Vrouw Maria, Leino has worked as a researcher from the spring of 2000.

Stefan Wessman has studied archaeology in Turku since 1997. In 1999 and 2000 he studied maritime archaeology at the University of Copenhagen. Wessman has been involved in several fieldworks on land and waters since 1997.

In 2001, Wessman was employed by the Centre for Maritime Archaeology at the National Museum of Denmark to participate in the excavation, documentation and conservation of the Kolding Cog, a shipwreck from the 13th century in Jutland, Denmark. While documenting the timbers of the wreck, Wessman used a Faro digitising arm, which is a new method of three-dimensional recording.

Since 2002, Wessman has worked as a researcher at the Maritime Museum of Finland. He is responsible for the documentation of the wreck site of the Vrouw Maria and especially for the 3D reconstruction of the Vrouw Maria. Wessman is working on his final thesis for his MA degree. The thesis is about the Lille Kregme Cog, a 14th century shipwreck found in Roskildefjord, Denmark. The thesis is a part of a Scandinavian Cog Project run by the National Museum of Denmark's Centre for Maritime Archaeology. The results of the project will be published in a volume in the series called Ships and Boats of the North.

Ulla Klemelä serves as conservator at the Maritime Museum of Finland. She is responsible for the conservation of the objects in the museum's collections and especially for the conservation of marine archaeological finds.

In addition to this, Ms Klemelä has worked as a visiting teacher at the courses in maritime archaeology and museology at the University of Helsinki and at the courses in the conservation training programme of the Finnish EVTEK Institute of Art and Design.

Ms Klemelä has been involved in the field of conservation of waterlogged material since 1984. She has been responsible for the conservation of the objects of several wrecks, the wrecks of Vrouw Maria, St. Nikolai and St.Mikael, for example.

Ms Klemelä took her conservator diploma at the Royal Danish Academy of Fine Arts, School of Conservation in 1984. She is a member of The International Institute for Conservation of Historic and Artistic Works (IIC) Nordic Group and The International Committee for Conservation (ICOM-CC).

GERMANY — Coorganiser

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The Archaeological State Museum of Mecklenburg-Vorpommern was founded in 1991 as the successor of the Schweriner Museum of Prehistory. The function of the museum is to take care of all archaeological finds from the north-east of Germany and to present them to the general public. In doing so, the museum has built up a tradition of archaeological collections in Mecklenburg-Vorpommern for over 400 years. The museum includes the Department for Management of Archaeological Monuments and Sites. The Department is responsible for the research and protection of the archaeological heritage in Mecklenburg-Vorpommern. Many archaeological sites are known to be in the numerous wetland-areas and waters in the region of Mecklenburg-Vorpommern, which has Baltic coastline of more than one thousand kilometres. The research and protection of sites under water, above all ship wrecks and stone-age settlements – today sunken because of the permanent rise in the sea level –, form the emphasis of the Department's daily work.

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From 1976 to 1988 **Friedrich Lüth** studied prehistory, Asiatic archaeology and ethnology at the universities of Saarbrücken and Hamburg. At the Hamburg university he completed his studies with the dissertation topic: "Salzmünde - Walternienburg - Bernburg. Typological and Chronological studies to the Mid-aeneolithic Period in Central Germany". After that he was employed at the Helms-Museum for archaeology and history in Hamburg-Harburg, finishing as the head of the Department for Management of Archaeological Monuments and Sites.

In 1992 Lüth became the director of the Archaeological Statemuseum/Department for Management of Archaeological Monuments and Sites of Mecklenburg-Vorpommern.

His scientific interest is in the prehistoric periods, especially in the Stone Age. Lüth is also interested in the maritime archaeology, especially in the development of medieval seafaring in the Baltic Sea area. He is also a member of the commission for underwater archaeology in the association of the state archaeologists of the Germany Federal Republic and a member of the organisation of the state archaeologists of Europe, Europae Archaeologiae Consilium (EAC). As the representative of Germany, Lüth is also involved in the processing of international standards for the protection and management of the cultural heritage under water.

Hauke Jöns studied prehistory, anthropology and geology at the University of Kiel. At the Faculty of Mathematics and Natural Science he submitted his dissertation in 1993 on the subject "Excavation in Osterroenfeld". The dissertation analysed an iron-age site from Northern Germany. From 1990 to 1994, at the Institute for Prehistory at Kiel, Jöns was responsible for an interdisciplinary research project concerning the beginning of the iron-production in Northern Germany. He summarised the results of the studies from the project in a habilitation-theses about "the development of the iron metallurgy in Northern Germany and southern Scandinavia". The thesis was accepted in 2001 at the University of Kiel. Since 1995 his fieldwork has concentrated on maritime archaeology and in particular on the research of the early medieval trade-system in the Baltic Sea area. The excavations of an 8th century trading centre near Groß Strömkendorf (reric) in the Wismar Bight was also managed by him. Since 2000 Hauke Jöns has been the leader of the Department for Management of Archaeological Monuments and Sites that is a part of the Archaeological State Museum of Mecklenburg-Vorpommern.

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www.archis.nl/html/nisa/

The forces of nature and human activity have shaped the Dutch landscape. A closer look at the soil, the landscape, and built-up areas will reveal the processes that, in the course of the centuries, have created that landscape. The future development and utilisation of the available space are determined by the choices we make today regarding such themes as living and working, learning and care, mobility and recreation. Needless to add, those choices involve a great many different parties.

Cultural heritage: Many things above or under the ground that illustrate the history of our country are part of our national cultural heritage. The Minister of Education, Culture and Science has made the State Service for Archaeological Investigations (ROB) responsible for the management of the archaeological component of that heritage. Much of our archaeological heritage lies hidden under buildings, woods, sand or water.

Tasks: The ROB charts (projected) archaeological values; describes and appraises those values; focuses on the development and implementation of government policy to ensure a sensible approach to those values; monitors compliance with that policy; and makes its knowledge and expertise available to a wide range of professional users and other interested parties.

About the NISA: The Netherlands Institute for Ship and Underwater Archaeology (NISA), part of the State Service for Archaeological Investigations, is responsible for the Dutch maritime heritage under water as well as on land. In the Netherlands many shipwrecks are actually found on land, in areas known as polders. Polders are pieces of land that are reclaimed from the sea. As its name indicates, the NISA specialises in two related fields: ships and underwater archaeology techniques. In recent years, on-site preservation has become a very important issue in the archaeological debate. This has increased the focus on non-intrusive archaeology in order to "value" wrecks (rating their importance for maritime heritage), and on on-site preservation techniques for wrecks under water as well as on land.

Next door to the NISA is the Batavia Yard, and together they form the National Centre for Maritime History. Both institutes are open to the public. At the Batavia Yard historic ships are rebuilt on a one-to-one scale. At the NISA countless fascinating exhibits of wrecks and archaeological finds reflect the rich heritage of Dutch maritime archaeology.

Staff of the MoSS Project at the Netherlands Institute for Ship- and Underwater Archaeology/ State Service for Archaeological Investigations (ROB)

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Robert O. Oosting
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Martijn Manders did a free-doctoral study in underwater archaeology and maritime history at the University of Leiden finishing with a study on the casks of a sixteenth century trader excavated on the Texel Roads. He has worked since 1990 at the Netherlands Institute for Ship and Underwater Archaeology, first in Alphen aan den Rijn and afterwards in Lelystad. Martijn is especially concerned with the work of the diving team of the NISA. He has specialised in the technique of excavating and the protection of shipwrecks. When it comes to the contents of ship wrecks, his special interest is in trade and cargo.

André van Holk studied human geography and prehistory at the state university of Groningen and specialised in maritime archaeology from 1976 to 1986. After that he was involved in different maritime archaeological projects in the Netherlands. For three years he took part in the investigations of vernacular craft along the Danube and its tributaries performed by the German Maritime Museum in Bremerhaven.

In 1996 he delivered his dissertation "Archaeology of inland craft. Life and work on board of inland ships between 1600 and 1900." Since 1997 he has been employed as a scientific researcher at the Netherlands Institute of Ship and Underwater Archaeology in Lelystad. Besides that he is a reader in maritime archaeology at the university of Leiden.

Robert Oosting completed his studies as a naval architect at the HTS of Haarlem in 1979. Since August 1980 Robert was involved, as a naval architect, in the shipwreck excavations in the Ijsselmeerpolders under the authority of the former "Rijksdienst voor de Ijsselmeerpolders"(RIJP) of the Ministry of Transport and Public Works. In the period 1992-2000, he was the head of the Ship Archaeological Division of the Netherlands Institute for Ship and Underwater Archaeology (NISA). From the end of 2000 Robert Oosting has worked as a civil servant at the Division of Maritime Heritage at the ROB/NISA and is involved in the physical and juridical protection of shipwrecks as well as in several ship archaeological research projects.

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Södertörns högskola (University college) is one of the most recently founded university colleges in Sweden. It was inaugurated in 1996 with some 1 000 students and it is growing by another thousand every year. One of its major tasks is to increase recruitment to higher education while at the same time the college aims at maintaining the highest academic standards in research and education.

In 2003, Södertörns högskola will have a stabilized number of 7 500 full-time students and 650 employees, most of whom will be PhDs or full professors. All teachers are expected to devote at least 25 percent of their time to research, while researchers are to devote a minimum of 25 percent of their time to teaching. 2003 is also expected to be the year when Södertörns högskola becomes a complete university. In the meantime, Södertörns högskola is expanding its rights to issue BA, BSc and masters degrees.

A considerable portion of research in the social sciences and the humanities is focusing on the history and culture of Eastern and Central Europe as well as the Baltic Sea region. Research in the natural sciences is most intensive in the intersection between molecular biology, biology, biochemistry, pharmacology and medical technology.

Södertörns högskola also aims at further cooperation between academic institutions and individuals and extramural life such as industry, local authorities and organizations.

The subject of archaeology at the university college also comprises the subject of marine archaeology as its own academic subject. Within the former, courses are performed in both general and marine archaeology on the undergraduate level. This year the college also started postgraduate studies in the subject, and marine archaeology is one of the special subjects.

Within the subject, the college runs different research projects. The ones hitherto performed have been in marine archaeology in the Baltic Sea area. In addition to this, the development of marine archaeology in the Swedish society has been studied both in time perspective and within the history of ideas.

Staff of the MoSS Project at the Södertörns högskola (University college)

Professor Carl Olof Cederlund
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Professor Cederlund's academic degrees and posts: Filosofie kandidat. (archaeology, ethnology and ethnography) at Stockholm University College in 1961; Filosofie licentiat in Nordic and comparative ethnology at Stockholm University in 1967; Filosofie Doctor in archaeology, esp. Northeuropean, at Stockholm University in 1984; Docent (Associate Professor) in marine archaeology at Stockholm University in 1984; Senior Lecturer in marine archaeology at Södertörns högskola in 1997. Professor in marine archaeology at Södertörns högskola in 1999.

Carl Olof Cederlund's employments: Amanuensis at the Wasa Shipyard 1961-1965; Curator there 1965-1967; Senior Curator and head of the field research department (working with archaeology, marine archaeology and maritime ethnology) at the Swedish National Maritime Museum 1967-1983;1975-1983 responsible for teaching in marine archaeology at the department of archaeology at the University of Stockholm; 1983-1997 given a special assignment by the board of the Swedish National Maritime Museums (the National Maritime Museum and the Vasa Museum) to be responsible for marine archaeological research and university teaching, as a co-operator between the museums and the University; 1997-1999 Senior lecturer in and head of the program of marine archaeology at Södertörns högskola (University college); 1999 professor in marine archaeology at Södertörns högskola.

Carl Olof Cederlund has lead and lectured at courses in marine archaeology at organisations for extramural education since the 1960s. He is a member of the Swedish Writers´ Union; Has up till today published around 260 works of science and popular science.

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Mary Rose Archaeological Services (MRAS) exists to make available to the archaeological community the experience, services and facilities that have been acquired by the Mary Rose Trust [MRT] over the last twenty years. MRAS is a wholly owned subsidiary of the MRT and all profits are covenanted for the benefit of the Trust. The MRT is the UK lead museum for Maritime Archaeology and Conservation and employs more Maritime Archaeologists and Conservation Scientists than any other UK institution. The MRT now has the largest vacuum freeze-dryer in the UK, which is drawing in conservation work on large waterlogged timbers from major UK land based as well as maritime archaeological sites. MRAS is based at the Mary Rose Trust site within the Royal Navy Base in Portsmouth (UK).

Some other projects, clients and partnerships:

HMS Victory
HMS Stirling Castle
HMS Colossus
HMS Roebuck
HMS Warrior
HMS Sussex

Fiskerton log-boat – Environment Agency
Romano-Celtic-Ship – States of Guernsey
Graveney boat – National Maritime Museum
Roman water pipes – Oxford Archaeology

UK Government Departments:
Ministry of Defence
English Heritage

Department of Culture Media and Sport
Department of Environment, Fisheries Rural Agriculture
Environment Agency

UK Universities:
Oxford
Portsmouth

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Charles Barker BA [hons] graduated at Kings College Department of War Studies – London - in European Naval History. Charlie Barker worked in the publishing, advertising & marketing environment gaining a strong experience in PR. He joined voluntarily the Mary Rose Foundation advising on fundraising.

Became Managing Director of the Mary Rose Archaeological Services Ltd. [MRAS] in November 2001. Since then, Charles Barker has been working to develop the archaeological services, selling expertise experience and all the Trust conservational and archaeological facilities and services all over the world.

As Managing Director, he is involved in the MoSS Project as financially responsible for the Monitoring Strategy.

Mark Jones BSc MSc PhD Is a leading conservation scientist involved with The Mary Rose Trust since 1983. Dr Jones devised the conservation methodology for the *Mary Rose* hull and is now responsible for all conservation and collections matters. Principal research interests lie in the structure and degradation of archaeological waterlogged wood; conservation interests include the stabilisation of large waterlogged wooden objects and storage of archaeological material. He currently serves as Honorary Lecturer at the Universities of Portsmouth and Southampton.

In addition to authoring more than 30 publications, Dr Jones has presented numerous papers at national and international scientific meetings and organised national and international symposia. With regard to the Dover Bronze Age project, Dr Jones did the scientific analysis and was responsible for the freeze drying of the boat pieces at the Mary Rose conservation laboratories.

Paola Palma BA MA graduated at Ca' Foscari University in Venice, gained MA in Maritime Archaeology at Southampton University. First degree thesis was a research carried out on the investigation of the II Century Roman wreck in Genoa-Pegli. For the MA research she investigated the cog-like type of vessel within the maritime and cultural transmission in Medieval Europe, comparing the Swedish cog of Jungfruskär to information on cog-like vessels gathered from Italian medieval sources.

She has taken part in surveys and excavations in Italy as well as in other countries, mainly on Roman and Medieval sites. Paola Palma is involved with the Nautical Archaeology Society both as a conference organiser and senior tutor. She has worked for the Mary Rose Trust since 2001, initially on the survey of the Fiskerton Logboat (circa 500 BC) and the organisation of Science Week.

She is currently Project Archaeological Officer for the Moss Project.

Presentation of the External Evaluator of the MoSS project and his organization

The Portuguese Center for Nautical and Underwater Archaeology, Centro Nacional de Arqueologia Náutica e Subaquática (CNANS), created within the scope of the Instituto Português de Arqueologia (IPA) of the Ministry of Culture by the Decree-Law nº 117/97, is an agency for the management of Portuguese underwater cultural heritage. The main tasks of the agency are related to the management of fortuitous finds, all external activities directed at the underwater cultural heritage or accidentally affecting it, and the development of actions, projects and programs for the monitoring, surveying and excavation of the underwater cultural heritage. Selective recovering and conservation may, or may not, follow formal investigations, but they are always correlated with the central aim of the national inventory. The CNANS also arranges courses (like the NAS training courses), conferences, workshops and seminars. For example, in 1998 the CNANS arranged a seminar on Iberian-Atlantic shipbuilding tradition. The seminar was a result of the many shipwreck finds of the nineties. The work of the CNANS is based on solid political-cultural principles that follow those of the ICOMOS charter. The CNANS had strong protagonists inside the Portuguese delegation that participated in the UNESCO meetings that prepared the draft convention for the Protection of Underwater Cultural Heritage.

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Francisco [José Soares] **Alves** (b. 1942) studied sociology and archaeology in Paris in the late sixties and early seventies. In 1975, he returned to Portugal after eleven years of exile and in 1976 he was invited by a committee of representatives of several ministers to lead the first urban archaeological rescue in the town of Braga. The rescue was about the ruins of the Roman Bracara Augusta. The rescue allowed the creation of the first Portuguese professional archaeology team. From 1980 to 1996 Alves was the director of the National Museum of Archaeology in Lisbon. As an archaeologist and a certified diver since 1959, he developed a global project on underwater cultural heritage in the scope of the National Museum of Archaeology. Since 1995 Alves has been responsible for the research project of the mid 15th century shipwreck of Ria de Aveiro A. In 1996 he was invited to direct an underwater excavation project centred on an Indiaman carrack that was wrecked in 1606 in the Tagus mouth. The project was a part of the program of the Portuguese pavilion in the Universal Expo '98. Alves was the organiser of the International Symposium of Archaeology of Ships of Iberian-Atlantic Tradition, and he was the editor of the Proceedings of the symposium (2001). Alves has participated and presented papers in more than thirty scientific national and international meetings. He has published more than one hundred articles, among them scientific articles, bulletins, reports e monographic dossiers, lecture notes, editorials, divulgation and opinion articles, memories, some of them in five languages (Portuguese, Spanish, Italian, French and English). In 1993, Alves received the Franco Papò Award at the National Italian Underwater Archaeology Conference, at Giardini Naxos, Sicily. Alves is a member of the International Committee on Underwater Cultural Heritage (ICUCH) of the ICOMOS, of the American Council on Underwater Archaeology (ACUA), of the Europae Archeologicae Consilium, and of the underwater archaeology net of the PACT group of Europe Council. He represented the IPA in the FEMAM project (Forum Euro-Mediterranean of Maritime Archaeology) of the EUROMED HERITAGE program of the European Community. He belongs to the Scientific Committee of the Portuguese edition of the National Geographic Magazine. He is a correspondent member of the Portuguese Academia de Marinha and of the German Institute of Archaeology.

Minna Leino

Presentation of the Four Wreck Sites within the Project: Finland

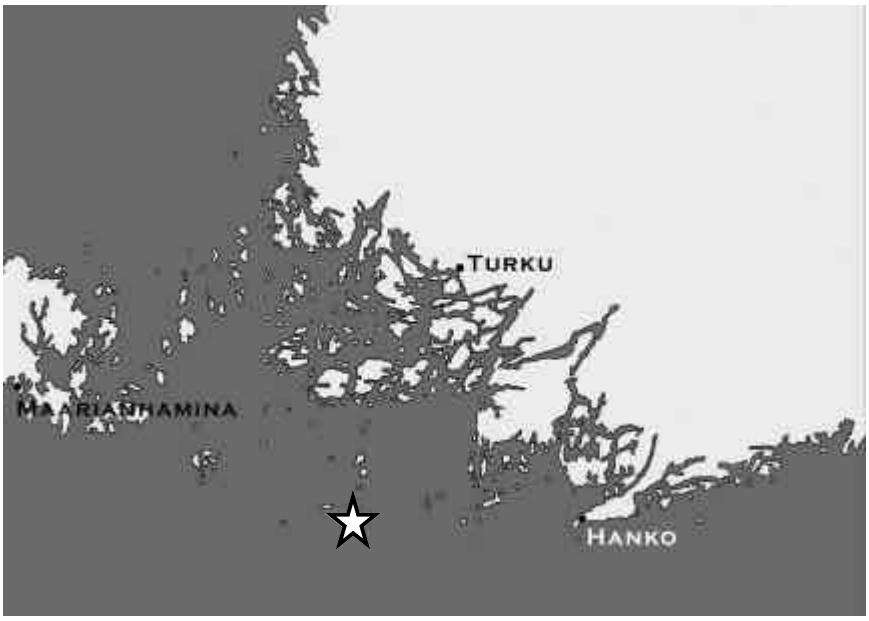
The Wreck of Vrouw Maria

Introduction

In Finland's territorial waters, there are more than thousand wrecks from different eras. One of these is of great interest: it is the wreck of a Snow-ship in the archipelago in the most south-western parts of the country. At the depth of over 40 meters, the wreck appears well preserved. By the help of historical documents and maritime archaeological research, we now know the wreck is that of a Dutch sailing ship called Vrouw Maria.

Vrouw Maria was a two-masted merchant vessel on her way from Amsterdam to St. Petersburg in the autumn of the year 1771. On a stormy night in the outer archipelago of Nauvo, Vrouw Maria suffered shipwreck and, a few days later, sank. According to the entries of the Sound customs house in Denmark, she was with a cargo of sugar, dyestuff, zinc, cloths, and single items the customs fee of which seems to have been unusually high. Vrouw Maria has a reputation of being a treasure ship because her cargo consisted of art treasures bought by Russian aristocrats and Catherine the Great. Among the works of art were for example Dutch paintings from the 17th century. A part of the cargo was salvaged soon after the shipwreck, but the majority of it went down with the ship.

The Baltic Sea has been a central merchant route between the East and the West for centuries and the sea has offered a way for cultural influences to spread from one country to another. The navigation and trade system in Europe was quite uniform at the end of the 18th century; the routes for transporting goods, money, and know-how had been established in the course of time. In this network of merchant routes, there were several centres, and The Netherlands and especially Amsterdam were among the most essential ones. Vrouw Maria was a part of the European merchant shipping of the end of the 18th century. The wreck offers an unspoiled and concrete possibility for the people of the 21st century to experience the everyday reality that prevailed in our parts of the world more than two hundred years ago.



The position of the wreck of Vrouw Maria. Chart by Mikko Rautala. The Maritime Museum of Finland/The National Board of Antiquities.

History of Research

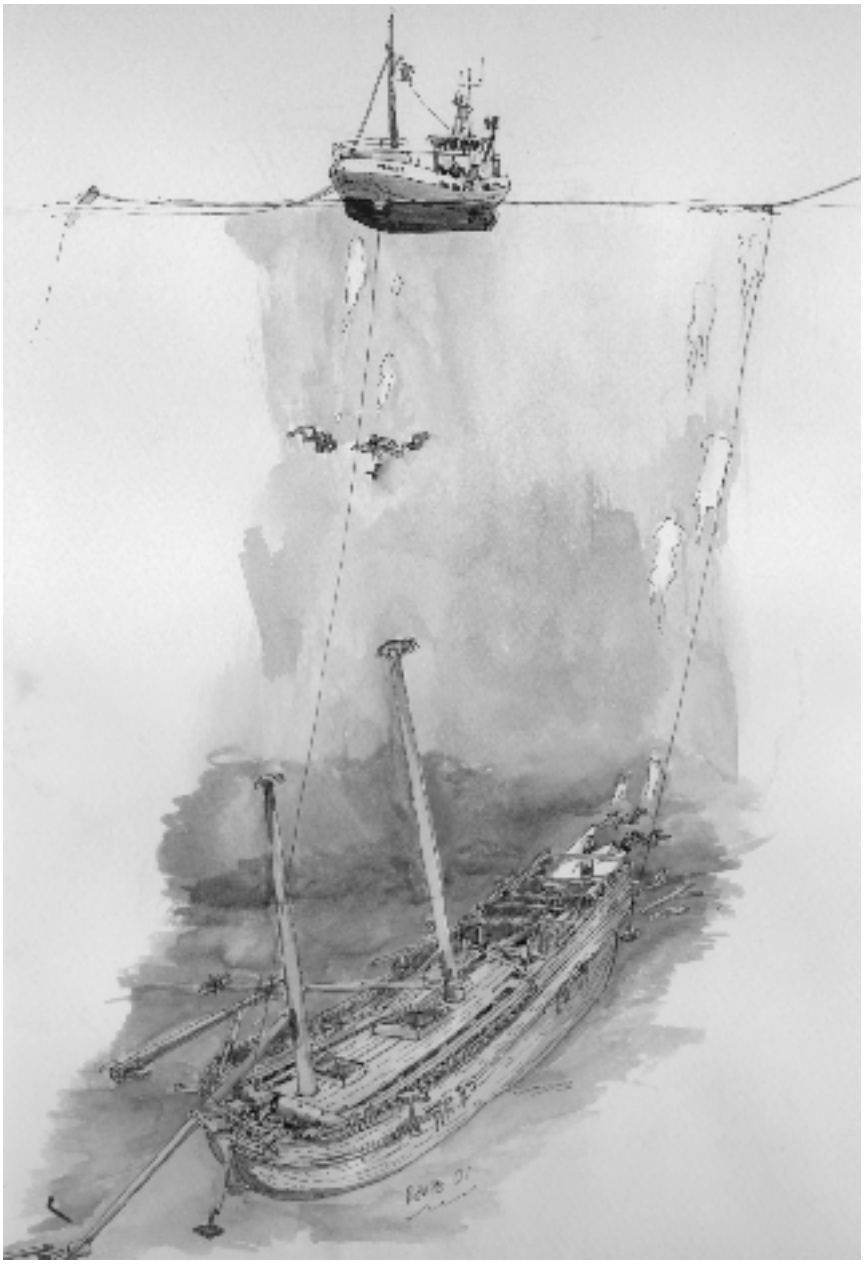
Dr. Christian Ahlström found the very first documents about the history of Vrouw Maria in the Finnish National Archives as early as in the 1970's. Ahlström gathered up pieces of information from different archives and he published them for the first time in 1979 (Sjunkna Skepp, Lund). The most important source for researchers is the ship's protest, which was found in the municipal archives of Turku. The document consists of an extract of Vrouw Maria's logbook and a list of the things that were salvaged. In the Diplomatica Collection in the State Archives (Riksarkivet), the Swedish National Archives in Stockholm, there is diplomatic correspondence concerning the attempts to search and salvage the ship.

For years, amateur divers tried to find the wreck. Mr. Rauno Koivusaari and other members of a

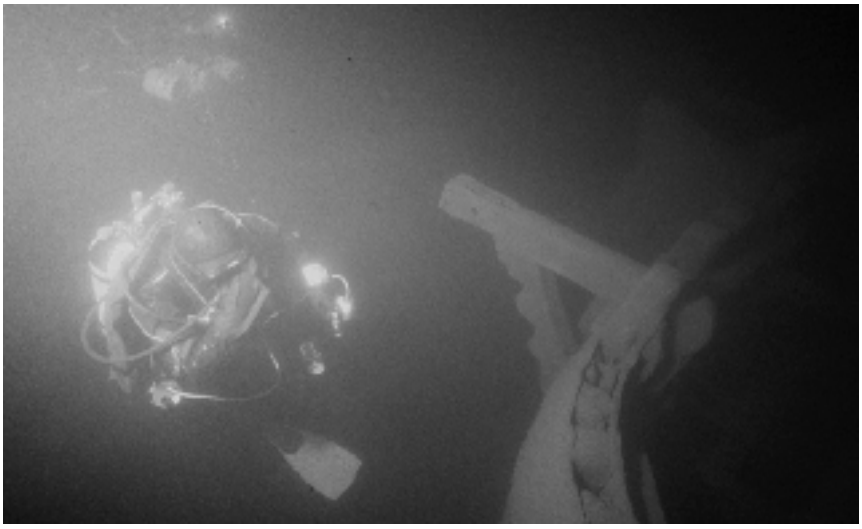
society called Pro Vrouw Maria managed to locate the wreck using a side-scan sonar in the summer of 1999. At the instigation of Dr. Christian Ahlström, an honorary member of the Pro Vrouw Maria Society, and by the help of the Dutch Ambassador to Finland, the personnel in the Notary Archives in Amsterdam assisted in tracing documents on Vrouw Maria. As a result of the search, documents about the ship's earlier phases and the insurance of the cargo were in fact found.

In the autumn of 1999, the Finnish Maritime Museum, being responsible for the underwater cultural heritage in Finland, engaged a researcher to co-ordinate investigations concerning the wreck of Vrouw Maria. The Museum started field research on the wreck in the summer of 2000. Researchers, who were aided by a group of voluntary divers, documented the wreck by photographing and videotaping it.

The work in different archives goes on. As a result of the studies in different archives, we know about the quality of Vrouw Maria's cargo, the events of the shipwreck, the attempts to salvage the ship, and about the subsequent phases of some of the things that were salvaged. In addition to this, certain auction lists and Clara Bille's doctoral thesis De tempel der kunst of het kabinet van den heer Braamcamp (Amsterdam 1961) tell us roughly what the works of art in Vrouw Maria's cargo were.



Artist´s view of the site. Drawn by Juha Flinkman.



Divers by the bow of the wreck. In the bow, the decorativeness of the wreck can be seen for example in the strut of the cathead. Photo by Jouni Polkko.

The Wreck and Its Surroundings

Location and Surroundings

The wreck is located in the outer archipelago, by the open sea, where it is exposed to winds. The wreck lies in a small deep that is surrounded by shallows. The sea bottom consists of a thick layer of clay and mud, and the upper layer of the bottom is sand. The depth of the sea is 41 meters on the spot, which means that the water temperature at the bottom is low all the time. There are strong currents near the Baltic proper, and it is likely

that changes in the hydrographical situation in the Baltic can be recognized there without delay. The amount of light at the bottom depends on the biological action in the upper layers of the sea. Daylight reaches the bottom of the sea on sunny summer days, but often it is so dim down there that additional light is required. The underwater visibility may go from ten meters down to half a meter depending on the currents and the amount of algae.

The Shipwreck of Vrouw Maria: from a Ship to a Wreck

The ship's protest gives us a picture of Vrouw Maria's last weeks. The ship left the port of Amsterdam for St. Petersburg on Thursday the 5th of September in 1771. Vrouw Maria passed the Sound customs house in Denmark and went on to the Baltic Sea. The course of the ship was due north. When the ship entered the mouth of the Gulf of Finland, she ought to have changed her course due east in order to get to St. Petersburg, but instead she ended up in the rocky coast of Finland.

According to the ship's logbook, on Thursday night the 3rd of October there were two men on the deck while the other members of the crew were inside spending their time in prayer. In the dark and stormy night the ship struck a rock. However, a big wave refloated the ship, and the crew did not see any leaking. After a while the ship struck another underwater rock and lost her rudder and a part of the sternpost. When the ship refloated again, the crew noticed that she leaked badly. The men tried to pump their ship dry. After the ship was anchored and the sails lowered, the crew saw that by the pump, water had risen up to three feet (nearly one meter). By 7 a.m. the crew had managed to pump the ship dry. The men were tired and they decided to take the dinghy and row to a nearby islet to get some rest. They thought the ship was too dangerous for sleeping because the weather was bad and there were many islets and underwater rocks that made the waves surge all around the ship.

At nightfall on the 4th of October, five islanders arrived at the scene. They promised to come back the following day and bring as many men as possible. When the wind began to drop, the crew rowed back to the ship and managed to salvage ten barrels. The barrels had numbers from 33 to 42. One barrel had "IBG No. 1" on it. Inside the ship, water had risen up to eight feet by the pump. The men did not dare to stay onboard any longer because they could not pump the ship dry. The logbook reveals that on Saturday morning, the 5th of October, nine islanders arrived to help the crew. All the men rowed to the ship and started to pump. By then, water had risen up to nine feet (nearly three meters). After having pumped all day the men had not managed to lower the water level for more than ¾ feet. In the evening, the islanders left. The crew had to leave the ship as well.

On Sunday the 6th of October, the weather was beautiful. The captain ordered some of his men to go and look for more help while the rest of the crew went back to the ship and started pumping again. The attempts to dry the ship were not successful and since the wind had risen again, the men were forced to leave the ship. In the evening, twenty-six men arrived at the scene.

On Monday the 7th of October, in a beautiful weather, the crew and the islanders went to the ship. Water was almost up to the deck and the men pumped as fast as they could. However, some coffee beans had got into the pump and the pumping made little progress. The crew decided to open the fore hatch in order to salvage the ship and her cargo. When the hatch was opened, the men saw that the upper hold was half-filled with water. According to the logbook, the men "salvaged everything they could".

On Tuesday the 8th of October, the salvage operation went on. The men kept on pumping and at the same time, parts of the cargo were taken out. The weather, which was nice at the beginning, turned dreary and the wind started blowing from south and south-east instead of east. The men had to leave the ship. On the following morning, when the men went back to the ship, they could not see her any more. Two customs officials from the town of Turku arrived, and the things that had been salvaged were moved to the customs yacht. After a few days, a north wind took the men into Turku and the captain gave his protest.

Ahlström, Christian 1979: Sjunkna Skepp. Lund.

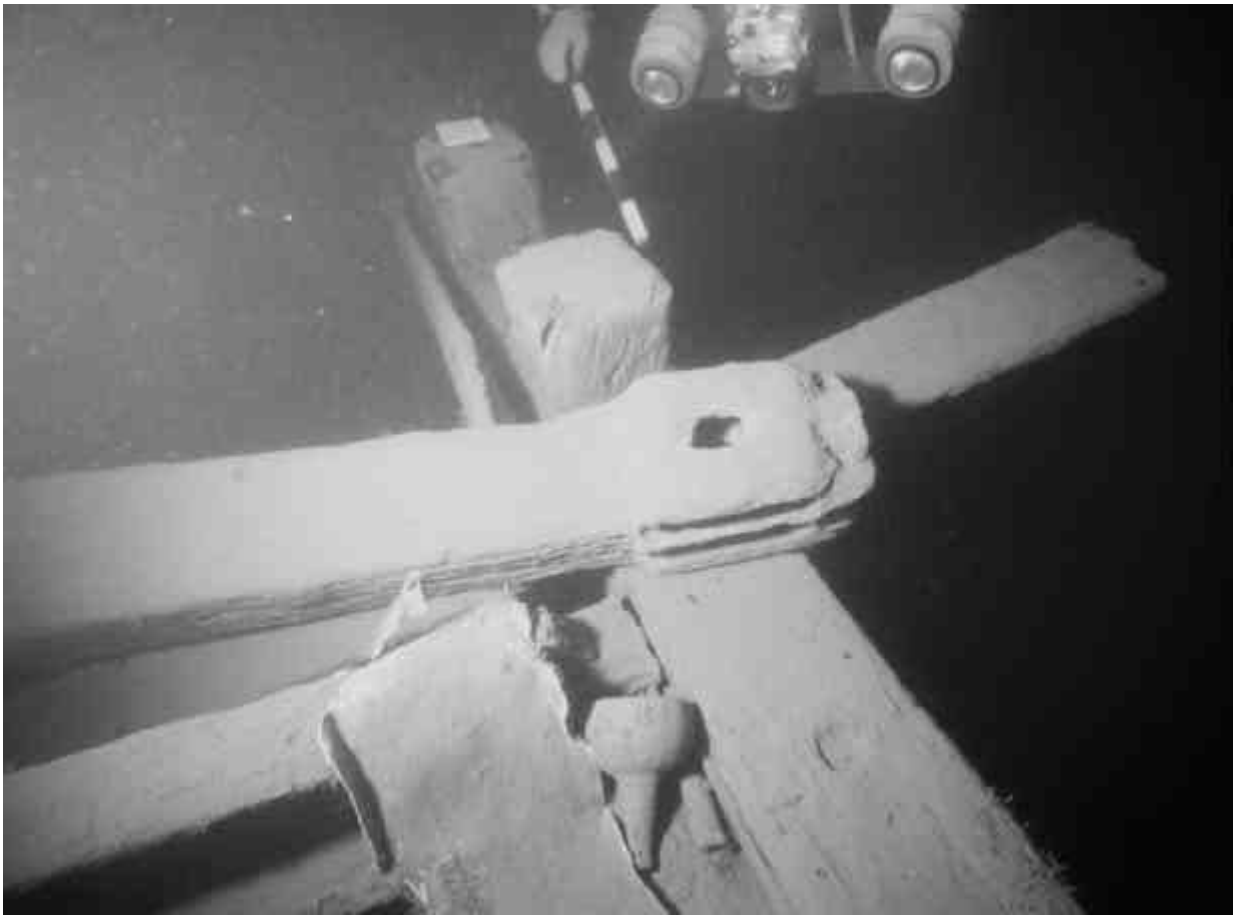
Ahlström, Christian 2000: Venäjän keisarinna ja hollantilainen koffi-laiva Vrouw Maria. Nautica Fennica 2000, Suomen merimuseo, The Maritime Museum of Finland Annual Report. Vammala.

The Wreck's Condition

The wreck is about 26 meters long and 7 meters wide. It lies on its keel on the bottom of the sea and leans on its starboard side. The masts, which are standing up, rise to a depth of 22 - 24 meters. The masts are made of three parts, and the upper parts have fallen down to the bottom of the sea on the starboard side of the wreck.

On the same area, there is one of the ship's anchors, which has made its way so deep into the bottom of the sea that one of the arms is completely buried in the ground. The fact that the anchor is in the sea bottom near the wreck reveals that Vrouw Maria sank precisely where the original shipwreck took place. In other words, the ship did not drift after the shipwreck. The other of the ship's anchors is still hanging in its place on the port side of the railing.

In general, the framework of the ship seems to be in good condition. The shipwreck damaged the ship a little: the rudder is lacking, and the transom is lost as well. Vrouw Maria was a decorative vessel; one can see lots of different woodcarvings in the wreck. The ship's five-meter-long tiller lies partly crosswise on the stern deck on the starboard side. On the deck, there are various single parts of the framework that either came off



The tiller lies crosswise on the stern deck and reaches the bulwark on the starboard side. Near the tiller there is among other things a whole glass bottle. Photo by Jouni Polkko.

A picture of a packing case in the hold of the wreck. On the surface of the case there are white sulphur bacteria. Photo by Jouni Polkko.

when the ship sank or that have fallen down from the rigging in the course of time. Among these pieces are the remains of the deck cabin. The windlass is undamaged, and there is still a lever attached to the windlass stock. Both the pumps are still upright, and one of them still has the piston rod in its place.

Vrouw Maria was a merchant vessel that sailed many days without a break. It was important to have enough room for the cargo but at the same time, ships that spent longer periods of time out on the sea had to have room for the crew as well. The interior of the wreck consists of the crew's quarters in the bow, the hold, and a cabin in the stern. A stovepipe in front of the windlass reveals the location of the ship's galley. The pipe reaches the upper deck, and it is built of brick.

The unharmed framework of the wreck gives us a unique opportunity to study the characteristics of a Snow ship. The wreck gives us information on the loading and transportation of the cargo as well as the ship's sailing qualities. By the help of Vrouw Maria, we will also find out more about shipbuilding, which was a central branch of industry. In the 18th century, it was vital in both the economic and political sense to make sure there was always raw material for shipbuilding.

The Cargo and Other Items

The contents of the hold of Vrouw Maria show a cross-section of the different fields of the European society of the 1770's. The wreck tells us about many people: about the suppliers in different countries, the loaders in Amsterdam, the islanders who helped in the attempts to salvage the ship in Nauvo, and the burgesses in Turku. Because some of the items were salvaged and taken to Russia, the wreck leads us as far as to St. Petersburg. In addition to these, there were of course more people involved with the ship: the men in the Sound customs house and, naturally, the crew of Vrouw Maria.

In the hold of the wreck, there is not enough free space for a diver to go in and document the ship without risking his or her own safety or the condition of the ship. This being the case, the interior of the wreck must be documented by the help of a small-size robot camera. Even then, the examination of the interior is difficult since a light layer of sediment covers practically everything. Some things can, however, be recognised under the sediment: there are zinc ingots, packing cases, some of which still have the cover in its place, and a carpet that seems to have been that of a soft kind - cloth, maybe. In addition to these, there are hundreds of clay tobacco pipes that form almost an even layer on top of everything else.

In the summer of 1999, soon after the wreck was found, divers raised six objects from the wreck. A researcher from the Maritime Museum of Finland supervised the operation. A clay bottle, a lead seal, a zinc ingot, and three clay tobacco pipes were on the deck of the wreck or in the upper parts of the hold. The clay bottle is a Seltzer water bottle with salt glazing. The bottle had contained mineral water from the mineral springs of the Prince of Trier. With the help of its form and a factory mark, the bottle can be dated to the 1760's.

Some words on the lead seal are still readable, and the text implies that the seal has been in a packing of cloth made in Leiden in Holland. Leiden was an important centre of cloth industry in Europe even in the 18th century. In Vrouw Maria there were rolls of Dutch cloth, and many of these were salvaged after the shipwreck. The seal may well have come off from a roll of cloth at the time.

With the help of the clay tobacco pipes' form and factory marks, the origin of the pipes is now known. A metallic analysis of the ingot revealed that it contains zinc. The finding of a zinc ingot corroborates the Sound customs entries, according to which there were more than 6500 kilograms of zinc in the ship's cargo. Zinc is used as raw material in manufacturing brass.

Research in the Future
Vrouw Maria as a Part of the Culture 2000 Programme

The aim of the monitoring theme of the MoSS project is to develop and improve the methods used in monitoring the environmental and physical conditions of shipwrecks.

When it comes to *Vrouw Maria*, for example, this means that the environmental conditions and the changes in them will be examined in detail. In addition to this, it is essential to find out how these changes affect the wreck. The safeguarding theme of the project aims at outlining and developing models to protect shipwrecks in general. The third theme of the project is visualisation, which aims at giving the public in large an idea about underwater cultural heritage. Visual images of the wrecks will be formed by the help of modern techniques and they will be based on documentation. The documentation work will go on on summer camps at the wreck in 2002 and 2003.

International co-operation not only helps the researchers in financial planning but also makes it easier for the co-operators to spread all new information more widely. There has been a boom in the maritime archaeological research in Finland in the past few years and it started when the wreck of Vrouw Maria was found in 1999. In the near future, a decision has to be made: are we going to have the wreck itself on display in a museum, or shall we look at the wreck in a three-dimensional virtual world?

Hauke Jöns

Presentation of the Four Wreck Sites within the Project: Germany

Ship wrecks in the coastal waters of Mecklenburg-Vorpommern

More than 700 wreck sites from the 13th century to the 20th century are known to exist in the coastal zone of Mecklenburg-Vorpommern. Some of the wrecks are in the shallow coastal waters and some in areas where the depth is up to 50 metres. In the last eight years, most of the wrecks have been taken over by the shipworm Teredo navalis and the well-preserved wrecks may be totally destroyed in a short period of time.

The Darsser Cog

In 1977, rescue swimmers located a wreck and informed the Museum for Seafaring in Rostock. The wreck lies at a depth of 6 metres and it is situated in the estuary of the Prerowstrom. Prerowstrom was a natural canal that connected the Baltic Sea and the Barther Bodden until it was filled up by sedimentation during a storm tide at the end of the 19th century. The ship was 23 metres long and it was built of oak. It is dated to the late 13th century by dendrochronology (between 1277 and 1293). The analysis of the wood samples from the planks leads us to assume that the ship was built in the region of the Weichsel estuary.

State of Preservation

The wreck is still exceptionally well preserved. However, it is endangered by human activities such as net fishing and sport diving, and it is in jeopardy because of the shipworm, too. The wreck was covered by silt sediment shortly after its sinking, which is the reason for the good state of preservation. Especially the starboard side is embedded in silt material, and 14 planks of this part of the ship are preserved. In other words, the starboard side is nearly complete. The keel, the stem, and parts of the deck beams are preserved as well. The Darsser Cog gives us a great opportunity to get information about the constructional details of a ship of this kind.

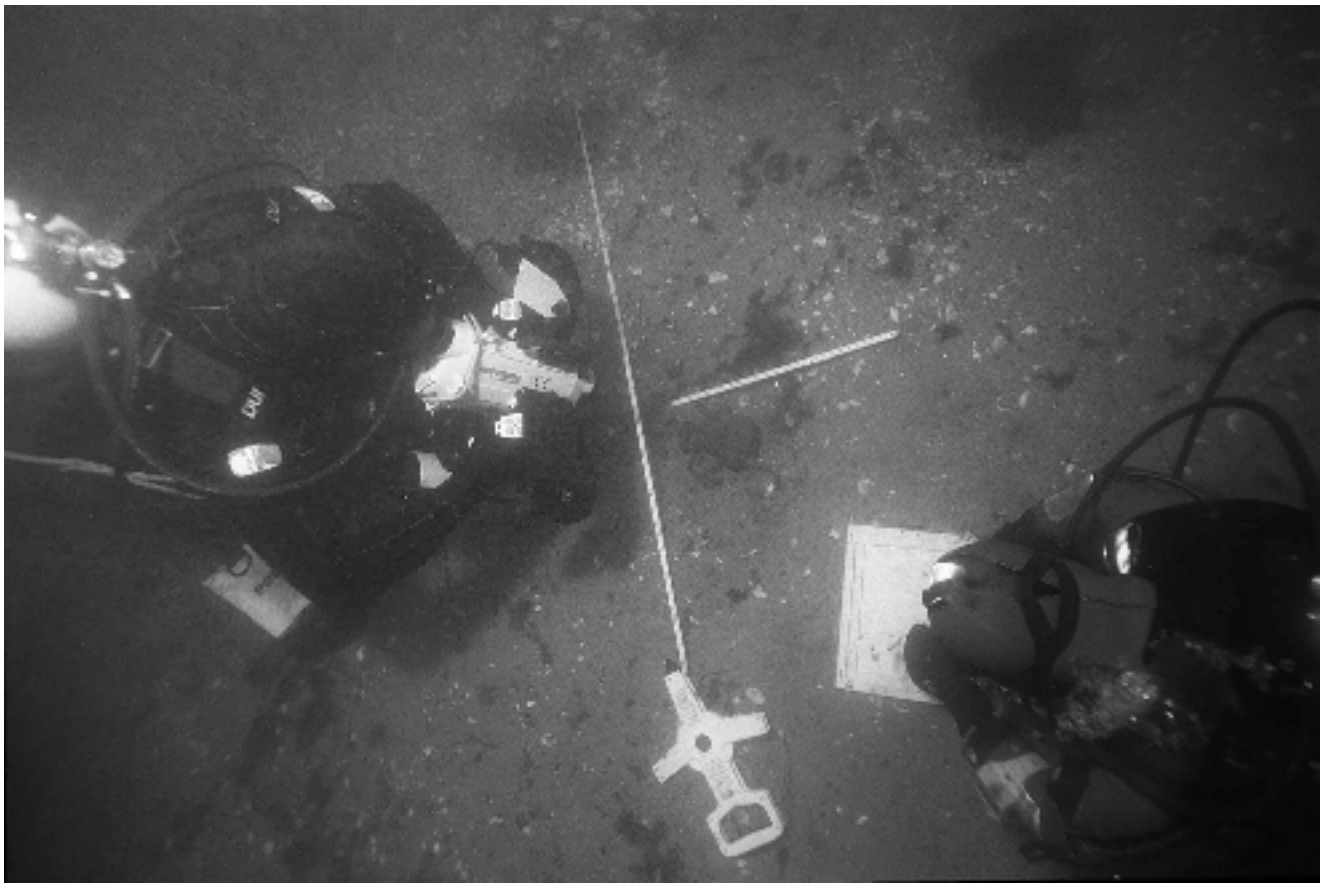
The position of the wreck of Darsser Cog. Chart by Mikko Rautala. The Maritime Museum of Finland/The National Board of Antiquities.

Historical Background

The Darsser Cog shares several construction details with the well known Bremer Cog. As such, it is an important indicator of the changing shipbuilding traditions of the 13th century in the Baltic area. More influences from the North Sea area came into the Baltic Sea, such as the flat, in carvel-technique built hulls - as in the "Darsser Kogge". During this time period, the decline and the sword-christianisation of the Slavonic tribes in north-eastern Europe by German knights and the colonisation of this area by western European farmers and settlers took place, followed by the foundation of thousands of new villages and towns and a vast deforestation. The using of the new carvel technique shows that the radical alteration in society and economy in the 13th century had also an influence on handicraft traditions.

The Cargo

The cargo of the ship consisted of roofing tiles, Norwegian whetstones and pieces of antler. Also a wooden barrel was found. A dendrochronological analysis indicates that the oak of the barrel came from the Polish coastline and that the oak was felled in 1335. In other words, it may be that the ship was used for a period of at least 40 years. The barrel was filled with sulphur that is likely of Icelandic origin. Also some ceramic and some well-preserved metal vessels have been found. According to the production marks, some of the containers were made in Lübeck. These findings lead us to think that the cog came from western Norway and that it was loaded with goods for the Baltic area when it sank in the Darss area. The cargo gives us a good picture of the trade in the early



Documentation of the wreck by the help of digital video cameras and drawings.

The flat ship bottom is characteristic of cogs from the North Sea region.

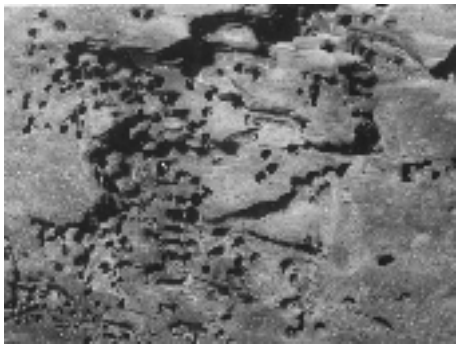
The massive keelson and the step of the mast.

The cargo: whetstones from Eidsborg in Norway.

phase of the Hanseatic period. In addition to the items mentioned above, parts of the crew's equipment have been found in the wreck and its surroundings. These findings will probably give us detailed information about the standard of seafaring techniques in the 13th century.

The *Teredo navalis* Problem

The wreck was well preserved up to the mid 1990's, but now it is extremely endangered by the shipworm Teredo navalis. In 1993, the shipworm entered the Baltic Sea when a big amount of North Sea saltwater passed the Store Belt. Teredo navalis adapted rapidly to the new ecological surroundings and started to reproduce. The worm has now reached the island of Rügen which means that the Darsser Cog is situated on the eastern border of the shipworm area.



Visible traces of the wood consuming mussel *Teredo navalis on the cog*

Investigations within the MoSS Project

The detailed investigation of the Darsser Cog will be the main task of the German project group. Geophysical investigations and aerial photographs will be used to obtain detailed information about the wreck site and its surroundings. The whole wreck will be excavated and documented in three steps by using video, photography, and drawings. It will also be recorded by photogrammetry. The environment of the wreck will be documented by a data logger and analysed by methods used in natural science. Data in different biological and geological archives may be used as well. The detailed documentation and analysis of the wreck will probably enable us to study how salt content and currents influence the shipworm's distribution. Hopefully, the results of the project help us to develop methods for saving wooden wrecks from Teredo navalis.

Documentation of the Wreck

In March 2001, the Archaeological State museum of Mecklenburg-Vorpommern made preliminary research at the wreck site. The first photogrammetry documentation was done as well, and in July 2001, there was a small-scale trial excavation in the afterbody of the ship in order to get more information about the ship's construction. By the help of various computer programs, we managed to get detailed measurements of the different parts of the wreck. The measurements could be used when a rough image of the visible parts of the wreck was drawn.

The wreck will be documented by different methods. Firstly, a side-scan sonar will give detailed data about any artificial structures at the nearby surroundings of the wreck. Parts of the wreck, parts of the cargo or even other wrecks might be located by this method. Secondly, the use of a sediment sonar will give us information about the sediment that covers the submerged parts of the wreck. We may get information about the depth of the keel, for example, and we may also find out whether there still are parts of the ballast stones, cargo or equipment inside the wreck. Next, an underwater georadar will likely give us detailed information about items that are under the wreck. Last but not least, regular aerial survey will document seasonal changes in the preservation conditions of the wreck.

Future Management of Preserving the Site

The wreck site is endangered by natural forces as well as by human activities. Before any steps to preserve the site can be taken, all the different destructive factors have to be analysed. We must carefully study the damages caused by the shipworm, fishermen, leisure divers, and dynamic coastal processes. In addition to this, we must study the construction impact. By installing a special datalogger on the site, we hope to get enough information to make a plan to preserve the wreck. When the research work is complete, the wreck will be covered with a protective special geo-fleece or sandbags.

Institutions Involved in the Project Group

All project activities will be organized by the Department for Preservation of Archaeological Monuments/Archaeological Statemuseum of Mecklenburg-Vorpommern (Landesamt für Bodendenkmalpflege/Archäologisches Landesmuseum Mecklenburg-Vorpommern). All researchers of this project are employed by this institution. The equipment used in the documentation of the wreck comes from the State Association of Underwater Archaeology of Mecklenburg-Vorpommern (Landesverband für Unterwasserarchäologie). The society is a non-profit and non-governmental organisation to support underwater research in the Baltic zone of Mecklenburg-Vorpommern. The scanning and data processing in the photogrammetry documentation of the wreck will be done by the University of Applied Sciences in Neubrandenburg (Fachhochschule Neubrandenburg, Fachbereich Bauingenieur- und Vermessungswesen).

Martijn Manders

Presentation of the Four Wreck Sites within the Project :

The Netherlands

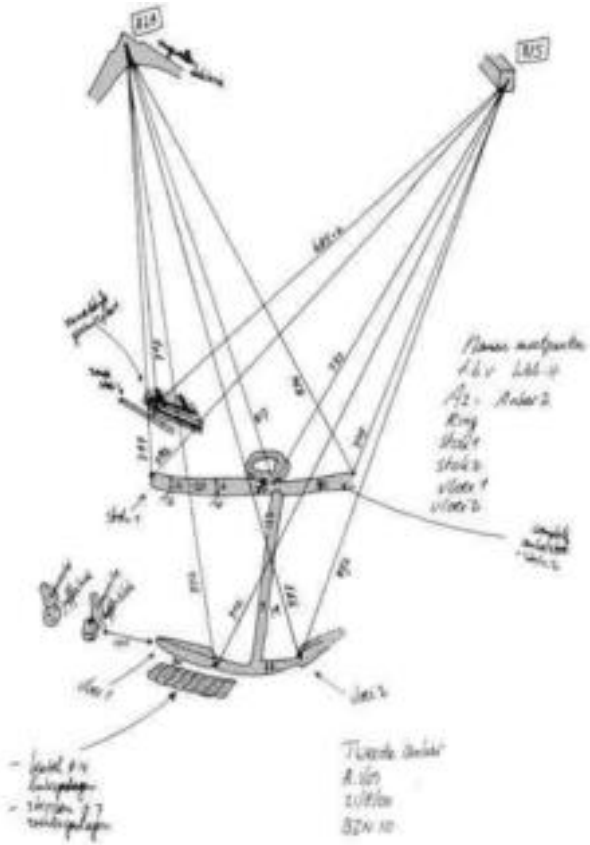
The BZN 10 Wreck - Threatened by Nature?

History

For centuries, the Netherlands has been an important maritime nation. Amsterdam was a staple market for all kinds of goods within Europe. Grain from the Baltic region was traded here, as well as goods from the East and the West Indies. However, for a long time it was impossible for a big ship to enter the Amsterdam harbour with its cargo because of the shallow waters in this area (called Pampus). As a solution, big ships were loaded and unloaded on the Texel Roads, in the Wadden Sea in the North of Holland. Protected from the North Western winds by the Island of Texel, it was a relatively calm area. Relatively, because during centuries thousands of ships were wrecked by storms. One example is the storm on the 24th of December, Christmas Night, 1593. That night, a fleet of around 150 ships was caught by a South Western storm. In a few hours, 24 ships sunk and 1050 sailors died. Another example is the South Western storm on the third of November 1638. In that night 35 ships went down. Between 1576 and 1790, at least 32 severe storms are registered.*1

One of the unfortunate ships that sunk during the Christmas Night of 1593 was the Scheurrak SO1. The wreck was excavated by the Netherlands Institute for Ship- and underwater Archaeology (ROB/ NISA) between 1989 and 1997 when the NISA developed ways to do archaeological research in muddy waters.*2 The wreck turned out to be that of a Dutch merchant ship with a cargo of (still well

The position of the wreck BZN 10. Chart by Mikko Rautala. The Maritime Museum of Finland/The National Board of Antiquities.



Picture 2: An underwater sketch of one of the anchors found on the BZN 10-wreck. Notice the datum-points 828 and 815 at the top of the picture. Drawing: ROB/NISA.

Picture 3: The result of combining the "Web-it" measurements with the underwater sketches. This picture shows everything of the BZN 10 wreck that surfaced the seabed in 2000. Drawing: ROB/NISA

preserved) Baltic wheat. Scheurrak SO is not the only shipwreck located in the Western part of the Wadden Sea. In a small area of a few square miles, there are about sixty wrecks with possible archaeological value from the sixteenth, seventeenth and eighteenth century. Most of these wrecks have been found by local fishermen and divers.*3 So far, the NISA has investigated twelve of these sixty wrecks in order to value them.

The BZN 10 Wreck

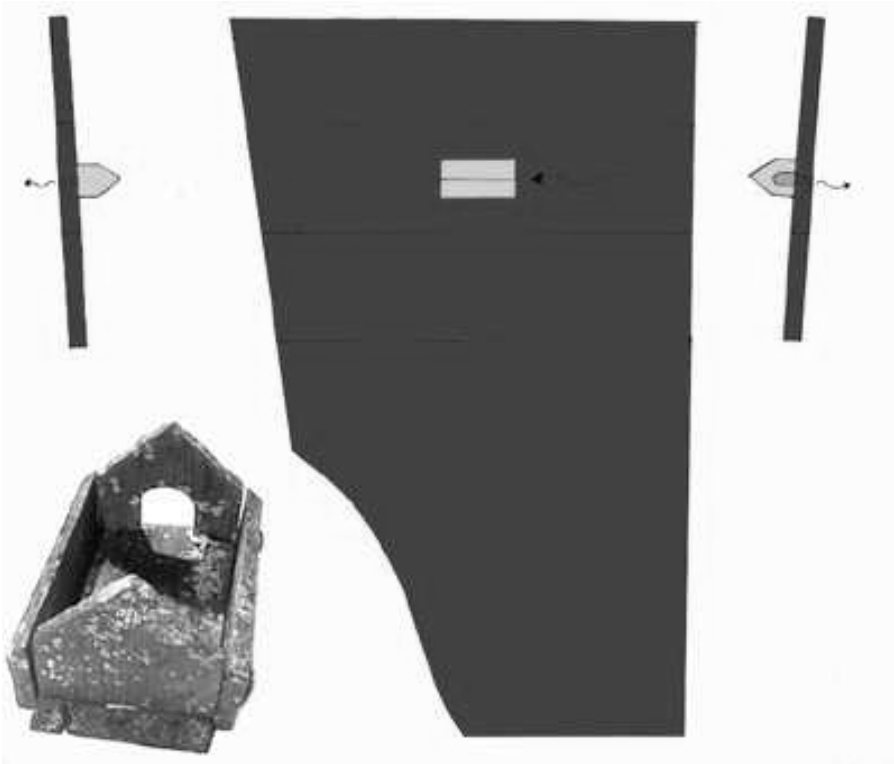
One of these twelve shipwrecks that have been evaluated in the Netherlands is the Burgzand Noord 10 (picture 1). The wreck was chosen as one of the four shipwrecks involved in the EU project "Monitoring, Safeguarding and Visualizing North European Shipwreck Sites (MoSS)". The evaluation of this shipwreck took twelve days. The site was not disturbed. To be able to make a picture of the wreck site, nails were hammered on specific points on the wreck. These nails were numbered and their distance and depth were measured. A computer program called "Web-it" plotted these points and their positions, and then drawings made by an archaeologist under water were be placed exactly in the wreck (picture 2), resulting in a scaled map of the wreck site showing everything surfacing the seabed (picture 3). Only a few objects, mainly ceramics, that can help us date the wreck were taken from the site. Some wood samples for dendrochronological research were taken as well.

Archaeological Data

By the help of this careful approach, the following things can be said about the BZN 10 wreck: The wreck site is 40 by 25 meters, and the ship itself must have been around 40 meters long. An almost complete starboard side is visible, not only from bow to stern, but also parts of the bulwarks are still there. Near the bow the ship's decoration in the form of a man's head has been extremely well preserved. The ship had two continuing decks with a considerable flare. The oven is very near to the bow of the ship. It's not intact anymore, but probably still in its original place. Besides these things, much of the rigging, like blocks and ropes, has been preserved as well.

What makes the ship special is the huge amount of pinewood (*Pinus sylvestris*) used in the construction. Near the stern some of the outer planking, the frames, the ceiling and the planks for the compartments are made of this wood as well as all the deck beams and deck knees. The use of this much pinewood does not indicate the ship to be of Dutch origin. Because of the amount of pinewood and the lack of well-preserved and accessible oak, dendrochronological dating was executed on pinewood samples from the deck beams. Two samples gave post quem dates of "after 1645" and "after 1646".*4 The wood originates from northern Germany.

Near the stern on the outside of the planking, above the second deck, a construction was found that appears to be a ventilator (picture 4).*5 Although mentioned in historical sources, this has never before been found on a shipwreck.



Picture 4: A unique find from the BZN 10 wreck: This little "birdhouse" above the second deck, near the stern, is probably a ventilator. When sailing, the pressure built up in the little house. Through a little hole in the planking the pressed air was blown in the (captain's?) cabin. Drawing: ROB/NISA.

The Cargo

The cargo of the ship consisted of a few hundred "olive jars". Jars of this kind have been found in many different shipwrecks, usually Spanish, but also on terrestrial sites all over the world.*6 The jars were not always used for olives or olive oil. The jars in BZN 10, for example, contained a mixture of what may be benthonite earth and urine. This kind of mixture was used in the processing of wool.*7 The jars are preserved extremely well; even the organic baskets are left and the corks are still in their place, thanks to the soft and protecting soil of the Wadden Sea bottom (picture 5). A few well-preserved oak casks in the wreck contained grapes and small fish bones. Another part of the hull, in the bow, had been reserved for pinewood boxes with schist slates of different shapes. At the site, there are also cooking gear, earthen- and stoneware, and nine iron canons with gun-carriers. The earthenware found on the surface of the wreck is dated between the 12th and the

Picture 5: Underwater photo of the cargo of olive jars from the BZN 10 wreck. Photo (from video): ROB/NISA.

19th century. This shows how dynamic the Wadden Sea and its currents are. Most of the earthenware, however, is from the second half of the 17th century and originates from northern Germany. It's local red earthenware, not to be used in trade. The mixture of finds with different origins and from different periods is more a rule than an exception on shipwrecks in the Wadden Sea. Unused clay pipes marked EB and dated in the last quarter of the 17th century are found on at least four different shipwrecks in the Burgzand area, thanks to the high dynamics of tidal movements.*8

During the evaluation, a seed of a Central or South American palm (*Orbigyna spec.*) was found in the wreck (picture 6). How does a nut or seed like this end up in a shipwreck in the Wadden Sea? The first and obvious reason can be that the seed got to this place on the BZN 10 and sank with the ship. However, during evaluation the site was not disturbed, and the seed was found on the sand surface. *Orbigyna* nuts do have the ability to travel thousands of miles by ocean currents and it is possible that it drifted as far as the Wadden Sea. But there can also be another reason. Other Orbigyna nuts, like the seed of the *Cohune* palm (*Orbigyna cohune*), were shipped to England in World War I for the production of charcoal filters for gas masks. Was this also the case for this one? It will be difficult to find out the truth about this little nut. Striking however is the fact that two other *Orbigyna* nuts have been found in two different Dutch shipwrecks from the second half of the 17th century. These nuts clearly belong to the wrecks. What was the purpose of bringing these seeds to Europe? Hopefully one day we will know.

Picture 6: Seed or nut from a Central or South American palm (Orbigyna spec.). The seed is 11 by 6 cm. Photo: J. Pauptit (Leiden University).

Protecting the Wreck and Evaluating the Collected Data

In twelve days we can get a fairly good impression of a wreck site. As seen above, it is clear that the conservation conditions concerning the BZN 10 wreck are excellent. However, the wreck is threatened by erosion and the ship worm (*Teredo navalis*).

We can conclude that this ship was probably not Dutch. The wood and the inventory point to a northern German origin. The cargo is probably Iberian. Was it a 17th century German merchant ship on her way back from a trip to the Iberian Peninsula? The facts point at that direction. The wreck is judged to be archaeologically very interesting, and it is now protected by fine polypropylene gauze. Future research at this wreck can give us much information about seafaring and trading on the European West Coast and the (intermediate) role of the Netherlands between the South and North European markets.

In the next three years, the wreck will be monitored and data about its degradation processes collected for the European project MoSS. As I stated above, the wreck is really threatened by nature. Now it's time to find out: how much, how quick, and what we can do about it. In the Netherlands we are especially focussed on testing our new method of protecting shipwrecks. In the past four years, we developed a method in which an artificial reef is created from sand and gauze to cover the wreck on the seabed. The method is cheap and easy to put in its place. It seems to work very well. The question still is, if the wreck and its artefacts are permanently protected from the ship worm and other organisms of the sea.

1. Information given by J. van Vliet, who's currently working on a database of storms on the Texel Roads.

2. ROB stands for the Rijksdienst voor het Oudheidkundig Bodemonderzoek (National Service for Archaeological Heritage). The NISA is part of this organisation (ROB/NISA).

3. The NISA doesn't have the policy of searching for shipwrecks. The main reason for this is the amount of reportings per year by fishermen and divers. Hundreds of shipwrecks are known in Dutch waters and reclaimed land of the former "Zuiderzee". See also Habermehl (2000).

4. Whenever no bark is present, it is only possible to give a "post quem" cutting date for pinewood. The wood is analysed by RING.

5. Manders and Van Vliet (in prep.).

6. Olive jars of this type are found in the San Diego wreck, The San Esteban (1554) and the Trinidad Valencera (1588).

7. The white paste still has to be examined.

8. Duco (1993). Even Roman ceramics are found on 18th century shipwrecks.

Carl Olof Cederlund

Presentation of the Four Wreck Sites within the Project:

Sweden

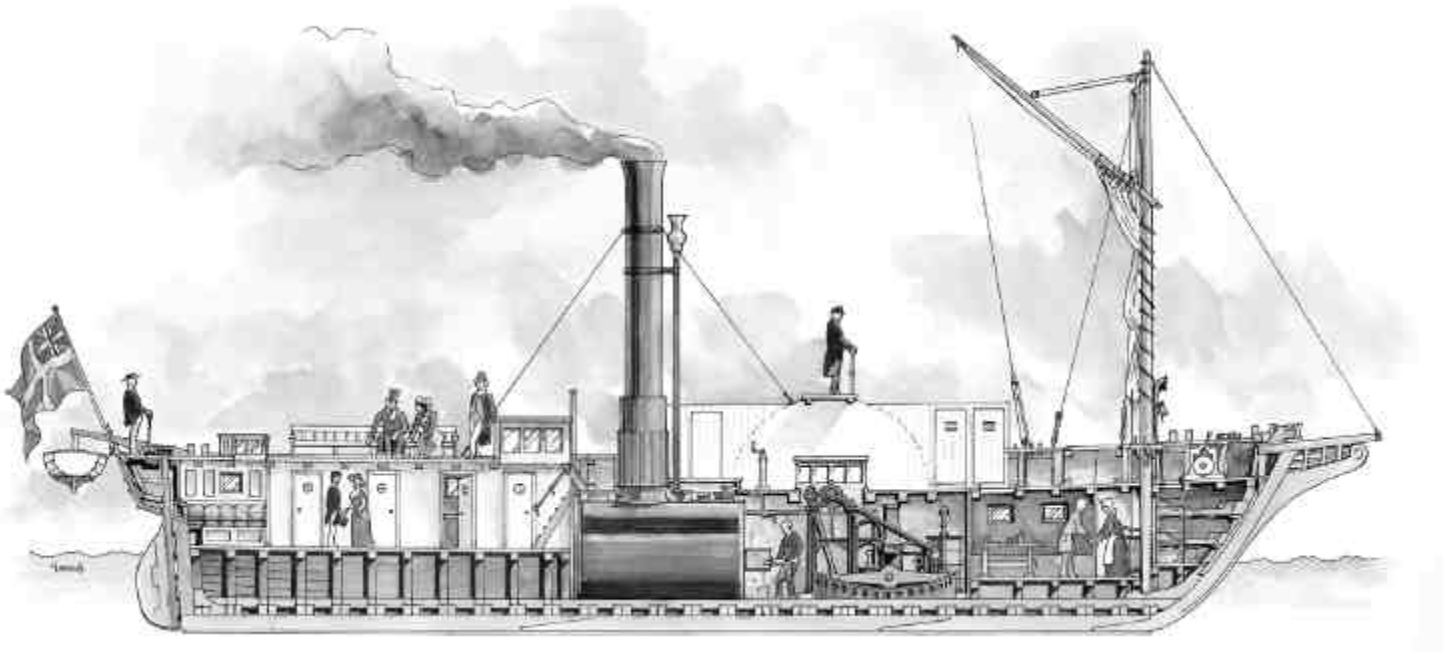
The Locating of the Wreck of the Paddle Steamer E. Nordevall (1836 - 1856) in 1980, and the Developments Concerning Its Preservation and Visualization 1980 - 2001

In 1980 scuba divers located the wreck of the paddle steamer E. Nordevall on the bottom of a large lake called Vättern in the central part of southern Sweden. The vessel was built at Hammarsten´s shipyard in the town of Norrköping in 1836-1837 and launched in 1837. It was built for traffic on the Göta Canal across Sweden. The canal had been opened in its full length just five years earlier.

The ship represents the first generation of steam ships in Europe in general use. This ship type was originally developed in Scotland for traffic on rivers and river estuaries in the 1820's. Daniel Frazer, a Scottish engineer, who was the technical leader of Motala Verkstad at the time, designed the two side-lever-engines in the vessel. Motala Verkstad was one of the first mechanical factories in Sweden, and of dominant importance for the development of marine steam engines and shipbuilding of the 19th century.

The position of the wreck of E.Nordevall. Chart by Mikko Rautala. The Maritime Museum of Finland/ The National Board of Antiquities.

The paddle steamer E. Nordevall sailing at Lake Vättern. Painting by R. Grosch, Forsvik Shipyard's Association.



Diagonal cross section drawing of the E. Nordevall. Painting by R. Grosch, Forsvik Shipyard's Association.

The E. Nordevall was designed by one of Sweden's most well known ship designers at the time, a naval officer called Johan Gustaf von Sydow. The E. Nordevall was commissioned by a shipping company that started steam ship traffic on the Göta Canal. The vessel was named after engineer Erik Nordevall (1783-1835). He was one the most prominent technicians in canal and lock building in Sweden in the late 18th and early 19th centuries, and he constructed and built among other things the locks at Trollhättan and Södertälje, both part of the Göta Canal.

The paddle steamer E. Nordevall was and still is uniquely well preserved on the flat and calm bottom of the fresh water Lake Vättern. At the time when the ship was located the main part of the exterior was still intact and the interior was in the same state of preservation as it was when the ship sank about 150 years earlier. The situation is due to the favourable preservation conditions in fresh water environments of this kind.

During the 1980's, the E. Nordevall was subject to extensive investigation and recording. The Swedish National Maritime Museum performed extensive photographical and film documentation on the site at the depth of 45 meters during the years 1985-1989. This was done in co-operation with several other parties such as the Göta Canal Company of today, the unit of Diving Technique at Chalmers University of Technology in Gothenburg, the Östergötland County Administration, and the Central Office of National Antiquities in Stockholm.

The Swedish Ancient Monuments Act protects the wreck of the E. Nordevall because the vessel foundered more than one hundred years ago

One of the aims of the underwater recording was to investigate whether it was possible to salvage and preserve the unique paddle steamer in a museum on land. The investigations resulted in an estimation of the salvage costs, a proposal of a museum building in the town of Motala on the eastern side of Lake Vättern, and also an investigation of the appropriate salvage and excavation techniques. The bodies and organizations to which the results of these investigations were remitted met them very positively. The necessary resources were on the other hand not available.

The Eric Nordevall II:

Type of vessel:
Side-wheeler steamship

Length:
28.6 meters (95 ft)

Beam:
6.5 Meters (22 ft)

Width of hull inside wheelhouses:
4.3 meters (14 ft)

Draught:
1.9 meters (6 ft)

Displacement:
150 tons

Propulsion:
2 side-lever steam engines of 17 hp each

Speed:
7 knots

Passengers:
approx. 80

In the course of the investigations, one could on the basis of the extensive photo and film recordings of the 1980's observe that the wreck was deteriorating. It was evident that it had become a popular site for leisure and tourist diving and that this had resulted in the pilfering of objects and the tearing down of parts of the vessel's superstructure. In the late 1990's, the county administration had to prohibit diving on the site in order to hinder future deterioration.

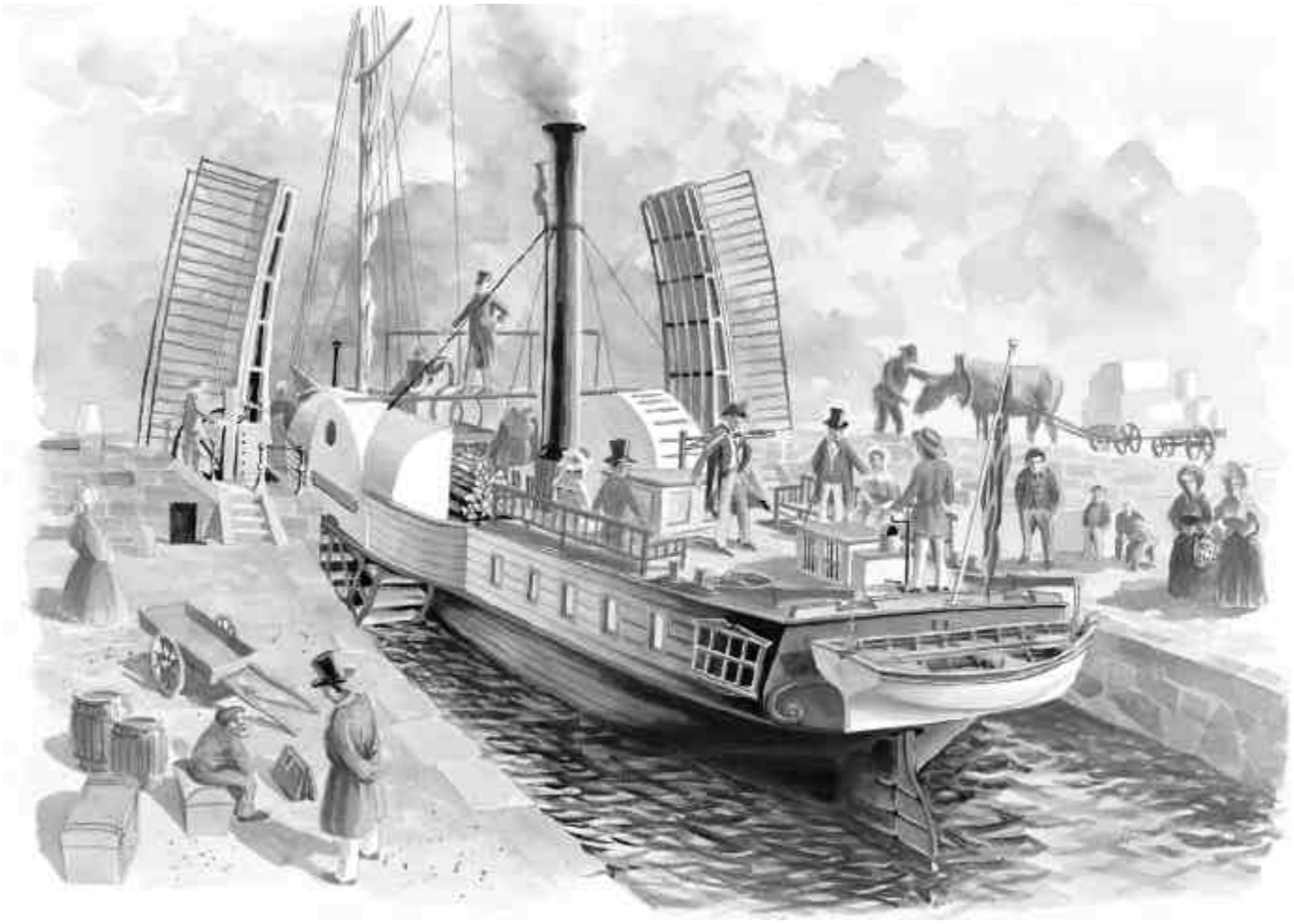
THE ERIC NORDEVALL II PROJECT

An association called Forsviks Varv (Forsvik's Shipyard Assoc.) was founded in 1995 with the aim of building a paddle steamer "Eric Nordevall II". This ship will be a replica of the original E. Nordevall, which saw 20 years of service before sinking in Lake Vättern.

The E. Nordevall and her sister-ships initiated a revolutionary change in Swedish transportation and communications by permitting a fixed timetable for the Stockholm - Gothenburg route.

Paddle steamers like the E. Nordevall represent the transition from the traditional mode of travel by sailing vessels or horse-drawn carriage to the new mechanical means of transportation, reflecting the industrial revolution and the period's advances in engineering.

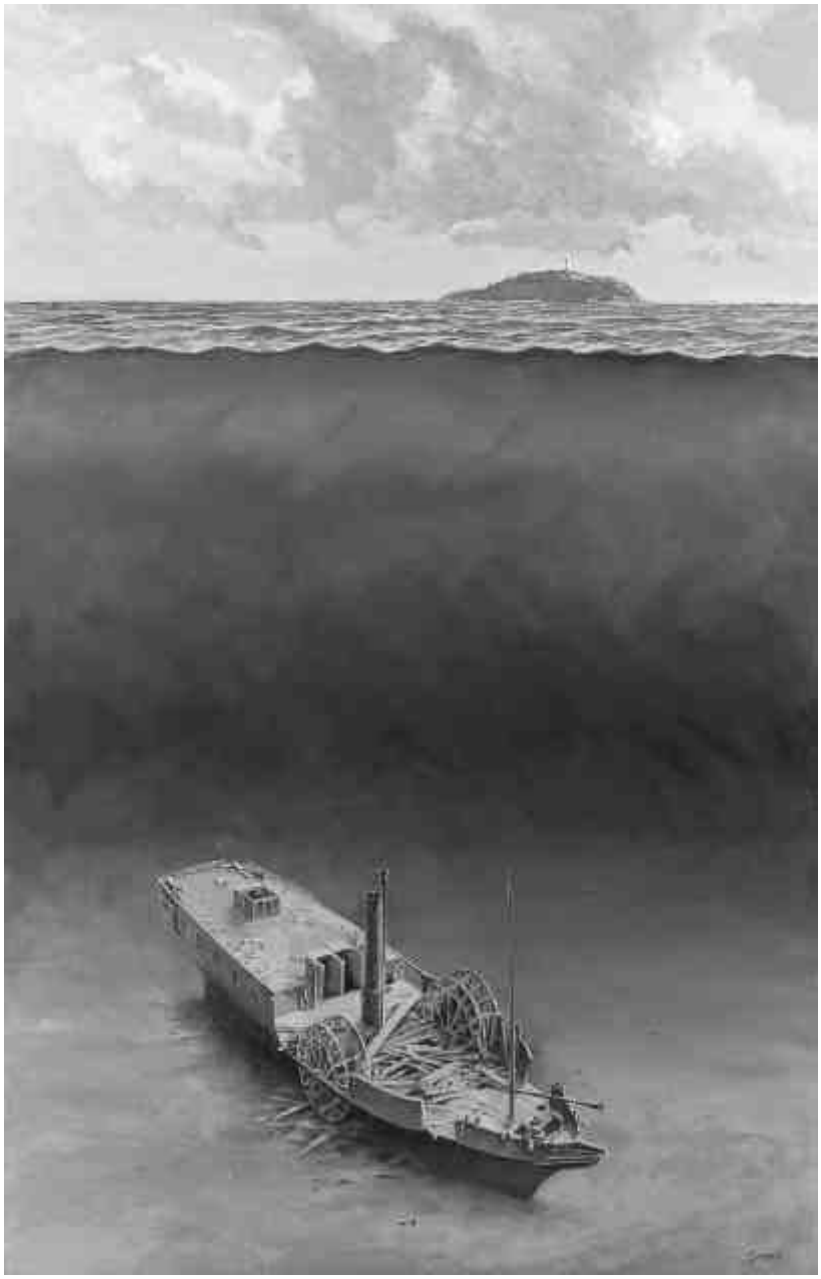
Great pains are being taken to construct the Eric Nordevall II as a historically true copy of the original, with the exception of certain modifications imposed by the Swedish Maritime Administration.



E. Nordevall in the Göta Canal. Painting by R. Grosch, Forsvik Shipyard's Association.

The paddle steamer is being replicated at Forsviks Varv on the western side of Lake Vättern, close by the town of Karlsborg, using new constructional drawings that are based on qualified measurements taken on the wreck during the marine archaeological research of the 1980's. When the hull and superstructure are completed, the ship will be towed across Lake Vättern to the Motala Verkstad where its two side-lever engines will be installed. The engines are built according to the original plans. The original plans are preserved; they are in the Archives of the Swedish National Maritime Museum. The Motala Verkstad is the same company that provided the original steam engines for the E. Nordevall.

The reconstruction of one of Sweden's first paddle steamers is being carried out in close co-operation with marine archaeologists, the Swedish National Maritime Museum and several other institutions concerned with Swedish cultural heritage. The goal of the Project Eric Nordevall II is to once again see an authentic paddle steamer in passenger service on the Göta Canal, as well as on Lakes Vänern, Vättern and Mälaren and in doing so, to present the public with a living example of cultural history from the period when Sweden's modern industrialism was in its infancy. Because neither ship nor machinery of this type has been preserved, the building of the Eric Nordevall II is a project of great maritime and general historical interest, both in Sweden and internationally.



The wreck of the E. Nordevall on the flat bottom of deep Lake Vättern. Painting by R. Grosch, Forsvik Shipyard's Association.

The Group for the Salvage of the E. Nordevall

A few years ago, a group was set up to plan and support the salvage of the original paddle steamer. The aim of the group is to work for the salvage, excavation, conservation and exhibition of the ship in a museum in Motala.

E. Nordevall in the MoSS Project

The paddle steamer E. Nordevall has been chosen as the Swedish case in the marine archaeology project within the *European Community Culture 2000 Programme: "Monitoring, Safeguarding and Visualizing North-European Shipwreck Sites: Common European Underwater Cultural Heritage - Challenges for Cultural Resource Management" (MoSS).* The Swedish partner in the project, The Södertörns högskola (University college) and professor Carl Olof Cederlund there, will study the conditions, options and alternatives to preserve and visualize the paddle steamer E. Nordevall historically in society - today and in the future.

Hauke Jöns, Martijn Manders,
Minna Leino, Carl Olof Cederlund

The European Significance of the Chosen Shipwreck Sites

FINLAND:
The European Significance of the Wreck Site of the Vrouw Maria

The Baltic Sea has traditionally been the most important trade route in Northern Europe and a way for cultural influences to spread from one country to another. The navigation and trade system in Europe was quite uniform at the end of the 18th century; the routes for transporting goods, money, and know-how were established in the course of time. In this network of merchant routes, there were several centres, and Holland and especially Amsterdam were among the most essential ones. Vrouw Maria was a part of the European merchant shipping of the end of the 18th century. Vrouw Maria represents the change in the trading on the Baltic Sea, where the merchantmen began to use smaller ships. Smaller vessels could use different routes occasionally, and the cargos in these ships consisted of a variety of goods. The route to the Russian capital, St. Petersburg, was used frequently, and several wreckings of ships from many countries occurred by the Finnish coastline. Preserving this European underwater cultural heritage is an essential task for those authorities that are responsible for maritime heritage.

Vrouw Maria is extremely well preserved. The lower parts of the masts are still standing. Other parts of the rigging are lying next to the hull. The hull is almost intact and it has protected the cargo that fills the hold of the ship.

Wrecks of the MoSS Project. Chart by Mikko Rautala. The Maritime Museum of Finland/ The National Board of Antiquities.

GERMANY:
The European Significance of the Wreck Site of the Darsser Cog

The Darsser Cog shares several construction details with the well known Bremer Cog. As such, it is an important indicator of the changing shipbuilding traditions of the 13th century in the Baltic area. More influences from the North Sea area came into the Baltic Sea, such as the flat, in carvel-technique built hulls - as in the "Darsser Cog". During this time period, the decline and the sword-christianisation of the Slavonic tribes in north-eastern Europe by German knights and the colonisation of this area by western European farmers and settlers took place, followed by the foundation of thousands of new villages and towns and a vast deforestation. The using of the new carvel technique shows that the radical alteration in society and economy in the 13th century had also an influence on handicraft traditions.

The cargo of the ship consisted of roof tiles, Norwegian whetstones and pieces of antler, which give a good picture of the trade in the early phase of the hanseatic period. In addition to these, parts of the crew's equipment have been found in the wreck and its surroundings, which probably will give detailed information about the standard of seafaring techniques in the 13th century.

THE NETHERLANDS:
The European Significance of the Wreck Site of the Burgzand Noord 10

The wreck of the Burgzand Noord 10 is located in the Texelstroom area, where all bigger ships were waiting to be unloaded or loaded at the Amsterdam staple market. It is therefore an example of a ship involved in the international trade. The wreck of the Burgzand Noord 10 is clearly not a Dutch ship: it is built in a different way, with the use of a lot of pinewood. The cargo of the wreck consists of hundreds of Iberian jars. It is possible that the wreck is of South European origin.

The wreck of the Burgzand Noord 10 is well preserved; even organic objects are still in good shape after 350 years. Unfortunately, the wreck has recently been freed from the sand that was covering it. It is extremely important to find ways to protect this wreck (and other wrecks) from quick degradation.

SWEDEN:
The European Significance of the Wreck Site of the Eric Nordevall

The wreck of the paddle steamer E. Nordevall (1836-1856), which lies in Lake Vättern at the depth of 45 meters in Sweden, is an example of the first steamships in Northern Europe. E. Nordevall was built of oak and it was commissioned in 1837. The wreck of the E. Nordevall is unique in several respects. The ship represents the first generation of civilian steamships developed in England and Scotland. Paddle steamers of the type were part of the transition to the new mechanical means of transportation, reflecting the industrial revolution and the period's advances in engineering. The ship is also an example of change in transportation on the lakes and canals of Sweden. The use of E. Nordevall and her sister ships permitted a fixed timetable for the Stockholm-Gothenburg route. The wreck is very well preserved, with the hull and paddle wheels still almost intact. The ship's engine room houses two engines of the side-lever-type. The type was the first of marine steam engines in Europe. Of the type, there is no other original specimen left to our days.

the Moss web-site

www.nba.fi/INTERNAT/MoSS/index.htm

One of the aims of the MoSS Project is to disseminate information via a multilingual Web site. The main language of the site is English. Basic information of the MoSS Project will be available also in Dutch, Danish, German, Swedish, and Finnish. The site was opened in June 2002.

The site will be up-dated throughout the project (2002 - 2004). New information can be found under headings such as these: What is going on? What is going to happen in the near future? What are the results so far? In the course of the project, the site will have new visual material as well.

The site will be used as a medium for communication between the partners and the general public. As a platform for information and discussion, the site will also serve as a source of information to special interest groups, such as sport divers, for example. The public can give feedback – opinions, ideas, questions etc. – about the MoSS Project via the site. The staff of the project are willing to answer any questions.

The site ensures that the project is accessible and intelligible to the widest possible audience. The site aims at making people - wherever they live or whatever their background is - enjoy, understand, and appreciate underwater cultural heritage. The site aims to raise public awareness of the range and importance of underwater cultural heritage.

At the site there are links to the sites of all the museums and institutions of the partners in the project. There are also links to the sites of those institutions that co-operate with the partners but are not official partners in the MoSS Project.

Feedback: feedback.moss@nba.fi

WHAT'S ON?

Meetings and Seminars

Meetings

The project meetings act as our internal communication, and the meetings are held mainly by the project participants themselves. In the meetings the partners discuss the project in detail, make plans for the future, and develop the general idea of the project. The participants discuss the different themes of the project and/or one theme at a time. Additionally, the aim of the meetings is to evaluate the project and discuss the many practical and scientific questions that evoke in the course of the project. The different themes can be discussed, if needed, in sub-groups. Our plan is to have two meetings per year: one in the beginning of March, and another in the beginning of November.

Indicative timetable of the meetings

The first meeting in Helsinki, Finland, November 15-16 2001
The second meeting in Portsmouth, England, March 15-17 2002
The third meeting in Germany, November 8-12 2002
The fourth meeting March 2003
The fifth meeting November 2003
The sixth meeting March 2004

Seminars

Our plan is to have three seminars; the first seminar is held in Germany in 2002 (theme: the documentation of shipwreck sites and photogrammetry), the second in Sweden in 2003 (theme: the visualization of shipwreck sites), and the third in the United Kingdom in 2004 (theme: the monitoring and safeguarding of shipwreck sites).

Seminars are bigger meetings with external experts and a wide range of lectures that bring extra expertise into the project. The seminars last for three days. Seminars are open for the general public, which is why they are scheduled on weekends. At each of the seminars, five experts are invited as special advisors and lecturers. The experts are specialists on underwater documenting, visualizing, monitoring and management.

The aim of the seminars is not only to provide the partners and the general public with information and expert knowledge but also to produce dialogue between the different groups who have an interest in the management and exploitation of underwater cultural heritage. The seminars are intended for the general public and the media as well as for the students and cultural operators and professionals of underwater cultural heritage.

MOSS Meeting and Seminar
The Documentation of Shipwreck Sites and Photogrammetry
Schwerin Castle
Germany

Sunday, 10th of November 2002

9^{00} Welcome
Minister of Education, Science and Culture
9^{15} The Culture 2000 Programme and the underwater cultural heritage
Representative of the European Commission
(to be confirmed later)

Theme A: The MoSS Project

9^{30} Methods and aims of the MoSS project - an introduction
S. Tikkanen
9^{40} The Vrouw Maria site
M. Leino
9^{50} The Darsser Cog site
F. Lüth/H. Jöns
10^{00} The Burgzand Noord 10 site
M. Manders/A. v. Holk
10^{10} The Eric Nordevall site
C. O. Cederlund
10^{20} Discussion

10^{30} Coffee break

Theme B: Documentation Techniques of the MoSS Project

11^{00} Practical experiences of underwater photogrammetical documentation of the Darsser Cog
Th. Förster/R.Obst
11^{20} Photogrammetry of the Darsser Cog - principles and data processing
W. Kresse/F. Wehden
11^{40} Documentation at the Vrouw Maria wreck site: The use of an underwater positioning system AquaMeter D100 and Video Ray Pro mini-ROV
M. Leino/S.Wessman
12^{00} Documentation of North Sea wrecks by the NISA
M. Manders/A. van Holk
12^{20} The underwater documentation of the paddle steamer E. Nordevall 1985-1989
C.O. Cederlund
12^{40} Discussion

13^{00} Lunch break

Theme C: Experiences in Documentation Techniques

14^{00} The excavation and recording of the Wreck of the warship Kronan (1676)
L. Einarsson (S)
14^{30} The excavation and recording of the Wreck of the warship Fredericus
A. Olsson (S)
15^{00} Acoustics for the non-destructive investigation of submerged archaeological sites
J. Dix (UK)
15^{30} Coffee break

16^{00} The Karschau ship. The recording and documentation technique
H.-J. Kühn (D)
16^{30} Discussion

17^{00} End of the seminar

Indicative timetable of the next seminars

The second seminar will be held in Sweden in 2003 (theme: the visualization of shipwreck sites).

The third seminar will be held in the United Kingdom in the spring of 2004 (theme: the monitoring, safeguarding and management of shipwreck sites).

This project has been carried out with the support of the European Community. The content of this project does not necessarily reflect the position of the European Community, nor does it involve any responsibility on the part of the European Community.