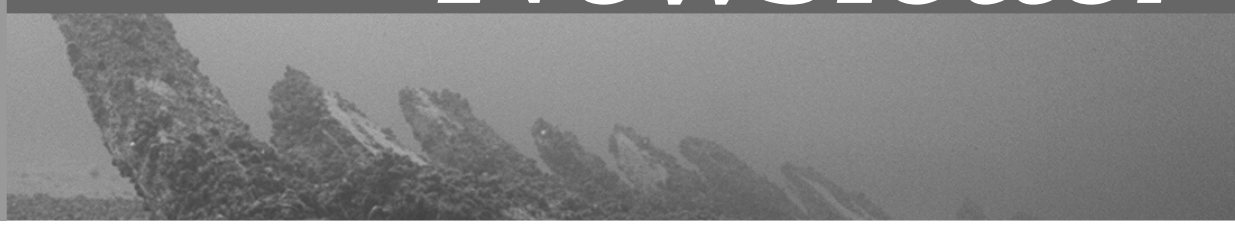
MoSS
May 2004

Newsletter

3/2004



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

contents

Theme : Safeguarding

Education and Culture
Culture 2000

Sallamaria Tikkanen, Riikka Alvik

What is MoSS?

The MoSS project is based on four shipwrecks, all of which are of great significance from a European point of view and show a diversity of intercultural relationships throughout a long period of history. The wrecks are located in Netherlands, Germany, Sweden, and Finland, and they represent different vessel types. The oldest of the wrecks is dated to the 13th century whereas the youngest is from the middle of the 19th century. The wrecks are in different kinds of underwater environments; in sea, lake, and brackish waters, and the conditions on the sites are both stable and unstable. The wrecks have preserved extremely well; two of them are almost intact.

The MoSS project has three main themes: monitoring, safeguarding and visualizing shipwrecks. The first theme includes monitoring the condition of the wrecks, or in other words doing research on the degradation of shipwrecks under water.

The aim of this theme is to develop and improve the methods used in monitoring the physical and environmental conditions of shipwrecks. The second theme is safeguarding, which aims at outlining and developing models to protect shipwrecks so that also the needs of different public groups are taken into account. The third theme is visualizing. The four shipwreck sites will be made physically visible using underwater and other images. The project will be advertised multilingually to the European public.

The MoSS project consists of fieldwork, Internet site, publications, posters, leaflets, reports, articles, meetings, and seminars. One of the objectives 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 wrecks of the project – ships that sailed on European waters – act as examples of maritime history as they tell us about the many local and international dimensions of the European culture.

The MoSS project is organized by The Maritime Museum of Finland (coordinator), The Mary Rose Archaeological Services Ltd. (United Kingdom), The National Service for Archaeological Heritage: Netherlands Institute for Ship- and Underwater Archaeology ROB/NISA (the Netherlands), The National Museum of Denmark/Centre for Maritime Archaeology (Denmark), The Department for Preservation of Archaeological Sites and Monuments / Archaeological State Museum of Mecklenburg-Vorpommern (Germany), and Södertörns högskola – University College (Sweden).

The MoSS Project is the first international shipwreck project that European Community Culture 2000 Programme funds. The European Community Culture 2000 Programme is a programme that supports international 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 sub-aquatic archaeology were especially called to take part in the program.

For more information, please contact Ms Riikka Alvik (Mrs. Tikkanen is on maternity leave), MoSS Project Leader, The Maritime Museum of Finland.
Tel. +358 9 4050 9057
Fax + 358 9 4050 9060
Email. riikka.alvik@nba.fi

Web site: http://www.mossproject.com

Friedrich Lüth

The underwater shipwreck sites of the MoSS-project

Cultural Heritage is a vulnerable commodity throughout the world. Its significance for the benefit of mankind and its use in the understanding of societies is widely acknowledged and it is commonly accepted as being something valuable that is in need of protection.

The difference between the various societies in the world emerges when the discussion concerns questions about what measures should be taken and how the heritage should be protected. These questions become even more vivid, when they touch on economic and planning matters.

When any form of cultural heritage is lying in the earth of a particular country, there are legislative rules and administrative routines to proceed with the management of that heritage.

As soon as cultural heritage is discovered in territorial or international waters, there is the possibility that more than one society might develop the feeling, that the significance of the find is related to its own history. Shipwrecks often bear this multicultural aspect and the question of "your shipwreck in my waters" occurs every now and then.

If a vessel was built with wood from the south-eastern Baltic coast in Poland in the 13th century and it carried artefacts from Island, Wales, Norway, Scania, Lübeck and Greifswald before it sunk in German territorial waters, this discovery is of high historical significance to all these countries. If it were found in German territorial waters German governmental bodies would naturally manage the find and it is they who would take all appropriate measure to protect, safeguard and manage the site. It should at the same time be a normal academic procedure that the scientific partner in the governmental process immediately enters into scientific cooperation with scholars in other nations.

If a shipwreck is found in the exclusive economic zone of a coastal state along the Baltic (it should be remembered that there is no area of high sea in the Baltic Sea), there is no prejudicial right to enhance protection and management for any Baltic state. Thus, to achieve a comparable management approach it will be necessary to develop internationally acknowledged standards as a basis to enter into co-operative work, both legally and scientifically.

So it should come as no surprise, that the heritage-legislation is also different in the six partner-countries of the MoSS-project. The shipwrecks under consideration all have either more or less significance for more than one partner-country and they are all under threat. They need a safeguarding-procedure that is appropriate to the particular site that takes as many measures as possible into account while protecting them in the best achievable way.

In this newsletter these differences in threats, legislation and protective measures will be described. It will give the reader a rough idea about how difficult it will be to find ways to protect shipwrecks "in situ" that can be adapted by all countries.

Map of the sites

Martijn Manders

Why do we safeguard shipwrecks?

Over the years, the preservation of archaeological sites in situ has become more and more important. This is also the case for maritime archaeological sites under water. The reasons to do so can be both pragmatic and based on more philosophic thoughts on how to manage our common maritime heritage.

Some philosophic motifs about the "in situ" protection of maritime heritage:

1. We have to preserve a representative part of the maritime past for future enjoyment and research.
The "stock" of archaeological interesting shipwrecks is immense and unarranged. It is therefore important to know what is where under water and to investigate its scientific value for maritime archaeology. This can be achieved by valuating these wrecks. After this, the state or condition of these selected wrecks should be preserved. If we don't actively safeguard the wrecks many good examples of maritime heritage will be lost forever.
The first physical protections in situ were carried out in the 1980s. This protection was specifically done to leave something for future generations (or even possibly for eternity). Due to projects like MoSS and BACPOLES, we know that protection in situ is a way to slow down degradation. However, it is impossible to stop the deterioration of shipwrecks totally (this is also the case for shipwrecks preserved ex-situ). It is therefore important to know how long a wreck can be protected under water by taking certain kinds of measures. The idea is to create an archive under water that is accessible and to make sure that the "files" are kept in as good a condition as possible until they are opened. For this reason it is important to have an idea about how long the protection has to be effective for: 5 years, 20 years or hundred years. The protective measures have to be selected in such a way that deterioration of the site can be brought down to a minimum while at the same time it will still be possible to access the site in the future for archaeological research.
Since it is important to know what will be protected, a non-intrusive assessment on the site is executed. This assessment will give answers to some basic questions concerning the extension of the site, the condition of the environment and the object, how old the wreck is and whether it has a cargo on board. This information is very helpful if, in the future, we are looking for an object to answer a specific scientific question.

Sonar equipment as it has been used on the Vrouw Maria site (Ulla Klemelä).

2. Most countries nowadays have a well-developed law and regulation system concerning the protection of maritime archaeological heritage.
This is the precautionary principle. It means that these countries are taking the responsibility to preserve not only their own but also the common maritime past. The preservation or safeguarding of shipwrecks under water is a logical method to do so.
Some international regulations concerning the protection of maritime heritage underwater even go further by stating that the conservation "in situ" should be the first option (Unesco convention on the protection of underwater cultural heritage of 2001 and the ICOMOS charter on the protection and management of underwater cultural heritage of 1996).

There are also pragmatic reasons to preserve maritime heritage "in situ":

1. The number of shipwrecks being discovered is growing quickly and there is not enough capacity to do all the necessary research.
Not only on land, but also underwater, archaeological sites are becoming more easily accessible. Nowadays it is not exceptional to dive as a hobby. Equipment that can look through even the dirtiest water (High frequency sound waves: Side Scan Sonar and Multibeam) has developed rapidly as well as equipment that can penetrate into the seabed (Middle range frequency sound waves: sub bottom profiler and Opus 3D, developed within the IMAGO project). This has caused a rise in the listing of archaeologically interesting shipwrecks underwater in Monument registers and other archaeological databases all over the world. These more advanced survey methods have made it possible for almost everyone to explore the underwater world at a

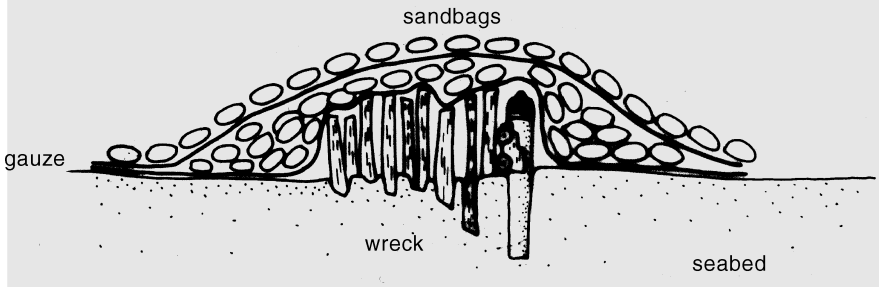
reasonable cost. However, this sudden accessibility of our maritime past has created an immense problem. To be able to keep an equilibrium between the number of wreck sites reported every year and the ones that can be investigated, the maritime archaeological community would need thousands of more archaeologists.

2. The excavation of a shipwreck underwater is very expensive.
Even though diving is not such an exclusive activity anymore, all interventions under water are still expensive. It is necessary to use special equipment and to be able to work accurately it is important to spend a lot of time under water. In some countries, the underwater archaeologist needs special training and licences to work under water. This makes an underwater excavation far more expensive than a regular excavation on a land site.

3. Even if a wreck is likely to be excavated, there is usually a big time gap between the discovery of the object and the actual excavation.
The following things have to be done before excavation can be started:
1. There has to be a (-n non intrusive) assessment first
2. There has to be a project design
3. There has to be funding in advance for the whole project
4. There has to be a timetable
5. There have to be research objectives. Details of the methodology and techniques to be employed must be set down in the project design
6. The investigating team has to have the necessary qualifications
7. Sometimes political or legal issues have to be solved (for example the ownership of a wreck) before an excavation can be started
The research objectives in an excavation are essential. If something is excavated it can never be recreated: Excavation destroys. This is the basic reason why all these rules have been created to regulate archaeological excavations. It will never be possible to get all the available information that is enclosed in a wreck. Maybe there are hundreds of questions which will arise if for example a cargo or a construction of a ship is studied. By excavating the cargo and trying to answer a few questions, you take away the source and it will be impossible to answer other questions that could just as easily have been asked. It is therefore important to know the field of research and its orientation before starting an excavation. In this way you might be able to ask (and answer) the most essential questions for that particular moment.

Not all wrecks are selected to be physically protected. Some natural environments are very stable and large scale physical protection is not necessary, like the Vrouw Maria Site. At the other end of the scale: some environments are very hostile to archaeological sites under water and much effort has to be expended in trying to stabilize the site, like at the BZN 10-site. At some sites it might not be considered worthwhile spending much effort or money on physical protection. If this is the case with a wreck site, then two choices can be made to leave a wreck unattended: either not physically and/or not legally protected. This selection of wreck sites is pragmatic and efforts to do research and to protect wrecks “in situ” should always be balanced.
It is not easy to mention what is important in the selection procedure when it comes to determining which wreck should be actively preserved and which should not. Two important factors however are age and the level of preservation: the condition of the site and the level of integrity (is it undisturbed, does the ship still have its cargo, etc.).

Declaring a wreck to be archaeologically interesting and worthy of protection means that responsibility has to be taken for it. This is not exclusively the task of the maritime archaeologist. Therefore: one of the best ways to safeguard our maritime past is to create public interest and support. How this has been done within the MoSS project can be read in the MoSS Newsletter on Visualizing (1/2004).



Physical protection with sandbags and polypropylene nets used in the 80s on the BZN 3 site in the Netherlands (M. Manders).

Martijn Manders

The Safeguarding of BZN 10

The site conditions, natural and human threats

The 17th century shipwreck Burgzand Noord 10 was found in an area in the Wadden Sea that is known as the Texel Roads. Here ships were protected for the dominant winds coming from the West and Northwest. The number of shipwrecks found in this area illustrates the fact that it was not always as safe as it was thought to be. Many of these shipwrecks are still very well preserved today. The reason for this is that when ships were wrecked in earlier times, they disappeared into the soft seabed and were covered by sediment that created an anaerobic environment where even organic objects are preserved. This environment is however not ever lasting.

The BZN 10 wreck is lying at a depth of 6 to 9 meters. The depth changes due to tidal movements. This, together with the low depth and the ever changing sand banks and gullies, makes the Wadden Sea an unstable natural environment: Sites that are protected by a thick layer of sand can be exposed again either within a few centuries, decades or even a few years. Wrecks are then susceptible to abrasion and under scouring. The Burgzand area in particular is eroding very heavily. This is being caused by the “Afsluitdijk”, which was built between 1927 and 1932 (see also Vos 2003). This obstacle prevents the water coming from the North Sea from flowing into the former Zuyder Sea. The water now has to find another way. This causes abrasion of the seabed. It has been estimated that in the following decennia the seabed will lower by at least 2 meters more. If no action is taken many shipwrecks in this area will be completely lost.

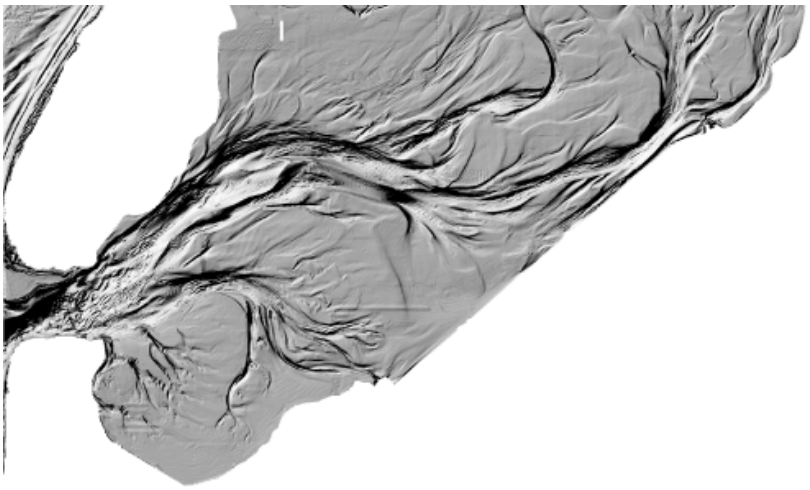
Divers above the BZN 10 wreck site with a view on the harbour of Oudeschild, Texel (R. Rutting).

When a wreck is sticking out of the seabed it is susceptible to many degrading processes. Besides abrasion and under scouring, one of the biggest threats is an attack by woodborers like the Teredo navalis. This shipworm can destroy wood within a few months, leaving nothing but hollowed out planks and frames that can easily be destroyed by the currents. Bacterial decay might be an ongoing process, even when the wreck is covered by sand. This is currently being investigated by the MoSS project.

The Wadden Sea is extensively used as a fishing ground. Wreck parts that are sticking out of the seabed are caught in nets and break off. Throughout the years divers have visited the many wrecks. These divers are also usually the reporters of the sites. Sometimes objects are taken from the wrecks, but since there is now a growing public concern about our maritime heritage this is not a major threat anymore.

Safeguarding: Legal protection

All archaeological wreck sites older than 50 years that are lying in Dutch National waters are protected by the



A map of the (Western part of the) Wadden Sea made of thousands of soundings. This picture shows the pattern of gullies and sand banks (S. van den Brenk, RWS).

Dutch Monument Law of 1988 (it is currently being revised but in general it will be the same). This means that there is an obligation to report and that excavation can only be carried out with a licence. The Dutch government has also committed itself politically to the operational rules of the Underwater Cultural Heritage (the Annex of the UNESCO Convention on the protection of the Underwater cultural Heritage, Paris 2001). It also promised to look into the possibilities of ratifying the Convention.
The Burgzand Area, in which the BZN 10 wreck is located, is part of the Wadden Sea. This area is listed on the "tentative List" of the World Heritage Convention. Its management is a subject on which The Netherlands, Germany and Denmark cooperate. When this area becomes a World Heritage Site, its value for common maritime heritage will be even better ensured (See also Maarleveld 2003). The Burgzand area is especially threatened by nature. However, if there were to be any infrastructural work done in this area, the wreck would be protected by the Malta Treaty. This means that archaeological considerations have to be taken into account in advance and that all archaeological work needed to protect (the value information of) a site "in- or ex-situ" should be paid for.

Safeguarding: Practical measures
The BZN 10 wreck has been physically protected to ensure its continuing value for maritime history in the coming years. The whole site, about 2000 square meters, is covered with polypropylene nets (mesh or gauze). These nets capture the sand that is moved up and down the seabed by the tidal currents and therefore create an artificial mound in which the wreck is kept in an anaerobic environment. This mound stops abrasion, under scouring and any attacks by woodborers. Because the mound is sloping, fishing nets don't get caught in parts of the wreck. Research being undertaken by the MoSS project has to answer the question of whether bacterial decay has been stopped or slowed down (see also Manders 2003).

The future: What more can we do?
The whole site is protected physically and by law. In the coming years the effects of this will have to be monitored. The wreck will be visited at least another three times in 2004. The effects of the physical protection will also be monitored every year with the use of a multi beam sonar (Van den Brenk 2003). This method, which does not require the presence of divers, has proved to be very effective in getting a large-scale overview of the sedimentation processes on the site. Divers will be used to repair any damage detected to the nets and for visual monitoring on site. It has not been decided yet how frequently this will be done after 2004. Everything that has been done or that will be done is written down in the Management Plan of the BZN 10 –site.
In general we will strive to create a greater public understanding of why shipwrecks in the Netherlands will need to be protected "in situ".

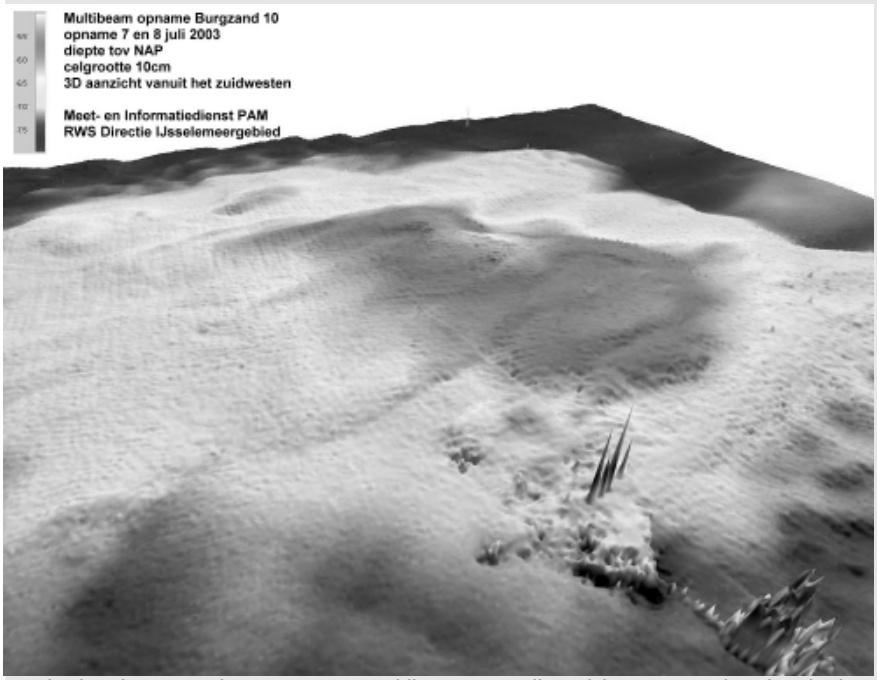
References

Brenk, Seger van den, 2003. Innovative Research at the BZN 10 wreck site. MoSS Newsletter 4/2003, 19-21.

Maarleveld, Thijs, 2003. The Wadden Sea and heritage protection in The Netherlands. MoSS Newsletter 4/2003, 13-15.

Manders, Martijn, 2003. Safeguarding: The physical protection of underwater sites. MoSS Newsletter 4/2003, 17-19.

Vos, Arent, 2003. The Burgzand-project and MoSS. MoSS Newsletter 4/2003, 4-6.



Monitoring the protective measures: Multibeam recording of the BZN 10 site after the last phase of physical protection in 2003. The test site for the MoSS-monitoring is in the lower right corner (S. van den Brenk, RWS).

Hauke Jöns

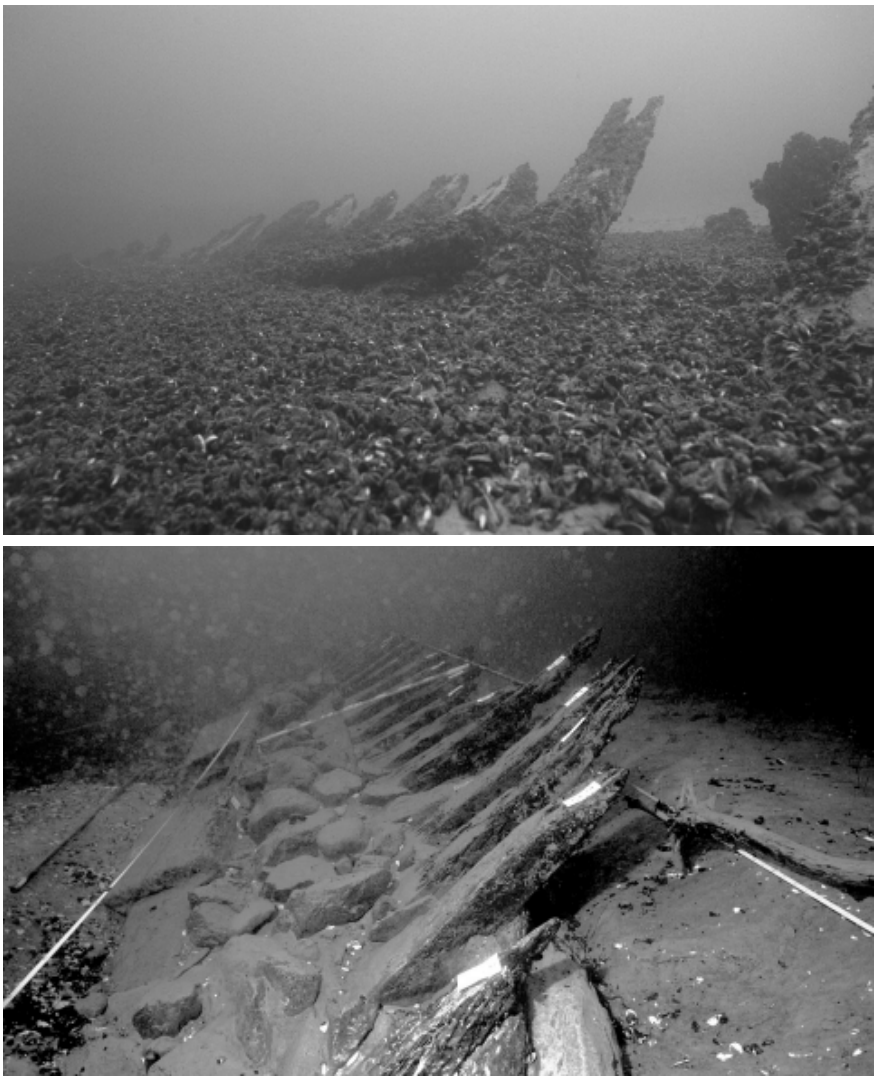
Safeguarding the Darsser Cog

The site conditions, natural and human threats

The late medieval Darss Cog – a ship built in the Frisian ship-building traditions in the region of the Vistula estuary at the end of the 13th century – sank only 800 m away from the south-western Baltic coastline in what are now German waters (for more information about the history and archaeology of the wreck of the Darss cog in MoSS see Newsletter 2/2003). The wreck is now lying at a depth of roundabout 6 m. Although strong currents are influencing its environment, the rate of sedimentation is not very high. In fact only around 5% of the wreck is exposed, so that most parts of its wooden remains are safe from erosion and are even lying in anaerobic conditions. The temperatures on this site vary over the year from 3 - 16° C, so the site can be regarded as being physically fairly stable. Since 1992 a monitoring mast, installed not far away from the Darss Cog site on the Darss sill, has been documenting the local ecosystem. The continuously published data show, that the chemical composition of the water has not changed very much during the monitoring period*.

The data from data loggers, installed within the MoSS-project to measure the physical and ecological parameters directly at the wreck-site, have also shown no evidence of any chemical pollution or significant changes as a result of chemical impact.

But a big threat to the maintenance of the wreck comes from biological factors. Investigations of samples from the Darss Cog site done by the monitoring-experts from MRAS and the Danish National Museum within the MoSS-project have shown that there is a high rate of biological activity which is leading to fungal and bacterial degradation of the wreck. But even worse is the rate of infestation by the so-called “shipworm” (Teredo navalis). This mollusc came to the Baltic Sea in 1993 from the North Sea, where it has survived for at least 3 centuries, although it originally lived in the warmer waters of Southeast Asia. A monitoring programme on the shipworm phenomenon in the Baltic Sea, initiated by the State Agency for Environment and Nature in Mecklenburg-Vorpommern has shown, that the shipworm has already adapted to the brackish water conditions of the Baltic Sea and conquered all the waters west of the area of Darss – Zingst – Hiddensee. During the last 10 years Teredo has disturbed half of all breakwaters on the coast of Mecklenburg-Vorpommern and has caused damage to a lot of wooden jetties and piers –



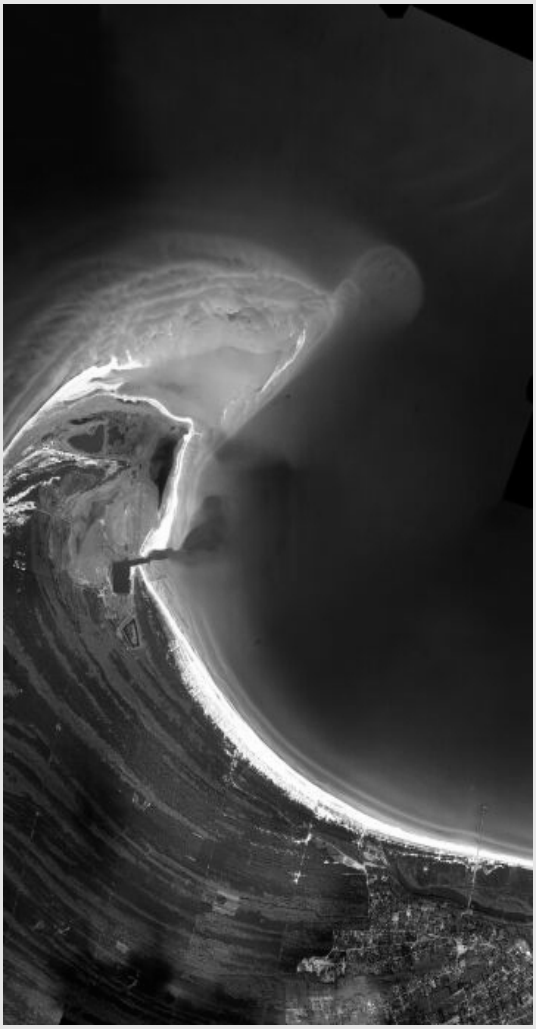
A well preserved ship wreck: The Frames of the Darsser Cog sticking out of the Baltic Seabed prior to and during the excavation (Roland Obst).

* www.io-warnemuende.de/projects/monitoring/de_home.html

leading to an estimated financial cost of around 13 million euro – moreover, it has also damaged a couple of historic shipwrecks (See Schulz 1995).
Another major threat to the Darss Cog and to other marine wreck-sites comes from human activities of different kind. The area around the Darss Cog site is part of the traditional fishing grounds of the native fishermen. Their anchors as well as their nets can lead to severe destruction at a wreck-site. But sports-diving to wreck-sites can also be regarded as a serious threat, especially in an area such as the south-western Baltic shore of Mecklenburg-Vorpommern, which is annually visited by around 6 Million tourists, a lot of them coming as active sports divers, partly interested in wreck-sites. Although the sites are legally protected, commercially organized or individual diving tours often cause minor and major damage at the wreck-sites.

Safeguarding: Legal protection
The Darss Cog sank in German territorial waters. Since all cultural matters including those relating to cultural heritage are the responsibility of the so-called "Länder" authorities we are faced by 16 different heritage-laws in Germany.
The Darss Cog is positioned near the coast of Mecklenburg-Vorpommern, so it is protected by the heritage-law of this "Land". Here sites and objects are defined as being cultural heritage, when they are of importance as scientific sources for the history of mankind and when they are testimonies to cities and settlements or of labour and economic development in the past. It is also stated in the law, that sites hidden in bogs, in the soil or under water are included in this definition and protected by the law without any form of restriction. Anybody who wants or needs to eliminate or change the site itself, or who instead might want to change the previous use or the environment of the site, needs permission from the heritage protection authorities. In the latter case he has to pay for all necessary measures such as excavating, documenting and restoring the site - so far as they have been necessitated by his activities.

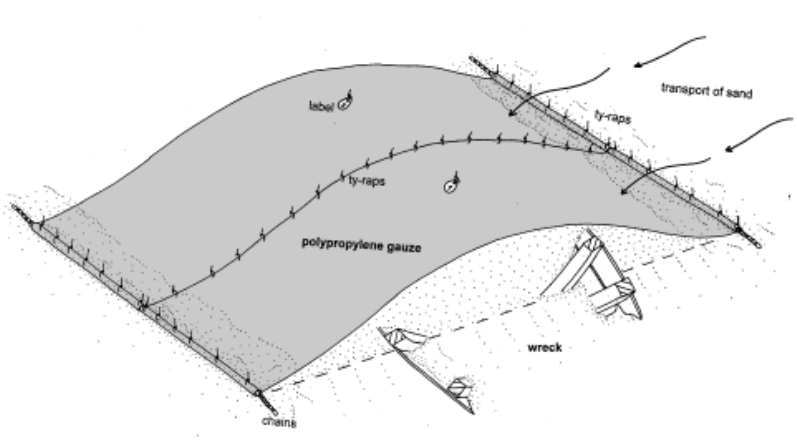
Safeguarding: Practical measures
Although the major factors influencing colonisation by the ship worm Teredo navalis are temperature, salinity and the depth of the wooden objects themselves, the "determining" factor for colonisation by this species is the amount of dissolved oxygen: If there is little or no oxygen present, the ship worm cannot respire and survive. So the most effective measure against this form of infestation is to cover all wooden parts of a wreck with compact sediment, so that no oxygen is left near it. Within the MoSS-Project a system developed in the Netherlands (see Manders 2003) has been tested for the first time under the special Baltic Sea conditions.
First the hull of the Darss Cog was filled with sediment and covered with fleece material and sandbags. In addition, the exposed parts of the ship were also covered with sediment and sandbags. Finally the whole wreck was covered by polypropylene gauze and fixed at its position by anchor chains. Four months later the wreck, the fleece material, the sandbags and the gauze were completely covered with sediment, so – hopefully – the shipworm will have lost one site in which to live and survive.
To prevent the damage and destruction of the Darss Cog site by boats and ships, a warning buoy has been positioned at the wreck site and the local fishermen have been informed about the site and the exclusion zone for fishing. In addition the position of the wreck has been published in the German Notices to Mariners, so that every ship-owner and captain easily can avoid a collision with the wreck. Every vessel is obliged to keep a safe distance from the buoy which makes it unlikely that the wreck will be damaged by anchors or fishnets.


Aerial photography of the Darsser Cog site, also showing the sedimentation of sand near the site (Otto Braasch).

The Darss Cog site is positioned not far away from the "Cadet channel", which is one of the busiest transport zones in the Baltic Sea. The "Channel" is continually patrolled by coastguard ships. The coastguards have also been informed about the significance of the Darss Cog site and its status as a protected heritage monument. So the site is being constantly monitored by them to prevent illegal diving or interference and is thus protected from human intervention.

Parallel to the technical measures of supervision and protection, sports divers have been and are continuing to be made aware of the importance of underwater cultural heritage through lectures, courses and guided dives. Some interested sports divers have even been involved in the investigations at the cog site. As volunteers, organised in the State Association for Underwater Archaeology of Mecklenburg-Vorpommern, they form an important element of support for the state-safeguarding system for shipwreck sites.

Loads of sandbags were used on the Darsser Cog site to level out big height differences prior to the protection with the polypropylene nets (Thomas Förster).



The method of physical protection with nets, chains and ty-raps as it has been used on the BZN 10 site and the Darsser Cog site (M. Manders).

The future: What more can we do?

As the Darss Cog will continue to be protected by law and patrolled by the coastguards in the future, the human impact on the site should be negligible. However, it may be much more complicated to reduce the high rate of biological activity, especially of the shipworm Teredo navalis. The now installed covering-system from the Netherlands, which has already been successfully tested in the Wadden Sea, will hopefully prevent any further damage to the Darss Cog in the Baltic conditions. Because the proven efficacy of this system can only be guaranteed, when the gauze itself is complete and undamaged and when the whole wreck is covered, the site will have to be visited and controlled at least twice a year. Because of the excellent visibility at the site, we will also continue to survey it by aerial photography in regular intervals to document the sedimentation processes at the site.

References

Manders, Martijn, 2003. Safeguarding: The physical protection of underwater sites. MoSS Newsletter 4/2003, 17-19.

Schulz, Werner, 1995. Der „Schiffsbohrwurm" – Teredo eine interessante Muschel der Ostsee und früherer Meere im norddeutschen Raum. Archäologische Geschiebekunde 12, 1995, 739-752.

For more information about the Darsser Cog see The Darsser Cog. MoSS Newsletter 2/2003.

Riikka Alvik

Safeguarding the wreck of Vrouw Maria

The site conditions, natural and human threats

The Vrouw Maria was a Dutch snow type sailing ship, which sank in the Finnish archipelago in 1771 (Ahlström 1997, 2000 and 2002; Leino 2003).

Part of her cargo was rescued before she sank, but most of it is still inside the ship. The existence of the wreck had been known from archival sources since the 1970s. It was found in 1999 by a group of divers after systematic archive research and a survey which was undertaken with the use of a side – scan sonar.

The wreck is at a depth of 41 meters at her keel on the seabed. Two masts are still partly standing and the hull of the wreck is almost intact. The wreck shows very clearly what the ship would have originally looked like. There are thousands of wrecks along the Finnish coast, but a wreck in this kind of state is very rare, even when considered with a worldwide perspective. This is why the safeguarding of these kinds of vulnerable shipwrecks is very important and also a challenging task.

The water temperature at the site varies from – 0, 7- 13 º C. The amount of daylight is very small at the bottom of the Baltic Sea at 40 meters depth. There is no sign of strong bacterial activity and there are no woodborers like Teredo navalis present. The basic sediment of the seabed is clay; only a thin layer above is sand and moraine. There are some (slow) currents, which may cause erosion, but the erosion is only on the surface of the wood. In Finland pack ice is usually the biggest problem and causes a lot of damage to shipwrecks. Luckily, this ice is not a threat to the Vrouw Maria because of its great depth.

The wreck is almost completely exposed except for the keel and 1 to 1, 5 metres of the hull above it. Deterioration, slow collapsing of the wooden parts and corrosion of the metal parts of the wreck are the main physical threats. These processes are quite unpredictable and difficult to prevent. For this reason all the research work done at the site has been non-intrusive so that the stability of the wreck has not been undermined.

Human activity is not considered as a threat in this area: the wreck is located in the Archipelago National Park owned by the Finnish government. The park has it own rules for protection. The site is far away from human settlements and ship routes; therefore there is not much human activity in this area. However, if the Finnish state should lose the lawsuit about the ownership of wreck and cargo that is now in progress (see below), this situation might change completely.

Safeguarding: Legal protection

In Finland shipwrecks (including their inventory and cargo) which sunk more than 100 years ago are protected by the Antiquities Act. If the owner has abandoned the wreck, it becomes the property of the Finnish government. The National Board of Antiquities is the authority responsible for all monuments of antiquity on land and underwater. It works in co-operation with different authorities, like the Ministry of the Environment, the Coast Guard and the Navigation Administration to protect the underwater cultural heritage. The Vrouw Maria and two other historically important wrecks are marked as being a protected area. In the case of the Vrouw Maria, this is the result of an agreement between the National Board of Antiquities and the land-owner, the Finnish Forest and Park Service. Diving and anchoring inside the protected area are prohibited.

Some of the discoverers of the wreck have taken the Finnish government to court and are now claiming their rights to the wreck and demanding salvage money for some of the artefacts they lifted from the wreck when it was found. The artefacts (three clay pipes, a lead seal, a mineral water bottle and a zinc ingot) were lifted for the identification and

A well preserved wreck: A drawing of the Vrouw Maria as it is lying on the Baltic Sea-bed (Tiina Miettinen).

dating of the wreck. A curator from the Maritime Museum of Finland advised the divers. This claim is based on the Finnish Law of the Sea. According to this law people are entitled to receive money when they rescue inventory, cargo or people from shipwrecks that are in direct danger. The case is still unresolved, but it will be very important for Finnish Maritime Heritage to resolve this case in such a way, that underwater cultural heritage is kept outside the bounds of the Laws of the Sea and that the Antiquities Act applies fully to Cultural Heritage in the Finnish territorial waters.

Safeguarding: Practical measures

The Finnish Coast Guard has been asked to keep surveillance of a specified area around the Vrouw Maria. In Finland safeguarding the underwater cultural heritage is not the official duty of the Coast Guard, but the authorities can make co-operative agreements. The research work that is undertaken can be a threat to the wreck, especially the anchoring of the diving support vessel. This is why there is a mooring system installed at the site. The diving support vessel is attached to four buoys, which are fastened onto the seabed with heavy concrete weights. Different parts of the wreck are continuously surveyed and any possible changes noted. There are certain “checkpoints”, which are particularly vulnerable. The environmental changes or research work done at the site may cause damage. These checkpoints are photographed every year.

The future: What more can we do?

The future plans for the monitoring and safeguarding of the wreck will be based on the knowledge gained from the research done during the years 2000-2003. At the moment the Vrouw Maria is still well safeguarded from any potential human impact. The degradation process is very unpredictable and it will probably continue at the site even though the process seems to be slow. Every radical change, for example intrusive research methods or the bringing up of artefacts from the cargo hold, may cause the collapse of the supporting structures of the ship. For this reason we have to plan all future actions very carefully. The Vrouw Maria is one of the very few extremely well preserved (almost intact) shipwrecks in the world and is of high cultural historic value not only for Finland, but also for the whole European Community.

References

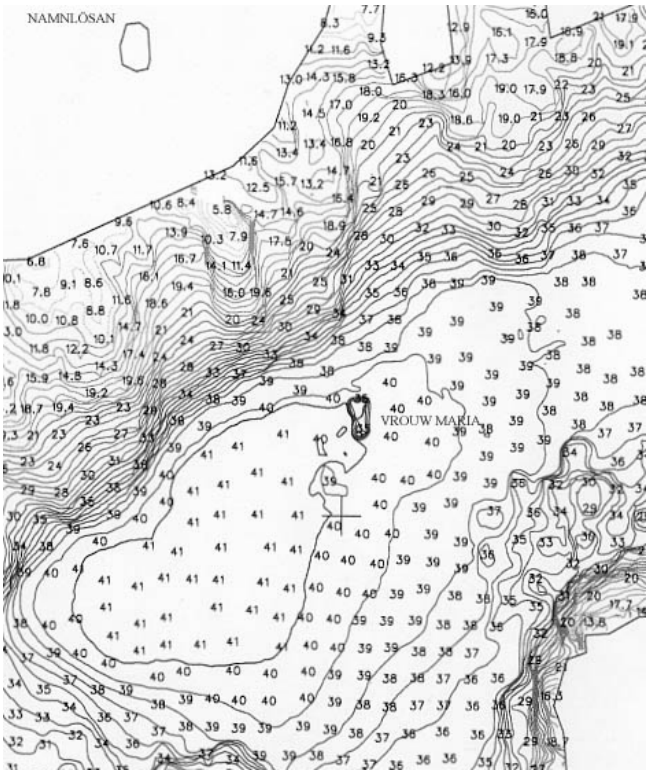
Ahlström, Christian, 1997. Looking for Leads. Shipwrecks of the past revealed by contemporary documents and the archaeological record. Suomalaisen Tiedeakatemian toimituksia. Humaniora 284. Saarijärvi.

Ahlström, Christian, 2000. The Vrouw Maria of 1771: an example of documentary research. The marine archaeology of the Baltic Sea area (III) ed. Carl Olof Cederlund. Newsletter 1/2000, Södertörns högskola, Sweden.

Ahlström, Christian, 2002. Aspects of Maritime History of Finland and the Eastern Baltic. Carol V. Ruppé - Janet F. Barstad (eds.), International Handbook of Underwater Archaeology. Kluwer Academic/Plenum Publishers, New York, 347-366.

Leino, Minna, 2003. Introduction of the Wreck of Vrouw Maria. MoSS Newsletter 1/2003.

For more information about the Vrouw Maria see the other articles in The Vrouw Maria. MoSS Newsletter 1/2003.



A map of the Vrouw Maria site showing the depths.

Carl Olof Cederlund

The safeguarding of the paddle steamer E. Nordevall

The site conditions, natural and human threats

The paddle steamer E. Nordevall sank in June 1856 under tow after grounding far out in the expansive lake Vättern. The weather was calm and the ship sank to a depth of 45 metres onto a flat bed of sand and silt. There are no strong currents in the fresh water lake and the natural environment on the site is less destructive than on many other wreck sites.

The E. Nordevall was still resting on the bottom principally intact when it was located by skin divers in 1980. The only major damage was the deterioration of the wheelhouses and the bridge, the pieces of which are lying on the main deck and beside the ship today. One could see considerable concretion on iron objects on deck, such as the windlass, the four signal guns at the bow and on the anchors lying on cabin deck.

This well-preserved ship with its two intact side lever engines, built in the 1830s, was recognised as providing unique evidence of the early, European steam ship era. It belongs to the first generation of steam ships in Europe with its technical background in Scotland and England.

Even if the natural environment is stable one has nevertheless been able to record the ongoing deterioration of the ship since it was first found. Trawling nets have caught in the ship and possibly also damaged the upper parts of it. A growing number of skin divers have also visited the site. It is probable that the damage on the upper parts of the hull has been caused on such occasions. Further, the localised destruction in the fore saloon and in the cabins is also probably due to the actions of skin divers. Through the extensive photo recording it is possible to see that a number of artefacts which were lying on the decks have been removed, actions which can't have been performed by anyone other than visiting skin divers.

Safeguarding: Legal protection

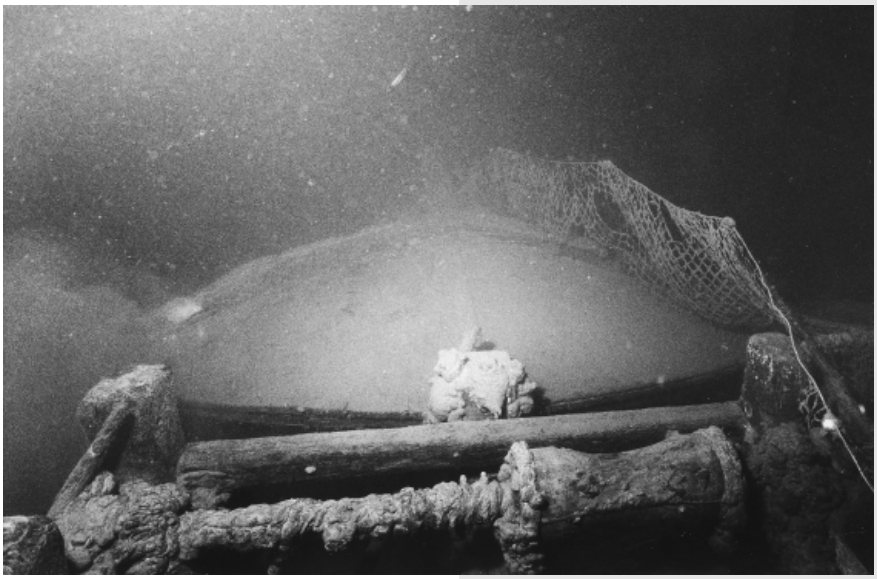
The E. Nordevall is - as it foundered more than one hundred ago - protected by the Swedish Antiquities Law. If the ship should be subject to intentional damage, this will, if proved, lead to fines or a prison sentence of up to 6 months. If the site should be endangered through any kind of construction work, the body planning and undertaking it will be responsible for the costs for the necessary measures for the safeguarding of the ship.

In the 1990s the site increasingly became one of the most prestigious wreck diving sites in Sweden. Diving tours were arranged to the site and also advertised in diving magazines and on the web. Due to the intentional and unintentional damage caused by this, in 1999 the Östergötland County Administration decided to establish an anchoring and diving prohibition on the site. This has helped to diminish the deterioration caused by diving.

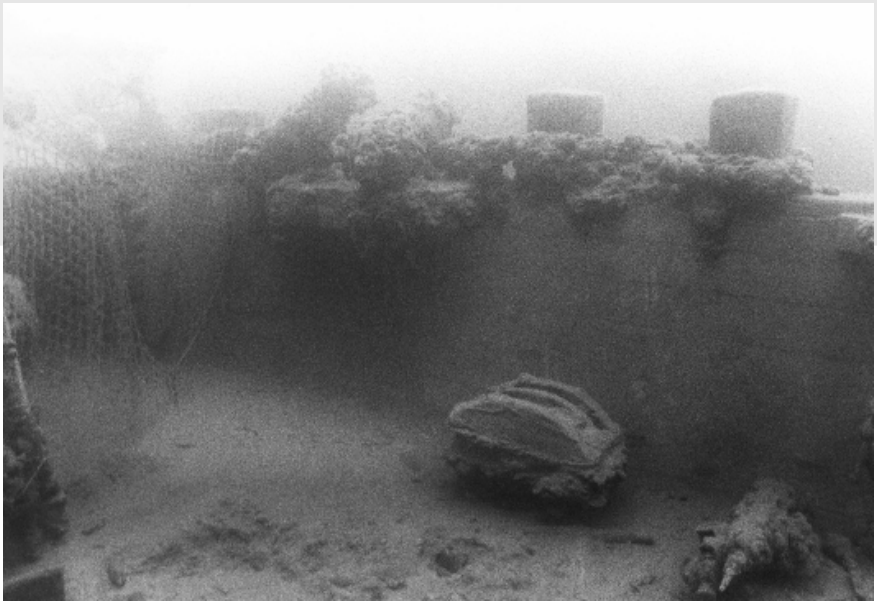
Safeguarding: practical measures

The E. Nordevall has been checked intermittently by divers employed by the authorities to ascertain the state of it. In the 1990s, part of its rigging and other artefacts were salvaged by private parties. These pieces have been taken into custody and will be re-deposited in lake Vättern. Skin diving groups applying for permission to dive on the site are permitted to do so, if procuring reports and documentation for the authorities.

The extensive safeguarding measures undertaken are reflected in the manifold nature of the documentation that has been performed on the site since the early 1980s. This has come in the form of photos, photo mosaics, video recording, filming and the measures that have been recorded to help establish the plans of the ship. On the basis of this documentation in the end of the 1980s one side view and two horizontal projection plans of the vessel as it looked at that time were created. This documentation



The fore deck and the windlass as seen from aft on the E. Nordevall photographed in the early 1980s. A fishing net has get caught in the bow section. The iron parts of the windlass have developed concretions (Kent Hult).



The railing in the starboard bow of the E. Nordevall from the inside. To the left can be seen the fishing net caught in this part of the ship and on the railing also two heavily concreted, iron signal guns. At the pollards are the remains of rope which evidently was used for the towing of the ship when it sank, and which seems to have been cut at that occasion (Kent Hult).

also of course creates valuable historical ship information for the future.

Salvage planning

Since its discovery there have been plans to raise the paddle steamer, to conserve it and exhibit it in a museum in the town of Motala at lake Vättern. In connection with this, the question of whether this form of salvage is possible to perform, practically and technically has been investigated. Since 2000 a new interest has developed in this idea and a society has been created for this purpose. The authorities have approved of salvage in principle. However, this is on the specific condition that all of the plans about the salvage operation and the financial recourses necessary for it, which include those relating to its excavation after it has been raised, its conservation, and the creation of a museum for the ship, are available before a salvage operation begins. Such conditions have yet to be met.

A full scale replica

The interest around the paddle steamer has also initiated a replica project. The aim is to build a full-scale replica of the ship. This will go into service with passengers on the same routes as the original ship. This is another way to safeguard not so much the original ship itself as the cultural motifs and messages carried by it.

The future: What more can we do?

The original paddle steamer must be safeguarded on its site, as long as it remains there. Its deterioration will continue due to both natural and human interference. In the foreseeable future it might loose its unique historical value. For shipwrecks, partly destroyed and buried in sediment, there today exist protective measures. For example, they can be covered with protective materials, which safeguard them against further deterioration. Such methods have not yet been developed for intact ships standing on under water sites. One way to safeguard such a shipwreck is to monitor the site through continuous visual controls by divers. This is an expensive and resource-demanding measure, especially as the resources necessary to undertake it systematically seldom exist today. One way to make the safeguarding process more effective is to establish continuous monitoring of the sites by the use of surveillance

One of the paddle wheels of the E. Nordevall photographed not long after the localization of the ship in 1980. To the left can be seen pieces of the dilapidated wheelhouse (Tony Holm).

The funnel, with the top section missing, and the safety valve tube, the latter partly damaged by oxidation, on the E. Nordevall. The top section of the funnel seems to have fallen down already before the localization of the vessel and is today lying on the deck beside the funnel itself (Kent Hult).

instruments which follow and register the effects of diving on the sites. This can be achieved through continuous radar surveillance of the water area at the site, or continuous surveillance of the sites under water by cameras mounted there. The military or the coast guard should manage such monitoring. Under water camera surveillance at the site would also help visualise this kind of site to a much wider general audience, if it were connected to a museum exhibition.

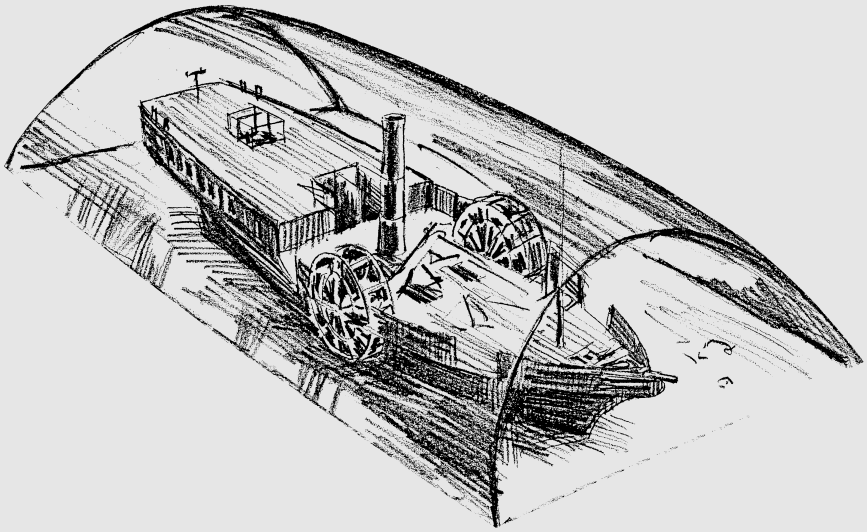
The deterioration of a shipwreck under water might demand the restoration of its structure through a process of rebuilding. It is important to discuss how, to what extent and in what ways one can do this to safeguard a wreck. For example, is it better to safeguard a well preserved shipwreck by the strengthening of its hull, superstructure etc as it stands on the bottom, through the restoration of those sections which have been coming apart by using the original parts which came loose and are now lying at the site? Or should the hull be fortified by the insertion of new material, such as girders or beams, which would keep the structure together more securely?

Methods for the safeguarding of intact, historical ships in European waters must be developed as these vessels constitute a unique body of evidence about earlier periods of European maritime culture.

Humanity will enter and possess the under water environment as it does the world above water today - for both bad and good. Unique historical ships standing intact on the bottom will become a part of our common cultural heritage. Today they are not generally perceived as being valuable either by the public or by society at large. They are not fully appreciated or safeguarded in the same way, as are remains located on land due to the simple fact that they are not perceived and recognised by anyone other than a few specialists.

References

For more information about the E. Nordevall project see The Eric Nordevall. MoSS Newsletter 3/2003.



The preservation of intact, historical shipwrecks on their sites under water is still to be developed.

As one future possibility a water filled, transparent glass fibre dome over the paddle steamer E. Nordevall on its site could protect it from interference by fishing, anchoring or diving. It could make it possible to monitor and control the natural environment at the ship, and also the state of the structure of the ship.

It would also make it possible to show the vessel at its site to the general audience in a museum at the shore through cameras and artificial light mounted in the dome (Drawing by R. Grosch).

Martijn Manders

Safeguarding a site: the Master-Management Plan

It is not easy to manage our maritime heritage. The environment makes it a complex business. Since maritime archaeology is a subject that crosses borders and is typically an international profession, it is necessary (and important) to find ways to easily compare shipwrecks with each other.
The management of our maritime heritage has to be organized, planned and structured. This also means that all wrecks should eventually be looked at in the same way. This again will enable us to compare sites and see similarities and differences.

For these reasons, the MoSS-project has developed a management plan for shipwreck sites.
The management plan is based on different existing formats. The general idea is that wrecks have to be valued, compared and structurally taken care of. It also implies that the information about sites is becoming accessible for more people.

Protection in situ is not only described in international agreements, but in many countries it is also a common policy and anchored in Monuments Acts. Archaeologists, policy-makers and the general public therefore have a responsibility.

The MoSS-project has developed a management plan based on the following principles:
1. The format has to be the same in all countries working on the MoSS-project and all countries should be able to use it.
2. A management plan should be made for all kinds of shipwreck sites.
3. A management plan can be based on very little information.
4. The management plan is not a static document; it should develop over the years.
5. All subjects should be clear to everyone and what to put each section of the plan should be self-evident.
6. Wrecks should be described in the same way.
7. The importance of the wreck for maritime archaeology should be stated.
8. All kind of research can be added.
9. The management plan should be accessible and understandable for different kinds of professionals.
10. The management plan should be readable as separate parts.

The above principles are ensured in the following ways and for the following reasons:
1. The management plan consists of the following (main) chapters:
a. Administrative details
b. General introduction
c. Assessment of the site
d. A cultural valuation of the wreck
e. Site management
f. Attachments
See for more detail the list below. The bases of the structure of the management plan have been taken from the Quality Standard Archaeology (Kwaliteits Norm Archeologie: KNA), which is used in the Netherlands. From there it has been adapted for the above proposed use. Many things that are of common use in different countries are now structured in this plan.
2. A management plan can be made for a 19th century paddle steamer like the Eric Nordevall, but also for a 13th century wreck like the Darsser Cog. A management plan has been made for all the wrecks involved in the MoSS project.
3. A management plan can be made for a wreck that is discovered with Side Scan Sonar. Only the position, a rough shape and the size are known. Plans can be made to investigate the wreck. If, after a while, the decision is made not to put much effort into a wreck site any more, this will be recorded in the management plan as well. This might then be the last thing written down in the management plan about that wreck, but the information on which choice has been made is nevertheless still recorded in the plan.
4. The management plan tells us something about the state of current knowledge about the site, what has been done and what will be done. Over the years a plan develops. The good thing about it is that everything executed on this site will be planned and recorded.
5. To be able to fill in the plan in the same way as everybody else, there should be a common understanding about how to fill in different chapters. This is the only way wrecks can be compared; everybody should “speak the same language”.
6. There is a strict format to describe wrecks in the same way.
7. The value of a wreck is partly a subjective but also an objective topic. Things like the condition of wood can be objectively described. How important a wreck is for ones nation can be very subjective, but important to know. The value of a wreck can change over the years. A wreck that used to be the only one of its kind can be, many years later, one of many. A wreck can also degrade to such an extent that it loses its value for archaeology. A wreck with a certain historical value, because it can be related to a certain event, can be very important for some of us (it becomes a relic), but for others it can be one of many as well.
8. Information from shipwreck sites can come in many varieties. A geologist should be able to add his information as well as an archaeologist, chemist or biologist.
9. It is the intention that (parts of) the management plan can be used by

different professionals, not only scientists, but also policy makers should be able to gain access to at least parts of the management plan. It is therefore very important that everybody understands each other. Miscommunication can be disastrous for maritime heritage.

10. It is unlikely that everybody who needs to get some information from the management plan will read it completely. For this reason the format should be designed in such a way that there is a general page and an index which will enable a quick search.

Why do we need a management plan?

The information about shipwrecks has to come out of heads and be put down on paper. The management plans and all related information should be accessible and clear to everyone. Almost by definition maritime archaeology is crossing borders: Dutch ships are wrecked in Finland (Vrouw Maria), German ships in The Netherlands (BZN 10) and so on.

If we were to have the same management plans for all shipwrecks under water, it would be much easier to compare these different sites. Moreover, it would also be easier to understand why some decisions are taken. The result could be (the feeling of) a shared responsibility. These management plans should show the potency of our maritime heritage, both to policy makers and the general public.

The MoSS-project hopes that this management plan will be of common use within the maritime archaeological community. It is aware of the fact that it might need some adjustments. However, the more it is used, the quicker it will become a standard tool and (in our point of view) the better we can manage our common maritime heritage.

The structure of the management plan:

Management plan of shipwreck site [name]

0. Administrative details

0.1 Date
0.2 Client
0.3 Executed by (contractor)
0.4 Approved authorities
0.5 Central registration number
0.6 Location research area
0.7 Co-ordinates
0.8 Environmental context
    Coastal Geology
    Climate
    Flora and Fauna
    Human impact
0.9 Size of research area
0.10 Depth
0.11 Owner terrain
0.12 Reported by
0.13 Periods of research
0.14 Site definition
0.15 Deposition of archives
0.16 Legal status
0.17 Recognized threats
0.18 Date of re-assessment / re-evaluation

1. Introduction

1.1 Previous studies
1.2 Historical context

2. Assessment of the site

2.1 Description of research assignment
- 2.1.1 Reference to working standards
- 2.1.2 Research objectives
- 2.1.3 Expected results
- 2.1.4 Aims/ wishes of the purchaser
- 2.1.5 Imposed research conditions
- 2.1.6 Evaluations in-between

2.2 Working procedure
- 2.2.1 Research methods
- 2.2.2 Imposed work conditions
- 2.2.3 Modus operandi
- 2.2.4 Natural sciences, applied sciences and other research

2.3 Research results
- 2.3.1 Environmental research
- 2.3.2 Physical condition
  - 2.3.2.1 Finds visible on surface
  - 2.3.2.2 Completeness (how much does it resemble the original state, quantity)
    - 2.3.2.2.1 Completeness wreck parts
    - 2.3.2.2.2 Stratigraphy intact
    - 2.3.2.2.3 Mobilia in situ
    - 2.3.2.2.4 Relation between mobilia and wreck parts
    - 2.3.2.2.5 Relation between mobilia
    - 2.3.2.2.6 Stability natural environment
- 2.3.3 State of preservation
  - 2.3.3.1 Organic wreck parts
  - 2.3.3.2 Metal wreck parts
  - 2.3.3.3 Organic mobilia
  - 2.3.3.4 Metal mobilia
- 2.3.4 Cultural-historic and archaeological data
  - 2.3.4.1 Identification
    - 2.3.4.1.1 Cultural context
    - 2.3.4.1.2 Century
    - 2.3.4.1.3 Exact dating
    - 2.3.4.1.4 Function
    - 2.3.4.1.5 Type
    - 2.3.4.1.6 Operating area
    - 2.3.4.1.7 Propulsion
    - 2.3.4.1.8 Size
    - 2.3.4.1.9 Material
    - 2.3.4.1.10 Building tradition
    - 2.3.4.1.11 Inventory
    - 2.3.4.1.12 Cargo
    - 2.3.4.1.13 Personal belongings
  - 2.3.4.2 Constructional features

2.4 Risk assessment
- 2.4.1 Natural impact
- 2.4.2 Human impact

3. Cultural valuation of shipwreck [name]

3.1 Experience aspects (quality)
- 3.1.1 Aesthetic values
  - 3.1.1.1 Visible
    - 3.1.1.1.1 Visible as landscape element
    - 3.1.1.1.2 Visible as exposition element
- 3.1.2 Memory value
  - 3.1.2.1 Historic

3.2 Physical quality
- 3.2.1 Structural integrity
  - 3.2.1.1 Presence of ship construction
  - 3.2.1.2 Completeness of the wreck parts
  - 3.2.1.3 Stratigraphic conditions
  - 3.2.1.4 Mobilia (portable antiquities) in situ
    - 3.2.1.4.1 Relation between mobilia and ship parts
    - 3.2.1.4.2 Relation between mobilia
  - 3.2.1.5 Stability of the natural environment
- 3.2.2 State of preservation
  - 3.2.2.1 Wreck parts
    - 3.2.2.1.1 Organic material
    - 3.2.2.1.2 Metal
    - 3.2.2.1.3 Composite
  - 3.2.2.2 Artefacts
    - 3.2.2.2.1 Organic material
    - 3.2.2.2.2 An-organic
    - 3.2.2.2.3 Composite

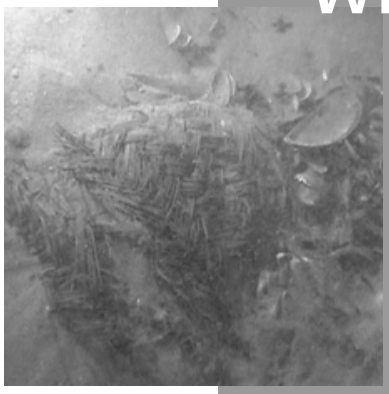
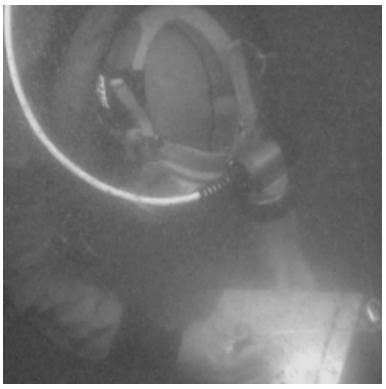
3.3 Quality of archaeological information
- 3.3.1 Representative value
  - 3.3.1.1 Chronological
  - 3.3.1.2 Regional
- 3.3.2 Significance of information
  - 3.3.2.1 Geographical significance
  - 3.3.2.2 Historical or archaeological significance

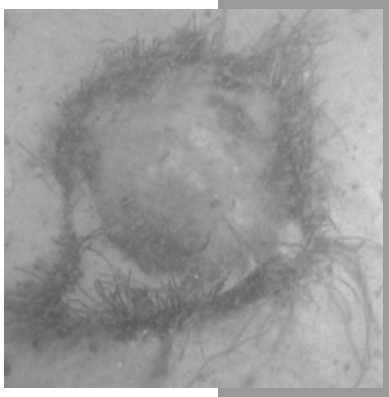
3.4 Conclusion

4. Site management

4.1 Cost-benefit analysis and general conclusion
4.2 Site management agenda

what's on?

meetings & seminars

Meetings:

The project meetings are staged for discussion within the project and are mainly held by the representatives of the different nations in the project. At the meetings the participants discuss about the general issues of the project, the research work done at the sites and evaluating the methods and results of it. Important matters are also how the information is going to be published and used within the different themes of the project. There are also subgroups for the different themes in the project. The next meeting will be held in Portsmouth, England and will be arranged by the Mary Rose Archaeological Services Ltd.

Seminars:

Maritime archaeological scholars, experts and practitioners from around the world are invited to these open seminars to hear and discuss progress and evaluation of the project themes. One more seminar is scheduled, two have already been held.

The first open seminar was held in Schwerin on November 10 2002 on the theme of *"Documentation of Shipwreck Sites and Photogrammetry."*

The second seminar was held at the Vasa Museum in Stockholm the 27th of June and at Forsvik Shipyard Association, Karlsborg, on June 28 2003 on the theme of *"Visualization of Shipwrecks and Shipwreck Sites."*

The third seminar of the MoSS-project will be held in Portsmouth, UK on the 5th and the 6th of June 2004. The aims of the seminar are monitoring, safeguarding and managing the shipwreck sites. More detailed information will be available during spring 2004 in our Internet site www.mossproject.com and the forthcoming newsletters.

Publisher:
The National Board of Antiquities
PL 913, FIN-00101
Helsinki, Finland

Editor: Carl Olof Cederlund
Phone +46 8 608 4201
carl-olof.cederlund@sh.se

Language checking:
Andrew Stickley, MA
Phone +46 8 608 4148
andrew.stickley@sh.se

Layout: Vesa Hautsalo
Phone +358 9 4050 9072
vesa.hautsalo@nba.fi

MoSS newsletter

Published quartely with the support of the Culture 2000 Programme of the European union