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The Protection of the
Underwater Cultural Heritage

UNIT 4

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Underwater Archaeological Resources



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Cover photo: Oceans, rivers and lakes contain a rich legacy of cultural heritage, but as it is not widely visible it is often unappreciated. It is the responsibility of cultural heritage managers to make all stakeholders aware of the value of this resource. © Martijn R. Manders

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UNIT 4

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UNIT 4

Author Martijn R. Manders

Underwater Archaeological Resources

Core Knowledge of the Unit

This unit introduces students to the concept of archaeological resources. It explains how to determine and measure each of the main resource types and understand what uses they have when managing underwater cultural heritage.

Upon completion of Underwater Archaeological Resources unit, students will:

- Understand what is meant by the term 'archaeological resource'
- Have knowledge of the different types of resources
- Be able to determine known, unknown and future resources
- Understand the practical uses of archaeological resources

Introduction to the Unit

What is 'archaeological resource'?

One definition for archaeological resource has been provided by the USA Archaeological Protection Act of 1979:

Any material remains of past human life or activities which are of archaeological interest, ... Non-fossilized and fossilized paleontological specimens, or any portion or piece thereof, shall not be considered archaeological resources... unless found in an archaeological context. No item shall be treated as an archaeological resource... unless such item is at least 100 years old.

An alternative definition from the British Columbia Archeological Resource Management Handbook states:

Archaeological resources consist of the physical remains of past human activity. The scientific study of these remains, through the methods and techniques employed in the discipline of archaeology, is essential to the understanding and appreciation of prehistoric and historic cultural development in British Columbia. These resources may be of regional, provincial, national or international significance... These resources are often very susceptible to disturbance and are non-renewable and finite in number.

In general, the archaeological resource can be thought of as the sum total of material remains left behind by humans in the past.

As illustrated by these two definitions, the detailed definition of archaeological resource can vary from country to country and is often influenced by science, politics and legislation. As a result it is often important to set out the appropriate scope or the limits of a planned activity, such as inventory and assessment, before undertaking the activity. By doing so, it develops an understanding of where your responsibilities lie as a country or as a cultural heritage manager.

The definition and therefore also the content of the archaeological resource is dependent on what is considered to be part of it, and what is of value. The value or significance of archaeological resources is discussed further in a separate unit (see Unit 6: *Significance Assessment*), how it is defined is important to understand this unit.

The scope of archaeological resources is broad and it possible to divide archaeological resource into many different categories. One can, for example, talk about the resources of finds, discrete sites, dispersed sites, war graves, landscapes, etc. or they can be clustered in terms of different environments such as terrestrial, coastal, river, lake and marine. All these definitions and clusters can lead to different considerations, demands and constraints on resource management.

The archaeological resource is a product of man, created by social processes and led by the need to create things that can be controlled and managed. We will therefore limit the scope and focus of this unit on archaeological resources in the context of underwater cultural heritage management and categorize them into the known, the unknown and the future resources.

1 Archaeological Resource: Static or Dynamic?

Is the archaeological resource something static that can be tightly defined or is the resource a dynamic one? To what extent the archaeological resource is dynamic depends a little on its definition and the effort given to protect underwater cultural heritage, but in general it is acknowledged that the quantity and quality of the resource constantly changes.

The quantity and quality is not only subject to definitions, but also to influences on the resource over time, such as mechanical, biological, chemical and human deterioration processes (see Unit 9: *In Situ Preservation*). Activities that generate future archaeological resources like, for example, building new houses or dredging new channels, can also cause the destruction of older parts of the resource. This is a normal phenomenon that has always existed. In these cases, the deterioration process is occurring quickly, on a very large scale and causes the 'old' archaeological resource to shrink rapidly.

ADDITIONAL INFORMATION

Resource Definition 1 Source: USA Archaeological Resources Protection Act of 1979.

Resource Definition 2 Source: www.tsa.gov.bc.ca/archaeology/docs/resource_management_handbook/index.htm (Accessed Nov 2011.)

2 Different Resources

To be able to create an accurate overview of this dynamic archaeological resource, it is important to constantly update information databases and to divide the resources into specific groups that can be managed. During this foundation course, the focus will be on three main archaeological resources: the known archaeological resource, the unknown archaeological resource and the future archaeological resource, which will be explained in detail later. However, one can distinguish additional categories of resources, such as the original resource, the extant resource, the lost resource, the recovered resource and the predicted resource.

Original resource: the cumulative total of anthropogenic remains that ever found their way into the soil, including the remains of built or dug structures. The original resource provides us with the most direct reflection of all human activity in the past. The actual size of the original resource can only be estimated, as many archaeological remains have been lost over time. The estimate will generally be less precise, as the age of the site becomes older.

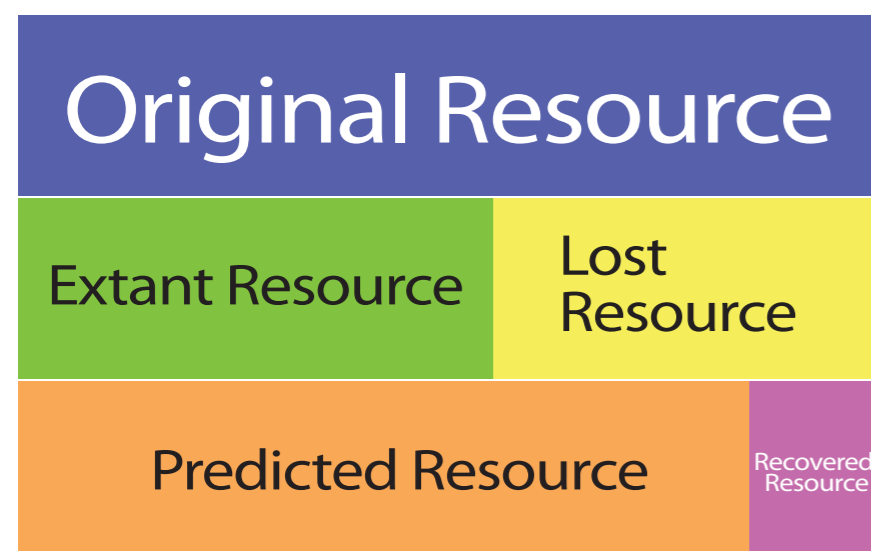
Extant resource: consists of the known and unknown archaeological remains still present in the soil, *in situ* or otherwise (for example, reburied). It is in fact synonymous with buried history or subsurface archaeology. It is particularly important because this is the part of the resource from which information about the past can be derived. It is also the part that can be preserved and managed *in situ*.

Lost resource: is the part of the original resource that has been destroyed as a result of various post-depositional biotic, abiotic and anthropogenic processes, either before or after it was documented.

Recovered resource: consists of that part of the resource that has been lost *in situ* due to archaeological research. The resource recovered during an investigation is by definition smaller than the resource that was present at the location prior to the work. The recovered resource usually consists of reports, photos, drawings, etc.

Predicted resource: comprises of both the unknown resource *in situ* and the undocumented lost resource. Predictive models can be used to gain some idea of the predicted resource. The predicted resource is unlikely to correspond exactly with the extant resource as the models are simply too inaccurate. We often do not know of all the variables that played a role in the choice to use a specified area or the degradation of the sites in a certain area. The ultimate goal is to obtain a picture of the predicted resource that approximates the unknown source as accurately as possible.

The archaeological resources: extant, lost and recovered resources in comparison to the original resources.
© Martijn R. Manders



The underwater archaeological resource can be partly seen as something particular and unique (e.g. sunken ships) or in some cases it can be considered as part of a larger resource; a combined underwater and terrestrial resource which would include, for example, prehistoric sites.

The maritime archaeological resource is a combination of both underwater and terrestrial sites, consisting not only of shipwrecks, but also harbours, ship yards, quays, jetties and beacons.

Suggested Reading

- Deeben, J. H. C., Groenewoudt, B. J., Hallewas, D. P., Rooijen, C. A. M. van and Zoetbrood, P. A. M. 2006. In Search of the Archaeological Resource. Heeringen, R. M. Van and R. C. G. M. Lauwerier (eds.). *Proceedings of the National Service for Archaeological Heritage in the Netherlands*, Vol. 46, pp. 113-126.
- Keith, D. H. 2006. *Going, Going – Gone! Background Materials on the Protection of the Underwater Cultural Heritage*, Vol. 2. Prött, L. V., Edouard, P. and Rochelle R. H. (eds.). UNESCO, pp. 265-278.

3 What is not Part of the Archaeological Resource?

Once the archaeological resource is defined, all that remains is not part of it, which is what makes these definitions so very important. For example, if it has been defined that the known archaeological resource consists of sites older than 100 years old, then everything younger than that is considered to not be a part of it. Since the age limit can be very strict, a 90 year old vessel cannot be considered a part of the archaeological resource and is therefore considered of low archaeological value. In 10 years, however, the vessel is 100 years old. Will it then suddenly become significant, because of its age? Age limits are usually made for management reasons, but in order to not be forced to review our resources every year, defining the future archaeological resource can be an option.

4 Why is it so Important to Determine These Resources?

Determining resources is one of the most basic management tools we have at our disposal. If countries are dedicated to protecting and managing their underwater cultural heritage, then it is important to first create an overview of what is most important to preserve. This essential component of planning enables budget, human resources and time to be used more effectively in both the short and long term.

Once determined, information on the resources should be recorded in a central database that can be accessed by all. This vast collection of data allows for the creation of a comprehensive summary that enables setting of priorities or which resources should be protected or not. These overviews can even be utilised as an important tool to advocate legislation among policy makers for the protection of underwater cultural heritage.

The size and the speed, in which the soil, sea and riverbeds are being disturbed by large infrastructural development, demand both quick overviews and accurate predictions of where archaeological sites are to be found. Once this information has been collected, it can be used in negotiations to preserve and protect the archaeological heritage.

The archaeological resource exists within a natural environment that is constantly in use. This also means that there is a constant pressure on the resource (directly or indirectly) due to infrastructure projects and climate change. As a result, in many countries archaeological research is undertaken alongside these infrastructure projects. The European Convention on the Protection of the Archaeological

Heritage (Valletta 1992) provides an example. In projects such as these, there is a delicate balance between different interests, such as the growth of a town or harbour versus the protection of the archaeological heritage. All stakeholders have their own political or economic interest that have to be carefully negotiated. It is therefore extremely important to have a good overview of what the archaeological resource in a certain area is, so that it can be thoroughly discussed during the negotiation process. By defining the resources, we can clearly illustrate the underwater cultural heritage, thus making it easier for other stakeholders to understand what and why it needs to be protected.

Lastly, by knowing the archaeological resources, scientists are given an insight of those they can use for future research.

For more information on the importance of determining resources, see Unit 3: *Management of Underwater Cultural Heritage*.

5 Who Determines What the Archaeological Resource is?

In many countries, it is either an accredited individual archaeologist or the competent authority involved with the management of underwater cultural heritage, who determines what constitutes the archaeological resource.

Until recently in the Netherlands, anything that was older than 50 years and of cultural historical significance was protected under the Dutch Monuments law and therefore a part of the cultural heritage resource. In 2012, this approach was altered to conform with the United Kingdom's practice of assessing each site on its own significance.

All resources have to be defined according to the definitions of archaeology. By using these definitions, we can determine whether something is in fact 'archaeological' or if it should be defined in different terms, such as 'built heritage'.

The cultural and historical significance and the age of the object are usually determined by a senior archaeologist. Significance can also be determined by other experts. If a community thinks a site is of value because it is linked to their own local history, then its significance cannot be denied. (See Unit 6: *Significance Assessment*).

6 What is the Known Archaeological Resource?

Known archaeological resource: this comprises of all the archaeological sites that are known to us.

Known archaeological resource can be a subject of debate, as what is 'known' about a site is not clearly defined before it can be categorized as such. Has a site been assessed and deemed significant or is it only necessary to know a fragment of crucial data about it such as its position? Does the existence of a wreck constitute a known resource? Is it the material that the wreck is made of? Or is that not even important? Some of the shipwreck databases also include shipwrecks that are known to have been sunk in a certain area, but these exact positions are not known. Is this also the known resource? All countries use different methods to assess the known resource, yet regardless of the criteria they use, the most important factor is to measure the resource consistently in the same way.

In general, the known archaeological resource consist of all archaeological sites that are known, registered and still exist in the soil.

The known archaeological resource consists of defined sites. However, is it possible to always define where a site starts and where it ends? Can a ship barricade be considered as one site? Or does it consist of several individual shipwreck sites? The same can be said about prehistoric sites on the seabed. Is the area where the stone artefacts were found considered as the site? Or does it spread far beyond that limited location?

All of this shows that there is a strong interaction between the known and the unknown archaeological resource. The location of what has been found may be known and with this information (combined with other data such as that on seabed morphology) we can gain an understanding of what can be expected to be found in the vicinity.

6.1 Uses of the Known Archaeological Resource

A database that contains the known archaeological resource is an orderly archive for archaeologists, which enables them to easily locate sites that would be useful to investigate and answer their research questions. When structured in a certain way, the database can provide a wealth of information from which to create an overview.

A database that contains the known underwater archaeological resource is also highly important for policy-makers because it reveals the richness of this heritage that cannot be observed by all, due to its location. In combination with other information, such as spatial planning data derived from a Geographic Information System (GIS) (see Unit 8: *Geographical Information Systems (GIS) in Underwater Archaeology*), we can determine possible threats and their impacts on underwater cultural heritage. The known resource can then be protected either through planning (infrastructure projects) or by protective legislation.

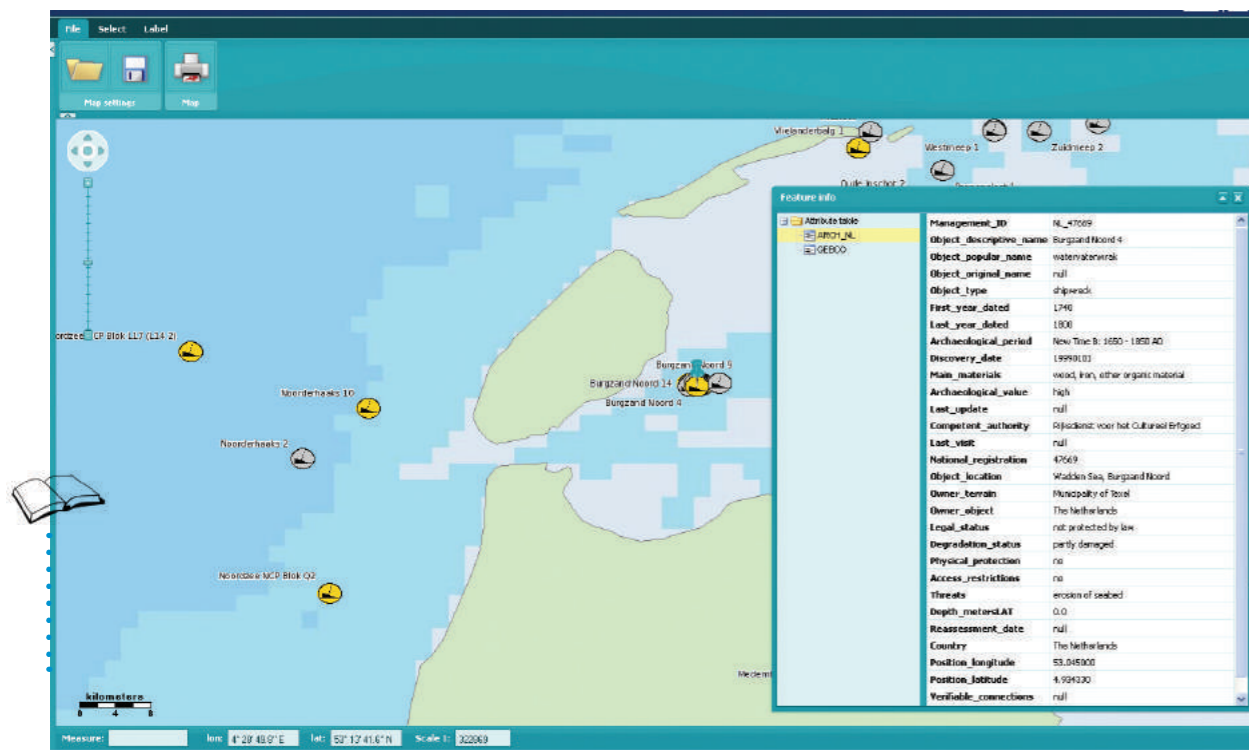
The known archaeological resource is also used to address the public and to create popular awareness. It provides us with information for public consumption, encouraging dialogue between different interest groups and stakeholders.



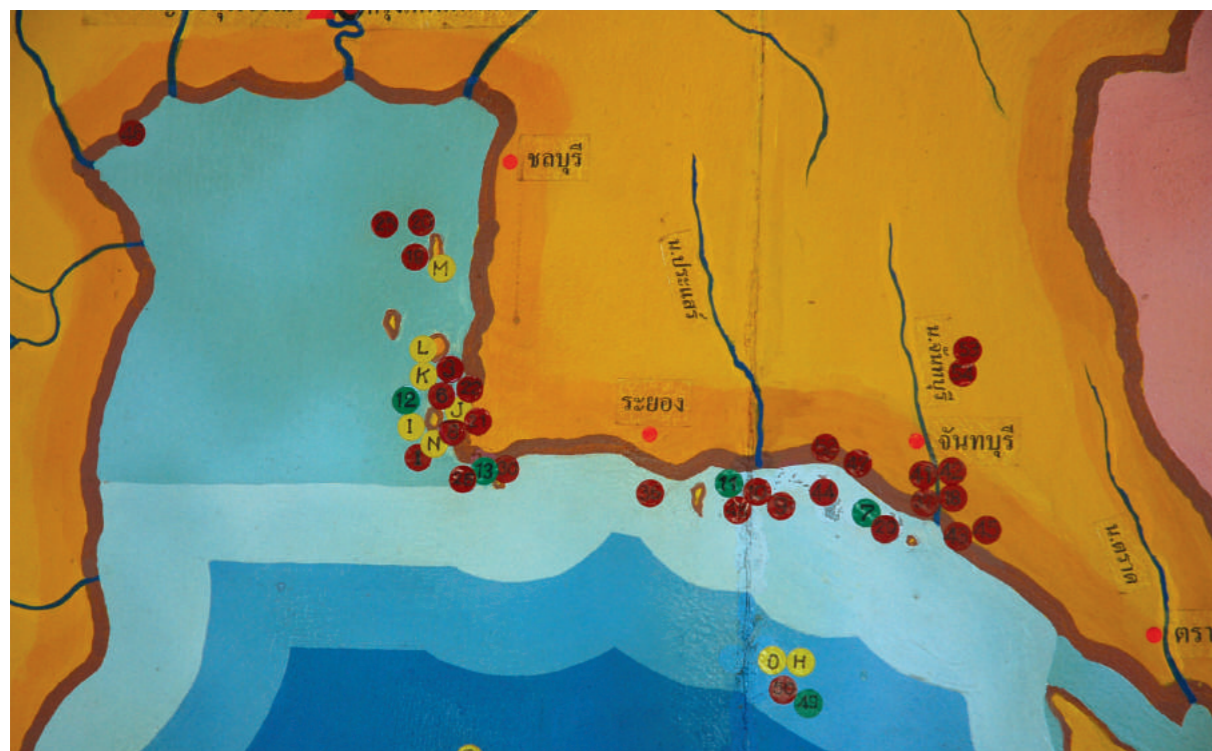
ABOVE: The Bankachai II shipwreck is a Thai Junk from the sixteenth century that was excavated by the Underwater Archaeology Division (UAD), Fine Arts Department of Thailand. © UAD, Thailand

BELOW: The early twentieth century shipwreck of Mannok Island has been used as the diving location during foundation courses and is also part of the known resource. © UAD, Thailand





The known maritime and underwater resources can be easily registered in a database or a Geographical Information System (GIS). Here, Dutch shipwrecks are registered in the MACHU GIS. © RCE



The known resources can also be easily plotted onto a physical map. Here, the located sites in the Gulf of Thailand as plotted by the UAD. © UAD, Thailand

6.2 Examples of Databases and GIS on the Known Archaeological Resource

- ARCHIS, Archaeological database of the Netherlands
- MACHU (Managing Cultural Heritage Underwater): www.machuproject.eu
- Avocational databases, such as NAS Adopt-a-Wreck
- The United Kingdom Hydrographic Office (UKHO): <http://www.ukho.gov.uk/Pages/Home.aspx>
- National Monument Record (UK)
- Databases/GIS in Asia

Suggested Reading

- Hootsen, H. 2008. Building the GIS System. *MACHU Report*. No. 1, Amersfoort, pp. 39-40.
- Marasco, E. and Peerayot S. 2006. Geographic Information Systems and Heritage Management: Computerized Management of Ancient Sites. *Asian Approaches to Conservation*. Research Conference Proceedings 3/5 October 2006, pp. 134-143.

7 What is the Unknown Archaeological Resource?

The unknown archaeological resource: the precise definition is dependent on that used for the known resource. Everything that may be excluded in the known resource can be added to the unknown, even if its existence has yet to be confirmed.

Usually, the unknown archaeological resource refers to archaeological remains whose location, nature, age and quality have not yet been determined. The scale and quality of this part of the resource can only be estimated, mainly on the basis of what is known about the known resource. The unknown resource is a predictive and indicative one; essentially, it is an educated guess of what may be present in a certain area.

7.1 How to Measure the Unknown Archaeological Resource

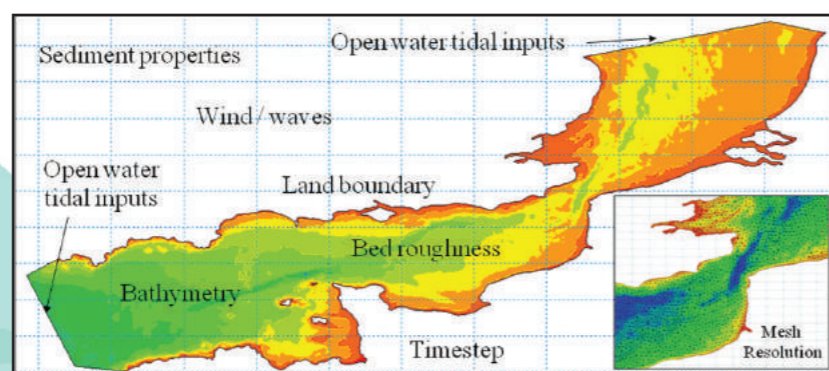
If a known site is defined as a site has been assessed, then the first and simplest method to get an indication of the unknown resource is to compare the amount of the known archaeological resource with the number of positions known.

Moreover, the unknown resource is that which can be expected to be found. To estimate this it is crucial to have an insight into what can be expected to be found in a certain area from various local stakeholders.

Usually, fishing communities can usually provide a lot of information on where shipwrecks or other obstacles are located. These are places where they fish or where their nets are caught. In some instances, they may even have dragged or recovered artefacts from their nets.

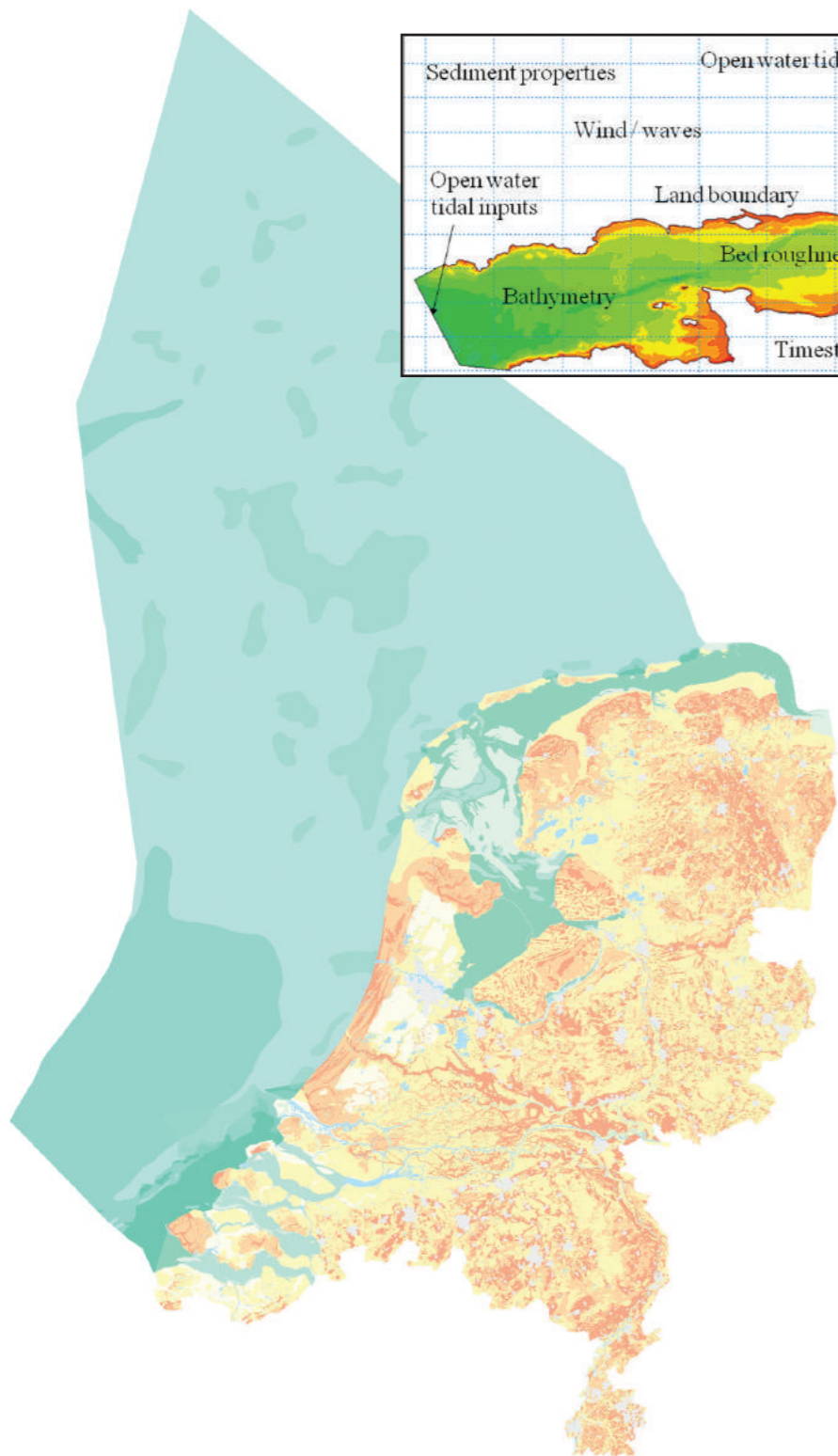
Harbour authorities also hold a great deal of information about their harbour, the entrance and routes to it. They may also be able to provide geophysical data of the seabed.

Recreational divers and dive schools would be familiar with the diving site. Shipwrecks are most attractive to divers, who may know their locations that are not known to competent authorities.



More advanced methods for indicating the unknown resource include the use of predictive modelling. Here the sedimentation-erosion patterns in the Southern North Sea Basin are being predicted. Using hindcasts (what has happened) and forecasts (what will happen) can give us clues on what is still left under the soil and what will be in danger of deterioration within a given period of time.
© MACHU Project

The unknown resources can be predicted by combining a variety of indirect evidence from an area such as historical, geological and climatological information. Here, an Indicative Map of Archaeological Value (IKAW) is developed according to the same principles in the Netherlands. © RCE



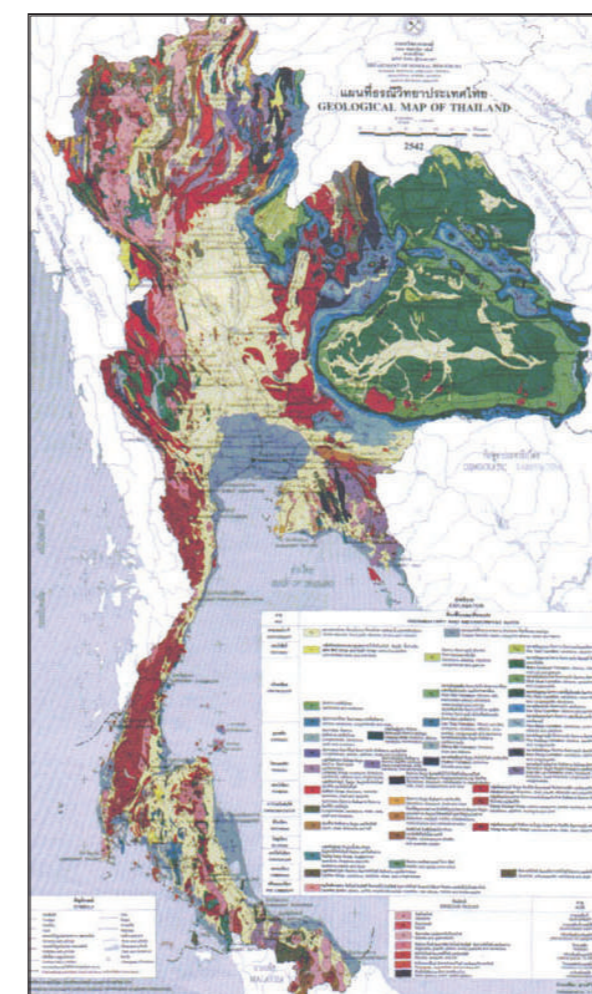
Furthermore, the unknown resource is also the prediction of the possible resource in an area. This can be measured using a variety of measurement tools such as:

Geological data: understanding how the coastline has evolved provides information on the possibility that ships have sunk in certain areas, as in cases where prehistoric sites are found. Geological data can help to determine the age of certain sea, river or lakebed sediments, allowing us to predict where possible sites can be located. It can also determine the type of sea, river or lakebed which can help us estimate the quality of the expected sites.

Geophysical data: can detect sites on the seabed by providing an indication that something is lying at a specific spot, but with no clear idea of what it is. Multibeam sonar and single beam sonar can be used to calculate the seabed change over time, by measuring the depth of the seabed. With this data, one can determine whether a specific area has been eroded or sedimentary.

Sometimes models (see MACHU project: www.machuproject.eu) are used to calculate past and future changes in the seabed. With this information we cannot only predict the unknown resource that remains in the seabed, but also what the future will eventually bring for these resources.

Lastly, it can be useful to consider historical information to predict the unknown source. How did the area develop? How was it used? Was it a busy sea route? Or has it always been a very shallow area? Did it silt up after a period of time? By examining available information from these perspectives, it is possible to predict the potential value of an area for underwater cultural heritage.



ABOVE: The geology can be used to predict the presence and condition of UCH in a certain area.
© Geological Survey of Thailand



RIGHT: Historical information, such as this map, can tell us whether certain areas were part of important trading routes or if waterways have changed over time.
Courtesy Martijn R. Manders' collection

7.2 Uses of the Unknown Archaeological Resource

It is very important to have obtained an educated idea of what can be expected from each category of resource. The speed with which infrastructural development is intruding into our marine environment (such as those in spatial planning) requires that an overview of the present resources be provided as an input to development plans for appropriate management of archaeological resources within the scope of infrastructure projects.

Having an insight into the unknown archaeological resource can provide an important tool in planning research agendas (see Unit 3: *Management of Underwater Cultural Heritage*) and can also be used to influence policy makers.

7.3 Examples of Databases, GIS and Research of the Unknown Resource

- *The MACHU project*: www.machuproject.eu
- *Prehistoric sites in the Southern North Sea Basin*
- *Indicative Maps Archaeological Value (the Netherlands)*
- *Examples from Asia: e.g. predicting location of Hominin Sites in Africa and Asia.*

Suggested Reading

- Collins, M. Holmes, K. and Brown, K.R. 2005. *Predicting the Location of Hominin Sites in Africa and Asia*. http://ads.ahds.ac.uk/catalogue/specColl/hominids_ahrb_2003/index.cfm (Accessed Feb 2012.)
- Coroneos, C. 2006. The Four Commandments: The Response of Hong Kong SAR to the Impact of Seabed Development on Underwater Cultural Heritage. *Heritage at Risk Special Edition*. Grenier, R. Nutley, D. and Cochran, I (eds.). ICOMOS, pp. 46-49.
- Dix, J. and Lambkin, D. 2008. Modelling Sediment Mobility to Support the Management of Submerged Archaeological sites. *MACHU Report*. No. 1, Amersfoort, pp. 40-41.

8 What is the Future Archaeological Resource?

Future archaeological resource: comprises of those sites that are not yet part of archaeological heritage due to several reasons (such as age, political choices or lack of interest), but may be of interest in the future.

In many countries sites have to be older than 100 years to be protected under heritage or archaeology law, as provided in the UNESCO Convention on the Protection of Underwater Cultural Heritage (Paris 2001).

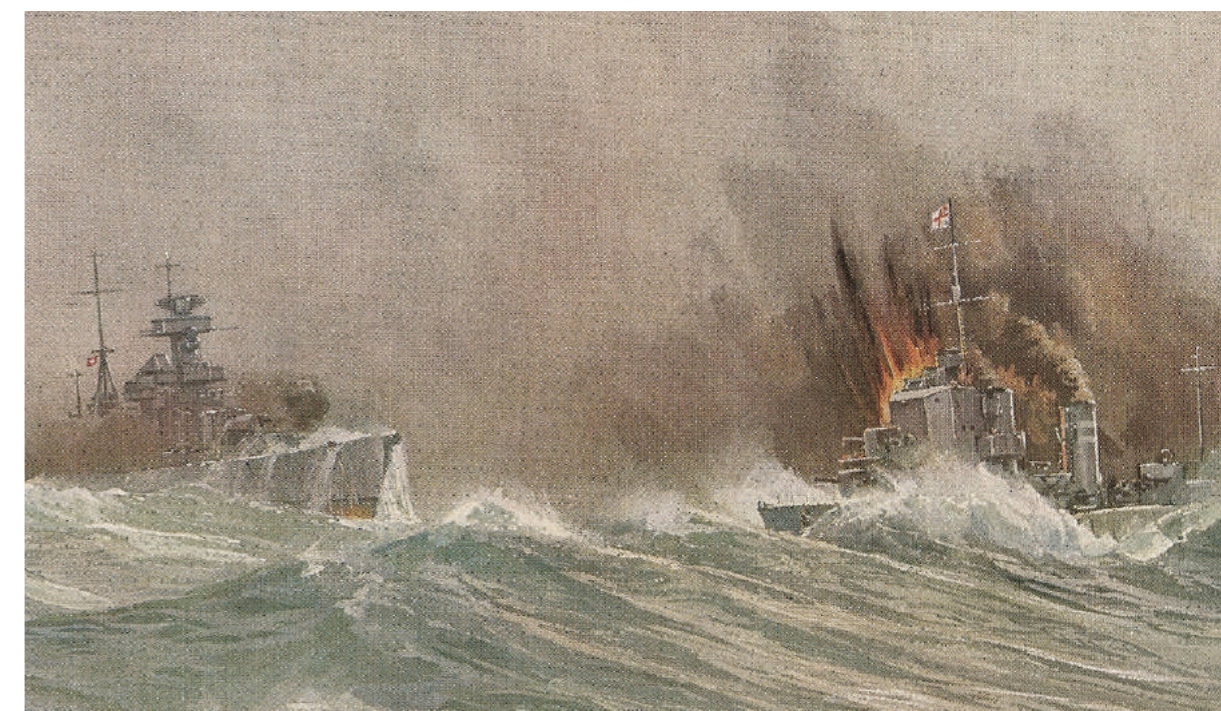
Although future archaeological resources may not be of immediate interest, an understanding of what constitute this category is useful, particularly when the future protection for some of these sites is required.

The *Titanic* provides an interesting example. Despite its popularity, the shipwreck reaches its 100 years threshold only in 2012, which is the UNESCO age limit. Other examples are the First and Second World War shipwrecks. Until 1989, the Second World War wrecks were not considered as archaeological heritage in the Netherlands. That year, the first wrecks reached 50 years of submersion, the minimum age

set by the Netherlands for a monument. It also has to be of cultural and historical significance, but that cannot be denied for warships of the period. Almost nothing was known about these sites and they were usually sidelined with little or no law enforcement done to protect them. As a result, many of the First World War and the Second World War wrecks have suffered extensive looting for both commercial and private gain. These days it will be hard to find a well preserved *Vorpostenboot* (a German ship used to guard the Dutch and Belgian Coasts), whereas in the 80s and early 90s there were plenty in existence. The Asian waters are full of sites related to the Second World War and other conflicts from the late nineteenth and the first half of the twentieth Century. In some countries, these sites are considered to be an important part of the country's underwater cultural heritage, while in others, their significance is marginal.

One argument to exclude the First and Second World War objects as part of archaeological heritage has been the claim that much is already known about them. We know how they were built and where, what they were doing and where they sank or crashed. This justification sounds logical in an era of extensive media. Moreover, there are photos, films, written resources, collective memories, etc. Indeed, ships, planes and tanks were built in series and the drawings still exist, so what can archaeology possibly add to this?

First of all, objects found tell us something not only about the objects themselves, but also about the area where they were found. This narrative forms an integral part of the history of that place. Secondly, although originally built in series, ships, for example, have their own individual history. Custom repairs and changes in design were made specifically for the purposes. Often times, the archaeological resource is the only evidence for this. Thirdly, archaeological research can tell us in much more detailed account of how a ship sank or how a plane crashed. Fourthly, the objects consist of not only the ship, the plane or the tank, but also of its content; the cargo, personal belongings etc. that are found on board. Extensive archaeological research can reveal much about how a specific object has been used and by whom.



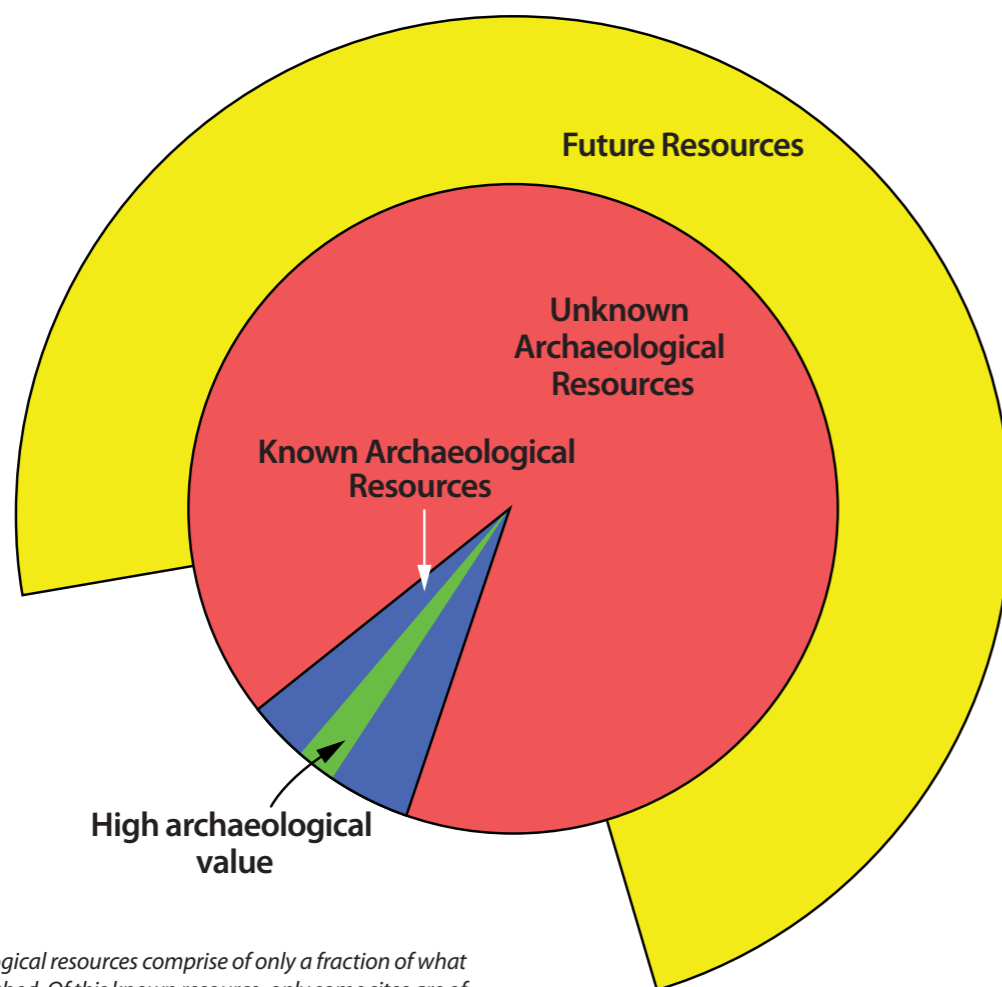
Should sites less than 100 years old be considered as underwater cultural heritage resources? German warship Hipper sinking the British destroyer HMS Glowworm during the battle of Norway in the Second World War. Picture taken from Heinz Bongartz: *Seemacht Deutschland, Zweiter Band 1944*. Courtesy Martijn R. Manders' collection

 **Suggested Reading**

- Gribble, J. 2006. The Sad Case of the SS Maori. *Heritage at Risk Special Edition*. Grenier, R. Nutley, D. and Cochran, I. (eds.). ICOMOS, pp. 41-44.
- Jeffery, B. 2004. World War II Underwater Cultural Heritage Sites in Truk Lagoon: Considering a Case for World Heritage Listing. *The International Journal of Nautical Archaeology*, Vol. 33.1, pp. 106-121.
- Muthucumarana, R. 2010. *SS Conch: A Wreck with a Reputation*. *Maritime Lanka 2*, pp. 35-40.
- Wessex Archaeology. 2008. *Aircraft Crash Sites at Sea. A Scoping Study*. Archaeological Desk-based Assessment.

8.1 Uses of the Future Archaeological Resource

As its name suggests, the future archaeological resource can help us to prepare for the near future. It is mainly a management tool that can help create awareness not only among archaeologists, but also policy makers and general public. Since age restructures the definition of archaeological resources, sites of less than 100 years are not well managed. By building our knowledge of this resource, we are better equipped to safeguard underwater cultural heritage and minimise its damage or total loss.



The known archaeological resources comprise of only a fraction of what still remains in the seabed. Of this known resource, only some sites are of high archaeological value and it is important to identify them. Older sites are usually more deteriorated, lie deeper under the sediment and are less visible than younger sites. Therefore, we must also determine the value and use of new and future archaeological resources. These resources are highly visible, often under threat and the focus of much debate.

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Unit Summary

In general, the archaeological resource can be described as the sum total of material remains left behind by humans in the past. It is possible to divide this broad resource into many categories, however, the most important are the known, unknown and future resources. These three categories of archaeological resource must be well understood to enable underwater cultural heritage to be well managed

The definition of each category depends to some extent on what is agreed among concerned stakeholders. How do we define, for example, what a known resource is? Is it when a site has been assessed or is it only necessary to have a fragment of information such as the exact location of a wreck? In contrast, the unknown archaeological resource is something which is there, but we have no information about its position or its quality. In this case, we have to identify the resource by taking an educated guess. Having knowledge about it is crucial for long term management strategies.

Heritage is defined by the legal frameworks of each country. Often times, the age of a site determines whether a site can be considered a heritage resource or not. Some time in the future, a site will be acceptable as part of the heritage. This requires that these 'new' sites also deserve protection and appropriate management to prevent their irreparable damage once they are classified by law as protected cultural heritage sites in the future.

Suggested Timetable

15 mins	Introduction Dividing Archaeological Resource into Sub-groups
75 mins	What is the Known Archaeological Resource? - Definition - Uses - Discussions
	Break
90 mins	What is the Unknown Archaeological Resource? - Definition - How to measure - Uses - Discussions
	Break
90 mins	What is the Future Archaeological Resource? - Definition - Uses - Discussions
	Break
75 mins	Practical Session: Defining Different Archaeological Resources of a Chosen Area
15 mins	Concluding Remarks and Closure

Teaching Suggestions

This unit introduces students to the concept of archaeological resources, how each major type of resource can be determined and measured, and how they are used in the management of underwater cultural heritage. Teaching suggestions designed to enhance the student's knowledge of some of the topics in the unit are listed below.

6 What is the Known Archaeological Resource?

Recommended questions for discussion are:

- Is the term 'known resource' used in Asian countries?
- If it is used in Asian countries, what does it mean?
- Is an excavated site also part of the known resource? Or are these only the in situ sites?
- Does the known resource consist only of archaeologically assessed sites?
- Does the known resource comprise of sites whose the exact positions are known?
- What if we cannot determine the extent of the site? Can we then consider it to be known or unknown resource?
- Is the known resource registered in a database?
- Is the database available for everyone to use?
- Who is responsible for it?
- Who contributes to it?

7.1 How to Measure the Unknown Archaeological Resource

When covering this topic, it may be useful for trainers to illustrate the teaching material with examples of underwater prehistoric sites such as those found in the Palk Strait/Gulf of Mannar (Sri Lanka), Torres Strait (Australia), Dwarka (India), Denmark and the North Sea Basin.

7.2 Uses of the Unknown Archaeological Resource

Recommended questions for discussion are:

- Is the term 'unknown resource' used in the Asian countries?
- If yes, what does it mean?
- Is the unknown resource registered in a database?
- Is the database available for everyone to use?
- Who is responsible for it?
- Who contributes to it?

8.1 Uses of the Future Archaeological Resource

Recommended questions for discussion are:

- Does the student's country of origin deal with the future resource?
- If yes, then how do they deal with it?
- If no, then why not and what is the normal procedure when sites such as the Second World War shipwrecks are found?
- Can the students come up with examples of future archaeological resources?
- Do the students think it is worth putting time, money, people and effort into this archaeological resource?

Practical Session

It is important that the students are provided with the practical task of defining different archaeological resources in a chosen area. Trainers should provide students with a range of information including:

- A selected area
- Basic information about the sites that are known in that area (or the possibility to access the data quickly)
- History of the area and its surroundings
- If possible information on the seabed (side scan sonar, multibeam, aerial photography, satellite images (Google Earth), sediment type, etc.)

It is recommended that students have two hours to interpret the information provided and using the knowledge they gained during the training, define the known, unknown and future underwater cultural heritage resources. The conclusions of the practical sessions can be discussed in a plenary session.

In early foundation courses, the central area of Chanthaburi was chosen for analysis. Students were given 1 to 2 hours to explore the centre, the harbour and the fishing village.



The regional field training centre in Chanthaburi is situated in a maritime environment. As a practical test, students are asked to survey the area and determine the known, unknown and future maritime resources. © Martijn R. Manders



Suggested Reading: Full List

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- Wessex Archaeology. 2008. Aircraft Crash Sites at Sea. *A Scoping Study*. Archaeological Desk-based Assessment.