



Maritime Law and Historic Preservation — A Brief Review

By David P. Howe

Several recent court cases have addressed the conflict between the preservation of historic wrecks and the traditional maritime laws of salvage and finds. This article will briefly review the law and discuss those cases.

Salvage

If property is lost or in peril at sea, salvage law generally applies. In a nutshell, “salvage” means that if I save your property from peril at sea and return it to you, you owe me a reward for saving it. For recovery to be salvage, the property must be in peril at sea and the salvor’s efforts must be voluntary and must contribute toward saving the property for the owner.

The amount of a salvage reward depends on a number of things. Under ancient Roman law, the reward for recovering sunken property was one-fourth to one-half the property value, depending on the depth where it sank. American courts consider a list of factors announced by the Supreme Court in a case called *The Blackwall*, including the speed, skill, and energy of the salvor, the value of the property the salvor used in the effort, the risks the salvor ran, the value of the salvaged property, the degree of peril to that property, and success. Later cases prioritized those factors. The 1989 London Salvage Convention added pollution prevention to the menu.

Salvage rewards are deliberately liberal to encourage mariners to try to rescue imperiled property (typically a ship or cargo) and return it to its lawful owner or the stream of commerce, thereby avoiding or reducing collateral problems such as the obstruction to navigation and pollution caused by wrecks. These are noble goals,

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but they have not included the need to protect historic wrecks or to examine such wrecks scientifically. Salvage law promotes the unscientific destruction of historic wrecks and the permanent loss of the archeological evidence they contain by rewarding the economically efficient recovery of commercially valuable objects.

Salvage rewards encourage mariners to try to rescue imperiled property, but if those efforts fail the salvor gets
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Notes from the Prez— Dave Howe

2000 has been a very productive year for MAHS. We had 66 students (a record number!) in the Basic Course: 30 live and 36 by videotape. Of those who took the course by videotape, 14 did so through the Delaware Maritime Archaeological Society, 10 in Curaçao, and 12 directly from MAHS. In addition, 27 Basic Course graduates took the Field School: 15 at Betterton, Maryland, where they investigated an unidentified wreck in the Sassafras River, one in Florida as part of the Field School video shoot, and 11 in Curaçao.

The Field School Video will soon be finished, rounding out the video series. Underwater footage was shot in Florida, and Steve Anthony and Accent Media are editing the final tape. Congratulations and thanks to Steve for his unremitting efforts to make the video series a reality.

One more Field School may be offered in the fall in connection with a local project. MAHS teams have been to Curaçao twice this year, and another trip is planned for the fall. Jim Smailes will take a team back to Bermuda in September. MAHS members will also help the Maryland Historical Trust in its Head of the Bay Project, investigating seventeenth to nineteenth century sites in the Elk River.

Hot news from the Halls of Justice: the Court of Appeals for the Fourth Circuit ruled that both *Juno* and *La Galga*, the two Spanish Navy frigates off Assateague, are still the property of Spain and are not up for grabs by Virginia or its licensee, Sea Hunt. Kudos to MAHS adviser Jim Goold and his colleagues at Covington & Burling! The decision does not make new law, it but reaffirms and reapplies the principles of prior cases recognizing that sovereign title to a sunken ship does not die merely from the passage of time.

It is often frustrating to clients and attorneys alike that vindicating clear legal rights can be such a difficult, lengthy, and costly process. Sometimes things do come out right in the end, but remember the curse: “May you have a lawsuit where you’re right.” If you’re lucky, with great expense and effort you just might break even and get what you’re entitled to. It is particularly puzzling in this case that the federal government was unable to use established legal procedures to assist Spain, which had to retain private counsel to win the case in court. Have we “privatized” foreign relations as well as the protection of historic ships? In any event, Spain’s title to both frigates is confirmed, and the legal principles logically extend to hundreds of other sunken ships, aircraft, and cargoes of all

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nothing – “no cure, no pay.” If the salvaged property has little value the reward might not even cover the salvor’s expenses. The salvor’s claim for a reward is only against the property *in rem*, that is, against the ship herself, not against her owner *in personam* unless the owner agreed to pay the salvor regardless of success. When a federal court has admiralty jurisdiction *in rem* it can decide the rights of everyone in the world in the ship, even those who do not know the ship is in dispute. Jurisdiction *in rem* requires that the ship be arrested under admiralty process. Mariners have an affirmative moral and legal duty to try to save the lives of those in peril on the sea, so there usually is no financial reward for life salvage.

A salvor has a maritime lien on the salvaged property as security for his claim, but the salvor does not own the property unless and until the owner or a court gives him title. The salvor’s rights may not be paramount, because there may be other, higher liens on the property. If the salvor and the owner cannot agree on the amount of the salvor’s reward they can go to court or arbitration to resolve that dispute.

If property is not in peril, recovery of that property is not salvage. Old maritime cases held that sunken property was in peril and recovery was salvage. For example, the court in *The Espiritu Santu* held that a wreck which lay in the Gulf of Mexico for 400 years was in peril for salvage purposes. But some recent cases have rejected the traditional rule, finding instead that historic wrecks are not in peril. These cases include *Klein*, discussed below.

If property is salvaged but the owner declines the benefits of salvage, in effect telling the salvor that he does not want the property and will not pay for its recovery, the owner thereby abandons the property and the salvor can become the new owner. The owner loses the property but avoids liability for salvage. This does not mean that the salvor automatically has title free and clear – there may be other liens or court costs.

A property owner can control, limit, or even prohibit salvage. This is one way the federal Government can protect its historic wrecks, such as U.S.S. *Monitor*, from unwanted interference under the guise of salvage. The removal of artifacts from a Government wreck can be prosecuted like any other theft of Government property.

Courts have begun to consider the degree of archeological care taken by the salvor as an additional factor in a salvage reward. These cases include *The Andrea Doria*, *MDM Salvage*, and *The Espiritu Santo*. That is good

news. The bad news is that courts do not hold salvors to the high scientific standards that good archeology requires. And, strictly speaking, factors for determining a salvage reward do not apply to an abandoned wreck governed by the law of finds. Because salvage and finds are mutually exclusive and a salvor cannot always predict which law the court will apply, lawsuits against sunken wrecks often include both types of claims.

Finds

If the owner abandons property at sea, the law of finds traditionally applies. This is simply the school-yard rule of “finders, keepers” – whoever finds the property and takes control over it can become its new owner. The law of finds applies only to abandoned property, not to property that is still owned. Abandonment means the lawful owner of the property voluntarily gave up all rights in the property. Many divers believe “finders, keepers” automatically applies to sunken property. For private property that may or may not be true, depending on what the property is, where it lies, and what the owner does. For national government property, it is false.

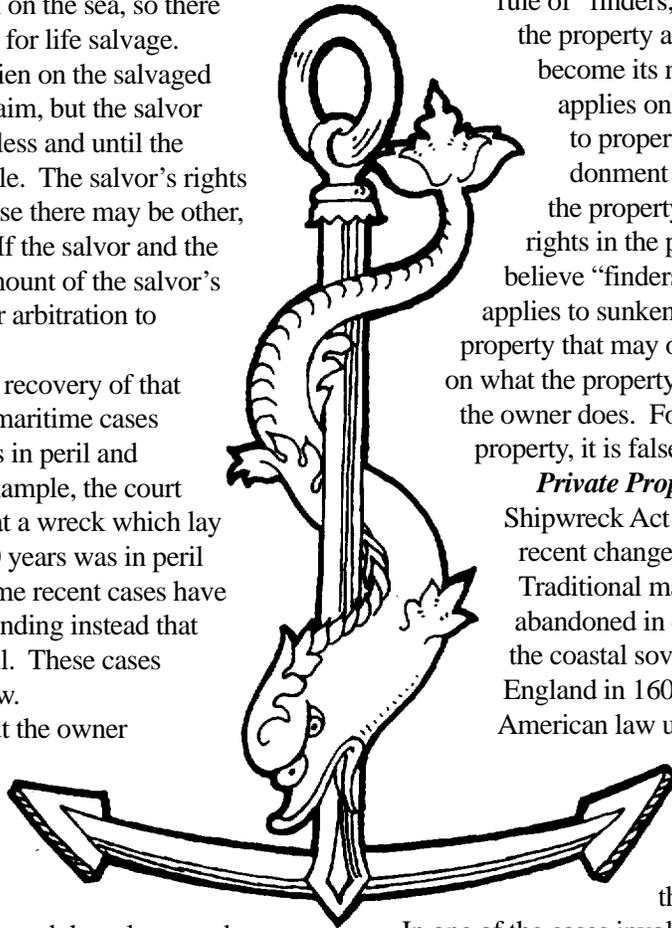
Private Property: The Abandoned Shipwreck Act of 1987 [ASA] is the biggest recent change in this area of the law.

Traditional maritime law held that wrecks abandoned in coastal waters belonged to the coastal sovereign. This was the law in England in 1606 and was received into American law upon Independence. The coastal sovereign for these purposes is the state government, not the federal Government, at least within three nautical miles of shore.

In one of the cases involving Mel Fisher and the *Nuestra Senora de Atocha* the court held that the federal Government might have the legal power to claim all submerged wrecks along the coast, but the existing statutes (the Submerged Lands Act, the Outer Continental Shelf Lands Act, and the Antiquities Act of 1906) did not amount to such a claim.

Under ASA the federal Government took title to all wrecks which are abandoned, *and* within three miles of the U.S. coast, *and either* (a) embedded in the sea bed or coral formations or (b) “historic,” that is, eligible for inclusion in the National Register of Historic Places under the National Historic Preservation Act of 1966 [NHPA]. The Government then transferred that title to the coastal

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states with guidelines on how to manage the wrecks. ASA also provides that the laws of salvage and finds shall not apply to such wrecks. After ASA was passed, many states developed active programs in underwater archeology for the management of historic wrecks. Unfortunately, a few states have lagged.

ASA only applies to abandoned wrecks, but it does not define abandonment. The traditional test for abandonment is that the owner must have left the property *sine spe recuperandi* (without hope of recovery) and *sin animus revertendi* (without an intention to return to it). Abandonment can be express, where the owner clearly announces an intention to abandon the wreck, or it can be inferred from a number of factors. The passage of time since the ship was lost is one factor, but it is not enough by itself to mean the wreck is abandoned. If the owner could have found and recovered the property but chose not to, a court can infer abandonment. For example, the *Captain Lawrence* sank in 1933 in 60 feet of water near shore in the Great Lakes. The court held that her owners could have salvaged her, and the fact that they never tried indicated that they had abandoned her.

By contrast, the *Central America* sank in 1857 in 8,000 feet of water off the Carolinas, and was found in the 1980s. The District Court held that the owners had abandoned her, and she belonged to the finder. The Court of Appeals reversed, holding that she was not abandoned. The court reasoned that her owners or underwriters (who became her owners when they paid for the loss) could not possibly have found her when she sank, so the fact that they never looked did not imply abandonment. The law of finds therefore did not apply, and the case was remanded to the District Court to decide on an appropriate reward for the salvor. The court gave the salvor 90 percent of the silver, and all the gold.

Under traditional law, lost treasure embedded in land belongs to the landowner, not to the finder. (This rule seems to have arisen in England when landowners wrote the laws.) In one case, Doctor Klein, a sport diver, recovered a sword and other artifacts from an old wreck — probably H.M.S. *Fowey*, built 1744, wrecked 1748 — in Key Biscayne National Park, and sued for title and/or salvage. Florida had ceded the submerged lands to the United States for an underwater park. Regarding title, the court held that the Government owned all wrecks embedded in the submerged lands in the park, and the artifacts were not abandoned and not subject to the law of finds.

As to salvage, the court held that the Government could prohibit the recovery of artifacts from those wrecks, and the artifacts were not in peril even though they were submerged. In *The Nashville* the court held that the wreck of a Confederate privateer embedded in a river in Georgia belonged to the state as owner of the riverbed. Divers who found the wreck had no title to the recovered objects.

Government Property: Under federal law, U.S. Government property can be abandoned only by an express act of competent authority complying with federal statutes. This applies to Navy ships and aircraft lost at sea. In *The U.S.S. Hatteras* case a U.S. Navy gunboat was sunk off Galveston in 1863 by C.S.S. *Alabama*. In 1976 a salvage company found the wreck and asked the Navy to allow them to salvage it. The Secretary of the Navy wrote them a letter to say “the Department of the Navy has in fact long since abandoned such vessel.” The

salvors recovered some artifacts. When the Government demanded them back, the salvors sued for title or a salvage reward. The court held that the Secretary’s abandonment was ineffective because it did not comply with the Federal Property and Administrative Services

If the owner abandons property at sea, the law of finds traditionally applies. This is simply the school-yard rule of “finders, keepers”.... Many divers believe “finders, keepers” automatically applies to sunken property. For private property that may or may not be true, depending on what the property is, where it lies, and what the owner does. For national government property, it is false.

Act of 1949. Therefore the ship and artifacts were Government property. The court also held the salvors were not entitled to a salvage reward because they did not sue for salvage within two years after the artifacts were recovered. For salvage claims, the “statute of limitations” — the time when a lawsuit can be brought — is two years under the Salvage Act of 1910.

A year after she sank the *Hatteras*, C.S.S. *Alabama* was sunk by U.S.S. *Kearsarge* off Cherbourg, France. The *Alabama*’s bell allegedly was recovered in 1936 by a commercial diver who traded it to a pub on the isle of Guernsey for bragging and drinking rights. The Germans occupied the island in World War II, and the Royal Air Force bombed the pub. The bell was exhumed from the rubble, and in 1979 was sold to an American antique dealer. He offered to sell it to the Naval Academy. They declined. He put it up for auction. The federal Government sued for the bell. The courts held the bell was Confederate government property when the *Alabama* sank, the federal Government had succeeded to title to all Confederate property, the bell had not been abandoned, and the bell therefore was U.S. Government property. As in the *U.S.S. Hatteras* case, the antique dealer was not entitled to a salvage reward because he did not sue within

two years after the bell was recovered (43 years before he bought it). The bell is now in the Navy Museum at the Washington Navy Yard.

In a lawsuit now pending in Florida, treasure hunters located a Navy aircraft off Miami. The aircraft is believed to be a TBD Douglas Devastator that fought in the Battle of the Coral Sea and the Battle of Midway. A private aircraft museum bought the coordinates, recovered a few parts as jurisdictional talismans, and sued the aircraft *in rem* for title or salvage. The federal Government intervened and claimed the aircraft. The District Court went against prior cases, and held that the Government had abandoned the aircraft and the museum was entitled to raise it. The Government has appealed that decision.

In the same way that the federal Government retains title to its sunken ships and aircraft, it recognizes claims of friendly foreign sovereign governments to continued ownership of their ships and aircraft. In 1997 Virginia issued permits to a company called Sea Hunt, Inc., to locate and excavate the wrecks of the Spanish navy frigates *La Galga*, which wrecked on Assateague Island in 1750, and *Juno*, which foundered off the island in 1802. Under the permits Virginia would take its pick (up to 25 percent) of the artifacts that Sea Hunt recovered from the wrecks. MAHS informed the Spanish Embassy about the permits and recommended that Spain assert sovereign title to the ships. The State Department supported the Spanish claim as a matter of foreign relations. Sea Hunt sued the wrecks *in rem* in the U.S. District Court at Norfolk, Virginia. On April 27, 1999, the court ruled that Spain still owned *Juno* and had not abandoned her, but Spain had abandoned *La Galga* by ceding her to Great Britain under the Treaty of 1763 ending the French and Indian War (Seven Years War). In the court's view Virginia had title to *La Galga* and could authorize salvage. Each side appealed, and the Court of Appeals held that Spain still owns both ships.

State Jurisdiction

State claims and state ownership of historic wrecks under ASA raise questions about the powers of federal courts "sitting in admiralty" to decide cases involving wrecks in state waters. Older cases did not question the jurisdiction of federal courts, until it became an issue in one of the *Nuestra Senora de Atocha* cases. The courts in that case held that the Eleventh Amendment to the Constitution barred federal courts from deciding the rights of a state unless the state consented to federal jurisdiction, but the amendment did not bar a federal lawsuit against individual state officials to challenge the constitutionality of their actions.

Most cases after *The Atocha* followed its rule about the Eleventh Amendment. Those cases include *H.M.S. Defiance*, *Jupiter Wreck*, *Marx*, *Riebe*, *Subaqueous*, *The*

Seabird, and *The Lady Elgin*. In *The Brother Jonathan* case in 1998 the Supreme Court overruled the reasoning of those cases. In *The Brother Jonathan* the State of California claimed title to a paddlewheel steamer that sank in 1865. The Court held that the state's rights derived from and were limited by the ASA. Although the ship admittedly lay on state submerged lands, the Court held that the state had not proven the ship was both abandoned and embedded — therefore the ASA did not apply. The Court rejected the argument that the Eleventh Amendment prevented the federal court from deciding the state's claim, but held instead that the state must prove in federal court that it owned the ship under the ASA. California and the wreck salvors subsequently reached a settlement to share proceeds from the wreck.

After *The Brother Jonathan* was decided, the state of Rhode Island filed a lawsuit in federal court claiming ownership and exclusive salvage rights to ten British transports that were scuttled in Newport in 1778. This is the first time a state has moved to use maritime law preemptively to protect historic wrecks. A decision in favor of the state should serve to protect the wrecks from commercial excavation or amateur pillage, and should go far to confirm states' rights to manage their historic wrecks.

Even within state waters, federal statutes may protect historic wrecks. For example, Section 106 of the NHPA requires a federal agency to assess the archeological impact of any project that the agency undertakes or permits. Dredging, excavation, construction, and similar work in the navigable waters of the United States requires a permit from the Army Corps of Engineers, under the Rivers and Harbors Appropriations Act of 1899. Consequently, the Corps of Engineers must ensure that the assessment required by Section 106 is performed before issuing a permit. Additionally, the National Marine Sanctuaries Act prohibits the unregulated recovery of wrecks within federal marine sanctuaries such as the Florida Keys and the Channel Islands off California. Other federal statutes, including the Archeological Resources Protection Act of 1979 [ARPA] and the Antiquities Act of 1906, may also apply in some cases.

In some cases, the existing laws work adequately to protect historic wrecks. In others, they do not — because the existing laws are a confused patchwork of redundancies and gaps, and in some cases because they simply are not enforced by executive officials or judges. The fuzzy state of the law is the reason that the ethics statement is so important for MAHS. A comprehensive set of legal standards is needed to establish clear rules for those who dive the wrecks and those officials who manage them.

In the meantime, when you dive on historic wrecks, treat them like fragile, non-renewable, public resources —
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The Manilla Wreck

By Clifford Smith

[The following article first appeared in *MARITimes: The Magazine of the Bermuda Maritime Museum*, and is reprinted with the permission of the Museum. The author, Clifford Smith, is the Museum's Director of Conservation and Underwater Archaeology.]

The Bermuda Maritime Museum 1998 underwater archaeology field season took place from May to October. A variety of projects were undertaken, including dives on the "Manilla Wreck." Preparation for conducting the underwater survey of this site started in early August with archival research in the Museum library to determine what, if anything, was known about the site.

The "Manilla Wreck" site was discovered by Harry Cox on January 13, 1975, off North East Breakers, at a depth of about 20 feet. An article published by Mendel Peterson in the December 1977 issue of *National Geographic* reports Cox salvaged from the "Manilla Wreck" a number of copper arm bracelets known as "manillas," thousands of glass trade beads, glass bottles, ceramic fragments, and a silver coin from 1690. Additionally,



Heather Weymouth records cannon measurements. (Photo courtesy of the Bermuda Maritime Museum)

Peterson said there were more than two dozen cannons found at the site. Based on the materials recovered by Cox, he concluded that this site represents the remains of a Dutch slave ship lost during the mid-18th Century and that Cox's finds constituted the largest known collection of slave-trade currency.



Carol Kerr works to establish the baselines. (Photo courtesy of the Bermuda Maritime Museum)

Yet, the most fundamental questions about the "Manilla Wreck" still remained to be answered: what is the extent of the site, are there any remains of the shipwreck, and how many cannons are there on site? Needless to say, our research pointed out only how little was really known about the site. Therefore, three goals were established for this year's "Manilla Wreck" project: developing a map of the "Manilla Wreck," completing a videotape record of the area, and producing a photo mosaic of the site.

The project was undertaken from August 14-28 by Museum staff underwater

archaeologist Clifford Smith, student intern Charlotte Willoughby-Ellis, and 16 volunteer divers from the Maritime Archaeological and Historical Society (MAHS) of Washington, D.C. Work was conducted seven days a week from 8:30 a.m. to 7 p.m., weather permitting. Everyone was happy to put in the time, for all wanted to complete the project before the MAHS group had to leave Bermuda.

As with any site, the first step is to find it. This is not a simple task on an unmarked wreck, for the charted coordinates set the location of the “Manilla Wreck” only within a series of breakers. The question then became: but which breaker? In addition, our research had revealed that the “Manilla Wreck” is the one of four ships reported to be lost on these breakers. Therefore, we had to find the right breaker with the correct wreck site.

To meet this challenge, we divided the area into four north to south sections. A visual search was then completed on each section by a team of four divers. This proved to be a successful method; by the end of the day we had located all of the reported wreck sites in the area including the “Manilla Wreck,” which we marked with a float. Naturally, it would have to be the last one found.

Our initial observations of the area found no visible ship timbers on the site. The most prominent feature of the site is a 14-metre double row of cannons running northeast to southwest along the southern of the two rock breakers in the immediate area. The geological features of the area are further defined as extending out to a ridge line that curves around from about 25 metres to the west of these rock breakers. Beyond the ridge line the sea floor drops to more than 30 feet. Within this area the bottom terrain is an uneven mix of coral, rocks, and small patches of sand in the old salvage trenches. The depth of the water over the site ranges from 10 to 20 feet.

The extent of the site itself was identified by conducting a non-destructive visual search of the bottom for artefacts. Divers swam back and forth over the area and all artefacts discovered were marked with red flagging tape. Once these items were flagged, the debris field

could clearly be seen extending to the north and south of the cannons and out to about 20 metres west of the rock breakers. No artefacts were found beyond the ridge line or further than five metres north or south of the cannons. Based on this artefact distribution pattern, the main area of the site was established as being 18 metres long by 12 metres wide within the larger 25-metre-square area.

With the size of the site now determined, we began mapping. The first step in this process was to lay out three 18-metre baselines parallel to the cannons. Normally, the hardest part of laying out a baseline is to verify that all of the baselines are extending parallel from the same zero point. To accomplish this, all the divers have to do is set six steel rods into the bottom—and usually this is not a difficult job. Well, it sounds easy on the boat.

Two days later, after a few bent rods, a little re-engineering with a hammer, and some loose rocks, we were able to set the last of the rods into the coral and rock bottom.

Baseline one was set one metre to the east of the cannons. The second baseline was eight metres to the west of baseline one. The third baseline was set in four metres to the west of baseline two. Within the three baselines, the depth of the site varied from 10 to 15 feet. Consequently, to minimize any distortion

this would cause when triangulating between these baselines, all of the baselines were levelled with the height of the first baseline at the zero end.

With the baselines in place and levelled, the work of mapping the site moved ahead in earnest. The major geological features and the few flagged artefacts found outside the baselines were recorded by triangulating out from the two outer baselines in short order. The three areas within the baselines were then subdivided into 13 four-by-four metre squares and one four-by-two metre half-section. Divers were then grouped into two-person teams and assigned to one of these sections.

Each dive team then triangulated the artefacts, cannons, or important features within their section. To record

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*Slave trade exhibit at the Bermuda Maritime Museum.
(Photo courtesy of the Museum)*

MAHS Continues Work in Curaçao

In June a team of MAHS volunteers travelled to Curaçao to continue work on the *Mediator* wreck site. In addition, they conducted the Basic Underwater Archeology Course using MAHS' videotape instructional series, *Diving Into History*, and followed up with a field school. As the following photo essay attests, it must have been a very busy time for the MAHS team as well as their hosts and student participants from the island. Be sure to check the next edition of *MAHSNews* for a full report on the activities.



Most of the dives were on the Mediator — this is a shot of the bow.



Wil Nagelkerken (left), Director of the Institute of Maritime Archaeology of the Netherlands Antilles, and Theo van Giessen (right) of Unique Curaçao, at the bow. Unique Curaçao is a foundation that supports a variety of activities on the island.



Theo looking into the hold of the Mediator



Some days, visibility was better than others. (Bob Spier taking trilateration measurements)



Bill Adams ran the Basic Underwater Archeology Course during the evenings, using the video Diving Into History. About ten local divers attended the course.

We then held a field school starting out in the clear water of Caracasbaai, an inlet east of the main harbor at Willemstad.





The field school continued the next day on the Mediator site in the Willemstad Harbor.



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Symptoms and Treatment of Hypothermia for the First Responder

By William Utley

The healthy human body maintains a very delicate temperature balance. Lowering or raising the body's core temperature only a few degrees can cause serious medical complications. Generally, our bodies react to temperature variations automatically and often compensate before we are aware there is a problem. It is only when this thermal regulation is disturbed by outside factors that life-threatening conditions come to the fore.

Our bodies are designed to lose and replace body heat in a never-ending cycle. We generate heat through muscle movement and calorie intake, and if we were not able to shed it we would literally cook ourselves to death. To avoid that somewhat unpleasant experience, the body loses heat in a variety of ways. For divers, the most critical way is through direct heat transfer to water, which conducts heat away from the body *25 times* faster than air at the same temperature.

Because of the high heat conductivity of water, divers must be constantly aware of hypothermia, a condition caused by heat loss from the central body core. Divers should understand the symptoms of hypothermia, take steps to prevent it, and know how to respond if it occurs. This is all the more critical for divers engaged in underwater archeological work. Working underwater, particularly in cold-water, requires great concentration on the task at hand. It can be easy for such divers to be unaware of their condition or to ignore it.

Mild Hypothermia

Any diver, even a warm-water recreational diver, can experience symptoms of mild hypothermia. Mildly hypothermic divers feel cold and may start shivering — shivering is the body's way of using muscle movement to generate heat. Those symptoms put the diver on notice to get out of the water. At this level of heat loss, the diver is active, alert, and generally able to remove his or her own exposure protection suit, dry off, and put on warm

clothing. Although the condition should be monitored, simple steps like covering the head and adding heat to the neck, armpits, or groin (places where we lose the most body heat) are generally sufficient for recovery.

Severe Hypothermia – A Physiological Chain Reaction

It is very important for divers to recognize the onset of hypothermia and to take appropriate action, starting with getting out of the water. If ignored or unrecognized, initial symptoms can develop into a very dangerous, potentially deadly condition. Once the body's core temperature

begins a downhill slide, its progression gathers speed to the point where the victim is so rapidly overtaken by events that it can be too late for self-help. A relatively simple case of "cold diver" can quickly spiral out of control and become a life-threatening emergency.

■ At a body core temperature of about 95°F, uncontrollable shivering starts. The victim is still coherent and able to move about with little or no help, but shivering alone is rarely sufficient to raise the core

temperature from this point absent other factors. When the shivering stops before the victim is re-warmed, the real problems begin.

■ As the core temperature continues to drop, the body begins to go through many physiological changes, and the condition starts to become life threatening. To sustain life, a body needs to preserve the key elements of the central body core: the heart, brain, and lungs. Our arms and legs, while "nice to have" features of our anatomy, are not necessary to sustain basic life.

■ Blood vessels in the limbs constrict to stop the flow of colder blood from the extremities to the body core. The body simply shuts down the blood flow to the

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(Hypothermia, continued from page 11)

limbs. The skin in the extremities also thickens, making it difficult to administer medication via syringe. Medication injected into a seriously hypothermic patient tends to pool in the extremities because of blood vessel constriction.

- About every twenty minutes, the blood vessels in the extremities open up briefly to allow new blood to flow to the limbs. If medication has pooled in the extremities, it can suddenly dump in concentrated form into the body core, potentially causing serious arrhythmia, an irregular heart beat. If the core temperature continues to drop, even this momentary dilation of the blood vessels will cease.
- With a continuing temperature drop, the heart rate will also begin to fall significantly. The victim will appear confused and muscles will stiffen. Speech will be slow and slurred. Pulse, while present will become increasingly harder to detect. Skin will be cold and bluish in color. At this level, victims no longer fend for themselves and will eventually become completely unaware of what is happening to them.
- When the core temperature falls below 92°F, standard thermometers will no longer be able to record the body temperature. Absent First Responder and medical attention, the core temperature drop will now become rapid. Heart rate and respiration will be very slow and shallow. Pulse will become almost undetectable, with rates as low as one or two beats a minute.
- The victim will lapse into unconsciousness and may appear to be dead. As the core temperature nears 86°F., the heartbeat will be irregular. If the temperature drop remains unchecked, the victim will suffer ventricular fibrillation, that is, very rapid twitching of the heart muscle that desynchronizes the heartbeat and the pulse.
- Ultimately, the victim will suffer cardiac arrest. Death will usually occur somewhere between 86° and 69°F core temperature, depending on individual physiology. However, a victim has been revived in a hospital setting with a core temperature of 64.4°F.

First-Aid Guidelines for the First Responder to Severe Hypothermia

- Remove the victim from the cold environment.

This does not simply mean removing the victim from the water and into shelter (room temperature of 65°-

72°F). Part of a wet victim's cold environment is the victim's clothes or wet suit and bathing suit. If the diver is physically unable to remove all of his or her wet clothing, then you must assist by doing it for them – modesty has no place in this situation. Cover the victim with dry blankets, dry clothes, or place the victim in a sleeping bag. Take care to minimize victim movement. Don't forget to insulate *under* the victim to avoid heat loss from conduction.

- Ensure ABCD's—Airway, Breathing, Circulation, and “Degrees.”

If the victim is unresponsive, perform the standard “ABC” first-aid protocol to ensure that the airway is open and to check for signs of life. Any injury that is more immediately life threatening than hypothermia must be treated first. Remember that you will need to make a much longer pulse check on a hypothermic victim, and breathing may be very shallow.

Rescuers should also monitor the victim's body temperature (“degrees”). Normal thermometers will only measure down to 92°F. If you know beforehand that you will be working in a cold environment, you should take along a hypothermia thermometer. Accurate core temperatures cannot be taken by mouth. The preferred method for taking a core temperature is rectally.

While taking a temperature is helpful in assessing the condition, if the victim is showing signs and symptoms of severe hypothermia, such as incoherence, memory loss, lethargy, and an inability to walk – or has lapsed into unconsciousness or has stopped shivering without having warmed up – the emphasis should be on getting the victim to the hospital.

- Prevent further heat loss.

Improper rewarming techniques, along with rough handling, can bring on a condition called “afterdrop,” a sudden drop in the body's core temperature. The key is *stabilization* – preventing further heat loss – not rewarming. You can wrap the body core, place the victim in a sleeping bag or thermal recovery capsule, or use skin to skin contact with a rescuer. *Moderate* heat (chemical heat packs, warm water bottles, etc.) *added gradually* can be applied to the head/neck, armpits, and groin. Be sure to insulate the victim from direct contact with the heat source to avoid burning. The addition of heat in this instance is not intended so much to rewarm but to prevent further heat loss. DO NOT induce liquids and DO NOT rub the extremities.

- Avoid rough handling.

Just as with improper rewarming techniques, rough

handling can also cause afterdrop. Victims should always be placed in a supine position. If the victim is coherent and in the shivering stage of hypothermia, the person can walk to a place of shelter. But if the victim is becoming incoherent or confused, the individual *must not* be allowed to walk around. Rough handling causes the blood vessels to dilate, and cold, deoxygenated blood that has pooled in the extremities is suddenly released into the central body core, potentially shocking and stopping the heart. Forcing a victim to walk even a few steps can generate afterdrop. Move the person as gently as the terrain or sea state will permit. If the victim's heart stops, you will have to treat the worst case scenario and administer CPR. CPR is obviously rough handling, but the choice is to have a stable dead person without rough handling or taking a chance that CPR will at least allow the victim a chance of survival when advanced medical care arrives.

■ **Transport to the hospital as soon as possible.**

Serious hypothermia victims need to be placed in a hospital setting. Even if you think there are no life signs, victims must go to the hospital where they can be rewarmed in a clinical setting and be assessed by a physician. Remember: No hypothermia victim should be considered dead until he or she is *warm and dead!* Again, if you are forced to transport the victim without advanced life support, keep the rough handling and rough ride to a minimum.

■ **Never Administer Oxygen**

If you recall First Responder protocols for drowning victims, administering 100 percent oxygen is critical to patient survival. However, with hypothermia First Responders should never administer oxygen. It is important to understand that the temperature of the oxygen container is the same temperature as the ambient air. This is generally much colder than the body's core temperature. Introduction of cold oxygen directly into the body core will induce further heat loss rapidly. While there is such a thing as heated oxygen, the temperature of the oxygen must be very precise. Heated oxygen can also shock the heart, and if used, should be administered in an advanced life support ambulance or hospital setting where the patient can be monitored. **DO NOT** try "home" oxygen warming techniques.

■ **Be Aware, Be Prepared**

Site managers, crew chiefs, divemasters, and dive partners are the keys to prevention or mitigation of hypothermia. If people are

working in the water, be it shoreline survey or diving, then everyone should be wearing appropriate exposure protection and prepared for the worst-case scenario. There must be a plan to deal with hypothermia, and to make sure that everyone on site is familiar with the symptoms and First Responder protocols.

Divers should know that the neck and head are part of the body core, and that 50 percent of their heat loss can occur from those two areas. In addition, buddy teams and dive planners should understand that hypothermia is an insidious condition. It can affect the rescuer as well as the victim. After all, the rescuer is usually exposed to the same conditions that caused the victim's hypothermia. A rescuer has to be self-aware. Moreover, divers must avoid complacency. Hypothermia can even strike in the Florida Keys in summer if divers extend their bottom times beyond the limits of their thermal protection. Even 80°F water can sap the heat from a body trying to retain a normal temperature. Also, hypothermia can be induced as a result of trauma which can confuse the body's normal regulating system.

Our understanding of the effects and medical protocols for hypothermia is in its infancy. It is only in the past twenty years or so through the pioneering work of individuals such as Dr. Mary Nemiroff of the U.S. Coast Guard that we have begun to comprehend the phenomena. Awareness is the key to prevention and response. ⚓

First Responder Check List for Treating Severe Hypothermia

- ✓ **Remove victim from cold environment**
- ✓ **Ensure ABCD's (airway, breathing, circulation, and degrees)—treat most immediate life threat first**
- ✓ **Prevent further heat loss**
- ✓ **Avoid rough handling**
- ✓ **Transport to hospital**
- ✓ **Never administer oxygen**
- ✓ **Be self-aware**

(Maritime Law, continued from page 5)

because they are. Take only measurements and images, leave only bubbles. The MAHS credo is that sites should be disturbed and artifacts recovered only for scientific purposes, under the supervision of a qualified archeologist. Otherwise, leave the wrecks undisturbed for other divers and future generations to explore and enjoy. Much of the information from a wreck site lies in the relative locations of artifacts, not in the artifacts themselves. That information is forever lost if the wreck is spread over a hundred coffee tables and mantles. If in doubt, call your State Historic Preservation Officer. For U.S. Navy wrecks, call the Underwater Archeology Branch at the Naval Historical Center (202) 433-9784. ⚓

About the author

David P. Howe is the President of MAHS. He has been Program Manager and Legal Adviser at the Underwater Archeology Branch at the Naval Historical Center, Assistant Supervisor of Salvage USN, a Trial Attorney with the U.S. Department of Justice, and in private practice in maritime and international law.

The opinions expressed in this article are the author's and do not necessarily reflect the views of any organization or government agency. Readers interested in legal citations for the cases referenced in this article should contact the author through MAHS at PO Box 44382, L'Enfant Plaza, Washington, D.C., 20026.

(Prez Notes, continued from page 2)

governments. The case should help to protect those sites from disturbance.

At the request of the Old Harford Town Maritime Center (OHTMC), MAHS participated in the annual Summerfest at Denton, Maryland, in August. The OHTMC is a new maritime museum focused on commercial river traffic on the Eastern Shore, and has two skipjacks under restoration. The skipjacks are interesting examples of wooden boat construction. One, a Virginia-built boat named *F. C. Lewis, Jr.*, is cross-planked. The other, *Maggie Lee*, built in Maryland in 1903, is one of only two known skipjacks planked fore-and-aft.

Finally, a special tip of the hat goes to Lark Stevens for again hosting the annual summer party. We all had a great time. Thanks for everything, Lark. ⚓

(Manilla Wreck, continued from page 7)

the data, a 1:10 scale grid was superimposed over their dive slate and as each point was measured in, the diver would plot the point on to the dive slate. The information was then transferred by all the dive teams to the master site plan each night and by the beginning of the second week we had all the sections recorded and transferred to the master plan. During this same period the work on the site was videotaped.

With mapping done and the entire area videotaped, we had completed two of the three goals of the project. All that remained to complete the project was the photo mosaic.

Unfortunately, hurricane George tracked to the south of Bermuda on its way to North Carolina and we lost four days out of our second week due to storm surge. The photo mosaic would have to be rescheduled. Still, MAHS and the divers from the Museum had completed a substantial amount of research considering the distance to the site from the Museum and the work involved in setting the baselines on site.



East Carolina University graduate student Sarah Milstead shooting images for a photo mosaic of the Manilla Wreck. (Photo courtesy of the Bermuda Maritime Museum)

In September, the last of the project's goals would be completed in two days by students from East Carolina University. Baselines were re-set on the rods that had been put in place by the MAHS group in August. Each one-metre square of the site was defined using yellow nylon lines. A total of 280 photographs were shot to cover the 20-by-14 metre area.

The old questions could now be answered: the furthest extent of the site is about 20 by 25 metres, there are no visible remains of any ship timbers, and there are 20 cannon on site. With these old questions answered, new questions can now be asked about the "Manilla Wreck": where is the ballast pile, where are the ship's anchors, and, most important, is this even a wreck site? ⚓

MARITIME ARCHAEOLOGICAL AND HISTORICAL SOCIETY

Statement of Ethics

The Maritime Archaeological and Historical Society is organized for the purpose of enhancing public awareness and appreciation of the significance of submerged cultural resources and the science of maritime archaeology. In pursuit of this mandate, members may come in contact with unique information and cultural material associated with terrestrial and underwater sites containing evidence of the history of humankind. To protect these sites from destruction by commercial salvors and amateur souvenir hunters, the Society seeks to encourage its members to abide by the highest ethical standards. Therefore, as a condition of membership and pursuant to Article 2, Section 1(A) of the bylaws, the undersigned executes this statement of ethics acknowledging adherence to the standards and policies of the Society, and further agrees as follows:

1. To regard all archaeological sites, artifacts and related information as potentially significant cultural resources in accordance with federal, state, and international law and the principles and standards of contemporary archaeological science.
2. To maintain the confidentiality of the location of archaeological sites.
3. To excavate, or otherwise disturb an archaeological site solely for the purpose of scientific research conducted under the supervision of a qualified archaeologist operating in accordance with the rules and regulations of federal, state, or foreign governments. Artifacts shall not be removed until their context and provenience have been recorded, and only when the artifact and related data have been designated for research, public display or otherwise for the common good.
4. To conduct oneself in a manner that protects the ethical integrity of the member, the archaeological site and the Society, and prevent involvement in criminal violations of applicable vandalism statutes.
5. To observe these ethical standards and aid in securing observance of these standards by fellow members and non-members.
6. To recognize that any member who violates the standards and policies of the Society shall be subject to sanctions and possible expulsion in accordance with Article 2, Section 4 of the bylaws.

Signature _____ Date _____

(Revised 1993)

MARITIME ARCHAEOLOGICAL AND HISTORICAL SOCIETY

P O Box 44382—L'Enfant Plaza—Washington, DC 20026

Application for Membership

Membership in the Maritime Archaeological and Historical Society is open to all persons interested in maritime history or archeology whether or not they are divers. Members of MAHS have first preference for enrollment in all courses and other activities and projects of the Society. To join MAHS, please sign the Statement of Ethics and send it to MAHS along with your check and completed application form. Annual membership dues are: \$30—Individual or \$35—Family

Enclosed please find \$ _____ for _____ individual membership _____ family membership

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Address _____

City _____ State _____ Zip _____

Phone (H) _____ (O) _____ (FAX) _____

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Skills (circle): research/dive/photo/video/communications/drawing/writing/first aid/other: _____

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General membership meetings of the Maritime Archaeological and Historical Society (MAHS) are held at 7:30 p.m. on the second Tuesday of each month. MAHS meets at the Cooper Middle School in McLean, Virginia, except in July, August and December. The school is located at 977 Balls Hill Road, just inside the beltway (Route I-495) at Exit 13, Georgetown Pike. Meetings in July, August and December are held at other locations for special events and holiday parties. Please join us and bring a friend.

PLAN AHEAD! Did you miss the summer party at Lark Steven's home on August 8? If so, you missed a good time. Don't let that happen again. Mark your calendars now for the annual MAHS holiday bash on December 12, 2000. The party will be held at the Topaz House in Bethesda, Maryland.

