

# Underwater Archaeology in México: From the Bottom of the Sea to the Crater of a Volcano

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## **Abstract**

Over thirty years, underwater archaeology division at Mexico's National Institute of Anthropology and History (INAH) has gone through diverse stages and fulfilled assorted projects in marine waters, in *cenotes* (sinkholes) and inundated caves, at the lagoons in the crater of a volcano, and in a beach in Baja California searching for the remains of a Manila Galleon cargo. Amazing discoveries include bones of extinct animals, skeletons and ashes dating from more than ten thousand years ago, hundreds of pre-Hispanic Maya skulls, and shipwrecks ranging from the 16th to the 21st centuries. Since the beginning national and international collaboration has been the key.

Being part of the group of experts who worked for the elaboration of the text of the 2001 UNESCO Convention on the Protection of the Underwater Cultural Heritage paved the way for Mexico being one of the first State Parties in ratifying this Convention; this also led to become one of the initial group that integrated the Scientific and Technical Advisory Body (STAB). Instruments like the Convention and the ICOMOS International Charter on the Protection and Management of Underwater Cultural Heritage are crucial in helping to win the battle against the permanent pressure of treasure hunter groups in countries like Mexico, which has a leading role as pioneer in the protection of the underwater cultural heritage and the development of underwater archaeology in Latin America. Together with UNESCO, INAH Mexico organized in 2010 the course "Research and Management in Underwater and Maritime Archaeology", in which 27 specialists from 14 countries of Latin America and the Caribbean participated. The future looks promising for this region.

## **Introduction**

Over the span of thirty one years, Mexico's underwater archaeological division at the Instituto Nacional de Antropología e Historia (INAH, National Institute of Anthropology and History), has gone through several stages and fulfilled a myriad of projects in diverse sites such as marine waters, *cenotes* or sinkholes, lagoons inside the crater of a volcano at 4,200 meters above sea level and in a beach of Baja California, searching for the remains of a Manila Galleon. Mexico is a country with a rich past and abundant cultural heritage along its seas, rivers, lakes, springs, and also in the thousands of water bodies spread in the Yucatan Peninsula. All this, a valuable testimony of what human beings are capable of achieving in order to live, to communicate with other lands, worship their deities and express themselves through art.

In February 2011, Mexican underwater archaeology celebrated 31 years of research, preservation, conservation and sharing through diverse means what the waters have kept for over more than 10,000 years. Since its creation in February 1980, INAH's underwater archaeology division decided to undertake projects with a multidisciplinary, multi-institutional, and international cooperation approach. With the support of Dr. George F. Bass, considered the "father of underwater archaeology in the world" and Dr. Donald H. Keith, both from the Institute of Nautical Archaeology at that time, Mexican archaeologists began to learn how to do archaeology in a new way. Since then, national and international collaboration has been the key.

Obviously, at first in Mexico we were land archaeologists. Going from surface to underwater archaeology is not an easy thing. Research topics can be unique and quite different from those investigated on land. Underwater projects happen in a completely different environment to ours, which entails certain challenges. Besides the fact that archaeologists cannot go to the site as often as in land, or remain there as much time to fulfill tasks, there are challenging circumstances like treacherous currents, dangerous animals, and diving accidents among others. It is worth pointing out, that underwater archaeology in Mexico has focused primarily on the location and recording of sites, as well as the analysis of objects in context. In some cases, sample pits and trenches have been excavated, but no thorough excavation project has been undertaken yet.

### ***First Projects***

The first underwater projects in Mexico took place between 1980 and 1990 in the Gulf of Mexico, the Caribbean and in a spring located in the state of San Luis Potosí, central Mexico. The story began in 1979, in the Cayo Nuevo Reef, Gulf of Mexico, where two sites dating from the 16th and 18th centuries, were discovered thanks to a report from two American sport divers. A cannon engraved with the year 1552 was identified as the oldest bronze cannon ever recovered in the Western Hemisphere (Luna Erreguerena 1982), and nowadays exhibited in the Museo de San José el Alto, in Campeche City. This was a fortunate event, as it helped to push INAH's authorities to finally take the decision to create an underwater archaeology department within the Institute. From then on, we have had the invaluable support of Mexican institutions and individuals, as well as many colleagues from the United States, Canada, the Cayman Islands, and more recently, from Argentina, England and Spain. All of them have become part of a wonderful and supportive team who has played, and continues to do so, a significant role in the development of Mexican underwater archaeology.

After the project in the Gulf of Mexico, in 1981 and 1982 we carried out a combined underwater and land archaeology project at the Media Luna Spring, where abundant pre-historic and pre-Hispanic materials were recorded, in spite of the fact that it has been continuously looted since the 1950's. In 1984, the Caribbean gave us the opportunity to do experimental archaeology. After being contacted by Michael Creamer, an American captain living in Isla Mujeres, we decided to attempt to confirm his hypothesis that El Castillo (The Castle), the main structure in the archaeological site of Tulum, Quintana Roo, was used as a "lighthouse" in pre-Columbian times, but also as a warning system. In his report, Creamer refers that Sabloff and Rathje "based their conclusion on Spanish accounts of the Maya lighting fires atop the towers as beacons to warn the island's inhabitants of invasion" (Creamer 1984).

In order to demonstrate this, two archaeologists climbed to the upper part of El Castillo with two gas lamps, while the rest of the team was in a boat navigating towards the beach. In the exact moment that the light of the first gas lamp was visible through one of the two small windows in the structure, the boat prepared to turn, and immediately after the second light appeared through the other window,

the boat was able to enter safely through a natural cut in the reef (Luna Erreguerena 1982). The experiment was a success, and it has been repeated twice since then: in 1998 for Discovery Channel and in 2009 for History Channel. It helped to demonstrate that Maya structures along the coast of Quintana Roo were used as navigational aids, a fact that is corroborated by the modern lighthouses built quite near some of these ancient structures (Luna Erreguerena 1982).

During the 2009 recreation, it was also proved that El Castillo served as a navigational aid not only when the artificial lights are seen from a boat at sea through the two small windows in the upper part, but also when the sun light can be seen from the two windows located in the lower part of this Maya structure, which does not have a roof. Today, thanks to this discovery fishermen and navigators in the area use this system to go in and out of the reef in total confidence. This is a modest example of how archaeology, a social science, can bring social benefits.

The last project, in what we call the first stage of Mexican underwater archaeology, took place in 1990 at the Chitales Reef, off Cancún, in the southeast part of Mexico, with the support of Dr. Donald H. Keith and the team from Ships of Exploration and Discovery Research, based in Texas. This was a multidisciplinary project aimed at documenting a 16th century shipwreck, in which biologists from the Universidad Nacional Autónoma de México (UNAM, National Autonomous University of Mexico) worked shoulder-to-shoulder with archaeologists. Once the excavation area had been determined, biologists collected all living corals and replanted them when the archaeological work was finished. They monitored the site over a year, until the area recovered. One of our goals is to respect and protect the natural heritage in which cultural heritage is immersed.

### ***Renewed or Die***

As mentioned before, the transition from land to underwater archaeology is not an easy task. By 1992, most of our few archaeologists had decided to go back to their terrestrial projects. This was a turning point for Mexican underwater archaeology suddenly threatened to disappear. However, if one is able to see that whenever a door closes another one opens up, things keep on flowing. In 1994, the first master level course on underwater archaeology was taught in Mexico with a field school in the Caribbean. Thirty professors from Mexico, the United States and Canada participated in the six-month course, and twenty archaeology and conservation students, graduated rekindling the fire of the discipline in Mexico.

### ***The 1630-1631 New Spain Fleet***

Then, in 1995, the big door opened for us: INAH's Department of Underwater Archaeology was promoted to a vice directorate and the most ambitious project ever fulfilled began to take shape: the investigation of the New Spain Fleet that lost several of its ships in the Gulf of Mexico during a storm in 1631, while on route to Havana bound for Spain as final destination. Fleets, created in the 16th century,

were in some way an extension of the Spanish empire that traveled to a different continent but were ruled by the same laws (Trejo Rivera 2003: 22).

Intense research on archives took place in Mexico, Spain and Cuba. Documents and maps from the 17th century were consulted, analyzed, and transcribed. After months of dedication to this endeavor, an area was selected in the Sound of Campeche, Gulf of Mexico, to start looking for the fleet's vessels lost during the storm, mainly one of the two flagships, *Nuestra Señora del Juncal* (Luna Erreguerena 2008: 57). The first field season took place in 1997. In sixteen days of survey, 24 sites were located and recorded. The discovery of these sites led us to create a parallel project: the Inventory and Diagnosis of Submerged Cultural Resources in the Gulf of Mexico, where 179 sites have been integrated to this day, with shipwrecks and isolated elements ranging from the 16th to the 20th centuries.

An increase in the number of sites located in the Gulf of Mexico has been occurring mainly due to two reasons: 1) the work done with fishermen, divers and natives who have led us to several shipwrecks and other cultural vestiges, above all in coastal waters; and 2) the support received in 1998 from the Submerged Cultural Resources Unit of the United States National Park Service to design a remote sensing system to be used in Mexican waters. The search for *Nuestra Señora del Juncal* continues, and this year the archival research has taken a new turn, as new specialists from Mexico, the United States and Spain have been integrated to the team in charge of this project. As we speak, the team is working planning an intense field season for 2012.

### ***Cenotes and Inundated Caves***

A universe of its own are the cenotes and inundated caves of the Yucatan Peninsula, where amazing discoveries have been made since 1999, when INAH's Subdirección de Arqueología Subacuática (SAS, Vice Directorate of Underwater Archaeology) received several reports from cave divers regarding the finding of prehistoric and pre-Columbian materials. Thousands of years ago, these caves were dry and served as an ideal shelter for animals and human beings alike. Since the sea level in this part of the Caribbean has increased more than 60 m in the last 10,000 years, the caves are now totally covered by water. Discoveries include bones of extinct animals, skeletons and ashes dating from more than ten thousand years ago; hundreds of pre-Hispanic Maya skulls, some of them with intentional cranial deformation; ceramic from the same period; and some elements from colonial times, as rifles used in the "Caste War" or Guerra de Castas, a wide Maya rebellion against the white elite (criollos and mestizos) of the colonial government in Yucatán, that lasted from 1847 to 1901.

The existence of several cave divers groups in the Yucatan Peninsula has been a decisive factor for these findings. Cave diving organizations in Yucatan and Quintana Roo calculate in thousands the number of cenotes and inundated caves in this region, many of which contain cultural vestiges. INAH's division of underwater archaeology works very closely with most of these divers, offering them special courses like the one from the Nautical Archeology Society (NAS) to teach them how to behave in the presence of cultural remains and how to help

archaeologists to record this material in a proper way. Since cave diving is an extreme type of diving which requires special training, sophisticated equipment and a constant practice, in Mexico there are not many archaeologists who can do this job, therefore, the work with these groups has proved quite positive for underwater archeology in such peculiar and dangerous bodies of water.

### ***Five Important Programs***

Sometimes, when you begin to work towards a dream, time goes by and you don't realize how big your dream has grown. This happened to us in Mexico, when we became suddenly aware that besides the projects carried out, there were many things we were doing at the same time that needed to be introduced into a proper structure. This is how a new project was born: Special Programs of the Vice Directorate of Underwater Archaeology, which includes five components: 1) Attending reports of underwater cultural heritage findings and their legal protection; 2) Training; 3) Divulcation; 4) Conservation of materials recovered from aquatic environments; and 5) National and international collaboration.

Each year, we travel to different parts of the country in order to attend reports of archaeological material findings. Through these inspections we have also contacted different authorities and began raising consciousness about the value and importance of such finds. Significant achievements have been obtained with local authorities and members of the communities with jobs related to the underwater cultural heritage, like fishermen, divers and tourist guides. Among the most significant discoveries made through fishermen in the coastal waters of Champotón, Campeche, is a 18th shipwreck known as "El Pesquero," probably of British origin (BarbaMeinecke 2008). Also, last year, port authorities in Veracruz asked INAH to survey the area where they were planning to extend the port facilities. Archaeologists from the Vice Directorate found and recorded hull remains from an 18th century ship, as well as ceramics and glass materials.

Training has been a permanent concern. Researchers from INAH receive constant courses on topics like geophysics, recording, videography, diving, etc. In this regard, national and international support still is a determinant factor. Specialists from Mexico and abroad participate each year in our field seasons, sharing their experience and knowledge, not only with researchers but also with archaeology and conservation students, diving instructors, and local people interested in the preservation of the underwater cultural heritage. Together with training, dissemination has been a permanent commitment. All researchers from SAS/INAH participate in symposiums, presentations, lectures and interviews both in academic and public forums. This program includes itinerant exhibitions, mainly in towns and cities around the places where archaeological work is being done, as well as video documentaries and publications.

Regarding the conservation of materials recovered from underwater sites, one of our policies has always been not to recover any object if its conservation cannot be guaranteed and only to recover those elements that serve our research objectives or those in danger of destruction or looting. In this program, we have received the invaluable support from different laboratories within INAH in Mexico

City and Campeche, and the Corrosion Laboratory from the Universidad Autónoma de Campeche (UAC, Autonomous University of Campeche).

### ***The Manila Galleon Project***

Even if the main part of our archaeological work has taken place in the area of the Gulf of Mexico and the Yucatan Peninsula, in 1999 researchers Edward von der Porten and Jack Hunter started a project in Baja California, searching for the remains of one of the Manila Galleons that traveled between America and Asia from 1565 until 1815. The Baja California Peninsula occupies 33% of Mexico's total coast. This peninsula is full of historic events related to the sea: the search for new territories and routes; the passage of pirates, buccaneers and corsairs; scientific expeditions; establishment of ports and Japanese fishing communities; the pearl industry; maritime accidents through the 19th and 20th centuries, and of course, the Manila Galleon route (Mejía 2007).

It was during the 1970's that American beachcombers began reporting findings of porcelain fragments in some beaches of Baja California, especially in the area of Ensenada. Some years later, news reached a group of researchers who immediately knew the potential of these findings. The University of Santa Clara in California and the National Institute of Anthropology and History, through its Centro INAH Baja California and the Vice Directorate of Underwater Archaeology, were invited to participate in this multidisciplinary project, which includes archaeologists, geophysicists, historians, geologists, art historians, and conservators.

Field seasons have been short and not sufficient, due to oceanographic and climatic adverse conditions, and financial limitations. In spite of this, results have been fruitful. Archaeologists have surveyed the area, both land and underwater, using metal detectors, remote sensing equipment, and GPSs. An important collection of shards of Chinese porcelain has been collected, together with beeswax blocks, stoneware fragments, a Fu dog bronze sculpture and some coins, among other elements. Preliminary analyses indicate that these objects date from the late 16th century and were part of the cargo of a Manila Galleon. The next field season will take place in 2012.

### ***The Nevado de Toluca Volcano***

An hour West from Mexico City there is a volcano known as the Nevado de Toluca, that rises to 4,600 meters above sea level. In its crater, there are two cold lakes—named Luna and Sol (Moon and Sun)—where pre-Columbian groups deposited offerings to fertility deities, and from where divers in the 1950's, 1960's and 1970's recovered rare serpent shaped wooden objects and incense cones and spheres (Luna Erreguerena et al 2009: XIV).

In May 2007, thanks to a donation given by Mr. Richard Siegel and a complementary funding from the Goldsbury Foundation—both received through archaeologist Johan Reinhard—researchers from INAH carried out a field season focusing mainly in the smaller Luna Lake. While some archaeologists worked

underwater, a professor and a group of students from the Escuela Nacional de Antropología e Historia (ENAH, National School of Anthropology and History) did some excavation pits on the shore. Findings were similar to those recovered some years ago: wooden objects shaped like serpents; 75 cones and spheres of a type of incense known as copal still in use today, plus cactus plants used for self-penitence (Junco 2009: 26).

Travelling exhibitions, together with a documentary film and a book entitled *Celestial Waters. Nevado de Toluca*, have been presented in many of the little towns around the volcano, especially among elementary and high school students. Besides, schools have received a copy of the book entitled "Under de sea, there are more than fishes..." designed especially for children and youth to raise awareness about the Mexican underwater cultural heritage and the importance of its preservation. This year, INAH will publish a comic book, which tells the story of the volcano and the archaeological work carried out, aimed at those people who don't like to read books.

### ***Management of Sites***

Management of underwater cultural heritage is something relatively new in Mexico. INAH participates in management programs in two protected areas: a park integrated by 23 reefs in Veracruz, Gulf of Mexico, and the Chinchorro Bank Biosphere Reserve situated in the Mesoamerican Reef, the second largest in the world, after the Australian Great Barrier. In both cases, INAH is working very closely with CONANP, an official branch of the ministry in charge of the environment, to protect the underwater archaeological heritage (Luna and Carrillo 2005).

Last August, a joint mission UNESCO-ICOMOS-UICN made an inspection visit to Chinchorro, after INAH and CONANP presented a technical file for the nomination of this reserve as a Mixed Site to be included as part of the world heritage. It would be the first Mixed Site (natural and cultural) for Mexico, and the first in the world with an underwater cultural component. Besides its wonderful ecological diversity, this place contains shipwrecks and isolated elements dating from the 16th century to the present. So far, INAH has located and recorded 68 sites.

### ***Presence in International Forums***

Being member of national and international councils dedicated to underwater archaeology and the preservation of the underwater cultural heritage, has allowed Mexico to be in constant contact with specialists from all around the world, as well as being part of a global effort to fight treasure hunters and to have a voice in the making of public awareness and policies regarding this legacy. Mexico was part of the group of experts who worked for the elaboration of the text for the 2001 UNESCO Convention on the Protection of the Underwater Cultural Heritage. This paved the way to be one of the first State Parties to ratify the Convention in July 2006 after a long and complex process that involved academic, legal and

technical authorities. Being one of the first twenty State Parties that ratified the Convention allowed Mexico to become one of the eleven members of the initial group that integrated the Scientific and Technical Advisory Body (STAB).

### ***Legal Aspects***

Mexico has fought a constant battle against treasure hunters. The infiltration of these groups into political spheres has made things even more difficult. However, based on the Ley Federal sobre Monumentos y Zonas Arqueológicas, Artísticas e Históricas (Federal Law on Archaeological, Artistic and Historical Monuments and Sites) (INAH 1972) and the Disposiciones Reglamentarias para la Investigación Arqueológica en México (Regulations for Archaeological Research in Mexico) (INAH 1977), among other laws, these attempts have been stopped successfully. INAH has an Archaeology Council whose duty is to receive, evaluate, approve or reject all archaeological projects pretended to be carried out in Mexico, be on land or underwater. When the Council receives an underwater archaeology project, it calls the Vice Directorate of Underwater Archaeology for an opinion. In this way, many requests—some of them disguised as “research projects”—from treasure hunters have been detected and rejected.

Instruments like the UNESCO 2001 Convention and the ICOMOS International Charter on the Protection and Management of Underwater Cultural Heritage are crucial in supporting countries that do not have a law to protect their underwater cultural heritage and those whose laws are weak in this regard; even those who have specific laws can find reinforcement through these international agreements.

### ***Regional and International Cooperation***

A golden formula is to give back to life what you have received from it, hence the importance of education that is crucial in the development of underwater archaeology and the preservation of the underwater cultural heritage. A good way is to join efforts and design regional courses directed to underwater archaeologists and specialists belonging to related disciplines. In 2010, UNESCO's Secretariat for the 2001 Convention and the National Institute of Anthropology and History organized the course “Research and Management in Underwater and Maritime Archaeology”, which took place in the Mexican port of Campeche with the attendance of 27 specialists from 14 countries of Latin America and the Caribbean. One of its main achievements was the creation of the Organización Latinoamericana de Arqueología Subacuática (OLAS, Latin American Organization on Underwater Archaeology).

Currently, INAH's Vice Directorate of Underwater Archaeology, with the special collaboration of Mexican historian Flor Trejo and Spanish professor Fernando Serrano Mangas, is organizing the course “Specialization in underwater archaeology of the Carrera de Indias and the recognition of the underwater cultural heritage (late 15th and early 19th centuries), which will take place in 2012 at the National School of Anthropology and History in Mexico City.



## ***Conclusion***

In conclusion, I want to express my gratitude for this invitation to share Mexico's experience in the field. Our experience in thirty-one years has been full of learning and growing, of challenges and achievements. Today, Mexico has a leading role as pioneer in the protection of the underwater cultural heritage and the development of underwater archaeology in Latin America, even though we have never excavated intensively a shipwreck or lifted a whole ship from the bottom of the sea, or count with a state of the art conservation laboratory for materials recovered from aquatic environments. Many of our projects were born from reports of archaeological findings, some due to the pressure of treasure hunters, and others based on research goals. Our work has been steady and according to the possibilities and priorities of the moment, never imagining the option of negotiating a legacy that is irreplaceable and non-renewable, which is valuable beyond economic considerations and that does not only belong to the nation in whose waters it is found, but to all human kind.

Modern times have witnessed a paradox in history. Many of those countries with wonderful ancient cultures belong today to the so called "third world"; therefore, they do not have the financial resources, advanced technology nor the specialists needed to investigate and preserve the remains of those cultures that lay in the bottom of their seas or in their rivers and lakes. Some of the countries in the Asian Pacific region, as well as Mexico, are good examples of this. On the other hand, many of the so-called "first world countries" have the resources, but they do not possess the cultural richness that our countries have. Maybe this is the reason why some of the main groups of treasure hunters come precisely from these rich countries with no strong bonds toward their past and their ancestors.

All countries have the right and the responsibility to preserve their underwater cultural heritage in accordance with their own idiosyncrasy and circumstances, which are different and unique. Underwater cultural heritage has remained stable and preserved over hundreds or even thousands of years in its aquatic context. There is no hurry and no justification to recover it, if one doesn't have the proper resources and meet the international standards clearly established in the ICOMOS Charter and the 2001 UNESCO Convention. Maybe one of the great lessons we have learned in Mexico is the fact that you can create your own reality, and begin working in the preservation and research of the underwater cultural heritage even if the feeling is that there are not enough means, because the only thing that is needed is to have a burning passion in your heart, and to believe that this portion of human history deserves to be preserved and investigated properly. Look then for the right people in your own country and the support of your own authorities; then, look for the assistance and cooperation of those countries and colleagues that have already walked a similar path and who have proved that it doesn't matter what you have, but how you use it.

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