אוניברסיטת חיפה
UNIVERSITY OF HAIFA
جامعة حيفا

APRIL 2025

The Carmel Maritime Archaeology Project:
Recording & Preserving Israel's Underwater Coastal Treasures

EXECUTIVE SUMMARY

Stretching from Haifa to Caesarea, the Carmel coastline preserves an extraordinary record of human maritime history spanning 11,000 years. Beneath its waters lie more than a hundred shipwrecks, ancient harbors, submerged settlements, and long-lost cargo—evidence of a long and complex relationship with the sea. Yet, despite its significance, much of this heritage remains unexplored. Threatened by climate change, coastal development projects and marine resources exploitation, these irreplaceable sites face the risk of being lost forever. Without urgent efforts to map, record, explore and raise public awareness, a crucial chapter of human history could disappear beneath the waves forever.

To safeguard these underwater treasures, University of Haifa researchers are proposing an ambitious project to systematically document these sites, investigate a selected number of them, and raise public awareness of their significance. They will combine existing records with high-tech underwater mapping, advanced artifact analysis, site-by-site assessments of preservation and conservation status, and the development of accessible presentations for the general public.

This first-of-its-kind effort in the Mediterranean Basin will not only protect Israel's maritime past, but also serve as a model for similar underwater and coastal exploration projects worldwide.

Spearheading this initiative is the University of Haifa's School of Archaeology and Maritime Cultures, the only institution in Israel specializing in maritime archaeology and heritage conservation. Equipped with a suite of archaeological science labs and world-class expertise, it is uniquely positioned to lead the pioneering study of the Carmel coastline's extraordinary heritage.

The Dor Lagoon, a unique concentration of underwater archaeological remains.

BACKGROUND

Beneath the waters of the Carmel coast lies an unparalleled maritime archive, unlike any other in the Mediterranean—possibly even the world. Shipwrecks, sunken settlements, and ancient harbors have been remarkably preserved by coastal sands and reefs, shielding them from the passage of time. But in recent decades, shifting sands, driven in part by human activity, have begun to expose these long-hidden remains, putting them at risk of damage and loss.

Archaeologists estimate that more than a hundred sites are scattered along this stretch of coastline, spanning thousands of years—from the Neolithic period through the Bronze and Iron Ages, Classical Antiquity, and the Medieval period. Each discovery adds to our understanding of ancient seafaring, trade, and daily life.

Recent finds include a cargo of Bronze Age copper and tin ingots near Dor and a cache of Crusader-era fire grenades at Neve Yam, highlighting the incredible diversity of artifacts preserved beneath the waves. Both Dor and Neve Yam are located just south of Haifa.

Despite this extraordinary wealth of archaeological remains and their immense importance to historical research, the Carmel sites have not been analyzed as a unified corus. Rather, some have only been described in the 1990's before digital imaging and GPS aided surveys were present. Studying these sites collectively would provide unprecedented insights into human maritime activities across millennia and significantly enhance our understanding of Mediterranean cultural heritage.

MULTI-DISCIPLINARY EXPLORATION OF THE CARMEL COAST SITES

The extraordinary nature of the Carmel coast requires an equally exceptional research approach—one that combines multiple disciplines to unlock its secrets. Today, our maritime archaeologists employ an impressive arsenal of tools, from digital modeling techniques that capture sunken vessels and cargo remains in unprecedented detail, to cutting-edge laboratory methods that reveal the composition and origin of submerged artifacts, and sophisticated strategies for heritage management and public presentation. This multi-disciplinary framework allows for a holistic understanding of these underwater time capsules.

Recent successes highlight the power of this integrated approach. Researchers studying the 8th century CE Ma'agan Mikhael B shipwreck utilized advanced digital modeling to document every timber and fastening before creating a detailed reconstruction using marine engineering software.

At Dor, archaeologists discovered a 7th-6th century BCE cargo that included rare iron blooms, imported storage jars, and ballast stones. These sites are being analyzed using various scientific techniques, such as archaeometallurgy, residue analysis, geological identification, ceramic petrography, and multispectral imaging, to reveal complex trade networks across the ancient Mediterranean.

The University of Haifa's ambitious project will dramatically expand this knowledge base through new underwater surveys, specialized analysis of recovered materials, detailed site vulnerability assessments, and public presentations. This pioneering initiative—unparalleled anywhere in the Mediterranean—will serve as both a foundation for focused case studies from this vast archaeological collection and a model for future underwater exploration projects worldwide.

Exploring the remains of cargo from a shipwreck that likely sunk between 1,000 BCE and 500 BCE at Dor Beach.

Methods: Recording, Underwater Archaeology, Archaeological Sciences, and Maritime Heritage Management

Our comprehensive approach combines four specialized fields to fully document and preserve the Carmel coast's maritime heritage.

1. Underwater Archaeology:

- Assembling archival records and historical documentation related to the Carmel coast sites.
- Conducting intensive diving survey seasons across the Carmel coastline, revisiting previously identified sites and documenting new discoveries.
- Carefully extracting artifacts and organic materials from 20 selected sites representing different aspects of the underwater record to determine precise dates and origins of shipwrecks and their cargoes.
- Creating detailed 3D maps of 10 high-priority shipwrecks, cargo sites, and submerged settlements of exceptional scientific value.

2. Coastal Archaeology:

- Documenting ancient harbor installations using advanced 3D modeling techniques while collecting associated artifacts.
- Surveying and studying coastal production sites, including ancient fishponds, salt-making facilities, and other maritime infrastructure.

Remains of a 5th-century BCE merchant vessel, found near Kibbutz Ma'agan Michael, offer a rare glimpse into ancient Mediterranean seafaring . It is on display at the Hecht Museum, University of Haifa.

3. Archaeological Sciences:

- Analyzing the geological composition, metallurgical properties, and ceramic characteristics of artifacts extracted from the sea, to determine their origins and manufacturing methods.
- Studying organic residues and ballast stones from selected sites to reconstruct ancient trade routes and connections.
- Conducting geoarchaeological analysis to understand how these sites formed and identify potential degradation processes that threaten their preservation.

4. Maritime Heritage Management:

- Preparing detailed condition reports on all underwater and coastal assets.
- Developing comprehensive plans for site valorization (improvement), stewardship, and ongoing monitoring.
- Collaborating with the Center for Cyber-Archaeology and Sustainability at UCSD to create easily accessible digital landscapes of underwater heritage, allowing the public to engage with and appreciate these otherwise invisible assets.

Excavation on the Carmel coast led by Prof. Emmanuel Nantet.

EXPECTED RESULTS

This project will generate valuable resources for both researchers and the public, including:

- A comprehensive and detailed publication summarizing all findings and their significance.
- Articles in leading academic journals.
- Collaborating with local councils and municipalities, barcode signage will be placed at designated coastal points. This will enable the public to visit digital landscapes of underwater heritage.
- Mapping and monitoring underwater heritage will provide an essential resource for safeguarding these cultural assets from planned maritime commercial (gas, oil, and communications) and recreational (fishing and diving) developments.
- A dedicated website showcasing the Carmel marine cultural heritage, designed for both scientific researchers and the general public.

Divers find prehistoric village beneath the sea near Haifa. Photo by Jonathan Benjamin

THE PROJECT TEAM

The success of this ambitious project relies on the expertise of a dedicated and multidisciplinary team, including:

Project Leadership:

- Israel Finkelstein, Head of the School of Archaeology and Maritime Cultures
- Assaf Yasur-Landau, Head of the Recanati Institute for Maritime Studies, marine and coastal archaeologist, expert in Bronze and Iron Age underwater remains
- Ruth Shahack-Gross, geoarchaeologist, leader in site formation processes and ancient materials analysis
- Shirly Ben-Dor Evian, Department of Cultural Heritage, Egyptologist, cultural heritage researcher and museum curator

Underwater Operations:

- Deborah Cvikel, marine archaeologist specializing in ship construction methods and shipwrecks from Classical to modern periods
- Assaf Yasur-Landau
- David Friesem, marine archaeologist and geoarchaeologist, expert in prehistoric submerged settlements
- Amir Yurman and Moshe Bachar, Dive Officers, Recanati Institute for Maritime Studies

Laboratory Analysis:

- Ruth Shahack-Gross, geoarchaeological analysis
- Tzilla Eshel, archaeo-metallurgist studying bronze, lead, and iron artifacts
- Vanessa Linares, organic residue analysis of underwater pottery

Maritime Heritage Management:

- Shirly Ben-Dor Evian, cultural heritage research
- Michelle Portman (Technion), head of the MarCoast Ecosystems Integration Laboratory, coastal and marine planning policy
- Jonathan Gottlieb, conservation specialist for underwater artifacts

Project Timeline

The project will run for three years, starting October 1, 2025.

Project Budget (USD)

Category	Cost (USD)
Underwater Survey	
Fieldwork expenses: two seasons/year (spring & fall, ~2 weeks each)	44,000
Research Personnel	
Project Director (3 years)	81,000
Ph.D. candidate or postdoc (underwater survey, 2 years)	51,000
Ph.D. candidate or postdoc (geoarchaeology, 1 year)	25,500
M.A. student (create underwater site database, 2 years)	32,000
M.A. student (cultural heritage, 2 years)	32,000
M.A. student (archaeometallurgy + lab costs, 1 year)	16,000
M.A. student (organic residue analysis + lab costs, 1 year)	16,000
M.A. student (marine policy, partial funding in cooperation with the Technion)	16,000
M.A. student (create coastal installations database, 1 year)	16,000
Website development	4,000
Operating expenses	36,000
Total	**$ 369,500**

Note: All diving and maritime equipment will be provided by the University of Haifa's Leon Recanati Institute for Maritime Studies.

Thank you for your consideration of this proposal.

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