

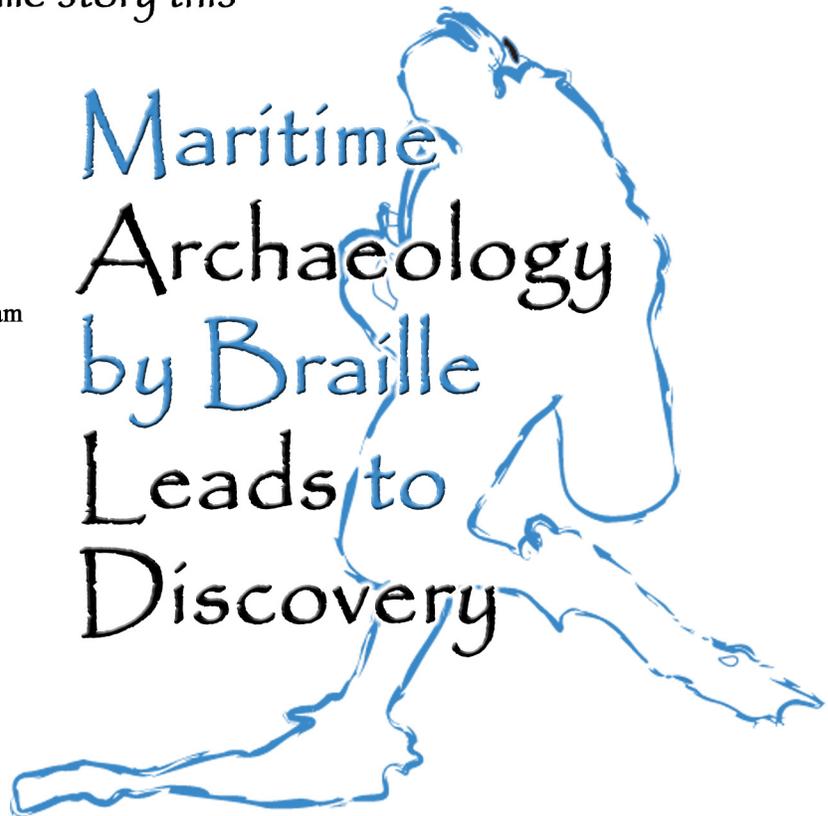
**I**t seems that great archaeological discoveries are always made on the final dive, day, or week of any field season. It may be because after weeks of working on and under the sea everyone's skills are honed, everyone has worked long, trying hours together as a team, and everyone is poised to recognize clues which might have been overlooked during the first throes of the project. It may be due to the frenetic pace invariably adopted during the final days of the season, before permits expire and fuel budgets and crew endurance are depleted, when time is the overbearing challenge and inspiration. It could simply be fate, reminding us the virtue of patience over the long months we must wait before further exploring what might be a significant new discovery. In any case, it was the same story this year.

by Chuck Meide, [Director](#)  
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Photo: Mike Jasper, MARC high school program student and LAMP Volunteer, gives Dr. Sam Turner the hand-held magnetometer.



Maritime  
Archaeology  
by Braille  
Leads to  
Discovery





The Research Vessel *Desmond Valdes* was donated by John and Desmond Valdes. The R/V *Desmond Valdes* is a 28' Grady White.

It was the last week of LAMP's three-month summer field season, and the last field season of the First Coast Maritime Archaeology Project. It was August 24, to be exact. There were dozens of targets we needed to test, and only a few days left to knock them off the list. Each target was a possible buried shipwreck, and there were too many to work before the end of the month. Prioritizing the most likely targets based on ephemeral survey data is always an iffy prospect, but our analysis did give us a sense that we were narrowing down the list to the higher probability targets.

Two months before, our survey team, in the newly donated research vessel *Desmond Valdes*, had scoured the seafloor with three geophysical instruments - the magnetometer (which detects the presence of iron, whether buried or exposed on the seafloor), the side scan sonar (which produces a detailed image of the seafloor itself and anything exposed on its surface), and the sub-bottom profiler (a second sonar device, which penetrates down through the sand and produces a sometimes-hard-to-interpret cross-section that might indicate buried timbers, stone, and metal).

With our list of targets in hand, now was time to "ground-truth" or test these targets. The only reliable way to confirm that these subtle blips in the computer data represented buried shipwreck sites is to put a pair of human eyes on them. Well, actually, in the waters of the nation's oldest port™, your eyes are usually superfluous because all you can see is blackness and it is likely any shipwreck is completely buried in the sand anyway.

So how do you find an invisible needle in a haystack that's buried beneath the sand? First, once the boat's Global Positioning System (GPS) has been used to locate the general area of the target, is to narrow the odds by using a hand-held magnetometer to pinpoint the exact spot with the strongest magnetic signature. Usually the divers start with a circular search to confirm that there is no wreckage exposed on the

bare, sandy bottom. At this point, assuming that the target is buried, the magnetometer leads them to the hottest spot, which is marked with a screw anchor tied to a buoy floating above. The next step is to determine if the source of the magnetism is something large and solid, like the remains or even a section of a hull, by probing beneath the sand. A diver can force a hand-held probe down through the sand by force of arm, but the same diver can penetrate a lot deeper with a water-powered or hydraulic probe.

So there we were, I was tethered by my air line and the probe's fire hose to my tender and safety diver on the research vessel *Desmond Valdes* twenty-five feet above. It was one of the bad vis days, which means it was completely black and another "archaeology by Braille" experience. Once you are used to working in the dark, it can actually be a peaceful environment, and with no visual distractions it brings a sharp focus to the job at hand. I was diving on Target STM001, or the first ("001") magnetic ("M") target from search area Storm ("ST").

I had laid tape measures in the four cardinal directions out from the screw anchor, creating a giant cross with the magnetic target at its center. The mission was to sink the ten-foot probe repeatedly into the seafloor at intervals of one meter. Ten holes in each direction, or forty probes along two perpendicular 20-meter long lines.

The hydraulic probe is a simple device we fabricated by using a ten-foot long pipe with a hose fitting and valve at its upper end. This upper end is connected by a long length of fire hose to a 9 horsepower pump on board the triple-

anchored vessel overhead. With the force of that gushing water, the pipe, when manhandled into a vertical position, sinks under its own weight into the sand, like a knife through hot butter.

This is all easier said than done, especially considering that August hurricanes far out in

the Atlantic bring powerful, rhythmic swells which surges the diver, the top-heavy probe, and the excess coils of fire hose back and forth. The business end of the probe, which is constantly spewing a powerful jet of water, is positioned by the diver who then holds it in place while standing up, using their shoulder and the strength in their legs and back to raise the heavy probe into the vertical position. Then all you have to do is let go as the probe almost instantly sinks up to its hilt into the sand.

On my first try, I positioned right at the screw anchor denoting the magnetic target, the probe encountered no resistance whatsoever. There was nothing buried directly below, so I noted that on a piece of Mylar, or underwater paper, attached

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to my clipboard, which was tied off to the screw anchor for safekeeping. The exhausting work of hauling the pipe up and out of the sand burns a lot of oxygen, which was supplied to me through a long hose from a "hookah" or low-pressure compressor on the boat. As a safety backup, all divers on the hookah carry a full scuba tank, just in case the compressor fails or runs out of fuel. The back-up air tank lent me reassurance, considering the copious amount of air I consumed in visibility so limited that I could not even read my air gauge.

I had gotten the working end of the probe into position one meter to the east of the screw anchor. Time for probe number two. Up goes my heaving body and the probe, and then it slid down rapidly - only to clunk forcibly into something buried just around a foot and a half below the sand! Interesting. Using one arm as best I can to steady the top-heavy probe, I eagerly reached into the hole with my other hand. My fingers slid down the pipe, into the swirl of jetting water... Wood!

Very interesting. But the probe is too awkward to hold in place that high above the seafloor for very long. So, with my knees firmly planted on the bottom making sure I didn't drift from the spot, I withdrew the probe. Its ten-foot length is actually made up of two 5-foot sections, so I unscrew one of these. It clattered silently to the sand below and I move it out of the way, touching the screw anchor so I can find it again. It is much easier to maneuver the shortened probe, so with its upper end resting against my shoulder, I moved it in a circular motion to blast away an area of sand above the wood. This can be a dangerous way to excavate; because the jet of water is unforgiving it could potentially damage delicate archaeological materials. So while jetting I tried to keep one hand at the business end, to feel buried wreckage as I moved the pipe, and so that I

could shield and quickly remove the jet if I discovered anything fragile (like rope, or sailcloth). But the wood below was solid. It was a plank, in fact, and there... there was a stone. A ballast stone! Or at least, it is very typical in size for a ballast stone, and we should know: on the Ballast Pile wreck, located less than half a mile away, we recovered exactly one thousand, one hundred and thirty-four ballast stones from our excavation trench completed just days before this discovery.



Dr. Sam Turner installs a screw anchor to mark the strongest point of the anomaly. Above, the picture is untouched taken on what is considered to be a good "vis" or visibility day. Below, the same photo has been touched up for publication.



My heart and mind raced as I continued to erase centuries of sand below my grasping, greedy fingers. There is another ballast stone, this one stuck to a plank by a growth of concretion. Concretions are concrete-like encrustations that form on and around iron, another good sign that this is a shipwreck. What else could it be? I ask myself. I tend to be a skeptic by nature, and it is always easy to misjudge these things in the dark, but the presence of wood, stone, and iron together at one site means that this is most likely a shipwreck! What's more, is that wooden ships using stone ballast would most likely pre-date the twentieth century.

The moment of discovery is always an exciting time; most of my moments have come in the dark, as my fingers did the exploring. Thirteen years earlier, in a similar situation on the bottom of Matagorda Bay, Texas, my fingers encountered and identified a cannon, which turned out to be a beautiful bronze specimen with baroque decorations identifying it as belonging to King

Louis XIV of France. Now, they cannot all be seventeenth-century explorer's vessels, but in the waters of the nation's oldest port™, this wreck could literally turn out to be anything - even a "golden oldie," the phrase my old professor George Fischer used to signify that most elusive of Florida shipwrecks, an early colonial vessel. Right now, at the very first acquaintance with this site, the possibilities were end-



L-R - Concretion believed to be the remains of a barrel's iron strap. Ballast stone retrieved STM001

less. These were the things running through my mind, while I was alone in the silent dark. Down here, in a previous century, collective dreams, investments, and perhaps lives came to ruin in a calamitous shipwreck. Nobody on the boat above had any idea what was going through my head, though it occurred to me that the safety diver would have noted my bubbles were staying in one spot for the length of the dive, so perhaps they too speculated on a moment of discovery.

Then I snapped to, and it was back to work. A long plank, at least one inch thick, lay on the bottom. It did not seem to be attached to any other structure, though most of it was still buried. At least two ballast-like stones were on top of it. To the right I came across a dense scatter of concreted objects - unknown objects, but definitely made of iron. One of these I set aside with a ballast stone for recovery and later analysis. Even in the dark my eyes widened with surprise when, to the left of the plank, I felt what seemed like a large, overturned, iron cauldron. It was round and concreted and bulbous, with a distinctive lip outlining a wide circular mouth. At its base was a stout peg, perhaps one of three legs? I also encountered a glass bottle - for a moment my heart stops until I recognized that it is a modern soft drink bottle. Not too modern, but the capped variety perhaps dating to the 1970s. Modern rubbish commonly collects on exposed wrecks, and when we date this bottle it may establish when the site was formerly exposed for a significant length of time.

At this point I decided that it was best to discontinue the jet-probe. It was just too dangerous to impact any more of a site

like this, almost certainly a shipwreck, with such a potentially destructive excavation device. Blasting inside the cauldron, for example, might instantly disperse the original contents, which if otherwise collected might be identifiable through laboratory analysis. So, reluctantly, I withdrew the probe and put it aside, its powerful jet churning harmlessly above the sand. This target had certainly tested positive, and was likely a wooden-hulled shipwreck. The best course of action, despite my yearnings to dig further, was to collect a small sample of artifacts for preliminary analysis, to let the sand settle back into place, and to leave it alone until next year.

The safest and most productive way to dig is to take the time to lay-out a systematic grid system over the site (which in zero-vis can take days), and use a suction dredge to carefully remove the sand from discreet areas or units. In that way we can keep track of horizontal and vertical positioning, note the exact location of every freshly exposed object, screen every bit of displaced sediment so as to not overlook even the smallest artifacts, and meticulously record the site as we slowly and carefully excavate. Underwater archaeology is like a crime scene investigation, and as archaeologists we must have the patience to proceed slowly in order to locate and understand every hidden clue. I had to have the patience to stop at this point, so as to return to dig again next year.

So, filled with excitement and regret, I slowly ascended to the surface, bringing with me two tape measures, a five foot section of pipe, a soft drink bottle, a shapeless concretion, a tiny sample of wood, and a single ballast stone. The probe stayed on the bottom, to be dragged back to the boat by its hose. As I approached the boat, they can tell I am returning with more than I went down with, which peaks their interest. I carefully passed my specimens up before breathlessly relaying my story.

*Since the close of the field season, LAMP scientists have begun analysis on the artifacts recovered from this and other sites. Preliminary assessment of the concretion recovered from Target STM001 leads us to believe that it may represent an iron barrel strap. We plan to subject the timber sample to tree species identification, and a sample of the rock will be analyzed by the New York State Geologist courtesy of our colleague Joe Zarzynski of Bateaux Below, Inc. LAMP plans to seek permits from the state of Florida to partially excavate this site in the summer of 2010 in order to better understand its nature, extent, and condition, and in hopes of determining its date, function, nationality and identity.*