

UNDERWATER ARCHAEOLOGY
Pickles Reef
Florida Keys National Marine Sanctuary



MAHS Survey and Field School 2011





MAHS returned to Florida in June of 2011 to continue a survey of Pickles Reef begun in 2010. The project was combined with the field school in underwater archaeology that we hold each year.





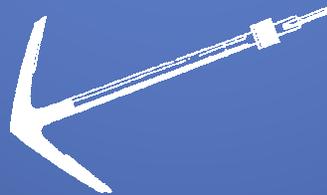
**Key Largo
and the FKNMS**

We were back in Florida in the clear blue waters of the Florida Keys National Marine Sanctuary off Key Largo. Pickles Reef is about 6 miles off shore.



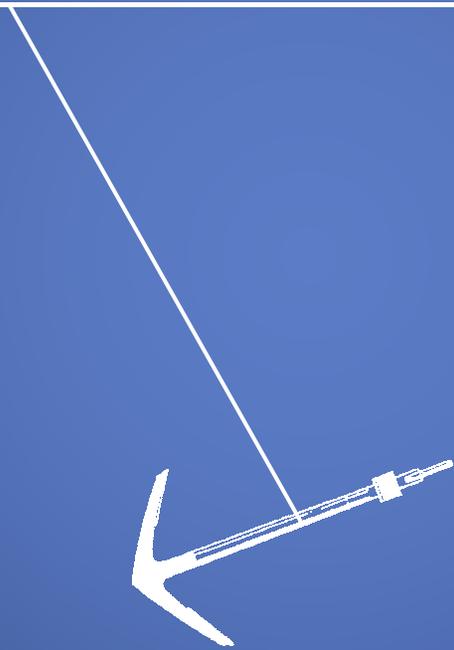
The mapping technique we use is baseline trilateration. It's a simple, accurate, and replicable procedure. We stretch a long tape measure down the center of the site, like the one marked by the red arrow in the picture.

baseline



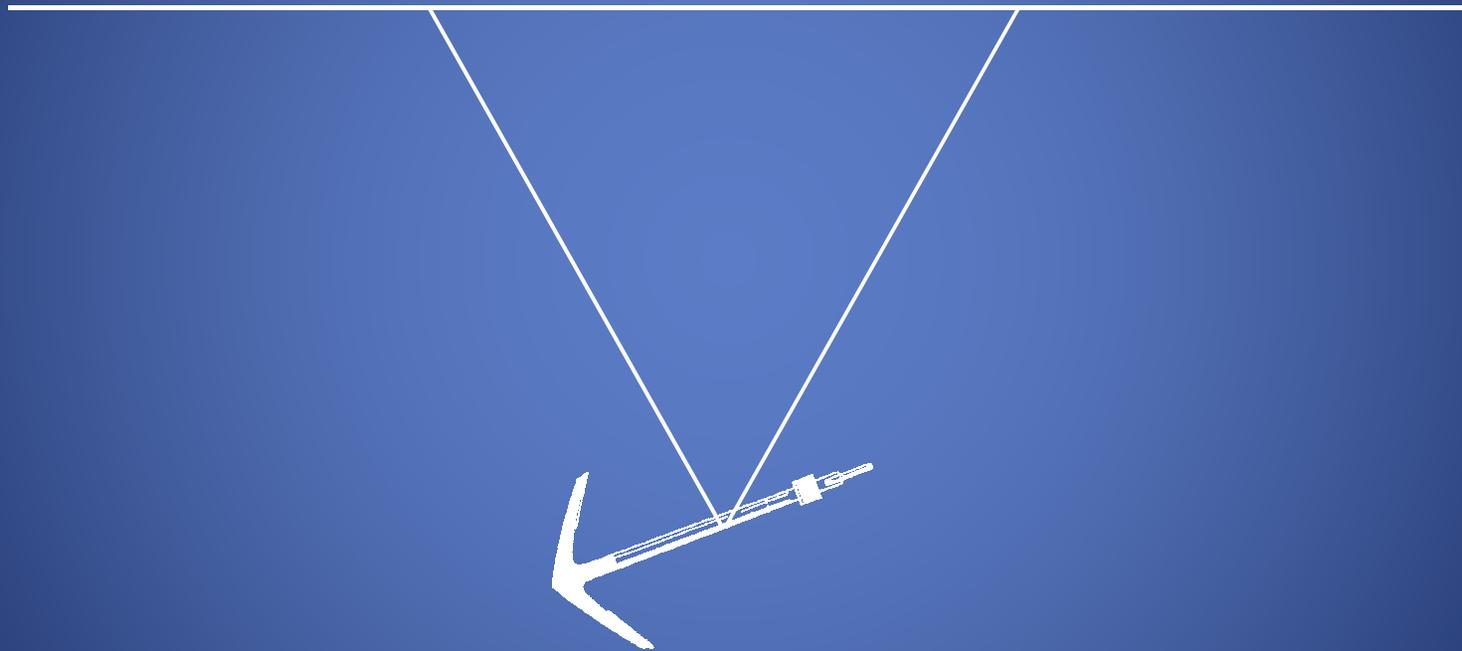
Then we take two measurements to each object we want to map.

baseline



One....

baseline



...two.



We always practice with a run-through on dry land before going into the water the first time to talk about things and be sure we all understand the process and how to carry it out

We don't use underwater communications equipment, so once we're in the water we lose the benefit of verbal communications.

During the practice session we mapped the locations of some lounge chairs to a baseline on the beach.



baseline



Enough practice, already. Time to gear up and get into the water.



Here's an important piece of equipment for all of us desk jockeys who haven't been out in the sun for awhile -- sunscreen.



There was a time when you had to be a good navigator to find the site – now you just use GPS. It's the same technology as the GPS in your car, there's just no voice telling you it's "recalculating" when it thinks you've made a wrong turn.



OK, no wrong turns, we found the site.

Now for one last pre-dive meeting – a final chance to discuss the dive plan.



Here's what the meeting looks like just below the waterline.



Down we go for a reconnaissance swim to familiarize everyone with the layout of the site.





Next thing to do is lay the baseline down the middle of the site.



One of the divers is reeling out the baseline...



...and then attaching it to the datum.



Ready to start trilateration mapping. We work in pairs, with each team assigned a section of the site.

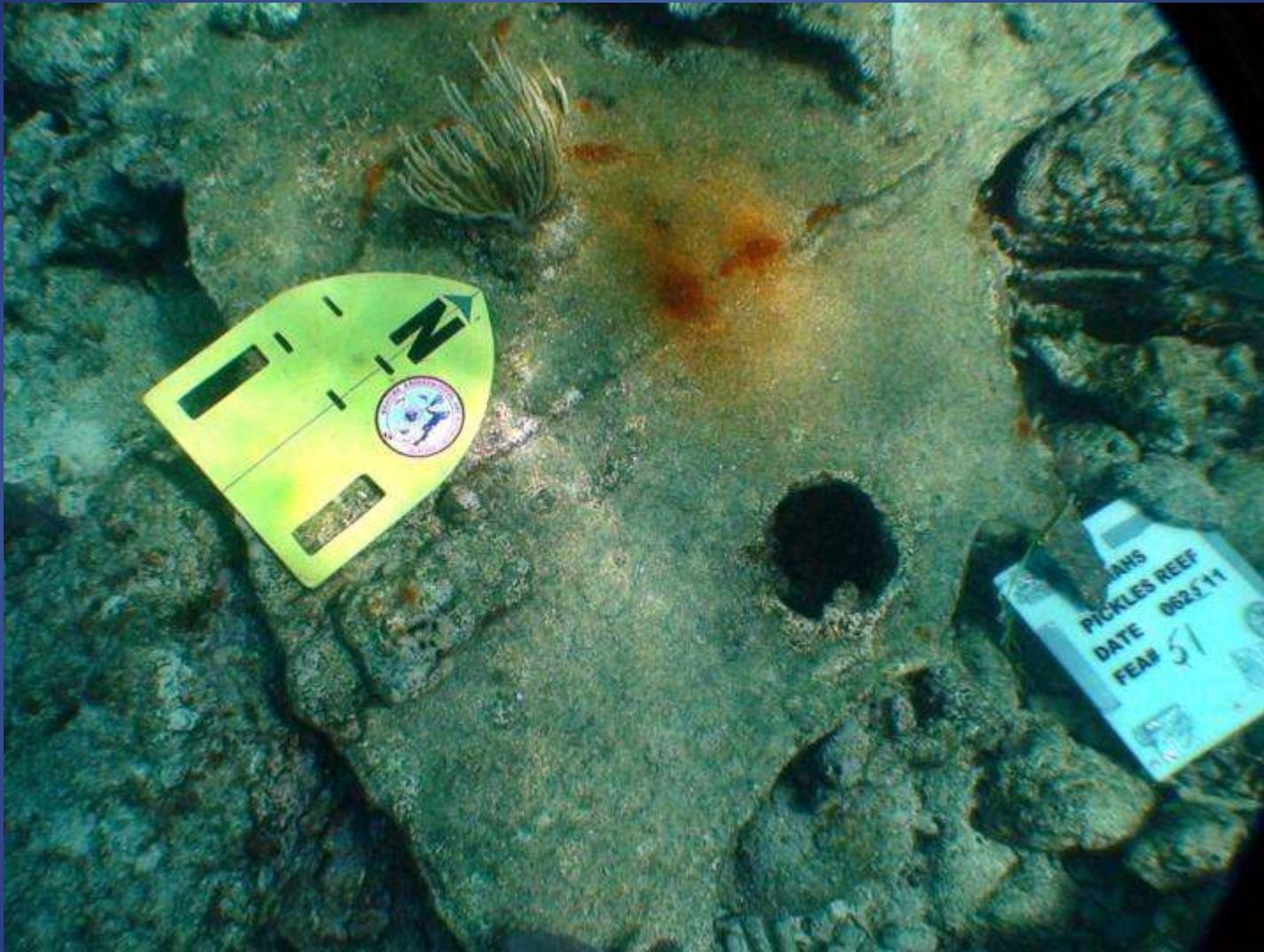


This diver is measuring the distance to a large flat piece of metal, which may be part of the hull of a ship or barge.



Here's a similar piece of metal, with what may be a welded seam.

The scale is one meter in length (about 3 feet).



Another hull plate with a welded seam? This one also looks like it has a small port hole.



And here, in contrast, are some pieces with what look like riveted connections.

This variation in construction technique could represent some diagnostic information.

Although there was some overlap in timing, riveting was generally characteristic of the 19th century while welding was prevalent later, well into the 20th century.



From the curvature, this metal rod may have been part of a small davit used to raise or lower things over the side of a vessel.

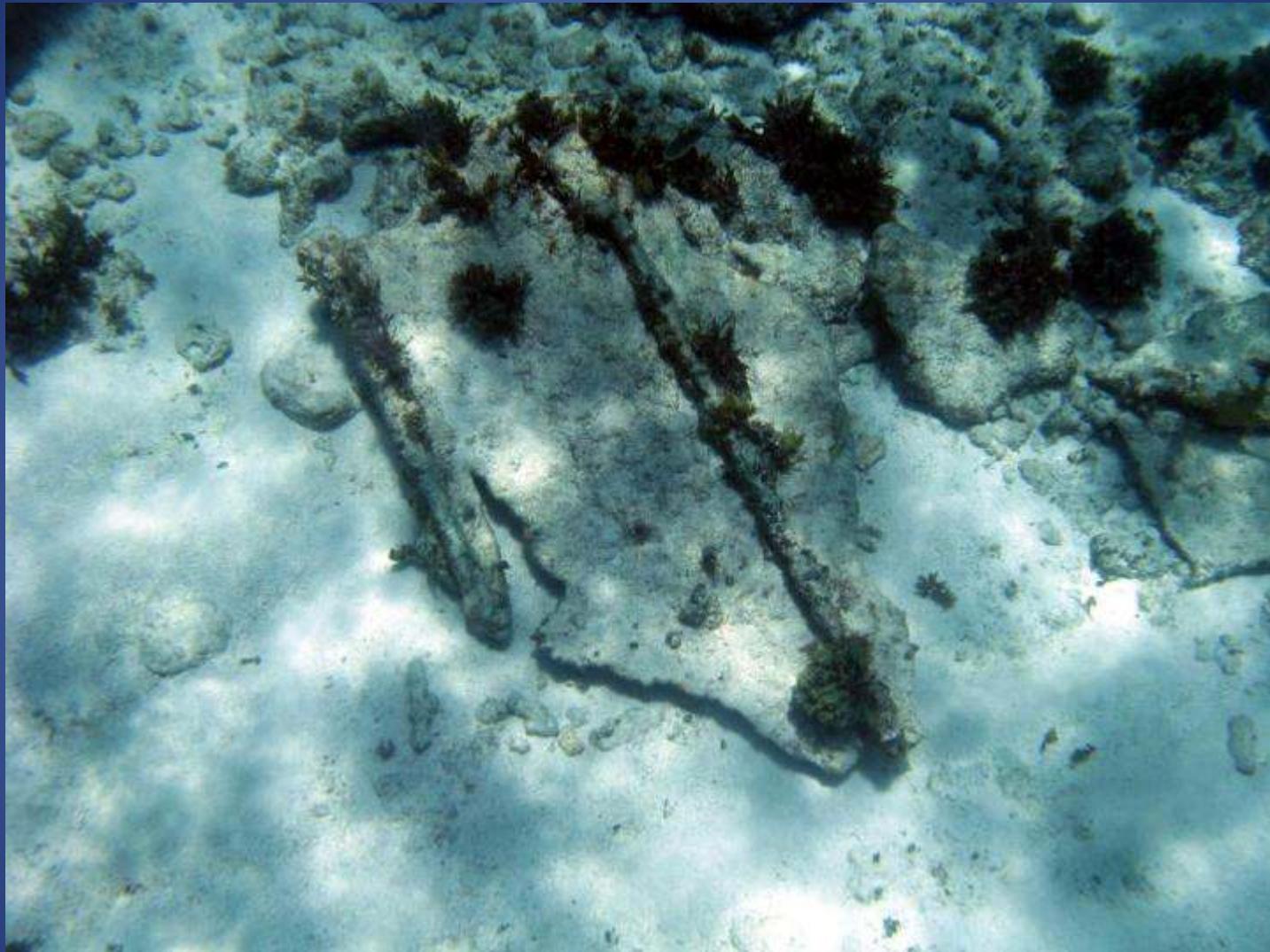


More metal hull fragments. Left is a large structural piece with knees or braces.

To the right is another wide fragment of hull plating.



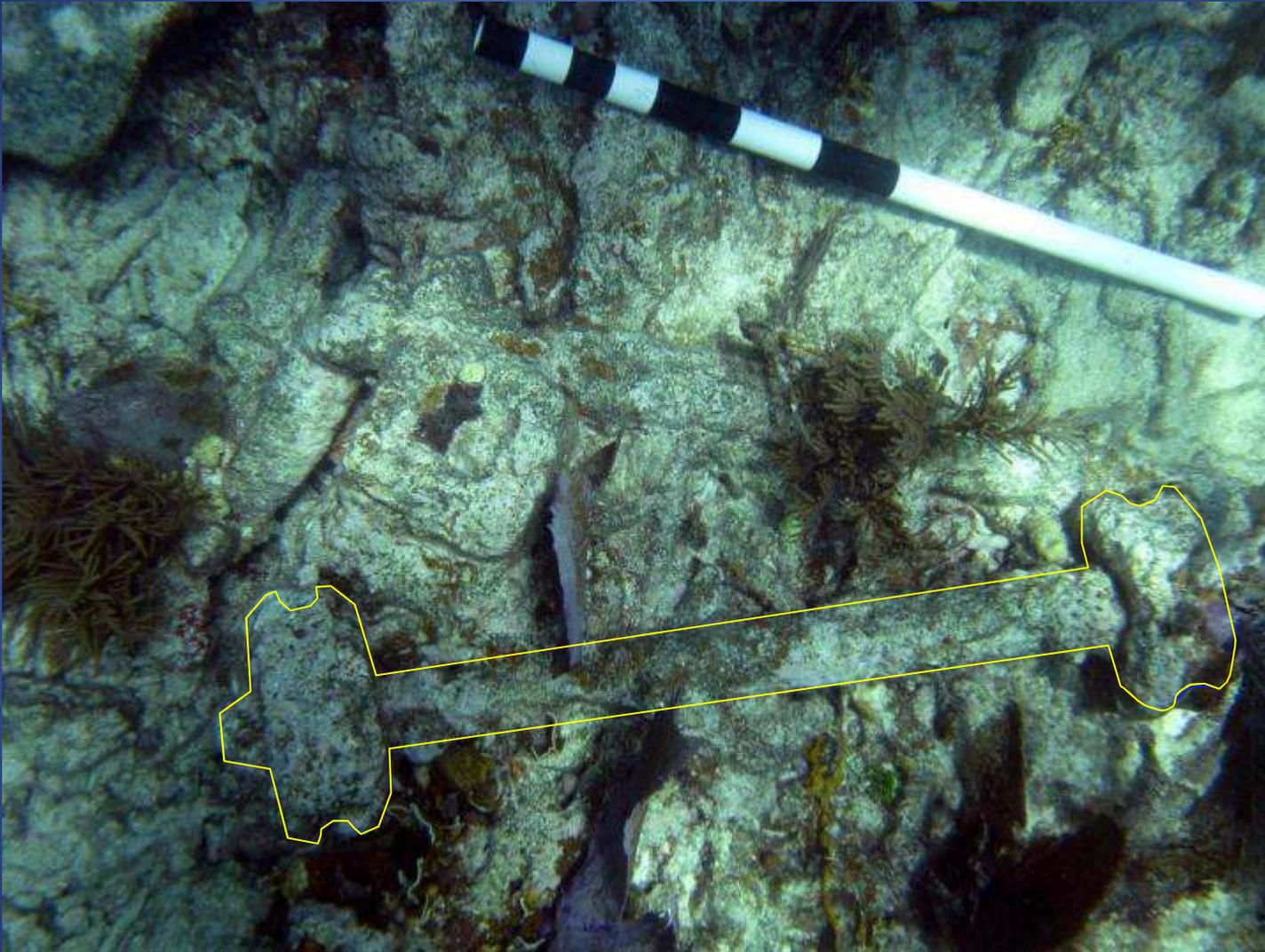
On the left is Feature 55 seen in the previous slide, and on the right more plate with structural reinforcements on the interior.



And a close-up of the latter.



This looks like an axle from a tram or small wagon that ran on metal rails. It's a little hard to pick out in this image.



Here is the general outline showing the notches for the rail.



And this is what the site is renowned for
-- barrels...



...barrels...



...barrels...



...and more barrels.

Actually, these aren't really barrels but the contents of some barrels – cement.

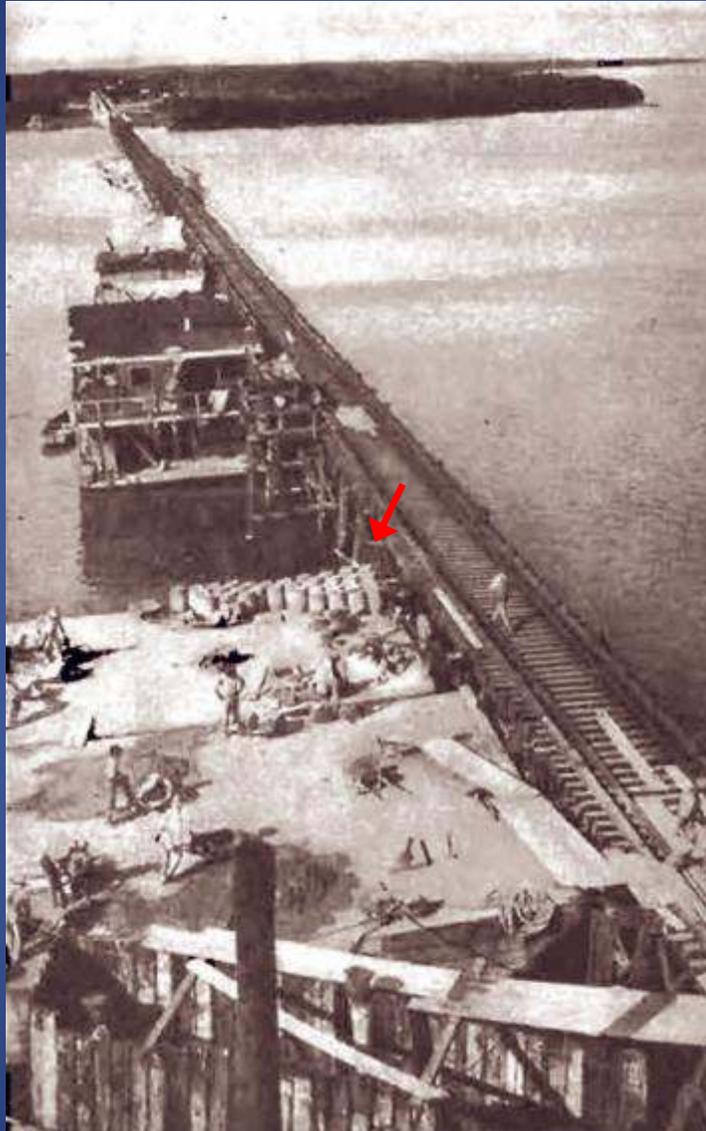
The cement was packed in wooden casks. The wood has deteriorated and left behind the hardened cement that was in them.



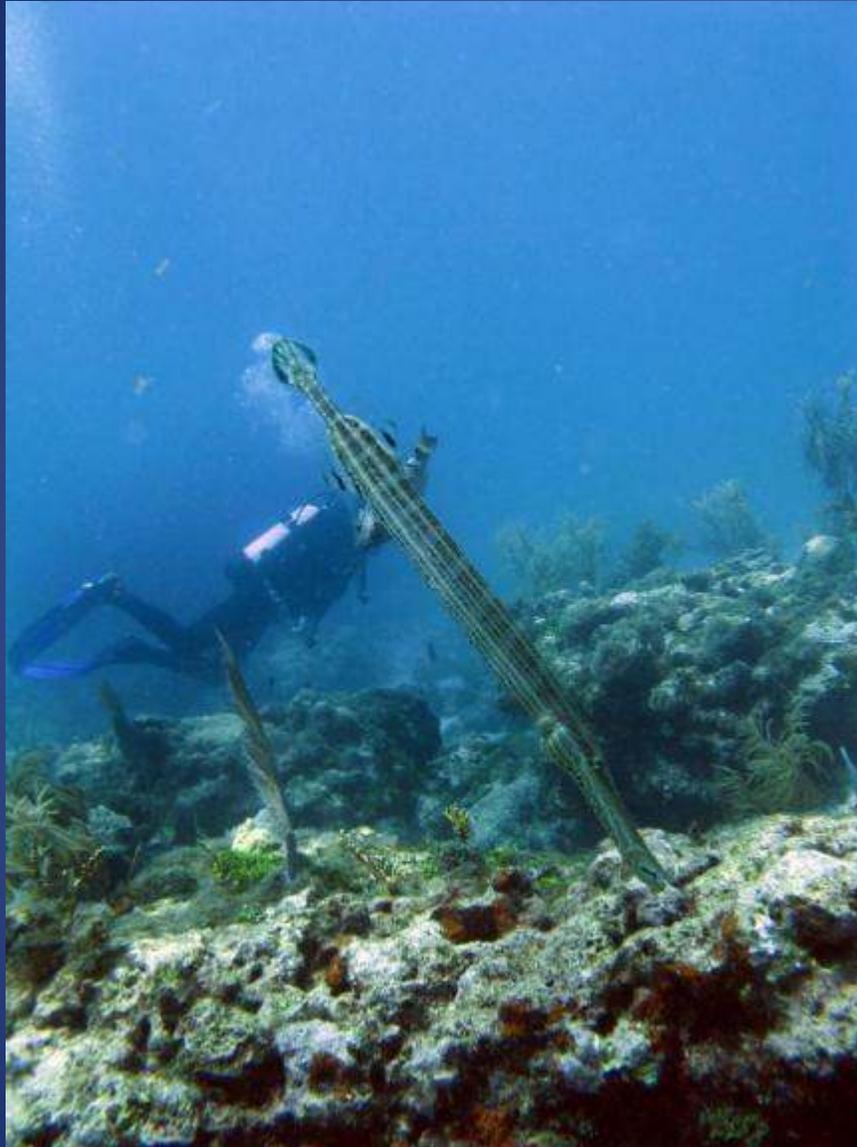
NOAA researchers had a chemical assay conducted on a sample of the cement and found that it was consistent with portland cement produced between 1890 and 1925.

And so, a current theory is that the cement was destined for one of Henry Flagler's massive construction projects that connected Miami to Key West after the turn of the 20th century, first by rail, then by road.

This is an image of the railroad under construction. Note the barrels near the center.



We don't know for certain what was in the barrels, but the workers appear to be pouring concrete, so the barrels may well have contained cement.



This being a reef on the northern edge of the Caribbean Sea, there are of course lots of fish.

In the foreground is a trumpet fish. They hang upright to blend in with coral and sponges and drift up on their prey.



More trumpet fish. They're related to seahorses and are supposedly called trumpet fish because of their long bodies – kind of an odd looking trumpet.



A couple of puffer fish swimming through the site.





On the right is some brain coral, one of the few corals on the reef that looks healthy.
And just below is a juvenile parrot fish – it's speckled with a reddish belly.



Above is a mature blue-green parrot fish and, on the right, a blue tang.



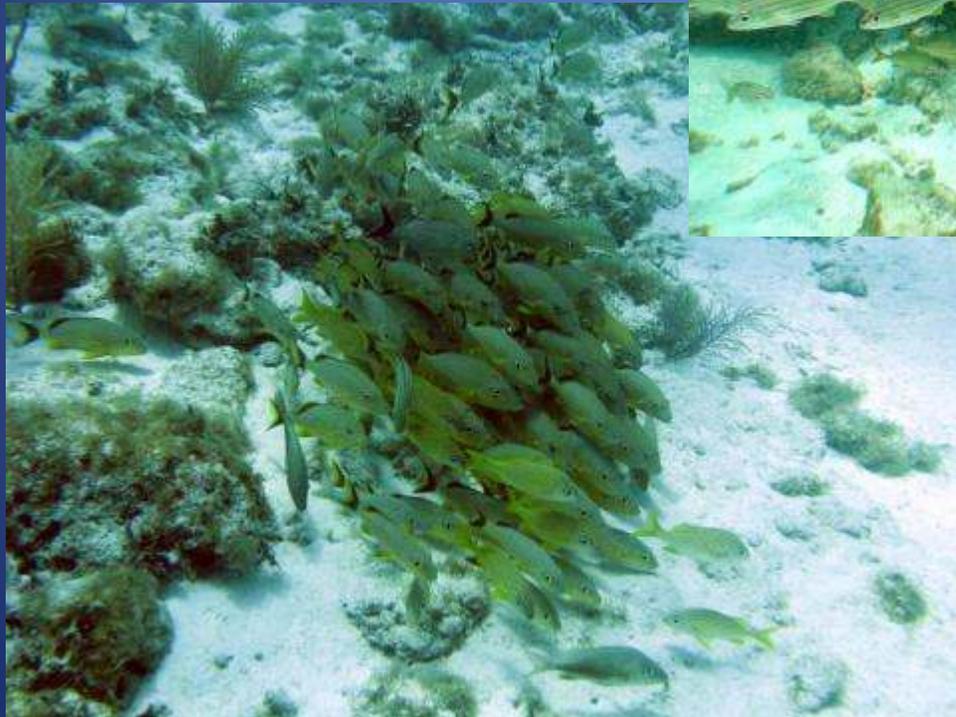
Here's a busy spot on the reef.



And another. This and a few of the other pictures of marine life are from Snappers Ledge, a part of Pickles Reef that is well known for its collection of fish life.



This is a school of small fish hanging out under a ledge.
Most of these are a species with a fairly unappealing name: blue-striped grunts.



Here are some more. They tend to hang out together in packs for protection...



...protection from things like this.

This is a nurse shark that came cruising through the archaeological site. Nurse sharks are pretty harmless to people, but they still look menacing – they're **sharks** after all.



This one's still poking around...



And then off it goes...



...and goes...

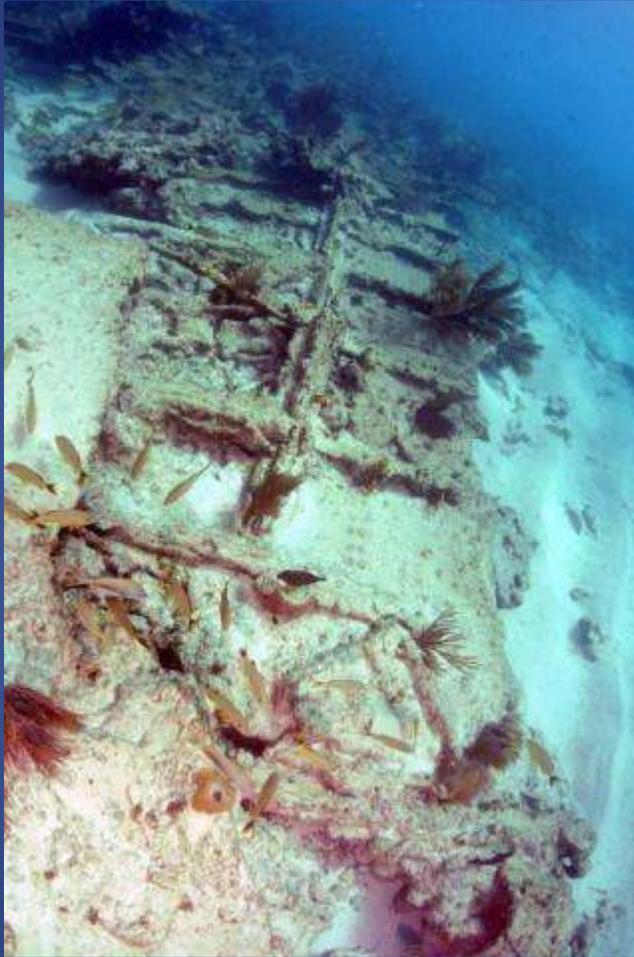


...off into the sea fans.



OK, excitement's over.
Back to work.

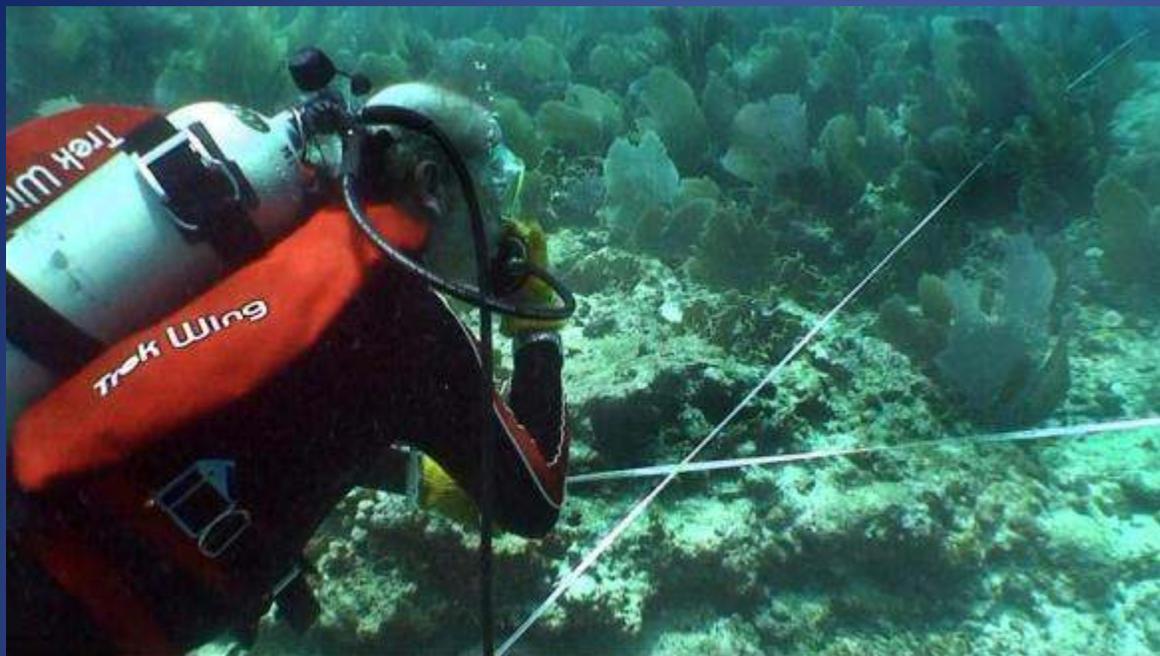




Conditions at the site had not changed substantially since the 2010 survey. Here is a large structural feature as it appeared in June 2010 (left) and in June 2011 (right).



Archaeology, whether it's on land or underwater, is all about record keeping.



More trilateration work.

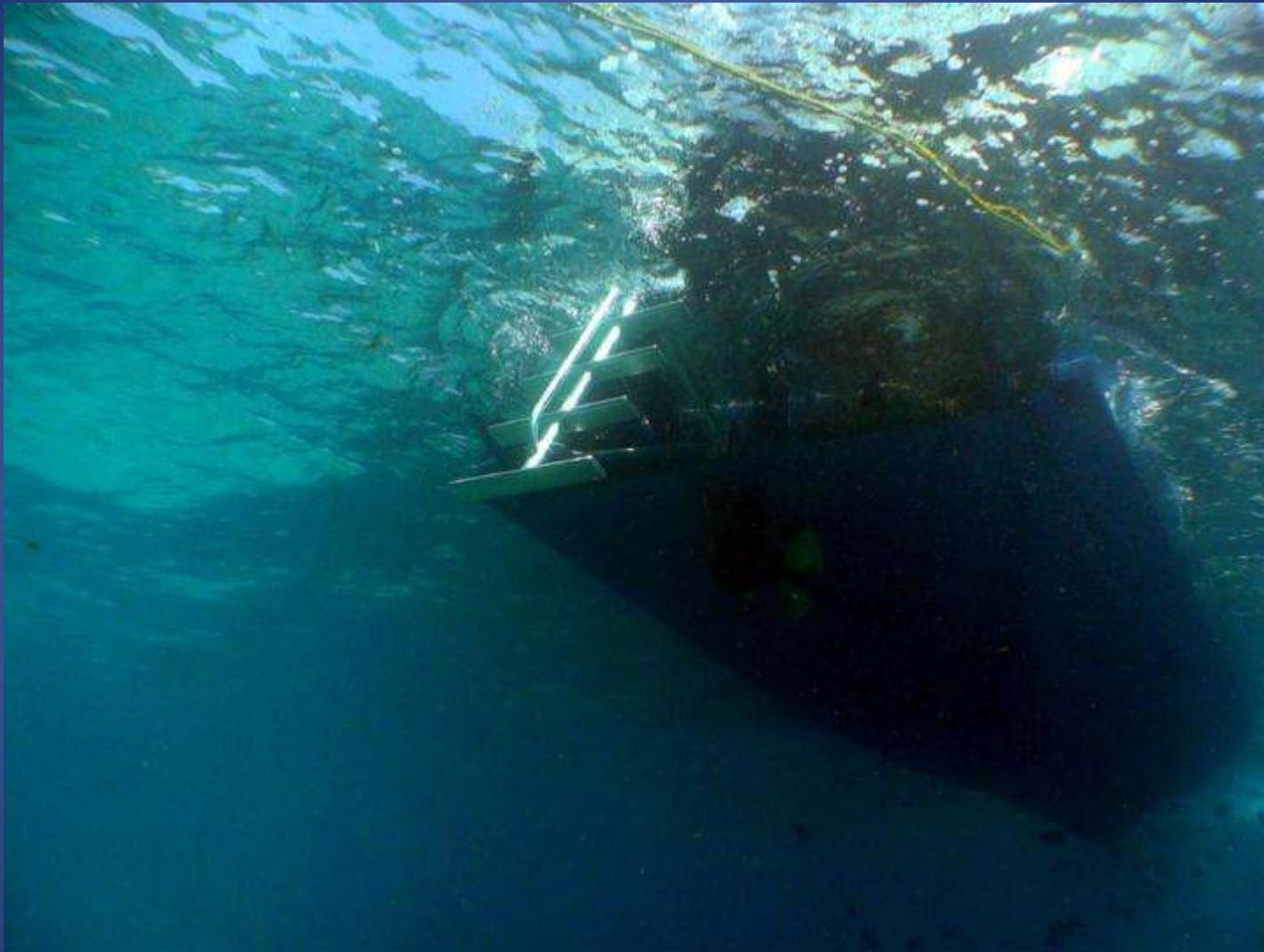




And more documentation.



At the end of the project we picked up everything except the rebar.
We'll need that to continue work next year.

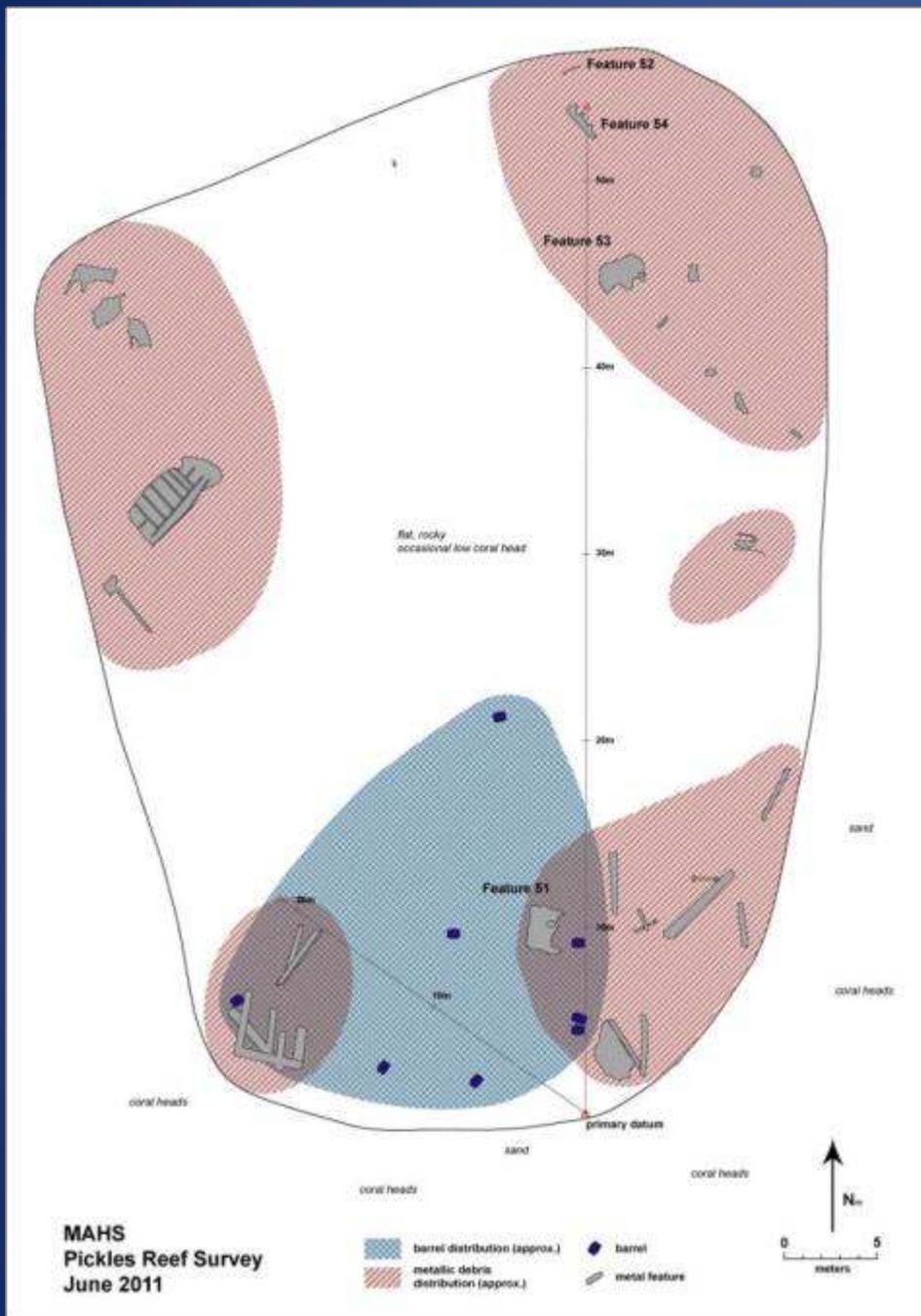


Back to the boat. This is always a welcome site when you're out in the open ocean. Even with really good visibility, 30-40 feet, you can't see it until you're pretty close, so you have to remember which way you went in order to get back.



At the end of each day we plot the data that the teams have collected, building up a site map.





Here's what we have so far. It doesn't look like a wreck at this point, just some scattered debris.

But the site is big enough that you can't really take it all in. So we map it in detail and then look to see if there are any patterns that make sense. It will take at least another season of mapping to fill in the picture.



No sunset shot at the end of the slide show this time – just a couple of pictures of the guys who ran the boat.

Chris, the boat captain...

...and Wes, the mate.



Here are the organizations involved in the project this season:



MAHS – Maritime Archaeological
and Historical Society, Washington,
D.C.



NOAA / Florida Keys
National Marine
Sanctuary



Conch Republic Divers





Will Blodgett, Jason Hawkes, Jim Smailes, and Dennis Knepper contributed photos for this presentation.

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