

# Roman ship carried live fish in tank

June 6 2011, by Deborah Braconnier

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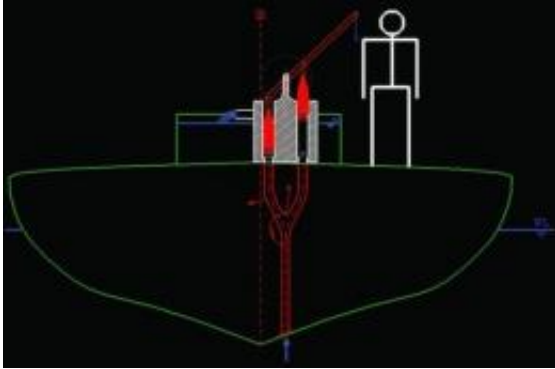


Image credit: S. Parizzi/[i]International Journal of Nautical Archaeology[/i]

(PhysOrg.com) -- A new report published in the *International Journal of Nautical Archaeology* shows that Roman fishing ships may have used a pumping system to supply oxygenated water to an onboard fish tank. Due to a lack of refrigeration, historians have long assumed that Roman ships caught fish and delivered it locally before the fish rotted, but this new discovery would have enabled them to keep the fish alive and transport them to buyers throughout the Mediterranean.

The wrecked fishing ship was discovered six miles from the coast of Grado, Italy and dates to second century AD. It was discovered in 1986 and brought up in pieces in 1999. It is currently located in the Museum of [Underwater Archaeology](#) in Grado. The ship was 16.5 meters long and was carrying small containers filled with processed fish.

The find that has stumped [archaeologists](#) until now was a lead pipe at the stern of the ship that went into a hole in the hull. The remaining piece of pipe is 1.3 meters long and between seven and 10 centimeters in diameter. They now believe the pipe was connected to a piston pump that was hand-operated. Archaeologists have seen such technology from the Romans but never on a ship. They have not, however, recovered a pump from the wreck.

It was originally believed that this pump could have been used to collect bilge water from the bottom of the ship or used to pump [sea water](#) into the boat for cleaning or fighting fires. However, Carlo Beltrame, a marine archaeologist from Ca' Foscari University, believes that chain pumps would have been used for the bilge water and that this ship was not large enough to need a system like that for cleaning or fires.

While they have not yet located a tank, they have calculated that the ship could have held one with about 4 cubic meters of water. The pump would have allowed it to pump and replace the water every 16 minutes, keeping it well oxygenated for fish transport.

This find would completely change what historians had believed to be true for the fishing market in Roman times. This opens up the possibility that they were transporting and marketing [fish](#) beyond their local market far earlier than previously thought.

**More information:** A Presumed Hydraulic Apparatus for the Transport of Live Fish, Found on the Roman Wreck at Grado, Italy, *International Journal of Nautical Archaeology*, DOI: 10.1111/j.1095-9270.2011.00317.x

### **Abstract**

The Roman wreck found off Grado, not far from the city of Aquileia in the north Adriatic Sea, was recovered in 1999. The ship carried various

kinds of amphoras with processed fish. A lead pipe, inserted in the hull near the keel, is curious evidence which the authors try to explain. The pipe could be connected to a piston-pump to suck water. A theoretical reconstruction demonstrates how this apparatus could work and that it could be used to feed a tank to allow trading in live fish over a long distance.

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