



## **Queen Anne's Revenge**

Conservation Laboratory Report, February 2004

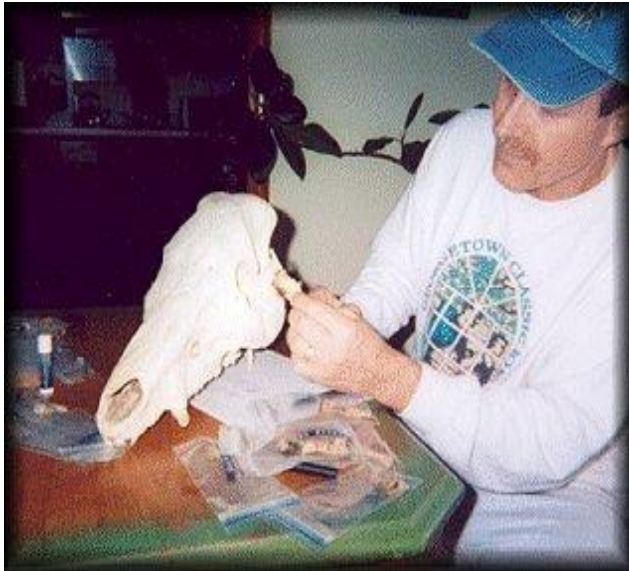
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The progress continues this month at the *QAR* Conservation Lab as we carry on with artifact conservation. All recovered *QAR* bones have been identified, wood documentation continues and our feature concretion, *QAR* 341.000, has revealed interesting artifact relationships. Setting up the laboratory itself proceeds; for example our fume hood passed the ECU Environmental Health & Safety Inspection, so we can now safely use solvents such as acetone.



### **QAR Bone**

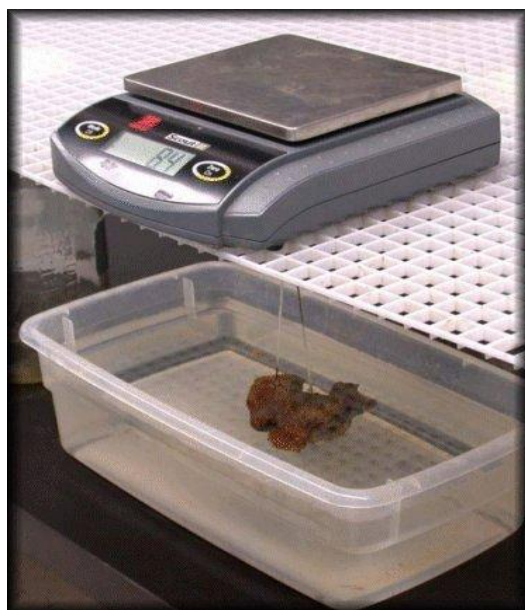
On February 10th Mark Wilde-Ramsing, *QAR* Project Director, took the final group of bone to be examined to The Catholic University of America in Washington, D.C. where David T. Clark of the Zooarchaeology Research Facility, Department of Anthropology identified all seventy-one bones recovered so far from the wreck. No human bone has been found and eleven pieces are considered intrusive. Of the sixty remaining bones, twenty-seven were identified as *Sus scrofa* (pig), the majority being cranial (head) or metatarsus (foot). Sixteen bones are *Bos taurus* (cattle), some with saw marks on vertebrae and long bones. Nine were identified as being indeterminate large

mammal, pig-cattle size. The other bones were identified as: three fish bones (cranial fragments and possibly a sturgeon vertebrae with tool marks); two *Aves* (indeterminate bird) limb bones; one ulna of *Rattus rattus* (rat) and one fossilized bone.

This information, as well as their relationships to other artifacts will help archaeologists better interpret these findings. For example, within concretion [QAR 342.000](#) were encased eighteen pig and cattle bones with several pieces of cast iron fragments embedded around them. Could the cast iron pieces be the remains of a kettle or griddle, and is it safe to say these animals were used for subsistence? Taking into consideration the two cannon shot, two large wrought iron bars and the folded lead sheet also removed from this concretion, archaeologists have a tough job ahead of them to unravel the original uses and locations of these finds on the ship before it was wrecked. With the exception of three bones still in desalination most of the *QAR* bone has been conserved and awaits study



by *QAR* Archaeologists. Once completed all the bones will be transferred to the North Carolina Maritime Museum.



### ***QAR* Wood**

Documentation and assessment of the *QAR* wood continues. Conservators carry out numerous tests to determine the condition of the wood - how degraded is it? Determining the degree of degradation together with identification of the wood (e.g. oak or pine) is essential for deciding the conservation treatment program for each individual piece. Two ways of determining condition are to calculate the moisture content of a piece and to perform a pin test. The percentage moisture content can be calculated either from measuring the density of a piece (not easy with sixteen foot long timbers), and comparing it to the density of non degraded wood of the same species, or from the difference in wet and dry weights of a sample removed from the piece. In the pin tests, a needle is pushed into the wood - the ease with which the pin penetrates the wood and how far it goes is another indication of the degree of degradation of the

timber. With fresh wood (oak or pine) it would be almost impossible to insert an ordinary needle.

When the pin test was done on the pieces of *QAR* hull sacrificial planking (pine) the pin easily went right through the thickness of the piece - they are very degraded. When the oak hull planks were tested in this way the pin easily went through an outer layer, but then met a more resistant, less degraded, level. A relatively non-degraded inner core and more degraded outer layer are typical of oak excavated from archaeological wet sites, whether marine or land. The resistance of oak to degradation is one of the reasons it was used to build ships in the first place! The difference in the degree of degradation through its thickness however, makes the conservation treatment more complex. If the wood dried out without treatment it would drastically shrink and distort because it is so degraded. This month we have been researching conservation treatment options and will report further on this next month. In the meantime we are also documenting the large hull timbers (planks, sheathing and frames) with 1:1 drawings and digital photographs. These significant tasks take teamwork and many hands (up to six people to move each timber from the treatment tank to the recording table). Tuesdays have been set aside for wood documentation when the full staff is available (including the ECU graduate assistants). Much care is taken to note all features of the wood from fastener and trunnel holes to natural knots



and grains. This process helps identify possible problematic areas, in addition to providing archaeological data for analysis.

Relationships between artifacts lead some to believe it could possibly be the hardware from a gun carriage. Work on the concretion began at Fort Fisher and continues at the VOA lab. Conservators diligently work off concretion with an air



scribe. Presently, over half of the concretion has been removed exposing two long wrought iron eyebolts with rings head-to-toe in relation to one another, with a large wrought iron rod through the middle. Parts of these artifacts are still solid wrought iron while in other areas the original metal has corroded away leaving a void. This void is filled with epoxy resin thus preserving the form of the original object. Wood fragments ranging in shape and size have also been discovered along with a decorative lead stud. Conservation is made simpler when these materials are separated.



Therefore, 1:1 drawings and digital photographs document their relationship for archaeologists to reconstruct artifacts accurately after treatment. Our thanks go to Mike Tutwiler who has committed many, many hours to *QAR 341.000*.

The *QAR* Conservation Lab Staff would like to recognize the Colonial Williamsburg Foundation for their support.

That's all for this month. Next month, *QAR* conservators work closely with the North Carolina Maritime Museum curators in having a look at previously conserved artifacts. And find out about our "old friend from the sea" who was back for a visit.