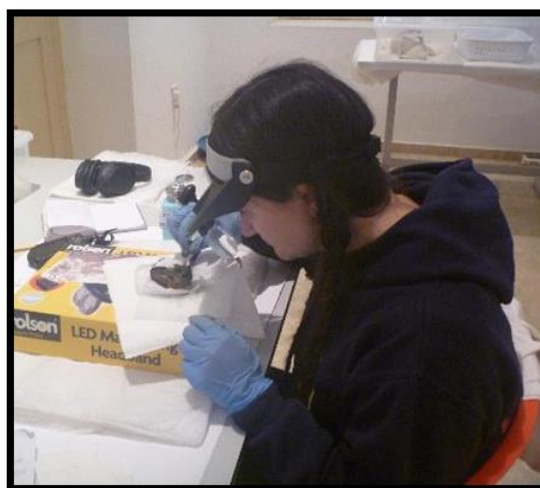


# The Kyrenia Ship Conservation Project

## Kyrenia Ship Collection: Conservation Progress Report

February 2017



Photographs courtesy of Veronica Ford and Cassy Cutulle, 2017

### **Cassy Cutulle**

MA, MSc University College London  
Chief Objects Conservator  
Kyrenia Ship Conservation Project

### **Veronica Ford**

MA, MSc University College London  
Assistant Objects Conservator  
Kyrenia Ship Conservation Project

## **Contents**

- **General Introduction**
- **February 2017: Conservation Tasks in Progress**
  - **Preventive Conservation Tasks**
    - **Environmental Monitoring at Conservation Laboratory**
    - **Environmental Monitoring at Kyrenia Castle**
    - **Storage and rehousing plans at Kyrenia Castle**
  - **Remedial Conservation Tasks**
    - **Restoration**
    - **Metals Treatment**
- **March 2017: Projected Work Plan and Current Standing**
- **February 2017 Budgets**

## **General Introduction**

During February, conservators Cassy and Veronica have focused their efforts on the remaining objects to be treated at the conservation laboratory in Nicosia. This has included beginning the treatment of the copper alloy objects which are best completed under laboratory conditions due to health and safety concerns surrounding the use of significant quantities of chemicals and solvents. Thus far the copper tacks and copper nails have been treated and the duck's head ladle (Cu19) and possible knife sheath (Cu18) are currently being treated. In addition, work has continued on the restoration of some of the more complicated restoration jobs including P15 and P21, which both required considerable laboratory time.

In preparation for March and April, when the re-housing of the collection at Kyrenia Castle will begin, the conservators also have started to plan and prepare packaging materials for this stage of the project. This includes gathering quotes for archival quality plastic boxes and shelving units which will allow the lead sheathing and fragments of the Ship's wooden hull in the Kyrenia Castle Storeroom to be re-housed.

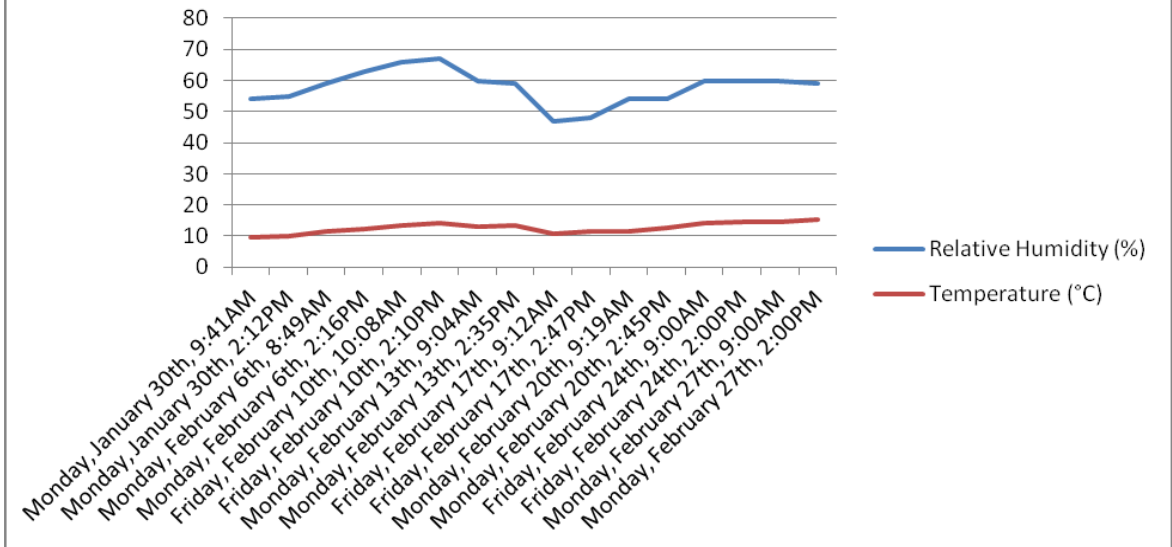
Preventive conservation activities at both the Conservation Laboratory in Nicosia and Kyrenia Castle continued as previously. Data from the Tiny Tag environmental data loggers will be included in the March 2017 report. As in January, particular care was taken to assess the metal objects at the conservation laboratory in Nicosia, with checks being made on the relative humidity and the silica gel within the boxes used to store them.

## **February 2017: Conservation Tasks in Progress**

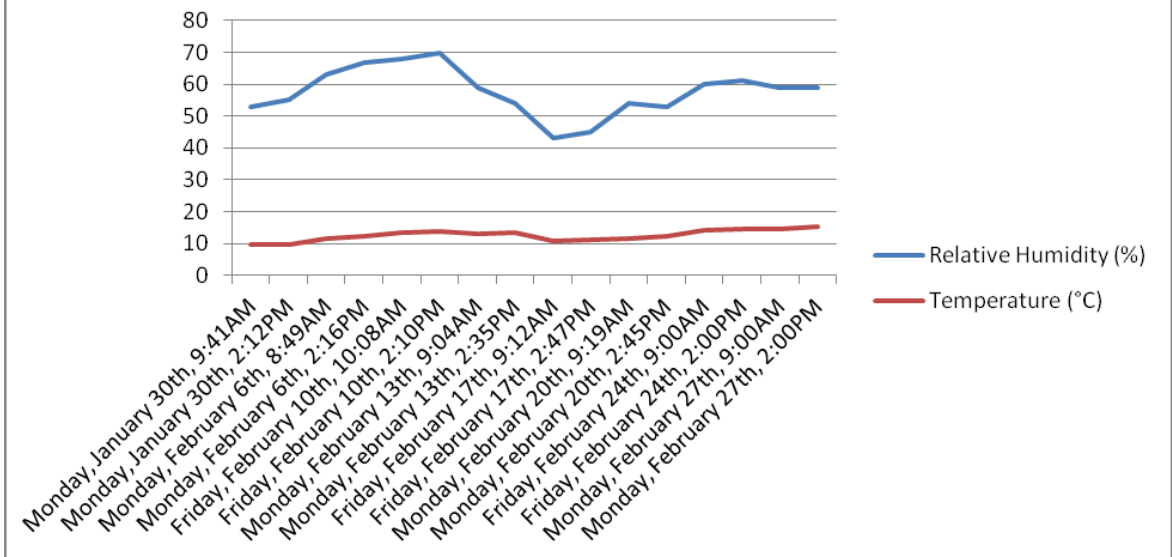
### **Preventive Conservation Tasks**

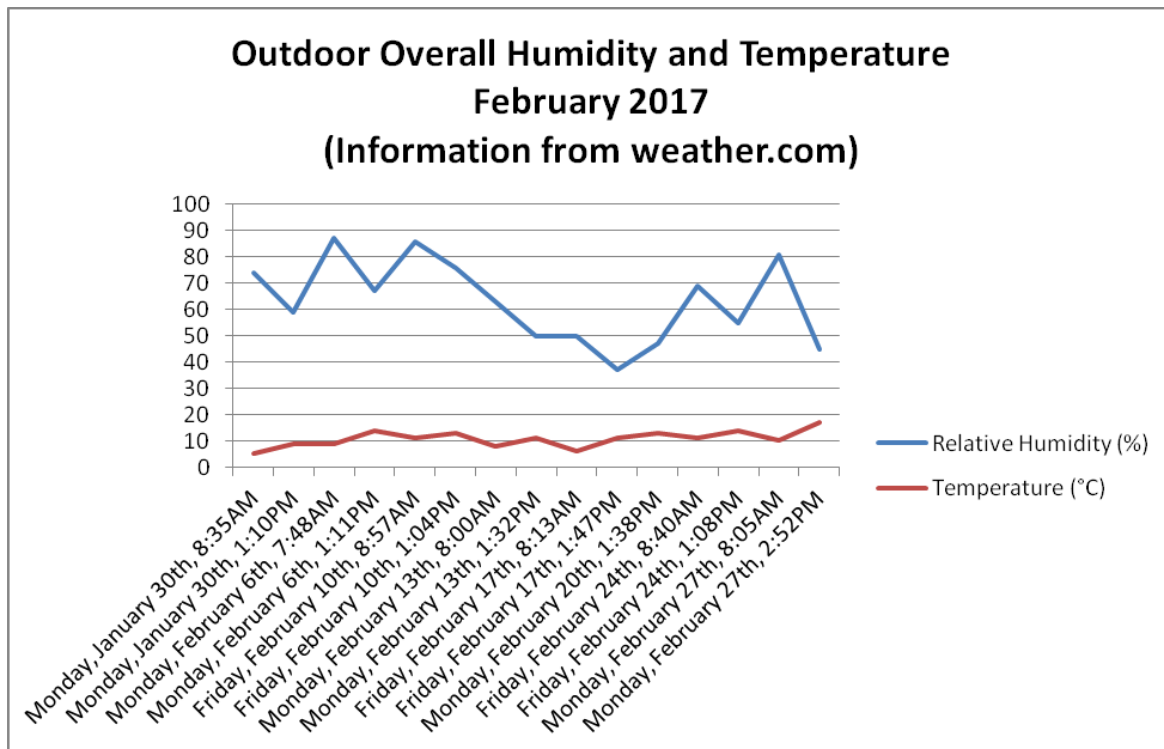
During the month of February, relative humidity and temperature data from the Conservation Laboratory in Nicosia continued to be collected by the conservators. As previously, data was obtained from the two cupboards used to store the objects indoors, and external conditions were recorded from "Weather.com". The same recording schedule was utilized as previously: logging of relative humidity and temperature took place four times a week—two recordings on Monday and Friday mornings and afternoons at approximately 9:00am and 2:00pm. On the morning of Monday February 20<sup>th</sup> no external reading was taken as an internet connection was not available.

### Indoor Relative Humidity and Temperature Sensor 1, Cupboard 1 February 2017



### Indoor Relative Humidity and Temperature Sensor 2, Cupboard 2 February 2017





**Figs. 1-3: Line graphs displaying the relative humidity and temperature within the two object cupboards housed in the Conservation Laboratory in Nicosia and the overall humidity and temperature outdoors (Graphs courtesy of Veronica Ford, 2017).**

During February, the indoor graphs for cupboards 1 and 2 (above) demonstrated a comparatively stable temperature, with an average of around 13°C, a few degrees higher than that seen in January. A trend towards a gradual increase in temperature is seen as the month progresses, with temperature below 10°C on January 30th, but increasing to over 15°C by February 27th as the winter season comes to an end. The indoor relative humidity remained high during the month, though it was not consistently over 60% as was seen in January. Greater fluctuations in relative humidity were present however, with the maximum relative humidity recorded reaching 70% and the minimum 43%. It appears that cupboard 2 was more prone to fluctuations and showed greater variability than cupboard 1. This is perhaps as a result of its location – cupboard 2 is closer to an external wall and window than cupboard 1, meaning it is more likely to be affected by external conditions. The outdoor graph (above) shows a similar gradual temperature increase throughout the month, and similar peaks and dips in relative humidity as seen on the indoor graphs, although here fluctuations are much greater.

As in January, the metals stored in cupboard 2 were assessed every 2 weeks to ensure that the objects in their boxes were not being adversely affected by the fluctuating relative humidity seen in the external environment (see below). The silica gel was checked and readings were taken from the relative humidity cards within the boxes used to store the metals. In some cases, the metals had been removed from cupboard 2 to the main conservation laboratory room to undergo treatment, but otherwise the relative humidity within the boxes was compared to the relative humidity within the cupboard. As may be seen below, all of the metals remained at 40% relative humidity or less, suggesting the silica gel and acid free padding which was added previously continued to act as an effective buffer from external conditions.

Box	Cu17	Cu18	Cu19	C1-8, Cu11, Cu21-Cu23, Pb23, Pb25, S9	Copper spikes	Copper tacks
Date	01/30/2017	01/30/2017	01/30/2017	01/30/2017	01/30/2017	01/30/2017
RH reading (blue strip)	30%	30%	30-40%	20%	20-30%	NA (Treatment in Progress)
Temp and RH (cupboard)	9.8C, 55%	9.8C, 55%	9.8C, 55%	9.8C, 55%	In main lab	In main lab
Observations	no color change of silica gel	no color change of silica gel	one (of three) bags of silica gel beginning to change color	one (of three) bags of silica gel beginning to change color	no color change of silica gel	NA (Treatment in Progress)
Actions	none	none	none	none	none	NA (Treatment in Progress)
Date	02/13/2017	02/13/2017	02/13/2017	02/13/2017	02/13/2017	02/13/2017
RH reading (blue strip)	30%	20%	30-40%	30-40%	30%	NA (Treatment in Progress)
Temp and RH (cupboard)	12.9C, 58%	12.9C, 58%	12.9C, 58%	12.9C, 58%	In main lab	In main lab
Observations	no color change of silica gel	one (of two) bags of silica gel beginning to change color	one (of three) bags of silica gel beginning to change color	two (of three) bags of silica gel beginning to change color	Slight color change of silica gel	NA (Treatment in Progress)
Actions	none	none	none	none	none	NA (Treatment in Progress)
Date	02/27/2017	02/27/2017	02/27/2017	02/27/2017	02/27/2017	02/27/2017
RH reading (blue strip)	30-40%	20%	30-40%	30-40%	30%	NA (Treatment in Progress)
Temp and RH (cupboard)	15.4C, 59%	In main lab	In main lab	C1-8 in main lab, Cu11, Cu21-Cu23, Pb23, Pb25 and S9 in cupboard 2: 15.4C, 59%	In main lab	In main lab
Observations	two (of two) bags of silica gel beginning to change color	one (of two) bags of silica gel beginning to change color considerably	one (of three) bags of silica gel beginning to change color considerably	two (of three) bags of silica gel beginning to change color	two (of two) bags of silica gel beginning to change color	two (of two) bags of silica gel beginning to change color

**Fig.3: Table displaying the relative humidity readings and observations from each box containing copper alloy objects, compared to the relative humidity within the cupboard at the same time (Table courtesy of Veronica Ford 2017)**

At Kyrenia Castle, the six Tiny Tag environmental loggers have continued to log the temperature and relative humidity in the Ship Storeroom, Shipwreck Museum Gallery and Ship Gallery every 7 minutes from December 12<sup>th</sup> 2016 (when the data was last downloaded) through February 2017. These devices will reach full capacity on March 1<sup>st</sup> 2017, after which the data will be downloaded.

In February, plans for the re-housing of the metal and wooden fragments of the hull (currently stored in the Kyrenia Ship Storeroom) continued to be developed. The focus of efforts has been on obtaining appropriate polypropylene boxes for long-term storage. This has proven problematic due to the large quantity as well as unusual dimensions of the boxes we require – the boxes should ideally be long but shallow, in order to fit some of the larger objects and also conserve space in the Storeroom. In the case of the metal items, the boxes should ideally have clip-on lids, which provide a better seal and therefore act as a more effective buffer from external conditions. In mid-February suitable small polypropylene boxes were obtained to re-house the lead rigging rings and it is envisioned that re-housing of the rings will begin in earnest in March 2017.

### **Remedial Conservation Tasks**

Throughout February, efforts have focused on continuing the restoration of the ceramics stored at the Conservation Laboratory. In particular, work on P15 is underway while conservator Veronica has continued her work on P21. Simultaneously, the conservators have started physical and chemical stabilization of the metallic objects currently stored at the Laboratory.

In continuation of the ceramic restoration, Cassy has commenced work on P15—a medium-level restoration job. The area of loss for restoration on this object is situated along the neck and rim of the jug, where some original sherds have been reconstructed. The process for this fill is a complex one as it is necessary for the plaster to accommodate sherds that have no current join with the original ceramic (termed “floating sherds”). To create the fill, various molds made from dental wax with a plasticine backing were crafted. These molds utilized an impression of the intact portion of the neck and rim—either from the interior or exterior—to get a mold into which the plaster could be cast. To account for the floating sherds, clingfilm was placed around each sherd and it was placed into the mold so that the plaster could be poured around it, allowing the sherd’s shape to be included in the fill. Several attempts at mold-making and casting were undertaken before fills that were usable were achieved. Ultimately, two plaster fills were joined with additional plaster to restore the larger areas of loss on the neck. More work is needed to re-create the rim with the original sherds in place.





**Figs. 4-6: Photographs of P15 (top left) and P21 (top right, bottom) during restoration treatment (Photographs courtesy of Cassy Cutulle and Veronica Ford, 2017)**

Similarly, Veronica's restoration work on P21 has also been technically challenging. The areas of loss on the bowl were large; making it difficult to create a mold and cast the plaster fills. Work on the bowl was started in December, allowing for the creation of one plaster fill for a smaller area of loss. The second fill, however, was much more complex as it filled approximately 40% of the bowl. To create the mold for this, dental wax was shaped to the area of loss and plasticine used as a backing material in certain areas. In particular, the plasticine was useful in preventing the liquid plaster from leaking out of the mold during the casting process. This immense fill was cast at the end of February and should be ready for further shaping in early March.

Also in February, the conservators have started treatment on the metal objects in the Conservation Laboratory. The first objects for treatment were the copper tacks and nails, which were prioritized for research by Wendy van Duivenvoorde in early-mid April. Additionally, the coins C1-C7 were also treated. The treatment for these objects included cleaning with ethanol applied by cotton swabs and also on stiff-bristle brushes. Cleaning, under magnification, focused on the removal of corrosion products where appropriate, and the removal of dirt and previous coatings. After cleaning, the objects were placed within a benzotriazole (BTA) bath for 24 hours. After this immersion, the objects were coated with Paraloid B48-N 1.7% w/v in 1:1 ethanol: acetone—a particularly good coating for metal objects. All of the tacks, nails and coins were treated in this manner, with the exception of C7 and C8/Pb11. Coin C7 was only cleaned and coated but was not immersed in BTA. This was to allow for future research of this object to occur without the contamination of BTA affecting such research. No treatment was seen as necessary for C8/Pb11 as it is in excellent condition and its value as an object of research means that coating and immersion in BTA is not appropriate.





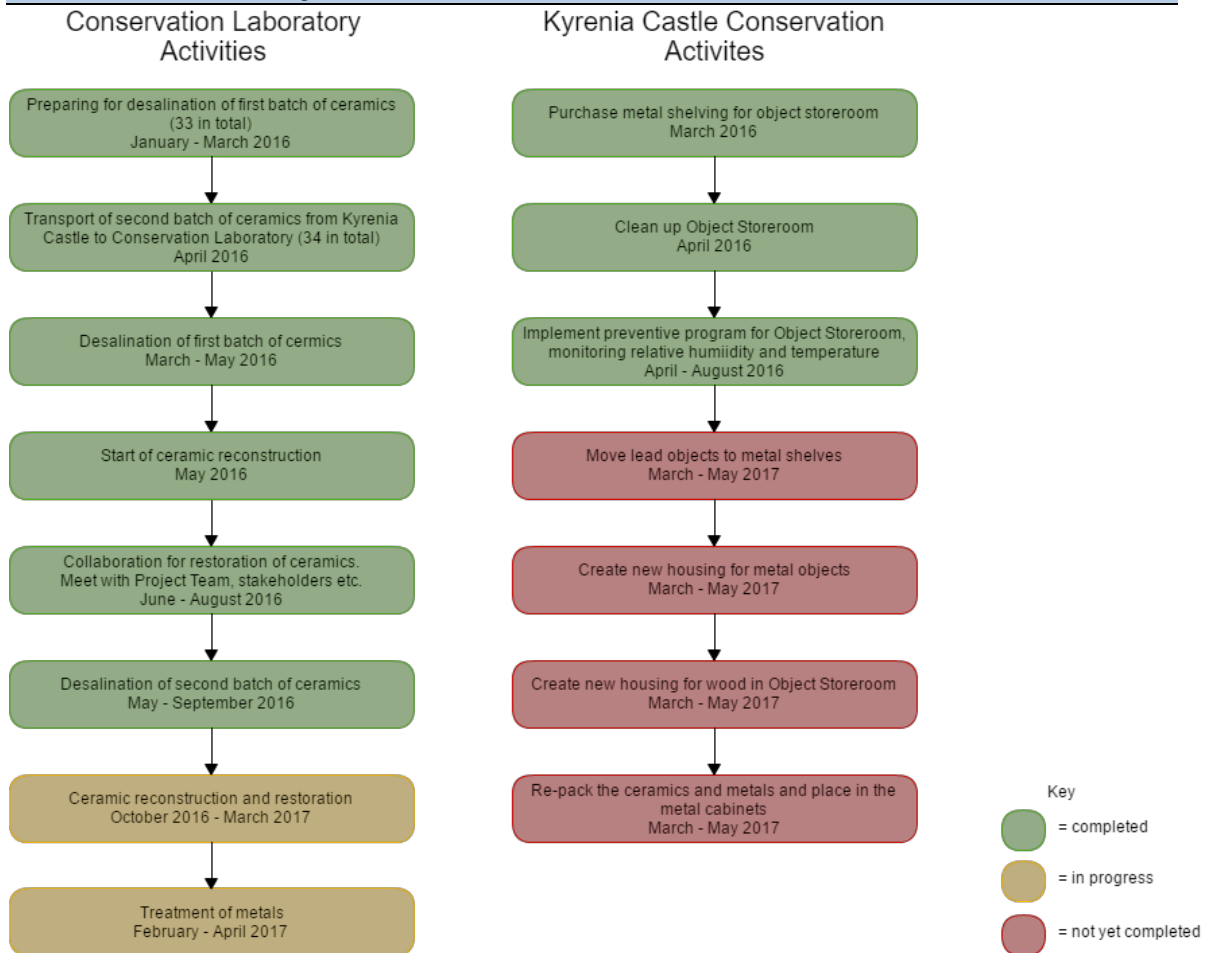
**Figs. 7-8: Photographs of conservators Cassy Cutulle (left) and Veronica Ford (right) removing the copper tacks and nails from the BTA. This work was done outside so as to limit the conservators' exposure to the BTA which is toxic (Photographs courtesy of Cassy Cutulle and Veronica Ford, 2017)**

Towards the end of February, Veronica and Cassy are continuing with the metals treatment by stabilizing objects Cu18 the sheath and Cu19 the duck's head ladle. Thus far, these objects have been assessed as needing cleaning to remove corrosion products and previously applied adhesive, as well as physical stabilization utilizing spider tissue—a strong interwoven archival tissue that can gently join areas together as well as provide a backing/facing for particularly weak areas. Specifically, the sprung portions of Cu18 and the bowl of Cu19 will require such physical stabilization. Furthermore, the importance of good packaging cannot be understated. With these fragile objects, it is the best way to ensure stability into the future. The use of chemicals such as BTA and coatings will be decided as the treatments progress.



**Fig. 9: Photograph of conservator Veronica Ford cleaning Cu18 using ethanol on cotton wool swabs (Photograph courtesy of Cassy Cutulle, 2017)**

## March 2017: Projected Work Plan



**Fig.10: Flow chart displaying the activities to be undertaken by the conservators for this Project and the progress made thus far (Flow chart courtesy of Veronica Ford, 2017).**