The Kyrenia Ship Conservation Project

Kyrenia Ship Collection:

Conservation Progress Report

June 2016

Photographs courtesy of Veronica Ford and Cassy Cutulle, 2016

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

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General Introduction

Throughout June, the conservators have continued the desalination and reconstruction of the ceramic objects currently stored at the Conservation Laboratory in Nicosia, making great progress throughout the month. Furthermore, the conservators have started the process of collaboration to discuss the restoration of the ceramic objects. This collaboration will include meetings with the Project Team and the bi-communal Focal Points to assess which objects should be restored, the level of restoration and how to prioritize such work. Simultaneously, preventive activities such as environmental monitoring as well as integrated pest management (IPM) have been maintained.

June 2016: Conservation Tasks in Progress

Preventive Conservation Tasks

In June, Veronica and Cassy continued to monitor and log the relative humidity and temperature at the Conservation Laboratory in Nicosia. Data from the monitors placed within the object cupboards were recorded, as well as data for the outdoor conditions, which was retrieved 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. The graphs from May are included in this report to provide a more comprehensive overview of the seasonal changes occurring [See Figs. 1-3 Below].

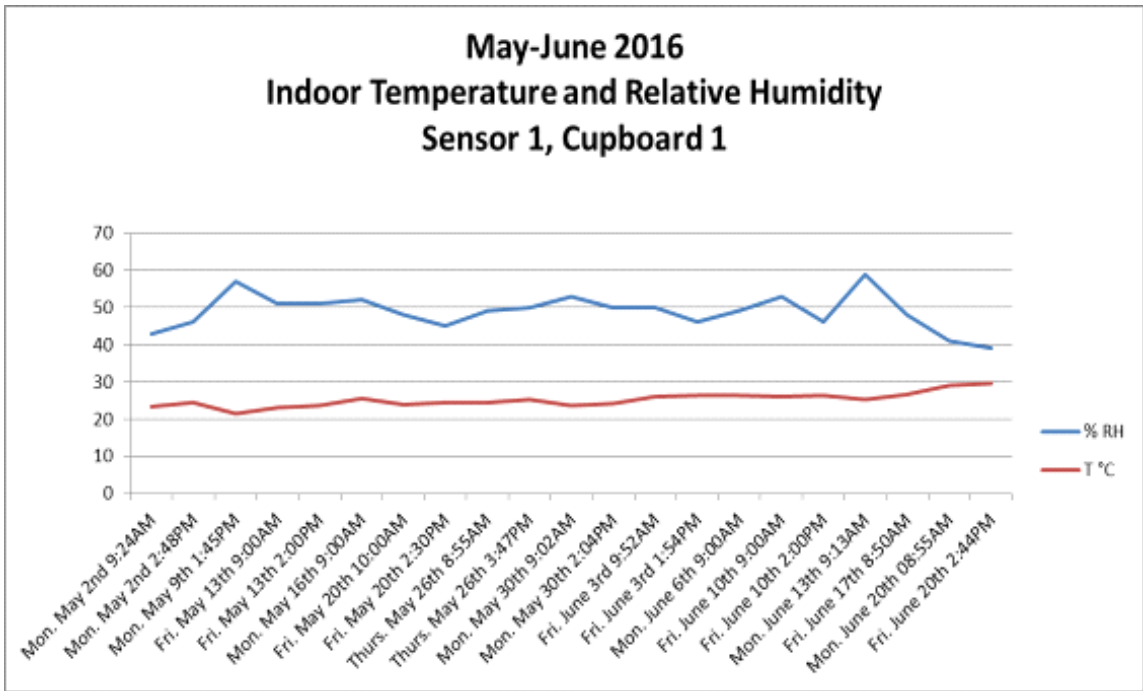

Fig. 1: Graph showing the fluctuations in indoor relative humidity and temperature in Cupboard 1 (Graph courtesy of Cassy Cutulle, 2016).

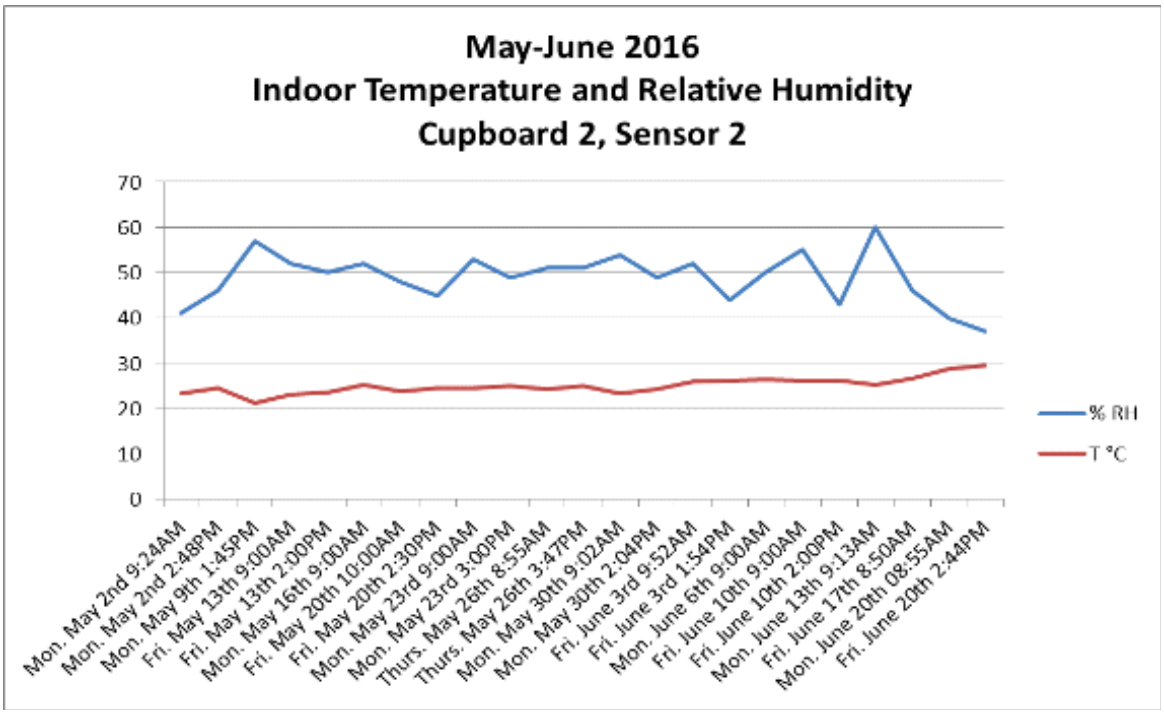

Fig. 2: Graph showing the fluctuations in indoor relative humidity and temperature in Cupboard 2 (Graph courtesy of Cassy Cutulle, 2016).

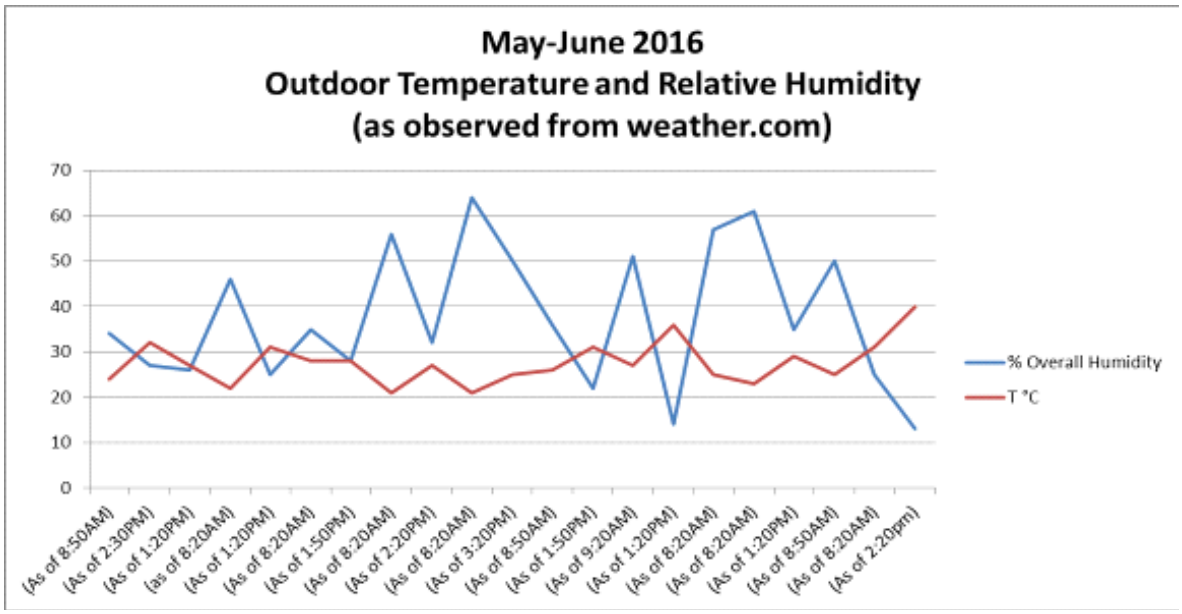

Fig. 3: Graph showing the fluctuations in outdoor relative humidity and temperature as observed from weather.com (Graph courtesy of Cassy Cutulle, 2016).

It is apparent from the lack of stark fluctuation on the "indoor" line graphs above [Figs. 1-3] that the Conservation Laboratory as well as the metal cupboards, provide a buffering shelter from the erratic outdoor fluctuations in temperature and relative humidity. Although this is the case, more can be done to provide a better buffering environment for the objects, especially with drastic summer temperatures imminent.

Conservation Laboratory, Nicosia and Integrated Pest Management				
Location	Trap Number(s) and Locations	Date	Length of Time (Check in March, June, September and December)	Results: Pests Observed on Trap
Conservation Laboratory, Room 1 (Office Room)	Trap #1: Fireplace Trap #2: On wall next to door	February 1st-March 3rd, 2016	1 month	3rd March 16 - Trap #1 - 4 ants (3mm), 1 fruit fly; Trap #2 - 1 woodlouse (7mm);
Conservation Laboratory, Room 2 (Storage space/connecting area)	Trap #3: Next to metal cupboard	February 1st-March 3rd, 2016	1 month	3rd March 16 - Trap #3 - missing - replaced
Conservation Laboratory, Room 3 (Lab 1 with Fume Cupboard)	Trap #4: Between 2 windows Trap #5: Near fume cupboard	February 1st-March 3rd, 2016	1 month	3rd March 16 - Trap #4 - 9 woodlice (5-7mm), 5 fruit flies, 2 ants; Trap #5 - 13 woodlice (3-8mm), 1 silverfish (2mm), 1 spider, 1 fruit fly, 1 ant
Conservation Laboratory, Room 4 (Lab 2 with adjoining bathroom)	Trap #6: Near object cupboards Trap 7: Near large sand tray	February 1st-March 3rd, 2016	1 month	3rd March 16 - Trap #6 - 1 woodlouse (6mm), 1 ant; Trap #7 - 2 woodlice (4-5mm), 1 spider (5mm), 5 ants, 1 fruit fly, 1 beetle (1-2mm)
Conservation Laboratory, Room 1 (Office Room)	Trap #1: Fireplace Trap #2: On wall next to door	March 3rd-June 27th, 2016	3.75 Months	June 27th 16 - Trap #1 - 7 flies, 2 woodlice(4mm, 3mm), 10 ants, 1 spider (2mm); Trap #2 - 10 flies, 7 spiders, 3 woodlice (4-7mm), 2 ants, carpet beetle (2-3mm), 1 silverfish (2mm), 1 flying ant (7mm).
Conservation Laboratory, Room 2 (Storage space/connecting area)	Trap #3: Next to metal cupboard	March 3rd-June 27th, 2016	3.75 Months	June 27th 16 - Trap #3 - 7 woodlice (4mm-9mm), 10 ants, 6 spiders, 1 carpet beetle (3mm), 1 red/black beetle (3mm), 2 casings, 3 flies, 1 moth, 1 silverfish (3mm), lots of frass, eggs(?) and detritus.
Conservation Laboratory, Room 3 (Lab 1 with Fume Cupboard)	Trap #4: Between 2 windows Trap #5: Near fume cupboard	March 3rd-June 27th, 2016	3.75 Months	June 27th 16 - Trap #4 - 8 flies, 14 woodlice (3mm-10mm), 1 silverfish (4mm), 10 ants, 3 spiders; Trap #5 - 33 woodlice (2mm-15mm), 15 spiders, 46 ants, 3 silverfish (4-12mm), 6 flies, lots of frass, eggs (?) and detritus.
Conservation Laboratory, Room 4 (Lab 2 with adjoining bathroom)	Trap #6: Near object cupboards Trap 7: Near large sand tray	March 3rd-June 27th, 2016	3.75 Months	June 27th 16 - Trap #6 - 3 woodlice (2mm-10mm), 16 spiders, 3 ants, 1 house moth (10mm), 1 fly, 1 long ant (12mm), 1 small thin black beetle (2mm); Trap #7 - 12 spiders, 46 ants, 5 silverfish (3mm-12mm), 4 woodlice (3mm-8mm), 2 black thin beetle (<1mm), 1 biscuit beetle (1mm), 1 fly

On the "indoor" line graphs above, it is noted that the metal cupboards have a relative humidity range of 50% ± 10-15% and a temperature range of 20°C ± 10°C over the monitoring period. While this is not a shocking range of variation, it would be ideal to decrease and stabilize the relative humidity range to 50% ± 10% and the temperature to 20°C ± 5°C, if possible. The use of silica gel and additional padding within the cupboard will aid these efforts in the future.

Fig. 4: Table listing the pests and insects found within the various rooms of Conservation Laboratory throughout February to June.

In late June the sticky blunder traps set by the conservators in January were examined and the pests and insects logged. These same traps were also viewed in March, however, seasonal changes and insect/pest life-cycles require that the traps are assessed in March, June, September and December. The table above [Fig. 4] displays the insects found within the traps. Although there are currently no organic

objects—which would be adversely affected by such insects—monitoring and logging the pests and insects is important and can reveal other issues within the Laboratory spaces, such as rotting wood, mold and water leakages, which certain pests/insects are attracted to. Insects such as silverfish indicate the presence of water, while woodlice are indicative of rotting wood and vegetation. The presence of both of these insects is not surprising as a garden that is regularly watered is located within the Laboratory grounds. Additionally, the use of deionized water within the Laboratory throughout the desalination process would no doubt attract them. The use of the metal cupboards and appropriate packaging has prevented the possibility of insect/pest harborage within or on objects. New traps have since been set and will be checked again in September.

Figs. 5-6: (Left) Photograph of the sticky blunder traps prior to examination. (Right) Photograph of conservator Cassy Cutulle assessing the insects/pests on a sticky trap (Photographs courtesy of Cassy Cutulle and Veronica Ford, 2016)

Fig. 7: Photograph of pests/insects on one of the sticky blunder traps (Photograph courtesy of Veronica Ford, 2016)

Lastly, supplies have been purchased for future activities at the Conservation Laboratory, which will allow us to proceed forward with minimal delays. These supplies include archival foams and tissue paper for storage of the objects, plate waxes to create forms for molding during restoration of the ceramics, silica gel to reduce humidity in storage areas and Japanese tissue paper for the physical stabilization of some metallic objects.

Remedial Conservation Tasks

During the first half of June, the second group of ceramics to arrive at the laboratory from Kyrenia was assessed for friability prior to desalination. Those that were found to be friable were consolidated using Paraloid B-44 2.5% w/v in acetone to ensure that they could be effectively desalinated without damage. In addition, structural cracks in the ceramics were stabilized by manually pipetting Paraloid B-44 5% w/v in acetone into the cracks. A total of 23 ceramics were consolidated. Following consolidation, these objects were desalinated.

This month, 3 batches of ceramic objects were placed in baths of deionized water, which were changed daily. As previously, the first of these baths constituted 1:1 tap water: deionized water and the desalination process took approximately a week for each object. Conductivity was regularly monitored using a Thermofisher Scientific "total dissolved solids", or TDS/conductivity meter, which measured the conductivity of the water in micro-Siemens and provided a temperature for the water. When the conductivity reached an appropriate endpoint–approximately 70-100 micro-Siemens—the desalination was completed and the object removed from the water and allowed to dry slowly, as described in May's Progress Report. All in all, 17 ceramic objects were desalinated this month.

Fig. 8: Photograph of batches 9 and 10 at the start of desalination (Photograph courtesy of Cassy Cutulle, 2016).

The conductivity values obtained during desalination were input into an Excel spreadsheet, as in previous months. This was input with formulas which allow for quick and convenient calculation of the adjusted conductivity value (K_{adj}), which take into account the weight of the ceramic and the volume of water used in the baths—both of which are fundamental in understanding when desalination is complete. Through calculation of the normative conductivity value (K_{norm}) the rate of desalination can also be plotted, as can be seen below in Fig. 9 below.

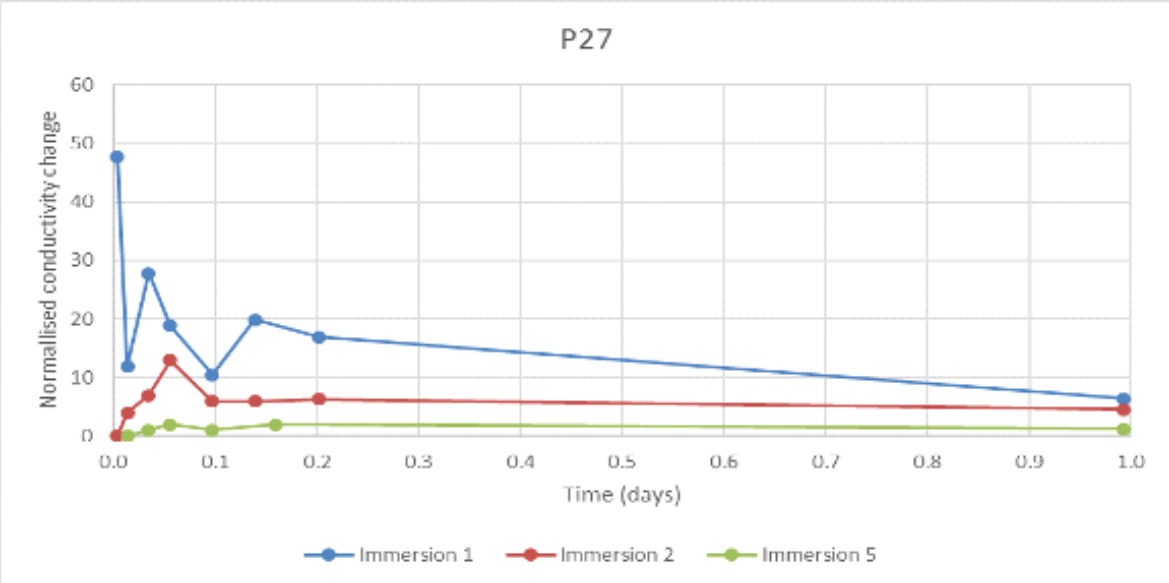

Fig. 9: Graph demonstrating the rate of desalination for P27 (Graph courtesy of Veronica Ford, 2016).

This graph shows the change in the rate of salt removal over time for ceramic P27 for 3 out of 5 immersion baths. Immersion 1 demonstrates a very rapid initial rate of salt removal, followed by a number of drops and peaks as salt removal slows and speeds up again. Overall, similar patterns are followed in immersions 2 and 5, and all baths show a gradual decrease in the rate of desalination as time progresses. From this graph it is also evident that desalination initially occurs at a rapid rate—for for the first few immersion baths—before becoming much slower towards the end of the process.

In relation to desalination, testing for the presence of chloride salts was also undertaken this month. The type of test conducted involved the usage of dilute HNO_3 (Nitric acid) and $AgNO_3$ silver nitrate. Samples of water from the second desalination bath of six objects were taken and tested to assess whether or not chlorides were present. Seven drops of HNO_3 and $AgNO_3$ were placed into 4ml of sample water. The presence of a dense white cloud or white precipitates signified a positive reaction and the presence of chlorides salts. A negative reaction was indicated using a control sample of deionized water, which does not contain ions/salts. A clear sample after dropping the chemicals in denoted a negative reaction. In all, three positive reactions occurred (objects P88, P105/P106 and P126) and three negative reactions (objects P101, P103 and P123). It is important to note that this test is qualitative, and does not provide information on the amount of chloride salts present.

Figs. 10-11: Conservators Cassy Cutulle and Veronica Ford conducting tests for the presence of chloride salts in sample desalination water (Photographs courtesy of Veronica Ford and Cassy Cutulle, 2016).

Fig. 12: Photograph displaying the results of the chloride salts testing for the six objects and also the control experiment (far right) (Photograph courtesy of Cassy Cutulle, 2016).

This month the conservators have spent considerable time proceeding with the reconstruction of the ceramics which were previously desalinated. The tested adhesive—Paraloid B-44 at 40% concentration w/v in acetone was used for this. This process has proven particularly time consuming for ceramics with large areas of loss and in numerous fragments. 12 objects have been successfully reconstructed in June using the methods described above, with a total of 16 ceramics reconstructed altogether.

Figs. 13-14: Photographs of conservator Veronica Ford reconstructing ceramic objects (Photographs courtesy of Cassy Cutulle, 2016).

With the restoration of the ceramics planned for the near future, the conservators have devoted time this month towards initiating collaboration amongst the stakeholders and interest groups involved in this project. This collaboration will take the form of discussions that will help the conservators to understand which objects to restore, what level to restore them to and the prioritization of the restoration. This is a particularly important aspect of the treatment process as it adheres to the ethical code of objects conservation through the inclusion of the viewpoints of those who are invested in this Collection. Additionally, it is important to think critically about the reasons for restoration, and whether or not it is necessary. Meetings with the Project Team have been planned and in August, a meeting with the bi-communal Focal Points and Martina Zaccaro—UNDP Representative—will take place to discuss the restoration.

July 2016: Projected Work Plan

In July, the conservators will carry out the final desalination of the second group of ceramic objects which were transported to the Conservation Laboratory in mid-April. Reconstruction of the ceramics will continue, along with restoration, pending the collaborative meetings . Preventive conservation activities and supply ordering will proceed as appropriate.

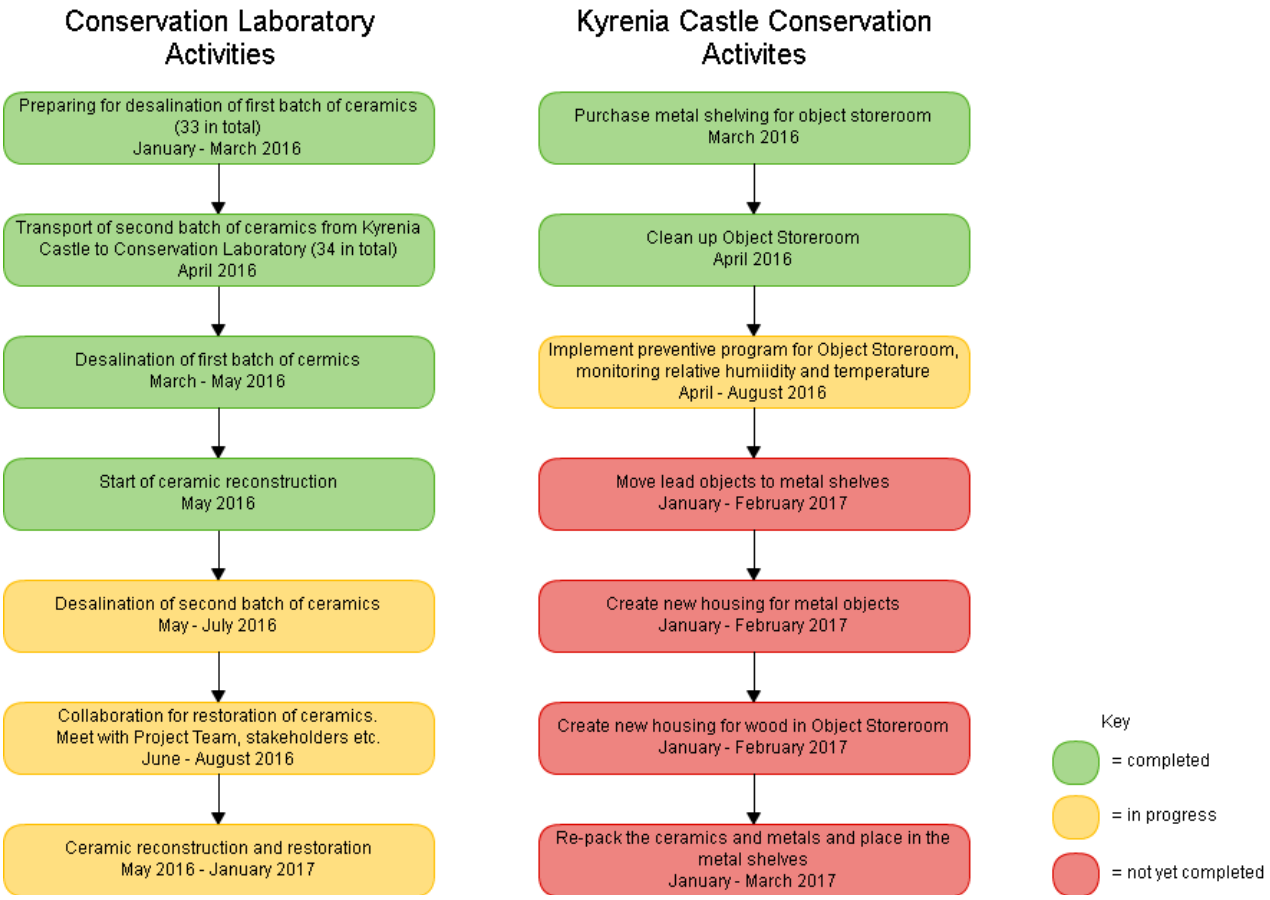

Fig. 15: Flow chart displaying the activities to be undertaken by the conservators for this Project and the progress made thus far (Flow chart courtesy of Veronica Ford, 2016).