



Link to project website



# Portable Protocols: Safe Conservation in Temporary Labs

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BUFFALO STATE  
The State University of New York



Link to Health & Safety resource

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Conservators can efficiently treat important pieces of scientific and artistic material while taking necessary measures for human safety. This poster focuses on safety procedures and three different treatment steps for avian mounts. *For full treatment reports with further detail on taxidermy conservation, scan the QR CODE in the upper left corner.*

**The Project:** During the 2021 joint AIC/SPNHC meeting, Liatte Dotan presented a talk titled "Arsenic and Old Feathers: A Survey of Detection, Mitigation and Treatment Approaches for Pesticide-Affected Objects and Proposal of a Treatment Protocol for SUNY Buffalo State". The presentation concluded with a **Handling and Treatment Consideration Flowchart** – a new instructional tool intended for use among collection staff, conservators, researchers, and others to help inform their actions when working with arsenic-containing specimens. *For a downloadable version of the Flowchart see QR CODE in the upper right corner.*

In summer 2021, two conservators from the National Park Service - Harpers Ferry Center successfully enacted the Flowchart during a two-week onsite treatment blitz of over 50 avian taxidermy specimens at Yellowstone National Park. Prior analysis proved the presence of arsenic on all the 100-year-old specimens from the historically significant Fishing Bridge Museum. Using the Flowchart as a guideline, conservators easily converted a conference room into a temporary treatment space and carried out skin tear repairs, feather fills, and structural stabilization.

### The Collection:

#### Fishing Bridge Museum, Yellowstone National Park

Completed in 1931, The Fishing Bridge Museum was built to reflect the beauty of nature itself. The locally sourced rock and stone structure appears to rise out of a rock outcrop and was designed so that visitors can see through the building to Yellowstone Lake. This example of "parkitecture" highlights the ecology of Yellowstone Lake, and the park's birds in particular. Fishing Bridge Museum originally displayed 182 avian taxidermy mounts in glass cases throughout the window-filled gallery. By enabling visitors to examine the specimens in this open setting, the museum creators aspired to entice patrons outside to watch and observe the birds' living counterparts. From 2020 to 2022 the museum underwent a renovation and exhibit text refresh, including conservation treatment of the birds. It will reopen in the summer of 2022 during the 150<sup>th</sup> anniversary of Yellowstone National Park.



Liatte Dotan

Fran Ritchie



### The Preparations: Health & Safety In A Temporary Lab

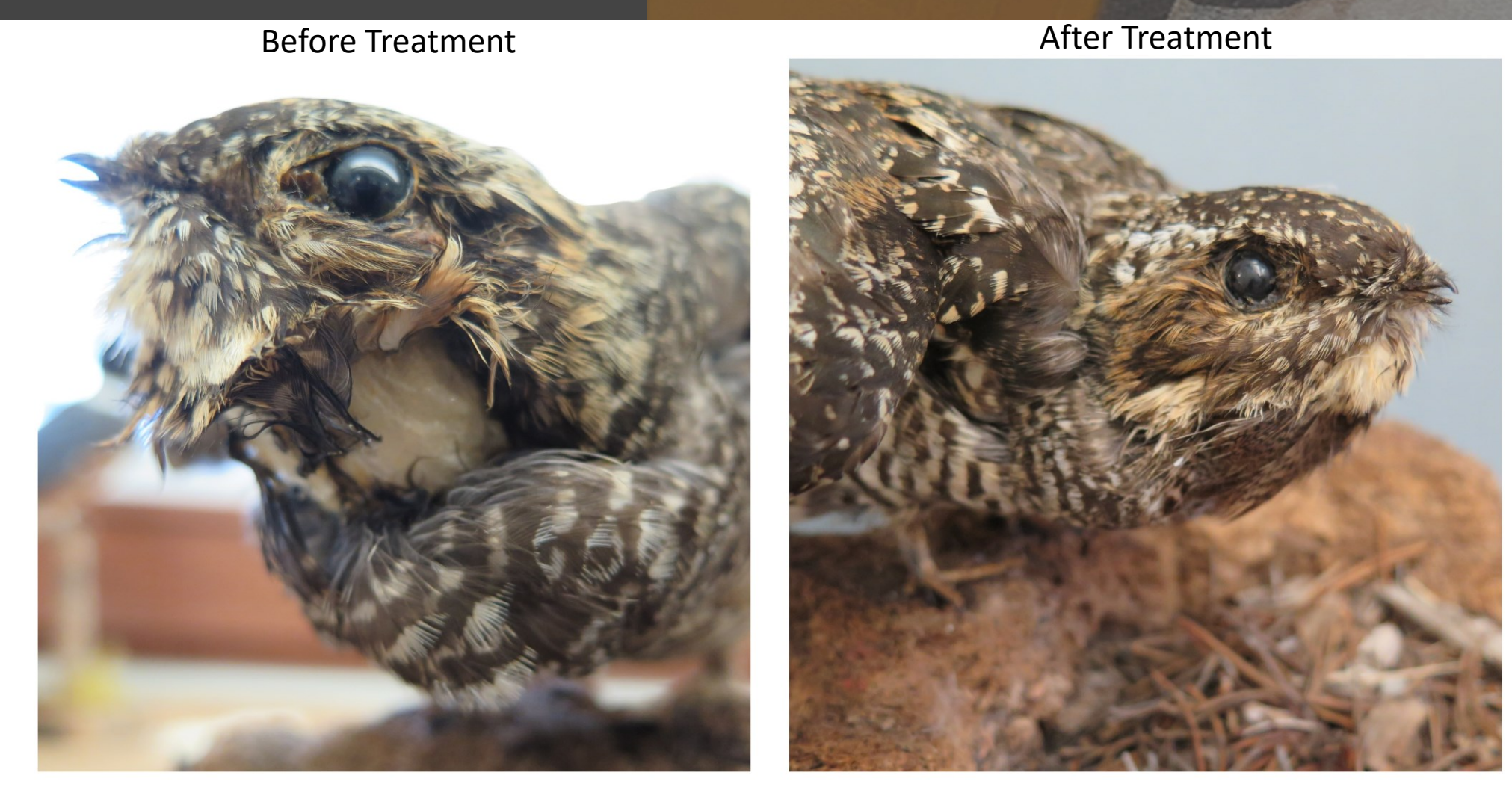
Previous microchemical analysis performed on the taxidermy collection using EM Quant<sup>®</sup> Arsenic Tests determined the presence of arsenic. The instructional **Handling and Treatment Flowchart** provides general procedures and is meant to ensure that safety is considered during each step of a treatment ([scan the QR CODE in the upper right corner to see the full Flowchart](#)). The conservators used the Flowchart prompts to make the following specific modifications to a conference room and to their treatment procedures to create a safe temporary lab space at Yellowstone:

- **Posted** hazard warning signage on the "lab" door and along designated worktables.
- **Covered** inside and outside of "lab" door handles with nitrile gloves to promote awareness, minimize possible exposure for staff entering/exiting the space, and to make clean-up easier.
- **Labeled** hazardous-waste receptacles and placed immediately outside the "lab" door, at "lab" threshold, and near each workstation.
- **Arranged** the "lab" for efficient treatment and created designated "dirty" and "clean" spaces that helped reduce contact with potentially hazard-covered surfaces:
  - Covered worktables in polyethylene sheeting, topped with craft paper and secured with tape.
  - Placed tables along the walls into an "L" shape to streamline the treatment process, ensuring specimens would not be carried across the room.
  - Brought objects into the "lab" from storage and placed immediately on the closest table in an area designated for photography.
  - Shifted specimens down the covered worktables for treatment, then back to photography area for after treatment images.
  - Used the same designated tools and tool roll during the course of treatment.
  - Used and stored laptops, camera, and other documentation equipment on designated "clean" desks. Removed gloves and placed them on "dirty" tables when handling these objects to prevent potential transfer.
- **Wore** appropriate level of PPE for each treatment step, such as gloves and lab coats for handling, masks and/or respirators for vacuuming. Lab coats were stored in a designated area at the end of each day, then washed onsite after the project concluded.
- **Cleaned** space after use: collected hazardous waste including table coverings, gloves, old packing material, etc. and disposed according to the park's procedures, wiped exposed surfaces with wet wipes, vacuumed the floor, chairs, tools and equipment with HEPA vacuum, removed signs.



Central Room, Fishing Bridge Museum, Aug. 1938, Image from Yellowstone National Park Archive  
YNP 10,337-4

### Taxidermy Treatments



Feather Fills

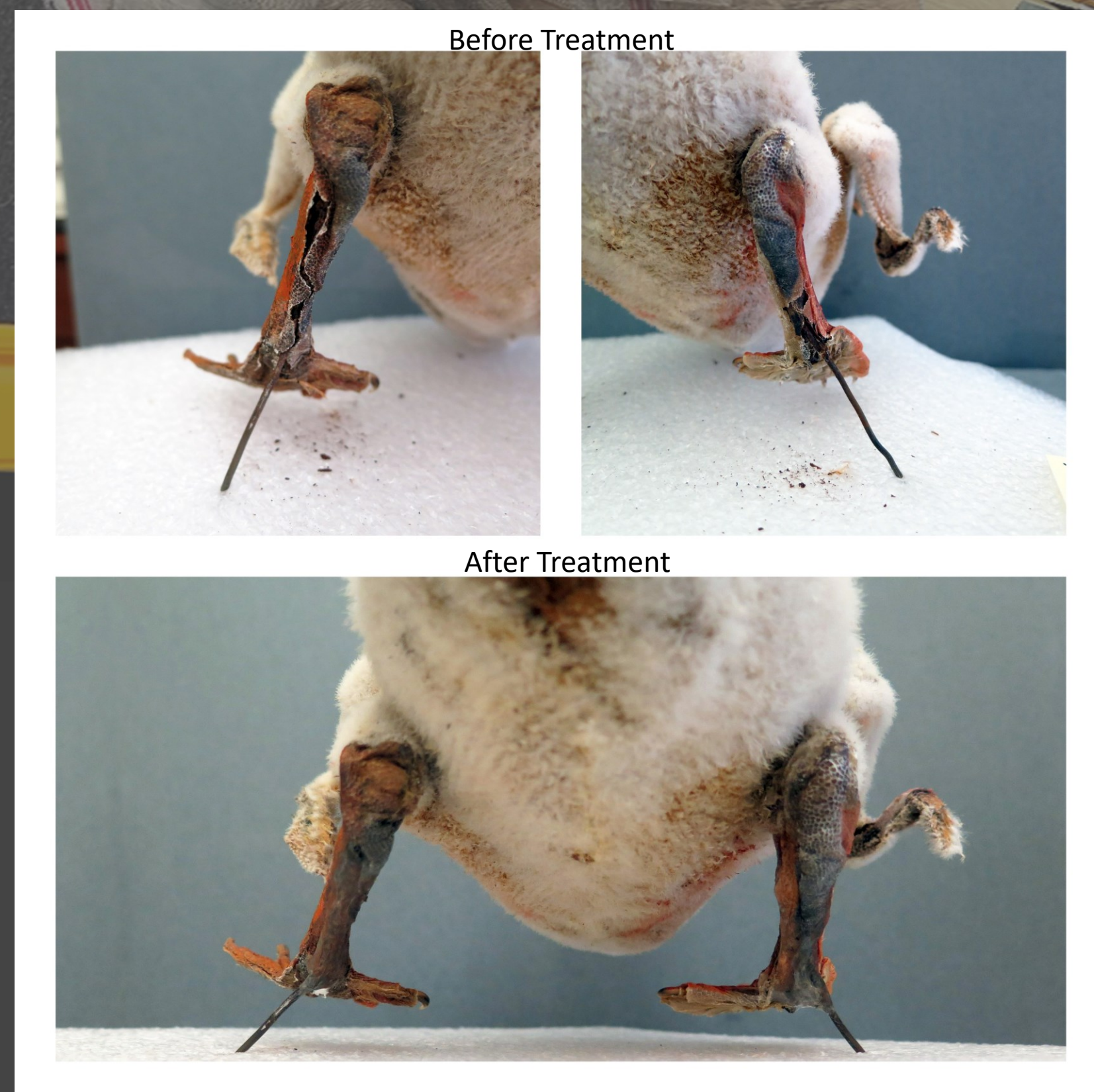
#### Before Treatment Condition:

Tears in the skin and associated skin loss resulted in feather loss under the head of this Night Hawk specimen.

#### Treatment:

- **Feather and Skin Consolidation:** Applied ethanol to the extant skin and feathers around the area of loss to pre-treat the surface, then brushed a dilute solution of Butvar B-98 in ethanol.
- **Skin Compensation:** Adhered Japanese tissue "patches" using B-98 to cover the gaps in the skin where the internal mannikin material was exposed. Toned "patches" to compliment surrounding feathers using QoR watercolors.
- **Feather Compensation:** Fabricated feather fills by first stretching a piece of spun-bond polyester in an embroidery hoop. Toned the polyester to resemble the bird's skin using Golden acrylic paints. Poked the calamus of small partridge feathers through the polyester and pulled with tweezers to the desired length. Repeated with several feathers until achieving the bird's natural feather pattern and length. Trimmed the calamuses until even and adhered them in place with a 3:1 Lascaux 498HV:360HV mixture covered with a smaller piece of polyester. Adhered the feather fills to the tissue patches on the specimen using the Lascaux mixture set with a heat spatula. Created a more voluminous fill by adding individual feathers where needed, adhered via a miniscule amount of Lascaux mix applied to the calamus.
- **Grooming:** Groomed matted feathers surrounding the fills using paint brushes dampened with odorless mineral spirits, immediately dried using directional cool air from a hairdryer.

Scan the QR CODE in the upper left corner for other treatment steps beyond feather fills.



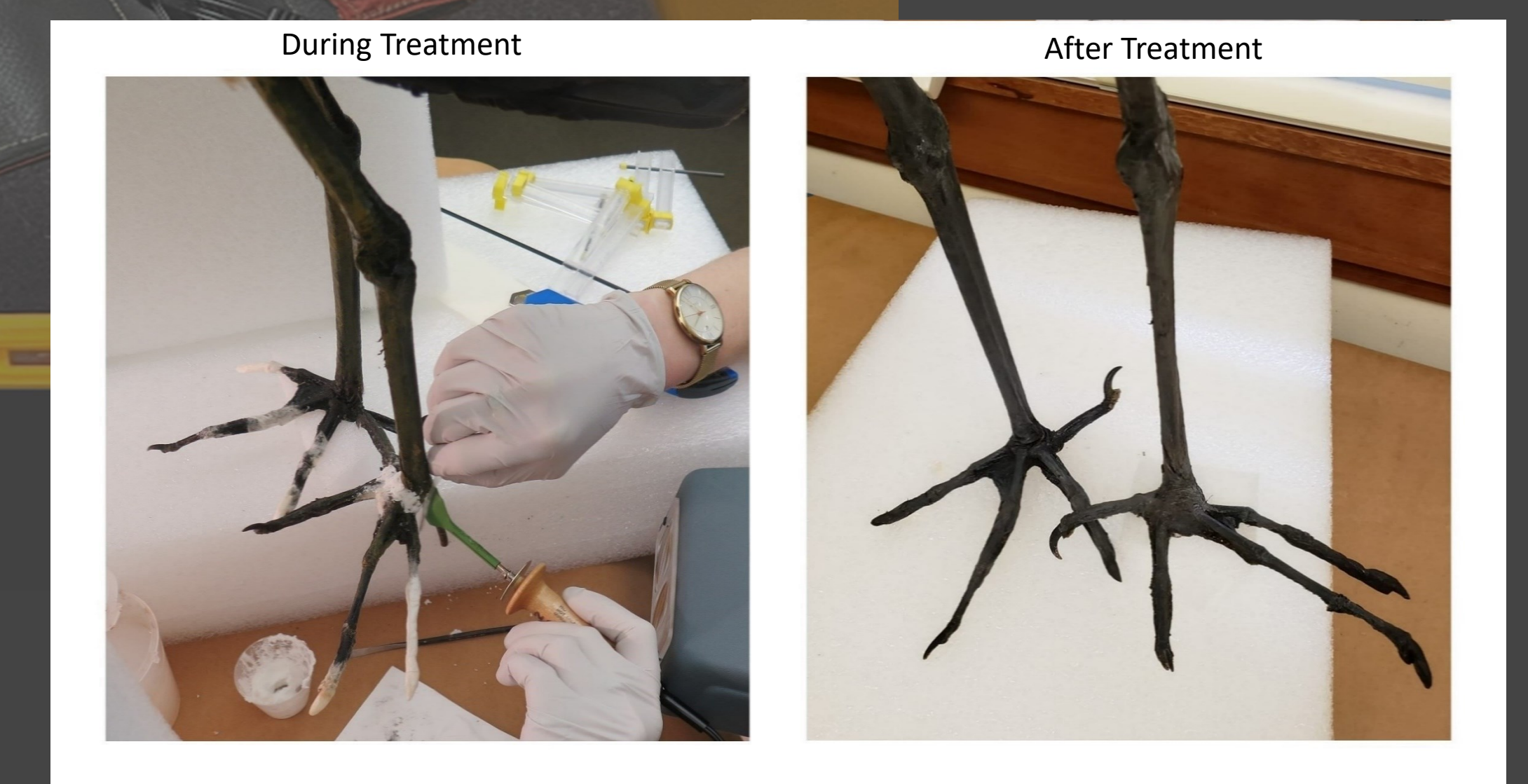
Tear Repairs

**Before Treatment Condition:** The thin untanned skin on the back of the legs of this American White Pelican chick was split due to corroding internal metal armature.

#### Treatment:

- **Corrosion Mitigation:** Cleaned the exposed corroded ferrous wire armature using cotton swabs dampened with mineral spirits.
- **Tear Repair:** Filled gaps around the metal wires along the length of the back legs a 3:1 Lascaux 498HV:360HV mix bulked with glass microballoons to a spackle consistency. Created an even surface and repaired torn skin by placing lightweight Japanese tissue over the skin and fill. Set the tissue onto the bulked Lascaux fill and shaped to match the texture of the skin using a heated spatula. Toned the tissue to match the pelican's skin using QoR watercolors.

Scan the QR CODE in the upper left corner for other treatment steps beyond skin tear repair.



Structural Stabilization

#### Before Treatment Condition:

The feet of this Great Blue Heron sustained significant breaks, loss, and detachment due to unequal distribution of weight on fragile toes. A previous restoration to repair the damage failed and the mount could no longer stand on its own.

#### Treatment:

- **Removal of Failed "Repair":** Removed previously-applied (unknown date) hot melt glue from the PL foot and related fragments using a heat spatula with pointed tip and scalpel.
- **Foot Reconstruction:** Reconstructed the lost digits and fragments by sculpting a spackle made of 3:1 Lascaux 498HV:360HV bulked with glass microballoons onto and around a wooden skewer. Wrapped the surface with Japanese tissue paper and manipulated the shape and texture using a heat spatula to mimic the natural foot. Fabricated talons from blotter paper, adhered to the reconstructed digits with the same Lascaux mixture.
- **Structural Repair:** Attached the reconstructed pieces using B-72 (in acetone) bulked with microballoons. The B72 bulked adhesive is stronger than the bulked Lascaux, not only filling gaps in the foot where material had been lost, but more importantly creating a stronger bond to the internal armature to support the weight of the specimen. Manipulated the surface of the bulked B72 using a heat spatula to match surrounding textures. Toned with QOR watercolors.

Scan the QR CODE in the upper left corner for other treatment steps beyond structural stabilization.

### The Results: Effectiveness and Treatments

Although the Flowchart provides general guidance only, it is a good starting point when planning your project and can be discussed with all staff to gather necessary protective materials and safety procedures. By planning for extra PPE, workspace coverings, and the need for potentially hazardous waste disposal, minimal extra time was used to prepare for and clean up after treatment onsite at Yellowstone. This project demonstrated that most spaces can be used successfully to treat arsenic-containing taxidermy collections. The potential hazards should not outweigh the care that these objects deserve.

Scan the QR CODE in the upper left corner to see all treatment steps that were part of the conservation of the historic avian taxidermy mounts.

#### Acknowledgements:

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