



## Art Conservation *and historical tool belts*

*Knives, needles, and fire starters were useful to the Nivkh, who traditionally have lived along the heavily forested Amur River and an island called Sakhalin in far eastern Siberia. Such tools, which have supported a livelihood historically based on fishing and hunting, could be kept close at hand by attaching them to belts. This year, a Nivkh belt in the collection of the University of Pennsylvania’s Penn Museum thought to date from the late 19th or early 20th century, was treated by WUDPAC Fellow and objects major Mackenzie Fairchild.*

Four tools are attached to the leather belt: a knife in a sheath, a fire starter, a pouch, and a needle case. Before treating the belt and tools, Mackenzie conducted a technical study with the goal of identifying as many of the materials used to make them as possible.

When Mackenzie began, she found only limited information available in English about the Nivkh and their traditions, written either by researchers or, more crucially, by the Nivkh themselves. Consequently, she understood that her own observations and scientific analysis, conducted in collaboration with scientists and her advisors in labs at Winterthur and the University of Delaware, could help broaden access and scholarship. Through visual observation, for example, she believed the leathers for the belt and tool attachment straps came from multiple species, but she hoped Peptide Mass Fingerprinting (PMF) would tell her exactly which animals contributed to the objects’ creation. Similarly, she anticipated that PMF could identify the species used for elements made of skeletal materials like the needle case and belt fastener, and that X-ray Fluorescence would tell her the composition of the objects’ metallic components. She also hoped to discover the fish species used in the knife sheath and pouch. Sturgeon, which is covered in star-shaped dermal denticles, was the leading candidate. Most of the materials are organic and required Mackenzie to take small, discrete samples for testing. The results were revealing: PMF data suggested that approximately eight different Arctic animal species were used to make the belt and tools.

The data gathered from this study allows for a much richer understanding of the belt and tools than the vague appraisals permitted by visual inspection. It also guided Mackenzie as she began her treatment. She humidified and reshaped the leather belt, reduced the corrosion evident on the metal parts, and stabilized a flaking bit of the pouch. Now that her analysis and treatment are complete, the belt will be returned to the Penn Museum.



### ARTC Spotlight—April 2023

*The University of Delaware’s Art Conservation Department educates and trains professional conservators who are well versed in the treatment, analysis, documentation, and preventive conservation of individual artifact and archive collections. For more news about our students and other department activities visit our web site at [www.artcons.udel.edu](http://www.artcons.udel.edu).*

*Top: Winterthur/University of Delaware Program in Art Conservation Fellow Mackenzie Fairchild taking samples of the leather components for peptide mass fingerprinting. Above: Mackenzie preparing a leather sample for peptide mass fingerprinting. Left: Details of the pouch and buckle before treatment, and an overall view of the belt after treatment. (Images: Evan Krape, Rosie Grayburn, and Mackenzie Fairchild.)*

