

# Curator's Choice

## *Tortoise and the Hair*

By: Nichole Doub, Head Conservator,  
Maryland Archaeological Conservation Lab

Tortoise shell is a beautiful material. The color, translucence, and patterning continue to inspire its imitation in modern accessories. Historically tortoise shell is produced from the shells of large sea turtles, primarily the hawksbill and green turtle. The shell of the hawksbill turtle (Figure 1) is particularly prized, and hunting of these animals drove them onto the endangered species list. Genuine tortoise shell use has been greatly restricted following the ban under the Convention on International Trade in Endangered Species (CITES) in 1973.

The shell is made of keratin. As the turtle grows, new layers of keratin are added under the existing layers creating growth rings. Keratin is a thermoplastic material, meaning that it can be shaped with heat. When the keratin is removed from the bony under shell, it is then heated (boiled) and flattened under pressure. It can then be molded and lathed into the desired form. Due to its thin construction, tortoise shell was used as decorative inlays in furniture, snuff boxes, mirrors, and personal adornment such as jewelry and combs. Tortoise shell is a luxury material. By the late 19<sup>th</sup> century, synthetic tortoise shell objects made of celluloid were made widely available to supply the demanding market at a fraction of the price.



Figure 1. Hawksbill sea turtle swimming. Image courtesy of the U.S. Fish and Wildlife Service.

As an organic protein, keratin doesn't survive well in most archaeological environments, and it is exciting when tortoise shell artifacts are recovered, as in the cases of these 19<sup>th</sup> century hair combs. These artifacts were recovered from the Federal Reserve (18BC27) and Ruth Saloon (18BC79) sites in Baltimore (Figures 2 and 3). Upon excavation, the layers of keratin had started delaminating and were very brittle. Conservators at the Maryland Archaeological Conservation Laboratory took advantage of the thermoplastic properties of the material and used heat together with a heat sensitive adhesive to reassemble the layers and return the tortoise shell comb to an approximation of its original shape. Following the elaborate hair stylings of the late 18<sup>th</sup> century, the Victorian period of fashion admired neat updos and combs became a popular and fashionable styling accessory (Figure 4).



Figure 2. Before and after treatment photographs of a tortoise shell comb from Federal Reserve (c. 1850-1870 context).



Figure 3. Tortoise shell comb from Ruth Saloon (late 1830s context).



Figure 4. Onésipe Aguado de las Marismas [Woman Seen from the Back], c. 1862. Image courtesy of the Metropolitan Museum of Art.

### References Cited

Mossman, Susan

2008 *Fantastic Plastic: product design and consumer culture*. London: Black Dog Publishing.

NOAA Fisheries' Species Directory

n.d. Available online (<https://www.fisheries.noaa.gov/species/hawksbill-turtle>).

O'Connor, Sonia, Caroline Solazzo, and Matthew Collins

2015 Advances in identifying archaeological traces of horn and other keratinous hard tissues, *Studies in Conservation*, 60:6, pp. 393-417.



10515 Mackall Road  
St. Leonard, Maryland 20685

Jefferson Patterson Park and Museum is part of the Maryland Historical Trust, an agency of the Maryland Department of Planning, Baltimore.

