Sharp Thinking

Thorns as Cleaning Tools in a North American Conservation Lab

Arianna Johnston
Conservator
Maryland Archaeological Conservation Lab

Thank you to Lindsay Hollister, Nichole Doub, and the Naval History and Heritage Command Underwater Archaeology Branch.

Thorns are a practical, renewable cleaning tool[1] and are effective at removing soft corrosion products and soil from fine details on soft archaeological metals like copper alloy, silver, gold, and gilt artifacts. Thorns are sharper than bamboo skewers and porcupine quills. Previous literature about their use in conservation either lacks detail on where to source thorns or recommends species that are unavailable or invasive in the United States.[2]

The Maryland Archaeological Conservation Laboratory (MAC Lab) sits within the 560 acres of Jefferson Patterson Park and Museum (JPPM) in southern Maryland. JPPM horticulturalist Lindsay Hollister encourages responsible foraging in meadows and forests of the park and assisted in identifying several local thorny plant options. Two species common to eastern North America fit criteria for use in our lab.

Common cleaning tools:
1) scalpel
2) bamboo skewer
3) porcupine quill
4) black locust thorn

Criteria for selecting thorns for use in the lab:

Species located at the park
- We have permission to forage here

Easily accessible from the trail
- Reduces poison ivy exposure risk

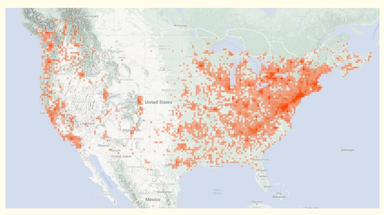
Abundant or invasive
- Easy to collect
- No overharvesting
- Contributes to trail clean-up

Needle-shaped thorns
- For easy mounting in a pin vice
- Hook-shaped thorns would need significant trimming

Black Locust (*Robinia pseudoacacia*)

- Fast growing tree that seeks sun
- Aggressively grows past the forest line
- Newest growth is thorny, but older branches lose thorns
- Best to harvest in spring and summer for newest thorny growth
- Considered invasive[3] in CA, CT, MA, ME, MN, NJ, NY, OR, RI, WI, Ontario

Do not remove

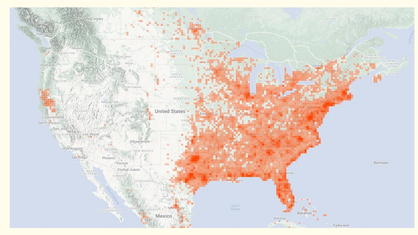


Black locust Observation Map from iNaturalist

Common Greenbrier (*Smilax rotundifolia*)

- Long trailing vine that clusters into thickets
- Invades trails and catches on clothing
- Thorns have black tips and size is dependent on vine thickness
- Deciduous, but thorns harvestable year-round
- New growth thorns too small to mount in pin vice
- Considered a threatened species in Great Lakes region of Canada[4]

Do not remove



Smilax Observation Map from iNaturalist

Harvesting and Processing

Black locust and common greenbrier can be harvested with pruning shears following basic pruning guidelines for trees and shrubs. Protective gloves are recommended as branches are sharp!

Thorns must dry to harden before use. Remove foliage from harvested branches, monitor for pests, and leave to dry in a well-ventilated space. Once dry, the thorns can be snapped off by hand or trimmed with pruning shears or scalpel. Greenbrier thorns can be snapped off the vine in the field if drying space is limited.

Royal Savage two-part button with button cover (UA2016.026.193), before (A) and after (B) cleaning, and (C) with black locust thorn (38.4x)
Images courtesy Naval History and Heritage Command Underwater Archaeology Branch

Case study

Black locust thorns were instrumental in cleaning an archaeological copper alloy button with a pierced open-work button cover. No tool available other than black locust thorns fit into the corners of the open-work or ribbed texture of the decoration when removing soil and iron corrosion staining.

Use and Observations

Thorns can be mounted in a pin vice (left). An adjustable or interchangeable collet helps when thorns vary in size.

Black locust thorns are springy and very sharp. The base of the thorn will need to be trimmed to fit into the pin vice. With enough pressure, the thorn will break and can splinter.

Greenbrier thorns are slightly less sharp and flatter in cross-section. They can be difficult to mount if they are too small.

Other options

This poster prioritized species in the mid-Atlantic United States. Other options (listed right) are untested. Check with your local government for protected or invasive status before harvesting or propagating.

Genus (Common Name)
Underlined = some species invasive[5] in some areas of North America

- *Berberis* (Barberry)
- *Pyracantha* (Firethorn)
- *Prosopis* (Mesquite)
- *Bougainvillea*
- *Crataegus* (Hawthorn)
- *Carissa* (Natal Plum)
- Some citrus varieties

Contact me if you test these!

Citations

1. Auffret, Stéphanie, and Sydney Beall Nikolaus. 2019. Cleaning of Wooden Gilded Surfaces: An Experts Meeting Organized by the Getty Conservation Institute. Los Angeles: Getty Conservation Institute.
2. The Staffordshire Hoard Conservation Team. 2015. "A New Conservation Tool." ICON News: The Magazine of the Institute of Conservation, 58: 20-21.
3. Black locust. 2018. Invasive.Org. Center for Invasive Species and Ecosystem Health. Accessed January 7, 2024. https://www.invasive.org/browse/subinfo.cfm?sub=3350/.
4. Committee on the State of Endangered Wildlife in Canada (COSEWIC). 2007. COSEWIC Assessment and Update Status Report on the Round-leaved Greenbrier Smilax rotundifolia in Canada. COSEWIC. Ottawa. https://species-registry.canada.ca/index-en.html/.
5. Center for Invasive Species and Ecosystem Health. Invasive.Org. Accessed 26 March 2024. https://www.invasive.org/index.cfm/.