



Image 1. Illustration by Christine Sioui Wawanoloath

## LESSONS LEARNED

- **Black ash trees** are an important cultural and economic species for several First Nations of North America
- **Black ash wood quality** for W8banaki basketry is best with narrow to medium-width rings and high density.
- **Collaborative research** with the W8banaki Nation mobilizes Indigenous and scientific knowledge, supporting adaptation to challenges like the emerald ash borer.
- **Sustainable practices** and future research should focus on promoting growth conditions that yield high-quality black ash wood to ensure the sustainability of basketry traditions.



## WOOD PROPERTIES OF BLACK ASH FOR USE IN INDIGENOUS BASKETRY

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Black ash (*Fraxinus nigra*) is an important species for the W8banaki Nation, which uses its wood for traditional basketry. To contribute to the understanding of the importance of wood properties of black ash in the face of the Emerald ash borer (EAB) epidemic (see Box 1), this study aimed to identify ideal wood properties required of splints that are used in basketry.

The process of making black ash baskets is an holistic process that involves many steps, knowledge and techniques. Selecting and, harvesting and wood processing are performed by knowledge carriers who have in-depth knowledge of the growing conditions and quality criteria required for black ash to be used in basketry. As part of this PhD research project, Laurence Boudreault partnered with the Ndakina office and - in accordance to a signed research agreement - joined ash pounders Michel Durant-Noelett, Luc Gauthier-Noelett and Danny Gill in a participatory research approach to understand the wood properties of black ash trees that are selected for use in basketry.

## TREE SELECTION

When selecting black ash for basketry, knowledge carriers look for different criteria such as vigour, stem straightness, absence of defects, and bark texture. At each harvesting site, some black ash trees with good basketry potential are selected, some are considered unsuitable, while others are deliberately left standing to ensure an ongoing supply for future generations.

**Box 1: Black ash basketry & the emerald ash borer (EAB):** Since the arrival of the EAB in early 2000s, these pests have devastated ash populations and pose significant threats to both the ecological balance and the cultural practices that are dependent on black ash trees. Ongoing efforts to protect ash trees from the EAB include seed collection, conservation initiatives and educational programs to teach traditional methods to younger generations.





## SELECTING SPLINTS, POUNDING & SPLINTING

After trees are selected and harvested, logs are moved to the pounding stage (Figure 2) where wood splints are extracted for weaving. During the pounding stage, knowledge carriers repeatedly pounds the log with the back of an ax from one end of the log to the other to cause the delamination of annual wood layers composed of latewood (see Box 2). These annual wood layers are then processed with a splinter tool to split them into thinner splints. Splints are then polished, refined and rolled up to be stored for later basket weaving.

In the pounding stage, the suitability for pounding is determined by whether or not annual wood layers (rings) can be easily peeled from the slab and if so, are they flexible and resistant to rupture. Not all logs are viable for pounding and not all annual rings could be transformed into thin, flexible splints due to different anatomical and mechanical wood properties (Box 2) that vary within the stem. For this study, knowledge carriers gave pounding layers a quality grade of low, medium or high that was determined by the smoothness of the splints, colour and the ease at which splints could be peeled from the log.

- **Low quality:** considered unsuitable for basketry as they often break at the pounding stage and are hard to divide into splints
- **Medium quality:** generally used for frames or utility baskets since the splints are usually thicker, less easy to work with, and darker coloured
- **High quality:** splints that are easily delaminated from the log and easily divided into flexible but rupture-resistant thinner plots. They are highly appreciated by basket makers.



Figure 1: The process of preparing black ash splints for W8banaki basketry. Photo by Laurence Boudreault

**Box 2: Anatomy of black ash wood:** Black ash is a porous-bodied temperate species found from eastern Manitoba to the Atlantic provinces. Its wood is characterized by alternating wood layers that are produced in spring versus the remainder of the growing season. The initial wood is formed of large, porous vessels and the later wood is formed of much smaller and dense cells. During the pounding process, the porous section produced in the spring is crushed and broken, This allows the basket makers to separate long strips of the final wood, which is much more resistant but still very flexible.



## WOOD PROPERTY ANALYSIS

Using the knowledge carriers characterization groups (low, medium, high quality), the wood layers were analyzed for various properties using densitometry that produce profiles of annual ring width, density and the proportion of late to early wood, all of which influence flexibility-related properties that are important for W8banaki basketry. To identify the wood properties that determine wood quality for basketry, we applied a generalized linear mixed model (GLMMIX).

### Results

The study found that ring width and wood density (Figure 3) significantly impact the suitability of black ash for basketry. High-quality basketry wood is characterized by narrow to medium-sized rings and relatively high density, providing the necessary balance between flexibility and resistance to rupture. These findings suggest that promoting growth conditions that produce these wood characteristics can help ensure a sustainable supply of black ash for future generations

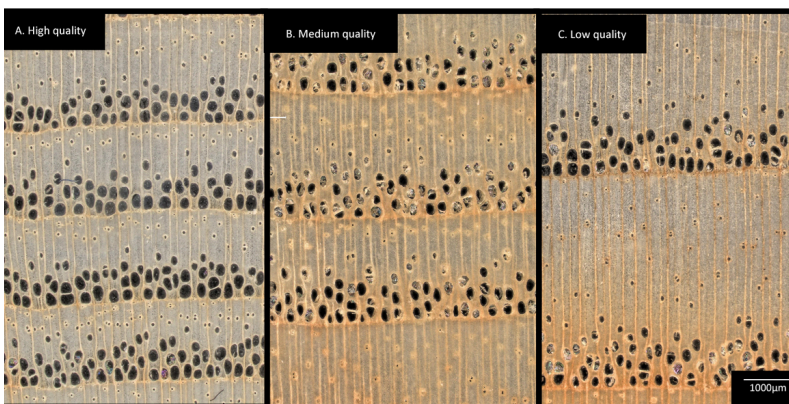


Figure 3: Three pounding layer exemplars with different ring widths that influence wood quality for basketry: A) narrow annual rings of high quality, B) medium annual rings associated with medium quality, and C) wide rings associated low quality. Images were taken with a Keyence microscope by Laurence Boudreault

## CONCLUDING REMARKS & ACKNOWLEDGEMENTS

This study highlights the importance of bringing together traditional ecological knowledge with scientific research. By understanding the specific wood characteristics valued by Indigenous basket makers, researchers can develop silvicultural practices that support the growth of high-quality black ash trees. This collaborative approach respects and incorporates Indigenous knowledge systems, fostering a holistic understanding of the species and its cultural importance.

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