



Forest Service
U.S. DEPARTMENT OF AGRICULTURE

FOREST PRODUCTS LABORATORY



Center for Wood Anatomy Research

Research Wood Collection

The Center for Wood Anatomy Research at the Forest Products Laboratory has the largest and most diverse scientific wood collection in the world, with more than 100,000 specimens of globally traded woods, endangered and threatened species, and other scientifically important species. Researchers use the collection to study macro and microscopic structures of wood to understand it as a material for human use and to develop tools and technologies to support the trade of legal forest products.



The research wood collection at the Forest Products Laboratory. USDA Forest Service photo by Ellie Lazarcik.

Forensic Wood Anatomy

Researchers at the Forest Products Laboratory develop wood forensic tools and technologies and provide forensic expertise to local, state, and federal law enforcement. Examples include the development of computer-vision wood identification systems and a portable, DNA-based technology to screen for prohibited softwood species in construction lumber; matching of stumps to logs stolen from federal lands; investigations of timber imports; expert testimony linking tree-ring evidence to the use of fire for disposal of a murder victim; and investigations into the origins and causes of forest fires on state, tribal, and federal lands.

Forest Products Laboratory research and expertise have resulted in millions of dollars of civil penalties, forfeitures of log and lumber shipments, and substantial penalties in criminal cases.

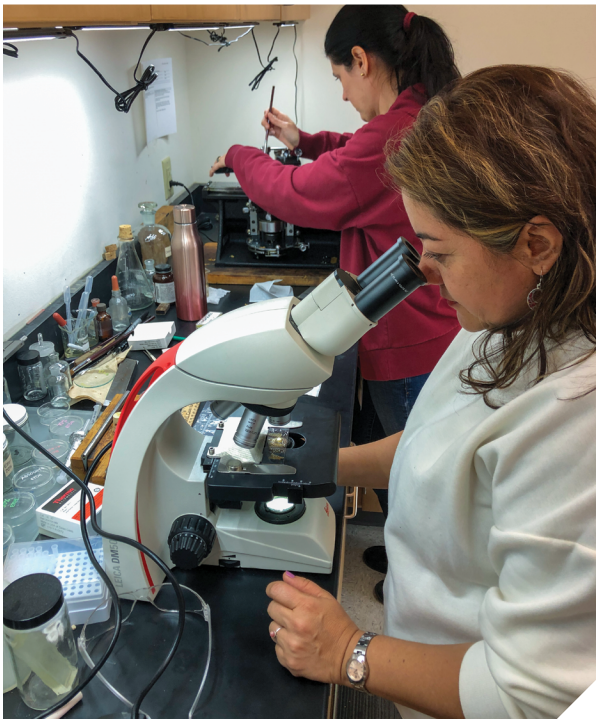
Researchers at the Forest Products Laboratory developed the XyloTron and XyloPhone—custom, automated, open-source wood identification systems that have been deployed in the United States and abroad to perform rapid field identification using a laptop computer or a smart phone.



A scientist using the XyloTron to image a specimen of oak. USDA Forest Service photo by Ellie Lazarcik.



Specimens of suspected illegal shipments of wood on display at the Forest Products Laboratory. USDA Forest Service photo by Ellie Lazarcik.



Scientists preparing and examining microscope slides of wood. USDA Forest Service photo by Ellie Lazarcik.

Protecting Timber Trade

Forest products derived from illegal logging depress prices for legal domestic products by an estimated \$1 billion per year, contributing to lost economic opportunity in the United States. Researchers at the Forest Products Laboratory found that 62 percent of common wood products were not the claimed type of wood and that every brand of lump charcoal tested was substantially misrepresented. Fraudulent claims were more common in imported products, which is consistent with the estimate that 15 to 30 percent of all wood found in global trade is logged illegally.

Biocentric Wood Science

In the United States, the annual payroll related to forest products is estimated to be more than \$50 billion, and the annual total market value of the wood industry exceeds \$250 billion. The ability of industry to develop innovative products that use harvested wood depends on access to valid, applicable, foundational research into wood properties, including cellular structure. Merging concepts of wood biology and technology, research at the Forest Products Laboratory improves understanding of wood performance and supports industry in developing new products and processes as wood availability changes and new woods enter the market.

Wood Identification Service

For over a century, the Center for Wood Anatomy Research has provided free reliable wood identification to the public: <https://research.fs.usda.gov/fpl/identification>.

Questions? Contact the Forest Products Laboratory at sm.fs.mailroomfpl@usda.gov.



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January 2026