

# The U.S. Forest Service

## Forest Products Laboratory: 1910–2010

### *A Century of Research Working for You*

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Since 1910, the Forest Products Laboratory (FPL) has promoted healthy forests and forest-based economies through the efficient, sustainable use of American wood resources. From propellers and paper to construction materials and nanotechnology, the Forest Products Laboratory has helped make life easier, more comfortable, and infinitely more rewarding for nearly every American.

In 1907, McGarvey Cline, Chief of the Office of Wood Utilization in the U.S. Forest Service, proposed to colleagues that, to improve coordination among disparate centers of research, one main Forest Service research laboratory be established. By January 1909, Gifford Pinchot, head of the Forest Service, made an offer to the University of Wisconsin (UW) in Madison to be home to this new central research laboratory. The offer was accepted with much acclaim by UW President Charles Van Hise. Forester Pinchot then, surprisingly, retracted the offer in light of objections by Congressman James McLaughlin of Michigan and a separate offer from the University of Minnesota. Heated deliberation ensued. Eventually, a February meeting between Pinchot, Van Hise, and Wisconsin Senator Robert M. “Fighting Bob” La Follette, among others, at the exclusive Cosmos Club in Washington, D.C., turned the tide. On March 5, 1909, the day after President Taft’s inauguration, Secretary of Agriculture James Wilson announced that Madison, Wisconsin, would indeed be home to the Nation’s first central wood research laboratory (Nelson 1971).

The FPL made its home on the UW-Madison campus in what today functions as the Materials Science and Engineering Building. McGarvey Cline was named its first director prior to the official opening on June 4, 1910.

Early research priorities focused on timber testing, wood preservation, wood-based distillates, timber physics, pulp and paper, and wood chemistry. National defense initiatives were also an early priority. Research into highly absorbent charcoal for gas masks, aircraft engineering, the effects of humidity and temperature change on wooden and laminate propellers, and wood drying processes began

by early 1917. FPL research also made significant contributions to World War II, the Korean Conflict, and continued through the 1960s to the modern era of Desert Storm.

Wartime efforts were multifaceted and produced two influential publications: *A Wood Aircraft Fabrication Manual* (U.S. Forest Products Laboratory 1942) and the *ANC Handbook on the Design of Wood Aircraft Structures* (U.S. Forest Products Laboratory 1944). Packaging experts also engineered remarkable savings in cargo space by redesigning boxes and packing material for wartime equipment. These and other FPL accomplishments in times of war are highlighted in a review published as *Forest Products Laboratory: Supporting the Nation's Armed Forces with valuable wood research for 90 years* (Risbrudt et al. 2007).

Between 1931 and 1932, a new building for the Forest Products Laboratory was designed and built less than a mile west of the original building on the University of Wisconsin campus. According to *A History of the Architecture of the USDA Forest Service* (1999), the new FPL building typified the American Perpendicular or Modernistic Phase of the Art Deco style as applied to commercial design.

Walking through the tall hallways of the FPL today feels a bit like strolling through a sparsely decorated museum. Art meets science in the classic Art Deco lobby and main elevator, while throughout the building heavy wooden doors, filing cabinets, and desks speak to a past filled with the muffled sounds of research and filing performed by seven decades of scientists and their secretaries.

The fourth floor's north wing has a string of offices with beautiful hardwood floors. These are not government extravagance, however. Several combinations of wood species and design applications were laid out as test flooring to measure changes due to temperature, humidity, and general use. At the end of this long hallway is the Center for Wood Anatomy Research. Through its heavy wood door sits over 100,000 wood specimens representing about 18,000 tree species from every corner of the globe—the largest collection of its kind. A piece of white oak recovered from a shipwreck near San Julian, Argentina, is believed to be from one of Magellan's ships, which sank during a storm in 1520. A specimen taken from what has been called a boat-like structure 13,000 feet up Mt. Ararat in Eastern Turkey is believed by some to be from Noah's Ark. These samples and many others sit near a bit of Thor Heyerdahl's Kon Tiki; chunks from the USS Constitution—branded "Old Ironsides" during the War of 1812; and samples from King Tut's tomb. A vast range of human and pre-human history is represented in this one small corner of the FPL.

The wood anatomy unit essentially began the day Eloise Gerry walked through FPL doors in June 1910. Though the Forest Service wasn't interested in hiring a woman at the time, as Gerry recalled, "there wasn't any man willing to come and do the work" (McBeath 1978; p. 129). She became the first woman appointed to a professional staff position at the FPL and the first woman in the United States to specialize in forest products research.

The year Gerry stepped down as project leader, 1924, was also the year Aldo Leopold became assistant director at the FPL under Carlisle P. “Cap” Winslow. Leopold’s organizational abilities and talent for writing proved a boon for the lab; though, as a forester amid an orchard of scientists, he seemed a “fish out of water” within the confines of a laboratory (Meine 1988, p. 234). Despite what may have been tenuous comfort working within the confines of a research laboratory, Leopold’s articles, published for professionals and lay people alike, established him as the Nation’s foremost spokesman for the preservation of wild country and the wise utilization of forest resources (Meine 1988, p. 243). Leopold, among other duties, supervised the FPL’s effort to reduce wood industry waste at the mill—by some estimates 66 percent—and encouraged the use of “inferior” species of trees until his departure from the FPL in June 1928.

An early synthesis of the combined expertise in wood and forest products research came in the form of the *Wood Handbook—Wood as an Engineering Material*, first published in 1935. A centennial edition of the *Wood Handbook*, its seventh, will be published in 2010.

New advances at the FPL include the 87,000 square-foot Centennial Research Facility. Aside from expanding the physical research space, social changes are also afoot. Retirements in the next decade will create turnover as baby-boomers move out and younger scientists move in to replace them. FPL director Chris Risbrudt looks forward to this sea change as an opportunity for FPL veterans to pass on the skills and knowledge accrued over many decades of service.

“Science is the accumulation of basic and applied knowledge,” says Risbrudt. “We stand on the shoulders of giants here at FPL, and our tradition of passing on knowledge continues to benefit not only the Forest Service but the broader community of science.”

Even though some research has been slowed or eliminated by budget cuts in recent decades, Risbrudt is optimistic of the progress ahead. “With our new facilities, we will be able to maintain cutting-edge research efforts and attract a new generation of researchers.”

In addressing questions of any change to the FPL’s core mission, Risbrudt says that the FPL has gone through changes in the past but “fundamentally, we travel in the same direction set forth in 1910. We will continue to focus on the advancement of forest health and forest products ingenuity while staying well-grounded in the realities of good science and sound economics.”

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