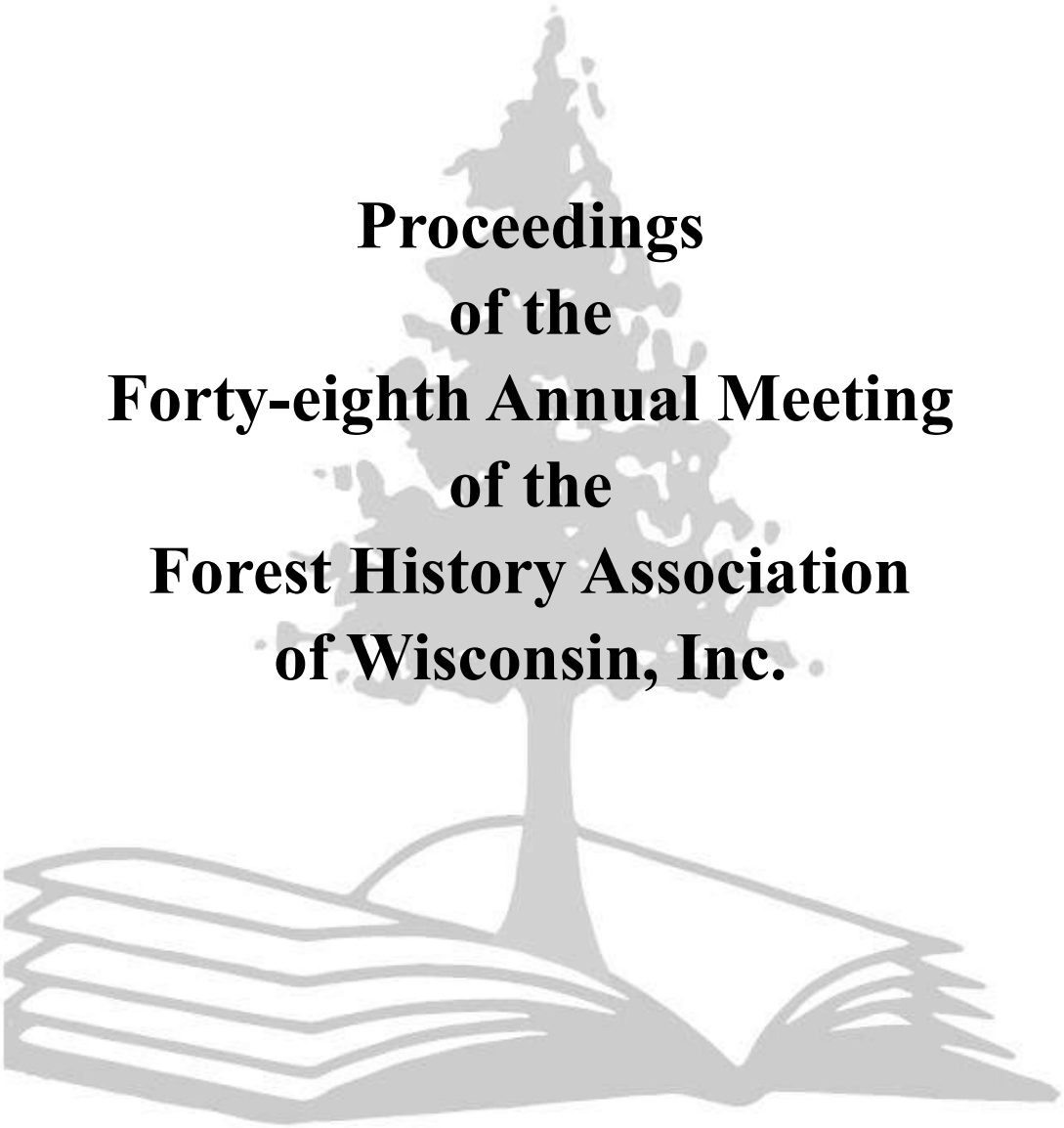
“The Military’s Role in Wisconsin’s Forest History”



Proceedings
of the
Forty-eighth Annual Meeting
of the
Forest History Association
of Wisconsin, Inc.

October 6—7, 2023
Tomah, Wisconsin

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Founded, 1975

“The past is but prologue to the future”

The Forest History Association of Wisconsin

The Forest History Association of Wisconsin had its beginnings early in 1975 when a group of representatives from the wood products industries, conservation agencies and the University of Wisconsin met to discuss a potential bicentennial project which would remind our citizens of the importance of forests in Wisconsin's past, present and future.

Their discussions led to the founding of the Association as a non-profit, tax-exempt endeavor whose principal objective would be to preserve Wisconsin's forest heritage. Membership is currently 184 individuals, corporations and institutions.

A twelve—fifteen member Board of Directors serves as the Association's governing body. Officers and directors for 2023 – 2024 are:

John Grosman (2024) President ..... Woodruff
Tom Jerow (2024) Vice President ..... Rhinelander
James Kerkman (2026) Treasurer ..... Bangor
Joe Hermolin (2025) Secretary ..... Antigo
Ed Forrester (2024) Past President ..... Cumberland
Kolleen Kralick (2024) ..... Rhinelander
Ricky Kubicek (2025) ..... Milwaukee
Nicole Filizetti (2025) ..... Minocqua
Arno Helm (2025) ..... Merrimac
Cindi Stiles (2026) ..... Rhinelander
Tony Waupochick (2026) ..... Keshena
Bob Walkner (2026) ..... Two Rivers
Don Schnitzler (2026) ..... Marshfield

The years indicate the year in which the director's term ends. Directors are elected by the members at the annual meeting for a term of three years with one-third (four) being elected each year on a rotational bases to maintain some continuity on the Board. Officers are elected by the Board members for two-year terms at the first Board of Directors meeting after the annual meeting — the president and vice-president are elected in even years and secretary and treasurer in odd years.

The Association has published a number of booklets which will have some appeal to most forest history enthusiasts:

- *Proceedings of Annual Meetings – 1976 – 2008*
- *Bibliography of Wisconsin Forest History Literature*
- *"Chips and Sawdust" (Quarterly Newsletter)*
- *A Chronology of "Firsts" in Wisconsin Forest History*
- *Logging and Lumbering Museums in Wisconsin*
- *Ghosts of the Forest: Vanished Lumber Towns of Wisconsin, Volume 1*

Information regarding the Association can be found by visiting the website:

https://www.foresthistoryassociationwi.com/

Information on any aspect of the Association's program and policies may be obtained by writing to:
Forest History Association of Wisconsin, P.O. Box 186 Bangor, WI 54614 .

Table of Contents

Foreword

The following text comprises the official transactions conducted, and the written papers presented, at the Forty-eighth Annual Meeting of the Forest History Association of Wisconsin held October 6-7, 2023 at Tomah, Wisconsin.

FHAW members Jim Kerkman, John Grosman, Arno Helm and Don Schnitzler served as the Conference Planning Committee making the necessary arrangements for an informative and enjoyable time in Tomah and at Fort McCoy. The Association appreciates all their efforts but especially wants to recognize the work of Jim Kerkman who coordinated most of the local details. The Association also appreciates the hospitality of host facilities, Tomah Area Historical Society, Cranberry Country Lodge and Fort McCoy, as well as the willingness of presenters to share their time and expertise with us.

We invite any reader of this 2023 Forest History Association of Wisconsin Proceedings, who is not already a member, to join us in our efforts to preserve the record of Wisconsin's forest history.

To learn more about the Association and to join us visit our website:
http://www.foresthistoryassociationwi.com/

Contact us by email: thefhaw@gmail.com

Follow us on Facebook! https://www.facebook.com/chipsandsawdust

View our recorded Forest History related presentations (webinars, conferences, etc.) on our YouTube Chanel: https://www.youtube.com/@foresthistoryassociationof9548

Don Schnitzler
2023 Proceedings Editor

"The Military's Role in Wisconsin's Forest History"

October 5 - 7, 2023

2023 Annual Conference of the Forest History Association of Wisconsin

Thursday, October 5, 2023

FHAW Board Meeting at 1 pm *(Tomah Area Historical Center, 321 Superior Ave, Tomah)*

Dinner at 5 pm *(Pizones, 210 Superior Ave, Tomah)*

Friday, October 6, 2023 – **From 8 am to 5 pm** (*Cranberry Country Lodge, 319 Wittig Road, Tomah)*

Morning

- Welcome: — Member of the Fort McCoy Command Group
- History of Fort McCoy – Fort McCoy Public Affairs Office
- Break – Refreshments
- History of Army Forestry Operations – Troy Morgan, Historian, Fort Leonard Wood, Missouri
- Fort McCoy Natural Resources Program History – Tim Wilder, Chief, Natural Resources Branch, and Charles Mentzel, Forester, Fort McCoy

Noon Hour — Catered Lunch and FHAW Business Meeting

Afternoon

- WWII POWs and CCC at Camp McCoy – Ryan Howell, Archaeologist, Fort McCoy
- Break – Refreshments
- US Forest Service Radiation Research at Rhinelander – Ed Bauer
- Forest Products Laboratory - Supporting the Nation's Armed Forces with Valuable Wood Research for Over a Century – Robert Ross

Friday, October 6, 2023 – **From 5 to 8 pm** (*Cranberry Country Lodge, 319 Wittig Road, Tomah)*

- Cash Bar/Poster Session/Social Hour
- Dinner
- Ho-Chunk Iron Mound Singers

Saturday, October 7, 2023 — **From 9 am to 1:30 pm** *(Depart from Cranberry Country Lodge)*

Fort McCoy Tour Highlights

- CCC camp excavation site
- WWII prisoner of war camp site
- WWII POW plantation

Lunch at Commemorative Area

48th Annual Forest Conference

Tomah, Wisconsin

The FHAW held its 48th Annual Fall Conference during October at Tomah with the theme "The Military's Role in Wisconsin's Forest History." The Cranberry Country Lodge served as an ideal setting for lectures, poster sessions, the annual membership meeting and banquet.

A series of lectures Friday took conference attendees through the history of Fort McCoy from its original name in June 1909, the Sparta Maneuver Tract, containing areas known as Camp Emory Upton (a maneuver camp) and Camp Robinson (a field artillery camp) to its renaming in 1926 as Camp McCoy. Fast forward to September 1974 when the post was recognized as a year-round army training facility and renamed Fort McCoy.

Troy Morgan, a historian from the U.S. Army's Engineer Museum at Fort Leonard Wood, Missouri shared the history of army forestry operations from the American Revolution to the modern era. While there was always a demand for wood products by the military, it wasn't until World War I when this requirement soared. Before that time army engineers used rough cut wood and logs to construct buildings, fortifications, and bridges.

Bob Ross, a retired project manager of the Madison-based Forest Products Laboratory (FPL), a centralized, national wood research laboratory highlighted its support of the Department of Defense (DoD) through approximately 10,000 articles, reports, manuals, other technical publications generated and provided to the DoD since FPL's founding in 1910. FPL has provided support on a broad array of technical questions—from design of packaging for transporting materiel to Europe and the South Pacific during World War II to assisting in the design and repair of motor mounts for minesweepers used in Desert Storm.

Ryan Howell, garrison archaeologist at Fort McCoy, gave an interesting presentation about the use of then Camp McCoy during the 1930s and 1940s highlighting Depression era programs like the Works Project Administration and the Civilian Conservation Corps. He also talked about the camp's use as an alien internment camp early in World War II, and later as a Prisoner of War camp for captured German and Japanese combatants. Some of these areas and their archeological evidence were highlighted during Saturday's tour.

About 40 members and guests listen as Ryan Howell talks of archeological evidence existing at Fort McCoy related to past use as a Civilian Conservation Corps Camp during the recent FHAW Fall Conference held at Cranberry Country Lodge.

During this time, 1942 – 1946, Camp McCoy ran its own sawmill with all the lumber used for on base facilities. Today Fort McCoy forestry operations are managed by a forester under the Natural Resource Branch. Tim Wilder, chief of the Environmental Management Division, and Charles Mentzel, forester, shared the history of natural resource management at Fort McCoy before and since World War II, specifically addressing the timber sale program, forest inventory, tree planting, timber stand improvement and more. Mentzel said that they have surpassed planting two million trees in Fort McCoy's history. For their efforts, Fort McCoy has been awarded the Tree City USA award by the National Arbor Day Foundation every year since 1989.

Adding interest to the line-up of presentations, was a talk by Ed Bauer, a research technician who 50 some years ago, studied the effects of radiation on 1,400 acres of woodlands near Rhinelander for the U.S. Forest Service and the Atomic Energy Commission. The experiment was ended by the Atomic Energy Commission after only three years of operation. There hasn't been any radioactivity since then and the site was eventually decommissioned by the Wisconsin Department of Natural Resources.

Friday evening attendees met for a social gathering, dinner banquet and as visitors to Ho-Chunk ancestral lands, a drum ceremony provided by the Ho-Chunk Iron Mound Singers who shared the history and meanings of their native songs.

The Iron Mound Singers performing at the FHAW Banquet at Tomah

Poster Sessions provided an opportunity to share and learn beyond the lectures. At top: Mary J. Schueller, author of Soldiers of Poverty, stands ready to discuss the Civilian Conservation Corps camps in Wisconsin and her other research efforts. Middle: John Grosman, FHAW president, shared information about Jay Cravens' book, "A Well Worn Path," highlighting his civilian experience in South Vietnam during 1967-1968 with the U.S. Forest Service. At bottom: Sara Rother, a forester with the U.S. Corps of Amy Education displayed a collection of historical publications.

FHAW Members Tour Fort McCoy

Kolleen Kralick leads a discussion at an archaeological excavation on Fort McCoy. The excavation exposed a foundation and artifacts at the site that was the location of three storage warehouses for the regional distribution center for the Civilian Conservation Corps in the 1930s. The area later became part of the prisoner of war camp for World War II detainees from Germany, Japan, Italy and Korea.

Cindi Stiles and Kolleen Kralick lead a discussion about historical sites and the loss of critical information from sites by looting. When an artifact is removed from a site, the context and relationship to other artifacts and cultural objects is lost, reducing the ability of researchers to piece together a story. The group is standing among cement tent pads that were associated with summer training camps from the 1920s and 30s.

The first stop on the tour was a red pine plantation planted in 1942 by prisoners of war at Camp McCoy. They were most likely German prisoners. Charles Mentzel, installation forester, leads a discussion on the planting and management of the plantation. Mentzel provided a handout with a map of the plantation and management highlights through the years. It was first commercially thinned in 1973 and has been thinned six times since. It is estimated the plantation brought in $78,800 in revenue over the years by harvesting 1,465 cords of pulpwood and 277,000 board feet of timber. In 1978, 20 acres of the plantation was clearcut to salvage the trees from an insect infestation. That area was replanted in 1979.

Tour participants escaped from the wind and cold by having lunch in a restored World War II mess hall. This building is part of the Fort McCoy Commemorative area, which includes a variety of WWII buildings with historic displays, a large military equipment park and Veterans Memorial Plaza.

Our Speakers

Tonya Townsell is garrison public affairs officer at Fort McCoy. She has extensive experience in leading public affairs communications efforts at army garrisons in various levels. Townsell came to the Fort McCoy Public Affairs Office in October 2015 from the Presidio of Monterey in California where she worked for six years. Prior to that, she had extensive experience in all aspects of army public affairs at organizations across the United States, as well as Germany. Her wealth of knowledge was gained working a variety of public affairs angles – both, as a civilian and as a soldier since 1990. Townsell holds a bachelor's degree from the University of Washington. Her various public affairs training comes from the Defense Information School.

Troy Morgan is a retired soldier who holds a bachelor's degree in history and government from Columbia College, a master's degree in military history from American Military University, and a master's degree in education from Drury University. He has worked for the U.S. Army's Center of Military History, Army Museum Enterprise for 16 years and currently serves as the Deputy Chief, West Region, Army Museum Enterprise, providing management oversight to 15 Army museums west of the Mississippi River.

Tim Wilder is Chief of the Natural Resources Management Division at Fort McCoy. He graduated from UW Stevens Point in 1986 with a bachelor's degree in forestry administration and a minor in wildlife management. He began work at Fort McCoy in 1985 as a biological science student trainee. He accepted a wildlife biologist position at Fort McCoy in 1987, which he held until 1994 when he moved into the endangered species biologist position. He served as the installation endangered species biologist until 2019 at which time he accepted his current position as Chief of the Natural Resources Branch.

Charles Mentzel is the forester at Fort McCoy. He began his career at Fort McCoy in 1987 as a junior fellowship trainee student. He worked summers and school breaks until he graduated from UW-Stevens Point in December 1991 with a bachelor's degree in natural resources management and a minor in forestry. In the spring of 1992, he accepted the position of forestry technician. Except for a 22 month temporary promotion as the forester, he worked as the forestry technician for 28 years, accepting the forester position in April of 2020.

Ryan J Howell has conducted archaeological research in Wisconsin, and particularly northern Wisconsin for more than 25 years. He is currently the garrison archaeologist at Fort McCoy for the U.S. Army. He received his bachelor's degree in archaeology/anthropology from the University of Wyoming and his master's degree at the University of Wisconsin-Madison in 1998.

Ed Bauer is a retired researcher with the U.S. Forest Service. He was born and raised in North Dakota. In 1962, he attended the Medical Institute of Minnesota for medical lab and radiology. In 1964, he moved to Rhinelander to work at St. Mary's Hospital. Following military service in the U.S. Army between 1965 and 1967, he attended Nicolet College to obtain an associate's degree. In December 1967, he was employed by the U.S. Forest Service as a biological sciences technician until retirement in 2000. During those years he worked in several different projects, radiobiology, genetics, biotechnology, and short rotation woody crops and received 22 special recognition awards. In the last years, his work was directed toward phytotechnology for environmental and riparian remediation using trees, namely hybrid poplars and willow. From 2000 to 2022, Bauer was a volunteer for the USFS, a consultant for Sand Creek Consultants, an employee of Iowa State University for 10 years, did contract work with the Mole Lake tribe and worked on the Great Lakes Restoration Initiative using phytoremediation technologies. In 2005 he received the Emeritus Technician Award from the Northern Research Station. He is co-author of 30+ peer reviewed journal articles, numerous conference papers and tech notes and abstracts.

Dr. Robert Ross is a retired USDA Forest Products Laboratory researcher. He served in a variety of leadership roles during his 35 years at FPL. His research focused on the development and use of nondestructive evaluation technologies for wood products and structures. Ross has worked on a variety of projects, including in-place assessment of members of the USS Constitution. He has written or co-authored more than 350 technical reports and articles and holds thirty-one U.S. and foreign patents. He was technical editor for the centennial edition of the Wood Handbook: Wood as an Engineering Material, and is a Fellow in the International Academy of Wood Science. He holds BS (Wood Science) and MS (Engineering Mechanics) degrees from Michigan Technological University, and a PhD (Engineering Science) from Washington State University.

History of Fort McCoy

Presented By

Tonya Townsell

Fort McCoy is named for Robert Bruce McCoy. He was born September 5, 1867, in Kenosha, Wisconsin. The son of a Civil War Captain, McCoy was a prominent local resident who served as a lawyer, district attorney, county judge and mayor of Sparta, Wisconsin. In 1920, he was nominated as the Democratic Party candidate for governor of Wisconsin.

Major General Robert Bruce McCoy

McCoy's military career began in May 1895. He reached the rank of major general during his 31 years of distinguished service, which included duty in the Spanish-American War, the police action in Mexico, and in World War I.

The idea of using land east of Sparta as an artillery range was conceived by McCoy. He had the foresight to recognize that future conflicts were inevitable, weapons could be improved upon, and training had to be emphasized.

Upon returning from the Spanish-American War, he envisioned an artillery camp, suitable for training Soldiers, situated in the low pastures and wooded hills surrounding Sparta. He started by buying small tracts of land, which he rented for grazing to finance additional land purchases. Eventually, he acquired 4,000 acres.

Maj. Samuel Allen, commander of the 7th Field Artillery, Fort Snelling, Minn., also admired the terrain of Sparta area for its training value. In September 1905, McCoy invited Allen's unit, along with an Army board of reviewing officers, to put the land to the test during 16 days of training on his family ranch.

In 1906, William Howard Taft, then Secretary of War, advocated building four large maneuver camps across the nation for use jointly by the regular Army and National Guard. They initially looked at land that was less expensive at Camp Douglas, but when local landowners heard the news, the land prices skyrocketed about tenfold from about $3.00 an acre to $30.00 an acre. This resulted in the McCoy property as a more realistic option and led to the decision to purchase the McCoy property and additional land of approximately 14,000 acres. This became what is now known as "South Post." The total parcel was divided approximately in half by the

Chicago, Milwaukee, St. Paul and Pacific Railroad. Situated north of the tracks was a maneuver camp named Camp Emory Upton; an artillery camp known as Camp Robinson went up to the south of the tracks. Temporary galvanized buildings were constructed in the summer of 1909 and the training began. The railroad provided an unloading sidetrack near the artillery camp and ran a spur into the maneuver camp. The first unit that arrived was a medical unit from Fort Russell, Wyoming.

In 1910, $40,000 in additional improvements were authorized. Construction was aimed at making the site permanent. Events during 1910 also helped the camp's reputation as an excellent field artillery site, with batteries from Fort Snelling; Minnesota; Fort Sheridan, Illinois; Fort Leavenworth, Kansas; and several National Guard units training there.

In 1911, a concrete ammunition storehouse was constructed at a cost of $8,000. The camp was named Camp Bruce E. McCoy in honor of Robert B. McCoy's father, who had served in the Civil War and for years owned the old Lafayette mill property, the land on which the maneuver camp was located.

Improvements and additions were made between 1910 and 1919 that included rifle ranges, office buildings and storehouses. Until 1919, the camp was a favorite of artillery, and was at one time described as the largest, most modern and most beautiful in the nation. It continued to grow through WWI with the construction of barracks, mess halls, stables and warehouses. Field artillery units trained at the camp during WWI through 1918.

Training stopped from 1919 to 1923, and the reservation was designated the Sparta Ordnance Depot. The primary function of the camp was to handle, store and ship explosive material. Thousands of tons of powder and Pyrex cotton – a highly explosive substance made of cotton treated with nitric and sulfuric acids – were shipped to the reservation for storage in magazines.

From 1923 to 1925, the U.S. Department of Agriculture acted as custodial agent for the camp as activity centered on dismantling the wartime barracks and the deactivation of the Ordnance Depot. The powder was processed at the depot and sold as dynamite to the commercial market. Lumber salvaged from the dismantled barracks was used to box and ship surplus powder to other government-owned depots.

Maj. Gen. Robert Bruce McCoy, 58, died on January 5, 1926, from pernicious anemia. On November 19, 1926, the War Department renamed the Sparta Military Reservation as Camp McCoy. The War Department once again regained control of the camp and construction started on barracks, mess halls, storage facilities and open sided stables. Summer artillery training was conducted from 1926 to 1933 by Regular Army, Reserve Officers Training Corps, and Officers Reserve Corps units from Illinois, Wisconsin, Minnesota and Iowa.

From 1933 – 1935, Camp McCoy was designated as a Civilian Conservation Corps (CCC) supply base, administering the supply of clothing, subsistence and equipment for Wisconsin CCC

camps. A discharge and reception center was established at Camp McCoy in 1939 to out-process enrollees until the center was closed in fall of that year.

From 1935 – 1941, the Works Progress Administration (WPA) cooperated with the U.S. War Department in a $22,000 building program at Camp McCoy that included construction of six wood buildings. The WPA also constructed the Camp McCoy stone entrance gates in December 1940. The South Post Stone Gates at State Highways 16 and 21 are the only remaining structures constructed by the WPA at Fort McCoy.

With another world conflict looming, Camp McCoy was the center of military interest when it was selected as the site for the Second Army Maneuvers. In August 1940, all National Guard and Regular Army troops in the states of Indiana, Illinois, Wisconsin, Michigan, Kentucky, Ohio and West Virginia concentrated at Camp McCoy for intensive training. The maneuver area covered 1,000 square miles in four counties. Approximately 65,000 enlisted men and officers were assembled under the command of Lt. Gen. Stanley H. Ford. The maneuvers marked the largest troop concentration in the Midwest since WWI, as well as the first time the Second Army had been concentrated in one area.

By now the camp was at full utilization and needed to grow. More than 45,000 acres were added between 1938 and 1942. With this additional land, total acreage increased to more than 60,000 acres.

The first unit to train at the "New Camp" in 1942 was the 100th Infantry Battalion. The 100th established one of the most outstanding battle records of any unit in WWII history.

In February 1942, the War Department announced the building of the cantonment area, referred to as the "New Camp," which still serves as the installation's cantonment area today. Enough facilities were constructed to house, train and support 35,000 troops. Inaugurated on August 30, 1942, some 8,000 local workers participated in this building project which took nine months to complete. The triangular shape of the cantonment area, or 'triad," was designed to allow troop units to live and train efficiently under one headquarters. More than 1,500 buildings were constructed at an estimated total cost of $30 million. The temporary wood buildings were required to last five years.

The former CCC discharge and reception center located on South Post was converted into a prisoner of war (POW) and relocation camp. The facility consisted of 35 buildings and a 20-

acre enclosure. The FBI relocated 293 enemy-alien internees to Camp McCoy. The camp was the largest holding facility for Japanese POWs (2,700) in the Continental United States and housed nearly 3,000 German and 500 Korean POWs until POW operations were ceased in 1946.

The first unit to train at the "New Camp" was the 100th Infantry Battalion, comprised of Hawaii National Guardsmen who were Americans of Japanese ancestry. The 100th served with distinction in Italy, suffering severe casualties while establishing one of the most outstanding battle records of any unit in WWII. More than 9,000 Purple Hearts were awarded to members of the 100th.

In 1945, the post's mission was changed to that of a reception and discharge center for soldiers returning from overseas. Men from Wisconsin, Minnesota, North and South Dakota, Michigan and Montana were processed and discharged. The reception section handled 5,400 soldiers a week, while the separation section handled 800 a week. When the center closed in 1946, nearly 250,000 soldiers had been processed.

In June 1947, the camp was put on inactive status. Reserve and National Guard units still used it as a summer training camp during the next few years.

The camp was reactivated in September 1950, shortly after the conflict in Korea started. The camp served as a major training center for the Fifth Army area, preparing soldiers for battle in Korea. The peak strength reached after activation was about 19,000. Earlier in that same year the post was considered a possible site for a proposed U.S. Air Academy.

In October 1951, the camp again became a reassignment and separation center. Before the center closed its doors in January 1953, more than 15,000 men were separated from service, and another 18,000 men had been reassigned to other posts.

In 1952, Camp McCoy came to the aid of the civilian community during the polio epidemic. More than 100 civilian patients were treated at the station hospital.

Camp McCoy made headlines in the winter of 1959 when the post was considered as a possible site for an intercontinental ballistic missile (ICBM) base. The Army opposed the idea and resisted Air Force efforts to have the site located there, reasoning that the Army may need all of Camp McCoy, which was still deactivated, at some later date.

In 1962, the state of Wisconsin was granted a right-of-way easement over 400 acres of installation property to build Interstate 90. The borrow and fill removed from three locations resulted in three lakes now known as Big Sandy, Sandy and West Sandy. These lakes became popular fishing and recreation areas.

The camp was officially renamed Fort McCoy on September 30, 1974. This designation recognized Fort McCoy's status as a year-round Army training facility.

In May 1980, Fort McCoy was designated as a Resettlement Center for Cuban refugees who came to the United States when Fidel Castro allowed them to leave Cuba as part of the "Freedom Flotilla." Approximately 15,000 Cubans were house at Fort McCoy through September.

Cuban refuges at Fort McCoy.

Fort McCoy's role as a mobilization site was evident during Operation Desert Shield/Desert Storm. A total of 74 units from nine states, accounting for more than 18,000 soldiers, as well as 3,400 items of equipment, deployed and redeployed through the installation.

The attacks on September 11, 2001, was the beginning of the Global War on Terror and Fort McCoy assumed the mission to prepare soldiers for deployment and assisted them in returning. As Operation Enduring Freedom began in Afghanistan in October 2001, Fort McCoy would serve as one of the mobilization training centers for reserve-component military personnel.

In March 2003 Operation Iraqi Freedom began and Fort McCoy created operating bases, Asian villages and live-fire convoy ranges to implement a training methodology known as Theater Immersion Training. Soldiers trained in an environment and in situations that replicated, as realistically as possible, those they would experience overseas.

In August 2021, Fort McCoy started to temporarily house refugees from Afghanistan as part of Operation Allies Welcome. Before the last group left in February 2022, the installation housed 12,706 refugees, taking in the largest population of refugees among the eight installations taking part in the operation.

History of Army Forestry Operations

By

Troy Morgan

Since the American Revolution, the Army called on its forestry engineers to produce lumber products in theater. Just like the lumber they produced, there were never enough of these men. The skills of lumbermen are time consuming to learn, the machinery complex and cumbersome, and the work is difficult and dangerous.

In the early days, lumber was just crude trees, sometimes shaped with an axe or adze. In 1821, soldiers stationed at Fort Snelling, Minnesota, built a sawmill at nearby St. Anthony Falls.

Several engineer regiments were raised during the Civil War. Most performed general engineer support and few specialty units were formed. When lumber was required, the needing unit was responsible for its procurement. During the Atlanta campaign, seven trestle bridges were built across the Chattahoochee River from the trees that lined the bank. Engineer detachments were sent to cut the trees and transport them to the river. When the Army was in areas where lumber was not plentiful, the American Southwest for example, alternate construction methods were used. Many of those forts were made with adobe.

Occasionally, units would operate private sawmills. Such was the case, in April of 1864, for Company E, 1st Regiment of Missouri Volunteer Engineers, who operated the mill of Mr. S. A. Ballinger. This mill, located in Waverly, Tennessee, was operated by Union forces for 54 days, at a cost of one dollar per day. This was the exception as the common building materials at the time were raw logs. A church that was built in the compound of the 50th New York Engineers near Petersburg, Virginia, almost exclusively used logs in their native form, even using smaller sticks as the decorations. If mills were located in liberated Confederate territory they were often seized.

The Spanish-American war saw the emergence of America as a global power. There is no documentation of U.S. Army soldiers operating sawmills during the Spanish-American War, likely because the war lasted under eight months.

Following the Spanish-American war is a period of known as the Philippine insurrection. No documentation of soldiers operating sawmills has been found, but the United States Army had two companies of engineers in the Philippines, so sawmills were possible, although not documented. There are documented instances of the Army purchasing either dimensional lumber or in most cases firewood from local vendors. Although earlier wars don't highlight the use of soldier foresters, it sets the stage for the Army bringing on active-duty loggers and lumbermen. The short period between the Spanish-American War and World War I is a huge transformational period in the Army.

In 1901 the Army War College was created because the Spanish-American War was a logistics nightmare. The Army and the Navy weren't prepared for warfare of that size and scope, adding to that, the United States is fighting all over the world at that time. General Order 155, issued in 1901, does two things: 1) It creates the Army General staff, a more professional and unified command organization that prepares the Army for success in future conflicts and allows better planning. 2) It creates the Army War College, today located at Carlisle Barracks, Pennsylvania.

The War College is a graduate school for Senior officers. Lieutenant colonels and colonels go there to learn to work on senior level staffs and command higher level units. General Order 155 creates a school for the students to work on military issues of the day that were of interest to the general staff of the Army. Another influence on the Army and later use of forces is the Russian-Japanese war. There was a tendency of allied nations and even neutral nations to send observers to conflicts. The Army sent observers to the Crimean War and the Russian-Japanese war to get an assessment of how warfare was evolving. The lesson learned from the Russian-Japanese war is that technological advancements over the previous years would favor the side adopting the advances. There was a massive use of trench warfare in the Russian-Japanese war.

In 1916, with the United States involved in the Punitive Expedition in Mexico, and World War I in Europe, the Army starts expanding the forces and specifically added 10 engineer regiments. Congress created the authorization before the units were created. Instead of expanding the regular Army, Congress expanded the National Guard and what later became the Army Reserve by adding nine railway regiments and a forestry regiment. To over-simplify, there are two types of engineers, type one destroys things and type two builds things.

Soon after the United States entered World War I in 1917, it became obvious that this war, fought in trenches across the French countryside, would require large amounts of wood products.

General Pershing, capitalizing on the lessons learned from the Spanish-American War, and realizing that lumber would have to be produced in theater to save vital shipping space, cabled the War Department stating "To send fighting troops before an adequate supply of lumber could be assured was without avail. Lumbermen should be among the first troops

Engineers working in forest at Camp Mortumier Forestry Depot. Co. E, 10th Engineers, Glen, France, during WWI.

sent overseas." In response to this pressing need, the 10th Reserve Engineers (Forestry) was authorized on May 17, 1917, and deployed to France on August 10. This was the first unit ever raised with the specific mission of lumber procurement and distribution. The insatiable need for lumber in the trenches necessitated the rapid expansion of the Forestry Engineers. On October 18, 1918, the multiple Forestry companies and battalions were reorganized into the 20th Engineer Regiment.

Sawmill 1918 , Sawmill at Camp Brookings near Landres, France, December 1918. (Signal Corps photo by Sgt. F. T. Morris).

The 20th Engineers was the largest regiment to serve in World War I, with over 18,500 troops assigned to 14 Battalions, 49 Forestry Companies, and 28 Engineer Service Companies. Additionally, the Quartermaster Corps provided another 10,000 troops to support the 20th Engineers. These, mostly African American troops, were organized into 12 labor battalions, 15 pack trains, 3 wagon companies and one motor truck company.

When the shooting stopped on November 11, 1918, the 20th was operating 81 sawmills producing over two million board feet of lumber daily. By the time of its redeployment to the States, the 20th Engineers had produced over 300 million board feet of lumber and 317,000 cords of firewood. Although some wood was imported or purchased from French dealers, the 20th Engineer's contribution represented over 75 percent of all lumber and ties and over 90 percent of all firewood used by the American Expeditionary Forces.

A fascinating aspect about the history of U.S. Army forestry engineers is a unit known as the Spruce Production Division. The airplanes of the day were made of wood and canvas. The canvas was painted with a resin dubbing material. The lumber required to build these planes had to be straight-grained and Sitka spruce from the Pacific northwest supplied the ideal lumber. The commercial market for Sitka spruce was small and in 1916 the European allies were buying all the spruce the United States could produce, creating a spruce shortage. In 1916, the Army started to plan for war and forecasted the need for airplanes, coming up with 10 million board feet per month. At this time the commercial market was only capable of producing approximately two million board feet per month.

This situation was exacerbated by a labor shortage in the Pacific Northwest, which had been troublesome since the turn of the century. Many of the loggers had started to unionize under what was called the Industrial Workers of the World (IWW). In addition to the increase in de-

mand for Sitka spruce, the IWW implements a work slowdown in the camps making the situation worse. Spruce production continues to decline with the IWW targeting spruce because they realize the supply and demand situation and are trying to leverage that for their advantage. In May of 1917, General Pershing appoints a civilian, Brice Disque, to investigate the situation and provide recommendations. Brice had been in the Army for 18 years, attaining the rank of captain, and after leaving was appointed as warden of a prison in Michigan.

Brice proposed using soldiers to improve the situation on September 29, 1917, and returns to active duty as a Lieutenant Colonel and then promoted to Colonel. He is appointed to lead the Spruce Production Division at Portland, Oregon. Instead of the Division becoming a forestry unit under the Army Corps of Engineers, the Army placed them under the Army Signal Corps. This was because the Army focused on the end product, aircraft, not what they were producing. The Army Air Service was located within the Army Signal Corps. This meant the soldiers serving in the Spruce Production Division wore either the aviation insignia or signal corps insignia.

Corps sawmill on Luzon operated by the 1612th Engineer Forestry Company, April 1945.

The Spruce Production Division had four missions: 1) Improve the civilian labor situation and increase production. 2) Build railroads to transport the spruce through the mills faster and to get into deeper spruce forests. 3) Production of spruce lumber using soldier loggers. 4) Operate a large sawmill where the trees were milled into lumber to send to the aircraft manufacturing facilities.

To improve the civilian labor situation, soldiers were brought in to work side-by-side with civilian loggers and improved food was served at the logging camps. This created a club, for lack of a better term, known as the Loyal Legion of Loggers and Lumbermen, better known as the "4Ls." The soldiers wore one inch collar discs to designate their branch of service and the 4Ls organizers handed out similar disks for the civilian loggers to wear within the camps. But it takes more than improving the food in the camps and handing out little buttons to suppress the IWW. While not an official Army policy found in historical records, it is believed that union leaders in the camps were being drafted and finding themselves in France.

Both the 20th Engineer Regiment of France and the Spruce Production Division were highly centralized operations. Unlike the highly centralized command and control of World War I, World War II Engineer Forestry Companies were normally assigned to theater engineer units.

The geographically dispersed nature of the conflict coupled with the highly mobile operations required decentralized command and control.

The 800th Engineer Forestry Company is the first forestry unit to deploy during World War II, participating in the North African-Italian and the European campaign. The Army also deployed five forestry companies to the Pacific and two to the China-Burma-India Theater of Operations. The Chief of Engineers after-conflict reports and after-action reports from World War I and World War II both say the same thing; there were not enough forestry units operating. The Final Report of the Chief Engineer European Theater of Operations during World War II summed up both the shortage of forestry companies and their desired command and control; "The number of Engineer Forestry units was inadequate to meet requirements. As many as 20 forestry companies could have been used to advantage. The conditions in the Theater were such that supervision by forestry battalion headquarters was unnecessary ... "

The final report disclosed a huge gap in capacity that was filled by substitution. As an example, one Army post office in New Guinea was constructed of corrugated tin that was likely repurposed from somewhere else in the theater. Many buildings were constructed with canvas wood from shipping crates. It's more common to see repurposing of shipping crates in the Pacific Theater than in the other theaters of operation, mainly because the policy to defeat Hitler gave the European Theater more priority for supplies. The other reason was the extreme distances in the Pacific Theater. Higher priority supplies such as ammunition, food, fuel, equipment were shipped first and at the bottom of the list was lumber, because it's big, consumes a lot of shipping space, and the military could generally deal without it.

In addition to substitution was the use of native materials and hiring locals to build facilities. Capturing enemy stocks was another way to acquire construction materials. This also occurred in the European Theater. Army foresters produced 11,000,000 board feet of lumber during the conflict but captured 24,000,000 board feet of German and Italian lumber, more than twice what was sawn by the U.S. Army.

To alleviate the lumber shortage, the Engineer Board issued chainsaws to conventional engineer units. Saws came in 24-inch and 36-inch models, both requiring two men to operate. The saws were fielded in 1942 with 15,230 of the 36-inch and 295 of the 24-inch saws purchased. There were fewer 24-inch saws issued because they went only to airborne engineer battalions to support airborne divisions. The smaller saws were more practical when parachuting out of airplanes. Issuing the chainsaws to non-forestry units not only assisted these units in clearing obstacles, it also allowed the units to produce their own pilings, firewood, and in some cases, dimensional lumber. The Army also maintained portable sawmills at the theater level. When there was a shortage of lumber, a sawmill was issued to a non-forestry unit to have them produce lumber.

In New Caledonia, a sawmill that was abandoned for a decade was identified through aerial reconnaissance and a company of the 131st Engineers prepared the mill for operation and

started producing lumber. Logs were floated down the river and then pulled up onto a make-shift small train with a Derrick for the short trip to the mill itself.

The Army contracted civilian mills to produce lumber. In the European Theater of operations in November of 1944, General Patton's Third Army, contracted with 21 civilian mills to produce 324,000 board feet of lumber. At the same time, a First Army Engineer Forestry company used two mills and produced 382,004 board feet. In civilian mills, soldiers were provided to augment whenever a labor force was short. It wasn't common, but it did happen. In southern Germany, the 7th Army engineers took over a mill when the employees had refused to report to work.

Post-war budget cuts and years of occupation duty found the United States Army unprepared for the unexpected war in Korea. The troops needed lumber products, but ammunition, replacement troops, and equipment were higher priority. Most of the trees had been removed from the southern half of Korea and little lumber was initially available. With so few trees available there wasn't much incentive for the U.S. Army to deploy forestry engineers. Creative procurement, or "scrounging" as the soldiers call it, was the key to successful operations.

Captain Richard McAdoo's, Company A, 65th Engineer Combat Battalion, bridge across the Nan River at Chinju was typical of early operations. He had 300 feet of river and 200 feet of bridging supplies. A reconnaissance party sent downstream uncovered some steel pilings and a large stockpile of heavy timbers. With the freshly liberated timbers the 65th was able to put a bridge across the Nan River that sustained the Eighth Army's drive northward.

Once armistice talks opened in Panmunjom, the Korean War began to resemble the trench warfare of World War I. Trenches, bunkers, and command posts all required large amounts of lumber, and it was initially impossible to import enough to meet the need.

While the more stationary nature of the later stages of the conflict allowed lumber to flow forward to the units at the front, shortages persisted. The 11th Engineer Combat Battalion started operating a portable sawmill to relieve some of the backlog of lumber orders. This mill stayed in operation well after the war's conclusion.

The Army experimented with an airborne sawmill, taking a commercially available Little Giant Self-Propelled Tractor Saw, painting it green, and dropping it out of an airplane with a parachute. These experiments, according to the reports, were successful. However, for some reason the Army never decided to operationalize or implement this concept.

By the mid-1960s, the escalating war in Vietnam provided what appeared to be a prime opportunity for Army loggers. Vietnam contained many exotic hardwood species and vast areas of timbered land. Army Engineers expressed an interest in setting up a sawmill in the forest across the bay from the large logistical base on the Cam Ranh Peninsula. In the spring of 1965, the 80th and 81st Engineer Detachments (Forestry) were activated at Fort Belvoir. The isolated nature of Army forestry operations, and the fact that the proposed area was a Viet Cong

stronghold led the Army to cancel plans to deploy forestry detachments to Vietnam. Both the 80th and 81st Engineer Detachments served in Vietnam but were redesignated as Engineer Fire Fighting Detachments before deployment.

Most lumber products used by the U.S. Army in Vietnam were imported from other countries. Many Asian nations provided lumber, since Asian wood imports were cheaper than those coming from the United States. It was not uncommon in Vietnam to see concrete forms made of Philippine mahogany plywood.

During the Vietnam War, the mission of producing lumber was transferred from the active Army to the Army Reserve. In January of 1968, the 748th Engineer Detachment (Forestry) was activated at Missoula, Montana. At the same time in Hurley, Wisconsin the 457th Engineer Detachment (Forestry) was activated.

Eventually, the increasingly mobile nature of warfare coupled with advances in global transportation and Just-in-Time Logistics ended the need for U.S. Army Forestry Engineers. In the late 1990s the 457th Engineer Forestry Detachment was redesignated as a garrison support unit. Unit members prepared their portable sawmill for transport and boxed up their logging equipment for turn-in. Although forestry units passed from the Army's active rolls, their proud legacy lives on in an exhibit at the Army Engineer Museum at Fort Leonard Wood, Missouri.

Fort McCoy Forest Management History

Presented By

Timothy Wilder and Charles Mentzel

The earliest information about natural resources work on the installation was found in area newspapers and dealt mainly with tree planting, hunting and fires. The dates go back to the earliest days of Camp Robinson (1910) and Camp McCoy, both earlier names of Fort McCoy.

Prior to WWII there is evidence of many wildland fires started by soldiers while training and soldiers were used to help fight those fires. The first set of aerial photos in the state were taken in spring of 1939 and burned areas are visible in the photos. At that time, the "North Post" area was not a part of Camp McCoy, so it is likely the burns were accomplished by farmers looking to improve their pastures. There is evidence that the installation employed forest rangers in these early years to suppress wildland fires.

Firefighting in WWII focused on structural fires but there were plenty of large wildland fires started by military training. The cantonment, built in 1942, was mainly composed of wooden structures and heated with coal, creating the need for many fire stations for a rapid response.

The "Real McCoy" was the installation newspaper and is still published today. It covered all aspects of camp life and provides some information about natural resources during that time. One article describes the effort to create firebreaks by cutting trees and selling the wood for paper pulp. In this instance the trees were not cut through a commercial timber harvest but with prisoner of war (POW) labor, and then the wood was sold through the salvage office that also disposed of other materials such as scrap metal, obsolete vehicles, etc. The firebreaks were established in straight lines, up and down the ridges, following the installation boundary. This caused a problem with soil erosion that was addressed in subsequent years.

THE REAL McCOY

Published Weekly By and For The Military Personnel of Camp McCoy

VOL. II. CAMP McCOY, WISCONSIN, SATURDAY, JANUARY 15, 1944 NO. 19

SATURDAY, MAY 22, 1943

Tuesday Big Day For Anglers

Trout Season Opens Here

Half a Million Seedling Pines To Be Planted Here

Scouts Visit Camp McCoy, Plant 20,000 Trees Here

March 24, 1945

The Real McCoy, a private publication In the interest of the military personnel at camp McCoy established in July 1942.

Limited information concerning timber harvest and sawmilling was found in early forest management plans written in 1953 and 1970. The plans referenced a sawmill in operation from 1942-1946 with an estimated 100,000 board feet cut and used each year from logs cut on the installation with some of the labor provided by POWs. Pine and oak logs were cut into railroad ties, utility lumber and blocking for vehicle shipments. There was also considerable use of timber for training purposes such as troop and equipment cover, and material for constructing bridges, gun emplacements, dugouts and other training needs.

The earliest management plans for Camp McCoy that specifically addressed natural resources include a Forest Fire Control Agreement with the State of Wisconsin Conservation Department, dated April 22, 1948, and the Land Utilization and Management Plan, dated May 20, 1948, with a revision on June 25, 1954. The forest fire agreement likely resulted from the large number of forest fires that occurred as the result of training during WWII. The Land Utilization and Management Plan referenced the national policy on soil conservation established by an act on 17 April 1935 (49 Stat. 163: U.S.C. 590a – 590q) because of the "Dust Bowl" in the 1930s.

In 1952, the post commander requested the United States Department of Agriculture Forest Service (USFS) to do a forest inventory and management plan as the initial step to begin a commercial harvesting program. The USFS intentionally left out areas of cantonment, administrative and storage, impact areas, live fire ranges, and training and maneuver areas, determining the timber potential consisted of only 9,511 acres out of the total installation area of 61,454 acres. The USFS completed the survey in spring, 1953, using aerial photographs from a 1950 flight. L.O. Grapp prepared and submitted the report in June 1953. The report included recommendations for timber management and fire protection. In April 1954, the Camp McCoy engineering office wrote a forest supplement to the existing land management plan to incorporate the USFS plan into an installation document. The 1954 supplement mapped out 10 forest compartments to help streamline management activities.

The military has technical manuals to cover almost every activity they do, and equipment they use. In 1963 the Army teamed with the Navy and published the first technical manual covering natural resource management, (TM 5-631/NAVDOCKS P-52, Installations-General Woodland Management). It was developed with assistance from the USFS and listed the important objectives of woodland management at that time. The listing does not state the priority of each objective, but it is possible they are listed as the highest priority to the lowest priority. The objectives were (in order):

1. Protecting the real estate investment of the government from depreciation, exploitation, and depletion.
2. Facilitating the military mission.
3. Produce the maximum forest products needed.
4. Contribute forest products to the local and national economy.
5. Protect downstream property from flood and erosion damage.

In 1981, the manual was updated by the Army, Navy and Air Force and the title changed to "Natural Resources Forest Management", and it did not cite assistance from the USFS. The objectives and their priorities changed:

1. Contribute forest products to the local and national economy.
2. Provide for the optimum sustained production of forest products consistent with the military mission and multiple natural resource uses, with special attention to cultural resources.

3. Enhance military training facilities by providing accessible forestland cover, buffer zones, recreation areas and scenic values.
4. Develop and maintain wildlife habitat within the concept of normal forest management principles.

Notable changes in military forest management from 1963 to 1981 include: more emphasis on forest products and sustained yield; concern for cultural resources, threatened and endangered species and wildlife habitat; and increased concerns for safety.

Arguably, the most important legislation for military natural resources management was the Sikes Act passed in 1960. It required cooperation with state and federal agencies in managing fish and wildlife resources, required an Integrated Natural Resources Management Plan and allowed access to the public for hunting and fishing when compatible with military training.

Army Regulations (AR) are used to ensure uniform compliance with Army policies and to implement public law, policy guidance and instructions from higher headquarters and other government agencies. AR 420-74 required a woodland management plan if there were more than 100 acres of productive forestland on an installation. The AR was established in 1955, two years after Camp McCoy requested the USFS complete the forest inventory that identified 9,511 acres as productive, and one year after the Forest Supplement to the Land Management Plan. This showed Camp McCoy was at the forefront of Army forestry. Army regulations identified the requirements for installations to complete, whereas the technical manuals gave more details on how to stay in compliance with Army regulations. AR 420-74 was superseded by AR 200-3 that covered all the earlier actions and expanded threatened and endangered species provisions, added urban forestry and natural resources law enforcement. In 2007, AR 200-3 was merged into AR 200-1, an existing regulation that focused on environmental protection such as air and water quality, and solid and hazardous waste. This change brought all the "environmental" rules under one regulation. Under the revised AR 200-1, natural resources information was greatly reduced, and many natural resources managers still referenced AR 200-3 to fill in the gaps.

Until 1942, an Army regulation prohibited the sale of timber except trees that had been so damaged they were unusable for construction purposes. That loophole might have been used to allow the WWII sale of pulpwood from the boundary clearing by harvesting pulpwood that was too small or defective for construction. In 1947 the Army requested that the USFS study forest resources to determine the economic potential of timber harvesting. The first commercial sales on Camp McCoy were completed in 1954-55, harvesting 4,595 cords of jack pine for $18,912. The first sale areas eventually became part of the present artillery impact area.

Initially, funds used for forestry operations came from regular grounds maintenance budgets and timber sale income went directly into the U.S. treasury. Nation-wide, forestry revenue started to exceed operations cost in the late 1950s. In 1961, Section 511 and Public Law 601 were passed that segregated timber sale revenues so they could only be used to reimburse

forestry expenses. Funding uncertainty for forest management was reduced and the Army forestry program as a whole made a profit during the 1960s. The more profitable installations such as Fort Lewis, Washington and Fort Stewart, Georgia helped fund the establishment of forestry programs on other installations. The forestry program did not have to ask for general revenue funds from 1961 - 1981. In 1982 the program did not make an overall profit so general revenue funds were needed to close the funding gap. That has only occurred once or twice since 1982. Local governments were noticing the timber sale revenues from area installations and were able to obtain a share of the net profits to help offset the loss of tax revenue from the installation. Called the State Entitlement Program, it is uncertain what year it was enacted, but it is known that the local government's share of profits was increased from 25% to 40% in 1984.

From 1954 to 2019 Camp/Fort McCoy timber sale program results were:

- 227,350 cords of pulpwood/firewood harvested
- 8,340,550 board feet of sawlogs harvested
- $6,892,360 of income generated
- 30,080 acres harvested or thinned (does not include sales from 1954-1966)
- 324 timber sale tracts (does not include sales from 1954-1966)

(Acres harvested, and timber sale numbers does not include the years 1954-1966 because of incomplete records from those years.)

Administering timber sales was originally accomplished through an agreement with the Wisconsin Conservation Department because the installation did not have qualified staff to estimate timber volume or appraise its value. This changed in the early 1960s when staff were assigned and trained in forestry. The Army Corps of Engineers were assigned the task to administer timber sales since they are charged with overseeing all Army real property, including standing trees which are considered real property. Different districts have worked with the installation, with the latest being the Seattle district.

Harvesting timber on Army property poses some challenges. One of them is unexploded ordnance, or UXO. Live ordnance fire is directed into impact areas to contain the danger of UXO. The location of impact areas has changed over time, with eight areas scattered around the installation until the 1970s when they were consolidated into the 7,000-acre North Impact Area (NIA), and the small arms impact area. While there was some attempt at clearing out UXO from the abandoned impact areas, this was not 100% successful. There are chances someone could come across UXO anywhere on the installation. In most instances UXO are hard to see, being buried by leaves and debris and rusting over time, not an obvious "bomb" sticking out of the ground. All contractors and staff are required to take a short course on identifying UXO and the procedures to report the finding. Natural resource regulations to include hunting, fishing and firewood collecting, prohibit picking up or disturbing UXO. The rule of thumb is: "If you didn't drop it, don't pick it up."

Firing military ordnance and small arms creates another problem for the forestry program, metal contamination in the trees. With the change in impact area locations, trees that were growing behind a range during WWII will still contain metal. Although sale locations are reviewed with past range maps, sometimes metal contaminated timber is sold. Emil Jelinek, a long-time logger on the installation tells of the time a sawmill rejected their wood from Camp McCoy unless it had been inspected and had the metal removed. Emil then borrowed an Army metal detector and inspected each log for metal, when found, he used an axe to chop it out. At least one timber sale had the price re-negotiated after the contractor found jacketed steel bullets from WWII in the logs when the logs went through the mill.

Emil Jelinek, a logger from Black River Falls, is shown with a load of pulpwood at the Land Management Branch Office in 1966. Jelinek logged on Fort McCoy from 1955 until his retirement in 2019 at age 97.

Harvesting timber and military training in the same location do not mix well. Soldiers are camouflaged and try to remain hidden, making it dangerous for logging equipment to be in the same area. In the early 1990s a conflict occurred when a logging operation was active in the same area soldiers were training. The equipment operator said it looked like the bushes started running away while the soldiers complained that a large piece of equipment was trying to run them over. Since then, there has been close coordination with the training office to prevent conflicts and accidents. While planning a timber sale the trainers are contacted to give input on how the sale could improve/enhance training. Much of the military's interest concerns opening areas for vehicle maneuvers, and leaving groups of large trees for cover and concealment. Cover is to protect soldiers by stopping bullets, while concealment is just to hide them and does not provide protection.

After a sale, areas are identified that require post-sale treatment such as removing stumps and slash to clear the areas for training. This may be accomplished with equipment such as a severe duty shredder or through prescribed burning. Gate access is coordinated with the Directorate of Emergency Services (installation police) and the military training staff for areas where there is a boundary gate near the sale. All live-fire ranges have safety fans that contractors cannot occupy when the range is active. Occasionally the forester will coordinate harvesting in an occupied training area by contacting the officer in charge of the training unit and asking if they might be able to co-exist. This is possible in larger training areas or if the soldiers occupy a specific location and do not use the entire training area.

Wildland fire from training activities is always a threat unless there is snow on the ground. Prescribed burns are conducted annually around ranges, within the impact area, and along the

railroad tracks to reduce fuel loads. Impact area firebreaks are scarified to help contain fires started there. When a fire escapes and damages timber, the forestry staff prepares timber damage reports. Sometimes a fire damages trees cut on an active sale, requiring renegotiating the sale price to account for the damaged wood, or the contractor can file a claim with the Army to reimburse the financial loss. Area pulp mills will not accept charred wood because it degrades the paper quality.

Forest inventory provides the information needed to properly manage the forest. The forest is divided into compartments and then into stands of similar tree species, tree density and age. The USFS did the first inventory without creating compartments. The 1954 forest plan divided the installation into 10 large compartments, but these proved too large for efficient management. In 1967 the compartment size was reduced, making 95 compartments that were easily identified by roads, trails, streams and ridges. Changes in the forest from timber sales, plantings, forest fires, land use changes and succession required periodic updates to the inventory. Army guidance required updates every 10 years. In the early 1980s the inventory information was sent to the WI DNR so they could compile the data and create management schedules, then in 1986, the installation forester, Jack Voeller, had the computer background to create an in-house, searchable database, eliminating the need to use WI DNR resources.

Through forest management, the forest has increased during the past 66 years. The 1953 inventory determined only 9,511 acres could support commercial harvests, and presently the forest inventory identifies 46,000 acres can support commercial harvests. While the comparison of acres is significantly different, it does show how much the land considered "non-forested" has grown during that time. In addition, the 1953 inventory estimated the standing volume at 30,100 cords of pulpwood and 5,338,000 board feet of timber. The 2019 forest inventory estimated 421,600 cords of pulpwood and 73,128,900 board feet of saw logs on Fort McCoy. During that period, the installation harvested 227,359 cords of pulpwood/firewood and 8,340,550 board feet of saw logs.

Tree planting was one of the earliest activities noted in the Fort McCoy area. Tree planting increased in the early 1960s with 1,300 acres and over 100,000 trees planted from 1962 through 1972. The 1970s sustained a high level of planting with a two millionth ceremonial tree planting in 1980. Eventually the remaining prairie/barrens areas were more valued for military training use and natural habitat. Approximately 3,500 acres of surviving red pine plantations are an important revenue source for the forestry program. Early tree planting in the 1960s was mainly completed by contract. Planting became a task for an in-house forestry crew until the late 1980s. Most of the planting now is accomplished by volunteers from local schools and scouting organizations.

Timber stand improvement started in the 1960s to increase the commercial value of the forest. Undesirable trees competing for growing space with the more valuable trees were removed through a variety of methods, such as chainsaw girdling, felling and herbicides. Girdling

fell out of favor after the military trainers realized that intentionally killing large trees and leaving them standing created a significant safety hazard. Cutting trees down was the preferred method. The intent of most of the herbicide work was to remove smaller trees and brush to release young oak trees. Trees were considered undesirable because of poor form, when tree density was too high, or were a competing species, such as low-quality oak in a pine stand. Some of the red pine plantations had lower branches pruned to increase the amount of clear wood in the stem. The National Guard Challenge Academy, located at Fort McCoy, was initially looking for outdoor projects for their cadets who are at risk youth. The cadets provided a valuable labor source for many years until they decided that sparing with the pruning saws was more fun than pruning trees.

Urban forestry, previously known as post beautification, has always been a part of military installations. In 1991, the installation started using a computer tree inventory system from the Davey Tree Company to complete an urban tree survey. That program has been retired and the survey is now embedded in a GIS program. Like the forest inventory, this survey is updated to capture new plantings and removals. The work was initially completed by installation staff, then contracted. A major improvement was the requirement to have a certified arborist on the contract staff to identify hazard trees and supervise tree planting and pruning work. In 2015, the forester started injecting ash trees with a pesticide, TreeÄge®, to protect them from the emerald ash borer. A focus of the Urban Forestry Program was the removal of dead branches in areas occupied by people to reduce the falling hazard. Storm damage clean-up was also a priority. The installation has been awarded the National Arbor Day Foundation's Tree City USA award annually beginning in 1989, acknowledging the work done for the urban forest. One of the highlights involves the installation's Child Development Center, with the Arbor Day tree plantings. The Arbor Day tree plantings are highlighted by the presentation of the Tree City USA award. In 1990, the Arbor Day ceremony included the first Tree City Award, presented by the area WI DNR forester Adrian Hagen.

In the first years involving the forestry program, the Wisconsin Conservation Department provided assistance. Harlen Helgeson was the first recorded installation employee assigned to forestry work. A.W. Schantz, an engineering technician, was later assigned complete forestry duties. Julian "Hutch" Hutchinson was hired as a forestry technician in 1966 and eventually became the forester, then the branch chief. Hutch retired in 1990. A wildlife biologist, Val Crispin, was added in the 1970s and the vacant forester position was filled by Ken Kirkman. Employees and hiring programs came and went over time. Anyone who has worked at Fort McCoy, or other federal, state and even local governments can tell you stories about how they had to do more with less and find creative ways to acquire funds and people to get the job done.

A. W. Schantz

Julian "Hutch" Hutchinson

WWII POW's and CCC's at Camp McCoy

By

Ryan Howell

Camp McCoy has about a 120-year history, and forestry during that history goes back all the way to 1911-1912. But the forests at Camp McCoy have changed over the years based on the needs of the military. When we see the early accounts of forestry projects or what they wanted to do with the forest, they were talking about the Dust Bowl. When the land was purchased in 1909, it was basically an over-grazed cattle ranch. First, we needed to control the dust, and then we needed to control the overgrowth.

The birth of the conservation movement and the United States Department of Agriculture Soil Conservation Service, drove the focus of forestry in the 1930s and 40s. This paper focuses on that period, specifically the New Deal programs like the Works Progress Administration (WPA), the Civilian Conservation Corps (CCC), and a recently identified resettlement administration camp. The resettlement administration camp didn't do much forestry, it was more like a Grapes of Wrath type of migrant work. It might have been involved with projects like cranberry planting, hops planting, or something similar.

Research into the history in these areas is just beginning and is driven by the National Historic Preservation Act and Section 106. Which means we essentially dig in front of projects, and just recently we've transitioned to more of a section 110 mode, where we're dealing with inventory, history and historical projects that may not be directly in front of a new range or new road or other planned projects. What is driving this work into CCC and WPA now on Fort McCoy, is that the 1930s and 40s hadn't been considered historical until recently.

For some background, the Great Depression occurred between 1929 and 1939. Franklin Roosevelt was elected president in 1932, and he initiated a series of domestic programs called the New Deal to combat the Great Depression and the hot and dry "Dust Bowl." Amazingly, they enacted most of these projects in the first 100 days of his administration, more than 69 government programs and agencies created in less than 100 days. The average unemployment rate at this time was about 25 to 30% for adults and 75% for those aged from 17 to 25.

Some of these were federal work programs and some of them were environmental programs like the WPA and CCC. Over the course of its run from the 1930s to 1941, the WPA engaged 8.5 million people and the CCC had nearly 3 million. The other part of the New Deal included things that we take for granted today like the fact that your bank won't have a run on it because of the FDIC. Most of these programs ended in 1941, when essentially the war industry, the Lend Lease Program and the production for World War II raised us out of the Depression.

The WPA ran from 1935 to 1943 on average, employing about 43,000 people a year in Wisconsin, and over the course of its run of eight years, it planted 63,000,000 trees in Wisconsin.

In Monroe County, it was run for the county work programs and it focused on county and state land using local labor from the Monroe County area. There wasn't a camp established for WPA workers as there was with the CCC. Forest Service lands and State Park lands have many structures built by WPA. At Fort McCoy, the stone gates on south post are all WPA construction. Much of the WPA construction was monumental architecture.

The WPA didn't do much forestry work on Camp McCoy. There they focused on roads, dams and bridges. Primarily infrastructure work for the Army during the first several years. They did some limited forestry work, maybe 500 to 600 acres, and mainly in the last part of the program. Essentially they ran out of work to do at Camp McCoy. The work that was being done for forestry was done in cooperation with the Wisconsin Conservation Department (WCD) and the presence of the WCD on county and state lands near the base. It appears they would plant the land and then sell the land to the army with the recently planted trees. These plantations formed the foundation for some of the acreage that Fort McCoy forestry is managing today. Most of the plantations were 5 to 10 acre stands and they were sold to the Army in 1941-42.

The Civilian Conservation Corps existed from 1933 to 1942 with 182 CCC camps across 43 counties of Wisconsin. Of the 182 camps, 109 were forest camps, meaning primarily focused on forestry operations such as tree planting, timber stand improvement, or work in the forest state forest or federal forest lands.

For the year 1935, we have the best CCC data for Camp McCoy. Overall, It shows 75,000 enrollees in Wisconsin with most of this run by the Sixth Corps Management and Supply Center folks at Camp McCoy. Essentially, they divided the state around the Portage area; east, west and then everything north of that, which was most of the forestry camps, used Camp McCoy as their supply headquarters area. It looks like most CCC activities, at least the administrative and the supply parts, moved to Sparta in 1936, using a tobacco building or something that had been taken over by the program.

But we're just getting an idea of the timeline because there was a lot going on. These work programs were established in 1932 and go into action in 1933 with many people moving through Camp McCoy. Currently, there is not a solid link on the timeline on these programs. For instance, we know that the first groups of CCC folks who arrived at Camp McCoy were doing forestry and did so for six months. We also know they ran a supply camp. But we don't know details of when several groups came in, went out, relocated, or then came back. There might have been three CCC camps on base at one time. We know that Camp McCoy was used as a training area or a rehab area, including physical training before they went on to other camps. The camp was used as a location to temporarily house CCC enrollees because it was an Army base, and it had plenty of tents for everyone. It was a case of, if you had people working for the federal government in these new programs, they would show up Camp McCoy and get sorted out later.

The 1935 records for CCC work at Camp McCoy show planned work for up to 21 miles of fire

break cutting around the base, 6,000 acres of timber stand improvement, planting 1,800 acres of wildlife food and cover, and completing seven miles of stream erosion improvements.

Prisoner of War Camp (POW)

POW Compound — View of the parallel fence at the enemy alien compound, taken from guard tower no. 1561 in 1943. Looking west. (Image from Fort McCoy cultural resource manager [CRM]. Public domain.)

Prior to having a POW camp on the installation, Camp McCoy had an alien internment camp. This included folks from Hawaii who were American citizens that were relocated here. This also included Italian American citizens, German American citizens and people who were either suspected by the Federal Bureau of Investigation (FBI) or they just didn't have the proper paperwork in hand. Many of these folks were released over the course of a year or two. Individuals who didn't know they needed to have an assistance card, or if they had a thick enough accent, were pulled off the street by the FBI as potential spies and saboteurs.

To put the timeline of the POW camp into perspective, on December 7, 1941, Pearl Harbor was attacked. In January 1942, Camp McCoy added the area north of Hwy 21, adding 46,000 acres to the base. In March 1942, the first enemy aliens, although most of them were U.S. citizens, arrived at the detention camp.

In March 1942, the POW population at Camp McCoy included one Japanese officer. He was a unique character, Kazal Sakamaki, and he had probably the worst luck of anybody in World War II. He participated in the attack on Pearl Harbor. He was in a miniature submarine, essentially a human-guided torpedo. Entering the opening to Pearl Harbor, the submarine goes into the front gate at the exact same time a U.S. destroyer is coming out. Someone on the destroyer spots his little 2-inch diameter periscope and sounds the alert that there is a submarine. The crew drops depth charges damaging the submarine. On the damaged submarine he decides to plant a bomb to commit harikari (kill himself). The bomb doesn't work so he decides to take the submarine out and sink it about 1/2 mile off Pearl Harbor. Kazal comes up and gets washed back ashore. Two days later he ends up on the beach in Pearl Harbor, essentially half dead, in front of a Navy patrol who take him prisoner. On the boat coming back from Pearl Harbor, he's the first Japanese prisoner of war, so he's a media celebrity. The government shows him off and brings his mini submarine back and used it as a prop for savings bond fundraising. He tries to kill himself six times on the way back and fails every single time.

In May and December 1942, large numbers of POWs arrived. May through December 1943 is the Allied push through North Africa. That's when the first big group of Germans are taken

prisoner by the Allies. The POWs start to arrive in greater numbers and in December 1944, the POW population reaches its capacity of 9,000.

POW Guard Tower—View of one of the guard towers at the enemy alien compound, 1943. (Image from Fort McCoy CRM. Public domain.)

In January 1945, McCoy is the only POW camp holding Japanese prisoners in the United States. In December 1945, the war ends and the last Japanese POW's leave McCoy for California. Along the way, they had them act as migrant workers for the citrus crop, and then they went back to Japan. The Germans at Fort McCoy were held into 1946 to attempt a little propaganda and education on the benefits of democracy for the German officers because there was a thought that these folks would be the leadership when they got back to Germany.

There were several POW camps in Wisconsin, Camp McCoy was one of the larger of what was considered large base camps. Having several thousand POW's, it was probably one of the top five in the nation for its size. Over the course of the war, nationwide POW camps held 365,000 POWs, while Camp McCoy held 9,000 at its height.

Camp McCoy's POW Camp grew several times. Starting in a central area, the Army had to constantly divide the prisoners to avoid conflict. With the Germans, there were Nazis and SS soldiers fighting the anti-Nazis. For the Japanese, the Japanese army would fight the Japanese Navy, and the Japanese that had willingly surrendered would be beaten by the folks who had been caught without surrendering. It was like holding four or five separate groups of prisoners and included were the Koreans who apparently the U.S. Army did not understand, were not volunteers for the Japanese but were slave labor for the Japanese. What started as one POW camp ended up as five or six.

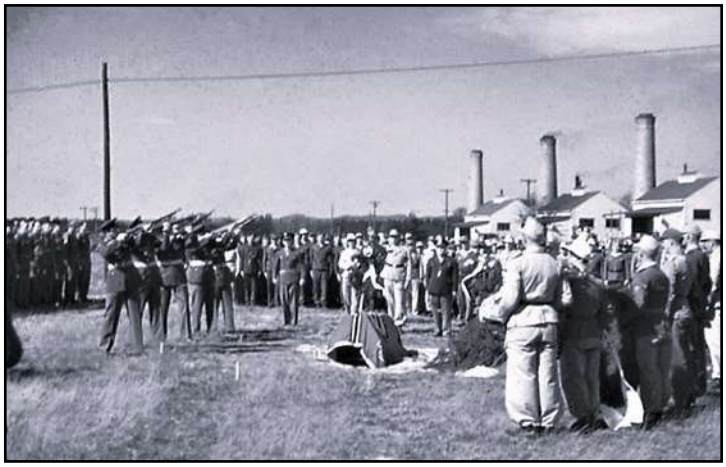
POW Guard Dog—An unidentified American handler poses with a guard dog at Camp McCoy, 1944. (Image from Fort McCoy History Museum. Public domain.)

The old stables from Camp Robinson were modified by the WPA tacking sides onto them to make cabins. These cabins became the barracks for the CCC. Later they became the POW barracks. Presently all that remains are footings of the buildings. Some were standing until the 1980s or 1990s, when the remaining structures were demolished.

The life for German prisoners was good. They were mainly kept on base, not sent out to the farms or canning factories and things like that. They were usually

put to work on base doing projects like digging the ditches, latrines or other projects, including logging and tree planting. There was a drastic difference between how the German POWs were treated and how the Japanese POWs were treated. It may have been from the Pearl Harbor effect that the Japanese were treated as subhuman.

The Germans had signed the Geneva Convention and so they were treated accordingly. They had recreation rooms with pool tables in them, they had their own musicals, their own Olympics, and in 1942, they were even allowed to celebrate Hitler's birthday.



POW Funeral—Funeral for POW Emil Preuss, 1 April 1945. (Image from Fort McCoy CRM. Public domain.)

There were never any German escapes. There was one person who apparently was caught on the train going to Portage and later claimed that he was escaping. But it appears he may have just fallen asleep on the train while they were offloading at Camp McCoy and then tried to put a brave face on it later by claiming that he had made a bold move for freedom.

Compared to the Japanese, the Germans were content with the feeling they were out of the war. They were getting fed better than if they were at home or in a Russian POW camp. The Japanese had it very differently. The Japanese had a quite different idea about surrender. They were trained to believe it was much better to die than to surrender. During the war, 371,000 Germans and 51,000 Italians surrendered. Only 5,000 Japanese were ever captured alive. Another way to put it in perspective, during the Burma Campaign, one of the large Japanese campaigns, 17,000 British surrendered to the Japanese while 142 Japanese surrendered to the British. During the naval campaigns, many of Japanese seamen who ended up as prisoners were found floating in the water, unable to resist being captured.

When the Japanese were released, there were mass suicides on the way back to Japan. Most of these prisoners did not want to go back to Japan, and there were several that succeeded in killing themselves on the boats. This provides some idea of their perception of captivity. When the POWs started making plans to head back to Japan, they would get letters from their relatives saying: Why don't you die; Don't come home; You're a disgrace to us; You know we don't want to hear from you again. When many of these POWs made it to Japan they never contacted their families. They ghosted themselves and went homeless, changed their names, or in some way became lost in their own country. There were no successful suicides at Camp McCoy. One hanging was prevented where a person was trying to hang themselves in the shower.

There were several escapes from the Japanese at Fort McCoy. Most only made it as far as Bangor or West Salem. One prisoner did make it as far as Prairie Du Chien. He had figured out the Mississippi River would go out to the Gulf of Mexico. Unfortunately, he thought he was in Louisiana. After a couple of days outside of Camp McCoy he gets rounded up by clam fisherman and escorted by shotgun to the nearest sheriff. That was the longest escape attempt from Camp McCoy. There were at least a dozen attempts by the Japanese to escape, the problem was they would get lost in the hills and coulees in western Wisconsin and not be able to find their way out. They would eventually turn themselves in or several of them would get captured by farmers when they knocked on the door for food.

Several Japanese prisoners died at the installation hospital. There are medical records showing that a person came in with 85% of their body covered in third degree burns who died 2 weeks later. The army cremated the Japanese who died and then sent the remains back with the POWs after the war. There were some German POW burials at Camp McCoy. Later the German POW remains were excavated and sent to Fort Sheridan.

Forestry projects.

The POW planted pine seedlings, sometimes small areas of 5 to 30 acres, with at least one at 100 acres. The Wisconsin state nursery in either Wisconsin Rapids or Boscobel provided available seedlings. Tree planting was not a major focus of the POWs at Camp McCoy. They were mainly doing infrastructure construction and similar projects. In Michigan, it seems to have been the opposite, a lot of forestry was accomplished.

Enterprise Radiation Forest

By

Ed Bauer

The Enterprise Radiation Forest (ERF) study first became a discussion item with the Institute of Forest Genetics, USDA, USFS, in 1967. At that time, the Atomic Energy Commission approached the Institute to support a program to study the effects of radiation on an entire forest ecosystem. The reasoning was to predict what would happen in the event of a nuclear disaster. They approached the Institute because they were already studying the effects of acute and chronic radiation on trees both in-house and in a field setting. In addition, the Institute had some trained staff and equipment to perform this study. See the below photo's of the laboratory and gamma field.

The Institute's scientific staff then proceeded to evaluate the requirements for the study site. These included staffing needs (8 permanent employees), study site location had to be on public land away from human habitation, flora, and fauna had to represent a typical northern forest community, anti-personnel fencing, radiation detection and safety equipment, dosimetry equipment, control building, vehicles, weather stations, laboratory equipment, etc. This massive undertaking required the development of this study from late 1967 to early 1969, when the project was initiated. The road conditions were old logging roads and a challenge to study site access, thus requiring four-wheel drive and ATV equipment. Employee safety was a significant issue as the work continued in the winter and other bad weather elements, chain saw use, inoculations to prevent rabies, radiological safety training, and associated procedures and training to work with and monitor radiological materials set forth by the Atomic Energy Commission.

Pre-irradiation Studies

All references to this study and its results are from two published volumes and personal experience by the author. The two volumes are: "The Enterprise, Wisconsin, Radiation Forest, Pre-irradiation Studies, Thomas Rudolph, Editor, and The Enterprise, Wisconsin, Radiation Forest,

Radioecological Studies, J. Zavitkovski, Editor." Published by Technical Information Center, Energy Research and Development Administration, 1977.

Left: Control building, entrance, gate, and fence. Right: The 10,000-G^{137} Cs radiation source in position in site 1.

The study site was on the Oneida County forest lands in Enterprise, consisting of 1,440 acres of land, with anti-personnel fencing around the entire area, a control building on the SE corner, and selection on the control and irradiation site being in the southwestern block of this area. The radiation source was a 10,000 CI source of Cesium 137 with a half-life of 33 years. The radiation source came from the Puerto Rico Rain Forest and was recharged at Oak Ridge Laboratories in Tennessee. The source was shipped in a lead pig with approximately 6-8 inches of lead in any direction away from the source. When set up for use in the field, the lead pig remained in the storage compartment when it was in a non-irradiation position. This source produces gamma radiation, which is like x-radiation, just a much shorter wavelength. **There is no residual radiation after exposure or source removal.** The source and guide tube were placed on a well-constructed wood stand about 6 feet above ground, as seen in the above photos.

The study site was selected for its continuity to topography, plant species, soil types, and a central, small, clear area for source placement. Transects were laid out to include certain tree species such as aspen, aspen-birch-maple, and road. All woody plant species were measured for diameter at breast height (DBH), height, and litter collections performed yearly from 1970 through 1974. Also during these years, weather data, solar radiation, and photographic images of herbaceous species in 1x1 meter ground plots were taken, laboratory measurements on nuclear volume and cambial growth, dosimetry measurements using in-house irradiator and dosimetry equipment such as ionization chambers.

The study consisted of 52 families and 193 plant species. Most woody plant species had nuclear volume measurements taken because radiosensitivity is related to interphase chromosome volume (ICV). The larger the nuclear volume and smaller the chromosome number, the more sensitive they are to radiation. In addition to the plant species, small mammals such as the white-footed deer mouse, chipmunk, and red squirrel were trapped for five days each month, tagged for ID, and observed to determine movement patterns, number and type of animals, weight, and mortality. Animal (ICV) is similar to humans, where LD100 is about 640 rads of acute radiation.

In addition to the above observations, a study on lichens was also initiated. Data, photographs, and micrographs were collected to demonstrate the pre-irradiation activity of the species.

Results

All infrastructure, field, laboratory measurements, animal trapping, climatological data, etc., were analyzed and presented. Table 6 shows the predicted results of what would be the response of the woody plants, herbaceous species, and lichens. See below table:

Table 6

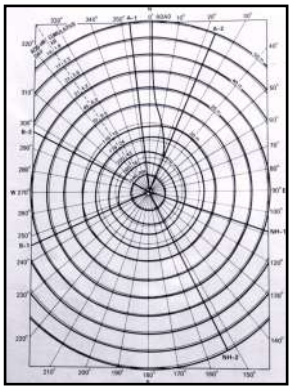
PREDICTED VEGETATION ZONATION AFTER A 5-MONTH GROWING-SEASON IRRADIATION WITH A 10,000-Ci SOURCE OF ^{137}Cs

Exposure,* r/day	Approximate distance from source,* m	Zone	Predicted surviving vegetation
1500	5	Devastated	No vegetation
500–1500	5–10	Lichen	Only lower plants; e.g., *Cladonia, Parmelia,* mosses
250–500	10–15	*Carex–Lycopodium*	Scattered individuals of *Carex pensylvanica, Lycopodium obscurum,* and perhaps *Cornus canadensis*
150–250	15–20	*Corylus*	*Corylus cornuta, Amelanchier* sp., and *Vaccinium myrtilloides* with seedlings and saplings of *Tilia americana, Fraxinus americana, Prunus serotina,* and *Ostrya virginiana*
65–150	20–30	Resistant angiosperm trees	*Tilia, Fraxinus, Prunus, Ostrya,* with some *Acer rubrum, A. saccharum, Betula papyrifera, Populus tremuloides, Quercus rubra,* and most original shrubs and herbs
20–65	30–50	Angiosperm trees	Essentially the original forest except gymnosperms (with occasional small trees of *Abies balsamea*)
20	50	Northern forest	Original northern forest

*Approximate exposure and distance are based on data by Woodwell and Sparrow (1963).

Radioecological Studies

Site irradiation was performed for 20 hours/day during the growing season in 1972. Dosimeters were placed on trees, ground plots, and animals during the entire irradiation period. See placement photos below. Fig. on the right shows a dosage of 1540 R/20hr.day at 0 M to 14 R/20hr. day at 50 M.



Left: Ground plot TLDs attached to bamboo stakes. Center: Tree TLDs attached to Monofilament line. Right: Isadore plot of daily and cumulative exposure at 1.0 m above ground.

Results

Due to the numerous studies and large amount of data, this paper will not show individual studies with charts that demonstrate the radiation effects on plant and animal species.

This chart illustrates the damage and recovery of the herbaceous, woody seedlings and shrubs, and trees in 1972 – 1974. Table 1 shows the predicted and observed effects of radiation on the ERF.

Forest Type	1972 Irradiation Year	1973	1974
Herbaceous	1. No real signs of damage. 2. Early senescence at rates of 300r or greater/ 20 hr. day	Delayed shoot elongation by weeks and months in high-radiation areas	Normalization of all herbs
Woody Seedlings and Shrubs	Tall and low shrubs dead at rates 1000r/20 hr. day and greater. Tall shrub biomass at 500r/20 hr. day reduced by 70-90%, low shrub no reduction	1. Almost all seedlings dead at 500r/20hr. Day, no change under 100r. 2. Biomass reduced for low shrubs at 100r and tall at 40r/20 hr. day	Low shrub recovery at 1500r and tall at 500r/ 20 hr. day.
Trees	1. Pre-mature leaf coloration 2. Radial growth showed the most damage; very little observed damage	Delayed leaf out All A. balsamea dead at 25r/20 hr. day or greater Maples dead at 240-430r/20 hr. day	Normalization of trees is showing good recovery. Normal leaf flush, more normal growth, etc.

Table 1

PREDICTED AND OBSERVED EFFECTS OF GAMMA RADIATION ON A NORTHERN FOREST ECOSYSTEM

Exposure, r/20-hr day	Approximate distance, m	Zone	Predicted surviving vegetation	Observed surviving and dominant vegetation
>1500	<5	Devastated	No vegetation	*Parmelia; Luzula, Fragaria, Potentilla, Juncus,* and *Veronica*
500–1500	5–10	Lichen	Only lower plants, e.g., *Parmelia, Cladonia,* mosses	About one-half of key herbs of forest and logging road; underground parts of *Rubus, Diervilla, Salix* survived and cover increased in 1973 and 1974
250–500	10–14	*Carex–Lycopodium*	Scattered individuals of *Carex, Lycopodium,* and *Cornus canadensis*	Three-fourths of herbaceous species survived; *Rubus* becoming dominant in 1973–1974; biomass of *Carex* and *Lycopodium* decreased
150–250	14–18	*Corylus*	*Corylus cornuta, Amelanchier,* and *Vaccinium* shrubs; saplings of *Tilia, Fraxinus, Prunus,* and *Ostrya*	*Corylus* shrubs either killed or their cover decreased; *Vaccinium* survived; all trees except *A. saccharum* killed; *Carex* and *Aster* biomass doubled here
65–150	18–25	Resistant angiosperm trees	*Tilia, Fraxinus, Prunus, Ostrya,* and some *Acer rubrum* and *A. saccharum, Betula, Populus,* and *Quercus*; most shrubs and herbs	About as predicted; however, *Tilia* was killed, and *Betula* cover was reduced; most shrubs and almost all herbs survived; *Carex* and *Aster* biomass doubled
20–65	25–40	Angiosperm trees	Essentially the original forest except conifers; occasional small conifer trees	About as predicted
<20	>40	Northern forest	Original northern forest	As predicted

The two tables below illustrate the total exposure estimate for the white-footed deer mouse, chipmunk, and red squirrel, and the last captured data shows very few surviving animals at the higher exposure rates.

Species	Total Exposure Estimate
Peromyscus maniculatus (woodland deer mouse)	1218 to 1220 r
Tamias striatias (Eastern Chipmunk)	610 to 2300 r
Tamiasciurus hudsonicus (red squirrel)	740 to 790 r

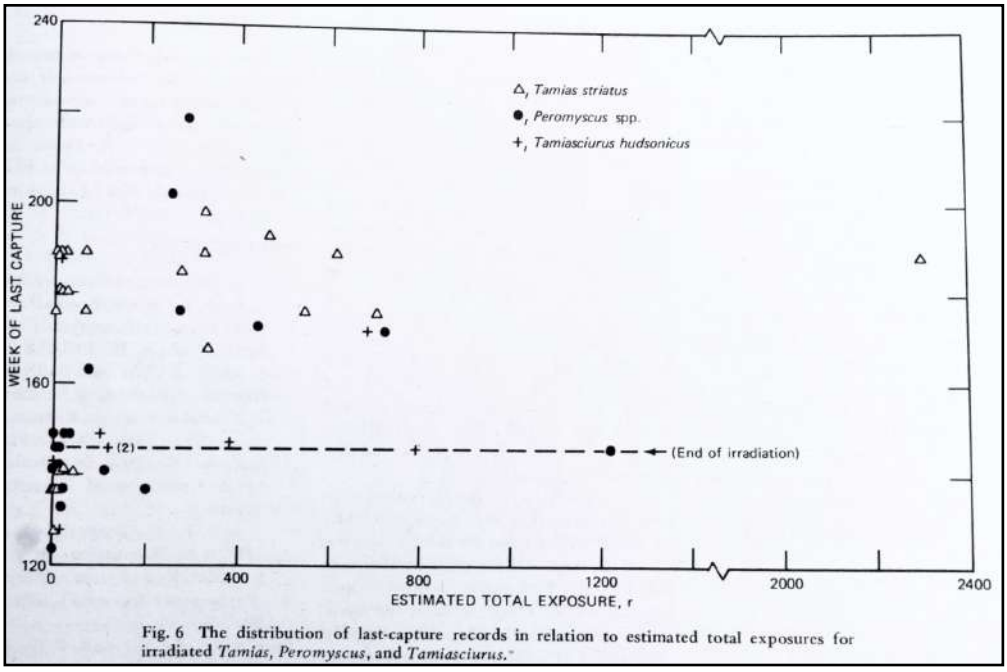


Fig. 6 The distribution of last-capture records in relation to estimated total exposures for irradiated *Tamias*, *Peromyscus*, and *Tamiasciurus*.

Conclusion

Given the pre-irradiation data and the radioecological studies data, it shows that many of the predictions were very close. We now know that lichens are about 250 times more resistant to radiation than their other northern deciduous forests. Also, rainforests are about 20 times more resistant, probably due to the increased water in the plants. Water is a great attenuator of radiation. The predictions based on ICV held true in that a species like balsam fir was much more sensitive to radiation than were the maples and birch. These studies cover a very broad range of species (plant and animal) and would be of great value to any researcher working in this area of research.

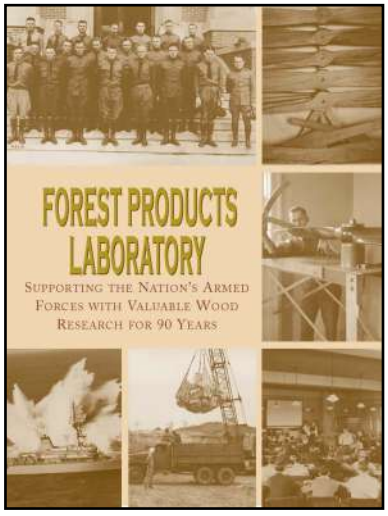
Forest Products Laboratory-Supporting the Nation's Armed Forces for More Than a Century

By

Robert Ross, Ph.D.

Preface

Founded in 1910 by the U.S. Forest Service to serve as a centralized, national wood research laboratory, Forest Products Laboratory (FPL) has a long history of providing technical services to other government departments and agencies, including the Department of Defense (DoD). A recent search of FPL's library and correspondence files revealed that approximately 10,000 articles, reports, manuals, other technical pub generated and provided to the DoD since 1910. FPL has provided support on a broad array of technical questions—from design of packaging for transporting materiel to Europe and the South Pacific during World War II to assisting in the design and repair of motor mounts for minesweepers used in Desert Storm.



Cover of the review article by the Forest Products Laboratory summarizing the work done by the laboratory for the United States armed forces published in the Forest Products Journal, Vol. 57. A full copy is located at www.fs.usda.gov/h/29233

This article offers a brief review of support of the United States' military. Much of the material about FPL's efforts during World War I, World War II, and the Korean are quoted directly—from an excellent report on the history of FPL (1910-1963) prepared by Charles Nelson (1971). Technical reports found in FPL's library form the foundation for the remainder of the article.

World War I

FPL's research efforts during the WWI period can be grouped into four general categories: aircraft, drying, packaging, and chemistry.

Improving Aircraft Design and Materials

The first national defense investigation at FPL was initiated in April of 1917, when FPL was contracted to determine the effect kiln-drying, steaming, and bending have on the strength of Sitka spruce and other airplane woods. Based on previous work at FPL, methods and specifications for kiln-drying green spruce and other woods were developed for the War Department's Signal Corps. After providing original specifications, FPL conducted an extensive series of stud-

ies to determine the effect of kiln-drying. By the end of 1918, 100 kiln runs on 26 species of airplane woods had been completed. These runs provided the material for the approximately 100,000 specimens that were tested to determine strength properties. FPL also was directly involved in the design and development of airplane parts such as wing beams, struts, elevator spars, wing ribs, and engine bulkheads. The goal was to maintain or increase strength while minimizing weight. In the spring of 1918, a severe shortage of wingbeam stock brought a request from the Signal Corps for an investigation of engineered built-up wing-beam designs. FPL test results indicated that two types, a three-piece I-beam and a box-section beam, were the most promising. The three-piece I-beam design was scheduled to go into production for use in the DeHaviland-4 (DH-4) airplane when the war ended. Further studies on the design of the DH-4 aircraft focused on the modification of wing ribs. FPL engineers speculated that DH-4 wing ribs could be lightened and strengthened by the increased use of plywood in construction. After a series of tests on several designs, FPL found one rib design that proved to be 30 percent lighter and more than twice as strong as the original design. This rib was about to be put into production at the time the armistice was signed. Studies at FPL also led to improved strut design as researchers uncovered information relating to the exact strength requirements of struts, compared the suitability of different species, identified the defects in rejected struts, and determined to what extent existing methods of inspection needed revision. The most important information obtained revealed that the strictly visual system of inspection was unreliable. Accepted struts did not always prove strong enough under tests, and rejected struts often had adequate strength. FPL developed a nondestructive method of testing struts that was subsequently incorporated into specifications.

Plywood, recognized as a basic structural material for use in airplanes early in 1917, presented a host of difficult technical problems that drew the attention of FPL. The most pressing problem was that of obtaining enough to meet the needs of expanding aircraft production. Airplanes used plywood in engine bulkheads, in the webs of wing ribs and beams, and in the fuselage. Late in 1917, when the U.S. Government decided to produce the DH-4 two--place observation plane in large numbers, an acute demand arose for waterproof plywood. To increase commercial production of plywood, FPL researchers developed formulas for several improved glues made from both blood albumin and casein. The formulas were supplied to manufacturers, and numerous companies became interested in manufacturing plywood. To further promote improved plywood, FPL scientists investigated commercial methods of glue and plywood manufacture in the field.

Drying Research

Drying research at FPL during WWI was not limited to airplane woods. The problem of effi-

ciently drying black walnut gunstock blanks arose in the months prior to April 1917. Consequently, the supply of air-dried black walnut was rapidly exhausted. First attempts by U.S. industry to kiln-dry black walnut blanks failed. When the United States entered WWI there arose an urgent demand for artillery wheels, escort wagons, and similar ordnance equipment, which required using oak. In May of 1917, the Bureau of Ordnance approached FPL for technical advice on how to kiln-dry oak. In response, scientists at FPL developed drying schedules that enabled manufacturers to dry 3-inch-thick oak material in 100 days. FPL researchers also developed new kiln designs; more than 240 kilns based on FPL- recommended designs were installed at 23 sites, including the Rock Island Arsenal in Illinois.

Allotments from the War Department enabled FPL to undertake another important aircraft research project: the equipping and operation of an experimental propeller plant. The central problem involved in propeller manufacture was to produce a propeller blade with sufficient stability to resist warp, twisting, and unbalancing of the blades with changes in humidity. Such defects had caused countless propeller failures. FPL established a special laboratory to investigate the problem. Begun in March 1918, the propeller research involved the manufacture, storage, and finishing of experimental propellers from seven species of wood under closely controlled conditions. Experimental propellers were produced at a rate of 10 a week, a schedule that called for work on a three shifts per day basis.

Packaging Research

FPL box and container research ranged from recommendations on the size and number of nails required for the most efficient box, to the complete redesign of boxes and containers. For example, a box designed to carry two Browning automatic rifles with equipment was redesigned to save both cargo space and material. A box originally designed to hold ten U.S. 1917 model rifles was redesigned at a savings of 33 percent in cargo space. FPL also conducted special courses for military and civilian employees of various branches of the military. These courses involved intensive training in the construction and testing of packages and greatly improved inspection services. In all, 45 privates, 21 officers, and 23 civilians were trained under this program.

Chemistry Research

One study conducted at FPL during this time dealt with poisonous gas. In April 1917, FPL was asked to develop a highly absorbent charcoal that could be used in protective masks to absorb chlorine gas. FPL first examined commercial charcoals available at the time. None was found to be suitable. After FPL scientists discovered that beech charcoal satisfactorily absorbed chlorine, charcoal for gas masks was manufactured from beech until it was discovered that beech charcoal would not protect against the gases then being used by enemy forces. Coconut char-

coal proved to be the best material for absorption of all poison gases. As coconut became scarce, FPL developed an acceptable alternative from hydrolyzed wood waste.

During the early part of the war, there was also a concern for an impending shortage of cotton linters for manufacturing nitrocellulose. In response, FPL developed several types of wood pulp suitable for nitration. These were nitrated at the Picatinny Arsenal in New Jersey and made into cannon powder. Other studies focused on the use of hemlock bark as a source of tannin, fiber-based shipping containers, and the development of waterproof shipping labels. The need for alcohol was great and ways of supplying it important. FPL staff determined the yields of ethyl alcohol that could be obtained by dilute acid hydrolysis and fermentation from 24 species of wood and optimum cooking conditions for a single-cook process. This basic information led to the successful operation of two commercial plants during the war.

World War II

World War II created an insatiable demand for forest products in the form of lumber, plywood, paper, plastics, and other materials. Some 25,000-trainer aircraft and gliders were made of wood and plywood. Wood was used in great quantities to build fighting ships including minesweepers, submarine chasers, PT boats, and even battleships, not to mention the swarms of landing craft so important for amphibious invasions. Each minesweeper and submarine chaser contained enough timber to build ten average houses. The famous PT boat, with its spruce keels, mahogany planking, and plywood hulls, used 28,000 board feet of wood. The decking for the average battleship consumed 200,000 board feet of lumber, and the construction of a "Liberty" ship required nearly 700,000 board feet of lumber for shipway, staging, and scaffolding. Under Secretary of War Robert P. Patterson expressed the vital military role of wood when he declared in 1943 that “lumber comes close to the heart of the whole war problem. There are 1,200 different items of military and naval equipment that can use lumber [and] each day we find new and important ways to use wood in our weapons.”

Forest Products Laboratory scientists enhanced protection of mine countermeasure vessel's laminated wood engine mounts from explosive impacts through use of engineering analysis and redesign of connector systems.

Three-hundred-thousand prefabricated housing units built largely of wood and plywood were needed to house the multitudes of war workers at production centers, while many thousands

of other wood structures were erected at military encampments around the country and abroad. According to government data, it required 1,400 board feet of lumber to house each soldier, 300 feet to send them overseas, and 50 feet per month to keep them supplied. A military officer reported in 1944 that 61,547 tons of lumber were needed to land 100,000 soldiers on a typical Pacific Island. Temporarily restoring the Italian port of Naples for use by the Allies required 50 million board feet of lumber. Even more surprising was the tremendous quantity of lumber required for packaging the materials of war. For example, more than 700,000 different military items had to be shipped for the North Africa campaign—most of them packaged in boxes, crates, and paper cartons. Lumber requirements for boxing and crating increased steadily from 1942 to 1944, when nearly 17 billion board feet of lumber were consumed in domestic and military packaging.

The amount of lumber required to package certain military items is illustrative. For example, each 105-millimeter Howitzer took 711 board feet, each 40-millimeter Bofors antiaircraft gun required 1,040 board feet, while each bomber shipped overseas consumed 5,000 board feet of blocking and crating lumber. In addition, the manufacture of cellulose compounds for explosives, plastics, and other products, and the spinning of great quantities of rayon for textiles used significant quantities of wood. There was hardly a phase of the war economy to which wood did not contribute.

Several wood-utilization projects of a national defense character had begun at FPL nearly two years before Pearl Harbor. Late in 1939 FPL initiated preliminary investigations relating to gas masks for the Chemical Warfare Service. About the same time the Rock Island Arsenal asked FPL to investigate the suitability of resin-treated wood for armor; the National Advisory Committee on Aeronautics wanted assistance on lumber specifications for spruce propellers; the Navy's Bureau of Yards and Docks wanted lumber and plywood specifications for a naval airbase under development in Florida; and several commercial concerns sought technical advice in connection with emergency plywood orders for Great Britain and molded plywood parts for military aircraft. At that time, FPL plans included the following proposed national defense activities: investigations to find substitutes for spruce in solid wood and plywood to meet the demands for training airplanes; studies of laminated gunstocks and the development of composite gunstocks; adhesive and plywood studies; the development of resin impregnated wood for possible military uses; investigations of alpha-cellulose wood pulp as a possible substitute for pure cotton in the manufacture of explosives; charcoal for gas masks; fireproofing compounds; wood plastics from sawdust; kiln-drying investigations related to production of aircraft lumber and gunstocks; and the preparation of specifications for materials and processes.

In late 1941 the aircraft industry asked FPL to compile and disseminate the latest technical in-

formation on plywood and plywood structural systems, modern adhesives, and gluing practices, finishes and finishing methods, laminated wood, and methods for testing aircraft woods. As a first step, FPL scientists prepared a series of reports on such subjects as testing for specific gravity, bonding practices, seasoning of aircraft woods, and the significance of wood defects on mechanical properties. Demand for these reports mounted swiftly as domestic industries converted to the manufacture of reconnaissance planes, trainers, and gliders—all of which were primarily of wood construction. These reports were sent to aircraft manufacturers, producers of aircraft lumber, plywood, and adhesives, and to several government agencies involved with mobilizing military production. The reports, however, soon proved insufficient to fulfill the needs of engineers, inspectors, and other specialists concerned with wood aircraft production. A need existed for comprehensive publications covering the entire field of wood aircraft design and manufacture. Accordingly, on August 15, 1942, FPL issued several significant publications. These publications incorporated the latest results of FPL research, supplemented with recent information obtained through visits to aircraft plants, adhesive manufacturers, and veneer and plywood producers. The publications received enthusiastic receptions by aircraft manufacturers and military authorities. G. A. Page, chief engineer of the Curtiss-Wright Division at St. Louis, Mo., wrote, "It [the Design Handbook] has expedited and facilitated our work in connection with the design of the C-76 airplane to a degree that is hard to estimate." The C-76, otherwise known as the Curtiss Caravan, was the first plane specifically designed to serve as a military cargo craft.

FPL submitted a proposal to the Aeronautical Board calling for expanded aircraft research on developments already under way, including high strength laminated paper plastics, hydrolyzed wood molding compounds, and resin-impregnated composites. Army and Navy officials had expressed a great deal of interest in the possibilities of these materials for application in wood aircraft production, and the Aeronautical Board approved an FPL program known as the "Forest Products Laboratory General Research and Development Program."

One of the most promising FPL wartime developments in the general field of plastics was a paper-based laminated plastic known as “papreg.” Among products made from papreg were gun turret parts for the B-24 Liberator bomber, gunner seats, gun shields, and aircraft ammunition boxes. “Compreg,” a resin-treated compressed wood, was used in propellers, bearing plates, and fittings for aircraft as well as for aerial and radar antennae for high-speed aircraft.

World War II was also the transition period from wooden to aluminum aircraft, and again FPL played an important role. Aluminum can provide a lightweight aircraft, but the weak oxides that form on the aluminum surface prevent durable bonds. FPL scientists developed a surface-preparation process, termed “the FPL etch,” that remains a standard method of preparing alu-

minum for bonding in the laboratory and is still used in some aircraft manufacturing.

While FPL was contacting defense agencies for the expansion of aircraft research, another important aspect of FPL's wartime service had already begun to take shape. This was the packaging research program. FPL, with its experience working on packaging problems, had extensive technical data on container design. In September 1941, the Secretary of War, in a letter to the Secretary of Agriculture, requested that FPL "provide the [Army] Ordnance Division with the necessary technical information and advice regarding its packaging and container problems." That same month, FPL entered into a cooperative agreement with the Ordnance Department whereby Ordnance agreed to support an expanded packaging program and pledged additional funds to cover necessary expansion of staff. From October 1941 to September 1942 Materiel Containers performed three functions: 1. A staff of field consultants performed on-site service at arsenals, ordnance plants, and supply depots; all the consultants, drawn mainly from the ranks of industry, were experienced in packaging procedures. 2. A research staff at FPL handled special container design and development problems, prepared specifications and packaging manuals, and established performance standards. 3. A group of instructors provided training courses for officers, inspectors, and others on the basic techniques and fundamental principles of packaging. Concurrent with the work on individual packaging instructions, FPL cooperated with the Ordnance Department and other agencies in preparing general publications on packaging. In all, nine manuals, 37 specifications, 1,500 packaging instructions, and numerous guides and directives were prepared.

Instructors for the ordnance packaging courses included staff from four universities. They gave four courses between April 13 and June 26, 1942, to a total of 61 ordnance inspectors and 37 FPL employees. Because of the great interest in the courses and the compelling need for expanded packaging research, the Ordnance Department significantly increased funding for fiscal year 1943. The funding enabled FPL to create a separate division to handle all the packaging courses as well as instruction on the subjects of aircraft wood inspection and fabrication for the Army and Navy. From April 1942 to the end of 1945, more than 16,000 military and civilian personal received training in 303 courses conducted at FPL or in the field. Of those trained, some 90 percent attended the 250 packaging courses, which ranged in length from a few days to two weeks. The 51-wood inspection and fabrication courses accommodated 1,345 personnel.

During the first 15 months of packaging research at FPL, existing crating specifications were revised, saving the equivalent of one-half million tons of shipping capacity. Brig. Gen. J.S. Hatcher, chief of the Ordnance Field Service, reported in 1943 that “on average four ships now can carry the weapons which formerly required five.” Improved packaging techniques devel-

oped at FPL also led to a significant reduction in losses caused by damage during shipment. By early 1943 damage losses in shipment had been reduced from 50 percent to 3 percent.

In cooperation with the Navy, FPL conducted a comprehensive—and successful—program on laminating wood for ship timbers. This work grew out of a critical shortage of large, high-quality white oak and Douglas-fir timbers. By the end of the war, both straight and curved ship members were being laminated at several Navy yards as well as by private companies. One manufacturer, working with data provided by FPL, produced laminated skegs for the Higgins landing craft at a rate of 70 per day, producing 11,000 keels for landing craft and keels and stems for 100 PT boats in the space of two years.

Another interesting FPL project was a study on the performance of gasogens. Gasogens are devices attached to motor vehicles that convert wood and charcoal into a motor fuel. FPL undertook a limited study of gasogens in 1942. A U.S. Forest Service truck was equipped with a demonstration gasogen unit, and a series of road tests were conducted using a range of woods and charcoals.

Shortly after V-E Day, a Joint Intelligence Objectives Agency, consisting of representatives of the Department of Agriculture, Navy Department, War Production Board, and other agencies was created to collect information on scientific developments in Germany. The Forest Products Committee of this Agency selected technical personnel, mainly from FPL, to serve as representatives.

Korean Conflict

Much of the defense-funded research conducted during this time focused on the combining of materials---solid wood with metals, plastics, and paper---to form various sandwich composites. These composites were of interest because of their relatively low weight and high strength and stiffness. Military interest centered on the use of these lightweight materials for jet aircraft and rocket-propelled missiles. The Air Force and Navy Bureau of Aeronautics chose FPL to conduct this work because of the lab's knowledge about adhesives, wood, paper, and plywood. This specialized composite research involved the development of new adhesive systems capable of withstanding the extremes of high and low temperatures encountered in supersonic flight at high altitudes, techniques for bonding and fastening parts together, and engineering analysis and design criteria. FPL engineers developed design criteria for sandwich construction, providing data essential for the use of sandwich materials in aircraft, guided missiles, and in the building and transportation industries.

FPL staff also prepared, for the Army Corps of Engineers, a handbook for Army, Air Force, and Navy officials engaged in procurement. The objective of this handbook was to instruct officials

on how to requisition the proper sizes and quality of material needed for any given purpose.

1960 through Desert Storm

FPL continued its interest in packaging after the 1950s, resulting in several publications. For the Air Force, FPL prepared a handbook on packaging cushioning design, which provided the means of applying sound engineering principles to problems of cushioning for a wide range of machinery, equipment, and instruments during transit. A cushion-selection indicator was also produced for the Air Force. Another important manual on wood crate design was produced by FPL staff.

Wood Enhancement Program

The Army's Picatinny Arsenal funded a two-phase program at FPL from 1988-89. The arsenal also provided funds to the U.S. Army Chemical Research and Engineering Center (CRDEC), Aberdeen Proving Grounds, Maryland, to assist FPL. The objective of the first phase of FPL's program was to develop a method for screening wood and wood-based products for resistance to chemical agents. Phase two's objective was aimed at evaluating various treatments and treatment methods for enhancing the performance of wood products used in pallets, consolidators, and skids. The screening protocol developed at FPL and approved by CRDEC in February 1989 used a simulant to identify materials that definitely would be unable to pass subsequent tests with chemical agents. It was, however, insensitive in identifying differences among treatments that subsequently were either marginally acceptable or unacceptable. Several technologies were shown to improve the chemical resistance of wood or wood-based products. Fifty of the wood/treatment combinations examined passed the screening test at FPL and were submitted to CRDEC. At the completion of the program, one of these had passed the U.S. Army test with chemical agents. Ten additional materials were sufficiently close to passing that they were worthy of further consideration.

Mine Countermeasure Vessels

The U.S. Navy, Naval Sea Systems Command, Structural Integrity Sub Group and CASDE Corporation asked FPL for assistance in the design of bolted joints that connect steel saddles to white oak glued-laminated timbers that would be subjected to tension perpendicular-to-grain forces. These joints are representative of those used to connect equipment foundations (such as diesel engines) to hull frames in mine countermeasure vessels (minesweepers). FPL conducted a series of tests using two joint configurations: one configuration used five 1/2-inch diameter bolts and the other used five 1-inch diameter bolts. FPL found that the design was controlled by tension perpendicular to grain strength values. As a follow-up, FPL was asked to develop options for field repair of this type of joint. Using the previously tested specimens, FPL engineers examined several repair techniques that could be installed under in-service condi-

tions. The repair techniques examined included using large lag screws, epoxy adhesives, and plywood side plates. After repair, the specimens were again tested. Results of these tests revealed that all three repair methods performed well. The most promising repair consisted of using lag bolts in combination with the epoxy adhesive. Those repaired beams had strength values that exceeded original values.

Laminated Wood Propellers

Minimizing wood shrinkage is a priority for many wood products in use, particularly engineered products manufactured to close tolerances, such as wood propellers for unmanned surveillance aircraft used in military operations. Those in service in the Middle East were experiencing performance problems because of wood shrinking during long-term storage at low equilibrium content conditions prior to installation. FPL identified causes of the problem and provided cost effective, in-field solutions.

Literature Cited:

Nelson, C.A. 1971. History of the U.S. Forest Products Laboratory (1910-1963), U.S. Dept. of Agriculture. Forest Service. Forest Products Laboratory. Madison, WI. 177 pp.

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Risbrudt, C. D.; Ross, R.J.; Blankenburg, J.J.; Nelson, C.A. 2007. Forest Products Laboratory-Supporting the nation's armed forces with valuable wood research for 90 years. Forest Products Journal 57:1/2:7-14.

Wood Aircraft Inspection and Fabrication, April 1951 ed. 1951. U.S. Dept. of Defense. Munitions Board Aircraft Committee. Subcommittee on Air Force-Navy-Civil Aircraft Design Criteria. ANC-19. U.S. Government Printing Office: Washington, DC. 235 pp.

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2023 Fixmer Award
The Forest History Association of Wisconsin
Distinguished Service Award

The Fixmer Award is given to an individual who has made an outstanding contribution to an organization, agency or corporation, within the forest products and resource community.

Northwoods local historian, Jim Bokern, of Manitowish Waters was recognized for his many efforts to preserve the state's forestry history with the 2023 Fixmer Award for Distinguished Service.

Bokern was a longtime history teacher in Marshfield before moving to Manitowish Waters in retirement though he's kept busy researching, recording and then telling the history of his new home. A few of his projects in the past year include the Camp Mercer CCC Trail, installing interpretive materials at DNR State forestry headquarters on Trout Lake, and documenting dozens of new archaeological sites with the Wisconsin Historical Society.

He is a member of the Association, its Archives Committee and a past conference and webinar presenter.

John Grosman, president of the Forest History Association of Wisconsin presents the Fixmer Award for Distinguished Service by an individual to Jim Bokern.

2023 Connor Award
Forest History Association of Wisconsin
Distinguished Service Award

The Connor Award is given to an organization which has made a significant contribution to forest history.

Monroe County Historical Society
Recognized with Connor Award

The 2023 Connor Award was presented during the recent Fall Conference to the Monroe County Historical Society.

The citation reads: *The Monroe County Historical Society has the unique ability to identify major projects impacting Wisconsin's forest history. The book, Logging Dilemma in the Big Swamp, published by the Society, is the premier book about early logging in southwest Wisconsin used by area school children."*

John Grosman, president of the Forest History Association of Wisconsin presents the Connor Award for Distinguished Service by an organization to Monroe County Historical Society. Accepting the award is society president, Carolyn Habelman.

The Monroe County Historical Society was responsible for publishing the book, detailing the late 1800s history of harvesting the last virgin pine forests of west Central Wisconsin.

The author and initiator of the book was the late Ralph Eswein of Black River Falls. With a special interest in the subject and his education in cartography and meteorology, Ralph began mapping the long-abandoned logging railroad grades, both in Jackson and northern Monroe counties. Collecting old logging photographs and other materials.

Once Eswein had all this material collected he approached the historical society and they agreed to publish the book. In 2021, Ralph developed terminal cancer. Before he passed away, the historical society, in conjunction with Ralph's desires, gained rights to the book and continued publication into a second edition.

Minutes of the
Annual Business Meeting of FHAW Members
October 6, 2023
Cranberry Country Lodge, Tomah, Wisconsin

Members Present: Jim Kerkman, Don Schnitzler, Carl Heinze, Cindy Stiles, Bob Walkner, Bill Haese, Pete Mann, John Grosman, Kate Grosman, Nicole Filizetti, Jerod Roll, Hannah Scholze, Mary Schueller, Tony Waupochick, Dick Thiel, John Thiel, Jerry Thiede, Kay Theide, Myles Akers, Don Hoffman, Kolleen Kralick, Sara Rother, and Bridget O'Brien.

Call to Order: FHAW President John Grosman called the meeting of the members to order at 1:10 pm.

Minutes of 2022 Membership Meeting: Minutes were previously published in *Chips & Sawdust*, Volume 47, Number 3, Fall 2022, pages 18-19. Motion to approve by Jim Kerkman; Second by Jerry Thiede. Motion carried.

President's Report: Grosman acknowledged everyone for their attendance and participation in this meeting. He encouraged everyone to visit the poster presentations during the remaining hours of the day. Highlighting recent accomplishments, he mentioned the growing number of finding aids created by the Archives Committee student interns and an ongoing consideration of splitting that committee in two, an archives committee and an educational committee. Grosman also mentioned the successful nominations of two individuals for the Forest History Hall of Fame, Bill Banzhaf and Chief Oshkosh. Finally, he encouraged everyone to watch for updates "From the President's Chair" on the pages of *Chips and Sawdust* newsletter.

Membership Report: Kerkman reported that total membership stands at 184. There are 109 individuals, 32 life, 3 corporate, 17 family, 9 non-profit, 13 exchange and 1 student member. Jim reported that 12 individuals took advantage of the multi-year membership established in 2022 – ten with the 3-year membership and two with the 5-year membership.

Treasurer's Report: Jim Kerkman reported on the 2022-2023 fiscal year which ended on June 30, 2023. The amount in each account at that time was $10,919.09 in checking, $3,315,30 in savings (restricted funds), and $5,000 in a certificate of deposit at Wisconsin Fells Bank for a total of $19,234.39.

Audit Report: John Grosman, Don Schnitzler and Bob Walkner performed the annual audit of the treasurer's book and found all financial records to be in order.

Scholarship-Internship Report: Student interns continue to create "Finding Aids" for members of the Forestry Hall of Fame through the UWSP archives. The first three are posted on the FHAW website, an additional one will be posted shortly. Plans for 2023-2024 include supporting two interns.

Exhibit Report: The Association's nine-panel history displays are available to reserve for 2024 by members and appropriate organizations to share with the public. Anyone wanting to request them should reach out to the association through the email address: thefhaw@gmail.com.

Award Presentations: President John Grosman announced or presented three FHAW awards – He announced that Jim Bokern will receive the 2023 Fixmer Award for distinguished service and Ed Forrester will receive the 2023 President's Award for his many efforts on behalf of the Association. The Connor Award for distinguished service by an organization was presented to the Monroe County Historical Society for their efforts publishing and reprinting of Ralph Eswein's book*, Logging Dilemma in the Big Swamp.* The award was accepted by Carolyn Habelman, president of the Monroe County Historical Society, who had encouraged Ralph's efforts during the original preparation and publication of the book.

Annual Meeting Proceedings: Work on the Proceedings of recent past meetings continues.

New Business: Consideration of amendments/revisions to the FHAW Bylaws –

- Article II, Section 1. Board membership to a range of 12 to 15 members replacing 12 members
- Article II, Section 2. Housekeeping – grammatical error correction
- Article II, Section 8. Housekeeping -- better define quorum for board of directors' meetings

Motion to approve recommended amendments and revisions to the bylaws by Jerry Theide. Second by Carl Heinze. All ayes. Motion carried

Nominations: John Grosman reported on four Board members up for re-election this year; Jim Kerkman, Bob Walkner, Don Schnitzler and Cindy Stiles. Also for consideration is new board member, Tony Waupochick. Their three-year term on the board will end in 2026. Since the 2022 meeting vacant board seats were filled by the following individuals, (date term ends)—John Grosman (2024), Nicole Filizetti (2025) and Kolleen Kralick (2024). Pete Mann moved to nominate and elect all these individuals for the terms identified, second by Carl Heinze. Motion carried.

Other Business: No other business was discussed.

Adjourn: Motion by Bob Walkner to adjourn, second by Don Schnitzler, motion carried.

Respectfully Submitted,
Don Schnitzler, Secretary protem

Financial Report

FOREST HISTORY ASSOCIATION OF WISCONSIN
JULY 1, 2022 to June 30, 2023

OPERATING RECEIPTS	**2021—2022**	**2022—2023**
Dues	$ 2,985	$ 3,691
Annual Meeting	4,398	1,859
Auction	000	306
Investment Income	000	4,936
Trans from M/M to checking 9-30-2021	10,000	
Total Operating Receipts	**$ 17,383**	**$ 10,792**
OPERATING EXPENSES		
Printing	$ 1,146	$ 1,086
Postage	733	1,029
Operations	3,141	4,253
Investments	10,000	00
Annual Meeting	4,353	979
Auction	00	000
Refund		50
Total Operating Expenses	**$ 19,373**	**$ 7,397**
CASH ASSETS 6-30-2023		
Checking and Money Market		
Associated Bank checking		$ 10,919
Money Market (0.10%) (Monthly) ($5.00 int.) T.Rowe Price cap gains, & div. in MM 6-30-18 $4,650 Restricted Donations (Scholarship fund) $1,870	$4,963	
Savings Account (for donations)		3,315
Donations Received	255	
CD at Wisconsin Dells Bank		5,000
Total (Checking, Savings and CD)		**$ 19,234**
INVESTMENTS 6-30-2023		
T. Rowe Price Mutual Fund Accounts (multiple investments)	**$ 112,943**	**$ 118,079**
	Total Assets	**$ 137,313**

Available Annual Proceedings Back Issues

Back Issues are available for $4.00 plus $2.00 shipping for the first issue, and $1.00 for each additional issue

Make checks payable to the Forest History Association of Wisconsin and send to:
James Kerkman, Treasurer, FHAW, PO Box 186, Bangor, WI 54614.

18th Annual Proceedings, Antigo—1993
"Archeology and Forest History"

19th Annual Proceedings, Marshfield –1994
"Prominent Lumbermen of Central Wisconsin

20th Annual Proceedings, Plover—1995
"Non-Traditional Products of the Forest, Their History and Commercial Development"

21st Annual Proceedings, Ladysmith—1996
"The Flambeau River Area's Forest Heritage"

25th Annual Proceedings, Rhinelander—2000
"Historic Rhinelander Area: Land of the Hodag"

26th Annual Proceedings, Stanley—2001
"The Historic Stanley Area"

27th Annual Proceedings, Oconto—2002
"The Historic Oconto Area"

28th Annual Proceedings, Two Rivers—2003
"The Historic Two Rivers Area"

29th Annual Proceedings, Ashland—2004
"The Historic Ashland Area"

30th Annual Proceedings, Sheboygan —2005
"The Historic Sheboygan Area"

31st Annual Proceedings, Laona —2006
"Camp 5 Museum"

33rd Annual Proceedings, Cable—2008
"The Historic Namekagon Valley"

43rd Annual Proceedings, Wisconsin Rapids—2018
"Logs to Paper to Cranberries-Historic Transformations of the Wisconsin Rapids Area"

- Notes -