Hugo Sauer Nursery History Trail

Final Draft Interpretive Media Package

Submitted: June 7, 2022 by Schmeeckle Reserve Interpreters

Northern Research Station
Institute for Applied Ecosystem Studies

Chequamegon-Nicolet National Forest
Caring for the Land and Serving People

Hugo Sauer Nursery site map

The map below shows the location of existing nursery buildings, along with a proposed route of the trail (using existing nursery roads), the site of the three-panel trailhead kiosk, and the proposed locations of 8 wayside exhibits and their message topics.

Proposed trailhead kiosk

The proposed trailhead kiosk would be installed near the Hugo Sauer monument boulder at the entrance to the nursery grounds. It would consist of three 34"x46" sign panels in powder coated aluminum frames. The frames would be attached to four vertical 8"x8" crowned timbers with metal brackets. The two side panels and posts would be angled inward about 15 degrees.

The center panel would include an introduction to the Hugo Sauer Nursery History Trail, along with a site map, permitted activities, and prohibited activities. The panel on the left would include a timeline of the nursery. The panel on the right would introduce nursery operations.

Drafts of the three sign layouts follow.

Hugo Sauer Nursery
History Trail

Welcome to the Hugo Sauer Nursery. This historic tree nursery opened in 1931 and produced millions of seedlings that reforested northern Wisconsin. Now managed by the U.S. Forest Service Northern Research Station, it continues to serve as a field site for cutting-edge forestry research. Follow the History Trail along old nursery roads to experience the historic buildings and landscapes that played such an integral role in the state's conservation story.

This area is open to:

- Walking and hiking
- Snowshoeing
- Pet walking; pets must be leashed

Please:

- No motorized vehicles
- No hunting or trapping
- No camping
- Pack out all trash

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Nursery Operations

CCC workers at the Huron-Manistee National Forest in Michigan prepare about 1,000 bushels of jack pine cones for shipping to the Hugo Sauer Nursery extractory, 1935.

Running a nursery was a labor-intensive operation that followed seasonal patterns. Over its 43 years of operation, the Hugo Sauer Nursery produced 276 million seedlings—200 million as a federal nursery and 76 million as a state nursery—mostly of red pine and jack pine. While the permanent nursery staff was small, hundreds of temporary laborers were needed seasonally to extract seeds, prepare and plant seed beds, and package seedlings for shipment. The buildings and layout of the nursery were based on this seasonal pattern of work.

1 Collecting cones and extracting seeds

Private citizens were paid by the bushel to collect native pine and spruce cones in fall. The cones were moved to a **cone shed**, where they were spread in thin layers on trays and turned daily to dry. In winter, the cones were taken to the **seed extractory**, placed on screen trays, and heated in kilns to open the scales. A cone "shaker" removed dirt and separated the seeds. The cleaned seeds were funneled into air-tight containers and moved to an insulated **cold storage seed shed**.

A state worker in the extractory fills trays with cones that will be heated to open the scales (1954).

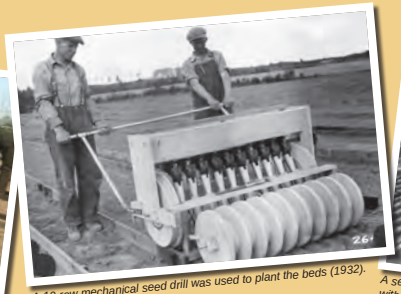
The cleaned seeds are funneled into an air-tight galvanized container and moved to a cold storage shed (1954).

2 Preparing beds and planting seeds

In early spring, the **seedbeds** were prepared for planting. The soil was worked with shovels and rakes, and then leveled. Planting usually occurred in May, depending on the weather. Workers used a mechanical seed drill that planted 10 rows of seeds at a time. After planting, seedlings required daily weeding and watering from overhead irrigation systems. After 5 to 6 weeks of growing, seedlings were thinned by hand.

CCC workers raked the seed beds at the nursery (1939).

The seed beds were leveled prior to planting (1939).


A 10-row mechanical seed drill was used to plant the beds (1932).


A seed bed after planting with 10 rows of seeds at 4 inches apart, with an overhead irrigation system and fence (1932).

3 Lifting, packing, and shipping seedlings

After 2 to 3 years of growth, the seedlings were ready to be shipped. The trees were "lifted" from the bed using spading forks and put into small boxes, which kept soil around the roots. The boxes were taken to a **packing shed**, were they were sorted, root pruned, and packed into bundles of 100 seedlings each. The bundles were loaded onto a truck and shipped all over the Northwoods for planting.

CCC crews provided much of the labor to lift seedlings in the 1930s. Here, workers are lifting and grading jack pines (1939).

Local women were often hired to sort seedlings for transplanting or bundling (1964).

Seedlings were wrapped into bundles of 100 with burlap fabric or waterproof paper (1958).

The bundled seedlings were loaded onto a truck for shipment (1964).

Reforesting the Northwoods

The Hugo Sauer Nursery has led many lives.

Established in 1931 as a federal tree nursery, it produced 200 million seedlings that were planted in the national forests of northern Wisconsin, Michigan, and Minnesota. Reborn as a state nursery in 1951, another 76 million seedlings were grown for state and private forests. Since 1957, it has served as an important field site for forestry research. Its legacy lives on today as scientists continue to use the nursery beds to study major changes in our landscapes.

Photo courtesy of Hal Berndt

Two-year pine seedlings growing in a seed bed at the Hugo Sauer Nursery (1964).

Federal Nursery: 1931–1950

After the vast pineries of Wisconsin were logged for lumber, decimated areas of slash and stumps were left behind. The U.S. Forest Service began acquiring these lands as national forests in the 1920s and 30s. To reforest the cutover, millions of trees and an army of people to plant them were needed. With financial assistance from Hugo Sauer, chairman of the Kiwanis International's Conservation and Reforestation Committee, a federal nursery opened here in 1931.

Photo courtesy of the Pioneer Park Historical Complex, CCC Museum, Rhinelander, WI.

CCC Company 654 from Minocqua at the Hugo Sauer Nursery side camp (1934). Side camps were work sites where CCC crews would work temporary shifts away from their main camp.

Photo courtesy of the Forest History Society, Durham, NC.

CCC enrollees helped with all operations of the nursery. Here, they use a mechanical seeder to plant red pine (1939).

Young men in the Civilian Conservation Corps (CCC), a work relief program established during the Great Depression, provided much of the labor needed to operate the early nursery and construct its buildings. Many of the buildings are still standing.

State Nursery: 1951–1974

Photo courtesy of Hal Berndt

Photo courtesy of the Forest History Society, Durham, NC

Harold "Hal" Berndt worked as the state nursery manager from 1955 to 1972. He and his wife raised four children in the nursery house that was located just behind you (photo from 1938).

By 1950, federal funding for forest restoration declined. The U.S. Forest Service announced plans to close the Hugo Sauer Nursery. Demand for trees on state and private forests in Wisconsin, however, was still high. With help from the Rhinelander Paper Company, the Wisconsin Conservation Department leased the nursery in 1951 and continued its operations until 1974.

Photo courtesy of Hal Berndt

Inmates from the McNaughton state prison camp near Lake Tomahawk provided much of the labor for the nursery during the state operation (1964).

U.S. Forest Service Research Nursery: 1957–today

In 1957, the U.S. Forest Service's **Northern Institute of Forest Genetics** was opened just north of the nursery, one of only three forest genetics institutes in the country. Researchers studied how trees could be grown faster, produce more wood, and be resistant to disease and insects. The nursery became a testing ground for growing superior breeds and varieties of trees. Today, the nursery continues to be used for cutting-edge forestry research, such as **phytoremediation**, where trees are grown to remove contamination from soil and water.

Hans Nienstaedt (right), geneticist and first Project Leader of the Northern Institute of Forest Genetics, measures white spruce seedlings at the nursery with Hal Luedke (left).

Photo courtesy of Ronald S. Zalesny, Jr.

David Karlsson, an intern from Sweden, conducts measurements at a landfill as part of a phytoremediation study.

Proposed wayside exhibits

Eight wayside exhibits are proposed for installation along the interpretive trail. Each sign panel would be sized at 24"x18" and housed in a cantilevered, powder coated, aluminum base, with vertical legs and a frame tilted at a 45° angle for easy viewing.

The message on each panel would focus on a specific historic building or landscape that can be seen along the nursery trail route. Drafts of the eight sign layouts follow. The site map on page shows the proposed locations of each wayside exhibit.

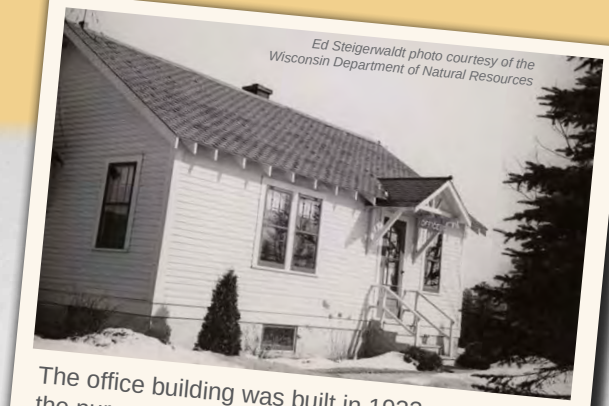
A Home on the Hill

Hugo Sauer Nursery History Trail

This was home to several nurserymen and their families from 1936 to 1972. A two-story house and garage, built by CCC enrollees in 1936, was perched on this hill just a few steps away from an office building. Living on site allowed the nursery managers to keep a watchful eye on their precious tree seedlings year-round. The buildings were removed in 1975.

Photo courtesy of the Forest History Society, Durham, NC

The two-story nurseryman's house was built in 1936 in a "country ranger house" style (1938 photo).



Ed Steigerwaldt photo courtesy of the Wisconsin Department of Natural Resources

The office building was built in 1933 and stored the nursery's operation records (1954 photo).

Photo courtesy of the Forest History Society, Durham, NC

This 1938 photo shows the nurseryman's house (left) and the office building (right).

Nursery Life

The nursery was an exciting place to live! Children enjoyed sledding down the hill, fishing and canoeing on Langley Lake, and biking on the nursery roads.

Photos courtesy of the Alvin E. Nelson family

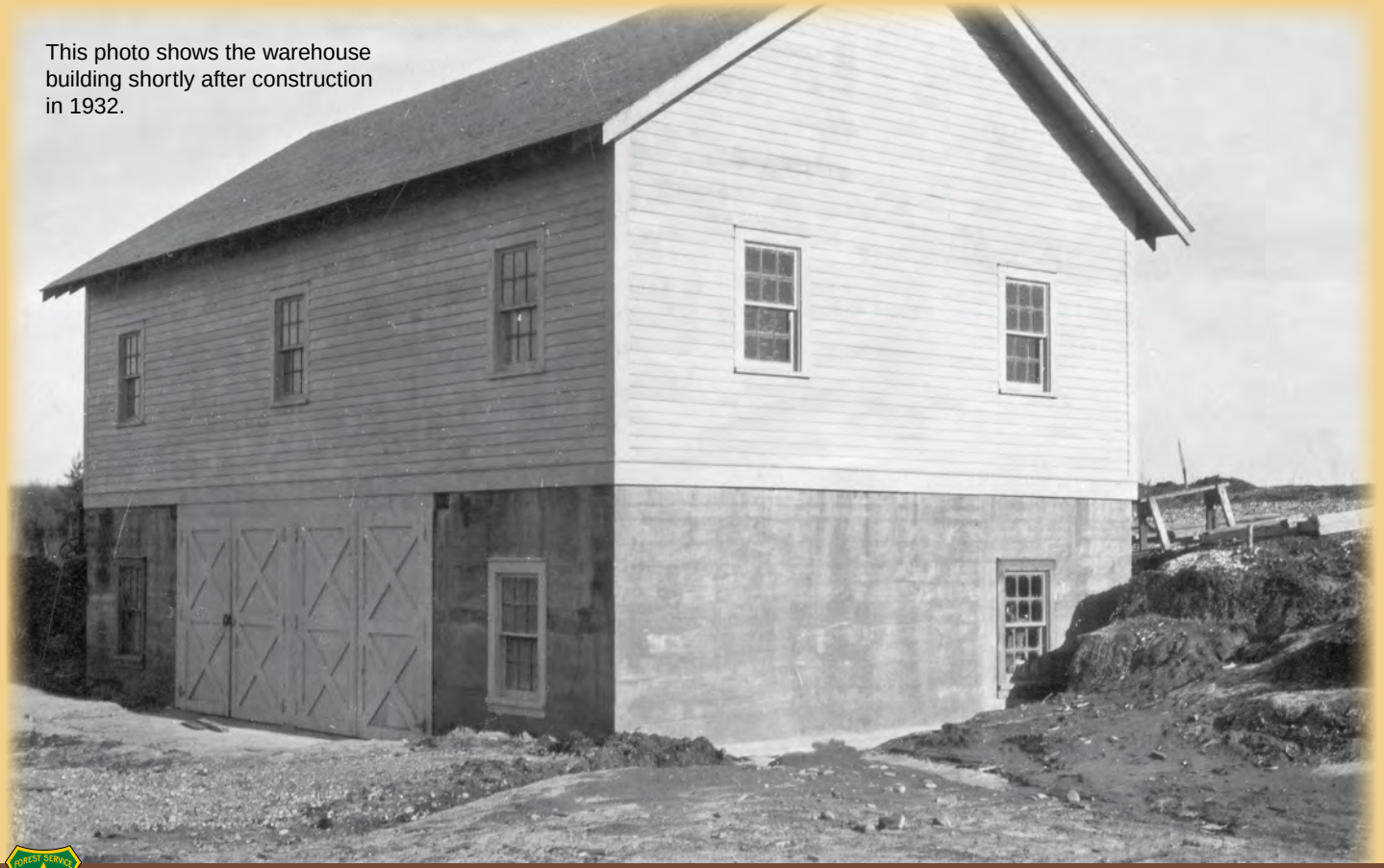
Alvin E. Nelson lived at the nursery with his wife and twin sons from 1951 to 1954. The boys enjoyed fishing and canoeing.

Photo courtesy of the Hal Berndt family

Hal Berndt and his wife raised four children at the nursery from 1955 to 1972. The kids loved biking on the nursery roads every day.

Warehouse #1

This two-story warehouse is one of the oldest remaining buildings at the nursery. Nurseryman G. Willard Jones began constructing it in August 1931 and finished in 1932. Its unique location against a hill provides access to the lower level on this side and the upper level on the other. It was designed to store nursery equipment. It is still used for storage today.



This photo shows the warehouse building shortly after construction in 1932.

Nursery Equipment

A tree nursery requires different types of equipment to operate, including tractors, plows, seed drills, and trucks. Safely storing this equipment was a top priority for the early nurserymen.

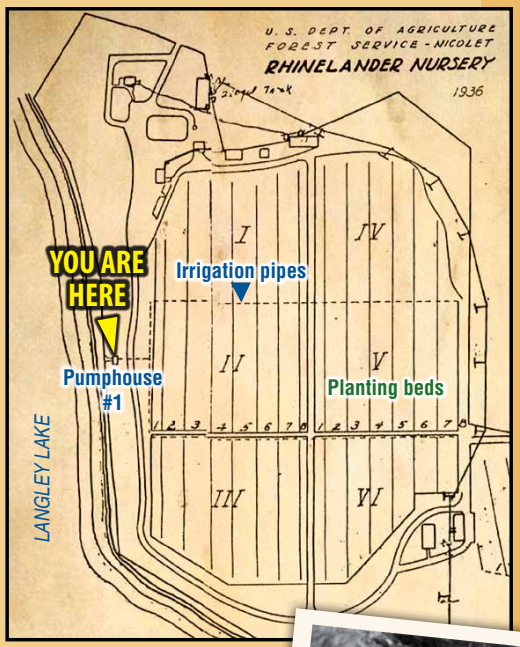
Tractors and plows were used to break ground for planting beds (1931 photo).

Mechanical seed drills planted multiple rows of seeds to the correct depth (1931 photo).

Pumphouse #1

This pumphouse is the oldest building at the nursery, constructed by nurseryman G. Willard Jones in 1931. Motor pumps housed inside the building sucked water from the lake through an intake pipe and propelled it to overhead sprinklers in the planting beds behind you.

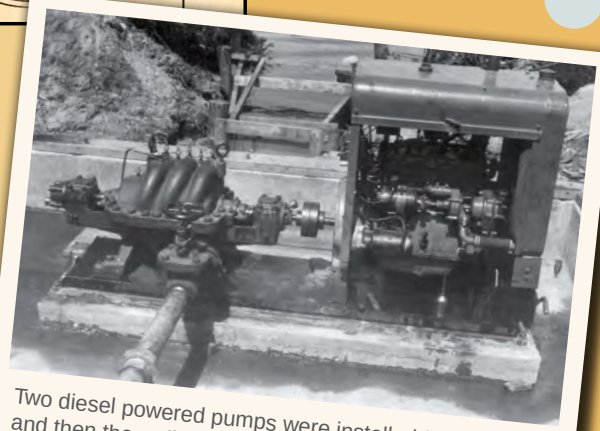
Pumphouse #1 as it appeared in 1931 shortly after construction. The building is designed in the late Rustic Style, which featured a gabled roof, clapboard siding, multi-pane windows, exposed end rafters, and a decorative gabled entryway.



This 1936 nursery map shows how water from pumphouse #1 was distributed to the irrigation pipes in the northern six planting beds (dotted lines).

Watering the Seedlings

The nursery was purposely located next to Langley Lake. While the sandy loam soil here is great for growing conifers, it doesn't hold moisture well. Daily irrigation was required to successfully grow seedlings.



Two diesel powered pumps were installed first in 1931, and then the walls and roof were built around them. Later, they were replaced by electric pumps.

Civilian Conservation Corps

Young men in the Civilian Conservation Corps (CCC) provided much of the labor for early nursery operations from 1933 to 1941. Enrollees prepared seedbeds, planted seeds, cared for seedlings, and packed up the young trees for shipping. They also constructed many of the nursery buildings, including the nearby implement shed completed in 1936.

The implement shed was built in 1936 to store large equipment and tools, the same function it serves today. It features 12 hinged bay doors.

Photo courtesy of the Pioneer Park Historical Complex, CCC Museum, Rhinelander, WI

CCC Company 654 men pose for a photo at the nursery in 1934. Before the side camp was constructed, the enrollees lived in tents.

CCC Side Camp

A CCC side camp, a worksite located away from the main camp, was constructed at the nursery between 1936 and 1937. Here, CCC workers slept, ate, and played between work shifts.

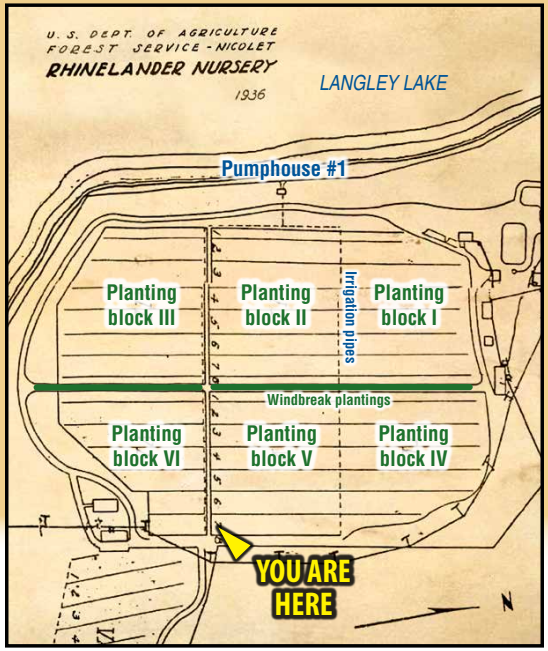
Photo courtesy of the Pioneer Park Historical Complex, CCC Museum, Rhinelander, WI

A photo of the side camp in 1941 shows a bunkhouse (in front) and shower house (behind). The camp also included a mess hall and kitchen.

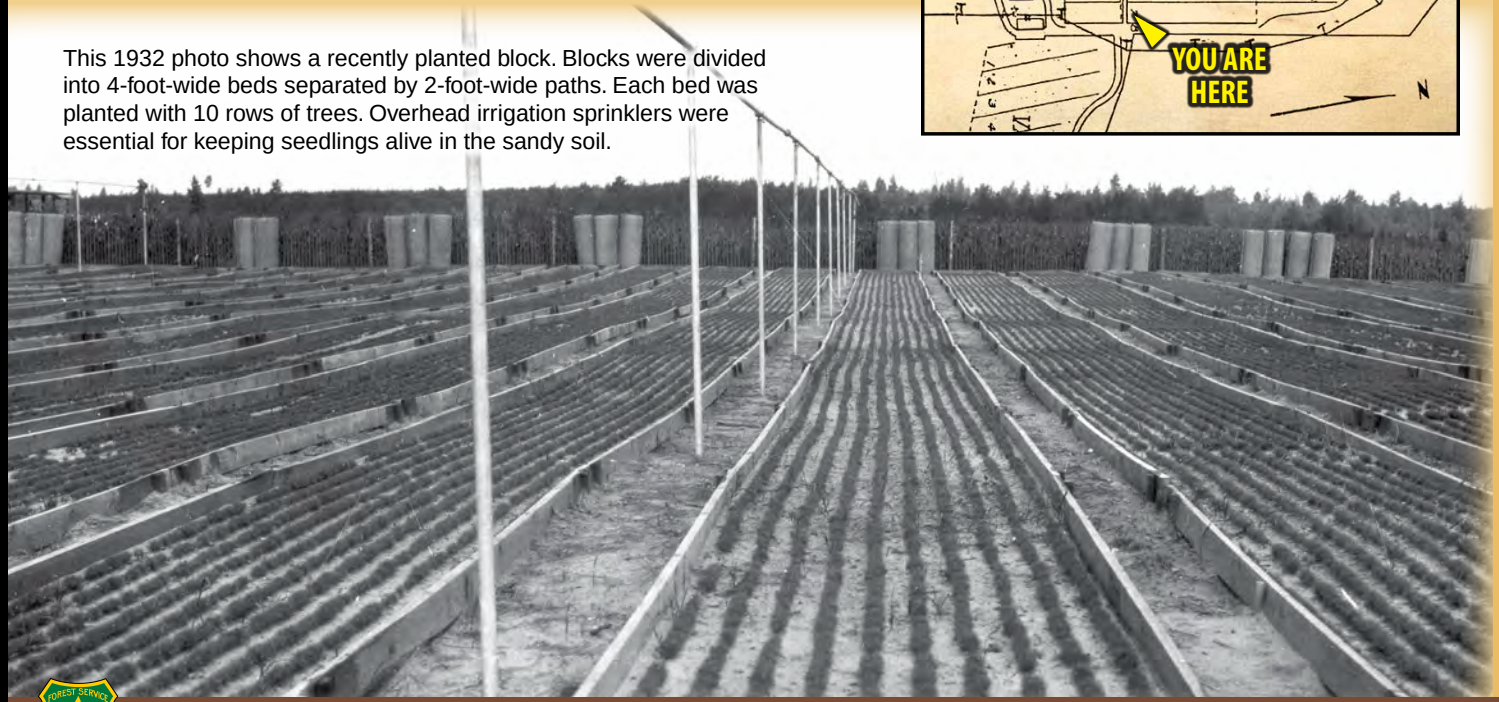
Nursery Landscape

Hugo Sauer Nursery
History Trail

You are standing at the intersection of two historic planting blocks. Imagine row after row of tiny tree seedlings waving their needles in the breeze. The long hedge of cedar trees at the far end of the blocks was planted as a windbreak in 1931. The metal posts sticking up out of the ground once connected underground irrigation pipes to overhead sprinklers.



This 1932 photo shows a recently planted block. Blocks were divided into 4-foot-wide beds separated by 2-foot-wide paths. Each bed was planted with 10 rows of trees. Overhead irrigation sprinklers were essential for keeping seedlings alive in the sandy soil.



Working the Beds

Preparing the nursery beds required a tremendous amount of manual labor. Civilian Conservation Corps workers assisted during the federal nursery operation, and prison laborers assisted during the state operation.

CCC workers rake the seed beds in 1939.

CCC workers use a 10-row mechanical seed drill to plant red pine in 1939.

Cone Shed & Packing Room

Hugo Sauer Nursery History Trail

Every spring and fall, this building bustled with dozens of workers who prepared seedlings grown in the nursery for shipment all over the Northwoods. The building was constructed in 1937 and added onto in 1958. The top floor was used to store and dry cones prior to extracting the seeds. The lower floor was used as a packing facility to ship seedlings. It was also refrigerated for short-term seedling storage.

Inside the packing room, women sort through the seedlings to cull, root prune, and bundle them (1964 photo). Local men and women were hired seasonally to prepare the seedlings for shipment.

A hundred seedlings were bundled together with brown paper and twine (1958 photo).

Seedling bundles were loaded onto a truck and shipped throughout northern Wisconsin (1958 photo).

Lifting Seedlings

The process of “lifting” seedlings from a nursery bed was done with a spade or machine. Soil was kept around the roots to protect them from damage.

Photo courtesy of Hal Berndt

Tree seedlings were typically lifted when they were two years old and about 6-8 inches tall (1966 photo).

Photo courtesy of the Forest History Society, Durham, NC

CCC workers lift and grade jack pine seedlings. They placed them in boxes and took them to the packing shed (1939 photo).

Storing the Seeds

This building was constructed in 1935 as a seed cold storage shed. After the seeds were removed from the cones and cleaned in the nearby extractory, they needed to be stored in a cool, dry environment to prevent germination. The insulated walls of this building and its location against a hillside allowed it to maintain an ideal temperature of 33–41°F without refrigeration equipment.

Ed Steigerwaldt photo courtesy of the Wisconsin Department of Natural Resources

A Hugo Sauer Nursery worker funnels white pine seeds into an air-tight galvanized canister. Each canister weighed about 160 pounds when filled. The canisters were moved to the seed house for storage until planting season (1954 photo).

Photo courtesy of the Forest History Society, Durham, NC

While no historic photos of the Hugo Sauer Nursery seed house are known to exist, the interior likely appeared similar to this cold storage shed at the Cass Lake Nursery in Minnesota (1940 photo).

Conifer Seeds

Pine and spruce trees grow cones that protect tiny winged seeds. When the cones open, the seeds are carried by the wind away from the parent trees. At the nursery, the wings were removed and the seeds were cleaned for easier planting.

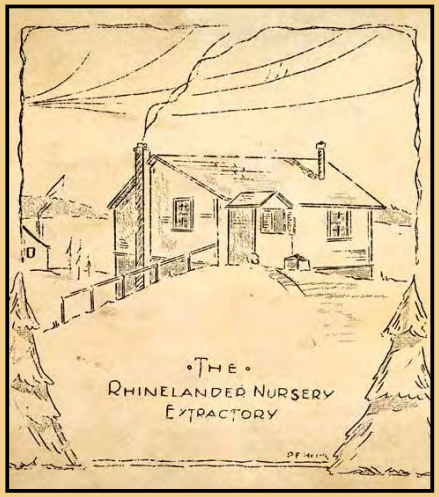
Photo courtesy of Confederation College

A red pine cone and its winged seeds (actual size).

Piles of cleaned red pine, jack pine, and white pine seeds from the Chippewa National Forest, Minnesota (1940 photo).

Extracting Seeds

Civilian Conservation Corps workers constructed a two-story seed extractory here in 1933. The building housed equipment for extracting seeds from cones. In its first year of operation from 1934 to 1935, about 17,000 bushels of cones were extracted to produce 6,300 pounds of pine and spruce seeds. Only the lower level of the building remains today below the wall.

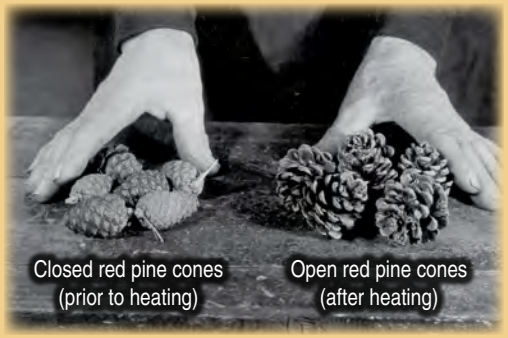


A drawing of the extractory from a 1935 newsletter called *The Nicolet Forum*.

Ed Steigerwaldt photo courtesy of the Wisconsin Department of Natural Resources

A Hugo Sauer Nursery worker shovels white pine cones onto a screen tray in the extractory (1954 photo). The cones were heated in a kiln to open the scales and release the seeds.

Photo courtesy of the Forest History Society, Durham, NC



The Extraction Process

The extractory housed several devices to remove and clean seeds from cones.

1

Cones on screen trays were heated in a *forced-air kiln* for 8 to 16 hours to open their scales.

2

The opened cones were dropped into a *shaker,* a large wire mesh drum that shook out the seeds when turned.

3

The seeds were placed into a *dewinger* machine that rubbed off the seed wings and scales.

4

Finally, the seeds were poured into a *fanning mill*, which blew off the chaff to clean them.

Extractory photos courtesy of the Forest History Society, Durham, NC