United States Department of Agriculture

# Minnesota Timber Industry, 2014

Resource Update FS-156

This resource update provides an overview of timber product output (TPO) and use in Minnesota based on questionnaires designed to determine the size and composition of the State's primary wood-using industry, its use of roundwood and its generation and disposition of wood residues. This study was a cooperative effort between the Minnesota Department of Natural Resources (MN-DNR) and the Forest Inventory and Analysis (FIA) unit at the Northern Research Station (NRS) of the USDA Forest Service. MN-DNR surveyed primary wood-using mills and FIA processed and analyzed the survey responses. This update presents results from the 2014 survey with comparisons to the 2010 survey. Sawmills that reported less than 5 thousand cubic feet of receipts in the 2010 study were not surveyed for the 2014 study. Receipts in 2010 at the 124 sawmills that were not surveyed in 2014 totaled 217,000 cubic feet of roundwood, accounting for roughly 0.5 percent of the total receipts of all sawmills. Certain terms used in this report—retained, export, import, production, and receipts—have specialized meanings and relationships unique to the FIA program that surveys timber product output (Fig. 1). Additional definitions and a list of the TPO species groups are on pages 5 and 6 of this report. Supplemental data tables can be found at https://doi.org/10.2737/FS-RU-156.

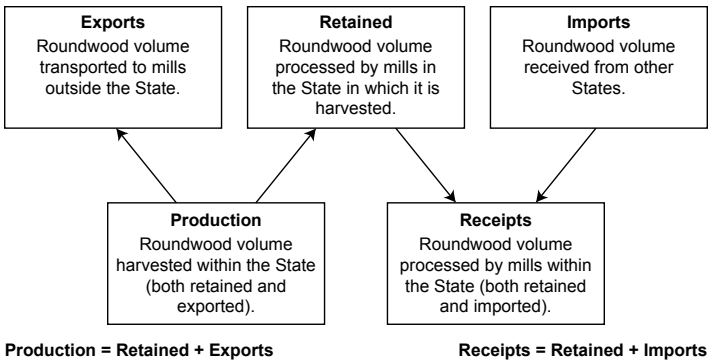


**Figure 1.—Diagram of the movement of industrial roundwood.**

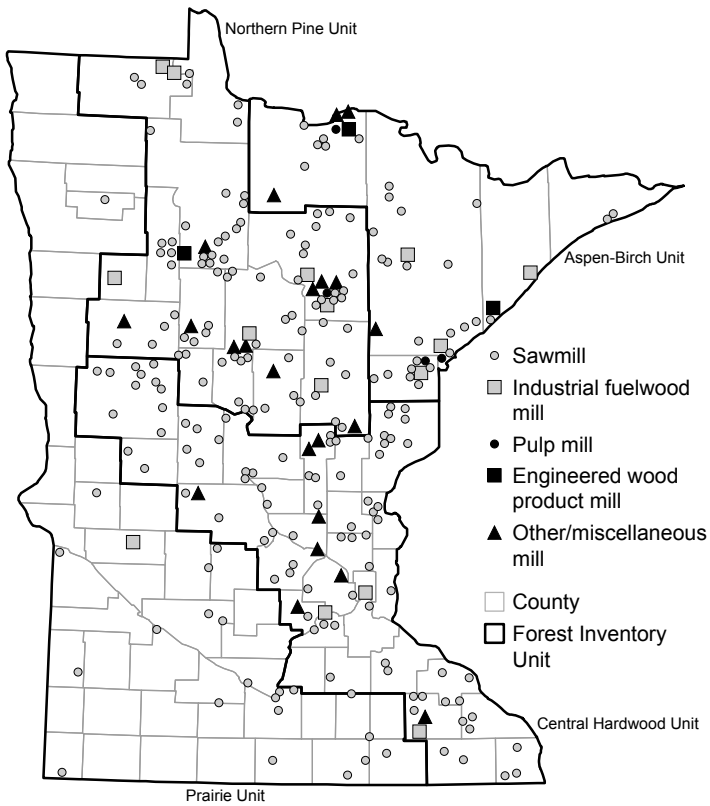


**Figure 2.—Primary wood-using mills, MInnesota, 2014.**

## Overview

In 2014, Minnesota's primary wood-using industry included 214 sawmills, 4 pulp mills, 3 engineered wood product mills, 15 industrial fuelwood mills, and 22 mills producing other products (Fig. 2, Table 1). Total receipts at Minnesota primary mills totaled about 221.2 million cubic feet—196.6 million cubic feet from Minnesota sources and 24.6 million cubic feet from Wisconsin, Michigan, Iowa, other states, and Canada. Primary wood-using mills generated 1.2 million green tons of mill residues, of which 65 percent were used for industrial fuelwood.

Total production of industrial roundwood from Minnesota forests in 2014 was 220.4 million cubic feet, of which 23.8 million cubic feet was exported to primary wood-using mills in other states or other countries, the majority of which went to Wisconsin. Roundwood harvested for pulp mills accounted for 57 percent of the total production within the state. Industrial roundwood harvests resulted in 106.1 million cubic feet of total harvest residues.

Forest Service
Northern Research Station
July 2018

**Table 1.—Summary of the Minnesota timber industry, 2007, 2010, and 2014**

| | 2007 | 2010 | 2014 | Change 2010-2014 |
|---|---|---|---|---|
| Number of primary wood-using mills[a] | 414 | 417 | 258 | NA |
| Industrial roundwood receipts–MMCF[b] | 231.9 | 238.8 | 221.2 | -7.3% |
| Saw log receipts–MMBF[c] | 239.6 | 226.9 | 212.9 | -6.2% |
| Industrial roundwood production–MMCF[b] | 221.3 | 226.1 | 220.4 | -2.5% |
| Saw log production–MMBF[c] | 233.8 | 228.3 | 228.5 | 0.1% |
| Growing-stock removals from timberland for industrial roundwood–MMCF[b] | 216.3 | 225.1 | 218.7 | -2.9% |
| Sawtimber removals from timberland for industrial roundwood–MMBF[c] | 645.5 | 673.3 | 658.1 | -2.2% |
| Wood material harvested for industrial roundwood–MMCF[b] | 325.0 | 336.7 | 326.5 | -3.0% |
| Harvest residue generated by industrial roundwood harvesting–MMCF[c] | 108.1 | 110.6 | 106.1 | -4.0% |
| Residues produced at primary wood-using mills–thousand green tons | 1,488.1 | 1,509.1 | 1,215.4 | -19.5% |

[a] Sawmills that reported receipts of less than 5,000 cubic feet of roundwood in 2010 were not surveyed in 2014.

[b] Million cubic feet.

[c] Million board feet, International ¼-inch Rule.

## Primary Timber Industry

### Industrial Roundwood

Receipts at Minnesota's 258 surveyed primary wood-using mills decreased from 238.8 million cubic feet in 2010 to 221.2 million cubic feet in 2014. Seventy-one percent of receipts were composed of hardwood species. Aspen alone accounted for 53 percent of the total volume processed.

Minnesota's timber industry saw a 2.5 percent decrease in industrial roundwood production in 2014, roughly 5.7 million cubic feet less than what was produced in 2010. Sixty-eight percent of industrial roundwood production was of hardwood species (Fig. 3). Roundwood harvested for pulp mills accounted for 57 percent of total production. Most of the decrease in overall production between 2010 and 2014 was due to a reduction in pulpwood production; saw log production remained roughly unchanged, other products production decreased slightly, and engineered wood products and industrial fuelwood production increased (Fig. 4).

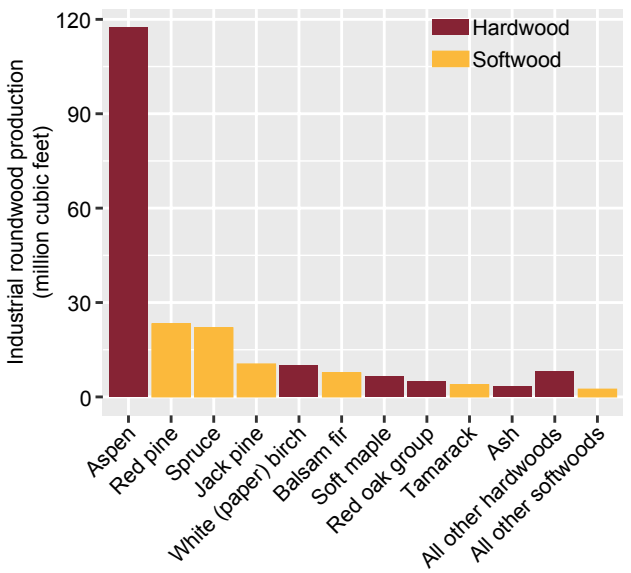


**Figure 3.—Industrial roundwood production by by species group, Minnesota, 2014.**

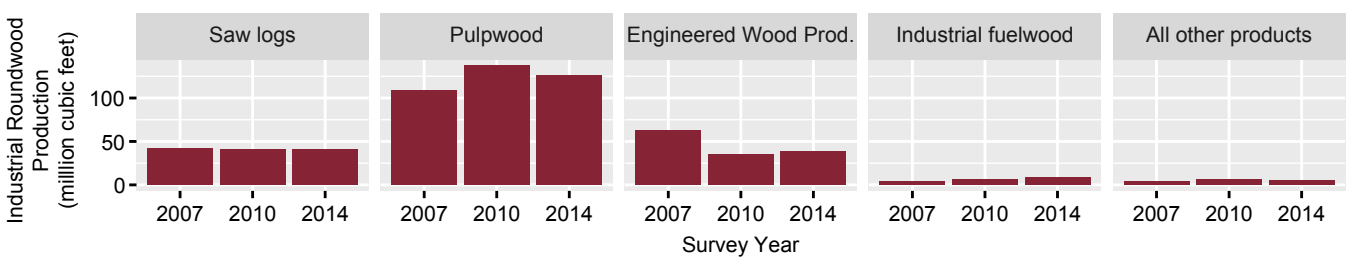


**Figure 4.—Industrial roundwood production by product and survey year, Minnesota. All other products include cabin logs, posts, and other miscellaneous products.**

### Pulpwood

Pulpwood is by far Minnesota's most important industrial roundwood product. There was one less pulp mill operating in 2014 compared to 2010, causing both production and receipts of pulpwood to decrease. Production of pulpwood decreased by 8.2 percent, from 1.7 million cords in 2010 to 1.6 million cords in 2014. Receipts of pulpwood at Minnesota pulp mills saw a similar decrease of about 10.6 percent from 2010 receipts, from 1.9 million cords to 1.7 million cords.

### Saw Logs

Despite not surveying sawmills that reported less than 5,000 cubic feet of receipts in the 2010 survey, 2014 production of saw logs from Minnesota forests remained roughly unchanged. Softwood species made up 61 percent of total production, while hardwoods made up 39 percent. Red pine production accounted for 42 percent of the 2014 total. Red pine also had the largest production increase in 2014 from the 2010 survey, up 10.1 million board feet (International ¼-inch Rule), while jack pine saw the largest decrease, down 19.1 million board feet (Fig. 5).

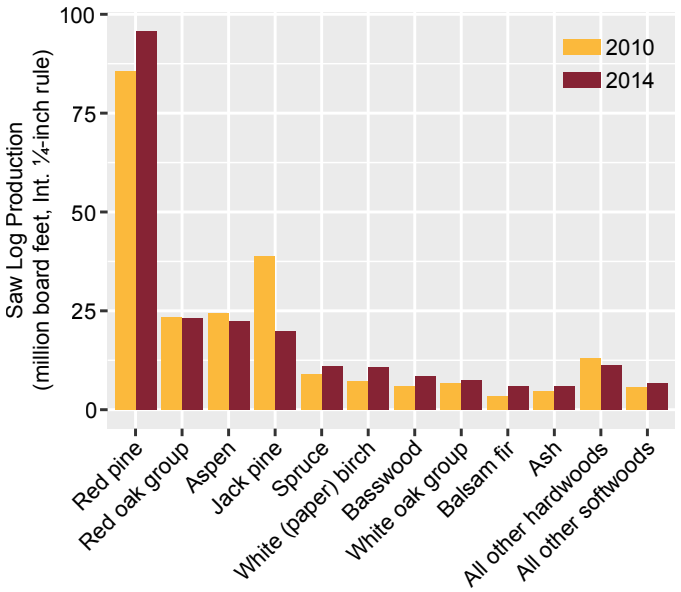


**Figure 5.—Saw log production by species group and survey year, Minnesota.**

### Engineered Wood Products

Receipts at engineered wood products mills in 2014 were down nearly 2 percent from 2010, likely due to one less mill operating in the State. However, production of roundwood for engineered wood products increased 12 percent, from 443,416 cords in 2010 to 494,996 cords in 2014.

### Timber Removals

During the harvest of industrial roundwood from Minnesota's forests in 2014, 206.5 million cubic feet of wood material from growing stock (e.g., sawtimber and poletimber) and 13.9 million cubic feet from non-growing stock (e.g., limbwood, saplings, and cull, dead, or nonforest trees) were used for primary wood products. The unused portion of timber removals amounted to 12.2 million cubic feet of logging residue from growing-stock sources and 93.9 million cubic feet of logging slash from non-growing-stock sources (Fig. 6).

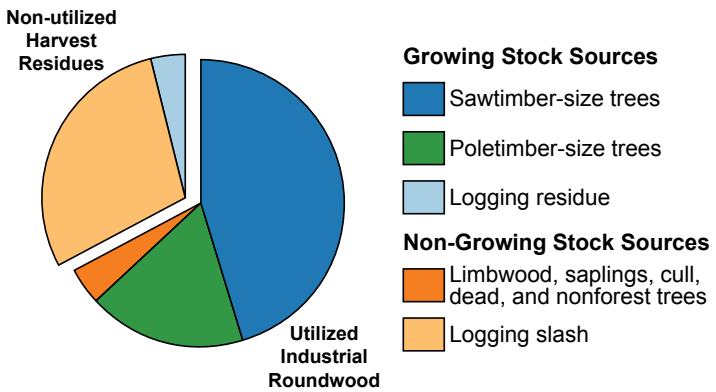


**Figure 6.—Distribution of timber removals for industrial roundwood by source of material and utilization, Minnesota, 2014.**

### Harvest Intensity

Estimating harvest intensity involves combining the data from this study with forest inventory data from FIA, which is an annual inventory of forests to quantify such metrics as area, number of live trees, net volume, etc. In 2014, there were nearly 17.5 million acres of forest land in Minnesota (Miles and VanderSchaaf 2015). With 326.4 million cubic feet of wood material harvested, Minnesota's statewide harvest intensity was 18.7 cubic feet of wood material removed per acre of forest land. That is a decrease in harvest intensity from 2010, which saw 19.5 cubic feet of removals per acre of forest land. Individual county harvest intensity ranged from less than 1 cubic foot of wood removed per acre to as high as 38.5 cubic feet per acre (Fig. 7)

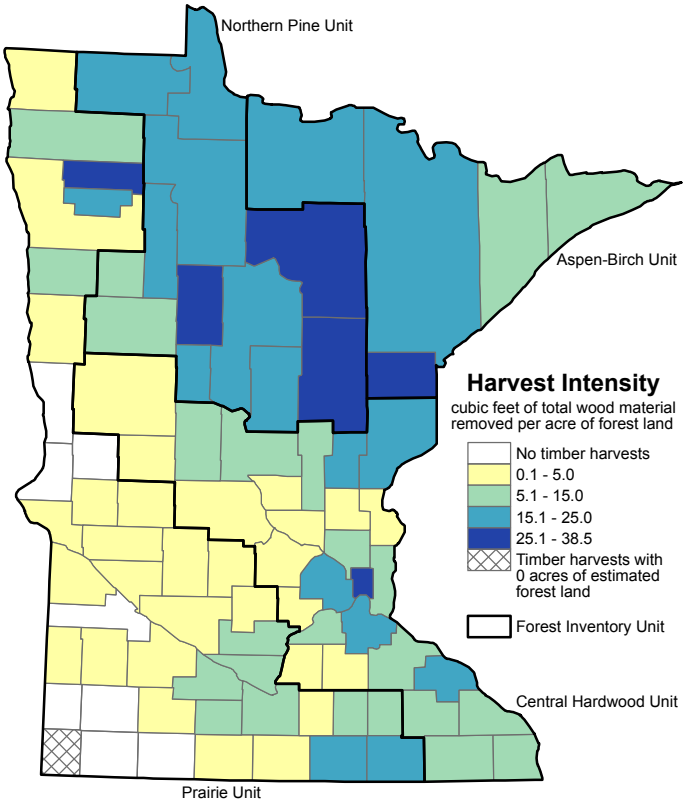


**Figure 7.—Harvest intensity of industrial roundwood by county, Minnesota, 2014.**

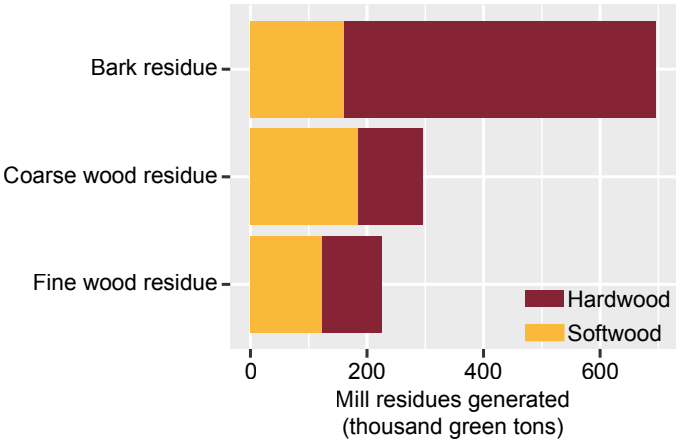


**Figure 8.—Distribution of residues generated by primary wood-using mills by primary wood-using mills by type of residue, Minnesota, 2014.**

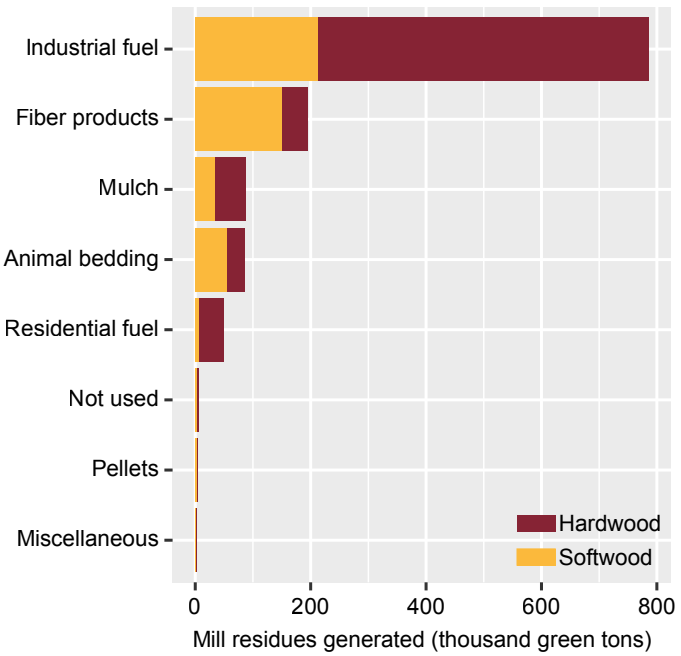


**Figure 9.—Distribution of residues generated by primary wood-using mills by method of disposal, Minnesota, 2014.**

### Primary Mill Residues

In converting industrial roundwood into products, such as lumber, Minnesota's primary wood-using mills generated 1.2 million green tons of coarse wood residue (e.g., slabs or edgings), fine wood residue (e.g., sawdust), and bark residue (Fig. 8). Sixty-five percent of mill residues were used for industrial fuel. Another 16 percent went toward fiber products, 7 percent to mulch, and 7 percent to animal bedding (Fig. 9). Sixty percent of coarse wood residues went toward fiber products; 45 percent of fine wood residue was used for industrial fuel; and 91 percent of bark residue was also used for industrial fuel.

## Literature Cited

Miles, P.D; VanderSchaaf, C. 2015. **Forests of Minnesota, 2014.** Resource Update FS-44. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 4 p.

**How to Cite This Publication**
Walters, Brian F.; Bergstrand, Kristen.; Piva, Ronald J. 2018. **Minnesota Timber Industry, 2014.** Resource Update FS-156. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 6 p. https://doi.org/10.2737/FS-RU-156.

**Supplemental Tables**
Data tables to accompany this report are available at https://doi.org/10.2737/FS-RU-156

**Contact Information**
Brian F. Walters
USDA Forest Service, Northern Research Station
1992 Folwell Ave.
St. Paul, MN 55108
Ph: 651-649-5135
Fax: 651-649-5140
bfwalters@fs.fed.us
Northern FIA: http://nrs.fs.fed.us/fia/
National FIA: http://fia.fs.fed.us

The published report is available online at https://doi.org/10.2737/FS-RU-156.

## Common and scientific names of tree species in Minnesota by TPO species group

### Softwoods

| | | |
|---|---|---|
| Cedar/juniper | | |
| | Eastern redcedar | *Juniperus virginiana* |
| | Northern white-cedar | *Thuja occidentalis* |
| Baldcypress | | |
| | Baldcypress | *Taxodium distichum* |
| Balsam fir | | |
| | Balsam fir | *Abies balsamea* |
| Jack pine | | |
| | Jack pine | *Pinus banksiana* |
| Red pine | | |
| | Red pine | *Pinus resinosa* |
| White pine | | |
| | Eastern white pine | *Pinus strobus* |
| Other pine | | |
| | Scotch pine | *Pinus sylvestris* |
| | Other pine species | *Pinus* spp. |
| Spruce | | |
| | White spruce | *Picea glauca* |
| | Black spruce | *Picea mariana* |
| | Other spruce species | *Picea* spp. |
| Tamarack | | |
| | Tamarack | *Larix laricina* |

### Hardwoods

| | | |
|---|---|---|
| Ash | | |
| | White ash | *Fraxinus americana* |
| | Black ash | *Fraxinus nigra* |
| | Green ash | *Fraxinus pennsylvanica* |
| Aspen | | |
| | Bigtooth aspen | *Populus grandidentata* |
| | Quaking aspen | *Populus tremuloides* |
| | Balsam poplar | *Populus balsamifera* |
| Basswood | | |
| | American basswood | *Tilia americana* |
| Beech | | |
| | American beech | *Fagus grandifolia* |
| White (paper) birch | | |
| | White (paper) birch | *Betula papyrifera* |
| Yellow birch | | |
| | Yellow birch | *Betula alleghaniensis* |
| Other birch | | |
| | Other birch species that are not yellow or white (paper) birch | *Betula* spp. |
| Black cherry | | |
| | Black cherry | *Prunus serotina* |
| Black walnut | | |
| | Black walnut | *Juglans nigra* |
| Cottonwood | | |
| | Eastern cottonwood | *Populus deltoides* |
| Elm | | |
| | American elm | *Ulmus americana* |
| | Siberian elm | *Ulmus pumila* |
| | Slippery elm | *Ulmus rubra* |
| Hickory | | |
| | Bitternut hickory | *Carya cordiformis* |
| | Shagbark hickory | *Carya ovata* |
| Hard maple | | |
| | Black maple | *Acer nigrum* |
| | Sugar maple | *Acer saccharum* |
| Soft maple | | |
| | Boxelder | *Acer negundo* |
| | Red maple | *Acer rubrum* |
| | Silver maple | *Acer saccharinum* |
| Red oak | | |
| | Northern pin oak | *Quercus ellipsoidalis* |
| | Northern red oak | *Quercus rubra* |
| | Black oak | *Quercus velutina* |
| White oak | | |
| | White oak | *Quercus alba* |
| | Bur oak | *Quercus macrocarpa* |
| Other hardwoods | | |
| | Hackberry | *Celtis occidentalis* |
| | Butternut | *Juglans cinerea* |
| | Eastern hophornbeam | *Ostrya virginiana* |
| | Black locust | *Robinia pseudoacacia* |
| | Black willow | *Salix nigra* |

## Definition of Terms

**Growing-stock removals.** The growing-stock volume removed from timberland by harvesting industrial roundwood products. Includes sawtimber removals, poletimber removals, and logging residues.

**Growing-stock tree.** A live timberland tree of commercial species that meets specified standards of size, quality, and merchantability. Excludes rough, rotten, and dead trees.

**Growing-stock volume.** Net volume of growing-stock trees 5.0 inches d.b.h. and larger, from 1 foot above the ground to a minimum 4.0-inch top diameter outside bark of the central stem or to the point where the central stem breaks into limbs.

**Harvest residues.** The total net volume of unused portions of trees cut or killed by logging. Includes both logging residues and logging slash.

**Industrial roundwood exports.** The quantity of industrial roundwood harvested in a geographical area and transported to other geographical areas.

**Industrial roundwood imports.** The quantity of industrial roundwood received from other geographical areas.

**Industrial roundwood products.** Saw logs, pulpwood, veneer logs, poles, commercial posts, pilings, cooperage logs, particleboard bolts, shaving bolts, lath bolts, charcoal bolts, and chips from roundwood used for pulp or board products.

**Industrial roundwood production.** The quantity of industrial roundwood harvested in a geographic area plus all industrial roundwood exported to other geographical areas.

**Industrial roundwood receipts.** The quantity of industrial roundwood received by commercial mills in a geographic area plus all industrial roundwood imported from other geographical areas.

**Industrial roundwood retained.** The quantity of industrial roundwood harvested from and processed by commercial mills within the same geographical area.

**Limbwood removals.** Net volume of all portions of a tree other than the central stem (including forks, large limbs, tops, and stumps) harvested for industrial roundwood products.

**Logging residue.** The net volume of unused portions of the merchantable central stem of growing-stock trees cut or killed by logging.

**Logging slash.** The net volume of unused portions of the unmerchantable (non-growing-stock) sections of trees cut or killed by logging.

**Poletimber.** A growing-stock tree at least 5.0 inches d.b.h. but smaller than sawtimber size (9.0 inches d.b.h. for softwoods, 11.0 inches d.b.h. for hardwoods).

**Primary wood-using mills.** Mills receiving roundwood or chips from roundwood for processing into products such as lumber, veneer, and pulp.

**Primary wood-using mill residue.** Wood materials (coarse and fine) and bark generated at manufacturing plants that process industrial roundwood into principal products. These residues include wood products obtained incidental to production of principal products and wood materials not utilized for some product.

**Rotten tree.** A tree that does not meet regional merchantability standards because of excessive unsound cull.

**Rough tree.** A tree that does not meet regional merchantability standards because of excessive sound cull (includes forks, sweep and crook, and large branches or knots), including noncommercial tree species.

**Roundwood.** Logs, bolts, or other round sections cut from trees (including chips from roundwood).

**Sapling.** A live tree between 1.0 and 5.0 inches d.b.h.

**Sawtimber removals.** As used in supplemental Table 9, sawtimber removals refers to the net volume in the merchantable central stem (includes the saw log and upper stem portions) of sawtimber trees harvested for industrial roundwood products. When referring to the sawtimber volume removed from timberland as in Table 11 in the supplemental files, sawtimber removals refers to the net volume in the saw log portion of sawtimber trees harvested for roundwood products or left on the ground as harvest residue.

**Sawtimber tree.** A growing-stock tree containing at least a 12-foot saw log or two noncontiguous saw logs 8 feet or longer, and meeting regional specifications for freedom from defect. Softwoods must be at least 9.0 inches d.b.h. and hardwoods must be at least 11.0 inches d.b.h.