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North Central Forest Experiment Station

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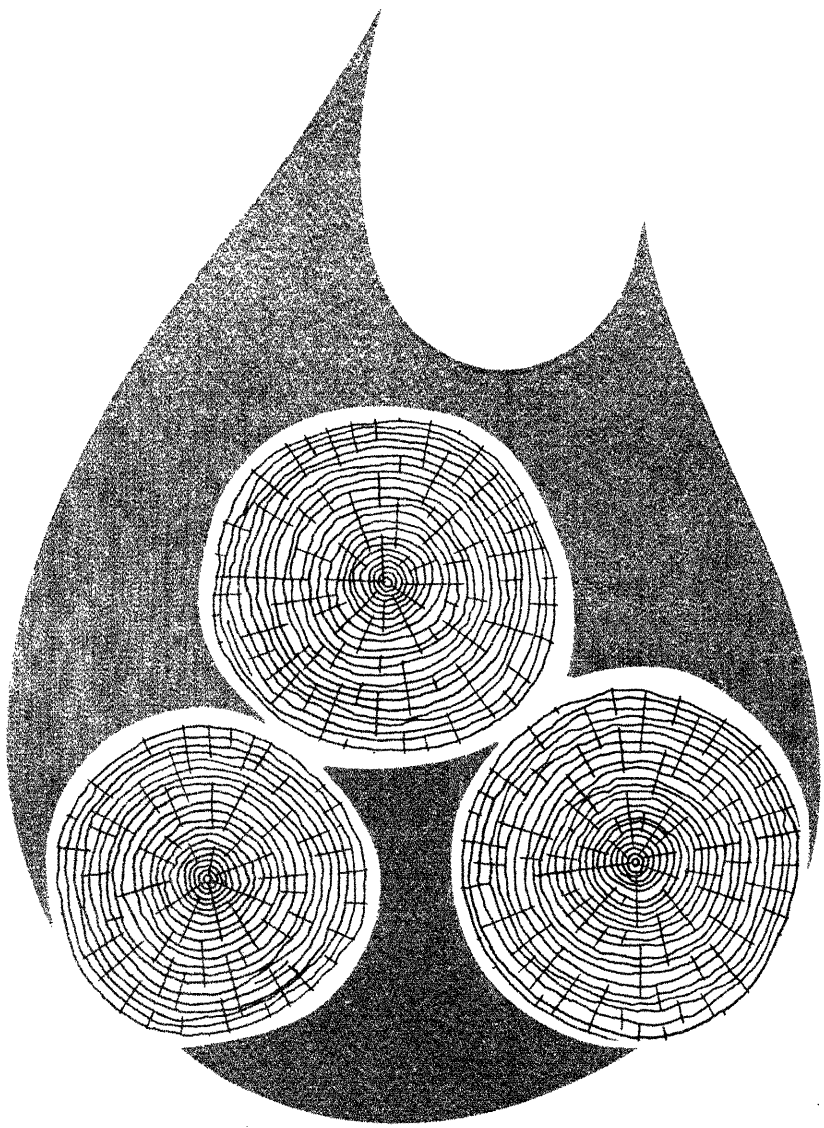
Fuelwood Production and Sources in Wisconsin, 1981

James E. Blyth, Michael E. Bailey, and W. Brad Smith



FOREWORD

This bulletin contains the results of a detailed study of 1981 fuelwood production and sources in Wisconsin. Such detailed information is necessary for intelligent planning and decision-making in wood procurement, forest resource management and forest industry development. Likewise, researchers need current fuelwood production information for planning projects.

Special thanks are given to the Wisconsin households, primary wood-using firms, and logging firms that supplied information for this study. Their cooperation is greatly appreciated.

Four Wisconsin DNR foresters were the major participants in conducting the phone survey:

Jeffrey F. Olsen-Coordinator
Donald R. Peterson
Dan C. Cobb
David J. Epperly

Their help is greatly appreciated.

Quantities shown may differ slightly from one table to another because of rounding differences, but these differences are insignificant.

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FUELWOOD PRODUCTION AND SOURCES IN WISCONSIN, 1981

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HIGHLIGHTS

From Roundwood

- Total fuelwood production from roundwood in 1981 was 1,916,000 cords.
- Red oak and elm comprised 52 percent of the fuelwood cut.
- Private land provided 92 percent of the fuelwood cut.
- Rural woodland furnished 78 out of every 100 cords of fuelwood. Of the remaining 22 cords out of 100 that were cut from other land classes, 9 cords came from fence rows, windbreaks, and rural yards; 7 cords came from pasture and cropland; 5 cords came from cities and villages, and 1 cord came from other areas.
- Dead trees on commercial forest land (CFL) provided 46 percent of the fuelwood. Nongrowing stock on CFL was four times as important for fuelwood as growing stock on CFL.
- Growing stock on CFL was not a major source of fuelwood. An estimated 296,000 cords (15 percent) came from growing stock on CFL.
- For equal amounts of fuelwood produced by loggers and by households, loggers cut four times as much from growing stock on CFL as did households.
- No county produced more than 18,000 cords of fuelwood from growing stock on CFL.

From Primary Wood-using Mill Residue

- Wisconsin's primary wood-using mills supplied 250,000 cords of wood residue for fuelwood in 1981. Eighty-five percent was hardwood.
- Coarse (chippable) residue constituted about 62 percent of the wood residue burned for fuel; the remainder was fines.
- Industrial customers took three-fifths of the 1981 residue used for fuel; domestic (household) customers used the remainder.

HISTORICAL FUELWOOD DEMAND

Wood was the primary source of energy in the United States until the late 1800's. Between 1949 and 1974 fuelwood use declined steadily for utilities, residences, and commercial businesses, although industrial fuelwood use increased steadily during that period. Wood supplied only 2 percent of U.S. energy in 1972, the year before the Arab embargo sent oil prices spiraling upward. In recent years wood has been making a moderate comeback. Both residential and industrial use of fuelwood is increasing. Between 1974 and 1981, roused by higher prices for fossil fuels such as coal, oil, and natural gas, Americans increased their use of wood fuels by 45 percent, according to the Department of Energy (DOE). The DOE found the number of households using firewood as their main space-heating fuel more than doubled in a recent 2-year period. In 1980 wood furnished about 1.5 quads (1.5 quadrillion BTU's) of energy, approximately 3 percent of the Nation's total. A U.S. Congress Office of Technology Assessment report on bioenergy says the total use of wood for energy could reach 5 to 10 quads annually by 2000.

A household fuelwood consumption study conducted by the Wisconsin Department of Natural Resources (DNR) found total firewood use by Wisconsin households was 1,371,000 cords during the 1979-1980 heating season. Approximately 485,000 households (29 percent) burned wood in stoves, furnaces, or fireplaces during that period.

NEED FOR PRODUCTION STUDY

A study of Wisconsin fuelwood production in 1981 was necessary to provide estimates of fuelwood production for the fourth Wisconsin forest inventory and to determine the impact of fuelwood production on the forest resource. The 1979-1980 consumption study only provided data for household users; information on production for industrial and other users was not available. Twenty percent of the household fuel was purchased, and no information was known on the timber sources and counties of origin for this material.

Forest managers and users are now questioning the magnitude of the fuelwood harvest and the sources of the wood. How much fuelwood is harvested from forest land? Urban areas? Fence rows and windbreaks? Pastures and cropland? How much fuelwood comes from public land? Does most of the fuelwood come from growing stock? Are dead trees an important source? Are loggers major producers of fuelwood? What are the principal species cut? Where are the principal fuelwood-producing areas in Wisconsin? Are saw log and pulpwood markets threatened by fuelwood producers?

To answer these and other related questions in Wisconsin, a cooperative study was completed in 1982 by the North Central Forest Experiment Station and the Wisconsin Department of Natural Resources.

ANALYSIS OF PRODUCTION

From Roundwood

Geographic source.—Central and Southeastern Wisconsin supplied one-half of the 1.916 million cords of fuelwood harvested in 1981. No Survey Unit contributed less than 14 percent. Counties each producing more than 50,000 cords (in order of importance) were Marathon, Outagamie, Oneida, Sheboygan, Grant, Eau Claire, and Chippewa (fig. 1).

Type of producer.—Fuelwood producers are divided into two major segments—households and commercial loggers. Households dominated production in all areas of the State and produced 7 out of 8 cords overall. However, loggers harvested 1 out of 4 cords in the two Northern Units:

Survey Unit	Production		Total
	Households	Loggers	
	(Thousand cords)		
Northeastern	241	79	320
Northwestern	204	66	270
Central	411	82	493
Southwestern	355	10	365
Southeastern	465	3	468
Total	1,676	240	1,916

Species.—Red oak and elm dominated the fuelwood harvest—they comprised 52 percent of the roundwood. Leading species cut were:

Species	Volume	Percent
	(Thousand cords)	
Red oak	526	28
Elm	479	25
Hard maple	179	9
White oak	176	9
Aspen	103	5
White birch	98	5
Soft maple	85	4
Ash	69	4

No other species supplied more than 26,000 cords. Only 3 percent was softwoods; white, jack, and red pine were the major species.

Red oak was important for fuel in every Unit, especially in the Central Unit where it provided 205,000 cords. Elm was a major contributor in every Unit including 141,000 cords cut in the Southeast and 124,000 cords cut in the Southwest. More than 50,000 cords of hard maple came from each northern Unit. White oak cutting was concentrated in the Central and southern Units.

Private vs. public land.—Private land furnished 92 percent of the fuelwood cut. Public land supplied a significant quantity of fuelwood in the northern Units and a nominal amount in the southern Units:

Unit	Private	Public
	(Thousand cords)	
Northeastern	264	56
Northwestern	200	70
Central	470	23
Southwestern	362	3
Southeastern	465	3
All	1,761	155

Forest industry land (owned by firms with primary wood-using mills) provided less than 1 percent of the fuelwood from the private sector.

In the public sector the leading source of fuelwood was county and municipal land:

Public land class	Fuelwood volume	Public
	(Thousand cords)	(Percent)
County and municipal	62	40
State	40	26
National Forest	37	24
Indian	16	10
	155	100

Counties and municipalities administer the most commercial forest land in Wisconsin.

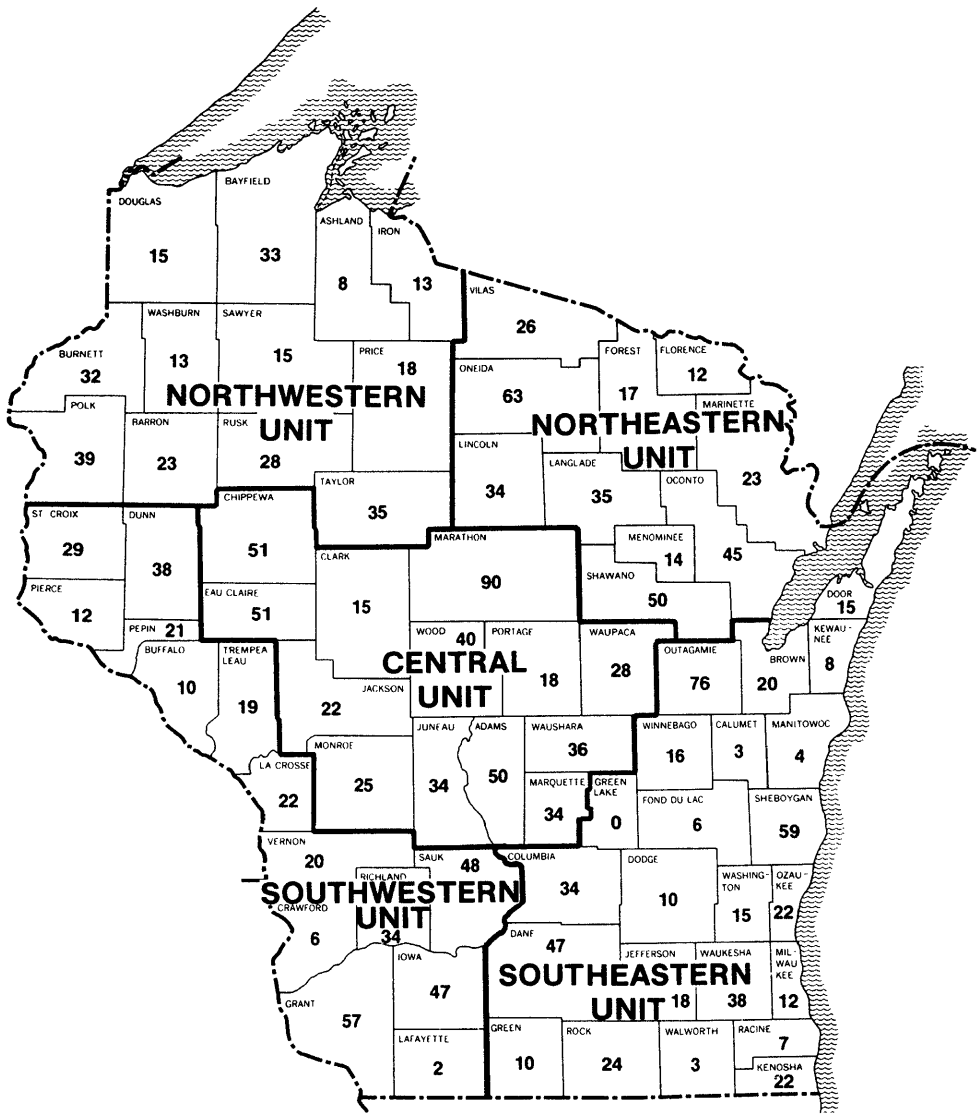

Figure 1.—*Fuelwood production by county from roundwood (in thousand standard cords), Wisconsin, 1981. Forest Survey Units shown are the geographical areas used by the Forest Inventory and Analysis Project to report periodic inventories and use of the Nation's forest resources.*

Oak and maple were the principal species cut on county and municipal land; 83 percent of the total production from this owner class came from the northern Units. More than three-fourths of the fuelwood harvested on State land was oak. The Northwestern and Central Units contributed most of the harvest from State land. Maple dominated the cut from the National Forests. Indian land in the Northeastern Unit provided most of the fuelwood from that class; elm was the primary species.

Rural woodland[1] *vs. other land.*—Seventy-eight out of every 100 cords of fuelwood came from rural woodland; the remainder came from diverse sources such as cities and villages; fence rows, windbreaks, and yards of homes in rural areas; and pasture and cropland. Rural woodland was the major source of fuelwood in all Units, especially the northern and Central Units where a higher percentage of land is forested:

Unit	Rural woodland	Other land
	(Thousand cords)	
Northeastern	302	18
Northwestern	219	51
Central	449	44
Southwestern	237	128
Southeastern	295	173
All	1,502	414

[1]*Rural woodland was assumed to be commercial forest land.*

Of the 22 cords out of 100 obtained on noncommercial forest and nonforest land areas, 9 cords came from fence rows, windbreaks, and rural yards; 7 cords came from pasture and cropland; 5 cords came from cities and villages; and 1 cord came from other areas.

Elm was the primary fuelwood species cut in cities and villages, and from fence rows, windbreaks and rural yards. Dutch elm disease control programs provide free wood in some cities. Oak was the most important species group from pasture and cropland.

Sixty-three percent of the fuelwood produced in cities and villages came from the heavily urbanized Southeastern Unit. Tree disease sanitation programs were very active in the Southeastern Unit. Nearly three-fourths of the harvest from fence rows, windbreaks, and rural yards was in the southern Units. For the pasture and cropland sector, the northwestern and the two southern Units produced the major portion.

Growing stock vs. nongrowing stock.—Growing stock (see definitions) on commercial forest land (CFL) was not a major source of fuelwood. Of the 1,916,000 cords of fuelwood cut from roundwood, an estimated 296,000 cords (15 percent) came from growing stock on CFL. Producers cut 1,206,000 cords (63 percent) from nongrowing stock on CFL:

Source	Volume	Percent of total
	(Thousand cords)	
Growing stock on CFL	296	15
Nongrowing stock on CFL		
Dead trees	889	46
Tops and limbs of growing stock trees	257	14
Cull trees and sections	58	3
Saplings	2	(2)
Nonforest and non CFL	414	22
Total	1,916	100

Nonforest and noncommercial forest land sources (such as cities, villages, pasture, cropland, fence rows, and windbreaks) supplied the other 414,000 cords (22 percent).

In general, the proportion of fuelwood harvested from growing stock on CFL declined from north to south in Wisconsin. The highest proportion cut from growing stock on CFL was in the Northwestern Unit:

Unit	Growing stock	
	Volume	Percent of Unit total
	(Thousand cords)	
Northeastern	65	20
Northwestern	64	24
Central	89	18
Southwestern	43	12
Southeastern	35	7
All	296	15

Six Northwestern Unit counties—Ashland, Barron, Bayfield, Burnett, Douglas, and Washburn—each produced more than 30 percent of their fuelwood from growing stock (fig. 2). By contrast, counties in the Milwaukee area with less growing stock volume produced less than 1 percent of their fuelwood from growing stock. Counties each producing more than 10,000 cords of fuelwood from growing stock were Bayfield, Burnett, Oneida, Shawano, Marathon, Chippewa, and Outagamie (fig. 3).

In the Central Unit, more than half of the fuelwood was cut from dead trees on CFL. Three Central Unit counties (Adams, Clark, and Marquette) each harvested 70 percent or more of their fuelwood from dead trees.

Compared to households, commercial loggers produced a much higher proportion of their fuelwood from growing stock on CFL. Loggers cut 43 percent from growing stock compared to 11 percent by households. By Survey Units, the proportion harvested from growing stock ranged from 38 to 51 percent for loggers and 7 to 15 percent for households.

From Primary Wood-using Mill Residue

Wisconsin primary wood-using mills generated 623,000 cord equivalents of wood residue in 1981. Eighty-four percent was hardwood. Forty percent of this total (250,000 cords) was used for fuel[3].

Most (85 percent) of the residue used for fuel was hardwood. Northeastern Wisconsin was the leading supplier of both softwood and hardwood:

Unit	Softwood	Hardwood
	(Thousand standard cords)	
Northeastern	21	67
Northwestern	8	44
Central	6	38
Southwestern	3	53
Southeastern	1	9
All	39	211

[2]*Less than 0.5 percent.*

[3]*Of the total residue, 38 percent was used for pulpwood, 20 percent was used for other products, and 2 percent was not used.*

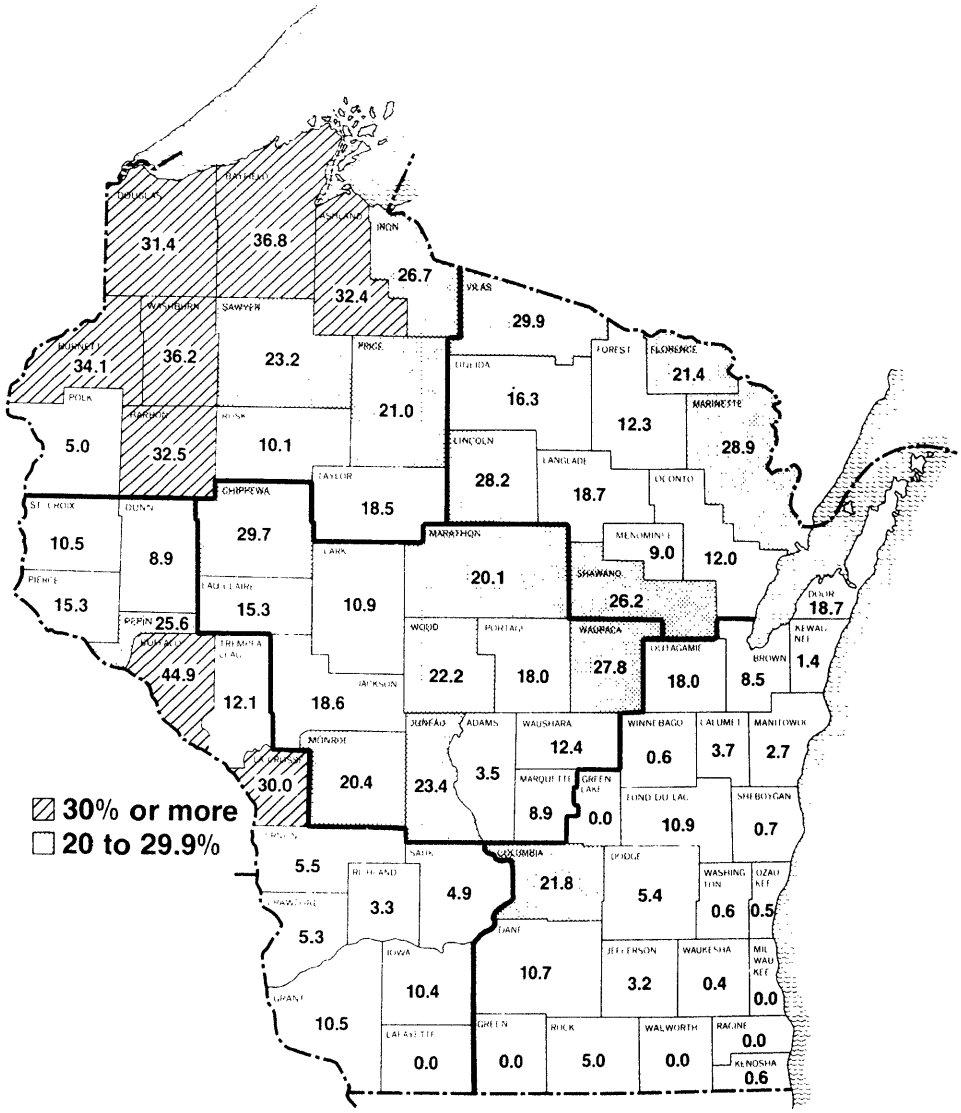

Figure 2.—*Percent of fuelwood harvest from growing stock on commercial forest land by county, Wisconsin, 1981.*

Nearly 62 percent of the residue burned was coarse (chippable) and the remainder was fines (primarily sawdust, shavings, and veneer clippings).

Two user groups, were identified—industrial and domestic. Industrial customers used about three-fifths of the residue burned for fuel; 88,000 cords were fines and 64,000 cords were coarse residue. Domestic (household) users preferred coarse residue because it is easier to handle and burns better than fines in most stoves and fireplaces. Domestic customers used 98,000 cords; only 7,000 cords were fines.

SUMMARY AND CONCLUSIONS

Total output of fuelwood during 1981 in Wisconsin from roundwood and primary wood-using mill residue was 2,166,000 cords. This volume of fuelwood contained sufficient heat value to replace approximately 217,000,000 gallons of No. 2 fuel oil[4]. Of every 100 cords produced, 88 cords were from roundwood and 12 cords were from primary mill wood residue. Hardwoods provided 96 percent of the total. Nearly half of the softwood fuel came from the Northeastern Unit:

Unit	Softwoods	Hardwoods
	(Thousand standard cords)	
Northeastern	42	367
Northwestern	14	308
Central	16	522
Southwestern	5	415
Southeastern	11	466
All	88	2,078

[4] *When comparing heat value between fuels, another factor to consider is the energy required to produce and deliver the fuels to the consumer.*

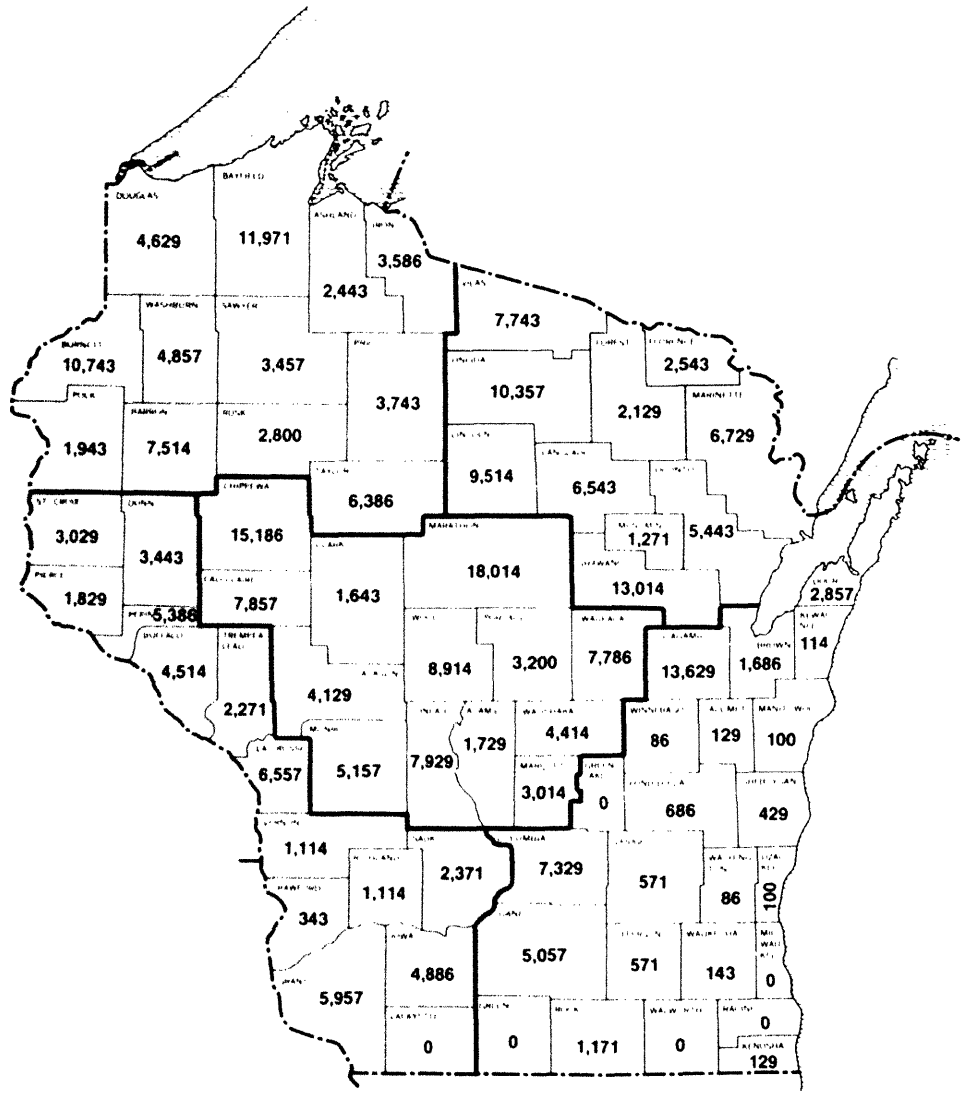

Figure 3.—*Number of cords of fuelwood harvested from growing stock on commercial forest land by county, Wisconsin, 1981.*

Hardwood fuel sources were well distributed between Units with each Unit supplying at least 15 percent.

All areas of the State participated significantly in the roundwood harvest for fuel. Households were the major producers, outproducing commercial loggers by a ratio of 7 to 1. Slightly more than one-half of the harvest was red oak and elm. Private rural woodland was the chief source of fuelwood.

Growing stock on CFL was not an important source of fuelwood—it accounted for only 15 percent of the roundwood cut or enough to supply one 500 ton per day pulpmill with wood for 1 year. No county produced more than 18,000 cords of fuelwood from growing stock on CFL. Nongrowing stock on CFL was four times as important for fuelwood as growing stock. Dead trees on CFL accounted for almost half of the harvest. More fuelwood was cut from nonforest and noncommercial forest land than from growing stock on CFL.

For a given quantity of fuelwood, loggers cut about four times as much from growing stock on CFL as did households. If loggers become a more important supplier of fuelwood, the percentage of growing stock in the mix of fuelwood will rise.

Some forest managers and wood procurement managers in Wisconsin fear that large quantities of fuelwood are being cut from growing stock that previously would have been used for pulpwood. Our study results should allay some of their concerns. Truckloads of fuelwood moving to market may appear to be identical to pulpwood from a distance, but some of this wood is from dead trees unsuitable or

undesirable for pulp and from trees on nonforest and noncommercial forest land that are not generally a forest industry supply source.

During the next 5 to 8 years, growing stock is likely to remain a minor source of Wisconsin fuelwood. Large quantities of dead trees, tops and limbs, and trees on nonforest land are available each year for fuelwood use. Follow-up fuelwood studies at 5-year intervals would be useful in determining trends in harvesting growing stock for fuel. Changes in the logger to household fuelwood production ratio will be important in determining the proportion of fuelwood cut from growing stock on CFL.

Use of dead trees and cull trees on CFL for fuel is contributing to forest productivity increases. As demand for fuelwood has increased, more of these trees have been removed for a profit as fuel or without need for subsidized incentives. Consequently, less money has been required for a given level of timber stand improvement than if fuelwood demand had remained at low levels.

STUDY METHODS

Data for this publication came from sampling Wisconsin households, loggers, and primary wood-using mills with formal questionnaires approved by the Federal Office of Management and Budget.

Roundwood Fuel

Households.—The respondent universe was all households in Wisconsin with listed telephones. Households were selected for the sample by the Wisconsin Department of Natural Resources (DNR) using systematic random sampling techniques. To save time and money, the phone numbers for sample households selected for the 1980 Wisconsin fuelwood consumption study were used where feasible. Approximately 55 percent of the sample phone numbers used in the consumption study were located in phone books used in the 1980 study. The other 45 percent of the sample was missing because some phone books had been discarded. New phone books were procured to replace the discarded books and a new sample of phone numbers was selected to replace those missing, using the same sample selection methods used in 1980.

Although part (55 percent) of the sample was originally drawn in 1980 and the other 45 percent was selected in 1982, the basic methods used were as follows. All Wisconsin phone directories were collected. All duplicate books and numbers and all out-of-State numbers were eliminated. Wisconsin was divided into 8 survey districts (fig. 4). Districts 1, 2, 3, and 7 comprise the Southeastern Survey Unit. District 5 is the Northeastern Unit, District 4 is the Northwestern Unit, District 6 is the Central Unit, and District 8 is the Southwestern Unit.

The sample size chosen in each District was sufficient to ensure a certain level of accuracy in the consumption study. The sample size was accepted for this production study because the standard error was expected to be less than ±10 percent Statewide at one standard deviation. The household sample ranged from 122 in District 3 to 728 in District 1.

After the duplciate numbers were eliminated, the number of residential phone listings was estimated in each book. Phone books were sorted by District and numbered consecutively in each District for systematically selecting the sample. Then the estimated number of residential phone listings was compiled for each District and was divided by the sample size for the District to determine the interval between sample phone numbers. For each District, a random start within the interval was drawn and identified the first sample residential number. The next sample phone number was identified by moving through the phone book by the interval between samples to the next sample; each successive sample phone number was determined by the interval between samples until all sample numbers were selected in the District.

To facilitate rapid selection of the samples, the "ruler" method was used in each phone book. Using a ruler, the number of phone entries per inch was counted for a few pages. Then the total number of entries per page was determined by multiplying the average number of listings per inch by the number of inches per column and then multiplying by the number of columns per page. Next, all empty spaces and nonresidential phone numbers on the page were counted and subtracted from the total number of entries per page to find the total number of residential phone listings per page. The number of residential phone numbers per page was found for 10-20 pages to get an average. Finally, this average was multiplied by the number of pages in the book to estimate the total number of residential listings in the book, taking care to subtract pages containing advertisements and government listings.

DNR foresters interviewed the sample households by phone using a formal questionnaire prepared by the North Central Forest Experiment Station. If a sample household cut fuelwood or collected it on the land where it was grown, interviewers asked to speak to the household member who knew the most about the quantity and kind of fuelwood cut or collected. If that person was not available, the interviewer asked when to call back for an interview with the knowledge-

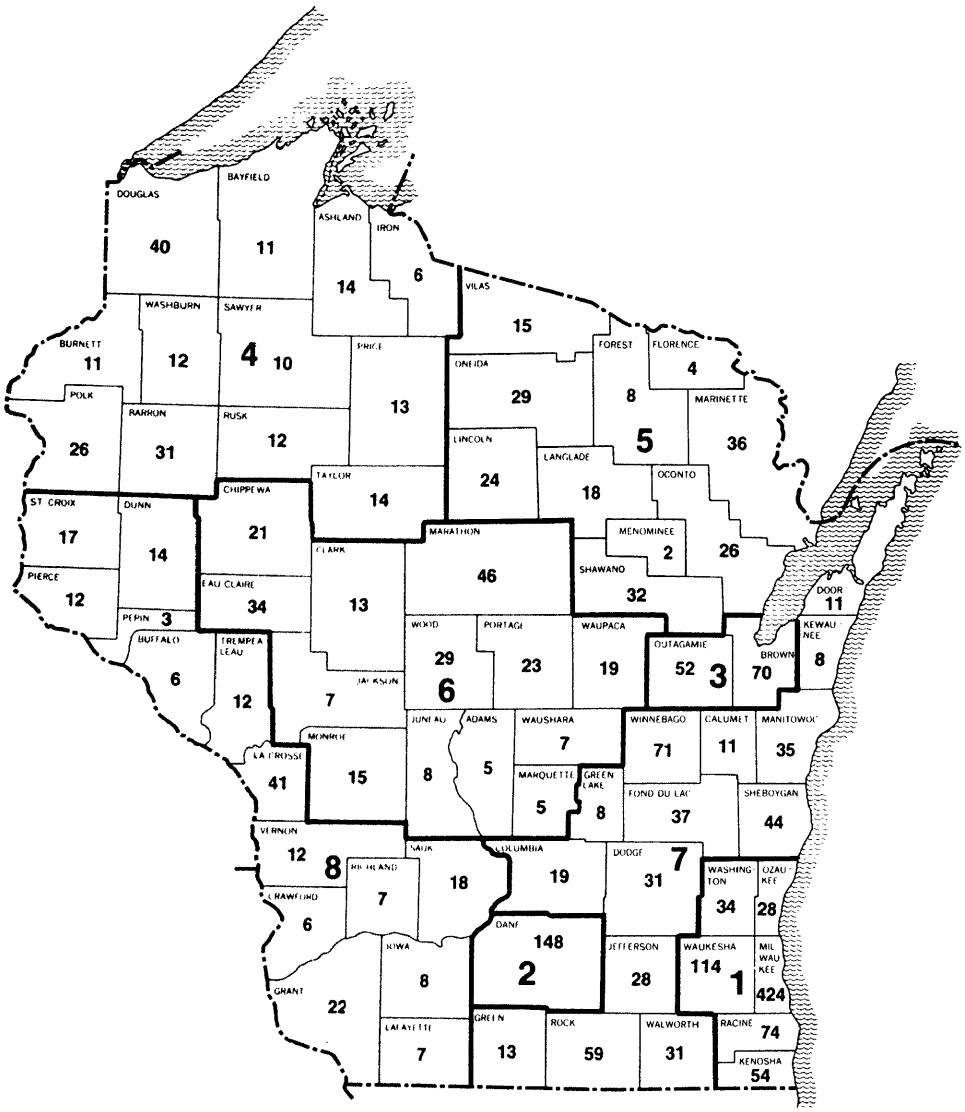

Figure 4.—*Survey districts and sample households. Small number in each county indicates the number of households sampled in the county.*

able respondent. Samples were replaced if the household could not be reached after six phone calls, if the sample was not a household, or if the household refused to answer. A replacement sample was the next residential number listed below the one being replaced.

The Station edited and compiled the data. Some respondents did not know the species cut for fuel, except in general terms such as mixed hardwoods, pine, maple, etc. Some assumptions were made to facilitate prorating the volume reported in general terms to specific species by county. The assumptions were:

General rule: Prorate on the basis of inventory volume in the county at the time of the last inventory.

Pine: If the trees are dead on rural woodland, give double weighting to jack pine, then prorate to white, red, and jack pine. Otherwise, prorate without double weighting.

Mixed softwoods: Prorate to all softwood species.

Maple: Give double weighting to hard maple and prorate to hard and soft maple.

Birch: Prorate to yellow and white birch.

Oak: Prorate to white and red oak.

Mixed hardwoods: Prorate to all hardwoods, except walnut is excluded for fuelwood cut from rural woodland.

Sampling rates were about twice as high in the Northern Units as in the others. Expansion factors

were determined for each Survey District by dividing the number of households in a District by the number of sample households in that District. These expansion factors were used to estimate the total fuelwood production by households in each county. The factors ranged from 405.9 in District 5 to 848.5 in District 3. Within a District, the sample was uniformly spread over the counties in the District. Statewide, 2,215 households were in the sample.

Commercial loggers.—A list of known active loggers was compiled for each county by the DNR. Several sources were used to locate loggers including DNR District Foresters. A total of 2,482 loggers were listed in alphabetical order by county. A 10 percent sample was selected by the Station beginning with a random start picked between 1 and 10 and adding consecutively an interval of 10 in selecting each of the other sample loggers. The sample of 248 loggers was distributed uniformly over all counties, and an expansion factor of 10 was used to estimate total fuelwood production by loggers in each county.

Using a formal questionnaire similar to that used for households, DNR foresters canvassed the loggers by phone with procedures similar to those used for households. Possible duplicate sampling of loggers was minimized by questioning all sample households producing more than 20 cords of fuelwood to determine if their name was on the commercial logger listing.

For estimating growing stock on CFL harvested for fuel, "rural woodland" (woodland outside city and village limits) was assumed to be commercial forest land (CFL). Logging utilization factors for fuelwood were used in estimating the quantity of growing stock cut for fuelwood on CFL. The Station developed these factors in Michigan during 1964-1965 by measuring trees cut for fuelwood on active harvesting operations. For fuelwood cut from live trees on CFL, 63 percent was estimated to be growing stock. For fuelwood cut or collected from logging residue on CFL, an estimated 27 percent was growing stock.

Fuel From Residue

Using a formal questionnaire, DNR foresters personally contacted all Wisconsin primary wood-using mills (those using logs and bolts) to determine the quantity of logs processed by them in 1981 and to determine how their wood and bark residue was used. Wood residue was divided into two categories—coarse wood (chippable) and fine wood (not chippable). Softwoods and hardwoods were separate categories. For each residue category, and for softwoods and hardwoods separately, the percentage of residue in 1981 was determined at each mill for six types of disposal. The percentages totaled 100 for each residue and species category. Two of the types of disposal were industrial fuelwood and domestic (household) fuel.

Conversion factors developed from past studies were used to estimate the quantity of residue generated at the primary mills in 1981 based on their logs and bolts processed. These residue quantities were then distributed by disposal category for each mill. Finally, the quantity by residue category was determined in each county.

APPENDIX
SAMPLING ERROR
Roundwood Fuel

All the reported figures are estimates based on sampling procedures that are designed to give accurate estimates of fuelwood production. A measure of reliability of these figures is given by sampling errors. This sampling error means that the chances are two out of three that the results for the sample differ by no more than the amount indicated from the results that would have been obtained if a 100 percent sample of all households and loggers had been made. Sampling error for fuelwood production was ±6.59 percent on a volume of 1,915,979 cords.

Fuel from Primary Mill Residue

All primary wood-using firms were canvassed to determine fuelwood production from their wood residue, so there is no sampling error.

DEFINITION OF TERMS

Commercial forest land.—Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization. Areas qualifying as commercial forest land have the capability of producing in excess of 20 cubic feet per acre per year of annual growth under management. Currently inaccessible and inoperable areas are included, except when the areas involved are small and unlikely to become suitable for production of industrial wood in the foreseeable future. In this paper, "woodland areas outside city or village limits (rural woodland)" were assumed to be commercial forest land.

County and municipal land.—Land owned by counties and local public agencies or municipalities, or land leased to these governmental units for 50 years or more.

Forest industry land.—Land owned by companies or individuals operating primary wood-using plants.

Growing-stock trees.—Live trees of commercial species qualifying as desirable and acceptable trees. Excludes rough cull and rotten cull trees.

Growing-stock volume.—Net volume in cubic feet of growing-stock trees 5.0 inches d.b.h. and over, from a 1-foot stump 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.

Indian land.—Tribal land held in fee but administered by the Federal Government.

Logging residue.—The unused portions of trees cut or killed by logging.

National Forest Land.—Federal land that has been legally designated as National Forest or purchase units, and other land under the administration of the USDA Forest Service.

Nonforest land.—Land that has never supported forests, and land formerly forested where use for timber management is precluded by development for other uses. Includes areas used for crops, improved pasture, residential areas, city parks, improved roads of any width and adjoining clearings, power line clearings of any width, and 1- to 40-acre areas of water classified by the Bureau of the Census as land.

Poletimber trees.—Growing-stock trees of commercial species at least 5.0 inches d.b.h., but smaller than sawtimber size.

Primary wood-using mills.—Mills receiving roundwood or chips from roundwood for processing into products.

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

Coarse mill residue.—Wood residue suitable for chipping such as slabs, edgings, and veneer cores.

Fine mill residue.—Wood residue not suitable for chipping such as sawdust and veneer clippings.

Roundwood.—Logs and bolts from harvested trees including chips from harvested trees.

Saw log portion.—That part of the bole of sawtimber trees between the stump and the saw log top.

Saw log top.—The point on the bole of sawtimber trees above which a saw log cannot be produced. The minimum saw log top is 7.0 inches d.o.b. for softwoods and 9.0 inches d.o.b. for hardwoods.

Sawtimber trees.—Growing-stock trees of commercial species 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. Hardwoods must be at least 11.0 inches d.b.h.

Standard cord.—A pile of logs 4x4x8 feet (128 cubic feet including air space and bark). A cord of fuelwood contains 70 cubic feet of wood and 58 cubic feet of bark and air space.

State land.—Land owned by States or land leased to these governmental units for 50 years or more.

Upper stem portion.—That part of the bole of sawtimber trees above the saw log top to a minimum top diameter of 4.0 inches outside bark or to the point where the central stem breaks into limbs.

STUDY LIMITATIONS

One minor component of total fuelwood production was not estimated—fuelwood produced from wood residue generated at secondary wood-using mills such as millwork plants, furniture plants, and office and store fixture manufacturers. This residue has no direct impact and only a nominal indirect influence on the forest resource used for fuelwood.

Households without listed telephones were not sampled. Study results may be slightly biased if the fuelwood harvest per household without listed phones is significantly different in quantity or sources from the fuelwood harvest per household with listed phones. Harvesting characteristics by these two groups was assumed to be similar, and expansion factors for estimating total fuelwood production took into account all households in Wisconsin.

Table 1.--Fuelwood production from roundwood by Unit, county, species, and source, Wisconsin, 1981

(In standard cords)

NORTHEAST UNIT

Species group[1/]	All sources	Source of fuelwood						
		Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands			Other sources
					Standing live trees	Logging waste	Dead trees	
Florence County								
Cedar	111	0	0	0	0	0	111	0
Pine	59	0	59	0	0	0	0	0
Total softwoods	170	0	59	0	0	0	111	0
Ash	10	0	0	0	5	5	0	0
Birch	2,109	0	0	0	1,516	0	593	0
White birch	10	0	0	0	5	5	0	0
Yellow birch	94	0	0	0	38	0	56	0
Elm	4,998	0	0	0	1,307	0	3,691	0
Maple	698	0	0	0	222	5	471	0
Oak	3,487	0	177	0	902	5	2,403	0
Other hardwoods	318	0	0	0	50	20	248	0
Total hardwoods	11,724	0	177	0	4,045	40	7,462	0
All species	11,894	0	236	0	4,045	40	7,573	0
Forest County								
Balsam fir	19	0	0	0	0	0	19	0
Hemlock	19	0	0	0	0	0	19	0
Total softwoods	38	0	0	0	0	0	38	0
Ash	214	0	0	0	49	135	30	0
Aspen	403	0	8	0	6	0	389	0
Basswood	10	0	0	0	9	0	1	0
Birch	1,041	0	0	0	423	372	246	0
Yellow birch	94	0	0	0	38	0	56	0
Elm	12,678	0	8	0	458	2,142	10,070	0
Maple	2,149	0	0	0	760	707	604	78
Oak	478	0	0	0	98	0	302	78
Other hardwoods	236	0	4	0	49	50	133	0
Total hardwoods	17,303	0	20	0	1,890	3,406	11,831	156
All species	17,341	0	20	0	1,890	3,406	11,869	156

(Table 1 continued on next page)

(Table 1 continued)

Species group[1/]	All sources	Source of fuelwood						
		Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands			Other sources
					Standing live trees	Logging waste	Dead trees	
Langlade County								
Jack pine	141	0	0	0	141	0	0	0
Total softwoods	141	0	0	0	141	0	0	0
Ash	1,174	0	0	0	456	435	283	0
Aspen	2,737	0	0	0	1,344	0	1,393	0
Birch	528	0	0	0	136	260	132	0
Elm	18,361	0	0	0	495	4,922	12,944	0
Hickory	460	0	0	0	125	320	15	0
Maple	7,631	0	0	0	570	4,732	2,329	0
Hard maple	2,100	0	0	0	1,575	0	525	0
Oak	1,509	0	0	0	385	1,043	81	0
Red oak	25	0	0	0	0	25	0	0
Other hardwoods	412	0	0	0	41	80	291	0
Total hardwoods	34,937	0	0	0	5,127	11,817	17,993	0
All species	35,078	0	0	0	5,268	11,817	17,993	0
Lincoln County								
Pine	839	0	0	0	0	0	839	0
Jack pine	146	0	0	0	137	0	9	0
Total softwoods	985	0	0	0	137	0	848	0
Ash	470	0	0	0	83	381	6	0
Aspen	4,766	0	0	0	3,707	0	1,059	0
Birch	6,575	0	0	0	3,726	836	2,013	0
White birch	20	0	0	0	0	7	13	0
Elm	7,436	0	0	1,352	438	306	5,340	0
Hickory	120	0	0	0	24	96	0	0
Maple	8,118	0	0	0	3,861	2,431	1,826	0
Hard maple	61	0	0	0	0	22	39	0
Oak	5,109	0	0	0	222	2,348	2,539	0
Red oak	5	0	0	0	0	5	0	0
Other hardwoods	30	0	0	0	6	24	0	0
Total hardwoods	32,710	0	0	1,352	12,067	6,456	12,835	0
All species	33,695	0	0	1,352	12,204	6,456	13,683	0

(Table 1 continued on next page)

(Table 1 continued)

Species group[1/]	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Marinette County								
Ash	125	0	0	0	23	17	85	0
Aspen	3,540	0	0	0	1,559	0	1,981	0
Birch	5,762	0	0	0	2,411	68	3,283	0
White birch	334	0	0	0	301	0	33	0
Elm	730	0	0	0	469	17	244	0
Maple	3,200	0	0	0	2,726	68	406	0
Hard maple	136	0	0	0	122	0	14	0
Soft maple	475	0	0	0	427	0	48	0
Oak	8,974	0	0	0	2,561	0	6,413	0
Other hardwoods	18	0	0	0	16	0	2	0
All species	23,294	0	0	0	10,615	170	12,509	0
Menominee County								
Ash	60	0	0	0	60	0	0	0
Birch	300	0	0	0	300	0	0	0
Elm	8,560	0	0	0	36	0	8,524	0
Hickory	96	0	0	0	96	0	0	0
Maple	1,218	0	0	0	0	0	1,218	0
Hard maple	204	0	0	0	204	0	0	0
Soft maple	800	0	0	0	800	0	0	0
Oak	2,939	0	0	0	504	0	2,435	0
All species	14,177	0	0	0	2,000	0	12,177	0
Oconto County								
Ash	2,000	0	0	0	3	6	1,991	0
Aspen	4,043	279	0	836	2,133	0	795	0
Basswood	1,015	0	0	0	102	0	913	0
Beech	1,947	584	0	0	545	0	818	0
Birch	13,086	0	1,967	0	1,807	3,050	6,262	0
Elm	9,714	1,156	203	836	1,270	22	6,227	0
Maple	10,385	0	0	0	443	1,021	8,921	0
Oak	3,155	0	0	0	547	8	2,600	0
All species	45,345	2,019	2,170	1,672	6,850	4,107	28,527	0

(Table 1 continued on next page)

(Table 1 continued)

Species group[1/]	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Oneida County								
Hemlock	5,519	0	0	0	0	0	5,519	0
Pine	5,519	0	0	0	0	0	5,519	0
Mixed softwoods	2,521	0	0	0	0	2,521	0	0
Total softwoods	13,559	0	0	0	0	2,521	11,038	0
Ash	105	0	0	0	87	10	8	0
Aspen	2,502	0	878	0	1,624	0	0	0
Basswood	5,519	0	0	0	0	0	5,519	0
Birch	16,259	0	548	0	1,125	8,167	6,419	0
White birch	25	0	0	0	18	3	4	0
Elm	345	0	0	0	279	10	56	0
Maple	15,970	0	591	0	3,567	3,433	8,379	0
Hard maple	195	0	0	0	162	14	19	0
Oak	8,166	0	0	0	2,068	2,436	3,662	0
Mixed hardwoods	761	0	0	0	0	761	0	0
Total hardwoods	49,847	0	2,017	0	8,930	14,834	24,066	0
All species	63,406	0	2,017	0	8,930	17,355	35,104	0
Shawano County								
Ash	3,752	0	10	0	1,217	2,470	55	0
Aspen	1,218	0	0	0	0	0	1,218	0
Basswood	609	0	0	0	609	0	0	0
Birch	3,363	0	162	0	507	1,795	899	0
Elm	10,693	0	150	0	1,070	5,236	4,237	0
Hickory	2,625	0	20	0	582	1,993	30	0
Maple	11,538	0	10	0	1,553	8,968	1,007	0
Hard maple	1,053	0	0	0	316	684	53	0
Oak	13,346	0	0	0	1,511	7,369	4,466	0
Red oak	1,051	0	0	0	315	683	53	0
Other hardwoods	510	0	10	0	100	400	0	0
All Species	49,758	0	362	0	7,780	29,598	12,018	0

(Table 1 continued on next page)

(Table 1 continued)

Species group[1/]	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Vilas County								
Pine	230	0	27	0	0	0	203	0
Red pine	5,357	0	5,357	0	0	0	0	0
Mixed softwoods	211	0	0	0	0	158	53	0
Total softwoods	5,798	0	5,384	0	0	158	256	0
Ash	357	0	0	0	321	0	36	0
Aspen	45	0	0	0	43	0	2	0
Birch	4,054	0	257	0	1,190	0	2,607	0
Yellow birch	10	0	0	0	0	5	5	0
Elm	693	0	0	0	624	0	69	0
Maple	3,810	0	0	0	3,075	438	297	0
Hard maple	4,975	0	0	0	4,481	0	494	0
Soft maple	693	0	0	0	624	0	69	0
Oak	5,072	0	2,760	0	1,327	155	830	0
Other hardwoods	357	0	0	0	321	0	36	0
Total hardwoods	20,066	0	3,017	0	12,006	598	4,445	0
All species	25,864	0	8,401	0	12,006	756	4,701	0
All Counties								
Cedar	111	0	0	0	0	0	111	0
Balsam fir	19	0	0	0	0	0	19	0
Hemlock	5,538	0	0	0	0	0	5,538	0
Pine	6,647	0	86	0	0	0	6,561	0
Jack pine	287	0	0	0	278	0	9	0
Red pine	5,357	0	5,357	0	0	0	0	0
Mixed softwoods	2,732	0	0	0	0	2,679	53	0
Total softwoods	20,691	0	5,443	0	278	2,679	12,291	0
Ash	8,267	0	10	0	2,304	3,459	2,494	0
Aspen	19,254	279	886	836	10,416	0	6,837	0
Basswood	7,153	0	0	0	720	0	6,433	0
Beech	1,947	584	0	0	545	0	818	0
Birch	53,077	0	2,934	0	13,141	14,548	22,454	0
White birch	389	0	0	0	324	15	50	0
Yellow birch	198	0	0	0	76	5	117	0
Elm	74,208	1,156	361	2,188	6,446	12,655	51,402	0
Hickory	3,301	0	20	0	827	2,409	45	0
Maple	64,717	0	601	0	16,777	21,803	25,458	78
Hard maple	8,724	0	0	0	6,860	720	1,144	0
Soft maple	1,968	0	0	0	1,851	0	117	0
Oak	52,235	0	2,937	0	10,125	13,364	25,731	78
Red oak	1,081	0	0	0	315	713	53	0
Mixed hardwoods	761	0	0	0	0	761	0	0
Other hardwoods	1,881	0	14	0	583	574	710	0
Total hardwoods	299,161	2,019	7,763	3,024	71,310	71,026	143,863	156
All species	319,852	2,019	13,206	3,024	71,588	73,705	156,154	156

(Table 1 continued on next page)

(Table 1 continued)

NORTHWEST UNIT

Species group[1/]	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Ashland County								
Cedar	462	0	0	0	0	0	462	0
Hemlock	462	0	0	0	0	0	462	0
Spruce	476	0	0	0	0	0	476	0
Total softwoods	1,400	0	0	0	0	0	1,400	0
Ash	278	0	0	0	238	18	22	0
Aspen	23	0	0	0	8	3	12	0
Birch	161	0	0	0	16	129	16	0
White birch	31	0	0	0	11	5	15	0
Elm	278	0	0	0	126	130	22	0
Maple	3,524	0	0	0	537	2,491	496	0
Hard maple	1,849	0	0	0	1,812	0	37	0
Total hardwoods	6,144	0	0	0	2,748	2,776	620	0
All species	7,544	0	0	0	2,748	2,776	2,020	0
Barron County								
Ash	1,832	0	0	0	1,749	0	83	0
Aspen	2,305	0	0	0	1,310	0	995	0
Basswood	741	0	0	0	0	0	741	0
Birch	467	0	0	0	234	0	233	0
White birch	262	0	0	0	0	0	262	0
Elm	3,198	0	0	261	248	436	2,253	0
Hickory	12	0	0	0	3	9	0	0
Maple	727	0	0	174	553	0	0	0
Oak	10,812	0	0	1,307	6,697	441	2,367	0
Red oak	2,493	0	0	0	0	1,017	1,476	0
Other hardwoods	295	0	0	0	292	0	3	0
All species	23,144	0	0	1,742	11,086	1,903	8,413	0

(Table 1 continued on next page)

(Table 1 continued)

Species group[1/]	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
				Bayfield County				
Cedar	109	0	0	0	11	0	98	0
Balsam fir	218	0	0	0	22	0	196	0
Total softwoods	327	0	0	0	33	0	294	0
Ash	133	0	0	0	118	2	13	0
Aspen	1,138	44	0	218	270	508	98	0
Birch	4,105	44	0	0	1,049	1,330	1,682	0
White birch	600	0	0	0	594	0	6	0
Elm	4,270	0	0	4,145	112	0	13	0
Maple	10,772	393	0	0	6,049	3,995	335	0
Hard maple	1,809	0	0	0	1,809	0	0	0
Oak	7,506	393	0	0	3,336	3,647	130	0
Red oak	1,200	0	0	0	1,188	0	12	0
Mixed hardwoods	650	0	0	0	65	585	0	0
Total hardwoods	32,183	874	0	4,363	14,590	10,067	2,289	0
All species	32,510	874	0	4,363	14,623	10,067	2,583	0
				Burnett County				
Pine	164	0	0	0	0	0	164	0
Jack pine	888	0	685	0	112	0	91	0
Total softwoods	1,052	0	685	0	112	0	255	0
Aspen	531	20	102	0	224	0	185	0
Birch	2,058	5	0	0	875	207	971	0
Elm	4,206	0	426	0	783	0	2,997	0
Maple	600	0	0	0	533	19	48	0
Oak	23,102	74	509	0	12,671	3,948	5,900	0
Total hardwoods	30,497	99	1,037	0	15,086	4,174	10,101	0
All species	31,549	99	1,722	0	15,198	4,174	10,356	0

(Table 1 continued on next page)

(Table 1 continued)

Species group[1/]	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
				Douglas County				
Pine	70	0	0	0	70	0	0	0
Spruce	17	0	0	17	0	0	0	0
Total softwoods	87	0	0	17	70	0	0	0
Ash	2,879	0	0	2,618	261	0	0	0
Aspen	2,914	0	0	1,309	321	0	1,284	0
Basswood	807	0	0	0	0	0	807	0
Birch	1,249	0	0	0	954	250	45	0
White birch	402	0	0	262	28	0	112	0
Maple	1,615	0	0	157	1,156	250	52	0
Oak	4,021	0	0	0	3,351	500	170	0
Red oak	783	0	0	0	775	0	8	0
Total hardwoods	14,670	0	0	4,346	6,846	1,000	2,478	0
All species	14,757	0	0	4,363	6,916	1,000	2,478	0
				Iron County				
Ash	55	0	0	0	55	0	0	0
Basswood	4,871	0	0	0	0	0	4,871	0
Birch	907	0	0	0	781	105	21	0
Yellow birch	110	0	0	0	110	0	0	0
Elm	1,953	0	0	0	959	293	701	0
Maple	5,315	0	0	0	2,547	2,122	646	0
Oak	200	0	0	0	150	20	30	0
All species	13,411	0	0	0	4,602	2,540	6,269	0

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(Table 1 continued)

Species group[1/]	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Polk County								
Balsam fir	1,309	0	0	0	0	0	1,309	0
Total softwoods	1,309	0	0	0	0	0	1,309	0
Aspen	632	0	0	0	76	229	327	0
Birch	617	0	0	0	23	106	147	341
Elm	25,585	0	8,238	8,165	0	473	7,235	1,474
Maple	175	0	0	0	0	12	49	114
Hard maple	61	0	0	0	15	46	0	0
Oak	10,233	0	1,994	1,309	1,739	2,063	2,787	341
Total hardwoods	37,303	0	10,232	9,474	1,853	2,929	10,545	2,270
All species	38,612	0	10,232	9,474	1,853	2,929	11,854	2,270
Price County								
Ash	90	0	0	0	23	8	59	0
Aspen	74	0	0	0	3	3	68	0
Basswood	9	0	0	0	3	3	3	0
Birch	989	0	0	0	141	20	828	0
Elm	8,896	0	0	0	3,126	12	5,758	0
Maple	7,726	0	0	0	2,616	44	5,066	0
Oak	10	0	0	0	0	10	0	0
Other hardwoods	44	0	0	0	0	0	44	0
All species	17,838	0	0	0	5,912	100	11,826	0
Rusk County								
Balsam fir	873	0	0	873	0	0	0	0
Pine	349	0	0	0	0	0	349	0
Total softwoods	1,222	0	0	873	0	0	349	0
Ash	738	0	0	0	156	0	582	0
Aspen	419	0	0	0	0	0	419	0
Birch	3,595	84	0	2,181	11	690	629	0
Elm	4,653	0	0	0	0	1,380	3,273	0
Hickory	1,453	0	0	0	0	1,380	73	0
Maple	3,140	0	0	2,618	83	0	439	0
Soft maple	2,781	0	0	2,781	0	0	0	0
Oak	9,662	196	0	0	151	5,815	3,500	0
Total hardwoods	26,441	280	0	7,580	401	9,265	8,915	0
All species	27,663	280	0	8,453	401	9,265	9,264	0

(Table 1 continued on next page)

(Table 1 continued)

Species group[1/]	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Sawyer County								
Ash	534	0	0	70	411	32	21	0
Aspen	2,094	0	0	0	0	0	2,094	0
Birch	910	0	0	664	233	0	13	0
Elm	1,567	0	665	70	271	96	465	0
Maple	2,640	0	0	917	989	192	542	0
Hard maple	2,740	0	0	0	2,703	0	37	0
Oak	4,355	0	0	3,307	734	0	314	0
Other hardwoods	50	0	0	35	15	0	0	0
All species	14,890	0	665	5,063	5,356	320	3,486	0
Taylor County								
Pine	100	0	0	0	0	0	100	0
Total softwoods	100	0	0	0	0	0	100	0
Ash	750	0	0	0	650	0	100	0
Aspen	615	0	0	0	0	0	615	0
Birch	1,477	0	0	0	1,115	0	362	0
Elm	5,591	0	0	0	1,613	0	3,978	0
Hickory	750	0	0	0	750	0	0	0
Maple	20,131	0	0	0	4,498	0	15,633	0
Oak	1,222	0	0	0	686	0	536	0
Mixed hardwoods	3,923	0	0	0	785	0	3,138	0
Total hardwoods	34,459	0	0	0	10,097	0	24,362	0
All species	34,559	0	0	0	10,097	0	24,462	0
Washburn County								
Pine	262	0	0	0	0	131	131	0
Total softwoods	262	0	0	0	0	131	131	0
Ash	3	0	0	0	0	0	3	0
Aspen	72	0	0	0	36	0	36	0
Birch	1,808	0	0	0	1,507	33	268	0
Elm	436	0	0	436	0	0	0	0
Maple	2,171	0	0	436	1,690	0	45	0
Oak	7,790	0	0	0	4,225	491	3,074	0
Mixed hardwoods	873	0	0	873	0	0	0	0
Total hardwoods	13,153	0	0	1,745	7,458	524	3,426	0
All species	13,415	0	0	1,745	7,458	655	3,557	0

(Table 1 continued on next page)

(Table 1 continued)

Species group[1/]	All sources	Source of fuelwood						
		Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands			Other sources
					Standing live trees	Logging waste	Dead trees	
		All counties						
Cedar	571	0	0	0	11	0	560	0
Balsam fir	2,400	0	0	873	22	0	1,505	0
Hemlock	462	0	0	0	0	0	462	0
Pine	945	0	0	0	70	131	744	0
Jack pine	888	0	685	0	112	0	91	0
Spruce	493	0	0	17	0	0	476	0
Total softwoods	5,759	0	685	890	215	131	3,838	0
Ash	7,292	0	0	2,688	3,661	60	883	0
Aspen	10,817	64	102	1,527	2,248	743	6,133	0
Basswood	6,428	0	0	0	3	3	6,422	0
Birch	18,343	133	0	2,845	6,939	2,870	5,215	341
White birch	1,295	0	0	262	633	5	395	0
Yellow birch	110	0	0	0	110	0	0	0
Elm	60,633	0	9,329	13,077	7,238	2,820	26,695	1,474
Hickory	2,215	0	0	0	753	1,389	73	0
Maple	58,536	393	0	4,302	21,251	9,125	23,351	114
Hard maple	6,459	0	0	0	6,339	46	74	0
Soft maple	2,781	0	0	2,781	0	0	0	0
Oak	78,913	663	2,503	5,923	33,740	16,935	18,808	341
Red oak	4,476	0	0	0	1,963	1,017	1,496	0
Mixed hardwoods	5,446	0	0	873	850	585	3,138	0
Other hardwoods	389	0	0	35	307	0	47	0
Total hardwoods	264,133	1,253	11,934	34,313	86,035	35,598	92,730	2,270
All species	269,892	1,253	12,619	35,203	86,250	35,729	96,568	2,270

(Table 1 continued on next page)

(Table 1 continued)

CENTRAL UNIT

Species group[1/]	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Adams County								
Pine	958	0	0	0	0	0	958	0
Jack pine	7	0	0	0	0	0	7	0
Total softwoods	965	0	0	0	0	0	965	0
Aspen	962	0	0	0	47	0	915	0
Birch	329	0	0	0	13	19	297	0
White birch	567	0	0	0	28	0	539	0
Elm	97	0	0	0	0	19	78	0
Maple	394	0	0	0	32	0	362	0
Oak	37,063	1,000	23	0	2,537	255	33,248	0
Mixed hardwoods	9,268	0	0	0	0	0	9,268	0
Total hardwoods	48,680	1,000	23	0	2,657	293	44,707	0
All species	49,645	1,000	23	0	2,657	293	45,672	0
Chippewa County								
Ash	3,621	0	0	0	1,366	263	1,992	0
Aspen	3,834	84	770	0	1,024	420	1,536	0
Birch	3,814	0	0	0	1,577	620	1,617	0
White birch	35	0	0	0	7	0	28	0
Elm	6,444	0	0	0	1,740	3,108	1,596	0
Hickory	48	0	0	0	12	36	0	0
Maple	6,947	0	770	0	2,393	302	3,482	0
Soft maple	1,049	0	0	0	105	787	157	0
Oak	21,414	0	770	0	9,390	7,055	4,199	0
Red oak	671	671	0	0	0	0	0	0
Other hardwoods	3,274	84	770	0	968	0	1,452	0
All species	51,151	839	3,080	0	18,582	12,591	16,059	0

(Table 1 continued on next page)

(Table 1 continued)

Species group[1/]	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Clark County								
Pine	5	0	0	0	0	0	5	0
Total softwoods	5	0	0	0	0	0	5	0
Ash	2,151	0	0	0	260	0	1,891	0
Aspen	11	0	0	0	0	0	11	0
Basswood	50	0	0	0	50	0	0	0
White birch	23	0	0	0	23	0	0	0
Elm	7,480	605	0	7	420	0	6,448	0
Maple	2,609	121	0	0	410	0	2,078	0
Hard maple	54	0	0	54	0	0	0	0
Soft maple	52	0	0	0	52	0	0	0
Oak	2,590	484	0	0	1,375	0	731	0
Red oak	6	0	0	6	0	0	0	0
Total hardwoods	15,026	1,210	0	67	2,590	0	11,159	0
All species	15,031	1,210	0	67	2,590	0	11,164	0
Eau Claire County								
Ash	500	0	0	0	500	0	0	0
Aspen	21	0	0	0	21	0	0	0
Birch	3,189	84	0	0	1,004	0	2,101	0
Elm	1,383	403	0	0	375	0	605	0
Maple	713	81	0	0	511	0	121	0
Oak	45,684	518	0	0	5,281	10,948	28,937	0
All species	51,490	1,086	0	0	7,692	10,948	31,764	0
Jackson County								
Aspen	24	0	0	0	24	0	0	0
Birch	10	0	0	0	10	0	0	0
White birch	68	0	0	0	68	0	0	0
Elm	11,191	0	11,191	0	0	0	0	0
Maple	2,143	519	0	0	65	0	1,559	0
Soft maple	158	0	0	0	158	0	0	0
Oak	8,603	519	0	0	6,240	0	1,844	0
All species	22,197	1,038	11,191	0	6,565	0	3,403	0

(Table 1 continued on next page)

(Table 1 continued)

Species group[1/]	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Juneau County								
Balsam fir	582	0	0	0	291	0	291	0
Pine	1,039	0	0	0	0	0	1,039	0
Jack pine	1,746	0	0	0	873	0	873	0
Total softwoods	3,367	0	0	0	1,164	0	2,203	0
Ash	500	0	0	0	375	0	125	0
Aspen	756	0	76	0	136	0	544	0
Birch	500	0	0	0	375	0	125	0
Elm	2,449	0	76	611	802	0	960	0
Maple	1,664	0	0	0	957	0	707	0
Oak	21,573	0	605	611	8,749	19	11,589	0
Mixed hardwoods	3,116	0	0	0	0	0	3,116	0
Total hardwoods	30,558	0	757	1,222	11,394	19	17,166	0
All species	33,925	0	757	1,222	12,558	19	19,369	0
Marathon County								
Pine	1,827	0	0	0	1,146	0	681	0
Total softwoods	1,827	0	0	0	1,146	0	681	0
Ash	12,279	0	0	168	7,028	865	4,218	0
Aspen	3,277	0	0	0	315	0	2,962	0
Birch	9,200	0	0	0	53	1,415	7,732	0
Elm	33,414	0	0	8,487	5,234	3,015	16,678	0
Hickory	400	0	0	0	80	320	0	0
Maple	14,143	0	0	504	3,479	6,777	3,383	0
Hard maple	13	0	0	0	0	0	13	0
Oak	12,567	0	0	1,344	3,058	6,234	1,931	0
Mixed hardwoods	1,743	0	0	0	0	0	1,743	0
Other hardwoods	654	0	0	0	20	80	554	0
Total hardwoods	87,690	0	0	10,503	19,267	18,706	39,214	0
All species	89,517	0	0	10,503	20,413	18,706	39,895	0
Marquette County								
Pine	652	0	0	0	0	0	652	0
Total softwoods	652	0	0	0	0	0	652	0
Ash	473	0	0	0	95	0	378	0
Aspen	710	0	0	0	142	0	568	0
Oak	31,849	0	4,201	0	4,494	0	23,154	0
Total hardwoods	33,032	0	4,201	0	4,731	0	24,100	0
All species	33,684	0	4,201	0	4,731	0	24,752	0

(Table 1 continued on next page)

(Table 1 continued)

Species group[1/]	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Monroe County								
Pine	1	0	0	0	0	0	1	0
Total softwoods	1	0	0	0	0	0	1	0
Ash	500	0	0	0	375	0	125	0
Aspen	3,402	0	0	0	0	0	3,402	0
Birch	963	0	0	0	375	0	588	0
Elm	2,895	0	0	0	974	0	1,921	0
Maple	1,761	0	0	0	375	0	1,386	0
Oak	15,746	0	0	0	6,032	0	9,714	0
Total hardwoods	25,267	0	0	0	8,131	0	17,136	0
All species	25,268	0	0	0	8,131	0	17,137	0
Portage County								
Cedar	111	0	0	0	0	0	111	0
Total softwoods	111	0	0	0	0	0	111	0
Ash	759	0	0	0	0	759	0	0
Aspen	4,537	0	0	0	0	4,537	0	0
Birch	1,179	0	34	0	0	765	380	0
Elm	1,172	0	84	0	0	0	1,088	0
Maple	2,040	0	0	0	0	2,040	0	0
Oak	7,809	0	34	0	700	2,040	5,035	0
Other hardwoods	168	0	17	0	0	0	151	0
Total hardwoods	17,664	0	169	0	700	10,141	6,654	0
All species	17,775	0	169	0	700	10,141	6,765	0
Waupaca County								
Pine	50	0	50	0	0	0	0	0
Total softwoods	50	0	50	0	0	0	0	0
Ash	2,133	6	0	0	356	1,690	81	0
Birch	1,838	0	0	0	143	1,660	35	0
Elm	2,986	8	0	0	561	2,249	168	0
Hickory	1,605	0	0	0	382	1,193	30	0
Maple	7,100	0	0	0	768	6,218	114	0
Hard maple	1,053	0	0	0	316	684	53	0
Oak	9,708	11	248	0	647	5,598	3,204	0
Red oak	1,051	0	0	0	315	683	53	0
Other hardwoods	449	0	199	0	50	200	0	0
Total hardwoods	27,923	25	447	0	3,538	20,175	3,738	0
All species	27,973	25	497	0	3,538	20,175	3,738	0

(Table 1 continued on next page)

(Table 1 continued)

Species group[1/]	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Waushara County								
Pine	2,659	2,659	0	0	0	0	0	0
Total softwoods	2,659	2,659	0	0	0	0	0	0
Aspen	128	0	77	0	10	0	41	0
Birch	705	0	0	0	0	0	705	0
Elm	7,877	0	0	0	122	0	7,755	0
Maple	41	0	0	0	31	0	10	0
Oak	23,496	0	77	3,942	6,821	0	12,656	0
Other hardwoods	597	0	358	0	48	0	191	0
Total hardwoods	32,844	0	512	3,942	7,032	0	21,358	0
All species	35,503	2,659	512	3,942	7,032	0	21,358	0
Wood County								
Pine	75	0	0	0	0	0	75	0
Total softwoods	75	0	0	0	0	0	75	0
Aspen	15,042	0	0	0	10,072	0	4,970	0
Birch	2,354	0	0	0	422	0	1,932	0
Elm	149	0	0	0	0	0	149	0
Maple	6,563	0	0	0	562	0	6,001	0
Oak	15,931	0	0	0	3,054	17	12,860	0
Total hardwoods	40,039	0	0	0	14,110	17	25,912	0
All species	40,114	0	0	0	14,110	17	25,987	0
All Counties								
Cedar	111	0	0	0	0	0	111	0
Balsam fir	582	0	0	0	291	0	291	0
Pine	7,266	2,659	50	0	1,146	0	3,411	0
Jack pine	1,753	0	0	0	873	0	880	0
Total softwoods	9,712	2,659	50	0	2,310	0	4,693	0
Ash	22,916	6	0	168	10,355	3,577	8,810	0
Aspen	32,704	84	923	0	11,791	4,957	14,949	0
Basswood	50	0	0	0	50	0	0	0
Birch	24,081	84	34	0	3,972	4,479	15,512	0
White birch	693	0	0	0	126	0	567	0
Elm	77,537	1,016	11,351	9,105	10,228	8,391	37,446	0
Hickory	2,053	0	0	0	474	1,549	30	0
Maple	46,118	721	770	504	9,583	15,337	19,203	0
Hard maple	1,120	0	0	54	316	684	66	0
Soft maple	1,259	0	0	0	315	787	157	0
Oak	254,033	2,532	5,958	5,897	58,378	32,166	149,102	0
Red oak	1,728	671	0	6	315	683	53	0
Mixed hardwoods	14,127	0	0	0	0	0	14,127	0
Other hardwoods	5,142	84	1,344	0	1,086	280	2,348	0
Total hardwoods	483,561	5,198	20,380	15,734	106,989	72,890	262,370	0
All species	493,273	7,857	20,430	15,734	109,299	72,890	267,063	0

(Table 1 continued on next page)

(Table 1 continued)

SOUTHWEST UNIT

Species group[1/]	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Buffalo County								
Aspen	607	0	0	0	577	30	0	0
Basswood	405	0	0	0	385	20	0	0
Elm	105	0	0	105	0	0	0	0
Maple	2,266	0	0	0	122	2,144	0	0
Oak	6,673	0	0	105	3,976	2,592	0	0
All species	10,056	0	0	210	5,060	4,786	0	0
Crawford County								
Ash	2	0	0	0	0	2	0	0
Basswood	2	0	0	0	0	2	0	0
Elm	3,188	0	1,594	0	526	0	1,068	0
Hickory	106	0	53	0	17	0	36	0
Maple	1,415	0	0	0	0	2	1,413	0
Oak	1,600	0	71	0	23	45	1,461	0
Other hardwoods	106	0	53	0	17	0	36	0
All species	6,419	0	1,771	0	583	51	4,014	0
Dunn County								
Balsam fir	135	135	0	0	0	0	0	0
Total softwoods	135	135	0	0	0	0	0	0
Ash	7,536	7,286	0	0	250	0	0	0
Aspen	4,655	0	405	0	0	0	4,250	0
Elm	13,104	12,143	557	50	76	38	240	0
Maple	1,155	0	405	0	750	0	0	0
Oak	10,679	4,857	607	0	4,304	152	759	0
Red oak	950	0	0	950	0	0	0	0
Other hardwoods	405	0	405	0	0	0	0	0
Total hardwoods	38,484	24,286	2,379	1,000	5,380	190	5,249	0
All species	38,619	24,421	2,379	1,000	5,380	190	5,249	0

(Table 1 continued on next page)

(Table 1 continued)

Species group[1/]	All sources	Source of fuelwood						
		Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Grant County								
Pine	2,429	0	2,429	0	0	0	0	0
Total softwoods	2,429	0	2,429	0	0	0	0	0
Aspen	4,999	0	1,457	3,542	0	0	0	0
Elm	14,362	0	619	6,780	405	2,436	4,122	0
Hickory	1,581	0	1,581	0	0	0	0	0
Hard maple	81	0	81	0	0	0	0	0
Oak	24,969	0	3,643	10,321	7,690	623	2,692	0
Walnut	80	0	80	0	0	0	0	0
Other hardwoods	8,483	0	8,460	0	0	23	0	0
Total hardwoods	54,555	0	15,921	20,643	8,095	3,082	6,814	0
All species	56,984	0	18,350	20,643	8,095	3,082	6,814	0
Iowa County								
Ash	815	0	0	0	0	0	815	0
Birch	972	0	0	486	0	0	486	0
Elm	10,785	0	367	1,096	428	7,737	1,157	0
Oak	29,581	0	689	10,319	685	3,798	14,090	0
Walnut	1,409	0	29	29	34	1,283	34	0
Other hardwoods	3,228	0	484	484	565	1,130	565	0
All species	46,790	0	1,569	12,414	1,712	13,948	17,147	0
La Crosse County								
Birch	487	0	0	0	122	0	122	243
Elm	3,281	0	728	0	304	61	1,945	243
Hickory	244	0	0	0	61	0	61	122
Maple	9,066	0	728	0	8,277	61	0	0
Oak	4,170	0	728	0	425	61	2,470	486
Other hardwoods	4,615	0	1,457	0	1,032	121	668	1,337
All species	21,863	0	3,641	0	10,221	304	5,266	2,431
LaFayette County								
Ash	210	0	0	0	0	0	210	0
Elm	518	203	0	0	0	0	315	0
Oak	203	203	0	0	0	0	0	0
Other hardwoods	810	0	810	0	0	0	0	0
All species	1,741	406	810	0	0	0	525	0

(Table 1 continued on next page)

(Table 1 continued)

Species group[1/]	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Pepin County								
Elm	7,285	0	0	0	0	0	7,285	0
Oak	810	0	0	0	0	0	810	0
Mixed hardwoods	12,952	0	0	0	5,181	7,771	0	0
All species	21,047	0	0	0	5,181	7,771	8,095	0
Pierce County								
Ash	70	0	0	0	70	0	0	0
Basswood	70	0	0	0	70	0	0	0
Cottonwood	607	0	0	607	0	0	0	0
Elm	4,511	0	0	404	384	0	3,723	0
Hickory	405	0	0	81	65	0	259	0
Maple	809	0	0	162	129	0	518	0
Oak	4,847	0	0	162	2,143	0	2,542	0
Other hardwoods	607	0	0	607	0	0	0	0
All species	11,926	0	0	2,023	2,861	0	7,042	0
Richland County								
Aspen	1,009	0	1,069	0	0	0	0	0
Birch	1,158	0	1,158	0	0	0	0	0
Elm	21,331	0	5,804	0	0	2,024	13,503	0
Maple	2,459	0	1,069	0	19	0	1,371	0
Oak	7,824	0	1,158	0	19	2,029	4,618	0
All species	33,841	0	10,258	0	38	4,053	19,492	0
St. Croix County								
Pine	405	0	0	0	0	0	405	0
Total softwoods	405	0	0	0	0	0	405	0
Aspen	4,371	607	2,550	0	607	0	607	0
Birch	304	0	0	0	152	0	152	0
Elm	12,913	0	6,031	0	2,591	0	4,291	0
Maple	405	0	0	0	0	0	405	0
Oak	9,027	0	1,032	0	1,407	0	6,588	0
Other hardwoods	1,315	0	1,315	0	0	0	0	0
Total hardwoods	28,335	607	10,928	0	4,757	0	12,043	0
All species	28,740	607	10,928	0	4,757	0	12,448	0

(Table 1 continued on next page)

(Table 1 continued)

Species group[1/]	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Sauk County								
Birch	971	0	0	0	194	0	777	0
Elm	13,357	0	546	0	486	519	11,806	0
Maple	121	0	6	0	0	6	109	0
Oak	16,536	0	1,698	0	1,166	35	13,637	0
Mixed hardwoods	16,190	0	0	0	1,619	0	14,571	0
Other hardwoods	859	0	18	0	97	17	727	0
All species	48,034	0	2,268	0	3,562	577	41,627	0
Trempealeau County								
Aspen	405	0	0	0	0	385	20	0
Elm	4,048	0	0	4,048	0	0	0	0
Oak	14,392	0	0	0	0	7,936	6,456	0
All species	18,845	0	0	4,048	0	8,321	6,476	0
Vernon County								
Elm	12,795	0	0	1,617	0	250	4,857	6,071
Oak	7,299	0	0	0	0	3,867	3,432	0
Other hardwoods	304	0	0	0	0	0	304	0
All species	20,398	0	0	1,617	0	4,117	8,593	6,071
All Counties								
Balsam fir	135	135	0	0	0	0	0	0
Pine	2,834	0	2,429	0	0	0	405	0
Total softwoods	2,969	135	2,429	0	0	0	405	0
Ash	8,633	7,286	0	0	320	2	1,025	0
Aspen	16,106	607	5,481	3,542	1,184	415	4,877	0
Basswood	477	0	0	0	455	22	0	0
Birch	3,892	0	1,158	486	468	0	1,537	243
Cottonwood	607	0	0	607	0	0	0	0
Elm	12,583	12,346	16,246	14,100	5,200	13,065	54,312	6,314
Hickory	2,336	0	1,634	81	143	0	356	122
Maple	17,696	0	2,208	162	9,297	2,213	3,816	0
Hard maple	81	0	81	0	0	0	0	0
Oak	138,610	5,060	9,626	20,907	21,838	21,138	59,555	486
Red oak	950	0	0	950	0	0	0	0
Walnut	1,489	0	109	29	34	1,283	34	0
Mixed hardwoods	29,142	0	0	0	6,800	7,771	14,571	0
Other hardwoods	20,732	0	13,002	1,091	1,711	1,291	2,300	1,337
Total hardwoods	362,334	25,299	49,545	41,955	47,450	47,200	142,383	8,502
All species	365,303	25,434	51,974	41,955	47,450	47,200	142,788	8,502

(Table 1 continued on next page)

(Table 1 continued)

SOUTHEAST UNIT

Species group[1/]	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Brown County								
Tamarack	510	0	0	0	255	0	255	0
Total softwoods	510	0	0	0	255	0	255	0
Ash	3,861	2,715	573	573	0	0	0	0
Aspen	712	263	0	364	0	0	85	0
Birch	1,810	0	0	0	764	0	1,046	0
Elm	10,726	93	2,673	3,716	1,528	0	2,716	0
Maple	585	509	0	0	19	0	19	38
Oak	1,146	0	573	573	0	0	0	0
Other hardwoods	434	0	0	0	109	0	109	216
Total hardwoods	19,274	3,580	3,819	5,226	2,420	0	3,975	254
All species	19,784	3,580	3,819	5,226	2,675	0	4,230	254
Calumet County								
Ash	226	0	0	0	113	0	113	0
Basswood	311	0	0	0	57	0	254	0
Elm	1,050	0	0	0	0	0	1,050	0
Maple	114	0	0	0	57	0	57	0
Oak	1,774	0	0	0	0	0	1,774	0
All species	3,475	0	0	0	227	0	3,248	0
Columbia County								
Pine	52	0	52	0	0	0	0	0
Total softwoods	52	0	52	0	0	0	0	0
Aspen	315	0	0	0	79	236	0	0
Basswood	1,896	0	0	0	4	1,608	284	0
Cottonwood	4	0	0	0	4	0	0	0
Elm	946	0	0	0	0	0	946	0
Maple	105	0	0	0	21	0	84	0
Oak	29,991	0	155	0	2,477	18,733	8,626	0
Other hardwoods	374	0	0	0	79	236	59	0
Total hardwoods	33,631	0	155	0	2,664	20,813	9,999	0
All species	33,683	0	207	0	2,664	20,813	9,999	0

(Table 1 continued on next page)

(Table 1 continued)

Species group[1/]	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Dane County								
Ash	852	0	0	37	0	0	815	0
Aspen	734	0	0	0	367	0	367	0
Basswood	2,445	0	0	0	2,445	0	0	0
Elm	3,152	1,019	869	408	25	0	831	0
Hickory	282	0	0	37	25	0	220	0
Maple	6,461	652	326	4,112	0	0	1,371	0
Oak	31,605	815	427	4,779	2,136	5,623	17,825	0
Other hardwoods	1,657	54	503	0	489	244	367	0
All species	47,188	2,540	2,125	9,373	5,487	5,867	21,796	0
Dodge County								
Pine	37	0	37	0	0	0	0	0
Total softwoods	37	0	37	0	0	0	0	0
Aspen	79	0	0	0	20	59	0	0
Basswood	131	131	0	0	0	0	0	0
Cottonwood	500	0	250	250	0	0	0	0
Elm	5,179	630	824	540	0	0	2,555	630
Maple	84	0	42	42	0	0	0	0
Oak	3,287	79	1,426	0	355	1,064	284	79
Mixed hardwoods	823	0	416	407	0	0	0	0
Other hardwoods	370	211	0	0	20	59	0	80
Total hardwoods	10,453	1,051	2,958	1,239	395	1,182	2,839	789
All species	10,490	1,051	2,995	1,239	395	1,182	2,839	789
Door County								
Cedar	619	0	0	0	25	0	594	0
Balsam fir	291	0	0	0	0	0	291	0
Total softwoods	910	0	0	0	25	0	885	0
Ash	736	0	0	0	243	243	250	0
Basswood	783	520	263	0	0	0	0	0
Beech	881	0	0	0	300	273	308	0
Birch	7,694	0	0	0	2,430	2,274	2,990	0
Elm	1,198	134	0	0	0	0	1,064	0
Maple	1,800	0	0	0	243	243	1,314	0
Oak	1,131	0	0	0	0	0	1,131	0
Other hardwoods	134	134	0	0	0	0	0	0
Total hardwoods	14,357	788	263	0	3,216	3,033	7,057	0
All species	15,267	788	263	0	3,241	3,033	7,942	0

(Table 1 continued on next page)

(Table 1 continued)

Species group[1/]	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Fond du Lac County								
Aspen	257	40	99	0	59	0	59	0
Birch	336	0	89	0	68	0	179	0
Elm	731	158	99	0	237	0	237	0
Hickory	158	40	0	0	59	0	59	0
Maple	946	40	709	0	130	0	67	0
Oak	1,460	79	188	0	364	0	829	0
Other hardwoods	2,426	1,223	986	0	148	0	69	0
All species	6,314	1,580	2,170	0	1,065	0	1,499	0
Green County								
Cottonwood	789	0	0	0	0	0	789	0
Elm	6,080	1,459	367	631	0	0	3,623	0
Maple	1,051	0	0	210	0	0	841	0
Oak	1,051	0	0	210	0	0	841	0
Walnut	163	0	41	0	0	0	122	0
Other hardwoods	789	0	0	0	0	0	789	0
All species	9,923	1,459	408	1,051	0	0	7,005	0
Jefferson County								
Ash	1,064	0	1,064	0	0	0	0	0
Aspen	520	0	260	0	156	0	104	0
Birch	91	68	23	0	0	0	0	0
Elm	2,294	986	1,048	0	156	0	104	0
Hickory	495	140	47	197	83	0	28	0
Maple	2,029	1,059	970	0	0	0	0	0
Oak	2,481	281	94	1,774	249	0	83	0
Other hardwoods	8,779	0	8,400	0	244	0	135	0
All species	17,753	2,534	11,906	1,971	888	0	454	0
Kenosha County								
Ash	100	30	70	0	0	0	0	0
Elm	1,795	1,702	93	0	0	0	0	0
Maple	6,373	1,588	70	0	21	0	4,694	0
Oak	13,751	2,593	2,094	3,988	63	277	4,736	0
All species	22,019	5,913	2,327	3,988	84	277	9,430	0

(Table 1 continued on next page)

(Table 1 continued)

Species group[1/]	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Kewaunee County								
Birch	394	0	20	0	0	0	374	0
Elm	7,293	0	4,110	0	0	0	3,183	0
Maple	100	0	0	0	100	0	0	0
Oak	297	0	10	0	100	0	187	0
All species	8,084	0	4,140	0	200	0	3,744	0
Manitowoc County								
Aspen	213	0	0	0	0	0	213	0
Elm	1,705	0	0	0	0	0	1,705	0
Maple	288	0	0	0	75	0	213	0
Oak	338	263	0	0	75	0	0	0
Other hardwoods	1,183	0	1,183	0	0	0	0	0
All species	3,727	263	1,183	0	150	0	2,131	0
Milwaukee County								
Pine	277	277	0	0	0	0	0	0
Mixed softwoods	935	935	0	0	0	0	0	0
Total softwoods	1,212	1,212	0	0	0	0	0	0
Beech	47	0	0	0	0	0	47	0
Birch	221	221	0	0	0	0	0	0
Elm	4,798	4,798	0	0	0	0	0	0
Maple	1,656	1,446	0	0	0	0	210	0
Oak	210	0	0	0	0	0	210	0
Mixed hardwoods	2,804	2,804	0	0	0	0	0	0
Other hardwoods	1,210	1,210	0	0	0	0	0	0
Total hardwoods	10,946	10,479	0	0	0	0	467	0
All species	12,158	11,691	0	0	0	0	467	0
Outagamie County								
Pine	26	0	0	0	13	0	13	0
White pine	6,512	6,512	0	0	0	0	0	0
Total softwoods	6,538	6,512	0	0	13	0	13	0
Ash	6,789	0	0	0	4,871	621	1,297	0
Aspen	5,091	0	0	0	4,836	0	255	0
Basswood	3,182	0	0	0	0	0	3,182	0
Birch	1,069	724	0	0	133	44	168	0
Elm	25,812	212	3,394	1,697	1,331	972	18,206	0
Hickory	80	0	0	0	16	64	0	0
Maple	9,532	530	0	0	4,900	1,898	2,204	0
Oak	890	0	0	0	64	204	622	0
Mixed hardwoods	12,728	0	0	0	3,777	0	8,951	0
Other hardwoods	3,945	3,819	0	0	4	16	106	0
Total hardwoods	69,118	5,285	3,394	1,697	19,932	3,819	34,991	0
All species	75,656	11,797	3,394	1,697	19,945	3,819	35,004	0

(Table 1 continued on next page)

(Table 1 continued)

Species group[1/]	All sources	Source of fuelwood						
		Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Ozaukee County								
Pine	299	0	0	0	0	0	299	0
Jack pine	138	0	138	0	0	0	0	0
Mixed softwoods	312	312	0	0	0	0	0	0
Total softwoods	749	312	138	0	0	0	299	0
Ash	11	0	0	0	0	11	0	0
Aspen	83	0	83	0	0	0	0	0
Birch	1,662	0	0	0	0	0	1,662	0
Elm	922	270	353	0	0	0	299	0
Maple	4,279	125	0	4,154	0	0	0	0
Soft maple	352	0	0	0	0	352	0	0
Oak	2,895	125	2,704	0	0	0	66	0
White oak	7	0	0	0	0	7	0	0
Mixed hardwoods	8,819	935	0	0	0	0	7,884	0
Other hardwoods	2,046	104	1,942	0	0	0	0	0
Total hardwoods	21,076	1,559	5,082	4,154	0	370	9,911	0
All species	21,825	1,871	5,220	4,154	0	370	10,210	0
Racine County								
Aspen	722	0	99	623	0	0	0	0
Birch	66	0	66	0	0	0	0	0
Hickory	1,662	0	0	1,662	0	0	0	0
Maple	166	166	0	0	0	0	0	0
Oak	3,531	0	0	3,531	0	0	0	0
Mixed hardwoods	831	831	0	0	0	0	0	0
Other hardwoods	416	0	416	0	0	0	0	0
All species	7,394	997	581	5,816	0	0	0	0
Rock County								
Ash	394	0	0	0	0	0	394	0
Elm	2,410	456	0	509	315	126	1,004	0
Hickory	276	0	0	138	0	0	138	0
Maple	1,755	0	887	276	79	32	481	0
Soft maple	336	168	0	168	0	0	0	0
Oak	16,247	982	0	1,166	1,182	473	12,444	0
Other hardwoods	2,123	825	0	963	0	0	335	0
All species	23,541	2,431	887	3,220	1,576	631	14,796	0
Sheboygan County								
Ash	1,272	0	0	0	18	71	1,183	0
Aspen	591	0	0	0	0	0	591	0
Elm	41,508	0	1,065	0	0	142	40,301	0
Hickory	89	0	0	0	18	71	0	0
Maple	2,360	0	0	0	217	568	1,575	0
Oak	10,610	0	329	0	75	16	10,190	0
Other hardwoods	2,187	0	1,399	0	0	0	788	0
All species	58,617	0	2,793	0	328	868	54,628	0

(Table 1 continued on next page)

(Table 1 continued)

Species group[1/]	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
Walworth County								
Aspen	66	0	66	0	0	0	0	0
Basswood	13	13	0	0	0	0	0	0
Elm	118	118	0	0	0	0	0	0
Hickory	53	0	0	0	0	0	53	0
Maple	118	118	0	0	0	0	0	0
Oak	2,077	13	1,577	0	0	0	487	0
Other hardwoods	197	0	197	0	0	0	0	0
All species	2,642	262	1,840	0	0	0	540	0
Washington County								
Pine	291	0	0	0	0	0	291	0
Total softwoods	291	0	0	0	0	0	291	0
Ash	881	881	0	0	0	0	0	0
Birch	197	0	20	0	0	0	177	0
Cottonwood	500	0	250	250	0	0	0	0
Elm	5,737	0	1,934	540	35	35	3,193	0
Maple	1,174	1,090	42	42	0	0	0	0
Oak	3,608	0	329	0	65	65	3,149	0
Other hardwoods	2,447	1,321	513	0	0	0	613	0
Total hardwoods	14,544	3,292	3,088	832	100	100	7,132	0
All species	14,835	3,292	3,088	832	100	100	7,423	0
Waukesha County								
Ash	263	0	0	0	0	0	263	0
Aspen	3,379	0	2,181	0	0	0	1,198	0
Birch	807	605	202	0	0	0	0	0
Elm	6,813	3,199	3,003	0	0	0	611	0
Hickory	2,698	1,262	1,365	0	60	0	11	0
Maple	1,808	1,348	288	0	74	0	72	26
Oak	12,662	4,393	6,942	0	74	0	1,227	26
Mixed hardwoods	1,662	0	0	0	0	0	1,662	0
Other hardwoods	7,616	0	4,362	1,246	0	0	2,008	0
All species	37,708	10,807	18,343	1,246	208	0	7,052	52
Winnebago County								
Aspen	298	0	179	0	24	0	95	0
Birch	666	0	0	0	0	0	666	0
Elm	5,330	0	0	0	0	0	5,330	0
Oak	2,560	0	179	0	24	0	2,357	0
Other hardwoods	6,722	0	835	0	112	0	5,775	0
All species	15,576	0	1,193	0	160	0	14,223	0

(Table 1 continued on next page)

(Table 1 continued)

Species group[1/]	All sources	Source of fuelwood						
		Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands			Other sources
					Standing live trees	Logging waste	Dead trees	
	All counties							
Cedar	619	0	0	0	25	0	594	0
Balsam fir	291	0	0	0	0	0	291	0
Pine	982	277	89	0	13	0	603	0
Jack pine	138	0	138	0	0	0	0	0
White pine	6,512	6,512	0	0	0	0	0	0
Tamarack	510	0	0	0	255	0	255	0
Mixed softwoods	1,247	1,247	0	0	0	0	0	0
Total softwoods	10,299	8,036	227	0	293	0	1,743	0
Ash	16,449	3,626	1,707	610	5,245	946	4,315	0
Aspen	13,060	303	2,967	987	5,541	295	2,967	0
Basswood	8,761	664	263	0	2,506	1,608	3,720	0
Beech	928	0	0	0	300	273	355	0
Birch	15,013	1,618	420	0	3,395	2,318	7,262	0
Cottonwood	1,793	0	500	500	4	0	789	0
Elm	135,597	15,234	19,832	8,041	3,627	1,275	86,958	630
Hickory	5,793	1,442	1,412	2,034	261	135	509	0
Maple	42,784	8,671	3,334	8,836	5,936	2,741	13,202	64
Soft maple	688	168	0	168	0	352	0	0
Oak	143,602	9,623	17,027	16,021	7,303	26,455	67,068	105
White oak	7	0	0	0	0	7	0	0
Walnut	163	0	41	0	0	0	122	0
Mixed hardwoods	27,667	4,570	416	407	3,777	0	18,497	0
Other hardwoods	45,055	8,901	20,736	2,209	1,205	555	11,153	296
Total hardwoods	457,360	54,820	68,655	39,813	39,100	36,960	216,917	1,095
All species	467,659	62,856	68,882	39,813	39,393	36,960	218,660	1,095

(Table 1 continued on next page)

(Table 1 continued)

ALL UNITS

Species group[1/]	All sources	Source of fuelwood: Cities and villages	Windbreaks fencerows and rural yards	Pasture and cropland	Rural woodlands: Standing live trees	Rural woodlands: Logging waste	Rural woodlands: Dead trees	Other sources
			All Counties					
Cedar	1,412	0	0	0	36	0	1,376	0
Balsam fir	3,427	135	0	873	313	0	2,106	0
Hemlock	6,000	0	0	0	0	0	6,000	0
Pine	18,674	2,936	2,654	0	1,229	131	11,724	0
Jack pine	3,066	0	823	0	1,263	0	980	0
Red pine	5,357	0	5,357	0	0	0	0	0
White pine	6,512	6,512	0	0	0	0	0	0
Spruce	493	0	0	17	0	0	476	0
Tamarack	510	0	0	0	255	0	255	0
Mixed softwoods	3,979	1,247	0	0	0	2,679	53	0
Total softwoods	49,430	10,830	8,834	890	3,096	2,810	22,970	0
Ash	63,557	10,918	1,717	3,466	21,885	8,044	17,527	0
Aspen	91,941	1,337	10,359	6,892	31,180	6,410	35,763	0
Basswood	22,869	664	263	0	3,734	1,633	16,575	0
Beech	2,875	584	0	0	845	273	1,173	0
Birch	114,406	1,835	4,546	3,331	27,915	24,215	51,980	584
White birch	2,377	0	0	262	1,083	20	1,012	0
Yellow birch	308	0	0	0	186	5	117	0
Cottonwood	2,400	0	500	1,107	4	0	789	0
Elm	469,558	29,752	57,119	46,511	32,739	38,206	256,813	8,418
Hickory	15,698	1,442	3,066	2,115	2,458	5,482	1,013	122
Maple	229,851	9,785	6,913	13,804	62,844	51,219	85,030	256
Hard maple	16,384	0	81	54	13,515	1,450	1,284	0
Soft maple	6,696	168	0	2,949	2,166	1,139	274	0
Oak	667,393	17,878	38,051	48,748	131,384	110,058	320,264	1,010
Red oak	8,235	671	0	956	2,593	2,413	1,602	0
White oak	7	0	0	0	0	7	0	0
Walnut	1,652	0	150	29	34	1,283	156	0
Mixed hardwoods	77,143	4,570	416	1,280	11,427	9,117	50,333	0
Other hardwoods	73,199	8,985	35,096	3,335	4,892	2,700	16,558	1,633
Total hardwoods	1,866,549	88,589	158,277	134,839	350,884	263,674	858,263	12,023
All species	1,915,979	99,419	167,111	135,729	353,980	266,484	881,233	12,023

[1/] As reported by fuelwood producers before prorating to individual species.

Table 2.--Fuelwood production from roundwood by Unit, county, species, and ownership, Wisconsin, 1981

(In standard cords)

All UNITS

Species 1/	All ownerships	Federal		Indian	State	County and municipal	Forest industry	Other private
		National forest	Other federal					
Cedar	1,412	0	0	0	0	0	0	1,412
Balsam fir	3,427	0	0	0	0	0	0	3,427
Hemlock	6,000	0	0	0	0	0	0	6,000
Pine	18,676	0	0	0	741	123	0	17,812
Jack pine	3,065	0	0	0	0	0	0	3,065
Red pine	5,357	0	0	0	0	0	0	5,357
White pine	6,512	0	0	0	0	0	0	6,512
Spruce	493	0	0	0	0	0	0	493
Tamarack	509	0	0	0	0	0	0	509
Mixed softwoods	3,978	2,710	0	0	21	0	0	1,247
Total softwoods	49,429	2,710	0	0	762	123	0	45,834
Ash	63,559	1,355	0	669	553	607	458	59,917
Aspen	91,942	55	0	0	24	1,011	0	90,852
Basswood	22,869	0	0	609	0	3	0	22,257
Beech	2,876	0	0	0	0	0	0	2,876
Birch	114,391	2,140	0	300	1,463	7,372	1,681	101,435
White birch	2,377	30	0	0	0	942	0	1,405
Yellow birch	308	198	0	0	0	55	0	55
Cottonwood	2,398	0	0	0	0	0	0	2,398
Elm	469,548	6,881	0	8,560	793	4,113	759	448,442
Hickory	15,694	0	0	96	0	30	726	14,842
Maple	229,840	9,819	0	1,369	4,224	19,000	2,046	193,382
Hard maple	16,384	9,489	0	204	0	102	1,264	5,325
Soft maple	6,695	693	0	800	0	566	0	4,636
Oak	667,375	2,490	0	3,539	30,647	23,774	5,545	601,380
Red oak	8,233	0	0	0	0	2,013	1,260	4,960
White oak	7	0	0	0	0	0	0	7
Walnut	1,653	0	0	0	0	0	0	1,653
Mixed hardwoods	77,143	0	0	0	1,558	2,049	0	73,536
Other hardwoods	73,194	523	0	0	0	128	50	72,493
Total hardwoods	1,866,486	33,673	0	16,146	39,262	61,765	13,789	1,701,851
All species	1,915,915	36,383	0	16,146	40,024	61,888	13,789	1,747,685

(Table 2 continued on next page)

(Table 2 continued)

NORTHEAST UNIT

Species 1/	All ownerships	Federal: National forest	Federal: Other federal	Indian	State	County and municipal	Forest industry	Other private
Cedar	111	0	0	0	0	0	0	111
Balsam fir	19	0	0	0	0	0	0	19
Hemlock	5,538	0	0	0	0	0	0	5,538
Pine	6,647	0	0	0	203	0	0	6,444
Jack pine	287	0	0	0	0	0	0	287
Red pine	5,357	0	0	0	0	0	0	5,357
Mixed softwoods	2,731	2,710	0	0	21	0	0	0
Total softwoods	20,690	2,710	0	0	224	0	0	17,756
Ash	8,267	357	0	669	0	284	248	6,709
Aspen	19,255	32	0	0	0	279	0	18,944
Basswood	7,153	0	0	609	0	0	0	6,544
Beech	1,948	0	0	0	0	0	0	1,948
Birch	53,074	1,640	0	300	290	4,151	147	46,546
White birch	390	0	0	0	0	251	0	139
Yellow birch	198	198	0	0	0	0	0	0
Elm	74,204	5,693	0	8,560	0	1,177	641	58,133
Hickory	3,301	0	0	96	0	0	363	2,842
Maple	64,717	2,126	0	1,331	2,754	6,454	257	51,795
Hard maple	8,724	4,900	0	204	0	102	632	2,886
Soft maple	1,968	693	0	800	0	356	0	119
Oak	52,235	151	0	3,389	544	3,107	91	44,953
Red oak	1,080	0	0	0	0	30	630	420
Mixed hardwoods	761	0	0	0	0	761	0	0
Other hardwoods	1,882	523	0	0	0	14	50	1,295
Total hardwoods	299,157	16,313	0	15,958	3,588	16,966	3,059	243,273
All species	319,847	19,023	0	15,958	3,812	16,966	3,059	261,029

(Table 2 continued)

(Table 2 continued)

NORTHWEST UNIT

Species 1/	All ownerships	Federal: National forest	Federal: Other federal	Indian	State	County and municipal	Forest industry	Other private
Cedar	571	0	0	0	0	0	0	571
Balsam fir	2,400	0	0	0	0	0	0	2,400
Hemlock	462	0	0	0	0	0	0	462
Pine	946	0	0	0	18	123	0	805
Jack pine	888	0	0	0	0	0	0	888
Spruce	493	0	0	0	0	0	0	493
Total softwoods	5,760	0	0	0	18	123	0	5,619
Ash	7,296	998	0	0	53	282	0	5,963
Aspen	10,817	23	0	0	0	519	0	10,275
Basswood	6,429	0	0	0	0	3	0	6,426
Birch	18,338	500	0	0	650	3,186	1,500	12,502
White birch	1,294	30	0	0	0	600	0	664
Yellow birch	110	0	0	0	0	55	0	55
Elm	60,635	1,188	0	0	84	981	0	58,382
Hickory	2,215	0	0	0	0	6	0	2,209
Maple	58,535	7,693	0	38	878	12,375	1,755	35,796
Hard maple	6,459	4,589	0	0	0	0	0	1,870
Soft maple	2,781	0	0	0	0	0	0	2,781
Oak	78,910	2,339	0	150	15,910	14,089	4,545	41,877
Red oak	4,476	0	0	0	0	1,983	0	2,493
Mixed hardwoods	5,446	0	0	0	0	457	0	4,989
Other hardwoods	389	0	0	0	0	15	0	374
Total hardwoods	264,130	17,360	0	188	17,575	34,551	7,800	186,656
All species	269,890	17,360	0	188	17,593	34,674	7,800	192,275

(Table 2 continued on next page)

(Table 2 continued)

CENTRAL UNIT

Species 1/	All ownerships	Federal: National forest	Federal: Other federal	Indian	State	County and municipal	Forest industry	Other private
Cedar	111	0	0	0	0	0	0	111
Balsam fir	582	0	0	0	0	0	0	582
Pine	7,267	0	0	0	520	0	0	6,747
Jack pine	1,752	0	0	0	0	0	0	1,752
Total softwoods	9,712	0	0	0	520	0	0	9,192
Ash	22,916	0	0	0	500	41	210	22,165
Aspen	32,704	0	0	0	24	21	0	32,659
Basswood	50	0	0	0	0	0	0	50
Birch	24,080	0	0	0	523	35	34	23,488
White birch	693	0	0	0	0	91	0	602
Elm	77,532	0	0	0	506	130	118	76,778
Hickory	2,053	0	0	0	0	24	363	1,666
Maple	46,115	0	0	0	566	46	34	45,469
Hard maple	1,120	0	0	0	0	0	632	488
Soft maple	1,259	0	0	0	0	210	0	1,049
Oak	254,032	0	0	0	13,334	5,284	909	234,505
Red oak	1,727	0	0	0	0	0	630	1,097
Mixed hardwoods	14,127	0	0	0	1,558	0	0	12,569
Other hardwoods	5,142	0	0	0	0	0	0	5,142
Total hardwoods	483,550	0	0	0	17,011	5,882	2,930	457,727
All species	493,262	0	0	0	17,531	5,882	2,930	466,919

(Table 2 continued)

(Table 2 continued)

SOUTHWEST UNIT

Species 1/	All ownerships	Federal: National forest	Federal: Other federal	Indian	State	County and municipal	Forest industry	Other private
Balsam fir	135	0	0	0	0	0	0	135
Pine	2,834	0	0	0	0	0	0	2,834
Total softwoods	2,969	0	0	0	0	0	0	2,969
Ash	8,633	0	0	0	0	0	0	8,633
Aspen	16,106	0	0	0	0	0	0	16,106
Basswood	477	0	0	0	0	0	0	477
Birch	3,890	0	0	0	0	0	0	3,890
Cottonwood	607	0	0	0	0	0	0	607
Elm	121,582	0	0	0	203	1,190	0	120,189
Hickory	2,334	0	0	0	0	0	0	2,334
Maple	17,695	0	0	0	0	0	0	17,695
Hard maple	81	0	0	0	0	0	0	81
Oak	138,606	0	0	0	833	793	0	136,980
Red oak	950	0	0	0	0	0	0	950
Walnut	1,490	0	0	0	0	0	0	1,490
Mixed hardwoods	29,142	0	0	0	0	0	0	29,142
Other hardwoods	20,732	0	0	0	0	0	0	20,732
Total hardwoods	362,325	0	0	0	1,036	1,983	0	359,306
All species	365,294	0	0	0	1,036	1,983	0	362,275

(Table 2 continued on next page)

(Table 2 continued)

SOUTHEAST UNIT

Species 1/	All ownerships	Federal: National forest	Federal: Other federal	Indian	State	County and municipal	Forest industry	Other private
Cedar	619	0	0	0	0	0	0	619
Balsam fir	291	0	0	0	0	0	0	291
Pine	982	0	0	0	0	0	0	982
Jack pine	138	0	0	0	0	0	0	138
White pine	6,512	0	0	0	0	0	0	6,512
Tamarack	509	0	0	0	0	0	0	509
Mixed softwoods	1,247	0	0	0	0	0	0	1,247
Total softwoods	10,298	0	0	0	0	0	0	10,298
Ash	16,447	0	0	0	0	0	0	16,447
Aspen	13,060	0	0	0	0	192	0	12,868
Basswood	8,760	0	0	0	0	0	0	8,760
Beech	928	0	0	0	0	0	0	928
Birch	15,009	0	0	0	0	0	0	15,009
Cottonwood	1,791	0	0	0	0	0	0	1,791
Elm	135,595	0	0	0	0	635	0	134,960
Hickory	5,791	0	0	0	0	0	0	5,791
Maple	42,778	0	0	0	26	125	0	42,627
Soft maple	687	0	0	0	0	0	0	687
Oak	143,592	0	0	0	26	501	0	143,065
White oak	7	0	0	0	0	0	0	7
Walnut	163	0	0	0	0	0	0	163
Mixed hardwoods	27,667	0	0	0	0	831	0	26,836
Other hardwoods	45,049	0	0	0	0	99	0	44,950
Total hardwoods	457,324	0	0	0	52	2,383	0	454,889
All species	467,622	0	0	0	52	2,383	0	465,187

1/ As reported by fuelwood producers before prorating to individual species.

Table 3.--Fuelwood production from roundwood by species group, Unit and county in Wisconsin, 1981

(In standard cords)

Unit and county	Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar	Basswood	Beech	White birch
NORTHEAST UNIT														
Florence	111	0	0	15	25	19	0	0	10	0	0	0	0	822
Forest	0	19	19	0	0	0	0	0	214	403	0	10	0	640
Langlade	0	0	0	141	0	0	0	0	1,174	2,737	0	0	0	349
Lincoln	0	0	0	454	327	204	0	0	470	4,766	0	0	0	5,483
Marinette	0	0	0	0	0	0	0	0	125	3,540	0	0	0	5,746
Menominee	0	0	0	0	0	0	0	0	60	0	0	0	0	76
Oconto	0	0	0	0	0	0	0	0	2,000	4,043	0	1,015	1,947	11,227
Oneida	134	659	5,812	2,847	2,014	1,698	324	71	131	2,813	0	5,535	0	14,994
Shawano	0	0	0	0	0	0	0	0	3,752	1,218	0	609	0	2,193
Vilas	9	6	27	136	5,455	111	39	15	357	45	0	0	0	3,309
Unit total	254	684	5,858	3,593	7,821	2,032	363	86	8,293	19,565	0	7,169	1,947	44,839
NORTHWEST UNIT														
Ashland	462	0	462	0	0	0	476	0	278	23	0	0	0	145
Barron	0	0	0	0	0	0	0	0	1,832	2,305	0	741	0	623
Bayfield	109	218	0	0	0	0	0	0	173	1,352	1	49	0	3,997
Burnett	0	0	0	1,026	14	12	0	0	224	307	0	0	0	1,806
Douglas	0	0	0	47	11	12	17	0	2,879	2,914	0	807	0	1,449
Iron	0	0	0	0	0	0	0	0	55	0	0	4871	0	675
Polk	0	1,309	0	0	0	0	0	0	0	632	0	0	0	525
Price	0	0	0	0	0	0	0	0	90	74	0	9	0	713
Rusk	0	873	0	139	62	148	0	0	738	419	0	0	0	2,818
Sawyer	0	0	0	0	0	0	0	0	534	2,094	0	0	0	714
Taylor	0	0	0	36	24	40	0	0	1,123	1,621	5	383	0	1,412
Washburn	0	0	0	184	34	44	0	0	59	421	2	54	0	1,624
Unit total	571	2,400	462	1,432	145	256	493	0	7,985	12,162	8	6,914	0	16,501
CENTRAL UNIT														
Adams	0	0	0	763	75	127	0	0	316	3,222	0	231	0	1,286
Chippewa	0	0	0	0	0	0	0	0	3,621	3,834	0	0	0	2,990
Clark	0	0	0	5	0	0	0	0	2,151	11	0	50	0	23
Eau Claire	0	0	0	0	0	0	0	0	500	21	0	0	0	2,638
Jackson	0	0	0	0	0	0	0	0	0	24	0	0	0	76
Juneau	0	582	0	2,524	74	187	0	0	652	1,423	0	95	0	548
Marathon	0	0	0	674	228	925	0	0	12,380	3,669	0	99	0	5,633
Marquette	0	0	0	433	48	171	0	0	473	710	0	0	0	0
Monroe	0	0	0	1	0	0	0	0	500	3,402	0	0	0	791
Portage	111	0	0	0	0	0	0	0	759	4,537	0	0	0	825
Waupaca	0	0	0	19	7	24	0	0	2,133	0	0	0	0	1,368
Waushara	0	0	0	1,374	351	934	0	0	0	128	0	0	0	549
Wood	0	0	0	59	4	12	0	0	0	15,042	0	0	0	1,826
Unit total	111	582	0	5,852	787	2,380	0	0	23,485	36,023	0	475	0	18,553

(Table 3 continued on next page)

(Table 3 continued)

Unit and county	Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar	Basswood	Beech	White birch
SOUTHWEST UNIT														
Buffalo	0	0	0	0	0	0	0	0	0	607	0	405	0	0
Crawford	0	0	0	0	0	0	0	0	2	0	0	2	0	0
Dunn	0	135	0	0	0	0	0	0	7,536	4,655	0	0	0	0
Grant	0	0	0	622	610	1,197	0	0	0	4,999	0	0	0	0
Iowa	0	0	0	0	0	0	0	0	815	0	0	0	0	954
La Crosse	0	0	0	0	0	0	0	0	0	0	0	0	0	478
Lafayette	0	0	0	0	0	0	0	0	210	0	0	0	0	0
Pepin	0	0	0	0	0	0	0	0	378	1,548	0	660	0	442
Pierce	0	0	0	0	0	0	0	0	70	0	0	70	0	0
Richland	0	0	0	0	0	0	0	0	0	1,069	0	0	0	1,125
St. Croix	0	0	0	173	122	110	0	0	0	4,371	0	0	0	298
Sauk	0	0	0	0	0	0	0	0	414	1,756	0	841	0	1,492
Trempealeau	0	0	0	0	0	0	0	0	0	405	0	0	0	0
Vernon	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unit total	0	135	0	795	732	1307	0	0	9,425	19,410	0	1,978	0	4,789
SOUTHEAST UNIT														
Brown	0	0	0	0	0	0	0	510	3,861	712	0	0	0	1,384
Calumet	0	0	0	0	0	0	0	0	226	0	0	311	0	0
Columbia	0	0	0	6	34	12	0	0	0	315	0	1,896	0	0
Dane	0	0	0	0	0	0	0	0	852	734	0	2,445	0	0
Dodge	0	0	0	5	2	30	0	0	100	151	6	160	18	26
Door	619	291	0	0	0	0	0	0	736	0	0	783	881	6,623
Fond du Lac	0	0	0	0	0	0	0	0	0	257	0	0	0	272
Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Green Lake	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jefferson	0	0	0	0	0	0	0	0	1,064	520	0	0	0	71
Kenosha	0	0	0	0	0	0	0	0	100	0	0	0	0	0
Kewaunee	0	0	0	0	0	0	0	0	0	0	0	0	0	319
Manitowoc	0	0	0	0	0	0	0	0	0	213	0	0	0	0
Milwaukee	715	16	84	71	24	238	8	56	297	335	39	100	111	283
Outagamie	0	0	0	2	8	6,528	0	0	8,687	6,320	121	3,603	273	1,218
Ozaukee	231	3	22	276	0	179	3	35	861	1,488	123	277	155	1,700
Racine	0	0	0	0	0	0	0	0	95	797	11	32	22	85
Rock	0	0	0	0	0	0	0	0	394	0	0	0	0	0
Sheboygan	0	0	0	0	0	0	0	0	1,272	591	0	0	0	0
Walworth	0	0	0	0	0	0	0	0	0	66	0	13	0	0
Washington	0	0	0	62	15	214	0	0	881	0	0	0	0	150
Waukesha	0	0	0	0	0	0	0	0	417	3,534	8	35	16	757
Winnebago	0	0	0	0	0	0	0	0	0	298	0	0	0	525
Unit total	1,565	310	106	422	83	7,201	11	601	19,843	16,331	308	9,655	1,476	13,413
State total	2,501	4,111	6,426	12,094	9,568	13,176	867	687	69,031	103,491	316	26,191	3,423	98,095

(Table 3 continued on next page)

(Table 3 continued)

Unit and county	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Walnut	Other hardwoods	All species
NORTHEAST UNIT											
Florence	1,391	0	4,998	0	671	27	3,487	0	0	318	11,894
Forest	495	0	12,678	0	2,032	117	478	0	0	236	17,341
Langlade	179	0	18,361	460	8,663	1,068	1,534	0	0	412	35,078
Lincoln	1,112	0	7,436	120	5,995	2,184	5,114	0	0	30	33,695
Marinette	350	0	730	0	2,021	1,790	8,216	758	0	18	23,294
Menominee	224	0	8,560	96	1,276	946	2,616	323	0	0	14,177
Oconto	1,859	0	9,714	0	5,974	4,411	3,022	133	0	0	45,345
Oneida	1,493	0	359	0	9,594	6,674	8,252	0	0	2	63,406
Shawano	1,170	0	10,693	2,625	10,192	2,399	13,967	430	0	510	49,758
Vilas	755	0	693	0	8,325	1,153	4,530	542	0	357	25,864
Unit total	9,028	0	74,222	3,301	54,743	20,769	51,216	2,186	0	1,883	319,852
NORTHWEST UNIT											
Ashland	47	0	278	0	4,587	786	0	0	0	0	7,544
Barron	106	0	3,198	12	560	167	11,416	1,889	0	295	23,144
Bayfield	813	0	4,297	0	10,122	2,590	7,988	799	0	2	32,510
Burnett	252	0	4,206	0	413	187	18,979	4,123	0	0	31,549
Douglas	202	0	0	0	1,171	444	4,074	730	0	0	14,757
Iron	342	0	1,953	0	4,085	1,230	166	34	0	0	13,411
Polk	92	0	25,585	0	187	49	8,333	1,900	0	0	38,612
Price	276	0	8,896	0	5,898	1,828	8	2	0	44	17,838
Rusk	777	0	4,653	1,453	2,400	3,521	7,986	1,676	0	0	27,663
Sawyer	196	0	1,567	0	4,735	645	3,662	693	0	50	14,890
Taylor	649	0	5,832	752	16,089	5,122	1,230	225	0	16	34,559
Wahburn	295	0	480	1	1,649	656	6,527	1,378	0	7	13,415
Unit total	4,047	0	60,945	2,218	51,896	17,225	70,369	13,449	0	414	269,892
CENTRAL UNIT											
Adams	149	0	609	52	497	1,041	32,344	8,844	0	89	49,645
Chippewa	859	0	6,444	48	3,580	4,416	17,389	4,696	0	3,274	51,151
Clark	0	0	7,480	0	1,506	1,209	2,019	577	0	0	15,031
Eau Claire	551	0	1,383	0	333	380	35,739	9,945	0	0	51,490
Jackson	2	0	11,191	0	1,091	1,210	6,773	1,830	0	0	22,197
Juneau	146	0	2,677	18	842	1,280	17,647	5,198	0	32	33,925
Marathon	3698	0	33,597	414	8,775	5,765	9,945	3,044	0	671	89,517
Marquette	0	0	0	0	0	0	24,495	7,354	0	0	33,684
Monroe	172	0	2,895	0	853	908	12,332	3,414	0	0	25,268
Portage	354	0	1,172	0	1,079	961	5,998	1,811	0	168	17,775
Waupaca	470	0	2,986	1,605	4,364	3,789	8,450	2,309	0	449	27,973
Waushara	156	0	7,877	0	19	22	18,191	5,305	0	597	35,503
Wood	528	0	149	0	3,021	3,542	12,275	3,656	0	0	40,114
Unit total	7,085	0	78,460	2,137	25,960	24,523	203,597	57,983	0	5,280	493,273

(Table 3 continued on next page)

(Table 3 continued)

Unit and county	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Walnut	Other hardwoods	All species
SOUTHWEST UNIT											
Buffalo	0	0	105	0	1,425	841	4,849	1,824	0	0	10,056
Crawford	0	0	3,188	106	869	546	1,161	439	0	106	6,419
Dunn	0	0	13,104	0	739	416	8,693	2,936	0	405	38,619
Grant	0	0	14,362	1,581	81	0	18,149	6,820	80	8,483	56,984
Iowa	18	0	10,785	0	0	0	21,536	8,045	1,409	3,228	46,790
La Crosse	9	0	3,281	244	4,994	4,072	3,027	1,143	0	4,615	21,863
Lafayette	0	0	518	0	0	0	148	55	0	810	1,741
Pepin	0	109	8,541	620	692	970	4,937	1,849	0	301	21,047
Pierce	0	607	4,511	405	621	188	3,539	1,308	0	607	11,926
Richland	33	0	21,331	0	1,856	603	5,676	2,148	0	0	33,841
St. Croix	6	0	12,913	0	281	124	6,547	2,480	0	1,315	28,740
Sauk	23	118	14,852	844	1,007	860	17,889	6,691	0	1,247	48,034
Trempealeau	0	0	4,048	0	0	0	10,470	3,922	0	0	18,845
Vernon	0	0	12,795	0	0	0	5,325	1,974	0	304	20,398
Unit total	89	834	124,334	3,800	12,565	8,620	111,946	41,634	1,489	21,421	365,303
SOUTHEAST UNIT											
Brown	426	0	10,726	0	428	157	664	482	0	434	19,784
Calumet	0	0	1,050	0	82	32	1,049	725	0	0	3,475
Columbia	0	4	946	0	75	30	17,965	12,026	0	374	33,683
Dane	0	0	3,152	282	5,107	1,354	19,198	12,407	0	1,657	47,188
Dodge	4	508	5,345	30	124	74	2,013	1,489	4	401	10,490
Door	1,071	0	1,198	0	1,346	454	629	502	0	134	15,267
Fond du Lac	64	0	731	158	641	305	863	597	0	2,426	6,314
Green	0	789	6,080	0	807	244	620	431	163	789	9,923
Green Lake	0	0	0	0	0	0	0	0	0	0	0
Jefferson	20	0	2,294	495	1,479	550	1,457	1,024	0	8,779	17,753
Kenosha	0	0	1,795	0	4,956	1,417	8,062	5,689	0	0	22,019
Kewaunee	75	0	7,293	0	75	25	170	127	0	0	8,084
Manitowoc	0	0	1,705	0	204	84	194	144	0	1,183	3,727
Milwaukee	57	21	5,325	110	1,456	604	505	365	11	1,327	12,158
Outagamie	349	178	28,440	556	7,450	4,019	2,012	1,457	0	4,435	75,656
Ozaukee	321	49	2,254	384	3,759	1,927	3,042	2,212	3	2,521	21,825
Racine	17	7	179	1,692	201	100	2,152	1,557	3	444	7,394
Rock	0	0	2,410	276	1,360	731	9,824	6,423	0	2,123	23,541
Sheboygan	0	0	41,508	89	1,720	640	6,290	4,320	0	2,187	58,617
Walworth	0	0	118	53	88	30	1,220	857	0	197	2,642
Washington	47	500	5,737	0	821	353	2,075	1,533	0	2,447	14,835
Waukesha	111	11	7,008	2,803	1,277	666	7,854	5,511	7	7,693	37,708
Winnbegao	141	0	5,330	0	0	0	1,497	1,063	0	6,722	15,576
Unit total	2,703	2,067	140,624	6,928	33,456	13,796	89,355	60,941	191	46,273	467,659
State total	22,952	2,901	478,585	18,384	178,620	84,933	526,483	176,193	1,680	75,271	1,915,979

Table 4.--Fuelwood production from roundwood by source of material, species, and unit, Wisconsin, 1981

(In standard cords)

All UNITS

Species	All sources	Growing stock[1]				Nongrowing stock sources					
		Total	Sawtimber		Pole-timber	Total	Tops, limb-wood [2]	Sap-lings[1]	Cull trees sections[1]	Dead trees[1]	Non-forest land[3]
			Saw log portion	Upper stem							
SOFTWOODS											
Cedar	2,501	59	29	15	15	2,442	90	-	-	1,406	946
Balsam fir	4,111	378	160	87	131	3,733	510	-	73	2,123	1,027
Hemlock	6,426	87	29	29	29	6,339	200	-	14	6,019	106
Jack pine	12,094	1,162	531	157	474	10,932	659	-	216	7,109	2,948
Red pine	9,568	204	87	44	73	9,364	332	-	29	2,584	6,419
White pine	13,176	502	215	86	201	12,674	390	-	100	3,195	8,989
Spruce	867	87	29	29	29	780	247	-	14	491	28
Tamarack	687	189	72	46	71	498	126	-	29	252	91
Total	49,430	2,668	1,152	493	1,023	46,762	2,554	-	475	23,179	20,554
HARDWOODS											
Ash	69,031	16,732	7,520	2,537	6,675	52,299	10,841	57	3,380	21,282	16,739
Aspen	103,491	22,506	10,266	3,132	9,108	80,985	12,641	85	4,647	44,045	19,567
Balsam poplar	316	26	13	-	13	290	13	-	-	206	71
Basswood	26,191	3,254	1,448	530	1,276	22,937	2,367	14	659	18,726	1,171
Beech	3,423	670	299	100	271	2,753	399	-	143	1,507	704
Paper birch	98,095	20,550	8,982	3,689	7,879	77,545	18,905	100	3,948	45,308	9,284
Yellow birch	22,952	5,000	2,169	891	1,940	17,952	4,366	-	934	11,044	1,608
Cottonwood	2,901	73	29	15	29	2,828	74	-	-	1,106	1,648
Elm	478,585	32,271	13,949	6,131	12,191	446,314	33,555	243	6,045	263,614	142,857
Hickory	18,384	3,444	1,427	778	1,239	14,940	4,517	28	619	2,819	6,957
Hard maple	178,620	45,978	20,365	7,681	17,932	132,642	37,698	316	9,067	62,638	22,923
Soft maple	84,933	19,507	8,551	3,494	7,462	65,426	17,069	72	3,824	32,475	11,986
Red oak	526,483	92,725	40,711	16,234	35,780	433,758	83,465	700	17,976	256,103	75,514
White oak	176,193	26,127	11,319	4,835	9,973	150,066	24,935	128	4,922	86,865	33,216
Walnut	1,680	373	143	115	115	1,307	859	14	43	191	200
Other hdwds.	75,271	4,017	1,806	665	1,546	71,254	3,136	-	751	18,084	49,283
Total	1,866,549	293,253	128,997	50,827	113,429	1,573,296	254,840	1,757	56,958	866,013	393,728
All species	1,915,979	295,921	130,149	51,320	114,452	1,620,058	257,394	1,757	57,433	889,192	414,282

[1] On commercial forest land.

[2] From sawtimber and poletimber on commercial forest land.

[3] Includes fuelwood from urban and suburban areas, fence rows, windbreaks, and trees on pasture and cropland.

Table 4 continued

NORTHEASTERN UNIT

Species	All sources	Growing stock[1]				Nongrowing stock sources					
			Sawtimber								
		Total	Saw log portion	Upper stem	Pole-timber	Total	Tops, limb-wood[2]	Sap-lings[1]	Cull trees sections[1]	Dead trees[1]	Non-forest land[3]
SOFTWOODS											
Cedar	254	45	15	15	15	209	90	-	-	119	-
Balsam fir	684	189	73	58	58	495	437	-	29	29	-
Hemlock	5,858	87	29	29	29	5,771	200	-	14	5,557	-
Jack pine	3,593	285	114	57	114	3,308	271	-	43	2,971	23
Red pine	7,821	101	43	29	29	7,720	272	-	14	2,043	5,391
White pine	2,032	101	29	43	29	1,931	231	-	14	1,657	29
Spruce	363	87	29	29	29	276	247	-	14	15	-
Tamarack	86	17	-	17	-	69	69	-	-	-	-
Total	20,691	912	332	277	303	19,779	1,817	-	128	12,391	5,443
HARDWOODS											
Ash	8,293	2,399	1,026	491	882	5,894	2,818	14	433	2,619	10
Aspen	19,565	6,660	3,087	800	2,773	12,905	2,615	14	1,415	6,860	2,001
Balsam poplar	-	-	-	-	-	-	-	-	-	-	-
Basswood	7,169	457	200	71	186	6,712	186	-	100	6,426	-
Beech	1,947	343	157	43	143	1,604	129	-	72	819	584
Paper birch	44,839	10,109	4,347	1,959	3,803	34,730	10,695	86	1,916	19,531	2,502
Yellow birch	9,028	2,518	1,087	444	987	6,510	2,146	-	458	3,474	432
Cottonwood	-	-	-	-	-	-	-	-	-	-	-
Elm	74,222	7,516	3,158	1,643	2,715	66,706	9,803	71	1,343	51,784	3,705
Hickory	3,301	1,187	492	275	420	2,114	1,781	14	189	110	20
Hard maple	54,743	16,719	7,288	3,044	6,387	38,024	15,847	129	3,244	18,376	428
Soft maple	20,769	5,532	2,422	1,003	2,107	15,237	4,931	29	1,089	8,937	251
Red oak	51,216	10,108	4,289	2,059	3,760	41,108	11,453	71	1,859	25,004	2,721
White oak	2,186	371	157	71	143	1,815	286	-	71	1,164	294
Walnut	-	-	-	-	-	-	-	-	-	-	-
Other hdwds.	1,883	508	239	75	194	1,375	538	-	75	748	14
Total	299,161	64,427	27,949	11,978	24,500	234,734	63,228	428	12,264	145,852	12,962
All species	319,852	65,339	28,281	12,255	24,803	254,513	65,045	428	12,392	158,243	18,405

[1] On commercial forest land.

[2] From sawtimber and poletimber on commercial forest land.

[3] Includes fuelwood from urban and suburban areas, fence rows, windbreaks, and trees on pasture and cropland.

Table 4 continued

NORTHWESTERN UNIT

Species	All sources	Growing stock[1/]				Nongrowing stock sources					
		Total	Sawtimber		Pole-timber	Total	Tops, limb-wood [2/]	Sap-lings[1/]	Cull trees sections[1/]	Dead trees[1/]	Non-forest land[3/]
			Saw log portion	Upper stem							
SOFTWOODS											
Cedar	571	-	-	-	-	571	-	-	-	571	-
Balsam fir	2,400	14	-	14	-	2,386	-	-	-	1,513	873
Hemlock	462	-	-	-	-	462	-	-	-	462	-
Jack pine	1,432	114	57	14	43	1,318	100	-	14	519	685
Red pine	145	-	-	-	-	145	16	-	-	129	-
White pine	256	-	-	-	-	256	16	-	-	240	-
Spruce	493	-	-	-	-	493	-	-	-	476	17
Tamarack	-	-	-	-	-	-	-	-	-	-	-
Total	5,759	128	57	28	43	5,631	132	-	14	3,910	1,575
HARDWOODS											
Ash	7,985	2,523	1,161	330	1,032	5,462	1,004	-	516	1,198	2,744
Aspen	12,162	1,648	774	215	659	10,514	1,132	-	344	6,996	2,042
Balsam poplar	8	-	-	-	-	8	-	-	-	6	2
Basswood	6,914	57	29	14	14	6,857	43	-	14	6,746	54
Beech	-	-	-	-	-	-	-	-	-	-	-
Paper birch	16,501	4,612	2,077	702	1,833	11,889	3,037	-	917	4,953	2,982
Yellow birch	4,047	1,131	493	174	464	2,916	769	-	203	1,234	710
Cottonwood	-	-	-	-	-	-	-	-	-	-	-
Elm	60,945	5,387	2,429	786	2,172	55,558	3,558	29	1,072	26,975	23,924
Hickory	2,218	864	360	187	317	1,354	1,081	14	158	100	1
Hard maple	51,896	16,164	7,324	2,332	6,508	35,732	9,956	86	3,290	18,684	3,716
Soft maple	17,225	3,876	1,737	603	1,536	13,349	2,641	-	775	5,925	4,008
Red oak	70,369	23,075	10,352	3,613	9,110	47,294	17,008	171	4,627	17,572	7,916
White oak	13,449	4,387	1,985	676	1,726	9,062	3,151	-	863	3,419	1,629
Walnut	-	-	-	-	-	-	-	-	-	-	-
Other hdwds.	414	200	92	31	77	214	77	-	46	49	42
Total	264,133	63,924	28,813	9,663	25,448	200,209	43,457	300	12,825	93,857	49,770
	269,892	64,052	28,870	9,691	25,491	205,840	43,589	300	12,839	97,767	51,345

[1/] On commercial forest land.

[2/] From sawtimber and poletimber on commercial forest land.

[3/] Includes fuelwood from urban and suburban areas, fence rows, windbreaks, and trees on pasture and cropland.

Table 4 continued

CENTRAL UNIT

Species	All sources	Growing stock[1]				Nongrowing stock sources					
		Total	Sawtimber		Pole-timber	Total	Tops, limb-wood[2]	Sap-lings[1]	Cull trees sections[1]	Dead trees[1]	Non-forest land[3]
			Saw log portion	Upper stem							
SOFTWOODS											
Cedar	111	-	-	-	-	111	-	-	-	111	-
Balsam fir	582	175	87	15	73	407	73	-	44	290	-
Hemlock	-	-	-	-	-	-	-	-	-	-	-
Jack pine	5,852	763	360	86	317	5,089	288	-	159	3,249	1,393
Red pine	787	103	44	15	44	684	44	-	15	267	358
White pine	2,380	401	186	43	172	1,979	143	-	86	792	958
Spruce	-	-	-	-	-	-	-	-	-	-	-
Tamarack	-	-	-	-	-	-	-	-	-	-	-
Total	9,712	1,442	677	159	606	8,270	548	-	304	4,709	2,709
HARDWOODS											
Ash	23,485	7,529	3,386	1,129	3,014	15,956	4,771	29	1,543	9,439	174
Aspen	36,023	8,796	3,933	1,359	3,504	27,227	5,978	57	1,759	18,426	1,007
Balsam poplar	-	-	-	-	-	-	-	-	-	-	-
Basswood	475	28	14	-	14	447	14	-	-	433	-
Beech	-	-	-	-	-	-	-	-	-	-	-
Paper birch	18,553	2,925	1,270	542	1,113	15,628	2,826	-	542	12,167	93
Yellow birch	7,085	889	387	186	316	6,196	1,090	-	172	4,909	25
Cottonwood	-	-	-	-	-	-	-	-	-	-	-
Elm	78,460	8,764	3,860	1,530	3,374	69,696	7,877	57	1,687	38,603	21,472
Hickory	2,137	707	289	173	245	1,430	1,141	-	130	159	-
Hard maple	25,960	5,856	2,477	1,246	2,133	20,104	7,145	43	1,060	10,730	1,126
Soft maple	24,523	5,187	2,201	1,100	1,886	19,336	6,274	29	972	11,138	923
Red oak	203,597	35,809	15,976	5,744	14,089	167,788	27,422	243	7,130	121,245	11,748
White oak	57,983	10,188	4,501	1,672	4,015	47,795	7,773	57	2,015	34,634	3,316
Walnut	-	-	-	-	-	-	-	-	-	-	-
Other hdwds.	5,280	760	344	115	301	4,520	445	-	143	2,504	1,428
Total	483,561	87,438	38,638	14,796	34,004	396,123	72,756	515	17,153	264,387	41,312
All species	493,273	88,880	39,315	14,955	34,610	404,393	73,304	515	17,457	269,096	44,021

[1] On commercial forest land.

[2] From sawtimber and poletimber on commercial forest land.

[3] Includes fuelwood from urban and suburban areas, fence rows, windbreaks, and trees on pasture and cropland.

Table 4 continued

SOUTHWESTERN UNIT

Species	All sources	Growing stock[1/]				Nongrowing stock sources					
		Total	Sawtimber: Saw log portion	Sawtimber: Upper stem	Poletimber	Total	Tops, limbwood [2/]	Saplings[1/]	Cull trees sections[1/]	Dead trees[1/]	Nonforest land[3/]
SOFTWOODS											
Cedar	-	-	-	-	-	-	-	-	-	-	-
Balsam fir	135	-	-	-	-	135	-	-	-	-	135
Hemlock	-	-	-	-	-	-	-	-	-	-	-
Jack pine	795	-	-	-	-	795	-	-	-	173	622
Red pine	732	-	-	-	-	732	-	-	-	122	610
White pine	1,307	-	-	-	-	1,307	-	-	-	110	1,197
Spruce	-	-	-	-	-	-	-	-	-	-	-
Tamarack	-	-	-	-	-	-	-	-	-	-	-
Total	2,969	-	-	-	-	2,969	-	-	-	405	2,564
HARDWOODS											
Ash	9,425	387	172	57	158	9,038	258	-	72	1,422	7,286
Aspen	19,410	1,602	715	272	615	17,808	1,344	-	329	6,505	9,630
Balsam poplar	-	-	-	-	-	-	-	-	-	-	-
Basswood	1,978	620	274	101	245	1,358	448	-	130	780	-
Beech	-	-	-	-	-	-	-	-	-	-	-
Paper birch	4,789	517	230	86	201	4,272	331	-	101	2,000	1,840
Yellow birch	89	-	-	-	-	89	-	-	-	42	47
Cottonwood	834	45	15	15	15	789	60	-	-	122	607
Elm	124,334	7,474	3,087	1,729	2,658	116,860	10,431	86	1,329	56,008	49,006
Hickory	3,800	399	171	71	157	3,401	342	-	85	1,137	1,837
Hard maple	12,565	4,002	1,815	572	1,615	8,563	2,487	29	843	3,528	1,676
Soft maple	8,620	3,259	1,487	457	1,315	5,361	1,973	14	672	1,927	775
Red oak	111,946	16,366	7,090	3,030	6,246	95,580	16,037	143	3,130	49,095	27,175
White oak	41,634	6,166	2,647	1,173	2,346	35,468	6,009	14	1,187	18,404	9,854
Walnut	1,489	373	143	115	115	1,116	859	14	43	62	138
Other hdwds.	21,421	1,562	688	272	602	19,859	1,404	-	287	2,738	15,430
Total	362,334	42,772	18,534	7,950	16,288	319,562	41,983	300	8,208	143,770	125,301
All species	365,303	42,772	18,534	7,950	16,288	322,531	41,983	300	8,208	144,175	127,865

[1/] On commercial forest land.

[2/] From sawtimber and poletimber on commercial forest land.

[3/] Includes fuelwood from urban and suburban areas, fence rows, windbreaks, and trees on pasture and cropland.

Table 4 continued

SOUTHEASTERN UNIT

Species	All sources	Growing stock[1/]				Nongrowing stock sources					
		Total	Sawtimber: Saw log portion	Sawtimber: Upper stem	Poletimber	Total	Tops, limbwood [2/]	Saplings [1/]	Cull trees sections [1/]	Dead trees [1/]	Nonforest land [3/]
SOFTWOODS											
Cedar	1,565	14	14	-	-	1,551	-	-	-	505	946
Balsam fir	310	-	-	-	-	310	-	-	-	291	19
Hemlock	106	-	-	-	-	106	-	-	-	-	106
Jack pine	422	-	-	-	-	422	-	-	-	197	225
Red pine	83	-	-	-	-	83	-	-	-	23	60
White pine	7,201	-	-	-	-	7,201	-	-	-	396	6,805
Spruce	11	-	-	-	-	11	-	-	-	-	11
Tamarack	601	172	72	29	71	429	57	-	29	252	91
Total	10,299	186	86	29	71	10,113	57	-	29	1,764	8,263
HARDWOODS											
Ash	19,843	3,894	1,775	530	1,589	15,949	1,990	14	816	6,604	6,525
Aspen	16,331	3,800	1,757	486	1,557	12,531	1,572	14	800	5,258	4,887
Balsam poplar	308	26	13	-	13	282	13	-	-	200	69
Basswood	9,655	2,092	931	344	817	7,563	1,676	14	415	4,341	1,117
Beech	1,476	327	142	57	128	1,149	270	-	71	688	120
Paper birch	13,413	2,387	1,058	400	929	11,026	2,016	14	472	6,657	1,867
Yellow birch	2,703	462	202	87	173	2,241	361	-	101	1,385	394
Cottonwood	2,067	28	14	-	14	2,039	14	-	-	984	1,041
Elm	140,624	3,130	1,415	443	1,272	137,494	1,886	-	614	90,244	44,750
Hickory	6,928	287	115	72	100	6,641	172	-	57	1,313	5,099
Hard maple	33,456	3,237	1,461	487	1,289	30,219	2,263	29	630	11,320	15,977
Soft maple	13,796	1,653	704	331	618	12,143	1,250	-	316	4,548	6,029
Red oak	89,355	7,367	3,004	1,788	2,575	81,988	11,545	72	1,230	43,187	25,954
White oak	60,941	5,015	2,029	1,243	1,743	55,926	7,716	57	786	29,244	18,123
Walnut	191	-	-	-	-	191	-	-	-	129	62
Other hdwds.	46,273	987	443	172	372	45,286	672	-	200	12,045	32,369
Total	457,360	34,692	15,063	6,440	13,189	422,668	33,416	214	6,508	218,147	164,383
All species	467,659	34,878	15,149	6,469	13,260	432,781	33,473	214	6,537	219,911	172,646

[1/] On commercial forest land.

[2/] From sawtimber and poletimber on commercial forest land.

[3/] Includes fuelwood from urban and suburban areas, fence rows, windbreaks, and trees on pasture and cropland.

Table 5.--Fuelwood production from primary wood-using mill residue by Unit, type of residue, and species group, Wisconsin, 1981

(In standard cord equivalents)[1/]

Type of use	All species			Softwood			Hardwood		
	Total	Coarse[2/]	Fine[3/]	Total	Coarse	Fine	Total	Coarse	Fine
ALL UNITS									
Industrial fuel	152,165	64,205	87,960	20,518	10,670	9,848	131,647	53,535	78,112
Domestic fuel	97,368	90,393	6,975	18,041	16,806	1,235	79,327	73,587	5,740
Total	249,533	154,598	94,935	38,559	27,476	11,083	210,974	127,122	83,852
NORTHEASTERN UNIT									
Industrial fuel	68,617	27,726	40,891	15,033	7,900	7,133	53,584	19,826	33,758
Domestic fuel	19,682	17,248	2,434	5,842	4,665	1,177	13,840	12,583	1,257
Total	88,299	44,974	43,325	20,875	12,565	8,310	67,424	32,409	35,015
NORTHWESTERN UNIT									
Industrial fuel	37,242	16,339	20,903	3,184	968	2,216	34,058	15,371	18,687
Domestic fuel	14,909	11,758	3,151	5,223	5,214	9	9,686	6,544	3,142
Total	52,151	28,097	24,054	8,407	6,182	2,225	43,744	21,915	21,829
CENTRAL UNIT									
Industrial fuel	15,709	5,541	10,168	1,424	1,006	418	14,285	4,535	9,750
Domestic fuel	28,353	27,077	1,276	4,396	4,377	19	23,957	22,700	1,257
Total	44,062	32,618	11,444	5,820	5,383	437	38,242	27,235	11,007
SOUTHWESTERN UNIT									
Industrial fuel	26,978	12,654	14,324	454	403	51	26,524	12,251	14,273
Domestic fuel	28,613	28,504	109	2,016	1,987	29	26,597	26,517	80
Total	55,591	41,158	14,433	2,470	2,390	80	53,121	38,768	14,353
SOUTHEASTERN UNIT									
Industrial fuel	3,619	1,945	1,674	423	393	30	3,196	1,552	1,644
Domestic fuel	5,811	5,806	5	564	563	1	5,247	5,243	4
Total	9,430	7,751	1,679	987	956	31	8,443	6,795	1,648

[1/] A cord equivalent contains 70 cubic feet of solid wood.

[2/] Suitable for chipping such as slabs, edgings, veneer cores, etc.

[3/] Not suitable for chipping such as sawdust, veneer clippings, etc.

Table 6.--Fuelwood production from roundwood and primary wood-using mill residue by Unit and species group, Wisconsin, 1981

(In standard cords)

Source and species group	All Units	North-eastern Unit	North-western Unit	Central Unit	South-western Unit	South-eastern Unit
ROUNDWOOD						
Softwoods						
Cedar	2,501	254	571	111	-	1,565
Balsam fir	4,111	684	2,400	582	135	310
Hemlock	6,426	5,858	462	-	-	106
Jack pine	12,094	3,593	1,432	5,852	795	422
Red pine	9,568	7,821	145	787	732	83
White pine	13,176	2,032	256	2,380	1,307	7,201
Spruce	867	363	493	-	-	11
Tamarack	687	86	-	-	-	601
Total	49,430	20,691	5,759	9,712	2,969	10,299
Hardwoods						
Ash	69,031	8,293	7,985	23,485	9,425	19,843
Aspen	103,491	19,565	12,162	36,023	19,410	16,331
Balsam poplar	316	-	8	-	-	308
Basswood	26,191	7,169	6,914	475	1,978	9,655
Beech	3,423	1,947	-	-	-	1,476
White birch	98,095	44,839	16,501	18,553	4,789	13,413
Yellow birch	22,952	9,028	4,047	7,085	89	2,703
Cottonwood	2,901	-	-	-	834	2,067
Elm	478,585	74,222	60,945	78,460	124,334	140,624
Hickory	18,384	3,301	2,218	2,137	3,800	6,928
Hard maple	178,620	54,743	51,896	25,960	12,565	33,456
Soft maple	84,933	20,769	17,225	24,523	8,620	13,796
Red oak	526,483	51,216	70,369	203,597	111,946	89,355
White oak	176,193	2,186	13,449	57,983	41,634	60,941
Walnut	1,680	-	-	-	1,489	191
Other hwds.	75,271	1,883	414	5,280	21,421	46,273
Total	1,866,549	299,161	264,133	483,561	362,334	457,360
All species	1,915,979	319,852	269,892	493,273	365,303	467,659
MILL RESIDUE						
Softwoods	38,559	20,875	8,407	5,820	2,470	987
Hardwoods	210,974	67,424	43,744	38,242	53,121	8,443
Total	249,533	88,299	52,151	44,062	55,591	9,430
ALL SOURCES						
Softwoods	87,989	41,566	14,166	15,532	5,439	11,286
Hardwoods	2,077,523	366,585	307,877	521,803	415,455	465,803
Total	2,165,512	408,151	322,043	537,335	420,894	477,089

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Discusses and analyzes 1981 Wisconsin fuelwood production from roundwood and primary wood-using mill residue. Analyzes production by geographic area, type of producer, species, landowner class, type of land, and tree source.

KEY WORDS: Growing stock, households, loggers, roundwood, residue.