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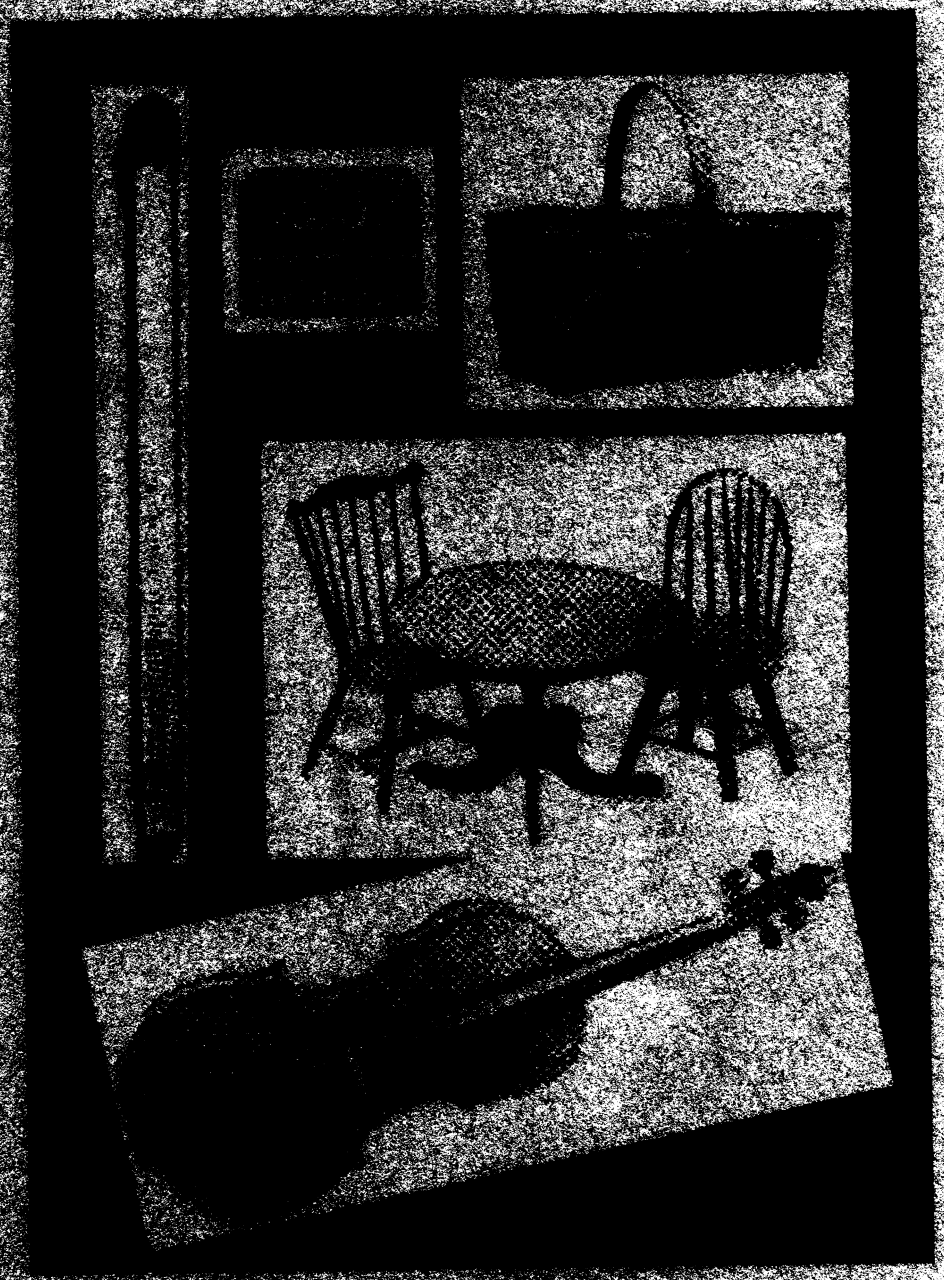
Forest Service

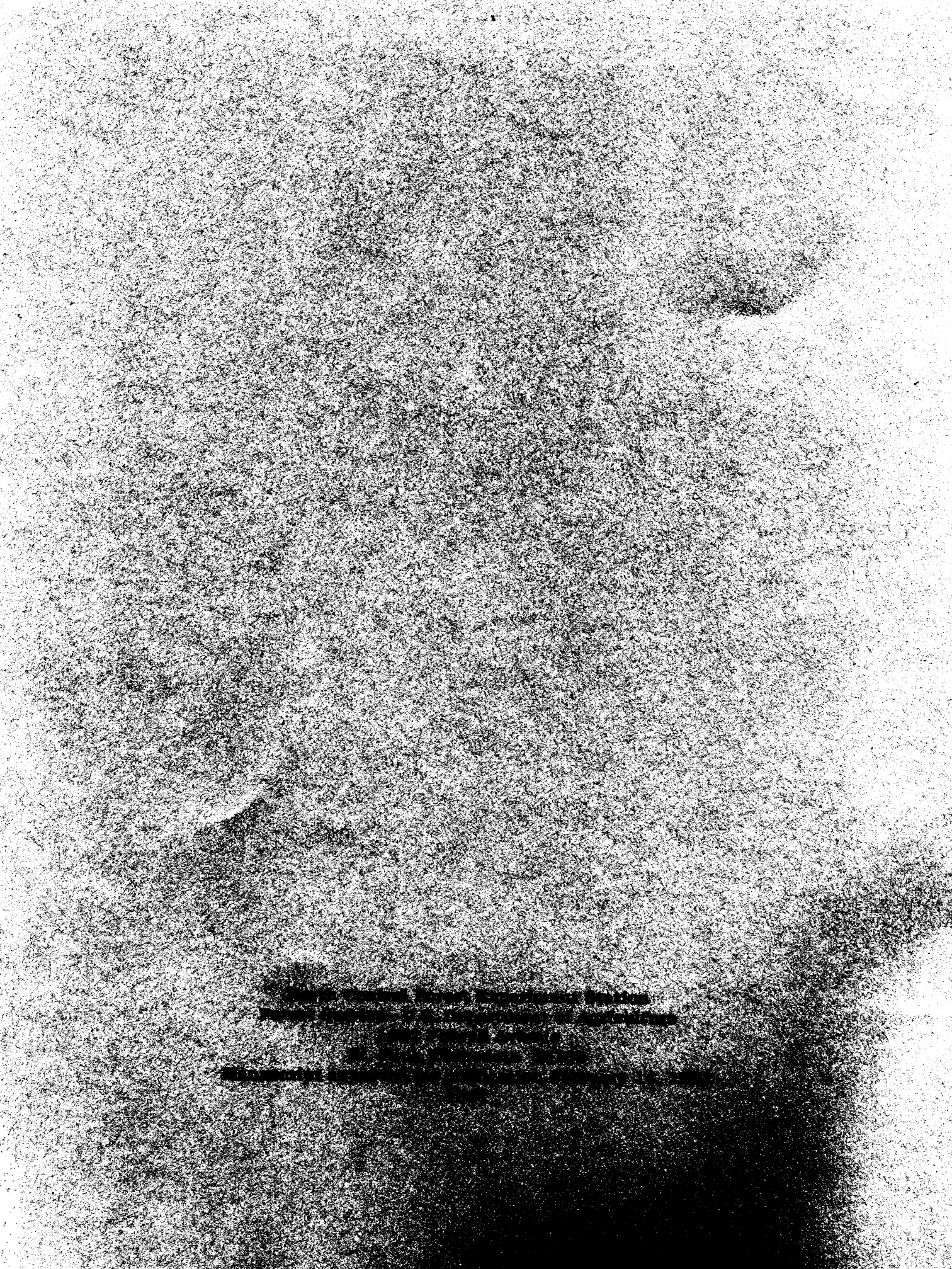
North Central Forest Experiment Station

Resource Bulletin NC-125

Veneer Industry and Timber Use, North Central Region, 1988

W. Brad Smith and Ronald L. Hefner





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Veneer Industry and Timber Use, North Central Region, 1988

W. Brad Smith
and ***Ronald L. Hackett***

HIGHLIGHTS

Note: *The veneer log figures contained in this report reflect only those logs that were received and processed by mills in the U.S. or Canada and* ***do not*** *include logs exported overseas. In recent years the volume of overseas exports has risen dramatically. Foreign export data indicate that over one hundred exporters shipped more than 150 million board feet of hardwood logs overseas in 1988. Many of these logs came from forests in the North Central Region. Although it is difficult to determine the volume that came from states in this region it is certain that the impact is significant and that a volume in excess of domestic veneer production is probably being shipped to foreign markets. Future studies will attempt to quantify the volume of logs exported overseas from the North Central Region.*

Lake States

- Lake States loggers harvested 95.2 million board feet of veneer logs in 1988, up 57 percent from 1984 when the last veneer industry study was made. Principal production gains since 1984 were in aspen, white birch, hard maple, basswood, and red oak.
- Twenty-nine Lake States veneer mills received 93.4 million board feet of logs in 1988, up 86 percent from 1984. Imports from other states and Canada continue to climb after hitting a 35-year low in 1980.
- More than 95 percent of the wood and bark residue generated at Lake States mills in 1988 was used.

Central States

- Central States veneer log production in 1988 was 19.3 million board feet, down 13 percent from 1984. Leading species cut were white oak, walnut, and red oak. Exports from the Central States have leveled off but continued to exceed 5 million board feet in 1988.
- Compared to 1984, veneer log receipts at 24 Central States mills fell 9 percent to 30.2 million board feet.
- Disposal of wood and bark residue at mills was not a problem with over 80 percent of all residues used. Industrial fuel was the leading use for this residue.

INTRODUCTION

This report of 1988 veneer log production and receipts in the North Central Region continues a series begun more than 28 years ago. On a total volume basis, veneer logs are the third most valuable industrial roundwood product harvested, outranked only by pulpwood and saw logs. The last veneer industry study was in 1984.

W. Brad Smith, Pricipal Mensurationist, received a B.S. degree in forestry and an M.S. degree in forest management from Purdue University. He joined the Forest Service in May 1977, and has been working with North Central's Forest Inventory and Analysis Unit since October 1977.

Ronald L. Hackett, Research Forester, received a B.S. degree in forest resources from the University of Minnesota. He joined the Forest Service in December 1974, and has been working with North Central's Forest Inventory and Analysis Unit since 1974.

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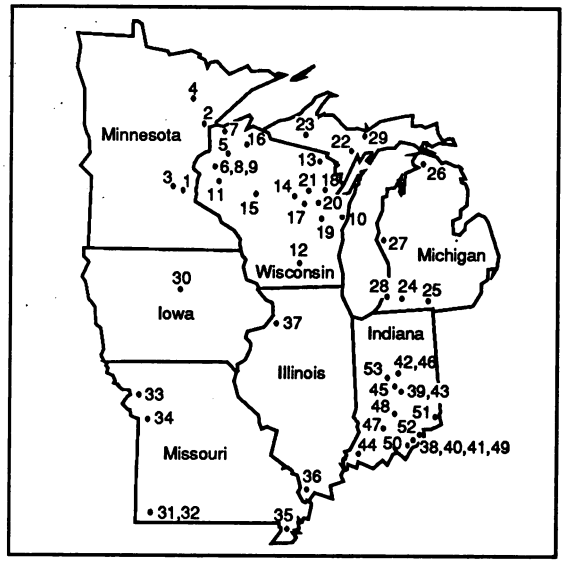
[1] *Production is the volume of veneer logs cut from a specific area; receipts are the volume of veneer logs received by mills in a specific area regardless of geographic source.*

Current detailed veneer log production[1] and receipt information is necessary for intelligent planning and decisionmaking in wood procurement, forest resource management, and forest industry development. In addition, researchers need veneer log harvest and receipt information for planning projects and analyzing and appraising the veneer industry.

This report presents the results of the survey, an analysis and interpretation of the data, and compares the results with 1984 or earlier years. Trends in veneer log production and use are also discussed. After a brief national overview, the report is divided into two sections—Lake States (Michigan, Minnesota, and Wisconsin) and Central States (Illinois, Indiana, Iowa, and Missouri)—because different species are grown and used as veneer logs in each area.

Fifty-three veneer mills operated in the region in 1988, two more than in 1984 (fig. 1). Between 1984 and 1988 three mills closed and five new mills opened. Net gains included one mill each in Minnesota and Missouri. Veneer production in the region generally falls into three categories; (1) face veneer for furniture, cabinets, door skins, flooring, etc., (2) commercial veneers for dye boards, cross banding, chopsticks, novelty sticks, toothpicks, etc., and (3) packaging or container veneers. As a rule each mill maintains primary production in just one of these areas using a narrow range of species. However, tight supplies of prime logs and pressures from foreign manufacturers have prompted many mills to



MINNESOTA			
Map	Name of mill	Location	Type[1]
1	Allen Wood Products Inc.	Henderson	C
2	Diamond Brands, Inc.	Cloquet	C
3	Elk River Box Factory	Elk River	P
4	Lakewood Industries	Hibbing	C
WISCONSIN			
5	Birchwood Lumber & Veneer	Birchwood	F,C
6	Birchwood Manufacturing	Rice Lake	F
7	Birds Eye Veneer Inc.	Butternut	F
8	Brunette Industrial Wood Products	Rice Lake	C
9	Brunette Box Factory Inc.	Rice Lake	P
10	Dufeck Manufacturing Co.	Denmark	P
11	Ebner Box Inc.	Cameron	P
12	Fox-Hasse Manufacturing Corp	De Forest	C
13	Goodman Forest Industries Ltd	Goodman	F
14	Hatley Veneer Co.	Hatley	F
15	Ike International Corp.	Stanley	C
16	Louisiana-Pacific	Mellen	F
17	Marion Plywood Corp.	Marion	F
18	New Linwood Inc.	Gillette	F
19	Seymour Woodenware Co.	Seymour	P
20	Weber Veneer & Plywood	Shawano	C
21	Wisconsin Veneer and Plywood	Mattoon	F

MICHIGAN			
Map	Name of mill	Location	Type[1]
22	Anthony and Company	Escanaba	C
23	Bessemer Plywood Corp.	Bessemer	C
24	Fruit Growers Package Co.	Paw Paw	P
25	International Veneer Co.	Coldwater	F
26	Manthei Inc.	Petosky	F
27	Michigan Crate & Basket Co.	Shelby	P
28	Riverside Package Co.	Riverside	P
29	Timber Products Mich (Cliffs)	Munising	F
IOWA			
30	R. S. Bacon Veneer Co.	Grundy Center	F
MISSOURI			
31	Crumbliss Wood Products	Neosho	P
32	Howe Lumber & Veneer Co.	Neosho	P
33	Missouri Valley Veneer	St. Joseph	F
34	Pleasant Hill Veneer (Vario)	Pleasant Hill	F
35	Tipton Box Co.	Caruthersville	P
ILLINOIS			
36	Lawrence Box and Basket	Cobden	P
37	Swords Veneer and Lumber Co.	Rock Island	F
INDIANA			
38	Adams Custom Veneer Co.	New Albany	F
39	Amos-Hill Associates	Edinburg	F
40	B. L. Curry & Sons Inc.	New Albany	F
41	Chester B. Stem Inc.	New Albany	F
42	Curry-Miller Veneers Inc	Indianapolis	F
43	David R. Webb Co.	Edinburg	F
44	Evansville Veneer & Lbr.	Evansville	F
45	Hoosier Veneer Corp.	Trafalgar	F
46	Indiana Veneers Inc.	Indianapolis	F
47	Jasper Veneer Mills Inc.	Jasper	F
48	National Veneer & Lumber Co.	Seymour	F
49	New Albany Box & Basket	New Albany	P
50	Norstam Veneers Inc.	Mauckport	F
51	Pierson-Hollowell Co Inc	Lawrenceburg	F
52	Roberts & Strack Veneer	Clarksville	F
53	Thiesing Veneer Company	Mooresville	F

[1] *Primary mill production by major category:*

P = Packaging and container veneer.
C = Commercial veneer for items such as toothpicks, novelty sticks, chop sticks, dye boards, crossbanding, etc.
F = Face veneer for furniture, cabinets, panels, door skins, flooring, or architechtural purposes.

Figure 1.—*Location of active veneer mills in the North Central Region, 1988.*

foreign manufacturers have prompted many mills to experiment with new species and products to remain competitive.

NATIONAL OVERVIEW

National production of pre-finished hardwood plywood fell 13 percent in 1985-1986 while foreign imports climbed 28 percent[2]. Domestic production rebounded in response to a stronger new housing market in 1986 and faired much better in the housing downturn of 1987-1988 than did imports. Housing starts are a major indicator of hardwood plywood demand in interior walls, kitchen and vanity cabinets, flush doors, flooring, and furniture (fig. 2).

Concerns over the rapid deforestation of the tropics and new international trade policies have caused many changes in industry patterns in recent years. Since 1984 the North Central Region's veneer production has risen a respectable 37 percent. However, U. S. exports of hardwood logs has doubled during that same period. This information is significant when one considers the pressure in many Pacific Rim countries to reduce log exports. Much of the new development in this region has gone into the value-added sector which should continue to provide a strong source of imports to the U.S. market. Indonesia, whose exports of hardwood plywood to the U.S. increased from 120 million square feet in 1980 to 1.6 billion square feet in 1984, shipped 2.7 billion square feet to the U.S. in 1987. Although total hardwood plywood imports were down in 1988 to near 1984 levels, they still comprise 74 percent of U.S. consumption. A bright spot for U.S. veneer manufacturers is an expected steady rise in demand for hardwood veneer in Japan and Korea in the next several years.

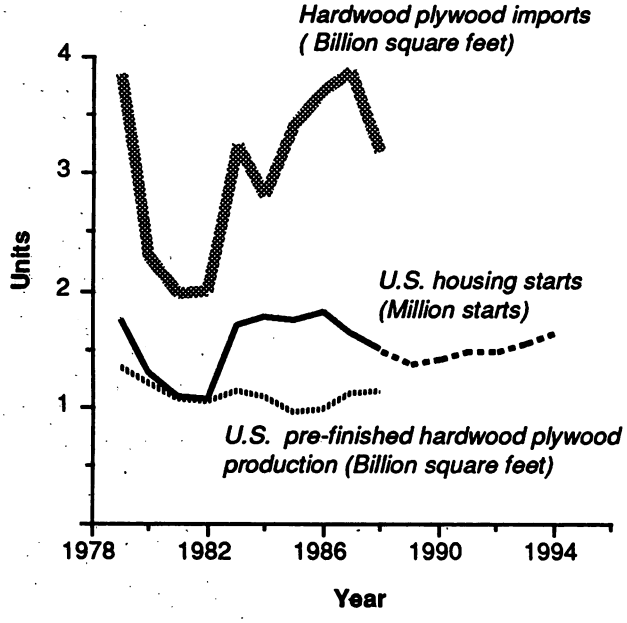


Figure 2.— *U.S. housing starts, U.S. hardwood plywood production, and hardwood plywood imports, 1979-1988. U.S. housing start projections, 1989-1994.*

Overall the trend for the near future is a modest 3 to 5 percent annual increase in veneer production as U.S. housing starts level off and then rise gently through the mid 1990's. New or expanding export markets for specialty veneer products such as chopsticks and sheet veneers for packaging could provide an additional boost. Products using species not currently in high demand will have the greatest potential to impact domestic production.

LAKE STATES

Production

During 1988 loggers cut 95.2 million board feet of veneer logs in the Lake States, up 34.7 million board feet from 1984. Red oak, hard maple, aspen, white birch and basswood accounted for 86 percent of total Lake States production (fig. 3).

Major production increases since 1984 were in aspen (13.0 million board feet), white birch (7.7 million board feet), hard maple (5.8 million board feet), and basswood (4.4 million board feet). Elm production continued to fall because Dutch elm disease has wiped out much of the Lake States elm resource.

Log exports fell to a record low of 7.0 million board feet after reaching a record high of 13.7 million board feet in 1984 as pine exports peaked and then dipped sharply with the opening of a new mill (fig. 4).

Principal export markets in 1988 were Indiana (3.0 million board feet), Canada (2.1 million board feet), and Ohio (1.7 million board feet). Illinois, Iowa, North Carolina, and Virginia received the remaining exports from the region.

[2] *Source: U.S. Department of Commerce, Bureau of the Census. Current Industrial Report Series MA-24F.*

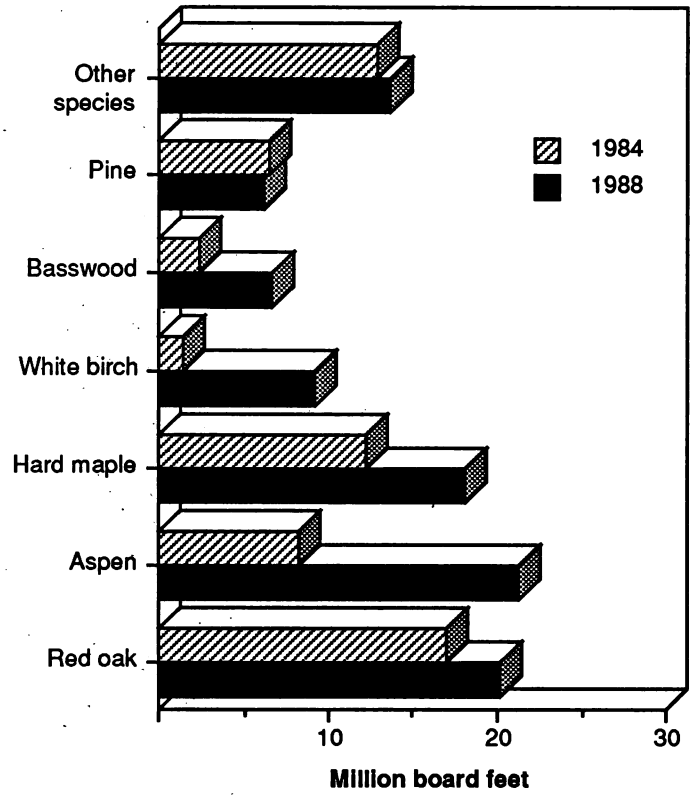


Figure 3.— *Veneer production in the Lake States by species group 1984 and 1988.*

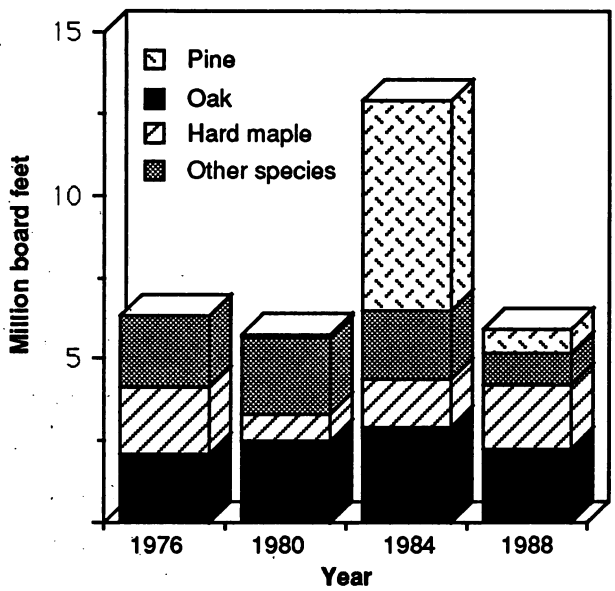


Figure 4.— *Veneer log exports from the Lake States region to other states and Canada for selected years, 1976-1988.*

Michigan producers cut 37.9 million board feet of veneer logs, an increase of 19 percent since 1984. Hard maple, red oak, and pine accounted for 71 percent of the Michigan harvest. Pine harvesting for veneer has stabilized after a rapid surge from 240 thousand board feet in 1980 to 6.4 million board feet in 1984 due to new market opportunities. The 1988 pine harvest leveled off at 6.2 million board feet. Out-of-state markets took over 50 percent of Michigan's output. Pine, hard maple, and oak were the dominant species shipped out-of-state.

Red oak and aspen accounted for more than three-fifths of Wisconsin's harvest of 42.8 million board feet. Exports to Michigan from Wisconsin returned to higher levels (39 percent) with the re-opening of a major Michigan mill. Total production increased 19.8 million board feet from 1984.

Principal species cut in Minnesota were white birch (7.8 million board feet) and aspen (3.8 million board feet). Together they accounted for more than three-fourths of the total Minnesota harvest of 14.5 million board feet.

Mill Receipts

Receipts at twenty-nine Lake States mills surged to their highest in 30 years at 93.4 million board feet of logs in 1988, up 43.3 million board feet from 1984. Major increases in receipts were in aspen, birch, and maple (fig. 5). Imports continue to rebound after hitting a 35-year low in 1980 and after falling for all reported years since 1966. However, imports from Canada have continued to fall since 1974 and are currently at a nominal level of 46 thousand board feet.

Since the last veneer study in 1984 Wisconsin mills reported major increases in basswood (4.4 million board feet), red oak (4.4 million board feet), and hard maple (2.8 million board feet); while declines were posted for aspen (2.8 million board feet) and yellow birch (1.6 million board feet). Michigan posted gains in aspen (15.0 million board feet), pine (5.3 million board feet), and hard maple (2.7 million board feet); declines were posted for pecan (2.8 million board feet) and walnut (1.8 million board feet). Minnesota reported a major increase in white birch (2.8 million board feet) and no serious declines.

Overall, 1988 was a very good year in the Lake States with receipts up 185 percent (25.5 million board feet) in Michigan, up 28 percent (9.2 million board feet) in Wisconsin, and up 284 percent (8.5 million board feet) in Minnesota.

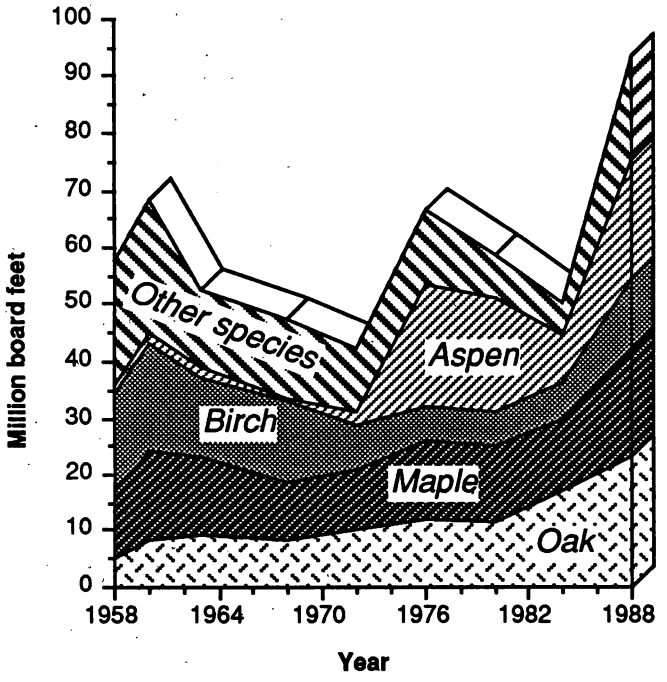


Figure 5.— *Veneer receipts in the Lake States by major species group, 1958-1988.*

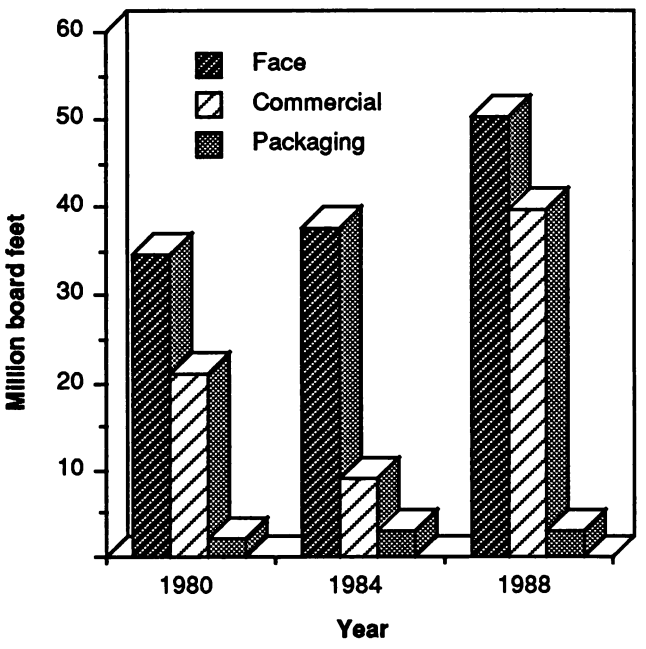


Figure 6.— *Lake States veneer production by year and type of product*

Mill Residue[3]

More than 98 percent of the coarse, fine, and bark mill residues generated during 1988 was used. Coarse residue was used mainly for industrial fuel (52 percent), domestic fuel (10 percent), and miscellaneous products such as small dimension and specialty items (29 percent). Industrial fuel was the primary use for fine residue and bark.

Industry Outlook

Lake States veneer log production will depend heavily on the strength of the new housing and remodeling industries, the strength of the American dollar, the ability of foreign plywood producers to compete in our markets, and the extent of competitive inroads by the flakeboard industry. All segments of the Lake States veneer industry looked strong in 1988 with commercial veneers showing an especially strong return to the marketplace (fig 6). The ability of the industry to find niches for specialty veneers, such as those that brought the resurgence of aspen and pine veneer to the region, will be crucial to the health of the veneer industry.

[3]*Mill residue generated at veneer mills is classed as: (1) bark; (2) coarse (wood)—suitable for chipping, such as veneer cores; (3) fine (wood)—not suitable for chipping such as veneer clippings.*

CENTRAL STATES

Production

Central States loggers cut 19.3 million board feet of veneer logs in 1988, down 13 percent from 1984 and the lowest annual recorded harvest since 1970. Recent results from the statewide inventory of Indiana's forests indicate that although the volume of trees with high quality logs is increasing slightly, their relative abundance is declining. In short, good logs of desirable species are getting harder to find and this trend is appearing throughout the region.

Three species furnished three-fourths of the volume:

Species	Million board feet
White oak	6.5
Walnut	4.3
Red oak	3.3

Production of all species except hard and soft maple were down slightly in the Central States since 1984. Although hard and soft maple veneer log production increased, their demand remained relatively low; both species had less than 1 million board feet.

Exports stabilized at near 1984 levels with 5.5 million board feet; primary destinations were Ohio (16 percent), Canada (16 percent), Wisconsin (19 percent), and Michigan (36 percent).

Indiana supplied three-fifths (11.3 million board feet) of the Central States veneer log harvest and 70 percent (7.7 million board feet) of the Indiana log volume remained in the State. Each of the other States cut between 2.0 and 3.2 million board feet.

Since 1984 Iowa was the only state in the Central States with increased production for the domestic market— a 36 percent gain, an increase of 755 thousand board feet. Missouri production fell 40 percent (1.3 million board feet), Indiana declined 15 percent (2.0 million board feet), and production fell in Illinois by 5 percent (158 thousand board feet).

Mill Receipts

Twenty-four Central States veneer mills received 30.2 million board feet of veneer logs in 1988, down 9 percent from the 1984 total. Only the larger and more efficient mills posted increases since 1984. Eighteen states supplied 16.4 million board feet of logs to Central States mills. States furnishing more than 2 million board feet each were Kentucky, Pennsylvania, Michigan, and Ohio (fig. 7). Major imports included white oak from Tennessee, Kentucky, and Ohio; red oak from Pennsylvania, Michigan, and Ohio; pecan from Mississippi and Louisiana; and black cherry from Pennsylvania.

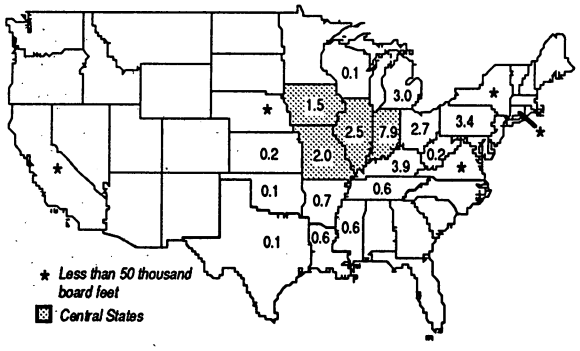


Figure 7.— *Million board feet of veneer logs produced for delivery to all Central States mills in 1988.*

Indiana's 16 veneer mills consumed more than 90 percent of the veneer log receipts in the Central States, including more than 85 percent of all species except aspen, elm, and cottonwood.

During the past 30 years, markets for Central States veneer species have changed dramatically. Total receipts are down 25 percent since the late 50's and early 60's. Container veneer species such as cottonwood are no longer in strong demand. Recent trends in furniture and paneling have increased the demand for red and white oak while walnut demand has diminished in volume and market share as prime logs have become scarce and expensive (fig. 8).

Plant Residue

Wood and bark residue have not been a disposal problem since 1974. Ninety-seven percent of the coarse wood residue, 88 percent of the fine wood residue, and 97 percent of the bark was used in 1988. Industrial fuel continued to be the leading use for each residue category; other uses were in pulp manufacturing, mulch, livestock bedding, and domestic (household) fuel.

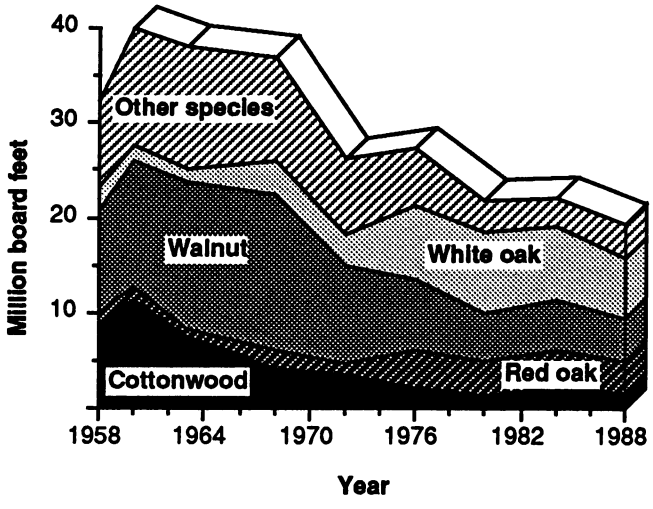


Figure 8.— *Veneer receipts at all Central States veneer mills by species group, 1958-1988.*

Industry Outlook

Most of the factors affecting future hardwood veneer log demand that were mentioned in the Lake States Industry Outlook section of this paper will also affect the Central States. Unlike the Lake States, however, overall veneer production in the Central States has not risen significantly in recent years (fig. 9). Foreign competition and the region's lack of diverse specialty veneers is likely to continue to be a major threat to Central States veneer mills. Although housing start projections show a near-term downturn, the forecast is for an upswing during the early 90's and veneer markets should benefit with slow steady growth.

The rise in exports of hardwood logs will continue to put pressure on domestic supplies of preferred species. The ability of smaller or less efficient mills to draw on an increasingly stressed resource will be evidenced in declining receipts (veneer production). The larger and more efficient mills will fare better as they expand into specialty markets and experiment with new species to maintain their competitive edge in both foreign and domestic markets.

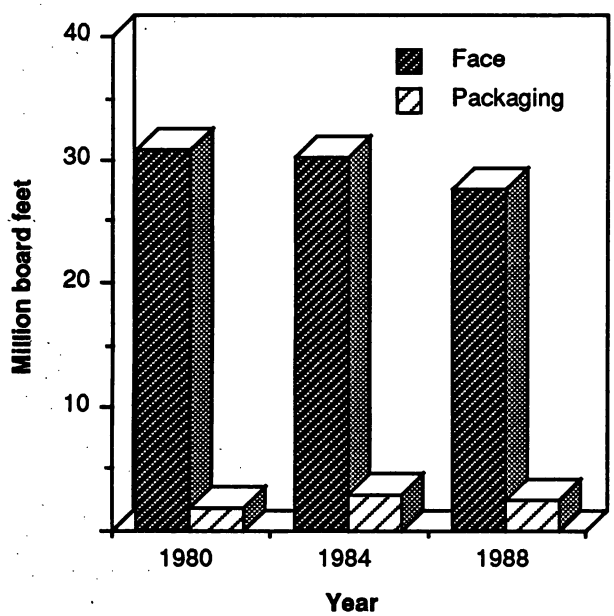


Figure 9.— *Central States veneer production by year and type of product*

APPENDIX

Methods

All known veneer mills in the United States and Canada using North Central States timber reported their veneer log receipts in 1988 by species groups and State of origin. For the wood and bark residue they generated in 1988, they reported (in percent) the disposal of coarse wood residue (chippable), fine wood residue, and bark in six disposal categories. Their cooperation is gratefully acknowledged. Data were collected, using the formal questionnaire presented on the following three pages by this Station in cooperation with the Northeastern Forest Experiment Station and the Indiana Department of Natural Resources. Data are not shown for logs exported to countries other than Canada. Canadian mills are canvassed by the U.S. Forest Service Northeastern Forest Experiment Station to verify receipts. Logs exported overseas are not reported because of the difficulties associated with tracking logs not processed immediately by domestic or Canadian mills. Future studies will investigate the possibility of tracking and reporting these logs, which have increased dramatically in recent years, based on port of shipment records.

All board foot data in this report have been converted to International 1/4-inch scale by applying a multiplier of 1.14 to all log volumes reported by veneer mills in Doyle scale and applying a multiplier of 1.04 to all log volumes reported by mills in Scribner Decimal C Scale. To convert to Doyle log scale, multiply the International scale volume by 0.8772. To convert to Scribner Decimal C log scale, multiply the International scale volume by 0.9615.

NORTH CENTRAL FOREST EXPERIMENT STATION
Forest Service, U.S. Department of Agriculture
1992 Folwell Avenue
St. Paul, Minnesota 55108

Form Approved
OMB No. 0596-0010

VENEER LOGS AND BOLTS PROCESSED IN 1988

This form is for reporting the quantity of veneer logs and bolts processed by this plant in 1988, and the disposition of the wood residues resulting from this operation. All replies will be held confidential and used only for aggregate statistical reports.

☐ Check here if you wish to receive a copy of the report resulting from this study.

Plant or company name: _____

Mailing address: _____

Plant location: _____

Person to contact about this report: _____

Plant operation in 1988 (Check one).

☐ Full time
☐ Part time
☐ Closed
☐ Sold

If plant was **sold** or closed, please report only those logs and bolts processed during **1988** before the plant was sold or discontinued operations. Give the new owners name and address in the **Remarks** section on page 3 of this form.

☐ Check here if no veneer logs or bolts processed in 1988 and return the form.

DO NOT WRITE IN THIS BLOCK

Cols. 1-5 = **61100**

MILL	STATE	COUNTY
XXX	XX	XXX
6-8	9-10	11-13

Product
XX
02
14-15

Factor
XXX
47-49

A pre-addressed envelope is provided for your convenience.

This survey is authorized by PL 93-378 as amended by PL 94-588. Your cooperation is appreciated and needed to make the results of this survey comprehensive, accurate, and timely, although you are not required to respond.

Section I. VENEER LOGS AND BOLTS PROCESSED IN 1988.

Do not include logs or bolts sold or transferred to other companies. Enter quantity processed opposite species in appropriate columns showing survey units, other states and Canada where the logs and bolts were harvested. If the unit of measure is board feet, indicate the log rule below.
If cords, specify size _____. If weight, specify pounds per thousand board feet _____ or pounds per cord _____.

Cols. 1-5 = 622xx or 623xx

Species	Unit of measure: Doyle log rule ☐ Scribner rule ☐ Doyle-Scribner ☐ International 1/4 ☐ Cords ☐ Other ☐ _____	Quantity processed from each State or foreign country (enter name of State of country in column headiings)									
	TOTAL QUANTITY PROCESSED. If board feet record in thousands.	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX
Domestic conifers (specify):	1										
	2										
Domestic Hardwoods: Ash	3										
Aspen (popple)	4										
Basswood	5										
Beech	6										
Black cherry	7										
Butternut	8										
Cottonwood	9										
Elm	10										
Gum	11										
Hard maple	12										
White birch	13										
Pecan (hickory)	14										
Red oak	15										
Soft maple	16										
Sycamore	17										
Walnut	18										
White oak	19										
Yellow birch	20										
Yellow-poplar	21										
Other (specify)											
FOREIGN SPECIES:											
TOTAL											

Cols. 27-46 blank

Section II. DISPOSAL OF PLANT RESIDUES IN 1988 BY TYPE AND USE

Instructions: Please enter your best estimate of the **percentage of each type of plant residue** that was used for the various purposes indicated

Cols. 1-5 = 6259x

DISPOSAL OF RESIDUE	BARK		COARSE RESIDUES (Suitable for chipping such as slabs, edgings, etc.)		FINE RESIDUES (Sawdust, veneer, clippings, etc. not suitable for chipping)	
	1 Conifer	2 Hardwood	3 Conifer	4 Hardwood	5 Conifer	6 Hardwood
	XX	XX	XX	XX	XX	XX
1. USED FOR:						
a. Manufacture of fiber products such as pulp, hardboard, or roofing felt 1	%	%	%	%	%	%
b. Charcoal or chemical wood 2	%	%	%	%	%	%
c. Industrial fuel at this or other mill 3	%	%	%	%	%	%
d. Domestic household fuel -- sold or given away 4	%	%	%	%	%	%
e. Miscellaneous uses such as livestock bedding, mulch, small dimension, and specialty items. 5	%	%	%	%	%	%
2. NOT USED: (Including land fill and residues burned as waste. 6	%	%	%	%	%	%
3. TOTAL	100 %	100 %	100 %	100 %	100 %	100 %

Section III. Material sold to the pulp industry in 1988, by type:

		Conifers	Hardwoods
1. Total quantity sold	Cords	_____	_____
	or Tons	_____	_____
2. Of the total quantity sold, what percent was from:			
a. Coarse residues		_____	_____
b. Fine residues		_____	_____
c. Roundwood chipped at plant (excluding cores)		_____	_____
		100%	100%

Remarks: _____

_____

COMMON AND SCIENTIFIC NAMES OF TREE SPECIES MENTIONED IN THIS REPORT

SOFTWOODS
Pine
- Eastern white pine ..... *Pinus strobus*
- Red pine ..... *Pinus resinosa*
- Jack pine ..... *Pinus banksiana*

Other softwoods
- Spruce ..... *Picea* spp.
- Balsam fir ..... *Abies balsamea*
- Eastern hemlock ..... *Tsuga canadensis*
- Tamarack ..... *Larix laricina*

HARDWOODS
White oak
- White oak ..... *Quercus alba*
- Bur oak ..... *Quercus macrocarpa*
- Chinkapin oak ..... *Quercus muehlenbergii*
- Swamp white oak ..... *Quercus bicolor*

Red oak
- Northern red oak ..... *Quercus rubra*
- Black oak ..... *Quercus velutina*
- Pin oak ..... *Quercus palustris*

Pecan (hickory)
- Bitternut hickory ..... *Carya cordiformis*
- Pecan ..... *Carya illinoensis*

White birch ..... *Betula papyrifera*
Yellow birch ..... *Betula alleghaniensis*
Hard maple
- Black maple ..... *Acer nigrum*
- Sugar maple ..... *Acer saccharum*

Soft maple
- Red maple ..... *Acer rubrum*
- Silver maple ..... *Acer saccharinum*

Beech ..... *Fagus grandifolia*
Ash
- Black ash ..... *Fraxinus nigra*
- White ash ..... *Fraxinus americana*
- Green ash ..... *Fraxinus pennsylvanica*

Balsam poplar ..... *Populus balsamifera*
Yellow-poplar ..... *Liriodendron tulipifera*
Aspen
- Bigtooth aspen ..... *Populus grandidentata*
- Quaking aspen ..... *Populus tremuloides*

Cottonwood ..... *Populus deltoides*
Basswood ..... *Tilia americana*
Black walnut ..... *Juglans nigra*
Butternut ..... *Juglans cinerea*
Black cherry ..... *Prunus serotina*
Elm
- American elm ..... *Ulmus americana*
- Rock elm ..... *Ulmus thomasii*
- Slippery elm ..... *Ulmus rubra*

Sycamore ..... *Platanus occidentalis*

TABLE TITLES

Table 1.--Production and imports of veneer logs, Lake States, 1988

(In thousand board feet) 1/

Species	Production by State 2/			Total regional production	Imports		Total regional imports	Total regional receipts 3/
	Michigan	Minnesota	Wisconsin		Other U. S.	Canada		
Pine								
Michigan	343	--	4,903	5,246	42	--	42	5,288
Minnesota-Wisconsin	155	14	102	271	--	--	--	271
Exported 4/	704	--	--	704	--	--	--	--
Total	1,202	14	5,005	6,221	42	--	42	5,559
Other softwoods								
Michigan	235	--	829	1,064	--	--	--	1,064
Total	235	--	829	1,064	--	--	--	1,064
Ash								
Michigan	727	--	--	727	193	--	193	920
Minnesota-Wisconsin	263	6	285	554	--	--	--	554
Exported 4/	172	--	--	172	--	--	--	--
Total	1,162	6	285	1,453	193	--	193	1,474
Aspen								
Michigan	4,704	--	10,443	15,147	--	--	--	15,147
Minnesota-Wisconsin	272	3,760	2,055	6,087	10	--	10	6,097
Total	4,976	3,760	12,498	21,234	10	--	10	21,244
Basswood								
Michigan	265	--	9	274	--	--	--	274
Minnesota-Wisconsin	812	1,497	4,124	6,433	208	--	208	6,641
Exported 4/	12	--	--	12	--	--	--	--
Total	1,089	1,497	4,133	6,719	208	--	208	6,915
Beech								
Michigan	246	--	--	246	--	--	--	246
Minnesota-Wisconsin	526	--	6	532	--	--	--	532
Exported 4/	73	--	--	73	--	--	--	--
Total	845	--	6	851	--	--	--	778
Black cherry								
Michigan	207	--	--	207	264	--	264	471
Minnesota-Wisconsin	1	--	18	19	--	--	--	19
Exported 4/	185	--	--	185	--	--	--	--
Total	393	--	18	411	264	--	264	490
Butternut								
Minnesota-Wisconsin	--	--	3	3	--	--	--	3
Total	--	--	3	3	--	--	--	3
Cottonwood								
Michigan	285	--	--	285	114	--	114	399
Minnesota-Wisconsin	--	347	262	609	28	--	28	637
Total	285	347	262	894	142	--	142	1,036
Elm								
Michigan	29	--	--	29	64	--	64	93
Minnesota-Wisconsin	--	--	2	2	--	--	--	2
Exported 4/	50	--	--	50	--	--	--	--
Total	79	--	2	81	64	--	64	95
Hard maple								
Michigan	6,471	--	318	6,789	48	--	48	6,837
Minnesota-Wisconsin	6,507	--	2,941	9,448	--	--	--	9,448
Exported 4/	1,838	2	10	1,850	--	--	--	--
Total	14,816	2	3,269	18,087	48	--	48	16,285

(Table 1 continued on next page)

(Table 1 continued)

Species	Production by State 2/ Michigan	Minnesota	Wisconsin	Total regional production	Imports Other U. S.	Canada	Total regional imports	Total regional receipts 3/
White birch								
Michigan	988	--	--	988	--	--	--	988
Minnesota-Wisconsin	87	7,803	245	8,135	--	--	--	8,135
Exported 4/	11	--	--	11	--	--	--	--
Total	1,086	7,803	245	9,134	--	--	--	9,123
Pecan								
Michigan	49	--	--	49	20	--	20	69
Minnesota-Wisconsin	--	--	23	23	--	--	--	23
Exported 4/	7	--	--	7	--	--	--	--
Total	56	--	23	79	20	--	20	92
Red oak								
Michigan	1,460	--	--	1,460	437	--	437	1,897
Minnesota-Wisconsin	2,598	713	13,033	16,344	226	45	271	16,615
Exported 4/	2,082	22	188	2,292	--	--	--	--
Total	6,140	735	13,221	20,096	663	45	708	18,512
Soft maple								
Michigan	282	--	--	282	--	--	--	282
Minnesota-Wisconsin	471	364	1,142	1,977	572	--	572	2,549
Exported 4/	2	--	--	2	--	--	--	--
Total	755	364	1,142	2,261	572	--	572	2,831
Sycamore								
Michigan	11	--	--	11	57	--	57	68
Total	11	--	--	11	57	--	57	68
Walnut								
Michigan	2	--	--	2	194	--	194	196
Exported 4/	448	--	--	448	--	--	--	0
Total	450	--	--	450	194	--	194	196
White oak								
Michigan	518	--	--	518	2,640	--	2,640	3,158
Minnesota-Wisconsin	3	11	1,387	1,401	19	--	19	1,420
Exported 4/	1,118	--	7	1,125	--	--	--	--
Total	1,639	11	1,394	3,044	2,659	--	2,659	4,578
Yellow birch								
Michigan	1,724	--	--	1,724	--	--	--	1,724
Minnesota-Wisconsin	855	--	425	1,280	--	1	1	1,281
Exported 4/	40	--	--	40	--	--	--	--
Total	2,619	--	425	3,044	--	1	1	3,005
Yellow poplar								
Michigan	--	--	--	--	7	--	7	7
Total	--	--	--	--	7	--	7	7
Other hardwoods								
Michigan	72	--	--	72	15	--	15	87
Total	72	--	--	72	15	--	15	87
All species								
Michigan	18,618	--	16,502	35,120	4,095	--	4,095	39,215
Minnesota-Wisconsin	12,550	14,515	26,053	53,118	1,063	46	1,109	54,227
Exported 4/	6,742	24	205	6,971	--	--	--	--
Total	37,910	14,539	42,760	95,209	5,158	46	5,204	93,442

1/ International 1/4-inch rule.

2/ Vertical columns of figures under box heading production by states present the amount of veneer logs cut in each state.

3/ Production minus exports plus imports.

4/ Veneer logs shipped to states outside the Lake States and to Canada.

Table 2.--Veneer log production and receipts in the Lake States by species, 1984 and 1988

(In thousand board feet) 1/

Species	Production			Receipts		
	1984	1988	Change	1984	1988	Change
Pine	6,449	6,221	-228	162	5,559	5,397
Ash	1,506	1,453	-53	1,479	1,474	-5
Aspen	8,257	21,234	12,977	8,257	21,244	12,987
Basswood	2,326	6,719	4,393	2,467	6,915	4,448
Beech	775	851	76	540	778	238
Black cherry	234	411	177	176	490	314
Cottonwood	994	894	-100	1,051	1,036	-15
Elm	520	81	-439	424	95	-329
Hard maple	12,254	18,087	5,833	10,793	16,285	5,492
White birch	1,447	9,134	7,687	1,335	9,123	7,788
Red oak	16,923	20,096	3,173	15,046	18,512	3,466
Soft maple	1,746	2,261	515	1,760	2,831	1,071
Walnut	457	450	-7	105	196	91
White oak	1,334	3,044	1,710	2,253	4,578	2,325
Yellow birch	4,164	3,044	-1,120	4,157	3,005	-1,152
Other species	1,081	1,229	148	154	1,321	1,167
All species	60,467	95,209	34,742	50,159	93,442	43,283

1/ International 1/4-inch rule.

Table 3.--Veneer log production by species group for selected years, Lake States, 1946-1988

(In million board feet) 1/

Year	All species	Species group												
		Ash	Aspen	Bass-wood	Beech	Yellow birch	Cotton-wood	Elm	Hard maple	Soft maple	Red oak	White oak	White birch	Walnut	Other species
1946	110.6	2.3	4.0	10.4	5.6	26.8 *2/*	0.4	16.6	40.3 *3/*	--	3.1 *4/*	--	--	--	1.1
1952	78.2	--	1.4	10.4	3.1	18.2 *2/*	--	11.5	23.8 *3/*	--	5.1 *4/*	--	--	--	4.7 *5/*
1954	72.0	0.8	0.3	9.2	3.2	17.3 *2/*	2.7	10.5	20.9 *3/*	--	5.5 *4/*	--	--	--	1.6
1956	79.0	0.7	0.8	10.3	5.7	20.3 *2/*	2.1	9.6	20.1	3.7	4.5 *4/*	--	--	0.3	0.9
1958	52.7	0.6	1.7	7.1	1.8	13.1 *2/*	2.2	8.9	9.7	2.2	4.8 *4/*	--	--	0.2	0.4
1960	54.0	1.0	2.1	6.2	1.0	14.1 *2/*	1.9	5.1	10.9	2.9	7.6 *4/*	--	--	0.6	0.6
1963	50.5	0.6	1.5	6.6	0.3	10.9 *2/*	0.4	5.7	10.5	2.2	8.9 *4/*	--	--	2.3	0.6
1965	51.7	0.7	0.6	6.0	0.5	11.3 *2/*	1.4	6.3	11.8	1.8	9.0 *4/*	--	--	0.9	1.4
1966	50.9	1.1	0.7	4.5	0.5	9.5 *2/*	1.4	5.7	13.1	1.5	9.1	0.3	--	1.5	2.0
1968	45.5	1.0	0.6	3.6	0.5	8.3	1.4	5.4	9.4	1.2	8.2	0.5	1.9	1.7	1.8
1970	34.4	0.4	1.3	3.2	0.3	4.4	1.3	3.8	8.8	0.8	6.8	0.3	1.2	0.6	1.2
1972	42.2	0.6	2.6	2.9	1.1	5.2	1.3	5.1	9.2	1.0	9.7	0.3	1.2	1.4	0.6
1974	68.7	0.9	24.2	2.4	0.7	4.2	1.8	6.1	11.7	2.0	11.1	0.6	1.3	1.0	0.7
1976	69.6	1.0	21.8	2.1	1.2	4.5	1.4	6.7	14.0	1.1	11.8	0.7	1.2	0.7	1.4
1980	64.1	0.8	20.2	2.1	1.1	4.2	1.3	3.3	12.8	1.5	10.7	3.6	1.6	0.3	0.6
1984	60.5	1.5	8.3	2.3	0.8	4.2	1.0	0.5	12.3	1.7	16.9	1.3	1.4	0.5	7.8
1988	95.2	1.5	21.2	6.7	0.9	3.0	0.9	*6/*	18.1	2.3	20.1	3.0	9.1	0.5	7.9

1/ International 1/4-inch rule.

2/ Includes white birch.

3/ Includes soft maple.

4/ Includes white oak.

5/ Includes ash and cottonwood.

6/ Less than 50 thousand board feet.

Table 4.--Lake States veneer log production, receipts, exports and imports for selected years, 1946-1988

(In million board feet) 1/

Year	Produced in the Lake States and received at Lake States mills	2/ Exported	3/ Imported	Total Lake States production	Total Lake States receipts
1946	109.7	0.9	5.9	110.6	115.6
1948	116.0	0.8	12.0	116.8	128.0
1950	86.0	0.6	15.7	86.6	101.7
1952	77.8	0.4	12.1	78.2	89.9
1954	71.6	0.4	12.1	72.0	83.7
1956	78.7	0.3	13.4	79.0	92.1
1958	51.5	1.2	6.0	52.7	57.5
1960	51.9	2.1	12.5	54.0	64.4
1963	45.0	5.5	7.7	50.5	52.7
1965	49.0	2.7	7.6	51.7	56.6
1966	45.8	5.1	9.6	50.9	55.4
1968	39.7	5.8	7.9	45.5	47.6
1970	31.4	3.0	5.6	34.4	37.0
1972	37.7	4.5	4.6	42.2	42.3
1974	63.4	5.3	4.1	68.7	67.5
1976	63.3	6.3	3.0	69.6	66.3
1980	56.6	7.5	2.1	64.1	58.7
1984	46.8	13.7	3.4	60.5	50.2
1988	88.2	7.0	5.2	95.2	93.4

1/ International 1/4-inch rule.

2/ From Lake States to other States and Canada

3/ From other States and Canada into Lake States.

Table 5.--Veneer log receipts in the Lake States by species group for selected years, 1952-1988

(In million board feet) 1/

Year	All species	Species group												
		Ash	Aspen	Bass-wood	Beech	Yellow birch	Cotton-wood	Elm	Hard maple	Soft maple	Red oak	White oak	White birch	Other species
1952	89.9	--	1.4	10.9	3.2	27.1 *2/*	--	11.7	24.9 *3/*	--	5.3 *4/*	--	--	5.4 *5/*
1954	83.7	0.8	0.3	10.3	3.2	25.0 *2/*	2.7	10.9	22.4 *3/*	--	6.5 *4/*	--	--	1.6
1956	92.1	0.7	0.8	10.6	5.7	28.5 *2/*	3.0	10.2	21.9 *3/*	4.7	5.0 *4/*	--	--	1.0
1958	57.5	0.6	1.7	7.3	1.8	17.2 *2/*	2.2	9.2	9.6	2.5	5.0 *4/*	--	--	0.4
1960	64.4	1.1	2.1	6.8	0.9	18.9 *2/*	3.3	6.2	12.2	3.6	8.4 *4/*	--	--	0.9
1963	52.7	0.7	1.6	6.7	0.3	14.3 *2/*	0.7	4.9	11.1	2.6	9.3 *4/*	--	--	0.5
1965	56.6	0.7	0.6	6.3	0.5	14.5 *2/*	2.1	6.3	13.2	1.9	9.3 *4/*	--	--	1.2
1966	55.4	1.1	0.7	4.8	0.5	14.7 *2/*	2.3	5.8	12.8	1.8	9.7 *4/*	0.2	--	1.0
1968	47.6	1.0	0.6	3.9	0.5	10.2	2.1	5.2	9.0	1.3	8.3	0.2	4.0	1.3
1970	37.0	0.3	1.3	3.6	0.3	6.1	1.4	3.8	9.0	0.9	7.7	0.2	1.9	0.5
1972	42.3	0.6	2.4	3.1	0.7	6.3	1.3	5.3	9.4	1.2	10.1	0.2	1.5	0.2
1974	67.5	0.9	24.3	2.6	0.5	4.6	1.8	5.7	11.9	2.3	11.1	0.1	1.3	0.4
1976	66.3	0.9	21.5	2.2	1.0	4.6	1.4	6.3	12.4	1.4	12.1	0.1	1.3	1.1
1980	58.7	0.8	20.0	2.1	1.0	4.4	1.3	2.1	11.9	1.5	9.7	2.0	1.5	0.4
1984	50.2	1.5	8.3	2.5	0.5	4.2	1.0	0.4	10.8	1.8	15.0	2.3	1.3	0.6
1988	93.4	1.5	21.2	6.9	0.8	3.0	1.0	*6/*	16.3	2.8	18.5	4.6	9.1	7.7

1/ International 1/4-inch rule.

2/ Includes white birch.

3/ Includes soft maple.

4/ Includes white oak.

5/ Includes ash and cottonwood.

6/ Less than 50 thousand board feet.

Table 6.-- Percent veneer log production and receipts in the Lake States by species, 1956 and 1988

(In percent)

Species group	Production		Receipts	
	1956	1988	1956	1988
Ash	0.9	1.5	0.8	1.6
Aspen	1.0	22.3	0.9	22.7
Basswood	13.0	7.1	11.5	7.4
Beech	7.2	0.9	6.2	0.8
Birch	25.7	12.8	30.9	13.0
Cottonwood	2.7	0.9	3.2	1.1
Elm	12.2	0.1	11.1	0.1
Hard maple	25.4	19.0	23.8	17.4
Soft maple	4.7	2.4	5.1	3.0
Oak	5.7	24.3	5.4	24.7
Other species	1.5	8.7	1.1	8.1
All species	100.0	100.0	100.0	100.0

Table 7.-- Residue produced at primary wood-using mills by type of material, by type of use, Lake States, 1988

(In thousand tons, green weight)

County and type of use	Wood residue						Bark	
	Total		Coarse 1/		Fine 2/			
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Michigan								
Fiber products	--	2.11	--	--	--	2.11	--	--
Industrial fuel	7.97	46.17	0.03	9.27	7.94	36.90	3.62	16.06
Domestic fuel	--	3.93	--	3.93	--	--	--	1.92
Miscellaneous 3/	4.93	14.14	4.93	12.29	--	1.85	--	0.65
Not used 4/	--	0.37	--	0.14	--	0.23	--	0.10
Total	12.90	66.72	4.96	25.63	7.94	41.09	3.62	18.73
Minnesota								
Industrial fuel	--	16.89	--	6.49	--	10.40	--	6.58
Domestic fuel	--	0.08	--	0.08	--	--	--	--
Miscellaneous 3/	--	6.46	--	2.43	--	4.03	--	--
Not used 4/	--	0.08	--	0.03	--	0.05	--	0.02
Total	--	23.51	--	9.03	--	14.48	--	6.60
Wisconsin								
Fiber products	--	11.20	--	4.47	--	6.73	--	--
Charcoal	--	0.08	--	0.00	--	0.08	--	--
Industrial fuel	0.55	66.20	0.21	21.93	0.34	44.27	0.15	21.58
Domestic fuel	--	2.97	--	2.97	--	--	--	--
Miscellaneous 3/	--	2.36	--	1.59	--	0.77	--	--
Not used 4/	--	3.22	--	2.09	--	1.13	--	2.56
Total	0.55	86.03	0.21	33.05	0.34	52.98	0.15	24.14
All States								
Fiber products	--	13.31	--	4.47	--	8.84		--
Charcoal	--	0.08	--	--	--	0.08	--	--
Industrial fuel	8.52	129.26	0.24	37.69	8.28	91.57	3.77	44.22
Domestic fuel	--	6.98	--	6.98	--	--	--	1.92
Miscellaneous 3/	4.93	22.96	4.93	16.31	--	6.65	--	0.65
Not used 4/	--	3.67	--	2.26	--	1.41	--	2.68
Total	13.45	176.26	5.17	67.71	8.28	108.55	3.77	49.47

1/ Suitable for chipping such as slabs,edgings,veneer cores,etc.

2/ Not suitable for chipping such as sawdust,veneer clippings,etc.

3/ Livestock bedding, mulch, small dimension, and specialty items.

4/ Includes residue burned as waste.

Table 8.--Production and imports of veneer logs, Central States, 1988

(In thousand board feet) 1/

Species	Production by State 2/				Total regional production	Imports		Total regional imports	Total regional receipts 3/
	Illinois	Indiana	Iowa	Missouri		Lake States	Other U. S.		
Pine									
Indiana	--	--	--	--	--	1	342	343	343
Iowa-Illinois-Missouri	--	--	--	--	--	--	222	222	222
Exported 4/	--	22	--	--	22	--	--	--	--
Total	--	22	--	--	22	1	564	565	565
Other softwoods									
Indiana	--	1	--	--	1	--	9	9	10
Total	--	1	--	--	1	--	9	9	10
Ash									
Indiana	15	256	--	--	271	22	186	208	479
Iowa-Illinois-Missouri	--	--	--	--	--	3	23	26	26
Exported 4/	21	178	--	--	199	--	--	--	--
Total	36	434	--	--	470	25	209	234	505
Aspen									
Exported 4/	--	--	10	--	10	--	--	--	--
Total	--	--	10	--	10	--	--	--	--
Basswood									
Indiana	--	20	--	--	20	--	2	2	22
Exported 4/	--	--	208	--	208	--	--	--	--
Total	--	20	208	--	228	--	2	2	22
Beech									
Indiana	--	1	--	--	1	--	--	--	1
Total	--	1	--	--	1	--	--	--	1
Black cherry									
Indiana	--	10	3	--	13	85	1,217	1,302	1,315
Iowa-Illinois-Missouri	--	--	--	--	--	--	112	112	112
Exported 4/	1	95	--	--	96	--	--	--	--
Total	1	105	3	--	109	85	1,329	1,414	1,427
Butternut									
Indiana	2	1	--	--	3	--	--	--	3
Total	2	1	--	--	3	--	--	--	3
Cottonwood									
Indiana	--	203	--	--	203	--	84	84	287
Iowa-Illinois-Missouri	6	--	--	1,379	1,385	--	171	171	1,556
Exported 4/	--	114	28	--	142	--	--	--	--
Total	6	317	28	1,379	1,730	--	255	255	1,843
Elm									
Indiana	--	8	--	--	8	--	10	10	18
Iowa-Illinois-Missouri	--	5	--	--	5	28	8	36	41
Exported 4/	24	62	14	--	100	--	--	--	0
Total	24	75	14	--	113	28	18	46	59
Gum									
Indiana	--	49	--	--	49	--	16	16	65
Total	--	49	--	--	49	--	16	16	65
Hard maple									
Indiana	1	140	--	--	141	288	32	320	461
Iowa-Illinois-Missouri	--	--	--	23	23	23	--	23	46
Exported 4/	--	210	9	--	219	--	--	--	--
Total	1	350	9	23	383	311	32	343	507

(Table 8 continued on next page)

(Table 8 continued)

Species	Production by State 2/ Illinois	Indiana	Iowa	Missouri	Total regional production	Imports Lake States	Other U. S.	Total regional imports	Total regional receipts 3/
White birch									
Indiana	--	--	--	--	--	11	--	11	11
Total	--	--	--	--	--	11	--	11	11
Pecan									
Indiana	82	194	--	147	423	1	1,715	1,716	2,139
Exported 4/	--	21	--	--	21	--	--	--	--
Total	82	215	--	147	444	1	1,715	1,716	2,139
Red oak									
Indiana	52	1,872	152	1	2,077	1,544	3,372	4,916	6,993
Iowa-Illinois-Missouri	--	120	--	--	120	--	148	148	268
Exported 4/	54	779	232	--	1,065	--	--	--	--
Total	106	2,771	384	1	3,262	1,544	3,520	5,064	7,261
Soft maple									
Indiana	6	121	--	--	127	2	47	49	176
Exported 4/	--	--	572	--	572	--	--	--	--
Total	6	121	572	--	699	2	47	49	176
Sycamore									
Indiana	15	183	251	--	449	--	76	76	525
Exported 4/	--	57	--	--	57	--	--	--	--
Total	15	240	251	--	506	--	76	76	525
Walnut									
Indiana	804	1,511	314	160	2,789	352	1,169	1,521	4,310
Iowa-Illinois-Missouri	38	86	457	174	755	--	80	80	835
Exported 4/	88	493	185	13	779	--	--	--	--
Total	930	2,090	956	347	4,323	352	1,249	1,601	5,145
White oak									
Indiana	1,275	2,734	193	57	4,259	676	3,844	4,520	8,779
Iowa-Illinois-Missouri	40	25	160	3	228	23	55	78	306
Exported 4/	577	1,393	60	11	2,041	--	--	--	--
Total	1,892	4,152	413	71	6,528	699	3,899	4,598	9,085
Yellow birch									
Indiana	--	--	--	--	--	40	--	40	40
Total	--	--	--	--	--	40	--	40	40
Yellow poplar									
Indiana	23	336	--	--	359	--	371	371	730
Iowa-Illinois-Missouri	64	--	--	--	64	--	--	--	64
Exported 4/	--	7	--	--	7	--	--	--	--
Total	87	343	--	--	430	--	371	371	794
Other hardwoods									
Indiana	--	16	--	--	16	--	2	2	18
Total	--	16	--	--	16	--	2	2	18
All species									
Indiana	2,275	7,656	913	365	11,209	3,022	12,494	15,516	26,725
Iowa-Illinois-Missouri	148	236	617	1,579	2,580	77	819	896	3,476
Exported 4/	765	3,431	1,318	24	5,538	--	--	--	--
Total	3,188	11,323	2,848	1,968	19,327	3,099	13,313	16,412	30,201

1/ International 1/4-inch rule.

2/ Vertical columns of figures under box heading production by states present the amount of veneer logs cut in each state.

3/ Production minus exports plus imports.

4/ Veneer logs shipped to states outside the Central States and to Canada.

Table 9.--Veneer log production and receipts in the Central States by species, 1984 and 1988

(In thousand board feet) 1/

Species	Production			Receipts		
	1984	1988	Change	1984	1988	Change
Pine	43	22	43	376	565	189
Ash	525	470	-55	604	505	-99
Basswood	155	228	73	14	22	8
Black cherry	35	109	74	1,131	1,427	296
Cottonwood	2,070	1,730	-340	2,147	1,843	-304
Elm	25	113	88	122	59	-63
Gum	169	49	-120	184	65	-119
Hard maple	244	383	139	569	507	-62
Pecan (hickory)	566	444	-122	3,778	2,139	-1,639
Red oak	3,998	3,262	-736	7,781	7,261	-520
Soft maple	346	699	353	391	176	-215
Sycamore	329	506	177	354	525	171
Walnut	5,199	4,323	-876	4,681	5,145	464
White oak	7,562	6,528	-1,034	10,367	9,085	-1,282
Yellow-poplar	654	430	-224	638	794	156
Other species	179	31	-148	57	83	26
All species	22,099	19,327	-2,772	33,194	30,201	-2,993

1/ International 1/4-inch rule.

Table 10.--Veneer log production by species group for selected years, Central States, 1956-1988

(In million board feet) 1/

Year	All species	Species group										
		Cotton-wood	Elm	Hard maple	Pecan (hickory)	Red oak	Soft maple	Syca-more	Walnut	White oak	Yellow-poplar	Other species
1956	33.1	8.0	0.9	0.8	0.1	1.1	1.8	0.6	10.6	3.4	1.6	4.2
1958	32.4	8.9	0.6	1.1	0.1	1.0	0.5	0.5	10.8	2.6	1.1	5.2
1960	39.9	11.2	2.0	1.2	0.1	1.5	1.2	2.5	13.2	1.6	1.6	3.8
1963	38.0	7.4	0.7	1.6	0.8	0.9	1.0	1.8	15.5	1.4	2.3	4.6
1966	36.7	6.2	0.7 *2/*	1.4	1.1	2.3	0.5	1.0	14.7	1.9	3.0	3.9
1968	37.0	4.1	0.7	1.3	3.0	2.1	0.4	1.2	16.1	3.6	1.3	3.2
1970	23.5	4.8	0.6	0.8	1.5	1.3	0.5	1.3	8.1	1.7	0.8	2.1
1972	26.2	3.5	0.5	1.1	2.4	1.7	0.4	0.7	10.0	3.3	1.2	1.4
1974	29.1	4.0	0.7	1.1	1.2	2.9	0.6	0.9	8.5	5.2	1.2	2.8
1976	27.4	2.3	*3/*	0.4	1.0	3.8	0.9	0.6	7.5	7.7	1.3	1.9
1980	21.8	1.5	0.1	0.2	0.6	3.4	0.2	0.3	5.1	8.6	0.8	1.0
1984	22.1	2.1	*3/*	0.2	0.6	4.0	0.3	0.3	5.2	7.6	0.7	1.1
1988	19.3	1.7	0.1	0.4	0.4	3.3	0.7	0.5	4.3	6.5	0.4	1.0

1/ International 1/4-inch rule.

2/ Estimated.

3/ Less than 50 thousand board feet.

Table 11.--Veneer log receipts by species group for selected years, Central States, 1956-1988

(In million board feet) 1/

Year	All species	Species group										
		Cotton-wood	Elm	Hard maple	Pecan (hickory)	Red oak	Soft maple	Syca-more	Walnut	White oak	Yellow-poplar	Other species
1956	44.4	10.9	0.8	1.2	0.6	1.3	0.8	1.3	11.4	6.7	2.8	6.6
1958	41.6	10.2	0.6	1.7	0.3	1.3	0.3	1.2	13.0	4.8	1.9	6.3
1960	50.2	10.4	1.0	2.9	0.2	1.4	0.5	2.3	17.1	3.6	2.8	8.0
1963	52.2	8.6	1.0	3.1	1.6	0.9	0.8	2.0	21.2	2.3	2.8	7.9
1966	48.2	6.7	1.0	3.6	1.6	2.0	0.4	1.2	17.9	2.1	4.4	7.3
1968	48.8	5.7	1.0	2.7	4.9	2.3	0.5	1.1	18.4	5.2	1.9	5.1
1970	28.0	4.7	0.5	1.3	3.0	0.8	0.6	1.4	10.0	2.0	1.1	2.6
1972	35.1	4.9	0.3	2.4	5.7	1.6	0.5	0.9	11.0	4.0	1.2	2.6
1974	39.7	5.6	0.7	1.3	3.6	3.8	0.7	1.0	10.1	7.7	1.3	3.9
1976	36.1	2.6	0.2	1.4	4.3	3.1	0.5	0.6	8.3	10.8	1.4	2.9
1980	32.9	1.7	0.7	0.6	3.4	4.4	0.2	0.3	5.9	12.6	0.9	2.2
1984	33.2	2.1	0.1	0.6	3.8	7.8	0.4	0.3	4.7	10.4	0.6	2.4
1988	30.2	1.8	0.1	0.5	2.1	7.3	0.2	0.5	5.1	9.1	0.8	2.7

1/ International 1/4-inch rule.

2/ Estimated.

Table 12.-- Percent veneer log production and receipts in the Central States by species, 1956 and 1988

(In percent)

Species group	Production		Receipts	
	1956	1988	1956	1988
Cottonwood	24.2	9.0	24.5	6.1
Elm	2.7	0.6	1.8	0.2
Hard maple	2.4	2.0	2.7	1.7
Pecan (hickory)	0.3	2.3	1.4	7.1
Red oak	3.3	16.9	2.9	24.0
Soft maple	5.5	3.6	1.8	0.6
Sycamore	1.8	2.6	2.9	1.7
Walnut	32.0	22.4	25.7	17.0
White oak	10.3	33.8	15.1	30.1
Yellow-poplar	4.8	2.2	6.3	2.6
Other species	12.7	4.7	14.9	8.8
All species	100.0	100.0	100.0	100.0

Table 13.-- Residue produced at primary wood-using mills by type of material, by type of use, Central States, 1988

(In thousand tons, green weight)

County and type of use	Wood residue							
	Total		Coarse 1/		Fine 2/		Bark	
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Indiana								
Fiber products	--	3.29	--	3.29	--	--	--	--
Industrial fuel	0.70	45.12	0.27	16.29	0.43	28.83	0.19	12.29
Domestic fuel	--	0.19	--	0.19	--	--	--	--
Miscellaneous 3/	--	2.14	--	0.79	--	1.35	--	2.75
Not used 4/	--	2.79	--	0.00	--	2.79	--	--
Total	0.70	53.53	0.27	20.56	0.43	32.97	0.19	15.04
Illinois-Iowa-Missouri								
Fiber products	--	0.54	--	0.45	--	0.09	--	0.88
Industrial fuel	--	3.27	--	1.34	--	1.93	--	0.95
Domestic fuel	--	0.20	--	0.20	--	--	--	0.15
Miscellaneous 3/	--	0.42	--	--	--	0.42	--	0.23
Not used 4/	0.45	2.18	0.17	0.55	0.28	1.63	0.13	0.50
Total	0.05	6.61	0.17	2.54	0.28	4.07	0.13	1.83
All States								
Fiber products	--	3.83	--	3.74	--	0.09	--	0.88
Industrial fuel	0.70	48.39	0.27	17.63	0.43	30.76	0.19	13.24
Domestic fuel	--	0.39	--	0.39	--	--	--	0.15
Miscellaneous 3/	--	2.56	--	0.79	--	1.77	--	2.75
Not used 4/	0.45	4.97	--	0.55	0.28	4.42	0.13	0.50
Total	0.98	60.14	0.27	23.10	0.71	37.04	0.32	17.52

1/ Suitable for chipping such as slabs,edgings,veneer cores,etc.

2/ Not suitable for chipping such as sawdust,veneer clippings,etc.

3/ Livestock bedding, mulch, small dimension, and specialty items.

4/ Includes residue burned as waste.

Smith, W. Brad; Hackett, Ronald L.
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Shows 1988 veneer-log production and receipts by species in the Lake States (Michigan, Minnesota, and Wisconsin) and in the Central States (Illinois, Indiana, Iowa, and Missouri). Comparisons are made with similar data in 1984. Includes tables showing veneer-log production and receipts for selected years since 1948 in the Lake States and since 1956 in the Central States.

KEYWORDS: imports, exports, veneer mills, wood residue, bark.

Our job at the North Central Forest Experiment Station is discovering and creating new knowledge and technology in the field of natural resources and conveying this information to the people who can use it. As a new generation of forests emerges in our region, managers are confronted with two unique challenges: (1) Dealing with the great diversity in composition, quality, and ownership of the forests, and (2) Reconciling the conflicting demands of the people who use them. Helping the forest manager meet these challenges while protecting the environment is what research at North Central is all about.