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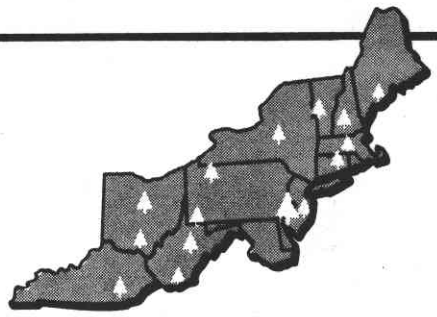

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FOREST-LAND CLEARING AND WOOD RECOVERY IN MARYLAND

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Abstract. Changing land use often results in removal of the existing forest cover. During a resurvey of Maryland's timber resources, a study was conducted to measure the losses of wood fiber attributable to forest-land clearing. An estimated 107 million cubic feet of growing stock were destroyed on 164,000 acres of commercial forest land cleared between 1961 and 1972. For fuel purposes, this represents a gross energy loss of 24.1 trillion Btus. Much of the recovered industrial wood came from forest lands cleared in rural areas, and much of the recovered firewood came from forest lands cleared in urban-suburban areas.

Forest-land clearing in the Eastern United States is an important potential source of industrial and fireplace wood. Until recently little attention had been paid to providing for the orderly harvest and utilization of this material because there were no formal markets. Rising solid-wood product prices and skyrocketing fuel costs have enhanced the possibilities of wood recovery at a profit and stimulated requests for statistics about the magnitude and composition of this underutilized raw material. In addition to determining the land area and volume of timber removed, this research attempted to identify those key factors that were related to timber recovery and use.

THE STUDY

During the Northeastern Station's second inventory of Maryland's timber resources, the land area had been divided on aerial photographs into two major classes—forest and nonforest—and the classification was confirmed in the field in 1961. Forest land was defined as at least 1 acre in size and at least 16.7 percent stocked by forest trees of any size, or land that formerly had such tree cover and was not currently developed for a non-forest use. Of 6,509 photo points so classified, 3,406 were forested.

During Maryland's third inventory, the forested point locations were transferred to

a second set of aerial photographs taken in 1972. Comparisons showed that 186 points had changed from forested to nonforested. These nonforest points were further divided into eight current land use classes: agriculture, rights-of-way, single family housing, tract housing, mining or waste disposal, industrial-commercial, public use and recreation, and water. The photo interpretation was verified by checking the classification on the ground. If correct (that is, if the forest cover there in 1961 had been removed), the field man determined when the cover was removed and whether all or a portion of the trees were used for industry wood products such as sawlogs, pulpwood, and piling, or for firewood. This information and data from the 1976 inventory field plots were used to calculate acreages cleared and volume of timber loss.

RESULTS

About 164,000 acres of commercial forest land[1] in Maryland were cleared between 1961 and 1972 (Table 1). This area is equal to 6.5 percent of the total commercial forest-land acreage in Maryland in 1976. Some of this loss, however, has since been offset by reversion of nonforested areas to tree cover. According to the forest resources report (Powell and Kingsley 1980) that resulted from Maryland's third inventory, the gross change[2] in commercial forest-land acreage was a decline of 13 percent from 1964. Gross commercial forest-land acreage dropped by 22 percent between 1964 and 1976 in the Central Survey Unit, but acreage increased by 5 percent in the Western Unit where marginally productive farmlands were reverting to tree cover at a faster rate than commercial forest lands were being cleared. Although the findings of our study cannot be compared directly with this report, they are compatible.

The greatest use of cleared forest land—nearly 75,000 acres—was for residential construction (Table 2). About two-thirds of the commercial forest-land clearing took place in the Central Unit, especially in Prince Georges, Anne Arundel, and Montgomery Counties where outward migration of government support workers from Washington, D.C. to the surrounding suburbs took place on a grand scale. The Southern and Lower Eastern Shore Units experienced another type of land-use change. Much of the commercial forest-land clearing in these units were for agricultural purposes. In the Western Unit, the forest land acreage cleared was low—913 acres annually—and according to the forest resources report, the loss was offset by farmlands that reverted to tree cover. Besides residential construction, forest clearing in preparation for mining operations was an important cause of forest land conversion.

Between 1961 and 1972, nearly 107 million cubic feet of growing stock—including 205 million board feet of sawtimber—were burned, buried, or otherwise destroyed in clearing commercial forest land in Maryland (Table 3). This loss of wood fiber represents enough volume to satisfy twice the entire industrial roundwood requirement for the forest-product industries in Maryland at 1975 operating levels; or as a fuel, this material has a gross energy value of 24.1 trillion Btus. Hardwood trees accounted for 81 percent of the growing-stock volume loss. Forest-land clearing in Prince Georges County alone accounted for 40 percent of the total growing stock and 49 percent of the total sawtimber volume that was destroyed.

Wood Recovery

Timber recovery for industrial purposes depended on such factors as location and amount of timber, intended land use, and year of clearing. In rural areas of the Southern and Lower Eastern Shore Units, industrial wood was recovered during agricultural land clearing whenever extensive areas were cleared and sawtimber-size trees were present. In many cases, however, if a farmer was extending a small field or if pole-size trees predominated, the trees were simply windrowed and burned (Fig. 1). Rural Allegany and Garrett Counties also experienced high industrial wood-recovery rates when the timberlands were cleared in preparation for coal mining operations.

[1] Land capable of producing industrial wood and not withdrawn from harvesting by law or regulation.

[2] Gross change represents the combined effect of administrative withdrawals, land reclassification, and land-use change.

Figure 1.—In agricultural areas in southern Maryland, when fields are extended, the existing vegetation often is windrowed and burned.

In urban-surburban fringe areas where access roads were being extended and new homes constructed, little industrial wood was recovered, but significant quantities of firewood were cut. During the 1960's it was common for contractors to pile and burn the trees and other unwanted vegetation. By the 1970's, open burning was discouraged for environmental reasons, forcing the contractor to consider other means of debris disposal. Today, when sawtimber-size stands are cleared, the sawlogs and pulpwood are recovered for industry use and firewood is recovered by residents or fireplace wood cutters. Thus, only the stumps and fine branches are left for disposal. Often, this material is chipped and trucked to landfills or used on-site as a landscape mulch. As corroborated by recent research in the Southeast (Welch 1978), heavy current demand for domestic and industrial fuelwood has made it possible to use those species and tree sizes, and that quality of material, that only yesterday were considered a cost item when clearing and developing forested lands.

LITERATURE CITED

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Table 1.—Area of commercial forest land in 1976 and area cleared between 1961 and 1972, by units and counties, Maryland

County	Area of commercial forest land—1976	Area of commercial forest land cleared, 1961-1972		
		Total	Percent of 1976 area	Sampling error[a]
	(Thousand acres)	*(Thousand acres)*	*(Percent)*	*(Percent)*
Central unit:				
Anne Arundel	114.9	14.6	12.7	
Baltimore	113.5	8.3	7.3	
Caroline	70.8	4.8	6.8	
Carroll	62.8	3.8	6.1	
Cecil	75.5	4.4	5.8	
Frederick	117.9	1.3	1.1	
Harford	86.0	10.9	12.7	
Howard	47.6	5.1	10.7	
Kent	43.5	1.3	2.9	
Montgomery	70.8	11.3	16.0	
Prince Georges	110.6	37.3	33.7	
Queen Annes	56.2	2.6	4.6	
Talbot	40.0	3.9	9.8	
Washington	95.4	1.3	13.6	
Unit total	1,105.5	110.9	10.0	5.3
Southern Unit:				
Calvert	74.6	9.6	12.9	
Charles	178.8	8.8	4.9	
St. Marys	122.7	2.6	2.1	
Unit total	376.1	21.0	5.6	11.8
Lower Eastern Shore Unit:				
Dorchester	150.7	3.6	2.4	
Somerset	98.8	—	—	
Wicomico	113.9	9.4	8.2	
Worcester	159.6	5.2	3.3	
Unit total	523.0	18.2	3.5	10.5
Western Unit:				
Allegany	207.6	4.7	2.3	
Garrett	310.5	9.0	2.9	
Unit total	518.1	13.7	2.6	15.7
State total	2,528.7	163.8	6.5	4.2

[a]Sampling error of commercial forest-land area cleared for individual counties is 25 percent or more.

Table 2.—Area of commercial forest land cleared between 1961 and 1972 by units and counties and current land use, Maryland

County	Current land use								
	Agriculture	Rights-of-way	Housing		Mining and waste disposal	Industrial-commercial	Public use and recreation	Water	Total all uses
			Single family	Tract					
	(Thousand acres)								
Central Unit:									
Anne Arundel	—	1.6	3.3	8.1	—	—	1.6	—	14.6
Baltimore	—	—	—	4.1	—	2.1	2.1	—	8.3
Caroline	3.2	—	—	—	—	—	—	1.6	4.8
Carroll	1.9	—	1.9	—	—	—	—	—	3.8
Cecil	—	2.2	2.2	—	—	—	—	—	4.4
Frederick	—	1.3	—	—	—	—	—	—	1.3
Harford	—	2.2	2.2	6.5	—	—	—	—	10.9
Howard	—	1.7	3.4	—	—	—	—	—	5.1
Kent	—	—	1.3	—	—	—	—	—	1.3
Montgomery	1.9	1.9	5.6	1.9	—	—	—	—	11.3
Prince Georges	—	7.4	1.9	18.6	1.9	1.9	5.6	—	37.3
Queen Annes	2.6	—	—	—	—	—	—	—	2.6
Talbot	3.9	—	—	—	—	—	—	—	3.9
Washington	1.3	—	—	—	—	—	—	—	1.3
Unit total	14.8	18.3	21.8	39.2	1.9	4.0	9.3	1.6	110.9
Southern Unit:									
Calvert	5.8	1.9	—	—	—	—	—	1.9	9.6
Charles	1.5	2.9	—	2.9	1.5	—	—	—	8.8
St. Marys	1.3	1.3	—	—	—	—	—	—	2.6
Unit total	8.6	6.1	—	2.9	1.5	—	—	1.9	21.0
Lower Eastern Shore Unit:									
Dorchester	3.6	—	—	—	—	—	—	—	3.6
Somerset	—	—	—	—	—	—	—	—	—
Wicomico	7.8	—	—	—	1.6	—	—	—	9.4
Worcester	1.7	—	3.5	—	—	—	—	—	5.2
Unit total	13.1	—	3.5	—	1.6	—	—	—	18.2
Western Unit:									
Allegany	—	1.6	—	—	3.1	—	—	—	4.7
Garrett	—	—	5.4	1.8	1.8	—	—	—	9.0
Unit total	—	1.6	5.4	1.8	4.9	—	—	—	13.7
State total	36.5	26.0	30.7	43.9	9.9	4.0	9.3	3.5	163.8

Table 3.—Net volume of growing stock and sawtimber destroyed during land clearing in Maryland between 1961 and 1972, by species group

County	Growing stock		Sawtimber	
	Softwood	Hardwood	Softwood	Hardwood
	(Million cubic feet)		*(Million board feet)*[a]	
Central Unit:				
Anne Arundel	1.6	6.9	2.1	16.6
Baltimore	.7	5.4	1.2	14.6
Caroline	.5	2.6	.6	5.4
Carroll	.1	.7	—	—
Cecil	.4	2.8	.7	7.6
Frederick	(*)	.4	—	—
Harford	.1	1.6	—	—
Howard	.1	.6	—	—
Kent	.2	1.7	.4	4.6
Montgomery	.6	7.0	.8	14.0
Prince Georges	8.7	33.5	13.6	86.4
Queen Annes	—	—	—	—
Talbot	.6	2.3	1.1	6.0
Washington	.3	1.5	.5	4.1
Unit total	13.9	67.0	21.0	159.3
Western Unit:				
Allegany	.1	.5	—	—
Garrett	(*)	.7	—	—
Unit total	.1	1.2	—	—
Southern Unit:				
Calvert	1.7	6.7	3.1	4.7
Charles	.9	7.5	.9	3.4
St. Marys	.3	.8	—	—
Unit total	2.9	15.0	4.0	8.1
Lower Eastern Shore Unit:				
Dorchester	1.3	1.5	3.1	3.0
Somerset	—	—	—	—
Wicomico	1.3	1.5	3.3	3.1
Worcester	.3	.7	—	—
Unit total	2.9	3.7	6.4	6.1
State total	19.8	86.9	31.4	173.5

[a]International 1/4-inch rule.
(*) Less than 50,000 cubic feet.

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