



United States
Department of
Agriculture

Forest Service

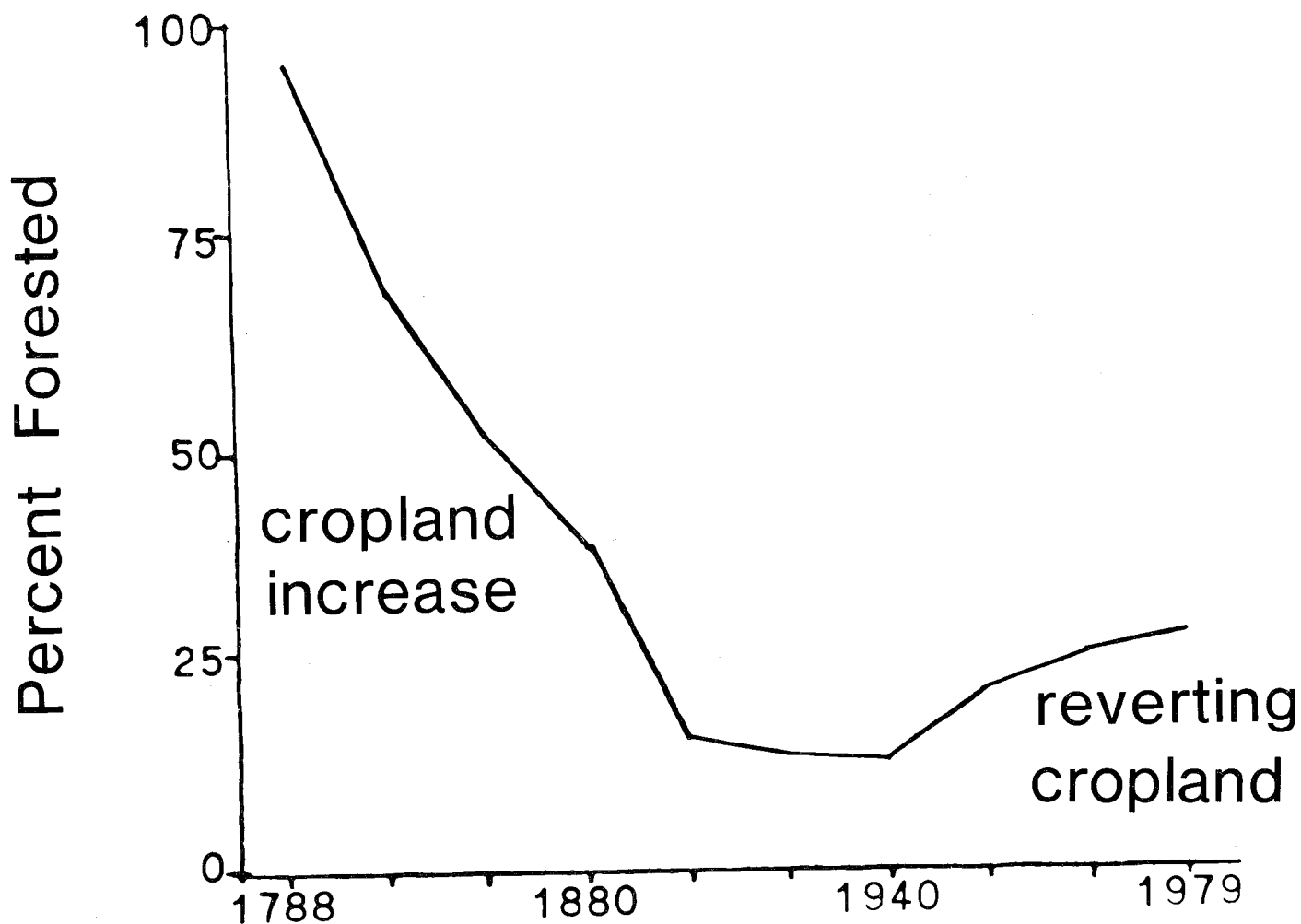
Northeastern Forest
Experiment Station

Resource
Bulletin NE-70
1982



Land Use Change in Ohio, 1952 to 1979

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Manuscript received for publication
9 September 1981

Abstract

The findings in this analytical report are made in conjunction with the third forest survey of Ohio. Forest area has increased from 5,446,000 acres in 1952 to 7,120,100 acres in 1979. Information on forest area is based on new and remeasured plots, and information on cropland and pasture was obtained from Census of Agriculture. Much of the land that became forest land since 1952 was previously cropland or pasture. The report also contains statistics about forest lands that changed uses and the volume of timber removed from these lands.

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Highlights

- Forest land increased from 5,446,000 acres in 1952 to 7,120,100 acres in 1979.
- Private owners control the use of 91 percent of the forest land in Ohio today.
- Land in farms decreased from nearly 21 million acres in 1950 to 16 million acres in 1978. However, the area of harvested cropland only decreased from 10,340,000 acres in 1954 to 10,289,500 acres in 1978.
- The urban areas with populations of 2,500 or more increased from 1,006,000 acres in 1954 to 1,724,000 acres in 1974.
- Public ownership of forest land increased from 310,000 acres in 1952 to 531,000 acres in 1979.
- Over 107 million cubic feet of growing stock material were removed from the commercial timber base of Ohio from 1968 to 1978 due to land use change.

Land Use Change in Ohio 1952 to 1979

Between 1952 and 1979 there have been shifts in land use in Ohio. This publication is intended to give land managers and planners current estimates of the area in major land use classes and to analyze the changes that have taken place during the period.

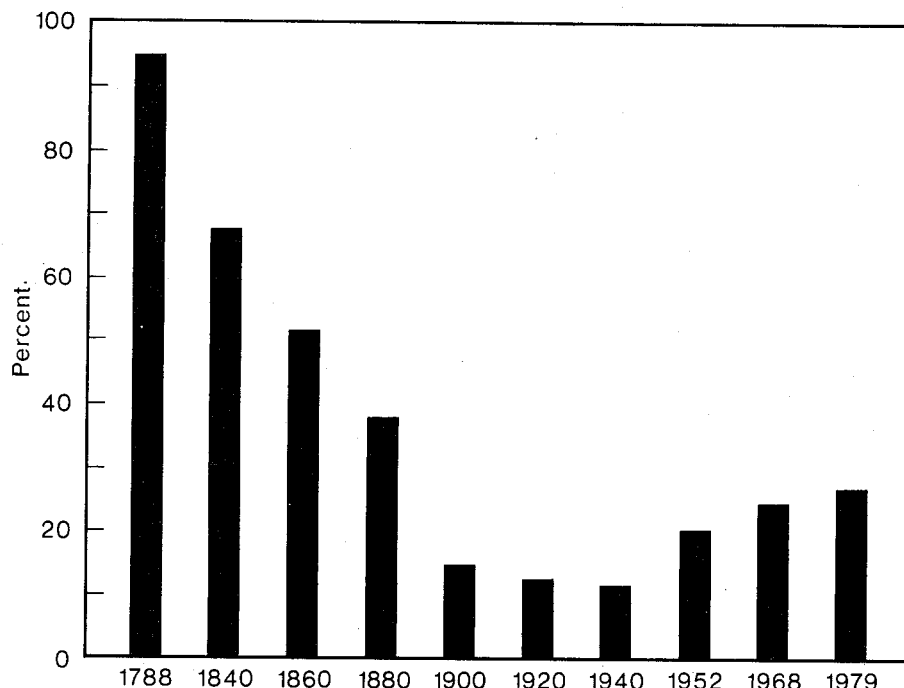
Introduction

Ohio's early history of land subdivision has left its mark in the pattern of development today. The Northwest Ordinance of 1787 provided for the dispersal of the public domain. From the time of the settlement of Marietta in 1788, the percent of forest area decreased from 95 percent to about 12 percent in 1940 (Diller 1944). The forest then began to increase to its present 27 percent (Fig. 1). Much of the land was cleared for cropland and grazing at one time. In addition, much of the wood in the southeastern part of the state was made into charcoal for the smelting of iron. The first of these furnaces may have been fired in 1802 and the last one closed during World War I. The height of this industry was from 1840 to 1885 with 65 furnaces operating in 1856. Each furnace required as much as 10,000 acres of woodland to support its need for charcoal (Wright 1957).

The first attempt to make a comprehensive inventory of woodland in Ohio began in January 1939. The Works Project Administration began the work with cooperation from the Ohio Agricultural Experiment Station and the USDA Forest Service, Central States Forest Experiment Station. Forest area was estimated for each county (Fig. 2). Volume estimates were completed for only 38 counties between 1939 and 1942. World War II interrupted this work, and a report of the work was completed and a recommended long-range forest program prepared (Diller 1944).

The Central States Forest Experiment Station completed the

Figure 1.—Forest land area of Ohio as a percentage of all land for selected years, 1788 to 1979.



1952 forest survey of Ohio. Field work for the survey was done from August 1951 to September 1953. The purpose of the survey was (1) to inventory the supply of standing timber and estimate the area of forest land; (2) to find out how fast the supply of timber was growing; (3) to find out how fast the supply was diminishing through industrial and domestic use, fire, insects, disease, and other causes; and (4) to interpret the findings to aid in the formulation of private and public forest policies (Hutchison and Morgan 1956).

The Northeastern Forest Experiment Station resurveyed Ohio in 1968. The field work had been completed in 1966 and 1967. This survey summarized the situation at that time and the changes that had taken place since the 1952 survey (Kingsley and Mayer 1970, DeBald and McCay 1969).

The Resources Evaluation Project of the Northeastern Forest

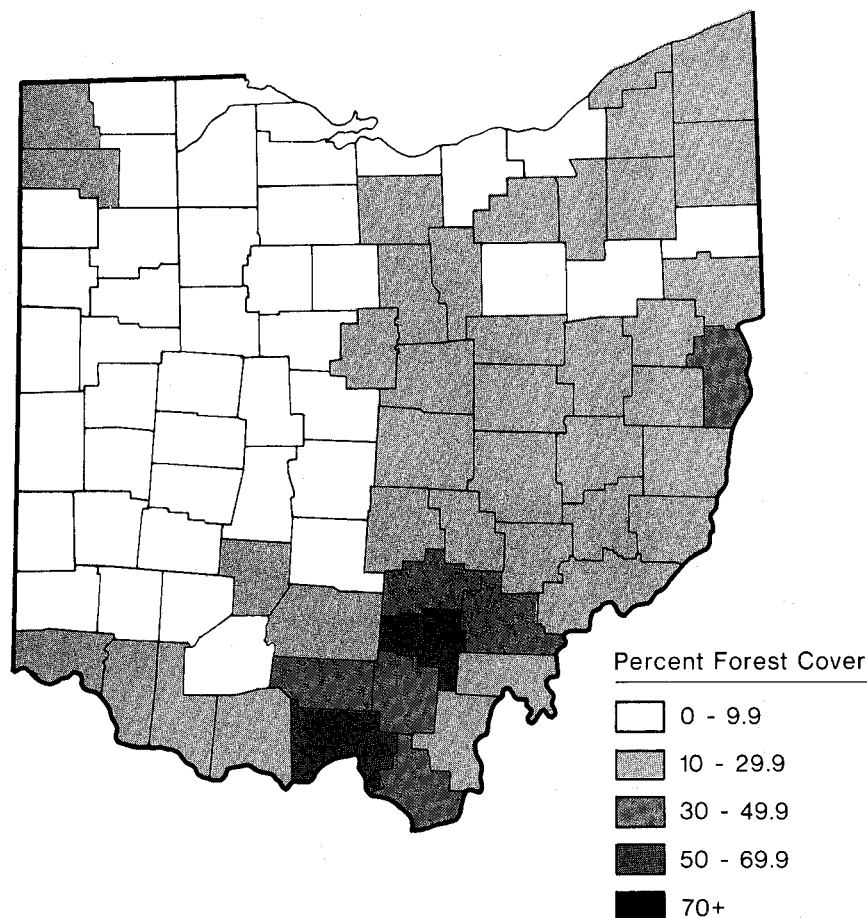
Experiment Station is preparing the 1979 resurvey. The data was collected in the field during 1978 and 1979. Additional reports are in preparation, or have been published that analyze the State's renewable resources, the private forestland owners, and the timber industries. This report supplements the information from the basic survey with information from other sources.

To fully understand the data and conclusions presented in this report, the user of these data is advised to read the discussion of the study methods presented in the appendix. Tables supporting conclusions found in the text are also contained in the appendix.

Forest Land

Forests cover over 27 percent of the land in Ohio. Private owners control the use of over 91 percent of these forest lands. The forest lands currently in public ownership were almost all in private ownership at

Figure 2.—Percent of forest land, by county, 1942.



one time and have been reacquired by the various levels of government. Information about public ownerships comes from records supplied by various agencies; information on private forest land is estimated by sampling procedures.

Public Forest Land

National Forest Lands

The USDA Forest Service established the Wayne National Forest Purchase Unit in 1935. By 1942, nearly 77,000 acres had been purchased. About 38,000 acres of this land were forested; the remainder were scheduled for planting, expected to regenerate naturally, or were building sites and nonforest lands.

By 1952 the portion of the Wayne-Hoosier National Forest in Ohio had 88,000 acres of forest land. The Forest continued to purchase lands and by 1968 it contained 118,000 acres of which 112,000 were forested.

Today there are 170,000 acres of National Forest land in Ohio. Commercial forest land accounts for 159,300 acres. The remaining acres are in forested special use areas and nonforest land.

Other Federal Forest Lands

In 1979, a canvass of the several federal agencies that have installations in the state identified 29,000 acres of forest land in their control. Of this, 15,000 acres are

considered commercial forest land and 14,000 acres are reserved forest land. Most of this land was in federal ownership at the time of the previous inventories but was unreported. A major exception to this is the Cuyahoga Valley National Recreation Area, which is a recent addition to the National Parks System. The lands in this recreation area were obtained from three sources: (1) purchase and condemnation from private landowners, (2) the Akron Metro Park System and (3) the state which had been planning a park in the area.

State Owned Lands

In 1885 the state established a Bureau of Forestry, and in 1917 the first state forest lands were purchased. The Bureau of Forestry became the Ohio Division of Forestry in 1921. The division functions were to purchase and develop State forests and forest parks, institute fire control on public and private lands, and grow and distribute reforestation planting stock.

The State forests contained nearly 108,000 acres by 1942. Approximately 90,000 acres were designated primarily for timber production. The remaining 18,000 acres were forest park areas used mainly for recreation. Timber removals were permitted from parks if they were consistent with park preservation policies.

The area in State forests continued to increase and by 1952 the state owned 169,000 acres of commercial forest land. The area in state parks was also increasing.

The 1968 survey did not separate the state land from much of the county and municipal ownership. The state-owned commercial forest land must have been nearly 187,000 acres.

The Ohio Department of Natural Resources, Division of Forestry currently has 19 State forests. These have a total area of nearly 170,000 acres. In addition, there are 71 state parks and 100 state wildlife manage-

ment areas. Currently 195,000 acres of commercial forest land are in state ownership and an additional 73,000 acres of forest land are reserved from harvesting.

County and Municipal

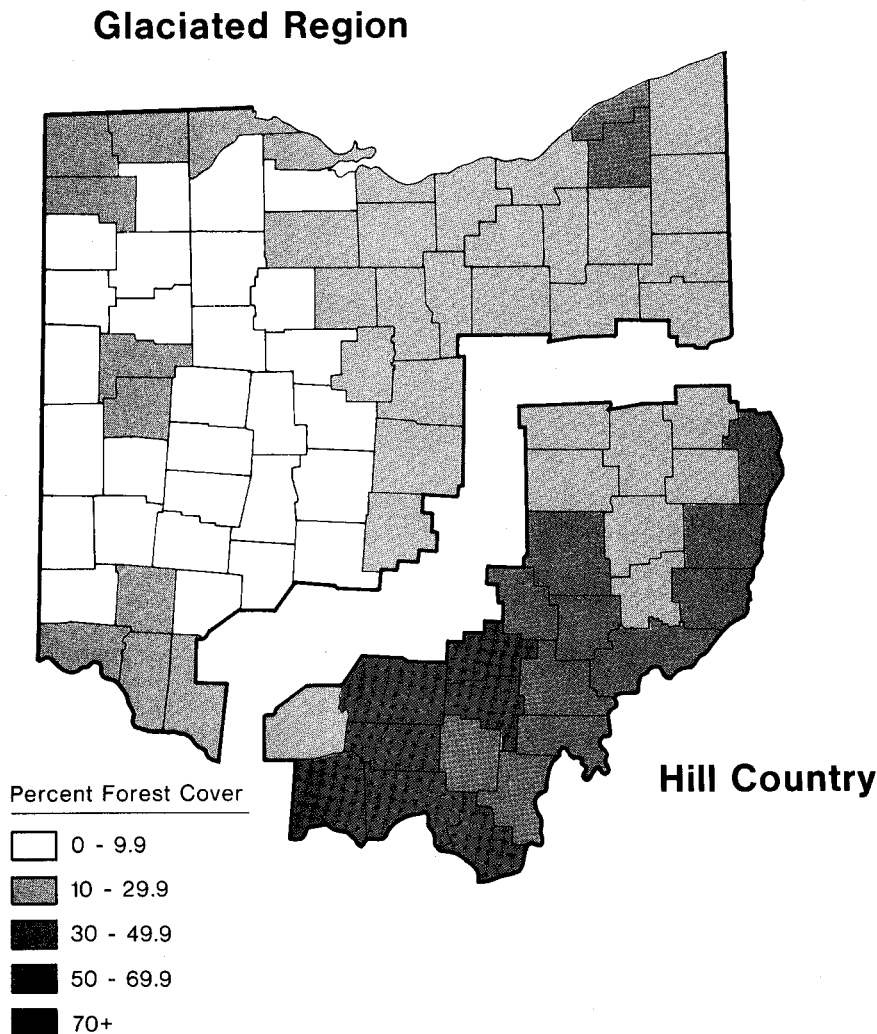
County and municipal ownership of forest land in Ohio includes multicounty conservancy districts, metropolitan park boards, and community forests. The Conservancy Districts were established to develop plans for flood control/water conservation, and water use within their particular river basin. The metropolitan park lands are maintained primarily as recreation areas around the major population centers of the state. The other community forests were acquired primarily for recreation and reservoir protection and in some cases for timber production.

The amount of county and municipal commercial forest land increased from 40,000 acres in 1952 to 42,000 acres in 1978. There are currently almost 26,000 acres of reserved forest land, primarily in the various municipal park systems.

The Conservancy Districts were established by state law to take advantage of federally funded public works programs of the 1930's. An example is the Muskingum Conservancy District:

The federal government, through the Corps of Engineers constructed 14 dams and reservoirs and relocated railroads and other public utilities. The Muskingum Conservancy District procured lands, easements and rights-of-way needed for the reservoirs and was reimbursed for these expenditures by the federal government. This district retains fee title to most of the 68,000 acres of land purchased. Only the lands required for the actual dam construction and supporting facilities were turned over to the Corps. In addition, the district acquired 133,000

Figure 3.—The two geographic regions of Ohio, and the percent of forest land, by county, 1952.



acres of flowage easements. This district currently retains 54,000 acres of which nearly 16,000 acres are inundated by the 10 permanent lakes. The district has planted trees on much of the remaining acreage and is actively practicing forest management.

Private Forest Land

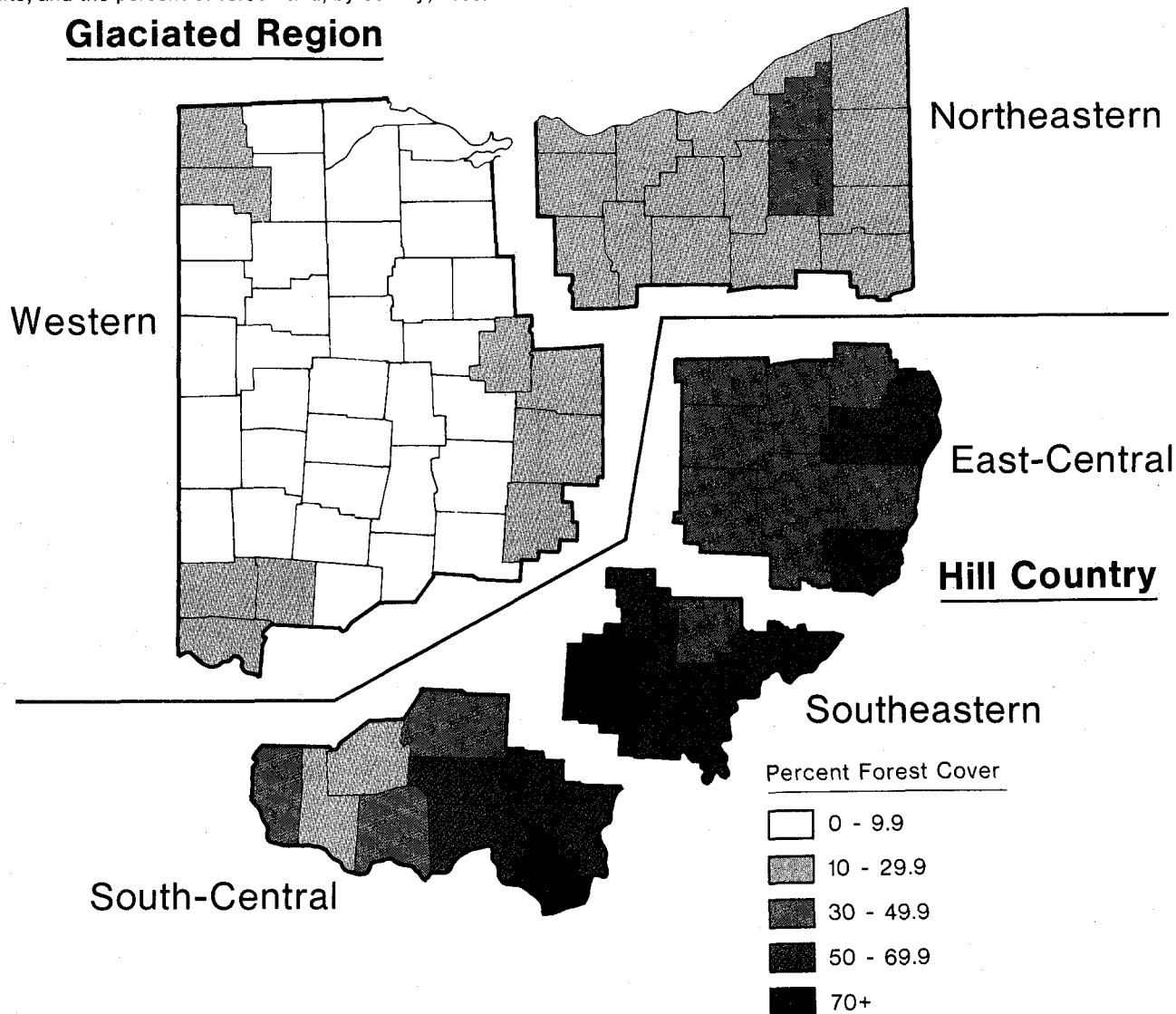
The 1952 Estimate

The estimate of forest land in the 1952 survey was made for each of the two geographic sampling

areas. The estimated forest area for 1952 was 5,446,000 acres, of which 5,099,000 acres were privately owned commercial forest land. The boundaries of these two geographic regions were approximations of the primary physiographic regions of the state: Glaciated and Hill country. (Fig. 3)

The Glaciated region had 2,160,000 acres of privately owned commercial forest area. By county, the percentage of forest ranged from as low as 4 percent to as high as 43 percent. Twelve percent of the region was forest land.

Figure 4.—The two geographic regions of Ohio, the five geographic units, and the percent of forest land, by county, 1968.



The Hill country had 2,939,000 acres of privately owned commercial forest land. The 26 counties had percentages that ranged from 17 to 68 percent. Thirty-five percent of the region was forest land.

The 1968 Estimate

The published 1968 estimate of forest land in Ohio was 6,405,000 acres (Fig. 4), of which 5,981,000 acres were privately owned commercial forest land. The five geographic

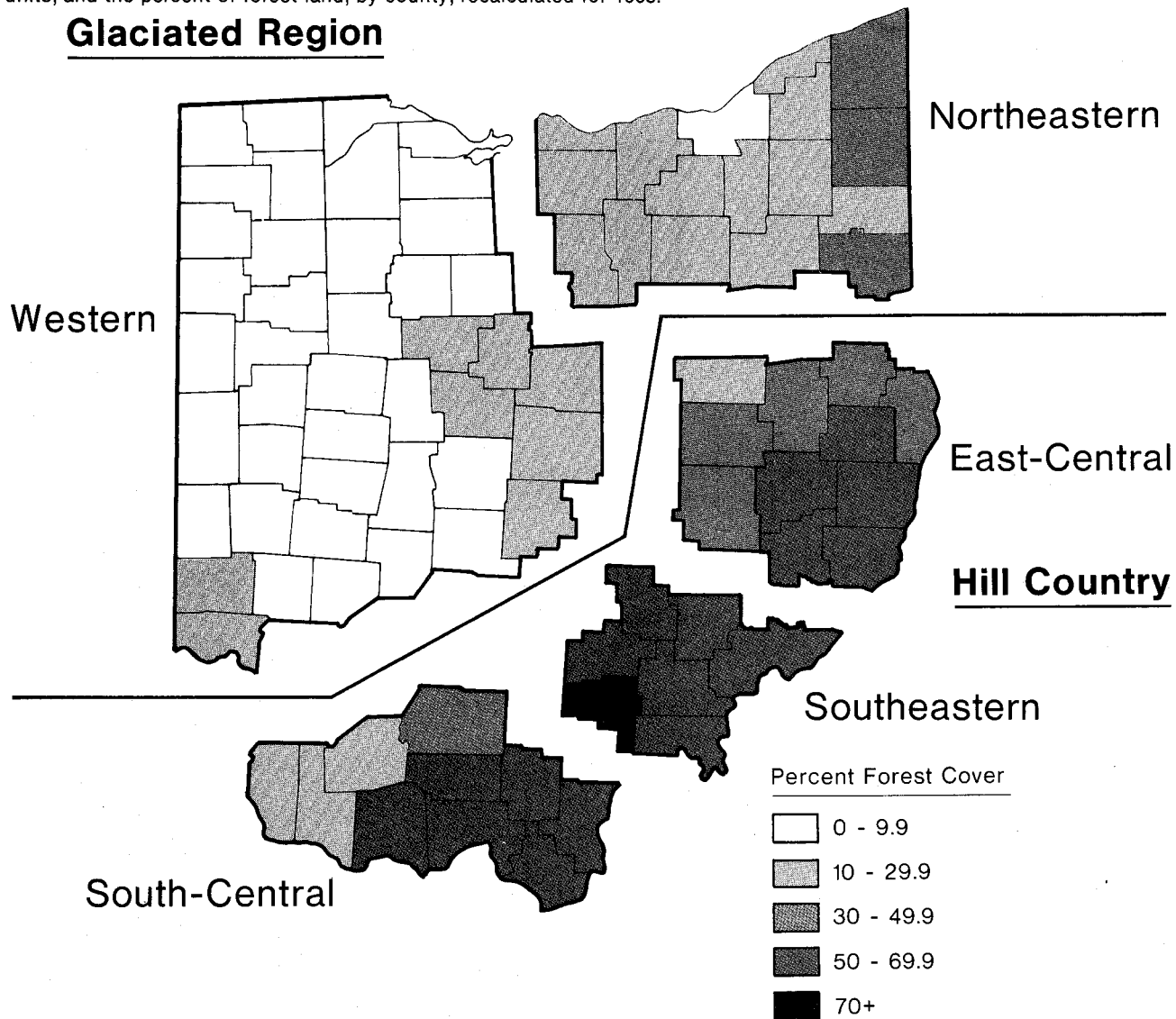
units were not exact subareas of the two physiographic regions used in the 1952 survey.

The Glaciated region from the 1952 Survey had two counties (Brown and Clermont) transferred to the Hill country. The remaining 60 counties became two geographic units. The Northeastern unit contains 17 of these counties. The remaining 42 counties formed the Western geographic unit.

The Hill country with the addition of Brown and Clermont counties was divided into 3 units: South-central, Southeastern, and East-central. The South-central unit contains 10 counties, the Southeastern unit contains 7 counties, and the East-central unit contains 11 counties.

The five units were more uniform sampling areas than the two regions used in the 1952 survey. In 1978 we used a new technique that

Figure 5.—The two geographic regions of Ohio, the five geographic units, and the percent of forest land, by county, recalculated for 1968.



produces better county level statistics to recalculate the 1968 estimate. The recalculation yielded different but we believe better estimates of commercial forest land. Some multicounty groupings were used for counties with too few field plots or with other sampling anomalies.

The recalculated estimate of forest land in Ohio for 1968 was

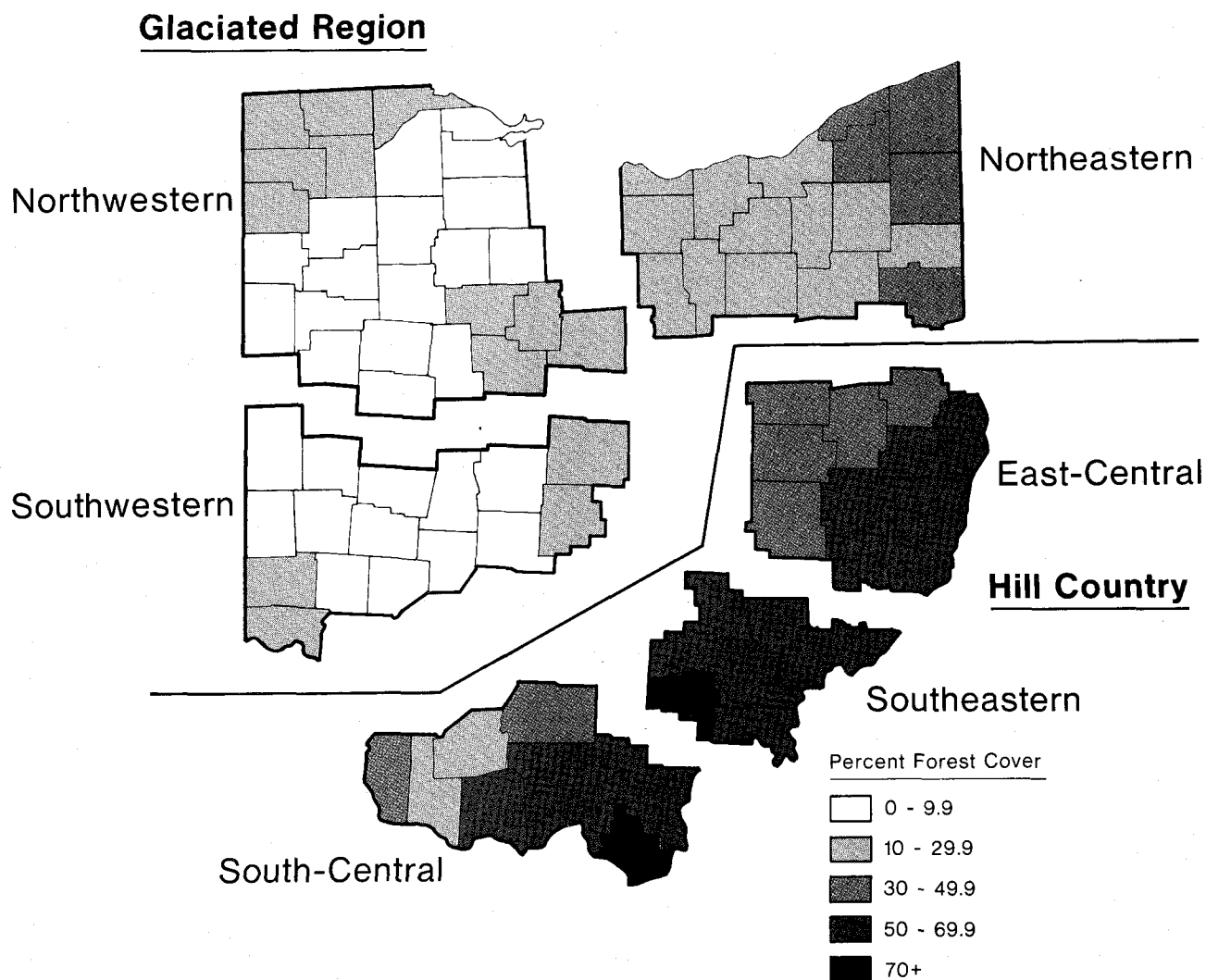
6,633,500 acres (Fig. 5). The trend in the Glaciated region showed an increase from 2,122,000 acres in 1952 to 2,199,000 acres of forest land in 1968. The Hill country forest area increased more rapidly from 3,324,000 acres in 1952 to 4,434,600 acres in 1968.

The 1979 Estimate

The 1979 estimate of forest land in Ohio consists of four

components: commercial forest land, productive reserved forest land, nonproductive forest land, and urban forest land. The current estimate of commercial forest land is 6,917,000 acres, of which 6,505,000 acres is privately owned. There are 119,400 acres of productive reserved forest land. The area of nonproductive forest land is estimated to be 43,100 acres. The area of urban forest is estimated to be 40,500 acres.

Figure 6.—The two geographic regions of Ohio, the six geographic units, and the percent of forest land, by county or group of counties, 1979.



The total area of forest land now exceeds 7,120,000 acres (Fig. 6).

The geographic units used in the 1979 survey remained the same as those used in 1968 with the exception of the Western unit, which was split into the Northwestern unit and Southwestern unit.

The area of commercial forest land in the Glaciated region increased in each of the three units

since 1968. The commercial forest area increased from 2,158,000 acres to nearly 2,410,400 acres in 1978. Nearly 2,353,000 acres of the 1978 area is in private ownership.

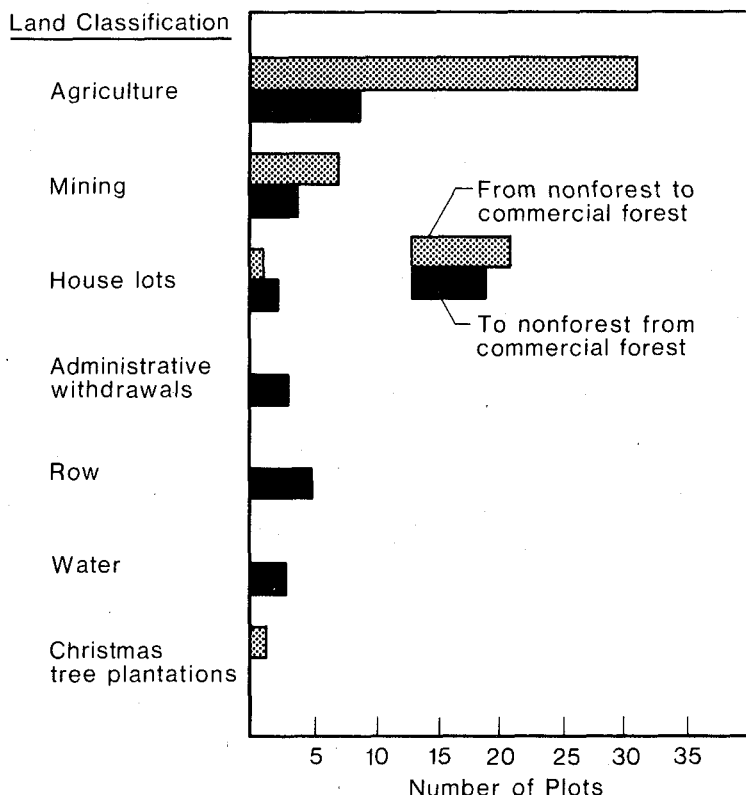
The area of commercial forest land in the Hill country increased from 4,397,000 acres in 1968 to 4,507,700 acres of commercial forest land. Private owners control 4,152,900 acres of the commercial forest area.

Factors Producing Change

Lands are being converted from forest land to nonforest uses such as agriculture, mining, urban, and other uses. Lands are also being classified forest land that were agricultural or active mining properties as recently as 1968.

Information on the types of land use changes affecting the forest resource can be obtained from

Figure 7.—Land use change summary, Ohio, 1978.



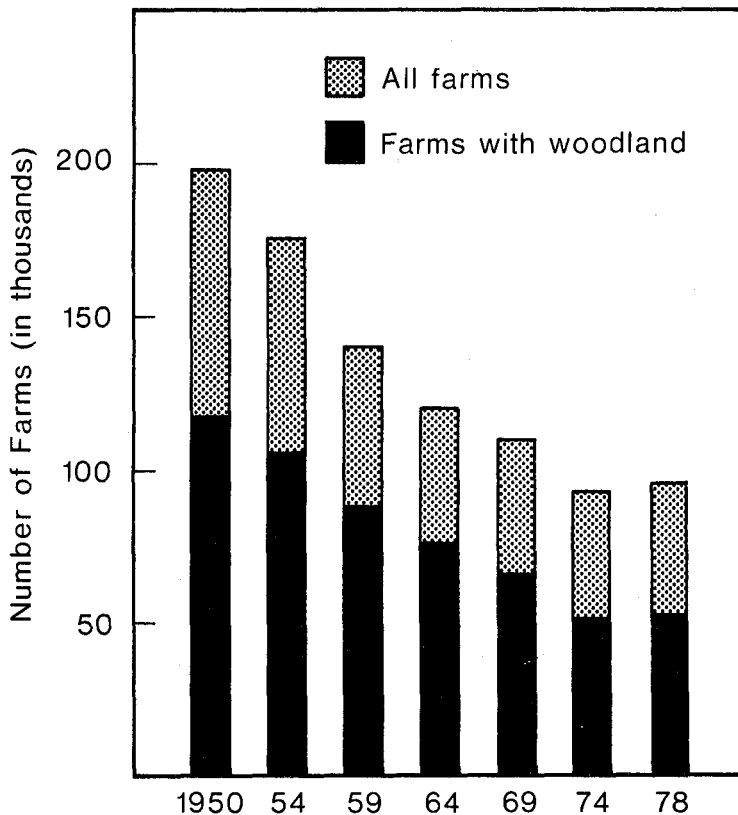
the plots remeasured from the 1968 survey. Nearly 2,200 plots were revisited in 1978. Of these, 66 had changed land use. Twenty-six plots changed from forest to nonforest uses, and the remaining 40 changed from nonforest or noncommercial forest to the commercial forest use category (Fig. 7).

The changing nature of agriculture in Ohio had the greatest effect on the forest resource. Most of the increase in forest land between 1968 and 1978 can be linked directly to the decrease in farm area. From remeasured plots, an estimated 211,200 acres of forest land was converted to agriculture, and at the same time 725,000 acres were reverting from farm to forest. From Census of Agriculture U.S. Bureau of Census (1980) data, the number of farms in Ohio has decreased

from 199,400 in 1950 to only 95,800 in 1978 (Fig. 8). The total area in farms went from 20,969,500 acres in 1950 to 16,088,400 acres in 1978 (Fig. 9).

Between 1950 and 1978, the average size of farms increased from 105 acres to 168 acres (Fig. 10). The average area of woodland per farm increased from 25.7 acres to 37.7 acres during the same period. By combining Census of Agriculture data from 1969 and 1978 and the forest survey data from 1968 and 1978, we get a rough estimate of change other than agriculture and forestry.

Figure 8.—Trends in the number of farms and farms with woodland, 1950-78.



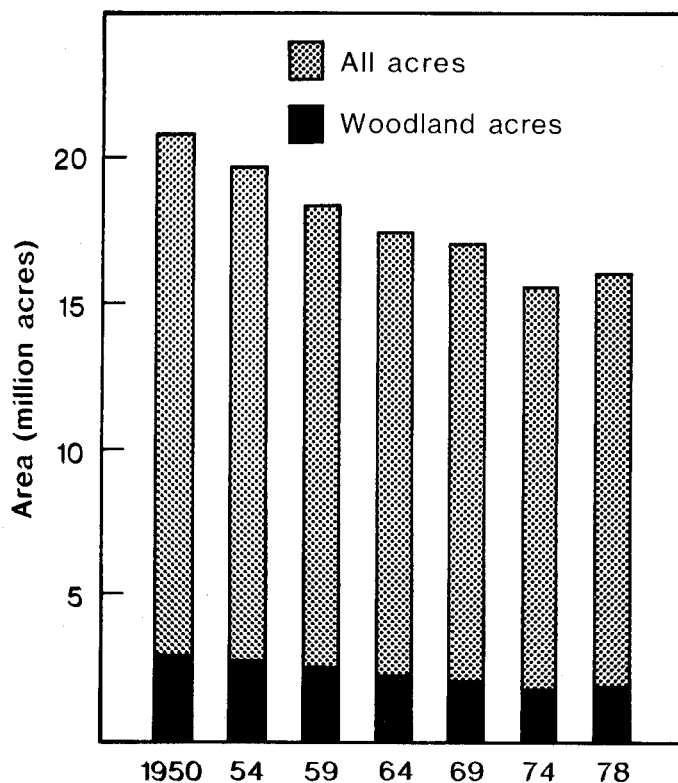


Figure 9.—Trends in area in farms and area in woodland in farms, 1950-88.

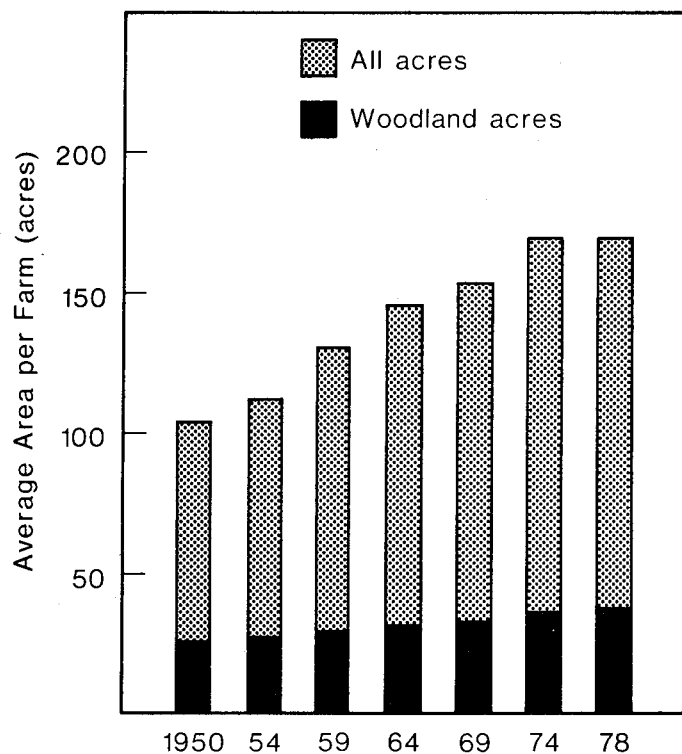


Figure 10.—Trends in average area per farm and woodland area per farm, 1950-78.

The estimates are:

Acres in farms, 1978	16,088.4
Woodland in farms, 1978	- 1,987.0
Nonforest area in farms	14,101.4
Forest area, 1978	+ 7,120.1
Combined area	21,221.5
Net land area	26,228.5 × 100
Percent land area	80.91

Acres in farms, 1969	17,349.4
Woodland in farms, 1969	- 2,154.6
Nonforest area in farms	15,194.8
Forest area, 1969	+ 6,630.5
Combined area	21,825.3
Net land area	26,251.3 × 100
Percent land area	83.14

These figures indicate a decrease in forest and farm land of at least 2.2 percent of the net land area in these two categories.

The rapid growth of urban and suburban areas in the Northeast has been well documented. The effect of this growth on forest area has not. The cost of removing trees before building houses and shopping centers has often led developers to use cropland first. Other considerations such as drainage and slope have also led to the cropland being developed first. We estimate that private individuals own 40,000 acres of forest land within incorporated municipalities. These lands meet the criteria of commercial forest land except for location. In many instances, the municipalities increased their jurisdiction beyond the area of active development. In other instances, development spread rapidly on croplands, leap-frogging the forested areas.

When we look at the changes that took place on our remeasured plots between 1968 and 1978, three plots were affected by urban-suburban growth. Two plots now fall on developed house lots. The third plot was partially cleared in 1968 for development that never took place, and the plot has again reverted to a forest condition. These plots indicate that some changes of this type have taken place; the estimates of the magnitude of these changes have high sampling errors.

The current survey estimates that there are 43,100 acres of non-productive forest land in Ohio. Most of the acres classified as nonproductive forest land are strip-mined lands not reclaimed to a level capable of producing 20 cubic feet of merchantable wood per acre per year.

Mining and mineral extraction were noted at 11 of the 1968 survey plots which were remeasured; four plots that were then forest are currently part of active stripping operations or were not replanted to trees. Seven plots that were part of active mining operations in 1968 have been restored to commercial forest land. These plots represent 42,200 and 74,000 acres, respectively.

Five plots, or 52,800 acres, that were forested in 1968 are now roads and rights-of-way. Two of the five are connected with mineral extraction. One is now in the powerline right-of-way to a major strip mining operation and another is an access road to an oil or gas well. The remaining three were not directly linked to mineral extraction but were in portions of the state where active mineral extraction is taking place.

The remaining changes indicated by remeasurement were: three plots changing to parks (49,500 acres), three plots being flooded by water projects (70,400 acres), and one plot changing from productive reserved (Christmas tree plantation) to commercial forest land by being allowed to grow. The former christ-

mas tree plantings are now over 20 feet tall.

This section illustrates the changes taking place on the forested portion of the state. The cropland and urban portions of the state are also undergoing changes in land use.

Cropland and Pasture

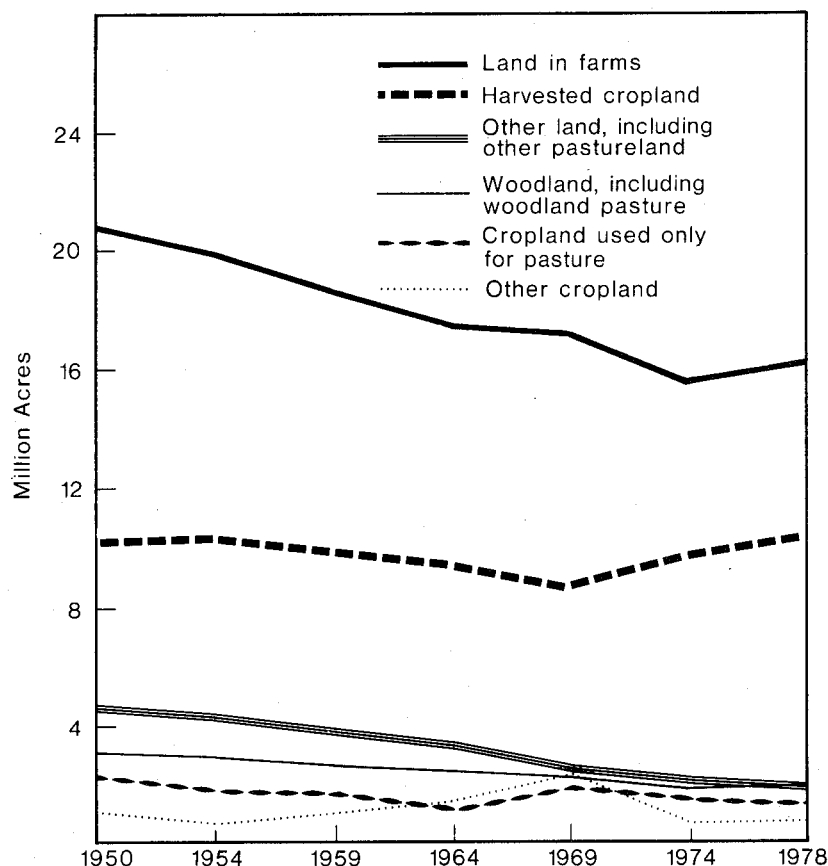
There has been a steady decline in land in farms in Ohio since 1950. This trend was well documented in the 1974 Census of Agriculture (U.S. Bureau of Census 1977) and preliminary data from the 1978 Census of Agriculture (U.S. Bureau of Census 1980) (Fig. 11). The cropland and pasture land components of the land in farms have not been consistent in their trends over the same time period.

The Census of Agriculture has two cropland categories, harvested cropland and other cropland. Harvested cropland reached a high of nearly 10,340,000 acres in 1954. The area of harvested cropland declined until it reached a low of 8,515,000 acres in 1969. It then rebounded sharply reaching 10,290,000 acres in 1978.

The Census of Agriculture includes in the category of "Other cropland" the area of cropland in cover crops, legumes, and soil improvement grasses which were not harvested and not pastured; cropland on which all crops failed; and cropland in cultivated summer fallow and idle cropland. From 1954 to 1969 the area of other cropland increased from 749,500 acres to 2,206,100 acres. The 1974 area of other cropland dropped to only 570,300 acres, and the 1978 area was 688,300 acres.

The trend in these two cropland categories reflect the various Federal programs that limited crop production during the 50's and 60's. Increasing demands for farm exports caused rapid shift from other cropland to harvested cropland between 1969 and 1978. The loss of cropland

Figure 11.—Trends in use categories of land in farms, 1950-78, Ohio.



in these two categories between 1954 and 1978 was nearly 112,000 acres. If high demands for farm exports continue, lands that went out of the cropland category, or land classified as croplands used only for pasture, may once again be placed in the crop production.

It has been reported that nationwide the Census of Agriculture may be underestimating cropland for 1974 by 6 percent (Frey 1979). If the national estimates were to be true in Ohio it would mean an additional 500,000 acres of cropland. The 1978 Census of Agriculture attempted to answer this criticism through additional sampling. This procedure identified nearly 200,000 acres of cropland that would not have been in their sample by the earlier method.

Changes in livestock production since 1950 have caused major changes in the use of pasture lands (Schertz and others 1980). There are three categories of pasture land used in the Census of Agriculture: cropland used only for pasture, pastured woodland, and pasture land other than cropland. The area of pastured woodland and pasture land other than cropland data is gathered only for farms with sales of \$2,500 and over. Therefore, the total area of pasture cannot be obtained directly from the Census of Agriculture.

An estimate of pasture land can be made by adding "cropland used only for pasture" (1,258,000 acres) on all farms and "other pasture, other than woodland pasture," (897,000 acres). Therefore a minimum of 2,155 acres were grazed in

Ohio in 1978. To better understand the pasture situation, a more detailed examination of the categories of pasture lands is necessary.

The category "cropland used only for pasture" is comprised primarily of lands that are rotated between pasture and cropland. A portion of this area is marginal for crop production, but could be used for this purpose without additional improvements such as drainage or clearing of brush. The marginal lands may be grazed for many years and only used for crops infrequently. The area in Ohio in this category declined from 2,049,000 acres in 1950 to 1,164,000 acres in 1964. The area increased to nearly 1,726,000 acres in 1969 and then declined again to 1,258,000 acres in 1978.

The acreage of pastured woodland and improved pasture that has sufficient stocking to be classified as woodland is difficult to estimate. Areas that receive only infrequent grazing or that receive fertilizer, seed, or brush control at several year intervals complicate the estimation of pastured woodland and other pasture land.

Woodland in all farms in Ohio declined from over 3 million acres in 1950 to 1,987,000 acres in 1978. Woodland in farms with sales of \$2,500 and over was nearly 1,491,000 acres in 1969, dropped to only 1,478,000 acres in 1974, then rose to 1,620,000 acres in 1978 (Table 10). The area of pastured woodland in these farms decreased from nearly 560,000 acres to 487,000 acres during 1969 to 1974. The area of woodland not pastured increased from 931,000 acres to 990,000 acres at the same time. These changes in the amount of forest land grazed can be traced to improvements in livestock, increased forest management, and to the maturing of the forest stands.

The remaining pasture land category is included in the other land, including pasture land, category. For all farms, the area was 4,544,000 acres in 1950 and 1,866,000 acres in 1978. The other land category in farms with sales

over \$2,500 was 1,698,000 acres in 1969 and 1,568,000 acres in 1978. The area of pasture land decreased from 871,000 acres to 744,000 acres. Further classification of improved and unimproved pastureland seem unreliable because without some improvement periodically these lands would revert to a forest condition.

Other Lands

The remaining areas of significant land use change in Ohio are urban areas and rural highways, railroads, and airports. The Ohio 1974 estimate for urban places including central cities, suburban fringe zones, and all other places with a population of 2,500 or more is 1,724,000 acres (Frey 1979). The 1954 estimate was 1,006,000 acres (Wooten and Anderson 1957). The area in rural highways increased from 520,000 acres in 1954 to 624,000 acres in 1974.

Utilization of Material From Land Use Change

Between 1968 and 1978, an estimated 486,000 acres of commercial forest land were converted to a non-forest use (Table 11). In the past, much of the timber volume from this land would have been buried, burned, or trucked to landfills. However, changes in markets and attitudes have brought about increases in product recovery from land clearings, particularly when sawtimber-size trees are present. The degree to which the timber is recovered when land use changes depends upon location in relation to markets, size of area being converted, and the end use of the land.

From studies conducted in New Jersey and Maryland, timber use factors were developed (Bones and Pierson 1975, Bones 1980). In Ohio, an estimated 107 million cubic feet of growing stock were removed from the commercial forest-land base due to land use changes. Of this, 31.6 million cubic feet of net growing stock were recovered for industrial timber products and fuel-

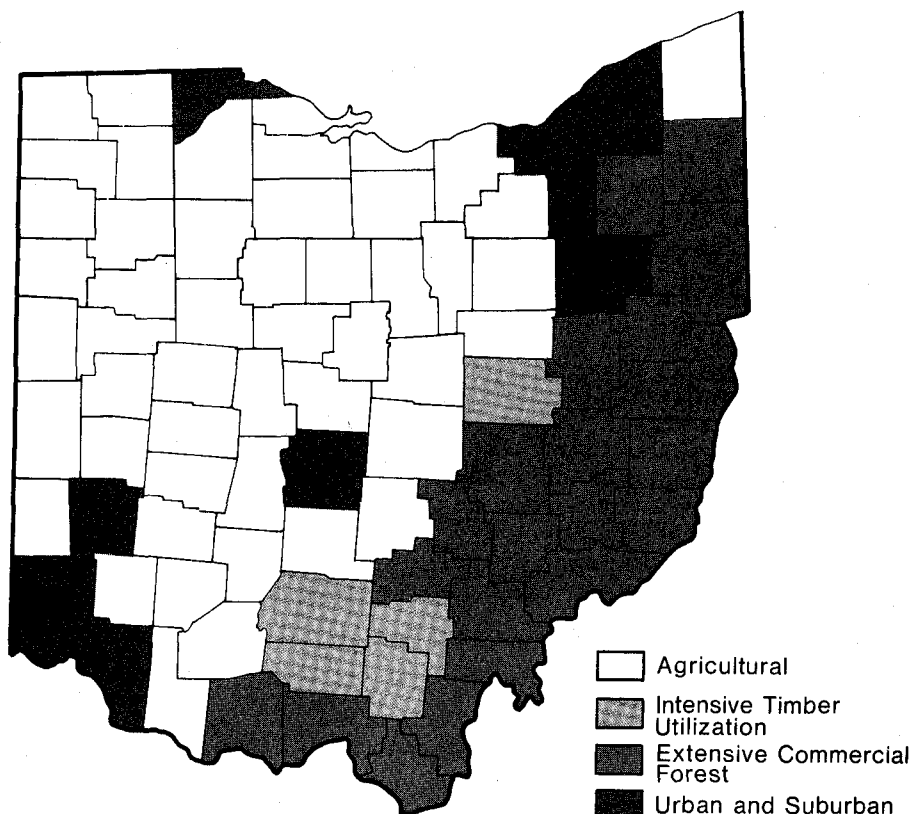
wood. However, most of the volume (70 percent) was left unused over the 10 year period. Of the total unused volume, 43.3 million cubic feet cannot be recovered because the volume is on land reserved for recreational use. These trees will not be harvested for industrial timber products but will continue to grow. The remaining 32.2 million cubic feet (3.2 million cubic feet annually) represent 4 percent of Ohio's annual roundwood harvest, at 1978 levels (Nevel and Redett 1980).

The state was divided into sub-areas based on a number of physical, economic, and demographic variables that reflect timber-based activity by county (Herrick 1973). The timber based activity in a county influences the utilization of material from land changes. Some of the groups identified by Herrick

have been consolidated into four groups shown here (Fig. 12). The groups are extensive commercial forests, intensive timber utilization, agricultural, and urban and suburban counties.

Timber utilization was greatest in areas of extensive commercial forest or intensive wood-using industries because the proximity of markets and high volumes per acre offset the cost of extracting the material. In contrast, agricultural regions are often located far from timber markets and population centers; thus, timber utilization is low. The acreages of commercial forest land converted to pasture and cropland had low volumes per acre. The combination of few markets and low volumes per acre effectively discourages timber recovery in the agricultural region.

Figure 12.—Counties grouped by level of timber-based activity and utilization of material from land use changes, Ohio, 1968-78.



The level of timber recovery from metropolitan and suburban areas was low. Although some wood was recovered for fuelwood when housing lots were cleared, the bulk of the volume was withdrawn from commercial use.

Conclusion

The increase in the area of forest land in Ohio is linked primarily to changes in agriculture and, to a lesser extent, to urban growth. These changes in forest land were neither planned nor expected. It is important for both public officials and private citizens to be aware of these changes to more consciously shape the future of Ohio's forest land.

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Appendix

Forest Survey Methods

The Resources Evaluation unit of the Northeastern Forest Experiment Station uses the sampling with partial replacement (SPR) design to inventory timber resources. The general application of this method to estimate land use and area attributes has been in use for some time (Frayer and Furnival 1967). Briefly, the current application of the method involves: (1) re-measuring a portion of the plots from a previous inventory to update previous area estimates and (2) a new independent estimate obtained from establishment of a new set of plots. The updated estimate or first estimate is combined with the new set of plot estimates to form a final estimate. The SPR design yields a more accurate statistical estimate of the area of forest land than other methods at the same cost. The re-measured plots from the previous survey provide an estimate of the current use of lands that previously were considered to be forested, and the prior use of lands that are now considered forested.

The 1978 to 1979 inventory re-measured 2,759 plots, classified 79,752 points on aerial photographs into land use and cubic foot volume classes, and established 2,128 new ground remeasurement locations, which were a subsample of the photo points. Of the plots remeasured from the 1968 inventory, 66 had changed land use.

An improved procedure for the calculation of area estimates was incorporated into the 1979 reinventory of Ohio's forest resources. All area estimates were developed by county or small groups of counties rather than by geographic units. Trends in land use for plots from the previous inventory were developed at the survey-unit level. Within units, a series of general rules were used to decide which counties were unique sampling units or grouped to form "super counties":

1. The county or super county had to contain approximately 60,000 acres of commercial forest land.
2. Where possible, adjacent counties within service forester areas were grouped to form super counties.
3. Counties with sampling anomalies were grouped with an adjacent county to produce more consistent estimates over time.

Definition of terms

Board foot. A unit of lumber measurement 1 foot long, 1 foot wide, and 1 inch thick, or its equivalent.

Commercial forest land. Forest land producing or capable of producing crops of industrial wood (more than 20 cubic feet per acre per year) and not withdrawn from timber utilization.

County and municipal lands. Lands owned by counties and local public agencies or municipalities or leased to them for 50 years or more.

Federal lands. Lands (other than National Forests) administered by Federal agencies.

Forest land. Land at least 10 percent stocked with trees of any size or that formerly had such tree cover and is not currently developed for nonforest use. The minimum area for classification of forest land is 1 acre.

Forest trees. Woody plants that have well-developed stems and are usually more than 12 feet in height at maturity.

Growing-stock trees. Commercial species classified as sawtimber, poletimber, saplings, and seedlings; that is, all live trees of commercial species except rough and rotten trees.

Growing-stock volume. Net volume, in cubic feet of growing-stock trees 5.0 inches dbh and larger, 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. Net volume equals gross volume, less deduction for cull.

Industrial wood. All roundwood products except fuelwood.

Land area. (a) Bureau of Census: The area of dry land and land temporarily or partly covered by water, such as marshes, swamps, and river flood plains; streams, sloughs, estuaries, and canals less than 1/8 statute mile wide; and lakes, reservoirs, and ponds less than 40 acres in area. (b) Resources Evaluation: same as (a) except that the minimum width of streams, etc., is 120 feet, and the minimum size of lakes, etc., is 1 acre.

Logging residues. The unused portions of growing-stock trees harvested or killed in the process of logging.

National Forest lands. Federal lands legally designated as National Forests or purchase units and other lands administered as part of the National Forest System by the USDA Forest Service.

Noncommercial forest land. Productive-reserved, urban, and unproductive forest land.

Nonforest land. Land that has never supported forests, or land formerly forested but now in nonforest use such as cropland, pasture, residential areas, and highways.

Other removals. The growing-stock volume of trees that were removed from the inventory by cultural operations (weeding, thinning, etc.), land clearing, or reclassification of some commercial forest land as noncommercial forest land and were not used for products.

Poletimber trees. Live trees of commercial species meeting regional specifications of soundness and form and at least 5.0 inches in dbh, but smaller than sawtimber trees.

Productive-reserved forest land. Forest land sufficiently productive to qualify as commercial forest land, but withdrawn from timber utilization through statute, administrative designation, or exclusive use for Christmas tree production.

Roundwood products. Logs, bolts, or other round timber generated by harvesting trees for industrial or consumer uses.

Saplings. Live trees 1.0 through 4.9 inches dbh.

Sawtimber trees. Live trees of commercial species at least 9.0 inches dbh for softwoods or 11.0 inches for hardwoods containing at least one 12-foot sawlog or two non-contiguous 8-foot sawlogs, and meeting regional specifications for freedom from defect.

Seedlings. Live trees less than 1.0 inch dbh that are expected to survive.

State lands. Lands owned by the State or leased to the State for 50 years or more.

Unproductive forest land. Forest land that is incapable of producing 20 cubic feet per acre per year of industrial wood under natural conditions, because of adverse site conditions.

Urban forest land. Noncommercial forest land within urban areas that is completely surrounded by urban development (not parks), whether commercial, industrial, or residential.

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Table 1.—Land area by land class, Ohio, 1979

Land class	Area	
	<i>Thousand acres</i>	<i>Percent</i>
Commercial forest land	6,917.1	26
Noncommercial forest land:		
Productive reserved	119.4	1
Urban	40.5	W
Unproductive	43.1	W
Total noncommercial	203.0	1
Total forest land	7,120.1	27
Nonforest land:		
Cropland ^a	10,977.8	42
Pasture ^a	2,154.4	8
Other ^b	5,976.2	23
Total nonforest	19,108.4	73
Total land area ^c	26,228.5	100

^a Source: U.S. Dep. Commer., Bur. Census, 1980. 1978 Census of Agriculture, preliminary report. AC78-P-39-000. p. 1.

^b Includes swampland, industrial and urban areas, other nonforest land, and 80,500 acres classed as water by Resources Evaluation standards, but defined by the Bureau of the Census as land.

^c U.S. Dep. Commer., Census, County and City Data Book, 1972.

W—Less than 0.5 percent

Table 2.—Land area, by geographic unit and land class, Ohio, 1979

(In thousands of acres)

Geographic unit	Forest land					Nonforest land	All land
	Commercial	Productive reserved	Urban	Unproductive	Total		
South-Central	1,601.3	24.8	0.2	0.5	1,626.8	1,680.7	3,307.5
Southeastern	1,247.7	14.5	—	2.2	1,264.4	811.1	2,075.5
East-Central	1,657.7	12.2	—	24.2	1,694.1	1,713.3	3,407.4
Northeastern	1,240.4	44.0	31.8	15.5	1,331.7	3,783.1	5,114.8
Southwestern	470.2	15.0	6.9	—	492.1	4,319.5	4,811.6
Northwestern	699.8	8.9	1.6	.7	711.0	6,800.7	7,511.7
Total	6,917.1	119.4	40.5	43.1	7,120.1	19,108.4	26,228.5

Table 3.—Area of commercial forest land, by ownership class and geographic unit, Ohio, 1979

(In thousands of acres)

Ownership Class	South-Central	South-eastern	East-Central	North-eastern	South-western	North-western	Total
National Forest	68.2	78.3	12.8	—	—	—	159.3
Other federal	—	—	.3	14.6	0.4	0.1	15.4
State	110.4	42.6	16.9	13.8	2.1	9.7	195.5
County and Municipal	.1	—	25.2	10.4	2.4	3.9	42.0
Total public	178.7	120.9	55.2	38.8	4.9	13.7	412.2
Corporate	162.3	153.0	245.2	98.5	31.8	24.9	715.7
Other private	1,260.3	973.8	1,357.3	1,103.1	433.5	661.2	5,789.2
Total private	1,422.6	1,126.8	1,602.5	1,201.6	465.3	686.1	6,504.9
Total, all ownerships	1,601.3	1,247.7	1,657.7	1,240.4	470.2	699.8	6,917.1

Table 4.—Land area, by county, geographic unit, and land class, Ohio, 1979

County and geographic unit	Forest land			Nonforest land ^a	Total land ^b	Propor- tion comm- erial ^c
	Noncom- mercial	Commercial				
		Public	Private			
----- Thousand acres ----- Percent						
Adams	4.1	11.9	182.1	177.6	375.7	52
Brown	.1	.2	82.3	231.0	313.6	26
Clermont	3.8	.8	92.8	195.7	293.1	32
Gallia	.1	10.6	161.3	129.4	301.4	57
Highland	2.3	2.2	62.7	284.2	351.4	18
Jackson	1.9	5.2	167.5	93.6	268.2	64
Lawrence	3.6	51.6	161.8	74.8	291.8	73
Pike	2.0	10.0	167.3	104.2	283.5	63
Ross	3.0	22.5	146.3	267.9	439.7	38
Scioto	4.6	63.7	198.5	122.3	389.1	67
South-Central Unit	25.5	178.7	1,422.6	1,680.7	3,307.5	48
Athens	2.7	13.5	178.3	128.1	322.6	59
Hocking	3.1	26.5	141.9	97.9	269.4	63
Meigs	.7	2.3	185.0	91.0	279.0	67
Morgan	1.7	4.7	130.2	132.2	268.8	50
Perry	3.0	23.3	125.0	111.1	262.4	57
Vinton	3.0	24.6	165.0	70.4	263.0	72
Washington	2.5	26.0	201.4	180.4	410.3	55
Southeastern Unit	16.7	120.9	1,126.8	811.1	2,075.5	60
Belmont	4.2	3.4	176.6	157.6	341.8	53
Carroll	.4	3.9	111.3	134.0	249.6	46
Coshocton	.1	5.2	162.1	192.3	359.7	47
Guernsey	5.4	1.1	163.7	167.7	337.9	49
Harrison	.6	9.9	132.5	113.6	256.6	55
Holmes	9.5	.2	77.0	184.7	271.4	28
Jefferson	.9	4.0	130.4	127.7	263.0	51
Monroe	.9	14.6	172.6	103.7	291.8	64
Muskingum	4.3	8.4	176.1	227.9	416.7	44
Noble	9.5	3.1	139.3	102.8	254.7	56
Tuscarawas	.6	1.4	160.9	201.3	364.2	45
East-Central Unit	36.4	55.2	1,602.5	1,713.3	3,407.4	49
Ashland	0.4	2.7	49.8	218.5	271.4	19
Ashtabula	4.6	—	187.9	255.5	448.0	42
Columbiana	2.8	1.8	128.5	208.7	341.8	38
Cuyahoga	34.2	—	—	257.6	291.8	0
Erie	.4	.5	18.4	149.7	169.0	11
Geauga	6.4	2.0	122.2	129.9	260.5	48
Huron	.7	1.0	37.6	278.7	318.0	12
Lake	3.7	.7	39.7	103.7	147.8	27
Lorain	1.6	.1	44.5	270.6	316.8	14
Mahoning	2.2	1.0	68.8	193.6	265.6	26
Medina	1.4	.2	58.0	212.4	272.0	21
Portage	6.6	11.1	79.1	220.0	316.8	28
Richland	.4	3.2	60.8	253.0	317.4	20
Stark	.3	1.2	61.5	305.6	368.6	17
Summit	5.4	7.1	50.2	198.4	261.1	22
Trumbull	20.0	5.0	136.2	227.9	389.1	36
Wayne	.2	1.2	58.4	299.3	359.1	17
Northeastern Unit	91.3	38.8	1,201.6	3,783.1	5,114.8	24

Table 4.—Continued.

County and geographic unit	Forest land			Nonforest land ^a	Total land ^b	Propor- tion commen- cial ^c
	Noncom- mercial	Commercial				
		Public	Private			
	----- Thousand acres -----					Percent
Butler	4.6	0.2	32.2	264.4	301.4	11
Clark	.1	W	17.2	240.0	257.3	7
Clinton	1.9	.4	16.1	244.0	262.4	6
Darke	.1	.1	28.9	358.1	387.2	7
Fairfield	.6	.1	49.0	273.5	323.2	15
Fayette	.4	.2	9.5	248.5	258.6	4
Franklin	.5	.4	24.4	319.0	344.3	7
Greene	1.9	.5	20.9	242.3	265.6	8
Hamilton	4.1	.3	45.4	215.2	265.0	17
Licking	.8	.3	105.6	332.3	439.0	24
Madison	.5	.1	9.2	286.5	296.3	3
Miami	.1	W	14.7	245.7	260.5	6
Montgomery	2.1	.6	23.2	267.9	293.8	8
Pickaway	.5	.3	15.9	305.9	322.6	5
Preble	1.9	.7	26.5	244.2	273.3	10
Warren	1.8	.7	26.6	232.0	261.1	10
Southwestern Unit	21.9	4.9	465.3	4,319.5	4,811.6	10
Allen	0.1	W	13.2	249.1	262.4	5
Auglaize	W	.1	17.4	238.5	256.0	7
Champaign	.4	.2	15.0	260.9	276.5	5
Crawford	W	.6	24.2	233.8	258.6	10
Defiance	.6	1.4	41.6	220.1	263.7	16
Delaware	1.4	1.0	38.8	246.8	288.0	14
Fulton	.6	1.0	27.6	231.3	260.5	11
Hancock	.2	.3	28.2	311.8	340.5	8
Hardin	.1	.7	26.5	271.6	298.9	9
Henry	.6	.6	16.7	248.3	266.2	6
Knox	.2	.5	85.3	253.8	339.8	25
Logan	.5	.4	28.0	265.5	294.4	10
Lucas	.6	.9	24.4	193.6	219.5	12
Marion	1.3	.6	21.2	236.1	259.2	8
Mercer	.1	W	16.1	268.0	284.2	6
Morrow	1.3	1.0	38.0	217.6	257.9	15
Ottawa	.1	.1	7.3	159.5	167.0	4
Paulding	.7	.8	22.7	242.7	266.9	9
Putnam	.1	W	12.7	298.2	311.0	4
Sandusky	.2	.2	11.2	250.2	261.8	4
Seneca	.2	.3	28.2	323.9	352.6	8
Shelby	.4	.5	34.3	225.9	261.1	13
Union	.4	.2	15.0	262.2	277.8	5
Van Wert	.1	W	10.9	250.8	261.8	4
Williams	.7	1.7	48.6	218.4	269.4	19
Wood	.3	.2	16.7	379.0	396.2	4
Wyandot	W	.4	16.3	243.1	259.8	6
Northwestern Unit	11.2	13.7	686.1	6,800.7	7,511.7	9
All counties	203.0	412.2	6,504.9	19,108.4	26,228.5	26

^a Includes productive-reserved, urban, and unproductive forest land.^b Source: U.S. Dep. Commer., Census, County and City Data Book, 1972.^c Percentage of total land area that is in commercial forest.

W—Less than 500 acres.

**Table 5.—Area of forest land, by county and geographic unit, Ohio,
1942, 1952, and 1968**

Unit	1942 ^a	1952 ^b	1968 ^c
Adams	105.6	188	187.1
Brown	32.7	49	76.8
Clermont	33.9	59	91.0
Gallia	77.5	130	159.1
Highland	32.6	59	84.2
Jackson	106.3	124	141.6
Lawrence	115.9	184	208.1
Pike	118.7	161	169.4
Ross	110.7	165	170.3
Scioto	217.2	237	259.7
South-Central Unit	951.1	1,356	1,547.3
Athens	115.5	138	217.8
Hocking	128.3	151	198.4
Meigs	71.4	132	168.1
Morgan	47.0	93	117.3
Perry	57.9	87	132.9
Vinton	155.4	179	196.9
Washington	101.3	192	250.1
Southeastern Unit	676.8	972	1,281.5
Belmont	76.5	102	158.3
Carroll	51.8	60	113.8
Coshocton	48.1	102	148.4
Guernsey	47.9	87	155.4
Harrison	35.9	74	138.7
Holmes	49.8	54	93.5
Jefferson	80.7	107	148.2
Monroe	64.6	128	183.8
Muskingum	61.7	128	175.6
Noble	35.1	53	115.7
Tuscarawas	51.2	101	156.3
East-Central Unit	603.3	996	1,587.7
Ashland/Richland	76.5	106	98.9
Ashtabula	88.0	119	121.7
Columbiana	48.2	78	98.3
Cuyahoga	11.0	55	41.7
Erie/Huron	44.8	70	64.8
Geauga/Lake	99.3	153	129.3
Lorain/Medina	54.4	92	92.3
Mahoning	24.9	53	56.1
Portage/Summit	74.8	125	153.8
Stark/Wayne	54.7	86	89.4
Trumbull	92.2	91	99.4
Northeastern Unit	668.8	1,028	1,045.7
Butler/Hamilton	43.9	79	83.4
Clark/Darke/Miami	39.6	61	46.7
Clinton/Greene/ Montgomery/Preble/Warren	69.1	124	110.8
Fairfield/Licking	79.7	107	100.6
Fayette/Franklin/Madison/Pickaway	48.4	59	48.8
Southwestern Unit	280.7	430	390.3
Allen/Auglaize/Mercer/ Putnam/Van Wert	73.9	112	69.6
Champaign/Logan/Shelby/Union	66.2	95	88.5
Crawford/Hardin/Wyandot	68.7	72	57.7
Defiance/Fulton/Henry/Lucas Paulding/Williams	116.4	144	123.8
Delaware/Marion/Morrow	69.7	75	67.0
Hancock/Ottawa/Sandusky/Seneca/Wood	97.9	118	82.8
Knox	34.5	48	63.4
Northwestern Unit	527.3	664	552.8
All counties	3,708.0	5,446	6,405.3

^a Diller 1944.

^b Hutchison and Morgan 1956.

^c Kingsley and Mayer 1970.

Table 6.—Area of commercial forest land, by county and geographic unit, Ohio, 1968 and 1979

County ^a geographic unit	1968	1979	Change	Change	Sampling errors	
					1968	1979
--- Thousand acres --- --- Percent ---						
Adams	197.2	194.0	- 3.2	- 2	4	5
Brown	74.6	82.5	+ 7.9	+ 11	11	10
Clermont	85.1	93.6	+ 8.5	+ 10	7	4
Gallia	164.6	171.9	+ 7.3	+ 4	2	6
Highland	75.8	64.9	- 10.9	- 14	18	6
Jackson	148.1	172.7	+ 24.6	+ 17	6	4
Lawrence	199.0	213.4	+ 14.4	+ 7	6	3
Pike	180.6	177.3	- 3.3	- 2	2	2
Ross	172.4	168.8	- 3.6	- 2	6	4
Scioto	262.7	262.2	- .5	W	3	2
South-Central Unit	1,560.1	1,601.3	+ 41.2	+ 2.6	1.9	1.3
Athens	215.1	191.8	- 23.3	- 11	7	4
Hocking	178.8	168.4	- 10.4	- 6	7	3
Meigs	182.3	187.3	+ 5.0	+ 3	3	4
Morgan	118.6	134.9	+ 16.3	+ 14	7	8
Perry	120.6	148.3	+ 27.7	+ 23	9	3
Vinton	197.1	189.6	- 7.5	- 4	7	4
Washington	238.6	227.4	- 11.2	- 5	5	6
Southeastern Unit	1,251.1	1,247.7	- 3.4	- 0.3	2.4	2.0
Belmont	173.1	180.0	+ 6.9	+ 4	4	4
Carroll	105.2	115.2	+ 10.0	+ 10	8	8
Coshocton	171.8	167.3	- 4.5	- 3	8	3
Guernsey	156.4	164.8	+ 8.4	+ 5	9	6
Harrison	148.5	142.4	- 6.1	- 4	10	9
Holmes	72.3	77.2	+ 4.9	+ 7	10	9
Jefferson	126.8	134.4	+ 7.6	+ 6	8	6
Monroe	178.5	187.2	+ 8.7	+ 5	8	5
Muskingum	172.2	184.5	+ 12.3	+ 7	6	5
Noble	136.6	142.4	+ 5.8	+ 4	11	10
Tuscarawas	144.2	162.3	+ 18.1	+ 13	7	7
East-Central Unit	1,585.6	1,657.7	+ 72.1	+ 4.5	2.5	2.0

County ^a geographic unit	1968	1979	Change	Change	Sampling errors	
					1968	1979
--- Thousand acres --- --- Percent ---						
Ashland/Richland	95.9	116.5	+ 20.6	+ 21	14	7
Ashtabula	192.2	187.9	- 4.3	- 2	8	3
Columbiana	118.0	130.3	+ 12.3	+ 10	11	4
Cuyahoga	—	—	—	—	—	—
Erie/Huron	59.2	57.5	- 1.7	- 3	30	16
Geauga/Lake	119.3	164.6	+ 45.3	+ 38	23	7
Lorain/Medina	95.3	102.8	+ 7.5	+ 8	18	11
Mahoning	61.2	69.8	+ 8.6	+ 14	19	6
Portage/Summit	131.1	147.5	+ 16.4	+ 13	21	14
Stark/Wayne	121.6	122.3	+ .7	+ 1	12	10
Trumbull	136.0	141.2	+ 5.2	+ 4	12	8
Northeastern Unit	1,129.8	1,240.4	+ 110.6	+ 9.8	5.0	2.8
Butler/Hamilton	73.9	78.1	+ 4.2	+ 6	24	15
Clark/Darke/Miami	53.9	60.9	+ 7.0	+ 13	17	11
Clinton/Greene/ Montgomery/Preble/ Warren	103.0	116.2	+ 13.2	+ 13	19	14
Fairfield/Licking	120.3	155.0	+ 34.7	+ 29	19	6
Fayette/Franklin/ Madison/Pickaway	61.7	60.0	- 1.7	- 3	24	21
Southwestern Unit	412.8	470.2	+ 57.4	+ 13.9	9.5	5.5
Allen/Auglaize/Mercer/ Putnam/Van Wert	58.1	70.4	+ 12.3	+ 21	29	19
Champaign/Logan/ Shelby/Union	86.4	93.6	+ 7.2	+ 8	26	15
Crawford/Hardin/ Wyandot	63.0	68.7	+ 5.7	+ 9	31	17
Defiance/Fulton/Henry/ Lucas Paulding/ Williams	145.5	188.0	+ 42.5	+ 29	15	7
Delaware/Marion/ Morrow	95.2	100.6	+ 5.4	+ 6	14	10
Hancock/Ottawa/ Sandusky/Seneca/ Wood	77.6	92.7	+ 15.1	+ 19	21	15
Knox	89.6	85.8	- 3.8	- 4	17	6
Northwestern Unit	615.4	699.8	+ 84.4	+ 13.7	7.7	4.6
All counties	6,554.8	6,917.1	+ 362.3	+ 5.5	1.6	1.0

^a Multi-county groupings are used for counties with too few field plots or with other sampling anomalies. This is done to minimize sampling errors when more detailed county-level data are presented.

W—Less than 0.5 percent.

Table 7.—Land in farms, Ohio, 1950-78

Land use	1950	1954	1959	1964	1969	1974	1978
<i>----- Thousand acres -----</i>							
Land in farms	20,969.4	19,991.6	18,506.8	17,619.5	17,111.5	15,668.2	16,088.4
Harvested cropland	10,295.6	10,340.0	9,743.5	9,276.4	8,515.3	9,680.5	10,289.5
Cropland used only for pasture	2,049.3	1,709.6	1,504.7	1,164.2	1,725.7	1,515.4	1,257.7
Other cropland	1,033.9	749.5	1,007.2	1,423.2	2,206.1	570.3	688.3
Other land including other pasture land	4,544.1	4,284.3	3,708.4	3,388.4	2,485.1	2,050.8	1,865.9
Woodland, including woodland pasture	3,046.6	2,908.3	2,543.0	2,366.0	2,366.0	1,851.4	1,987.0

Sources: U.S. Dep. Commer., Bur. Census 1974 Census of Agriculture, Ohio, Vol. 1; and 1978 Census of Agriculture, Preliminary Report, Ohio.

**Table 8.—Trends in number of farms and farms
with woodlands, Ohio, 1950-78**

Year	Number of farms	Number of farms with woodlands	Percent of farms with woodlands
<i>----- Thousand acres -----</i>			<i>Percent</i>
1950	199.4	118.6	59.5
1954	177.1	106.6	60.2
1959	140.4	88.6	63.1
1964	120.4	75.9	63.0
1969	111.3	65.9	59.2
1974	92.2	51.1	55.4
1978	95.8	52.7	55.0

Source: U.S. Dep. Commer., Bur. Census, 1974 Census of Agriculture; Ohio, Vol. 1; and 1978 Census of Agriculture, Preliminary Report, Ohio.

Table 9.—Trends in average area per farm and woodland area per farm, Ohio, 1950-78

Year	Area per farm	Woodland area per farm
1950	105	25.7
1954	113	27.3
1959	132	28.7
1964	146	31.2
1969	154	33.1
1974	170	36.2
1978	168	37.7

Sources: U.S. Dep. Commer., Bur. Census, 1974 Census of Agriculture, Ohio, Vol 1; and 1978 Census of Agriculture, Preliminary Report, Ohio.

Table 10.—Land use in farms, from Census of Agriculture 1969-78

Land use	All farms			Farms with sales of \$2,500 and over		
	1969	1974	1978	1969	1974	1978
Harvested cropland	8,515,275	9,680,470	10,289,523	7,778,695	9,360,973	10,007,182
Cropland used only for pasture	1,725,734	1,515,372	1,257,665	1,203,442	1,134,658	1,034,179
Other cropland	2,206,080	570,252	688,308	1,653,975	458,700	580,801
Woodland:						
Pasture				559,515	487,241	
Not pastured				931,187	990,330	
Total	2,179,233	1,851,361	1,986,991	1,490,702	1,477,571	1,619,794
Other land:						
Improved pasture land				403,476	293,322	
Unimproved pasture land				467,765	488,477	
Pasture land, other than cropland and woodland pasture			896,702	871,241	781,799	744,052
Land in house lots, barn lots, ponds, wasteland, etc.				826,746	878,233	823,521
Total	2,485,137	2,050,783	1,865,935	1,697,987	1,660,032	1,567,573

Table 11.—Volume of growing stock on commercial forest land converted to nonforest uses in Ohio, 1968-78

Land class	Land area changing	Mean volume per acre			Total volume		
		Used	Unused	Total	Used	Unused	Total
	<i>Thousand acres</i>	<i>Cubic feet per acre</i>			<i>Thousand cubic feet</i>		
Agricultural	211.2	10.4	5.4	15.8	2,196.5	1,140.5	3,337.0
Row	52.8	121.0	155.6	276.6	6,388.8	8,215.7	14,604.5
Mining	42.2	30.6	27.6	58.2	1,291.3	1,164.7	2,456.0
Water	70.4	308.4	308.4	616.8	21,711.4	21,711.4	43,422.8
Administrative withdrawals	49.5	.0	874.3	874.3	.0	43,277.9	43,277.9
Urban	59.9	.0	.0	.0	.0	.0	.0
All classes	486.0	54.1	261.6	315.7	31,588.0	75,510.2	107,098.2

Birch, Thomas W.; Wharton Eric H. **Land use change in Ohio, 1952 to 1979**. Broomall, PA: Northeast. For. Exp. Stn.; 1982; USDA For. Serv. Resour. Bull. NE-70. 24 p.

An analytical report on trends of major land uses in Ohio from 1952 to 1979. The relationship between the decline in farm area and increase in forest land is emphasized. The losses of wood fiber attributable to clearing forest land between 1968 and 1979 are also estimated.

ODC 905.2(771)

Keywords: Forest land, cropland, pasture, removals, utilization.

Headquarters of the Northeastern Forest Experiment Station are in Broomall, Pa. Field laboratories are maintained at:

- **Amherst, Massachusetts, in cooperation with the University of Massachusetts.**
 - **Berea, Kentucky, in cooperation with Berea College.**
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