

AN INVESTIGATION OF PRIVATE FOREST
LANDOWNERSHIP IN THE SOUTHERNMOST
THIRTY-SEVEN COUNTIES OF THE LOWER
PENINSULA OF MICHIGAN

Thesis for the Degree of Ph. D.
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Con H Schallau

1961



This is to certify that the
thesis entitled
AN INVESTIGATION OF PRIVATE FOREST LANDOWNERSHIP
IN THE SOUTHERNMOST THIRTY-SEVEN COUNTIES
OF THE LOWER PENINSULA OF MICHIGAN
presented by
Con H. Schallau

has been accepted towards fulfillment
of the requirements for
Ph.D. degree in Forestry


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Date July 10, 1961

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ABSTRACT

AN INVESTIGATION OF PRIVATE FOREST LANDOWNERSHIP IN THE SOUTHERNMOST THIRTY-SEVEN COUNTIES OF THE LOWER PENINSULA OF MICHIGAN

by Con H. Schallau

Some 127,000 landowners hold 2,428,000 acres of forest land in the 37-county study area of southern Michigan. Nearly two-thirds of the forest land is divided among landowners having less than 25 acres of forest land. Only 12 percent own more than 50 acres. It is apparent that economic incentives to practice forestry are quite limited for most forest landowners in the study area.

Private woodland owners were classified into 12 occupational groups. The full-time farmer group accounted for the largest single share (24 percent) and the business-professional group ranked a close second with 20 percent of the forest acreage.

It was estimated that the average woodland owner held his forest tract 25 years. This rate of turnover of forest land is relatively rapid when the time it takes a tree to produce timber products is taken into account. The owner who already has a producing woodland enterprise is able to formulate plans and expectations regarding future returns from his forest land. But for the individual possessing cut-over land, the time it would take to produce monetary

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returns would generally outdistance his managerial life cycle.

The 207 interviewees were classified according to their concepts of forest management. An owner's concept of forest management was found to vary with his age, occupation, and family ties.

Collectively, the southern Michigan woodland owners make a significant contribution to the state's forest economy, but for many of the individual owners the income received (if any) from the sale of timber products is generally unimportant. Only a third of the owners had harvested timber products during their tenure.

Owners who had harvested timber during the five-year period, 1954-1959, had their cutting practices appraised. Three out of five of such owners harvested in a "fair" or better manner, but "poor" cutting was more prevalent than "good" cutting. Cutting practices varied considerably among occupational groups. For instance, 50 percent of the business-professional group qualified for a "good" classification, while none of the wage earners were so ranked. Cutting practices also varied depending on the owner's age, family ties and concept of forest management.

The majority of the respondents selling stump-age restricted the logger's cutting activity, but 41

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percent allowed the operator to cut any tree he wanted. Actually, 34 percent of the sellers of timber products intended that everything merchantable be harvested.

Findings of this study disclosed that most of the woodland owners who sold timber were poorly informed regarding timber marketing procedures. Fifty-six percent of the owners admitted that they had no basis for judging the fairness of the prices received for their timber products; 89 percent accepted only one bid before selling their timber, and only 36 percent of the interviewees who sold timber used a written contract.

Urban encroachment was found to be an important factor affecting the forest resources in southern Michigan. The actual usurping of forest land was not the only facet of urbanization shown to be important. Forest landowners in the urban fringe were less inclined to claim timber production as their objective of holding forest property than woodland owners in the less densely populated sectors. "Poor" cutting practices were more pronounced in the urban fringe than elsewhere.

Woodland owners were queried regarding their participation and interest in various forestry assistance programs. Although few interviewees had participated, the interest shown in certain programs was encouraging. The Cooperative Forest Management service forestry program had the most appeal both in

terms of actual participation and potential clientele.

Owners were apathetic toward such institutional devices as yield taxes, forest credit and the capital gains provision of the income tax code. A significant share of the interviewees did show interest in a timber products price and market information service.

It was concluded that the present level of timber output from southern Michigan's forests can be maintained indefinitely despite the threat of urbanization. On the other hand, overcutting could lead to degeneration of present timber market channels. This suggests the need for directing more information and assistance to owners of merchantable growing stock to effect more orderly marketing of their timber products.

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By

Con H. Schallau

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AN INVESTIGATION OF PRIVATE FOREST LANDOWNERSHIP
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CHAPTER I

INTRODUCTION

Private forest landownership has been identified as a "forestry problem" for many years. For instance, in the Forest Service's first comprehensive forest resource analysis, the Capper Report,¹ prepared over forty years ago, ownership was singled out as a basic forestry problem. Today, however, the concern regarding private forest landownership represents a 180-degree shift from that of the Capper Report.

The official title of the Capper Report, "Timber Depletion, Lumber Prices, Lumber Exports, and Concentration (*italics mine*) of Timber Ownership" immediately suggests the contrast. It is paradoxical that in a relatively short span of years foresters have been concerned with both too few and too many timber landowners.

¹U.S.D.A. Forest Service, "Timber Depletion, Lumber Prices, Lumber Exports, and Concentration of Timber Ownership," Report on Senate Resolution 311, U.S.D.A., 1920, 71 pp.

Looking back, it can't be said that foresters actually solved the early "large ownership problem." If anything, it resolved itself. Many of the early large owners either lost or liquidated their holdings. In more recent years, large ownerships have become accepted as an aid and not a handicap to forestry.

It would be highly desirable if, in the future, the small private ownership problem would favorably resolve itself without the intervention of forestry programs. However, there is no adequate basis for such presumption.

Urbanization during the past decade and a half promises to introduce additional complexities to the small ownership problem and to the general forest resource situation as well. The extreme mobility and growth of the nation's population, manifest in the rapid expansion of its cities and villages, has only recently been recognized as a real threat to the forest resource base of our country. For example, the Forest Service Chief, R. E. McArdle, recently had this to say with regard to urban growth:

There isn't going to be enough land to go around. Up to a few years ago we in the Forest Service thought there was ample land in trees to grow our timber needs if efficiently managed. Even in the Timber Resource Review study completed in 1958, we only raised a mild caution on this point. We suggested then that further significant reduction in commercial forest land should be made only 'with full realization that such withdrawals

may adversely affect future timber supply.' In light of present circumstances we think this was too conservative. We are now genuinely concerned.²

Initially at least, urbanization will have its greatest impact on the small private forest ownerships located near the outskirts of the nation's major metropolitan areas. This process raises serious questions about the location of efforts in the public and private assistance programs which are attempting to increase the efficiency of the nation's small private forest land holdings.

It is becoming increasingly apparent that forestry assistance programs will have to assume a higher degree of selectivity in the future than is presently the case. In the first place, as Kenneth Pomeroy has pointed out, "We are not equipped with enough man power to treat all potential clients."³ And even if we were, there would be little justification for attempts to encourage all small woodland owners to devote more time to their woodland enterprise(s). This is because there is good reason to believe, as Marion Clawson points out, that many small woodland owners are

²Richard E. McArdle, "The Sixties--Decade of Decision." Address before 83rd Annual Convention of American Pulp and Paper Assn., New York, Feb. 25, 1960, p. 4.

³Kenneth B. Pomeroy, "The Problem," American Forests, 64(5): 14-15, 38-44, 1958.

behaving in an economically more rational manner, given their aims and objectives, than their advisors have proposed.⁴

The matter of selectivity has several facets. For one thing, such an approach would recognize regional, state, and even intra-state differences as far as timber productivity potential of the private owner is concerned. It would also allow for the fact that certain educational and technical assistance programs are more effective than other means to reach particular objectives in given regions. And lastly, of course, a more discretionary administration of educational and technical assistance programs would recognize that certain types of owners will respond more favorably than others to assistance programs.

It is obvious that if a more discretionary approach to forestry assistance programs is to be undertaken, we must be able to develop criteria which will serve to most efficiently direct public and private assistance funds to those owners whose potential for increasing the nation's timber output is the greatest. Size might be one criterion. The TRR points out that, by concentrating programs on owners

⁴Marian Clawson, "Economic Size of Forestry Operations," Jour. of Forestry, 55:521-526, 1957.

of more than 30 acres of commercial forest land, for example, half of the small woodland owners might be eliminated with a loss of coverage of only six percent of the total commercial forest land area.⁵ But as Pomeroy mentions, using size alone as a criterion might lead to rank discrimination; ten acres of good Douglas fir might be worth more than half a township of scrub oak.⁶

If size is not an all-inclusive criterion to use, then what other factors should be used by those who are endeavoring to promote improved management on small forest holdings? Many of the answers are dependent upon the owners themselves. We must learn more about them--who they are, how they react to suggestions, why some practice forestry and why some don't.

Objectives of the Study

This study was undertaken primarily in recognition of the need for more information about the small private forest landownership situation in the nation's farm woodlot areas.⁷ Since the study area selected

⁵U.S.D.A. Forest Service, Timber Resources for America's Future, U.S.D.A. Forest Resource Report 14, 1958, p. 321.

⁶Pomeroy, op. cit., p. 43.

⁷This investigation was an official study of the Lake States Forest Experiment Station. The objectives were initially set forth in the work plan for line project No. FS.-4-el-4-LS, dated October, 1958.

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encompasses several metropolitan areas it also afforded an opportunity to examine certain aspects of urban growth which affect forest resources.

The development of criteria to guide the administration of forestry assistance programs was not within the scope of this study. Rather, the study was designed to seek and identify certain problems and to provide clues which might guide the administration of the forestry assistance programs in the study area. More specifically, the objectives of this study were as follows:

1. To determine who are the small woodland owners, how they may be grouped into various owner classes (e.g., occupations and size of holdings), how much forest land each group owns, and how management differs between groups.
2. To determine the extent to which various forestry practices are being carried out by owners in the study area.
3. To determine if and how certain variables, such as size of holding, length of tenure, form of ownership, owner's age, distance of owner from forest land, experience with timber production and marketing, and urbanization affect the forest landowner's attitudes, concepts and actions regarding forest management.

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4. To determine the objectives of ownership and how they affect forest management.
5. To evaluate certain assistance programs in terms of owner acceptance and improved forestry practices and to suggest desirable changes.
6. To determine, on the basis of ownership patterns and owner attitudes, whether or not increased production of wood products from private forest land in the study area can be anticipated.

Study Area

The study area includes the southernmost 37 counties of the Lower Peninsula of Michigan. (See Figure 1 for study area location.) Once almost entirely covered with forest, the area is now only 17 percent forested.⁸

Except for the northern tier of counties which were once a part of the great Michigan pinery, the study area has never experienced an organized attempt to harvest the timber. Danford who describes early lumbering in southern Michigan as a transition stage--to an

⁸Virgil E. Findell, et al., Michigan's Forest Resources, U.S. Forest Service, Lake States Forest Expt. Sta., Sta. Paper 82, 1960, p. 5.

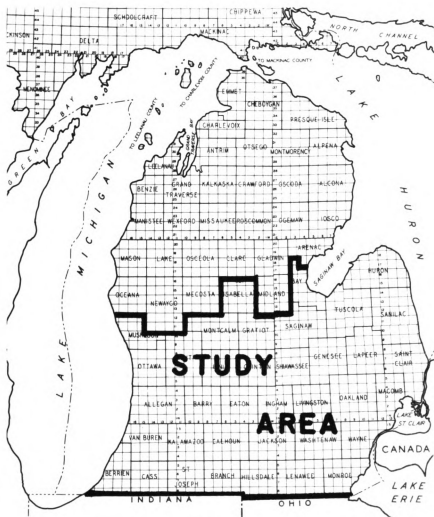


Figure 1. Southern Michigan Study Area

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industrial and agricultural base--points out that the pioneers were intent upon establishing farmsteads and that logging was strictly incidental.⁹

The study area, which coincides with District 4, Michigan, of the Lake States Forest Survey, accounts for most of the state's economic activity. This area, where 91 percent of the state's 7.8 million people live,¹⁰ supports about 75 percent of the total number of farms and 91 percent of the urban employment.

Such statistics would appear to relegate forestry to a minor position, especially in light of the fact that only 16.6 percent of the 15.2 million acres of the study area is classified as commercial forest.¹¹ However, a few comparisons between the forest resources of southern Michigan with those of the northern half of the Lower Peninsula, a region where timber production is generally conceded to be the highest and best use of much of the land, suggests that forestry should not be ignored in the study area. Seventy percent of the

⁹Ormand S. Danford, "The Social and Economic Effects of Lumbering on Michigan, 1835-1890," Michigan History Magazine, 26:346-364, 1942.

¹⁰J. Allen Beegle and John F. Thaden, "Population Changes in Michigan, 1950-1960," Mich. Agr. Expt. Sta., 1960, p. 3.

¹¹Private owners account for all but five percent of the commercial forest land in the study area. Cf., Findell, et al., op. cit., p. 39.

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northern half of the Lower Peninsula is forested in contrast to 17 percent in the southern half, but the latter area accounts for nearly twice as much sawtimber acreage--986,000 acres as compared to 501,000 acres.¹² The value of timber per unit of volume tends to be much higher in the study area than farther north. Thus, although the 1954 harvest from the forests of the northern half of the Lower Peninsula, in terms of cubic foot volume, was nearly twice that from southern Michigan's forests, the dollar value of the respective harvests was nearly the same--\$9.8 million in the northern half as compared to \$9.1 million in the southern half.¹³

¹²Findell, op. cit., p. 38.

¹³Source: Basic work tables, Michigan Survey Report, Fall, 1957, (unpublished).

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CHAPTER II

REVIEW OF THE LITERATURE

Research in forest landownership and management has expanded greatly in the last decade. Ten years ago there were only five such studies completed. To date, almost four times as many ownership studies have been conducted and their findings published. As a result, we know a good deal more about the nation's private woodland owner--his characteristics, his management, his marketing practices, and his knowledge of and interest in various government assistance programs.

The first portion of the ensuing literature review will attempt to capsulize the findings of the various forest landownership studies which have been completed. The second portion of the review takes cognizance of the fact that there is much to be accomplished in the future regarding private forest landownership research. For example, we need more information on owners' value systems and how these affect concepts of and interest in forest management. We need to determine the most effective information media to use in motivating woodland owners to accept particular ideas and practices regarding woodland management and

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product marketing. In the second section, "motivation and behavioral" research will be reviewed on the assumption that it is indicative of the approach which forest investigators will use in the future. The third and final section of Chapter II will pertain to urbanization and its probable impact on forests and other land resources.

Forest Landownership Studies

The first attempt to study private woodland owners was made in northwest Wisconsin.¹ The objective of this study was "to appraise the factors affecting private ownership in the region to obtain some clues as to trends in this form of tenure." This study, which was based on a mail canvass, was limited to a five-county area predominately held by large corporations.

Despite a limited scope and the fact that it was based on a mail canvass, the examination set a good standard for future studies. Among other things, for instance, the questionnaire was designed to evaluate owners' attitudes toward public assistance leading toward better forest management.

¹Charles H. Stoddard, Jr., "Future of Private Forest Land Ownership in the Northern Lake States," Journal of Land and Public Utilities Economics, 18:267-283, 1942.

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Another early study was that of Folweiler's which was conducted in Louisiana.² This study was of an exploratory nature and concerned public as well as private forest land. There was no attempt to undertake a strenuous examination of owner characteristics and the study did not consider attitudes at all. There was no questionnaire or interview involved. This investigation can best be summed up as serving to lay groundwork for future studies.

Shortly after Folweiler completed his survey of the situation in Louisiana, Chamberlin et al. conducted a more intensive ownership study in southern Arkansas, northern Louisiana, and central Mississippi.³ The work area was confined to one timber type--the loblolly-shortleaf. Although the questionnaire was designed to collect considerable information, very little was utilized in the final presentation.

The authors used a "pine stocking index" to rate an owner's management practices. This criterion, which was first outlined by Folweiler, assumed that

²A. D. Folweiler, "Forest Land Ownership in Louisiana and its Influence on Timber Production," Louisiana Agr. Expt. Sta. Bul. 377, 1944, 56 pp.

³H. H. Chamberlin, L. A. Sample, and Ralph W. Hayes, "Private Forest Land Ownership and Management in the Loblolly-Shortleaf Type in Southern Arkansas, Northern Louisiana and Central Mississippi," Louisiana Agr. Expt. Sta. Bul. 393, 1945, 46 pp.

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"an indication of the owner's attitude toward his forest land is to be found in its relative productive condition."

Using a case study approach, Barraclough conducted a study of private forest landowners in 23 New England towns.⁴ Designed to obtain basic information about owners of small forest holdings, the investigation made no attempt to relate owners or attitudes to forest management practices.

Mississippi Agricultural Experiment Station Technical Bulletin Number 33 describes a comprehensive analysis of private forest landownership in Central Mississippi.⁵ The investigation was directed toward finding out who the forest landowners were, how they grouped into different classes, how much forest land each group owned, how management differed between groups, and what were some of the important pressures, needs, abilities, beliefs and degrees of knowledge

⁴Solon L. Barraclough, "Forest Land Ownership in New England," Unpublished Ph.D. thesis, Harvard University, 1949, 269 pp.

Also for a summary see:

Solon Barraclough and James C. Rettie, "The Ownership of Small Private Forest Land-holdings in 23 New England Towns," U.S. Forest Service, Northeastern Forest Expt. Sta., Sta. Paper 34, 1950, 32 pp.

⁵Lee M. James, William P. Hoffman, and Monty Payne, "Private Forest Land Ownership and Management in Central Mississippi," Mississippi Agr. Expt. Sta. Technical Bul. 33, 1951, 38 pp.

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which affected the owners' decisions.

Timber management was rated on the basis of past cutting practices and fire protection. The technique was admittedly subjective, but more authentic than the "pine stocking index" used by Chamberlin et al. The investigation also evaluated the owner's concept of timber management, which was shown to have a direct bearing on management practices--as an owner's concept became more enlightened, the owner's management rating improved steadily. Owners were also interviewed concerning programs for improving timber management; however, there was no attempt made to delve into particular programs.

Yoho's study, which was patterned after the central Mississippi study, was conducted in the northern half of the Lower Peninsula of Michigan.⁶ He found that only a fraction of the owners were following good forest management practices. More significant, however, was the fact that only half of the owners in the study area saw a possibility of improving their timber management.

Unlike previous investigators, Yoho attempted to evaluate owners' attitudes and acceptance of specific

⁶James G. Yoho, "Private Forest Land Ownership and Management in 31 Counties of the Northern Portion of the Lower Peninsula of Michigan," Unpublished Ph.D. thesis, Michigan State University, 1956, 343 pp.

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programs directed toward improving forest management. Unfortunately, most owners were unfamiliar with such programs; this limited the attempt to determine the effectiveness of the programs in terms of owners' attitudes and improved forestry practices.

In a case study conducted on a small scale in Texas, Mignery tried to determine why some woodland owners practiced forestry while the majority failed to do so.⁷ Although the analysis failed to answer this question, it did shed light on what characterizes an owner who practices forestry. This investigation found that it was the more enlightened and well-to-do owners who practiced good forest management, but that even these individuals did not undertake management until professional foresters encouraged them to do so. In addition, nearly all of these owners had received continuous assistance from public or private agencies.

In a brief report of the results of 651 interviews with forest landowners in the Tennessee Valley, it was disclosed that better forest management was on the increase.⁸ This study used a rather complex system

⁷A. L. Mignery, "Factors Affecting Small Woodland Management in Nacogdoches County, Texas," Jour. of Forestry, 54(2):102-105, 1956.

⁸Tennessee Valley Authority, "Private Forest Management in the Tennessee Valley," T.V.A., Norris, Tennessee, 1954, 13 pp.

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of rating management practices. The evaluation rated management by a composite scoring of degree of planning, logging control, grazing control, employment of a cutting budget, fire protection, reforestation, timber cutting system, insect and disease control, and improvements.

Shortly after the findings of the preceding study were published, T.V.A. completed another ownership study.⁹ A case study approach was used, involving 505 woodland owners in the "T.V.A." states who had cooperated with the Authority and their respective state agency in establishing case demonstration forests. These 505 demonstration forests, which were established between 1943 and 1948, varied from 3 acres to 118,000 acres in size.

Using approximately the same scheme for rating management as in the 1954 T.V.A. investigation, the 505 owners were categorized into one of three management groups: "satisfactory," "unsatisfactory," and "marginal." The owners falling into the last group were not analyzed. This left 200 "satisfactory" and 89 "unsatisfactory" owners. Judging from these 289 interviews, the basic motive in good management was

⁹Tennessee Valley Authority, "Influence of Woodland and Owner Characteristics on Forest Management," T.V.A. Division of Forestry Relations Report 217-56, 1956, 38 pp.

pride of ownership and interest in productive land management as a long-time family enterprise.¹⁰ Low income and financial difficulties were the main reasons for unsatisfactory management.

Christensen,¹¹ working in New York State, developed, applied, and tested a methodology for investigating forest owners' management objectives. Though most of the subject matter dealt primarily with the statistical biases stemming from geographical differences, and the use of mail questionnaires, certain conclusions regarding the owners' objectives and motivations were given:¹²

1. The assumptions that woodlands are managed to produce timber for net return . . . may not be valid. In the counties comprising the study area, only 19 per cent of the 959 respondents listed a 'timber products for sale' objective.

2. The contributions of forest land in terms of wildlife, recreation, and home-use timber products appear to be the most important objectives in the minds of forest owners.

3. The role of timber products seems to be closely related to the acreage of forest owned . . . a substantial increase in the frequency of this objective is noted with each increase in woodland area class.

4. . . . the reason which underlies the existence of management objectives stems from a complex of sociological economic and psychological influences.

¹⁰Ibid., p. 4.

¹¹Wallace W. Christensen, "A Methodology for Investigating Forest Owners' Management Objectives," Unpublished Ph.D. thesis, State University of New York, 1957, 184 pp.

¹²Ibid., p. 115ff.

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In order to determine the consensus of opinion regarding suggested means to cope with the small woodland ownership problem, the American Forestry Association polled its membership in 1958.¹³ Using a structured-type questionnaire, the AFA asked its membership what they thought about certain public and private forestry assistance schemes. The result of this poll appeared in the American Forests about a year later.¹⁴

Although no single suggested scheme received the support of a simple majority of those voting, the poll did provide some insight as to what characterizes an AFA woodland owner.¹⁵

He would like some help in putting his forest in good condition, but he prefers to retain personal responsibility. He has confidence in his ability, if someone will show him how to do the job.

A study conducted in three counties in southern New York State by Webster and Stoltenberg was designed specifically to determine what ownership characteristics can be used to predict whether or not a woodland owner will respond to forestry assistance programs.¹⁶

¹³Kenneth B. Pomeroy, "American Forestry Association Small Woodlands Opinion Poll," American Forests, 64(7):31-33, 1958.

¹⁴Kenneth B. Pomeroy, "What the AFA Small Woodland Owners Want," American Forests, 65(2):14-15, 57-60, 1959.

¹⁵Ibid., p. 57.

¹⁶Henry H. Webster and Carl H. Stoltenberg, "What Ownership Characteristics Are Useful in Predicting Response to Forestry Programs?" Land Economics, 35(3):292-295, 1959.

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Although they tested such factors as owner's age, occupation, method by which forest property was acquired, years owned, distance of forest property from owner's residence, and value per acre of standing timber, none of these proved to be significantly related to whether or not the owner responds to forestry assistance. However, two other characteristics, acreage of forest land owned, and assessed value of the owner's property, were positively correlated with response to public assistance programs.

Bruce's work, which was limited to one aspect of the small ownership problem, describes the position of the woodland owner when he markets timber products.¹⁷ The total of 1,222 mail questionnaires analyzed in this study represented 2.6 percent of the small forest landowners in the Washington State study area. Bruce found that only 56 percent of the owners received "before-sale" assistance (i.e., aid in management, cruising, marking timber for sale, etc.). From this he concluded that:

Apparently one of two things is happening: either landowners are so well educated in forest practices that they need no assistance, or they are so uninformed that they do not realize their need for help.

¹⁷Richard W. Bruce, "Marketing, Sawlogs and Pulpwood From Small Woodland Holdings--an Economic Analysis," State College of Washington, Agr. Expt. Sta. Bul. 599, 1959, 31 pp.

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One thing seems clear, most people who want help are receiving it, but apparently these people are a small minority.¹⁸

A survey of 51 randomly selected woodland owners in St. Helena Parish in Louisiana serves to substantiate Webster's and Stoltenberg's findings.¹⁹ This study also found that the owners who had undertaken management programs owned above average size tracts of timber and had generally more financial resources than the non-manager.

Casamajor, et al., recently completed an interesting study of timber marketing and landownership in California.²⁰ Although changes in forest landownership patterns were studied, this research was aimed at developing more efficient timber marketing in Mendocino County, California, and at bringing about a better understanding of timber marketing in an area of rapidly expanding cut.

Interviews with 126 randomly selected, small (less than 5,000 acres) woodland owners suggested that despite the importance of forest industries in the local economy, there were numerous imperfections in the timber

¹⁸Ibid., p. 6.

¹⁹R. W. McDermid, et al., "Ownership Factors Affecting Management of Small Woodlands in St. Helena Parish, Louisiana," Louisiana Expt. Sta. Bul. 520, 1959, 19 pp.

²⁰Paul Casamajor, Dennis Teegarden, and John Zivnuska, "Timber Marketing and Landownership in Mendocino County," Calif. Agr. Expt. Sta. Bul. 772, 1960, 55 pp.

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marketing processes. For example, timber was usually sold after negotiating with only one buyer. Also, because of the owner's limited market contact, and his desire to deal with a buyer in whom he has confidence, the selection of this buyer was often determined by a variety of non-monetary considerations (e.g., personal friendship, good reputation, only buyer known). Written contracts were used by two-thirds of the owners, but experience in Mendocino County showed that the lack of knowledge regarding the legal and physical aspects of marketing timber often meant that the contract provided little or no protection to the seller.

McClay summarized the findings of nine "exploratory" studies conducted in 1958 by the five eastern forest experiment stations of the Forest Service: Southern, Southeastern, Northeastern, Central, and Lake States.²¹ A total of 957 woodland owners located in the states of New York, Pennsylvania, Wisconsin, Kentucky, Ohio, Missouri, North Carolina, Georgia, and Arkansas were interviewed.

These studies validated much that was already known about woodland owners. However, there were several findings that shed added light on the subject.

²¹T. A. McClay, "Similarities Among Owners of Small Private Forest Properties in Nine Eastern Localities," Jour. of Forestry, 49(2):88-92, 1961.

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For instance, owners who had used professional forestry services were asked "whether they were influenced to do so by foresters, private individuals, non-forester public employees, demonstrations or meetings, or forestry literature."²² The original motivating force could not be determined, but the findings did bring out the importance of personal as opposed to impersonal contacts. These studies also indicated that leasing or other arrangements for forest management might be feasible in some areas.

"Motivation and Behavioral" Research

Farm managers and small woodland owners, though exhibiting some common characteristics (in many instances an individual may be both), should not be considered altogether identical as far as their motives are concerned. Since they are his source of income, economic considerations are paramount among the factors which determine how the farmer manages his various crop and livestock enterprises. However, forces other than those of an economic nature may be more instrumental in determining what the small private woodland owner does with his forested tract. Despite this and perhaps other differences, research techniques and findings of

²²Ibid., p. 91.

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agricultural economists and rural sociologists regarding the farm managerial processes may prove useful to investigators studying the small private woodland owner.

A number of useful concepts concerning the managerial processes have been formulated by Glenn L. Johnson as a result of his attempts to determine how farm managers cope with risks and uncertainties. He classifies problems facing the manager into one of five categories as follows:²³

1. Technology
2. Innovation
3. Prices
4. Personalities
5. Institutions

Whenever a manager is confronted with a problem, be it an "institutional" or say a "price" problem, Johnson has found it possible to describe the manager's position in terms of one of six knowledge situations.²⁴

Faced with a problem, the manager may be ready, willing and able to take action immediately as a result of having perfect knowledge or at least the conviction that knowledge is nearly enough perfect to behave as if it were actually perfect. Or else the owner may find himself in one of five stages of "imperfect

²³Glenn L. Johnson, "Handling Problems of Risk and Uncertainty in Farm Management Analysis," Jour. of Farm Economics, 34(2):807-816, 1952.

²⁴Ibid., p. 812.

knowledge." He might be categorized in the risk situation. Here, despite the lack of perfect knowledge, the manager is still willing to "risk it" because the "additional knowledge concerning this problem is not worth the cost of acquiring it."²⁵ The third possible grouping is the learning situation. Here the owner finds that the subjective cost of more knowledge is less than the subjective value of more knowledge and so refrains from taking positive or negative action. An inactive status describes the manager who does not have enough information for positive action but finds the value of accruing more knowledge less than its cost. In the forced action situation some outside factor causes the manager to act despite the fact that if he had more time he would have remained in the learning situation. The last knowledge situation is that of forced learning. Under such circumstances the owner is caused, again by external factors, to commence collecting information regarding a subject which normally he would not find it feasible to do.

As Johnson points out, studying the risk and uncertainty problems of the farm manager indicates

²⁵Glenn L. Johnson, "Managerial Concepts for Agriculturalists," Kentucky Agr. Expt. Sta. Bul. 619, 1954, 55 pp.

the subjects farmers are trying to learn . . . those they are not trying to learn because the subjective marginal cost of learning exceeds its subjective marginal value . . . those they are not trying to learn because they are willing to 'risk it' on the basis of what they know.²⁶

Results from the North Central Regional Interstate Managerial Study (IMS) show that farm managers feel that price information is the most important kind of information, although such is not used as frequently as production information.²⁷ This study also found that

In general, the relative pattern of information disseminated in printed form in farm management texts, agricultural college experiment stations and extension programs conforms rather closely with the pattern of information used by farmers and with the importance attached by farmers to different kinds of information.²⁸

Rural sociologists have developed a very useful conceptual framework for studying the process of how farmers respond to information concerning new farm practices. This phenomenon is called the "diffusion process," and is described below:²⁹

1. Awareness Stage - At this stage an individual becomes aware of some new idea, such as hybrid corn. He knows about the existence of

²⁶Johnson, 1952, op. cit., p. 816.

²⁷Glenn L. Johnson and Cecil B. Haver, "Agricultural Information as an Aspect of Decision Making," Mich. Agr. Expt. Sta. Tech. Bul. 273, 1960, 55 pp.

²⁸Ibid., p. 6.

²⁹George M. Beal, and Joe M. Bohlen, "The Diffusion Process," Iowa State College Agr. Ext. Service, Special Report 18, 1957, 5 pp.

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the idea, but he lacks details concerning it. For instance, he may know only the name and may not know what the idea or product is, what it will do or how it will work.

2. Interest Stage - At the interest stage an individual wants more information about the idea or product.

3. The Evaluation Stage - The individual makes a mental trial of the idea. He applies the information obtained in the previous stages to his own situation.

4. The Trial Stage - If he decides that the idea has possibilities for him, he will try it. The trial stage is characterized by small-scale experimental use, and by the need for specific information which he deals with: how do I do it; how much do I use; when do I do it; how can I make it work best?

5. Adoption Stage - This stage is characterized by large scale, continued use of the idea, and most of all, by satisfaction with the idea.

Recognizing that there are differences between farmers as to how they respond to information about new practices, Beal and Bohlen describe five types of managers:³⁰

1. Innovators
2. Early Adopters
3. Early Majority
4. Majority
5. Non-adopters

There is good reason to believe that only a small percent of the farm managers fall into the "innovator" class despite the fact that Hildebrand and Partenheimer, in the Interstate Managerial Study,

³⁰Ibid.

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found that 36 percent of the respondents classified themselves as innovators.³¹ As Everett Rogers points out,

Innovators are usually regarded (by rural sociologists, county agents, and farmers) as only the first two or three percent of the population to adopt new practices Secondly, the selection method used by Hildebrand and Partenheimer actually only determines which farmers have innovator self images, and not which farmers have innovator behavior. There is considerable research evidence that (1) many farmers have innovator self images who are not actually innovators, and (2) many innovators do not perceive of themselves as innovators.³²

A study based on data collected in Wisconsin disclosed that innovative behavior is rather consistent.³³ Fliegel, comparing the adoption of 11 farm practices in Sauk County, Wisconsin, found that the adoption of a new practice was a function of the farmer's tendency to adopt others.

Beal and Rogers found that just because a farmer was one of the first to become aware of a new practice is no indication that he is an innovator.³⁴

³¹Peter E. Hildebrand and Earl J. Partenheimer, "Socio-economic Characteristics of Innovators," Jour. of Farm Economics, 40(2):446ff, 1958.

³²Everett M. Rogers, "A Note on Innovators," Jour. of Farm Economics, 41(1):133, 1959.

³³Frederick C. Fliegel, "A Multiple Correlation Analysis of Factors Associated with Adoption of Farm Practices," Rural Sociology, 21(3):286, 1956.

³⁴George M. Beal and Everett M. Rogers, "The Adoption of Two Farm Practices in a Central Iowa Community," Iowa State University Agr. and Home Economics Expt. Sta. Special Report 26, 1960, p. 11.

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The first to adopt practices do so not because they learned about the practice earlier than the majority but because they required less time to move from awareness to adoption.

In this same study it was pointed out that "technological farming ideas often flow from impersonal sources to the earlier adopters and from them as personal communications to the later adopter."³⁵ This suggests that in order to expedite the diffusion of information regarding new practices, change agents (i.e., extension, agricultural experiment station, etc.) should identify and seek out the innovators and "apply" the information at this point. Helpful in this respect are the studies which have sought to characterize the innovators. A number of examples of such work, however, serve as word of caution to anyone who wants to generalize on the subject of innovator characteristics. For instance, in an Iowa study the acceptors of farm practices in contrast to the non-acceptors read more state college bulletins, were more prone to join cooperatives, were younger, and took more trips to the

³⁵Ibid., p. 19.

See also, R. M. Dimit, "Diffusion and Adoption of Approved Farm Practices in Eleven Counties in Southwest Virginia," (Abs.), Iowa State College Journal of Science, 30:351, 1956.

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nearest metropolitan center.³⁶ These findings agree with a Kentucky study conducted by Marsh and Coleman.³⁷ But Copp's analysis of Kansas and Wisconsin farmers found that (1) measures of economic productivity and (2) personality variables (i.e., mental flexibility and discerning ability) accounted for most of the variance in the quantitative measures of farm practice adoption, and that social position (i.e., age, formal education, level of living and social participation) were of minor importance when the former two factors had been taken into account.³⁸ In still another study, Beal and Rogers characterized the first adopters of 2-4-D weed spray and anti-biotic swine supplements in much the same fashion as Gross and Taves.³⁹ However in the latter work, innovators were found to be younger, while Beal and Rogers found innovators to be older.

Various investigators have suggested the need to go beyond the socio-cultural variables used to

³⁶Neal Gross, and Marvin J. Taves, "Characteristics Associated with Acceptance of Recommended Farm Practices," Rural Sociology, 17(4):327, 1952.

³⁷C. Paul Marsh and A. Lee Coleman, "The Relation of Farm Characteristics to the Adoption of Recommended Farm Practices," Rural Sociology, 20(3):289-296, 1955.

³⁸James H. Copp, "Toward Generalization in Farm Practices Research," Rural Sociology, 23(2):103-111, 1958.

³⁹Gross and Taves, op. cit.

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characterize innovators and find the intervening factor(s) to explain empirical findings.⁴⁰ One such study described "rationality" as a variable intervening between the operation of the socio-cultural variables (i.e., contact with extension, size of farm, age, tenure arrangements, level of living, etc.) and the act of adoption.⁴¹ The actions of the farm manager were judged to be rational or irrational on the basis of a three-point scale which assumed rationality to involve (1) the use of deliberation, (2) planning, and (3) the best available sources of information and advice in arriving at decisions as a means of achieving maximum economic ends.

Perhaps as it is used in this study, the limited definition of rationality does not bias the findings. It is apparent, however, that the only irrational behavior considered by these workers was action which involved deviations from what Rothschild termed the "capitalistic spirit."⁴²

⁴⁰Cf. ibid., p. 327.

⁴¹Alfred Dean, Herbert A. Aurbach, and C. Paul Marsh, "Some Factors Related to Rationality in Decision Making Among Farm Operators," Rural Sociology, 23(2): 121-131, 1958.

⁴²K. W. Rothschild, "The Meaning of Rationality: a note on Professor Lange's Article," Review of Economic Studies, 14:50-52, 1947. Rothschild suggested three types of irrationality: (1) "Real irrationality," a term applied to purely emotional, impulsive actions; (2) irrationality born from ignorance; and (3) irrationality as deviation from the "capitalistic spirit."

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Failure to recognize that rationality assumes other dimensions may preclude full understanding of managerial behavior. This admonition is particularly valid when dealing with problems arising from the inability to distinguish between the household and the firm.

Interdependence of the household and firm serve to complicate the analysis of the managerial decision-making process. One thing appears certain--little progress is possible if the two aspects of managerial research are handled separately. As Johnson points out, "the lines of demarcation between firms and households become so indistinct and the lines of interrelationships so complex that we are forced conceptually to combine the two and treat them jointly."⁴³

Although there are many similarities, the interdependence of the household and firm can take on slightly different meanings in the case of small private forest landownership research. A very disconcerting problem in woodland owner research stems from the fact that timber production dictates long "economic planning horizons."⁴⁴ Needless to say, farm management

⁴³Johnson, 1954, op. cit., p. 14.

⁴⁴A point in time beyond which an individual ceases to formulate expectations and plans. Cf., Earl O. Heady, Economics of Agricultural Production and Resource Use, Englewood Cliffs, N. J., Prentice Hall, Inc., 1960, p. 474.

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researchers don't worry about an owner's length of tenure being so short that it precludes the anticipation of crop harvests. However, the length of tenure of the farm owner does present difficulties. For instance, several researchers have shown that increased efficiency of the farm is often hindered by this facet of the firm-household situation. Heady, et al.⁴⁵ found in a study of Iowa farmers that

Little capital is used during both the beginning and the closing phases of the farm life cycle because of different types of uncertainty and values of farm families. Limited extension of credit by the loan firms is particularly important for beginning farmers. Capital use is limited during the close of the farmer's operating career mainly because the family opposes being in debt.

This situation, of course, would appear to have important implications as far as woodland management is concerned.

Urbanization

Much of the ensuing information concerning urbanization has been abstracted from papers prepared by authorities on the subject, and much of what they have reported is based on personal observations and

⁴⁵Earl O. Heady, W. B. Back and G. A. Peterson, "Interdependence Between the Farm Business and the Farm Household with Implications on the Economic Efficiency," Iowa State College Agr. Expt. Sta. Research Bul. 398, 1953, 44 pp.

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opinions rather than on systematic research. The reason for this is that many aspects of the urbanization situation do not lend themselves to quantification.

The ubiquitous automobile and super highway--add these to the nation's growing population and one can account for most of the postwar surge in urban growth. Though this change has centered around the nation's major metropolitan areas, the nature of urban growth is by no means uniform. One observer uses seven categories to describe the various patterns of urban dispersal:⁴⁶

1. Gradual encroachment - where city boundaries slowly push out.
2. Urban encirclement of non-urban territory.
3. Radial penetration along main arteries.
4. Diffusion - where urban communities fan out in no predictable patterns into the countryside.
5. Non-contiguous development - "leap-frogging."
6. Industrial decentralization.
7. Planned dispersal.

Every type of land is subject to urbanization. However, because of lower construction costs preference is usually given to level or nearly level land, free

⁴⁶Ernest A. Englebert, "Land-use Planning for 'Rurban' Areas," Farm Policy Forum, 9(3):27-32, 1957.

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from stones, and clear of trees and brush.⁴⁷ All of the above suggests that this phenomenon is quite inefficient and wasteful as far as land utilization is concerned. Noting this, Gaffney suggests a⁴⁸

. . . thesis . . . that urban prices are uneconomically high--that the "scarcity" of urban land is an artificial one, maintained by the holdout of vastly underestimated supplies in anticipation of vastly overestimated future demands. I think this uneconomical price level imposes a correspondingly uneconomical growth pattern on expanding cities. High land prices discourage building on vacant lands best situated for new development and divert resources to building highways, utility networks, and whole new complexes of urban amenities so as to provide and serve substitute urban lands further out--substitutes for something that is already in long supply. Not only is this pattern wasteful of time, steel, cement, gasoline, and good farmland; it founds national prosperity on the firm of a land bubble.

Just how inefficient urban growth can be was localized in a study conducted in Flint, Michigan.⁴⁹ Despite the fact that there were still 40,000 vacant subdivided lots within the city limits of Flint at the time of the investigation, fringe area platting had proceeded at a rapid rate.

⁴⁷A. B. Beaumont, "A Look at Urbanization," Soil Conservation, 24(1):3-7, 1958.

⁴⁸M. Mason Gaffney, "Urban Expansion - Will it Ever Stop?" Yearbook of Agriculture, 1958, U.S.D.A., 1958, pp. 503-522.

⁴⁹Walter Firey, "Social Aspects to Land Use Planning in the Country-City Fringe: The Case of Flint, Michigan," Mich. Agr. Expt. Sta. Special Bul. 339, 1946, 57 pp.

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Mounting apprehension has been voiced by numerous agricultural leaders concerning the indiscreet appetite of urbanization. At a time when agricultural surpluses are common, such fears would appear unfounded. However, a look at the rate of urban encroachment of agricultural land brings to light some foreboding elements. Reporting the findings of a recent Soil Conservation Service study, D. A. Williams, SCS administrator, points out that,⁵⁰

Every year more than one million acres of cultivable land in the United States is going into such uses as urban subdivisions, industrial sites, defense establishments, highways, and airports. During the last 15 years (1943-1958), the study indicates that approximately 17 million acres of our flattest and most fertile farmlands, that is in land capability classes I to IV, have been converted to such non-agricultural uses.

That represents almost three percent of all land suitable for cultivation in the United States. If these withdrawals continue for another 15 years at the present rate--and the trend is slightly upward--a total of about 100 million acres of land that once was suitable for cultivation will have been converted to non-agricultural use, including about 80 million acres that have now been so converted.

A study of urban growth in southern Michigan disclosed that if population growth and economic activity is maintained, future urban expansion can be expected to result in approximately 135,000 acres of agricultural

⁵⁰D. A. Williams, "Urbanization and Related Problems of Agricultural Land Conversion Have Created New Problems in Conservation," Farm Equipment Retailing, 25(3):32-33, 1958.

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land per year going into urban and rural non-farm land.⁵¹

The effects of urban growth on agricultural production are manifest in other than the physical act of usurping crop land for immediate development into residential or industrial sites. As Beaumont points out, "much farmland in areas that are becoming urbanized lies idled; the owners wait for the golden harvest that will come when they sell the land for urban developments."⁵² Moore and Barlowe found evidence of this idling process in southern Michigan.⁵³

There is evidence that much of the agricultural land in the "urban fringe" is not owned by farmers.^{54,55} Gaffney suggests that this is due to the fact that "high-priced lands in areas with urban possibilities tend to gravitate to those who have the financial power to wait."⁵⁶

Several writers have indicated that there is no reason to believe that a scarcity of agricultural land

⁵¹Clarence W. Jensen, "The Effects of Urbanization on Agricultural Land Use in Lower Michigan," Unpublished Ph.D. thesis, Michigan State Univ., 1958, p. 155.

⁵²Beaumont, op. cit., p. 6.

⁵³E. Howard Moore and Raleigh Barlowe, "Effects of Suburbanization upon Rural Land Use," Michigan Agr. Expt. Sta. Tech. Bul. 253, 1955, 34 pp.

⁵⁴Jensen, op. cit.

⁵⁵Moore and Barlowe, op. cit., p. 10.

will develop in the future. Such individuals feel that the urban-farm situation is completely exaggerated and point to the fact that the population trend may level off, and even if it doesn't, they believe modern technology will make agricultural land increasingly productive so that still fewer acres will feed more and more people.⁵⁷ These same individuals will also point to the fact that there is still potential crop land to be developed. But this provides a rather ominous note from the forest products standpoint, because much of the potential crop land to which such individuals refer is now covered with timber.

It is difficult to appraise urbanization and its future impact on timber production. However, McArdle suggested that by⁵⁸

combining the possible diversions of forest lands for urban development, parks, and other purposes with the potential conversions to grow food, it appears that more than one-third of our timber growing capacity and one-fourth of our commercial forest land may seriously be sought for other purposes within the next few decades.

⁵⁶Gaffney, op. cit., p. 5.

⁵⁷Cf. John M. Willem, "Interurbia is Here to Stay," Business Horizons, 1(2):25-32, 1958.

and also

Marion Clawson, R. Burnell Held, and Charles H. Stoddard, Land For the Future, Resources for the Future, Inc., Baltimore, The John Hopkins Press, 1960, 570 pp.

⁵⁸McArdle, op. cit., p. 5.

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Despite apparent discord among the different authorities, most will agree that some form of planning is necessary in order to avoid wholesale inefficiencies in land use. As Barlowe points out,

our expanding requirements for non-agricultural uses of land can have a relatively small impact on our total agricultural potential. But this assumes the orderly development of our land resource base.⁵⁹

⁵⁹Raleigh Barlowe, "Our Future Needs for Non-farm Lands," Yearbook of Agriculture, 1958, U.S.D.A., 1958, pp. 474-479.

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CHAPTER III

METHODOLOGY

A two-stage sampling procedure was devised to facilitate the collection of information needed to fulfill the objectives of the southern Michigan ownership study.

A sample comprising two percent of the land area was used because experience of earlier studies in Mississippi¹ and northern Michigan² suggested that this would assure reasonable sampling errors for area and number of owner estimates. In addition, a two percent sample was needed to provide a reasonably large and representative sample of southern Michigan woodland owners from which to sub-sample for purposes of interviewing and inspection of woodlands. Out of a total of 679 civil townships in the study area, 81 were randomly selected for sampling purposes. The basic sampling unit, however, did not include the entire township. Sampling was restricted to an arbitrarily

¹James, et al., op. cit.

²Yoho, op. cit.

located six-section block within each of the 81 townships.³

Locating Sample Townships

Beazley and Skok describe a systematic sampling procedure using multiple random starts which they point out,

enabled the determination of an unbiased estimate of variance from the sample regardless of the population distribution. Normally, systematic samples with only one random start do not provide such estimates rigorously.⁴

This scheme was used in selecting the 81 sample townships in the southern Michigan study area. As in Beazley and Skok's study, three random starts were used.

The first step in determining the locations of the sampling units was to number all of the civil townships in the 37-county study area. This was accomplished by starting at the northernmost township and numbering from east to west. From the total of 679 townships, 81 were systematically selected using three random starts. Desiring 81 sample six-section blocks meant that the three random starts would occur within the

³Sections 21, 22, 27, 28, 33, and 34 were arbitrarily chosen as the sampling unit in each of the 81 selected townships.

⁴Ronald Beazley and Richard Skok, "Marketing Practices and Price Formations in the North Central Farm Woodland Product Sales--A Regional Statement and Working Plan," NCM Project 17-3, School of Forestry, Univ. of Minnesota, 1957, pp. II-1.

numbers 1 and 25, inclusively. Using random numbers, three starting points were located and by adding 25 successively until the 679th township was reached, the three clusters of townships were located. The locations of the 81 sample townships are shown in Figure 2.

The first stage of the study required visiting each of the 81 townships to ascertain not only the location of all the woodlots one acre and larger in the arbitrarily located six-section block within each of the 81 sample townships, but in addition, the occupations and addresses of those owners having woodlots three acres or larger in size. The location of all private forest holdings was sketched from recent (1957 or later) Agriculture Stabilization and Conservation Committee aerial photographs onto county plat books to determine the owners' names. The respective township supervisors were then visited to check the accuracy of the plat book and to determine the occupation of each owner. "Form No. 1" (see Appendix A) was filled out for each owner. Altogether, the name, occupation, and forest acreage for 1569 woodland owners were collected from the 81 sample blocks.

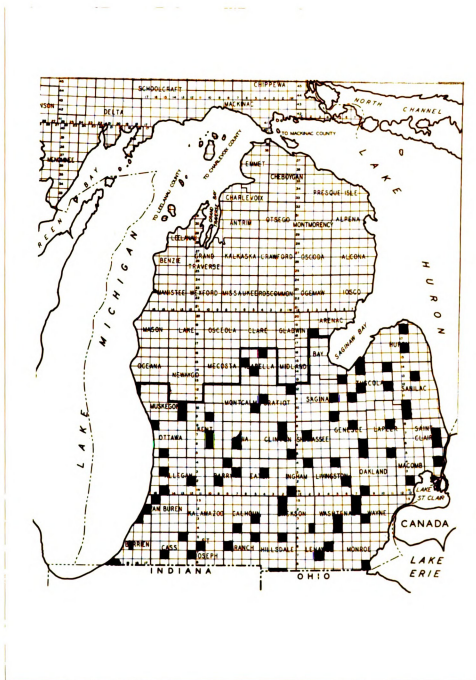


Figure 2. Location of Sample Blocks in Southern Michigan Study Area

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Determination of Forest Area and Number of Woodland Owners

Table 1 shows the distribution of forest area and the number of forest owners by occupation classes. The estimates of forest area by occupation strata were determined by using the "ratio estimator" technique.⁵ Here it was necessary to assume that the 81 sample blocks were randomly located. This was not exactly true since a systematic area sample with random starts technique was employed. However, there was no reason to suspect any connection between the ordering of the 679 townships and the distribution of forest land and forest owners.

The sampling error for the forest area estimates for each of the occupations is shown in column three of Table 1. The following equation was solved to determine each of the sampling errors:

$$\text{est } V(Y_R) = \frac{N(N-n)}{n} \cdot \frac{1}{n-1} \sum (Y_i - R_n X_i)^2$$

where:

V = Variance of an area estimate.

Y = An estimate of the total forest acreage among N sample blocks possessing a certain occupation Y.

⁵William G. Cochran, Sampling Techniques, New York, John Wiley and Sons, 1953, p. 129.

TABLE 1
NUMBER OF FOREST LANDOWNERS AND DISTRIBUTION OF FOREST
AREA, BY OCCUPATION CLASSES

Occupation	Acreage	Acreage sampling error (percent)	Number	Number sampling error (percent)
General farming	422,302	7.75	18,731	5.78
Dairy farming	153,255	11.37	7,426	11.81
Part-time farming	262,952	10.43	14,469	5.30
Sawmill operator	8,280	43.22	134	99.89
Non-forest industry	24,378	34.43	404	50.00
Businessman- professional	482,807	9.31	17,137	8.67
Wage earner	379,205	8.16	19,861	6.60
Housewife or widow	168,042	11.42	6,254	7.57
Recreation groups	20,468	31.60	337	52.76
Real estate	18,720	5.40	983	45.99
Undivided estate	87,068	13.24	2,504	12.19
Retired	344,800	5.86	16,170	12.33
Unclassified*	55,723	8.97	22,822	11.88
Total	2,428,000	--	127,232	3.12

*Primarily owners of less than 3 acres but more than one acre of forest land, but includes owners whose occupations were not obtainable.

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N = The number of six-section blocks in sample area possessing some private commercial forest.

n = The number of six-section blocks in sample.

Y_i = The total forest acreage in the i^{th} sample block possessed by occupation Y .

X_i = The total private forest acreage in the i^{th} sample block.

R_n = The ratio estimator $\frac{Y}{X}$.

Since there was no independent estimate of the total number of forest landowners in southern Michigan (forest survey data provided estimates of forest area and not number of owners), an estimate was determined endogenously by estimating the average total number of owners as well as number of owners in each of the occupation strata per six-section block and then expanding these estimates by the total number of six-section blocks (3804) in the study area. Only "count-owners" (see below) were used in this determination. The random start technique served as the basis for estimating the respective variance. The sampling error was determined as follows:

$$\text{Sampling error} = \sqrt{\frac{\text{mean square random starts}}{\text{number of six-section blocks in sample}}} \cdot \text{number of six-section blocks in study area}$$

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Subsampling for Interview and Woodland Inspection

The area sampling method used was subject to large ownership bias. Ideally it would have been better to have subsampled from a list of woodland owners compiled from county records, but such a list would have been too time-consuming to assemble. To adjust for this large ownership bias (i.e., assure that each owner has an equal chance of falling in the sample) the following criterion was used: In order to qualify as a "count-owner" (i.e., to have an opportunity to be selected for the interview subsample and be counted when estimating the number of woodland owners in the study area), the northeasternmost corner of all of the owner's tracts with woodland must fall within the limits of the six-section sampling unit. This procedure, in effect, sampled a population of "northeast corners," and assumed that these points were evenly spread throughout the study area. Casual familiarity with the area indicated that this assumption was valid enough for the purposes of this study.

Figure 3 demonstrates how the "count-owner" scheme works; owner "A" would be a "count-owner" even though tracts A_2 and A_3 fall outside the sampling. He qualifies since the furthestmost northeast corner of all tracts with woodland is located at A_1 (within the six-

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section block). Owners "B" and "E" would not qualify since the northeast corner falls outside the sample unit. Owner "C" would qualify for the same reason as "A". Obviously, owner "D" would qualify, since all of his property lies within the sample unit. Owner "F" would qualify even though the woodlot itself is not within the sample unit, since the northeast corner of this contiguous tract does fall inside. On the other hand, owner "G" would not be counted, since the northeast corner of his wooded tract is outside the six-section block.

Note that the boundaries of the sample block were extended to the northwest and the southeast. This aided in determining whether or not a particular property is most northeastern when it is the farthest north but not farthest east and vice versa. Owners west of these lines who also have wooded property in the sample block were included; those east of these lines were excluded. Using this criterion, both owners "H" and "I" qualify as "count owners."

As complicated as the scheme appears, it was quite easily applied. It merely required double checking only the ownership of properties within the sampling units which the aerial photographs disclosed as containing woodlands. Whether or not these owners had property elsewhere was determined by checking with the

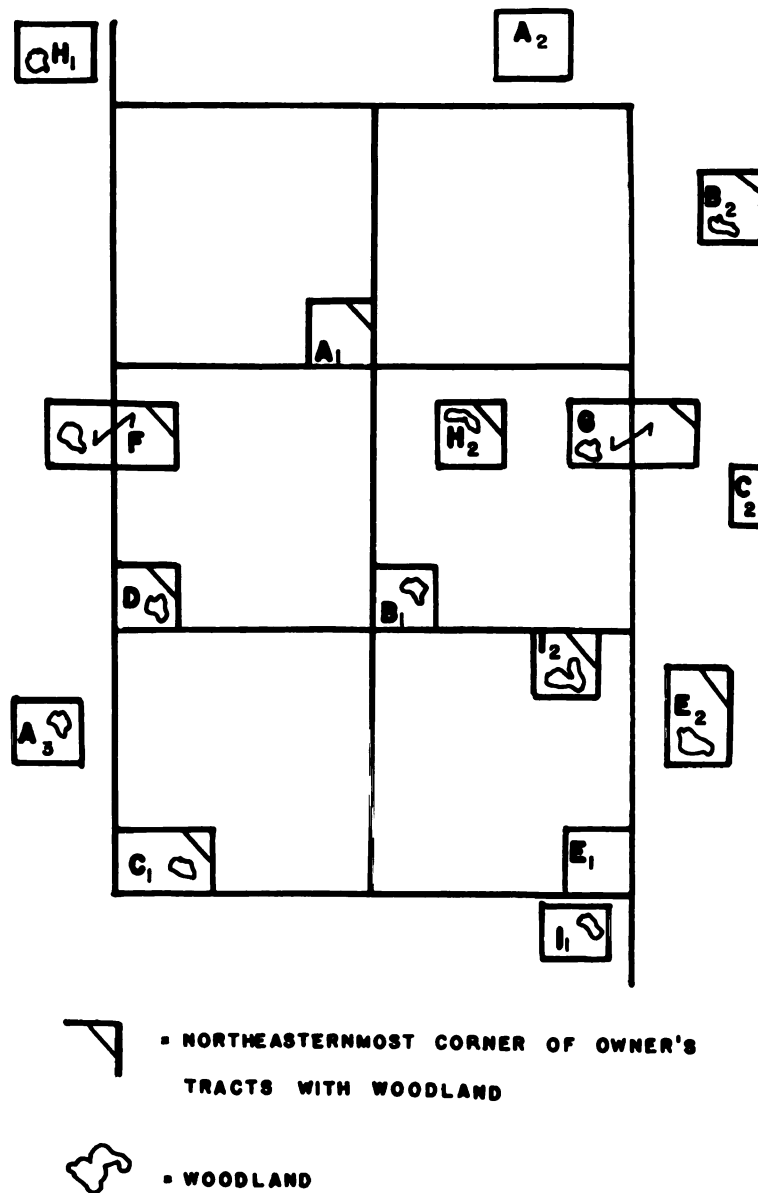


Figure 3. Example of Scheme Used to Determine Whether or not Woodland Owner was a "Count-Owner"

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township supervisors. Referring again to aerial photographs, such properties outside the 81 sample units were checked to see whether or not they included wooded tracts. By applying the above criteria approximately 75 owners were judged as "non-count-owners."

Earlier forest landownership studies have shown that many of the variables studied were associated with the owners' occupations. Therefore, to improve the efficiency of the sampling scheme the "count-owners" were stratified by occupations prior to the allocation of the interview sample. Because it was desired that the estimates of variation of yes-and-no answers be optimized rather than the variance of mean proportion, the sample allocated to each occupation was proportional to the square root of the number of owners in each stratum rather than the actual number in each occupation stratum (see Table 2).

The second stage of the study involved interviewing 206 woodland owners. Upwards to two hours were spent with each of these individuals depending on how many of the questions in the interview form (see Form No. 2 in Appendix B) applied to a particular owner's situation.⁶ Upon completion of the

⁶The questionnaire was pre-tested by using it to interview 12 forest landowners in the Ingham-Clinton County area.

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TABLE 2

ALLOCATION AND ACCOMPLISHMENT OF FIELD INTERVIEWS, BY OWNER
OCCUPATION CLASS

Occupation class	Number(N) of "Count-owners" in 81 sample units	\sqrt{N}	Sample allo- cated*	Actually sampled
General farming	316	17.78	38	33
Dairy farming	111	10.54	23	22
Part-time farming	182	13.49	29	33
Sawmill operator	2	1.41	2	2
Non-forest industry	5	2.24	5	5
Businessman-professional	203	14.21	30	26
Wage earner	363	19.05	38	26
Housewife or widow	106	10.30	22	15
Recreation groups	5	2.24	5	4
Real estate	17	4.12	9	6
Undivided estate	51	7.14	15	8
Retired	208	14.42	31	27
Total	1569	116.94	250	207

*This column includes both the "primary" and "alternate" sample. Initial planning called for the selection of 200 "primary" owners and 50 "alternates." Interviewing had hardly commenced when it became apparent that most of the allocated samples would be needed to obtain 200 interviews. So, from the beginning "alternates" and "primary" owners were treated alike (i.e., attempts were made to contact and interview all 250 owners). The following example shows how the sample was allocated by occupation classes:

$$\begin{aligned}
 \text{number of primary} &= \frac{200}{116.94} \cdot \sqrt{N} \\
 \text{"general" farmers} &= 1.72 \cdot 17.78 = 30 \\
 \text{number of alternate} &= \frac{50}{116.94} \cdot \sqrt{N} \\
 \text{"general" farmers} &= .43 \cdot 17.78 = \underline{8}
 \end{aligned}$$

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interview, the owner's woodland was cruised to appraise the value of the growing stock and to rate cutting practices. (See Form No. 3 in Appendix C for appraisal form used.) The point-sampling technique was employed in cruising woodlots, and a cumulative tally sheet developed expressly for this type of cruising was used.⁷ Recognition of the variation in timber market conditions dictated visiting each of the service foresters in the study area in order to obtain current (1959) stumpage prices (see Appendix D for the range of stumpage prices encountered for each species). Using the stumpage prices quoted by the service forester in each of their respective localities, owners' "investments" in growing stock were then estimated.

Upon completing an interview and the cruising of an interviewee's woodlot, supplemental comments and observations were recorded by means of a portable dictating machine.

Stage one required approximately six weeks of actual field travel while twelve weeks were needed to complete the 207 interviews.

⁷Philip L. Thornton, and O. Keith Hutchison, "Cumulative-Volume Tally Sheets for Sampling," U.S. Forest Service Central States Forest Expt. Sta., Station Note 114, 1958, 2 pp.

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CHAPTER IV

GENERAL CHARACTERISTICS OF FOREST LAND- OWNERS IN SOUTHERN MICHIGAN

In the introductory chapter it was suggested that the "solution" of the small ownership problem will require that a more selective approach be adopted in the future by the agencies concerned than is presently the case. This means, of course, that criteria must be formulated now so that the implementation of the various assistance programs will take into account interregional, state and even intra-state differences between the forest owner, the forest resource and their spatial distribution.

In this study certain general characteristics of forest landownership were examined to determine the degree of their association with not only the owner's knowledge of and response to public assistance programs but also the owner's interest in and treatment of his woodland property. As was previously indicated, occupation is probably the most convenient way to classify the forest landowner. In addition, however, it is useful to characterize him in terms of age, area and value of his holdings, length of tenure and family ties, distance from woodland property and the location of the owner's

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In the ensuing paragraphs the forest landowner will be classified according to all but the last of the above mentioned characteristics.¹ In the chapters which follow we will observe how some of these attributes of forest landownership temper the owner's treatment of his woodland holdings and participation and acceptance of the various public assistance programs.

Distribution of Forest Owners, Area, and Forest Value, by Occupation

In southern Michigan, where most of the State's agricultural activity takes place, it is not surprising to find the farm owner group accounting for a sizeable percentage of the forest land area. As can be seen in column three of Table 3, the farmer-owner group, both full- and part-time, owns 35 percent of the forest area of southern Michigan. It can also be seen in Table 3 that the farmer occupation group accounts for an even greater segment of the total population of forest landowners. This explains why the average size of forest holding (22 acres for full-time, and 18 acres for part-time) for this group is below the study area average of 23 acres. One idea often circulated in forestry circles

¹Urbanization and its influence on forest landownership will be discussed in Chapter VI.

TABLE 3
NUMBER OF OWNERS, FOREST AREA, AND FOREST VALUE,
BY OCCUPATION

Occupation	Forest owners	Forest area	Growing stock value	Average area per owner	Average growing stock value per owner
		(percent)		(acres)	(dollars)
Full-time farming	25	24	29	22	1777
Part-time farming	14	11	7	18	803
Businessman-professional	16	20	26	28	2386
Wage earner	19	16	5	19	423
Retired	16	15	19	21	1831
Other*	10	14	14	31	2079
Total	100	100	100	23	1524

*"Other" includes non-forest industrial owners, sawmill operators, widows, dealers in real estate, and undivided estates, but does not include owners of less than three acres of forest land.

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is that the woodlot can provide an outlet for farm labor during the slack season. However, since the farmer group is in a minority, this suggestion is not too appropriate to the southern Michigan area.

Businessman-professional owners make up 16 percent of the total number of forest landowners in the study area, but account for a slightly higher percent of the forest area (20 percent). This owner-area relationship is borne out by the fact that the average size of holding for this group of owners, 28 acres, is above the average for the study area.

Although they represent nearly one-fifth of the owners in the study area, the wage earners account for less than one-sixth of the forest area. However, like the full-time farmers, the retired owners' ratio of percent of forest land to percent of owners approximates unity. Because this ratio is somewhat greater than one in the case of the "other" category, the average forest area per "other" owner, 31 acres, is somewhat above the average for the study area.

Area-wise the contrast among the various occupation classes is not significant, but in terms of money-value of growing stock, the distinction is quite sharp (Table 3). For instance, the full-time farmers account for nearly 30 percent of the growing stock money-value in the study area, whereas the wage earners' investments

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in growing stock amount to only five percent of the study area total. In terms of average value of growing stock per owner the contrast is even more pronounced. Here the businessman-professional group is first with an average per owner of \$2386. This is nearly six times that of the \$423 average for the wage earner group. Of primary importance is the fact that three occupational groups--full-time farmers, businessman-professional, and retired owners--account for almost three-fourths of the investment in growing stock in the study area. These groups comprise only slightly more than one-half of the owners (57 percent), and 59 percent of the forest area.

Forest Area, Growing Stock Value and Number of Owners, by Area Classes

How much forest area a particular owner possesses has generally been accepted as a measure of his relative importance in the overall forest resource picture. This measure has proved useful not only because area differentials most generally indicate total growing stock differences but it is an indication of the economic incentives provided by the owner's woodland enterprise.

To a certain degree this assumed relationship between area and investment in growing stock holds true in the southern Michigan study.² As can be seen in

²The relationship between an owner's investment in growing stock (Y) and total forest area owned (X) was

Table 4, two-thirds of the owners own 25 acres or less of woodland. This group accounts for about the same percent of the total growing stock value as it does of the total forest area.

Only one-third of the woodland owners in the study area own more than 25 acres of woodland, but this group of owners accounts for 68 percent of the growing stock value. However, it is to be noted that the positive relationship between area and money-value of growing stock is not uniform throughout. The average investment in growing stock per owner is the lowest in the 3-25 acre area class, but the largest average total investments in growing stock are not possessed by the owners having the largest woodland holdings. Owners of the largest woodlands have the lowest average per acre value of growing stock; as a consequence they fail to attain the growing-stock values of owners in the 51-100 acre class.

The relationship between number of owners, area of forest land and value of growing stock is even more dramatically portrayed in Table 5. This table more

tested using data obtained from 207 cruise reports. The simple correlation between X and Y was calculated to be .6489. Though this relationship was significant at the one percent level, the coefficient of determination shows that only 42 percent of the total variance in Y is associated with differences in forest area-owned. Species composition, stocking level, and market conditions probably account for the remainder.

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TABLE 4
COMPARISON OF FOREST AREA, GROWING STOCK VALUE AND NUMBER
OF OWNERS, BY AREA CLASSES

Area class	Forest owners	Growing stock value	Forest area	Value of growing stock per acre	Value of growing stock per owner
	(percent)			(dollars)	
3-25 acres	68	32	36	60	725
26-50 acres	20	31	29	72	2320
51-100 acres	8	29	17	114	5520
100+ acres	4	8	18	28	3000
Total	100	100	100	67*	1524*

*Average, not total, for entire study area.

TABLE 5

COMPARISON BETWEEN THE DISTRIBUTION OF GROWING
STOCK VALUE, FOREST AREA AND FOREST OWNERS

Cumulative percentile distribution of growing stock (dollar value)	Forest area	Forest owners
	(percent)	
Upper 10 percent	3	1
Upper 20 percent	4	2
Upper 30 percent	9	3
Upper 40 percent	12	6
Upper 50 percent	17	9
Upper 60 percent	21	13
Upper 70 percent	29	18
Upper 80 percent	35	24
Upper 90 percent	45	35
100 percent	75	68
Growing stock having no salable value	25	32

clearly demonstrates how the number of owners and forest area are related to value of growing stock. It shows that if one were to array all the woodland ownerships from the highest dollar investment in growing stock to the lowest, it would take only a small percent of the forest area and even a smaller proportion of the forest owners to account for most of the study area's growing stock value. For instance, the upper 90 percent of the growing stock value is held by only one-third of the owners with 45 percent of the forest area. Two-thirds of the owners, with three-fourths of the forest land in the study area, own all of the merchantable growing stock. Thirty-two percent of the owners with a fourth of the forest land area have no merchantable growing stock. These relationships between forest area and forest value can be explained in part by the fact that the more valuable forest types occupy the kind of sites which, at least in the past, have competed with agricultural crops and have been more subject to the land-clearing whims of the farm managers. The larger tracts, on the other hand, occupy sites which have relatively less potential value in agricultural uses and usually have competed only with the dairy cow.

Distance of Residency From Forest Property

Absentee ownership is not prevalent in southern Michigan. As can be seen below, 64 percent of the owners

reside on the property where their woodland tract is located. Another 19 percent live such a short distance (1 to 10 miles) away from their woodland that the distinction between them and the former group as far as forest management is concerned would seem inconsequential. Only 17 percent of the owners live more than 11 miles from their woodland.

Distance of residency from woodland tract (miles)	Percent of owners
On site	64
1-10	19
11-25	5
26-50	4
51+	<u>8</u>
	100

Characteristics Which Influence Forest Landowners' Planning Horizons

Earlier it was stated that an individual's economic planning horizon is a point in time beyond which he ceases to formulate expectations and plans. Not only will planning horizons vary from individual to individual but from one enterprise to another. Because of the long growing periods which are inherent in the woodlot enterprise, there are probably few if any other investment opportunities which require equally

long planning horizons. Indeed, it would seem that the individual owner must be seeking other than monetary satisfactions to justify forestry investments which involve starting with bare ground. Although they may yield periodic returns during one owner's tenure, many of the possible investments of time and money in the management of the existing uneven-aged hardwood stands which predominate in the study area involve time intervals which might also outdistance the individual's lifetime. But there are other factors closely allied to age which also affect an owner's economic planning horizons, and therefore, his interest in forest management. These ownership characteristics are principally the following: length of tenure, length of time that forest land has been in the present owner's immediate family, and tenure arrangement.

Age of Owner

Most forest landowners in southern Michigan are in advanced age brackets. Table 6 shows that 60 percent of the owners are 50 years or older. A third of them are at least 60 years of age. Only 15 percent of the owners are 40 years or younger and only one percent are 30 or under. This relationship is understandable, when one considers the fact that most often an investment in rural-type real estate in the study area is beyond the capital resources of the young man.

TABLE 6
DISTRIBUTION OF FOREST OWNERS AND FOREST
AREA, BY AGE CLASSES

Age of forest owner	Forest owners	Forest area
	(percent)	
Under 30	1	*
31-40	14	15
41-50	25	29
51-60	28	25
61+	32	31
Total	100	100

*Less than one percent.

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The implications of this owner-age situation with respect to economic planning horizons are very important. Considering the fact that the average woodland owner in the study area is 55 years old now and has held his property for 15 years, one can see that his ultimate planning horizon when he acquired the property at age 40 was relatively restrictive as far as timber production is concerned. For the new owner whose woodlot has sufficient growing stock to immediately support periodic harvests, expectations and plans can be formulated with a degree of certainty. However, assuming that the average owner relinquishes his property at age 65, the most distant horizon for the "new" owner is 25 years which would be rather binding if all a "new" woodland owner possessed was cutover land. Another consideration regarding an owner's age is that his managerial attitude may vary with age. How this affects timber management will be partially assessed in Chapter V.

Length of Tenure

Table 7 serves to further illustrate the shortness of tenure so common in the study area. Some 35 percent of the owners with 37 percent of the forest area have held their wooded property less than 10 years. About a fourth of the owners have held their property twenty years or more.

TABLE 7
 LENGTH OF TIME THAT FOREST PROPERTY HAS BEEN
 OWNED BY PRESENT OWNERS

Length of tenure	Forest owners	Forest area
	(percent)	
1-10 years	35	37
11-20 years	39	39
21+ years	26	24
Total	100	100

Assuming that the average owner holds his property 25 years, it is apparent from Table 7 that in the next few years, at least 26 percent of the owners accounting for 24 percent of the forest land will relinquish title to their woodland property.

Family Ties and Planning Horizons

Generally speaking, the longer a particular property stays in the family the better as far as students of land management are concerned. The "good" which is attributed to family ties in property ownership is due to its association with the stewardship concept of land management. An owner contemplating the future transfer of his property to one of his children would be more prone to consider long-term planning than the owner who plans on selling the property to non-relatives during his lifetime. In other words, he would want to improve rather than "mine" his woodlot. To the extent, therefore, that this association is valid, the forester's problems are ameliorated by forest land being held in one family for more than one generation.

Unfortunately, it is an exception rather than the rule to find forest land held within the family for more than one generation (see Table 8). Nearly two-thirds of the ownerships had not been held by members of the immediate family prior to the present owner's

TABLE 8
 NUMBER OF GENERATIONS PRIOR TO PRESENT OWNERSHIP
 THAT FOREST PROPERTY HAS BEEN IN THE FAMILY

Number of generations	Forest owners	Forest area
	(percent)	
None	64	65
One generation	17	11
Two or more generations	18	22
Non-family type owner- ship status	1	2
Total	100	100

acquisition. In the case of 17 percent of the owner-ships, the forest land had been in the family one generation prior to the present ownership, and in the case of 18 percent, two generations. Of course the present status speaks only for the past. In other words, there has been no decided tendency for woodland property to pass from one generation to the next. Whether or not this will continue to be the case is a matter for conjecture. However, it would appear that most owners' planning horizons do not take into account the future ownership of their property by their son(s) and daughter(s).

Tenure Arrangement

The inherent characteristics of timber production give rise to much uncertainty, a situation which is aggravated by the fact that the time required for a cutover stand to mature most often spans more than one owner's tenure. Each new owner will have a different set of ownership objectives.

Perhaps the most stable form of tenure arrangement with respect to ownership objectives is the corporation. However, as can be seen in Table 9, two percent of the owners with only one percent of the land are accounted for by the corporate form of ownership. Nearly all of the forest land, 88 percent of it, is owned by individuals who, collectively, make up 93

TABLE 9
DISTRIBUTION OF FOREST OWNERS AND FOREST
AREA, BY TENURE ARRANGEMENT

Tenure arrangement	Forest owners	Forest area
	(percent)	
Individual	93	88
Partnership	3	7
Corporation	2	1
Undivided estate	2	4
Total	100	100

percent of the forest landowners.

Undivided estates, like corporations, also make up two percent of the number of forest landowners. But the former group owns more forest land (four percent of total). The legal settlement of undivided estates usually doesn't take very long; one or two years in most cases, although litigation may sometimes stretch over a lifetime. In any case, the planning horizon of such an entity would appear to be undefinable.

CHAPTER V

THE SOUTHERN MICHIGAN PRIVATE FOREST LANDOWNER AS A TIMBER PRODUCER

The title to this chapter may first appear redundant. However, when one considers that most woodland owners in the study area do not think of themselves as "timber producers," the element of ambiguity disappears. The fact is that most woodland owners interviewed were surprised when informed that individuals like themselves were subjects of an important forestry problem. Although many owners were cognizant of certain other forest conservation problems, these owners almost invariably associated such problems with the nation's major forested regions (e.g., the Upper Peninsula of Michigan or the Douglas fir region of the Pacific Northwest) and not southern Michigan.

On the basis of the amount of cutting activity during the five-year period 1954-1959, it is estimated that only about four percent of the private forest landowners in southern Michigan harvest timber products in any one year. This being the case, the value of the rough products (f.o.b. cars) resulting from the "average" sale in 1954 amounted to about \$2000. By subtracting

processing charges to arrive at the stumpage value, it is estimated that the average forest landowner selling stumpage in 1954 received about \$950 for his harvest.¹ However, since most owners sell timber products only once (if at all) during their tenure, it is easy to understand why timber production receives so little recognition from the southern Michigan forest landowner.

Owner's Concept of Forest Management

Determination of an owner's concept of forest management was accomplished by using a subjective appraisal technique patterned after methods used in ownership studies conducted in Mississippi² and the northern Lower Peninsula of Michigan.³ In these two studies an owner was categorized into one of seven "concept" groups. However, in the southern Michigan study such refinement was not feasible; five categories were used as follows: no concept, below median, median, above median, and high concept. These groupings are described below:

¹Most of the stumpage sales in southern Michigan involve only sawtimber. By using Forest Survey estimates of the value added by manufacture of sawtimber products (Findell, et al., op. cit., p. 23), the rough product value estimate was adjusted to determine the estimate of stumpage value.

²James, et al., op. cit.

³Yoho, op. cit.

1. No concept - Owners do not associate their wooded holdings with timber products.
2. Below median concept - Forest management in the minds of woodland owners is very elementary. The maximum involved is tree planting and fire protection.
3. Median concept - Owners recognize that forest management requires some effort above and beyond the labor and capital inputs used in fire protection and reforestation.
4. Above median concept - Owners recognize the act of cutting as a silvicultural tool and have a fair to good awareness of timber-products marketing techniques.
5. High concept - Owners have a "sustained-yield" concept which very nearly approaches or equals that of professional foresters.

Figure 4 describes the distribution of private forest owners, area and growing stock value by concept of forest management. For all practical purposes the distribution of forest owners and forest area by concept classes coincides. However, while it too expresses a definite negative skewness, the distribution of growing stock value differs somewhat from the owner and area distributions. It is evident that the more enlightened

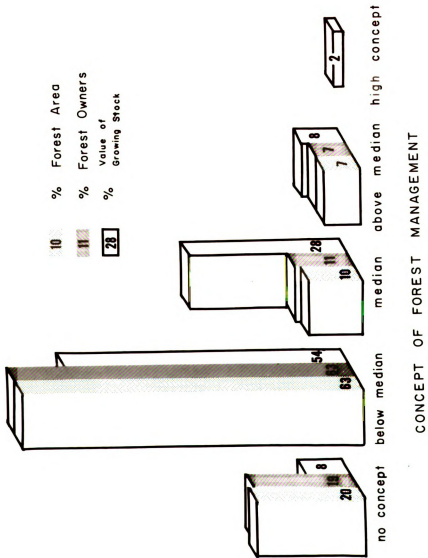


Figure 4. Distribution of Private Forest Owners, Area and Growing Stock, by Concept of Forest Management

owners (as far as forest management is concerned) generally own more valuable woodlands on a per-acre basis, and they have larger total investments in growing stock than the less enlightened woodland owners. Although there is room for conjecture, an owner's degree of enlightenment regarding forestry probably has more effect on the value of his growing stock than the latter variable has on his concept of forest management. This contention will be further substantiated when cutting practices are compared with owner concepts.

As Table 10 shows, conceptual variations are associated with differences in owner occupations. For instance, nearly all of the wage-earner woodland owners exhibited "below median" or poorer concepts of forest management, whereas most full-time farmers had some concept of the meaning of forestry. The businessman-professional category ranks first in the percent of owners represented in the "above median" or better concept class. However, this same group ranks below both the full-time farmers and retired woodland owners in percent of owners having a "median" or better concept. The retired owners have a larger percentage in "median" or better concepts than any other occupational group.

An owner's concept of forest management varied to some degree with age (see Table 11). Generally

TABLE 10
OWNER'S CONCEPT OF FOREST MANAGEMENT, BY OCCUPATION CLASSES

Occupation	Concept of Forest Management					Total
	No Concept	Below Median	Median	Above Median	High Concept	
(percent of forest owners)						
Full-time farming	4	70	16	10	0	100
Part-time farming	15	73	6	6	0	100
Businessman- professional	11	71	4	14	*	100
Wage-earner	36	60	4	0	0	100
Retired	32	40	20	8	0	100
Other	36	56	2	5	1	100
All occupations	20	63	10	7	*	100

*Less than one percent.

TABLE 11
AGE OF WOODLAND OWNER, BY CONCEPT OF FOREST MANAGEMENT*

Concept of forest management	Age of owner				All Age Classes
	Under 40	41- 50	51- 60	61+	
	(percent of owners)				
No concept	13	11	19	32	20
Below median	72	68	57	58	63
Median	8	12	10	9	10
Above median	7	9	15	1	7
High concept	0	**	0	0	**
Total	100	100	100	100	100

*Concerns only individual-type ownerships.

**Less than one percent.

speaking, the middle-aged owners (41-60 years of age) have a slightly better grasp of forest management than owners both younger and older.⁴ It might appear strange that the 61+ age group does not coincide more closely with the retired category in Table 10. Usually the retired owners professed greater understanding of forest management than did the 61+ age group. The difference can be explained partly by the fact that some of the retired owners are under 60 years of age and many of the owners 61 years of age or older have not as yet retired.

In Chapter IV it was suggested that the longer a particular property remains in the same family the better the opportunity for the stewardship concept of land management to prevail. To the extent that this is true, one might expect an owner whose wooded property has been in his family one or more generations to have a higher concept of forest management. Although the findings of this study are not decisive, they do lend some support to the above premise. Interviewees whose wooded property had been in the immediate family for two or more generations generally have a slightly better concept of forest management than other woodland owners

⁴This "bell-shaped" distribution has been observed by other investigators who have studied various gerontological aspects of the farm management process. Cf. Heady, Back, and Peterson, op. cit.

(see Table 12). However, the difference between the concepts of owners whose wooded tracts were not in the immediate family prior to the present ownership is not significantly different from those whose property has been in their family one generation.

Although it was not determined from direct questioning, it should be pointed out that the discussions with woodland owners brought to light the fact that many of the owners having "median" or above concepts of forest management had rather unique backgrounds which may help explain their degree of enlightenment. Several indicated that they had logging experience, while a few others indicated that they learned to appreciate forestry as a result of their Civilian Conservation Corps experience. As will be pointed out later, contact with a professional forester may also have improved the woodland owner's knowledge of forestry.

Objectives of Ownership

Despite the fact that most private forest landowners in southern Michigan have a poor grasp of forest management, the majority (52 percent) indicated that their main objective in owning woodland is producing forest products (see Table 13). But this does not hold true for all occupations. Three-fourths of the full-time farmers stated that forest-products production

TABLE 12
ASSOCIATION BETWEEN THE NUMBER OF GENERATIONS
FOREST LAND HAS BEEN IN FAMILY AND OWNER'S
CONCEPT OF FOREST MANAGEMENT*

Concept of forest management	Not pre- viously in family	In family one prior generation	In family two or more prior generations	Total
(percent of owners)				
No concept	22	16	18	20
Below median	62	73	56	63
Median	9	4	16	10
Above median	7	7	10	7
High concept	**	0	0	**
Total	100	100	100	100

*This comparison only concerns individual or family-type ownerships.

**Less than one percent.

TABLE 13

OBJECTIVE OF OWNERSHIP, BY OCCUPATION CLASSES

Objective of ownership	Occupation					
	Full-time farming	Part-time farming	Businessman-professional	Wage Earner	Retired	Other All occupations
	(percent of forest owners)					
"Forest products"*	74	55	39	36	52	51
Pasture	19	27	4	0	8	0
Clear for agriculture	1	9	7	8	4	4
Recreation	0	0	7	16	0	2
Investment-speculation	0	0	4	0	8	9
Inactive	6	9	18	36	20	31
Residence	0	0	4	4	4	0
Other	0	0	17	0	4	3
Total	100	100	100	100	100	100

*Includes growing timber for sale, sale of mature timber, home use, fuel and maple syrup production.

was the main objective of ownership. This objective also claimed more than half of the interviewees classified as part-time farmers, retired and "other." Although forest-products production ranked first, it did not account for the majority of the owners in the businessman-professional or the wage-earner groups.

A significant proportion of owners in all the groups except the two farming occupations claimed an "inactive" status regarding their woodland holdings. As one might expect, the two farming categories are the only ones in which a sizeable percentage of the owners claimed "pasturing" to be the main objective. Although clearing for agriculture does not rank high among the objectives, it accounts for a recognizable share of the owners in the part-time farming, wage-earner, and businessman-professional groupings. Surprisingly, the full-time farmer shows the least desire to clear his forest land for agricultural purposes. The reason for this might be that while the full-time farmer has enough cropland or has already converted the usable portions of his woodland to farming, some of the owners in the other three occupational groups entertain aspirations of enlarging their crop and livestock enterprises and thereby finance their way into full-time farming.

Generally speaking, the more valuable an owner's investment in growing stock, the greater the

likelihood of an objective of forest-products production (see Table 14). This is true only up to a point--the majority of the owners in the highest growing-stock value class do not claim forest-products production as their main reason for holding forest land. It could be assumed that owners of the most valuable forest holdings were not hard pressed for cash and preferred not to bother with the problems of timber harvest. Most of these owner-ships fell into the industrial corporations or businessman-professional occupational categories.

Timber Harvesting Activity

Table 15 demonstrates that the individual forest landowner in southern Michigan is not a very active timber producer. Two-thirds of the woodland owners interviewed had never harvested timber products during their tenure.⁵ The main reason why most of these owners had not harvested timber is that they lacked enough merchantable growing stock to justify a timber sale. Nearly 70 percent of the owners interviewed who had not harvested timber had less than one thousand dollars invested in growing stock. Thirty-two percent had no merchantable growing stock at all.

⁵Some of these owners cut timber for fuel, but in such small amounts (less than 1/5 of a cord per acre per year) that it did not qualify as a bona fide timber harvesting operation.

TABLE 14

OBJECTIVE OF OWNERSHIP, BY GROWING STOCK VALUE CLASSES

Objective of ownership	Dollar value of owner's investment in growing stock							All growing stock classes
	0	1-999	1000-1999	2000-4999	5000-9999	10,000+		

*Includes growing timber for sale, sale of mature timber, home use, fuel, and maple syrup production.

TABLE 15
DATE OF MOST RECENT CUTTING

Years prior to 1959	Forest owners
	(percent)
1-5*	17
6-10*	9
11-15	5
16+	1
No cutting	68
Total	100

*19 percent of the owners harvesting timber within the 10-year period preceding 1959 also acquired their woodlands during this period.

Table 15 shows also that the majority (53 percent) of the woodland owners who harvested timber products did so in the five years preceding the time of interview. This should not be construed as indicating a recent surge in harvesting activity. Many owners indicated they had made earlier cuts, and this is not reflected in Table 15. Also, in all probability, because of the rapid turnover rate in ownership, many of the owners who harvested say, 10 or 15 years ago, have since sold their forest property.

The footnote to Table 15 validates what foresters have suspected: many owners use the income from the sale of timber products to help pay for recently acquired real estate. Nineteen percent of the owners who harvested timber within the 10-year period, 1949-1959, also acquired title to their property during this period. Change of tenure may have affected forest condition in another way. It is probable that some former woodland owners "mined" their woodlots shortly before selling. Although there are no data relative to this activity, the condition of many woodlots suggests that this "mining" activity is about as prevalent as the timber harvesting activity of owners having recently acquired woodland property.

Owners were asked why they hadn't harvested any timber, and for the most part, their response coincided with what was observed at the time of inspections.

Table 16 shows that 52 percent of the owners believed they did not have enough merchantable growing stock to interest buyers. Most of these owners were correct in their appraisal, although a few owned woodlots which, judging from timber marketing in the area, should have attracted timber buyers. Most woodlots held by owners refusing to sell because logging activity would be incompatible with aesthetic values probably would not interest buyers. The same conclusion applies to about half of the owners who indicated that they had not received any offers for their timber.

For most of the owners who had not harvested timber because they had not received any suitable offers, it is not a matter of them knowing for certain that they could receive a higher bid elsewhere. Instead, most of their reluctance to sell stems from the owners' general distrust of timber buyers and recognition of their poor bargaining position. Rather than take a chance of losing on a timber sale transaction they don't sell at all.

Only 26 percent of the woodland owners who had harvested timber did so strictly for home uses (see Table 17). Since most of the interviewees who harvested timber actually marketed timber products, a good opportunity was provided for evaluating the marketing practices of private forest landowners in southern Michigan. But, before observing specific examples of how such

TABLE 16
WHY OWNERS HAVE NOT HARVESTED TIMBER

Reason for no cutting	Forest owners
	(percent)
Not worth time or effort	3
Would be incompatible with aesthetic values	8
Have not received any offers for timber	17
Have not received any suitable offers for timber	15
Have no saleable timber	52
Have no time to look for buyers	1
Other	4
Total	100

TABLE 17
PURPOSE OF TIMBER HARVEST

Purpose	Forest owners
	(percent)
Stumpage sale	67
Home use	26
Cut products sale	4
Manufactured products	*
Home use and cut products sale	3
Total	100

*Less than one percent.

owners behaved in the timber-products market place, the nature of the cutting practices of all owners who had cut during the five-year period, 1954-1959, will be examined.

Cutting Practices

Owners' cutting practices were classified into three categories--"good," "fair," and "poor." "Good" cutting means that as a result of the logging activity the owner's woodland property will improve in quality and volume productivity within the first 10 years after harvest. "Fair" means that the stand will only maintain its pre-cutting productivity during the next 10 years, while "poor" was used to describe instances where the owner harvested in such a fashion that the stand's productivity was reduced by logging. The tabulation below shows how the woodland owners as a whole performed as far as timber harvesting is concerned:

<u>Owner's cutting practice</u>	<u>Percent of owners harvesting timber during 5-year period, 1954-1959</u>	<u>Percent of forest area cut over, 1954-1959</u>
Good	18	29
Fair	41	38
Poor	41	33
	<hr/> 100	<hr/> 100

This tabulation shows that three out of five interviewees who cut their timber did so in such a manner that afterwards their woodland productivity was at least maintained if not enhanced. A larger proportion of the area cut over fell into the "good" or "fair" categories, reflecting that "good" cutting applied generally to the larger tracts of woodland.

When one considers the relatively rapid rate of turnover of property ownership in southern Michigan, the findings on cutting practices indicate a serious problem. The "average" owner retains his property 25 years. This means that every ten years, 40 percent of the forest ownerships change hands. If the cutting record of the interviewees during the 1954-1959 period is representative of what to expect in future years, the chances are that about 40 percent of the new owners, if they harvest timber, will do so in a "poor" manner.

A number of owner characteristics tend to be closely associated with the manner in which an owner harvests his woodlot. One of these variables, age, and how it seemingly influences cutting practices is described in Table 18. Although it involves more than just the farmer-type occupations, this relationship tends to reflect the household-firm interdependency problem which Heady et al. have described.⁶ The younger woodland owners

⁶Heady, et al., op. cit.

TABLE 18
ASSOCIATION BETWEEN OWNER AGE AND CUTTING PRACTICES

Owner age	Cutting practices			
	Good	Fair	Poor	Total
(percent of forest owners)				
40 and under	0	50	50	100
41-50	12	36	52	100
51-60	29	31	40	100
61+	15	44	41	100
All ages	18	41	41	100

(40 and under) exhibited the poorest cutting practices, while the middle-aged group compiled the best record on this count. Although they nearly equalled the 51 to 60-year-old age-bracket in terms of the proportion of owners having practiced "fair" or better cutting, the oldest age-bracket had a much poorer showing in the "good" cutting practice category. The greater tendency for the younger owners to harvest in a "poor" manner than the other age brackets can probably be attributed to their greater difficulty in obtaining capital resources. This also may help explain why owners in the oldest age-bracket were less prone to cut in a "good" manner than the 51 to 60 age-bracket. However, a reluctance to seek credit, rather than an inability to obtain it, is probably the reason why the oldest owners liquidated their woodlots.

Table 19 shows that there is a greater tendency for woodland owners, whose property has been in the family two or more generations, to demonstrate "fair" or better cutting practices than owners whose property has been in the immediate family for a lesser period. Unfortunately, from the forestry standpoint, only 18 percent of the ownerships fell into the "two or more generation" category. The behavior of those owners whose forest property had been in their family one previous generation is difficult to explain. It would be expected that their cutting performances would be a compromise between

TABLE 19
 RELATIONSHIP BETWEEN OWNER'S CUTTING
 PRACTICES AND FAMILY TIES

No. of previous gen- erations woodland has been in owner's family	Cutting practices			
	Good	Fair	Poor	Total
	(percent of forest owners)			
None	17	36	48	100
One generation	--	50	50	100
Two or more generations	31	46	23	100
All owners	18	41	41	100

the other two categories. Instead, they had the poorest showing. Since such owners and those who had no previous family ties had comparable concepts of forest management, it may be that additional sampling would show that the cutting practices of these two groups of owners were more similar than the data in Table 19 suggest.

Cutting practices differed markedly among occupational groupings (see Table 20). The majority of the owners classed as businessmen-professional and "other," who harvested timber, exhibited "fair" or better cutting practices. In fact, nearly half of the owners classed as businessmen-professional harvested in a "good" manner, while one-third of the "other" owners qualified for this rating. On the other hand, all of the wage-earners whose woodlots were appraised were given a "poor" rating. Cutting performances of full-time farmers and retired owners were intermediate in comparison with other occupational categories.

It would appear that some of the variation in cutting practices between occupational categories can be ascribed to variations in owners' concepts of forest management (compare Tables 10 and 20). Table 21 adds support to this argument by showing that cutting practices improve as the owner's concept of forest management expresses more enlightenment.

Aside from age, family ties, concept and occupational differences, discussions with the various owners

TABLE 20
CUTTING PRACTICES BY OCCUPATION

Occupation	Cutting practices			
	Good	Fair	Poor	Total
	(percent of forest owners)			
Full-time farming	10	46	44	100
Part-time farming	0	52	48	100
Businessman- professional	49	26	25	100
Wage-earner	0	0	100	100
Retired	17	33	50	100
Other	23	44	23	100
All occupations	18	41	41	100

TABLE 21
RELATIONSHIP BETWEEN CUTTING PRACTICES AND
OWNER'S CONCEPT OF FOREST MANAGEMENT

Concept of forest management	Cutting practices			
	Good	Fair	Poor	Total
	(percent of forest owners)			
No concept	--	31	69	100
Below median	8	46	46	100
Median	42	15	43	100
Above median	62	38	--	100
High concept	100	--	--	100
All concepts	18	41	41	100

brought out a more fundamental difference between owners which may also help explain the variation in cutting practices. Generally, the owner whose cutting was classed as "good" was the type of person who placed high value on "exogenous" information in the conduct of forestry as well as other business-type transactions. In other words, if he didn't know all the particulars about timber marketing when approached to sell timber, he did not hesitate to seek outside help before consummating a timber sale.

Owner's Surveillance of Logging Activity

In a sense, the epitome of surveillance occurs when an owner does his own logging. Only 30 percent of the interviewees who harvested timber performed their own logging but, judging from the type of cutting which resulted, perhaps it is fortunate that the majority of the owners did not conduct their own logging operations. Table 22 shows that only two percent of those who did their own logging were given a "good" rating while 24 percent of the owners who did not do their own cutting qualified for "good" cutting practices.

Actually, the performance of the "owner-loggers" was not much better than that of the woodland owners who sold stumpage and allowed the logger to take any trees he desired.⁷ Forty-one percent of the owners interviewed

⁷Only nine percent of the owners who did not do their own logging personally supervised the logging operation.

TABLE 22

COMPARISON BETWEEN CUTTING PRACTICES OF THOSE OWNERS WHO
DID, AND THOSE WHO DID NOT DO THEIR OWN LOGGING

Cutting practices	Owners who performed own logging	Owners who did perform own logging	All owners who harvested timber 1954-1959
(percent of owners)			
Good	2	24	18
Fair	53	37	41
Poor	45	39	41
Total	100	100	100

who had harvested timber sold stumpage without restricting the logger in any way. Table 23 shows that 74 percent of these owners cut in a "poor" manner and none received a "good" rating. In cases where the owner restricted the logger in some manner, "fair" or better cutting resulted nearly three-fourths of the time. Cutting practices of a third of these owners qualified for a "good" rating. Table 24 shows that the higher the concept the less prone the owner is to allow the logger unrestricted rights. But this is to be expected. The important point is that even owners with partially developed concepts of forest management tend to restrict loggers' cutting activity. Poor cutting is dominant only among those owners who have no concept of forest management.

Restrictions placed by owners on loggers' cutting can be summarized broadly as follows:

<u>Restrictions placed on loggers</u>	<u>Percent of forest owners who restricted loggers</u>
Minimum diameter limitation	42
Species limitation	29
Trees marked for cutting	23
Other*	<u>6</u>
	100

*Includes designating only "over-mature" trees and use of a maximum diameter limitation.

TABLE 23

RELATIONSHIP BETWEEN FREEDOM ALLOWED THE LOGGER AND
RESULTING CUTTING PRACTICES

Cutting practices	Owners allowed logger to cut any trees	Owners restricted loggers' cutting
(percent of owners)		
Good	0	33
Fair	26	41
Poor	74	26
Total	100	100

TABLE 24

RELATIONSHIP BETWEEN OWNER'S CONCEPT OF FOREST MANAGEMENT AND FREEDOM ALLOWED THE LOGGER

Concept of forest management	Percent of owners in each concept stratum who allowed loggers to harvest any trees desired
No concept	72
Below median	38
Median	25
Above median	13
High concept	0
All concepts	41

The most prevalent method used to restrict the logger was a diameter limitation, followed by species limitation and, then, trees marked for cutting. The first two types provided considerably less restraint than the marking of trees for cutting (see Table 25).

Perhaps the logging operator is partly responsible for the prevalence of "poor" cutting, but it is likely that the owner is at least equally responsible. Table 26 shows, for instance, that 34 percent of the owners who harvested timber actually intended to remove all merchantable growing stock. This is probably why most loggers don't hesitate to remove all merchantable saw timber when given an opportunity. As one sawmill operator who was interviewed because he owned woodland pointed out, "If I don't bargain for everything, the owner will sell his timber to another bidder who is willing to cut everything." There is not much deviation from the general pattern among occupation classes, except for the businessman-professional owner. In the latter class, only 14 percent of the owners intended to remove all merchantable growing stock in logging operations.

As concepts of forest management improve, owners show less desire for removal of all merchantable growing stock. This relationship is direct:

TABLE 25

CUTTING PRACTICES RESULTING FROM THE VARIOUS METHODS
USED TO RESTRICT LOGGERS

Restrictions placed on loggers	Cutting practices			
	Good	Fair	Poor	Total
	(percent of owners)			
Diameter limit	21	34	45	100
Species limit	24	33	43	100
Trees marked for cutting	59	41	--	100
All owners who harvested timber 1954-1959	18	41	41	100

TABLE 26
OWNERS WHO INTENDED TO REMOVE ALL MERCHANTABLE
GROWING STOCK, BY OCCUPATION CLASS

Occupation	Forest owners (percent)
Full-time farming	31
Part-time farming	44
Businessman-professional	14
Wage-earner	33
Retired	42
Other	40
All occupations	34

<u>Owners' concept</u>	<u>Percent of owners in each concept stratum desiring the removal of all mer- chantable growing stock</u>
No concept	49
Below median	25
Median	20
Above median	10
High concept	0

The importance of intending to reserve some merchantable growing stock as a silvicultural concept in Lower Michigan is illustrated in Table 27. Owners who intended to remove all merchantable growing stock rated much better cutting practices than those who did not intend to reserve any timber.

Negotiating the Sale of Timber

From the standpoint of the individual owner, the fact that he did not cut in a "good" manner could probably be justified for any number of reasons. He may have needed ready cash to buy new farm implements, a bulk storage tank, a refrigerator, or a new car. By using the income from his woodland harvest he might have been able to save more in interest charges than the net annual growth of his woodlot could earn him. In any case, with the dearth of input-output data on timber production in southern Michigan, it is not possible

TABLE 27

CUTTING PRACTICES OF OWNERS WHO DID, AS COMPARED WITH
OWNERS WHO DID NOT INTEND THAT ALL MERCHANTABLE
GROWING STOCK BE HARVESTED

Cutting practices	Owners intended to remove all merchant- able growing stock	Owners did not intend to remove all merchant- able growing stock
	(percent of owners)	
Good	0	29
Fair	19	52
Poor	81	19
Total	100	100

to judge whether the woodland owners interviewed behaved in an "economically" rational manner when they harvested timber.

Though many of the owners interviewed may have behaved rationally when deciding on how much of their growing stock to harvest, the following paragraphs will create doubts as to whether good judgment was used in negotiating the actual sale of timber products.

Buying and selling timber products in southern Michigan can be likened to horse trading. Each sale is unique: the species composition of each stand is a bit different from the next, the volume of products to be harvested varies considerably, and on top of this, market conditions vary from one sector of the study area to another. All of this tends to weaken the relative bargaining strength of the seller. For one thing he is often conditioned to expect a set, unnegotiated price for his timber products, especially if he's had experience selling agricultural commodities. Secondly, because he does not enter the timber market very often, his limited contacts inhibit his ability to intelligently analyze the current price structure for timber products.

It was not possible to determine whether the woodland owners who sold stumpage or cut products received "fair" prices for their products. Perhaps many did, but the response to a number of the questions

tends to indicate otherwise. For one thing, there was a definite absence of the written word in timber sale negotiations. For example, as shown in Table 28, only 36 percent of the owners interviewed who had sold stumpage or cut products used a written contract to consummate the sale of their timber products. It can be observed also that the tendency to use a written contract varies significantly from one occupation to another. All businessman-professional woodland owners interviewed who sold timber products used a written contract, while none in the wage-earner group did. The part-time farmers' performance was not much better than that of the wage-earners, but almost half of the full-time farmers interviewed used a written contract when selling timber products.

Owners who used a written contract were more likely to have "good" cutting practices than those owners not using a contract (see Table 29). However, since the cutting activities of 38 percent of the former class of owners were judged to be poor--not much different from the latter group in this respect--the use of a written contract is apparently not a good indicator of the type of cutting to expect. The reason for this, apparently, is that many contracts are drawn simply to stipulate that the purchase price be paid to the woodland owner at a given time.

TABLE 28
 USE OF WRITTEN CONTRACT IN TIMBER SALE
 NEGOTIATIONS, BY OCCUPATION*

Occupation	Forest owners	Forest area
	(percent)	
Full-time farming	49	38
Part-time farming	14	9
Businessman- professional	100	100
Wage earner	0	0
Retired	22	23
Other	26	11
All occupations	36	34

*Does not include all owners who harvested timber; 26 percent of the owners interviewed who harvested timber did so for home use and had no reason to use a contract of any kind.

TABLE 29

COMPARISON OF THE CUTTING PRACTICES OF
OWNERS WHO USED A WRITTEN CONTRACT WITH
THOSE OWNERS NOT USING A CONTRACT

Cutting practices	Owners using written contract	Owners not using writ- ten contract
(percent)		
Good	35	8
Fair	27	46
Poor	38	46
Total	100	100

Judging from the experiences of several of the interviewees, loggers are sometimes the first to suggest the use of a written contract. However, this so impressed some of these owners that they neglected to investigate the particulars of the contract. If they had, they would have found that the covenants contained therein protected only the buyer's interest.

An indication that many of the interviewees did not know what they actually received per unit volume of timber products sold is the fact that a significant proportion accepted a lump-sum payment for their timber products (see below).⁸

<u>Method of payment</u>	<u>Percent of forest owners selling timber products</u>
Lump-sum	42
Scale of cut products	58
	<hr/> 100

The same owner who sells by lump-sum is also more likely to allow "poor" cutting to take place. Table 30 shows that none of the owners interviewed who sold by lump-sum qualified for "good" cutting.

⁸There's nothing inequitable about a lump-sum payment if the owner knows how much timber he is selling and receives a number of bids. On the other hand, payment based on the scale of cut products can encourage high-grading if the owner does not stipulate what trees are to be cut.

TABLE 30
 RELATIONSHIP BETWEEN METHOD OF PAYMENT
 AND OWNERS' CUTTING PRACTICES

Cutting practices	Method of payment	
	Lump-sum	Scale of cut products
	(percent of owners)	
Good	0	31
Fair	48	33
Poor	52	36
Total	100	100

Table 31 shows that the use of a lump-sum method of payment is definitely associated with poor concepts of forest management. Ninety-four percent of the owners who used this method had "below median" or poorer concepts. This table shows also that owners with better concepts of forest management were not the only ones who used the "scale of cut products method" of selling their timber. However, the higher the concept, the more prone the owner is to use the latter method.

One way for an owner to judge the fairness of an offer for his timber products is to compare bids. The tabulation below reflects how frequently this is done:

<u>Bids obtained</u>	<u>Percent of forest owners selling timber products</u>
One	89
Two	7
Three or more	4

Nearly 90 percent of the interviewees sold their timber products without obtaining more than a single bid. In some instances, perhaps, the owner was doing well to get one bid, but this may not reflect the usual situation. Actually, it would take more research to determine whether or not, ceteris paribus, the owners receiving two or more bids were better off, price-wise, than those owners who were ready, willing, and able to risk a sale on the basis of only one bid.

TABLE 31

RELATIONSHIP BETWEEN OWNER'S CONCEPT OF
FOREST MANAGEMENT AND METHOD OF PAYMENT
USED IN SELLING TIMBER PRODUCTS

Concept of forest management	Method of payment	
	Lump-sum	Scale of cut products
	(percent of owners)	
No concept	32	15
Below median	62	53
Median	6	15
Above median	0	16
High concept	0	1
Total	100	100

However, most of the owners selling timber didn't know whether they were getting a reasonable price for their stumpage or cut products (see Table 32). More than half of the interviewees who sold timber, 55 percent, readily admitted that they had no real basis for judging the reasonableness of the prices they received. Another 18 percent based their appraisal on personal knowledge, but it is debatable whether or not these owners really knew very much about the current price structure when it came time to consummate the timber transaction. The same can be said for those who sought the advice of a neighbor or friend. Perhaps the only owners who could rest assured that their negotiated price approached a maximum were those who sought the advice of the service forester or compared different buyers' quotations.

Woodland Improvement Practices

So far the discussion of the private forest landowner as a timber producer has concerned only the acts of harvesting and marketing of timber products. Technically speaking, of course, these acts merely represent the culmination of the long-term process of wood-cellulose production. With most crops there would be no harvest unless input factors were introduced at various stages in the production process occurring before harvesting and marketing, but in the case of

TABLE 32

MEANS BY WHICH FOREST OWNERS DETERMINED THE REASONABLE-
NESS OF THE PRICE RECEIVED FOR STUMPAGE

Means for determining reasonableness	Forest owners (percent)
Advice of neighbor or friend	8
Advice of service forester	8
Comparison of different buyers' quotations	11
Personal knowledge with source unknown	18
No real basis	55
Total	100

forests, a crop can be brought to harvest without the concerted effort of man. Since only five percent of the woodland owners interviewed had carried out any woodland improvement practices during their tenure, there is little reason to doubt that most of the timber products produced in the study area result from little or no husbandry effort on the part of the forest landowner.

Table 33 describes the type of forest improvement practices carried out by the owners reporting such effort. Timber stand improvement accounts for most of this activity. Removal of "wolf-trees" would be a better term, perhaps, since most of the timber stand improvement (TSI) work reported by the owners interviewed was limited to such endeavors.

While TSI work was restricted to established hardwood stands, thinning and pruning practices were conducted by owners of pine plantations. A few owners were given credit for conducting woodland improvement practices as a result of having fenced out livestock from their woodlands. In an area where grazing of woodlots has served to inhibit the regeneration of many woodlots in the past, such action is definitely an "improvement." However, as the tabulation below reflects, the grazing of woodlots is not prevalent any more.

TABLE 33
IMPROVEMENT PRACTICES ADOPTED BY FOREST OWNERS*

Type of improvement	Forest owners (percent)
Timber stand improvement (TSI)	69
Thinning and/or pruning	15
Combination (i.e., thinning, pruning, and TSI)	11
Fencing livestock	5
Total	100

*Only five percent of all forest owners carried out any improvement practices.

<u>Extent to which woodlot is grazed</u>	<u>Percent of forest owners</u>
Entirely	14
Partially	12
None	74
	<hr/>
	100

There is reason to believe that if dairying was more widely established in southern Michigan farming, there would be more grazed woodlots. When several of the interviewees were questioned concerning the need for woodland improvement, they remarked that they wished they had a few dairy cows so that they could "clean up their woodlot a bit."

Again, as one might expect, the higher the owner's concept of forest management, the more likely he is to conduct forest improvement practices. This relationship is shown in Table 34. Here it can be seen that none of the woodland owners interviewed having "below median" or poorer concepts of forest management had devoted time or expense to improving the efficiency of their woodlots. Only nine percent of the "median" owners did so, while the majority of the owners having "above median" or better concepts carried out improvement practices.

The small proportion of woodland owners interviewed who had conducted some sort of woodland improvement should not be construed to mean that most were not

TABLE 34

RELATIONSHIP BETWEEN OWNER'S CONCEPT OF FOREST
MANAGEMENT AND WOODLAND IMPROVEMENT ACTIVITY

Concept of forest management	Owners carrying out woodland improve- ment practices
	(percent)
Low concept	0
Below median	0
Median	9
Above median	60
High concept	100
All concepts	5

aware of woodland improvement opportunities. Actually, the majority (76 percent) of the owners indicated that they could improve their forest management. Table 35 tells why these owners haven't taken steps to increase the productivity of their existing woodland holdings. Forty-one percent of the owners stated that a lack of interest in forestry was the main reason for not improving their woodlot, while another 31 percent said they had more rewarding activities. A small proportion (8 percent) of the woodland owners reasoned that the cost of improving the condition of their woodland would outweigh any possible return. An identical number of the owners sensed that there were opportunities for increasing the product output of their woodlots, but because they lacked technical knowledge, they had not carried out improvement practices.

Although it doesn't represent a forest improvement practice, per se, tree planting is a closely allied activity. Indeed, it is perhaps the most apparent expression in southern Michigan of an effort to create timber values. One-fifth of the owners interviewed had planted trees during their tenure.⁹

⁹Of the owners who did not plant, only five percent indicated that they intended to plant trees in the future. The rest expressed no desire to establish forest plantations.

TABLE 35
OWNERS' REASONS FOR NOT IMPROVING FOREST MANAGEMENT

Reason	Forest owners
	(percent)
Not interested in forestry	44
More rewarding activities	31
Cost outweighs benefits	8
Lack of technical knowledge	8
Other	9
Total	100

The extent of planting activity varied widely by occupations (see Table 36). Thirty percent of the businessman-professional group and an almost equal percentage of retired owners planted trees. At the bottom of the list, only 10 percent of "other" owners planted trees. There is also a wide variation among occupational strata as far as the average size of plantation is concerned. The individual planting efforts of most owners were slight--averaging five or six acres or less--but the businessman-professional owners averaged 34 acres. As a result of this relationship the latter occupation group accounts for the major part (60 percent) of the forest plantation acreage established by woodland owners interviewed.¹⁰

All interviewees who had planted trees were queried regarding their principal reason for doing so. Timber production was not the most common response (see Table 37). Creation of aesthetic values ranked first in terms of number of owners, but the importance of this purpose is even more predominate than the statistics in Table 37 indicate. The businessman-professional

¹⁰ It may appear redundant to refer to "forest plantation acreage established by woodland owners." However, there is an unknown amount of forest plantation acreage which has been established by individuals who, before they planted trees were not "woodland owners." Since their trees were not large enough to be distinguished from aerial photos (1957-1958 vintage) they were not considered in this study.

TABLE 36
EXTENT OF TREE PLANTING ACTIVITY, BY OCCUPATION CLASS

Occupation	Proportion of occupation stratum plant- ing trees	Average size of planta- tion	Proportion of total planta- tion acreage established by occupation stratum
	(percent)	(acres)	(percent)
Full-time farming	19	4	11
Part-time farming	14	6	9
Businessman- professional	30	34	60
Wage earner	16	2	6
Retired	28	2	8
Other	10	5	6
All occupation classes	20	6	100

TABLE 37
OWNERS' OBJECTIVES IN PLANTING TREES

Purpose of tree planting	Owners who planted trees (percent)
Aesthetic value	34
Soil conservation	20
Christmas trees	16
Timber production	13
Game cover	12
Other	6
Total	100

group accounted for 60 percent of the planted acreage, and two-thirds of this acreage was established for the creation of aesthetic values. Other occupational groups also indicated aesthetic value to be a principal reason for planting.

CHAPTER VI

THE INFLUENCE OF URBANIZATION ON PRIVATE FOREST LAND MANAGEMENT IN SOUTHERN MICHIGAN

There is one strategic factor which serves to distinguish the forest lands of southern Michigan from those of other forest regions of the United States. This is the matter of urbanization. There is good reason to believe that in time much of the woodland in southern Michigan will ripen to urban uses. In the future, certain wooded sectors of southern Michigan will inevitably cease to be effective suppliers of timber products.

When one stops to consider the fact that in the past 100 years we have seen forest resources of southern Michigan shrink from nearly 100 percent of the land area to only 16.6 percent, the above prediction does not appear drastic at all. Admittedly, the motivating force which promises to eventually usurp much forest land in southern Michigan is not the same which has been responsible for the bulk of the forest land clearing up to this time. However, in view of the rapid increase and extreme mobility of the population in southern Michigan, the distinction may not be important.

Population Changes in Southern Michigan

During the past century Michigan's population has increased more than ten-fold, from approximately 700,000 in 1860 to nearly eight million in 1960.¹

Although the rate of growth in percentage from one decade to the next has been fairly constant (approximately 20 percent), the character of this growth has shown considerable change. Until 1880, some 90 percent of the State's population was rural. The rural segment dropped to 30 percent in 1930, then increased to 38 percent in 1950. The recent reversal of the long-term declining trend has been due to the growth of the "rural-non farm" and not the "rural-farm" segment of the rural population.² In fact the "rural-non farm" sector is by far the most rapidly growing sector of the State's population.³

¹Beegle and Thaden, op. cit.

²The distinction between "rural farm" and "rural-non farm" is hard to pin down due to the definitional changes made from time to time by the Census Bureau. In 1950, for instance, the "rural-non farm" population included all persons living outside urban areas who did not live on farms. "Rural-farm" population included all persons living on farms, regardless of occupation. In 1960, despite the fact that they lived on farms, persons were classified as "rural non-farm" if they did not meet certain income and/or acreage criteria.

³J. Allan Beegle and Donald Halsted, "Michigan's Changing Population," Mich. Agr. Expt. Sta., Spec. Bul. 415, 1957, p. 7.

As yet a distinction has not been made between the study area's population growth and the rest of the state. Actually, the southern Michigan area has accounted for most of Michigan's population increase in recent years. For example, between 1950 and 1960 southern Michigan's population gained by 1,386,615, representing 97 percent of the total population gain in the state.⁴

Another important characteristic of the population growth in southern Michigan is the fact that the largest growth, both absolutely and percentage-wise, has occurred in the "fringe" areas which orbit the urban centers, and not the large cities. Detroit, for instance, lost nearly 171,000 persons in the past decade.⁵ Michigan's cities recorded only a 7.7 percent increase while the "county remainders" or urban fringe areas expanded by 42 percent during the past decade.

It is apparent, at least during the past several decades, that there is a strong tendency for cities to expand extensively and not intensively. Whether or not this tendency will continue indefinitely is a matter for conjecture, but particularly since World War II

⁴Beegle and Thaden, op. cit., p. 5.

⁵Detroit was one of 11 Michigan cities 10,000 and over that lost population in the past decade. Ibid.

we have seen cities expand--not in the form of a pinnacled mass of skyscrapers, but in an extensive urban sprawl. The advent of the automobile, which has increased the mobility of a city's inhabitants and the development of a vast network of super highways, has been responsible for much of this change. McKusick, referring to urbanization in New England suggested that legislative bodies, in their eagerness to get the farmer "out of the mud" during the twenties, actually had sown the first seeds of urban expansion.⁶ Not only is the farmer now out of the mud and in fact, out of farming in many instances, but better roads have provided impetus to the influx of non-farm persons into the rural zones.

Spatial Relationship of Population Density with Forest Owners and Forest Area

In an attempt to more closely relate the pattern of urban growth in southern Michigan to its forest resources, all of the study area's civil townships were arbitrarily divided into four zones based on population density.⁷ Since 1960 census data were still not available

⁶H. A. McKusick, "The Urban Strip Versus Forestry in New England," Forest and Park News, Mass. Forestry and Park Association, 24(3):3, 1960.

⁷Zones are identified as follows:

<u>Zone</u>	<u>Persons per square mile</u>
I	10-30
II	31-50
III	51-100
IV	100+

at the township level, 1950 statistics were used as a basis for this classification. The necessary reliance on ten-year-old information, of course, created a problem. The absolute density of most of the townships is underestimated. However, it is the relative relationship that is sought and the assumption that this has not changed markedly during the 1950-1960 decade does not appear out of order.

Table 38 shows the distribution of total land area, forest owners and the forest area by population density zones. Generally speaking the townships in the "density IV" zone (i.e., those having more than 100 persons per square mile) are restricted to the first tier of townships around the incorporation limits of the State's major cities. Most of the exceptions to the rule are accounted for by the fact that population growth around the periphery of a city tends to aggregate along the main highways leading into a city; moreover, topographic features such as rivers and swamp land preclude the development of cities in certain directions. For the sake of identification this "density IV" class will be referred to as the "urban fringe" area of southern Michigan. It should be mentioned at this time that although the townships comprising the "urban fringe" are aligned in a more or less "orbital" fashion around the major metropolitan complexes, the arrangement of

TABLE 38

DISTRIBUTION OF LAND AREA, FOREST OWNERS, FOREST AREA
AND GROWING STOCK VALUE, BY POPULATION DENSITY CLASSES

Population density zone	Land area*	Forest owners	Forest area	Growing stock value
(percent)				
I	27	28	35	28
II	34	43	39	42
III	23	14	11	16
IV "urban fringe"	16	15	15	14
All zones	100**	100	100	100

*Source: U.S. Bureau of the Census, Characteristics of the Population, Michigan, Vol. II, part 22, (Wash., D. C.), 1952.

**"Land area" is comprised of all the area in southern Michigan outside the incorporation limits of villages and cities having a population of 2,500 persons or greater.

the other density classes is not uniform. Many factors such as topographic features, the proximity of two or more cities to one another, agricultural activity, and the network of railroads and highways are all compounded together in accounting for the haphazard spatial arrangement of those townships falling into the density I, II, or III zones.

Referring again to Table 38, it can be seen that 16 percent of the land area in southern Michigan outside of the incorporation limits of the villages and cities having a population of 2,500 persons or greater, falls into the "urban fringe." This "fringe" area also accounts for about the same proportion of the forest owners, forest area and the growing stock value.

Table 39 shows some variation among the four population density zones in terms of the monetary value of the growing stock per acre, ranging from \$99 in Zone III to \$53 in Zone I. The contrasts are less pronounced in terms of growing stock value per owner, ranging from \$1715 in Zone III down to \$1410 in the "urban fringe." Indeed, the most noteworthy feature of Table 39 is that growing stock value per owner does not increase substantially or in a regular pattern as one moves out from the "urban fringe" into successive zones of decreased population density.

TABLE 39
COMPARISON OF GROWING STOCK VALUE PER ACRE AND PER OWNER,
BY POPULATION DENSITY ZONES

Population density zone	Average growing stock value per acre	Average total investment in growing stock per owner
(dollars)		
I	53	1520
II	73	1498
III	99	1715
IV "urban fringe"	62	1410
All zones	67	1524

Some Distinguishing Characteristics of the "Urban Fringe" Forest Landownerships

Certain physical manifestations of urban growth which affect the forest resources of southern Michigan might be assessed. One could, for instance, compare aerial photographs of recent vintage with those of an earlier flight and get an estimate of the rate at which forest land is usurped by new sub-divisions or industrial and commercial developments. However, such an exercise is beyond the scope of this study. Despite the limitations of not being able to measure directly the rate of urban encroachment of forest land, several interesting aspects of the status quo in urbanization were observed.

Owner Occupations by Population Density Zones

Occupational characteristics of forest owners vary by population density zones (see Table 40). Part-time or full-time farmers comprise a fourth of the woodland owners in the urban fringe, but in the other population density zones, these occupation groups account for one-third to nearly two-thirds of the ownerships. The businessman-professional group, on the other hand, comprises a third of the owners in the urban fringe, but a much smaller proportion of the owners in the other zones. Wage earners are a larger proportion of the woodland owner population in the less populated

TABLE 40
 FOREST OWNERS IN POPULATION DENSITY ZONES,
 BY OCCUPATION CLASS

Occupation	Population density zone			
	I	II	III	IV "urban fringe"
	(percent of forest owners)			
Full-time farming	27	17	49	20
Part-time farming	15	16	14	6
Businessman- professional	13	16	9	32
Wage earner	25	20	10	16
Retired	11	20	9	17
Other	9	11	9	9
Total	100	100	100	100

zones than in the urban fringe. Despite the variations, the most notable feature of Table 40 is the diffusion of all occupation groups throughout the study area.

Extent of Very Small Wooded Tracts
by Population Density Zones

Although owners of very small wooded tracts one to three acres in size were not interviewed in this study, their great numbers and dispersal through population zones deserve attention. Many of these tracts represent a portion of a farming enterprise, but most wooded tracts of this size are associated with real estate property of limited acreage, often not much larger than the size of the woodland, where the owner resides. It is reasonable to assume that most of these owners have urban-type occupations. Table 41 shows that woodland ownerships one to three acres in size are numerous in all population zones, particularly in the urban fringe.

Owner Objectives by Population Density Zones

It has been shown that agricultural land abandonment occurs at a faster rate than urban development in the urban fringe.⁸ To the extent that the owners' objectives regarding their woodland holdings are indicative

⁸Moore and Barlowe, op. cit., p. 19.

TABLE 41
DISTRIBUTION OF FOREST LANDOWNERSHIPS ONE TO THREE ACRES
IN SIZE, BY POPULATION DENSITY ZONES

Population density zones	Forest owners	Forest area
	(percent)	
I	13	2
II	18	2
III	16	3
IV "urban fringe"	27	6

of what to expect in timber production, it appears that forest land in the urban fringe is being "idled"⁹ faster than it is being subdivided or developed for industrial, commercial or residential purposes. For example, only 29 percent of the owners in the urban fringe indicated timber production to be the main objective for their woodland property (see Table 42). This is in sharp contrast to the other three zones where the majority of the owners stated that their woodland area was devoted to timber production. On the other hand, the inactive objective claimed the largest share--42 percent of the owners with 39 percent of the forest area--of responses in the urban fringe. Except in Zone II, this objective was claimed by only a few of the other owners.

One could almost say that the investment-speculation objective of woodland ownership was peculiar to owners in the urban fringe. Aside from one percent of the owners in Zone II, all of the owners having an investment-speculation objective possessed urban fringe woodland holdings. Such individuals, of course, are awaiting the day when their wooded tracts can be subdivided or developed for industry.

⁹One does not "idle" a wooded tract merely by leaving it alone as is the case with crop land. Trees grow in spite of man's efforts. However, "idling" does apply if the owner does not desire to harvest his woodland.

TABLE 42

FOREST OWNERS' OBJECTIVES, BY POPULATION DENSITY ZONE

Objectives of ownership	Zone I		Zone II		Zone III		Zone IV "urban fringe"	
	Owners	Area	Owners	Area	Owners	Area	Owners	Area
(percent)								
Forest products	63	40	50	60	70	62	29	26
Pasture	12	28	6	7	19	19	12	20
Clear for agri- culture	10	7	3	1	7	15	--	--
Recreation	5	5	7	7	--	--	--	--
Investment- speculation	--	--	1	1	--	--	13	6
Inactive	6	5	24	13	4	4	42	39
Residence	2	2	3	3	--	--	--	--
Other	2	13	6	8	--	--	4	9
Total	100	100	100	100	100	100	100	100

It may seem strange that none of the owners in the urban fringe indicated residence as their objective. Many owners who resided on their properties claimed some other primary objective for holding their land. If interviews had been extended to owners of tracts of one to three acres of woodland, the residence objective would no doubt be more prevalent in the urban fringe than elsewhere.

Cutting Activity by Population Density Zones

One could argue that an owner's objective has no necessary bearing on his cutting activity. But the fact remains that in the urban fringe, where significantly fewer owners indicated forest products as their objective of ownership, there were also fewer owners indicating that they had harvested timber during their tenure.

As is shown in Table 43, only 19 percent of the urban fringe woodland owners with 24 percent of the forest area in this zone have harvested timber products during their tenure. In the other three zones at least a third of the owners harvested timber during their tenure.

It appears that it is not because the growing stock is less valuable in the urban fringe which accounts for the limited amount of cutting activity, because the per acre value of the woodlands in this zone is greater

TABLE 43

DISTRIBUTION OF FOREST LANDOWNERSHIPS IN WHICH COMMERCIAL
TIMBER SALES HAVE BEEN CONDUCTED,
BY POPULATION DENSITY ZONE

Population density zone	Forest owners	Forest area
	(percent)	
I	38	53
II	33	42
III	37	47
IV "urban fringe"	19	24
All zones	32	45

than that for Zone I (refer back to Table 39). The average total investment in growing stock per owner is less in the fringe areas than elsewhere, but the difference is not enough, it would seem, to account for such a sharp difference in the frequency of owners reporting cutting activity. Nor does the spatial distribution of woodland area appear to account for the difference in cutting activity. Forest land as a percent of the total land area is greater in the urban fringe than in Zone III.¹⁰ The only adequate explanation left for the limited cutting activity in the urban fringe appears to be the owners' objectives of ownership.

Cutting Practices by Population Density Zones

Not only is there less cutting activity in the urban fringe than in the other zones, but the indications are that when owners in this zone cut, they do a poorer job. In fact, the cutting practices of all urban fringe owners interviewed who harvested timber products during the five-year period 1954-1959 were classified as "poor" (see Table 44). In all other

¹⁰Forest land as a percent of the total land area was estimated for each of the population density zones as follows: "I" - 23 percent; "II" - 20 percent; "III" - 8 percent; and for the urban fringe" - 16 percent.

TABLE 44

FOREST OWNERS' CUTTING PRACTICES, BY POPULATION
DENSITY ZONES

[illegible]

population density zones, a substantial proportion of the recent cutting operations qualified for at least a "fair" classification.

Several owners interviewed in the urban fringe who had harvested timber voiced a feeling of resignation regarding the future encroachment of their woodland tracts by subdivisions. They felt that since their forest land will be cleared for industrial or home sites in the near future they might just as well sell everything merchantable when they have an opportunity to sell. In fact, one such owner indicated that this argument was used by the logger when he negotiated for the sale of the owner's growing stock.

Sale of Wooded Tracts for Residential or Commercial Development

As one would suspect, a larger percent of the woodland owners in the urban fringe (12 percent) have sold a portion of their woodland for residential or commercial development than is the case in the other zones (see Table 45). It should also be noted, however, that there is "urban-type" encroachment in the less populated zones as well as in the urban fringe.

Many owners who have not yet sold woodland for "urban-type" purposes have, nevertheless, had the opportunity to do so. Table 46 shows the response of those owners who had not sold but had been asked to

TABLE 45

SALE OF WOODED TRACTS FOR RESIDENTIAL OR COMMERCIAL
DEVELOPMENT, BY POPULATION DENSITY ZONES

Population density zones	Owners who had sold portions of their woodland for residential or commercial development (percent)
I	2
II	4
III	7
IV "urban fringe"	12

TABLE 46

DISTRIBUTION OF OWNERS WHO HAD BEEN APPROACHED FOR SALE
OF ALL OR A PART OF THEIR WOODLAND FOR RESIDENTIAL OR
COMMERCIAL DEVELOPMENT, BY POPULATION DENSITY ZONES

Population density zones	Owners who had been approached
	(percent)
I	10
II	18
III	5
IV "urban fringe"	27

sell a part or all of their woodland for residential or commercial development. Again, the urban fringe ranks first. However, it should be noted that even in the less populated zones there is a significant demand for wooded tracts for residential or commercial development. In Zone II, for example, 18 percent of the owners indicated that they had been asked to sell at least part of their woodland for "urban-type" purposes. It is difficult to explain why there is a sharp drop-off in the "non-forestry" demand for woodlands in Zone III. The fact that, except for the urban fringe, the zones are not necessarily arranged concentrically around the large cities, may have something to do with this peculiarity.

Table 47 shows that more of the owners having the larger investments in growing stock had been approached for sale of a portion or all of their woodlands for urban uses than those owners having more limited investments in growing stocks. This could indicate that much of the valuable timber in southern Michigan is subject to urban encroachment. However, the more likely explanation is that the owners of the larger investments in growing stock have more woodland to sell. In terms of area, the impact of urbanization on the more valuable growing stocks may be no greater than upon the less valuable ones.

TABLE 47

DISTRIBUTION OF OWNERS WHO HAD BEEN APPROACHED FOR
SALE OF ALL OR A PART OF THEIR WOODLAND FOR
RESIDENTIAL OR COMMERCIAL DEVELOPMENT,
BY TOTAL VALUE OF GROWING STOCK

Value of growing stock	Owners who had been approached (percent)
No value	15
\$1-999	12
\$1000-1999	19
\$2000-4999	14
\$5000-9999	36
\$10,000+	60

Future Urban Encroachment Upon Southern
Michigan's Forest Resources

It was beyond the scope of this study to actually gauge the rate at which forest land is physically usurped for residential or commercial purposes. But even if it were, the entire impact of urbanization could not be measured, because there is reason to believe that forest land is "idled," as far as timber production is concerned, before an actual physical move is made to utilize the wooded site for urban purposes.

Although the physical usurping of forest land is not the only manifestation of urbanization, it would be helpful to know how fast forest land is ripening to urban uses. There is no direct means of measuring this but, by utilizing the results of a study concerned with the impact of urbanization on agricultural land in southern Michigan, it is possible to get some idea of the rate of urban encroachment upon the forest resources of southern Michigan.

By critically examining road and city maps, Census data, and even making on-the-spot assessments of urban expansion, Jensen¹¹ was able to measure the rate at which agricultural land in southern Michigan was usurped for non-agricultural purposes during the 15-year period,

¹¹Jensen, op. cit.

1940-1955. He estimated that during this period 135,000 acres of agricultural land ripened to non-agricultural uses annually.¹² Whether or not this rate will continue will depend, as Jensen points out, on whether or not:¹³

(1) the growth in population continues; (2) industrial expansion continues which provides jobs for these greater numbers of people; (3) economic activity remains at a relatively high level, with incomes also averaging high enough that the land holding desires of many can be satisfied; and (4) that people's desires do not change and alter the present pattern of preferences, including their support of public development of land acreage along many lines.

Using Jensen's estimate to predict when all of southern Michigan's agricultural land will have ripened to non-agricultural uses if the present rate were to continue indefinitely, and assuming that this will also be the time when its forest resources have been "urbanized," the rate at which private forest land in southern Michigan will ripen annually to non-forestry uses in the next decade was estimated to be approximately 1.4 percent of the total private forest area as of 1957.

Admittedly the indirect approach to gauging the impact of urbanization on forest land is subject to error. For instance, there is no necessary relationship between the urbanization of agricultural land and that of forest land. An act which will take crop land

¹²Ibid., p. 156.

¹³Ibid.

out of production, such as the sale of a farm at the edge of a city to a non-farmer, will probably not immediately take the woodlot out of production of timber products. As was mentioned earlier, the woodland portion of a property may grow a crop without the intervention of man's efforts. Also, the proximity of the city and its lucrative job opportunities and the rapid expansion of a network of highways has caused many farmers to abandon part or all of their crop land. Such abandonment does not affect the farmer's woodland.

While agricultural land abandonment may predate abandonment of southern Michigan's forest lands, the time difference may not be important. One factor which is of considerable importance is the pattern of urbanization; it occurs in a checker-board fashion which serves to isolate "islands" of forest land. The likely situation is that the forest resources of southern Michigan will be chopped up into smaller and smaller blocks and these individual blocks will become more isolated from one another.¹⁴ Conceivably, we could be faced with a situation where we still had, say, 20 or 30 percent of the forest area which existed in 1957, but since there isn't enough growing stock in any one area to

¹⁴ Better roads hasten urbanization, but they also reduce logging costs. This "positive" aspect of urbanization may counter-balance some of the negative features. Cf. McKusick, op. cit., p. 3.

attract and maintain wood-using industries, the effective supply of forest products is nil.

Another point to consider is the fact that forest land may be usurped for agricultural production as well as urban uses. Although there is no widespread indication of this at the present time, the situation could change in the future as more of the nation's agricultural land is also urbanized and the consumption of farm products increases.

CHAPTER VII

OWNER INTEREST AND PARTICIPATION IN PUBLIC TECHNICAL AND EDUCATIONAL ASSISTANCE PROGRAMS AND OTHER DEVICES DESIGNED TO PROMOTE FOREST MANAGEMENT

In a theoretical capitalistic economy individual action via the price system would properly allocate forest resources. In other words, "dollar votes" cast in the market place would buy the level of forest conservation desired by the majority of the citizens. In practice, however, malfunctions in the price system can and do steer economies away from the desired optimum level of forest conservation. Wantrup points out six ways in which the "signaling system" of the price system can break down:¹

1. Price signals do not exist on the benefit or on the cost side or both.

Here Wantrup is referring to the problem of determining extra-market benefits and costs of such things as silt-free water resulting from a forested hillside or stability

¹S. V. Ciriacy-Wantrup, "Social Objectives of Conservation of Natural Resources with Particular Reference to Taxation of Forests," Paper read at Research Conference on Forest Taxation, University of Oregon, January 27-28, 1959, pp. 6-9.

in a small community resulting from the assurance of the perpetual operation of a wood-using industry.

2. Price signals are distorted as a result of such factors as "undesirable" income distribution or monopolistic tendencies in certain sectors of the economy.

3. Price signals vary so much over time that the response is abortive. This is caused by the influence of the business cycle in a free enterprise economy.

4. Price signals are not received by the decision-making agent but by others.

5. Price signals are misunderstood or ignored by the decision-making agent.

6. Price signals cannot be followed by the decision-making agent due to lack of financial liquidity, laws, and regulations.

It can be argued that even if the malfunctions listed above could be eliminated, the amount and kind of forest conservation which would ordinarily develop through private initiative in search of economic gain would not adequately serve the needs of society. Forest conservation would occur only in areas where it was economical,² and because the individual has a shorter planning period and higher time preference rate, what is economical to an individual usually won't coincide with society's welfare optimum.³

²Roland Renne, Land Economics, New York: Harper and Brothers, 1947, p. 632.

³Cf. Raleigh Barlowe, Land Resource Economics, Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1958, p. 310.

Because of malfunctions in the price system and the lack of identity between an individual's and society's interests, conservationists have resorted to using various devices in attempting to produce a "social optimum" regarding forest conservation. For example, in the past considerable forest land has been transferred from the public domain to the trusteeship of the Forest Service. Both the federal and various state governments have made outright purchases of private lands to promote forest conservation. But neither of these acts affect (at least directly) the management of forest land owned by the nation's 4.5 million small woodland owners. Of more direct influence are the assistance programs adopted by federal and state governments and by private organizations to actively promote better forest management on the part of the private forest landowner.

One of the major purposes of this study was to appraise owner interest and participation in technical and educational assistance programs and other devices designed to promote forest management in southern Michigan. To this end, many questions were directed at the 207 interviewees (see Form No. 2, Appendix B). Their replies form the basis for the remainder of this chapter.

Forestry Extension

Of the various public assistance programs promoting forest management in southern Michigan, perhaps none attempts to reach as large an audience as forestry extension. As W. K. Williams pointed out, "Extension attacks the forestry job through educational means and uses methods aimed at reaching the largest number of owners."⁴

Forestry extension work was authorized by the Clarke-McNary Act, passed in 1924 and amended in 1949. It is Section 5 of this act which provides for educational assistance to owners of farms "in establishing, renewing, protecting and managing woodlots, shelter belts, windbreaks, and other valuable forest growth, and in harvesting, utilizing and marketing the products thereof."

As is the case with other phases of the cooperative extension program, the county agricultural extension director's office serves as a focal point from which much of the forestry extension is dissipated. With cooperation of the Federal Extension Service and the technical guidance of the extension forester who is usually headquartered at a land-grant college or university, the

⁴W. K. Williams, "Farm Forestry Extension, What it is and How it Works," U. S. Forest Service, Agr. Information Bul. 107, 1953, p. 3.

county agricultural extension director will prepare and use newspaper articles, radio talks, circular letters or other means to stimulate thinking about forestry. A forestry field day is another device used by forestry extension in areas where farmers indicate interest and willingness to cooperate. On such occasions the county extension director will plan the demonstration, set the date, time, and place, notify residents in the community, and arrange for the extension forester to be present.

The county extension director will often handle hundreds of requests for forestry information over the course of a year. Many times he is able to satisfy the particular request himself but often he will refer the farmer to the CFM service forester or the extension forester for specialized assistance. The extension forester also services many requests which come to him directly, in addition to those referred to him by the county agricultural agent.

The size of the forestry extension programs being handled in southern Michigan at the county level is described in Table 43. In this 37-county area the agricultural extension directors, with the help of their staffs, devoted a total of 318 man-days to forestry subjects during 1959 and 375 during 1960. In each of these years more than 11,000 different persons were assisted directly in some phase of forestry--in most

TABLE 43

FORESTRY EXTENSION ASSISTANCE PROVIDED THROUGH COUNTY
OFFICES IN SOUTHERN MICHIGAN*

	1959	1960
Number of different individuals assisted	12,628	11,128
Requests for forestry assistance met by kind:		
Planting forest trees	7,434	6,371
Timber stand improvement	1,407	1,304
Timber harvest	1,245	1,518
Estimating and appraising	855	1,054
Maple syrup production	337	338
Treating wood products	1,989	1,378
Marketing forest products	1,499	1,528
Fire protection	3,684	4,241

*Source: Data were obtained by compiling annual estimates reported in the 1959 and 1960 "Annual Report of County Extension Agents," (Form FES 21-revised June 1959). A report for each of the 37 counties is filed at the Michigan Cooperative Extension Office at East Lansing, Michigan.

instances, either tree planting or forest fire protection.⁵ Tabulations for each of the two years can not be added since there is no way to determine the extent to which certain individuals were given forestry assistance in both years.

More than one-third of the owners interviewed in this study had received some sort of extension aid in areas other than forestry from the county agricultural director's office, but only three percent received forestry assistance.

	<u>Percent of forest owners</u>	<u>Percent of forest area</u>
Owner has received <u>non-forestry</u> assistance from county extension agent	35	39
Owner has received <u>forestry assist-</u> ance from county extension agent	3	5

The assistance offered from the county extension offices is mainly in traditional agriculture, but it is extended to all occupation groups (see Table 49).

Although more than a third of the owners interviewed had received non-forestry extension aid, only three percent

⁵Because of the "asbestos" nature of the native hardwood stands of southern Michigan at first it might appear odd that so many requests were made for fire prevention assistance. However, it is not the owners of hardwood stands but rather those who have established pine plantations who are responsible for most of the requests concerning fire protection.

TABLE 49
OWNERS WHO RECEIVED NON-FORESTRY ASSISTANCE FROM
COUNTY AGENT, BY OCCUPATION

Occupation	Forest owners (percent)
Full-time farming	60
Part-time farming	39
Businessman-professional	18
Wage earner	12
Retired	48
Other	23
All occupations	35

reported receiving forestry advice from the county offices.⁶ There is an apparent disparity between the limited forestry assistance reported by owners and the large number of requests for forestry aid which the county agents reported, but there are some possible explanations. One explanation is that many of the requests are probably repeats from the same individuals. Also, many of the individuals who sought extension advice on planting probably did not own forest land until they established a plantation. To the extent that such plantings were not visible from aerial photos these "new" woodland owners were not subject to the sampling design of this study. Even if visible, many of these plantations probably did not qualify the owner for interview purposes since the plantings were less than three acres in size or were established as windbreaks.

The extension forester headquartered at Michigan State University is an adjunct to the county cooperative extension program. In addition to supplying the county agent with technical guidance and assistance, the extension forester also handles requests sent directly to him by the individual in need of advice. However, judging from the interviews, not many of the woodland owners

⁶The majority of such requests (65 percent) were for planting information. The rest were classified as "other" and included information on timber sale transactions, and referrals to the Cooperative Forest Management service forester.

in southern Michigan avail themselves of this service. As shown in Table 50, only two percent of the owners had actually received assistance from the extension forester.⁷ The interviewees who hadn't received such aid were further queried as to their interest in this program. Eighty-six percent of the owners indicated that they were not interested in the aid which the extension forester can provide. Most of these owners had not heard of such a service until it was fully explained to them at the time of the interview.

After having the program explained to them, one percent of the owners expressed a "strong" interest in extension forestry assistance while another 11 percent of the owners were judged to be "slightly" interested.⁸ Various reasons were given: they didn't believe they would benefit; they were not interested in forestry; they had applied for assistance elsewhere; or, if they thought assistance was needed, they would apply for it elsewhere.

⁷Like those handled by the county agents, most of the requests concerned plantation establishment. One owner stated having had his timber marked for cutting by the extension forester, but since 1951, this type of public aid is provided only by the CFM service forester.

⁸The terms "slight" and "strong" will be used repeatedly to classify an owner's interest in the various assistance programs analyzed in this study. Individuals expressing a "strong" interest were those who, at the time of the interview, had a felt need for the service

TABLE 50
ATTITUDES OF WOODLAND OWNERS TOWARD EXTENSION
FORESTER ASSISTANCE

Owner attitudes	Forest owners	Forest area
	(percent)	
Has received assistance from extension forester	2	1
Knows about extension forester program but not interested because:		
Doesn't believe any gain obtainable from extension aid	3	2
Not interested in forestry	3	2
Has applied for aid elsewhere	2	1
If aid is needed it will be obtained from CFM service forester	1	*
Other	2	4
Was not familiar with extension forester program, but:		
Expressed <u>strong</u> interest in such assistance	1	6
Expressed <u>slight</u> interest in such assistance	11	13
Not interested in extension forester assistance	75	72
Total	100	100

*Less than one percent.

Soil Conservation District Program

The Michigan Soil Conservation Districts Law (Act 297, P.A. 1937) which was enacted in 1937 and amended in 1945 provides a means by which farmers and other landowners on petition, hearing, and referendum can organize local units of government to protect their soil and water resources. These units, called Soil Conservation Districts (SCD) are governmental subdivisions of the state, but they are operated and controlled by land occupiers within the district. All except three of the counties in the southern Michigan study area--Huron, Wayne, and Monroe counties--are included within an organized district.

The primary objective of the SCD program is to promote good land use through the establishment of complete soil and water conservation programs on the lands of the district. At the request of the districts, the Soil Conservation Service provides technical assistance in conservation planning. Farmers avail themselves of

or advice in question and indicated they will take it upon themselves to obtain such aid in the near future. Invariably such owners, without prompting by the interviewer, asked for the address of the individual or agency providing the type of aid in question. Individuals expressing "slight" interest saw no need at the time of the interview for the particular advice or assistance, but indicated that if an occasion would arise which required such knowledge or information, they would seek outside help. There is a strong likelihood that such owners will soon forget that assistance is available.

these planning facilities by making an application to the district directors.

Table 51 shows that as of June 30, 1960, there were 21,638 SCD cooperators in southern Michigan owning 2,635,768 acres of agricultural land, or 62 percent and 56 percent of the respective SCD totals for the State of Michigan. The proportion of cooperators with basic conservation farm plans is slightly higher in southern Michigan than in the remainder of the state. The study area also has a slightly better record in terms of the percent of agricultural land being "planned." Thirteen percent of the agricultural land in the study area is owned by cooperators having a basic conservation plan compared with 11 percent for the state as a whole.

Judging from a study of 157 planned farms in five districts in the Lower Peninsula of Michigan, the majority (70 to 80 percent) of the cooperators believed that their farm plans were workable.⁹ This is not surprising since the plan is developed jointly by the SCS technician and the farmer and it is the latter who decides which of several suggested land-use programs he intends to follow.

Forestry considerations are often included in

⁹C. R. Hoglund, "Soil Conservation in Michigan, Progress, and Problems," Michigan State Univ. Agr. Expt. Sta., Special Bul. 394, 1955, p. 12.

TABLE 51
SOIL CONSERVATION DISTRICT PROGRAM STATUS
AS OF JUNE 30, 1960*

Location	SCD cooperators	SCD cooperators having basic conservation plan	Portion of total agricul- tural area in SCD "planned"
	(number)	(acres)	(number) (acres) (percent)
Southern Michigan study area**	21,638	2,635,768	14,577 1,724,661 13
State of Michigan***	34,637	4,682,041	22,001 2,847,469 11
Southern Michigan total as percent of state total	62	56	66 60 ****

*Data compiled from records maintained at the Soil Conservation Service state headquarter, East Lansing, Michigan.

**Soil Conservation Districts encompass all but three of the counties comprising the study area.

***Twelve counties in the State of Michigan have not as yet been organized into Soil Conservation Districts.

****Not calculated.

the overall plan. A conservation plan may call for a reduction in woodland area, but a shift in the other direction is often deemed advisable. In fact, one observer estimated that if all farm land in southern Michigan were covered by a SCD farm plan and these programs followed strictly, woodland area would be increased by approximately 128,000 acres.¹⁰ Evidence that such changes are actually being adopted by the SCD cooperators who have basic conservation plans is described in Table 52. Here it can be seen that during a one-year period, July 1, 1959 through June 30, 1960, 11,757 acres of crop land owned by SCD farm planners were converted to woodland. Thirty percent of these conversions occurred in southern Michigan. This is not a net change in forest area since a portion of the cooperators' land (2,448 acres) was converted from woodland and grass to crop land during the same period. Much of the conversion occurred in southern Michigan and resulted in a net increase in forest area of 2,038 acres.

Soil Conservation Service technicians extend their aid to individuals other than SCD cooperators. Numerous owners in the study area indicated that they had received SCS technical advice in connection with the ACP program, for instance. However, only about one out

¹⁰Earl E. Fenton, "Changes in Land Use that Would be Affected by the Adoption of Conservation Farm Plans in 53 Michigan Soil Conservation Districts," Quarterly Bulletin, Mich. State Univ. Agr. Expt. Sta. 41(1): 74-87, 1958.

TABLE 52

LAND CONVERSIONS EFFECTED BY SCD COOPERATORS IN MICHIGAN FROM JULY 1, 1959 THROUGH JUNE 30, 1960*

Location	Land conversions made	
	From crop land to woodland	From woodland and grass to crop land
	(acres)	
Southern Michigan study area	3,499	1,461
State of Michigan	11,757	2,448
Southern Michigan total as percent of state total	30	60

*Data compiled from records maintained at the Soil Conservation Service state headquarters, East Lansing, Michigan.

of 10 woodland owners interviewed had gone as far as to have an SCD farm plan drawn up (see Table 53). Sixteen percent of the full-time farmers, 11 percent of the part-time farmers, and 17 percent of the businessman-professional occupation groups have farm plans. None of the wage earners interviewed had a formal plan, but this finding is not wholly unexpected since more of the wage earners possess their property for non-agricultural purposes than say, the businessman-professional group and, of course, the farmers themselves.

Not many of the woodland owner "planners" considered forestry measures. As the tabulation below points out, 70 percent of these owners had not adopted forestry practices as a result of their SCD farm plan.

<u>Forestry practices adopted as a result of having an SCD farm plan</u>	<u>Percent of owners having an SCD farm plan</u>
Windbreak	6
Plantation	25
Fencing of woodlot	5
None	70

Establishment of a forest plantation was the most popular forestry practice by SCD cooperators. This act, of course, represents conversion of crop land or grass to woodland. A few of the owners fenced their woodlots or established windbreaks. None of the SCD planners interviewed indicated that they had, or even

TABLE 53
OWNERS HAVING SCD FARM PLAN, BY OCCUPATION

Occupation	Forest owners
	(percent)
Full-time farmer	16
Part-time farmer	11
Businessman-professional	17
Wage earner	0
Retired	10
Other	0
All occupations	9

planned to shift a portion of their woodland to crop land.

Regarding the sampling design, it should also be pointed out that the findings of this study regarding SCD cooperators are restricted to such individuals who had existing woodlots at the time the plan was drawn up or whose "conversions" to woodland were visible from 1957 aerial photographs. Undoubtedly, there were a few "new" SCD woodland owners who were unintentionally missed.

Agricultural Conservation Program

The Agricultural Conservation Program (ACP) is a national program of the U.S. Department of Agriculture, administered by the Agricultural Conservation Program Service. The ACP was established in 1936 by the enactment of the Domestic Allotment Act.¹¹ The purpose of this initiating act was two-fold: first, it provided funds to encourage farmers to shift acreage from the "basic" soil depleting to soil-conserving crops and to stay within assigned acreage allotments when producing the "basic crops"; secondly, the act provided funds to assist farmers in adopting certain water and soil conservation practices which would not otherwise be

¹¹49 stat. 1148.

carried out. However, in 1944 Congress appropriated only enough funds to provide for the soil and water conservation payments. It was at this time that the basic objectives of the ACP were oriented from a combined acreage control and conservation program to solely a conservation-promoting agency. Although the ACP helped advance the cause of conservation during the early years, the emphasis was to reduce the acreage planted to certain crops.¹²

Forestry practices, mainly tree planting, have been approved since the program was initiated. However, for the nation as a whole, such practices have accounted for only a very small portion of the cost-share assistance extended to farmers.¹³

Action to formulate the ACP for a given crop year commences during January of the previous year.¹⁴

¹²V. Webster Johnson, and Raleigh Barlowe, Land Problems and Policies, New York, McGraw-Hill Book Co., Inc., 1954, p. 95.

¹³Dickerman pointed out that, during a ten-year period, forestry practices accounted for less than one percent of all ACP payments. Cf., M. B. Dickerman, "Forestry Assistance Programs," Timber Resource Review, (Preliminary report), Chapter IV, Section F, U.S. Forest Service, Washington, D. C., 1955.

¹⁴Information concerning the development of the ACP for a given year was obtained from various ACP national bulletins, Michigan ACP handbooks, and a personal conversation with Raymond Locher, ACP specialist, Michigan State ASC office, East Lansing, Michigan.

Using suggestions submitted by county planning groups, the state ACP planning group¹⁵ determines the conservation needs of the state. Utilizing the state reports, the ACP service develops the national program. Subsequently an individual state program is spelled out in an ACP Handbook developed from the National ACP Bulletin. Then the county ACP groups decide which of the practices approved at the state level to use in their respective counties. In the last analysis, it is the county ACP group that determines which ACP practices will be made available to the farmer.

As is the case for all ACP practices, any landowner, operator, tenant, or sharecropper who has a forestry problem which can't be met with his own resources may request ACP cost-share assistance in carrying out forestry conservation projects. In southern Michigan, the CFM service foresters not only help formulate the county ACP but are responsible for determining that the conditions of the ACP agreement are met before the farmer receives the appropriate cost-share payment.

An indication of the extent of ACP accomplishments in the study area can be obtained from the data

¹⁵The ACP group for the State of Michigan is made up of three farmers appointed by the Governor, the state agricultural extension director, the state conservationist, and a Forest Service representative. At the county level, the ACP planning group is composed of the ASC committee, an SCS technician and a Michigan Conservation Department district or service forester.

shown in Table 54. During a four-year period, 1956-1959, a total of 38,799 acres of forest plantation was established under ACP, while ACP-sponsored timber stand improvement (TSI) was carried out on 23,703 acres of forest land in southern Michigan. The southern Michigan ACP tree planting effort represented 18 percent of the total for the entire state; TSI work represented 25 percent of the total for the state.

As far as ACP tree planting is concerned, between 1956 and 1959, acreages and number of participating farms decreased markedly.¹⁶ No doubt this drop-off is related in part to the advent of Soil Bank-sponsored tree planting.¹⁷ The number of farms participating in the TSI phase of the ACP remained fairly constant. However, although less pronounced than in ACP tree planting, there was a downward trend in acres involved. The Conservation Reserve program does not sponsor TSI endeavors, but it does compete with the ACP for tax dollars. In this sense, the slight downward trend in TSI work might be attributed to the Soil Bank program.

Two-thirds of the woodland owners interviewed in

¹⁶The reduction is not due to a decrease in ACP cost-sharing payments. On the contrary, presently an owner is reimbursed for 75 percent of the cost of planting. As recently as 1956, planting costs were shared equally by the owner and the federal government.

¹⁷The combination of a large cost share and substantial annual payments over a 10- to 15-year contract period made the Soil Bank much more attractive than ACP.

TABLE 54
ACP FORESTRY ACCOMPLISHMENTS IN SOUTHERN MICHIGAN,
1956-1959*

Year	Tree planting		Timber stand improvement	
	Number of farms participating	Number of acres involved	Number of farms participating	Number of acres involved
1956	539	1778	120	1427
1957	416	1892	103	1816
1958	357	1406	111	1324
1959	268	1408	110	1355
Total	**	6484	**	5922

*Source: Compiled from the Michigan ASC annual reports for the years 1957-1960.

**Total for the four-year period not appropriate since a particular farm may be involved in one or several years.

this study professed some general knowledge of the ACP. Thirty percent had received some sort of non-forestry assistance at least once during their tenure. However, a much smaller proportion of the owners were aware of the ACP forestry opportunities and only four percent had received ACP cost-share payments in carrying out approved forestry practices (see Table 55). Seventy-eight percent of the woodland owners were not familiar with the forestry aspect of ACP, and even after it was fully explained to them, only 11 percent expressed interest--two percent were "strongly" interested and another nine percent of the woodland owners expressed "slight" interest. Owners who have participated in the forestry aspect of ACP have, on the average, larger woodland holdings more valuable growing stocks than non-participants (see tabulation below, a portion of which has been extracted from Table 55).

<u>Owners' status regarding ACP</u>	<u>Percent of forest owners</u>	<u>Percent of forest area</u>	<u>Percent of growing stock value</u>
Had partici- pated	4	6	5
Not aware of but showed interest (strong or slight)	11	10	18
Not interested	<u>85</u>	<u>84</u>	<u>77</u>
	100	100	100

TABLE 55

ATTITUDES OF FOREST LANDOWNERS IN SOUTHERN MICHIGAN
WITH RESPECT TO THE FORESTRY ASPECT OF ACP

Attitudes	Forest owners Forest area	
	(percent)	
Owner has received ACP forestry assistance	4	6
Owner aware of, but has not applied for ACP forestry assistance	18	20
Owner not aware of, but <u>strongly</u> interested in ACP forestry	2	2
Owner not aware of, but <u>slightly</u> interested in ACP forestry	9	8
Owner not aware of, and not interested in ACP forestry	65	60
Not eligible for ACP*	2	4
Total	100	100

*All industrial and commercial business firms were judged ineligible for ACP cost-share, more on the basis of precedence than the written law.

In contrast, those who were not interested in the forestry aspect of ACP had, on the average, slightly smaller holdings than the participants and substantially more valuable investments in growing stock than the non-interested group.

A number of reasons were given by the owners who had not applied for ACP forestry assistance despite awareness of its availability. Table 56 shows that 30 percent of these owners felt the trouble it took to apply for cost-share payments would outweigh any possible benefits, while another 19 percent expressed a lack of interest in forestry. An additional 16 percent opposed subsidy-like payments on principle. Perhaps this attitude is a bona fide carryover from the period when the ACP was used to reduce crop surpluses, but mainly it reflects the opposition of many individuals to the intrusion of government into the economy. Actually, this type of attitude toward ACP as well as other government programs was more prevalent than empirical data shows. Table 55 showed that 65 percent of the woodland owner respondents did not know about forestry cost-shares under ACP prior to the time of interview and even then did not show an interest. One of the reasons for their ignorance of this particular phase of ACP was that any brochure or pamphlet which may have been sent to them explaining the specifics of ACP was discarded before

TABLE 56

OWNER'S MAIN REASON FOR NOT APPLYING FOR ACP FORESTRY
ASSISTANCE DESPITE KNOWLEDGE OF PROGRAM

Reason	Forest owners who knew of but had not applied for ACP forestry assistance
	(percent)
Believes trouble outweighs benefits	30
Not interested in forestry	19
Opposed to subsidy-like payment	16
Has lacked time to investi- gate	11
Objects to terms	9
Does not think would qualify	7
Other	8
Total	100

reading because of their unsympathetic attitude toward government programs.

Participation and interest in the forestry phase of ACP was restricted pretty much to three occupation strata (see Table 57). As far as participation was concerned only three groups were represented: full-time farming, businessman-professional, and retired. The full-time farming group exhibited more actual participation, but the other two groups expressed more interest. The part-time farming group and woodland owners classified as "other" exhibited the least knowledge of and interest in the program.

Though there were no wage earner interviewees who expressed knowledge of, let alone receiving forestry-ACP payments, this group ranked second only to the retired group as far as interest was concerned. This situation tends to suggest that perhaps this group of owners is not in a very good position to receive information, say, from the county agent's office, regarding the ACP program.

Table 54 above pointed out that most of the forestry ACP activity in southern Michigan represented tree planting. This situation was reflected in this study. Ninety percent of the owners interviewed who had participated in the forestry phase received ACP cost-share for plantation establishment. Timber Stand Improvement accounted for the remainder. Invariably, those who had

TABLE 57

ATTITUDES OF FOREST LANDOWNERS WITH RESPECT TO THE FORESTRY
ASPECT OF ACP, BY OCCUPATION CLASS

Attitudes	Full- time farm- ing	Part- time farm- ing	Businessman- professional	Wage Earner	Retired	Other
(percent of forest owners)						
Owner has re- ceived ACP forestry assistance	9	0	7	0	4	0
Owner knows about, but has not ap- plied for ACP forestry assistance	27	23	19	0	21	15
Owner not aware of, but <u>strongly</u> inter- ested in ACP forestry	2	3	0	4	8	0
Owner not aware of but <u>slightly</u> interested in ACP forestry	7	0	11	16	12	4
Owner not aware of, and not interested in ACP forestry	55	74	63	80	55	76
Not eligible for ACP forestry	0	0	0	0	0	5
Total	100	100	100	100	100	100

received forestry-ACP payments stated that they would have undertaken forestry conservation measures without the incentive payments.

Soil Bank

To the extent that it sponsored the accomplishment of some forestry-type effort, the Soil Bank Conservation Reserve program initiated under the Agricultural Act of 1956 can be classified as a forestry assistance program. However, the basic purpose of this activity was not the promotion of conservation, but rather, the reduction of agricultural crop surpluses. Of secondary importance was the fact that crop land retired under the auspices of this program was put to conservation uses on a relatively long-term basis.

Where crop land was converted to tree plantations, contracts provided for reimbursement, in cash or materials, up to 80 percent of the cost of establishing plantations plus annual rentals for the duration of the contract (10 to 15 years when tree cover is established) averaging about \$10 per acre.

When the Soil Bank Act expired during the summer of 1960, Congress did not pass legislation necessary to provide for new contracts under this program. However, even during the four years that it was in effect, an appreciable acreage of forest plantations was established

in the State of Michigan. All told, 30,561 acres of plantations were established on land which the owners had contracted to retire. As can be seen in Table 58, 4,016 acres of forest plantings were established in southern Michigan on Conservation Reserve lands. This represents 13 percent of the state's total Soil Bank tree planting accomplishments.

Note that both the number of farms involved and the acreage of plantations established increased from one year to the next--except in 1960. However, this drop-off is explained by the fact that the 1,074 acres established in 1960 represents only spring planting. The Conservation Reserve expired before the fall planting season commenced.

When queried about their participation in any phase of both the Acreage Reserve and the Conservation Reserve, 23 percent of the woodland owners interviewed indicated that they had contracted to retire crop land under the auspices of the Acreage Reserve program. The frequency of participation varied among occupation strata. As shown in Table 59, the retired woodland owner was more likely to participate than any other type of woodland owner.

Wage earners are far down the list as Soil Bank participants, but this is not surprising since wage earners held relatively little land that could qualify

TABLE 58

CONSERVATION RESERVE TREE PLANTING ACTIVITY (CR-A-7)
IN SOUTHERN MICHIGAN, 1957-1960*

Year	Number of farms involved	Number of acres planted
1957	54	735
1958	49	830
1959	63	1,374
1960	71	1,074
Total	**	4,016

*Data compiled from county Conservation Reserve program annual statistical reports (Form CSS-846) maintained by the Michigan ASC office, East Lansing, Michigan.

**Total not appropriate since there were instances where individuals planted trees in more than one year.

TABLE 59

FOREST OWNERS PARTICIPATING IN SOIL BANK PROGRAM,
BY OCCUPATION CLASS*

Occupation	Forest owners
	(percent)
Full-time farming	29
Part-time farming	30
Businessman-professional	21
Wage earner	4
Retired	36
Other	22
All occupations	23

*This tabulation concerns the Acreage Reserve portion of the Soil Bank program. None of the owners interviewed had participated in forestry as part of the Conservation Reserve.

for the Soil Bank. Despite the variation by occupation groups, the most impressive feature of Table 59 is that it shows all occupation groups (other than wage earners) participated to a substantial degree in the program.

Although 35 percent of the woodland owners interviewed expressed some knowledge of the tree-planting aspect of the Conservation Reserve, not one had contracted to retire crop land under such conditions. This, of course, is easily explained not only by the fact that the probability of encountering an individual who had participated was very low, but also by the fact that some of the Conservation Reserve tree planting was undoubtedly accomplished by "non-woodland" owners and therefore not subject to the sampling procedure used in this study. Table 60 shows that nearly one-third of these owners failed to take advantage of this program because they felt their crop land was too valuable to even consider retiring, while another 18 percent of the owners were opposed to the Conservation Reserve as a matter of principle. Fifteen percent of the owners might have planted trees on retired crop land had the rental payments been higher.

Although it was expressed as the main reason by only four percent of the owners who knew about the Conservation Reserve tree-planting program, other respondents also felt that planting trees on retired crop land

TABLE 60

OWNER'S MAIN REASON FOR NOT PARTICIPATING IN FORESTRY
ASPECT OF THE CONSERVATION RESERVE DESPITE
KNOWLEDGE OF PROGRAM

Reason for not applying	Forest owners
	(percent)
Land too valuable to retire	32
Owner opposed to principle of Conservation Reserve	18
Payments not enough to compen- sate for taking crop land out of production	15
Not interested in planting trees	13
Owner does not have land that would qualify	10
Restrictions outweigh benefits	6
Tree planting too permanent-- hard to reconvert	4
Other	2
Total	100

would be too difficult to reconvert should they decide to again farm retired land after their Conservation Reserve contract expired. One owner felt that a tree planting contract might cloud his title and therefore make it difficult to sell his property.

Of those owners who did not know about the tree planting aspect of the Conservation Reserve (65 percent of all owners interviewed), only one percent expressed "strong" interest in the program, while two percent were "slightly" interested.

Cooperative Forest Management Program

In August of 1950, Congress passed the Cooperative Forest Management (CFM) Act which authorized the Secretary of Agriculture to cooperate with the states to enable them to provide technical on-the-ground services to all private forest landowners and operators and to processors of primary forest products with respect to the management of forest lands and the harvesting, marketing and processing of forest products. This act superseded the Norris-Doxey Act of 1937 which was similar to the CFM Act but restricted technical on-the-ground assistance in forestry to farmers. Actually, it was the Clarke-McNary Act of 1924 which set the stage for both of these acts by providing for a limited amount of forestry assistance to private forest landowners. Though the CFM Act

did not limit eligibility by size of ownership, technical CFM assistance has not been extended to large owners.

In Michigan the administration of the CFM program is not uniform throughout the entire state. Except in southern Michigan, State Conservation Department district foresters are responsible for providing CFM-type assistance. Because the district foresters' primary responsibilities involve the management of state forest areas, CFM aid generally accounts for only a small proportion of the district foresters' duties.

In the southern Michigan study area, all except three of the counties therein are administered by one of eight CFM service foresters. In contrast to the district foresters, most of the CFM service foresters' time is spent with the private forest landowners. Only one of the service foresters in southern Michigan is responsible for administration of a state forest area.

In southern Michigan the service foresters perform numerous tasks in aiding the private forest landowners. Perhaps the most useful contribution is made whenever the CFM forester helps the landowner negotiate and administer a timber sale. On such an occasion the CFM forester will generally cruise and appraise an owner's woodlot, mark trees for cutting and help advertise the timber sale. If the owner so desires, the CFM forester will also advise him on how to draw up a meaningful

written contract (i.e., one which protects the seller as well as the buyer).

Table 61 shows that six percent of the woodland owners interviewed had received assistance from the CFM service forester. In terms of the number of woodland owners reached by the assistance programs analyzed so far (i.e., county extension director, three percent; extension forester, two percent; SCD, three percent; ACP, four percent; and Soil Bank, none), the CFM program ranks first. However, none of the statistics on the extent of assistance is impressive.

A measure of achievement would be more informative than the mere tabulation of the number of owners assisted, but such a measure is not available. Despite this fact it is doubtful that any one of the other assistance programs studied accomplished more than the CFM program in maintaining and enhancing the productivity of forest land. For one thing, most of the assistance provided by the service forester (at least in the cases observed in this study) came at a time when woodland owners were harvesting timber products. This is a very crucial period for the subsequent productivity of a forest stand. During the five-year period, 1955 through 1959, a CFM forester was involved in one out of every eight timber harvests conducted by the woodland owners interviewed. Most of these harvests involved the sale of stumpage.

TABLE 61

ATTITUDES OF FOREST LANDOWNERS REGARDING CFM SERVICE
FORESTRY PROGRAM

Attitudes	Forest owners	Forest area
	(percent)	
Owner has received CFM assistance	6	8
Owner has not received CFM assistance but is aware of program and intends to seek aid in future	4	8
Owner aware of, but not interested in CFM assistance	12	12
Owner not aware of, but <u>strongly</u> interested in CFM assistance	10	14
Owner not aware of, but <u>slightly</u> interested in CFM assistance	17	14
Owner not aware of, and not interested in CFM assistance	51	44
Total	100	100

Many woodland owners who had not received CFM assistance indicated a degree of interest in this program. Table 61 shows that four percent of the owners had not received CFM aid but knew about the program and expected to seek it in the future. Ten percent more expressed "strong" interest in the CFM program after it was explained to them. Another 17 percent indicated that they were "slightly" interested. All told, 37 percent of the owners interviewed had either participated or indicated interest in the CFM program. This total was also larger than comparable totals for the other programs studied.

As the tabulation below indicates, owners who participated in the CFM program generally had larger timber holdings than those who expressed no interest. Those who showed "slight" interest in CFM had, on the average, smaller forest holdings than the participants. But the "strongly" interested owners, like the participating ones, had larger forest holdings, on the average, than non-participants.

<u>Owner status regarding CFM program</u>	<u>Percent forest owners</u>	<u>Percent forest area</u>	<u>Percent growing stock value</u>
Has participated	6	8	14
Plans to seek aid in future	4	8	10
Not aware of but:			
shows <u>strong</u> interest	10	14	13
shows <u>slight</u> interest	17	14	20
Not interested	<u>63</u>	<u>56</u>	<u>43</u>
	100	100	100

Also it can be seen that the 37 percent of the interviewees who had participated or expressed interest in CFM assistance accounted for more than half of the merchantable growing stock.

Marked differences among occupational strata in regard to CFM participation are shown in Table 62. Actual participation among the owners interviewed was restricted to three groups: businessman-professional, full-time farming, and woodland owners classified as "other." However, the data in Table 62 also suggest that the frequency by which the members of a particular occupation stratum have participated in CFM is not a very good indicator of how the group might respond if more effective means would be devised to disseminate information regarding the CFM program. True, the businessman-professional group had the highest proportion of its owners having received forestry assistance from the service forester. However, woodland owners classified as either wage earners or part-time farmers showed as much interest in the CFM program after it was explained to them as the businessman-professional group.

None of the retired woodland owners interviewed had ever requested CFM aid; moreover, the retired owners did not express much interest after the CFM program was explained to them. One possible explanation is the fact that CFM assistance would be geared toward prolonging the

TABLE 62

ATTITUDES OF FOREST LANDOWNERS PARTICIPATING OR SHOWING INTEREST IN CFM ASSISTANCE, BY OCCUPATION CLASS

Attitudes	Occupation											
	Full-time farming Own-ers	Part-time farming Own-ers	Businessman- professional Own-ers	Wage earner Own-ers	Retired Own-ers	Area	Area	Area	Area	Other		
	12	10	--	--	14	24	--	--	--	9	5	
Owner has re- ceived CFM assistance												
Owner has not received CFM; is aware of program and intends to seek aid in future	1	1	--	--	14	21	--	--	8	19	7	5
Owner not aware of CFM, but strongly interested	11	13	12	14	11	25	16	22	8	7	--	--
Owner not aware of CFM, but slightly interested	12	10	30	30	18	5	24	19	4	2	18	24
Total	36	34	42	44	57	75	40	41	20	28	34	34

harvest of timber products. Because of their short planning horizons, such suggestions appear to have little appeal to retired woodland owners.

Sixteen percent of the interviewees were aware of the CFM program, but for various reasons had not requested such aid. Almost a third of these owners stated that a lack of interest in forestry was their reason for ignoring the CFM program (see Table 63). Another third indicated they knew about the CFM program and intended to seek CFM aid in the future. Others did not believe they would benefit from CFM assistance, or they knew enough to manage their own woodlands, or they felt it was too difficult to get aid. In some cases the reasons expressed for not seeking aid were not valid, but the important point is that they were real to the owners themselves.

It has been stated that most of the owners who had received CFM aid (six percent of all woodland owners) had requested it at a time when they were harvesting timber products and that most of these harvests involved actual timber sale transactions. This is substantiated below:

TABLE 63

OWNER'S MAIN REASON FOR NOT APPLYING FOR CFM FORESTRY
ASSISTANCE DESPITE KNOWLEDGE OF PROGRAM

Reason	Forest owners
	(percent)
Not interested in forestry	5
Expects to seek CFM aid in future	5
Doesn't believe any gain obtainable from CFM aid	4
Feels it is too difficult to obtain such aid	1
Has technical competency, so doesn't need CFM aid	1
Other	*
Total	16

*Less than one percent.

<u>Type of CFM aid</u>	<u>Forest owners receiving CFM aid</u> (percent)
Assisting owner in adminis- tering a timber sale:	
Including timber marking	50
Not including timber marking	25
Tree planting information	15
Other	<u>10</u>
	100

The timber sale aid provided by the CFM forester usually involved the cruising of the owner's woodlot, providing a list of potential buyers, and enough information on stumpage prices to enable the woodland owner to bargain more effectively. In two-thirds of the cases involving timber sales, the CFM forester also marked the timber to be cut. Generally the service forester helped the owner draw up a meaningful timber sales contract and in a few instances advertised the proposed sale.

Some idea of the effectiveness of CFM assistance can be obtained from Table 64 which compares the cutting practices of owners who had requested CFM aid with the cutting practices of owners who had not received such assistance. More than half (57 percent) of the interviewees who had harvested timber and had received CFM assistance cut in a "good" manner, while only 13 percent

TABLE 64

COMPARISON OF CUTTING PRACTICES OF OWNERS HAVING
RECEIVED CFM ASSISTANCE AND THOSE NOT
RECEIVING SUCH AID

Cutting practices	Forest owners had received CFM aid	Forest owners had not received CFM aid
(percent of owners)		
Good	57	13
Fair	16	44
Poor	27	43
Total	100	100

of the owners who had not received CFM aid were so classified.

In Chapter V cutting practices were shown to improve as the owner's concept of forest management improved. The tabulation below demonstrates that the CFM participants, on the average, had substantially higher concepts of forest management than the non-participants:

<u>Concept of forest management</u>	<u>Percent of owners receiv- ing CFM assis- tance</u>	<u>Percent of owners <u>not</u> receiving CFM assist- ance</u>
No concept	0	21
Below median	43	64
Median	23	9
Above median	34	6
High concept	0	*

*Less than one percent.

One might conjecture, then, that it was a higher level of enlightenment regarding forest management rather than the CFM foresters' assistance which accounted for the participants' better cutting performances. However, such a conclusion would overlook the possibility that an owner's association with the CFM forester improved his concept of forestry,¹⁸ or simply that those with higher concepts

¹⁸Unfortunately, there was no way to appraise the CFM participants' bargaining position vis-a-vis the non-participants'. However, since the CFM participants

understood that their cutting practices would be improved if they took advantage of the CFM assistance available to them.

Despite the better overall showing, Table 64 shows that CFM assistance does not always assure "good" or at least "fair" cutting. However, interviewees who allowed the logger to practice "poor" cutting, did so in spite of the service forester's effort. In one instance, for example, an owner had harvested timber six years before the interview took place, at which time a service forester was consulted. Although this cutting was not appraised, the stand's condition at the time of the interview reflected "good" cutting. Subsequent to this first experience the interviewee inherited part of his father's estate. In his haste to buy out his brother's share, he ignored the known fact that he could still get help from the CFM forester. Instead, he sold stumpage from his father's estate to the first logger to contact him.

A similar instance involved an owner who had never actually received CFM aid at the time he harvested his timber but who had occasion to receive timber-marking

usually received more than one bid for their stumpage (an exception rather than the rule in the case of the non-participant) one might possibly infer that they usually received a higher return, ceteris paribus, than the non-participants.

advice when he was just "thinking" about a timber sale. Apparently this single experience convinced him that he knew all there was to know about administering a timber sale. In any case, when the time arrived for him to negotiate the sale of his timber he ignored the availability of professional advice and proceeded to mark the timber, with the logger accompanying him, "just like the farm forester would do it."

Despite the fact that there were some recipients of CFM assistance who did not put the service forester's advice to practice, nearly all were unanimous in stating that they would ask for such assistance again if the need should arise. Judging from the above, some did not recognize a need when they last harvested timber.

Every one of the interviewees indicated that they would have been willing to pay a nominal fee for the services rendered by the CFM forester. However, only two-thirds of the recipients would have paid the actual cost. Though they all said they were satisfied with the CFM assistance, this unwillingness to pay a consultant's fee does indicate at least a degree of skepticism on the part of a few interviewees. One such individual voiced dissatisfaction because all of the bids which he received for his stumpage clustered about the forester's estimate. He felt that there might have been some collusion between his counsel (the forester) and the bidders. By and large

the service foresters have established a "faithful" clientele. Comments such as, "I wouldn't cut a single tree in my woods before _____ (the name of the service forester) said so," or "When I decide to cut my timber I'm going to have the county [sic] forester mark my timber," are representative of the feelings expressed by the interviewees who have received aid from or knew about the CFM program.

Forest Taxation

Certainly one of the more important aspects of forest conservation has been and will continue to be the matter of taxation. In the past, efforts of forest conservationists have brought about revisions in tax laws designed to adjust the tax burden more closely to the peculiar nature of forest returns and therefore encourage sustained-yield management on private forest land.

Michigan has two yield tax laws which were enacted to alleviate certain problems arising from the application of the annual property tax to forest land. And, of course, all private woodland owners who receive income from the sale of timber products can avail themselves of the capital gains and the depletion allowance provisions of the federal income tax law, both of which are favorable to forest conservation. Before observing empirical findings of this study which reflect the private woodland

owners' knowledge and interest in each of these special tax provisions, the rationale and nature of the particular law will be discussed.

The Property Tax and its Alternatives

Of the taxes which affect the management of forest land, the property tax undoubtedly receives the most comment from foresters. In almost every instance the contention is that forest property, because of its peculiar economic character, should be given a different kind of attention, as far as the property tax is concerned, than that afforded other capital assets. The reasoning behind this plea is that the general property tax has a much more powerful effect on the management of timber than on the management of most other kinds of real estate. Vaux¹⁹ points out this distinction:

Timber assets yield income only when part or all of the asset is physically converted into products. This is a very different situation from that confronting owners of other types of capital assets. Consider, for example, the orchardist who derives his income from his orchard asset without any physical change in the orchard trees themselves. Moreover, his income depends on how much fruit the trees produce, and he cannot increase his gross receipts by cutting down the trees themselves. In the economist's terms the fruit trees represent capital assets, the fruit represents income, and income and capital

¹⁹Henry J. Vaux, "Forest Taxation: A Citizen's Problem," Paper read at meeting of Citizen's Conference on Pacific Northwest Forest Resources, Portland, Oregon, June 20, 1959, pp. 4-5.

are clearly distinguished in physical terms. The productivity of the orchard capital is not affected by the amount of fruit harvested in order to secure income.

But the tree farmer is in quite a different position. Tree farm income is derived only by cutting and selling trees. There is no physical distinction between the income and the capital assets; they are in fact a physical identity. So far as I know there is no other important economic good besides timber which has this peculiar characteristic of a physical identity between capital plant and income. It is a characteristic of the greatest possible significance for the economics of timber growing and it is the central reason why the general property tax on standing timber should be differentiated from property taxes on any other form of real estate.

An example of how the ad valorem property tax hinders forest conservation is the situation involving the remaining old-growth timber supply over a long enough period of time to allow the second growth stands to mature. The property tax serves to accelerate the cutting of this mature timber and this is just the opposite of what is needed if a region is to look forward to long-run stability in its forest industries.

Another consequence of the peculiar nature of timber production is what Duerr calls "time bias."²⁰ This bias results if assessments are periodically stepped up to reflect the increase in value that comes with approaching harvest. If this is the case, double counting occurs, since in theory at least, the value of a

²⁰William A. Duerr, "Forest Taxation Problems--How Serious and for Whom?" Proceedings, Society of Amer. Foresters, Syracuse, New York, 1957, p. 127.



stand of timber already reflects the present worth of all future income. It is obvious that this time bias will merely strengthen the depleting effect of the general property tax observed in the previous example.

The forest yield tax represents an attempt to alleviate some of the strain caused by the general property tax. This plan was made popular first around 1910 when tax-forfeiture of cutover lands was at its peak in the Lake States. Yield taxes are now optional in 14 states.²¹

A discussion of the pros and cons of the yield tax as an alternative to the general property tax is a treatise in itself. It will suffice to mention here that in recent years some forest tax experts have shifted their allegiance from the yield back to the ad valorem tax.²² Among the reasons for their thinking that the forest landowner is better off with the general property tax is the fact that (1) less reliance is being placed on property tax as a source of revenue, and (2) better

²¹U.S.D.A. Forest Service, "State Forest Tax Law Digest - 1956," U.S.D.A., 1957, 86 pp.

²²Cf., E. T. Williams, "Forest Taxation: What Can be Accomplished by Improving and Modifying the Property Tax?" Society of American Forester Proceedings 1957, op. cit., pp. 130-133.

Robert Campbell, "Forest Yield and Severance Taxes," Taxation and Conservation of Privately Owned Timber, Proceedings of a conference held at the Univ. of Oregon, Jan. 27, 28, 1959, pp. 47-53.

assessment methods are being employed which should go a long way toward eliminating the "time bias" which has characterized the property tax in the past.

Operation of Michigan's Woodlot Tax Law

Michigan's present Woodlot Yield Tax Law, enacted in 1917 (Act 86, P.A. 1917) is an outgrowth of the earlier Foster Act of 1911, which like its successor was directed toward farm forestry. In order for a wooded tract to qualify, provisions of the present law stipulate that a woodlot represent no more than one-fourth of a farm tract and this tract be no more than 160 acres in size, of which at least one-half is devoted to agriculture. Other provisions spell out the species and stocking level requirements. Also, no pasturing of woodlots is allowed.

An owner desirous of entering his woodlot must file application with the county treasurer's office which in turn notifies the respective township supervisor or assessor. Such properties are then listed on assessment rolls at a value of one dollar per acre.

Fuelwood and other forest products cut for home use are not subject to the yield tax. However, if the owner wants to sell timber products he must notify the township supervisor of his intentions. Only after an accurate measure of the volume to be cut is made and a yield tax of five percent of the stumpage value of the

timber harvested is paid can these timber products be removed from the premises.

Unfortunately, the "housekeeping" responsibilities relating to this tax law were not effectively delegated. Since no control agency maintains a record of the entries under this law, it is not possible to accurately determine the extent to which the Woodlot Law of 1917 is utilized.²³ However, judging from what limited information is available, the Woodlot Yield Tax law has never been widely accepted. In 1939, for instance, it was found that only 2,538 acres, owned by 72 owners, had been classified under the law.²⁴

Operation of Commercial Forest Reserve (Pearson) Act

Until 1925, owners of tracts of land covered entirely by commercial forest were not entitled to special tax treatment. However, at this time the Michigan legislature passed the Commercial Forest Reserve (Pearson) Act (Act 94, P.A. 1925) which offered commercial forest owners an option similar in spirit, at least, to that offered by the Woodlot Yield Tax law.

²³In 1960 the Michigan legislature passed Act 22, P.A. 1960, which transferred certain responsibilities of Act 86, P.A. 1917 from the State Board of Agriculture to the Conservation Commission. This action may lead to better record keeping.

²⁴A. Z. Nelson, "Forest Land Taxation in Michigan," U.S. Forest Service, Washington, D. C., 1940, p. 27.

This act authorized the special classification

. . . of lands containing no material natural resources other than forest growth, no portion of which is used for agricultural, mineral, grazing, industrial, recreational, or resort purposes, and upon which the owner proposes to develop and maintain a forest either through planting or natural production or both. Such land must be capable of producing a thrifty forest growth and must at the time of listing as a commercial forest reserve actually carry sufficient forest growth of suitable character and so distributed as to give assurance that a stand of merchantable timber will be developed within a reasonable period of time.

Such lands that qualify must first be certified by a representative (usually a district forester) of the Department of Conservation. Whenever the owner wants to harvest timber this agency must be notified. A representative of the Conservation Department will verify the report of the volume harvested and collect the yield tax which is computed at a rate of ten percent of the stumpage value. In addition to a yield tax on any stumpage sold, the owner must pay an annual property tax of five to ten cents per acre.

Unlike the Woodlot Yield Tax, an accurate record is maintained of all the listings under the Pearson Act. The Department of Conservation is charged with this responsibility. Records show that as of April 1, 1961, a total of 447,698 acres of commercial forest land has been listed under the Pearson Act.²⁵ Acreage involved

²⁵This information was obtained from records maintained by the Lands Division, Michigan Department of Conservation.

in the listings have quadrupled since the end of World War II, indicating the recent upsurge in interest in this tax law. Almost all of the listings involved commercial forest land in the Upper Peninsula. It is noteworthy, however, that 494 acres of the total acreage listed to date are to be found in the 37-county study area of southern Michigan.²⁶

Because southern Michigan's forest resource is characterized by many small tracts which are usually only a part of a farmstead, it was not surprising to find that most owners were not able to determine the tax on their woodland holdings. If a wooded tract has been cleared or improved in any way there is no way to tell from the tax bill just how much of the annual burden is assessed to the forested section. Data below show that only six percent of the owners could determine the property taxes on their forested tracts:

	<u>Percent of forest owners</u>
Can determine property taxes of forest tract	6
Can not determine taxes, but imputes a portion of property tax burden onto forest tract	4
Can not determine taxes, and does not impute a portion of property tax burden onto forest tract	90
	<hr/> 100

²⁶The 494 acres so listed are located in six southern Michigan counties: Gratiot, 40 acres;

The above tabulation also shows that four percent of the owners, though they could not determine the property tax on their woodland, did impute a portion of their annual tax burden onto their forested tract.

The assessment of a particular forest property might have been quite realistic. Judging from the findings of this study, however, such a situation would more than likely be a coincidence. It will be recalled that the first stage of the sampling procedure used in this study involved visiting 81 township supervisors. This provided an opportunity to find out how forest land was assessed. Most of the assessors indicated that they gave special consideration to the wooded portion of property, but unless the owner's woodland covered an entire description, there would be no way to prove this from the tax bill. Even with an assessor's recognition of the difference in productivity of forest versus agricultural land, the assessment techniques used apparently were not very scientific. None of the assessors who were visited, for instance, had ever referred to the chapter in the Assessor's Manual which deals with forest land appraisal technique.²⁷

Isabella, 40 acres; Kalamazoo, 100 acres; Ottawa, 160 acres; Tuscola, 114 acres; Lapeer, 40 acres.

²⁷Michigan State Tax Commission, Assessor's Manual, Lansing, Michigan, 1955, pp. 212-232.

Empirical evidence suggests that factors other than the dollar value of an interviewee's growing stock determine the effective rate at which his woodlot is taxed. As can be seen in Table 65, there is no significant correlation between an owner's growing stock value per acre and the tax per acre. One should not infer from this relationship that the assessor does not recognize differences in forest land productivity when the assessment is made. Too many factors are confounded here. What can be said is that for some undeterminable reason(s) two woodlots comparable with respect to growing stock value but located in different townships may be taxed at different rates.

Owners who could either determine the property tax on their woodland, or imputed a portion of their annual tax burden to the wooded section of their land holdings were asked what they would do if the taxes on their forest land were increased by 25 percent. The response to this questioning is listed below:

<u>Effect of property tax increase</u>	<u>Percent of owners able to determine or impute property tax on woodland</u>
Owner would dispose of wooded tract	90
No effect	10
	<hr/>
	100

An owner's willingness up to this time to pay annual taxes which in some instances, at least, are

TABLE 65

RELATIONSHIP BETWEEN ANNUAL PROPERTY TAX AND
THE VALUE OF OWNERS' GROWING STOCK*

Growing stock value per acre	Average annual property tax per acre
(dollars)	(dollars)
0	.83
1-25	.76
26-50	.28
50-100	1.22
100+	1.40

*The correlation between the annual tax and the growing stock value was tested using data from 14 instances where property taxes could be determined by the interviewee. The correlation coefficient ($r = .37$) was not significant at the five percent level.

greater than the annual gross return from his woodland is indicative of the fact that he derives benefits from his forest land other than those normally associated with timber production. However, it is apparent from the above that most of the interviewees who impute or can determine taxes may have reached a saturation point. Ninety percent of the owners state they would dispose of their forest property should their property tax be increased by 25 percent.

These same individuals were asked how a tax decrease would affect their forest management. Their response to this questioning more or less complements the answers to the first question:

<u>Effect of property tax decrease</u>	<u>Percent of owners able to determine or impute property tax on woodland</u>
Intensification of cultural measures	15
Stepping up planting rate	80
No effect	5
	<hr/>
	100

Despite the fact that woodland management of certain interviewees could be affected by property tax changes, the majority of the owners (90 percent) would not be able to relate a tax increase or decrease to their woodland; presumably, they would remain unaffected by property tax changes.

Records show that a few woodland owners in the study area have registered their woodland under the Pearson Act. An undetermined number have also taken advantage of the Woodlot Yield Tax Law. However, none of the interviewees had registered their forest land under either of these laws.

Table 66 shows that five percent of the woodland owners knew about the existence of Michigan's yield taxes, but most knew only a few of the particulars pertaining to them. Most of the owners who knew something about the applicable law, qualified, but did not apply, were able to rationalize their lack of participation quite clearly. As the footnote to Table 66 points out, 70 percent did not feel they would gain any benefit by registering their woodlands. In other words, they sensed that any savings accrued as a result of the yield tax would probably be counterbalanced by a shift in the incidence of the property tax to their non-forest holdings. Such a shift could easily occur if the woodland does not cover the entire description or if the owner possesses more property in the same township.

A few of the owners felt that it would be politically unfeasible to take advantage of either of the yield tax laws. These owners would rather pay a burdensome tax than invite the wrath of their neighbors or customers.

TABLE 66

OWNER STATUS REGARDING KNOWLEDGE OF AND INTEREST IN
MICHIGAN YIELD TAX LAWS

Owner status	Forest owners	Forest area
	(percent)	
Owner familiar with yield tax law*	5	5
Owner not familiar, qualifies, but <u>slightly</u> interested in yield tax law	8	12
Owner not familiar, qualifies, but not interested in yield tax law	56	38
Owner not familiar, does not qualify for either yield tax	31	55
Total	100	100

*Only half of these owners qualify and when they were asked why they had not registered despite knowledge of yield tax:

70 percent did not feel they would benefit;
20 percent said it would not be politically
feasible;
10 percent gave "other" reasons.

Only limited interest was shown by woodland owners who did not know about the yield tax laws prior to the interview. None indicated "strong" interest, but eight percent of the interviewees expressed "slight" interest, but eight percent of the interviewees expressed "slight" interest. Interested owners, as can be seen in Table 66, generally had average size woodland holdings or larger. Fifty-six percent of the owners did not know about, qualified, but did not show any interest in either of the yield tax laws. Thirty-one percent who were not familiar did not qualify for the tax entry under either of the tax laws.

Capital Gains Provision of
the Internal Revenue Code

Section 631 of the Internal Revenue Code of 1954, which superseded Section 117 of the 1939 code, provides that a forest landowner can sell stumpage and pay the capital gains tax on the difference between his basic cost (or March 13, 1913 value) and the selling price. Inasmuch as overpayment of income tax on revenue received from the sale of timber property detracts from the economic incentive to practice forestry, and to the extent that ignorance of the capital gains provision of the Code is the basis for such overpayment by small woodland owners in southern Michigan, one way to improve forest management in this area is to promote a better understanding of Section 631 of the Internal Revenue Code of 1954.

As was pointed out in Chapter V, almost a third of the owners interviewed had harvested timber products at least once during their tenure. The majority of these sales involved the sale of stumpage or cut products and most of them have occurred since 1954. One would expect, then, to find that a fair proportion of the owners had taken advantage of the capital gains provision of the Internal Revenue Code. However, as is disclosed in Table 67, only three percent of the owners interviewed had used the capital gains treatment when reporting receipts from timber products sales. One major reason for this is also apparent in the table--88 percent of the interviewees had not heard of the capital gains provision prior to being interviewed.

Nine percent of the owners indicated that they were familiar with the capital gains provision, but for various reasons had not utilized it. For nearly three-fourths of these owners, the answer was obvious; they hadn't sold any timber products during their tenure. Another 22 percent of this group felt the red tape involved in claiming a capital gains rather than straight income treatment was not worth the possible benefits. Six percent stated that they did not think any savings would accrue from using the capital gains provision.

A third of all owners interviewed showed some interest in the capital gains treatment after having

TABLE 67

OWNER STATUS REGARDING CAPITAL GAINS PROVISIONS OF
INCOME TAX LAW

Owner status	Forest owners
	(percent)
Owner has used capital gains provision	3
Owner aware of but has not used capital gains provision*	9
Owner not aware of but <u>strongly</u> interested in capital gains provision	1
Owner not aware of but <u>slightly</u> interested in capital gains provision	32
Owner not aware of and <u>not</u> interested in capital gains provision	55
Total	100

*Of such owners, 72 percent said that they haven't had any occasion to use capital gains provision since they hadn't sold any timber products; 22 percent felt effort outweighed possible benefits; while 6 percent did not believe they would gain any benefits from this tax provision.

it explained to them, but very few showed a "strong" interest. More than half of all the owners interviewed did not know about the capital gains treatment and remained completely apathetic even when it was explained to them.

Owners who indicated that they had used the capital gains provision were asked whether or not this provision in the federal income tax law affected their timber management in any way. All interviewees answered that this provision was neutral with respect to the way they managed their woodland.

Forest Credit

Until recent decades, agriculture in general suffered from a dearth of available credit. High risks, accompanied by high administrative costs, served to discourage the development of appropriate financial facilities to handle the credit needs of the nation's farmers. The land banks and later the production credit associations along with the Farm Security Administration (now the FHA) have served to alleviate many of the farmers' credit woes.

Judging from all that has been said and written, the forest credit situation (vis-a-vis the general agricultural credit picture) leaves much to be desired. Because they are able to handle much of their forest

investment through capital and reserve accounts, forest credit presents no real obstacle to the large forest industries. However, in the case of the individual, non-industrial small woodland owner the situation is rather bleak. As Duerr recently pointed out, "we do not . . . altogether need to speculate about what the world would be like if there were no credit. We can get an inkling by looking at small woodlands."²⁸

Generally speaking, credit has two primary functions, be it in the forest economy or otherwise. First of all, credit serves to transfer control over fixed resources to individuals who are presumably in a better position to utilize these resources than the present owner, and secondly, to make it possible for individuals to utilize capital inputs before they can obtain income for repayment of the loan. Forest credit transactions, that is those involving loans secured by forest property, have generally been restricted to instances involving forest industrial firms who need external capital for expansion of plant site(s) or forest acreages. Though neither of these examples apply to southern Michigan, forest credit might prove useful in connection with the settlement of estates or meeting unusual "firm" or "household" needs of the owner. Judging from what was pointed out in Chapter V, the woodlot is often

²⁸William A. Duerr, Fundamentals of Forest Economics, New York: McGraw-Hill Book Co., Inc., 1960, p. 472.

quite vulnerable to premature cutting whenever it changes hands. To the extent that it inhibited such activity, suitable forest credit machinery would, in effect, increase the productivity of southern Michigan forests.

The above is not to say that a "demand" now exists for forest credit in southern Michigan. Much of the "need" for forest credit probably exists in minds of foresters. As Duerr points out, "Often, when we speak of small owner credit, we are really referring not to what the owner wants but to what society wants for him."²⁹

Although a number of agencies, both public and private (e.g., national and land banks, Farmers Home Administration, and insurance corporations) have been actively involved in providing forest credit in various parts of the country, there is no record of such activity in southern Michigan. Furthermore, empirical evidence suggests that it will be a while, if ever, before such a precedence is established. Eighty-eight percent of the owners interviewed in this study responded negatively when asked whether or not they were interested in forest credit (see Table 68). Only one percent expressed "strong" interest, while 11 percent were "slightly" interested.

²⁹Duerr, op. cit., p. 478.

TABLE 68
OWNER'S INTEREST IN FOREST CREDIT

Owner's interest	Forest owners (percent)
No interest	88
Strong interest*	1
Slight interest*	11
Total	100

*Of those owners showing interest in forest credit, 85 percent would use it to promote non-forest activities; 10 percent indicated that such funds would support forestry measures; while five percent would use this credit to promote both types of activity.

Of the owners who showed some interest in forest credit, 85 percent indicated that they would sponsor "non-forestry" endeavors (e.g., purchasing farm implements, buying more crop land, or expanding their business). Only 15 percent would utilize this type of loan to enlarge or improve their woodland enterprise. This latter figure includes five percent who were interested in furthering both forestry and other types of activities with loans secured by forest collateral.

Table 69 explains why forest credit terms did not interest the majority of the owners. Eighty-one percent of the owners who were not interested stated that they didn't need credit. Either they could not foresee a need to enter the money market at all or if they did, had established a good credit rating and would not need collateral. An additional nine percent voiced an objection to any type of credit while three percent thought there wasn't enough collateral tied up in their woodland holdings to bother with. Two percent preferred to use other collateral.

Aside from the fact that stimulating interest among woodland owners in forest credit represents a formidable task there are a few other obstacles to contend with. For one thing, there would be a high administration and servicing cost involved. In this connection, it should be noted that since few, if any,

TABLE 69
OWNER'S MAIN REASON FOR LACK OF INTEREST
IN FOREST CREDIT

Reason	Forest owners
	(percent)
No need	81
Opposed to borrowing on general principles	9
Not enough "forest" col- lateral to bother with	3
Prefers to use other col- lateral	2
Other	5
Total	100

of the credit agencies in the southern Michigan area are now equipped to appraise the loan value of woodland property, professional advice would have to be sought and this, of course, would increase the servicing cost. Secondly, there is no provision in the state banking laws which would allow state banks to negotiate real estate loans secured by forest collateral.³⁰ However, it would seem that if any real need should arise in Michigan for forest credit, such a void could be remedied.

Public Timber Price and Market Information Service

The need for a timber price reporting service is a subject which has been characterized by more debate than action. Although timber price information is being disseminated to small woodland owners by public agencies in a few states, to date this activity has usually been piecemeal. Such a service usually represents an adjunct to, rather than a primary function of, these organizations.

In 1957, Senate Bill 840 was introduced before Congress which would provide for "price reporting and

³⁰Maurice C. Eveland and Fred M. Alger, Jr., Michigan Financial Institutions Act (1951 revision), Lansing, Michigan: Michigan State Banking Department, 1951, p. 38.

research with respect to forestry at a national level."³¹ Information regarding the progress of such legislation is not available. The provision for research is perhaps the most encouraging aspect of this proposed legislation. Although it is usually recognized that better price information would tend to improve forest management among small woodland owners, at least to the extent that it would enhance timber returns, there is reason to believe that more research will be needed before useful "price determinates" can be formulated for a particular area.³²

All woodland owners interviewed were asked whether or not they had ever received any advice on timber prices. Sixteen percent indicated that they had, and as seen in Table 70, timber buyers provided most of the information. With full reliance on such a source, an owner's enlightenment as far as the structure of timber prices is concerned would depend upon the number of buyers with which he has contacts. Any one of the other sources listed (i.e., CFM service forester, extension, consulting forester) presumably could provide the owner with more reliable price information than a single buyer.

When queried as to their interest in a public timber price and market information service, the majority

³¹U.S. Congress, Senate, "A bill providing for price reporting and research with respect to forest products," 85th Congress, 1st Session, Senate Bill 840, 1957.

TABLE 70
FOREST OWNERS SOURCE OF PRICE INFORMATION

Source	Forest owners
	(percent)
CFM service forester	27
Extension forester	4
Consulting forester	4
Buyers	65
Total	100

of the interviewees were indifferent (see Table 71). However, 47 percent showed some interest. Most of those who expressed "strong" interest were owners who had been reluctant to sell timber products mainly because of their admitted lack of knowledge of timber prices and markets.

Private Organizations Seeking to Improve the Management of Small Woodlands

Public organizations are not alone with respect to providing aid to the nation's small woodland owners. However, for all practical purposes, privately sponsored assistance programs are almost absent from the picture in southern Michigan. Except for those owners who have become "Tree Farmers," or who have employed a consulting forester, there is not much evidence of private effort. Interviewees were questioned regarding these two agencies. Also, in an attempt to determine the feasibility of private group action, questions were also posed regarding cooperatives.

Michigan Tree Farm System

Nationally, Tree Farms are sponsored by American Forest Products Industries. In Michigan this program

³²Cf. John Zivnуска and Ann Shideler, "Is Price Reporting For Standing Timber Feasible?" Jour. of Forestry, 56(6):393-398, 1958.

TABLE 71
FOREST OWNERS INTEREST IN PUBLIC TIMBER PRICE
AND MARKET INFORMATION SERVICE

Interest	Forest owners
	(percent)
No interest	53
Strong interest	12
Slight interest	35
Total	100

operates through the Michigan Forest Industries with the cooperation of the Forestry Division of the Department of Conservation. A Tree Farm sign serves as public recognition of an owner's voluntary commitment to practice good forestry. There are no membership dues, no subsidies or assessments.

Four of the interviewees were "Tree Farmers." When asked whether or not their membership had improved their attitude toward forestry, three said it did. The fourth felt the program was neutral with respect to his attitude but he indicated that his sign had attracted much attention from individuals driving by. He spoke of several instances when people stopped to inquire about membership in the Tree Farm movement.

Consulting Forestry Opportunities in Southern Michigan

Five consulting firms are headquartered in Michigan, but two restrict their clientele to the Upper Peninsula. Additionally, some out-of-state firms might be willing to provide professional forestry assistance to woodland owners of southern Michigan if they received suitable offers.

Only one of the interviewees had employed a consulting forester. On this occasion the owner sought professional assistance in negotiating and administering a timber sale because he resided 140

miles from his wooded tract and because of his readily admitted ignorance of forestry. Although he did not maintain this counsel after the sale was completed, he indicated interest in having his forest land continually managed by a consulting firm.

All owners were asked whether they would be interested in using the services of a consulting forester to manage their forest property at a cost not to exceed 20 percent of the gross stumpage. Less than one percent of the interviewees expressed strong interest in such a plan. Seven percent of the owners expressed "slight" interest in the service of a consulting forester.

Cooperative Arrangements to Enhance Private Forest Management

Examples are not numerous, but there have been instances where groups of small private woodland owners have taken it upon themselves to improve their forest management practices through the formation of forest cooperatives. Although not all of them are now in existence, 76 cooperatives in 26 states have attempted to solve some or all of the problem associated with the growing, harvesting, processing, marketing, and purchasing of forest products.³³ The basic advantages of a

³³Allan W. Bratton, "Cooperatives and Small Woodlands," Yearbook of Agriculture, 1949, U.S.D.A., 1949, p. 183ff.

cooperative versus individual effort are market-oriented. In other words, because of their ability to provide a large, continuous supply of raw, and in some instances processed, timber products, the cooperatives are able to bargain more effectively in the market place than the single small woodland owner.

The record of past failures will attest to the fact that certain basic principles must be followed and conditions met if a forest cooperative is to succeed.

As Bratton points out:³⁴

Membership must be open to all who will actively participate in the organization, and active leaders must be found who are able and willing to contribute to the benefits of all members.

To warrant organization, a cooperative, like any other business, must have a sufficient volume of business. The long-time social and economic benefits that can be derived from forest conservation may be considered as desirable byproducts of the forest-management program of forest cooperatives, but immediate economic consideration will determine the success of the cooperative as a business.

Cooperatives do not offer much to owners of non-productive and depleted wood. Strong organizations may be able to afford such owners some help, but there is a limit to the amount of help a cooperative can give that does not contribute to keeping the organization financially strong.

Judging from the response of the interviewees to questioning regarding cooperatives, such organizations have little appeal to small woodland owners in southern

³⁴Ibid.

Michigan. None of the owners were "strongly" interested and only five percent expressed "slight" interest. Almost all who did were farmers who had seen agricultural cooperatives in action and could visual similar advantages with respect to timber product marketing.³⁵

³⁵All but 11 percent were farmers.

CHAPTER VIII

SUMMARY AND CONCLUSIONS

In the preceding chapters the southern Michigan private woodland ownership problem has been analyzed. Obviously, it is misleading to speak of this situation in a singular sense, since the private woodland ownership problem is actually a composite of many perplexing circumstances. This study has dealt with the economic aspects of the private woodland ownership situation. In this chapter the findings will be summarized, a number of conclusions stated and some suggestions made regarding future research.

Summary

A Profusion of Woodland Owners Exhibiting Wide Diversity in Occupational Backgrounds

An idea of the magnitude of the private woodland ownership problem in southern Michigan is obtained when one considers the fact that an estimated 127,232 woodland owners reside in the 37-county study area. Considering also that there are now fewer than a dozen public foresters servicing the area, it is obvious that the job of assisting each and every one of these owners is out of the question.

From the standpoint of the public and private agencies engaged in promoting better forestry practices among the small private owners by means of mass media, the diverse nature of the woodland owners' occupations in the study area serves to further accent the problems created by the profusion of woodland owners. Twelve different occupation groups were used to classify the southern Michigan woodland owners: general farming, dairy farming, part-time farming, sawmill operator, non-forest industry, businessman-professional, wage earner, housewife or widow, recreation groups, dealers in real estate, undivided estates, and retired.

Some of the above occupation groups were not very important in the overall picture, but on the other hand, there was no one group which accounted for the major portion of the ownerships or the area of forest land. For example, the largest group, the full-time farmer (general and dairy-farmer groups combined), accounted for one-fourth of the ownerships and 24 percent of the forest area. Next in terms of numbers was the wage earner group with 19 percent.

Small Forest Acreages Supporting Low Value Growing Stock

Only 12 percent of the forest owners in southern Michigan possess more than 50 acres of woodland. Nearly two-thirds of the forest area is divided among landowners

having less than 25 acres of forest. These factors alone suggest the limited forest opportunities available to most of the forest resource owners in the study area.

Area of forest land owned was demonstrated to be only a fair indicator of an owner's investment in growing stock. Whereas the businessman-professional group ranked second to the "other" class in terms of the average size of forest area owned, it was first in terms of the average growing stock value per owner. Part-time farmers, last in terms of woodland area per owner, ranked ahead of wage earners in growing stock value per owner.

Using an array of the owners' woodland holdings, ranked from the most valuable ownership to the least, the relationship between the number of owners, area of forest land and value of growing stock was dramatically portrayed. It was estimated that only nine percent of the owners with 17 percent of the forest area accounted for one-half of the monetary value of southern Michigan's merchantable growing stock. Ninety percent of the value of the merchantable growing stock was accounted for by 35 percent of the owners with 45 percent of the forest area. It would appear, then, that economic incentives to practice forestry are quite limited for the majority of the woodland owners in the study area.

Limited Planning Horizons

Because of the extended time intervals inherent in timber production, owner age, length of tenure, family ties and tenure arrangements are of strategic importance as far as small private woodland management problems are concerned.

It was estimated that the average woodland owner was 40 years old when he acquired full ownership of his wooded tract, and by assuming that he planned to dispose of it at age 65, the longest he would formulate plans and expectations into the future would be 25 years. This might not be too restrictive in the case of the individual owner who already had a producing woodland enterprise, but for the new owner of cutover land the situation would be quite different. The time it would take such forest land to produce monetary returns would exceed the average owner's managerial life cycle.

The ephemeral nature of forest ownerships in southern Michigan would not be a serious matter if the shift in property ownership would not break up a precedent established by earlier land use planning. For one thing, the transfer of forest property is most generally a non-family exchange. Almost two-thirds of the ownerships were not in the present owner's immediate family prior to his acquisition. However, to the extent that the association between the stewardship concept of land management and family ties is valid, forest management

might be enhanced in the remaining instances where the forest property had been in the family one or more previous generations.

Infrequent Incomes from Forest Property

In terms of the total value of raw forest products produced, the woodland owners of southern Michigan as a group have made a significant contribution to the state's forest resource picture. However, on the average, the individual owner's contribution was trivial. For instance, in 1954 the value of the raw products produced from southern Michigan forest land was 9.1 million dollars, but the average owner harvesting timber during this period received only \$950 for the stumpage sold. This might at first appear to be a respectable sum, but most owners sell timber products only once (if at all) during their tenure. On an annual basis, the average return to individual owners is very small.

Mediocre Concepts of Forest Management

Woodland owners were subjectively classed into one of five categories depending on their concept of forest management: no concept, below median, median concept, above median, and high concept. Because timber production plays such a minor role in the economy of the study area, it was not surprising to find that most of

the owners ranked at the lower end (median or below) of this scale. Eighty-three percent of the owners had "below median" or poorer concepts while only seven percent of the owners were classed as having above median or higher concepts.

Size of ownership did not vary with the owner's concept of forest management, but value of growing stock did. Generally speaking, the better the owner's concept, the more valuable his woodland investment would be. The higher value was attributed more to the owner's degree of enlightenment regarding forestry than vice versa.

An owner's concept of forest management was found to vary depending on his occupation, age, and family ties. Owners classified into either the general farming or the businessman-professional groups expressed, on the average, a higher degree of enlightenment than members of the other occupational categories. Owners younger than 40 and particularly those above 60 years of age had the poorest record with respect to their concepts of forest management. The 51-60 age bracket ranked the highest. It would take additional research to explain this apparent similarity between the two extreme age groups. It is interesting to note, however, that farm management researchers have also observed various similarities between the youngest and oldest managers.

Owners whose woodlands had been in their immediate family for two or more generations were somewhat more

enlightened, on the average, than the rest of the owners. Although this relationship lends some support to the belief that family ties promote better land stewardship, the proportion of ownerships falling into the "two or more generation" category was so small that any ameliorating effects would be unimportant to the study area as a whole.

Despite the fact that the majority of the owners had a rather elementary grasp of forest management, 52 percent indicated forest products to be the main objective for retaining their woodland ownership. Nineteen percent claimed an "inactive" status and 11 percent of the owners used their woodlots mainly for pasture. Only five percent of the owners expressed a desire to eventually clear their woodland for agricultural purposes.

Poor Cutting Practices

Nearly one-third of the owners interviewed had harvested timber during their tenure. In order to get some idea of their cutting performance, an appraisal was made of all the woodlots logged over during the 1954-1959 period. Three out of five owners whose woodlots were appraised qualified for a "fair" or "good" rating. However, only 18 percent fell into the latter category. Since 41 percent of the owners cut in a "poor" manner, it is unlikely that the results of the "good" cutting in terms of increased productivity was enough

to compensate for the degenerating effects of the "poor" cutting activity.

The "poor" cutting performances assume more significance when the rapid rate of forest property turnover is considered. It was estimated that in the next ten years 40 percent of the forest ownership would change hands and that 40 percent of these "new" owners, if they harvested timber, would cut in a poor manner. Also, an undeterminable number of the "old" owners would probably "mine" their woodlands before disposing of their property.

Certain characteristics were associated with the manner in which an owner harvested his forest land. The poorest cutting records were achieved by the younger owners (40 and under) followed closely by those 61 years of age and up. The 51-60 year-old group compiled the best record.

Cutting practices varied considerably depending upon the owner's occupation. For example, almost half of the businessman-professional owners who harvested timber between 1954 and 1959 qualified for a "good" cutting rating. One-third of the "other" owners qualified as "good," while all of the wage earners cut in a "poor" manner.

An owner's concept of forest management was apparently an important factor in determining the quality of the owner's cutting practices. Generally speaking, the higher the concept, the better the cutting practices.

When one considers the nature of the methods which the interviewees used to restrict the logging operator, it is a wonder that the quality of logging practices was not lower. Forty-one percent of the owners who harvested timber allowed the logging operator to take any tree he desired. Actually, 34 percent of the owners intended that everything merchantable be removed by the logger. Although some of the cutting practices of the owners showing no intention to restrict the logger were judged to be "fair," none were given a "good" classification.

It is significant to note that 59 percent of the owners restricted the logger's cutting activity. Although the cutting practices of such owners were considerably better than those not restricting the logger, there were still those who allowed "poor" cutting to result. "Poor" cutting often resulted when a diameter or species limitation was used. Only "good" or "fair" cutting practices resulted if the interviewee marked trees for cutting.

Woodland Owners' Ignorance of Timber Marketing Procedures

An owner's decision to cut in a "poor" manner may have been entirely rational. It is doubtful, however, whether many of the owners used good judgment in negotiating the actual sale of timber products. As one service forester pointed out, most woodland owners will travel from one end of the county to the other to save themselves \$100 when buying a car or a piece of machinery,

but won't hesitate to sell stumpage to the first timber buyer who comes along. As a result, they may sell for several hundred dollars less than they could have received. Results of this study lend support to this generalization.

Findings of this investigation give no proof of whether or not the owners who sold timber products received a "fair" price for their timber products, but on the other hand there is evidence that many of the owners selling timber products were also unable to determine the fairness of negotiated prices. In fact, 56 percent of the interviewees who sold timber products admitted that they had no basis for determining the reasonableness of the prices received.

Lump sum was used as a basis for payment by 42 percent of the owners who sold stumpage. There is nothing particularly wrong with this method of payment as long as the owner knows how much timber he is selling and has received several bids. It is doubtful that many owners selling lump sum knew how much volume they were selling, and the fact that only nine percent of all "timber" sellers received more than one bid further indicates their poor bargaining position.

Only 36 percent of the owners used a written contract in the sale of their timber products. Such owners as a group generally exhibited better cutting practices than owners who didn't use a written contract,

but the fact that "poor" cutting frequently resulted in spite of the contract indicates that often this document contained covenants which protected only the buyer's position.

Negligible Woodland Improvement Activity

Indications are that most of the timber products derived from southern Michigan's forest resources grew in spite of, rather than because of, the owners' efforts. Only five percent of the woodland owners interviewed had carried out any woodland improvement. Most of this was confined to TSI endeavors. The frequency of tree planting, although not exactly an act of forest improvement, did indicate an interest on the part of some of the owners in creating woodland-type values. One-fifth of the owners stated that they had planted trees. However, except for the businessman-professional owners, who planted an average of 31 acres per owner, most of the planting efforts were inconsequential. Then too, only 13 percent indicated timber production to be their main reason for planting. Creation of aesthetic values was the most frequent reason given (34 percent of those who planted trees). Despite the lack of woodland improvement activity, the majority (76 percent) indicated that they could improve their forest management. Forty-one percent of these owners indicated a lack of interest in forestry as their main reason for not improving their

woodland management, while 31 percent had more rewarding activities claiming their time and effort.

Urban Encroachment Upon Southern
Michigan's Forest Resources

One factor which serves to distinguish southern Michigan's forest resource from that of most other regions in which forest ownership studies have been made is its proximity to large population centers. Nearly all of Michigan's population growth during the last decade occurred in the study area. The larger cities (e.g., Detroit) are actually losing residents. It is the "fringe" area which is accounting for most of the population growth. This "extensive" character of southern Michigan's population growth has and probably will continue to have an effect on the forest resource base in the study area.

Urbanization appeared to have some influence on woodland owners' objectives. Except for those owning forest land in the urban fringe zones, the majority of the interviewees gave forest products as their objective of forest landownership. In the urban fringe only 29 percent indicated this to be their objective. The most common response--"inactive"--claimed 42 percent of the urban fringe owners. This suggests that forest land is being idled at a faster rate than it is being subdivided or developed for industrial or commercial purposes.

"Speculation" was another objective peculiar to the urban fringe.

Logging activity was less frequent but "poor" cutting more prevalent in the urban fringe than elsewhere. Only 19 percent of the urban fringe owners had harvested timber. In contrast, at least a third of the owners in the other three zones had harvested timber products during their tenure. This situation suggests that the owners' stated objectives have some meaning, since as noted above, forest products was a less important objective than "inactive" in the urban fringe.

All of the interviewees residing in the urban fringe who harvested timber during the 1954-1959 period did so in a "poor" manner. In the remaining zones the majority of the owners qualified for "fair" or better ratings. It would require additional research to prove the point, but this relationship indicates that many of the urban fringe woodland owners are resigned to the eventual usurping of their woodlands by urban uses and when they get an opportunity to sell stumpage they harvest everything merchantable.

There was evidence of some urban encroachment upon forest land in every zone. Owners were asked whether or not they had sold a portion of their woodland for eventual urban-type development. Although more (12 percent) of the woodland owners in the urban fringe

answered in the affirmative, some owners in each of the other zones had sold forest land for residential or commercial development.

Owners who hadn't sold a portion of their woodland for residential or commercial development purposes were asked if they had ever received such offers from prospective buyers. Again more of the owners in the urban fringe answered "yes." Similarly, some offers were also made to woodland owners in the other zones.

The rate at which private forest land in southern Michigan will ripen annually to non-forest uses in the next decade was estimated to be approximately 1.4 percent of the total private area as of 1957. This rate is based on an agricultural economist's prediction of the rate at which agricultural land in southern Michigan will be urbanized. Although there is no necessary relationship between the rate at which agricultural land and forest land ripen to urban uses, the differences may not be very important. For one thing the pattern of urbanization may serve to isolate certain sectors of the study area from timber-product markets. Then, despite the existence of merchantable volume, these stranded pockets of forest land might cease to be effective suppliers of timber products.

Indifference to Public Assistance Programs
and Other Devices Designed to Improve
Private Forest Land Management

Woodland owners were queried as to their interest and/or participation in various public assistance programs and other devices being used or suggested to enhance private forest management in southern Michigan. Most showed little or no interest in the assistance programs. However, the interest and participation varied depending upon the program, the owner's occupation, size of forest holding and investment in growing stock.

Numerous owners indicated having contact with the county cooperative extension director's office. Thirty-five percent of the owners had received some form of non-forestry advice from their county agent. The frequency of contacts varied considerably among occupations. For instance, the majority (60 percent) of the full-time farmers had received advice, while only 18 percent of the businessman-professional and 12 percent of the wage earner groups had requested non-forestry aid. This contrast, of course, is due to the farmer-oriented nature of the extension program. Only three percent of the respondents had contacted the county extension director's office for assistance regarding forestry matters.

The extension forester at Michigan State University also provides direct aid to woodland owners. However,

only two percent of the interviewees sought forestry advice from this agency.

Most owners were not familiar with the extension forestry program, and when asked whether or not they were interested, only one percent of the woodland owners expressed "strong" interest. An additional 11 percent showed "slight" interest.

One out of ten woodland owners interviewed had a Soil Conservation District farm plan, but this rate varied among occupations. Woodland owners categorized as either full-time farmers or businessman-professional were more likely to have asked for such assistance than other types of owners. Only a minority of these "planners" had adopted forestry practices subsequent to having their farm plan developed. Twenty-five percent did "retire" some crop land or grass land by planting trees.

Although two-thirds of the woodland owners were familiar with the ACP and 30 percent had received some cost-share aid, only four percent had requested ACP-forestry assistance. Most of this forestry ACP aid was for tree planting, but some TSI work was sponsored by the ACP.

After having it explained to them, another 11 percent of the owners showed some interest in the forestry phase of ACP. Both the participating and interested owners had more valuable investments in growing stock,

on the average, than the non-interested group.

Only three occupational groups--full-time farming, businessman-professional, and retired--participated in the forestry phase of ACP, but some individuals in all groups expressed a degree of interest. In fact, the wage earner group was second only to the "retired" category in terms of interest shown.

Eighteen percent of the owners indicated that they were aware of, but had not sought, forestry ACP aid. Various reasons were given, the most frequent (30 percent) being that the owner felt the trouble of applying for cost-share outweighed any possible benefits. Nineteen percent expressed a lack of interest in forestry as their reason for not applying for forestry ACP cost-share. Sixteen percent were opposed to the subsidy-like nature of ACP.

Although not a forestry assistance program per se, the now defunct Conservation Reserve did promote some forestry practices. Records indicate that slightly more than 4,000 acres of trees were planted on retired acreages during the four years the Conservation Reserve was in effect, but none of the woodland owners interviewed had contracted to plant trees. The 35 percent of the interviewed owners who knew about the tree planting aspect of the Soil Bank were asked why they hadn't participated. The most frequent answer given (32 percent of the owners responding) was that they felt their land

to be too valuable to retire. Eighteen percent of the owners responding expressed opposition to the Conservation Reserve as a matter of principle.

The remaining 65 percent of the owners who did not know about the tree-planting aspect of the Conservation Reserve were asked to comment on this program after it was explained to them. Only three percent of these owners expressed any interest. Many felt that once a woodland was established it was too difficult to eliminate the tree cover.

Aside from a limited amount of ACP activity, the CFM service forester organization is the only public assistance program which has dealt directly with the management of the owners' existing second-growth stands. This program was also the most popular not only in terms of the number of interviewees who had sought CFM assistance (six percent of the owners), but especially in terms of the potential clients (i.e., those who hadn't heard of, but showed some interest in the CFM program after it was explained to them).

Most of the owners who had sought the CFM forester's aid did so at a time when they were negotiating the sale of stumpage. The service forester cruised the owner's woodlot, marked his timber and helped the owner advertise his sale. It was shown that the CFM forester helped administer one out of eight of the timber sales conducted by the interviewees between 1954 and 1959.

Unlike the other assistance programs analyzed, it was possible to obtain some indication of the effectiveness of the CFM program. This was accomplished by comparing the cutting practices of the CFM participants with those of non-participants. Almost 60 percent of the former owners practiced "good" cutting while only 13 percent of the non-participants' cuttings were so classified. Since, on the average, the CFM participants had a better grasp of forest management than other owners, it might be argued that the service foresters' assistance was not the reason for their better cutting performances. However, it appeared more probable that an owner's association with a CFM forester not only improved his cutting practices but also enhanced his concept of forest management.

The frequency of participation in the CFM program varied among occupations. However, as was the case with the forestry ACP, the number of CFM participants within a particular occupation stratum was not a very good indication of how this group might respond if more effective means could be devised to disseminate information regarding this program. For instance, the businessman-professional group had the highest proportion of owners who received CFM aid, but both the wage earner and part-time farmer groups showed proportionally as much interest in this program as the businessman-professional group.

Owners who had participated or expressed an interest in CFM assistance generally had larger woodland holdings and above average investments in growing stock.

It can be stated almost categorically that property taxes have little bearing on the way owners in southern Michigan manage their woodlots. The obvious reason for this is that most woodland owners are not able to determine how much their woodlots are being taxed. Judging from the comments of the owners who could determine their tax or imputed a portion of their annual tax burden onto their wooded tract, any appreciable increase in property taxes will have an unfavorable effect on their woodland management. A tax decrease on woodland property, on the other hand, could have a favorable influence.

Michigan has two yield taxes and despite the fact that there are entries in southern Michigan under both of these laws, none of the respondents had registered his woodland. Only five percent of the owners even knew about the yield tax laws. Most of these owners had not registered their woodland under either law because they felt that they would not gain any tax benefits.

Despite the fact that nearly a third of the respondents had harvested timber products, only three percent had taken advantage of the capital gains provision of the Internal Revenue Code. An additional

nine percent had heard of, but never used this special provision. The reason they had not, in most instances, was obvious. Three-fourths of the latter group had not harvested timber products as yet. The remaining owners who knew of but had not applied either believed they wouldn't derive any tax benefits or else felt the red tape involved was not worth the savings they might gain.

After having the capital gains treatment explained to them, one-third of the owners interviewed expressed some interest, but 55 percent of the respondents expressed indifference.

Judging from the comments of those who had used it, the capital gains provision was neutral with respect to the way they managed their woodlot.

Forest credit had little appeal to the woodland owners interviewed in this study. Only 12 percent of the owners expressed any interest at all and only one percent showed "strong" interest. Most indicated that such funds if acquired would be used to promote farm or business ventures.

The reason most owners were not interested in forest credit was that they were not in need of any type of credit. This lack of demand is just one factor which might preclude the future use of forest credit in southern Michigan. Because of the high cost of servicing, it is doubtful whether many credit agencies would be interested in negotiating loans secured by forest land.

A significant proportion of the woodland owners expressed an interest in the idea of a public timber price and market information service. Twelve percent were "strongly" interested while 35 percent were "slightly" interested. Some interviewees, 16 percent, indicated having been advised on timber products markets and prices. However, only eight percent of the owners who sought price and market information received professional counsel on this subject.

Woodland Owners Also Apathetic
Toward Certain Private Aids

Four of the interviewees were "Tree Farmers" and when asked whether this association affected their feeling toward forest management, three indicated that it had stimulated a more favorable feeling in this respect. The fourth indicated that although Tree Farm membership didn't change his impression of forestry, he stated that the sign was good advertisement.

Consulting foresters are apparently not very active in the study area. Only one interviewee had employed a consultant. Less than one percent of the interviewees expressed "strong" interest and only seven percent "slight" interest in the services of a consulting forester.

Cooperative arrangements have been used in various parts of the nation to cope with the inherent difficulties of small woodland ownership. However, such forestry

organizations have never been formed in southern Michigan. Judging from the interest shown by the interviewees, it doesn't appear that forestry cooperatives would gain much support in this area. None of the owners expressed "strong" interest and only five percent expressed "slight" interest.

Conclusions

A number of vexing situations were brought to light in the preceding analysis. With few exceptions these problems coincided with findings described by investigators studying private forest landownership in other areas. One factor discussed above is not peculiar to most forest regions. This is the matter of urbanization. One appropriate conclusion regarding the future of southern Michigan's forest resource is that urban expansion will continue indefinitely to usurp forest land in this area. The critical question left unanswered is how this phenomenon will affect southern Michigan's potential as far as timber production is concerned.

It would appear that further reductions in the forest area due to urbanization would be accompanied by a decrease in the supply of timber products from southern Michigan. But such a conclusion ignores other factors which may enhance timber production in this area. For one thing, the estimated rate of urbanization of forest land (see Chapter VI, page 153) may be too high. This

prediction was based upon a 15-year trend between 1940 and 1955 which may be atypical. Secondly, the continuing reduction in the acreage of grazed woodlots and the conversion of crop land and pasture to woodland may compensate for the loss of forest area due to urban encroachment.¹

"Poor" cutting practices are probably a more critical feature of the forest resource picture in southern Michigan than urbanization. It was disclosed above that "poor" cutting was more prevalent than "good" cutting during the 1954-1959 period. If this situation should continue, it is possible that a large gap could be created in the age class distribution of the forest resources in southern Michigan. As a result, it is conceivable that in the future many of the present forest-product marketing channels could degenerate for the lack of enough growing stock in a given area to attract buyers. As was suggested earlier, the urbanization process alone could also act to isolate sections of the forest resource base.

¹Using the predicted rate of urbanization given in Chapter VI, approximately 34,000 acres of forest land are now being urbanized annually in southern Michigan. On the other hand, the annual reduction in grazed woodlots amounted to 47,000 acres between 1954 and 1959 (source: Preliminary 1959 Census of Agriculture data). There is no way to determine the rate of conversion of cropland and pasture to forest land, but Census data also show that in 1959 the acreage of cropland "not harvested and not pastured" in the study area was 1,015,447 acres which represents an increase of 174,000 acres over the 1954 figure. Much of this acreage is undoubtedly reverting back to forest cover.

Ignoring the need now to market southern Michigan's forest resources in a more orderly fashion may mean that silvicultural and planting measures implemented from now on would be in vain because the end products would lack markets.

Despite urbanization and the prevalence of "poor" cutting practices, one may not be justified in predicting a decline in timber production from southern Michigan's forest land. A more plausible conclusion might be that although the output of timber products may not increase--unless, of course, forest landowners could be encouraged to practice better forestry in the future--southern Michigan's present level of timber production will be maintained indefinitely.

In light of the above conclusions regarding the future of timber production in southern Michigan, there are a number of important implications regarding forestry assistance programs. As was just noted, unless the forest landowner can be motivated to adopt better forestry practices, there is little likelihood that timber output in the study area can be increased. The challenge to public assistance programs is therefore real, but considering the vast number of small owners, the diversity of their occupational backgrounds, and their apathy toward forestry assistance programs, the task of reaching these owners assumes formidable proportions. But the situation is not hopeless as it appears at first thought. For one

thing, it has been shown that a relatively small percent of the owners possess a major share of the merchantable growing stock. For instance, 24 percent of the owners account for 80 percent of the dollar value of southern Michigan's growing stock. It is obvious that public assistance programs should be geared to reaching these "high value" owners first, since it will be their decisions and not the actions of owners possessing little or no merchantable growing stock, which, collectively, will temper the stability of southern Michigan's timber market structure in the immediate future.

One other important consideration regarding owner interest in forestry assistance is that many who had not been aware of particular assistance programs when interviewed and who expressed no interest when the programs were explained may simply have responded as they usually do to new ideas. With further exposure to the idea of using particular programs, their interest might be stimulated.

Unfortunately the findings of this study do not identify how best to publicize the various assistance programs. The need for better publicity is obvious. It is apparent both from the ignorance of woodland owners about the programs available and the lack of response to programs when they do hear about them. One of the more obvious difficulties is the broadening out of the chief channel of communication to landowners--the

extension program at the county level.² Here recognition of the fact that most of the forest landowners are not farmers is a vital consideration.

Information and assistance regarding timber stand improvement, fire protection, and tree planting should not be overlooked when considering future needs, but information and aid regarding the negotiation of timber sales should receive first priority. Not only was there more interest shown in the latter type of aid, but there is a greater need for it. One situation often encountered in this study was the owner who was almost totally ignorant of the value of his timber products when he negotiated a timber-products sale. For the majority the economic incentives to practice better forest management are nonexistent, but for a strategic minority this is not the case. It would seem that increased acceptance of better forest management by southern Michigan forest landowners will depend a great deal on the success of efforts to provide more aid and information regarding the marketing of timber products to this minority group.

Even moderate success in convincing forest

²Other agencies besides extension could assume some of the responsibilities of publicizing the availability of public forestry assistance programs. Reference is made here to cooperative extension since presently it is the most important agency handling the task of disseminating forestry educational information to woodland owners in southern Michigan.

landowners of their need for more information when they negotiate the sale of their timber could overtax the agencies now providing this type of aid in southern Michigan. This calls for coordination to prevent situations arising where forest landowners become disgruntled because they can not obtain information which they were led to believe was readily available.

Suggestions for Future Research

This investigation brought to light the fact that CFM participants will sometimes ignore past help from the service forester. It would be well to know why this is so. A similar question relates to how much CFM assistance to a particular owner "survives" a subsequent property transfer. Answers to both of these questions as well as information on the general effectiveness of the CFM program could be obtained from a survey of past participants.

Judging from the interviewees' responses, some of the assistance programs, notably the CFM and ACP, would have significantly more participants if more effective means of "advertising" could be devised. One of the problems appears to be the lack of communication with the non-farmer-type owner. Additional research is needed to determine ways to expand the audience of forestry extension and to explore other possible outlets for disseminating information about

the various assistance programs.

The above analysis has disclosed that many woodland owners not only need, but some also want, additional information regarding timber marketing procedures. Research is needed to not only ascertain better means to disseminate this information but also, sources of, and methods to collect meaningful price and market information need to be explored. Lest it be construed otherwise, it should be pointed out that there is perhaps an even greater need to examine the entire timber marketing process from the landowner to the ultimate user. Conceivably, the net return to the southern Michigan woodland owners might not be increased over the long run despite their greater knowledge of timber markets and prices if inefficiencies still exist in the marketing channel. It is known, for instance, that high grade veneer logs are being exported from the study area. Perhaps much of this could be utilized, say, by the Grand Rapids furniture industry.

One reason why limited use is made of timber stand improvement under the ACP is that the service foresters lack cost and return guidelines. Input-output studies are needed to fill this void.

The most challenging aspect of the small woodland ownership situation is the indifferent attitude of the great majority of owners toward forest conservation. This deepseated apathy may require generations

to change. Nevertheless, cooperative research endeavors of foresters, psychologists and rural sociologists could undoubtedly speed the process.

APPENDICES

APPENDIX A

Form No. 1
F. L. C. Study
Southern Michigan

1 - County _____ Date _____

2 - Township _____ Recorder _____

3 - Cluster and Owner Number _____

4 - Owner _____ Address _____

5 - Forest Area Owned: Total Land Area Owned:

In Sampling Unit _____ acres _____ acres

In County _____ acres _____ acres

6 - Distance of Residence From Property _____ miles

7 - Does the northeast corner of owner's property fall
within sample unit?

☐ Yes ☐ No

8 - Owner Occupation:

- (a) ☐ Farm - general and other (specify) _____
- (b) ☐ Farm - dairy
- (c) ☐ Farm - livestock (other than poultry and dairy)
- (d) ☐ Part-time Farmer
- (e) ☐ Lumber Company
- (f) ☐ Pulp Company
- (g) ☐ Sawmill Operator
- (h) ☐ Non-Forest Industry
- (i) ☐ Professional or Businessman
- (j) ☐ Wage Earner
- (k) ☐ Housewife or Widow
- (l) ☐ Recreation Groups
- (m) ☐ Real Estate
- (n) ☐ Undivided Estate
- (o) ☐ Retired
- (p) ☐ Other (specify) _____

EXPLANATION OF ITEMS APPEARING ON FORM NO. 1
 (Stage one sample--This form was completed for
 all woodland owners within sampling units)

Question Number

- 1- Self-explanatory
- 2- Self-explanatory
- 3- Indicates which of the sample clusters applies: A, B, or C. Owners were numbered consecutively within each sampling unit for initial identification.
- 4- Full name and address of owner was listed whether it was individual, partnership or corporation. In cases where an individual owned land in partnership in addition to an individual holding, each was indicated as a separate ownership.
- 5- Since ownership boundaries were not always restricted to sample unit boundaries, two entries were necessary. First, total forest landownership within sampling unit was indicated. This figure was used to determine the proper area relationship between different classes of ownership. Total forest land holding in the county was used to categorize each ownership under the proper size classification. It was necessary to assume that all of an owner's woodland tracts were within county limits. There was error here, but it was assumed to be negligible.
- 6- Self-explanatory
- 7- This information was necessary to determine whether owner was a "count-owner."
- 8- Indicates the owner's occupation classification. Only one description was used for an owner. If several designations appeared to fit a particular owner, the chief occupation was used. Categories "a," "b," and "c," refer to commercial farmers, that is, the owner possessed at least three acres of land and devoted at least three-fourths of his time to farming. A part-time farmer also possessed three acres of land but

could devote more than one-fourth of his working time off the farm. Category "a," general and "other" included all types of commercial farmers except dairy and livestock, that is, fruit, poultry, and vegetable. Farmers were classified in category "b" and "c" if 50 percent or more of the value of sales was made up of dairy and livestock products, respectively.

Non-forest industry is an industry which does not use wood as a basic raw material, such as a power company, gas or oil company, or a mining company.

Professional worker or businessman included doctors, lawyers, engineers, gas station operators, teachers, and merchants.

A wage earner was any worker not classifiable under categories "a" through "h."

A widow or housewife was any woman not classifiable under any other category listed above.

If owner was retired, his occupation prior to retirement was also indicated.

APPENDIX B

Budget Bureau Approval
Number - 40-5924.1
Expires December 31, 1959

Form No. 2
F. L. O. Study
Southern Michigan

CLASSIFIED FOREST LANDOWNERSHIP QUESTIONNAIRE

Observations of Forest Ownership in Southern Michigan

1. County _____ Date _____
2. Township _____ Recorder _____
3. Cluster and Owner Number _____
4. Owner _____ Address _____

General Influences

5. Forest Area Owned:

(a) In Sampling Unit _____ acres	Interviewer check here <input type="checkbox"/> if the Northeasternmost corner of all tracts with woodland lies in the sampling unit.
(b) Total in U. S. _____ acres	

Forest Area, Size of Holdings (acres):

- | | |
|---------------------------------------|---|
| (a) <input type="checkbox"/> 3 to 9 | (h) <input type="checkbox"/> 100 to 199 |
| (b) <input type="checkbox"/> 10 to 19 | (i) <input type="checkbox"/> 200 to 499 |
| (c) <input type="checkbox"/> 20 to 29 | (j) <input type="checkbox"/> 500 to 999 |
| (d) <input type="checkbox"/> 30 to 39 | (k) <input type="checkbox"/> 1000 to 4999 |
| (e) <input type="checkbox"/> 40 to 49 | (l) <input type="checkbox"/> 5000 to 9999 |
| (f) <input type="checkbox"/> 50 to 74 | (m) <input type="checkbox"/> 10000 to 49999 |
| (g) <input type="checkbox"/> 75 to 99 | (n) <input type="checkbox"/> 50,000 and up |

6. Is title to this land held in the name of an individual, a partnership or a corporation, or undivided estate?

- | | |
|--|---|
| (a) <input type="checkbox"/> Individual | (c) <input type="checkbox"/> Corporation |
| (b) <input type="checkbox"/> Partnership | (d) <input type="checkbox"/> Undivided Estate |

7. FOR INDIVIDUAL OR FAMILY OWNERSHIP: Prior to present ownership, how long has this property been in your family? (If more than one tract, indicate total acreage applicable to following alternatives):

acres	
Not in Family	:
One Generation	:
Two or More Generations:	

8. FOR INDIVIDUAL OWNERSHIP: What is your age? ____ years

9. Chief Occupation of Owner: (Or Field of Corporate Activity)

- (a) ☐ Farm - general and other (specify) _____
 (b) ☐ Farm - dairy
 (c) ☐ Farm - livestock (other than poultry and dairy)
 (d) ☐ Part-Time Farmer
 (e) ☐ Lumber Company
 (f) ☐ Pulp Company
 (g) ☐ Other Forest Industry (specify) _____
 (h) ☐ Non-Forest Industry
 (i) ☐ Professional or Businessman
 (j) ☐ Wage Earner
 (k) ☐ Housewife or Widow (Husband's occupation _____)
 (l) ☐ Recreation Groups
 (m) ☐ Dealer in Real Estate
 (n) ☐ Undivided Estate
 (o) ☐ Retired (Former occupation _____)
 (p) ☐ Other (specify) _____

10. When was the forest land in the sampling area acquired? (If more than one tract, indicate year and acreage applicable for each.)

Tract:	A	B	C	D
Year:				
Acres:				

11. IF NON-CORPORATE OWNER: How many acres of this land did you acquire by:

	Inheritance	_____
Purchase from relatives	Foreclosure	_____
Purchase from non-relatives	Gift	_____

12. Distance owner is from forest: (If more than one tract, indicate miles and acreage applicable to each.)

Tract:	A	B	C	D
Miles:				
Acres:				

13. Objective of ownership (if more than one use, list by priority): What are your primary reasons for retaining ownership of this land?

- | <u>Farmer</u> | <u>Non-Farmer</u> |
|--|--|
| (a) <input type="checkbox"/> General Farm Use
(Combination-i.e.,
home use, sale of
mature timber,
pasture, etc.) | (a) <input type="checkbox"/> Residence |
| (b) <input type="checkbox"/> Home Use | (b) <input type="checkbox"/> Recreation |
| (c) <input type="checkbox"/> Sale of Mature
Timber | (c) <input type="checkbox"/> Growing timber
for Sale |
| (d) <input type="checkbox"/> Pasture | (d) <input type="checkbox"/> Production for
Owner's Sawmill |
| (e) <input type="checkbox"/> Fuel | (e) <input type="checkbox"/> Maple Syrup Pro-
duction |
| (f) <input type="checkbox"/> Growing Timber
for Sale | (f) <input type="checkbox"/> Sale of Mature
Timber |
| (g) <input type="checkbox"/> Clear for Agri-
culture | (g) <input type="checkbox"/> Investment or
Speculation |
| (h) <input type="checkbox"/> Production for
Owner's Sawmill | (h) <input type="checkbox"/> Inactive |
| (i) <input type="checkbox"/> Maple Syrup Pro-
duction | (i) <input type="checkbox"/> Other (specify) _____ |
| (j) <input type="checkbox"/> Recreation | |
| (k) <input type="checkbox"/> Investment or
Speculation | |
| (l) <input type="checkbox"/> Inactive | |
| (m) <input type="checkbox"/> Other (specify) | |

14. Who's in charge of woodland management on this land (if more than one tract, indicate acreage applicable for each of the following alternatives):

	<u>acres</u>
Owner :	_____
Manager:	_____
Tenant :	_____

Owner's experience with timber harvesting

15. Have you ever conducted a commercial timber cutting operation on your property? (If forest industry, or cut for home use, visualize as sale to self).

☐ Yes ☐ No

- (a) IF NO, why not? (Check appropriate box(es) for field coding, then go to question 26).

- (1) ☐ Monetary return not sufficient to warrant time and effort
- (2) ☐ Would be incompatible with other uses:
- (1) ☐ Aesthetic
- (2) ☐ Wildlife
- (3) ☐ Other (specific) _____
- (3) ☐ Has not received any offers for timber
- (4) ☐ Has not received any suitable offers for timber

- (5) ☐ Has no salable timber
 (6) ☐ Does not have time to look for buyers
 (7) ☐ Has looked, but has not been able to locate any buyer
 (8) ☐ Other (specify) _____

(b) IF YES, When was most recent cut? Year _____

(c) IF YES, Was the purpose of the most recent cut for home use, stumpage sale, for cut products or for manufactured products?

- (1) ☐ Home Use
 (2) ☐ Stumpage Sale
 (3) ☐ Cut Products Sale
 (4) ☐ Manufactured Products (specify) _____

(d) IF YES, and most recent cut was sale of stumpage or cut products: Was the payment for most recent cut made on lump sum or on scale of cut products basis?

- (1) ☐ Lump Sum
 (2) ☐ Scale of Cut Products
 (3) ☐ Other (specify) _____

Owner's surveillance of cutting operation (applies only if owner has sold timber)

16. If owner did not perform own logging: What are your main reasons for not doing your own harvesting?

- (1) ☐ Does not have necessary equipment
 (2) ☐ Too much trouble to find market for products
 (3) ☐ Does not like woods work
 (4) ☐ Lacks experience
 (5) ☐ Believes stumpage sale more profitable in long run
 (6) ☐ More profitable uses for his labor
 (7) ☐ Physical inability to do heavy labor
 (8) ☐ Other (specify) _____

17. Was logger allowed to cut any tree he wanted?

☐ Yes ☐ No

(a) IF NO, How was logger restricted in cutting?

- (1) ☐ Diameter Limitation
 (2) ☐ Species Limitation
 (3) ☐ Trees were marked for cutting
 (4) ☐ Other (specify) _____

(b) If diameter limitation: What minimum cutting diameters were specified for soft wood? for hard wood?

	Sawtimber		Pulpwood	
DBH	Soft _____	Hard _____	Soft _____	Hard _____
Stump	Soft _____	Hard _____	Soft _____	Hard _____

18. Was cutting supervised by you or your representative?
☐ Yes ☐ No
19. Was cutting supervised by a professional forester?
☐ Yes ☐ No
20. Was a written contract used in the conduct of this sale?
☐ Yes ☐ No
21. Did you intend to remove all merchantable trees?
☐ Yes ☐ No

Owner's familiarity with price and market conditions:

IF OWNER HAS SOLD TIMBER

22. How was most recent sale initiated, did you contact the buyer, or did buyer first contact you?
- (a) ☐ Buyer contacted owner
 (b) ☐ Owner contacted buyer
23. IF OWNER CONTACTED BUYER, from what source did you learn about possible buyers? (For field coding)
- (a) ☐ Neighbor or friends (f) ☐ Wood-using mill
 (b) ☐ Newspaper advertisement (g) ☐ Personal knowledge with source unknown
 (c) ☐ Service forester (h) ☐ Other (specify) _____
 (d) ☐ Extension forester
 (e) ☐ County agent
24. How many bids were obtained in most recent sale?
 Number _____
25. How did you determine reasonableness of prices received? (field coding)
- (a) ☐ Advice of neighbor or friend
 (b) ☐ Advice of service forester
 (c) ☐ Advice of county agent
 (d) ☐ Advice of extension forester
 (e) ☐ Comparison of price with other buyers' quotations
 (f) ☐ Personal knowledge of going prices
 (g) ☐ No real basis; price just sounded good
 (h) ☐ Owner's estimate
 (i) ☐ Other (specify) _____
26. Have you ever been advised on timber marketing procedures and/or prices?
☐ Yes ☐ No

27. IF YES, by whom? (field coding)

- | | |
|---|--|
| <input type="checkbox"/> Service forester | <input type="checkbox"/> Consulting forester |
| <input type="checkbox"/> Extension forester | <input type="checkbox"/> Industrial forester |
| <input type="checkbox"/> County agent | <input type="checkbox"/> Buyers |
| <input type="checkbox"/> SCS | <input type="checkbox"/> Other (specify) _____ |

28. How would you feel about a public timber price and market information service similar to U.S.D.A.'s market newsinformation?

- (a) ☐ No interest
 (b) ☐ Slight interest
 (c) ☐ Strong interest

Forest management effort and interest:

29. To what extent is the woodland area usually grazed:
 (field coding)

- (a) ☐ Entirely (b) ☐ Partially (c) ☐ None

30. Have you carried out any woodland improvement practices?
☐ Yes ☐ No

(a) IF YES, what type: (field coding)

- (1) ☐ Thinning
 (2) ☐ Pruning
 (3) ☐ Fencing out livestock
 (4) ☐ Plowing fire lines
 (5) ☐ Timber stand improvement
 (6) ☐ Other (specify) _____

(b) IF NO, Why haven't you?

- (1) ☐ Not interested in timber production
 (2) ☐ Lacks technical knowledge needed
 (3) ☐ Physical condition is limiting
 (4) ☐ More rewarding activities claim owner's time and money
 (5) ☐ Does not believe benefits would justify cash outlay
 (6) ☐ Believes net benefit would result but it is too small to bother with
 (7) ☐ Other (specify) _____

31. Have you planted trees on any of your land?
☐ Yes ☐ No

(a) IF YES, how many acres? _____

(b) What was the purpose of tree planting (single or combination)?

- (1) ☐ Soil conservation
- (2) ☐ Timber production
- (3) ☐ Aesthetic value
- (4) ☐ Christmas trees
- (5) ☐ Other (specify) _____

(c) IF NO, why haven't you?

- (1) ☐ No land available
- (2) ☐ Not interested
- (3) ☐ Returns will not justify effort
- (4) ☐ Other (specify) _____

Attitude of owner toward timber management

32. Do you have a management plan or scheme to regulate cutting?

☐ Yes ☐ No

33. Do you believe that your timber management could be improved?

☐ Yes ☐ No

34. IF BELIEVES MANAGEMENT COULD BE IMPROVED: What are your main reasons for not practicing better woodland management. (two choices)

- (a) ☐ Not interested in timber production
- (b) ☐ Area too far away for close supervision
- (c) ☐ Cost of management outweighs possible benefits
- (d) ☐ More rewarding activities claim owner's time and money
- (e) ☐ Present (high) prices preferred to uncertain prices of future
- (f) ☐ Immediate need of liquidating timber for cash
- (g) ☐ Uncertainty of ownership in undivided estate
- (h) ☐ Lack of technical know-how
- (i) ☐ Unfulfilled hope to clear land for pasture
- (j) ☐ Long periods between successive incomes under management
- (k) ☐ Pressing need to liquidate timber for cash
- (l) ☐ Income possibilities too small to justify management effort
- (m) ☐ Physical condition limits supervision and management effort
- (n) ☐ No clear explanation
- (o) ☐ Other (specify) _____

= = = = =

ENUMERATOR: What is the owner's concept of timber management? (Enumerator's judgment)

- (a) ☐ No idea
- (b) ☐ Reforestation and/or refraining from cutting
- (c) ☐ Light cutting and other measures for public good at some personal sacrifice
- (d) ☐ Light cutting and other measures economically desirable in the long run, but not at present
- (e) ☐ Light cutting, economically desirable both in present and long run
- (f) ☐ Fire protection and light cutting, economically desirable both in present and long run
- (g) ☐ High, continuing yield of timber products

Impact of urbanization

35. INTERVIEWER: Using Jensen's system, classify the township wherein the owner's woodland lies (This classifies area on basis of percent non-farm population--either township or county--with classification as shown in

<u>Classification</u>	<u>Percent non-farm rural population(*)</u>
<input type="checkbox"/> Rural	0-10
<input type="checkbox"/> Primarily Rural	10-50
<input type="checkbox"/> Primarily Urban	50-90
<input type="checkbox"/> Urban	90-100

= = = = =

36. Have you ever sold a portion of your woodland for residential, industrial, or commercial development?

☐ Yes ☐ No

(a) IF NO, Have you ever been approached on possible sale for residential, industrial, or commercial development?

☐ Yes ☐ No

(*) Source: 1950 Census of Population: Characteristics of the Population, Michigan, United States
Department of Commerce, Bureau of Census,
Washington, D. C., Vol. II, Part 22, 1952.

Attitude toward Soil Conservation District program

37. Is your woodland property located in a soil conservation district?

☐ Yes ☐ No

IF NO, go to question 41.

(a) IF YES, have you an SCD Farm Plan which takes in your woodland property?

☐ Yes ☐ No

(b) IF OWNER HAS AN SCD FARM PLAN: What forestry practices were adopted as a result of recommendations of their farm plan?

- (1) ☐ Windbreak
- (2) ☐ Plantation
- (3) ☐ Timber stand improvement
- (4) ☐ Fencing woodland
- (5) ☐ None

Attitude toward Agricultural Conservation Program

38. Have you ever applied for ACP farm payments?

☐ Yes ☐ No

(a) IF NO, Have you heard about payments that the Agricultural Conservation Program makes for certain farm practices?

☐ Yes ☐ No

INTERVIEWER CHECK: Property is located in county where ACP forestry payments are available?

☐ Yes ☐ No

IF NO, go to question 40.

39. INTERVIEWER CHECK: Is owner's property eligible for ACP forestry payments? ☐ Yes ☐ No

(a) IF ELIGIBLE, have you ever applied for ACP forestry payments? ☐ Yes ☐ No

(1) IF NO: Have you heard about ACP forestry payments being available from time to time?

☐ Yes ☐ No

(a) IF YES: Why haven't you applied?

- ☐ Does not think he would qualify
- ☐ Believes trouble outweighs possible money benefit

- ☐ Is opposed to subsidy-like payment on principle
☐ Objects to terms
☐ Other (specify) _____

- (b) IF NO: Some of the practices for which payments are made are planting, thinning, and pruning. Payments generally cover a part up to 50% of the cost of these practices. What interest would you have in this program?
☐ Not interested
☐ Interested in possible payments, but does not believe practices would be influenced
☐ Interested in possible payment and believes practices would be influenced

(2) IF YES:

- (a) What practices were adopted for which application for payment was made?
☐ Planting ☐ Fencing
☐ Thinning ☐ Releasing undesirable trees
- (b) What was your reason for applying for ACP forestry payments?
☐ To improve the soil
☐ To receive payments
☐ To aid timber production
☐ To create aesthetic value
☐ Other (specify) _____
- (c) Would these have been undertaken without payment? ☐ Yes ☐ No

40. IF ACP FORESTRY PAYMENTS ARE NOT AVAILABLE IN THE COUNTY:
 Have you heard about ACP forestry payments being available from time to time in some counties of the State?
☐ Yes ☐ No

41. Some of the practices for which payments are made are planting, thinning, and pruning. Payments generally cover up to 50% of the cost of these practices. What interest would you have in this program being made available in your county?
- (a) ☐ Shows no interest
 (b) ☐ Shows interest in possible payments, but does not indicate practices would be influenced
 (c) ☐ Shows interest in possible payments and indicates practices would be influenced

Attitude toward CFM Service forestry program

42. Have you ever sought Cooperative Forest Management service forestry assistance? ☐ Yes ☐ No

(a) IF NO: Have you heard about CFM service forestry assistance being available from time to time?
☐ Yes ☐ No

(1) IF YES: Why is it that you have never applied?

- ☐ Is not interested in forestry
- ☐ Feels it is too difficult to obtain such aid
- ☐ Does not believe that anything can be gained from such aid
- ☐ Expects to seek advice in future
- ☐ Considers such aid valuable but has technical competence or employees with technical competence
- ☐ Considers such aid valuable but has applied for aid from Extension or SCS
- ☐ Other (specify) _____

(2) IF NO: Some of the services provided are scaling, price and marketing, planting information and marking timber. What interest would you have in this program?

- ☐ Not interested
- ☐ Interested in possible assistance but does not believe practices would be influenced
- ☐ Interested in possible assistance and believes practices would be influenced

(b) IF YES TO 42 (Has applied for CFM): Which of the following kinds of aids were received?

- ☐ Market or price information
- ☐ Marking timber
- ☐ Scaling
- ☐ Planting information
- ☐ Other (specify) _____

(c) Would you have requested this aid if there had been:

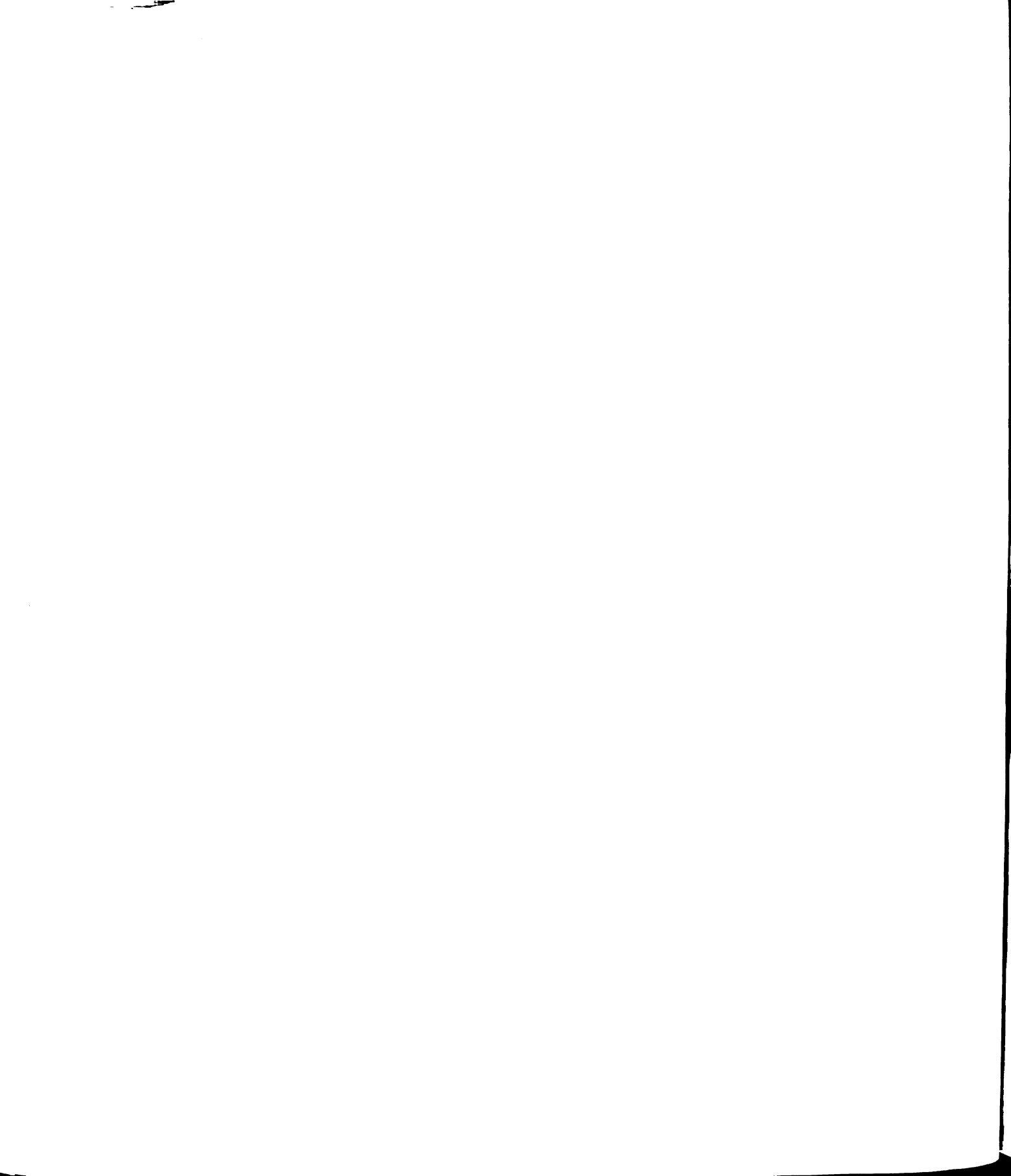
(1) A nominal charge, say \$2, for the service?

☐ Yes ☐ No

(2) A charge based on actual cost? ☐ Yes ☐ No

(d) IF YES TO 42: Would you ask for aid again?

☐ Yes ☐ No



(e) We'd like to have your evaluation of the service. That is, if you followed the advice, what you thought of it; or if you did not follow it, why it was that you didn't?

- (1) ☐ Did not fully understand advice given, hence has not followed it
- (2) ☐ Doubts technical soundness of advice; hence has not followed it
- (3) ☐ Believes too costly to follow it
- (4) ☐ Has used aid, but considers results unsatisfactory
- (5) ☐ Has followed advice, but is uncertain if it is satisfactory
- (6) ☐ Has followed advice and considers it satisfactory
- (7) ☐ Other (specify) _____

Attitude toward aid from county agricultural agent

43. Have you received non-forestry aid from the county agent? ☐ Yes ☐ No

44. Have you received forestry aid from the county agent? ☐ Yes ☐ No

IF FORESTRY AID RECEIVED:

(a) What aid was provided by the county agent?

- (1) ☐ Market or price information
- (2) ☐ Marking timber
- (3) ☐ Scaling
- (4) ☐ Planting information
- (5) ☐ Other (specify) _____

(b) We'd like to have your evaluation of the forestry aid provided by the county agent. That is, if you followed the advice, what you thought of it; or if you did not follow it, why it was that you did not?

- (1) ☐ Did not fully understand advice given; hence has not followed it
- (2) ☐ Doubts technical soundness of advice; hence has not followed it
- (3) ☐ Believes too costly to follow
- (4) ☐ Has followed advice, but considers results unsatisfactory
- (5) ☐ Has followed advice, but is uncertain if it is satisfactory
- (6) ☐ Has followed advice and considers it satisfactory
- (7) ☐ Other (specify) _____

(c) Would you have requested aid had there been a nominal charge, say \$2? ☐ Yes ☐ No

Attitude toward extension forestry assistance

45. Have you ever sought aid from an extension forester?
☐ Yes ☐ No

(a) IF NO: Have you heard about assistance being available from extension foresters from time to time? ☐ Yes ☐ No

(1) IF YES: Why is it that you have never applied?

- ☐ Is not interested in forestry
- ☐ Feels it is too difficult to obtain such aid
- ☐ Does not believe anything can be gained from such aid
- ☐ Expects to seek advice in future
- ☐ Considers such aid valuable but has technical competence or employees with technical competence
- ☐ Considers such aid valuable but has applied for aid from CFM service forester or SCS
- ☐ Other (specify) _____

(2) IF NO: Extension foresters give aid in such things as market, planting, scaling or marking information. Of what interest would this sort of aid be to you?

- ☐ No interest
- ☐ Slight interest
- ☐ Strong interest

(b) IF YES TO 45: Which of the following aids were received?

- (1) ☐ Market or price information
- (2) ☐ Marking timber
- (3) ☐ Scaling
- (4) ☐ Planting information
- (5) ☐ Other (specify) _____

(c) Would you ask for extension forestry aid again?
☐ Yes ☐ No

46. We'd like to have your evaluation of the extension forestry assistance. That is, if you followed the advice, what you thought of it; or if you did not follow it, why it was that you didn't?

- (1) ☐ Did not fully understand advice given; hence has not followed it
- (2) ☐ Doubts technical soundness of advice; hence does not follow it

- (3) ☐ Believes it too costly to follow
- (4) ☐ Has used aid, but considers results unsatisfactory
- (5) ☐ Has followed advice, but is uncertain if it is satisfactory
- (6) ☐ Has followed advice and considers it satisfactory
- (7) ☐ Other (specify) _____

Attitude toward general property tax of forests (applies only to forest properties under property tax)

47. We would like to know whether or not your woodland management is affected by the property taxes you pay on your forest property. First of all, can the annual tax on your woodlot be determined separately from tax on your other land? ☐ Yes ☐ No

(a) IF YES: What is the tax per acre? _____

(b) IF NO: Do you impute any portion of the annual property tax to your woodland area? ☐ Yes ☐ No

IF RATE PER ACRE CANNOT BE DETERMINED AND OWNER DOES NOT IMPUTE ANY PORTION OF TAX TO WOODLAND, GO TO QUESTION 50.

48. If property tax on forest was lowered, would you be stimulated or encouraged to improve management in any of the following ways: (check all measures affected)
- (1) ☐ By intensifying cultural measures used in woods
 - (2) ☐ By stepping up planting rate
 - (3) ☐ By acquiring new holdings for timber management
 - (4) ☐ No effect
 - (5) ☐ Other (specify) _____

49. If property tax on forest land should be increased, say by 25 percent, what would be the effect on the following management practices?

- (1) ☐ Cultural measures in woods would be diminished
- (2) ☐ Planting rate would be decreased
- (3) ☐ Plans for acquisition of new holdings would be dropped
- (4) ☐ No effect
- (5) ☐ Other (specify) _____

Attitude of owner toward yield taxes

50. Michigan has yield tax laws affecting commercial forest and woodlot operations. Are you familiar with these laws? ☐ Yes ☐ No

(a) IF YES: What is your status regarding qualification and registration under Michigan yield tax laws?

- (1) ☐ Qualifies but has not registered under commercial forest yield tax
- (2) ☐ Qualifies and has registered under commercial forest yield tax
- (3) ☐ Qualifies but has not registered under woodlot yield tax
- (4) ☐ Qualifies and has registered under woodlot yield tax
- (5) ☐ Does not qualify for any yield tax

(b) If he does not know of existence of applicable law, but qualifies for registration: Tax benefits under this law may be obtained by registering and carrying out certain management practices: How would you feel about adopting procedures necessary to qualify for tax benefits?

- (1) ☐ Shows no interest
- (2) ☐ Shows interest in possible tax benefits, but does not indicate management would be influenced
- (3) ☐ Shows interest in possible tax benefits and indicates management would be influenced

(c) If he knows about existence of law, qualifies, but has not registered: Why is it that you have not registered for this tax benefit?

- (1) ☐ Does not think he would qualify
- (2) ☐ Does not know how to go about registration
- (3) ☐ Believes restrictions outweigh possible tax benefits
- (4) ☐ Does not believe he would gain tax benefit
- (5) ☐ Objects to special privilege taxation on principle

(d) If he knows about law, qualifies, and has registered: How has registration under this law influenced your management and ownership of forest land?

- (1) ☐ Believes his management has not been influenced
- (2) ☐ Believes his management has been influenced
- (3) ☐ Does not believe ownership could be retained without this tax aid

Attitude toward special federal income tax provisions for timber producers

51. There are certain special federal income tax provisions such as the capital gains allowance to benefit timber producers. Have you made use of this law, or were you not aware of the existence of these provisions?

☐ Used ☐ Did not use ☐ Was not aware of law

- (a) IF DID NOT KNOW OF LAW: Now that you are aware of this law, what is your opinion of same?

- (1) ☐ Shows no interest
 (2) ☐ Shows interest in possible tax benefits, but does not indicate management would be influenced
 (3) ☐ Shows interest in tax benefits and indicates management would be influenced

- (b) IF DID KNOW OF LAW, BUT DID NOT USE: How does it happen that you have not made use of these special provisions?

- (1) ☐ Does not know how to go about tax calculations
 (2) ☐ Believes effort to use special provisions outweighs possible tax benefits
 (3) ☐ Does not believe he would gain tax benefits
 (4) ☐ Objects to special privilege taxation on principle
 (5) ☐ Other (specify) _____

- (c) IF LAW WAS USED: Do you feel that your management has or has not been influenced by use of this law?

- (1) ☐ Believes management has not been influenced
 (2) ☐ Believes management has been influenced

Owner's attitude toward forest credit

52. Have you ever considered the idea of borrowing funds on the security of your forest land? ☐ Yes ☐ No

53. Would you be interested in borrowing if this credit was readily available?

- (a) ☐ Not interested
 (b) ☐ Mildly interested
 (c) ☐ Strongly interested

54. IF NOT INTERESTED: Why is it that this would not interest you?

- (a) ☐ Opposed to borrowing on general principles
 (b) ☐ Opposed to regulatory clause on management of woodland
 (c) ☐ Prefers to use other collateral
 (d) ☐ Other (specify) _____

55. IF INTERESTED: For what purposes would you wish to borrow?

- (a) ☐ Improve or manage forest property
 (b) ☐ Other (non-forestry) purposes (specify) _____

Attitude toward soil bank

56. Have you participated in either the acreage reserve or non-forestry aspect of the conservation reserve of the soil bank program? ☐ Yes ☐ No

57. Have you participated in the forestry aspect of the conservation reserve of the soil bank program by applying for payments for planting trees on retired cropland? ☐ Yes ☐ No

(a) IF NO: Have you heard about payments being available through the conservation reserve for planting trees on retired cropland? ☐ Yes ☐ No

(1) IF YES: Why is it that you have not signed up under this program?

- ☐ Owner not interested in planting trees
☐ Owner does not have land which would qualify
☐ Owner does not believe payments are great enough to compensate for costs and trouble of the planting
☐ Owner believes program restrictions outweigh benefits of participating in program
☐ Owner is opposed to conservation reserve on principle
☐ Owner plans to participate in program in future
☐ Other (specify) _____

(2) IF NO: (Enter short statement about program) Of how much interest would this sort of program be in your case?

- ☐ No interest
☐ Slight interest
☐ Strong interest

(b) IF YES TO 58, (Has applied for conservation reserve)

(1) What was your reason for participating in the conservation reserve?

- ☐ To improve the soil
- ☐ To receive payments
- ☐ To help him retire
- ☐ To avoid problems in renting
- ☐ To work full time off the farm
- ☐ To help him get started in farming
- ☐ Timber production
- ☐ Other (specify) _____

(2) Would tree planting have been undertaken without payments? ☐ Yes ☐ No

Attitudes of owner toward more intensive forestry aids
(applies to small private holdings)

58. Would you be interested in using the services of a forester to manage your forest property under good forestry practices at a cost not to exceed 20 percent of the gross stumpage value? ☐ Yes ☐ No

59. Would you be interested in joining other owners in the same area in a cooperative which would hire a forester to jointly manage their forest properties? ☐ Yes ☐ No

60. Are you a member of the American Tree Farm System or other similar program? ☐ Yes ☐ No

If other, specify _____

(a) IF YES: What effect has this program had toward stimulating you toward better forestry practices?

- (1) ☐ Attitude favorable toward better forestry practices
- (2) ☐ No change in attitude toward forestry

REMARKS:

EXPLANATION OF ITEMS APPEARING ON FORM NO. 2
 (Questionnaire--This form was completed only
 for the ownerships chosen for interview)

Question Number

- 1,2,3, and 4- This information was transferred from Form No. 1.
- 5- Entry "a" was known prior to interview. Entry "b" was sought from owner, and considered entire ownership.
- 6- Criteria for classifying owner was the same as that used for Form No. 1.
- 7- Self-explanatory.
- 8- In cases where there was more than one method of acquisition, the different ways and the corresponding acreages were recorded.
- 9- There could only be one form of ownership. For instance, an individual's ownership was considered separately from that property which he held in partnership.
- 10,11, and 12- Self-explanatory.
- 13- Self-explanatory, except possibly categories "c" and "f," which should not be confused. "Sale of mature timber" indicates owner is not practicing forestry, while "growing timber for sale" does.
- 14- Self-explanatory.
- 15- Reference was mainly to commercial cuttings, although the removal of fuelwood and other occasional products qualified if the volume cut during previous five-year period was equivalent to at least two cords on an area of at least five acres.
- 16 through 34- Self-explanatory.
- 35- This information was determined prior to interview.
- 36 through 60- Self-explanatory.

APPENDIX C

Form No. 3
F. L. O. Study
Southern Michigan

WOODLAND INSPECTION

- 1 - County _____ Date _____
- 2 - Township _____ Recorder _____
- 3 - Cluster and Owner Number _____
- 4 - Owner _____ Address _____
- 5 - Date of Last Cutting _____
- 6 - Class of cutting Practices:
☐ Good ☐ Fair ☐ Poor
- 7 - Description of Woodland Holdings:

Type	Area	Volume/acre	Value of Type	Value of Type
:(acres):	MBF	Cds	\$/MBF	\$/Cd
:	:	:	:	:
:	:	:	:	:
:	:	:	:	:
:	:	:	:	:
:	:	:	:	:
:	:	:	:	:
:	:	:	:	:
:	:	:	:	:
:	:	:	:	:
:	:	:	:	:
:	:	:	:	:

Total

EXPLANATION OF ITEMS APPEARING ON FORM NO. 3.
(Woodland inspection--This form was completed
for only the ownerships chosen for interview
purposes)

Question Number

- | | |
|---------------|--|
| 1,2,3, and 4- | This information was transferred from Form No. 1 |
| 5- | Date of last timber harvest was recorded only if made during present ownership. |
| 6- | This evaluation required a subjective appraisal of cutting carried out by owner during five-year period 1954-1959. See Chapter V, page 91 for explanation of rating terms. |
| 7- | This tabulation was based on the results of the point-sampling cruise of the owner's woodlot and current stumpage prices as supplied by the various service foresters. |

APPENDIX D

RANGE IN STUMPAGE PRICES ENCOUNTERED DURING
SUMMER OF 1959 IN SOUTHERN MICHIGAN

<u>Species</u>	<u>Stumpage prices</u>
	dollars per M bd. ft. (International $\frac{1}{4}$ -inch)
Sugar maple, <u>Acer saccharum</u> Marsh.	20-80
Soft maple, <u>Acer rubrum</u> L. and <u>A. saccharinum</u> L.	14-35
Northern red oak, <u>Quercus rubra</u> L.	17-40
White oak, <u>Quercus alba</u> L.	15-60
Black oak, <u>Quercus velutina</u> Lam.	8-25
American elm, <u>Ulmus americana</u> L.	2-30
American beech, <u>Fagus grandifolia</u> Ehrh.	10-30
American basswood, <u>Tilia americana</u> L.	20-50
Yellow poplar, <u>Liriodendron tulipifera</u> L.	30-65
Black cherry, <u>Prunus serotina</u> Ehrh.	15-70
White ash, <u>Fraxinus americana</u> L.	15-50
Black ash, <u>Fraxinus nigra</u> Marsh.	15-40
Shagbark hickory, <u>Carya ovata</u> (Mill.) K. Koch	7-30
Eastern cottonwood, <u>Populus deltoides</u> Bartr.	10-25
Butternut, <u>Juglans cinerea</u> L.	10-60
Black walnut, <u>Juglans nigra</u> L.	75-350
Eastern hemlock, <u>Tsuga canadensis</u> (L.) Carr.	20-25
Eastern white pine, <u>Pinus strobus</u> L.	15-35

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