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presented by

Russell Peter Kidd

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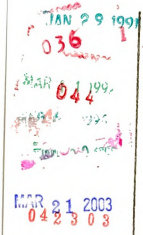

URBAN FORESTRY ACTIVITIES IN SELECTED MICHIGAN COMMUNITIES

By

Russell Peter Kidd

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ABSTRACT

URBAN FORESTRY ACTIVITIES IN SELECTED MICHIGAN COMMUNITIES

By

Russell P. Kidd

The level and extent of urban forestry activities in 150 medium size Michigan communities was evaluated by use of a mail questionnaire survey. Use of the "Total Design Method" of questionnaire preparation and follow-up resulted in an eighty percent response rate. Chi-Square Tests of Independence were used to measure the significance of several relationships between urban forestry activities and community population. General conclusions of this study include:

1. Municipal tree management is poorly developed in most communities due to inadequate finances. Most communities do not have adequate tree management plans, tree inventories, or shade tree commissions.

2. The attitudes of municipal officials on behalf of their communities regarding the importance of urban trees and their management is very positive.

3. The Cooperative Extension Service is a recognizable source of information and other types of educational assistance regarding urban forestry.

To

Annie

My Wife

PREFACE

> Efficient, effective management of urban vegetation, especially trees and forests, is essential to the environmental and social well-being of all our citizens. By the year 2000 between 80 and 95 percent of all North Americans will probably be living in or adjacent to metropolitan centers. Although culture and language may vary and climatic-vegetation zones differ, urbanites of every region will face similar problems and have comparable requirements for goods and services. . . . Unfortunately municipal budgets will be hard pressed to respond. This will be the urban forester's challenge: to solve the dilemma of meeting urban man's demands and needs for enduring trees and forests in the midst of severe economic and environmental constraints.
>
> -J. W. Andresen-

Thus begins the foreward to Grey and Deneke's book entitled Urban Forestry (1978). This passage ominously describes a bleak outlook for urban forestry. In 1981, Americans are suffering from double-digit inflation, a depressed economy, and high taxes. Accordingly, individuals in both public and private sectors are clamoring for less government spending and fewer government programs. Unfortunately, a large portion of urban forestry projects at all levels of government have been funded by some of these programs. Although it is anticipated that there will be a strong need for urban

forestry activities in the future, the outlook for funding such programs in the short term is bleak unless communities can develop effective alternative strategies for overcoming financing and staffing problems of municipal tree care programs.

In the state of Michigan, most of the large cities including Detroit, Grand Rapids, and Lansing, among others, have comprehensive tree management programs and adequate staffs which have enabled such communities to conduct effective urban forestry programs. While budget cutbacks have curtailed tree management activities in some of these communities, all programs are intact awaiting future expansion in some more economically favorable time. However, are the smaller cities and towns of Michigan as fortunate?

This study was undertaken to examine the prevailing condition of urban forestry activities in these smaller cities and towns of Michigan. The object was to gather, analyze and report information obtained regarding urban forestry activities in these communities in the most simple and straightforward approach as possible. It was believed that this type of approach would provide the most useful and meaningful application of the information obtained in this study.

During the course of this investigation, a number of people provided advice and other forms of

assistance that contributed to the overall success of this project.

I would like to thank my advisor, Dr. Melvin R. Koelling, for his invaluable assistance and guidance in this investigation and throughout these past four years at Michigan State University. In addition, I would also like to thank the other members of my graduate committee, Dr. J. James Kielbaso and Professor Theodore H. Haskell, for their advice and guidance in this endeavor. Other colleagues in the Department of Forestry, particularly Michael T. Lambur, are also acknowledged for their assistance at various times throughout this investigation.

Special thanks is also extended to Sharon L. Carlson and Peggy M. Wolski, who typed large portions of the original manuscript and the mail questionnaire used in this study.

However, my biggest "thank you" is for my wife, Anne, whose love, patience and personal sacrifices provided me with the encouragement and the opportunity to complete this undertaking in the last hurried month of its preparation.

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CHAPTER I

INTRODUCTION

Interest in urban forestry programs increased rapidly during the 1970's, although it appeared to reach a maximum in 1978 with the convening of the National Urban Forestry Conference and the appropriation of Cooperative Forest Management funds to support expanded state forestry activities. Consequently there was an intensive effort in many states, including Michigan, to inform communities without urban forestry programs of the importance of the urban forest and its management. The Michigan State University Cooperative Extension Service and the Division of Forestry in the Michigan Department of Natural Resources promoted urban forestry activities through staff specialists, who advised small cities and large towns (i.e. medium size communities) how to organize and finance a municipal tree management program. Many of these communities were receptive to the idea of tree management, but lacked the technical expertise and funding to establish such programs.

By 1980, however, support and assistance from Michigan State University's Cooperative Extension Service

had been reduced owing to personnel changes. The strong information base necessary to continue an aggressive municipal forestry program in medium size communities was no longer present. Several of the assumptions upon which the Cooperative Extension Service based its urban forestry educational programs no longer appeared to have high priority when compared to developments in the economy of both the state and federal governments. This concern resulted in this investigation which was designed to re-evaluate the status of urban forestry activities in medium size Michigan communities.

Medium size communities as used in this study were broadly defined to include cities and towns from 1,000 to 100,000 in population. The term, "medium size," was selected because it differentiated these communities from the small villages and larger cities of Michigan. Small villages (under 1,000 in population) were excluded from the study since it was thought that these communities did not have adequate resources available to support an urban forestry program. Similarly, large cities (over 100,000 in population) were excluded as the greater portion of these were already supporting a municipal forestry program.

This investigation was based on the assumptions that most medium size communities have poorly managed or nonexistent municipal tree care programs due primarily to

a lack of financial resources and information concerning trees and tree management programs. The principal objectives were threefold:

1. To determine the level of municipal tree management in medium size communities in Michigan.

2. To quantify certain attitudes and beliefs that these medium size communities hold towards trees and tree management programs.

3. To ascertain how medium size communities perceive the Cooperative Extension Service as a source of educational assistance concerning urban forestry.

Likewise, certain secondary objectives were also set forth. The first of these secondary objectives was to compile a databank of information concerning urban forestry activities in medium size communities in Michigan. The reason for setting this objective was to utilize the collected information to formulate more effective urban forestry extension programs for these communities. The second of these additional objectives was to educate appropriate officials in these medium size communities as to the importance of municipal tree management. Hopefully such information could help identify those components of a well-managed urban forestry operation with the belief that this information might stimulate municipal officials to consider developing an urban forestry program in their community.

The Conception of a Survey Investigation

The nature of the planned investigation suggested that some type of survey research be performed to collect information concerning medium size communities. Decisions about research methods involve many considerations, including costs, time, the researcher's own experience and qualifications and the availability of trained staff and facilities (Warwick and Lininger 1975). Other research methods, such as field research, historical-documentary, or experimental laboratory investigations, were found to be inappropriate to achieve the objectives of this study, or too time consuming and costly to be realistically considered.

The types of survey methods available to collect data included face-to-face interviews, telephone, and mail questionnaire surveys. A mail questionnaire survey method was selected because it was believed to be the most effective and efficient method for collecting the required information under the time and financial constraints available.

The mail questionnaire procedure was selected because it was known to be effective in obtaining relatively accurate information at a minimal cost and with few administrative requirements, as opposed to telephone and/or face-to-face interview survey methods (Dillman 1978). In addition, the use of mail questionnaires in

similar previous urban forestry survey investigations (e.g. Kielbaso and Ottman 1976; Miller and Bate 1978; and others) tended to confirm this as an acceptable method of collecting data for this current study.

Although the principal disadvantage of a mail questionnaire has traditionally been non-response bias, this problem was believed to be minimized by using a relatively new, but effective, mail questionnaire survey method called the "Total Design Method" (Dillman 1978). Previous use of this method has consistently yielded superior results from both a qualitative and quantitative response. Additional information on this survey method is provided in the Methods and Procedures section.

CHAPTER II

LITERATURE REVIEW

The literature reviewed in the course of this investigation can be classified into the following categories:

1. Relevant urban forestry references that pertain to municipal forestry operations in medium size communities.

2. Relevant references that pertain to the role of the Cooperative Extension Service and urban forestry in cities and towns.

3. Relevant survey research references which relate to the methodology used in this investigation.

It should be noted that these categories are not mutually exclusive and that some of the work reviewed could have been classified into more than one category. However, each reference is considered to be classified into its most appropriate category.

Urban Forestry in Medium Size Communities

The literature abounds with references that describe the benefits provided by trees and other vegetation for people living and working within urban areas. For example, the social, amenity and aesthetic benefits

provided by trees are described by Little and Noyes (1970); Santamour, Gerhold, and Little (1976); Gold (1977); and Howell (1980). Similarly, Kielbaso (1974) and Payne (1975) discuss the economic values of trees in urban locations. Grey and Deneke (1978); Pardo (1979); and Shafer and Moeller (1979) reiterate the benefits provided by trees and express the need for better management to maximize these benefits.

There also appears to be a significant amount of literature which expresses the need for communities to manage trees in the urban environment to provide and maintain these benefits. For example, Andresen and Dolberg (1973); Walterscheidt and Terry (1977); Moll (1978); and Miller (1980) explain how communities should organize and manage an urban forestry program. Whereas Tate (1973) and Foster (1977) focus their discussion on the care and maintenance of urban trees. Current issues and problems that affect communities and their urban forestry programs were examined by Rubens (1978) and Burns and Moeller (1979).

The majority of these reports suggest that well-managed trees are valuable monetary assets which contribute more than shade and beauty to a particular community. Because of these desirable attributes communities should have some type of systematic approach to tree management since it is more efficient and

economical than providing care on only an as-needed basis. However, in spite of these several reports extolling tree benefits and management, many communities have not yet established municipal tree care programs.

Previous Urban Forestry Survey Research

Since 1973, several survey investigations have been conducted to determine the status of urban forestry activities within communities of the United States. These surveys differed slightly in scope and complexity, but many of the conclusions drawn form the basis for assumptions made in this investigation. Some of the more important findings from these past survey investigations are cited below.

Ottman and Kielbaso (1976) implemented a national survey to determine local government involvement in municipal tree care programs. From their survey, they noted that 55 percent of those communities with a population between 2,500 and 99,999 had established systematic tree care programs as compared to 64 percent of those communities over 100,000 in population. Whereas 79 percent of those communities over 100,000 in population had established municipal shade tree ordinances, only 66 percent of communities between 2,500 and 99,999 in population had enacted such a regulation. Furthermore, only 20 percent of all cities surveyed in the North Central

region of the United States (Michigan included) used a "master street tree planting plan." Such a plan, describing the species and location of trees planted, assists in guiding a community's tree maintenance activities. Perhaps one of the most significant findings reported that, nationwide, the mean annual expenditure for tree care was $1.63 per capita. For communities between 2,500 and 99,999 in population in the North Central States, this figure was reported to be slightly higher, at $1.82 per person.

Miller and Bate (1979) performed a survey to determine the status of urban forestry activities in Wisconsin municipalities over 2,500 in population. The basis for their investigation dealt with questions that asked whether there might be certain community characteristics which influence the presence and the level of urban forestry activities. In addition, the authors hoped to identify where researchers should direct their efforts to provide the greatest benefit to urban foresters in these communities. For those communities which had no identifiable urban forestry program, the investigators hoped to identify the problems and needs that most concerned these municipalities. Based on the survey responses, they concluded that:

> Communities most likely to have urban forestry programs have been characterized as having a population in excess of 10,000, a

> higher than average per capita income, an institution of higher education, a large number of community-owned trees and a severe Dutch elm disease problem . . . (Miller and Bate 1978).

Although most of the communities without urban forestry programs were interested in initiating tree management programs, their size and per capita income prevented them from establishing such a program. However, 85 percent of the mayors of these communities believed their community would initiate a tree care program if outside assistance was provided (Miller and Bate 1978).

In a survey of Michigan communities of 500 or more in population, Cool, Kielbaso and Myers (1973) sought to determine the status of municipal forestry activities in these communities. Despite a rather poor response rate, they made some interesting observations concerning municipal forestry activities in medium size communities. From those communities which responded, the investigators reported that 85 percent were unaware of the number of street trees present in their municipality and only 36 percent had established a municipal tree ordinance. Sixty-eight percent of these communities had no full-time forestry employees. The authors also reported that the majority of communities responding indicated that no type of beautification committee or citizens group was present to help manage municipally owned trees.

In regards to smaller municipalities (as measured by population) the low rate of return was believed to be indicative of the relative low level of importance of basic forestry activities in those municipalities (Cool et al. 1973). Furthermore, these investigators concluded there was need for an education and publicity program in smaller communities to promote the importance of municipal forestry. The authors also expressed the need for additional research into more specific areas of municipal forestry activities.

Sievert (1980) referred to the use of a questionnaire survey in regards to urban forestry activities in Ohio. A questionnaire was sent to 700 incorporated municipalities as part of the initiation of the urban forestry program for the Division of Forestry in the Ohio Department of Natural Resources. With approximately one-third of the municipalities responding, the results indicate that most were interested in obtaining additional information and technical assistance.

Bassett and Lawrence (1975) conducted a survey to determine the status of urban tree inventory systems in the United States. Their purpose was to determine how many communities used inventory systems to facilitate the management of street trees. From the 166 communities that responded to their mail questionnaire, these investigators found that 70 percent of these communities did

not conduct a periodic or continuous inventory of their street trees. However, those communities that did inventory their street trees utilized the information obtained to plan future work activities such as tree maintenance, tree planting and tree removals. The authors concluded that:

> . . . a periodic or continuous comprehensive survey of urban trees will be an invaluable tool to pinpoint maintenance problems and to help plan and schedule daily work, particularly in the larger cities, where inventories are not common. Relatively few cities in the United States are now committed to a comprehensive inventory of street trees . . . (Bassett and Lawrence 1975).

As these past survey investigations have suggested, only a small percentage of communities have established tree care programs. Since most surveys were conducted prior to 1978, before significant funding and assistance developments occurred in the urban forestry area, a new investigation should be helpful in providing additional information.

Successful Urban Forestry Programs

Understandably, medium size communities may be reluctant to establish long term municipal forestry programs for fear of prohibitive costs, lack of technical expertise, or uncertain results. Yet, many medium size communities have established effective urban forestry programs with only limited financial resources and

technical assistance from outside sources. The key components to these successful programs seems to include widespread community support and, oftentimes, innovative solutions to financial problems that occur in the process of establishing the urban forestry program.

Baughman (1979) cites the state of Kansas as an example where urban forestry programming has been successful on a wide level. Since 1970, state foresters have helped 119 Kansas towns establish comprehensive community forestry programs. Baughman noted that:

> . . . the most successful towns used community tactics in planning and implementation of the program. They had a local, dynamic, respected spokesperson for the program. Emphasis was placed on efficient use of resources and highly visible activities . . . (Baughman 1979).

Walterscheidt (1980) concurred with this approach as appropriate to smaller cities and towns. In addition to tree management plans, tree ordinances and other specific requirements, the author expressed the opinion that a small community needs interested citizens, a responsive administration and capable advisors to maintain an effective urban forestry program.

In considering how to minimize the costs of a tree care program, this same investigator recommended that smaller communities appropriate only a small amount of money to begin an urban forestry program and then increase this amount over time. This approach helps

foster community support for tree care that can lead to a long-range commitment to such a program (Walterscheidt 1980). It is also suggested that smaller communities can further economize by contracting out to private enterprise many of the needed tree care activities. In addition, the author noted that the use of joint purchase plans involving both homeowners and civic organizations can help reduce the cost of purchasing trees from commercial nurseries.

Walterscheidt (1978) also urged communities to pursue any type of innovative approach that will help subsidize the cost of a community tree management program. He reported:

> The methods are not always direct sources of funds for tree programs, but at the least serve as indirect sources. They are a way to get trees on the right-of-way. It is then up to the city forester or whomever is in charge of trees to find the maintenance funds . . . (Walterscheidt 1978).

Some of these methods included applying for government grants such as Community Development Block Grants, Comprehensive Employment and Training Act grants and other federal or state funds for which a municipality qualified. The opinion was also stated that a well-designed tree ordinance could require building contractors to plant trees along the right-of-ways of newly constructed residential subdivisions or industrial complexes. This is another way in which a community can

minimize its direct costs in a tree establishment and care program. In addition, the author believed that communities should not overlook such opportunities as fund raising events, endowments, or damage settlements for trees destroyed by automobiles or other agents to help minimize costs and generate public support for urban forestry.

Several examples of urban forestry programs in medium size communities are reported in the literature (Diller 1975; Heritage and Pavolich 1980; Robinson 1978; and Terry 1977).* These examples illustrate that it is possible for medium size communities to undertake a long-term municipal forestry program with limited financial resources and widespread community support.

The Cooperative Extension Service and Urban Forestry

The role of the Cooperative Extension Service in relation to urban forestry programs was reviewed. While a few authors have examined the role of the Cooperative Extension Service in urban forestry, this relationship has not been thoroughly documented.

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*The communities documented in the literature were as follows: Diller - Wooster, Ohio; Heritage and Pavolich - Magnolia, New Jersey; Robinson - Burlington, Colorado; and Terry - Hillsdale, Michigan.

The Cooperative Extension Service is an educational organization created by passage of the Smith-Lever Act in 1914. At that time it was given the responsibility to conduct educational programs designed to increase agricultural production. Subsequent legislation provided authorization to conduct programs in natural resources, including forestry. The Cooperative Extension Service is a major component of the Land Grant University System in each state and serves to extend the educational and research components of these institutions to off-campus audiences.

Extension forestry is the people-oriented educational process of instructional programs, information flow and technology transfer, advisories and demonstration projects applied to the scientific management of forest resources for the continuous production of goods and services (Extension Committee on Organization and Policy 1976). As such, extension forestry can often help communities solve their urban forestry problems because of its ability to provide information individually and through mass media. Where appropriate expertise is available the Cooperative Extension Service can assist communities without urban forestry programs by providing current information and technology designed to assist in the establishment and maintenance of an effective tree care program.

The idea of information flow and technology transfer in urban forestry was briefly explored by Watt (1979), when he discussed the need for good communications to further the objectives of urban forestry. His principal assumption was that a recognizable channel of communication needs to be established which is easily accessible by all lay and professional persons involved in the broad field of urban forestry. According to Watt:

> . . . Good communications, then, expedite the flow of information from scientist to practitioner, from practitioner to practitioner, and from professionals to the layman--in short, to all those interested in the problems and benefits of the urban forest . . . (Watt 1979).

It is interesting to note that the Cooperative Extension Service, through its people-oriented educational process, is uniquely structured to provide the channel of communication that is needed.

Watt did subsequently mention the Extension Service by name in his discussion of communications in urban forestry. He commended the organization for being very effective in disseminating information on shade tree care through publications and meetings, especially with the lay public (Watt 1979). However, he did not elaborate further on the role of the Cooperative Extension Service in urban forestry.

Bell (1973) described what he thought the Cooperative Extension Service's role could be in urban

forestry, if adequate finances were available. His discussion focused on the tree management problems of both large and small communities and on the educational needs of public officials and private citizens, with respect to urban forestry. According to Bell, most small communities need information on tree maintenance, inventories, ordinances and other aspects of urban forestry to enable them to effectively manage their trees. He expressed the idea that education is needed for most public officials because these individuals appear to have little technical knowledge concerning trees and their management in communities. Furthermore, he added that education is also needed for private citizens because they required information on tree care to maintain their shade trees and the trees that lined their community's streets. Bell concluded that:

> Due to its complexities and the great variety of problems, as well as the need for education it appears . . . that the needs of urban forestry can best be served by an organization like the Cooperative Extension Service. . . .
>
> Solving the problems of Urban Forestry (author's use of upper case) strike me as a classic example of what the Land Grant Universities and the Cooperative Extension Service were charged with in the Morrill Act of 1862 and the Smith-Lever Act of 1914 but with clientele changed from the farms to the cities . . . (Bell 1973).

The role of the New Jersey Cooperative Extension Service in urban forestry was discussed by Sperapani

(1980). He alluded to the fact that the role of the organization was to transmit information to help arborists, shade tree commissions and the general public with urban forestry problems. For example, the Cooperative Extension Service in New Jersey periodically offers short courses in arboriculture to help arborists become Certified Tree Experts. It also offers similar educational programs for shade tree commissioners and other agency personnel.

Sperapani explained that in some counties of New Jersey, the Cooperative Extension Service supplies local shade tree commissions with monthly newspaper articles that can be used to promote urban forestry within these communities. In addition, information on tree care is also provided to the general public through publications, office visits and mass media. The author concluded that the Cooperative Extension Service has an effective system for developing recommendations and making them known to the appropriate community (Sperapani 1980).

Neuhauser (1973) discussed the role of the Cooperative Extension Service in urban forestry for central New York State. He described three program areas in which he considered the Cooperative Extension Service to have a significant role in urban forestry. These program areas included a home horticulture program for the general public, a commercial horticulture education

program for business firms that produce and sell nursery stock and a community resource development street tree program for cities and towns (Neuhauser 1973).

The street tree extension program involves working with communities on a two-phase program. Phase I concentrates on working with community leaders and interested citizens to familiarize them on how to get a street tree program started in their community. Phase II, which usually begins the following year, concentrates on helping community leaders keep their street tree programs active. Both of these activities center around an educational program held early in each phase which concerns establishing or managing an urban forestry program.

Neuhauser also notes a potential problem. He stated that the street tree extension program had a few implementation problems. Contrary to the prescribed role of the Cooperative Extension Service, the author believed that the principal problem facing the Cooperative Extension Service was the lack of time available to work with each individual community in developing an urban forestry program. He stressed the need for help from foresters in the New York Department of Conservation to work with communities in implementing a street tree program. Neuhauser concluded that:

> . . . the educational opportunities in Urban Forestry (author's use of upper case) are tremendous. Many communities are and

> will go ahead with Urban Forestry related programs . . . with or without help from Cooperative Extension . . . Many of these programs will lack direction and a firm foundation unless the expertise of professional foresters . . . is made available . . . (Neuhauser 1973).

These reports have illustrated how the Cooperative Extension Service in various states has assisted people and local governments with urban forestry problems. In most cases, the primary role of the Cooperative Extension Service is to provide education which results in a flow of information to appropriate audiences.

The Methodology of Survey Research

The use of survey research as a valid data collection method is well accepted, particularly in the social sciences. Increased use of this method is also occurring in other areas, including urban forestry.

Many previous survey research methods have been misused or poorly executed and accordingly have resulted in obtaining poor response rates or inaccurate data. To avoid these problems, survey research investigations must be carefully planned, implemented and analyzed if accurate results are to be achieved. As one researcher noted:

> No survey fully satisfies the theoretical ideals of scientific inquiry. Every survey represents a collection of compromises between the ideal and the possible. The primary goal . . . is to . . . arrive at the best possible compromises. Perfect (italicized)

> surveys may not be possible, but good (italicized) surveys can and should be done . . . (Babbie 1973).

Several references on survey research methodology were consulted in the planning and implementation phases of this study.

Babbie (1973) presented a detailed discussion on the theory and use of survey research methods. He attempted to illustrate that survey research methods are an acceptable and precise form of scientific inquiry when used correctly. He emphasized the importance of logic and skill in performing survey research which can provide a practical guide to its use as a scientific method. It was explained that various components are involved in the design, analysis and reporting stages of a survey investigation. Noteworthy was the author's discussion on how to construct and interpret tables produced from the results of univariate and bivariate analyses.

Warwick and Lininger (1975) successfully integrated the general theory of survey research together with its practical application. Their work served as much as a textbook on the methodology of survey research as it did in producing a practical manual for developing a survey investigation. The majority of discussion was devoted to the explanation of each stage of a properly conducted survey. These ranged from the initial planning and conceptualization of ideas to the coding of data and

their final analysis. A brief chapter on the development and proper use of mail questionnaires was also included.

A particularly unique and innovative approach to conducting mail questionnaire surveys was developed by Dillman (1978). His method for planning, designing and implementing a mail survey investigation is called the "Total Design Method." According to the author:

> . . . This term is a result of the premise on which it is based, namely, to maximize both the quantity and quality of responses, attention must be given to every detail that might affect response behavior. The TDM (Total Design Method) relies on a theoretically based view of why people do and do not respond to questionnaires and a well-confirmed belief that attention to administrative details is essential to conducting successful surveys . . . (Dillman 1978).

The results achieved by following the "Total Design Method" have been significant. Of 48 previous studies which have used this method, an average response rate of 74 percent was obtained with no survey obtaining less than a 50 percent response rate (as compared to a response rate of 40-50 percent that Dillman believed was typical of most mail survey investigations). This method was developed as a result of intensive investigation into the advantages and disadvantages of mail surveys and why past uses of this method have yielded such poor results.

The theoretical basis for the "Total Design Method" is an extension of the general theory of social

exchange. Simply defined, this theory holds that a person's own actions are motivated by the return that these actions hope to bring from others. According to Dillman, this theory assumes that a person will generally engage in an activity because of the rewards he or she hopes to reap, providing that the rewards exceed the costs for performing this activity. Thus to maximize survey response, the author believes it is necessary to maximize the rewards, minimize costs and establish a trust with the respondent that these rewards will be delivered. The implications of this theory help to explain why people respond to questionnaire surveys. It also underscores the importance of giving attention to all details in the construction and implementation of a "Total Design Method" mail survey investigation.

Documentation of previous investigations and accounts from the literature were cited to illustrate their relationship to the present study. If needed, additional citations will be made elsewhere in the body of this paper.

CHAPTER III

METHODS AND PROCEDURES

Development of the Survey

The question of how to assess the status of urban forestry activities in medium size communities implied that some form of survey be used. As a result, it was determined that a single stage descriptive survey which sampled a cross-section of communities should be adequate for obtaining the necessary information. Since the Cooperative Extension Service operates throughout the state in conducting its educational programs, the scope of the survey covered the entire state of Michigan.

The Survey Sample

Communities to be surveyed were selected from the "Directory of Municipal Officials" published semi-annually by the Michigan Municipal League. The League's membership represents 98 percent of Michigan's urban population (Michigan Municipal League 1980). This directory contains a listing of 531 incorporated cities and villages and includes data on population, names and addresses of major officials, and other pertinent statistical information for each municipality. From this

listing, a total of 150 communities were selected for the survey. These communities were selected primarily on the basis of population, which ranged between 1,000 and 100,000. Every community over 10,000 population was included in the sample. However, several larger communities (approaching 100,000 population) were excluded from the sample because they were known to have active urban forestry programs. In addition, a few communities with less than 10,000 in population were selected based on their status as a county seat or as a major metropolitan suburb. This was done to obtain program comparisons between smaller communities and larger communities. It was believed that larger communities were more likely to have an established tree management program.

The city manager or other similar administrative official was selected as the representative for each of these 150 communities. This position was chosen since the individual present was regarded as a professional who is readily accessible, and should be in a good position to analyze programs and needs of the community. It is believed the city manager should be able to make a relatively accurate assessment of how receptive the community and its decision-makers are towards establishment of an urban forestry program. An additional advantage of selecting the city manager was their familiarity with the financial capability of the community and that he or she

could recommend to local government decision-makers which community programs should be considered for funding.

Designing the Survey Instrument

Theory and concept of the "Total Design Method" (Dillman 1978) requires that specific procedures be understood and followed, if acceptable results are to be obtained. These procedures guided the design of questions, layout of the questionnaire format, and the sequence of events used in administering the mail survey. While it is not considered essential to this presentation to fully explain the detailed set of procedures described by Dillman in his manuscript on the "Total Design Method," those interested in the theory and concept of this method should refer to the original reference (Dillman 1978) for more information.

Total Design Method Modification

It must be noted that, due to some financial, clerical and time constraints, a few modifications were made to suggestions for implementing the "Total Design Method." Although none of these changes were believed to have serious implications, they were made with the realization that the response rate and amount of information obtained might be affected. Dillman stressed that

slight changes to the "Total Design Method" might affect response quantity and quality, but admitted that this was not known for certain.

Changes made in application of the "Total Design Method" process are summarized as follows:

1. The questionnaire was not photographically reduced in size to a 6 1/8" x 8 1/4" size as suggested. An 8 1/2" x 11" questionnaire was mailed.

2. This change in questionnaire size required that a larger, manila envelope be used, instead of the business-size stationery envelopes which were recommended.

3. A rubber stamped mailing address on a pre-paid return envelope was used instead of a self-addressed business reply envelope.

4. Typed mailing labels were used on both the first class mailing envelopes and as the inside address on each cover letter instead of being individually typed.

5. Two signatures appeared on the cover letter and the additional follow-up materials. One signature was actually signed in blue ball point ink; whereas, the other was rubber stamped.

6. The mailing sequence was slightly adjusted after sending the postcard follow-up. The second cover letter and replacement questionnaire were mailed approximately one month after the original mailing instead of

the prescribed three weeks. In addition, the final follow-up mailing was eliminated after receiving a response rate that was considered acceptable for this study.

Content of the Survey Questionnaire

Original Assumptions

Early in the development of this study several assumptions were compiled which represented some ideas and perceptions on urban forestry activities existing in medium size communities. This list was intended to serve as a guide for designing questions for the mail questionnaire. The developed questions sought to verify whether these assumptions were valid as reported by representatives of the communities surveyed. These assumptions clarified in greater detail the principal objectives of the study as contained in Chapter I.

As a method of pretesting the assumptions upon which this study was based, a listing of all assumptions was distributed to six colleagues for their analysis. All reviewers were staff members of the Department of Forestry and Department of Park and Recreation Resources at Michigan State University. Each reviewer was asked to respond as to whether they considered the assumptions on the list to be true, false or unknown.

The results of the pretesting process were mixed. However, there appeared a consensus of agreement for the majority of assumptions.* Where some differences were stated, these seemed to confirm the suspected lack of adequate information on the status of urban forestry as practiced in medium size Michigan communities.

The Finalized Questionnaire

In its final form the questionnaire contained 61 questions. It was separated into two parts: Part I, which contained 49 questions designed to explore the status of urban forestry in medium size communities; and Part II, which asked for demographic information on the communities being surveyed. Questions in Part I were formulated from the assumptions mentioned previously. The demographic data were obtained to help in analyzing the data collected from Part I. Specific questions relating to demographic information were concerned with such areas as position of the respondent, exact population of the community, legal classification, form of government, approximate per capita income, and other similar facts and characteristics. A final question asked for feedback and comments from the respondents.

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*A list of the assumptions is provided for closer inspection in Appendix 1.

Pretesting the Questionnaire

After the questionnaire had been assembled into the "Total Design Method" format, it was pretested by submitting it for review to each of the individuals previously mentioned. Due primarily to time constraints, pretesting with a representative group of the target population was not completed. However, since the population to be surveyed was perceived to be fairly homogeneous, the consequences of not pretesting the questionnaire were thought to be minimal.

Administration of the Survey

The questionnaire, accompanying cover letter and mailing address of each survey recipient was electronically reproduced and assembled into individual mailing packages. The initial mailing was sent on June 5, 1980, to each of the 150 communities in the survey sample. The first follow-up consisting of a thank you/reminder postcard was mailed one week later. A second cover letter and replacement questionnaire were mailed on July 3, 1980, to those communities from whom no response had been received. As of August 31, 1980, responses were no longer being received and the survey was considered complete.

Concurrent with the mailing sequence an information packet was assembled and mailed to each community

which requested additional information. This packet contained information on several aspects of urban forestry and was composed of extension bulletins, one page information sheets, and an urban forestry reference list.

Examples of the questionnaire, cover letter and subsequent follow-up materials are contained in the appendix.

Analysis of Survey Data

The data collection from the mail questionnaires was coded for computer analysis and processed using the CDC 6500 computer at the Michigan State University Computer Science Laboratory.

The computer program selected to analyze the data was the Statistical Package for the Social Sciences (SPSS). This program was chosen because it was readily adaptable to the form of analysis needed in this investigation and because of its widespread acceptance and use in many scientific fields. The most commonly used subprograms in this computer package were the frequency count and simple, two-axis cross-tabulations.

In addition, a number of hand calculations using figures generated from the computer were also performed to facilitate analysis of the survey data.

CHAPTER IV

RESULTS AND DISCUSSION

Response Rate

The response rate of the 150 communities sampled in this study was 80 percent. This is equivalent to 120 questionnaires which were completed in a form usable for analysis. This response rate, according to Babbie (1973), can be considered "very good" in comparison to most mail surveys. More importantly, the 80 percent response rate was also slightly higher than the average response rate reported during past uses of the "Total Design Method" (Dillman 1978). This was believed to be related to the relatively homogeneous and professional composition of the respondents (see Table 1). Furthermore, the magnitude of the response can be interpreted as a strong interest in the survey topic, its sponsor, the survey method, or a combination of these factors.

As noted in Table 1, 57 percent of the questionnaires were completed by the city manager or other administrative official to whom it was originally addressed. The remaining questionnaires were diverted to other departments for completion. In 35 percent of the cases, the questionnaire was completed by the Director of the Public Works Department, Parks and Recreation

TABLE 1.--Breakdown, by Position, of the Survey Respondents in Michigan Communities - 1980.

Position	# of Respondents	% of Respondents
City Manager (or similar position)	68	57
Department Director (Public Works, Parks, or similar position)	41	34
City Forester (or similar employee)	33	3
Village Clerk and others	7	6
TOTAL	119	100

Department, or other department that appeared to have jurisdiction over the community's trees. In only 3 percent of the cases did a city forester or similar employee respond to the questionnaire.

Description of the Communities Surveyed

In the 120 usable returns received, 114 cities and 6 villages responded. The location of these communities is shown in Figure 1. As is apparent in this figure, the majority of these communities are located in the southern lower peninsula of Michigan, particularly in the southeastern portion of the state. Communities within this region were highly represented in the sample since this area of the state is the most heavily urbanized and populated. It is also worth noting that those communities which did not respond to the survey appear to be randomly located throughout the state. The relatively random distribution of non-respondents does not appear to represent any particular bias with respect to sampling error.

When asked to describe what community development had taken place in their communities over the past five years, 45 percent of the respondents reported that their community had grown during this period (Table 2). In contrast, an identical percentage reported that development in their community appeared to have stabilized over

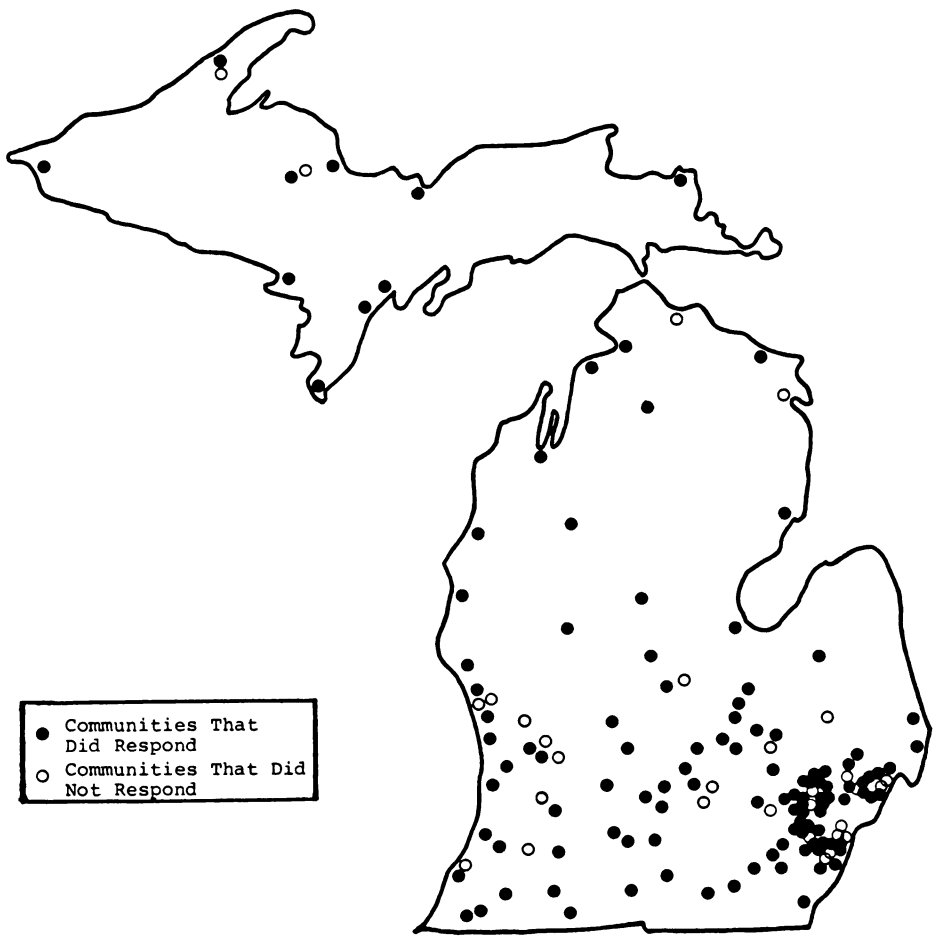

Figure 1.--Location of Michigan Communities Surveyed.

NOTE: A list of the communities surveyed appears in Appendix 3.

TABLE 2.--Community Development Trends of Michigan Communities as Described by Survey Respondents - 1980.

Trend of Development	# of Communities	% of Communities
Growing	54	45
Stable	54	45
Declining	11	9
TOTAL	119	100

NOTE: Percentages may not add up to 100 percent due to rounding error.

the previous five years. As depicted in Table 2, the remaining 9 percent reported their community had actually declined (lost population) over the past five years. Combined, the high percentage of the "stable" and "declining" responses seems to imply that significant economic growth in the majority of these communities is not occurring. This lack of development is significant as it might be precluding a number of communities from establishing an urban forestry program in favor of maintaining more essential public services under the available limited funds.

As illustrated in Table 3, population of the surveyed communities ranged from 1,000 to 100,000 in size, with a mean of 18,121. Furthermore, both the modal and median population for communities surveyed was approximately 10,000 people (see Table 3). These statistics indicate a wide population variation in the communities surveyed, with the majority concentrated at the lower end of this range.

Post-Stratification of the Sample

Due to the large response rate to the questionnaire, the significant lack of community development reported, and the wide variation in population size that exists in these communities, it was decided to post-stratify the sample. Three strata or groupings were

TABLE 3.--Stratified Population Groupings and Other Population Statistics of the Michigan Communities Surveyed - 1980.

Population Grouping (# of people)	# of Communities	% of Communities	Population Statistics
1,000 - 7,999	46	39	Mean = 18,121 Mode = 10,000 Median = 10,000 Range = 98,810 Minimum = 1,190 Maximum = 100,000
8,000 - 25,000	49	42	
25,001 - 100,000	23	20	
TOTAL	118	100	

NOTE: Percentages may not add up to 100 percent due to rounding error.

selected and labeled as "population groupings." These population groupings are shown in Table 3. The decision to post-stratify the sample data was made knowing that post-stratification increased the risk of biasing subsequent analyses. However, the outcome of this investigation, represented by the relationships and trends uncovered in this study, demonstrated that post-stratification produced little, if any, measurable bias.

Post-stratification of the data was completed so the influence of population size on the level of urban forestry activity could be determined. Accordingly, the definition of a "medium size community" was reduced in size and categorized as the population grouping which ranged from 8,000 to 25,000 in size (see Table 3). Population groupings above and below the 8,000 to 25,000 category were labeled as "large size" and "small size" communities. Other than this modification, post-stratification of the sample data should not have any significant impact on the original assumptions and objectives of the study.

All analyses incorporated these stratified population groupings into the format of contingency tables. Contingency tables or row by column (r x c) table analysis was the primary statistical method used to ascertain possible relationships between the stratified population groupings and several variables stated in the

questionnaire. This method of analysis utilized the Chi-Square (χ^2) Test of Independence to determine what, if any, relationships existed and how strongly the variables in such relationships were related to each other. In this study, the probability of a relationship occurring was rejected if the chi-square significance obtained was greater than 0.1 in value.

Level of Municipal Tree Management

A principal objective in this investigation was determination of the level of municipal tree management existing in communities within stratified population groupings. Measurement of the level of municipal tree management in a community involved a number of variables that, taken collectively, embodied an ideal, well-managed urban forestry program.

These variables included:

1. The presence of a systematic tree care program.
2. The appropriation of funds for tree care activities.
3. The enactment of a municipal tree ordinance.
4. The administration of a municipal tree inventory.
5. The development of a tree management plan.
6. The existence of a tree commission or tree board.

An overall concensus would seem to indicate municipal tree management in all stratified population groupings is not well developed and trees in the surveyed communities can be said to be poorly managed. Furthermore, of the three population groupings, communities between 8,000 and 25,000 in population (i.e. medium size communities) appear to have the highest level of municipal tree management. However, even this level of management is comparatively poor in relation to an ideal, well-managed urban forestry program. Several relationships and trends can be presented here as evidence of these conclusions.

Systematic Tree Care Programs

The number of systematic tree care programs (i.e. shade tree, street tree or urban forestry activities) present in the communities surveyed is an important measure of the level of municipal tree management. According to data in Table 4, systematic tree care programs were present in 57 percent of the medium size communities. As a comparison, the majority of communities in the other two groupings did not have established systematic tree care programs (see Table 4).

Although what constituted a systematic tree care program varied from one community to another, the acknowledgment, nonetheless, of the presence of such a

TABLE 4.--The Number of Systematic Tree Care Programs Present in Michigan Communities - 1980.

Population Grouping	Systematic Tree Care Program in in Michigan Communities, 1980		#/% Row Total
	Present	Not Present	
1,000 - 7,999	17/37[1]	29/63	46/39
8,000 - 25,000	28/57	21/43	49/42
25,001 - 100,000	9/39	14/61	23/20
#/% Column Total	54/46	64/54	118/100

NOTE: Percentages may not add up to 100 percent due to rounding error.

[1]Numbers in cells are the number in the category and percent of row total.

program was an important finding. The presence of a tree care program signified a community-wide expression of concern for its street and shade tree resource.

The Appropriation of Funds for Tree Care

The amount of money that communities appropriate for tree care can be used as a measure of the level of municipal tree management. As illustrated in Table 5, there is a strong relationship (represented by a chi-square significance of 0.0001 in value) between the population groupings and the amount of funds appropriated for tree care activities in 1980. In this relationship, the amount of money appropriated is directly proportional to the population of these communities. According to Table 5, a significant 63 percent of the communities in the smallest population grouping spent no more than $9,999 for tree care activities in 1980. Conversely, 57 percent of the communities in the largest population grouping had spent over $50,000 for tree care during this same time period. For communities in the 8,000 to 25,000 population grouping, the amount of funds appropriated for tree care was about equally distributed between these values.

However, a more precise financial measure of municipal tree management is the concept of annual per capita expenditure for tree care as advanced by Ottman and Kielbaso (1976). This approach is useful in that it

TABLE 5.--The Amount of Funds Appropriated for Tree Care Activities in Michigan Communities - 1980.

Population Grouping	Amount of Funds Appropriated (Dollars)			#/% Row Total
	500 to 9,999	10,000 to 49,999	50,000 to 345,000	
1,000 - 7,999	20/63[1]	11/34	1/3	32/40
8,000 - 25,000	10/29	13/37	12/34	35/43
25,001 - 100,000	0/0	6/43	8/57	14/17
#/% Column Total	30/37	30/37	21/26	81/100

Chi-square significance - 0.0001

[1]Numbers in cells are the number in the category and percent of row total.

serves as an index for comparing municipal tree management in communities of unequal populations. Secondly, it may be interpreted as an indication of a community's commitment to its urban tree resource. In this study, mean annual per capita expenditures for tree care were computed for each stratified population grouping as a whole.

The per capita expenditures for tree care by population groupings are listed in Table 6. As can be seen from this table, medium size communities had developed the largest mean annual per capita expenditure in 1980 ($2.82). In comparison, larger size communities had the next largest mean annual per capita expenditure for tree care in 1980, with a value of $2.39 (see Table 6). This suggests that communities between 8,000 and 25,000 in population have greater public commitment to tree care than communities in the other population groupings. Conversely, another interpretation of the figures in Table 6 is that, due to an economy of scale not present in medium size communities, larger size communities have a lower fixed cost factor per person for providing basic tree care activities. A more conclusive decision about these interpretations could not be made without information regarding the number of trees present in each community. However, this information was not requested in the questionnaire.

TABLE 6.--Mean Annual Per Capita Expenditures for Tree Care for Communities Surveyed in Michigan - 1980.

Population Grouping	Mean Annual Per Capita Expenditure in 1980*	# of Communities in the Grouping
1,000 - 7,999	$2.10	32
8,000 - 25,000	$2.82	35
25,001 - 100,000	$2.39	14
TOTAL	$7.31	81

*The formula and calculations used to determine these expenditures are located in the appendices of this paper for examination.

Municipal Tree Ordinances

Tree ordinances provide communities with a legal justification to regulate the planting, maintenance and removal of all trees within their municipal jurisdiction. The number of municipal tree ordinances enacted in the communities surveyed is shown in Table 7. These data (Table 7) suggest that a relationship exists between the presence of municipal tree ordinances and the stratified population groupings as evidenced by a chi-square significance of 0.0842 in value. According to Table 7, as population increases from the smaller size grouping

TABLE 7.--The Number of Municipal Tree Ordinances Present in Michigan Communities - 1980.

Population Grouping	Municipal Tree Ordinances in Michigan Communities, 1980		#/% Row Total
	Present	Not Present	
1,000 - 7,999	21/46[1]	25/54	46/39
8,000 - 25,000	27/55	22/45	49/42
25,001 - 100,000	17/74	6/26	23/20
#/% Column Total	65/55	53/45	118/100

Chi-square significance - 0.0842

NOTE: Percentages may not add up to 100 percent due to rounding error.

[1]Numbers in cells are the number in the category and percent of row total.

to the larger size grouping, the number of municipal tree ordinances enacted increases from 46 percent to 74 percent, respectively (see Table 7). It can be concluded that the majority of communities in the two stratified groupings over 8,000 in population have established municipal tree ordinances.

Municipal Tree Inventories

Any urban forestry program cannot be efficiently and effectively managed without accurate information concerning needed tree care activities. Information about pruning or planting needs, tree removal priorities and other activities which need to be performed can be obtained, if communities have access to data from municipal tree inventories. The number of communities that have conducted a tree inventory is shown in Table 8. As portrayed in this table, the majority of communities in each population grouping, regardless of size, have not conducted a tree inventory (see Table 8). This variable, which is basic to a good urban tree care program, indicates the level of municipal tree management is poorly developed for communities in all three population groupings.

Tree Management Plans

Oftentimes, information that is gathered through municipal tree inventories is analyzed and developed into

TABLE 8.--The Number of Municipal Tree Inventories that Had Been Conducted in Michigan Communities by 1980.

Population Grouping	Municipal Tree Inventories Conducted in Michigan Communities by 1980		#/% Row Total
	Conducted	Not Conducted	
1,000 - 7,999	20/47[1]	23/54	43/38
8,000 - 25,000	17/35	31/65	48/42
25,001 - 100,000	7/30	16/70	23/20
#/% Column Total	44/39	70/61	114/100

NOTE: Percentages may not add up to 100 percent due to rounding error.

[1]Numbers in cells are the number in the category and percent of row total.

a municipal tree management plan. A typical plan describes the goals and objectives of tree management in a community and directs projected tree care activities which must be performed. It may also contain other pertinent information regarding the street and shade tree resource in a particular community.

The number of communities which had developed tree management plans is shown in Table 9. Not surprisingly, responses to this question corresponded closely to responses received for the municipal tree inventory variable. That is, over 60 percent of the communities in all three population groupings have not developed a tree management plan. This was the second variable measured which indicates a low level of tree care in most communities.

Shade Tree Commissions

Some communities without a forestry or parks and recreation department responsible for tree management provide for tree care through citizen advisory groups such as shade tree commissions or tree boards. In many states (Michigan included), state enabling legislation is present which allows for the establishment of such tree commissions or tree boards, and provides these groups with legal authority to administer a tree care program. The number of shade tree commissions and tree boards

TABLE 9.--The Number of Tree Management Plans Present in Michigan - 1980.

Population Grouping	Tree Management Plans in Michigan Communities, 1980		#/% Row Total
	Present	Not Present	
1,000 - 7,999	18/39[1]	28/61	46/39
8,000 - 25,000	15/31	34/69	49/42
25,001 - 100,000	7/30	16/70	23/20
#/% Column Total	40/34	78/66	118/100

NOTE: Percentages may not add up to 100 percent due to rounding error.

[1]Numbers in cells are the number in the category and percent of row total.

which exist in the surveyed communities are reported in Table 10. It is noted that over 75 percent of the communities in each stratified population grouping do not have a shade tree commission or tree board. This further confirms the now apparent trend that the level of municipal tree management in all three population groupings is poor.

TABLE 10.--The Number of Shade Tree Commissions or Tree Boards Present in Michigan Communities - 1980.

Population Grouping	Shade Tree Commissions or Tree Boards in Michigan Communities, 1980		#/% Row Total
	Present	Not Present	
1,000 - 7,999	11/24[1]	35/76	46/39
8,000 - 25,000	2/4	47/96	49/42
25,001 - 100,000	3/13	20/87	23/20
#/% Column Total	16/14	102/86	118/100

NOTE: Percentages may not add up to 100 percent due to rounding error.

[1]Numbers in cells are the number in the category and percent of row total.

Attitudes and Beliefs About Trees and Tree Management

The Perceived Lack of Financial Resources

Prior to initiation of this investigation, it was believed that the lack of financial resources and inaccurate information concerning trees and tree management programs were two primary reasons why communities do not have well-established tree care programs. In order to obtain supportive data for this assumption, a number of variables were used to measure attitudes and opinions of respondents regarding their community. Attitudes and opinions about trees and tree management programs based on non-factual information may be as detrimental as the lack of financial resources with respect to establishing and maintaining a municipal tree care program.

However, examination of the data does not support fully this assumption. That is, lack of financial resources is a limiting factor, but contrary to the expressed assumption, most managers in communities appear to be well-informed and receptive to the needs of trees and municipal tree care programs. Thus it can be concluded that inaccurate information concerning trees and tree management programs is not a contributing factor in explaining why communities have poorly developed urban forestry programs. Instead, the lack of financial resources appears to be the major constraining factor in

preventing establishment of tree management programs. Several significant results and trends which support these conclusions will be considered.

When communities without systematic tree care programs were surveyed, over 62 percent of the respondents in each population grouping indicated that the lack of financial resources was the biggest deterrent to establishing an urban forestry program (see Table 11). Examination of data in this table under "lack of financial resources" accounted for 62 to 80 percent of the responses from these communities. Furthermore, no other answer option for this question accounted for more than 19 percent of the responses in any population grouping (see Table 11). Hence, the majority of the respondents in each of the population groupings held that the lack of financial resources was the major deterrent which prevented their communities from establishing urban forestry programs.

Other indications that financial resources are a serious problem for communities with and without systematic tree care programs are also evident.

The ability of a community to finance a full-time, non-professional tree care position was found to be strongly related to population as evidenced by a chi-square significance of 0.0000 in value. According to Table 12, population groupings varied directly with the

TABLE 11.--The Deterrents That Prevented Communities in Michigan From Establishing a Systematic Tree Care Program - 1980.

Population Grouping	Deterrents That Prevented Michigan Communities From Establishing Systematic Tree Care Programs, 1980				#/% Row Total
	Lack of Financial Resources	Lack of Interest by City Fathers	Lack of Technical Expertise	Lacking for Other Reasons	
1,000 - 7,999	16/62[1]	2/8	5/19	3/12	26/47
8,000 - 25,000	14/74	1/5	1/5	3/16	19/35
25,001 - 100,000	8/80	1/10	1/10	0/0	10/18
#/% Column Total	38/69	4/7	7/13	6/11	55/100

NOTE: Percentages may not add up to 100 percent due to rounding error.

[1]Numbers in cells are the number in the category and percent of row total.

TABLE 12.--The Ability of Communities in Michigan to Finance a Full-Time, Non-Professional Tree Care Position - 1980.

Population Grouping	Ability to Finance a Full-Time Tree Care Position, 1980		#/% Row Total
	Able to Finance	Unable to Finance	
1,000 - 7,999	2/4[1]	44/96	46/39
8,000 - 25,000	17/35	31/65	48/41
25,001 - 100,000	13/57	10/44	23/20
#/% Column Total	32/27	85/73	117/100

NOTE: Percentages may not add up to 100 percent due to rounding error.

[1]Numbers in cells are the number in the category and percent of row total.

ability of a community to finance a full-time, non-professional tree care position. As can be seen from data in this table, a nearly unanimous 96 percent of the respondents in the 1,000 to 7,999 population grouping believed their communities were unable to finance such a position. Similarly, 65 percent of respondents in the 8,000 to 25,000 population grouping held the same opinion. Conversely, in the 25,001 to 100,000 population grouping 57 percent thought their community was able to finance a full-time, non-professional tree care position.

Another indication concerning the financial capabilities of communities was whether the respondents believed that their communities were financially able to formulate a tree management plan. According to Table 13, about equal percentages of the respondents (55 percent and 53 percent respectively), in the smaller and medium size population groupings believed that their communities were financially able to formulate such a plan. In relation to their inability to finance a full-time, non-professional tree care position, this finding can be interpreted as encouraging. The development of well conceived tree management plans could help maximize the efficiency and effectiveness of tree care in all communities. As can be seen from Table 13, 64 percent of the respondents in the large community grouping believe their communities were unable to finance tree management

plans. However, in relation to the capability of these larger size communities to finance a full-time, non-professional tree care position, this was a puzzling and contradictory response.

TABLE 13.--The Ability of Communities in Michigan to Finance a Tree Management Plan - 1980.

Population Grouping	Ability to Finance a Tree Management Plan, 1980		#/% Row Total
	Able to Finance	Unable to Finance	
1,000 - 7,999	24/55[1]	20/46	44/40
8,000 - 25,000	24/53	21/47	45/41
25,001 - 100,000	8/36	14/64	22/20
#/% Column Total	56/51	55/50	111/100

NOTE: Percentages may not add up to 100 percent due to rounding error.

[1]Numbers in cells are the number in the category and percent of row total.

A possible explanation for this finding might be how respondents in each of the three population groupings perceived the implications of developing tree management plans. Perhaps the respondents in the largest population

grouping believed the combination of financing a full-time tree care position and formulating a management plan would financially over-extend the capabilities of their communities. In contrast, respondents in the smaller population groupings, knowing that their communities could not finance a full-time tree care position, might have believed that responsibilities written into a management plan would always be funded on an "as available" basis. As such, this arrangement would never exceed the financial capabilities of their communities.

Perceptions About Trees and Tree Management

A series of three questions were used to evaluate the attitudes of respondents concerning the importance of trees and tree management programs in their communities. Each question in the series was constructed as a statement, to which the respondents were asked to react and record their responses. The range of answer options ranged from "strongly disagree" to "strongly agree." However, in order to facilitate the analysis, the "disagree" and "agree" types of answer choices were consolidated.

The first question asked respondents to react to the following statement:

Q-21 Please react: Shade trees increase the value of real estate in your community.

The responses to this statement are shown in Table 14. As is evident from this table, 96 percent of the respondents in the smaller and medium size communities and 87 percent of the respondents in the larger size communities agreed with this statement.

TABLE 14.--Attitudes of Respondents in Michigan Communities Regarding Whether Trees Increase the Value of Real Estate in Their Communities - 1980.

Population Grouping	Attitudes of the Respondents Regarding Whether Trees Increase the Value of Real Estate, 1980			#/% Row Total
	Disagree	Uncertain	Agree	
1,000 - 7,999	0/0[1]	2/4	44/96	46/39
8,000 - 25,000	0/0	2/4	47/96	49/42
25,001 - 100,000	3/13	0/0	20/87	23/20
#/% Column Total	3/3	4/3	111/94	118/100

NOTE: Percentages may not add up to 100 percent due to rounding error.

[1]Numbers in cells are the numbers in the category and percent of row total.

A similar, but not as strong a reaction, was obtained for the second question. This question asked the respondents to react to:

> *Q-22 Please react: Street trees should be viewed as a monetary investment by a community and managed as such.*

The responses to this statement are shown in Table 15. As compared to the first statement, 83 percent and 88 percent of the respondents in the small and medium groupings, respectively, and 91 percent of the respondents in the larger size grouping agreed with this statement (see Table 15). It was surprising that this large a percentage of respondents reacted favorably. Of the three statements given, this one had been expected to evoke large differences in opinion due to the somewhat controversial topic addressed in this statement.

The last question asked the respondents to react to the following statement:

> *Q-23 Please react: Shade trees increase the quality of life in your community.*

The responses to this statement are shown in Table 16. As can be seen from this table, over 90 percent of all the respondents in each population grouping agreed with this statement. It is also noted that the percentages in Table 16 were almost identical to the responses received for the statement in Table 14.

TABLE 15.--Attitudes of Respondents in Michigan Communities Regarding Whether Trees Should be Viewed as a Monetary Asset and Managed as Such - 1980.

Population Grouping	Attitudes of the Respondents Regarding Whether Trees Should be Viewed and Managed as a Monetary Asset, 1980			#/% Row Total
	Disagree	Uncertain	Agree	
1,000 - 7,999	1/2[1]	7/15	38/83	46/39
8,000 - 25,000	1/2	5/10	43/88	49/42
25,001 - 100,000	2/9	0/0	21/91	23/20
#/% Column Total	4/3	12/10	92/86	118/100

NOTE: Percentages may not add up to 100 percent due to rounding error.

[1]Numbers in cells are the number in the category and percent of row total.

TABLE 16.--Attitudes of Respondents in Michigan Communities Regarding Whether Trees Increase the Quality of Life in Their Communities - 1980.

Population Grouping	Attitudes of the Respondents Regarding Whether Trees Increase the Quality of Life, 1980			#/% Row Total
	Disagree	Uncertain	Agree	
1,000 - 7,999	0/0[1]	3/7	43/94	46/39
8,000 - 25,000	0/0	2/4	47/96	49/42
25,001 - 100,000	2/9	0/0	21/91	23/20
#/% Column Total	2/2	5/4	111/94	118/100

NOTE: Percentages may not add up to 100 percent due to rounding error.

[1]Numbers in cells are the number in the category and percent of row total.

Interpretation of the trends represented in the Tables 14, 15, and 16 is, in the view of the respondents, trees are aesthetic and monetary assets which should be managed as such in their communities. It must be recognized, however, that the respondents' attitudes towards the importance of trees and tree management may be different than the community-at-large. This could be due to the nature of their employment, educational background, or other factors that were not measured in this investigation.

Due to the limitations of this survey, measuring the attitudes of entire communities concerning the importance of trees and tree management was not possible. Instead, respondents were asked to evaluate attitudes of the community-at-large from their perspective. Two questions were asked in an attempt to measure the overall opinion of residents regarding the importance of trees in their community.

The first question asked was:

Q-42 How often do homeowners contact your office concerning tree-related problems in their yard or along city streets?

Responses to this question are shown in Table 17. Judging from the significance of chi-square (0.0156 in value) in this table, there is a strong relationship between community size (small, medium or large) and how often homeowners ask for assistance. Changes in the

TABLE 17.--The Frequency at Which Homeowners in Michigan Communities Contacted the Respondents Regarding Shade Tree Problems - 1980.

Population Grouping	Frequency at Which Homeowners Contacted the Respondents Regarding Shade Tree Problems, 1980				#/% Row Total
	Very Frequently	Frequently	Occasionally	Rarely or Never	
1,000 - 7,999	4/9[1]	11/24	26/56	5/11	46/39
8,000 - 25,000	11/22	19/39	13/27	6/12	49/42
25,001 - 100,000	8/35	6/26	5/22	4/17	23/20
#/% Column Total	23/20	36/31	44/37	15/13	118/100

Chi-square significance - 0.0156.

NOTE: Percentages may not add up to 100 percent due to rounding error.

[1]Numbers in cells are the number in the category and percent of row total.

largest frequency of each response from "occasionally" to "very frequently" (56, 39, and 35 percent respectively) correspond directly with changes in the population of the stratified groupings (see Table 17). This relationship was interpreted as meaning that a greater number of homeowners contacted the respondents' offices in larger communities than did homeowners in smaller communities. However, it must be remembered that homeowners in smaller communities probably have fewer people available in their local municipal government to ask for assistance and advice about shade trees. A lack of other more definitive information prevented a conclusive decision regarding whether this relationship depicted that homeowner concern about trees increased with community size.

The second question in this series was:

Q-43 Based on the frequency of homeowners' contacts concerning tree-related problems, do you feel that trees are perceived as a valuable asset by residents of your community?

The responses to this question are shown in Table 18. As can be seen from this table, the majority of the respondents in the small, medium and large size communities (86, 88, and 91 percent respectively) believed that residents perceived trees to be a valuable asset to their community.

Based on the respondents' perception of community attitudes, results of these two questions, not

TABLE 18.--The Number of Homeowners in Michigan Communities, as Perceived by the Respondents, That Believe Trees Were a Valuable Asset to Their Community - 1980.

Population Grouping	Homeowners, as Perceived by Respondents, That Believed Trees Were a Valuable Asset, 1980		#/% Row Total
	Did Believe	Did Not Believe	
1,000 - 7,999	37/86[1]	6/14	43/37
8,000 - 25,000	43/88	6/12	49/43
25,001 - 100,000	21/91	2/9	23/20
#/% Column Total	101/88	14/12	115/100

[1]Numbers in cells are the number in the category and percent of row total.

surprisingly, indicate that the majority of residents in each population grouping recognize the values and contributions of trees. This conclusion, in combination with the respondents' view of trees and tree management, led to the rejection of one portion of the assumptions in this study; specifically that inaccurate information is not a valid reason why communities have poorly managed tree care programs.

The Perception of the Cooperative Extension Service

The third objective in pursuing this investigation was to determine how communities in the stratified population groups perceive the Cooperative Extension Service as a source of educational assistance concerning urban forestry. The primary reasons for pursuing this objective were to determine if the Michigan State University Cooperative Extension Service is a visible and well-publicized source of information and assistance regarding trees and tree management programs. Secondly, it was necessary to determine if additional extension programming in urban forestry would be beneficial to communities in the identified population groupings.

There is a strong consensus among communities surveyed in this investigation that the Cooperative Extension Service is recognized as a source of information and educational assistance. In addition, many

communities favored the idea of additional extension educational programming in urban forestry. It was unclear, however, if the use of such programming could help to increase public interest and support of tree management activities in these communities.

When asked if their community was aware of the Cooperative Extension Service as a source of information and other educational assistance concerning urban forestry, the majority of the communities surveyed in each population grouping responded affirmatively (see Table 19). As recorded in this table, 78, 82 and 96 percent of the respondents in the small, medium and large size groupings, respectively, indicated that their community was aware of the Cooperative Extension Service.

The need for additional extension programming was also explored in this questionnaire. Respondents were asked to react to the statement of whether communities wanted to see more educational programs to help increase citizen interest and support of tree management activities. Responses to this question are shown in Table 20. According to this table, the largest percentage of respondents in the medium and large population groupings, 49 and 48 percent respectively, agree with this statement. This large percentage of "agree" responses indicates a greater need for tree management programs in

TABLE 19.--The Number of Communities in Michigan That Were Aware of the Cooperative Extension Service as a Source of Information and Other Forms of Educational Assistance Regarding Urban Forestry - 1980.

Population Grouping	Michigan Communities That Were Aware of the Cooperative Extension Service Regarding Urban Forestry, 1980		#/% Row Total
	Were Aware	Were Not Aware	
1,000 - 7,999	35/78[1]	10/22	45/39
8,000 - 25,000	40/82	9/18	49/42
25,001 - 100,000	22/96	1/4	23/20
#/% Column Total	97/83	20/17	117/100

NOTE: Percentages may not add up to 100 percent due to rounding error.

[1]Numbers in cells are the number in the category and percent of row total.

TABLE 20.--Attitudes of the Respondents in Michigan Communities Regarding Whether Additional Extension Educational Programming in Urban Forestry was Desired - 1980.

Population Grouping	Attitudes of the Respondents Regarding Whether Additional Extension Programming in Urban Forestry was Desired, 1980			#/% Row Total
	Disagree	Uncertain	Agree	
1,000 - 7,999	7/16[1]	20/46	17/39	44/38
8,000 - 25,000	4/8	21/43	24/49	49/42
25,001 - 100,000	2/9	10/44	11/48	23/20
#/% Column Total	13/11	51/44	52/55	116/100

NOTE: Percentages may not add up to 100 percent due to rounding error.

[1]Numbers in cells are the number in the category and percent of row total.

these communities than in communities of the smallest population grouping.

Another question asked respondents if they believed additional extension educational programming in urban forestry would be beneficial to their communities. Responses to this question are shown in Table 21. As can be seen from this table, 47, 44, and 48 percent of the respondents in the small, medium and large size groupings, respectively, believe that such programming would be beneficial. However, as with the figures in Table 20, over a third of the respondents in each population grouping were uncertain as to whether additional programming would be helpful (see Table 21). Based on the wording of these questions, this sizeable amount of "uncertain" responses was interpreted as meaning that many respondents were unsure as to how the public would react to additional programming, rather than meaning that additional extension programming was not needed.

TABLE 21.--Attitudes of the Respondents in Michigan Communities Regarding Whether Additional Extension Educational Programming in Urban Forestry Would be Beneficial to Their Communities - 1980.

Population Grouping	Attitudes of the Respondents Regarding Whether Additional Extension Programming Would be Beneficial to Their Communities, 1980			#/% Row Total
	Yes	Uncertain	No	
1,000 - 7,999	21/47[1]	15/33	9/20	45/39
8,000 - 25,000	21/44	17/35	10/21	48/41
25,001 - 100,000	11/48	9/39	3/13	23/20
#/% Column Total	53/46	41/36	22/19	116/100

NOTE: Percentages may not add up to 100 percent due to rounding error.

[1]Numbers in cells are the number in the category and percent of row total.

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary of Findings

The results of this investigation offer meaningful insights into the status of urban forestry activities in Michigan communities (1,000 to 100,000 population). Several important findings are summarized as follows:

In general, municipal tree management in the majority of these communities is poorly developed, primarily as a result of inadequate financial resources available for investment in urban forestry activities. Moreover, this low level of municipal tree care is also partially attributable to insufficient use of such urban forestry management tools as tree inventories, tree management plans, and shade tree commissions or tree boards. However, contrary to the original assumptions of this study, lack of accurate information regarding the importance of trees and tree management is not believed to be a contributing factor to this low level of municipal tree management.

Classified on the basis of population, the following findings regarding existing tree management activities in Michigan communities are evident. The

majority of communities in the medium and large size communities over 8,000 in population have enacted municipal tree ordinances (55 and 74 percent respectively). Secondly, 57 percent of the communities between 8,000 and 25,000 population have established systematic tree care programs as compared to 37 percent and 39 percent of the small and large size communities. In addition, it is noted that no community over 25,000 in population in Michigan has appropriated less than $10,000 for tree care activities in 1980. Moreover, 57 percent of the respondents in communities over 25,000 (large size communities) indicated that their community can finance a full-time, non-professional tree care position.

Overall, attitudes of the survey respondents, speaking on behalf of their communities, regarding the importance of trees and tree management is very positive. The results of the survey indicate that more than 80 percent of the respondents in each population grouping (small, medium and large communities) believe that trees increase the value of real estate, are monetary assets that should be managed accordingly, and increase the quality of life in their communities. In addition, a similar percentage of the respondents in each grouping think that the majority of the residents in their communities believe trees are a valuable asset.

Finally, there is a strong consensus among the Michigan communities surveyed that the Cooperative Extension Service is available as a source of information and educational assistance regarding urban forestry. In addition, 49 and 48 percent of the respondents in medium and large size communities, respectively, believe that additional extension educational programming in urban forestry is needed to help stimulate public interest and support for tree management activities. Although over 40 percent of the respondents in each population grouping (small, medium and large) note that additional extension programming in urban forestry would be beneficial to their community, nearly a third of the respondents in each grouping are uncertain. This finding is interpreted as meaning that those respondents are unclear as to how the public in their community will react to such programming.

Conclusions

Many of the conclusions drawn in this study appear to have widespread application to urban forestry practitioners and interested lay people who strive to achieve proper management of community shade tree resources. These conclusions are separated into five points that concern this investigation:

1. The use of the "Total Design Method" is highly recommended whenever mail surveys are determined to be the most appropriate research method available to gather information. The superior response rate achieved is worth the extra amount of work required to perform a "Total Design Method" survey.

2. The lack of financial resources is a major constraint in explaining why communities between 1,000 and 100,000 population have poorly managed or nonexistent tree care programs. Assuming that the results of this survey do not change dramatically in the short term, these communities will probably need outside financial assistance, if municipal tree management is expected to improve in the future.

3. In this investigation, there was a relationship between population size and the level of municipal tree management existing in communities. Communities between 8,000 and 25,000 population have a slightly higher level of municipal tree management than do communities in the smaller or larger population groupings. However, in general the level of municipal tree management is low in all three population groupings (small, medium and large communities) and is in need of improvement.

4. Ill-informed attitudes and beliefs concerning trees and tree management programs are not a contributing reason why communities between 1,000 and 100,000 in

population have poorly developed tree care programs. On the contrary, results of this investigation indicate that most individuals are remarkably well-informed and receptive to the importance of trees and tree management programs.

5. The Cooperative Extension Service is a well-publicized and available source of information and other types of educational assistance for all communities surveyed. In addition, many of these communities would like to see additional extension educational programs offered in the area of urban forestry.

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LITERATURE CITED

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APPENDICES

APPENDIX 1

THE LIST OF ASSUMPTIONS PERTAINING TO URBAN FORESTRY ACTIVITIES IN MEDIUM SIZE COMMUNITIES

Assumptions

1. Under the present conditions of the economy, most medium size communities are financially strapped to provide such things as an urban forestry program.

2. Most medium size communities perform tree care on an emergency basis only.

3. Most medium size communities have no formal plans as to what should be done with their trees.

4. Most medium size communities cannot afford to hire a full-time forester, crew, and equipment, but do have enough resources to formulate a management plan that can be used to guide their tree care activities in the future.

5. Most medium size communities have never conducted a tree inventory.

6. Most medium size communities have weak or no shade tree ordinances established in their community.

7. Most medium size communities do not require building contractors to plant trees or save existing vegetation in newly constructed subdivisions.

8. Most medium size communities feel that tree management is a service that their community should provide.

9. Because most medium size communities lack the resources for a major urban forestry program, they will only seek elementary tree management needs (such as tree planting, pruning, and tree removal) in formulating a management plan.

10. Most medium size communities do not realize that trees are an investment worth protecting and have other values beside shade and aesthetics.

11. Most medium size communities are unaware of the federal/state cooperative forest management grants that are available for urban forestry technical assistance.

12. Most medium size communities are unaware that trees can be included as a component in many of the community development or other similar governmental grants that are available.

13. Most medium size communities perceive consultants as costly and hence would avoid engaging them for help in urban forestry matters.

14. In most medium size communities, citizen participation in community affairs is poor, but there would be enough interest to establish a shade tree commission.

15. Most medium size communities are unaware as to who to turn to for help in urban forestry matters and therefore approach local sources such as tree services, landscape architects, or nurseries.

16. The Cooperative Extension Service is not well-publicized to these medium size communities as a source of information and other educational assistance concerning urban forestry.

17. Most medium size communities would like to see more public education on urban forestry and other matters to increase citizen interest and support of local governmental activities.

APPENDIX 2

EXAMPLES OF THE SURVEY QUESTIONNAIRE, COVER LETTERS, AND SUBSEQUENT FOLLOW-UP MATERIALS

Urban Forestry Activities

In Selected

Michigan Communities

A survey of municipal managers concerning tree management in their communities.

Department of Forestry
Michigan State University
126 Natural Resources Building
East Lansing, MI 48824
Telephone: (517) 355-0097

COOPERATIVE EXTENSION SERVICE
MICHIGAN STATE UNIVERSITY and
U.S. DEPARTMENT OF AGRICULTURE COOPERATING

FORESTRY EXTENSION
126 NATURAL RESOURCES BUILDING

EAST LANSING · MICHIGAN · 48824

Urban Forestry in Selected Michigan Communities

First, we would like to ask you several questions concerning the extent of urban forestry programming in your community. Please answer the questions to the best of your ability.

This questionnaire should take about 45 minutes to complete.

I. Urban Forestry Data

Q-1 Are municipally-owned trees systematically cared for in your community through an organized shade tree, street tree or other similar urban forestry program? (Circle number)

1 YES → *If yes, skip to question 5.*
2 NO

Q-2 Could you please indicate why your community does not have a shade tree program? (Circle each number that applies)

1 LACK OF FINANCIAL RESOURCES
2 LACK OF INTEREST BY CITY FATHERS
3 LACK OF CITIZEN SUPPORT
4 LACK OF KNOWLEDGE AND TECHNICAL EXPERTISE
5 LACK OF TRAINED AND QUALIFIED PERSONNEL
6 OTHER (PLEASE SPECIFY)_____
_____

Q-3 Using the responses you selected in Question 2, please indicate which one you feel is the biggest deterrent that prevents your community from establishing an urban forestry program? (Circle number)

1 LACK OF FINANCIAL RESOURCES
2 LACK OF INTEREST BY CITY FATHERS
3 LACK OF CITIZEN SUPPORT
4 LACK OF KNOWLEDGE AND TECHNICAL EXPERTISE
5 LACK OF TRAINED AND QUALIFIED PERSONNEL
6 OTHER (PLEASE SPECIFY)_____
_____

Q-4 Can it be assumed that tree care is an item which is performed on an emergency basis only, as circumstances (hazard reduction due to Dutch Elm Disease, ice storms, etc.) dictate? (Circle number)

1 YES
2 NO

Q-5 Are there presently <u>any</u> funds being allocated by your community for tree care? (i.e. planting, pruning, removals, spraying, etc.) (Circle number)

1 YES
2 NO → *If no, go to question 6.*

(If yes, please answer 5a-d)

Q-5 a. How much money was appropriated for all operations?_____

_____

b. Please describe the operations that were funded _____

_____

_____

_____

c. Under whose supervision (title, department, etc.) were these operations carried out?_____

_____

d. What percentage of these operations was contracted out to private enterprise?_____

Q-6 Besides hazard reduction, (removing dead or injured trees that threaten the public's welfare) do you think street tree management is a service that local government should provide? (Circle number)

1 YES
2 NO

Q-7 Do you feel your community is financially able to employ a <u>full-time</u> person to be responsible for the care and maintenance of street trees? (Circle number)

1 YES
2 NO

Q-8 Is there a formal plan (e.g. Master Street Tree Plan, Comprehensive Plan, etc.) that explains how the trees in your community should be managed? (Circle number)

1 YES
2 NO → *If no, go to question 9.*

(If yes, please answer 8a)

Q-8 a. Which of the following items are addressed in this plan? (Circle each number that applies)

1 TREE PLANTING NEEDS AND PRIORITIES
2 PRUNING NEEDS AND PRIORITIES
3 REMOVAL PRIORITIES
4 PEST MANAGEMENT PRACTICES
5 MUNICIPAL NURSERY OPERATIONS
6 INVENTORY DATA
7 FUTURE PERSONNEL REQUIREMENTS
8 EDUCATION AND PROMOTION POLICY
9 OTHER (PLEASE SPECIFY)_____

Q-9 Do you feel that your community is financially able to formulate a management plan that could be used to guide future tree care activities? (Circle number)

1 YES
2 NO

Q-10 Please react: Because most medium size communities lack the resources for a complete urban forestry program, they will only seek elementary tree management needs such as tree planting and hazard reduction priorities in formulating a management plan. (Circle number)

1 STRONGLY DISAGREE
2 DISAGREE
3 UNCERTAIN
4 AGREE
5 STRONGLY AGREE

Next, we would like to ask a few questions concerning the administrative aspects of urban forestry.

Q-11 Does your community have a municipal tree ordinance? (Circle number)

1 YES
2 NO → *If no, skip to question 17.*

Q-12 In what year was the ordinance established?_____

Q-13 Was this ordinance mainly established in response to Dutch Elm Disease? (Circle number)

1 YES
2 NO
3 UNCERTAIN

Q-14 Does your ordinance regulate the planting, maintenance, and removal of municipally-owned trees to suit your community's present needs? (Circle number)

1 YES
2 NO
3 UNCERTAIN

Q-15 Does your ordinance require building contractors to plant trees or save existing vegetation as a condition in constructing new subdivisions and plats? (Circle number)

1 YES
2 NO
3 UNCERTAIN

Q-16 Do you think your ordinance adequately regulates the planting, maintenance and removal of municipally-owned trees to suit your community's future needs? (Circle number)

1 YES
2 NO
3 UNCERTAIN

Q-17 Have the trees in your community ever been inventoried? (Circle number)

1 YES
2 NO → *If no, skip to question 21.*

Q-18 What was the date of the inventory?_____

Q-19 Is this inventory periodically updated? (Circle number)

1 YES
2 NO
3 UNCERTAIN

(If yes, please answer 19a)

Q-19 a. How is this inventory updated?_____

_____

Q-20 How is the inventory data stored? (Circle number)

1 ON COMPUTER
2 ON TREE CARDS
3 OTHER (PLEASE SPECIFY)_____

Q-21 Please react: Shade trees increase the value of real estate in your community. (Circle number)

1 STRONGLY DISAGREE
2 DISAGREE
3 UNCERTAIN
4 AGREE
5 STRONGLY AGREE

Q-22 Please react: Street trees should be viewed as a monetary investment by a community and managed as such. (Circle number)

1 STRONGLY DISAGREE
2 DISAGREE
3 UNCERTAIN
4 AGREE
5 STRONGLY AGREE

Q-23 Please react: Shade trees increase the quality of life in your community. (Circle number)

1 STRONGLY DISAGREE
2 DISAGREE
3 UNCERTAIN
4 AGREE
5 STRONGLY AGREE

-5-

In this next section, we would like to explore your community's use of government assistance programs.

Q-24 Are you aware of the existence of a federal-state cooperative assistance program that allocates funds on a 50-50 matching basis to communities for planning segments of an urban forestry program? (Circle number)

1 YES
2 NO

(If yes, please answer 24a)

Q-24 a. How did you learn of this cooperative program's existence?_____

_____

Q-25 Has your community ever used Community Development Block Grants, Federal Revenue Sharing, Land and Water Conservation Funds, or other similar construction and improvement type monies in the past? (Circle number)

1 YES
2 NO → *If no, skip to question 29.*

Q-26 Was the installation of trees included as a part of the construction or improvement project(s) that was funded? (Circle number)

1 YES → *If yes, skip to question 29.*
2 NO

Q-27 Was your community aware that tree planting was a legitimate budget item that could be included in many of these construction or improvement projects? (Circle number)

1 YES
2 NO → *If no, skip to question 29.*

Q-28 Could you please explain why trees were not included as part of the construction or improvement project(s) that was funded._____

_____

_____

Q-29 Has your community contracted consultants in the past for planning community projects? (Circle number)

1 YES
2 NO

Q-30 Please react: Most medium size communities perceive consultants as costly and hence would avoid engaging them to plan urban forestry projects. (Circle number)

1 STRONGLY DISAGREE
2 DISAGREE
3 UNCERTAIN
4 AGREE
5 STRONGLY AGREE

Q-31 Assuming less governmental spending in the future, how do you think your community might finance tree care activities that need to be performed?_____

_____

_____

_____

_____

Q-32 Does your community have a cost-share system of financing established that requires homeowners to help pay for the cost of planting trees along city streets? (Circle number)

1 YES
2 NO → *If no, skip to question 33.*

(If yes, please answer 32a)

Q-32 a. From the viewpoint of your community, do you think it would be feasible to expand this type of system to help defer costs for other types of tree care activities such as pruning, spraying or fertilizing? (Circle number)

1 YES
2 NO
3 UNCERTAIN

Q-33 Is there a shade tree commission or a tree board operating in your community? (Circle number)

1 YES
2 NO → *If no, skip to question 38.*

If yes, please answer questions 34-37, then skip to question 40.

Q-34 When was the tree commission established?_____

Q-35 How many members are on the commission?_____

Q-36 Are any of these members professional arborists or horticulturists? (Circle number)

1 YES
2 NO

Q-37 What activities does this commission coordinate? _____

_____

_____

(Please skip to question 40)

(From Question 33)

Q-38 How strong do you feel the citizen participation is in your community's affairs and projects? (Circle the number that applies the closest to your community)

1 VERY ACTIVE IN DECISION-MAKING ABOUT COMMUNITY AFFAIRS
2 ACTIVE, BUT LEAVES DECISION-MAKING TO PUBLIC AND ELECTED OFFICIALS
3 RARELY ACTIVE, CONCERNED ONLY WHEN MATTERS BECOME CONTROVERSIAL
4 INACTIVE

Q-39 Do you think there would be enough public support for a tree commission responsible for coordinating shade tree activities in your community? (Circle number)

1 YES
2 NO
3 UNCERTAIN

Q-40 Do other community groups consider trees in their planning and activities? (Circle each number that applies)

1 BEAUTIFICATION COMMISSION
2 GARDEN CLUB
3 CHAMBER OF COMMERCE
4 ROTARY, OPTIMISTS OR OTHER SIMILAR GROUP
5 OTHER (PLEASE SPECIFY) _____
6 NO OTHER GROUP CONSIDERS TREES IN THEIR ACTIVITIES

Q-41 Is Arbor Day or Week officially observed by your community? (Circle number)

1 YES
2 NO

Finally, we would like to ask a few questions concerning your community and who it contacts for help and advice.

Q-42 How often do homeowners contact your office concerning tree-related problems in their yard or along city streets? (Circle number)

1 VERY FREQUENTLY
2 FREQUENTLY
3 OCCASIONALLY
4 RARELY
5 NEVER

Q-43 Based on the frequency of homeowner contacts concerning tree-related problems, do you feel that trees are perceived as a valuable asset by residents of your community? (Circle number)

1 YES
2 NO

-8-

Q-44 If your community requires help or information in regards to street tree problems, who do you contact for advice? (Circle each number that applies)

1 MICHIGAN DEPARTMENT OF NATURAL RESOURCES
2 LOCAL TREE CARE COMPANY
3 COUNTY EXTENSION OFFICE
4 UNIVERSITY CAMPUS SPECIALISTS
5 LOCAL COLLEGE OR VOCATIONAL SCHOOLS
6 CONSULTING ARBORISTS
7 LANDSCAPE ARCHITECTURE CONSULTANTS
8 INTERNATIONAL SOCIETY OF ARBORICULTURE
9 OTHER (PLEASE SPECIFY) _____

Q-45 Is your community aware of the Cooperative Extension Service as a source of information and other educational assistance concerning urban forestry? (Circle number)

1 YES
2 NO

Q-46 Please react: Most medium size communities would like to see more educational programs on urban forestry matters to help increase citizen interest and support in tree management activities. (Circle number)

1 STRONGLY DISAGREE
2 DISAGREE
3 UNCERTAIN
4 AGREE
5 STRONGLY AGREE

Q-47 From the viewpoint of your community, would additional extension educational programming (in areas such as pruning trees to prevent storm damage, tree species selection for city streets, insect and disease management, etc.) increase community support for a street tree program <u>at a level</u> that your community could financially manage? (Circle number)

1 YES
2 NO
3 UNCERTAIN

Q-48 Do you and your community wish to receive more information about establishing and managing an urban forestry program? (Circle number)

1 YES
2 NO

Q-49 Do you and your community wish to receive a summary of the results of this questionnaire? (Circle number)

1 YES
2 NO

Finally, in order to fully understand and interpret the study results, we urgently need to have you answer Part II, concerning the demographic characteristics of your community. Thank you.

II. Demographic Data

A. The Respondent

1. Name:_____

2. Position:_____

3. Years in that position:_____

B. The Community

1. a) Name of your municipality:_____

   b) Name of your county:_____

2. a) Present population:_____

   b) Population as of the 1970 census:_____

   c) Present population of county:_____

3. What is your community's legal classification? (Circle number)

   1 CITY
   2 VILLAGE
   3 TOWNSHIP
   4 COUNTY
   5 OTHER (SPECIFY)_____

4. What is the form of government within your community? (Circle number)

   1 MAYOR - COUNCIL
   2 COUNCIL - MANAGER
   3 COMMISSION
   4 TOWN MEETING
   5 OTHER (SPECIFY)_____

5. How would you describe your community's development within the past five years? (Circle number)

   1 GROWING
   2 STABLE
   3 DECLINING

6. What do you anticipate your community's development to be during the next five years? (Circle number)

   1 GROWING
   2 STABLE
   3 DECLINING

7. In your opinion, what do you think is the approximate median per capita income of the residents within your municipality? (Circle number that applies the closest to your community)

   1 $5,000 - $9,999 PER YEAR
   2 $10,000 - $14,999 PER YEAR
   3 $15,000 - $19,999 PER YEAR
   4 $20,000 - $24,999 PER YEAR
   5 $25,000 - $29,999 PER YEAR
   6 $30,000 - $34,999 PER YEAR
   7 $35,000 - $39,999 PER YEAR
   8 OVER $40,000 PER YEAR

8. What was your total municipal budget for 1980?_____
for 1979?_____
for 1978?_____

9. In general, what sort of trend do the figures in Question 8 represent? (Circle number)

1 AN INCREASE IN SERVICES PROVIDED
2 A "STATUS QUO" IN SERVICES PROVIDED
3 A DECREASE IN SERVICES PROVIDED

10. Please indicate the sources used in your 1979 annual budget to generate revenues for services provided by your community? (Circle each number that applies)

1 GENERAL PROPERTY TAX
2 SPECIAL FRONTAGE TAX
3 CITY INCOME TAX
4 VEHICLE TAX
5 MILL LEVY
6 EMERGENCY EMPLOYMENT ACT (INCLUDING CETA)
7 ENDOWMENTS
8 STATE GOVERNMENT GRANTS/ASSISTANCE
9 FEDERAL GENERAL REVENUE SHARING
10 OTHER FEDERAL PROGRAMS/ASSISTANCE
11 OTHER (SPECIFY)_____

11. Using the responses selected in question 11, please rank them (using 1, 2, 3, etc.) according to how much each source of revenue contributes to the annual municipal government. (e.g. 1 = contributes the most, 2 = contributes the second most, etc.)

_____ GENERAL PROPERTY TAX
_____ SPECIAL FRONTAGE TAX
_____ CITY INCOME TAX
_____ VEHICLE TAX
_____ MILL LEVY
_____ EMERGENCY EMPLOYMENT ACT (INCLUDING CETA)
_____ ENDOWMENTS
_____ STATE GOVERNMENT GRANTS/ASSISTANCE
_____ FEDERAL GENERAL REVENUE SHARING
_____ OTHER FEDERAL PROGRAMS/ASSISTANCE
_____ OTHER (SPECIFY)_____

12. Any comments that you think might help the Cooperative Extension Service in working with communities on urban forestry problems are appreciated:

_____
_____
_____
_____
_____
_____

Thank you for your time and effort in answering this questionnaire.

COOPERATIVE EXTENSION SERVICE
MICHIGAN STATE UNIVERSITY and
U.S. DEPARTMENT OF AGRICULTURE COOPERATING

FORESTRY EXTENSION
126 NATURAL RESOURCES BUILDING
EAST LANSING · MICHIGAN · 48824

June 5, 1980

Dear Administrator:

Currently local governments are being hard pressed to respond to their community's needs for a shade tree program because of the demand for reduced government spending and the current state of the economy. Many communities are unaware that efforts can be made to manage their trees even at low levels of financial resources that either come from local government or interested community organizations. However, the key to successful management is careful planning that will ensure efficient use of limited resources and that will eliminate wasteful spending and unworthy projects.

In this regard, your community has been selected to participate in this study in order to determine the extent of urban forestry (i.e. shade or street tree management) in selected Michigan communities. Through your participation, we will be able to put what resources we have available in this area to their best and most efficient use. We have chosen to send this questionnaire to you, the chief administrative official, because we feel that your knowledge of community affairs and municipal government programs is the most accurate in the community.

You may be assured of complete confidentiality in the process of this study and any publications that result from this project.

The results of this study will be used to design more meaningful extension education programs that will enable Michigan communities to deal more effectively with their urban forestry problems. The results will be made available to the Michigan Department of Natural Resources, the Michigan Municipal League and any other interested organizations.

The enclosed questionnaire has been designed in a convenient manner to assist you in making quick responses. Most of the questions only require you to circle the appropriate response, but a few questions do ask for a brief written reply. Please take the time to answer this questionnaire in order to make this project and its aftermath beneficial to you and other Michigan communities.

I would be most happy to answer any questions you might have concerning this project. Please write or call. The telephone number is (517) 355-0097.

Thank you for your assistance in this matter.

Sincerely,

Russell P. Kidd
Project Coordinator

Sincerely,

Melvin R. Koelling
Professor (Extension)
Project Adviser

RPK:slc

Enc.

COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
U. S. DEPARTMENT OF AGRICULTURE AND MICHIGAN STATE UNIVERSITY COOPERATING

Last week a questionnaire was mailed to you seeking information concerning the extent of urban forestry in your community.

If you have already completed and returned it to us, please accept our sincere thanks. If not, please do so today. Because shade tree management can differ dramatically from one community to another, it is important that we receive high participation from the communities that were sent questionnaires. This will mean the difference between meaningful and mediocre future extension education programs in this area. Therefore it is extremely important that you respond.

If by some chance you did not receive the questionnaire, or it got misplaced, please call me right now, collect (517-355-0097) and I will place another one in the mail today.

Sincerely,

Russell P. Kidd
Project Coordinator

Sincerely,

Melvin R. Koelling
Project Adviser

COOPERATIVE EXTENSION SERVICE
MICHIGAN STATE UNIVERSITY and
U.S. DEPARTMENT OF AGRICULTURE COOPERATING

FORESTRY EXTENSION
126 NATURAL RESOURCES BUILDING

EAST LANSING · MICHIGAN · 48824

July 3, 1980

Dear Administrator:

About a month ago, we wrote to you seeking information concerning the extent of urban forestry (i.e. street or shade tree management) in your community. As of today, we have not yet received your completed questionnaire.

Urban forestry is understandably not a high priority item for many Michigan communities. Yet many communities, regardless of size, do expend monies annually to finance tree care activities that need to be performed. We need to determine the extent of tree management in Michigan communities in order to develop extension education programs that will be truly meaningful and cost effective.

I am writing to you again because of the significance each questionnaire has to the usefulness of this study. This research project was undertaken because urban forestry activities differ dramatically from one community to another. High participation from communities sent questionnaires will enable us to construct an accurate picture of how tree management is practiced and viewed in these communities. The results of this study will then be used to design extension programs that will help Michigan communities to deal more effectively with their urban forestry problems.

In the event that your questionnaire has been misplaced, a replacement is enclosed.

Your input in this project is greatly appreciated.

Sincerely,

Russell P. Kidd
Project Coordinator

Sincerely,

Melvin R. Koelling
Professor (Extension)
Project Adviser

RPK:slc

Enc.

COOPERATIVE EXTENSION SERVICE
MICHIGAN STATE UNIVERSITY and
U.S. DEPARTMENT OF AGRICULTURE COOPERATING

FORESTRY EXTENSION
126 NATURAL RESOURCES BUILDING

EAST LANSING · MICHIGAN · 48824

August 28, 1980

Dear Administrator:

Earlier this summer you participated in a mail survey regarding the extent of tree management in your community. This was part of a research project conducted by the Department of Forestry for the Cooperative Extension Service at Michigan State University. We are pleased to report that 118 completed questionnaires (out of 150 mailed) have been returned to date. Thank you for being part of such a successful project. This letter and the enclosed contents are in answer to those who requested additional information.

The enclosed material is intended to serve as a resource package for you and your community. Hopefully it will answer many of your questions concerning the importance of urban forestry and offer guidelines and/or suggestions for any future tree management activities that you might undertake. Also included is a reference list of other educational materials that you might want to acquire and where you might go to receive additional help.

Thanks again for your participation. The results of the questionnaire are still being analyzed and are presently not available. If you have any further questions, please do not hesitate to contact this office.

Sincerely,

Russell P. Kidd
Project Coordinator

Sincerely,

Melvin R. Koelling
Professor (Extension)
Project Adviser

RPK:slc

Enc.

APPENDIX 3

THE LIST OF COMMUNITIES SURVEYED IN THIS INVESTIGATION

1. Adrian
2. Albion
3. Allegan
4. Allen Park
5. Alma
6. Alpena
7. Bangor
8. Battle Creek
9. Bay City
10. Benton Harbor
11. Berkely
12. Beverly Hills
13. Big Rapids
14. Birch Run
15. Birmingham
16. Bloomfield Hills
17. Brighton
18. Buchanan
19. Burton
20. Cadillac
21. Caro
22. Centerline
23. Charlevoix
24. Charlotte
25. Cheboygan
26. Clare
27. Clawson
28. Coldwater
29. Corunna
30. Dearborn Heights
31. DeWitt
32. Dowagiac
33. East Detroit
34. East Grand Rapids
35. East Lansing
36. Eaton Rapids
37. Ecorse
38. Escanaba
39. Farmington
40. Farmington Hills
41. Fenton
42. Ferndale
43. Flat Rock
44. Flushing
45. Frankenmuth
46. Franklin
47. Fraser
48. Garden City
49. Gaylord
50. Gladstone
51. Grand Blanc
52. Grand Haven
53. Grand Ledge
54. Grandville
55. Greenville
56. Grosse Pointe
57. Grosse Pointe Farms
58. Grosse Pointe Park
59. Grosse Pointe Shores
60. Grosse Pointe Woods
61. Hamtramck
62. Hancock
63. Harper Woods
64. Hastings
65. Hazel Park
66. Highland Park
67. Hillsdale
68. Holland
69. Houghton
70. Howell
71. Hudson
72. Huntington Woods
73. Inkster
74. Ionia
75. Iron Mountain
76. Ironwood
77. Ishpeming
78. Kentwood
79. Lapeer
80. Lathrup Village
81. Lincoln Park
82. Ludington
83. Madison Heights
84. Manistee
85. Marquette
86. Marshall
87. Mason
88. Melvindale
89. Menominee
90. Milan
91. Milford
92. Monroe
93. Montrose
94. Mount Clemens
95. Mt. Pleasant
96. Munising
97. Muskegon
98. Muskegon Hieghts
99. Negauwee
100. New Baltimore
101. Niles
102. Northville
103. Norton Shores
104. Novi
105. Oak Park
106. Owosso
107. Paw Paw
108. Petoskey
109. Plainwell
110. Pleasant Ridge
111. Plymouth
112. Portage
113. Port Huron
114. River Rouge
115. Riverview
116. Rochester
117. Rogers City
118. Romeo
119. Romulus
120. Roosevelt Park
121. Roseville
122. Royal Oak
123. St. Clair
124. St. Clair Shores
125. St. Johns
126. St. Joseph
127. St. Louis
128. Saline
129. Sault Ste. Maire
130. Southgate
131. South Haven
132. Sterling Heights
133. Sturgis
134. Tawas City
135. Taylor
136. Tecumseh
137. Three Rivers
138. Traverse City
139. Trenton
140. Troy
141. Utica
142. Walker
143. Wayne
144. Westland
145. Whitehall
146. Williamston
147. Woodhaven
148. Wyoming
149. Ypsilanti
150. Zeeland

APPENDIX 4

THE FORMULA AND CALCULATIONS USED TO DETERMINE MEAN ANNUAL PER CAPITA EXPENDITURES FOR TREE CARE IN THIS STUDY

Formula:

$$\text{Mean Annual Per Capita Expenditure for Tree Care for Each Population Grouping} = \frac{\frac{\text{Funds Appropriated - 1980 Community Population}}{\text{Total Number of Communities in Each Population Grouping}}}{}$$

1,000 - 7,999 Population Grouping

$$\text{Mean Annual Per Capita Expenditure for Tree Care} = \frac{\$67.22}{32}$$

$$= \$2.10$$

8,000 - 25,000 Population Grouping

$$\text{Mean Annual Per Capita Expenditure for Tree Care} = \frac{\$98.80}{35}$$

$$= \$2.82$$

25,001 - 100,000 Population Grouping

$$\text{Mean Annual Per Capita Expenditure for Tree Care} = \frac{\$33.51}{14}$$

$$= \$2.39$$