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AN EVALUATION OF TWO METHODS OF RELATING ENVIRONMENTAL INTERPRETATION TO URBAN RESIDENTS OF DETROIT, MICHIGAN

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AN EVALUATION OF TWO METHODS OF RELATING ENVIRONMENTAL INTERPRETATION TO URBAN RESIDENTS OF DETROIT, MICHIGAN

By

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ABSTRACT

AN EVALUATION OF TWO METHODS OF RELATING ENVIRONMENTAL INTERPRETATION TO URBAN RESIDENTS OF DETROIT, MICHIGAN

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Freeman Tilden (1977) stated that interpretation must relate to the visitor to be effective. Two methods of relating to urban audiences are often discussed: the explanation of the natural environment through analogies to similar life and systems in the city and interpretation of the natural aspects of the urban environment. An evaluation of the effectiveness of these two methods is the objective of this research project.

The two methods were operationalized via slide-tape programs. A total of 562 visitors to Belle Isle Urban Nature Center in Detroit, Michigan viewed the programs and evaluated them with respect to enjoyment and knowledge gain. Subjects came from the city of Detroit and its suburbs and included a representative mix of age, educational, and racial groups.

For the study population as a whole, little difference exists in the program evaluations. Different subgroups, however, were found to have different

preferences. Non-whites preferred the programs interpreting the urban environment, while whites tended to favor the programs using analogies.

To my parents,

for their support and encouragement.

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CHAPTER 1

INTRODUCTION

With increasing urbanization has come an increasing alienation between people and the natural environment. Whereas man once needed an intimate knowledge of this environment to survive, survival today, for most, depends on the man-made environment and interactions with other people. Thus, two characteristics of urban populations are evident with respect to nature: a lack of awareness and a lack of knowledge.

Residents of urban areas are more familiar with and more knowledgeable about the man-made environment than the natural (Lewis, 1975; Kaplan, 1977). Most people lack the interest or opportunity to learn about nature firsthand, and what knowledge they do gain is usually distorted. Books often portray animals as humans in fur coats or as having human personalities (More, 1977). Zoos and gardens exhibit animals and plants in unnatural settings. Television introduces viewers to the world of plants and animals, but to those of far away places rather than those of their own neighborhoods. Ladd (1977:16) notes,

> It is likely that children in the United States know more about nature in distant lands than they do about the natural features in their own cities, neighborhoods, and backyards.

In addition to lacking knowledge about the natural environment, urban populations lack an awareness of it. This lack of awareness is due not only to the exclusion of natural elements from the man-made environment, but to the abundance of environmental problems that now exist. People who are constantly subjected to these problems, such as air and water pollution, soil erosion, and the destruction of plant and animal life, generally become conditioned to them. Thus, the problems become no more than inconveniences that must be tolerated. However, as Hanson (1977:171) wrote,

> the mechanisms that allow people to go about their daily activities in an urban setting . . . are really mechanisms that require them to ignore much of their environment.

Lately there has been a growing feeling that this lack of knowledge and awareness is detrimental. This feeling can be attributed to two factors. First, interaction with nature is believed to aid in physical and mental development (Sharpe, 1976; Terry, 1971; Kaplan, 1977). Second, with urbanization has come an increased ability to affect the natural environment. To do so efficiently, man must understand the workings of nature and the consequences of his actions (Terry, 1971).

Interpretation

One tool for reacquainting people with the natural environment is interpretation. Through it, the complex interactions of nature can be explained. Interpretation, as defined by Risk (1978:159),

> is the translation of the technical and often complex language of the environment into non-technical form, with no loss of accuracy, so as to create in the listener sensitivity, awareness, understanding, enthusiasm and commitment.

The effectiveness of interpretation, according to many, depends on how well it relates to the visitor (Sharpe, 1976; Field and Wagar, 1976; Hanna and Silvy, 1977). Freeman Tilden, a pioneer in the philosophy of interpretation, states as the first of his six principles:

> Any interpretation that does not somehow relate what is being displayed or described to something within the personality or experience of the visitor will be sterile. (Tilden, 1977:9)

Consequently, for an urban audience, interpretation should be designed to relate specifically to the experiences that are a part of urban life.

Little emphasis, however, is given to the urban environment in most interpretation. It is today, as it was in its beginnings, based mainly in the natural sciences (Magill, 1978). Training for interpretors falls into three major areas of study: natural science and natural resources, communication, and behavioral sciences (Kuehner, 1977). Johnson compiled a list in 1977 of

22 colleges and universities in the United States which offered masters level graduate work in interpretation or a closely related field. Not one of these offered a course dealing with urban interpretation, urban populations, or urban resources as part of their specific interpretive classes. Further, most interpreters work in relatively undisturbed areas, interpreting the natural life that exists on-site (Magill, 1978).

Thus there is a need to learn more about effective interpretation in an urban setting. To begin providing such information is the purpose of this study.

The Research Project

There are two methods of relating interpretation to urban audiences currently being discussed in the literature. The first of these involves the use of analogies to explain the natural environment. Here the familiar life, structures, and systems of the city are used to foster an understanding of similar, though unfamiliar, components of and interactions in the natural world.

The second method of relating calls for interpretation of the urban environment itself including not only the natural aspects of a city, such as the plants, animals, and geology; but the man-made, the buildings, sewer and transportation systems, etc. The proponents of this method contend that people should be knowledgeable about and will

be interested in the things that surround them and affect their lives. "Too often we feel we must remove ourselves and our constituents from the urban situation before we can begin to interpret the environment" (Wallin, 1976:331).

While discussion of the desirability of these two methods has blossomed and programs using them have been implemented, no research has been directed toward measuring their effectiveness. The success of these two types of interpretation can be determined by answering two questions:

1. To urban audiences, how acceptable are these two methods as compared to more traditional methods of interpretation? Specifically, how enjoyable and interesting, and
2. Do these two methods aid in the goals of interpretation: sensitivity, awareness, understanding, enthusiasm, and commitment (Risk, 1976:159)?

The present study proposes to begin answering these questions. A series of slide-tape programs were designed and produced using three test methods, or treatments: the use of urban analogies in interpreting the natural environment, interpretation of the urban environment, and the more traditional method of interpreting the natural environment without attempts to relate to urban visitors. Testing was conducted at Belle Island Urban Nature Center at Belle Isle Park in Detroit, Michigan. Nature Center visitors viewed

the programs and were asked to rate them on enjoyment and educational value as well as to provide some background information about themselves.

Objective and Hypotheses

The objective of the present study is to investigate the effectiveness of two methods of relating interpretation to urban populations. The null hypotheses being tested are that urban audiences will not evaluate the experimental programs differently when they have different treatments or themes, and that the characteristics of the visitor will have no effect on how he or she evaluates the program.

CHAPTER 2

RELATED LITERATURE

Three aspects of this study will be covered in the review of related literature: interpretation in general, interpretive research and evaluation studies, and the urban audience. Literature concerning interpretation for urban populations is limited; therefore, the literature reviewed here has been drawn from many fields including environmental education, recreation, forestry, and natural resources.

Interpretation

A good beginning for a discussion of interpretation is a definition of the subject. Unfortunately, almost everyone offers their own definition, though many cite similar characteristics. Freeman Tilden, called a pioneer of interpretive philosophy, defines interpretation as:

> an educational activity which aims to reveal meanings and relationships through the use of original objects, by firsthand experience, and by illustrative media, rather than simply to communicate factual information. (Tilden, 1977:8)

Sharpe (1976:4) quotes Don Aldridge, of Scotland, as defining interpretation as:

> the art of explaining the place of man in his environment, to increase visitor or public awareness of the importance of this relationship, and to awaken a desire to contribute to environmental conservation.

Finally, Edwards (1976:13) characterizes interpretation as "attractive communication, offering concise information, given in the presence of the topic, and its goal is the revelation of significance."

Personal preference affects not only the definition of interpretation, but its goals as well. Three major objectives are often cited:

1. to aid in the development of an awareness, appreciation, and understanding of an area on the part of the visitor,
2. to assist in the accomplishment of management goals, and
3. to promote an understanding of the sponsoring agency and its goals.

In a discussion of interpretation, Gary Everhardt, Director of the National Park Service, alludes to all three objectives.

> Today we view interpretation not as the luxury it may have been considered in the past, but as a cornerstone of good park management. For interpretive programs not only foster an awareness and understanding of park features, but they also present an opportunity to affect the attitudes of visitors about the lands held in public trust and about their total environment. (Sharpe, 1976:xi)

In 1957, Tilden proposed six principles that he believes are important for effective interpretation:

1. Any interpretation that does not somehow relate what is being displayed or described to something within the personality or experience of the visitor will be sterile.
2. Information, as such, is not Interpretation. Interpretation is revelation based on information.
3. Interpretation is an art, which combines many arts, whether the materials presented are scientific, historical, or architectural.
4. The chief aim of interpretation is not instruction, but provocation.
5. Interpretation should aim to present a whole rather than a part, and must address itself to the whole man rather than any phase (Tilden, 1977:9).

This study was designed to test the first of these principles, that of relating interpretation to the visitor, in relation to a specific group of people: urban residents. This principle, as well as the other five, is based on one man's beliefs about interpretation. Since they were the first attempt in defining interpretation, they were and still are generally accepted as fact. Research to verify these principles, however, has been lacking. To the author's knowledge, no studies have tested any of Tilden's

principles specifically, though some may have dealt with them indirectly.

Research and Evaluation Studies

Although studies concerning the principles of interpretation have been non-existent or close to it, other aspects of interpretation have been researched. The research falls into two categories: descriptive and evaluative. Descriptive research is the most abundant and most likely the first type to have been conducted in interpretation. Studies of this type cover interpretive sites, visitors, programs, and interpreters themselves. Evaluative research is more recent and mainly deals with the interpretive technique, e.g., exhibits, slide programs, guided walks.

Descriptive Studies

Site specific studies such as "The Historic Huron River: Local Site Survey and Interpretation," by McLennan and Nazzaro, and "Site Analysis and Interpretive Development of the Allegan Pine Plains Ecosystem," by Schaddelee, gather data on the natural, historical, and cultural resources of a specific area. These data are then used in planning interpretive programs and developing intepretive master plans.

Descriptive research involving visitors has dealt mainly with visitor identification, in terms of demographic and socioeconomic characteristics, and the identification of activities visitors engage in while on site (Gramann and Field, 1978; Hanna and Silvy, 1978). However, visitor expectations prior to attending interpretive programs have also been the subject of research (e.g., Blahna and Roggenbuck, 1979).

Finally, descriptive studies have been conducted on interpretive programs and facilities (Lime, 1979) and the interpreters themselves (Hinkle, 1976).

Evaluation Research

Interpretive research has not only been descriptive but evaluative as well. The results of evaluation studies are important for three reasons. First, they can lead to increased visitor benefits, such as enjoyment and knowledge gain. Second, research results can aid in the accomplishment of management objectives. Finally, they can be used to justify the time and money spent on interpretive programs.

Evaluative Methods and Criteria

The methods used in evaluation research vary greatly depending on the purpose, scope, and scale of the research. The amount of visitor contact and information desired as well as time and monetary constraints

influence the method selected. Some common research methods include personal interview, self-administered questionnaire, and visitor observation. Two more unusual methods are the recording quizboard, with which a visitor can test his or her knowledge of a given subject (Wagar, 1976; Blahna and Roggenbuck, 1979), and Visitor Employed Photography, in which visitors are given loaded instamatic cameras and asked to film things of interest during their recreation activity (Cherem, 1978).

The criteria used in evaluation are also important and vary according to the research topic. Some criteria used in past studies include: learning, interest, enjoyment, satisfaction, pleasure, visitor behavior, and visitor use patterns (Morefoot and Blake, 1979). Additional variables commonly measured include characteristics of the interpretive message, media, facility, and program, as well as characteristics of the visitor, such as demographic and socioeconomic traits, behaviors, interests, attitudes, and beliefs.

Evaluation Studies

Because of their value in interpreting planning and programming, a number of evaluation studies have been conducted on interpretive activities. Almost all of these have dealt with the interpretive technique--exhibit, guided walk, slide program, etc. The study methods used in these

evaluations have ranged from visitor observation to personal interview.

Many evaluation studies have attempted to determine the effectiveness of existing programs. One such study was conducted at the Adirondack Museum in New York. The researchers, Shiner and Shafer (1975), used visitor observation to gauge public reaction to the Museum's exhibits. They recorded visitor sex and approximate age, and the time taken to view or listen to each of the exhibits being studied. The visitors' viewing or listening times were then compared to a previously measured total viewing or listening time for each exhibit to obtain an idea of its effectiveness.

A similar study was conducted by Kuehner (1972) at the Forest Service Interpretive Area in the Lake Tahoe Basin. Visitors were observed as they used a self-guided nature trail. For each group studied, the observer recorded the time taken to walk the trail; the group's size and composition; the sex, race, and approximate age of each member; and the behavior of a selected group member while on the trail. At the end of the trail an interview was conducted with the selected group member. The visitor was asked to respond to open-ended questions about interests, general impressions, and knowledge gained while on the trail; recall questions concerning the trail stations;

demographic characteristics such as occupation, residence, education, and age; and questions about his or her visit to the area.

A different type of program evaluation was executed by St. Clair (1972). Instead of conducting an evaluation of existing interpretive programs, St. Clair set up an experiment to test the relative effectiveness of two interpretive techniques: the slide program and guided nature walk. The experimental programs were presented at Carl G. Fenner Arboretum in Lansing, Michigan, and were publicized in advance so that the visitors self-selected which type of program they would attend. The information presented in the slide programs and on the nature walks was standardized to control for potential differences due to the interpretive message. A short questionnaire measuring knowledge recall was used to evaluate the effectiveness of these programs. A control group which had attended neither program was used for comparison.

These evaluation studies and others like them have a somewhat restricted usefulness. Those that deal with existing programs often leave too many variables uncontrolled for, thus they are effective only in providing information about the program or programs being studied. The research conducted with experimental programs, since it can control for various factors, is generally more

useful. Still, these research efforts need to be duplicated in other areas and situations to determine the extent of their generalizability.

The Urban Audience

Attitudes Toward Nature

A review of the literature concerning the environment indicates there is a general feeling that people need to be made aware of and be educated about the natural world. Urban communities, especially, "have a strong environmental education . . . need" (Heritage Conservation and Recreation Service, 1978:28). Unfortunately, there is no general consensus on how this can best be accomplished. The National Urban Recreation Study conducted by the U.S. Department of the Interior (1978:57) found that

> the need for greater understanding of urban environmental problems by citizens is well recognized, but environmental education programs are considered inadequate by educators in most cities studied.

Within the urban populations themselves, there are both negative and positive feelings about the natural environment (Kaplan, 1977; Brown and Dawson, 1978).

Negative feelings aroused in people in regard to the natural environment are generally believed to be due to an unfamiliarity with this environment. Driver and Greene (1977) cite a study by Aiello et al. of the outdoor activities of children in a suburban residential area. The

results show that neighboring families had differing attitudes about the suitability of natural areas for play areas for their children.

> While some parents actively encouraged their children to play in the woods or around the pond, others, who expressed an unfamiliarity with nearby natural areas, strongly discouraged their youngsters from visiting these places. (Driver and Greene, 1977:68)

Though the study dealt with suburban residents, these results could be extended to those urban residents who lack a familiarity with natural settings.

Unfamiliarity with the natural environment also played a part in Benjamin, Moeller, and Morrison's (1977) study of the environmental attitudes of sixth graders. They found that children from urban areas with low socioeconomic backgrounds and no environmental education training responded most negatively to natural scenes of swamp and seashore. These same children, however, felt least negative about scenes portraying some sort of environmental pollution. Hence, familiarity appeared to affect environmental attitudes.

Though these studies indicate the presence of some negative feeling toward nature on the part of urban populations, others studies indicate that there are also positive feelings. Brown and Dawson (1978) researched the attitudes and interests of urban and suburban residents of metropolitan New York in relation to wildlife and

wildlife-related recreation. The results indicate that the majority of the respondents felt wildlife was at least a moderately important part of their outdoor recreation experience. Almost three-fourths participated in the observation, feeding, or photography of wildlife; almost all believed the opportunity to take part in nature programs outside the school or home was important for children; and over one-third believed this same opportunity was important for adults.

In a study designed to aid in the redevelopment of an urban park in Detroit, Michigan, urban residents once again indicated an interest in nature activities. Approximately one-tenth of the households surveyed aspired to participate in nature walks should Belle Isle Park be redeveloped (Richards, 1974). Also, a Nature Center and nature trails were among the important activities that respondents believed should be provided.

Interest in Urban Populations

Interest in exposing urban populations to the natural environment seems to have increased greatly in the past few years. Evidence of this can be seen in the recent expansion of environmental education programs in schools and the occurrence of conferences such as the Intergovernmental Conference on Environmental Education held in the Soviet Union in 1977; the United States Forest

Service's Symposium-Fair on "Children, Nature, and the Urban Environment," also held in 1977; and the April 1979 conference of Western Interpreters Association on "Urban Interpretation."

Aiding urban people in developing a knowledge and understanding of nature has been deemed important for two reasons. First, a closeness to nature is felt to be beneficial for people and their development (Sharpe, 1976; Terry, 1971). Jensen (1973:243) states an opinion shared by many:

> In principle, what special experience does man need to bring out the best in him? What kinds of conditions need to be present? What kinds of situations need to be developed? Among other things, man needs a close and continuous relationship with natural things, with nature unspoiled. He needs to understand his oneness with and his intimate relationship to the natural world. As nearly as possible, he should come to understand, respect, and love nature.

A closeness to nature is believed to offer tranquility and challenge and foster skill development, competence, and increased self image and mental health (Kaplan, 1977; Hanson, 1977).

The second reason for the importance of a knowledge of nature lies in the promotion of each person's ability to adequately deal with environmental issues. Terry (1971:xv) suggests that

> for our representative democracy to function, our citizenry must be aware of and must understand

> their environment. The management of natural resources requires environmental understanding and participation on the part of the voting public.

A knowledge of the environment is necessary not only for effective management of natural resources, but of urban environments as well.

> Perhaps people will take an interest in the city and do something about its quality if they see it as theirs and if they understand its values and special environment. ("Interpretation," 1979:39)

Since an understanding of and a closeness to nature is considered important, and urban populations seem to be lacking in this, it follows that these people must somehow be acquainted with the natural environment. Interpretation is one manner of doing so, for the mission of Interpreters "put simply, is to create a bridge between man and nature, to help people enjoy and protect the resources which are rightfully theirs" (Cahill, 1979:7). Cahill (1979) stresses the importance of interpreting to urban residents for it is these people who, by virtue of their number, will play the greatest role in the future of nature and natural environments.

Interpreting the environment for urban populations, however, is not necessarily an easy task. Generally, past interpretative efforts have dealt with relatively undeveloped landscapes and people that elected to spend their leisurely moments in these areas. It is not known whether

the methods of interpretation that have proved effective with these people will also prove effective with urban populations. Schneider notes that a naturalist "may try to project his values on the urban child and find his values rejected because the child lacks the experience to base nature values on" (Reid, 1970:29). Magill (1978) suggests that research is needed for interpretation in urban areas. He cites the need for better techniques, better methods of gaining interest, and improvements in the information and education programs.

Relating Interpretation to Urban Audiences

The first of Tilden's six principles, that interpretation must relate to the visitor in order to be effective, is one upon which there is general agreement. Questions arise, though, in determining how to relate to the visitor. With respect to the urban audiences, there are at least three different ways of relating. One is through the interpretive method--using familiar communication systems, language and music.[1] Two other methods of relating to urban audiences work through the interpretive message. The first uses analogies to familiar life,

[1]This manner of relating was used in a summer nature program in the city of Tustin, California. The sponsoring agency used a portable television tape system, the idea of which was very familiar, to get the participating children involved in the planned programs (Thomas, 1978).

structures, and systems of the city to explain similar life and interactions in the natural environment. The second interprets the more familiar urban environment, including both its natural and man-made aspects.

The use of analogies in urban interpretation is fairly new but the idea has been spreading. Lewis (1975:22) believes that "for the inner-city youth, natural habitats become more comprehensible when presented as a familiar concept: neighborhoods in a city." Hence, in interpretation with these youths, he stresses the idea of a "Nature City" that has parallels in both function and organization to their city. Other examples of the use of urban analogies may also be found. In a program designed as part of a research project, St. Clair (1972) compares a milkweed plant and the insects on it to a tenement house and its residents. Finally, in an exhibit in the Forest Park Nature Center of the Peoria Park District in Illinois, the terms "occupation" and "street address" are used to aid in the explanation of "niche."

Interpretation of the urban environment itself is a relatively new concept. Its possible focus includes not only the natural elements of a city, but its buildings, roadways, sewer systems, and more. Two innovative programs developed using this method are the "Gutter Walk" and "Supermarket Walk" (Wallin, 1976). Designed by the

interpretive staff of the East Bay Regional Park System in the San Francisco-Oakland, California area, the programs encourage the participants to explore the uses and sources of, along with the story behind, the items they encounter along a city street or in a food market.

The evaluation of three approaches to interpretation in relation to their effectiveness in relating to urban audiences is the subject of this research project. The approaches, or treatments, being tested are:

1. The more traditional orientation, where the natural environment is interpreted and no attempt is made to relate to urban visitors specifically,
2. interpretation of the natural environment using urban analogies, and
3. interpretation of nature in the urban environment.

The following chapter contains an explanation of the methods used in the research.

CHAPTER 3

METHODS

Study Design

Two methods of relating interpretation to urban audiences are being evaluated: urban analogies and interpretation of the urban environment. Since programs using these methods are not widespread and the effects of various factors need to be controlled, it was decided to conduct the testing using experimental programs. The slide-tape format was used in designing these programs as it was considered the best interpretive technique for the purposes of this study.

The programs were shown to visitors at Belle Isle Urban Nature Center in Detroit, Michigan. Each visitor evaluated the programs and supplied background information about themselves through a self-administered questionnaire. The study was conducted on weekends during August and September 1979. Following is a summary of the design and production of the slide-tape programs and the questionnaire, a description of the testing site and method of presentation, and an explanation of the study objective and hypotheses and the statistical techniques used in data analysis.

Development of the Slide-Tape Program

Three treatments were used in developing the experimental programs: (1) urban analogies (analogy), (2) interpretation of the urban environment (urban), and (3) interpretation of the natural environment without reference to the urban (traditional). The third treatment was used for control purposes.

The effectiveness of the programs was evaluated by the people who viewed them. Each group watched two programs, a traditional and either an analogy or an urban. Thus, the evaluations of the analogy and urban programs could be compared with the evaluations of the traditional program. The traditional program, then, functioned as a control.

To avoid exposing the subjects to the same material twice, and, at the same time, control for program content, two themes were selected: plant and animal. Both themes were used with each treatment in designing a total of six programs:

1. Analogy plant
2. Urban plant
3. Traditional plant
4. Analogy animal
5. Urban animal
6. Traditional animal

Each group of visitors saw two programs: (1) a traditional program acting as a control and (2) one of the experimental programs--analogy or urban. Themes for the

programs were selected so that each subject was exposed to one animal and one plant program. Thus, each group viewed one of the four program combinations:

1. Traditional plant / Analogy animal
2. Traditional animal / Analogy plant
3. Traditional plant / Urban animal
4. Traditional animal / Urban plant.

The sequencing of programs within each combination was alternated between groups of subjects to control for possible order effects.

The message given in all six programs was kept as consistent as possible in order to control for its possible effects on the evaluations. Both the plant and animal programs identify and describe the plant or animal life in the area and explain why this life exists there. The traditional and analogy programs contain information about plants and animals found in the more natural areas on Belle Isle. This is in keeping with most interpretive programs currently in operation which tend to interpret the life on their site. Both cover exactly the same plants and animals.[1] The analogy programs, however, differ from the traditional in that analogies are made to city life, referring specifically to Detroit whenever possible. An example of this can be seen in the comparison of a

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[1]There is an exception where one plant was deleted from the analogy program due to time constraints.

portion of the script and slides of both programs, Figures 1 and 2.[1]

In contrast to the analogy and traditional, the urban programs portray the plants and animals living in the City of Detroit. In some cases, the plants and animals discussed are also found in the other two programs. In all cases, those in the urban programs are discussed, and usually shown, in an urban setting. Figure 3 illustrates this with a plant found in both the traditional and urban programs.

Information on the plants and animals used in the program scripts was taken from first-hand observation, personal interviews, and written materials. The photographs which illustrate the scripts also come from many sources. To be consistent with the thrust of the research, most of the slides were taken by the researchers on Belle Isle and in Detroit. While it would have been preferable to have taken all in the area, it was not possible due to time constraints. Therefore, some slides were borrowed from the collections of individuals, agencies, and three departments at Michigan State University.

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[1]Copies of the complete script and set of slides for the analogy, urban and traditional plant programs may be found in Appendix A.

1

2

"As old elms died from the Dutch Elm Disease,[1] the young white ash, which need a lot of sunlight to grow, have taken their place in the forest."[2]

Figure 1. A Sample of the Script and Slides from the Traditional Plant Program

1

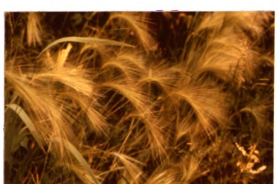
2

3

4

"Just as old buildings of Detroit are torn down and replaced with new ones, the old elms that died were replaced with young white ash."

Figure 2. A Sample of the Script and Slides from the Analogy Plant Program



"If you look closely at those (plants) here you will see the foxtail barley."

Traditional Plant Program

"In vacant lots and odd spots of soil around the city you will notice the foxtail barley."

Urban Plant Program

Figure 3. Comparative Scripts and Slides from the Traditional and Urban Plant Programs

When the scripts were ready for taping, a student was selected as the narrator. Though he had a pleasant speaking voice, was readily available, and his use kept project costs down, there are drawbacks to the use of a non-professional. Some errors were made in word pronunciation and voice inflection. Overall, however, the arrangement was acceptable.

After suitable background music was found, personnel at the Instructional Media Center at Michigan State University taped the programs. To add interest, illustrative bird songs were inserted in appropriate spots. The use of professional help in taping the programs was justified in that it yielded high quality tapes in a short period of time.

The equipment necessary to run the programs consists of a tape player, lap dissolve unit, and two slide projectors. The lap dissolve changes slides by dissolving one onto the screen while simultaneously dissolving another off. This assures that the screen is never blank, hence the programs move more smoothly. All of the equipment was interconnected so that, once set up, each program could be started when the "play" button on the tape player was pushed.

Measurement

Visitor evaluation of the test programs was measured through a self-administered questionnaire. This method was selected because it allows for the collection of more data than visitor observation and yet is less time consuming than personal interviews. Two types of information were obtained from the questionnaires: background data on the visitor and his or her evaluation of the slide-tape programs.

Background data collected from the study population includes visitor characteristics, motivations, beliefs, and preferences. The visitor characteristics included in the questionnaire are: personal traits (age, sex, race, education and place of residence); previous experience with nature centers, programs, and activities; and group size and composition. Study participants were also asked for their reason for stopping, whether a visit to the Nature Center was their main reason for coming to Belle Isle, and whether it was their idea to visit the Nature Center. Finally, preferences for different types of nature programs and opinions about the operation of nature centers were solicited from the subjects.

Evaluations of the programs were obtained through a series of questions. The visitor's perceived knowledge gain and enjoyment from the slide-tape programs were

measured. Respondents were also asked to designate the program which related best to them and their lives. This was necessary to determine if the programs designed to relate to the urban visitor did, in fact, do so. Finally, in two open-ended questions, the subjects were requested to express their specific likes and dislikes in relation to the programs.

Previous work indicates that inner city populations may have problems answering questionnaires (Fein, 1971). In his study of park users, Mills (1978) found that the inner-city residents had problems with understanding question wording. Hodgson and Fridgen (1978) felt the need to use a shortened form of their questionnaire when sampling in an inner city park. A simple and short questionnaire was also recommended by personnel at the Belle Isle Urban Nature Center based on their knowledge of the Center's visitors. Hence, for this study, the questionnaire was designed to be short and the questions clear and uncomplicated.

Most of the questions covering background information were developed with a multiple choice format where the respondent was given, depending on the question, between two and six answers and asked to select the one most closely matching his or her own. For variety, both circling and checking were used as indicators of the correct answer.

This structure was used because it allows for quick answering by the respondent and easy coding by the researchers. In instances where multiple choice was not appropriate, respondents were asked to write their responses in the blank provided.

The majority of the evaluation questions were also designed to utilize the multiple choice format. In those measuring perceived enjoyment and learning, the respondent was asked to rate the programs on a scale made up of six common evaluative terms: poor, fair, average, good, very good, excellent. This form was selected because the six possible choices, or ratings, would allow for some differentiation in the quality of the programs, but not so much that the question would become too complicated or require more precision than could be expected in visitor evaluations. The questions soliciting program likes and dislikes were open-ended.

The questionnaire itself, like the individual questions, was designed to appear as short as possible. This was accomplished by limiting the number of questions and spacing them so that the questionnaire included a substantial amount of blank space. The questionnaire was printed on colored paper, as this has been shown to increase visitor response (Smith, Nuxoll, and Galloway, 1976).

Pretesting of the questionnaire led to the rewording of a few questions in order to improve clarity. The content of the questions, however, remained as described above. A copy of the final questionnaire may be found in Appendix B.

Study Population and Site

The site of this study, Detroit, is the fifth largest city in the nation. In 1970, 1.3 million people lived within its boundaries, with a density of 10,968 people per square mile (U.S. Bureau of Census, 1974). In addition, 43.7% of Detroit's residents were black.

Testing was conducted at the Belle Isle Urban Nature Center. Located in Detroit, it receives the urban and racially mixed population necessary for this study. The Nature center also receives heavy visitation during most of the year.

Belle Isle Park is situated in the Detroit River, three miles from the center of the city. It is close to major transportation routes and a part of the Detroit city bus service. On the 985 acres that make up Belle Isle, one can find a variety of recreational activities, such as golf courses, tennis courts, baseball diamonds, a bathing beach, fishing piers, picnic facilities, as well as cultural activities, including an aquarium, children's zoo, the Great Lakes Museum, Nature Center, and Conservatory

(Department of Public Information, 1976). In addition, approximately one-fourth of the island is in virgin timber.[1]

Located on the northeastern side of the park, Belle Isle Urban Nature Center was created to "acquaint the inner-city person with their environmental surroundings and show the relationship between the quality of their surroundings and their lifestyle" (Mattes, 1979). In 1978, the second year of its operation, the Nature Center received 139,000 visitors (Glowniak, 1979). The naturalists offer guided nature walks, live animal demonstrations, puppet shows, movies, and craft sessions to school children and the general public year around.

Presentation of the experimental slide-tape program and administration of the questionnaire took place in the Nature Center in the centrally located auditorium. The auditorium seats 150 and is equipped with a projection booth, speaker system and a large projection screen.

Method of Presentation

The slide-tape programs were shown on Saturdays and Sundays during August and September of 1979. This format may have introduced some bias as it can be argued that

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[1]For more information on Belle Isle Park, see Norman Ronald Richards, "Recreation Behavioral Patterns and Characteristics of Urban Residents in Relation to Belle Isle Park, Detroit, Michigan" (unpublished Master's Thesis, 1974).

visitors on weekends in August/September are different than those who come during the week and the remainder of the year. This appears to be the case at Belle Isle. The Nature Center staff believes the Center receives the largest percentage of urban residents during these times. However, since urban residents were desired for this study, these proved to be the best times for sampling.

Each program combination (see page 25) was shown on both weekend days, at varying times, and with the program order continuously switched (plant/animal and animal/plant). At the beginning of the study, the showings were randomized. Toward the end, though, showing times were selected to insure that there would be approximately the same number of evaluations for each combination.

Due to the sporadic nature of the visitation levels, it was decided to conduct the programs when a sizable group was present in the building rather than at prearranged times. Each showing was announced over the public address system twice: at three minutes and one minute prior to the presentation.

Once an audience was seated, they were welcomed, the experiment was generally explained,[1] and they were asked to

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[1]The audience was told the purpose of the study was to gain information about the visitors to the Nature Center and obtain the evaluations of the programs. The urban/non-urban orientation of the research was not noted.

participate in the testing. Those who agreed to do so were given a questionnaire and a pencil and instructed to complete the questions concerning visitor background before the slide-tape programs began. The program evaluations were completed immediately following the program showings and the questionnaires were collected at the door as each person left.

Following each presentation, the completed questionnaires were numbered consecutively. Notes were made on the date, time, and length of the showing; number of questionnaires; number of people in the building at the time of the first announcement; and general observations on the audience. The presentations lasted approximately thirty minutes and an average of four were given per day. A summary of the programs, program combinations, and method of presentation can be found in Figure 4.

Objective and Hypotheses

The objective of this study is to evaluate the effectiveness of two methods of relating interpretation to urban audiences: urban analogies and interpretation of the urban environment. Three general null hypotheses may be stated:

H_1: There will be no difference in the evaluations of the experimental programs with differing treatments (analogy, urban, or traditional).

Group	Program Combinations	Treatment					
		Traditional		Analogy		Urban	
		Plant	Animal	Plant	Animal	Plant	Animal
1	Traditional plant/ analogy animal	E / L			E / L		
2	Traditional animal/ analogy plant		E / L	E / L			
3	Traditional plant/ urban animal	E / L					E / L
4	Traditional animal/ urban plant		E / L			E / L	

E = Program enjoyment evaluation
L = Program learning evaluation

Figure 4. Program Combinations and Method of Presentation

H_2: There will be no difference in the evaluations of the experimental programs with differing themes (plant or animal).

H_3: Characteristics of the visitor will have no effect on how he or she rates the programs.

In hypothesis H_1 and H_2, testing of the enjoyment and learning value of the programs will form subhypotheses. Finally, additional testing will be conducted to determine the effects of interactions between the program orientation, program theme and the visitor characteristics.

Data Analysis

Upon completion of the testing, the data gathered was coded and punched onto computer cards. Analysis was done by computer at Michigan State University using the Statistical Package for the Social Sciences (SPSS) system. Six statistical techniques were used:

1. Frequencies were run on the visitor background variables, giving the distribution of data for each variable.

2. Crosstabulations were also run on the visitor background variables. Crosstabulations allow the comparison of the frequency distributions of two or more variables.

3. The mean program ratings for enjoyment and learning were computed for each category in selected independent variables.[1]

Three statistics were used in determining if statistically significant differences exist between groups:

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[1]The BREAKDOWN program in SPSS.

4. Chi square: a test on the frequencies in the crosstabulations;

5. F-test: a test of the means, used with the program ratings; and

6. Analysis of variance: another test of the means. Run on program ratings and visitor background variables.

For all statistical tests, a confidence interval of 95% was used. Thus, a computed test statistic of greater than .05 meant there was no statistically significant difference between the programs.[1]

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[1]For information on statistical testing and techniques, see Hubert M. Blalock, Social Statistics (New York: McGraw-Hill Book Co., 1960).

CHAPTER 4

PRESENTATION OF RESULTS

Introduction

Through the course of the six-week study period, forty-nine program showings were conducted. Two additional showings were cancelled due to lack of subjects. In all, 562 visitors agreed to participate in the testing and watched one of the four program combinations. Of these, 286 viewed an analogy program and 276 an urban program. Seventy-three people, or 13% of the sample population, did not complete the questionnaire. The time taken to view the programs and respond to the questions was about thirty minutes.

Two types of data were obtained from the study: (1) information that profiled each respondent, and (2) his or her ratings of the slide-tape programs.[1] The visitor background data is important for three reasons. First, it allows the identification and description of the survey population. Second, it is needed to determine if the respondents were, as desired, urban residents. Finally,

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[1]Data obtained from questions concerning Nature Centers in general (Questions 8-10) were not included in these results as the information does not pertain directly to the study objective.

the data may be used for management purposes as it aids in identifying those who visit Belle Isle Urban Nature Center.

A summary of the visitor background data will be covered in the first section of this chapter. The information gathered includes the visitor's area of residence, race, sex, age, and education, as well as information on visitor groups, reasons for visiting the Nature Center, previous experience with nature centers and nature activities, and program preference. The program evaluation data will be covered in the section following this.

Profile of the Sample Population

The study design called for the use of available subjects. Thus, weekend visitors to Belle Isle who stopped at the Nature Center and decided to attend the announced slide-tape programs were sampled. The people who attended the programs made up, on the average, approximately half of the visitors in the Center at the time of each announcement. Although there were reported to be eight million visitors to Belle Isle in 1979 (Yourist, 1979), the number of visitors to the Nature Center, including school groups, was only a small part of that--139,000 (Mattes, 1979). That such a small percentage of Belle Isle visitors stop at the Nature Center is partly due to its location on the far side of the island, away from the only access point to

the island. Also, no signs exist to direct visitors to the Nature Center. Nevertheless, it is necessary to keep in mind that the group of visitors profiled in this study is a self-selected group and may or may not be representative of the larger group or possible visitors.

During the study, the slide-tape programs were randomly assigned to groups of subjects to control for possible differences in visitor characteristics. Later, tests were conducted to compare the characteristics of subjects who saw an analogy program with those who saw an urban. No statistically significant difference was found in fourteen of the fifteen visitor background variables. That a significant difference was found in group size, was due to the fact that a party of eighteen viewed an analogy program while no correspondingly large party viewed an urban.

Since almost no difference was found between the characteristics of those who saw each type of program, the data on those characteristics is presented for the test population as a whole. The United States Government 1970 Census data for race, age, sex, and education will be used to compare the sample population to the population of Detroit and the surrounding area.

Visitor Characteristics

The average visitor sampled was white, young, and highly educated. He or she had some previous experience with nature centers and nature activities. The average subject visited the Nature Center with his or her family and preferred programs on animals, nature in the country, nature in a far-away place, and outdoor nature walks.

Residence. Of the 562 subjects, 46% were Detroit residents, 33% lived in the suburbs around Detroit, and 21% traveled from other areas. In no case did visitors from any single zip code area make up more than 3% of the total population.

The three residential areas; Detroit, suburbs of Detroit, and other areas; were defined as follows. Detroit is comprised of all those areas within the external city boundaries including the incorporated areas of Hamtramack and Highland Park. The suburbs of Detroit, represented by the shaded portion of the map in Figure 5, is made up of those areas falling outside the city limits, but roughly within a twenty-mile radius of downtown Detroit. The areas classified as suburbs are listed in Appendix C. Finally, the areas that do not fall into either category are identified as "other."

Race. Approximately two-thirds of the visitors surveyed were white and one-third were black. When divided

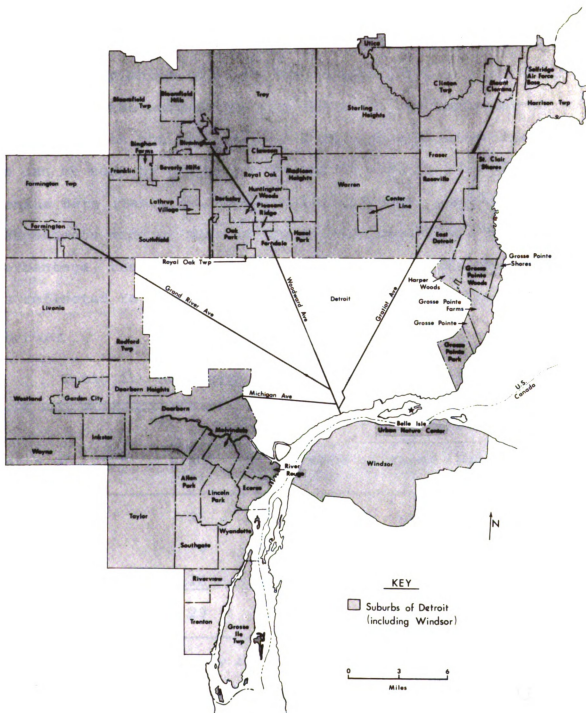

Figure 5. Areas Classified as Detroit and Suburbs of Detroit.

according to residential area, it can be seen that over half of the Detroit residents (55%) were black, while suburban residents and residents from other areas were predominantly white (93% and 74%, respectively).

For the purpose of this study, it was important to include within the population a good number of minorities. As can be seen by comparing the survey results with 1970 census data (Table 1), this was accomplished. Non-white respondents made up more of the sample population, by percentage, than the population of Detroit. This pattern is reflected to a much smaller extent in suburbanites.

Table 1. Respondent Race by Area of Residence[a]

	Subjects			Census Data[b]		
Area of Residence	Black (%)	White (%)	Other (%)	Black (%)	White (%)	Other (%)
Detroit	55	33	12	43	56	1
Suburbs	4	93	3	2	97	1
Other	14	74	11			
All respondents	29	61	10			

[a]Percentages may not total to 100 due to rounding.

[b]Taken from P_1, Census of Population and Housing, 1970, Census Tracts, Detroit, Michigan.

Sex. Females comprised slightly more than half (54%) of the sample population, due primarily to the larger number of females among suburban visitors (Table 2). Though the sex of the non-white respondents is split fairly evenly between male and female, 56% of the white respondents were females.

Table 2. Respondent Sex by Area of Residence

Area of Residence	Subjects		Census Data[a]	
	Male (%)	Female (%)	Male (%)	Female (%)
Detroit	50	50	48	52
Suburbs	41	59	49	51
Other	47	53		
All respondents	46	54		

[a]Taken from Table P_1, Census of Population and Housing, 1970, Census Tracts, Detroit, Michigan.

Age. Subjects varied in age from three to eighty-three years, with the mean being 29 and the median 27. Persons younger than eighteen made up 34% of the group and only 7% were sixty or older (Figure 6). Ten to seventeen year olds and twenty-five to thirty-four year olds were the two largest categories, each accounting for about one-fourth of the population.

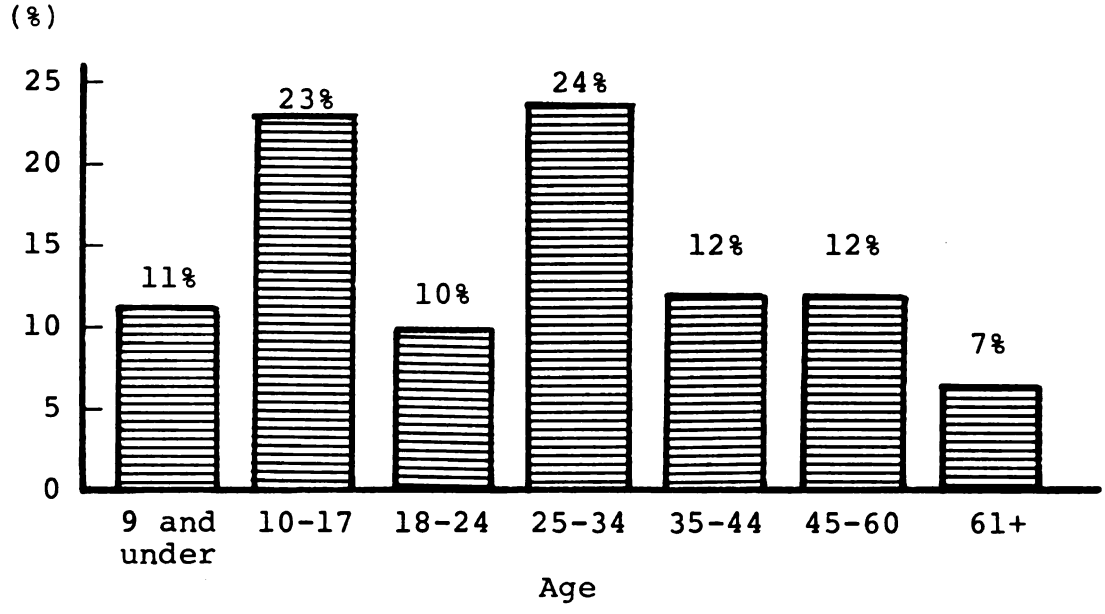

Figure 6. Age of Survey Respondents.

Visitors from Detroit and other areas included more people under the age of seventeen (37%) than those from the suburbs (29%) (Table 3). While respondents from the suburbs are fairly representative of the 1970 suburban population, those from Detroit are not. Survey respondents were younger, on the average, than residents from Detroit.

Education. Almost one-third of the respondents (29%) had completed ten to twelve years of education and over one-third more (38%) had finished at least one year of college. Visitors to the Nature Center over twenty-five years of age who participated in the study were, in general, more highly educated than residents of both Detroit and its suburbs (Table 4). Little difference was found between

Table 3. Respondent Age by Area of Residence[a]

Area of Residence	Subjects				Census Data[b]			
	5-17 (%)	18-34 (%)	35-59 (%)	61+ (%)	5-17 (%)	18-34 (%)	35-59 (%)	61+ (%)
Detroit	37	35	20	8	26	25	31	17
Suburbs	29	34	29	8	32	25	33	10
Other	37	34	25	4				

[a]For a more detailed summary, see Appendix D.

[b]Taken from Table P_1, Census of Population and Housing, 1970, Census Tracts, Detroit, Michigan.

subjects from Detroit and the suburbs in the years of education completed. Of those respondents from other areas though, a larger percentage had attended college three or more years. Finally, a higher percentage of non-whites (62%) than whites (54%) had completed at least one year of college.

Previous nature experience. About half of the sample population (48%) had previously visited Belle Isle Urban Nature Center, three-fourths (74%) had been to at least one other nature center, over two-thirds (68%) had attended at least one nature program, and almost one-third engaged in non-structured nature activities, such as bird watching and hiking, at least once a month (Table 5).

Table 4. Education by Area of Residence for Respondents Twenty-Five and Older[a]

Area of Residence	Subjects			Census Data[b]		
	High School or Less Education (%)	1-2 Years of College (%)	3+ Years of College (%)	High School or Less Education (%)	1-2 Years of College (%)	3+ Years of College (%)
Detroit	46	28	26	84	7	6
Suburbs	48	23	29	76	11	12
Other	30	24	46			

[a]Percentages may not total 100 due to rounding.

[b]Taken from Table P_2, Census of Population and Housing, 1970, Census Tracts, Detroit, Michigan.

Table 5. Previous Experience with Nature Centers and Nature Programs[a]

Question	Previous Experience		
	None (%)	1 or 2 (%)	3 or More (%)
Prior visits to the Nature Center	52	27	20
Number of other nature center visited	25	39	35
Number of programs attended	31	42	26

[a]Percentages may not total 100 due to rounding.

A single measure of prior experience was created from the four variables discussed above: times visited Belle Isle Urban Nature Center, times visited other nature centers, times attended a nature program, and participation in nature activities. The answers given to these questions were assigned a 0, 1, or 2 for answers of "none," "1 or 2," and "3 or more," respectively. These scores were then added, for each person who answered all four questions, producing a grand score which could range from 0 to 8. The grand scores were grouped and crosstabulated with area of residence. The results, presented in Table 6, show little difference between residents of the different areas. One exception can be noted: residents of areas other than

Table 6. Prior Experience by Area of Residence[a]

Score	Prior Experience	All Respondents (%)	Area of Residence		
			Detroit (%)	Suburbs (%)	Other (%)
0-2	Little	42	41	38	51
3-5	Some	40	43	41	32
6-8	Much	18	16	20	17

[a]Percentages may not total 100 due to rounding.

Detroit and its suburbs have the least amount of previous experience.

Visitor Groups

Group composition. Over two-thirds (70%) of the visitors who attended the slide-tape programs came to the Nature Center with their family or relatives. More of the residents of Detroit came alone or with friends, while more of the suburbanites came in family groups (Table 7).

Group size. Although almost half (48%) of the respondents came in groups of four to six, group size ranged from one to eighteen people. Small groups, three people or less, made up more of the population from Detroit (48%) than that from the suburbs or other areas (30% and 26%, respectively). The largest percentage of groups of seven or more came from outside Detroit (Table 8).

Table 7. Group Composition by Area of Residence[a]

Group Composition	All Respondents (%)	Area of Residence		
		Detroit (%)	Suburbs (%)	Other (%)
Alone	4	6	1	1
Family-relatives	70	62	80	72
Friends	19	24	11	19
Family-relatives/ friends	6	5	2	--
School/ organization	2	2	5	9

[a]Percentages may not total 100 due to rounding.

Table 8. Group Size by Area of Residence[a]

Group Size	All Respondents (%)	Area of Residence		
		Detroit (%)	Suburbs (%)	Other (%)
1	3	6	1	--
2-3	35	42	29	26
4-6	48	40	55	56
7 or more	14	11	16	17

[a]Percentages may not total 100 due to rounding.

Reason for Visiting Belle Isle Urban Nature Center

Twenty percent of the sample population came to Belle Isle primarily to visit the Nature Center. Three main reasons were given by respondents for stopping: (1) "to learn about plants and animals," (2) "for fun," and (3) "to find out what a nature center is" (Table 9). A reason other than those listed was specified by 12% of the subjects. The largest group of these (20%) added that they stopped "to see Belle Isle Urban Nature Center."

Detroit residents checked "to learn" and "to find out what a nature center is" most often, 30% and 32%, respectively. "For fun," however, was selected by the largest group of suburbanites (36%) and residents of other areas (31%).

Program Preference

Program preferences were measured by asking subjects to choose between four pairs of program types. These were (1) plants or animals, (2) nature in the city or the country, (3) nature in a far-away place or in your neighborhood, and (4) an indoor slide show or an outdoor nature walk. On the whole, subjects preferred programs about animals, nature in the country, nature in a far-away place, and outdoor nature walks (Table 10).

Table 9. Reason for Stopping by Area of Residence[a]

Reason for Stopping	All Respondents (%)	Area of Residence		
		Detroit (%)	Suburbs (%)	Other (%)
To learn about plants and animals	26	30	18	27
Stop at the bathroom, get a drink, or get directions	2	4	1	1
For fun	28	20	36	31
To pass the time	8	10	6	8
To find out what a nature center is	28	32	23	23
Other	12	12	15	11

[a]Percentages may not total 100 due to multiple responses.

Table 10. Program Preference by Area of Residence[a]

Program Choices	All Respondents (%)	Area of Residence		
		Detroit (%)	Suburbs (%)	Other (%)
1. Plants	13	12	11	18
Animals	76	73	79	77
Both	11	15	10	5
2. Nature in the city	22	27	12	25
Nature in the country	73	67	82	73
Both	5	6	6	2
3. Nature in a far-away place	55	57	50	59
Nature in your neighborhood	40	39	44	39
Both	4	5	6	2
4. Indoor slide program	20	19	20	23
Outdoor nature walk	72	73	70	72
Both	8	8	10	5

[a]Percentages may not total 100 due to rounding.

"Nature in the city" was selected much less often by suburbanites (12%) than by residents of Detroit or other areas (27% and 25%, respectively). This, however, was the only significant difference found in the four program pairs.

Summary

The visitor information data gathered gives a profile of the people surveyed. Almost half of the subjects were residents of Detroit. Of this group, over three-fourths were of races other than white and half were female. In addition, nearly three-fourths were younger than thirty-five years old and half of those twenty-five and older had completed at least one year of college. Of the suburban respondents, though, almost all were white, over half were female, and only two-thirds were younger than thirty-five years old. Educational status was similar to that of Detroit residents.

Of the entire sample population, three-fourths visited the Nature Center with family and/or relatives. Almost half of the subjects attended in groups of four to six people and another third came in groups of two or three. When asked the reason for stopping, three answers were selected most often: (1) "to find out what a nature center is," (2) "for fun," and (3) "to learn about plants and animals."

Finally, previous experience with nature centers and nature activities and preference for certain types of programs were measured. The results indicate that half of the people surveyed had previously visited Belle Isle Urban Nature Center, three-fourths had visited at least one other nature center, two-thirds had attended at least one nature program, and over one-third took part in informal nature activities once a month or more. The majority of the survey population indicated they prefer programs about animals, nature in the country, nature in a far-away place, and outdoor nature walks as compared to programs about plants, nature in the city, nature in your neighborhood, and indoor slide programs.

The profile of the respondents indicates that the desired sample population was obtained. A large number of urban residents and a good percentage of minorities were included in the visitors sampled. Subjects from Detroit, however, were younger, more educated, and included a larger percentage of non-whites, than the residents of Detroit in general.

Program Evaluation

The objective of this study is to test the effectiveness of two methods of relating interpretation to an urban audience: urban analogies and interpretation of the urban environment. To this end, a set of slide-tape

programs were developed and presented and the viewers were asked to rate them in relation to two dimensions: enjoyment and knowledge gained. To simplify this task, the subjects were given a scale of seven common evaluative terms and asked to circle the one that most closely represented their choice: poor, fair, average, good, very good, excellent. The data obtained from these evaluations were later tested in relation to the three study hypotheses. These are: (1) that treatment has no effect on program evaluation, (2) that theme has no effect on program evaluation, and (3) that the characteristics of the visitor have no effect on how he or she rates the program. Prior to these tests, however, the evaluation data was tested for effects due to the order of program showings. In addition, the traditional program ratings were tested for possible differences between those presented with an analogy versus an urban program.

The remainder of this chapter contains a summary of the results of the tests on program order, program grouping, evaluations by program treatment, evaluations by program theme, and the effect of selected visitor characteristics. Information will also be provided on the respondents' perceptions of which program related most to them and their lives and their comments on the programs.

Program Grouping

Each group of visitors was shown one of the four different program combinations:

1. Traditional plant / Analogy animal
2. Traditional animal / Analogy plant
3. Traditional plant / Urban animal
4. Traditional animal / Urban plant.

Counting the two possible orders of presentation of the programs within each combination, there were a total of eight showing formats. Two tests were conducted to determine if any significant difference exists in the evaluations of the same program in differing showing circumstances. Possible differences due to the order of presentation of each program within the combinations were the subject of the first test. Following this, tests were conducted on the ratings of the traditional programs when presented with an analogy program as compared to an urban. Both tests used the mean ratings of enjoyment and knowledge gain.

Program order effects. Only two of sixteen tests for program order effects yielded statistically significant differences. In the traditional plant/analogy animal combination, respondents rated the analogy animal program higher on enjoyment when it was shown last. Secondly, in the traditional plant/urban animal combination, the traditional plant program was rated higher on enjoyment when it was shown last.

Effect of analogy and urban treatments on traditional program evaluation. Of the four combinations, only one revealed a statistically significant difference in the evaluations of the traditional programs. The traditional plant program received higher rating on knowledge gain when presented with the urban animal program than with the analogy.

A word of caution must be given about the interpretation of the differences in program order and evaluation of the traditional programs. These differences could be due to variations in the visitor characteristics between groups. No attempt is made here to sort out which variables caused the differences. In most of the subsequent analyses, the order of presentation and treatment of the program presented with the traditional program will be ignored.

Evaluations

The survey respondents were requested to evaluate each program separately on two dimensions: enjoyment and learning. Mean ratings were calculated and analysis of variance and F-tests were conducted to determine if statistically significant differences exist between the program types. In analyses with the program treatments, the ratings of the traditional programs that were presented with an analogy program and the ratings of those that were presented with an urban were kept separate. This was necessary to

keep the group sizes comparable as all respondents saw a traditional program and only half saw either an analogy or an urban. The results of the tests on differences in the ratings by program treatment will be presented first. Following will be a summary of the tests on program theme.

Preferences for urban, analogy, and traditional treatments. Little difference was found between the mean enjoyment and learning ratings of the three treatments. The mean ratings for enjoyment, Table 11, were between 4.7 and 4.8, where 4.0 equals good and 5.0 very good. The ratings for learning, Table 12, were between 4.6 and 4.7. A statistically significant difference was found in the learning ratings only, between the traditional and urban pair. The traditional program received a slightly higher score, 4.7, than the urban, 4.6.

Preferences for plant and animal themes. Programs with the animal theme were rated higher on both enjoyment and learning than the plant. The difference between ratings was slightly higher for enjoyment, 0.3, than for learning, 0.1. The differences are statistically significant for both dimensions.

Preferences by treatment and theme. When program ratings are separated by both treatment and theme, four additional significant differences were found:

Table 11. Mean Program Enjoyment Ratings

Theme	Treatment				
	Traditional	Analogy	Traditional	Urban	Total
Plant:					
Number	119	132	129	125	505
Mean	4.5	4.7	4.5	4.5	4.6
Standard error	0.09	0.09	0.09	0.08	0.04
Animal:					
Number	132	125	124	129	510
Mean	5.0	4.9	4.9	4.9	4.9
Standard error	0.07	0.09	0.09	0.08	0.04
Total:					
Number	247	247	246	246	
Mean	4.8	4.8	4.7	4.7	
Standard error	0.06	0.06	0.07	0.06	

Table 12. Mean Program Learning Ratings

Theme	Treatment				
	Traditional	Analogy	Traditional	Urban	Total
Plant:					
Number	121	132	130	124	507
Mean	4.3	4.9	4.6	4.5	4.6
Standard error	0.10	0.08	0.09	0.10	0.05
Animal:					
Number	135	125	124	126	514
Mean	4.9	4.6	4.8	4.7	4.7
Standard error	0.08	0.10	0.09	0.10	0.05
Total:					
Number	251	251	246	246	
Mean	4.7	4.7	4.7	4.6	
Standard error	0.07	0.06	0.07	0.07	

Plant: The analogy program was rated higher than the urban in enjoyment and higher than the urban and traditional in learning.

Animal: The traditional program was rated higher than the analogy in learning.

Of the twenty-four program pairings, only these four yielded statistically significant differences. None were found between the traditional and urban programs or between other pairings of the traditional and analogy or analogy and urban programs.

Effects of Selected Visitor Characteristics on Program Ratings

Analysis of the program evaluations in conjunction with visitor background data will aid in determining if the programs were evaluated differently by differing groups of people. Six variables were selected which were believed to have the most effect on the program ratings. These are: age, education, previous experience with nature centers and nature activities, area of residence, sex, and race. All were analyzed to determine their effects on the program enjoyment and learning ratings in general and in relation to program treatment and theme. Analysis of variance was used with each variable to test for statistically significant differences in the ratings.

The selected visitor characteristics were first tested for their effect on the programs as a whole. Following this, they were tested with program treatment and theme. The first calculations were necessary to discover whether possible differences in mean ratings of the program treatments and themes were due to the treatments (themes) or only to differences in the rating scales of people with differing characteristics.

Effect on Ratings in General

In the overall ratings of enjoyment and learning, only race appears to have no statistically significant effect. Age, education, and previous experience seem to affect both enjoyment and learning. Residence and sex affect only learning.

Age. The highest program ratings for both enjoyment and learning were given by visitors aged nine and younger and sixty-one and older. The lowest ratings were given by those eighteen to twenty-four years old (Table 13). This variation in ratings, and those in analyses of other characteristics, may be due not to a difference in enjoyment or learning, but to a difference in evaluation scales among people of differing ages or other traits. The terms provided for evaluating the programs (poor, fair, average, good, very good, excellent) are not absolute measurements

Table 13. The Effect of Selected Characteristics on Program Evaluations[a]

Characteristics	Mean Enjoyment Rating	Mean Learning Rating
Age:		
9 and younger	5.0[b]	4.9[b]
10-17	4.7	4.8
18-24	4.4	4.4
25-34	4.8	4.6
35-44	4.6	4.6
45-60	4.8	4.8
61+	5.1	5.0
Last Year of Education Completed:		
Grades 1-6	4.8[b]	4.9[b]
Grades 7-9	4.6	4.7
Grades 10-12	4.8	4.7
College 1-2 years	4.6	4.6
College 3+ years	4.6	4.4
Previous Experience:		
Little	4.6[b]	4.6[b]
Some	4.7	4.7
Much	4.8	4.8
Area of Residence:		
Detroit	4.8	4.8[b]
Suburbs of Detroit	4.7	4.6
Other	4.7	4.6
Sex:		
Male	4.7	4.6[b]
Female	4.8	4.6
Race:		
White	4.7	4.7
Non-White	4.7	4.7

[a]Tests for statistically significant differences in mean ratings were conducted separately for enjoyment and learning in conjunction with each characteristic. For example, one test for differences was run on the mean enjoyment ratings assigned by respondents of different ages, while another test was run on the mean learning ratings assigned by respondents of different ages.

[b]Differences in mean ratings are statistically significant.

and so were subject to individual interpretation.[1] Thus, while two people may have felt the same about a program, one may have given it a "good" rating and another a "very good."

Education. For program learning, the highest score was given by respondents with the least amount of schooling, six years or less, and the lowest score was given by those with the most schooling, three or more years of college. The ratings given for enjoyment, however, show much less difference. Subjects with less than six or ten to twelve years of education rated the programs highest, while all others rated them somewhat lower.

Prior experience. The mean ratings assigned to both learning and enjoyment were identical, with those respondents having little experience giving the lowest ratings. Those with "some" and "much" experience gave progressively higher ratings.

Other variables. Area of residence and sex of the respondent seem to have had an effect only on the learning ratings. Residents of Detroit gave higher ratings to the programs than those of the suburbs or other areas. The mean rating of females was higher than that of males.

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[1]For more information, see Jum C. Nunnally, Psychometric Theory, 2nd ed. (New York: McGraw-Hill Book Co., 1978).

Effect of selected visitor characteristics variables on program treatment and theme. The selected variables were tested for their effect on the ratings program treatment and theme. Prior to testing for statistically significant differences, the mean scores were adjusted for the effects of the characteristics on the programs as a whole. With the adjustments made, only race yielded a significant difference in program treatment, while no variable did so with theme. For the mean enjoyment and learning scores for the program treatments, see Tables 14 and 15. For the mean enjoyment and learning scores for program theme, see Tables 16 and 17.

Race. The significant differences in mean ratings by racial groups occur in the learning ratings of the analogy and urban programs. While the analogy programs received a higher score from white respondents, the urban received a higher score from subjects of other races (Table 15).

Respondents' Perceptions of Which Program Related Most

After viewing the slide-tape programs, the respondents were asked not only to evaluate them, but to indicate which program related most to themselves and their lives. The basic premise of this study is that the analogy and the urban programs would relate to an urban visitor better than the traditional. Therefore, it was necessary to determine if these programs did, in fact, do so.

Table 14. Mean Enjoyment Ratings of the Program Treatments as Affected by Selected Visitor Characteristics

Characteristics	Treatment			Total
	Traditional	Analogy	Urban	
Age:				
9 and younger	5.0	5.0	5.1	5.0
10-17	4.7	4.6	4.8	4.7
18-24	4.3	4.6	4.2	4.4
25-34	4.8	4.8	4.7	4.8
35-44	4.7	4.8	4.6	4.6
45-60	4.8	5.0	4.6	4.8
61+	5.1	5.4	5.0	5.1
Last Year of Education Completed:				
Grades 1-6	4.8	4.9	5.0	4.8
Grades 7-9	4.7	4.4	4.8	4.6
Grades 10-12	4.8	4.9	4.7	4.8
College 1-2 years	4.6	4.8	4.4	4.6
College 3+ years	4.7	4.6	4.5	4.6
Previous Experience:				
Little	4.7	4.7	4.6	4.6
Some	4.7	4.8	4.7	4.7
Much	4.8	4.9	4.8	4.8
Area of Residence:				
Detroit	4.8	4.8	4.8	4.8
Suburbs of Detroit	4.6	4.9	4.6	4.7
Other	4.7	4.8	4.5	4.7
Sex:				
Male	4.7	4.8	4.7	4.7
Female	4.8	4.8	4.7	4.8
Race:				
White	4.7	4.9	4.6	4.7
Non-White	4.8	4.7	4.8	4.7

[a]See Footnote a, Table 13. Means were tested after having been adjusted for the effects of the characteristics on the programs as a whole. No statistically significant differences were found in the mean enjoyment ratings for program treatment.

Table 15. Mean Learning Ratings of the Program Treatments as Affected by Selected Visitor Characteristics[a]

Characteristics	Treatment			Total
	Traditional	Analogy	Urban	
Race:				
White	4.7	4.8[b]	4.5[b]	4.7
Non-White	4.7	4.6	4.8	4.7
Age:				
9 and younger	5.0	4.7	5.0	4.9
10-17	4.7	4.8	4.8	4.8
18-24	4.4	4.5	4.3	4.4
25-34	4.6	4.6	4.5	4.6
35-44	4.6	4.8	4.4	4.6
45-60	4.8	4.8	4.6	4.8
61+	5.1	5.1	4.8	5.0
Last Year of Education Completed:				
Grades 1-6	4.9	4.8	4.8	4.9
Grades 7-9	4.7	4.5	4.8	4.7
Grades 10-12	4.6	4.9	4.6	4.7
College 1-2 years	4.7	4.9	4.3	4.6
College 3+ years	4.5	4.3	4.4	4.4
Previous Experience:				
Little	4.6	4.6	4.5	4.6
Some	4.7	4.7	4.7	4.7
Much	4.7	5.0	4.6	4.8
Area of Residence:				
Detroit	4.7	4.7	4.8	4.8
Suburbs of Detroit	4.6	4.8	4.4	4.6
Other	4.7	4.6	4.4	4.6
Sex:				
Male	4.6	4.7	4.5	4.6
Female	4.8	4.8	4.6	4.8

[a]See Footnote a, Table 13. Means were tested after having been adjusted for the effects of the characteristics on the programs as a whole.

[b]Differences in mean ratings are statistically significant.

Table 16. Mean Enjoyment Ratings of the Program Themes as Affected by Selected Visitor Characteristics[a]

Characteristic	Theme		Total
	Plant	Animal	
Age:			
9 and younger	4.9	5.2	5.0
10-17	4.4	5.0	4.7
18-24	4.2	4.6	4.4
25-34	4.6	4.9	4.8
35-44	4.5	4.9	4.6
45-60	4.7	5.0	4.8
61+	5.1	5.2	5.1
Last Year of Education Completed:			
Grades 1-6	4.7	5.1	4.8
Grades 7-9	4.3	4.9	4.6
Grades 10-12	4.5	5.0	4.8
College 1-2 years	4.3	4.7	4.6
College 3+ years	4.5	4.8	4.6
Previous Experience:			
Little	4.5	4.8	4.6
Some	4.6	4.9	4.7
Much	4.6	5.0	4.8
Area of Residence:			
Detroit	4.6	4.9	4.8
Suburbs of Detroit	4.5	4.9	4.7
Other	4.5	4.9	4.7
Sex:			
Male	4.5	4.9	4.7
Female	4.6	4.9	4.8
Race:			
White	4.5	4.9	4.7
Non-White	4.6	4.9	4.7

[a]See Footnote 1, Table 13. Means were tested after having been adjusted for the effects of the characteristics on the programs as a whole. No statistically significant differences were found in the mean enjoyment ratings for program theme.

Table 17. Mean Learning Ratings of the Program Themes as Affected by Selected Visitor Characteristics[a]

Characteristic	Theme		Total
	Plant	Animal	
Age:			
9 and younger	4.8	5.0	4.9
10-17	4.6	4.9	4.8
18-24	4.3	4.5	4.4
25-34	4.6	4.6	4.6
35-44	4.5	4.7	4.6
45-60	4.7	4.8	4.8
61+	5.0	5.1	5.0
Last Year of Education Completed:			
Grades 1-6	4.6	5.0	4.9
Grades 7-9	4.4	4.8	4.7
Grades 10-12	4.6	4.8	4.7
College 1-2 years	4.5	4.6	4.6
College 3+ years	4.5	4.4	4.4
Previous Experience:			
Little	4.5	4.6	4.6
Some	4.7	4.7	4.7
Much	4.7	4.8	4.8
Area of Residence:			
Detroit	4.6	4.8	4.8
Suburbs of Detroit	4.6	4.7	4.6
Other	4.6	4.6	4.6
Sex:			
Male	4.5	4.7	4.6
Female	4.7	4.8	4.8
Race:			
White	4.6	4.7	4.7
Non-White	4.6	4.7	4.7

[a]See Footnote a, Table 13. Means were tested after having been adjusted for the effects of the characteristics on the programs as a whole. No statistically significant differences were found in the mean learning ratings for program theme.

The data gathered from this question were analyzed by treatment and theme. In addition, the responses were crosstabulated with the six selected visitor background variables. All analyses used chi square to test for statistically significant differences between the different treatments, themes, and visitor characteristics.

Forty-one, or 8.5%, of the respondents indicated that they thought both programs related to them, though the questions did not include a "both" answer. Likewise, five respondents wrote in "neither." As these responses do not add to the differentiation between programs, they were deleted from further analyses.

Respondents' Perceptions by Program Treatment and Theme

Visitors' responses to which program related most to them were first analyzed by the program treatment. Since the subjects selected between the analogy and the traditional or the urban and traditional programs, analyses were conducted separately within these two program pairs.

The majority of respondents felt the traditional program did not relate as well as the other program to which they were exposed. Slightly more chose the analogy program (51%) than the traditional, while the larger number (59%) chose the urban over the traditional (Table 18). Also, almost two-thirds of the subjects (65%) indicated

Table 18. Program Perceived as Relating Most

Treatment	Total (%)	Theme	
		Plant (%)	Animal (%)
Traditional	49	48	49
Analogy	51	52	51
Traditional	41	43	40
Urban	59	57	60

that the animal program related more than the plant. Analyses conducted on the combination of treatment and theme show little difference from the analyses on treatment alone. This would suggest that theme makes no difference in how each treatment related to the visitor.

Perceptions as Affected by Selected Visitor Characteristics

The data on subject perceptions of which program related most were analyzed with the six visitor characteristics used in analyses of the program evaluations. Race, age, and sex appear to have an effect on responses, while education, previous experience, and residential area do not. Race and age yield statistically significant differences between program treatments, though only in the traditional/analogy combinations. Sex yields a difference between the program themes.

Race. The analogy programs were selected more often by non-white respondents, 44%, than either the traditional or urban programs, 31% and 35%, respectively (Table 19). The difference between the traditional and analogy programs is statistically significant.

Table 19. Selection of Program Treatment as Affected by Race and Age[a]

Characteristic	Treatment			
	Traditional (%)	Analogy (%)	Traditional (%)	Urban (%)
Race:[b]				
White	69	56	59	65
Non-White	31	44	41	35
Age:[b]				
9 and younger	10	9	12	12
10-17	26	27	26	23
18-24	7	12	9	14
25-34	22	30	20	21
35-44	6	12	12	14
45-60	21	8	10	10
61+	7	2	9	6

[a]Percentages may not total 100 due to rounding.

[b]A statistically significant difference was found between the traditional and analogy programs.

Age. Differences in program selection can also be found in subjects of varying ages. Respondents aged seventeen and younger chose each program with approximately the same frequency. Those aged twenty-five to thirty-four selected the analogy program most often, while people aged forty-five and older selected the traditional.

Sex. While both sexes chose the animal program most often, females were much more likely to choose the plant program than males (Table 20). The other visitor characteristics, age, education, prior experience, area of residence, and race, appear to have no effect on preferences for program theme.

Table 20. Selection of Program Theme as Affected by Sex

	Theme	
Sex	Plant (%)	Animal (%)
Male	39	51
Female	61	49

Respondents' Comments About the Programs

To obtain specific comments from the visitors and determine what impressed them most, the subjects were asked in two open-ended questions to indicate what they liked and disliked about each program. Sixty-four percent, or 355 people, provided some sort of comment. Most comments were positive; only one-fourth of those given were negative. There were some general remarks that were given for all the programs regardless of the program treatment. Other comments, however, related specifically to the analogy and urban program treatments.

Across all programs a number of likes and dislikes were expressed. Respondents indicated a like for the habitat descriptions, informative nature of the programs, photography, commentary, species names given, and a number of specific plants and animals. In addition, some subjects mentioned that they enjoyed seeing common life and that the programs were easy for children to understand.

A number of negative comments were also expressed about the programs, many of which are in direct contrast with positive or other negative comments. The remarks given include: *too short, not enough detail, not very informative; too long, dull, slow; subjects too common; too simple for adults, too sophisticated for children; and do not like plants.* Other respondents indicated that they disliked the commentary *(boring,*

too fast, too slow), the narrator *(spoke in a monotone, slurred words)*, and the music, and they regretted that it was not a film rather than a slide-tape program.

In addition to these general remarks, comments were given that relate directly to the program treatment. With regard to the analogy programs, seventeen specific comments were made, eight of which were negative. The positive opinions include:

- *good parallel between city community and nature,*
- *I liked the analogies with modern human life, and*
- *liked the way the presentation is compared to city life for a better understanding* [*sic*].

Among the negative comments were:

- *did not care for comparison of the habitats to Detroit, and*
- *showed to* [*sic*] *much of run down buildings.*

Nineteen specific comments were given to the urban programs, approximately the same number as the analogy programs, but only one was negative. Among the things respondents indicated they liked are:

- *scenes shot in Downtown instead of suburbs,*
- *related to things everyone in the city has seen,*
- *I like the way they show you how different animals live in Detroit, and*
- *now I know the names of those plants in my alley and yard.*

The one negative statement given was that the program *related to my life in Detroit.*

As there was nothing unique in the traditional programs, it is difficult to separate out those comments which related specifically to them. Many people considered Belle Isle familiar surroundings and made positive comments in reference to this for both the traditional and analogy programs. As an example, one visitor indicated that she liked both programs because *they told all about what we can see here specifically in our Detroit area.*

Summary

To determine the effectiveness of the experimental programs, the respondents were asked to rate each program on its enjoyment and learning value. Overall, the programs were rated high on both, 4.7 on a scale of 1 to 6. The ratings were analyzed by program treatment and theme and crosstabulated with six visitor characteristics: age, education, previous experience with nature centers and nature related activities, area of residence, sex, and race. Visitors' perceptions of which program related most to them were also analyzed in relation to program treatment and theme and crosstabulated with these six variables. Finally, the visitors' comments about the program likes and dislikes were examined. All analyses included statistical tests for significant differences.

The results of these analyses show that several significant differences do exist. In treatment, the traditional programs were rated slightly higher than the urban programs on learning. In theme, the animal programs were rated higher on both enjoyment and learning than the plant programs. When the data were analyzed with the combination of treatment and theme, further differences became evident. In learning, the analogy plant program was rated higher than the traditional, while the traditional animal program was rated higher than the analogy. Also, the analogy plant program was rated higher in enjoyment and learning than the urban.

The six visitor background variables were analyzed for their effect on the program evaluations in general. These effects were then adjusted for in analyses of the program treatment and theme. Significant differences were found at all levels of analysis.

In the analysis of ratings for the programs as a whole, race is the only variable that appears to have no effect. Three variables seem to have affected both the enjoyment and learning ratings: age, education, and previous experience. In age, those respondents aged nine and younger or sixty-one and older gave the highest scores and those eighteen to twenty-four gave the lowest scores. In education, the highest enjoyment scores were

assigned by people with less than seven or ten to twelve years of schooling, while the remainder tied with the lowest. The learning evaluations showed a little more differentiation; the highest came from people with six or less years of education and the lowest from those with three or more years of college training. In both enjoyment and learning, the lowest scores were assigned by respondents with little previous experience and the highest by those with much. The final two variables, residential area and sex, appear to have had an effect only on the learning evaluations. Detroit residents and females both rated the programs highest.

Following tests on the programs as a whole, the visitor characteristic variables were tested for their effect on the program treatment and theme. Only race yielded a significant difference in ratings by program treatment. White respondents rated the analogy programs highest, while non-white respondents gave the highest ratings to the urban. In analyses with program theme, significant differences were not found with any characteristic.

Analyses of the data on visitor perceptions of which program related most shows that the majority of the respondents felt the traditional program did not relate as well as the analogy or urban program. Almost

two-thirds felt that the animal program related more than the plant. Of the six variables, race and age, seem to have affected the selection of the program treatment, while sex affected the program theme.

Comments on program likes and dislikes were mostly positive. Few, however, related specifically to the analogy or urban treatment of the program. Of those that referred to the analogies, about half expressed a dislike for them. On the other hand, only one person indicated a dislike specifically for the interpretation of the urban plants or animals.

CHAPTER 5

CONCLUSION

Summary of Procedures

The problem of relating interpretation to the urban visitor is one that has been discussed often. Solutions have been proposed and implemented, but little research has been conducted to determine if these solutions are viable. The present study was designed to provide some data on the effectiveness of current methods of urban interpretation.

Two methods of relating interpretation to urban audiences were selected for experimental testing. The first explains the unfamiliar life and interactions in the natural world through analogies to common life and systems of the city. The second interprets nature in an urban setting. These two were termed, for the purpose of this study, analogy and urban, respectively.

The study design utilized slide-tape programs and a self-administered questionnaire. The experimental programs were produced using the analogy and urban treatments. For control purposes, the programs were contrasted with a third treatment. This treatment, traditional, uses the more common interpretation of the natural environment, without

reference to the urban, or built environment. The experimental design necessitated the use of two themes: plant and animal.

Testing was conducted at Belle Isle Urban Nature Center in Detroit, Michigan because it receives a high percentage of urban residents among its visitors. The programs were run on weekends during August and September 1979. In all, 562 people viewed the slide-tape programs and completed the questionnaire.

Conclusions

The study population was an urban population with almost half of the respondents being residents of Detroit and another third from the suburbs around Detroit. It was also a racially mixed group. Approximately one-third of the people sampled were of races other than white. Finally, the subjects were highly educated and most had had at least some prior experience with nature centers and nature related activities.

Three general hypotheses were tested with this study population. Stated null, these are:

H_1: There will be no difference in the evaluations of the experimental programs with differing treatments (analogy, urban, or traditional).

H_2: There will be no difference in the evaluations of the experimental programs with differing themes (plant and animal).

H_3: Characteristics of the visitor will have no effect on how he or she rates the programs.

Further minor hypotheses were posed concerning the effects of interactions between the program treatments, program themes, and visitor characteristics.

Testing of the first hypothesis indicates that it can be rejected in only one case: the evaluation of knowledge gain for the urban and traditional programs. Respondents reported learning slightly more from the traditional program than from the urban. This may indicate that urban residents do not want to learn about the city, preferring instead to learn about more natural areas. This theory seems to be supported by the fact that when given a choice between attending a program on nature in the city or nature in the country, most of the respondents chose the latter.

Testing of the second hypothesis led to its rejection on enjoyment and learning. In both dimensions the animal program was evaluated higher than the plant. Here also, the program evaluations correspond with a previously indicated program preference. When asked whether they would prefer to view a program on plants or animals, most respondents selected animals.

The preference for animals over plants may be the result of greater identification with the former. Animals are animate objects; they appear warm and cuddly and seem to have personalities like humans. Plants, on

the other hand, appear more inanimate and perhaps, therefore, less interesting.

The combination of program treatment and theme in analyses yielded yet other differences. In the analogy/traditional combination, the plant learning score was higher with the analogy treatment, while the animal learning score was higher with the traditional. In comparing the analogy and urban programs, the analogy again received higher plant scores, this time on both enjoyment and learning. A possible cause of these differences could be familiarity. Analogies are used in explanation. In the plant programs, the analogies may have helped to clarify the information presented and thus increased their enjoyment and learning value. On the other hand, familiarity with animals may have made the analogies seem unnecessary and simplistic, giving the programs the appearance of conveying less information.

The third hypothesis being tested, that visitor characteristics will have no effect on program ratings, was rejected for only one characteristic, race. The results suggest that white respondents learned more from the analogy programs, while respondents of other races learned more from the urban. As almost all of the non-white respondents were from Detroit, this may indicate that, at least for this group, interpretation of a familiar environment aids in

understanding. The other characteristics tested for their effect on the program ratings; age, education, prior experience, residential area, and sex; appear to affect the programs only as a whole.

According to the respondents, the urban programs related more to themselves and their lives than the traditional. No real difference was found between the analogy and traditional treatments. However, within the visitor groups, non-whites and respondents aged twenty-five to thirty-four selected the analogy programs as relating more, while those aged forty-five and older selected the traditional.

To most people, the animal program was seen as relating more than the plant. This again could be a result of the animate/inanimate nature of animals and plants. Females were more likely than males to indicate that the plant program related to them. An explanation of this difference may be found in the fact that women are more likely to keep house plants.

Two reasons for the lack of large differences between program evaluations and perceptions of which program related most may be suggested. First, the programs may have been too similar. Although they were designed to reflect the three treatments; analogy, urban and traditional; the differences between the programs may not have been drastic enough to have strongly affected the

responses. A second possible explanation for the similar ratings could be an indifferent attitude among the respondents as to whether the programs interpreted nature in an urban setting or in a natural setting. Since the majority of the survey population had had at least some experience with nature centers and nature-related activities, they may have held a positive feeling about nature programs in general.

Limitations

The results of this study should be viewed with certain precautions in mind. A number of limitations are inherent in the type of data gathering used and the questions asked. First, the subjects' knowledge of being tested may have affected their responses, a phenomenon Selltiz termed the "guinea pig effect" (Webb, Campbell, Schwartz, Schrest, 1966). Second, certain visitor profile questions depend on the subject's ability to recall correctly, an ability that could be questioned. Finally, the questions used to measure program enjoyment and knowledge gain are subjective rather than objective. This gives rise to additional problems. As there was no set scale for rating the programs, everyone used their own. Thus, a "good" program may not have meant the same to all. Also, respondents were asked only for perceived knowledge gain. Answers to this

would be based on the person's ability to accurately judge how much they learned and their current knowledge level.

Limitations to the study's generalizability must also be considered. The study population is made up of visitors to a nature center, a group who may have different attitudes about the experimental programs than non-visitors. Also, the study was conducted only on weekends during two months of the year. It is conceivable that weekday visitors or visitors during other times of the year may be different. Lastly, had interpretive techniques other than the slide-tape or topics other than plants and animals been used, different results may have been obtained.

In regard to these limitations, several recommendations can be made for similar studies in interpretation for urban audiences. These recommendations, varying in complexity, fall into four general categories: the time frame, study population, interpretive programs, and measurement tools. These will be discussed in greater detail in the following paragraphs.

If the study is repeated, the time frame should be extended to include all seasons of the year. There is some feeling among the staff at Belle Isle Urban Nature Center, which most likely could be extended to other centers, that the visitor population varies with the seasons. A more complete picture of the attitudes of urban audiences would need to be based on visitors throughout the year.

The same argument can be used with weekday versus weekend visitors.

Two major changes can be made in the survey population. Studies should be conducted with urban populations of other areas to determine the generalizability of the results of this study. In addition, the population sampled in this study was visitors to a nature center. Presumably, a large number of urban residents never go to these facilities. Programs conducted along the city streets may draw an entirely different group of people.

A third area where further research is needed is the interpretive technique. Slide-tape programs were selected for this study because of their consistency, but other more active interpretive techniques, such as guided walks, may be more effective with urban populations. Also, changes in program theme may have an effect on the success of the experimental programs.

Finally, changes could be made in the manner of evaluating the effectiveness of the programs. Other study methods include observation, mailed questionnaire, and personal interview. Each is useful in providing a different type of information. Different methods of measuring learning, such as retention, both short- and long-term could also be used. Lastly, there may be additional visitor characteristics, not measured in this study, that influence the effectiveness of the analogy and urban programs.

Recommendations

Based on the research methods and the results of this study, a number of recommendations can be made for designing programs to relate to urban audiences and for future urban interpretation evaluation studies.

Programs for Urban Audiences

The most evident finding of this study is that urban audiences prefer programs about animals to those about plants. Using this information, it might be helpful to add bits of information about animals to programs on other topics. This may spark visitor interest and add to the enjoyment and knowledge gained.

In relation to the program treatment, two suggestions can be made based on the program evaluations. For non-white urban residents, interpretation of the environment of their city would appear to be the most effective as it is perceived as providing the most information. On the other hand, interpretation of the natural environment using urban analogies appears to be the most effective with white urban and suburban residents.

Every interpretive program, regardless of its theme, should be tailored to the audience that is attending. All characteristics of the visitors should be examined: race, age, education, area of residence, etc. In an urban area,

it may be helpful to enlist the aid of an urban resident to help in designing the programs.

As most respondents indicated a preference for outdoor nature walks over indoor slide shows, this too could be used in planning interpretive programs. For urban audiences, guided walks could be conducted through the city, along the streets, alleys, and parks. For audiences of a more suburban nature, analogies could be combined with a walk through more natural areas. Guided walks offer the visitor a chance to observe firsthand and to participate more actively in the interpretive program.

Future interpretation concerning the urban environment should stress not only the natural aspects of a city, but the man-made. The topics that could be covered are far ranging, including buildings and architecture, water and sewage systems, sources of pollution, and solutions to environmental problems. The historical, cultural, and social aspects of the city would also prove excellent sources for interpretive topics.

Future Evaluation Studies

This study has hardly begun to research the topic of urban interpretation. Although the analogy and urban programs were designed to be different, they still reflect a more traditional type of interpretation. Research is needed to discover new techniques and evaluate established ones in relation to interpreting to urban audiences.

The interpretive message also needs to be evaluated. Research should be conducted to determine what subjects are currently being interpreted in urban areas and where deficiencies exist in the information covered. This study dealt with the interpretation of natural resources, but the interpretation of man-made and cultural, historical and social resources should also be investigated.

Research could be conducted in the operation of Urban Interpretive Centers. Acting in a manner similar to Nature Centers, these areas would serve as focal points for interpretation within the city. Not only could they house information about the city, but they could serve as beginning points for self-guiding trails.

Finally, the training for interpretors needs to be examined. Currently, most colleges and universities prepare their graduates to work in relatively natural environments. Future opportunities for employment, however, will come from urban areas. Educational programs should be developed which will prepare interpretors to work in these areas.

APPENDIX A

SCRIPTS AND SLIDES FROM THE EXPERIMENTAL SLIDE-TAPE PROGRAMS

APPENDIX A

SCRIPTS AND SLIDES FROM THE EXPERIMENTAL SLIDE-TAPE PROGRAMS

"Plants of Belle Isle"
(Traditional Treatment)

1 •2 •3 •4 As you travel around Belle Isle you will notice that it is covered with trees, shrubs, and grasses. If you take the time •5 to stop and look more closely, you will see that there are many different •6 types of plants growing here. From the mosses that hug the ground to the trees that touch the sky, they exist in almost infinite variety.

•7 The needs of each plant in the world are different; some plants like •8 lots of sun, while others prefer plenty of shade. Many things such •9 as soil type, water supply and weather conditions help determine the kinds of plants that can grow in any area.

•10 In order to understand why the plants on Belle Isle are here, •11 it is necessary to know a little about the island. It is a low island, only two to three feet higher than the Detroit River, so the soil stays •12 relatively moist all year. In addition, the changes man has made on the surface of the island have blocked the island's natural drainage routes, causing many of the low areas to be covered with water. •13 The plants in these wet areas are different than those that grow in dryer places for not all plants can live in soil that is flooded for part of the year. •14

On Belle Isle you will notice three types of areas or habitats. •15 These are the grassy areas, shrubby edges and clearings, •16 and the forest. The plants in each habitat are different because each habitat fulfills different basic requirements. •17 For instance, trees in the forest allow little sunlight to reach the floor so it is an ideal place for shade loving plants. Let us take a look at some of the different plants that grow in these three areas. •18

In the grassy habitat you will find plants that like a lot of •19 sunlight and a dryer soil. If you look closely at those here you will see the foxtail barley. The "tails" on this grass help spread its seeds

all over the island. Each bristle in the tail carries a seed and is covered with tiny hooks.[20] These hooks catch on the fur or clothing of any animal or person that passes by and the bristle stays there until it falls off or is removed.[21]

Another plant that you will see in the grassy areas of the island is the common plantain. The plantain can be identified by its thick, leathery leaves[22] and central flowering stalk. It blooms during the summer, but because the flowers are so small, they are easily missed.[23]

A hairy plant with warty seed pods, the common milkweed also grows on Belle Isle. Almost every part of the milkweed is edible at some time during the year.[24] When young, the shoots, leaves and seed pods can be eaten, and when not yet opened, the flowers.[25]

In forest clearings and on the borders of grassy areas and the forest, you will find another type of habitat, one which is dominated by shrubs.[26] Most of the plants you will find here in the shrub habitat are different than those of either the grassy areas or the forest.[27]

One of the largest shrubs in this habitat is the hawthorn. It is, as its name implies, covered with strong, sharp thorns.[28] Hawthorns are in the same family as apple trees and their flowers and fruit look similar, though the fruit of the apple is much larger.[29]

Look under the shrubs and you may see spots of purple and yellow. These are the flowers of the bittersweet night shade.[30] This plant does well on Belle Isle because it prefers to live in moist soil.[31] Although it is related to the tomato, its bright red berries are poisonous.

Another plant that grows best in moist shrubby areas is the wild black currant.[32] This shrub blooms in the spring and the fruit, when ripe, is small and black.[33] It can be used to make jam, jelly and wine.[34]

Leaving the shrubby areas you can begin to explore the plants of the forest.[35] The trees are mainly oaks and maples, but this has not always been the case.[36] Not too long ago, oaks and hickories made up a major part of the forest. The hickories, however, were killed by a disease and the maples have since replaced them.

If you take a walk through the forest today, you will see one of the oldest trees found on Belle Isle,[37] the swamp white oak. Several characteristics separate it from other oaks.[38] Look at the leaves and you will

see that the edges are divided into sections, or lobes, which are either rounded or tooth-like.[39] Looking at an older tree you will see that the bark on the trunk is made up of blocks or ridges. On younger branches though,[40] it peels away to show the inner layer. As its name implies, the swamp white oak prefers moist or swampy sites.

The pin oak is another of Belle Isle's oaks.[41] It is especially suited for the island since it grows well in clay soil and can live through periods of standing water.[42] Its leaf differs from the swamp white in that the lobes are sharply pointed and the space between them is deep, sometimes almost touching the center vein.[43]

On your walk through the forest you might notice a medium-sized tree with leaves that have jagged edges, and surfaces that are pale green above and silvery below.[44] You would be looking at one of the island's maples--a silver maple. It, like the swamp white oak and the pin oak, is able to live in those parts of the forest where the soil is periodically[45] covered with water. The silver maple, like many other fast growing trees has brittle wood. The branches are often broken by high winds and heavy loads of ice and snow.[46]

A relatively new plant in the forest of Belle Isle is the white ash.[47] It is growing here now because of the deaths of the American Elms. As old elms died from the Dutch Elm disease,[48] the young white ash, which need a lot of sunlight to grow, have taken their place in the forest. The wood of the white ash is hard and is used to make those things that need strong wood, such as baseball bats and ax handles.[49]

A small tree that you are likely to see on a walk through the forest is the blue beech.[50] Its leaves are oval and have jagged edges. The trunk of a blue beech is twisted and grooved, and it has smooth, bluish-gray bark.[51]

Under the trees you may see the sensitive fern. It probably got its name because it is easily killed by cold weather.[52] Beside the fern grows a plant that is as plentiful as it is hated. The group of three leaflets will alert the wary to stay away, for this is poison ivy.[53] In some spots it seems to cover the forest floor and everything on it, though in other places it is much less dense.[54] Its small flowers appear in early summer and its berries are dry and yellowish-white.

•55 In this slide show you have seen a few of the many plants that grow here on Belle Isle. Each grows in the habitat that supplies it with what it needs, and if you go looking for it this is where you will find it. •56 Take a walk around Belle Isle today and see what other plants you can find. When you find a new plant, don't just look at its leaves and flowers, •57 but look at where it is growing and what other plants it is growing with. It is clues like these that will •58 help you know and understand the plants around you. •59 •60 •61

"Plants of Belle Isle"
(Traditional Treatment)

1. Blackout slide
2. Title slide
3. Small plant growing in tree roots
4. Forest
5. Moss on log
6. Tree top
7. Plantain and grass
8. Sensitive fern on shaded forest floor
9. Canal with trees along banks
10. Foxtail barley along road
11. Detroit River
12. Aerial of Belle Isle
13. Close-up of swampy woods
14. Grassy area
15. Shrubby opening in forest
16. Forest
17. Forest floor covered with plants
18. Grassy area
19. Group of foxtail barley
20. Close-up of foxtail barley seed head
21. Plantain
22. Plantain flower
23. Close-up of milkweed plant with seed pods
24. Milkweed plant with flowers
25. Shrubby area
26. Shrubby area along road
27. Hawthorn trunk
28. Hawthorn leaves and fruit
29. Bittersweet nightshade plant with flowers
30. Close up of nightshade with flower
31. Nightshade berries
32. Black currant plant
33. Black currant flowers
34. Forest
35. Swamp white oak leaves
36. Shagbark hickory leaves
37. Swamp white oak tree
38. Close-up of swamp white oak tree
39. Swamp white oak bark
40. Swamp white oak bark on younger branches
41. Pin oak in swamp
42. Pin oak leaves
43. Silver maple leaves
44. Silver maple tree
45. Silver maple trunk and branch
46. Young white ash
47. Fallen tree
48. White ash growing among fallen trees
49. Blue beech leaves
50. Blue beech trunk
51. Sensitive fern
52. Poison ivy
53. Poison ivy growing on tree stump
54. Poison ivy with flowers
55. Forest floor
56. Daisies in field
57. Field
58. Mushroom
59. Wild grapes
60. Sun through leaves
61. Blackout slide

"Plants of Belle Isle's Nature City"
(Analogy Treatment)

Belle Isle is covered with many different plants. Yet it is not so different from Detroit, with its great assortment of buildings. The buildings that make up Detroit range in size from the smallest house to the tallest skyscraper. So too do the plants of Nature City vary. From the mosses that hug the ground to the trees that touch the sky, they like the buildings of Detroit, exist in almost infinite variety.

The needs of each plant in the world are different; some plants like lots of sun, while others prefer plenty of shade. Many things such as soil type, water supply, and weather conditions help determine the kinds of plants that can grow in any area.

In order to understand why the plants on Belle Isle are here, it is necessary to know a little about the island. It is a low island, only two to three feet higher than the Detroit River, so the soil stays relatively moist all year. In addition, the changes man has made on the surface of the island have blocked the island's natural drainage routes. This is much like plugging your bathtub; the water on Belle Isle cannot drain so it collects in the low spots. The plants in these wet areas are different than those that grow in dryer places, for not all plants can live in soil that is flooded for part of the year.

The City of Detroit is made up of many different neighborhoods. Downtown you can find the business district. In other areas there are shops and stores, and in still others, houses and apartment buildings. In Belle Isle's nature city there are also different neighborhoods, or habitats. These are the grassy areas, shrubby edges and clearings, and the forest. The plants in each habitat are different because each habitat fulfills different basic requirements. For instance, trees in the forest allow little sunlight to reach the floor so it is an ideal place for shade-loving plants. Let us take a look at some of the plants that grow in each of these three neighborhoods.

In the grassy habitat, or neighborhood, you will find plants that like a lot of sunlight and a dryer soil. If you look closely at the plants here, you will see the foxtail barley. The "tails" on this grass

help spread its seeds all over the island.[26] Each bristle in the tail carries a seed and is covered with tiny hooks. Acting like hitch-hikers they catch a ride with any person or animal that passes by.[27]

Another plant that you will see in the grassy neighborhoods of Belle Isle is the common plantain. The plantain can be identified by its thick, leathery leaves[28] and central flowering stalk. It blooms during the summer, but because the flowers are so small they are easily missed.[29]

A hairy plant with warty seed pods, the common milkweed also grows on Belle Isle. Some people think of it as a[30] wild vegetable for almost every part can be eaten at some time during the year. When young, the shoots, leaves and seed pods[31] are edible, and when not yet opened, the flowers.

[32]In forest clearings and on the boarders between grassy areas and the forest, you can find another of Nature City's neighborhoods, one which is dominated by shrubs.[33] Most of the plants that you will find here in the shrub habitat are different than those of either grassy areas or forest.[34]

One of the largest shrubs in this neighborhood is the hawthorn. It is, as its name implies, covered with thorns.[35] These thorns are strong enough and sharp enough that they can be used as sewing needles and fish hooks.[36] Hawthorns are a cousin of the apple tree and their flowers and fruit look similar, through the fruit of the apple is much larger.[37]

Look under the shrubs and you may see spots of purple and yellow. These are the flowers[38] of the bittersweet nightshade. This plant does well on Belle Isle because it prefers to live in moist soil.[39] Although it is a relative of the tomatoes you eat in your salads, its bright red berries are poisonous.[40]

Another plant that grows best in the moist shrubby neighborhood is the wild black current.[41] This shrub blooms in the spring and the fruit, when ripe, is small and black. Though you may never have seen it in a store, black currents make good jam, jelly, and wine.[42]

Leaving the shrubby areas you can begin to explore the plants of Nature City's third neighborhood, the forest. The trees are mainly oaks and maples, but this has not always been the[43] case. As the neighborhoods in Detroit change over time so do those on Belle Isle. In Detroit's earlier

days hickories rather than maples made up a major part of the forest. The hickories, however, were killed by a disease and maples have since replaced them.

If you take a walk through the forest today you will see one of the oldest trees found on Belle Isle, the swamp white oak. Trees often look the same to those who are not used to them just as the buildings of Detroit look the same to a stranger in the city. But like the buildings, if you look carefully you can learn to tell one tree from another. Look at the leaves of the swamp white oak and you will see that the edges are divided into sections, or lobes, which are either rounded or tooth-like. Looking at an older tree you will see that the bark on the trunk is made up of blocks or ridges. On younger branches, though, it often peels away to show the inner layer. As its name implies, the swamp white oak prefers moist or swampy sites.

On your walk through the forest you might notice a medium sized tree with leaves that have jagged edges and surfaces that are pale green above and silvery below. You would be looking at one of the island's maples--a silver maple. It, like the swamp white oak, is able to live in those parts of the forest where the soil is periodically covered with water. The silver maple, like many other fast growing trees has brittle wood. The branches are often broken by high winds and heavy loads of ice and snow.

A relatively new plant in the forest neighborhood is the white ash. It is growing here now because the Dutch elm disease has killed Belle Isle's American Elms. Just as the old buildings of Detroit are torn down and replaced with new ones, the old elms that died were replaced with young white ash. The wood of the white ash is hard and is used to make those things that need strong wood, such as baseball bats and hammer handles.

A small tree that you are likely to see on a walk through the forest is the blue beech. Its leaves are egg-shaped and have jagged edges. The trunk of a blue beech is twisted and grooved and it has smooth bluish gray bark. Because it looks very much like knotted human muscles, it has also been given the name musclewood.

Under the trees you may see the sensitive fern. It probably got its name because it is easily killed by cold weather.[63] Beside the fern grows a plant that is as plentiful as it is hated. The group of three leaflets will alert the wary to stay away, for this is poison ivy.[64] The poison ivy often grows on trees and dead stumps[65] much as other ivies grow on buildings in the city.[66] Its small flowers appear in early summer and its berries are dry and yellowish-white.[67]

In the habitats of Belle Isle are found many different plants, just as you can find many different buildings in the neighborhoods of Detroit.[68] Each plant grows in the habitat that supplies it with what it needs, and if you go looking for it, this is where you'll find it.[69] Take a walk around Belle Isle's Nature City and see what other plants you can find. When you find a new plant don't just look at its leaves and flowers,[70] but look at where it is growing and what other plants it is growing with.[71] It is clues like these that will help you know and understand the plants around you.[72] [73] [74] [75]

"Plants of Belle Isle's Nature City"
(Analogy Treatment)

1. Blackout slide
2. Title slide
3. Small plant growing in roots of tree
4. Forest
5. Aerial of Detroit
6. House in Detroit
7. Renaissance Center
8. Moss on log
9. Tree top
10. Plantain
11. Sensitive fern on shaded forest floor
12. Canal with trees on the banks
13. Foxtail barley along road
14. Detroit River
15. Aerial of Belle Isle
16. Close-up of swampy forest
17. Downtown Detroit
18. Shops in Detroit
19. Houses in Detroit
20. Field
21. Shrubby opening in forest
22. Forest
23. Shaded forest floor
24. Field
25. Group of foxtail barley
26. Close-up of foxtail barley seed head
27. Plantain
28. Plantain flowers
29. Close-up of milkweed with seedpods
30. Milkweed with flowers
31. Flowers of milkweed
32. Shrubby area
33. Shrubby area along road
34. Hawthorn trunk
35. Hawthorn branch with thorns
36. Hawthorn leaves and fruit
37. Bittersweet nightshade plant with flowers
38. Close-up of nightshade with flowers
39. Nightshade berries
40. Black currant plant
41. Black currant flowers
42. Forest
43. Boarded-house in Detroit
44. Shagbark hickory leaves
45. Swamp white oak tree
46. Tree tops
47. Swamp white oak leaves
48. Close-up of swamp white oak leaves
49. Swamp white oak bark
50. Swamp white oak bark on younger branches
51. Silver maple leaves
52. Silver maple tree
53. Silver maple trunk and branch
54. Young white ash
55. Vacant lot beside abandoned building in Detroit
56. Renaissance Center behind building
57. Fallen tree
58. White ash growing among fallen trees
59. Blue beech leaves
60. Blue beech trunk
61. Close-up of blue beech trunk
62. Sensitive fern
63. Poison ivy
64. Poison ivy on tree stump
65. Ivy on building in Detroit
66. Poison ivy with flowers
67. Aerial of Detroit
68. Forest floor
69. Daisies in field
70. Field
71. Mushroom
72. Jewelweed flowers
73. Wild grapes
74. Detroit through tree on Belle Isle
75. Blackout slide

"Plants of Detroit"
(Urban Treatment)

When you think of the city, what is the first thing you think of--buildings and cars, concrete and glass? If you do, you are missing a vital part of Detroit, the trees and other plants that live in and around the structures of man.

The needs of each plant in the world are different; some plants like lots of sun, while others prefer plenty of shade. Many things such as soil type, water supply, and weather conditions help determine the kinds that can grow in any area.

The plants that live and grow in Detroit are a hardy bunch--especially those in the crowded downtown area. Many of those that lived in this part of Michigan before Detroit became a city have since disappeared because they could not tolerate the changes in their surroundings. Those here today, both native and introduced, are able to live in a harsh environment of polluted air, compacted earth, and small spots of soil.

Each plant that you will find in Detroit is growing there for one of two reasons. First, some plants were left during construction. The seeds from these plants and introduced ones have also blown into areas where the earlier plants were removed, such as vacant lots, construction sites, and cracks in concrete and asphalt. The second reason for a plant growing in Detroit is that it was planted there by the city or by individuals who wanted to brighten up their living and working environment.

Walk or drive around Detroit and you will see many of the plants that were left from earlier days or that have moved back into disturbed areas. One of these is the common milkweed. It is a hairy plant and the only type of milkweed that has warty seed pods. Every part of the milkweed is edible at some time during the year. When young, the shoots, leaves and seed pods can be eaten, and when not yet opened, the flowers.

Even though it was brought into this country, the common plantain is a plant that you will see almost everywhere in Detroit. It has done so well here because its thick, leathery leaves can take a lot of punishment, such as trampling and long periods without water. The plantain blooms during the summer, but because the flowers are so small they are easily missed.

One of the trees that was left standing when houses were built is the swamp white oak. It is a medium sized tree with leaves that are divided into sections, or lobes, that are tooth-like or rounded. The bark on the trunk of the swamp white oak is made up of blocks or ridges. On upper branches though, it often peels away to show the brighter inner layer.

If you travel around Detroit before noon, you are likely to see the bluish-purple flowers of the chickory. The chickory blooms in the summer and early fall and the flowers open in the morning and usually close by noon. The roots of this plant are sometimes dried, brewed, and drunk in the place of coffee.

In vacant lots and odd spots of soil around the city, you will notice the foxtail barley. The "tails" on this grass help spread its seeds all over Detroit. Each bristle in the tail carries a seed and is covered with tiny hooks. These hooks catch on the clothing of any person or the fur of any animal that passes by and the bristle is carried there until it falls off or is removed.

Another plant that grows in unpaved parking lots and other small sections of soil throughout Detroit is the sow thistle. You can easily tell that it is related to the dandelion by looking at its bright yellow flowers. This plant though, grows from one to six feet tall and the edges of its leaves are prickly.

Many different types of trees, shrubs, and flowering plants have been planted in yards and along the streets of Detroit. These plants serve many purposes. First, and perhaps most important, they look nice. They also cut the glare from and soften the harsh surfaces of Detroit's buildings. In the summer they cool the air by giving off moisture and providing shade. In the winter, trees and shrubs help block the chilling winds.

Many of the trees being planted in Detroit are especially adapted for city life. You may have seen, for instance, the honey locust. Special types have been developed for planting that have no thorns or seed pods. These varieties of honey locust are ideal for the downtown area because they can grow in small areas, such as median strips; tolerate salt from winter road clearing; and their leaflets are so small that

they shrivel up and blow away rather than cover the sidewalks and clog the sewer drains.[39]

Other trees also do well in the city. Ailanthus was brought from eastern Asia and planted in Detroit as an ornamental.[40] It is a hardy tree that can live and grow in poor hard-packed soils and in a smoky atmosphere.[41] In fact, because it does so well here, it has spread from the areas it was planted and is now growing throughout Detroit.[42]

The London Plane Tree is a popular city tree. It is a nice looking tree with bark that you can't miss.[43] On young trees and the branches of older ones, large pieces of bark peel away to show the yellowish-green inner layer.[44] Look among the branches of the tree, you will see the fruit of the London Plane packed into dense balls. These balls, or fruit heads, usually grow in two's and three's rather than singly.[45]

Another oak in Detroit, the Northern Red, is often planted because of its symmetrical form and rich red autumn color.[46] The leaves of this oak, like those of the swamp white, are divided into lobes, but the lobes are pointed rather than rounded.[47] The Red Oak can easily be found in winter because its bark is broken into flat-topped ridges.[48]

Brought into this country from Europe, the Norway Maple is often planted as an ornamental.[49] It has broad leaves that, when broken, give off a milky white sap.[50] The fruit of the Norway Maple grows in pairs and each seed is attached to a wing. The wing allows it to be carried by the wind to new locations.[51]

The people of Detroit plant more than just trees--flowers are a favorite of many. One plant that you are likely to see throughout the city is the marigold.[52] There are three basic types of marigolds: African, French, and Mexican; and each grows to a different size.[53] Their flowers can be solid yellow, orange, red or maroon, or a combination of any of these colors. Marigolds need good soil and a sunny position to grow well.[54]

Another plant that is popular in Detroit is the begonia. Unlike marigolds, begonias prefer partially shaded spots,[55] such as the north side of buildings. There are many varied kinds of begonias; they differ in size, and in the shape and color of their leaves and flowers.

Depending on the type, the leaves may be large or small and may be spotted, bronze colored, green above and red below, or varigated. The flowers can be white, pink red, peach, or coral.

The plants of Detroit work for us in cooling and warming the air and in making the city more pleasant to live in. But they do more than just this, they show us that the city is alive with life and that nature can and does exist not only in the land around Detroit but in the heart of the city as well.

"Plants of Detroit"
(Urban Treatment)

1. Blackout
2. Title slide
3. Begonia
4. Aerial in Detroit
5. Tree and top of building
6. Plantain
7. Vacant lot
8. Downtown Detroit
9. Plants growing in parking lot
10. Aerial of Detroit showing air pollution
11. Vacant lot with many old trees
12. Vacant lot
13. Landscaped yard
14. Milkweed in parking lot
15. Milkweed seed pods
16. Milkweed with flowers in parking lot
17. Plantain next to building
18. Plantain next to sidewalk
19. Plantain flowers
20. Swamp white oak on Detroit street
21. Swamp white oak leaves
22. Swamp white oak bark
23. Swamp white oak bark on younger branches
24. Chickory growing in front of fence
25. Close-up of chickory in front of fence
26. Foxtail barley in parking lot
27. Foxtail barley close-up of "tail"
28. Foxtail barley
29. Sow thistle in parking lot
30. Sow thistle flower
31. Sow thistle leaves
32. Trees in front of house in Detroit
33. Marigolds along sidewalk
34. Trees shading house of Detroit
35. Honey locust
36. Honey locust branch (building in background)
37. Honey locust in median strip in Detroit
38. Honey locust leaves
39. Ailanthus in front of apartment
40. Ailanthus in alley
41. Ailanthus close-up of leaves and flowers
42. London Plane leaves
43. London Plane bark
44. London Plane fruit
45. Red Oak in front of building
46. Red Oak leaves
47. Red Oak bark
48. Norway Maple along street in Detroit
49. Norway Maple leaves
50. Norway Maple leaves and fruit
51. Marigolds
52. Marigold flowers
53. Marigold flowers
54. Begonia in shady spot
55. Begonia leaves and flowers
56. Begonia with large spotted leaves
57. Begonia flowers
58. Tree-lined residential street in Detroit
59. Aerial of Detroit
60. Crabapple fruit and leaves
61. Sow thistle
62. Red oak leaves and acorn
63. Black-out slide

APPENDIX B

SELF-ADMINISTERED QUESTIONNAIRE USED FOR EVALUATING EXPERIMENTAL SLIDE-TAPE PROGRAMS

THE PROGRAM WILL START IN A FEW MINUTES

As part of our program today we will be asking you about the kinds of programs you enjoy and would like to see at the Nature Center. Please fill in PART A while you are waiting for the program to begin, and PART B after it is over. Thank you, what YOU say will help us.

PART A

For Questions 1-3 CIRCLE ONE ANSWER

1.	How many times have you been to Belle Isle Nature Center before?	Never	1 or 2 times	3 or more times
2.	How many OTHER nature centers have you been to?	None	1 or 2	3 or more
3.	How many times have you gone to a nature program or on a guided walk before today?	Never	1 or 2 times	3 or more times

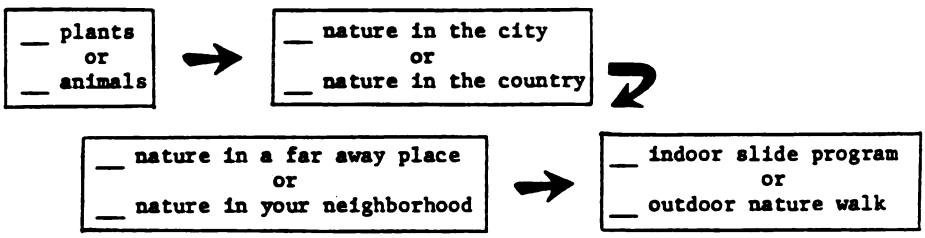
4. Do you take part in nature activities, such as hiking or bird watching, once a month or more? __ yes __ no

5. Why did you stop at the nature center today? (Check 1 please)

___ to learn about plants and animals
___ to stop at the bathroom, get a drink, or get directions
___ for fun
___ to pass the time
___ to find out what a Nature Center is
___ other:_____

6. Was a visit to the nature center your main reason for coming to Belle Isle today? Yes_____ No _____

7. For EACH box check the program you'd rather go to:



8. Do you feel that nature centers like this one should be run mainly

__ for adults

__ for children

__ equally for both adults and children

9. For children do you think this place is mainly

__ an enjoyable or fun place

__ a learning place

__ a place to relax

10. For adults do you think this place is mainly

__ an enjoyable or fun place

__ a learning place

__ a place to relax

11. How many people came with you today to the Nature Center? (Include yourself)_____

12. Who did you come with?

___ alone
___ family/relatives
___ friends
___ school group or organization

13. Was it your idea to visit the Nature Center today? Yes____ No____

14. Where do you live? _____, _____
city zipcode

15. Sex: Male ____ Female ____

16. How old are you? _____

17. Race: ___ Black
___ White
___ Hispanic (Chicano, Mexican American)
___ Other

18. What was the last grade in school that you finished?

____ grades 1-6
____ grades 7-9
____ grades 10-12
____ college: 1-2 years
____ college: 3 + years

THIS IS THE END OF PART A, PLEASE WAIT UNTIL THE PROGRAM IS OVER TO ANSWER PART B.

PART B

PROGRAM EVALUATION

A staff member will explain this part of the questionnaire after the two slide programs.

1. First we would like you to tell us how much you enjoyed each of the programs and how much you learned from them. Circle the word that best expresses how you felt about each program.

   a. In terms of ENJOYMENT:

   the FIRST program was: poor fair average good very good excellent

   the SECOND program was: poor fair average good very good excellent

   b. In terms of LEARNING:

   the FIRST program was: poor fair average good very good excellent

   the SECOND program was: poor fair average good very good excellent

2. Which of the two programs do you think relates the most to you and your life?

   ____FIRST PROGRAM or ____SECOND PROGRAM

3. Please tell us what you liked or did not like about the two programs:

   FIRST PROGRAM

   Liked:

   Did not like:

   SECOND PROGRAM

   Liked:

   Did not like:

THANK YOU VERY MUCH FOR YOUR HELP

PLEASE HAND THE QUESTIONNAIRE TO AN ATTENDANT ON THE WAY OUT

HAVE A NICE DAY TODAY

APPENDIX C

AREAS CLASSIFIED AS "SUBURBS OF DETROIT"

APPENDIX C

AREAS CLASSIFIED AS "SUBURBS OF DETROIT"

Allen Park
Berkley
Beverly Hills
Bingham Farms
Birmingham
Bloomfield Hills
Bloomfield Township
Center Line
Clawson
Clinton Township
Dearborn
Dearborn Heights
East Detroit
Ecorse
Farmington
Farmington Township
Ferndale
Franklin
Fraser
Garden City
Grosse Ile Township
Grosse Pointe
Grosse Pointe Farms
Grosse Pointe Park
Grosse Pointe Shores
Grosse Pointe Woods
Harper Woods
Harrison Township
Hazel Park
Huntington Woods
Inkster
Lathrup Village
Lincoln Park
Livonia
Madison Heights
Melvindale
Mount Clemens
Oak Park
Pleasant Ridge
Redford Township
River Rouge
Riverview
Roseville
Royal Oak
Royal Oak Township
St. Clair Shores
Southfield
Southgate
Sterling Heights
Trenton
Troy
Utica
Warren
Wayne
Westland
Windsor, Ontario
Wyandotte

APPENDIX D

RESPONDENT AGE BY AREA OF RESIDENCE

APPENDIX D

RESPONDENT AGE BY AREA OF RESIDENCE

Age	Area of Residence				
	Detroit		Suburbs		Other
	Subjects (%)	Census[a] (%)	Subjects (%)	Census[a] (%)	Subjects (%)
9 and under	11	10	10	12	14
10-17	26	16	20	20	23
18-24	13	13	10	11	5
25-34	23	13	24	14	29
35-44	11	11	14	14	13
45-60	8	19	15	19	12
61+	8	18	8	10	4

[a]From Table P_1, Census of Population and Housing, 1970, Census Tracts, Detroit, Michigan.

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