A CHILD'S VIEW OF THE URBAN FOREST

by Gary R. Johnson and Janette Monear

Abstract. One hundred twenty elementary school children in Minnesota were given cameras for one school week and instructed to photograph their outdoor world. The children represented four different grade levels and three population regions: urban, suburban and rural. This study is an alternative to the photograph evaluation surveys given to adults or children, and provides insight into a child's view of the urban forest. A high percentage of the photographs from all regions and all grade levels included trees. Children from urban areas photographed fewer playground scenes than did suburban and rural children. Younger children photographed more people and playgrounds than older children did.

As urban foresters, we are concerned that the green infrastructure of our communities be of benefit to society aesthetically, spritually, economically and physically. These benefits are goals for successful urban forest designs and management plans, and residents recognize and appreciate these benefits to varying degrees.

There has been extensive research into the public's perceptions of the urban forest and its values. These studies have provided valuable insight and information for more successful boulevard and park designs, and tree selection. Research also has provided information on how the public values trees spiritually and culturally (1]) how inner-city residents prefer parks that provoke a sense of safety (3), and where homeowners prefer to have street trees located (2).

The majority of the survey research to date has focussed on adult values, perceptions and preferences. Stiegler (4) did include youths in his research on perceptions of urban forests, however. A survey of sixth grade elementary students revealed that their perception of the value of the urban forest differed from that of the senior citizen group. Students preferred more natural areas for diversity and solitude; elments they found lacking in urban forests.

The use of photographed urban forest scenes to initiate responses from surveyed audiences and to provide comparisions is a common research method (2,4). Individuals surveyed are commonly requested to compare photographed scenes, or specific trees and express a preference, or note particular dislikes.

The purpose of this investigation was to allow children to document the character of their urban, suburban and rural landscapes through their own photography. Through an objective analysis of elements of the photographs, we wanted to determine if these landscapes were uniquely different from each other. We sought to describe the characteristic environments of children in these areas in order to gain more knowledge regarding the character of the landscapes that influences young people. This information could be useful for directing educational programs in the natural resources, and to influence the design and planting of urban spaces.

We chose to address three questions with this investigation: 1) Are there elements of the urban forest that are common to or important to diverse groups of young people? 2) Are there any differences in the perception of the urban forest among children from different age levels? 3) Are there any differences in the perception of the urban forest among children from different socio-economic regions (urban, suburban, rural)?

Methodology

For one school week in June, 1993, one hundred twenty elementary school children were involved in a cooperative study conducted by the Minnesota Extension Service-Forest Resources Department, and the Twin Cities Tree Trust. This project was designed to provide some insight on the roles that the urban/community forests play in a young person's life. Rather than asking the students to analyze and compare photographs, we elected to issue cameras to the students and allowed them to document their urban forests through their own camera lenses. These photo-

graphs were then segregated by age (grade level) and socioeconomic background (location of the school).

Three elementary schools in Minnesota, located in three different socio-economic areas were chosen as participating schools. Administrators were contacted prior to the project and were informed of the nature of the project. All three schools agreed to participate and to not discuss the project with the students. The three schools that participated in the project were:

Four Winds School, in Minneapolis. Students attending this school are primarily residents of a very urban, ethnically diverse, low-middle income section of Minneapolis.

Kenneth Hall Elementary School, in Spring Lake Park. Students attending this school are residents of several Minneapolis/St. Paul, middle income, second-ring suburban, neighborhoods.

Winthrop Elementary School, in Winthrop, Minnesota. Winthrop is a small, rural community, approximately 90 miles southwest of the Twin Cities.

Four grade levels within each school were selected for this project: students who had just completed grades 1,3,4 and 6. Ten students from each grade level were selected from each shool. Participants were chosen by a lottery method: students selected slips of paper from a box; if a number was printed on the paper the student was issued a camera for the week. Only ten slips of paper had numbers printed on them and enough papers were prepared so each student could participate in the drawing from each class.

The cameras that were used for the project were 27 exposure, disposable cameras. Students were given verbal and printed instructions on how to operate the cameras when the cameras were issued to them. They were instructed to take pictures of anything they wanted to, but the photos had to be taken outdoors since the cameras had no flash units. General examples of photograph subjects were given, such as "things that are important to you... things you commonly see...or things you hope will always be there."

The students were not informed of the nature of the project. They were not informed of the professions of the investigators, only that we were from the University of Minnesota.

Cameras were issued on June 21, 1993 (Monday), and collected by us on June 25, 1993. Participants were encouraged to involve their parents only with operating the cameras. The cameras were collected and marked with a code that indicated the school and grade level. The names and sex of the students for each school and grade level were recorded, but were not included on the individual camera coding.

Photographs were analyzed on an objective basis; no interpretations of scenes or attributes were made. The analysis of the photographs was performed by several people involved with the project, with data recorded on a standard analysis form developed by the investigators.

Photographs for each grade level within each school were analyzed first. Following this analysis, the results for each grade level for all schools were combined. These data were then used to compare the photographs among age levels. Since the individual grade levels within each school represented a relatively low sample size (10), only combined grade level frequencies from all schools were used for comparisons, which provided a sample size of 30. The results for all grade levels within each school were combined to provide comparative data among schools.

The analysis for each photograph involved documenting whether or not it had "green" and/or "non-green" features in it. Green was defined as any living plant. Non-green was any non-living feature, such as water, pavement, soil, rocks. If the photograph had any green in it, the green was then further identified as trees, shrubs, lawns/grass, flowers, or flower/vegetable gardens. Non-green elements were further identified as water, sky, stone/rocks,or pavement.

The photographs with green features were categorized according to the percentage of the photograph that was green. Four categories of percentage of green were used: 0-25%, 26-50%, 51-75%, 76-100%. Frequencies for each category were tabulated for each grade level within each school, for each grade level for all schools and for each school. Frequencies of various attributes were then recorded for each photograph. We recorded the photographs that had people in

them, and whether or not they were active and in the shade of trees; residential structures and whether or not they were in full sun; parks and whether or not shade was provided; churches/schools/hospitals and whether or not trees were present; athletic areas; playgrounds w/equipment and whether or not trees were present; businesses/commercial features; and animals. No interpretations were made. If an attribute was not distinctly obvious it was not recorded.

Results

A total of 120 children participated in this project, forty from each school, ten from each grade level within each school. This sample group was represented by 65 males and 55 females; the sample population was 215. A total of 2001 photographs were acceptable for analysis out of a possible 3240 exposures, for a return rate of 62%. The gross return rate was actually greater than 62%; however, only photographs that were clear enough to be analyzed and were taken outdoors were used.

A high percentage of the photographs had some green in them, for all regions and all grade levels, as shown in Table 1. Regional comparisons show 92.2% of the photographs from urban areas, 94% from suburban areas and 95.7% from rural areas had green in them. More specifically, of the "green" photographs, 85% of the urban, 89.5% of the suburban and 81.7% of the rural photographs had trees in them.

A comparison of the "green" photographs in terms of the percentage of the photograph that was green is shown in Table 2. There was a increase in the number of photographs that were more than 50% green from the urban samples to the rural samples. There was a similar increase in the percentage of photographs with more than 50% greenspace for grade/age levels; photographs taken by older children had more green in them.

As with "green" attributes, a high percentage of the photographs from all regions and all grade levels contained "non-green" attributes, as shown in Table 3. Of particular interest is the percentage of photographs with non-green attributes that contained scenes with pavement. A uniformly high percentage of all scenes had non-green attributes, 98.6-99.7% across regions and 98.2-99.8% across grade levels. However, the percentage of non-green photographs that contained scenes with pavement declined from urban to rural, 63.8-39.7%. Comparisons among grade levels did not indicate any notable trends.

Table 1. Percentage of photographs with "green attributes" and percentage of "green" photographs with trees.

	Percentage with "green"	Percentage of "green" with trees
Region		
Urban	92.2	85.0
Suburban	94.0	89.5
Rural	95.7	81.7
Grade level		
One	90.8	80.8
Three	93.6	85.7
Four	94.8	88.1
Six	96.6	86.7

Table 2. Percentage of "green" photographs with more than 50% green.

Region	%
Urban	31.7
Suburban	39.0
Rural	46.9
Grade level	
One	29.6
Three	42.2
Four	58.9
Six	56.9

People and residential buildings were common attributes of photographed scenes for all regions and grade levels, illustrated in Table 4. A higher percentage of urban region photographs had people in them compared to other regions, but not a dramatic difference.

For grade levels, there was a decline in the percentage of photographs with people in them as grade levels increased. This again, however, was not a notable trend. Table 4 also shows the percentage of photographs with residential buildings, which were common and uniformly represented across regions and grade levels. A high percentage of the buildings were shaded,

Table 3. Percentage of photographs with non-green attributes and percentage of non-green scenes with pavement or water.

Attributes	Regions			Grade level			
	Urban	Suburban	Rural	One	Three	Four	Six
% with "non-green"	99.7	98.6	99.3	99.8	98.2	98.7	99.8
% with pavement	63.8	49.9	39.7	53.0	54.8	48.3	46.7
% with water	12.1	16.5	8.2	6.2	9.0	22.5	11.9

and it was uniformly represented across age levels and regions. Unfortunately, in many of the photographs it was difficult to discern whether the shade was projected by trees or other buildings, so "shaded" is very generic in this analysis.

Table 5 show the percentage of photographs with parks, parks with shade, playgrounds with equipment, playgrounds with trees and athletic areas [ball fields]. Trees were generally well represented in parks; a high percentage of playgrounds also had trees, with the exception of suburban areas. Urban and suburban region photographs contained the highest percentage of parks, rural region photographs had the highest percentage of athletic fields; and urban area scenes contained the fewest playground with equipment scenes, a notable difference when compared to suburban areas. Grade level trends showed younger children photographed playground scenes more than the other two attributes, and older children photographed more park scenes.

Discussion

Many regional stereotypes were confirmed by this study: children in urban areas live in an environment that has more pavement in it than rural area children are exposed to; suburban and rural areas produced more "green" scenes. Photographs from urban areas contained more people than rural area photographs did. Younger children spent more time in playgrounds than older children did. These are confirmations of what we probably all would have predicted.

Perhaps more significant is not how the regions or grade levels differed, but how similar they were. All regions and grade levels had a high percentage of their photographs with trees in them. Most residential buildings were shaded, by something; most of the parks and playgrounds had trees present. The residential areas that the children from Four Winds school live in are not heavily forested. This area is characterized by major roads and shopping districts. The rural area was not a forested area either; corn, soybeans and clover dominate that landscape. And yet, most of the photographs included trees in the scenes. Possibly, the children did seek out urban forests to

Table 4. Percentage of photographs with people, residential buildings, and residential buildings shaded.

	w people	w residences	residences shaded
Region		%	
Urban	47.1	54.0	73.7
Suburban	38.9	46.5	83.5
Rural	43.2	45.3	69.4
Grade level			
One	58.8	54.4	72.5
Three	42.2	42.2	77.5
Four	36.2	46.6	78.0
Six	35.3	50.6	75.4

Table 5. Percentage of photographs with parks, parks with shade, playgrounds with equipment, playgrounds with trees and athletic areas.

	Parks	Parks w shade	Playgrounds w equipt	Playgrounds w trees	Athletic areas
Region			%		
Urban	16.2	93.9	2.6	75.0	3.0
Suburban	15.6	91.1	17.6	44.4	5.6
Rural	10.2	95.7	7.5	88.2	16.8
Grade level					
One	5.8	92.6	15.8	32.4	7.5
Three	12.4	93.8	9.5	81.6	12.0
Four	24.3	94.0	7.3	82.9	7.7
Six	13.4	91.7	6.5	57.1	7.1

document their everyday lives. Possibly, the frequency of trees in photographs was coincidental; trees just happened to be present where the photographs were taken. However, the fact that the children in the very urban, heavily developed inner city and the children in the largely agronomic rural area chose to photograph in or near areas with trees is notable. Whether or not the photographers intentionally included trees in their work is speculative; the point that the children were near the trees in 80.8-89.5% of the "green" photographs is notable. Trees are influencing these young lives.

Another interesting exception to predicted outcomes was the number of scenes with water present. This study was performed in the middle of the great flood of 1993 in Minnesota, and Winthrop was literally surrounded by flooded rivers and streams. A major highway into Winthrop was closed due to high river waters the day that the investigator delivered the cameras. However, water scenes were not as common in the rural area photographs as they were in the urban area scenes.

In regards to urban forest design, particularly in very urban areas, attention should be given to parks since that was a more commonly photographed scene for these children as compared to rural area children. Interpreting the relatively low percentage of urban area scenes in playgrounds with equipment is difficult; perhaps there are far fewer playgrounds available than there are in suburban or rural areas, or perhaps the children avoided playgrounds in favor of parks.

Perhaps an important conclusion that could be drawn from this study is more related to the methodology used. It was a different way to "survey" children, potentially with less bias than other methods. The return rate was very good, approaching 75% of all cameras distributed; and the majority of the children did not abuse their freedom to photograph anything they wanted to. The only drawbacks to conducting an analysis such as this are that it is very labor and time intensive, and clarifications or interpretations cannot be made since the photographers were not part of the analysis.

Acknowledgment. This research study was supported by grants from Northern States Power Company and United Power Association of Minnesota, and materials and services donated by Ritz Camera Centers.

Literature Cited

1. Dwyer, J.F., H.W. Schroeder, and P.H. Gobster. 1991. *The significance of urban trees and forests:toward a deeper understanding of values.* J. Arboric. 17(10):276-284.
2. Sommer, R., and C.L. Cecchettini. 1992. *Street tree location and sidewalk management preferences of urban householders.* J. Arboric. 18(4):188-191.
3. Talbot, J.F., and R. Kaplan. 1984. *Needs and fears: the response to trees and nature in the inner city.* J. Arboric.10(8):222-228.
4. Stiegler, J.H. 1990. Public perception of the urban forest. pp.40-45. **In** Proceedings of the Fourth Urban Forestry Conference, 1989. St. Louis, MO.

Extension Educator/Associate Professor
Urban and Community forestry
University of Minnesota
116 Green Hall
1530 N. Cleveland Ave.
St. Paul, MN 55108
and
Time for Trees Program Coordinator
Twin Cities Tree Trust
6300 Walker Ave. South
St. Louis Park, MN 55416