

**INTERESTS OF URBAN RESIDENTS IN WILDLIFE
AND
FEASIBILITY OF WILDLIFE EDUCATION PROGRAMS
IN TWO URBAN SETTINGS**

by

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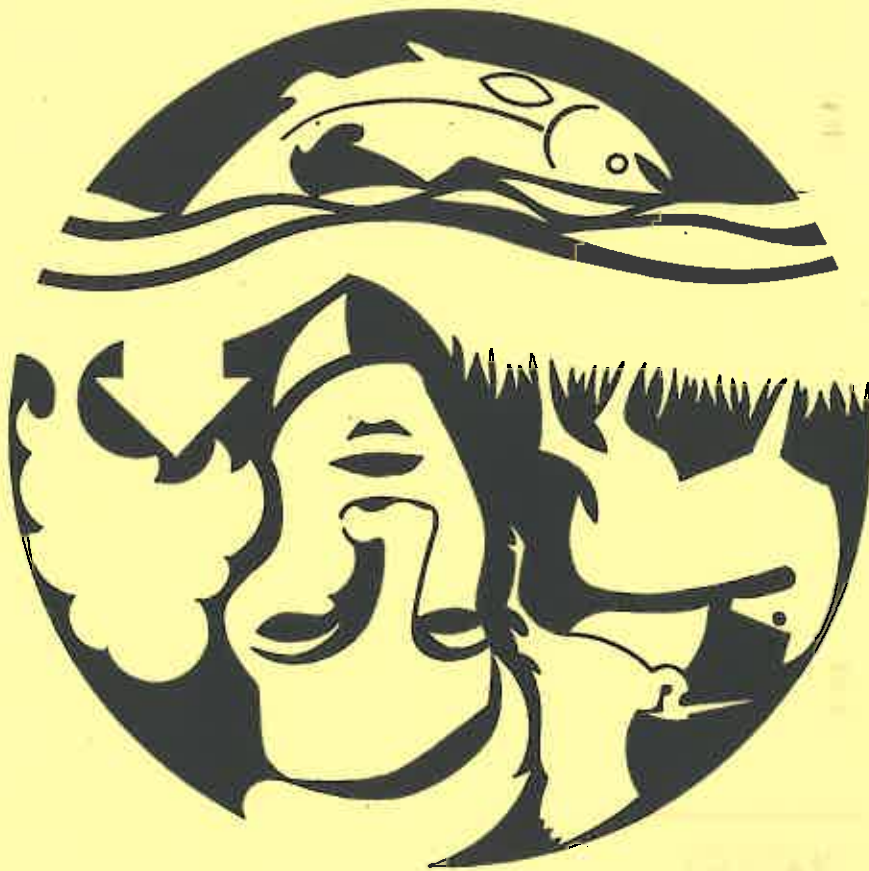
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FINAL REPORT

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JOB NUMBER AND TITLE: 146-01-03 - Effects of Social Factors and Trends on Participation in Wildlife Related Activities

- JOB OBJECTIVES:
- (1) To determine the demand for and feasibility of establishing urban wildlife programs in two pilot areas of New York and how to market those programs.
 - (2) To further our knowledge of how people develop an interest in wildlife and what social and cultural factors affect that development.

JOB DURATION: 1 April 1992- 31 March 1996

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EXECUTIVE SUMMARY

In 1992 and 1993 the Division of Fish and Wildlife began to seriously plan and implement a wildlife observation program. It is not specifically an "urban" initiative. At approximately the same time, the Division of Fish and Wildlife appears to have reached a consensus to increase urban programming. The agency has committed to providing mechanisms to increase the number and quality of positive "encounters" with wildlife by urban people.

Accordingly, in this study we set out to: a) examine the trends in urban wildlife programming interests between 1978 (when a similar study was

conducted) and 1994; b) define associations between wildlife interests found in 1994 and demographic variables that may assist in estimating the size of a program offering needed, and/or needed stratifications in the location and style of presentation; c) begin to understand how specific socio-cultural pathways operate and compete or coalesce in the development of wildlife interests and participation; and d) begin to develop the ability to predict the effect of actions or messages that condition those sociocultural pathways (whether they are NYSDC program efforts or other).

This job had two major objectives. The first was to determine feasibility of urban wildlife programs in two pilot areas of New York and how to market those programs. The second objective was to further our knowledge of how people develop an interest in wildlife and what social and cultural factors affect that development.

METHODS

Two areas of New York were chosen by Bureau of Wildlife staff as potential pilot sites for enhancing urban wildlife programming, Syracuse and

Southern (S.) Westchester County. A two-stage survey approach, telephone interview with mail follow-up, was used to determine the level and nature of interest of urban residents in wildlife in the two pilot areas. A sample of 2,400 households was drawn for each pilot area. From the initial sample of households (n=4,800), people in 1,011 households completed telephone interviews. Based on our definition of interest in wildlife, 834 of those interviewed by telephone were eligible to be sent the mail questionnaire. Of those eligible, 80% or 665 people agreed to fill out the mail questionnaire and provided us with their name and address. Finally, of those sent mail questionnaires, 378 returned them, resulting in an adjusted response rate of 57%.

POLICY RECOMMENDATIONS FOR PILOT URBAN WILDLIFE PROGRAMS

1. Additional demand for urban wildlife education programs exists in

Syracuse and S. Westchester.

Fifty-eight percent of Syracuse households and 56% of S. Westchester households indicated that someone in the household would be interested in attending wildlife education courses if offered in their neighborhood in the future. After weighting for a bias in education level the percent with interest dropped to 52% in both areas.

2. DEC, Bureau of Wildlife could conduct such programs without fear that their sponsorship would discourage participation.

Respondents were asked if they would participate in wildlife education programs if they were taught by DEC, Bureau of Wildlife personnel. Almost all respondents (96%) indicated they would participate.

3. A self-supporting program could be achieved by charging approximately \$13 per half-day program. This fee would be acceptable to less than

half of those with interest in programs. Some type of subsidy or cut in projected costs would be necessary to make the program available to the majority of those with interest.

Most respondents who were asked if they would be willing to pay \$5 or \$10 for a full day program said yes. The point at which only half of the respondents would be willing to pay, was reached at between \$20 and \$25 dollars for both Syracuse and S. Westchester.

4. Initial programs should focus on identification of local wildlife and identification of birds in particular. Programs should be geared to an audience already somewhat familiar with wildlife.

Over half of those who were interested in future wildlife education programs would like to see programs that focus on identification of local wildlife and identification of birds in particular. Respondents who considered themselves already to be occasional or active participants in wildlife-related activities were most likely to be interested in future programs. Thus, program scope should take into consideration an already potentially active audience with some wildlife knowledge.

5. Programs should be offered primarily as half-day events on the weekend. Program length was somewhat of a concern for about half of the respondents. Full day programs might limit participation. Programs offered on the weekends were less likely to be noted as a concern than programs offered in the evening.

6. Programs should be offered somewhere within the study area, preferably in subareas with an above average level of interest in future programs. Most respondents (91% in Syracuse, 82% in S. Westchester) were willing to drive to attend programs. Analysis of the zipcodes of those interested in future programs gives some indication of sections of each pilot study area

where interest is highest. The greatest distance across a subarea with above average interest in future programs was approximately 9.5 miles in Syracuse and 14.5 miles in S. Westchester. It seems likely that programs situated within these areas would lose the fewest number of participants due to travel distance.

7. Use local newspapers, television and possibly a special DEC newsletter to announce programs.

The majority of respondents felt they could be best reached with information about future programs by local newspapers or local television. Using a combination of television and newspapers, announcements would likely reach 80% of Syracuse households and 73% of S. Westchester households with interest in future programs.

Three-quarters of respondents indicated an interest in receiving a newsletter that came out quarterly about wildlife and wildlife education programs in their area. About 84% of Syracuse households and 63% of S. Westchester households say they would be willing to pay \$3 per year to receive the newsletter. In Syracuse, an additional 10% of those with interest in programs would be reached by a newsletter costing \$3. This would be over and above those likely to be reached by local TV or newspapers, for a total of 90% of those with interest being reached. The increased percentage would be 16% in S. Westchester with a total of 89% of those with interest being reached by either local TV, newspapers or a newsletter.

8. Concentrate advertising in sections of S. Westchester with highest levels of interest when using more directed advertising methods such as newsletters.

This recommendation is made because S. Westchester contains such a large population that sending newsletter announcements to all households would probably be financially impractical.

9. Programs should appeal to a culturally diverse, better educated, middle-aged audience. Some programs should be for families.

Households with children were more likely than households without children to express interest in future wildlife education programs. However, since households without children make up such a large proportion of all households, the majority of households likely to participate in future programs would be households without children.

Our findings on the importance of families, especially parents, for developing active participants (from Section II of the report) suggests that urban wildlife programs designed to increase participation in wildlife-related activities in the future should focus on educating parents about wildlife and then having them teach their children. Courses for adults only or adults with children might be more effective than courses for children only.

The majority of participants would likely have some college-level background and fall in the 25-44 year old age bracket. We found no difference in likely participation rates based on racial background.

10. The message or tone of the program should take into account participants' present views on the environment and its management. Most respondents would be receptive to program content that discussed the importance of management of the environment by humans. Based on answers to the management questions at the end of the New Environmental Paradigm scale, we categorized respondents into three groups with different views on management. The majority of respondents (84.5%) felt that humans should

manage the environment for the benefit of ecosystems that included humans. he second group, consisting of 13.3% of respondents with interest in future programs, believed that humans should not manage the environment. This group was twice as likely as the other groups to contain respondents with a high school education or less. This group would likely take offense at, or not attend programs they believed advocated management of the environment, including wildlife. The third group consisted of only a few respondents (2.2%) who felt that the environment should be managed for the benefit of humans only without regard to plants and animals.

SOCIAL AND CULTURAL INFLUENCES ON WILDLIFE INTEREST DEVELOPMENT AND PREDICTIONS OF FUTURE PARTICIPATION

1. Sociodemographic trends indicate an aging population and one less dominated by whites. Current data on participation in wildlife-related activities indicates that both of these trends will result in fewer people actively participating in wildlife-related recreation in the future. The task faced by agencies who want to maintain or increase active participation levels then is great. Educational efforts such as the urban wildlife program

discussed in the first half of this report, the Apprentice Hunter program, and the Becoming an Outdoors Woman program become more important as they all attempt to develop interest and provide experiences for increasing

participation by those less likely to become active participants on their own. 2. We found a positive relationship between family influencers and more active participants. If an agency goal is to develop active participants, our research suggests that working through families to develop interest in children is very important. This study did not examine the importance of

families in merely developing interest in wildlife (as opposed to active participation). Future research is needed to determine barriers to basic awareness or interest development in these urban populations.

3. This study examined two pilot areas in urbanized portions of New York State. Other upstate urban areas such as Albany and Rochester and downstate areas peripheral to New York City could be expected to yield similar findings to Syracuse and S. Westchester. The study results are less applicable to rural areas of New York.

4. Positive views of the Bureau were common among those aware of the agency. Concern by some Bureau staff about a poor image of the agency among urban New Yorkers was not supported by this study. However, lack of awareness of the agency was a problem for many people, especially nonwhites, the young, and less educated. Increasing awareness of the agency in urban areas should be more of a priority than concerns about changing a poor image for the few who have it.

5. As has been seen in other studies, those who participate in consumptive activities are likely also to participate in nonconsumptive activities. This shared interest should be built into program planning, and people should not be thought of as just hunters or anglers.

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INTRODUCTION

Wildlife managers and researchers in New York and elsewhere have had only rudimentary knowledge of the nature of urban wildlife interests. The origins, development, and correlations of these interests with social or cultural factors have not been defined. Some trend data on participation can be ascertained from the 1980, 1985, and 1990 USFWS studies. However, we have almost no idea whether changes we see are short or long-term trends or what factors have affected the few observed changes that have been monitored. Relationships between changes in type or level of participation and changes in social or cultural factors are relatively unknown.

From an initial study in 1978, we learned that a majority of sampled metropolitan residents said they would like more encounters with wildlife in their neighborhoods. More specifically, they indicated an intention to take advantage of wildlife identification and natural resource interpretation outings for themselves and their children. They wanted additional opportunity to observe more and greater diversity of wildlife—in spite of their recognition that a city's wildlife habitat is often limited in quality and quantity, and that human population density can be a limitation; and in spite of their prior wildlife damage or nuisance experience.

Planning and program direction decisions based on demographic extrapolations do not adequately consider the dynamics or impact of participation, especially by those who are trying out an activity; or those who have a low level of commitment and low potential for sustained participation. Based on our experience with other outdoor activities, we believe that typical demographic strata are not sufficient to reliably predict which socio-cultural factors are operant. DEC managers and HDRU researchers do not believe typical variables such as age, education and income predict the

potential scope, intensity, or salience of an individual's wildlife attitudes, values, interests, or recreational participation well enough to plan or budget management efforts.

In numerous studies of participation in hunting, a more rural-oriented wildlife activity, social processes and factors (e.g., interactions within age or income groups, peer groups, and the family) have been tied to value orientation and participation level or history. Similarly, cultural factors or their indices (e.g., rural versus urban upbringing, early experiences or parental/peer attitudes related to adoption of hunting) have also been explored. These research experiences also encouraged our attempts to apply unifying concepts such as social worlds to urban wildlife interests and activities.

Social and cultural factors seem to be dynamically involved in the formation and expression of values, beliefs and behaviors (Stedman et al. 1993). They influence the processes that establish norms of value and behavior and changes in the development or expression of wildlife interests. Those changes in turn appear to shape trends in participation.¹ Such understandings should help explain observed changes in value norms and/or in level or nature of participation. Knowing how such factors operate should help managers anticipate the effects a change in management, or a swing in

¹People value wildlife and benefit from wildlife management in varied ways. Some values related to wildlife are manifested in participation activities that can be observed. Managers are often frustrated because measurements of such "participation" do not fully reflect relative amounts of benefit or value received (or lost). Other activities or "encounters," such as those that are incidental or unplanned, are difficult to observe and are even more difficult to quantify or manage for. Even when different individuals do the same activity in the same place, they do not each receive the same benefits because their wishes and expectations differed going into the activity, and therefore their satisfaction with the experience differed. These frustrations need not discount the importance of participation as an index of: level of public desires or needs for specific types of encounters or activities, the effectiveness of management actions, the priority of management alternatives, or the relative importance of conflicting uses of resources. Changes in participation level need to be recognized and used as one index of satisfaction. Actions are taken to increase participation with the rationale that total benefit or value accrued will similarly increase.

social or cultural values, would have on participation and resulting needs to adjust wildlife population levels or their distribution.

Level and type of wildlife interests were not identical in all urban settings sampled in New York, but they were surprisingly widespread and

similar in nature. In 1992 and 1993 the Division of Fish and Wildlife began to seriously plan and implement a wildlife observation program. It is not specifically an "urban" initiative. At approximately the same time, the

Division of Fish and Wildlife appears to have reached a consensus to increase urban programming. The agency has committed to providing mechanisms to

increase the number and quality of positive "encounters" with wildlife by

urban people. Such positive encounters are believed to be keys to improved

recognition and understanding of each citizen's responsibility to support and cooperate with management of wildlife and other natural system elements as

renewable resources in shared ecosystems.

Assuming that wildlife encounters in a learning context would continue

to be the most universally sought "program" in 1995, the Division began to

determine the requirements for offering that service. Numbers of

participants, experiences sought, attitudes toward management, fees that can

be generated, agency credibility, use of alternative programs, the settings or

conditions that are required for participation, and associated costs, will be

primary determinants in new programming.

Two areas of New York were chosen by Bureau of Wildlife staff as potential pilot sites for enhancing urban wildlife programming, Syracuse and Southern (S.) Westchester County. These sites were chosen in part using data from the 1978 Urban Wildlife Study which indicated they had the highest potential for assessing program feasibility both in an upstate and downstate

METHODS

Accordingly, in this study we set out to: a) examine the trends in urban wildlife programming interests between 1978 and 1994; b) define associations between wildlife interests found in 1994 and demographic variables that may assist in estimating the size of a program offering needed, and/or needed stratifications in the location and style of presentation; c) begin to understand how specific socio-cultural pathways operate and compete or coalesce in the development of wildlife interests and participation; d) begin to develop the ability to predict the effect of actions or messages that condition those socio-cultural pathways (whether they are NYSDEC program efforts or other). This job had two major objectives. The first was to determine feasibility of urban wildlife programs in two pilot areas of New York and how to market those programs. The second objective was to further our knowledge of how people develop an interest in wildlife and what social and cultural factors affect that development. After discussing the methods used, the report will divide into two sections, one addressing each major study objective.

OBJECTIVES

urban area. They also provided the best opportunity to sample a cross section of the demographic strata analyzed in the initial study.

A two-stage survey approach, telephone interview with mail follow-up, was used to determine the level and nature of interest of urban residents in wildlife in the two pilot areas. Questions in both instruments were designed with a concern for comparability with the 1978 study. The initial telephone interview contained questions on past participation in wildlife-related activities, degree of interest in wildlife-related programs in urban areas, and sociodemographic characteristics. (See Appendix A for exact content and wording of telephone interview questions.) Interviewees who indicated some interest in wildlife-related activities or future wildlife-related programs were asked if they would be willing to complete a more detailed follow-up mail questionnaire. The mail questionnaire contained questions on how individuals developed an interest in wildlife, types of past programs participated in, specific interest in future programs and constraints to future participation. (See Appendix B for exact content and wording of the mail questionnaire.)

References in the text to all respondents or all households in Syracuse and S. Westchester refer to data derived from the telephone interview. References to data indicating the respondents had an interest in wildlife were derived from the mail questionnaire.

Study Area

The Syracuse study area was defined by the 1990 Census as the Syracuse Urbanized Area minus the villages of Baldwinsville and Phoenix. This area was larger than that studied in 1978, but represented the urban growth of Syracuse. Residents of the entire area were needed for an accurate representation of the current urban population. Telephone numbers were

systematically selected from the 1993-94 Syracuse telephone directory using a list of telephone exchanges within the study area.

The Southern Westchester County study area was defined as the townships in Westchester County south of the North Tarrytown-Mount Pleasant-North Castle town boundaries. This area was identical to that studied in 1978 and contains the heavily urbanized areas of Yonkers and Mount Vernon (10,000 to 15,000 people per square mile, according to the 1990 Census). It also corresponded with the telephone area defined as the Lower Westchester Exchanges. The sample for this area was drawn randomly from telephone listings by Survey Sampling Inc.

Survey Implementation

A sample of 2,400 households was drawn for each pilot area. Households were contacted by telephone and interviewees were selected using the method outlined by Dillman (1978) to randomize which adult in the household is interviewed. Telephone interviewing was conducted in late February and March 1994. Attempts were made to contact each household at least once. Based on anticipated mail survey response rates, telephone interviewing was stopped when a large enough sample ($n=450$) was obtained in each area to permit analysis of key mail questionnaire items at the $P \leq 0.05$ significance level. Interviewees with an interest in wildlife or future wildlife programs were sent a mail questionnaire in April, 1994. Up to three follow-up mailings were sent to nonrespondents over the course of the following month.

Survey Response

The telephone interview refusal rate was high (Table 1), especially in S. Westchester (32%). From the initial sample of households ($n=4,800$), people in 1,011 households completed telephone interviews. Based on our definition

Table 1. Sample selection process—overall and by pilot study area.

Initial Sample	Pilot Study Area		Overall
	Syracuse	S. Westchester	
2,400	2,400	4,800	
Telephone Interview			
Refusals	543	777	1,320
Refusal rate	22.6%	32.4%	27.5%
Completed	542	469	1,011
Mail Questionnaire			
Eligible based on definition of wildlife interest	466	368	834
Agree to be surveyed	387	278	665
Noncooperation rate	16.9%	24.5%	20.3%
Undeliverables	5	2	7
Completed questionnaires	237	138	378 ^a
Response rate (based on those agreeing to be surveyed minus undeliverables)	62.0%	50.0%	57.4%

^aIncludes 3 questionnaires where the ID number was removed so they could not be assigned to a pilot area.

of interest in wildlife (defined at the beginning of this Methods section), 834 of those interviewed by telephone were eligible to be sent the mail questionnaire. Of those eligible, 80% or 665 people agreed to fill out the mail questionnaire and provided us with their name and address. The mail questionnaire noncooperation rate was also higher in S. Westchester than in Syracuse (Table 1). Finally, of those sent mail questionnaires, 378 returned them, resulting in an adjusted response rate of 57%. Differences in cooperation and response rates between Syracuse and S. Westchester resulted in a larger sample size to analyze in Syracuse (Table 1).

Analysis

Data from the telephone interview and mail questionnaire were coded by HDRU staff using the SPSS Data Entry II software package. Analysis was conducted using the SPSS statistical package (SPSS Inc. 1992). Chi-square, t-tests, and Scheffe's test were used to test for statistically significant differences at the $P \leq 0.05$ level.

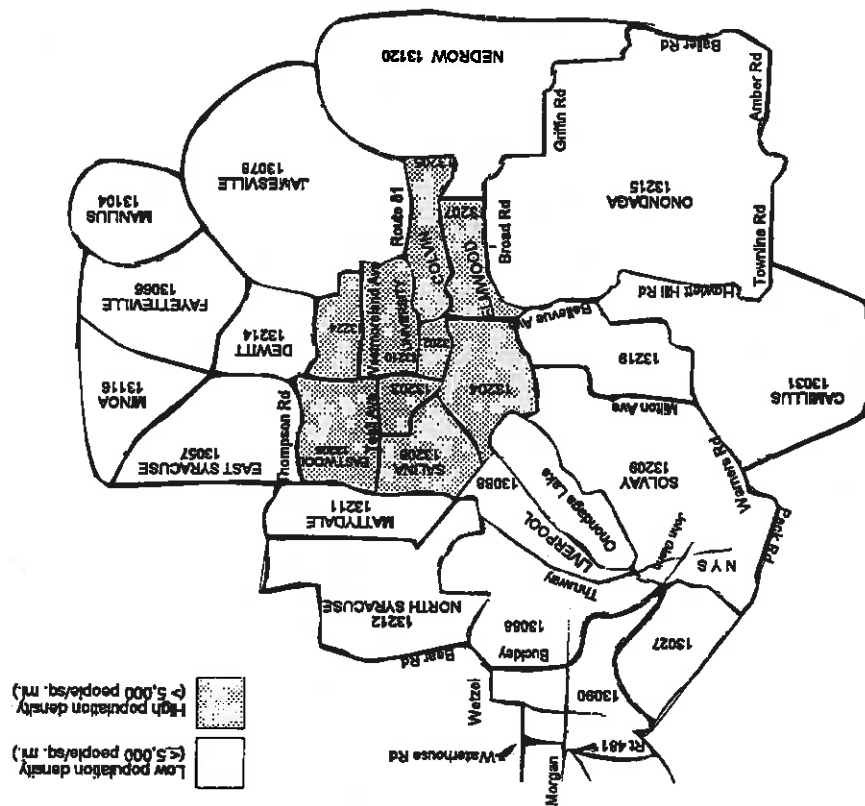
Defining High Population Density Subareas within the Pilot Study Areas

Population density information from the 1990 Census was matched with zipcode areas to identify respondents to the mail questionnaire living in low or high density subareas with the two pilot study areas. It was assumed that high density areas would have less open space and residents of those areas might face different constraints to participation in wildlife education programs. Areas with a population densities of $> 5,000$ people per square mile were considered high and $\leq 5,000$ were considered low. Thus for the Syracuse area, the central city of Syracuse was considered high and the surrounding areas low (Figure 1). For S. Westchester, much of the lower half of the study area was considered to be a high density area (Figure 2).

Comparisons with 1990 Census Data

Representativeness of the sample is always a concern, but with high telephone refusal rates it became an even greater concern. The sample was drawn from telephone listings and was intended to be representative of households in each pilot study area. To examine how representative telephone respondents were, data from the 1990 Census was compared with sociodemographic data provided by respondents (Table 2). The distribution of sex, age, race, and household composition of approximated Census data in both pilot areas. The frequency distribution of

Figure 1. Population density within Syracuse pilot area (approximated using 1990 Census data and zip codes).



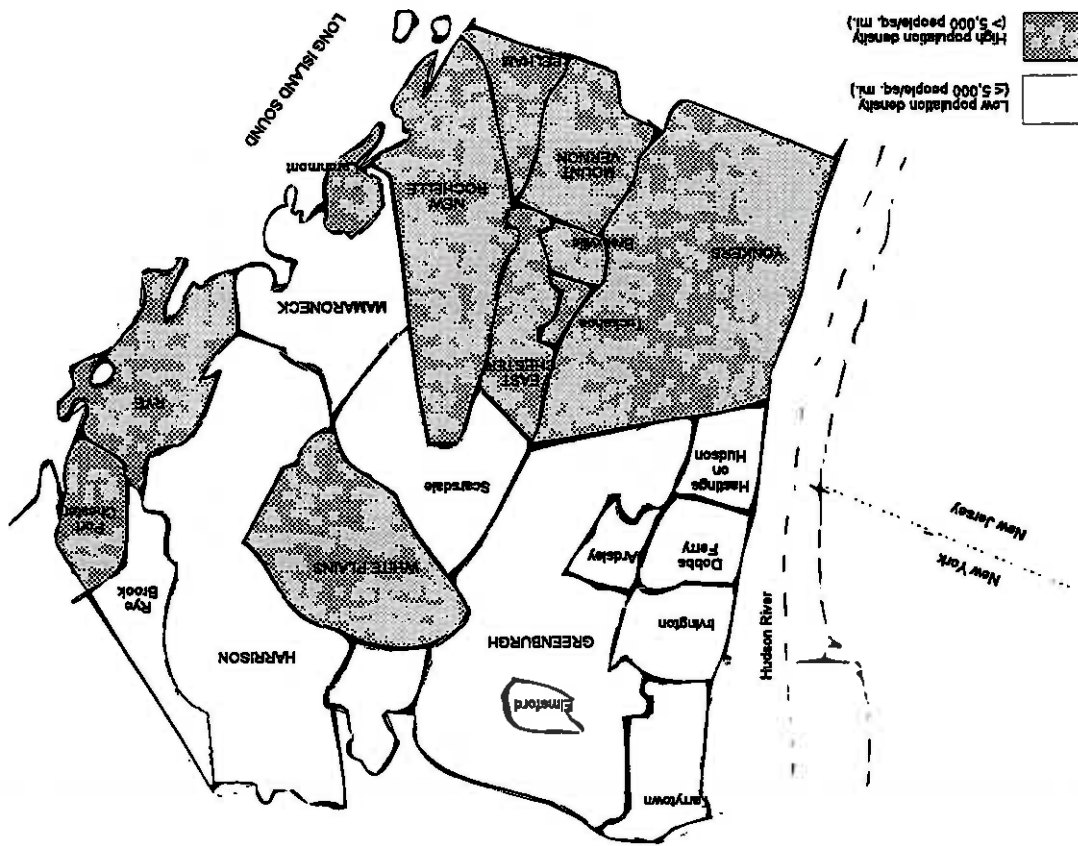


Figure 2. Population density within S. Westchester pilot area (approximated using 1990 Census data and zip codes).

Table 2. Comparison of sociodemographic characteristics of respondents before and after weighting for educational attainment with 1990 Census data.

	Pilot Study Area					
	Syracuse			S. Westchester		
	1990 Census	Sample	Sample After Weighting for Education Percent	1990 Census	Sample	Sample After Weighting for Education
Sociodemographic Characteristics						
Sex of Respondent (adult ≥ 18 yrs. old)						
Male	46.5	46.6	43.8	46.8	44.6	42.2
Female	53.5	53.4	56.2	53.2	55.4	57.8
Age of Respondent						
18-24	16.9	5.1	10.1	12.4	5.6	6.9
25-44	42.0	46.4	37.6	40.2	39.8	35.9
45-64	23.3	29.7	29.1	27.7	32.2	30.0
65+	17.8	18.8	23.2	19.7	22.4	27.2
Race of Respondent (race of householder)						
White	89.0	92.2	87.3	75.5	79.6	76.4
African-American	8.6	4.8	9.2	16.5	9.2	11.1
Other	2.4	3.0	3.5	8.0	11.2	12.6
Educational Attainment of Respondent (adults ≥ 25)						
Grades 1-11	20.0	4.6		20.7	4.5	
Grad. High School	30.0	26.0		25.8	24.6	
Some College	25.6	26.6		19.9	19.6	
Grad. College	15.1	20.2		17.8	21.7	
Some Post Grad.	9.3	22.6		15.8	29.6	
Household Composition						
Adults only	69.0	63.4	63.6	73.4	63.8	65.0
Two adults with children	22.2	32.9	31.6	22.2	32.5	32.3
Single female with children	7.5	2.4	3.2	3.5	3.0	2.3
Single male with children	1.3	1.3	1.6	0.9	0.7	0.3

respondents 25 years and older by educational attainment was skewed toward the high end in both pilot areas. We have found that respondents to surveys often have higher education levels. In this study, we found higher education levels were associated with greater interest in future wildlife education programs. To ensure that our estimates of demand for wildlife education programs were not affected by this bias, data were weighted to reflect 1990 Census data on educational attainment. In doing so, distributions of other sociodemographic characteristics were changed, most notably age and sex (Table 2).

We found that weighting the data for education did slightly reduce the percent of respondents interested in future wildlife education programs. Thus, estimates of demand for these programs were calculated using these numbers in an effort not to overstate real demand. However, weighting for educational attainment did not change other estimates such as degree of interest in program topics or estimates of past participation. Thus, data were weighted for differences in educational attainment only for estimates of demand for future programs.

Comparisons between Methods

Respondent consistency between survey methods was examined by comparing several questions which were asked both during the telephone interview and in the mail questionnaire. Respondents recall of past participation in conservation or environmental programs was inconsistent between the two instruments. Interest in future programs was consistent between methods. Three-quarters of respondents were consistent about their interest in future wildlife education courses. However, of those who indicated on the telephone that they had participated in past programs, less than half (44%) indicated on the mail questionnaire that they had so participated. A number of reasons

could be postulated to explain this difference. Possibly respondents: (1) found the two pages of questions on past participation daunting and wrote nothing down, (2) tried to recall the programs they had attended but realized they had not occurred during the previous year, or (3) felt that past participation was a more socially desirable response to give a telephone interviewer, but felt no need to do so on the mail questionnaire. A number of respondents (14%) who said they had not participated in programs during the telephone interview answered in the affirmative on the mail questionnaire. The detailed questions on the mail questionnaire may have stimulated their recall.

POLICY RECOMMENDATIONS FOR PILOT URBAN WILDLIFE PROGRAMS

1. Additional demand for urban wildlife education programs exists in Syracuse and S. Westchester.

A small group of people have participated in conservation or environmental programs in the past 12 months. Fifteen percent of Syracuse households and 12% of S. Westchester households interviewed by telephone had at least one household member participate in conservation or environmental information programs in the 12 months prior to the interview. The active households in the two regions said they participated in an average of 3 and 4 programs, respectively, in the past year. The most frequently checked topics of past programs were "learning to identify local wildlife" (50%) and "learning about life cycles and habits of local wildlife" (51%).

Demand for future wildlife education programs is higher than past participation rates. Fifty-eight percent of Syracuse households and 56% of S. Westchester households indicated that someone in the household would be interested in attending wildlife education courses if offered in their neighborhood in the future. After weighting for a bias in education level, the percent with interest dropped to 52% in both areas. This is still substantially higher than past participation rates in wildlife education activities.

We weighted the proportion of respondents with interest in future programs by educational attainment and then we developed expanded estimates using data from the 1990 Census to get a rough estimate of the number of people in each pilot area with an interest in wildlife education programs. We found that approximately 110,000 adults and children in Syracuse and 160,000 adults and children in S. Westchester would have interest in specific wildlife education programs (Table 3). Respondents in Syracuse said they or other members of their household would be interested in participating in wildlife education programs an average of 10 days per year; S. Westchester respondents said an average of 7 days per year.

Questions from the 1977 Urban Wildlife study (Brown and Dawson, 1978) on interest in wildlife education programs were repeated verbatim in the current study to allow for comparisons between the two studies. As Table 4 shows, little change has occurred in the number of households participating in conservation or environmental programs or in the level of interest in future programs. Apparently no programs have been implemented in the intervening years to satisfy what appears to be a strong demand.

The results of the current study show that strong demand for programs exists, but actual participation rates in new programs will depend on a variety of factors. Some assessed in this study and discussed below include: topics covered, marketing considerations, cost, sponsorship, and travel distance. Other factors not assessed in this study include: advertising (amount and quality), weather, and quality of instruction. An evaluation of initial programs and their marketing would improve our assessment of potential demand for these initial programs. Programs designed for repeat participants would have a different demand level based in part on participants satisfaction with the initial program. The information presented in this report addresses demand for initial programs only.

*Estimates are based on 1990 Census information for households in the pilot study areas (Syracuse: adults = 269,184; children = 84,540; S. Westchester: adults = 473,280; children = 131,977).

Pilot Study Area	Household interest in some type of program		Percent
	Syracuse	S. Westchester	
	58.0	55.8	
Data weighted for educational attainment			
Household interest in some type of program	52.4	52.2	
Household interest in program to study life cycles and habits of local wildlife	39.8	38.6	
Estimated number of adults*	74,500	113,900	
Estimated number of children	35,600	56,300	
Household interest in program to learn to identify local wildlife	40.4	37.4	
Estimated number of adults	79,000	108,400	
Estimated number of children	41,800	50,600	

Table 3. Estimates of demand for future wildlife education programs.

Table 4. Comparison of past participation and interest in future wildlife education programs between 1977 and 1994 studies.

	Pilot Study Area			
	Syracuse		S. Westchester	
	1977 ^a	1994	1977 ^a	1994
Percent				
Households who participated in conservation or environmental programs in 12 months prior to survey.	11.9	14.8	14.5	12.3
Number of adults who would participate in programs to study life cycles and habits of local wildlife.				
0	67.3	60.9 ^b	67.6	64.0 ^b
1	20.0	24.3	16.2	24.9
2	10.2	14.1	15.2	9.8
3 or more	2.4	0.7	1.0	1.3
Number of adults who would participate in wildlife identification programs.				
0	60.8	61.1	62.4	65.8
1	25.3	21.4	20.5	23.3
2	12.2	16.1	15.6	10.3
3 or more	1.6	1.4	1.5	0.6
Of households with children, number of children who would participate in programs to study life cycles and habits of local wildlife.				
0	51.9	52.9	57.3	52.4
1	20.3	23.3	20.0	25.0
2	16.5	17.0	16.0	18.3
3 or more	11.4	6.8	6.6	4.3
Of households with children, number of children who would participate in wildlife identification programs.				
0	48.1	47.6	45.3	55.5
1	25.3	26.2	25.3	26.2
2	16.5	18.4	20.0	14.0
3 or more	10.1	7.8	9.3	4.3

^aSource: Brown and Dawson, 1978.

^bAll 1994 data estimating future participation has been weighted by educational attainment of respondents.

2. DEC, Bureau of Wildlife could conduct such programs without fear that their sponsorship would discourage participation.

Respondents were asked if they would participate in wildlife education programs if they were taught by DEC, Bureau of Wildlife personnel. Almost all respondents indicated they would participate (Table 5). The few that said "No", indicated that they would not because they (1) did not want to see tax money spent on such programs, (2) the programs should be run privately, or (3) the government may have a vested interest in the topics covered.

Respondents who indicated via telephone that no one in their household would be interested in wildlife education programs were asked for reasons for their lack of interest. Only one respondent indicated their negative opinion toward DEC would prevent them from participating. (DEC was cited as the sponsor of the research study, not necessarily the sponsor of the wildlife education program.) Respondents were asked if any of several reasons for their lack of interest, listed by the interviewer, applied to them. Half of the respondents in S. Westchester and 45% in Syracuse indicated that they were not interested in the topic. Therefore, approximately one-quarter of all urban households in Syracuse and S. Westchester said they were not interested in wildlife topics. African-Americans were more likely than other racial groups to express no interest in wildlife topics (38% vs. 22%).

Households in S. Westchester were less likely than Syracuse households to express interest in group activities (Table 6). Lack of interest in group activities did not differ by age or race. One-fifth to one-quarter said they already had the knowledge or skills they thought would be offered in any future program. This is consistent with this groups increased likelihood of being currently active in wildlife-related recreation activities.

Table 5. Respondents' level of concern for factors that might impact participation in future wildlife education programs by pilot study area.

<u>Factors That Might Impact Participation</u>	<u>Pilot Study Area</u>			
	<u>Syracuse</u>		<u>S. Westchester</u>	
	<u>Somewhat of A Concern</u>	<u>Very Much of A Concern</u>	<u>Somewhat of A Concern</u>	<u>Very Much of A Concern</u>
	<u>Percent</u>			
Full-day programs	24.8	24.2	21.2	32.9
Programs offered in the evening	18.9	18.2	22.2	18.9
Programs offered on weekends	11.9	13.8	13.3	11.1
Safety in neighborhood parks	13.8	17.6	16.9	24.7
Safety of public transportation to programs	10.9	14.1	10.5	22.1
Participate if taught by DEC, BOW	<u>No</u> 4.4	<u>Yes</u> 95.6	<u>No</u> 3.5	<u>Yes</u> 96.5

Table 6. Reasons given for lack of interest in participating in future wildlife education programs, by pilot study area.

Pilot Study Area		Reasons for no interest in future programs
Syracuse	S. Westchester	
Percent checked ^a		
51.2	40.7*	Not interested in the topic
44.8	30.5	Not interested in a group activity
25.6	19.6	Already have knowledge/skills offered
2.2	1.0	Already participating in programs

^aPercents do not add to 100% because respondent could indicate more than one reason.

*Statistically significant difference between pilot study areas at $P \leq .05$ using Chi-square test.

3. A self-supporting program could be achieved by charging approximately \$13 per half-day program. This fee would be acceptable to less than half of those with interest in programs. Some type of subsidy or cuts in projected cost would be necessary to make the program available to the majority of those with interest.

Willingness to pay for wildlife education programs was estimated using a dichotomous choice method where respondents are randomly assigned an amount and asked if they would be willing to pay that amount for a full day program. The percent willing to pay a given amount decreases as the amount of money increases. At some high amount no one would be willing to pay. We chose to limit the high end to an amount just above what we thought most people would be willing to pay for future programs.

Most respondents who were asked if they would be willing to pay \$5 or \$10 for a full day program said yes (Figure 3). The point at which only half of the respondents would be willing to pay, was reached at between \$20 and \$25 dollars for both Syracuse and S. Westchester.

Using the following assumptions, we estimated the number of people who would attend a wildlife education program at different cost levels (Figure 4): (1) If respondents were willing to pay \$X for a full-day program, we assumed they would be willing to pay $1/2 \$X$ for a half-day program. (Half-day programs were preferred by respondents, as discussed later in the report.)

(2) Two members of a household would participate. (3) Only 25% of those with interest and willing to pay the specified amount would actually participate. This number is based on participation rates of those with expressed interest in other DEC related programs (19% of women who wrote for a Becoming an Outdoors Woman brochure participated [K. Stang, pers. comm.]) and a review of literature on program participation rates nationwide (e.g., based on 17 studies, a median of 23% of smokers joined worksite smoking cessation programs [Glasgow et al. 1993]). (4) They would participate in only one half-day program.

A rough cost estimate to run a program for one year based on an average number of participants derived above would be: \$12.70 per participant in Syracuse and \$13.40 in S. Westchester. This estimate included half-time educators for 6 months, interns for summer months, a full-time program manager, a full-time secretary, rental space costs, equipment and transportation costs, and advertising costs in each location. Possible ways of reducing the estimated costs include coordination with other interested groups and use of interns instead of half-time staff.

Figure 3. Percent of respondents willing to pay for a full day wildlife education course at various levels of cost by pilot study area. (The data point for S. Westchester at \$15 was not presented because of the small sample size responding at that dollar amount.)

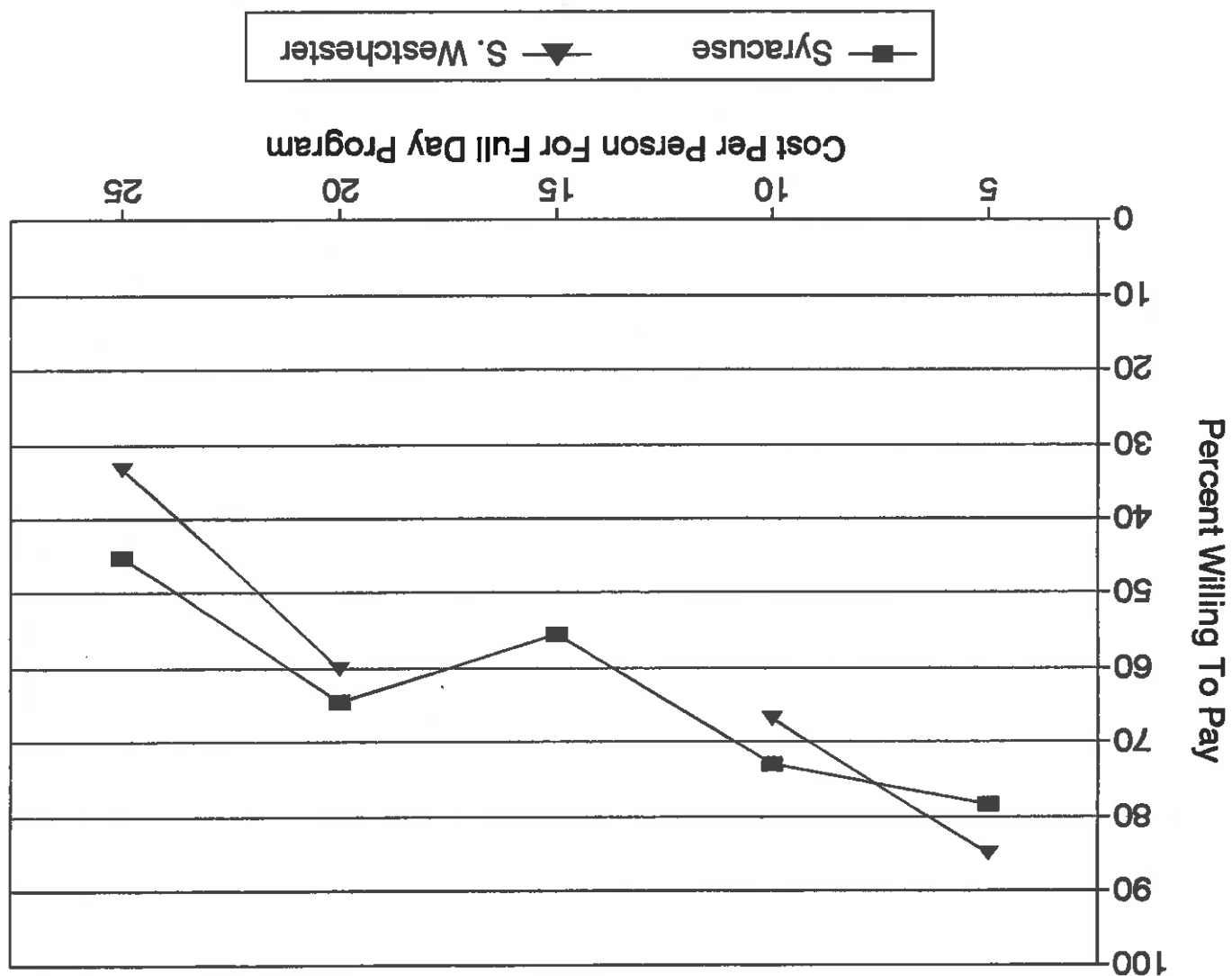
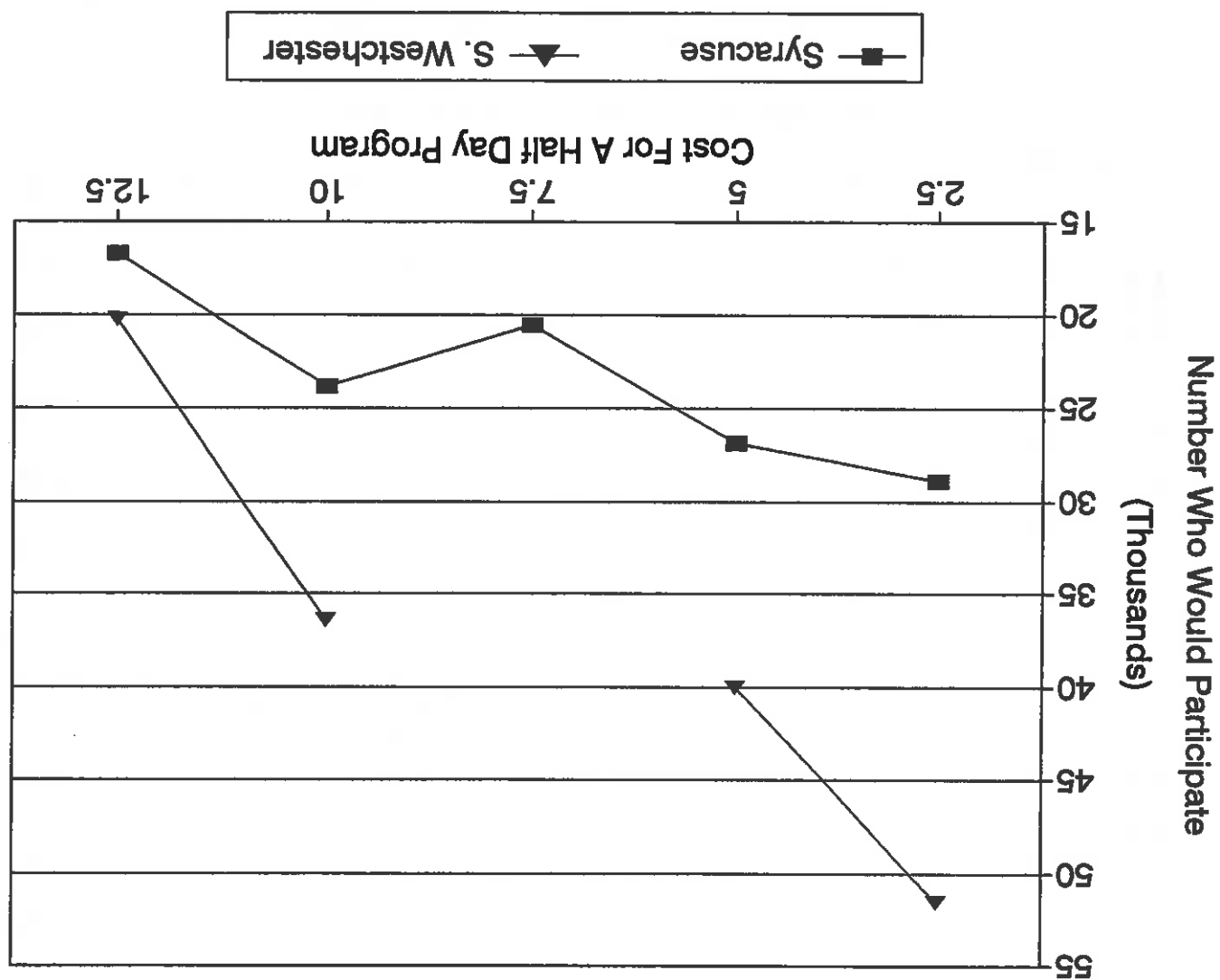


Figure 4. Number of people who would actually participate in a wildlife education program at various cost levels for a half-day program by pilot study area. (The data point for S. Westchester at \$7.50 was not presented because of the small sample size responding at that dollar amount.)



Over half of those who were interested in future wildlife education programs would like to see programs that focus on identification of local wildlife and identification of birds in particular (Table 7). How wildlife live in the urban environment, what their life cycles and habits are, and how to share this information with children were also commonly selected topics. Some Syracuse programs should emphasize learning about or modifying habitat to attract more wildlife to the area, because Syracuse residents expressed more of an interest in this topic. Few respondents were interested in learning about methods of controlling populations of wildlife. Older respondents (aged 65+) were twice as likely to be interested in this topic as younger respondents (41% vs. 17%).

4. Initial programs should focus on identification of local wildlife and identification of birds in particular. Programs should be geared to an audience already somewhat familiar with wildlife.

Comparing these costs with respondents willingness to pay (Figure 3) suggests that to achieve a self-supporting program the fee charged would be more than what the majority would be willing to pay. In order to provide a program that the majority of those with interest would be willing to pay for, some of the costs would have to be reduced or subsidized. For example, according to Figure 3 if a program was subsidized 20-25% (\$10 cost for a half-day) then 60-65% of those with interest would be willing to pay that amount. Household income affects willingness to pay for programs, with those at lower income levels less willing to pay at each dollar amount tested (Figure 5). Using Figure 5, programs planners could determine a sliding scale fee that would allow more households access to future programs.

Figure 5. Percent of respondents at household income levels above and below the median willing to pay for a full day wildlife education course at various levels of cost.

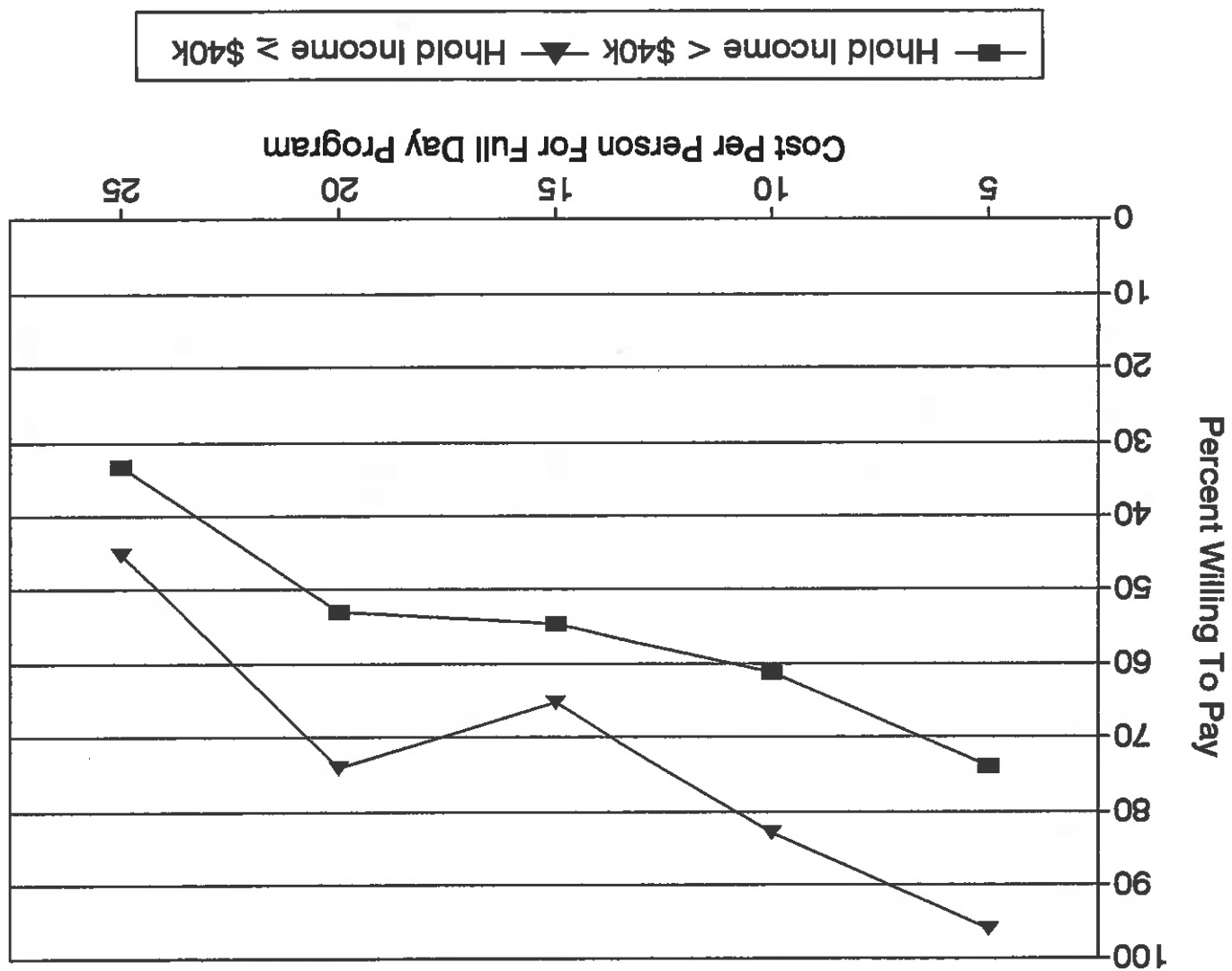


Table 7. Topics respondents said they would be interested in for future wildlife education programs by pilot study area.

Pilot Study Area		Program Topics	
Syracuse	S. Westchester		
Percent interested in topic		for future programs	
58.9	51.6	Identify local wildlife	58.9
59.6	52.6	Identify local birds in particular	51.6
45.8	47.4	How to teach children about wildlife	52.6
47.6	41.1	How wildlife live in an urban environment	47.4
47.6	41.1	Life cycles and habits of local wildlife	41.1
43.4	32.6*	Rare marine mammals and birds	41.1
45.2	42.1	Modifying habitat to attract wildlife	32.6*
32.5	30.5	Wildlife's role in the world	42.1
39.2	30.5	How to handle nuisance wildlife problems	30.5
34.3	30.5	How wildlife rehabilitators care for injured animals	30.5
23.5	24.2	Identify local fish in particular	24.2
18.1	24.2	Methods of controlling populations of wildlife	24.2
5.4	7.4	Other topics	7.4

*Statistically significant difference between pilot study areas at $P \leq .05$ using Chi-square test.

Preferences for different topic areas were not found to be associated with different household composition or race. While households with children were more likely to be interested in a variety of topics than households without children, no topic areas were checked more frequently by respondents from households without children. Thus no differences in topic areas covered can be suggested based on household composition. Additionally, no significant differences in topic preferences were noted by respondents of different racial backgrounds.

Respondents who considered themselves already to be occasional or active participants in wildlife-related activities were most likely to be interested in future programs (based on correlation analysis). They were more likely to

indicate interest in a variety of possible program topics than those with only a general or passive interest in wildlife. Thus, program scope should take into consideration an already potentially active audience with some wildlife knowledge, while program topics should remain those favored by the majority. Respondents who were currently members of conservation or environmental organizations were 25 to 30% more likely to be interested in future programs. Thus, some participants could be expected to have knowledge of wildlife issues based on their membership in these organizations. However, since the majority of respondents were not members of organizations, the majority of those likely to participate in programs would not be members.

5. Programs should be offered primarily as half-day events on the weekend.

Program length was somewhat of a concern for about half of the respondents (Table 5). Full day programs might limit participation. Programs offered on the weekends were less likely to be noted as a concern than programs offered in the evening.

Most respondents (91% in Syracuse, 82% in S. Westchester) were willing to drive to attend programs. Of those in Syracuse willing to drive, 99% were willing to drive 5 miles, 91%-10 miles, and 75%-15 miles. Similarly in S. Westchester, of those willing to drive, 98% were willing to drive 5 miles, 90%-10 miles, and 73%-15 miles.

Analysis of the zipcodes of those interested in future programs gives some indication of sections of each pilot study area where interest is highest. Because of the small sample size in each zipcode area, the results in Figures 6 and 7 should be interpreted with caution. Zipcodes were obtained only for respondents who had some interest in wildlife and were willing to fill out the mail questionnaire. Thus, the percent with interest in future programs presented in Figures 6 and 7 was based on people with at least some

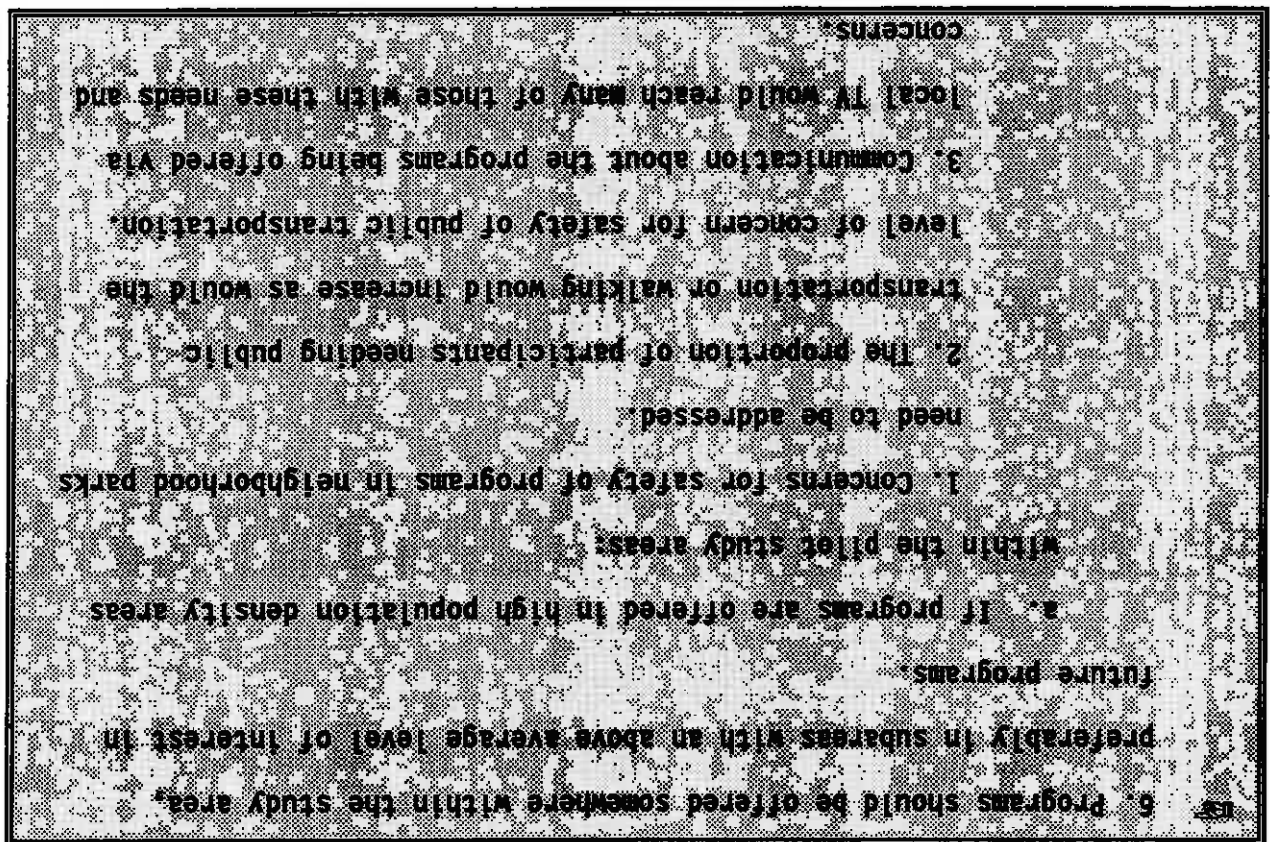


Figure 6. Level of interest in future wildlife education programs by Syracuse zip code areas.

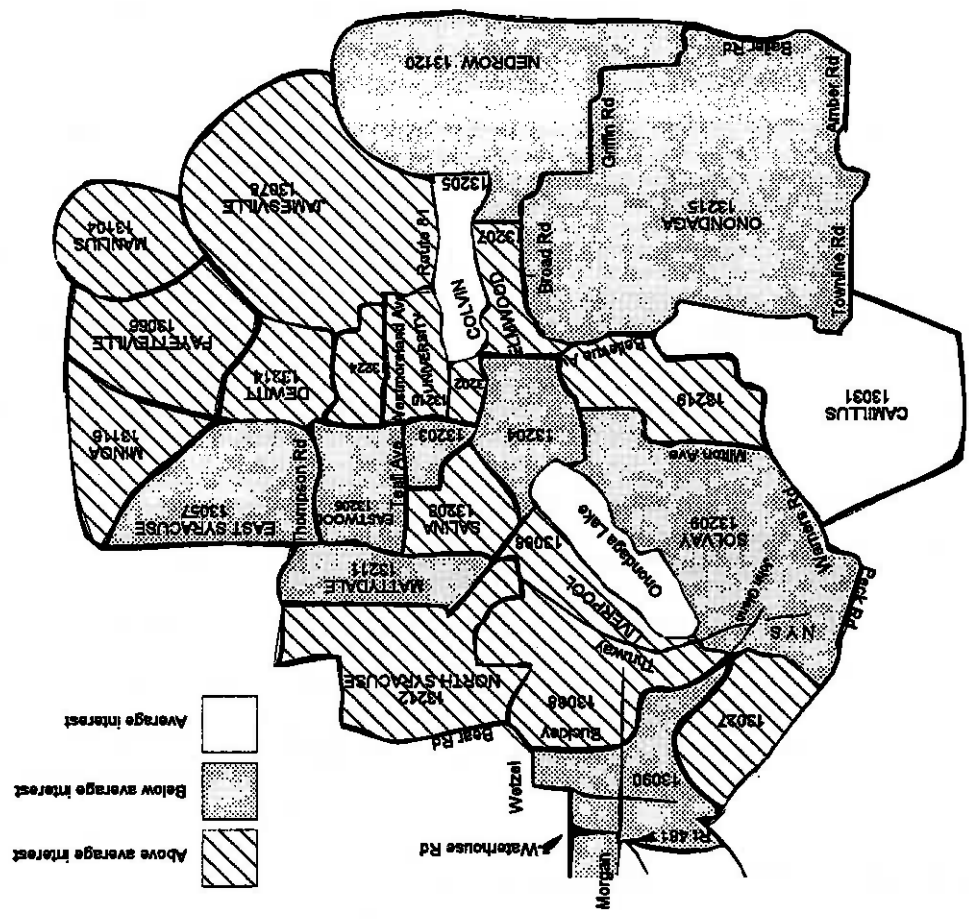
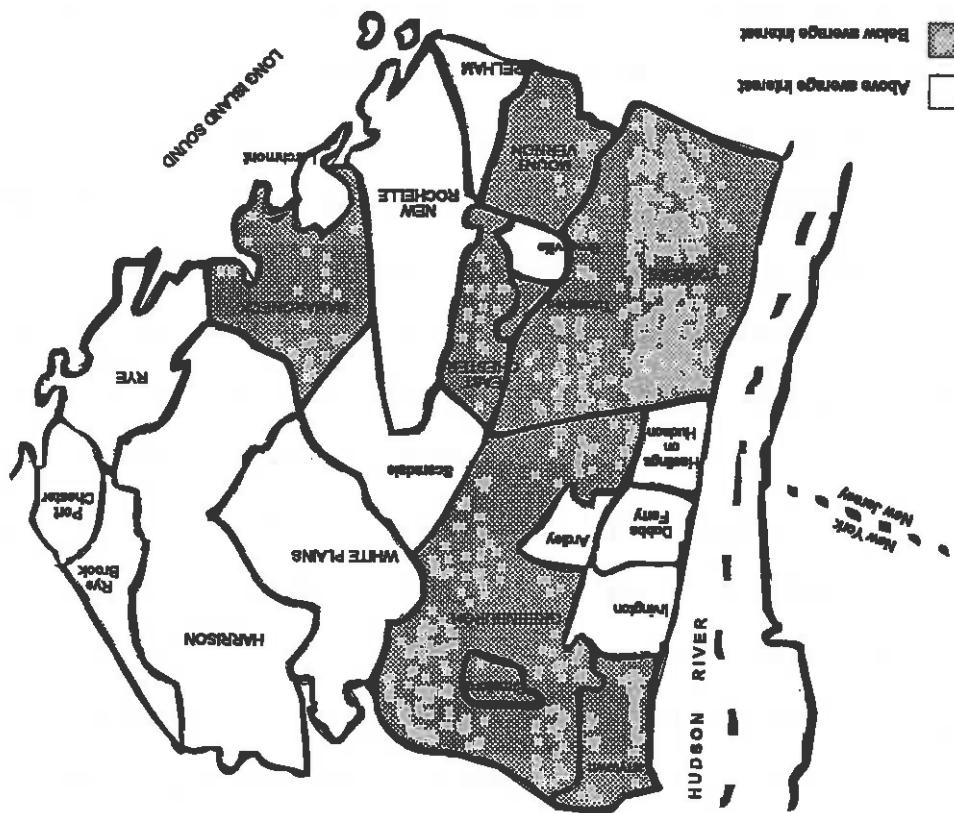


Figure 7. Level of interest in future wildlife education programs by areas within S. Westchester (approximated using zip codes).



interest in wildlife. Because of the small sample sizes, information on level of interest by zipcode area is presented only as above or below the average level of interest for the pilot area. Figure 6 shows the southeast section of Syracuse and an area north of downtown Syracuse to be areas with above average interest in future programs. Figure 7 shows the eastern portion of S. Westchester and a small area along the Hudson River around Ardsley to be areas with above average interest in future programs.

The greatest distance across a subarea with above average interest in future programs was approximately 9.5 miles in Syracuse and 14.5 miles in S. Westchester. It seems likely that programs situated within these areas would lose the fewest number of participants due to travel distance. This recommendation is based on interest of participants and willingness to travel, not on any analysis of potential program sites.

Twenty-one percent of respondents interested in attending future programs and living in high population density areas (refer to Figures 1 and 2 for location of these areas) would need to either walk or take public transportation to reach the program site. Over 40% of those needing to take public transportation were concerned about the safety of doing so. Also, over 40% of those living in high density population areas were concerned about the safety of programs held in neighborhood parks. The communication mechanism most likely to reach people with these concerns would be local TV. It was the source of information most often preferred for announcements of programs and was used by a majority of respondents with concerns in these high density population areas.

7. Use local newspapers, television and possibly a special DEC newsletter to announce programs.

The majority of respondents felt they could be best reached with information about future programs by local newspapers or local television (Table 8). Using a combination of television and newspapers, announcements would likely reach 80% of Syracuse households and 73% of S. Westchester households with interest in future programs. There were no significant sociodemographic differences between those who would be reached by these two methods and those who would not be, although 90% of nonwhites would be reached compared with 77% of whites. Other less costly sources such as DEC publications could be used to supplement newspaper and television coverage but would not be sufficient in and of themselves. Television and radio would be expected to be more effective in Syracuse than in S. Westchester (Table 8). Other sources mentioned specifically by respondents included direct mailings and newsletters from environmental organizations and local nature centers.

Current sources of information about New York wildlife reflect preferences for media outlets for receiving information about wildlife education programs. A majority of respondents receive their current information from newspapers, followed to a lesser extent by friends and family, and television (Table 9). Few respondents reported having no current source of information about New York wildlife.

Three-quarters of respondents indicated an interest in receiving a newsletter that came out quarterly about wildlife and wildlife education programs in their area. Virtually all households with interest would be willing to pay \$1 per year to receive it. About 84% of Syracuse households

Table 8. Perceived likelihood of various sources of information reaching respondents, by pilot study area.

Potential Sources of Information on Wildlife Education Programs	Pilot Study Area			
	Syracuse		S. Westchester	
	Likely or Very Likely to Reach Them	Best Source	Likely or Very Likely to Reach Them	Best Source
	Percent			
Local newspaper	65.9	33.8	56.4	31.0
Local television	69.0	27.4	51.5*	21.4
DEC publication (e.g., <i>The Conservationist</i>)	37.4	12.2	31.9	15.5
School handouts and mailings	38.2	11.0	36.8	16.5
Local radio	44.6	5.2	32.7*	4.9
Posters in your neighborhood	33.3	2.3	40.2	6.8
Other		8.1		3.9
		100.0		100.0

*Statistically significant difference between pilot study areas at $P \leq .05$ using Chi-square test.

Table 9. Current sources of information on New York wildlife for those indicating household interest in future wildlife education programs, by pilot study areas.

	Pilot Study Area			
	Syracuse		S. Westchester	
	% Checking Source	Most Important Source	% Checking Source	Most Important Source
Current Sources of Information on New York State Wildlife				
Newspapers	59.9	21.6	50.5	29.3
Friends or family	50.0	12.6	27.9*	12.2
Television	42.4	21.0	37.8	24.4
Magazines or newsletters from environmental interest groups	42.4	9.8	31.5	14.6
DEC publications	32.0	16.8	18.9*	8.5
Other magazines	25.0	5.6	20.7	3.7
Radio	21.5	3.5	14.4	0.0
Movies, films	15.7	0.7	18.0	1.2
Meetings, presentations	11.0	1.4	9.9	2.4
Other sources	12.2	<u>7.0</u>	4.5*	<u>3.7</u>
		100.0		100.0
No current source	5.8		2.7	

*Statistically significant difference between pilot study areas at $P \leq .05$ using Chi-square test.

and 63% of S. Westchester households said they would be willing to pay \$3 per year to receive the newsletter. In Syracuse, an additional 14% of those with interest in programs would be reached by a newsletter costing \$1. This would be over and above those likely to be reached by local TV or newspapers, for a total of 94% of those with interest being reached. The increased percentage would be 23% in S. Westchester with a total of 96% of those with interest being reached by either local TV, newspapers or a newsletter. If the cost of the newsletter was raised to \$3 then only an additional 10% would be reached in Syracuse over and above those reached by local TV and newspapers, for a total of 90% and an additional 16% would be reached in S. Westchester for a total of 89%.

8. Concentrate advertising in sections of S. Westchester with highest levels of interest when using more directed advertising methods such as newsletters.

Advertising of programs will be most effective in subareas within S.

Westchester that have the highest percentage of households with interest.

Target areas can be identified using Figure 7 as discussed under

recommendation 6 above. This recommendation is made because S. Westchester

contains such a large population that sending newsletter announcements to all

households would probably be financially impractical.

Households with children were more likely than households without children to express interest in future wildlife education programs (Table 10). However, since households without children make up such a large proportion of all households (Table 2), the majority of households likely to participate in future programs would be households without children. In approximately 40% of households currently without children the person interviewed was young enough (<45 years old) to potentially have children in the future.

Section II of this report documents the relationship between positive family influence and more active participation in wildlife-related activities. Our findings on the importance of families, especially parents, for developing active participants suggests that urban wildlife programs designed to increase participation in wildlife-related activities in the future should focus on educating parents about wildlife and then having them teach their children. Courses for adults only or adults with children might be more effective than courses for children only.

Respondents were asked to indicate interest in future programs at the household level, thus their education level, age, and race will not necessarily be representative of program participants. However, their characteristics give an indication of the characteristics or profile of likely participants. Since 50% or more of the adults in the study areas have some college education (according to the 1990 Census) and those with some college

9 Programs should appeal to a culturally diverse, better educated, middle-aged audience. Some programs should be for families.

experience were more likely to express an interest in programs (Table 10), the majority of participants would likely have some college-level background; thus programs should be designed with that in mind. Young to middle-age (25-44) respondents were the most likely age group to express interest in future programs (Table 10). Respondents age 65 and older were least likely to

Table 10. Interest in future wildlife education programs by socio-demographic characteristics in each pilot study area.

Sociodemographic Characteristics				Pilot Study Area	
				Syracuse	S. Westchester
				Future Interest	Future Interest
				Yes	No
				Percent	Percent
<i>Household Composition</i>					
Adult(s) only	49.3	50.7*	48.3	51.7*	63.1
Adult(s) with children	29.3	70.7	36.9		
<i>Education Level of Respondent</i>					
Grades 1-11	62.5	37.5*	59.1	40.9*	
Grad. high school	52.6	47.4	56.4	43.6	
Some college	38.5	61.5	37.2	62.8	
Grad. college	37.7	62.3	44.4	55.6	
Some post grad.	30.7	69.3	34.4	65.6	
<i>Race of Respondent</i>					
White	40.7	59.3	43.5	56.5	
African-American	53.8	46.2	54.8	45.2	
Other	50.0	50.0	43.1	56.9	
<i>Age of Respondent</i>					
18-24	40.7	59.3*	44.0	56.0*	
25-44	32.8	67.2	31.8	68.2	
45-64	42.4	57.6	49.7	50.3	
65+	62.0	38.0	58.4	41.6	

*Statistically significant difference between groups within a study area at $P \leq .05$ using Chi-square test.

Participants in any specific future wildlife education program may not hold exactly the same beliefs as these respondents. However, program planners

of the analysis of this scale are reported in detail in Appendix C. Results with interest in wildlife education programs to a management message. The appropriateness of management to help us assess the receptivity of those measure people's generic environmental values and beliefs (Edge11 and Nowell, scale developed by Dunlap and Van Liere (1978). This scale was designed to The mail questionnaire contained the New Environmental Paradigm (NEP)

10. The message or tone of the program should take into account participants' present views on the environment and its management.

white. areas are white, the racial background of most participants will likely be households without children. Since the majority of households in both study for whites with children (Table 11). There were no differences by race among were combined. Interest levels among non-whites with children were less than respondents may mask small differences by race, data from the two pilot areas be attracted to future programs. Since the smaller sample sizes of non-white More than or nearly one-half of the members of all races indicated they would as well. No differences were observed by racial background of the respondent. 25-44 age group, the majority of participants will likely fall in that group with no children present (Table 11). Since a plurality of adults are in the wildlife education programs. This was particularly true in white households indicate that they or members of their household would be interested in

Table 11. Interest in future wildlife education programs by sociodemographic characteristics.

Future Interest		Percent		
Yes	No			
51.2	48.8		Adult(s) only*	
51.6	48.4		White	
60.0	40.0		Age	
62.0	38.0		18-24**	
53.4	46.6		25-44	
39.5	60.5		45-64	
45.0	55.0		65+	
52.8	47.2		African-American	
67.1	32.9		Other	
69.8	30.2		Adult(s) with Children	
78.9	21.1		White***	
71.5	28.5		Age	
63.3	36.7		18-24	
52.6	47.4		25-44	
			45-64	
			Other	

*Statistically significant difference based on household composition at $P \leq .05$ using Chi-square test.
 **Statistically significant difference by age for white adults only at $P \leq .05$ using Chi-square test.
 ***Statistically significant difference by race for adult(s) with children only at $P \leq .05$ using Chi-square test.

can use the information summarized below as a starting point in understanding the overall audiences of people with interest in urban wildlife programs. Respondents who indicated a household interest in future wildlife education programs agreed strongly with the statements regarding the importance of maintaining the balance of nature (Appendix Table C-1). They also agreed with statements about limits to growth on the planet. They disagreed with statements indicating that humans should dominate over nature and strongly disagreed that the earth should be managed only for the benefit of humans.

This section examines relationships between childhood experiences and adult interest and participation in wildlife-related activities. We were

SOCIAL AND CULTURAL INFLUENCES ON WILDLIFE INTEREST DEVELOPMENT AND PREDICTIONS OF FUTURE PARTICIPATION (RESULTS AND DISCUSSION FROM STUDY)

Most respondents would be receptive to program content that discussed the importance of management of the environment by humans. Based on answers to the management questions at the end of the NEP scale, we categorized respondents into three groups with different views on management. The first group, consisting of 13.3% of respondents with interest in future programs, believed that humans should not manage the environment. This group was twice as likely as the other groups to contain respondents with a high school education or less. They were also twice as likely to contain respondents who needed to walk or take public transportation to the program site. (No other sociodemographic differences were found.) This group would likely take offense at, or not attend programs they believed advocated management of the environment, including wildlife. (It should be noted that we did not assess opinions on the use of specific techniques such as hunting.) Communication via local TV will be the best method to reach a majority of this group; thus the TV message should be constructed accordingly. The majority of respondents (84.5%) felt that humans should manage the environment for the benefit of ecosystems that included humans. The third group consisted of only a few respondents (2.2%) who felt that the environment should be managed for the benefit of humans only without regard to plants and animals.

primarily looking for influencers or characteristics associated with interest or activity at the individual level. While the respondents are not representative of all New York State urbanites, the results presented below give some indication of the types of associations between variables we would expect to find statewide in urban areas. Using sociodemographic characteristics, we can assess current levels of awareness of DEC and interest in wildlife to gain insight into future participation levels.

Childhood Experiences

Respondents were almost equally split as to whether people (52%) or books, magazines, and television (48%) had a greater impact on their developing interest in wildlife. This split occurred among urban residents with at least some interest in wildlife. As we will see shortly, the importance of significant others increases as respondent activity levels increase.

Almost half (42%) of respondents considered their parents to have been the most positive influencers on their interest in wildlife. Since the question on identifying positive influencers of wildlife interest spanned to adulthood, we also found mention of friends and spouses as compared with parents (Table 12). Most respondents indicated that other people also influenced their interest in wildlife. Only 8% said no other person has had a positive influence on their interest in wildlife.

The sources mentioned most frequently as important for information about wildlife during childhood were books, magazines, and television (Table 13). Family outings, the next notable source, were mentioned as important by about half of the respondents. Youth organizations were an important source for some (36%), but not a source at all for many (33%). Newspapers and radio were

Table 12. People who positively influenced respondents' interest in wildlife and the most influential person, for those with some interest in wildlife.

Positive Influencers to Date	% checking	Most influential (%)
Father	47.3	23.1
Mother	40.4	18.8
Friend	37.4	14.5
Spouse	30.5	11.8
Teacher	32.7	8.6
Other relative	22.0	7.9
Sibling	23.6	6.3
Girl or Boy Scout leader	9.1	5.9
Other adult	15.9	3.1
None of the above	8.2	100.0

Table 13. Importance of childhood sources of wildlife information for respondents with some interest in wildlife.

Childhood Sources of Information	Not a Source	Unimportant Source	Somewhat Important Source	Important Source	Very Important Source
Books, magazines	4.0	7.7	26.5	31.6	30.2
Television	17.4	7.2	20.3	24.3	30.8
Family outings	12.6	12.6	25.9	24.1	24.8
School materials	8.7	11.3	29.3	28.7	22.0
Youth organizations	33.3	13.7	16.6	19.8	16.6
Movies, films	10.5	12.5	31.2	29.5	16.3
Newspapers	36.4	22.8	26.9	8.6	5.3
Radio	49.5	23.9	14.0	9.0	3.6

not important sources of information in childhood, but as we will see later, they are important in adulthood. Respondents were given an opportunity to volunteer important sources not listed in Table 13. The most frequently mentioned was exposure through a rural upbringing.

Most respondents who answered an open-ended question in the mail questionnaire described a significant experience that affected their interest in wildlife in terms of an activity that occurred in middle childhood. Of those who provided some information about a childhood experience, 90% said the experience occurred between the ages of 5 and 15 and the majority (56%) said it occurred between the ages of 7 and 10. Most people described their experience in terms of an activity such as camping, taking a field trip, or reading.

Descriptions of significant childhood experiences were quite varied:

- ▶ 39% gave a site description, which most often was an outdoor setting but not always a natural setting (e.g., farms, zoos).
- ▶ 29% mentioned a specific person. Individuals mentioned were mostly family members rather than friends or other significant adults (e.g., teachers, scout leaders).
- ▶ 27% mentioned a book, television show or movie in their description. Popular shows were Wild Kingdom and Bambi.
- ▶ 23% mentioned a specific animal. Most (85%) of the animals described were wild animals. Some (11%) were baby animals.

Thus, childhood experiences did not always involve a significant adult, nor did they always revolve around a specific living wild animal.

Interaction Between Childhood Experiences and Current Interest Levels

Urban residents with at least some interest in wildlife described their current interest level as:

- ▶ active participation in wildlife-related activities (16%),
- ▶ occasional participation in wildlife-related activities (25%),
- ▶ passive only—meaning they read or watched television programs about wildlife (34%), or
- ▶ general interest only—meaning they have interest, but don't do much specifically related to wildlife (25%).

We found differences in childhood experiences within the active or occasional groups based on the types of activities they participated in (nonconsumptive versus consumptive). To highlight those as well as differences based on level of interest (general to active), we conducted the analysis presented below using the four groups reconfigured as follows:

- (1) occasional or active participants who engaged in some consumptive activities (hunting or fishing) (19%),
- (2) occasional or active participants who engaged only in nonconsumptive wildlife-related activities (observing, feeding, or photographing) (22%),
- (3) those with passive interest (34%), and
- (4) those with only general interest in wildlife (25%).

People had a greater influence than passive media (books, television) on developing active participants. Respondents who were occasional or active participants were more likely than passive or general interest respondents to indicate that people, especially family members, were more important in

developing their interest in wildlife than passive media (Table 14). Almost all occasional or active respondents (89% - 94%) indicated at least one family member had a positive influence on their interest in wildlife. Significantly more important influencers for occasional or active participants were fathers, spouses, other relatives, or friends. Those with general interest were more likely to say no one had a positive influence on their interest.

Similarly, family outings were more likely to play an important role as sources of wildlife information during childhood among occasional or active participants than general or passive respondents (Table 15). Movies were more likely to be important during childhood for those who currently have a primarily passive interest in wildlife. However, movies were also cited as an important source of information for 60% of participants in consumptive activities.

The positive influence of fathers was frequently felt among participants in consumptive activities, while mothers and fathers were both likely to be positive influencers of those involved in solely nonconsumptive activities (Table 14). This conclusion is similar to that reported by Purdy and Decker (1986) who found that 42% of 1983 hunter training course participants listed their father as the most important influencer of their decision to become a hunter.

Teachers or other significant adults (such as scout leaders) were no more likely to be positive influencers of active participants than those with only a general interest in wildlife (Table 14). School materials or youth organizations were also no more likely to be sources of information in childhood for active versus less active respondents (Table 15). The average age at which a respondent had an important wildlife experience was also not

Table 14. Influencers of wildlife interest during childhood by current level of interest in wildlife for those with at least some interest in wildlife.

	Percent			
	<u>General Interest</u>	<u>Passive Interest</u>	<u>Occasionally or Actively Participate in Nonconsumptive Activities Only</u>	<u>Occasionally or Actively Participate in Some Consumptive Activities</u>
<u>Greater Effect on Developing Interest</u>				
Books, magazine, television People close to me	51.1 48.9	64.5 35.5	33.3 66.7	34.3* 65.7
<u>Positive Influencers to Date</u>				
Father	44.0	38.1	59.5	54.3*
Mother	33.0	34.7	58.2	38.6*
Friend	27.5	32.2	46.8	47.1*
Spouse	25.3	24.6	38.0	40.0*
Teacher	30.8	34.7	32.9	28.6
Other relative	8.8	19.5	32.9	37.1*
Sibling	24.2	16.9	34.2	22.9*
Other adult	25.3	21.2	20.3	22.9
None of the above	16.5	9.3	1.3	4.3*
Some family member	70.3	71.2	93.7	88.6*
<u>Most Important Influencer</u>				
Family member	58.2	60.5	77.3	77.4*
Friend, other adult	41.8	39.5	22.7	22.6

*Statistically significant difference between interest groups at $P \leq .05$ using Chi-square test.

Table 15. Important or very important childhood sources of wildlife information by current level of interest in wildlife for those with at least some interest in wildlife.

Childhood Sources of Information	General Interest	Passive Interest	Occasionally or Actively Participate in Nonconsumptive Activities Only	Occasionally or Actively Participate in Some Consumptive Activities
	Percent Indicating Interest	Percent Indicating Interest	Percent Indicating Interest	Percent Indicating Interest
Books, magazines	54.7	60.7	61.3	73.1
Television	55.2	57.9	49.3	57.1
Family outings	35.7	42.5	58.9	63.6*
School materials	50.0	54.3	44.4	51.5
Youth organizations	30.6	35.1	33.8	47.1
Movies, films	37.6	48.7	37.0	60.3*
Newspapers	16.5	13.2	12.7	12.3
Radio	8.5	10.6	18.3	10.8

*Statistically significant difference between interest groups at $P \leq .05$ using Chi-square test.

significantly different between active and less active respondents. If one is interested in increasing the numbers of people participating in wildlife-related activities, these findings suggest that increasing family involvement would be more effective in developing active participants than nonfamily learning experiences, such as school or youth groups. This is not to say that schools or youth groups do not stimulate interest in wildlife (we did not measure this). However, after interest is present, nonfamily learning experiences are not associated with more active participants.

This series of findings on the importance of families, especially parents, for developing active participants suggests that urban wildlife programs designed to increase participation in wildlife-related activities in the future should focus on educating parents about wildlife and getting them involved in wildlife-related activities and then having them teach their children. Courses for adults only or adults with children might be more effective than courses for children only. (See Section I: Recommendation 9) More active respondents do not appear to have different views about the environment than those with a more general interest. We found no significant differences between interest levels for any of the NEP factors or the management factor. Thus, for this group of urban residents with at least some interest in wildlife, participation level was not associated with different environmental value factors.

Current Levels of Participation

Urban residents in the two pilot study areas reported participating in wildlife-related activities at approximately the same rates in 1994 as in 1977 (Table 16). There were slight increases in 1994 in the percent of respondents reporting feeding wildlife around their home and in fishing. USFWS National

Table 16. Participation levels in wildlife-related activities estimated by different studies since 1977.

<u>Wildlife-related Activities</u>	<u>Urban Residents</u>	<u>National Survey New York State</u>	<u>National Survey New York State</u>	<u>Urban Wildlife Study</u>
	<u>1994</u>	<u>1991^a</u>	<u>1985^b</u>	<u>1977^c</u>
<u>Percent Participating</u>				
Around home				
<i>Observing</i>	63.9	30	33	63.8
<i>Feeding</i>	55.6		40	50.1
<i>Photographing</i>	20.9		8	18.2
Away from home				
<i>Observing</i>	35.7	12	13	18.7
<i>Fishing</i>	25.1	12	15	
<i>Hunting</i>	6.4	5	5	7.5

^aSource: USFWS, 1993.

^bSource: USFWS, 1989.

^cSource: Brown and Dawson, 1978.

Survey of Fishing, Hunting, and Wildlife-Associated Recreation (National Survey) estimates from 1991 and 1985 generally indicated much lower participation rates for New York State residents than the two New York urban studies (1994, 1977) for all wildlife-related activities except hunting (Table 16). These differences in participation rates could be attributed to differences in areas surveyed (Syracuse and S. Westchester versus New York State) as well as differences in methods (12-month recall by telephone [1994] or mail [1977] versus 3-month recall by phone [1991] and 12-month recall during personal interviews [1985]).

As expected, respondents who reported an interest in wildlife were more likely to participate in wildlife-related activities than the group that included all urban residents (interested and uninterested) (Table 17). Furthermore, good consistency can be found between stated level of interest and participation levels of respondents. Most respondents (285%) who indicated that they occasionally or actively participate in wildlife-related activities reported observing wildlife around their homes. Nine out of 10 respondents who reported occasionally or actively participating in consumptive activities fished, and 39% hunted. The incidence and rate of participation in nonconsumptive and consumptive activities increased with interest level.

Respondents who participated in consumptive activities reported participating in observing, feeding, or photographing wildlife at a rate similar to those who participated only in nonconsumptive activities. Participation in multiple types of activities by many consumptive participants was consistent with an earlier study conducted by the authors using National Survey data (Connelly et al., 1985). Nearly twice as many consumptive

users in the current study said they took a trip to observe wildlife as did National Survey respondents (64% vs. 36%).

Other natural resource-related activities were popular among urban residents (Table 18). Many urban residents participated in activities such as picnicking (74%) and gardening (62%). Fewer participated in what might be considered extractive natural resource-related activities: collecting rocks or shells (29%) and clamming (5%). Those with interest in wildlife who participated in extractive natural resource-related activities (hunting, fishing, gardening, collecting rocks or shells, clamming) did not have different views of management or environmental values (as measured in this study) than those who did not participate in extractive activities.

Respondents with an interest in wildlife were always more likely to have participated in natural resource-related activities (Table 18). For example, those who were interested in wildlife were three times more likely to have participated in hiking than those with no interest in wildlife. Those who participated in consumptive activities reported being active in many natural resource-related activities (e.g., 96% participated in picnicking, 77% hiked) (Table 18). Urban residents who participated in consumptive activities were significantly more likely to participate in boating, camping, and clamming than residents who only participated in nonconsumptive activities.

Urban residents with some interest in wildlife cited television and newspapers as the two most frequently used current sources of information on New York wildlife (Table 19). Those sources along with information from environmental interest groups were most frequently cited for information on national or international wildlife issues. Television was listed as the most important source of national or international wildlife information by over

Table 17. Participation in wildlife-related activities in the past 12 months.

	All Respondents		Those With Wildlife Interest		Those Who Occasionally or Actively Participate in Nonconsumptive Activities Only		Those Who Occasionally or Actively Participate in Some Consumptive Activities	
	% Participating	Mean Days For Participants	% Participating	Mean Days For Participants	% Participating	Mean Days For Participants	% Participating	Mean Days For Participants
Wildlife-related Activities								
Around Home								
Observing	63.9	177	72.0	179	84.8	212	87.1	221
Feeding	55.6	163	67.1	163	73.4	174	77.1	209
Photographing	20.9	10	25.2	10	39.2	14	41.4	18
Away From Home								
Observing	35.7	21	43.1	22	72.2	43	64.3	29
Feeding	19.5	19	23.5	19	30.4	33	38.6	36
Photographing	19.1	12	23.1	13	35.4	27	42.9	19
Fishing	25.1	19	28.2	19	0.0	--	88.6	21
Hunting	6.4	13	7.4	13	0.0	--	38.6	14

Table 18. Participation in natural resource-related activities in the past 12 months.

Natural Resource- related Activities	All Respondents	Those With No Wildlife Interest	Those With Wildlife Interest	Those Occasionally or Actively Participate in Nonconsumptive Activities Only	Those Occasionally or Actively Participate in Some Consumptive Activities
			Percent Participating		
Picnicking	74.0	54.1	78.2*	87.3	95.7
Gardening	62.0	40.7	66.6*	77.2	82.9
Hiking	44.8	15.7	50.8*	75.9	77.1
Boating	41.5	22.7	45.4*	49.4	71.4**
Collecting rocks or shells	28.7	8.7	36.9*	38.0	48.6
Camping	26.6	13.4	29.4*	36.7	54.3**
Clamming	4.6	0.0	5.5	6.3	17.1**

*Statistically significant differences between those with and those without wildlife interest at $P \leq .05$ using Chi-square test.

**Statistically significant differences between those who participate in nonconsumptive activities only versus some consumptive activities at $P \leq .05$ using Chi-square test.

Table 19. Current sources of information on New York and national/international wildlife for those with some interest in wildlife.

	New York State Wildlife		National or International Wildlife	
	Most Checking Important Source	% Checking Important Source	Most Checking Important Source	% Checking Important Source
Current Sources of Information				
Television	41.8	24.1	80.7	57.0
Newspapers	52.8	23.8	40.5	7.1
DEC publications	24.1	14.7	7.8	1.0
Friends or family	38.1	12.6	18.2	2.3
Magazines or newsletters				
from environmental interest				
groups	34.0	9.8	46.6	15.5
Other magazines	21.7	4.9	38.3	10.0
Radio	17.7	2.4	9.4	0.3
Meetings, presentations	8.0	1.4	2.9	0.3
Movies, films	16.6	0.7	46.4	3.9
Other sources	8.3	5.6	9.7	2.6
	100.0	100.0		100.0
No current source	5.4		2.9	

half of respondents. While DEC publications (such as *The Conservationist*)

were mentioned as a source of New York wildlife information by only one-

quarter of respondents, it was listed as the most important source by 15% of

respondents.

Predicting Future Levels of Participation for Urban Residents

In our study of urban residents in two areas of New York, we found that

white respondents were significantly more likely than non-whites, especially

African-Americans, to express at least some interest in wildlife (Table 20).

(Recall from the previous section that white respondents were not more likely

to be interested in future wildlife programs.) To make predictions about

changes in interest level statewide, we must assume that interest levels

Table 20. Levels of interest in wildlife for various sociodemographic groups.

Sociodemographic Characteristics	Of Those With Interest:				
	Occasionally or Actively Participate in Nonconsumptive Activities Only		Occasionally or Actively Participate in Some Consumptive Activities		Percent
	No Interest	Some Interest	General Interest	Passive Interest	
Sex					
Male	18.2	81.8	25.4	33.9	14.7
Female	16.2	83.8	25.1	33.7	28.3
Age					
18-24	21.2	78.8*	57.1	28.6	0.0
25-44	11.7	88.3	29.1	30.9	20.6
45-64	20.3	79.7	20.5	29.1	24.8
65+	21.2	78.8	19.7	50.8	21.3
Race					
White	15.3	84.7*	23.4	33.8	22.5
African-American	34.3	65.7	---	---	---
Other	20.9	79.1	---	---	---
Education level					
Grades 1-11	27.8	72.2	---	---	---
Grad. High School	19.1	80.9	28.8	35.6	11.0
Some College	13.6	86.4	21.3	38.3	22.3
Grad. College	15.0	85.0	21.8	32.2	24.1
Some Post Grad.	16.0	84.0	27.0	31.0	28.0

*Statistically significant differences between sociodemographic groups at $P \leq .05$ using Chi-square test.
 ----Insufficient sample.

within racial groups (or age groups) are similar across the state. If we make this assumption, we find from Census data that the white proportion of the New York population is expected to decline over the next 25 years and the non-white proportions to increase (figure 8), therefore we would expect a decline in wildlife interest statewide. The proportion of the African-American population is not expected to increase as much as other non-whites (primarily Asian and Pacific Islanders), so the drop in interest may not be as great because a higher proportion of other non-whites were interested in wildlife. From our study, adults of ages 25-44 were the most likely to be interested in wildlife and along with slightly older adults (age 45-64) were the most likely to be active in wildlife-related activities (Table 20). However, some differences by age were dependent on sex and race (Table 21). We found that, although interest was lower in the 18-24 age group, most young white men were interested in wildlife. Older adults (age 65+) were more likely to take a more passive interest in wildlife and younger adults (age 18-24) a more general interest.

The percent of respondents participating in consumptive and nonconsumptive trips decreased with age (Figures 9 and 10). This general declining trend was observed in both the 1977 and 1994 studies. (Information on level of interest was not available from the 1977 study, thus only participation levels can be compared.) These changes in participation levels are termed an "age effect" by demographers (Meredith and Schwe 1994) and can be seen most clearly by examining the change in percent participating between a given age class in 1977 (e.g., 29-46 year olds) and the next older age class in 1994 (47-64 year olds). In this way, comparisons among the same cohort of people can be made given the 17 year difference between studies.

Figure 8. Projected proportions of New Yorkers by racial background, 1993-2020. Source: Campbell, 1994.

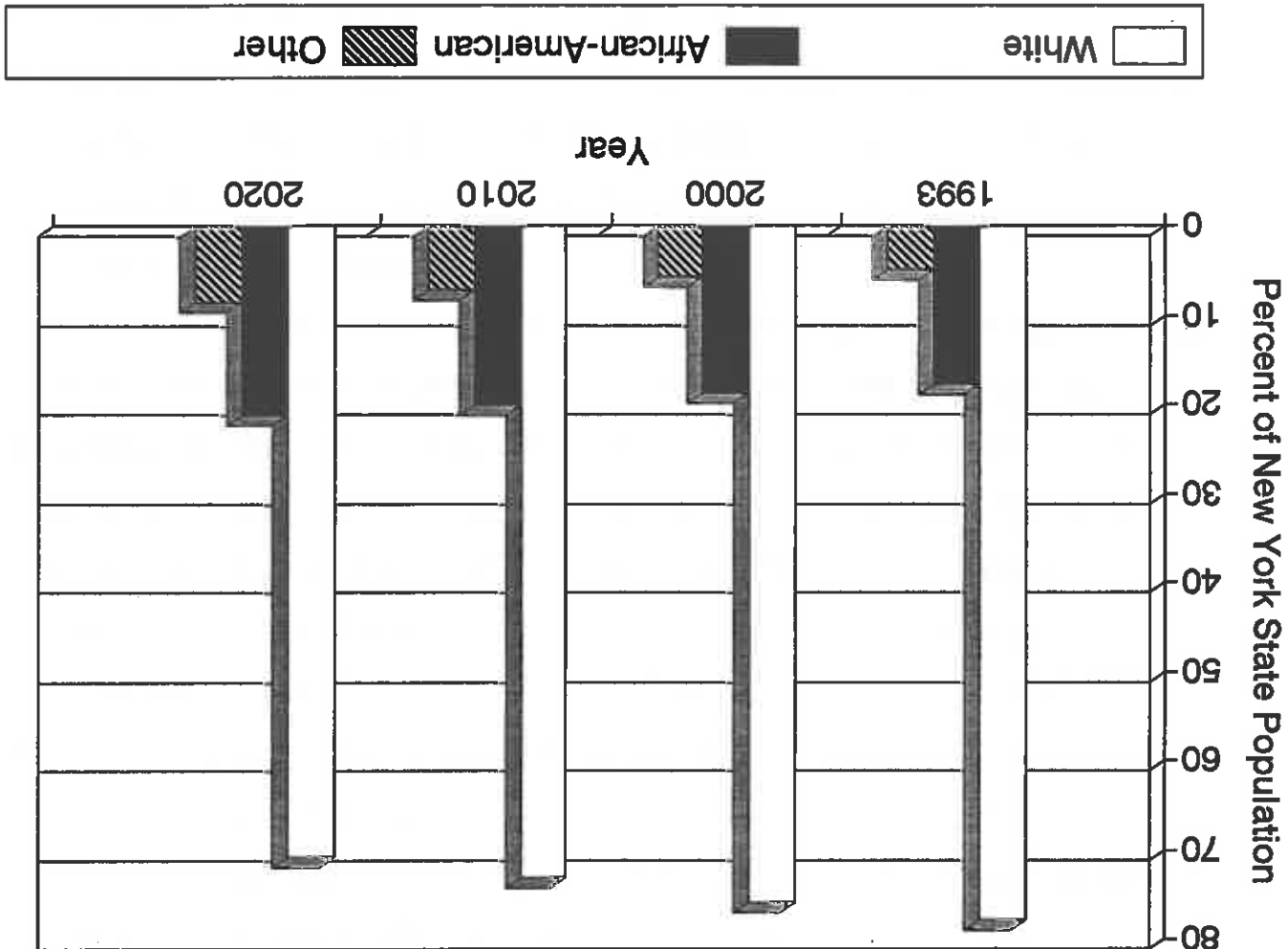


Table 21. Presence or absence of interest in wildlife by sociodemographic groups.

	Percent		
	No Interest	Some Interest	
White*	15.0	85.0	
Males	15.9	84.1	
Age			
18-24	10.0	90.0	
25-44	14.4	85.6	
45-64	20.4	79.6	
65+	14.3	85.7	
Females	14.3	85.7	
Age			
18-24**	14.3	85.7	
25-44	8.1	91.9	
45-64	15.5	84.5	
65+	23.1	76.9	
African-American	33.8	66.2	
Males	37.8	62.2	
Females	29.0	71.0	
Other	21.5	78.5	
Males	22.6	77.4	
Females	20.6	79.4	

*Statistically significant difference by race at $P \leq .05$ using Chi-square

test.
**Statistically significant difference by age for white females at $P \leq .05$ using Chi-square test.

Participation in nonconsumptive activities around the home (e.g.,

observing or feeding birds) does not show an age effect (Figure 11). The

percent participating remains constant and high across age groups.

Some groups (e.g., Syracuse consumptive ages 29-46, S. Westchester

nonconsumptive trips ages 18-28 and 29-46, S. Westchester nonconsumptive around

the home ages 18-28) appear to have declined in their participation by age

between 1977 and 1994. A whole host of explanations for the decline are

Figure 9. Percent participating in consumptive activities (hunting and fishing) by age groups in 1977 and 1994 in the two pilot study areas.

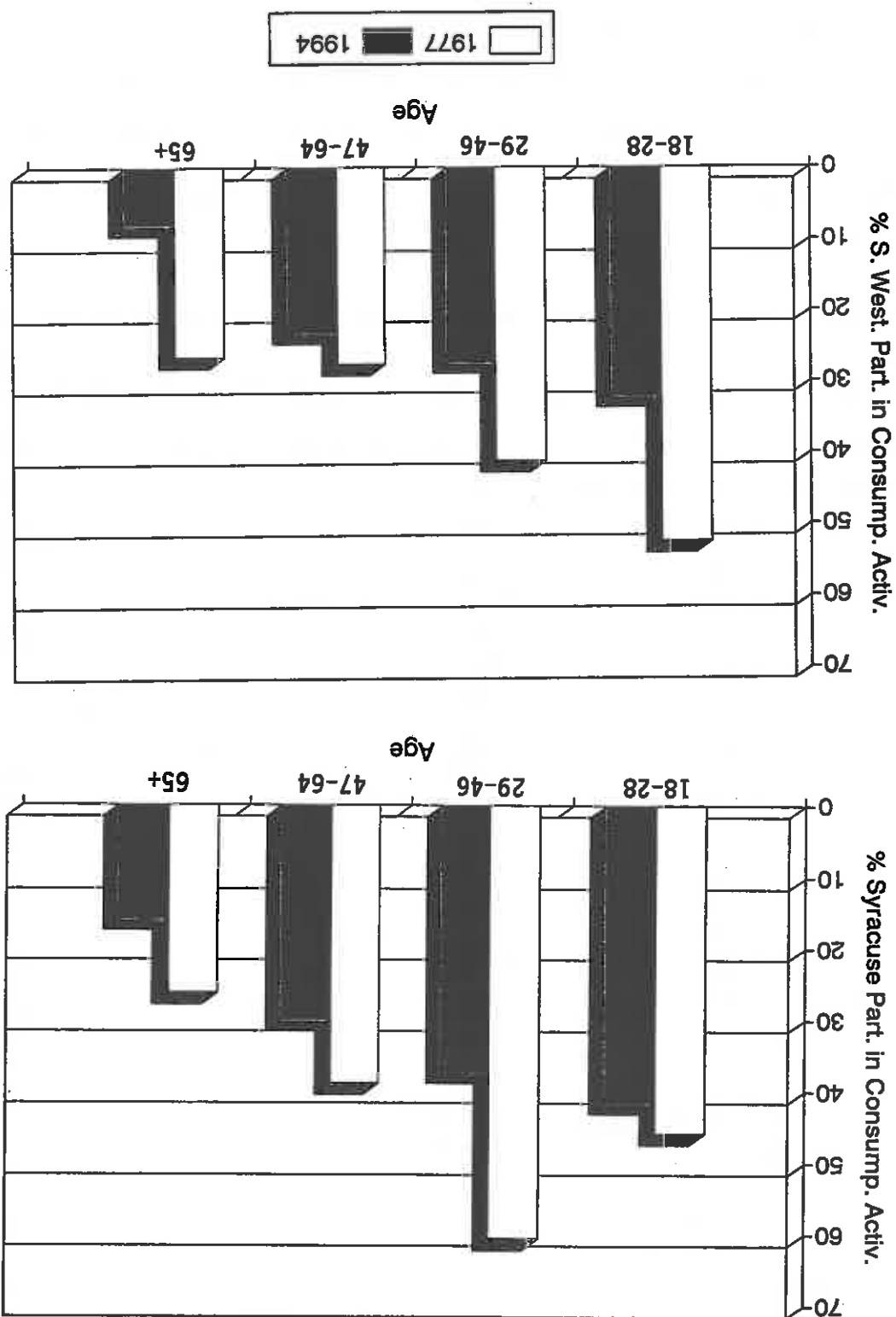


Figure 10. Percent participating in nonconsumptive trips by age groups in 1977 and 1994 in the two pilot study areas.

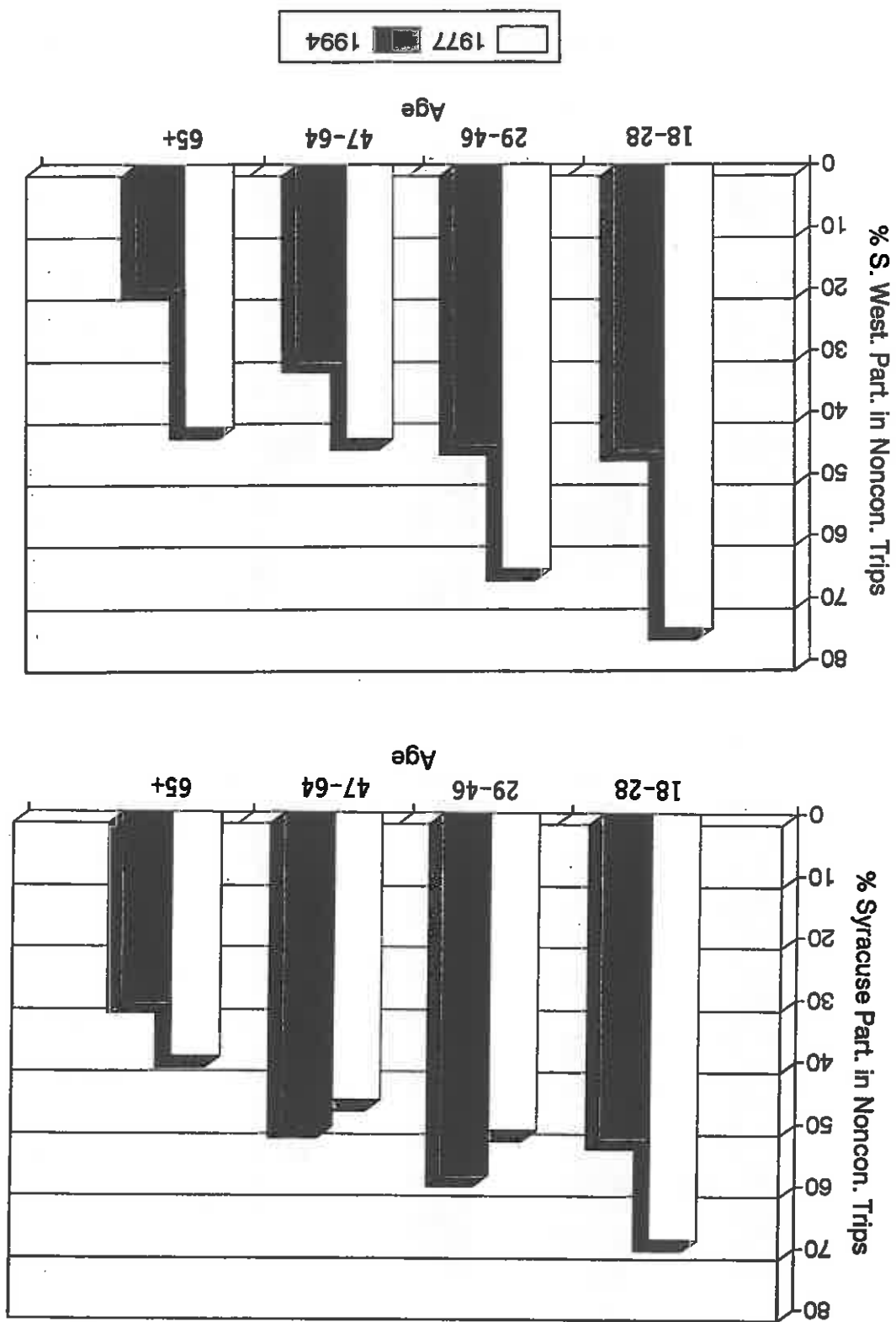
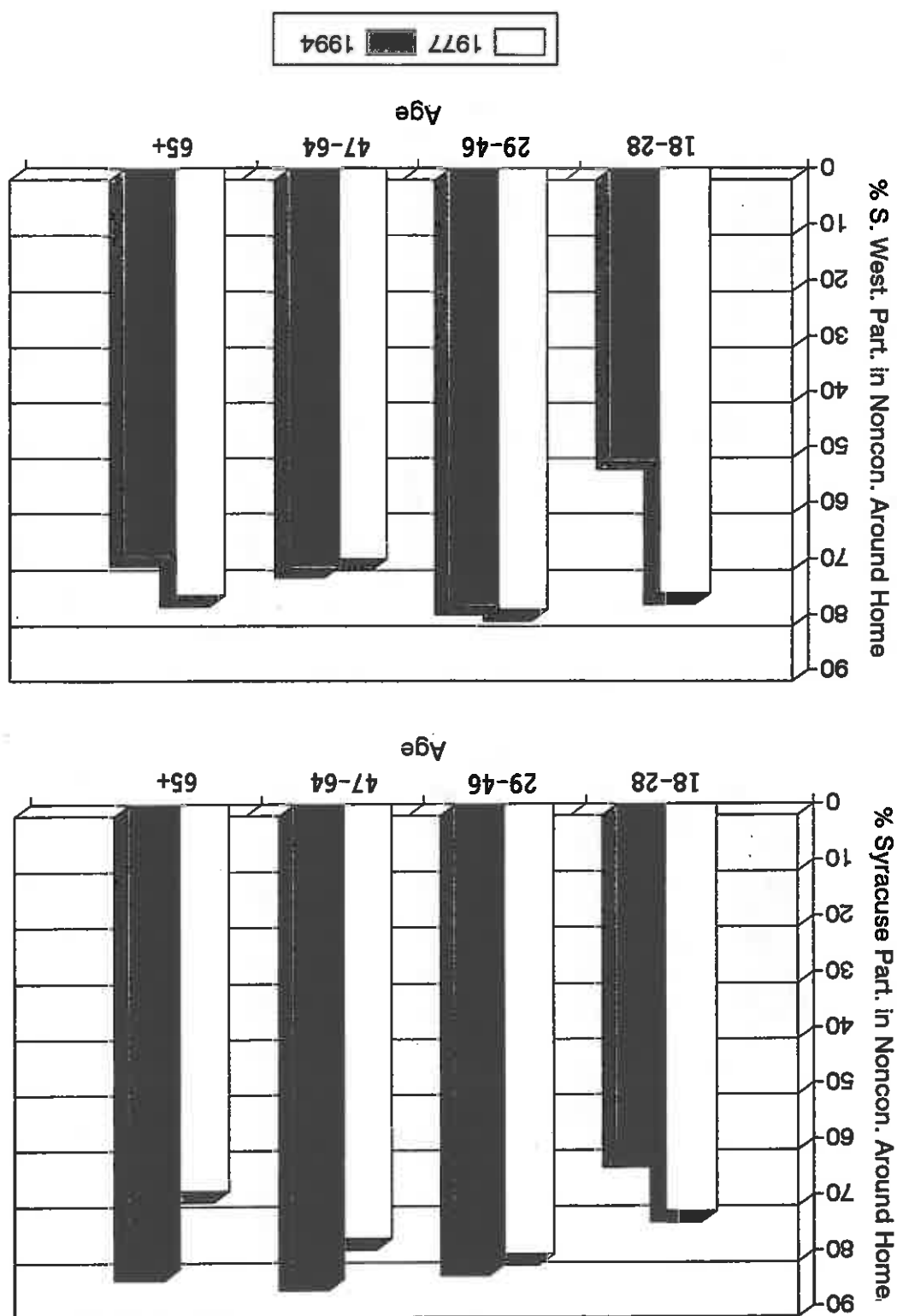


Figure 11. Percent participating in nonconsumptive activities around the home by age groups in 1977 and 1994 in the two pilot study areas.



possible, from lack of access to safety, to societal shifts in values. But importantly, these differences are always in the direction of decline from 1977 to 1994. Also, these differences tend to show up in the younger age groups. If one believes that interest in wildlife-related activities is developed in childhood or young adulthood, then lower participation rates among younger age classes could indicate lower overall participation rates in the future. This is termed the "cohort effect," in which interests or values formed in young adulthood remain constant as people age (Meredith and Schwe 1994).

Predicting future numbers of participants relies on knowledge of the age and cohort effects and the changing age structure of the population (Figure 12). Due to the age effect discussed above and the aging of the baby-boom generation (Figure 12), we can expect the number of active participants taking consumptive and nonconsumptive trips to decline. The lower percent of participants in the younger age classes in 1994 for all three types of activities could indicate a cohort effect, which would further reduce the number of active participants in the future. This would be compounded by the lower number of people in this younger (post baby-boom) age group.

Sociodemographic trends in age and race forecast the future given no changes in educational effort or other programs that might increase interest over current levels. Differences in educational attainment speak to differences in being able to acquire knowledge about wildlife. Those with at least some college level education were more likely to be interested in wildlife than those with a high school or less education (Table 20). Urban residents with some post college education were twice as likely to participate in nonconsumptive only activities as in consumptive activities.

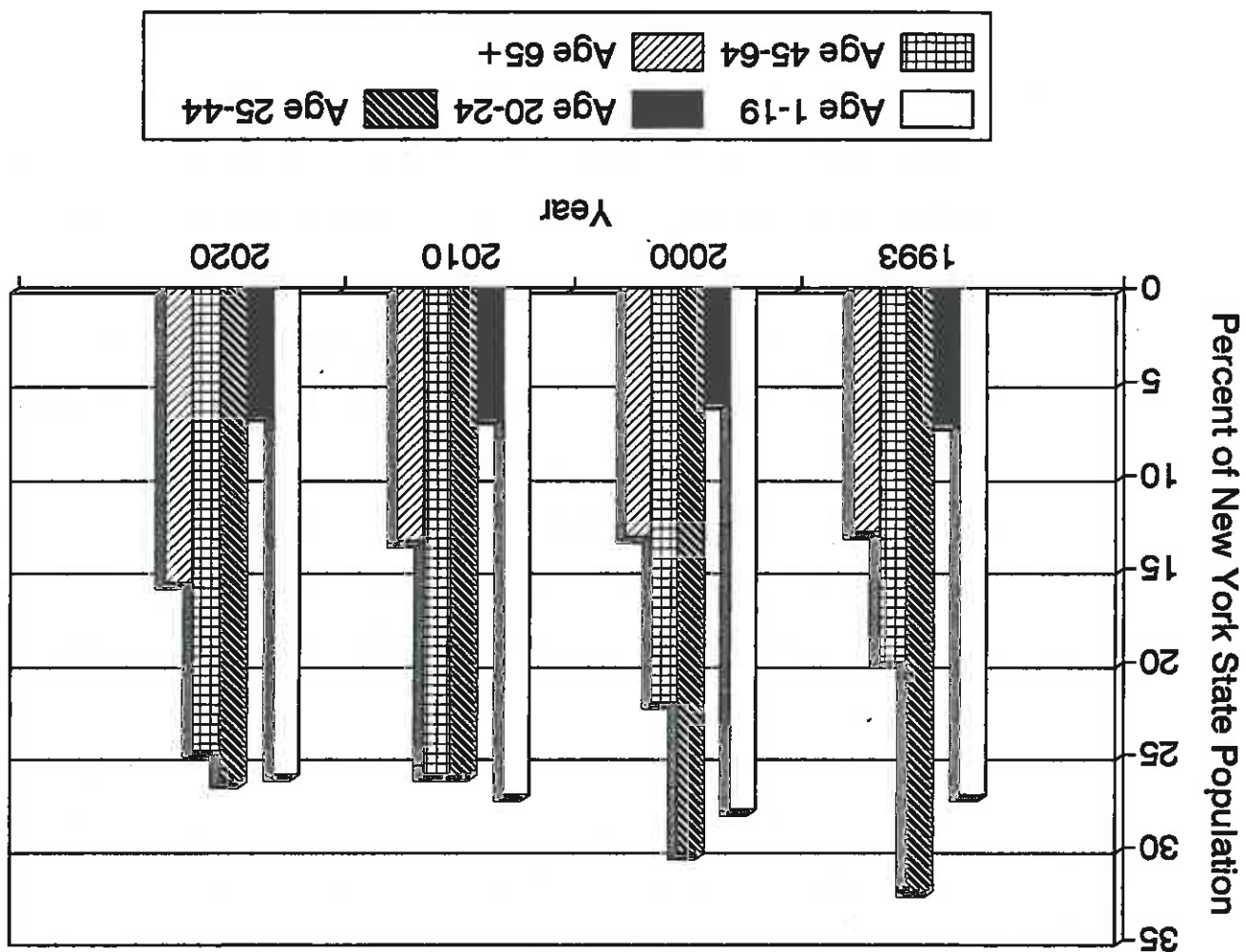


Figure 12. Projected proportion of New Yorkers by age group, 1993-2020. Source: Campbell, 1994.

Agency Awareness

Current communication efforts by DEC have resulted in awareness of the agency by many urban residents (71%), but awareness levels varied by sub-

groups. Those with no interest in wildlife were less likely to be aware of DEC (Table 22). Awareness of DEC was much lower in S. Westchester than in Syracuse. It was also lower for nonwhites compared with whites and less

educated versus more educated respondents. The trend in awareness by age

differed based on whether the respondent was interested in wildlife or not.

Younger respondents with an interest in wildlife were less likely to be aware of DEC than older respondents. For those with no interest in wildlife, the

youngest and oldest respondents were more likely to be unaware of DEC, while middle-aged respondents, especially those aged 25-44, were most likely to be

aware of DEC. Awareness levels did not differ by sex.

Of those aware of DEC, about half had heard of the Bureau of Wildlife. Awareness levels for the Bureau were more constant across study areas and

sociodemographic characteristics, except for lower levels among the 18 to 24

age group and other non-whites (Table 22).

Three-quarters of respondents who had heard of the Bureau indicated they would call them if they had a question. Of those that said they would not

call the Bureau, one-quarter indicated they would not have thought to call the Bureau, 10% said they would not call because they had negative feelings toward DEC, and the remainder (65%) indicated they would call other organizations.

Thus, most people who were aware of the Bureau had a positive impression, at least positive enough to call if they had a question.

Table 22. Respondents indicating familiarity with DEC and the Bureau of Wildlife by area, sociodemographic characteristics, and by interest in wildlife.

Respondent Characteristics	Familiar With DEC			If Familiar:		
	No Interest	Some Interest	in Wildlife	Heard of Bureau of Wildlife	Within DEC	Percent Saying "Yes"
A11	57.1	73.7	55.5			
Pilot Study Area						
Syracuse	71.1*	84.5*	57.2			
S. Westchester	46.2	60.3	53.0			
Age						
18-24	0.0*	58.5*	39.1*			
25-44	82.0	74.5	46.0			
45-64	59.7	80.2	64.8			
65+	38.1	66.0	67.8			
Race						
White	---	77.1*	55.7*			
African-American	---	58.7	69.7			
Other	---	45.3	35.5			
Education						
Grad. High School or less	42.9*	63.4*	57.7			
Some College	60.6	77.1	52.5			
Grad. College	77.4	79.3	54.9			
Some Post Grad.	65.8	77.9	57.1			

*Statistically significant differences between sociodemographic groups at $P \leq .05$ using Chi-square test.
 ----Insufficient sample.

Wildlife Damage Levels

Approximately one-quarter of the households in Syracuse and S. Westchester experienced wildlife damage or nuisance problems around their home in the past 12 months. Only 31% of those with problems contacted anyone for help in dealing with the problem. Animal damage control specialists were contacted by one-quarter of those who contacted someone. Thirteen percent indicated they contacted DEC; 9% contacted the Humane Society. The remainder contacted a wide variety of people for help with their wildlife problem, from the police to friends and neighbors. Information collected in this survey was only of a very general nature; more detailed questions would be needed to estimate amount and costs of damage.

Management Implications of Social and Cultural Influences

1. Sociodemographic trends indicate an aging population and one less dominated by whites. Current data on participation in wildlife-related activities indicates that both of these trends will result in fewer people actively participating in wildlife-related recreation in the future. The task faced by agencies who want to maintain or increase active participation levels then is great. Educational efforts such as the urban wildlife program discussed in the first half of this report, the Apprentice Hunter program, and the Becoming an Outdoors Woman program become more important as they all attempt to develop interest and provide experiences for increasing participation by those less likely to become active participants on their own.

2. We found a positive relationship between family influencers and more active participants. If an agency goal is to develop active participants, our research suggests that working through families to develop interest in children is very important. This study did not examine the importance of

families in merely developing interest in wildlife (as opposed to active participation). Future research is needed to determine barriers to basic awareness or interest development in these urban populations.

3. This study examined two pilot areas in urbanized portions of New York State. Other upstate urban areas such as Albany and Rochester and downstate areas peripheral to New York City could be expected to yield similar findings to Syracuse and S. Westchester. The study results are less applicable to rural areas of New York.

4. Positive views of the Bureau were common among those aware of the agency. Concern by some Bureau staff about a poor image of the agency among urban New Yorkers was not supported by this study. However, lack of awareness of the agency was a problem for many people, especially nonwhites, the young, and less educated. Increasing awareness of the agency in urban areas should be more of a priority than concerns about changing a poor image for the few who have it.

5. As has been seen in other studies, those who participate in consumptive activities are likely also to participate in nonconsumptive activities. This shared interest should be built into program planning, and people should not be thought of as just hunters or anglers.

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APPENDIX A:
Telephone Interview

Good (Morning, Afternoon, Evening):
(IF A CHILD ANSWERS ASK TO SPEAK WITH AN ADULT.)

My name is _____ and I work for the Department of Natural Resources at Cornell University. Cornell is conducting a research study to learn more about the wildlife interests of people who live in or near cities. Is this the residence. (IF NOT < VERIFY THAT YOU DIALED CORRECTLY AND APOLOGIZE FOR THE MISTAKE.)

This research study is sponsored by the Department of Environmental Conservation and involves a brief telephone survey. So that results will truly represent everyone in your community, we use a random method to select which person in your home to interview. To do this, I need to ask one or two short questions:

1. First, how many people 18 years and older live in this household, including yourself?

_____ # of adults in household

2. How many of them are men?

_____ # of adult men

Okay, we use a particular method to randomly select someone in your household to talk to, and I need to interview _____ (Annie-Follow Dillman outline here)

(REPEAT INTRO. IF NECESSARY)

Even if you have little interaction with wildlife, we would still like to know something about your interests and activities.

Would you be willing to spend about 5 minutes now answering a few questions? (IF NO, ASK FOR A MORE CONVENIENT TIME TO CALL BACK AND ENTER ON COVER SHEET.)

Before we get into the questions about your experiences with wildlife I'd like to ask a few background questions that will help us categorize the people we have spoken with.

3. First, if there are other adults in your household, is one of them your spouse or significant other?

Yes

No

4. How many children (under 18) live in your household?

_____ # of children What are their ages?

5. In what year were you born? _____ 19 _____

6. How many years of school have you completed, counting 8 years for finishing the 8th grade, 12 years for high school graduation, and 1 year for each additional year of college, technical, or vocational training? _____ years
7. We would like to know more about your racial or ethnic background, do you consider yourself white, African-American, Asian, Native American, or from some other background? _____
 white _____
 Black or African-American _____
 Asian or Pacific Islander _____
 Native American Indian _____
 other _____
8. Are you of Spanish or Hispanic origin? _____
 Yes _____
 No _____
9. Which of the following best describes the area in which you lived for the longest time while you were growing up? _____
 large city of 100,000 population or over _____
 city of 25,000 to 99,999 population _____
 small city of 5,000 to 24,999 population _____
 Rural, town, or village (under 5,000 population) _____
10. Are you a member of any conservation or environmental organizations (such as National Wildlife Federation, Sportsmen's Club, Sierra Club)? _____
 No _____
 Yes Which ones? _____
- Now I'd like to ask you some questions about your interest in wildlife. Wildlife includes wild mammals, birds, fish, insects, reptiles, and amphibians such as snakes, lizards, and frogs.
11. On how many days over the past 12 months have you taken part in each of the following activities around your home? _____
 Observing wildlife _____
 Feeding wildlife (this includes feeding birds) _____
 Photographing wildlife _____

12. On how many days over the past 12 months have you gone to areas away from your home for the primary purpose of:

- Observing wildlife (this would include bird watching, but not trips to zoos or aquariums) _____
- Feeding wildlife (including birds) _____
- Photographing wildlife _____
- Fishing _____
- Hunting _____

13. Over the past 12 months have you participated in any of the following outdoor activities?

- | | | | | | |
|--------------------------|-------|-----|-------|----|-------|
| Camping | _____ | Yes | _____ | No | _____ |
| Boating | _____ | Yes | _____ | No | _____ |
| Hiking | _____ | Yes | _____ | No | _____ |
| Rock or shell collecting | _____ | Yes | _____ | No | _____ |
| Clamming | _____ | Yes | _____ | No | _____ |
| Gardening | _____ | Yes | _____ | No | _____ |
| Picnicking | _____ | Yes | _____ | No | _____ |

14. Are there other activities that you have participated in over the past 12 months which I have not mentioned, but in which wildlife were an important part of the activity for you?

What were they? _____
 Yes _____
 How important was wildlife for this activity? Was it very important, important, or somewhat important? (If respondent says somewhat then delete activity.)

 No _____

15. Have you or any members of your household participated in conservation or environmental information programs (such as wildlife identification programs, nature interpretation programs) during the last 12 months?

Yes _____ How many adults and children in your household have participated?
 # of adults _____
 # of children _____

16. Would you or anyone in your household participate if any of the following wildlife education programs were offered in your neighborhood in the future?

a. A program to study the life cycles and habits of local wildlife.
 Yes _____
 No _____
 If YES: # of adults _____ # of children _____

b. An outdoor program to learn to identify local wildlife.
 Yes _____
 No _____
 If YES: # of adults _____ # of children _____

17. Is there any other type of wildlife-related program you would be interested in? _____
- Yes _____ No _____
- (How many adults? _____ children? _____)
18. If they said no to 16 and 17, ASK: I'm going to read a list of possible reasons why you might not be interested in these types of programs. As I read each reason, please tell me if it does or does not apply to you.
- Not particularly interested in the topic _____
- Already participating in these types of programs _____
- Already have the knowledge/skills that would be offered by the programs _____
- Not interested in participating in a group activity _____
- Are there any other reasons why you are not interested in these types of programs? _____
-
19. Are you familiar with the New York State Department of Environmental Conservation? _____
- No (SKIP to Q22) _____ Yes _____
20. Have you ever heard of the Bureau of Wildlife within the Department of Environmental Conservation? _____
- No (SKIP to Q22) _____ Yes _____
21. If you had a question about wildlife in your area would you call the local DEC, Bureau of Wildlife office? _____
- No Why not? _____
- Yes _____
22. Have wildlife been a nuisance or caused any damage to your home or property in the past 12 months? _____
- No _____
- Yes Did you contact anyone for help in dealing with the problem? _____
- No _____
- Yes Who? _____

23. If person said YES to Q14, Q15, Q16, Q17, Q22 or yes to feeding or photographing wildlife at home or away from home, or yes to observing wildlife away from home); ASK: Would you be willing to fill out a bit more detailed survey on your wildlife interests and concerns if you were selected to receive a survey mailed to your home? The questions would take about 10-15 minutes to answer and the return postage would be provided so you wouldn't have to pay anything.

____ Yes Let me confirm your full name and mailing address:
 ____ No (Refer back to cover sheet.)

Thank you for taking the time to answer my questions. (If appropriate: If you are selected for the mail survey, you should be receiving the survey from us in April. Thanks again for your help.)

APPENDIX B:
Ka'i'l Questionnaire

A SURVEY OF URBAN RESIDENTS' INTEREST IN WILDLIFE



Human Dimensions Research Unit
Department of Natural Resources
New York State College of Agriculture and Life Sciences
A Statutory College of the State University
Cornell University, Ithaca, N. Y.



A SURVEY OF URBAN RESIDENTS' INTEREST IN WILDLIFE

Research conducted by the
Human Dimensions Research Unit
in the Department of Natural Resources
College of Agriculture and Life Sciences
Cornell University
Sponsored by the
Department of Environmental Conservation
Bureau of Wildlife

Thank you for responding to our telephone survey conducted in February and March. As we mentioned on the telephone, this mail questionnaire seeks more detailed information about your interests and concerns regarding wildlife. Please complete this questionnaire at your earliest convenience, seal it, and drop it in any mailbox (no envelope is needed); return postage has been provided. Your responses will remain confidential and will never be associated with your name.

THANK YOU FOR YOUR ASSISTANCE!



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1. First, we would like to know a little bit about how you developed an interest in wildlife. ("Wildlife" includes mammals, birds, fish, insects, reptiles, and amphibians such as snakes, lizards, and frogs.) As a child, which of the following were sources of information about wildlife, and how important was each to you in developing an interest in wildlife: (Circle one number for each source.)

1 = not a source of information
 2 = a source, but unimportant
 3 = a somewhat important source
 4 = an important source
 5 = a very important source

	Not a Source	Source of some importance	Very Important Source
a. Newspapers	1	2	3
b. Books, magazines	1	2	3
c. Radio	1	2	3
d. Television	1	2	3
e. Movies, films	1	2	3
f. School materials	1	2	3
g. Youth Organizations (ex, Scouts, 4-H)	1	2	3
h. Family outings	1	2	3
i. Other (Please describe:	1	2	3
	4	4	4
	5	5	5

2. Was there any one event, activity, experience (including books, movies, TV, etc.) that you can recall from your childhood that significantly influenced your feelings about wildlife? Please describe that briefly below.

How old were you when this event took place? _____ years old

3a. Have any of the following people or groups of people had a POSITIVE influence on your interest in wildlife up to this point in your life? (Check as many as apply.)

_____	Mother	_____	Friend
_____	Father	_____	Teacher
_____	Sister or brother	_____	Other adult (ex., Scout leader)
_____	Spouse	(Please specify: _____)	
_____	Other relative	_____ None of the above	

3b. If you checked more than one category above, please circle the person who had the greatest positive effect on your interest in wildlife.

4. Which of the following had the greater effect in helping you to develop an interest in wildlife? (Check one.)

_____ Books, magazines, and TV were more important.

_____ My experiences with people close to me were more important.

5. Now, thinking about your current involvement with wildlife, which category below best describes you? (Check the one category that most closely describes your current involvement level.)

_____ I have a general interest in wildlife but don't do much that is specifically related to wildlife.

_____ I read or watch TV programs about wildlife or belong to a wildlife organization, but rarely participate in outdoor wildlife activities such as birdwatching, feeding or photographing wildlife, or hunting.

_____ I participate occasionally in outdoor wildlife-related activities.

_____ I am an active participant in one or more outdoor wildlife-related activities.

a. Television	_____	_____
b. Radio	_____	_____
c. Newspapers	_____	_____
d. Movies, films	_____	_____
e. Magazines or newsletters from environmental interest groups (i.e., National Wildlife Federation)	_____	_____
f. Magazines published by other sources	_____	_____
g. Department of Environmental Conservation publications (i.e., <i>The Conservationist</i>)	_____	_____
h. Attending presentations, meetings	_____	_____
i. Friends or family	_____	_____
j. Other (Please describe: _____)	_____	_____
k. None, I have no current source of information about wildlife	_____	_____

For New York State Wildlife (Please write one letter from the list in Question 6a.)

(ist in Question 6a.)

7. People relate to the environment in many different ways. Some of these relationships are explored below. Please read the following statements and indicate to what extent you agree or disagree with each statement. (Circle one number for each statement.)

1 = strongly agree
2 = mildly agree

3 = mildly disagree
4 = strongly disagree

	Strongly Agree	Agree	Strongly Disagree
a. The balance of nature is very delicate and easily upset	1	2	3
b. When humans interfere with nature it often produces disastrous consequences	1	2	3
c. Plants and animals exist primarily to be used by humans	1	2	3
d. Humans must live in harmony with nature in order to survive	1	2	3
e. Humans were created to rule over the rest of nature	1	2	3
f. Humans are severely abusing the environment	1	2	3
g. Humans have the right to modify the natural environment to suit their needs	1	2	3
h. We are approaching the limit to the number of people that the Earth can support	1	2	3
i. The Earth is like a spaceship with only limited room and resources	1	2	3
j. There are limits to growth which our industrialized society cannot expand	1	2	3



	Strongly Agree				Strongly Disagree			
	1	2	3	4	1	2	3	4
k. To maintain a healthy economy we will have to develop a "steady state" economy where industrial growth is controlled	1	2	3	4				
l. Humans need not adapt to the environment because they can remake it to suit their needs	1	2	3	4				
m. Humans should manage the environment as necessary to keep ecosystems in balance	1	2	3	4				
n. We should manage the environment for human benefits and not worry about how plants and animals are affected	1	2	3	4				

Past Participation in Conservation or Environmental Information Programs

If you or members of your household participated in conservation or environmental information programs (such as wildlife identification programs or nature interpretation programs) in the past 12 months, please answer the questions in this section. If you or members of your household have not participated in such programs in the past 12 months, please check here _____ and skip to the next section (Question 15) on Future Program Participation.

8. Which of the following topic areas were covered in programs you or members of your household participated in during the past 12 months? (Check as many categories as apply.)

- _____ Learning to identify local wildlife
- _____ Learning to identify local birds in particular
- _____ Learning to identify local fish in particular
- _____ Learning about life cycles and habits of local wildlife
- _____ Learning about wildlife's role in the world
- _____ Learning about how wildlife live in the urban environment
- _____ Learning about or modifying habitat to attract more wildlife to your area
- _____ Learning about methods of controlling populations of wildlife
- _____ Learning how to handle your own nuisance wildlife problems
- _____ Learning about rare marine mammals (e.g., whales) and birds (e.g., eagles)
- _____ Learning about how wildlife rehabilitators care for injured wildlife
- _____ Learning how to teach children about wildlife
- _____ Other → Please describe: _____

9. How many different programs have you or members of your household participated in during the past 12 months? _____

Number of programs _____

Please answer the following questions for the 2 most recent programs you or members of your household have participated in. If you have only participated in 1 program, please fill in the first column of information.

	Program 1	Program 2
10. What topics were covered (using the list in Question 8)?	_____	_____
11. How many adults and children in your household attended?	_____	_____
Number of adults	_____	_____
Number of children	_____	_____
12. How much did it cost per person to attend?	\$ _____	\$ _____
13. Who sponsored the program?	_____	_____
14. Would you or members of your household attend a similar program again?	Yes _____ No _____	Yes _____ No _____
If you said NO, why not?	_____	_____

Future Program Participation

If you or others in your household might be interested in participating in new wildlife education programs in your neighborhood, please answer the following questions. If you or members of your household are not interested in attending these types of programs, please skip to the next section on Leisure Activities (Question 23).

15. Which of the following topic areas would be of interest to you or members of your household? (Check as many categories as apply.)

- ☐ Learning to identify local wildlife
- ☐ Learning to identify local birds in particular
- ☐ Learning to identify local fish in particular
- ☐ Learning about life cycles and habits of local wildlife
- ☐ Learning about wildlife's role in the world
- ☐ Learning about how wildlife live in the urban environment
- ☐ Learning about or modifying habitat to attract more wildlife to your area
- ☐ Learning about methods of controlling populations of wildlife
- ☐ Learning how to handle your own nuisance wildlife problems
- ☐ Learning about rare marine mammals (e.g., whales) and birds (e.g., eagles)
- ☐ Learning about how wildlife rehabilitators care for injured animals
- ☐ Learning how to teach children about wildlife
- ☐ Other → Please describe: _____

16. How far would you be willing to travel from your home to attend a wildlife education program?

☐ Miles by car

☐ Could only attend if public transport was available

☐ Could only attend if it was within walking distance of my home

17. Would you be willing to pay \$_____ per person for a full day program?

☐ Yes

☐ No

18. How many days a year would you or members of your household be interested in participating in wildlife-related programs?

_____ days per year

19. Would you participate in such programs if they were taught by Department of Environmental Conservation, Bureau of Wildlife personnel?

Yes _____

No → Why not? _____

20. Please indicate if any of the following issues would be a concern that would limit your participation in such programs. (Circle one number for each issue.)

1 = not a concern
2 = a slight concern
3 = somewhat of a concern
4 = very much of a concern

Not a Concern
Very Much of a Concern

a. Programs offered in the evening	1	2	3	4
b. Programs offered on weekends	1	2	3	4
c. Full day programs	1	2	3	4
d. Safety in neighborhood parks	1	2	3	4
e. Safety of public transportation to programs	1	2	3	4
f. Other (Please describe: _____)	1	2	3	4

21a. How likely is it that each of the following information sources would reach you with information about wildlife-related programs sponsored by the Department of Environmental Conservation? (Circle one number for each information source.)

1 = very unlikely
2 = unlikely
3 = neither unlikely or likely
4 = likely
5 = very likely

Very Unlikely	Very Likely
1. The company's financial performance is likely to decline significantly over the next 12 months. 2. The company's market share is likely to decrease significantly over the next 12 months. 3. The company's customer base is likely to shrink significantly over the next 12 months. 4. The company's product line is likely to become outdated over the next 12 months. 5. The company's management team is likely to be ineffective over the next 12 months. 6. The company's competitive advantage is likely to erode over the next 12 months. 7. The company's financial position is likely to weaken over the next 12 months. 8. The company's operational efficiency is likely to decline over the next 12 months. 9. The company's innovation pipeline is likely to dry up over the next 12 months. 10. The company's brand reputation is likely to suffer over the next 12 months.	1. The company's financial performance is likely to improve significantly over the next 12 months. 2. The company's market share is likely to increase significantly over the next 12 months. 3. The company's customer base is likely to grow significantly over the next 12 months. 4. The company's product line is likely to become more relevant over the next 12 months. 5. The company's management team is likely to be effective over the next 12 months. 6. The company's competitive advantage is likely to strengthen over the next 12 months. 7. The company's financial position is likely to strengthen over the next 12 months. 8. The company's operational efficiency is likely to improve over the next 12 months. 9. The company's innovation pipeline is likely to flourish over the next 12 months. 10. The company's brand reputation is likely to improve over the next 12 months.

	1	2	3	4	5
a. Local newspaper	1	2	3	4	5
b. Local radio	1	2	3	4	5
c. Local TV	1	2	3	4	5
d. Posters in your neighborhood	1	2	3	4	5
e. Department of Environmental Conservation publications (such as <i>The Conservationist</i>)	1	2	3	4	5
f. School handouts and mailings	1	2	3	4	5
g. Other (Please describe: _____)	1	2	3	4	5

21b. Which one of the above information sources would be the best source of information to use to reach you?

_____ Please write one letter from the list in Question 21a.

22. Would you be interested in receiving a fish and wildlife newsletter that among other things announced programs in your area and came out quarterly?

☐ No ☐ Yes ← If a fee of \$_____ per year had to be charged for the newsletter, would you still be interested in receiving it?

Yes _____

No _____

Leisure Activities

23. How many hours do you work outside the home per week?

_____ Number of hours

24. What percent of the time when you are not working outside the home do you spend pursuing:

Personal leisure activities? _____ % of time

Family leisure activities? _____ % of time

25. What activities account for most of your leisure time?

26. Please circle your approximate 1993 TOTAL HOUSEHOLD INCOME before taxes, in thousands of dollars:

Less than 10 10 12 14 16 18 20 22 24 26 28 30 32

34 36 38 40 45 50 55 60 65 70 75 80 85 90 95

More than 95

APPENDIX C:**Factor Analysis of NEP and Management Scale**

Factor analysis of the scale identified 4 factors, 3 of which were associated with the NEP scale (Appendix Table C-1). The fourth factor measured the appropriateness of management. Total scale reliability measured using Cronbach's $\alpha = .52$. Factors explained 61% of the variance. One item, "humans are severely abusing the environment," was dropped from the scale because it was not strongly associated with any one factor. Respondents in Syracuse who had interest in wildlife but not in future programs felt less strongly that humans should not dominate over nature as respondents with interest in future programs [1.9 vs. 1.7]. No other significant differences were found between those with interest in wildlife but not in future programs versus those with interest in future programs.

Table C-1. Mean New Environmental Paradigm scale scores for respondents who indicated household interest in future wildlife education programs by pilot study area.

Pilot Study Area		New Environmental Paradigm Factors	
Syracuse	Mean ^a	Syracuse	Mean ^a
Balance of nature ^b	3.6	3.4	
Limits to growth ^c	3.0	3.1	
Humans over nature ^d	1.7	1.7	
Management Factor			
Manage for human benefits only ^e	1.4	1.4	

^aMeasured on a 4-point scale where 1 = strongly disagree and 4 = strongly agree.

^bItems - The balance of nature is very delicate and easily upset. When humans interfere with nature it often produces disastrous consequences. Humans must live in harmony with nature in order to survive.

^cItems - We are approaching the limit to the number of people that the Earth can support. The Earth is like a spaceship with only limited room and resources. There are limits to growth beyond which our industrialized society cannot expand. To maintain a healthy economy we will have to develop a "steady state" economy where industrial growth is controlled.

^dItems - Plants and animals exist primarily to be used by humans. Humans were created to rule over the rest of nature. Humans have the right to modify the natural environment to suit their needs.

^eItems - Humans need not adapt to the environment because they can remake it to suit their needs. We should manage the environment for human benefits and not worry about how plants and animals are affected. Humans should manage the environment as necessary to keep ecosystems in balance. (This item was negatively correlated with the other two and was recoded before means were calculated.)

