YOUNG PEOPLE'S ATTITUDES TOWARD WILDLIFE

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ABSTRACT

YOUNG PEOPLE'S ATTITUDES
TOWARD WILDLIFE

By

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A questionnaire was distributed to a random sample of seventh through twelfth graders in Michigan public schools to determine young people's attitudes toward wildlife. Completed questionnaires were returned by 2,362 young people, 49% of the original sample.

Young people were asked to indicate the reasons why wildlife is important to them, the kinds of wildlife-oriented activities in which they participate, and their desires for environmental education classes and outdoor recreation areas. Basic wildlife biology questions were included to estimate their knowledge of environmental science.

Most young people said it was important to protect or control wildlife because it is part of nature (96%), because they wanted to learn about wildlife (92%), and because they enjoyed watching wildlife (90%). The majority of young people, including hunters, non-hunters, and

anti-hunters, valued the aesthetic qualities of wildlife more than the utilitarian ones.

The activities most young people participated in were fishing (72%), watching wildlife (71%), and feeding wildlife (63%). Ninety-six percent of the respondents watched wildlife T.V. programs and television was indicated as the greatest influence on wildlife attitudes.

There were a number of misconceptions about biological processes. The questions most people answered incorrectly asked about the effect of forest fires on wildlife, forest succession, and wildlife as a renewable resource.

Desires regarding environmental education were greatest for wildlife classes, environmental classes, and boating instruction. More than 70% of the people said there should either be more guided nature walks, nature centers, or areas for watching wildlife. Over 60% of the respondents wanted more city parks or recreation areas where motor vehicles are restricted or areas where hunting is prohibited.

These results have strong management implications for the ways to best educate the public and the kinds of recreational areas in greatest demand.

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Gerri Ann Pomerantz

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INTRODUCTION

The Problem

The problems in managing our country's wildlife cannot be dealt with on a purely biological basis. No longer can the wildlife professional simply determine how many animals to harvest and the best ways to increase the number of game. The issues facing today's resource managers are much more complex involving economic, sociological and political problems as well as biological ones.

Present day Americans do not place the same values on wildlife as people of the past. The utilitarian or meat and fur values of wildlife are secondary to the aesthetic and existence values (Shaw 1974a). More and more people are crowding into our National and State parks and forests, wildlife refuges, game lands, and scenic areas to view the wildlife. There are numerous types of users on these lands including hikers, bird watchers, hunters, fishermen, bicyclists, snowmobilers, motorcyclists, horseback riders and mountain climbers. Increasing numbers of recreationists, whether they desire a new camp site equipped with full bath facilities or simply a wilderness trail, are demanding further

development of our natural resources and it is up to the resource manager to effectively deal with this increased public demand (Hendee and Potter 1971; Lucas 1964; Shaw 1974b; Wagar 1966, 1974). However, it is by no means an easy task to accommodate the many demands of the wide range of recreationists and cope with the physical strain on the resources within the restrictions of present environmental legislation. In order to deal with this situation, a resource manager should not only be well trained in the basic sciences and knowledgeable about most game species of wildlife and their habitats. He or she must also be well versed in ecological interrelationships, economics, communicative skills, statistics, computer science, urban and non-game wildlife, law, the legislative process, sociology and planning (Zagata 1976). The fact that most students who prepared for careers in wildlife were not trained in all these areas has created trauma for present day wildlife professionals.

The need to address these trauma inducing issues is apparent and at the thirty-eighth Midwest Fish and Wildlife Conference an entire session was devoted to the problems of increased public demand, changing environmental legislation and the traumatized professional. It is not sufficient for the wildlife manager to react to situations as they arise. The problems relating to our natural

resources need to be anticipated and managers must become planners.

Background Information

But what exactly is the purpose of land management? Some groups such as the Sierra Club and Wilderness Society argue that wilderness is a resource in its own right and not something to be developed for public utilization (Lucas 1964). However, Alan Wagar (1974) points out that,

> our most powerful argument for such values as wilderness, solitude, whooping cranes and redwoods is that many of us judge our lives to be enriched by their presence. We maintain diversity and uniqueness for the current and future benefits they provide for people, not to benefit the attractions themselves.

It is therefore the land planner's responsibility to manage resources for the greatest public benefit (Hendee and Potter 1971; Lucas 1964; Shaw 1974b; Wagar 1966).

The next logical question then, is what benefits are people seeking from wildlife and general outdoor recreational activities? There is no single answer to this question. First, the benefits a hunter reaps from his day in the woods may be different from those of the bird watcher, and a paddling canoeist may derive a different kind of satisfaction than a motorboater. Furthermore, the resource manager's perception of a wilderness area and the experiences associated with it differ from the public's perception (Lucas 1964). Consequently, a wildlife professional is hard pressed to come up with a

plan that will satisfy the needs of such a diverse population. There are ways, though, to manage areas for multiple uses through such methods as zoning and use-limits and still maintain high quality recreation (Lucas 1964; Wagar 1974). But before appropriate management programs can be devised, the needs of the public must be identified. It is only through research into public attitudes and behaviors that the goal of resource management can be achieved (Hendee and Potter 1971; Shaw 1974b; Wagar 1974).

A number of studies have researched the attitudes, behaviors and characteristics of hunters (Hendee and Potter, 1976, list 33 such studies). However, little research has been done on non-consumptive users and their attitudes toward wildlife (Shaw, 1976, lists 5 studies). Studies that have examined public attitudes showed that childhood experiences have a strong influence on adult recreational activities and attitudes toward wildlife. Shaw (1974b) found that a person's early social environment is an important determinant of hunting attitudes and Kellert (1976) concluded that the childhood environment is most important in formation of attitudes towards animals.

The selection of adult activities is strongly influenced by present and past availability of recreational opportunities (Bevins et al. 1968; Burch and Wenger

1967; Hendee 1969; Sapora 1966). Research on hunter behavior supports this contention. Most adult hunters were introduced to the sport in their early teens and few people begin hunting in later life if not introduced to the sport by the age of twenty (Klessig 1970; Schole et al. 1970).

Purpose

All evidence points to the fact that childhood environment has a very strong influence on adult attitudes and behavior patterns. If the attitudes and behaviors of today's young people can be identified, the resource manager will have a better understanding of future public attitudes and the ways to go about influencing them. This knowledge will enable the manager to prepare better information and education programs and be more equipped to deal with future public demands by developing responsive management programs.

No study to date has dealt exclusively with the attitudes of young people toward wildlife or wildlife-oriented activities. It was therefore the intent of this study to provide information on the attitudes and behaviors of today's young people and to relate them to various background factors. In addition, young people's knowledge of environmental science and their desires for outdoor recreation areas and environmental education classes are examined.

METHODS

The Survey Instrument

The survey instrument was a printed questionnaire. In responding to questionnaire items, people often express a high degree of verbal commitment but have lower levels of actual commitment and knowledge of the subject area (Maloney and Ward 1973). Therefore, in developing the questionnaire used for Michigan's young people (Appendix I) a concentrated effort was made to distinguish between what a person feels, what he or she actually does in regard to those feelings, and how much objective information influences his or her feelings and behavior patterns. A five part model was designed to accomplish this objective. All questionnaire items fell into one of the following categories: (1) attitudes, (2) knowledge, (3) behavior, (4) desires, or (5) background characteristics.

Specific questions were written with the help of wildlife professionals, psychologists and environmental education specialists. After several revisions a pilot questionnaire was pretested on a sample of 200 seventh through twelfth graders. Appropriate scales were

determined for some questionnaire items and the final questions were selected.

The Sample Population

A sample of 4,800 seventh through twelfth graders in Michigan public schools was desired. To attempt to obtain a state wide sample of this size it was necessary first to sample the school districts in the state. The Michigan Education Directory and Buyer's Guide 1975-76 lists all Michigan public school districts indicating the student enrollment per district. One hundred and thirty-five school districts were selected using the United States census bureau sampling procedure (Kish 1965). This sampling method ensures a stratified random sample where highly populated areas are sampled more heavily than areas with small student populations. At the same time, a sample representative of all areas of the state is obtained.

The superintendents of the selected school districts were contacted and asked if they would permit students in their district to participate in the study. In 125 districts a sample of 30 students per district was requested. Due to the large number of students it was necessary in 5 districts to request a sample of 60 students, in 3 districts a sample of 90, and a sample of 420 seventh through twelfth graders was requested from the Detroit school district.

If district superintendents were willing to participate in the study there were a number of options they were given in order to minimize the time required of school personnel and to maintain the privacy of the students (Appendix II). Sample selection procedures were provided to those superintendents who desired to have district personnel select the sample (Appendix III). Other superintendents chose to have Department of Natural Resources (DNR) employees select the sample for their district.

Administration of the Questionnaire

In most cases the questionnaires were delivered to the school district office by DNR personnel and school district employees distributed the questionnaires to the students. Superintendents were given the choice of having students complete the questionnaires in the classroom or at home. All surveys were accompanied by an instruction sheet. DNR personnel collected the surveys one week from the day they were delivered to the school districts.

In 17 districts, after the sample was selected a list of the students' names and addresses was provided by the superintendent. A questionnaire was mailed directly to the student's home in those districts. In addition to the student instruction sheet, a cover letter was included with the questionnaire (Appendix IV). If the student did not return his or her questionnaire within four weeks, a

second copy was sent. A third mailing went out to remaining non-respondents four weeks from the date of the second mailing.

Analysis of Data

Questionnaires were scored by optical scanners and responses put onto computer tapes. The frequency of each response was tabulated. Adjusted frequencies for questionnaire responses are used in all tables. The adjusted frequency was calculated by (1) subtracting the number of missing cases for a particular questionnaire item from the total number of respondents and (2) using this new total as the divisor in determining the percentage of each response category.

Contingency tables were established for the following categories: sex, grade, residence, and attitude group. Chi square was used to determine significant relationships between each category and questionnaire items.

Definition of Terms

In an attempt to get at some of the objections young people have about hunting, a distinction was made between hunting for food and hunting for fun (Appendix I, Question 5). Separating these two dimensions of hunting does not mean to imply that when a person hunts for food he or she does not also enjoy the sport of hunting the animal or have fun in the process. By the same token,

the person who hunts for sport may and probably will eat the meat of the animal he or she kills. The reasons for making this distinction are twofold: (1) There are some hunters whose primary reason for hunting is to obtain meat and object to hunting just for the fun of it; and (2) There are other people who do not hunt who, while they approve of hunting for food, object to hunting for pleasure (Shaw 1974b).

Some criteria were needed to delineate the hunting attitudes of young people. The separation of food and sport hunting was a guide used to define the various attitude groups. The labels of meat hunter versus sport hunter or non-hunter versus non-hunter, anti-sport do not imply value judgements on the ethics of sport hunting. It is simply a method of classifying the responses of young people. It should be kept in mind that the distinction made between food and sport hunting was an artifact of this study and it may not be a true indicator of young people's attitudes.

RESULTS

The Sample Population

Completed questionnaires were returned by 2,362 seventh through twelfth graders, 49.2% of the original sample. The distribution of respondents per grade is listed in Appendix I, Question 34. At the time the questionnaire was distributed many high school seniors had already graduated, which may account for the lower percentage of twelfth grade respondents.

People representing all resident categories from heavily populated urban centers to rural areas were sampled (Appendix I, Question 36). The greatest proportion of respondents came from small towns, suburbs, and small cities.

A greater percentage of females than males returned completed questionnaires (Appendix I, Question 35). There was a significant difference ($x^2 = 15.04$, $df = 6$, $p < .05$) in the ratio of male to female respondents across the urban-rural dimension. The largest discrepancy was in the large city where female respondents outnumbered males by more than two to one (Table 1).

Table 1.--Male and female respondents by area of residence.

Residence	Percent Males	Percent Females
Large City	32.8	67.2
Medium City	42.5	57.5
Small City	48.2	51.8
Suburb	46.1	53.9
Small Town	50.3	49.7
Farm	45.5	54.5
Other Rural Area	44.8	55.2

The ratio of male to female respondents was not constant across the different grades ($x^2 = 15.89$, df = 5, $p < .05$). In the seventh and eighth grades males outnumbered females, but in grades 9 through 12 there was a greater proportion of females to males (Table 2).

Most respondents lived in one family homes (88.4%). The majority lived with both their mother and father (82.9%) and had either a brother or sister (94.4%). A greater proportion of respondents from rural areas lived with both their mother and father than those from urban areas. Urban areas had a greater number of young people who lived only with their mother.

Ninety-one percent of the respondents were white, 5.2% were black, and 3.8% represented other racial or

Table 2.--Male and female respondents by grade.

Grade	Percent Males	Percent Females
7	52.7	47.3
8	50.1	49.9
9	47.4	52.6
10	44.3	55.7
11	39.8	60.2
12	43.8	56.2

ethnic groups. The majority of black respondents (94.5%) were from urban and suburban areas.

Comparison of the responding sample population with the 1970 United States census of twelve to eighteen year olds and the Michigan dropout statistics 1974-75 for ninth through twelfth graders showed the following discrepancies: (1) a greater proportion of rural residents (46%) was represented by the sample than was in the actual Michigan population (26%), whereas the proportion of large city residents represented was smaller than that in the population; (2) a greater proportion of urban females were represented than was in the 1970 population of twelve to eighteen year olds; and (3) the uneven distribution of male and female respondents across the six grades was not consistent with the fairly equal distribution of males and females in Michigan public schools in grades 9 through 12.

The percentage of male respondents per grade varied between 39.8% and 52.7%. Whereas, the percentage of males in the population of ninth through twelfth graders in Michigan public schools varied between 50% and 51%.

The disproportionate representation of urban residents was due to the fact that many Detroit area schools were unable to participate in the study. I cannot determine the cause of the discrepancy in the distribution of males and females except to speculate that females may be more inclined to complete questionnaires than males.

In analyzing the responses of urban and rural residents, the proportion of responses within a residence category, and not the absolute frequencies, were used for determining trends in attitudes and behaviors along the urban-rural dimension. Therefore, any conclusions comparing urban and rural residents were not affected by the sample's discrepancy from the actual population of young people.

In order to correct for the unequal distribution of males and females in the sample, all questionnaire responses were separated out according to sex. Contingency tables were computed for male respondents for three variables, grade, residence, and attitude group, and separate contingency tables were computed for female respondents. Consequently, any conclusions about residence, grade or

attitude group trends were likewise unaffected by the sampling discrepancy.

Attitude Groups: Anti-Hunters, Non-Hunters, and Hunters

Two questions were designed to identify hunters, anti-hunters, and those people who do not hunt, but are not opposed to hunting, who will be called non-hunters. The first question expressed attitudes towards hunting (Appendix I, Question 5). A distinction was made between hunting for sport and hunting for food, and whether or not all hunting should be against the law. Three-fourths of the people were against hunting only for sport, but said that hunting for food was OK. About a quarter thought that all hunting should be against the law.

The second item asked about a person's hunting behavior (Appendix I, Question 29). People who had hunted in the past were asked if they planned to continue hunting or had quit. People who had never hunted were asked whether or not they would like to hunt in the future. Answers to these two questions identified five attitude groups (Figure 1). People who said that all hunting should be against the law and never planned to hunt, were classified anti-hunters (Group 1). Respondents who approved of hunting for food, but disapproved of hunting for sport and had never hunted themselves were called non-hunters, anti-sport (Group 2). Those people who had never hunted,

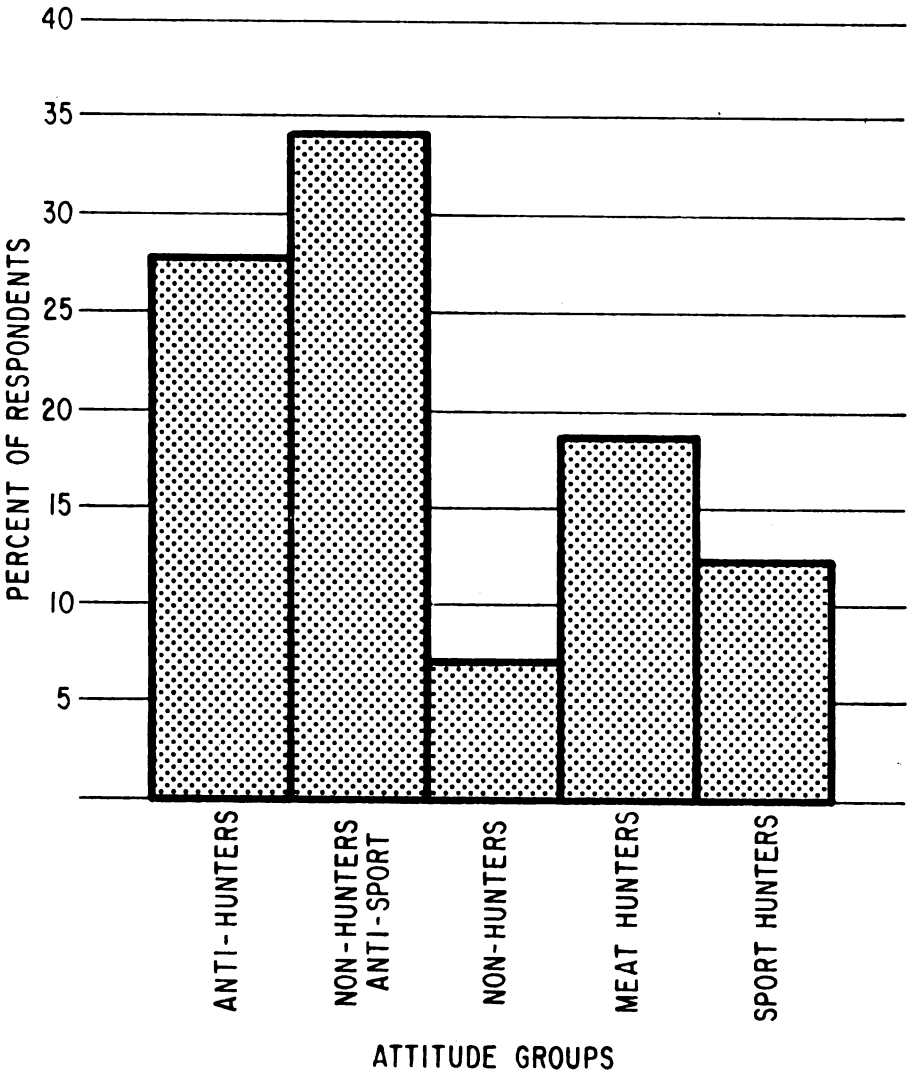

Fig. 1.--Five attitude groups.

but were not opposed to hunting either for food or sport were simply called non-hunters (Group 3). People that had hunted, approved of hunting for food, but were opposed to hunting for sport were classified as meat hunters (Group 4). Lastly, respondents that hunted before and were in favor of both food and sport hunting were called sport hunters (Group 5).

If the sample is divided into three major categories of anti-hunters (Group 1), non-hunters (Groups 2 and 3), and hunters (Groups 4 and 5), there appears to be a fairly even distribution of the three groups. However, examination of the five attitude groups shows a definite anti-sport hunting trend. Of the hunters, the majority were meat hunters, not sport hunters, and the non-hunters against sport hunting clearly outnumbered those for sport hunting.

As might be expected, the hunter groups were predominantly male, while anti-hunter groups consisted mostly of females (Figure 2). The female population was heavily skewed toward anti-hunting sentiment, whereas the male population was divided between hunters and non-hunters against sport hunting.

Examination of the attitude groups across the seven resident categories shows an increasing number of hunters from the urban cities to rural areas, with a corresponding decrease in anti-hunters (Figure 3). The number

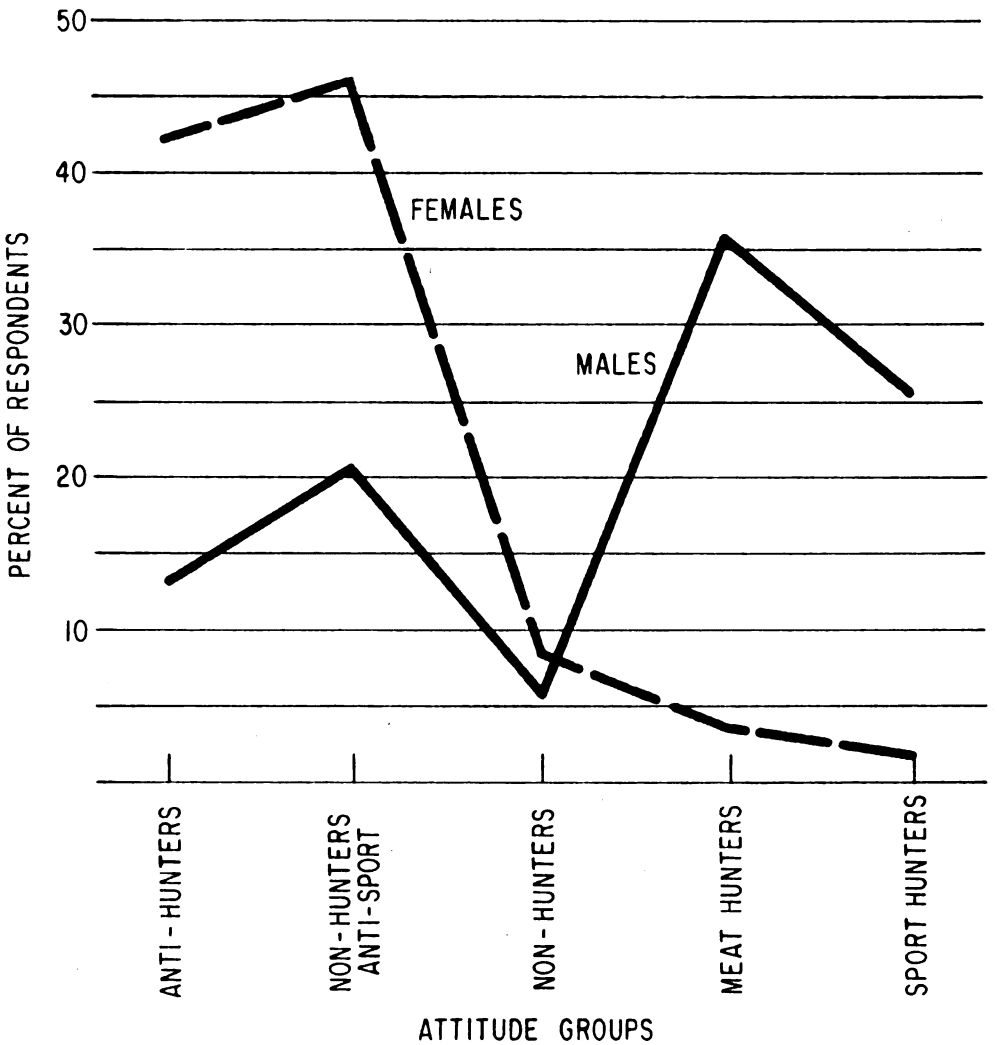

Fig. 2.--Distribution of males and females in the five attitude groups.

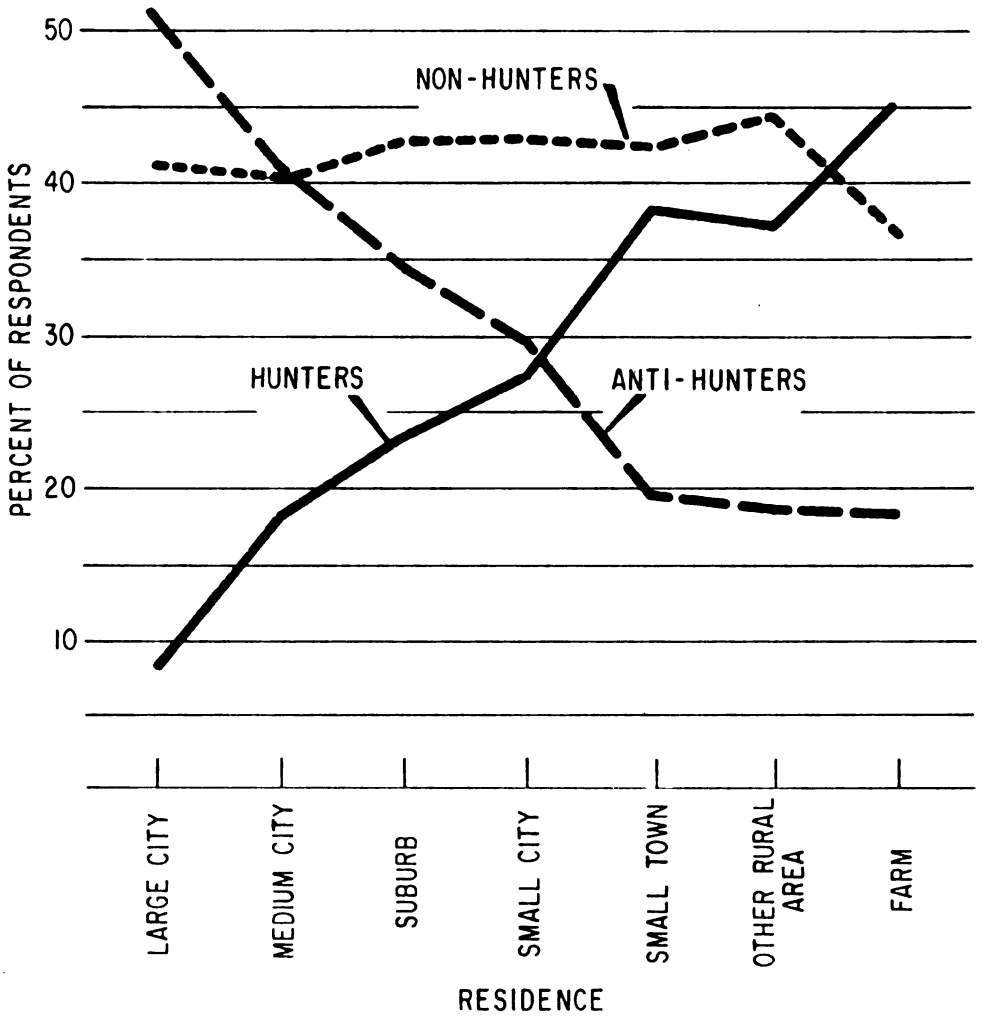

Fig. 3.--Distribution of anti-hunters, non-hunters, and hunters by area of residence.

of non-hunters remained constant across the urban-rural dimension.

There was a similar trend across the urban-rural dimension of increasing numbers of young people's family members who hunt. More young hunters had family members that hunt than non-hunters, and there were more non-hunters than anti-hunters with members of their family that hunt.

Attitudes

Young people were asked a number of questions from both a personal and societal viewpoint to ascertain their opinions on the importance of wildlife (Appendix I, Questions 2, 3). Similar responses were obtained for both sets of questions regarding wildlife values. Most of the young people thought wildlife was important to protect because it is part of nature, because people want to learn about wildlife, and because they want to watch wildlife (Table 3).

Of those people who agreed that wildlife should be protected or controlled because it provides food and because people want to hunt wildlife, hunters significantly outnumbered the other attitude groups ($x^2 = 199.27$, $df = 12$, $p < .05$; $x^2 = 463.96$, $df = 12$, $p < .05$) and males significantly outnumbered females ($x^2 = 47.09$, $df = 4$, $p < .05$; $x^2 = 207.41$, $df = 4$, $p < .05$). Females outnumbered males in agreeing with the aesthetic or educational values of wildlife (Table 4). Five response categories ranging

Table 3.--Reasons why people should protect or control wildlife.

Reason	Percent of young people who said it was a good or very good reason
Because wildlife is a part of nature.	96.4
Because people want to learn about wildlife.	92.4
Because people want to watch wildlife	89.7
Because people want to know wildlife is around.	71.4
Because wildlife provides food.	50.8
Because wildlife can be dangerous to other wildlife.	35.9
Because people want to hunt wildlife.	35.0
Because wildlife can be pests.	11.2

from "a very good reason" to "a very bad reason" were tested with chi square, but only two categories are reported in Table 4. There was not a definite distinction of aesthetic versus utilitarian values across the urban-rural dimension.

Six questions were designed to measure the anthropomorphic feelings that young people have. Most respondents attributed the sensation of pain to animals and about half believed that animals think about their actions (Appendix I, Question 4). An anthropomorphic scale score was established for each respondent by giving one point

Table 4.--Reasons to protect or control wildlife where there were significant differences ($p < .05$) in the responses of males and females.

Good or very good reason	Percent Males	Percent Females	x^2	df
Because wildlife is part of nature.	85.3	97.4	25.07	3
Because people want to learn about wildlife.	89.2	95.2	45.13	3
Because people want to watch wildlife.	87.4	91.9	27.44	3
Because wildlife provides food.	57.0	45.2	47.09	4
Because people want to hunt wildlife.	46.1	24.9	207.41	4

for each anthropomorphic statement agreed with, and then totaling the number of points. There were no significant differences in the scores of urban and rural residents ($x^2 = 13.09$, df = 12, $p > .05$), nor were there differences between the six grades ($x^2 = 11.76$, df = 10, $p > .05$). However, more females than males had high anthropomorphic scale scores ($x^2 = 14.41$, df = 2, $p < .05$) and of the five attitude groups, significantly more anti-hunters had high scale scores ($x^2 = 28.68$, df = 8, $p < .05$).

Influencing Factors

Students were asked to choose, from a specified list, the factors which influenced their interest in wildlife (Appendix I, Question 9). Television was

indicated by the greatest number of people (87.1%) as having an effect on their interest in wildlife. A parent or a movie was indicated by 75% or more of the respondents as an influencing factor.

There were more people in the lower grades, than in the higher ones, that said a television program or a movie or a book or a scout or club leader influenced their interest in wildlife.

A significantly higher percentage of males said their interest in wildlife was influenced by a relative ($x^2 = 21.94$, df = 2, $p < .05$) and a scout or club leader ($x^2 = 10.41$, df = 2, $p < .05$), whereas, more females were influenced by a teacher ($x^2 = 18.14$, df = 2, $p < .05$) and a school class ($x^2 = 15.11$, df = 2, $p < .05$).

Significantly more rural than urban residents felt their interest in wildlife was influenced by a relative ($x^2 = 21.05$, df = 12, $p < .05$). There were seven resident groupings and three response categories for influencing factors.

Knowledge

To determine if wildlife values were based on sound biological knowledge a number of questions were asked about environmental science. Most people correctly answered questions about the effect of air pollution on plants, the role of insects in an ecosystem, interspecific competition, wildlife habitats, and human effects on the

environment (Table 5). The questions which caused the greatest difficulty asked about the effect of forest fires on wildlife, forest succession and wildlife as a renewable resource.

The number of correct answers was totaled for each person and a knowledge scale score was determined. The plotted distribution of scores formed a normal curve, and had a mean of 7 out of a possible 15 points. There were significant differences in the knowledge scale scores between the different grades, attitude groups, resident categories and sexes (Table 6). Each successive grade, between 7 and 12, had more students who had high knowledge scale scores ($x^2 = 52.08$, $df = 10$, $p < .05$). A greater number of hunters than non-hunters had high knowledge scores, and more non-hunters had high scores than anti-hunters ($x^2 = 149.54$, $df = 8$, $p < .05$). Significantly more males scored higher on the knowledge questions ($x^2 = 64.40$, $df = 2$, $p < .05$) and there were more rural residents with high scores ($x^2 = 30.41$, $df = 12$, $p < .05$).

Activities

In addition to identifying what young people knew and how they felt about wildlife, we wanted to know just what they did for general recreational and wildlife-oriented activities. The most popular general recreational activities were bicycling and swimming (Appendix I, Question 7). Wildlife-related activities participated in

Table 5.--Proportion of young people that correctly answered environmental science questions.

Environmental Science Category	Percent of correct responses
Air pollution's effect on plants	93.2
Insect's role in ecosystem	84.9
Interspecific competition	79.9
Wildlife habitat	78.2
Human effects on environment	66.4
Conservation	61.6
Food chains	51.0
Carrying capacity	45.7
Hunting as a tool of wildlife management	44.6
Population dynamics	41.4
Wildlife as a renewable resource	32.7
Forest fires	23.2
Energy transference	22.4
Transpiration	14.2
Forest succession	11.5

Table 6.--Knowledge scale scores of respondents by attitude group, grade, sex, and residence.

	Knowledge Scale Scores Percentage of respondents with scores between		
	0-6	7-8	9-14
Attitude Group			
Anti-hunters	50.0	30.7	19.3
Non-hunters, anti-sport	31.8	31.0	37.2
Non-hunters	29.2	30.0	40.8
Meat hunters	18.4	33.6	47.9
Sport hunters	21.7	23.2	55.1
Grade			
7	44.7	27.8	27.5
8	40.6	31.1	28.3
9	33.5	30.8	35.8
10	34.7	26.0	39.2
11	27.4	32.4	40.2
12	27.0	28.4	44.7
Sex			
Males	28.3	27.8	43.9
Females	41.0	30.3	28.7
Residence			
Large City	47.2	21.6	31.2
Medium City	44.9	23.5	31.6
Small City	35.7	31.4	32.9
Suburb	33.2	28.0	38.9
Small Town	33.3	28.7	38.0
Farm	30.3	34.6	35.1
Other Rural Area	28.5	30.6	40.9

by 50% or more of the respondents included fishing, feeding wildlife, watching wildlife, driving and hiking to look for wildlife, visiting the zoo, watching wildlife movies and T.V. shows, and reading wildlife books (Appendix I, Question 8).

There were a number of activities where male participants significantly outnumbered females, whereas there were only two activities, horseback riding and visiting the zoo, where there were more female than male participants (Table 7). Male dominated general activities included football, basketball, softball, snowmobiling, boating and camping (Figure 4). General recreational activities where there were no significant differences ($p > .05$) between males and females included swimming, hiking, cross-country skiing, tennis and bicycling.

Wildlife-oriented activities where male participants largely outnumbered females were hunting, fishing, and catching insects (Figure 5). Males also significantly outnumbered females in taking classes in hunting and fishing instruction, as well as in six other wildlife-oriented activities. Those wildlife-related activities where there were no significant differences ($p > .05$) between males and females were watching wildlife, keeping a wild animal for a pet, and watching a wildlife movie and T.V. show.

Table 7.--Activities where there were significant differences ($p < .05$) in the number of male and female participants.

Activity*	Percent Male	Percent Female	x^2	df
Hunting	51.2	6.2	577.85	1
Football	46.1	10.7	460.26	2
Hunting Instruction	37.6	5.4	363.41	1
Fishing	86.0	59.6	194.41	1
Basketball	53.0	27.5	157.73	2
Caught Insects	54.9	34.0	101.11	1
Softball	54.3	35.9	79.58	2
Fishing Instruction	28.1	16.9	40.85	1
Read Wildlife Book	63.4	53.9	20.77	1
Drove to look for Wildlife	60.0	51.6	16.03	1
Hiked to look for Wildlife	55.4	47.1	15.30	1
Snowmobiling	23.9	15.6	25.16	2
Boating	28.7	21.4	30.84	2
Camping	31.4	24.7	27.92	2
Boating Instruction	28.9	23.9	7.11	1
Fed Wildlife	65.8	61.2	4.96	1
Environmental Classes	27.8	23.3	5.79	1
Wildlife Classes	18.9	15.1	5.86	1
Horseback Riding	5.6	14.3	66.52	2
Went to the Zoo	63.1	68.8	7.99	1

*Activities listed in order of decreasing differences between the percentage of male and female participants.

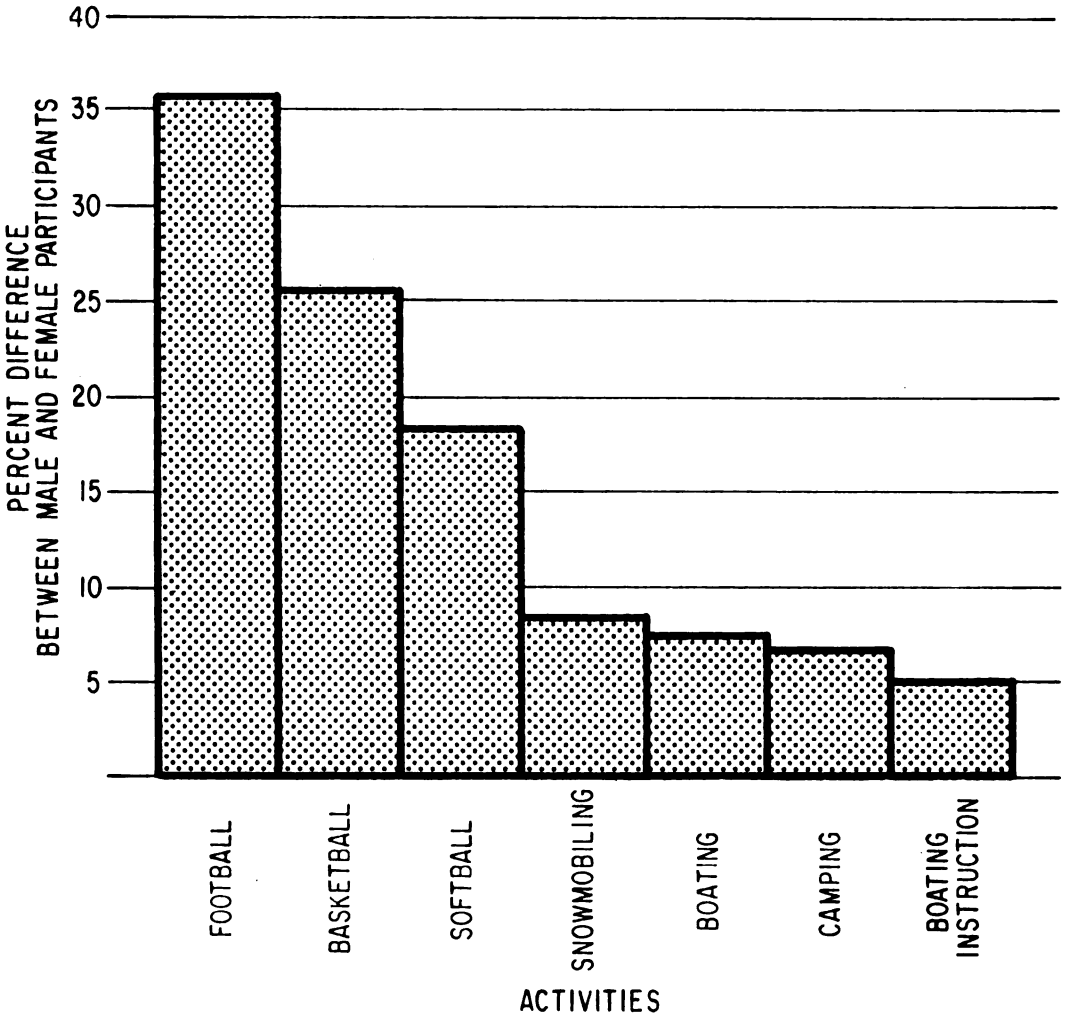

Fig. 4.--Male dominated general recreational activities.

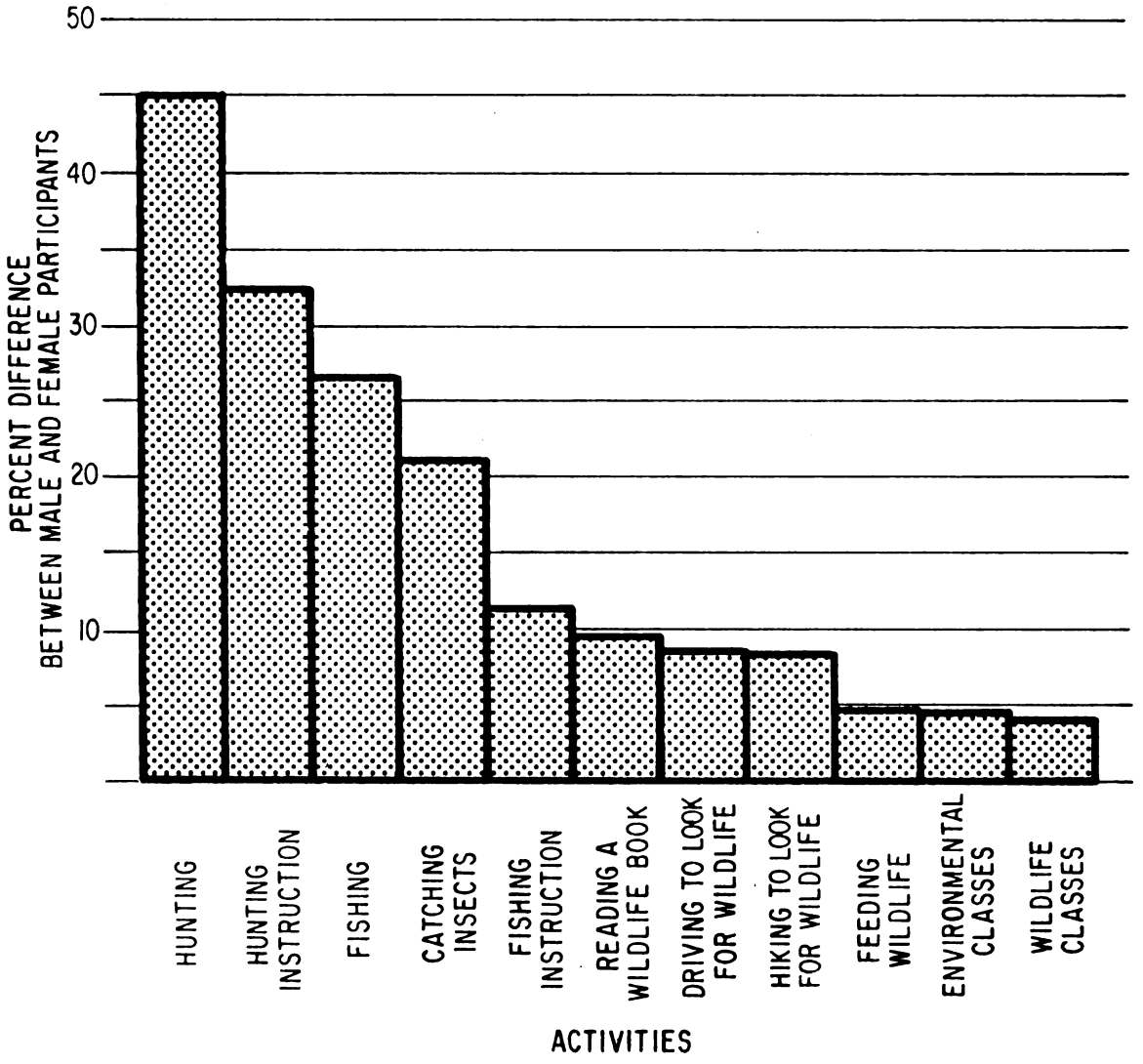

Fig. 5.--Male dominated wildlife-oriented activities.

In most general recreational and wildlife-oriented activities there was an even distribution of participants across grades. However, there were seven activities where the lower grades had significantly more participants than the higher ones (Table 8, Figure 6).

Differences in participation were apparent across the urban-rural dimension, with rural residents participating more than urban residents in many wildlife-oriented activities (Table 9, Figure 7).

In six wildlife activities hunters participated more than non-hunters, and non-hunters were more active than anti-hunters (Table 10). Other activities where hunters had more participants than the other attitude groups included basketball, camping, and keeping a wild animal for a pet.

Desires

Finally, students were asked to describe the kinds of things they desired for the future. The types of instruction desired by more than 50% of the people included classes in wildlife, boating, environmental education, camping, plants and fishing (Table 11). It was assumed that people already participating in these classes did so by their own choosing and were therefore included in the percentage of people desiring instructional activities. The same ranking of desires for instructional activities applies if the number of active participants are

Table 8.--Activities where there were significant differences ($p < .05$) in the number of participants in the seventh through twelfth grades.

Activity	Grade						x^2	df
	7	8	9	10	11	12		
Bicycling	80.7	83.5	77.8	71.6	65.0	52.2	115.79	10
Fishing	76.5	75.5	72.1	70.7	70.6	63.5	16.58	5
Softball	50.1	51.0	54.4	41.5	38.2	25.4	106.86	10
Caught Insects	55.9	48.1	41.1	41.5	39.3	36.6	35.89	5
Football	31.3	33.7	31.1	22.0	22.3	21.2	37.78	10
Camping Classes	27.2	24.1	25.2	17.3	19.2	19.2	18.38	5
Bird Watching	7.6	6.6	7.8	3.4	2.5	2.8	22.94	5

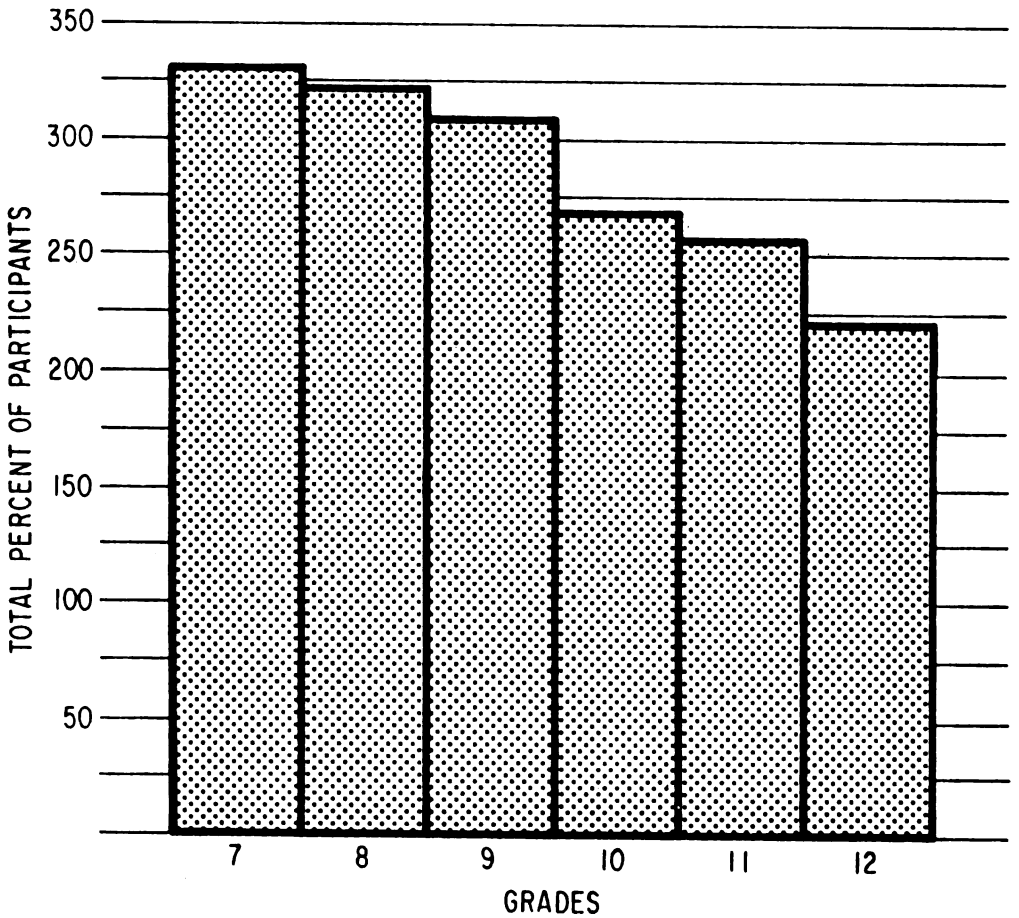

Fig. 6.--Percentage of recreational participants by grade.

Table 9.--Activities where there were significant differences ($p < .05$) in the number of participants from urban and rural areas.

Activity	Area of Residence							x^2	df
	Large City	Medium City	Small City	Suburb	Small Town	Farm	Other Rural Area		
Drove to look for wildlife	42.5	45.3	51.7	53.2	59.3	61.7	64.9	35.90	6
Hiked to look for wildlife	40.0	42.7	45.4	56.9	52.7	49.2	58.5	30.01	6
Went hunting	9.9	20.1	22.8	20.6	32.8	38.7	33.1	63.81	6
Took hunting instruction	4.0	11.0	18.9	16.8	24.5	25.5	27.8	55.04	6
Went snowmobiling	7.4	11.3	15.0	10.0	28.9	31.2	23.5	249.39	12
Took wildlife classes	9.7	14.8	11.6	17.3	17.0	23.9	22.4	25.26	6
Went bird watching	3.2	3.5	3.8	3.9	5.3	8.0	8.7	14.82	6

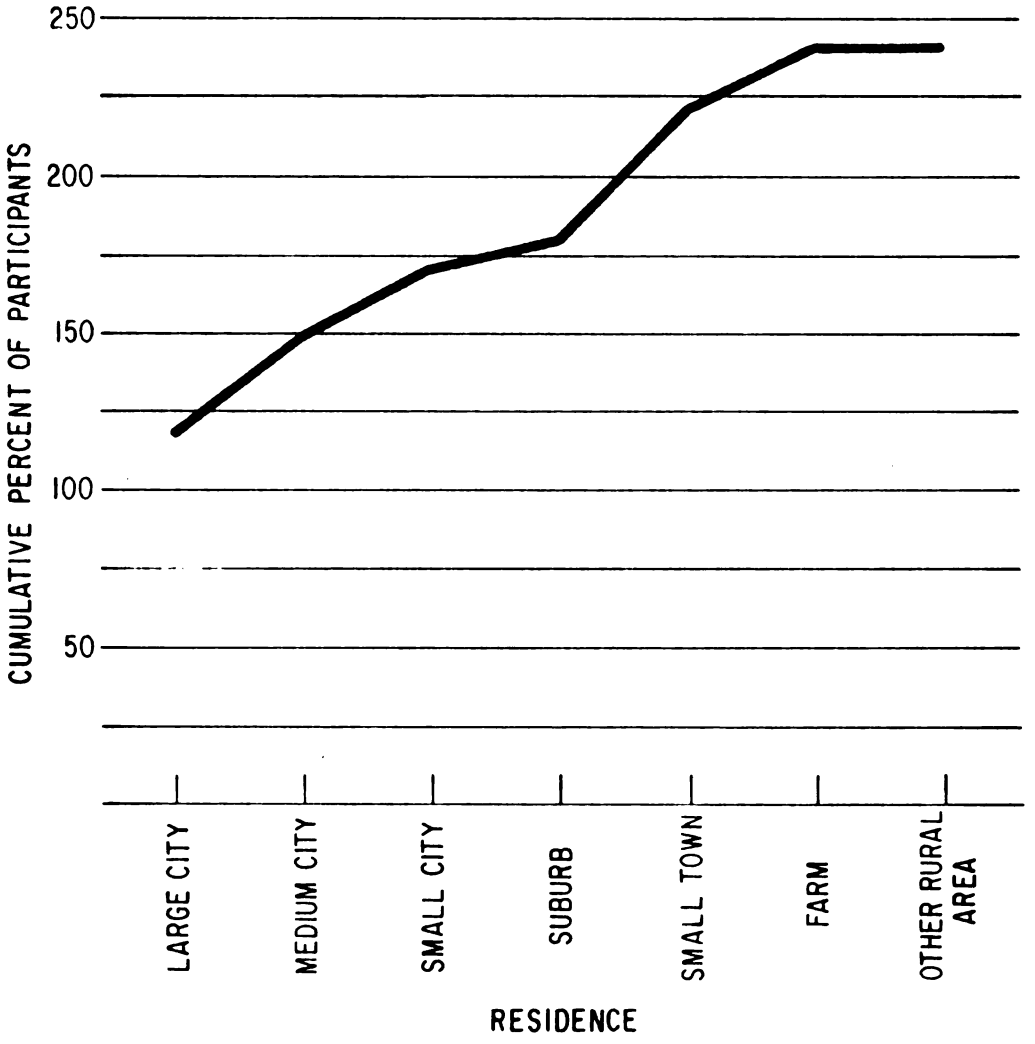

Fig. 7.--Percentage of participants in recreational and educational activities by area of residence.

Table 10.--Activities where there were significant differences ($p < .05$) in the number of participants in hunter, non-hunter, and anti-hunter groups.

Activity	Hunters	Non-Hunters	Anti-Hunters	x^2	df
Fishing	92.8	68.8	54.2	191.13	4
Hunting	92.0	5.1	.9	1309.27	4
Driving to look for wildlife	76.3	50.8	43.5	123.51	4
Catching insects	65.0	40.8	26.1	158.83	4
Hiking to look for wildlife	63.7	47.5	47.3	43.24	4
Hunting instruction	62.3	7.1	1.9	668.83	4
Snowmobiling	32.7	14.4	13.0	125.22	8

Table 11.--Types of instruction desired by young people.

Instruction	Percent of people who participate or would like to participate
Wildlife classes	71.1
Boating instruction	67.3
Environmental education	65.3
Camping classes	59.8
Plant classes	59.6
Fishing instruction	50.6
Hunting instruction	36.6
Bird watching group	31.2

eliminated, with the exception of hunting instruction which ranks below bird watching. At the top of the list of the kinds of things young people thought there should be more of were areas for watching wildlife, nature centers, and guided nature walks (Table 12).

Of the eight items where young people expressed their desires for the future, males outnumbered females in only one category, desiring more areas for hunting. Females expressed a greater demand than males for various types of recreational areas and information centers (Table 13).

Differences in desires between urban and rural residents were apparent in only two categories. More

Table 12.--Things that young people want more of.

Desire	Percent who think there should be more
Areas for watching wildlife	77.8
Nature centers	73.2
Guided nature walks	70.7
City Parks	62.5
Recreational areas where motor vehicles are prohibited	60.5
Recreational areas where hunting is prohibited	59.5
Booklets about wildlife	52.8
Areas for hunting	15.2

Table 13.--Desires for recreational areas and environmental education where there were significant differences ($p < .05$) in the responses of males and females.

Desire	Percent Male	Percent Female	x^2	df
Areas for watching wildlife	75.4	85.4	35.13	2
Nature centers	74.5	81.0	17.36	2
Guided nature walks	71.2	82.7	41.08	2
City parks	59.5	69.5	24.14	2
Recreational areas where hunting is prohibited	48.9	72.3	148.25	2
Areas for hunting	26.6	5.6	256.90	2

rural residents wanted more hunting areas (x^2 = 66.07, df = 12, $p < .05$), while a greater proportion of urban residents wanted more city parks (x^2 = 24.42, df = 12, $p < .05$).

As would be expected, of those people desiring more hunting areas, hunters represented the greatest number (x^2 = 820.94, df = 8, $p < .05$), and anti-hunters outnumbered the other attitude groups in desiring more areas where hunting is prohibited (x^2 = 235.39, df = 8, $p < .05$). A greater number of anti-hunters and non-hunters against sport hunting wanted more guided nature walks (x^2 = 46.00, df = 8, $p < .05$) and significantly more anti-hunters desired more booklets about wildlife (x^2 = 13.22, df = 4, $p < .05$).

Significant differences between the grades were apparent in one category. Each successive grade, between 7 and 12, had more students who thought there should be more recreational areas where motorized vehicles are prohibited (x^2 = 48.84, df = 10, $p < .05$).

DISCUSSION

Do young people, whether they be anti-hunters or hunters, urban or rural residents, males or females, have a common set of attitudes and beliefs about wildlife? Does a person's background influence his or her behaviors and attitudes toward wildlife? Are the subjects being taught in public schools affecting the way young people think of wildlife? Do parents and the media influence young people's interest in wildlife? Do young people have similar desires for environmental education and recreation areas or do they differ with the different types of recreationists? These were some of the questions addressed in the study of Michigan's young people.

To identify some of the answers to these questions, young people's attitudes, behaviors, knowledge, desires and background characteristics were examined. Distinguishing between a person's stated attitudes and actual behavior patterns was not the sole purpose of having five separate categories of questionnaire items. A more important objective was to put the pieces together to be able to understand the position of today's youth regarding our country's wildlife. Certainly the limited number of

questions asked does not intend to cover the wide gamut of wildlife issues. However, the points touched upon have revealed some of the qualities young people value about wildlife.

The responses of young people across the different grades, residence categories, sexes and attitude groups showed a number of areas of disagreement. Surprisingly though, there were many attitudes, activities and desires that were common to the various groups of young people. In discussing the results of this survey, the similarities in the population will be described first, followed by a discussion of the points of difference between the subsets of the sample of young people.

All groups of young people felt it was important to protect or control wildlife because it is part of nature, because they enjoy watching wild animals, and because they want to learn about them (Table 3). A number of things can be seen from these reasons for protecting wildlife. First, young people are conscious that the animal they see in the woods is not divorced from its environment, but is an integral part of it. Further support for this assumption was indicated by young people's responses to the environmental science questions. The questions most people answered correctly dealt with the interdependence of the various components of an ecosystem (Table 5). It appears that young people are aware of some

of the possible effects a pollutant or disturbing influence has on an ecosystem. These responses may be an indication that the prominence of environmental issues in the news and/or the increase of environmental education classes in schools are having an impact on the attitudes of young people.

Secondly, all groups of young people thought wildlife was important for viewing purposes and a high percentage of respondents (77.8%) indicated a desire for more recreational areas for watching wildlife. This is an aesthetic quality where an individual can derive pleasure merely by seeing an animal. The utilitarian qualities of wildlife, such as providing food or fur, are not valued by nearly as many people. Shaw (1974) says this shift from the utilitarian to the aesthetic values of wildlife may be a "process of cultural evolution in response to the changes in the supply of the resource relative to human numbers." Whether this is indeed the reason for the shift in attitudes is debatable. Nevertheless, the fact remains that aesthetic qualities of wildlife are valued by the majority of all groups of young people.

All groups of young people also said they value wildlife because they want to learn about it. When asked about their desires for the future, all groups of young people indicated that they want more knowledge about wildlife. Over 70% of the respondents said there should

be more nature centers or guided nature walks (Table 12). The eagerness of young people for more types of environmental education can have wide ranging management implications.

Shaw (1974b) identified similar attitudes in the three adult groups he sampled. Members from the Michigan Supporters of Fund for Animals, Inc. (anti-hunters), the Michigan Audubon Society (non-hunters), and a sample of Michigan deer hunters "rated the aesthetic, existence and ecological values of wildlife as more important than its value in providing for hunting recreation."

The most popular wildlife-related activity was fishing. The other wildlife-oriented pursuits that had large numbers of participants were all non-consumptive activities. Activities such as hunting and catching insects had few participants in comparison. Although both fishing and hunting are consumptive recreational activities, more young people regarded fishing as an acceptable passtime. An Oregon wildlife preferences and activities survey (Aney and Cowan 1974) revealed similar findings in the adult population it sampled. Seventy-seven percent of the people sampled expressed some interest in fishing, whereas only 43% had some interest in hunting.

Two questions, dealing with a young person's anthropomorphic feelings, were asked in an attempt to find out the reasoning behind this belief. When asked if

rabbits feel pain, 85% of the respondents agreed, whereas only 63% agreed that fish feel pain. More people attributed humanistic feelings to mammals than to fish. Perhaps this is one of the reasons that even people who are opposed to hunting, find fishing an acceptable sport and many participate in it themselves.

Those wildlife-oriented activities where there were small differences (less than 10%) or no significant differences between male and female participants were all non-consumptive activities. Conversely, many of the wildlife-oriented activities where there were differences in participation between males and females were consumptive activities. Of the eleven male dominated wildlife activities, the five with the largest differences between male and female participants (12% - 45%) were activities involving hunting, fishing and catching insects.

General recreational activities where there were no significant differences between male and female participants were individual as opposed to team activities. Those activities where male participants largely outnumbered females (17% - 36%) were team sports and those with lesser differences (5% - 8%) were more individual leisure activities.

Although there were several activities where there were more participants in the lower grades (Table 8), there were no significant differences in the number of

participants in grades seven through twelve for the majority of general recreational and wildlife-oriented activities. This is probably a good indication that the number of recreationists will remain fairly constant between the ages of twelve and eighteen; a point that should be kept in mind by resource managers when trying to predict the demands future recreationists will place on a resource.

There were a number of differences in the background characteristics, attitudes and behaviors between the respondents in the five attitude groups. However, in some areas the degree of similarity among the groups was noteworthy. To begin with, anti-hunters represented 27.9% of the sample, while non-hunters, anti-sport represented 34.1%. Another 18.5% were meat hunters who were opposed to hunting for sport. All together, that accounts for 80.5% of the respondents who have committed themselves on their attitudes toward hunting. Although these three groups have a number of differences in their basic philosophies, the one thing all agreed upon is that hunting for fun is not acceptable. On the other hand, almost as many people, 76.2%, agreed that hunting for food was all right.

The questionnaire instructions did not explain how a respondent was supposed to interpret the statements, "I approve of hunting for food," and "I approve of hunting for fun." Consequently, the reasoning behind this

overwhelming disapproval of hunting for fun is open to a number of interpretations. Hunting for food and for fun have the same end result, the death of an animal. One of the sources of objection to hunting for fun may be about an individual's motives before the hunt. Most of the respondents would probably approve if a person's primary motive was to kill an animal for food, but disapprove if the primary motive was to kill an animal for personal pleasure. Another possibility, is that a respondent was referring to the methods an individual uses when hunting. A respondent may have thought that if a person hunts for fun, he or she just goes about shooting at any animal in sight just for the 'fun' of it. This conclusion would not gain much approval to say the least.

Whether an individual interpreted these two statements from the standpoint of hunting motives or methods cannot be determined. Neither can subtleties, such as food hunting for subsistence or food hunting for the pleasure of the sport be differentiated. There have been a few studies (Hendee and Potter, 1976, list 5) that have examined some of the reasons behind hunting opposition. Although the reasons for the anti-hunting sentiment expressed by young people cannot be determined from the scope of this study, resource managers should be aware of young people's attitudes, and determine the course of action needed to deal with them.

The greatest contrasts in attitudes, behaviors, knowledge, desires and background characteristics appeared when comparing the different groups of young people along the hunter-anti-hunter dimension. The respondents who comprised the hunter attitude groups had a number of things in common, as did those who were anti-hunters. The large majority of hunters were male (91.4%), and 59.9% came from rural areas. Hendee and Potter (1976) noted that six out of seven studies found that a majority of hunters spent part of their childhoods in rural areas. However, data from sixteen studies indicated that hunting is not limited to rural residents. Hunting has traditionally been a male dominated activity (Schole 1973) and this study did not indicate otherwise. Females (79.3%) and people from urban and suburban areas (68.9%) accounted for the greatest proportion of anti-hunters. Applegate (1973, 1975) found that hunting opposition was associated with urban residence in the New Jersey residents he sampled.

Males, rural residents and hunters all had more participants (than other groups in their respective categories) in consumptive wildlife activities. They also had a greater proportion of people who had high environmental knowledge scale scores. A greater percentage of males and hunters expressed low degrees of anthropomorphism and valued the utilitarian qualities of wildlife.

It makes sense that people who hunt would not be as anthropomorphic as people opposed to hunting, would participate more in other types of consumptive wildlife activities, be more knowledgeable about the animals they hunt and appreciate the utilitarian qualities of wildlife. The interesting thing however, is that even though these differences between males and females, hunters and anti-hunters, and urban and rural residents exist, when young people were asked about their desires for the future there was overwhelming agreement amongst all groups. The things most people wanted more of were recreational areas for watching wildlife, nature centers and guided nature walks. These desires show that all groups of young people want more educational opportunities and more on-the-site educational facilities, as well as additional areas for the non-consumptive recreationist. The thing the smallest number of people desired was more areas for hunting.

If resource managers are to alter some of the misconceptions people have about wildlife, they must first identify the problem areas and then determine the best ways to get a new message across. In this study, the environmental science questions most frequently answered incorrectly dealt with the effect of fire on wildlife and the renewability of various natural resources (Table 5). These responses may be an indication that the Smokey the Bear concept has been oversold to the point of creating

false impressions in young people. It seems that the media, television in particular, has had a strong effect on young people's interest in wildlife as they themselves have indicated (Appendix I, Question 9). The Oregon wildlife preferences and activities survey (Aney and Cowan 1974) found that television was the most important source of information about wildlife for the adult population it sampled. Resource managers should be aware of the possible use of television as an instructional device and of the impact it has on wildlife attitudes.

CONCLUSIONS

The responses of young people in three categories: (1) attitudes toward wildlife, (2) knowledge of environmental science, and (3) desires for the future have expressed some common themes. Young people appreciate the aesthetic more than the utilitarian qualities of wildlife. They recognize the interdependence of wildlife with their environment, and they want to learn more about wild animals and the habitats in which they live. The largest group of respondents were non-hunters against sport hunting. Young people were active in general recreational and wildlife-oriented activities and wanted instruction in various types of outdoor recreational activities.

It is apparent that young people are more than willing to learn about wildlife and the environment. They have indicated their areas of prime interest and schools and wildlife agencies should take advantage of this interest by implementing new educational programs and research. There are ways to inform the public to try and change some of the misconceptions still held by many people. In addition to classes offered through local

schools, young people can be taught by community groups and concerned individuals. Television was indicated as having the greatest influence on wildlife interests and could be put to use by organizations other than Disney productions. Instead of using Smokey the Bear solely to help prevent forest fires, he might also be used to explain some of the positive effects of controlled fires for wildlife habitats. In addition, he or another symbolic character could be created to disseminate information about wildlife and the environment.

The high demand for nature centers and guided nature walks indicates that on-the-site educational facilities would be well utilized. Guided tours on state land such as those offered in national parks, would be one way to make direct contact with the public. The peak season for several uses of public lands coincides with the summer vacations of college students. State agencies, in cooperation with colleges and universities, could reach large numbers of recreationists by employing college students as guides in state parks and forests. The state would be educating the public and not need to spend large sums of money if college credit were offered to the student guides in place of or in addition to a salary.

The Youth Conservation Corps has provided a way for young people to have direct field experience in a learning situation. This program should be continued and

expanded and others like it should be instituted by private community groups to reach local populations of young people.

The majority of young people, regardless of their background, participated in non-consumptive wildlife activities and in fishing. And though 30.8% were hunters, only 15.2% felt a need for more hunting areas. If the activity patterns of today's young people remain fairly constant over the next few years they can have strong management implications. The public the resource manager will be serving is going to be demanding more kinds of areas for the non-consumptive recreationist. Faced with the prospect of increasing public demand and decreasing natural resources the resource manager will have to set priorities to provide for the greatest public benefit. However, it is not solely up to the resource manager to provide facilities for non-consumptive users. The public must be willing to take a more active role in resource planning and be willing to financially support their demands. The organization and financial backing of sportsmen have traditionally determined the objectives of wildlife agencies and the needs of sportsmen should continue to be met.

The conflicts between the different types of recreationists can no longer be ignored. However, it should be recognized that despite differences, the various

types of recreationists have many common desires. The skills of the researcher and resource manager are needed respectively to identify these desires and to effect some of the necessary changes in management policy. The time is ripe for new management programs and young people are more than ready for them.

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APPENDICES

APPENDIX I

QUESTIONNAIRE RESPONSES OF SEVENTH THROUGH TWELFTH GRADERS

APPENDIX I

QUESTIONNAIRE RESPONSES OF SEVENTH THROUGH TWELFTH GRADERS

1. In general, how much interest do you have in wildlife?

	N	%*
A lot	1553	67.5
A little	733	31.8
None	16	.7
Missing data	60	

2. Which of these are reasons why wildlife is important to you?

	A very important reason		An important reason		Not a reason		Missing data
	N	%	N	%	N	%	N
Because I enjoy watching wildlife	820	35.8	1309	57.2	160	7.0	73
So I can hunt for food	123	5.4	388	17.1	1755	77.4	96
So I can hunt for fun	138	6.1	302	13.5	1804	80.4	118
Because I just like to know wildlife is around	978	43.1	1061	46.8	230	10.1	93
So I can learn about nature	1009	44.5	1028	45.3	231	10.2	94

3. How important do you think these reasons are for protecting or controlling wildlife:

	Very good reason		Good reason		Don't know		Bad reason		Very bad reason		Missing Data
	N	%	N	%	N	%	N	%	N	%	N
Because people want to watch wildlife	973	41.4	1135	48.3	188	8.0	50	2.1	4	.2	12

*The adjusted frequency is used for all response categories. The computation of adjusted frequencies is explained in the Methods section under Analysis of Data.

3. Continued

	Very good reason		Good reason		Don't know		Bad reason		Very bad reason		Missing Data
	N	%	N	%	N	%	N	%	N	%	N
Because people want to hunt wildlife	278	11.9	540	23.1	412	17.6	614	26.3	492	21.1	26
Because people want to learn about wildlife	1160	49.5	1006	42.9	143	6.1	31	1.3	4	.2	18
Because wildlife is part of nature	1714	72.9	551	23.4	67	2.9	16	.7	2	.1	12
Because some wildlife can be dangerous to other wildlife	213	9.1	627	26.8	885	37.9	454	19.4	158	6.8	25
Because wildlife provides food	289	12.4	892	38.4	525	22.6	472	20.3	145	6.2	39
Because people just want to know wildlife is around	421	18.0	1253	53.4	372	15.9	251	10.7	48	2.0	17
Because wildlife can be pests	59	2.5	203	8.7	398	17.0	822	35.1	858	36.7	22

4. Please check if you agree or disagree with the following:

	Agree		Disagree		Don't know		Missing data
	N	%	N	%	N	%	N
Most wild animals fall in love	818	34.9	519	22.1	1010	43.0	15
Rabbits feel pain	1990	85.0	67	2.9	284	12.1	21
Animals think about their actions	1119	48.0	528	22.6	685	29.4	30
Wild animals feel lonely in the wilderness	351	15.2	1462	63.2	502	21.7	47

4. Continued.

	Agree		Disagree		Don't know		Missing Data
	N	%	N	%	N	%	N
Fish feel pain	1469	62.9	258	11.0	610	26.1	25
Eagles look vicious	714	30.4	1366	58.2	267	11.4	15

5. Please tell us how you feel about hunting animals.

	Strongly Agree		Agree		Don't know		Disagree		Strongly Disagree		Missing Data
	N	%	N	%	N	%	N	%	N	%	N
I think all hunting should be against the law	252	10.7	273	11.6	297	12.6	1177	50.1	352	15.0	11
I think hunting for fun is OK	78	3.3	338	14.4	194	8.3	735	31.3	1004	42.7	13
I think hunting for food is OK	373	15.9	1415	60.3	256	10.9	207	8.8	96	4.1	15
I think it's OK for other people to hunt	151	6.4	963	41.0	487	20.7	480	20.5	266	11.3	15

6. We would like your opinion about hunting antlerless deer. Do you think it is necessary to shoot some does and fawns, as well as bucks, in parts of Michigan?

	N	%
Yes	462	21.0
No	1739	79.0
Missing data	161	

7. Please tell us if you have done these activities in the past year and how often you did them.

	A lot		Sometimes		Not in the past year		Missing data
	N	%	N	%	N	%	N
Went swimming	1583	67.3	653	27.8	117	5.0	9
Played softball or baseball	1047	44.7	1098	46.9	195	8.3	22
Went snowmobiling	450	19.4	712	30.6	1163	50.0	37
Went hiking	466	20.1	1096	47.2	762	32.8	38
Went cross-country skiing	76	3.3	166	7.2	2070	89.5	50
Played basketball	924	39.5	1134	48.5	282	12.1	22
Played tennis	595	25.5	1057	45.2	685	29.3	25
Went boating	586	25.1	1007	43.1	743	31.8	26
Went camping	652	27.9	875	37.4	813	34.7	22
Played football	639	27.4	989	42.4	703	30.2	31
Went bicycling	1680	72.6	553	23.9	81	3.5	48
Went horseback riding	239	10.2	719	30.7	1382	59.1	22

8. How many times did you do each of these activities in 1975?

	Have done this in the past year		Never, but would like to		Never, don't want to		Missing data
	N	%	N	%	N	%	N
Caught insects or frogs	1026	43.8	147	6.3	1171	50.0	18
Went fishing	1678	71.9	346	14.8	309	13.2	29
Went hunting	641	27.5	343	14.7	1346	57.8	32
Fed wildlife	1477	63.3	770	33.0	85	3.6	30

8. Continued.

	Have done this in the past year		Never, but would like to		Never, don't want to		Missing data
	N	%	N	%	N	%	N
Watched wildlife (example: birdwatching)	1675	71.2	519	22.1	157	6.7	11
Kept a wild animal for a pet	527	22.5	835	35.7	977	41.8	23
Went to a wildlife movie	1622	69.2	528	22.5	194	8.3	18
Watched a TV show about wildlife	2256	96.3	45	1.9	41	1.8	20
Read a book about wildlife	1368	58.3	653	27.8	326	13.9	15
Went for a drive in a car or truck to look for wildlife	1305	55.6	857	36.5	186	7.9	14
Tried to photograph wildlife	915	38.9	1262	53.6	176	7.5	9
Went for a hike to look for wildlife	1203	51.2	983	41.8	164	7.0	12
Went to the zoo	1551	66.3	624	26.7	165	7.1	22

9. How much have these things and people influenced your interest in wildlife?

	A lot		A little		Not at all		Missing data
	N	%	N	%	N	%	N
A parent	819	34.8	1144	48.7	388	16.5	11
A relative	472	20.1	1025	43.6	853	36.3	12
A friend	682	29.3	1040	44.7	604	26.0	36
A scout or club leader	342	14.7	312	13.4	1671	71.9	37
A teacher	647	27.7	1001	42.9	685	29.4	29
A school class	543	23.3	925	39.7	864	37.0	30
A TV program	1112	47.6	922	39.5	301	12.9	27

9. Continued.	A lot		A little		Not at all		Missing data
	N	%	N	%	N	%	N
A movie	817	34.8	1033	44.1	495	21.1	17
A book	545	23.4	953	40.9	830	35.7	34
A newspaper or magazine	567	24.3	1072	46.0	690	29.6	33
A club	178	7.6	408	17.4	1757	75.0	19

Please tell us if you agree or disagree with the following statements.

	Agree		Disagree		Don't know		Missing data
	N	%	N	%	N	%	N
10. Forest fires are always bad for wildlife	1591	67.5	548	23.2	219	9.3	4
11. The carrying capacity is the ability of the land to support a certain number of animals	1065	45.7	152	6.5	1111	47.7	34
12. Everything a person does has an effect on the environment	1563	66.4	442	18.8	348	14.8	9
13. Air pollution does not effect plants	62	2.6	2195	93.2	98	4.2	7
14. Intolerant trees are the first trees which appear in forest succession	268	11.5	241	10.3	1830	78.2	23
15. Loss of habitat does not effect animal populations	138	5.9	1836	78.2	373	15.9	15
16. Species with high breeding rates have low death rates	268	11.4	971	41.4	1106	47.2	17

17. To me, the word conservation means

	N	%
To save	804	34.6
To use wisely	1432	61.6
I don't know	88	3.8
Missing data	38	

		Agree		Disagree		Don't know		Missing data
		N	%	N	%	N	%	N
18.	Insects are pests and have no purpose	193	8.2	1996	84.9	162	6.9	11
19.	Killing the annual surplus of wildlife through hunting is currently a part of wildlife management	1044	44.6	533	22.7	766	32.7	19
20.	Wildlife is a renewable resource	765	32.7	1095	46.9	476	20.4	26
21.	An increase of one species has no effect on other species in the same area	166	7.1	1873	79.9	306	13.0	17
22.	All food chains begin with green plants	1196	51.0	495	21.1	655	27.9	16
23.	Energy can be recycled through an ecosystem	523	22.4	187	8.0	1629	69.6	23
24.	Transpiration is the process by which plants obtain water from the soil	621	26.5	333	14.2	1389	59.3	19

25. Please tell us if you have participated in any of these activities in your community.

	I participate in it		I don't participate, but I would like to		I don't participate in it		Missing data
	N	%	N	%	N	%	N
Bird watching group	123	5.2	608	25.9	1613	68.8	18
Camping classes where you learn to make fires, set up tents, etc.	519	22.2	882	37.7	941	40.2	20
Boating instruction	616	26.3	958	41.0	765	32.7	23
Fishing instruction	523	22.3	663	28.3	1156	49.4	20
Plant classes where you learn about trees and wild plants	479	20.5	916	39.2	944	40.4	23
Hunting instruction	481	20.5	376	16.0	1487	63.4	18
Wildlife classes where you learn about wild animals	395	16.9	1271	54.2	677	28.9	19
Environmental classes where you learn about the air, water and land where we live	593	25.3	940	40.1	814	34.7	15

26. What do you think about each of these things?

	There should be more		There are enough		There should be less		I don't care		Missing data
	N	%	N	%	N	%	N	%	N
Recreational areas where motorized vehicles such as cars, motorcycles and snow-mobiles are not allowed	1414	60.5	519	22.2	291	12.5	112	4.8	26
Recreational areas where hunting is not allowed	1385	59.5	548	23.5	329	14.1	67	2.9	33
Areas for hunting	353	15.2	1071	46.0	821	35.3	81	3.5	36
Areas for watching wildlife	1814	77.8	391	16.8	35	1.5	92	3.9	30
Guided nature walks	1649	70.7	440	18.9	43	1.8	199	8.5	31
Nature centers to visit	1702	73.2	452	19.4	27	1.2	145	6.2	36
City parks	1459	62.5	728	31.2	66	2.8	82	3.5	27
Booklets or articles about wildlife	1231	52.8	847	36.3	38	1.6	215	9.2	31

		N	%
27.	Does a member of your family hunt?		
	Yes	1777	78.4
	No	490	21.6
	Missing data	95	
28.	Have you ever shot a firearm? (rifle, pistol, etc.)		
	Yes	1413	63.3
	No	819	36.7
	Missing data	130	
29.	Please tell us if you have hunted		
	I haven't hunted, and I don't plan to	1302	56.3
	I haven't hunted, but I plan to	267	11.5
	I have hunted, and I plan to hunt again	617	26.7
	I have hunted, but I quit	128	5.5
	Missing data	48	
30.	Did you have a Michigan hunting license in 1975?		
	Yes	485	37.4
	No	813	62.6
	Missing data	1064	
31.	Did you have a hunting license from any other state in 1975?		
	Yes	37	3.0
	No	1196	97.0
	Missing data	1129	
32.	Did you actually hunt in Michigan in 1975?		
	Yes	588	46.4
	No	680	53.6
	Missing data	1094	

		N	%
33.	What is your age?		
	11	1	.1
	12	118	5.1
	13	379	16.3
	14	414	17.9
	15	469	20.2
	16	452	19.5
	17	328	14.1
	18	152	6.6
	19	5	.2
	Missing data	44	
34.	What grade are you in?		
	7	371	16.0
	8	399	17.2
	9	439	18.9
	10	472	20.3
	11	358	15.4
	12	282	12.1
	Missing data	41	
35.	What is your sex?		
	Male	1076	46.6
	Female	1234	53.4
	Missing data	52	
36.	Which best describes the place you live now?		
	Large city (more than 500,000)	125	5.7
	Medium City (100,000 to 500,000)	234	10.6
	Suburb of a medium or large city	440	19.9
	Small city (25,000 to 100,000)	401	18.1
	Small town or village	582	26.3
	Farm	188	8.5
	Rural area other than a farm	242	10.9
	Missing data	150	

		N	%
37.	Which best describes the building where you live?		
	A one family house	1973	88.4
	A two family house or duplex	126	5.6
	Row-house or townhouse	45	2.0
	A small apartment house (up to 8 families)	11	.5
	A large apartment house (more than 8 families)	13	.6
	Other	63	2.8
	Missing data	131	
38.	With whom do you live?		
	Mother	280	12.9
	Father	48	2.2
	Both mother and father	1806	82.9
	Other	44	2.0
	Missing data	184	
39.	Do you have any brothers and sisters?		
	Yes	2227	97.4
	No	60	2.6
	Missing data	75	
	Number of people with brothers	1855	
	Number of people with sisters	1818	
40.	What is your race or ethnic group? (optional)		
	Caucasian (white)	2050	91.1
	Black American	117	5.2
	American Indian	36	1.6
	Chicano	24	1.1
	Other	23	1.0
	Missing data	112	

APPENDIX II

LETTERS OF PERMISSION REQUEST FOR STUDENT SAMPLE SENT TO SCHOOL DISTRICT SUPERINTENDENTS

APPENDIX II

LETTERS OF PERMISSION REQUEST FOR STUDENT

SAMPLE SENT TO SCHOOL DISTRICT

SUPERINTENDENTS

State of Michigan
William G. Milliken, Governor
DEPARTMENT OF NATURAL RESOURCES
Howard A. Tanner, Director

I am a graduate student at Michigan State University and am beginning a survey that will be used as a thesis for a graduate degree. The survey will examine the participation of young people in various wildlife oriented activities, their attitudes toward hunting and non-hunting uses of wildlife, and the value of wildlife to them. Various factors such as family background, urban or rural residence, peer group affiliations, education, and outdoor experience will also be studied. These characteristics will then be correlated with an individual's behavior and his or her attitudes toward wildlife.

The information gained from this study will enable prediction of the future needs and demands of today's youth. This knowledge will be invaluable to wildlife administrators in planning future management programs as well as to schools and communities in establishing environmental education classes.

By using methods suggested by the U.S. Census Bureau, your school district was selected to represent one area of the state. The responses of a number of students in your school district on a questionnaire will be combined with those of students in other districts. It is very important that we be able to contact students from your district in grades seven through twelve

so that a truly representative sample for the state is obtained.

The only information needed is the name, address, and grade level of the students. I realize this appears to be a large task, but to reduce the effort there are two ways the sample can be chosen and two ways for the questionnaires to be distributed. Would you please select the procedure that you feel is most suitable.

A Department of Natural Resources employee can come to your office to choose the sample or I can mail you the sampling procedure for your office to make the selection. The questionnaires can be delivered to you for your office to distribute (a DNR employee would personally bring the questionnaires and collect them after they have been completed), or I can distribute the questionnaires if a list of the students' names and addresses is provided.

All questionnaire responses will be held in confidence and only the overall survey results will be published.

On the enclosed form please indicate the procedures you feel are workable for your school district. If you would like further information about this project I would be most happy to discuss it with you.

Thank you for your cooperation.

Sincerely yours,

Gerri Pomerantz
Graduate Student Assistant
FOREST WILDLIFE RESEARCH

State of Michigan
DEPARTMENT OF EDUCATION
Lansing, Michigan 48902

Dear Educator:

The Curriculum Division of the Michigan Department of Education has reviewed Ms. Pomerantz's questionnaire about the attitudes of young people toward wildlife and her proposed method of analysis. This research will be of great service to us in aiding the development of environmental education programs.

At present, the Michigan Environmental Education Referent Committee (MEERC) is formulating curriculum objectives for environmental education classes in grades kindergarten through twelve. An indication of the wildlife interests and levels of understanding of Michigan students would be extremely useful to the MEERC.

I would personally like to encourage you to support Ms. Pomerantz's efforts and to cooperate with her in any way you can.

Thank you.

Sincerely yours,

Jack Kammeraad
Science and Environmental
Specialist

State of Michigan
William G. Milliken, Governor

DEPARTMENT OF NATURAL RESOURCES

Stevens T. Mason Building, Lansing, Michigan 48926
Howard A. Tanner, Director

February 25, 1976

Dear Sir:

The Office of Planning Services has reviewed Mrs. Pomerantz's proposed thesis "Wildlife and Michigan's Young People" and find it to be a promising study. The information gained will, no doubt, be most helpful to the Department of Natural Resources in its program and policy planning process.

We support the efforts of Mrs. Pomerantz and her research advisor, Professor L. W. Gysel of Michigan State University. We encourage you to provide your vital help and cooperation toward the success of this study. The success of this effort depends on securing an unbiased sample of young people. Your assistance in helping obtain a representative selection of young people living in Michigan would be sincerely appreciated.

Respectfully yours,

John Kennedy, Head
Planning & Technical
Services Section
Office of Planning Services

MICHIGAN STATE UNIVERSITY

Department of Fisheries and Wildlife
Natural Resources Building
East Lansing, Michigan 48824

This study on the attitudes of young people toward wildlife has the support of the Fisheries and Wildlife Department at Michigan State University. In recent years several studies have been done on the public's concern for wildlife. However, no research has focused exclusively on the opinions of young people.

As the chairman of Ms. Pomerantz's graduate committee and coordinator of this study, I can personally assure you, as did Ms. Pomerantz, that the information obtained from these questionnaires will in no way be linked to students' names.

The assistance you could provide would be most valuable and greatly appreciated.

Respectfully,

Leslie W. Gysel
Professor
Department of Fisheries
and Wildlife

Please check the appropriate boxes:

Sample Selection

- ☐ Our school district will choose the sample.
- ☐ A DNR employee will choose the sample.

Questionnaire Distribution

- ☐ A DNR employee will deliver the questionnaires for our school district to distribute.
- ☐ Our school district will provide a list of student names and addresses so the DNR can distribute the questionnaires.

☐ I am unwilling to participate in this project.

Signature _____

School District _____

APPENDIX III

LETTER DESCRIBING SAMPLING PROCEDURE

APPENDIX III

LETTER DESCRIBING SAMPLING PROCEDURE

State of Michigan
William G. Milliken, Governor
DEPARTMENT OF NATURAL RESOURCES
Howard A. Tanner, Director

Thank you for agreeing to participate in the study of young people's attitudes toward wildlife.

Below I have outlined the procedure for selecting a sample of seventh through twelfth graders in your school district. This selection method can be used with any type of district roster, such as a master list of students in the district, a student listing by schools or a listing by grade level.

The procedure I feel is easiest to follow and which will give me the random distribution of names that I need is as follows:

First, gather together all rosters which include seventh through twelfth graders.

Then, starting with the name, select every student on your list.

This method will give a sample of approximately thirty students.

Record the name, address and grade level (7, 8, 9, 10, 11 or 12) of each student chosen. A data form has been enclosed if you wish to use it.

Example of the sampling procedure:

Starting with the 2nd name, choose every 3rd person on your list.

School District Roster

Name	Address	Grade Level
Mary Fix	123 Parson Rd., East Lansing, MI 48823	7
start here↓		
Peter Smith	44 Lakeview Rd., Lansing, MI 48809	7
John Jones	587 Sunnyview, Lansing, MI 48912	8
Sally Johnson	1586 E. Court St., E. Lansing, MI 48824	9
Marty Pomer	782 Vine St., Lansing, MI 48910	10
Jerry Gold	805 Fairfax, Lansing, MI 48907	11
Ken Stevens	1850 Arbor Rd., Lansing, MI 48908	11
Linda Doring	369 Wing Ave., E. Lansing, MI 48823	12
Vivian Kevens	610 Gelding, Lansing, MI 48902	8
Cindy Mattson	23 Bond Rd., E. Lansing, MI 48824	9
John Scott	1976 Liberty Rd., Lansing, MI 48920	12

The circled names with their respective addresses and grade levels are then recorded on the data form.

Once again, I would like to thank you for cooperating in this study. Your assistance is greatly appreciated.

Sincerely,

Gerri Pomerantz
Graduate Student Assistant
Forest Wildlife Research

APPENDIX IV

LETTERS THAT ACCOMPANIED QUESTIONNAIRE

APPENDIX IV

LETTERS THAT ACCOMPANIED QUESTIONNAIRE

Please distribute one of the following to each student in your sample:

(1) A questionnaire
(2) A cover letter
(3) A general instruction sheet
(4) A scoring pencil

We have enclosed enough material for 48 students. Please distribute these materials only to those students on your list. Do not give the additional questionnaires to students not on your list.

Thank you for your help. Your participation has been greatly appreciated.

Sincerely,

Gerri Pomerantz
Graduate Student Assistant
FOREST WILDLIFE RESEARCH

STATE OF MICHIGAN

WILLIAM G. MILLIKEN, Governor

DEPARTMENT OF NATURAL RESOURCES

HOWARD A. TANNER, Director

Wildlife

Plants, Trees
and Shrubs
needed by Wildlife

People

Dear Student:

In order to take care of our wildlife, we need facts about three areas; wildlife, plants, and people. During the past years, the Universities and the Department of Natural Resources have learned most about wildlife and plants. Recently, we have begun to do research on what people think and feel about wildlife.

The study we are now doing is the first one in the United States which concerns young people. All other studies have asked adults what they think about wildlife.

We asked some experts at Michigan State University to help us write a questionnaire for young people in grades 7-12. Then we chose a sample of schools and asked permission to give this questionnaire to a few students, like yourself, who were specially chosen.

Today, thousands of students from all walks of life, and from all areas of Michigan are receiving this survey. It is very important that you fill out the questionnaire because your answers are representative of hundreds of people from your part of the state. Please do not ask for help from teachers, parents, or friends. Please do not look at any books. Just fill out the form according to your own feelings. Remember, this is <u>not a test</u>, it is a questionnaire which will help young people throughout the State <u>voice their</u> opinions about wildlife. Please do <u>not</u> sign your name as we are keeping all your answers secret and <u>confidential</u>.

We appreciate the time and effort that you are giving us, and want to thank you for your help.

Sincerely,

Ed Langenau

E. E. Langenau, Jr.
Wildlife Research Biologist
Michigan Department of Natural Resources

Gerri Pomerantz

Gerri Ann Pomerantz
Graduate Student Assistant
Michigan State University

EEL:GAP:jr
Attachments

GENERAL INSTRUCTIONS

Your answers will be scored by a computer so please pay attention to the following:

1. We would prefer that you use the special pencil provided.

2. Do not make stray pencil marks on the form.

3. If you make a mistake please erase completely.

4. Check the instructions for each question:

   a - If it says "Please check only one," do not check 2 or 3 boxes.

   b - Do not check spaces between boxes.

   c - Put comments only in places where a space (_____) has been provided. Put additional comments on the back of the questionnaire if you wish.

5. If you get tired or bored, please stop and come back to the questions later. Please do not check boxes in haste just to finish.

We appreciate your help and hope you enjoy filling out this questionnaire.