

TOWARD ENVIRONMENTAL UNDERSTANDING

An Evaluation of the 1972 Youth Conservation Corps

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PREFACE

This report presents the results of an evaluation of the Youth Conservation Corps in the summer of 1972. Its focus is environmental learning including relevant attitudes, values and orientations toward environmental action. The study was conducted for the U. S. Departments of Agriculture and the Interior by the authors, who are affiliated with the Institute for Social Research and the School of Natural Resources at The University of Michigan. Our primary method of data gathering was the group administered questionnaire that was given to all corps members during their first and final weeks in camp. Questionnaires were also given to camp directors and supplemental information was derived from site visits to a sample of camps.

The data computation upon which this paper is based employed the OSIRIS computer software system, which was jointly developed by the component centers of the Institute for Social Research, The University of Michigan, using funds from the NSF, the Interuniversity Consortium for Political Research and other sources.

In presenting results, we have focused on concise summaries of differences in satisfaction, attitude change and knowledge gain for various classifications of corps members and camps. More detailed breakdowns are reported in the appendix tables. When interpreting the results the reader is urged to exercise caution, keeping in mind the limitations of data of this nature. One important caution

is that the results apply to types of corps members and camps as they were represented in the 1972 program. For instance, what is an accurate description of girls in the 1972 program may not apply to girls who did not participate in the program. Self-selection and the recruiting-screening procedures employed by the agencies have probably resulted in the creation of a group with attitudes, values and learning orientations quite different from those found in the general population. Similarly, when we speak of non-residential camps, or camps of a certain agency, we are talking about these camps as they existed at a given time and place. We cannot, as yet, speak of the inherent qualities of non-residential camps or of camps sponsored by a particular agency.

Further caution should be exercised when judging the significance of our findings. By and large, most of the relationships we have observed are not strong, although they are fairly consistent. For example, differences between the reactions of boys and girls are seldom large, but consistently show more favorable results for girls. Taken by itself, a 2 or 3 percent difference on one measure certainly does not offer much basis for decision-making. However, if one group is consistently high or consistently low, it may be productive for program administrators to ask themselves what could account for such slight, but consistent differences.

Although we have described relationships between two variables we cannot attribute cause, or even be sure that the relationship we describe is not due to complex inter-relationships between a number of variables. For example, we found that four-week camps produced relatively large gains in knowledge, but we also pointed out that all but one of the four-week camps were located within a single administrative region of the Forest Service, and that the entry scores of corps members in these camps were high. Therefore, it may be erroneous to conclude that short camp sessions produced greater learning, and we urge those using this report to question each relationship, seeking explanations which go beyond the broad classifications we have used. We have indicated a number of one-to-one relationships which we feel are obviously in need of further specification before sound interpretation can be made. In a number of cases the information needed for interpretation was not part of

our data gathering efforts, but is available to the agencies administering the camps. We hope that this report will stimulate further inquiry and will serve, as the title implies, as a step toward understanding.

A study such as this one is the work of many people whose names do not appear on the title page. We wish to acknowledge at least some of the individuals by name. The work was an effort of the Survey Research Center. The Center is part of The University of Michigan's Institute for Social Research, which is directed by Angus Campbell. The director of the Center is Robert L. Kahn. task of distributing and receiving questionnaires was carried out by the Center's field section. Tracy Berckmans assumed major responsibility for this task. The editing and coding was under the direction of Joan Scheffler with supervision ably handled by Bruce Janet Keller was responsible for preparing the basic data tapes and obtaining computer output. Statistical assistance was provided by Richard Knopf and Jack Kruse. The painstaking job of typing the numerous tables and the text under deadline conditions was handled by Anita Ernst, Diane Dunham, Patricia Veerkamp, and Margaret Hinz. The figures were drawn by Lena Behnke. pages were typed by Mimi Savage and Pam Deasy and proofread by Grace Truax and Carol Cole. The editorial work of Linda Stafford has added to the readability and attractiveness of this report, and the critical reading of Marilyn Scott has added to its accuracy and clarity. The development of the questionnaires benefited from the suggestions of William Stapp of the School of Natural Resources of The University of Michigan, and Paul Yambert of Southern Illinois University whose orientation to environmental understanding has contributed greatly to the development of our thinking in this The cooperation and assistance provided by R. Duane Lloyd, David Olexer and Wayne Bell of the U. S. Forest Service, and Peter Mowitt and Phil DeLongchamps of the U. S. Department of the Interior have been greatly appreciated. Special recognition should be given to the directors and staffs of the individual camps who have assisted us by handling the group administration of the corps member questionnaires, and hosted our on-the-site visits to their camps.



Constructing an Interpretive Trail for the Handicapped on Mt. Figueroa, Los Padres National Forest, Calif.

Chapter 1

INTRODUCTION

During the summer of 1972, approximately 3400 young people participated in the Youth Conservation Corps (YCC). This report presents our evaluation of that, the second year of this pilot program. A companion volume, Youth and the Environment, presents the results of a study of the 1971 program.

When the program was established, eight objectives were stated. Two dealt with environmental learning, two with work accomplishment, and four with the social and personal development of the young people. These objectives originate in Section 1 of Public Law 91-378 and were made operational by the U.S. Departments of Agriculture and the Interior. Through the first two summers

¹R. Marans, B. Driver, and J. Scott, Youth and the Environment: An Evaluation of the 1971 Youth Conservation Corps; Institute for Social Research, The University of Michigan, Ann Arbor, Mich.; 1972.

Public Law 91-378, 91st Congress S.1076, approved August 13, 1970. Section 1 has the following statement of purpose: "The Congress finds that the gainful employment during the summer months of American youth, representing all segments of society, in the healthful outdoor atmosphere afforded in the national park system, the national forest system, the national wildlife refuge system, and other public land and water areas administered by the Secretary of the Interior and the Secretary of Agriculture creates the opportunity for understanding and appreciation of the Nation's natural environment and heritage. Accordingly, it is the purpose of this Act to further the development and maintenance of the natural resources of the United States by the youth, upon whom will fall the ultimate responsibility for maintaining and managing these resources for the American people."

of the program the agencies have demonstrated a strong commitment to realizing the Congressional intentions for establishing the YCC program. In our 1971 evaluation of the Youth Conservation Corps an attempt was made to cover nearly all objectives. In general, our findings showed the program to be succeeding. However, it appeared that the environmental education component of the program was falling short of its potential. This finding led to the following recommendation:

Our analysis of the environmental knowledge of youth showed the least favorable results of our overall program evaluation. . . . Because of the high potential in this area and because increasing environmental understanding was intended to be a major objective of the program, we strongly recommend that the administering agencies consider more effective ways of accomplishing these objectives. In fact, we believe that efforts toward making improvements in environmental education should be a major focus of the sponsoring agencies in 1972 (pg. VIII-8).

The focus on environmental learning in our current evaluation reflects the fact that the agencies took our recommendation seriously. We have not totally overlooked other aspects of the program, but if greater depth of information on other areas is desired we refer the reader to our 1971 report and the reports of the sponsoring agencies.

RESEARCH DESIGN

The methodology employed in gathering the data for this report is described in detail in the 1971 report. Basically, it consists of self-administered questionnaires being given to corps members during both the first and final weeks of camp. The questionnaires were developed by the Survey Research Center of The University of Michigan and sent to the camps for group administration by camp personnel. Procedures were followed to ensure that a corps member's responses were not known to others in the camp. The questionnaires were returned directly to the Survey Research Center where all identification other than an identifying code number was removed, and the responses were prepared for computer analysis.

One departure from the 1971 procedure was the introduction of a small experiment within the overall study. This experiment, dealing with the use of an environmental education manual and the training of environmental education specialists, is described in

Chapter 7.

In addition to responses from corps members, information was collected through mail questionnaires sent to camp directors and from site visits. This information was used in analyzing corps members' responses to the program.

Before the camps opened, an inventory for each camp was assembled which included information on dates of operation, size, agency sponsorship, residential character, and sex of corps members. These variables were used in analyzing corps members' responses.

ORGANIZATION OF THIS REPORT

This report is presented in eight chapters. Chapter 2 describes the young people who participated in the program. In Chapter 3 we discuss corps members' satisfaction with the program and selected attributes of it. Chapter 4 deals with corps members' motivations and attitudes about environmental matters. Environmental activism and plans for the future are covered in Chapter 5. In Chapter 6 we discuss measures of environmental learning. Chapter 7 examines relationships between camp and corps member characteristics and learning. The corps members' evaluations of the environmental education program and the effectiveness of various learning activities are presented in Chapter 8. The final chapter summarizes the findings and contains recommendations for the program and future evaluation.

Chapter 2

CHARACTERISTICS OF CORPS MEMBERS AND CAMPS

This chapter describes a number of background characteristics of the young people who participated in the Youth Conservation Corps in 1972 and the camps and programs they attended. It also provides an opportunity to determine the representativeness of the program in terms of attracting young people from all social, economic and racial backgrounds. It does this by comparing distributions of corps member characteristics for the 1971 and 1972 programs. While the data presented in this chapter are descriptive, they identify those variables which will be used in analyzing corps member responses reported in later chapters.

DEMOGRAPHIC AND SOCIOECONOMIC CHARACTERISTICS OF CORPS MEMBERS

The law creating the Youth Conservation Corps states that the corps membership should be open to young people of both sexes and all socioeconomic and racial classifications. In our 1971 evaluation, we found that the participants in the program were, for the most part, representative of American young people. However, we found that in 1971 a larger proportion of boys participated in the program than girls and that blacks were slightly underrepresented.

As seen in Table 2-1, the distribution of corps members with

Rather than differentiating between non-residential programs and residential camps in this report, we will refer to both of them as camps. For a distinction between non-residential programs and residential camps, see Chapter 2 of the 1971 program evaluation.

Table 2-1 (Sheet 1 of 2)

Characteristics of Corps Members (percentage distributions of corps members responding during the summers of 1971 and 1972) 1

	<u>1971</u>	1972 7
Sex of Corps Members	••	
Boys Girls	63 37	58 42
Total % and (N)	100 (2300)	100 (3188)
Race and Ethnic Background		
White Black American Indian Spanish surname Others	83 9 4 2 2	82 7 6 3 2
Total % and (N)	100 (2275)	100 (3120)
Place of Residence		
Large city of more than 500,000 people Medium size city of 100,000 to 500,000	7	9
people	10	12
Suburb of medium or large city	9	9
Small town of 25,000 to 100,000 people	17	17
Small town of less than 25,000 people	31	28
Rural area or Indian reservation		<u>25</u>
Total % and (N)	100 (2265)	100 (3141)

Percentages are adjusted to exclude corps members not answering questions. A total of 3211 corps members were administered questionnaires.

Table 2-1 (Sheet 2 of 2)

Characteristics of Corps Members (percentage distributions of corps members responding during the summers of 1971 and 1972)

	1971 %		1972 7	
Family Income				
Under \$5,000 \$5,000-7,499 \$7,500-9,999 \$10,000-12,499 \$12,500-14,999	11 15 16 17 12		8 13 11 16 12	
\$15,000-17,499 \$17,500-19,999 \$20,000 and over Don't know	11 6 9 3		12 7 11 10	
Total % and (N)	100	(2098)	100	(3211)
Age				
14 15 16 17 18 or 19	1 29 34 27 9		1 28 35 27 9	
Total % and (N)	100	(2288)	100	(3167)
Schooling Completed				
7th grade 8th grade 9th grade 10th grade 11th grade 12th grade First year of college	* 2 17 34 33 14 *		1 17 33 33 16 *	
Total % and (N)	100	(2286)	100	(3157)

^{*}Less than .5 percent.

¹See footnote on sheet 1 of this table.

 $^{^2\}mathrm{The}$ median family income of corps members was \$11,500 in 1971 and \$11,950 in 1972.

respect to sex improved in 1972. While a third of the participants in the 1971 program were girls, the proportion of girls who participated in 1972 increased to 42 percent. Despite this increase, the girls were underrepresented relative to their numbers in the United States.

Based on our questionnaires, 82 percent of the people who participated in the 1972 program were white while 7 percent were black, 6 percent were American Indian, and 3 percent were Spanishsurnamed. While the proportion of white corps members who participated in the program remained approximately the same between 1971 and 1972, the proportion of blacks decreased slightly and the proportion of American Indians increased. These shifts tended to alter the racial and ethnic background distribution that was found During that period, blacks participating in the program were slightly underrepresented whereas American Indians were To an extent, we attribute these distrislightly overrepresented. butions to limitations placed on the sponsoring agencies with respect to areas from which they could recruit corps members. the previous year, policy and budget constraints limited recruitment to areas near the camps themselves. Since most camps were located in national forests or national parks and away from urban areas, the majority of young people selected were from small towns, rural areas, or Indian reservations. The types of places from which corps members come is shown in the third panel of Table 2-1.

The proportion of young people who came from large cities and medium-sized cities increased slightly between the 1971 and 1972 programs. This increase lessened the proportion of young people coming from towns of less than 25,000, rural areas, and Indian reservations. Nevertheless, youths from these types of communities comprised more than half of the participants in the 1972 program.

According to the fourth panel of Table 2-1, the distribution of corps members by family income was similar to that found in the 1971 evaluation. During 1972, the proportion of youths from families with incomes of less than \$10,000 decreased when compared to the proportion for the same group in 1971. At the same time, the proportion of corps members whose family income was \$20,000 and over increased in 1972. These shifts in the distributions of

family income between 1971 and 1972 are reflected in the median family incomes reported for the two periods. While the median family income of corps members in 1971 was \$11,500, the median family income for corps members participating in the 1972 program was \$11,950. Since the 1971 median income for American families headed by persons aged 35 to 55 was \$12,403,² we believe the participants in the 1972 program are representative of young people from families throughout the United States.

The last two panels in Table 2-1 show that the age and grade completion distributions between 1972 and 1971 were nearly identical. In 1972, the median age of young people participating in the program was slightly less than 16. At the same time, the median years of school completed for corps members were about 9.8.

PAST ENVIRONMENTAL EXPERIENCES OF CORPS MEMBERS

Besides identifying several demographic and socioeconomic background characteristics, we asked corps members about their prior camping experience, about their involvement in environmentally-related organizations and whether or not any member of their family was employed in an environmentally-related job. As part of our 1971 evaluation, we found that corps members with prior camping experience generally responded more favorably to the Youth Conservation Corps program. In order to identify the precise nature of prior camping experience, we asked corps members whether or not they had engaged in specific types of camping. These specific activities are shown in the first panel of Table 2-2.

It is important to note that only 12 percent of the youths participating in the program said they had not had any camping experience whatsoever. For all corps members, the most frequently mentioned experience was campground or trailer camping where 58 percent said they had participated in this activity. At the same time, 4 percent of the youths (or approximately 130 corps members) had participated in the Youth Conservation Corps during the summer of 1971. In subsequent chapters we will see if these experiences

²U.S. Bureau of the Census, <u>Current Population Reports</u>, Series P-60, No. 85, "Money Income in 1971 of Families and Persons in the United States," U.S. Government Printing Office, Washington, D.C.; 1972; Table 17, p. 44.

Table 2-2 (Sheet 1 of 2)

Environmentally Related Experiences and Backgrounds (percentage of corps members during the first week)

Percent of Corps Members

	Major Break %	Specific Experience
Prior Camping Experience 1		
No prior experience Some prior experience Campground or trailer camping Summer camp - one week or longer Backpacking alone or in small group Group overnight camp - less than a week Group day-camp Youth Conservation Corps - 1971 Other camping experience	12 88	58 54 53 50 30 4
Total % and (N)	100 (3155)	
Organization Memberships 2		
None of the following One or more of the environmentally	46	
related memberships listed below Scouts, 4-H, Y's Outdoor recreation group or club Conservation or environmental action group Natural Science group or club	54	34 22 15 10
Total % and (N)	100 (3014)	

The question was: "Before coming to the Youth Conservation Corps Camp this year, what camping experience have you had? (CHECK ALL YOU HAVE DONE)."

²The question was: "We're interested in the kinds of clubs and organizations young people belong to. Do you belong to any of these groups or clubs -- at school, in your neighborhood, church or other places? (CHECK ALL YOU BELONG TO)."

Table 2-2 (Sheet 2 of 2)

Environmentally Related Experiences and Backgrounds (percentage of corps members during the first week)

	Percent of Corps Members	
	Major Break %	Specific Experience
Family Employment 3		
No family member employed in the		
following lines of work	77	
One or more family members employed		
in the environmentally related lines	0.0	
of work listed below	23	6
Forestry, lumbering, timber sales Teaching or research in biological		O
or natural science		5
Park, natural area, or outdoor		•
recreation area management or		
ownership		4
Urban or regional planning,		
architecture, landscape		
archetecture		4
Mining		3
Other work directly connected to		
obtaining, using, planning or		
managing natural resources		4
Total % and (N)	100 (2968)	
Family Income from Farming, Orchards or Ranching4		
None	85	
Less than half	10	
About half	2	
More than half	3	
eave we want thousand	ū	

The question was: "Is anyone in your family living at home employed in the following lines of work? (CHECK AS MANY AS APPLY)."

100(2953)

Total % and (N)

The question was: "Does anyone in your family living at home receive any income from farming, orchards or ranching?". (IF YES) "About how much of your family's income comes from farming, orchards, and ranching?"

are related to satisfaction with the program and environmental knowledge.

In terms of organizational membership, 46 percent, or somewhat less than one-half of the people participating in the program, were not members of any organization related to the environment. On the other hand, approximately one-third were members of a scout group, 4-H club or some other youth group. It is interesting to note that 15 percent of the corps members belonged to a conservation or other environmental action group.

Panel 3 of Table 2-2 shows that 77 percent of the campers came from families where no one living at home was employed in an environmentally-related activity. Those activities range from forestry to environmental planning, architecture and mining. At the same time, only 15 percent of the corps members came from families which derived income from farming, ranching or fruit growing. Of these 450 young people, two-thirds reported that less than half of the family income came from these sources.

We conclude from these data that a substantial portion of corps members participating in the 1972 program had experienced a number of outdoor environments other than the one in which they lived and that a majority were involved in one way or another in organizations that had some association with the outdoor environment. Furthermore, a small proportion of corps members came from families where environmentally-related work was a means of support.

CHARACTERISTICS OF THE CAMPS

An important part of our evaluation of the Youth Conservation Corps is to understand the effects of different camp and program characteristics on corps member responses. In 1971 we found that corps member responses were indeed different for camps with different characteristics. Similar analyses with respect to corps member responses and response changes are made in this report.

In order to present some idea of the types of differences that existed in camps during 1972 and to lay the groundwork for the analyses which follow, this section will describe a number of camp and program characteristics. The primary source of information is the camp inventory form or questionnaire prepared by each camp director. Supplementary data come from the records of the

Forest Service and the Department of the Interior.

For purposes of our study a total of 97 camps are considered. The camp in American Samoa was excluded from our inventory. Camps which held two consecutive four-week sessions, most of which were conducted at the same location, were considered as single camps.

The data presented in Table 2-3 describe the major characteristics of the 97 camps. The first panel shows the number of camps under the sponsorship of each agency participating in the program. Approximately half of the camps (50) were under the sponsorship of agencies of the Department of the Interior while the remainder (47) were administered by the U.S. Forest Service, which is part of the U.S. Department of Agriculture.

In the second panel of Table 2-3 the sex composition of the camps is shown. Seventy-eight of the 97 camps (nearly 80 percent) were co-ed. This proportion is considerably higher than that which existed in 1971 when 50 percent of the camps were co-ed. This change is considered to be healthy in view of the fact that corps member responses during 1971 were generally more positive in co-ed camps than in the all-boy camps. In almost all co-ed camps there was an equal number of boys and girls.

Another important difference in camps is the number of corps members in attendance. Camp sizes varied from 6 to 50 corps members at any one time. The third panel of Table 2-3 shows the number of camps within five designated size groups. Small camps had fewer than 15 corps members, while the largest groups of camps had 40 or more corps members. The average size of the camp during 1972 was 36 members.

The fourth panel of Table 2-3 shows that the majority of camps lasted for an eight-week period. Furthermore, 12 camps ran two consecutive four-week sessions. All but one of those double-session camps were operated in the Northeastern region of the Forest Service.

Earlier in this chapter we mentioned the two types of Youth Conservation Corps camps, residential and non-residential. The last panel in the Table 2-3 shows that, of the 97 camps, more than

³Among the girls participating in the 1971 program, those in all-girl camps were the most enthusiastic about the program.

Table 2-3

Characteristics of Youth Conservation Corps Camps - 1972

	Number of Camps 1
Sponsoring Agency	
Bureau of Indian Affairs Bureau of Land Management Bureau of Reclamation Bureau of Sport; Fisheries and Wildlife Forest Service National Park Service	6 6 19 47 13
Sex Composition	
Coed Girls only Boys only	78 5 14
Size of Camps (number of corps members)	
6-14 (6, I2, I4) 15-20 (15, 16, 17, 20) 21-29 (24, 26, 28) 30-39 (30, 32, 35, 36, 37) 40-50 (40, 44, 45, 50)	5 20 26 25 21
Duration of Camp Sessions	
4 weeks 5-7 weeks 8 weeks 9-10 weeks	12 4 77 4
Type of Camp	
Residential - 5 day Residential - 7 day Non-residential	52 18 26

The total of ninety-seven camps: (a) excludes the Youth Conservation Corps camp in American Somoa and (b) considers camps with two consecutive four-week sessions as single camps.

half were five-day residential camps and approximately 20 percent were seven-day residential. In the five-day residential camps, corps members were allowed to return home on the weekends, where-as the seven-day residential camps granted no or few furloughs. Twenty-six camps (approximately one-fourth of all camps) were non-residential where corps members returned to their homes on a daily basis.

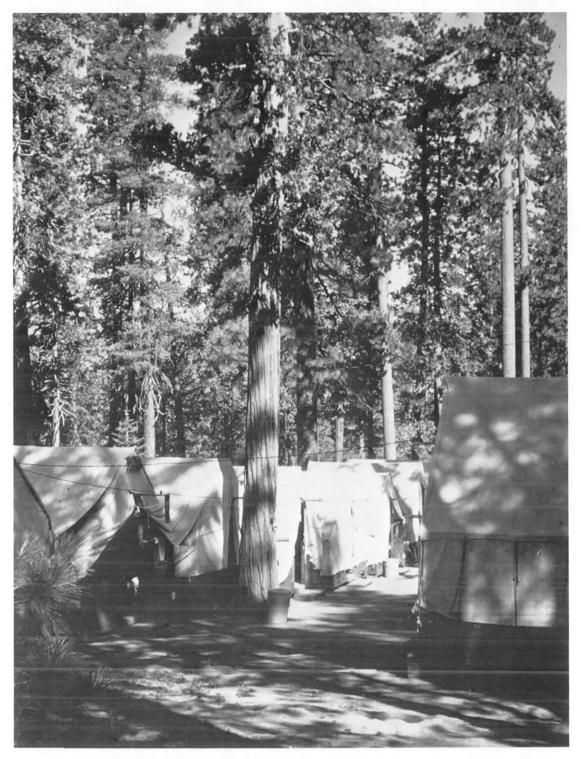
There was considerable variation in setting for the residential camps. Among the facilities used were: college campuses, boarding schools, ski lodges, army posts, training centers, former fishing and vacation resorts, Ranger stations, wilderness locations, and organizational campgrounds. The living accommodations ranged from dormitories, cabins, and trailers to tents.

Typically, non-residential camps were located closer to urban areas than were residential camps. Five-day residential camps tended to recruit from a limited number of school districts located close to the camp. Seven-day residential camps more often drew from a wider region or were in remote settings.

Two additional characteristics of the camps which were important in assessing corps member responses in the 1971 program were also identified as part of the 1972 evaluation. These included camp ratings on the extent to which corps members participated in camp governance and camp ratings on the interpersonal relations that existed between corps members and camp staffs. Responses to 17 questions were used to derive measures for these two characteristics. These questions were asked on the final week questionnaire.

Next to each question was a line divided into equal parts with diametrically opposite responses appearing at the two ends. Corps members were asked to place an \underline{X} at the point along the line which best described their camp according to the question. Because of the multi-dimensional nature of both camp governance and interpersonal relations, several questions on each subject were included in the series. For any question the average response of all corps members in a camp was considered a more reliable measure than a measure based on a single response.

The pattern of responses to all questions was similar to the pattern of responses that was given by corps members participa-



Tents Housing 50 Corps Members at Minarets YCC Camp, Calif.

ing in the 1971 program; that is, the ratings of staff by the 1972 corps members were similar to the ratings by the 1971 youth. It was therefore decided to select the same 12 items which were used in 1971. This approach enabled us to compare scores for camps which operated during 1971 and 1972. It should be noted that while the patterns of corps members responses to questions between the two years were nearly identical, the responses given in 1972 were more favorably inclined toward the staff and their relationships with youth. 4

As in 1971, six items which were highly intercorrelated were used to build a participation index. Another set of six items was used to build the interpersonal relations index. These two sets of items are shown below. 5

For each index (participation and interpersonal relations), corps members' mean scores on the six questions were calculated for each camp. For this analysis we treated each session of double-session camps independently. Thus, unlike the previous description of camp characteristics covering 97 camps, the work on the participation and interpersonal relations indexes covers a total of 109 camps. We used the same procedure used in 1971 to calculate mean scores for each of the camps. These scores were assigned to categories for the two indexes and are shown in Table 2-4.

The camp participation index is a measure of the extent to which corps members participated in governing their camp. As indicated by the questions used to construct the index, it reflects the staff's willingness to ask for and use corps members' ideas, their willingness to innovate, to share information, to discuss problems openly, and to involve corps members in the decision—making process. The interpersonal relations index considers corps members' perceptions of how staff members relate to them in various contexts. The questions used to construct this index consider the corps members' perceptions of the staff's friendliness, supportiveness, and willingness to communicate, trust, and show confi-

⁴See Appendix Tables B-1 and B-2 in Appendix B for a comparison of average corps member scores for 1971 and 1972.

⁵See Appendix Tables B-3, B-4 and B-5 for the intercorrelations between items within and between indexes.

Table 2-4

Number of Camps by Scores on Participation Index and Interpersonal Relations Index

Participation Index	Number of Camps
High	19
Medium	72
Low	18
Interpersonal Relations Index	Number of Camps
	
High	22
Medium	70
Low	17

¹The procedure used in assigning camps to an index category involved four major steps:

Calculating the mean score for all corps members in all camps on each question.

²⁾ Calculating the mean of the mean scores for all camps.

Plotting the distribution of individual camp scores around the mean score for all camps.

⁴⁾ Using the frequency distribution of camp scores, identifying three groups of camps, and designating them as high, medium and low on the index.

dence in corps members.

Participation Index Items

- A. How often did the staff ask for and use your ideas about program matters such as work assignments and topics studied?
- B. How often did the staff ask for and use your ideas about non-program matters such as discipline and free time activities?
- C. To what extent was the staff willing to try new ways of doing things in order to improve the corps program?
- D. To what extent was the staff willing to share information with corps members about the camp and its operation?
- E. How much were you involved in making decisions about running the camp and its operation?
- F. How often did the staff and corps members meet to discuss corps problems?

Interpersonal Relations Index Items

- A. How often was the behavior of the camp staff friendly and supportive?
- B. To what extent do you consider individual members of the camp staff as friends?
- C. To what extent did the staff give positive rather than negative comments or criticisms in discussing the work of corps members?
- D. To what extent did you feel free to talk to members of the staff?
- E. To what extent did the staff treat you as an individual rather than just another member of the group?
- F. How much trust and confidence was shown by the camp staff in working with corps members?

Because the patterns of responses to individual items in both indexes were similar and in order to draw comparisons between the 1971 and 1972 programs, a single index combining the participation and interpersonal relations scores was constructed. Each camp was then assigned an appropriate index score based on a procedure used in the 1971 evaluation (see pages II-14 and II-15 of the 1971 evaluation). The following table summarizes the number of camps for

each index score:

Participation-Interpersonal Relations Index		Number of Camps	
Low	(1)	12	
	(2)	11	
	(3)	60	
	(4)	1.4	
High	(5)	12	

These camp scores will be used in much of the subsequent analysis.

In sum, we have presented a number of descriptive statistics indicating that the young people who participated in the 1972 Youth Conservation Corps program were, for the most part, representative of the young people throughout the United States. Discrepancies with respect to sex composition which had existed in 1971 were improved somewhat in the 1972 program. Young people with a wide range of socioeconomic and demographic characteristics participated in the program. Moreover, most corps members had experienced some form of outdoor activity associated with camping prior to entering the Corps. Of note is the 4 percent of the youths who participated in the program in 1972 who also had been members of the Youth Conservation Corps in 1971.

The camps which corps members attended were equally varied. Besides having different sponsors, camps differed considerably in size, sex composition, length of session, living arrangements, and the extent to which corps members were involved in camp governance and interacted with the staff.

Chapter 3

CORPS MEMBER SATISFACTION WITH THE PROGRAM

A major purpose of this report is to evaluate the Youth Conservation Corps from the point of view of the young people who participated in the 1972 program. As in 1971, corps members were asked as part of the final questionnaire to assess their summer experience. Their enthusiastic responses to two general questions have confirmed our expectations based on responses to identical questions asked in 1971 and on what we heard during our site visits. As seen in Table 3-1, corps members were highly satisfied with the program. Eightynine percent said they liked the Youth Conservation Corps experience while 93 percent felt their experience was worthwhile.

When comparing the distribution of responses to these questions for 1971 and 1972, it is apparent that the 1972 corps members rated their experiences more highly. These very high ratings, however, were not shared by all corps members. Five percent of the youths in the 1972 program said they couldn't clearly say whether they liked or disliked the program and 1 percent felt their camp experience was not very worthwhile. Furthermore, 12 percent of the youths who participated in the program did not respond to these questions. We are uncertain as to how many of the participants who are classified as "no response" failed to answer the question because they were not present at the time the questionnaire was administered and how many did not respond because of negative feelings.

Throughout the remainder of this chapter we will attempt to identify how various corps members responded to their experiences

Table 3-1

Overall Evaluation of the Youth Conservation Corps Experience
(percent distribution of corps members who were administered questionnaires during the final week of the programs and all corps members in the programs)

		rs Responding inal Week	All Corps Members in the Program	
	<u> 1971</u>	1972	<u> 1971</u>	1972
To begin with, how do you feel about your Youth Conservation Corps experience this summer?	7.	<u> </u>	<u>_</u> x_	1972 X
I really liked it	55	67	51	62
I liked it	31	22	28	21
I can't say I clearly liked or				
disliked it (neutral)	9	4	9	5
I disliked it	1	1	1	*
I really disliked it	*	*	*	*
No response	_4	<u>6</u>		<u>12</u>
Total	100	100	100	100
How worthwhile to you was your Youth Conservation Corps experience this summer?				
Very worthwhile	71	78	65	72
Somewhat worthwhile	23	15	22	15
Not very worthwhile	2	1	2	1
Not at all worthwhile	1	*	*	*
No response	3	<u>6</u>	_11	<u>12</u>
Total	100	100	100	100
Number of cases	2245	2856	2425	3212

^{*}Less than .5 percent.

¹Includes corps members who responded during the final week and the additional corps members who were given the initial questionnaire but not the final one. These additional corps members are included in the "No response" percentages in this and other tables reported in this chapter.

and how these responses differed in camps with different characteristics. We will also discuss corps member responses to questions about program characteristics considered to be most worthwhile and least worthwhile. Finally, corps member ratings of specific program features will be presented.

DIFFERENCES IN SATISFACTION WITH THE PROGRAM

We have shown that the young people attending the camps responded favorably to their Youth Conservation Corps experience. However, satisfaction was not universal. In this section, we will consider responses for different groups of corps members and for corps members in different types of camps in order to identify the potential areas where program weaknesses occurred.

CORPS MEMBER DIFFERENCES. As seen in Table 3-2, responses to the Youth Conservation Corps experiences differed for a number of corps members. For the most part girls were more enthusiastic about the experience than boys. While 68 percent of the girls said they really liked their experience, this response was given by 57 percent of the boys. Furthermore, 6 percent of the boys said they were indifferent or disliked the experience while 4 percent of the girls responded in this way. It is interesting to note that the difference between neutral and negative responses for boys and girls was not as great as it was in 1971 when 12 percent and 6 percent, respectively, gave neutral and negative responses. This suggests that the boys participating in the 1972 program responded more favorably to their experience than did the boys who participated in the program during the preceding year.

The second panel of Table 3-2 shows that among corps members of different racial backgrounds, whites were most satisfied with their experience. Although in 1971 those with Spanish surnames responded almost as favorably as did whites, their responses in 1972 were somewhat different. While 70 percent of the Spanish surnamed youths said they liked the program, 10 percent reported being indifferent or disliking it. Similarly, 9 percent of blacks and 9 percent of American Indians were neutral about their experience or disliked it.

Table 3-2 also shows the relationship between corps members' place of residence and their attitudes toward the Youth Conserva-

Table 3-2 (Sheet 1 of 2)

Relationship Between Satisfaction with the Youth Conservation Corps

Experience and Select Characteristics of the Corps Members

(percent distribution of corps members)

Table 3-2 (Sheet 2 of 2)

Relationship Between Satisfaction with the Youth Conservation Corps Experience and Select Characteristics of the Corps Members (percent distribution of corps members)

	Corps	Members'	Response			
	Really		Neutral or	No		Number
	Liked it	Liked it	Disliked it	Response	Total	of Respondents
Prior Camping or Related experience ¹	***				<u> </u>	Î
Yes	62	21	5	12	100	2913
No	59	16	8	17	100	236
Participation in 1971 YCC:						
Yes	57	25	7	11	100	132
No	62	21	5	12	100	3016

Related experiences in which corps members were asked if they had participated include attendance at a residential summer camp, an overnight camp or a group day camp. Participation in backpacking and campground or trailer camping with family and friends are also considered related experiences.

tion Corps experience. Although we were able to assess how well corps members responded to the program by seven categories of hometown size, these categories were collapsed to differentiate more clearly between urban and rural backgrounds. Differences between the three categories considered were negligible.

When we consider responses for corps members from families with different incomes, the percentage distributions are, for the most part, the same. A higher proportion of those whose family income was less than \$5,000 did not respond to the question while a lower proportion of them said they really liked it.

In an attempt to sort out the relative importance of income in how youths with different ethnic backgrounds responded to the program, we considered the relationship between income and satisfaction separately for the major racial and ethnic groups. Table 3-3 clearly shows that for whites income level is not related to satisfaction. While differences in levels of satisfaction for blacks, American Indians and corps members with Spanish surnames appear for different income levels, the relationships are not clear. In part, our inability to make a definitive statement about the relationships of income to satisfaction for these groups is due to the limited number of young people in each group. However, it appears that racial or ethnic background is a more important factor than income in explaining satisfaction with the program.

In the 1971 evaluation we showed that the younger corps members tended to be less satisfied with the program than the older corps members. In 1972, this situation was less clear cut. Whereas 8 percent of the 18 and 19-year-olds reported indifference or dislike of the program, only 4 percent of the 14 and 15-year-olds responded in this way. Otherwise there were few differences associated with age.

During 1971, we found that those people who had prior camping experience tended to rate the Youth Conservation Corps experience higher than those who had no prior camping experience. An analysis of the 1972 data (using a question altered from the 1971 version) shows that having prior camping or other related outdoor experience tended to be linked to higher levels of satisfaction with the Youth Conservation Corps experience. We have not attempted to

Table 3-3

Relationship Between Satisfaction with the Youth Conservation

Corps Experience and Corps Members' Income and Race

(percent distribution of corps members)

White	Really Liked It	Liked It	Neutral or Disliked It	No Response	Total X	Number of Respondents
Under \$5,000	65	16	3	16	100	154
\$5,000 - \$9,999	67	18	4	11	100	585
\$10,000 - \$14,999	63	21	5	11	100	1005
\$15,000 and over	66	21	5	8	100	813
Black						
Under \$5,000	27	27	14	32	100	44
\$5,000 - \$9,999	49	16	8	27	100	77
\$10,000 - \$14,999	49	30	5	16	100	61
\$15,000 and over	53	22	11	14	100	36
American Indian						
Under \$5,000	27	43	12	18	100	49
\$5,000 - \$9,999	43	31	4	22	100	45
\$10,000 - \$14,999	45	23	ġ	23	100	53
\$15,000 and over	43	30	12	15	100	33
Spanish Surname						
Under \$5,000	50	17	-	33	100	12
\$5,000 - \$9,999	57	19	7	17	100	42
\$10,000 - \$14,999	44	20	11	25	100	36
\$15,000 and over	63	6	25	6	100	16

analyze the relationships between specific prior outdoor experiences and levels of satisfaction since the number of young people who had actually participated in any one of these activities was relatively small.

We examined the relationship between how well corps members liked the program and whether or not they had participated in the YCC in 1971. We found that among those 132 corps members who had participated during the previous year, 57 percent reported that they really liked the program. This compared to reports of really liking the program from 62 percent of those youths who had not previously participated in the YCC. Similarly, 7 percent of the returnees reported being indifferent or disliking the program compared to 5 percent of the youths who were not involved during the previous year. These findings may be related to the findings showing slightly lower levels of satisfaction among the 18 and 19-year-olds, the age group which contained most of the returnees.

CAMP DIFFERENCES. The second part of this section deals with corps members' assessments of their experiences under different camp and program conditions. Table 3-4 shows relationships between corps member ratings and five camp characteristics identified in the preceding chapter.

The first panel of Table 3-4 shows that girls, whether in the all-girl camps or in co-ed camps, rated their experience more highly than did boys. However, boys were more likely to say they really liked it if they were in co-ed camps. The proportion of corps members who said they were indifferent about their experience or disliked it was approximately the same in all types of camps. Comparing 1972 with 1971 figures we see that, while ratings from girls remained high, the percentage of boys in all-boy camps who liked the program increased substantially.

Similarly the distribution of responses from corps members in the residential and non-residential camps is nearly identical although non-residential camps received marginally higher ratings. This slight difference between the two types of camps was less than half of that found in 1971 when youths who participated in non-residential camps gave higher ratings to their summer experience than those who attended residential camps.

Another characteristic of the camps which may be related to

Table 3-4

Relationship Between Satisfaction with the YCC Experience and Select Characteristics of Camps (percent distribution of corps members)

	Corps	Members	Response			
Camp Characteristics	Really Liked it	Liked it	Neutral or Disliked it	No <u>Respo</u> nse	<u>Total</u>	Number of Respondents
Sex Composition	z	7	%	X	x	#
Co-ed girls	68	17	4	11	100	1186
Girls only	69	16	6	9	100	159
Co-ed boys	62	21	5	12	100	1370
Boys only	44	31	6	19	100	465
Type of Camp						
Residential	61	21	5	13	100	2621
Non-residential	64	21	5	10	100	582
Size of Camp						
6-14	70	10	3	17	100	70
15-20	55	27	6	12	100	414
21-29	61	24	5	10	100	644
30-37	65	20	5	10	100	986
38-50	62	18	5	15	100	1091
Duration of Camp Session Forest Service Camps						
4 weeks	70	18	4	8	100	795
5-7 weeks	66	18	2	14	100	140
8 weeks	61	20	3	16	100	879
9 or more weeks	53	31	8	8	100	51
Interior Agency Camps						
4 weeks	71	13	4	12	100	24
8 weeks	58	22	7	13	100	1279
9 or more weeks	52	43	5	-	100	44
Agency						
Bureau of Indian Affairs	24	38	15	23	100	176
Bureau of Land Management	64	18	2	16	100	131
Bureau of Reclamation	62	19	10	9	100	200
Bureau of Sport		0.0		_		
Fisheries, Wildlife	63	22	6	9	100	426
Forest Service	65	20	3	12	100	1865
National Park Service	64	20	5	11	100	414

corps member satisfaction is the number of young people who attended any single camp. In Chapter 2 we showed that the number of corps members per camp did not vary greatly for the entire program. Camp sizes ranged from 6 to 50 members with an average camp containing about 35 corps members. Based on the distribution of the number of corps members per camp, we arranged camps into five groups ranging from very small (fewer than 15) to large camps (40 The distribution of corps members' ratings of camp experience for the five groups is shown in the third panel of Table Except for the very small sized camps, there appears to be little difference which is associated with size of camp in how well the corps members liked their summer experience. were somewhat higher in the eight camps containing fewer than 15 corps members. It is clear, that based on data from 1971 as well as from 1972, very small camps tend to be viewed most favorably by the youths who participate in them, but otherwise size and satisfaction are unrelated.

The extent to which the length of the camp session is related to satisfaction is also considered in Table 3-4. The vast majority of camps were eight weeks in length, a dozen lasted four weeks, while several were of a nine or more weeks' duration. Based on our data, corps members who attended the four-week sessions were more enthusiastic about the program than were those who attended for longer periods. The differences, however, were not quite as great as they were in 1971.

In the 1971 evaluation, data were not presented on satisfaction levels within camps sponsored by different agencies. Data from 1972 show that agency sponsorship was strongly related to how corps members responded to their summer experience. The noticeable difference appears in the Bureau of Indian Affairs camps where only 24 percent of the youths said they really liked their experience as compared to more than two and a half times as many of the youths who responded this way in the camps of other agencies. With respect to satisfaction, there was an obvious interaction between agency sponsorship and ethnic background. We showed earlier that Indian youths were the least satisfied group. However, since American Indians rated the program much higher than did youths in the Bureau of Indian Affairs camps, it appears that agency influ-

ences are more likely to be responsible than ethnic background for these low satisfaction scores.

Finally, we suggested in Chapter 2 that the friendliness of the camp staff and their willingness to allow corps members to participate in running the camp could influence corps members' Indeed, this was the case in 1971. Relationships of responses. the participation-interpersonal relations (PI) index with corps members' ratings of their experience are shown in Table 3-5. strong relationship once again existed between the camp index score and how well corps members rated their summer experience. Corps members in those camps with high PI index scores were more likely to evaluate their experience highly. For example, among the youths in camps which scored low on the index, 72 percent said they liked the program, as compared to 91 percent of the corps members in high index camps who said they liked the program. lationship can also be seen in the proportion of youths who were indifferent or who gave negative ratings to the program.

The relationship between the way corps members rated the worthwhileness of the YCC program and the way they rated their camps on the PI index is seen in the second panel of Table 3-5. Again, positive responses are linked to high camp scores. camps with high scores on the index, 92 percent of the corps members rated their experience as being worthwhile to some degree. For camps with low scores, 87 percent said the experience was It should be emphasized that, in both cases, ratings with respect to how well the youths liked their summer experience and how worthwhile they felt it to be were very high. also be noted that the difference between high and low scoring camps was greater with respect to rating liking for the summer experience than was the difference with respect to rating the worthwhileness of the summer experience. This seems to suggest that although corps members in camps which were rated low on the PI index may not have liked their program or summer experience very much, they nevertheless felt it had been a worthwhile experience.

ATTRIBUTES CORPS MEMBERS CONSIDERED MOST AND LEAST WORTHWHILE

In our 1971 evaluation, we asked corps members to indicate those aspects or attributes of the program which they liked best

Table 3-5

Relationships Between Overall Evaluation of the Youth Conservation
Corps Experience and Camp Participation-Interpersonal Relations Score
(percent distribution of corps members)

"To begin with, how do you feel about your Youth Conservation Corps experience this summer?"

Interp	ipation- ersonal ons Score	Corp Really Liked it	Liked it	Response Neutral or Disliked it	No response	Total %	Number of Respondents	Number of Camps
Low	(1)	39	33	14	14	100	398	12
	(2)	57	26	9	8	100	311	11
	(3)	62	20	4	14	100	1790	60
	(4)	74	15	1	10	100	401	14
High	(5)	79	12	1	8	100	312	12

"How worthwhile to you was your Youth Conservation Corps experience this summer?"

		Very Worthwhile, Somewhat Worthwhile	Not Very Worthwhile, Not at All Worthwhile	No Response	Total	Number of Respondents	Number of
1		<u> </u>	Z	74	X	#	#
Low	(1)	83	4	13	100	398	12
	(2)	90	2	8	100	311	11
	(3)	86	-	14	100	1790	60
	(4)	90	-	10	100	401	14
H ig h	(5)	92	-	8	100	312	12

and those which they liked least. In addition, we asked them what they thought was worthwhile about the program and what was not worthwhile. In both sets of questions we provided opportunities for corps members to respond freely; that is, they could write in their responses.

Rather than repeating this procedure in 1972, we decided to focus on those things that the 1971 corps members had mentioned as being most worthwhile and least worthwhile to them. Our assumption was that groups of responses derived from the 1971 evaluation would be the same in 1972. Therefore, we created a fixed list of attributes and asked the corps members to check those that were worthwhile and those that were not. In addition, they were asked to indicate those things that were the <u>most</u> worthwhile and those things that were the least worthwhile.

Table 3-6 shows separately the proportion of corps members who said the various attributes were worthwhile or <u>most</u> worthwhile.

Attributes were of a personal nature or dealt with the social, work, or environmental learning aspects of the program.

Several attributes were mentioned by approximately half of all corps members. Among things classified as personal, 51 percent mentioned that working and living outdoors was worthwhile to them, while 50 percent said that being physically active, keeping in shape, and seeing new places were worthwhile. Meeting new people and making friends and learning to get along with others were mentioned by approximately half of the corps members as being worthwhile among social attributes. The three listed features of the environmental learning program were mentioned as being worthwhile by about half of the corps members. In the 1971 evaluation, the attribute mentioned by corps members as being most worthwhile was the chance to meet people and make friends. In 1972, this feature again had the highest rating with nearly one out of three corps members saying it was the most worthwhile aspect of the program.

Similarly, corps members were asked to respond to a list of features that had been identified from the 1971 evaluation as being least worthwhile. They were asked to scan the list and indicate those things that they thought were not worthwhile about the program. Then they were to go over the list again, and pick out the single attribute which was least worthwhile for them. Corps

Table 3-6

Attributes of the Program Mentioned as Being Worthwhile (percentages based on 3010 corps members responding during final week in camp)

	Proportion of Corps Member Who Said Attribute Was:		
Attribute	Worthwhile	Most Worthwhile	
Personal			
Working and living outdoors, being			
in a natural setting	51	26	
Being physically active and keeping in shape	50 50	4	
Seeing new places	50 43	3 11	
Being on my own Earning money	43 39	4	
Finding out about myself	34	18	
rinding out about myself	34	10	
Social			
Chance to meet people and make friends	52	32	
Learning to get along with young people from			
different social backgrounds	51	19	
Social or recreational activities	37	2	
Learning to get along with adults	31	1	
Work			
The work program in general	43	21	
Construction projects	43	9	
Trail building	39	6	
General up-keep of buildings and grounds	31	2 2	
Thinning, stacking brush, weed control	30	2	
Working with fish or wildlife	25	10	
Planting	23	2	
Environmental Learning			
Learning general principles of ecology			
and conservation	52	18	
Learning about nature - identifying and			
observing plant and wildlife	51	19	
Learning practices of natural resource management			
and how government agencies work in these areas	48	14	

member responses to attributes of the program mentioned as being not worthwhile are shown in Table 3-7. Most often mentioned was "other corps members who didn't do fair share—didn't contribute to program." As in 1971, corps members did not think it was worthwhile to spend time waiting around for tools, supplies, or people or to spend a lot of time getting to and from work projects. Nearly one out of four said that listening to lectures and formal group discussions was not worthwhile. The attribute mentioned most often as being Least worthwhile was "time spent waiting around on the work for tools, supplies, or people"; 21 percent of the youths responded in this way. It should be noted that the proportion of corps members mentioning things worthwhile was nearly twice that of corps members mentioning things not worthwhile.

RATINGS FOR SPECIFIC PROGRAM ATTRIBUTES

In order to gain additional insights into specific attributes of the program we asked corps members to rate their staff, their follow corps members, and their camps from several points of view. A 5 point scale ranging from excellent to poor was provided for Table 3-8 shows the results of these each specific attribute. ratings for all corps members. Because of high ratings on the earlier, more general questions about liking the program, we are not surprised to find that specific attributes were, for the most part, also rated high. With few exceptions, more than half of the corps members rated each attribute as excellent or very good. highest rating was given to the amount of work accomplished at 80 percent of all corps members rated it "very good" or "excellent." High ratings were also given to the regular staff. Their commitment to the overall program objectives and their concern about the environment were highly rated, as was their performance as work leaders.

Corps members appeared to take pride in their work since they gave very high ratings to the work accomplished at camp with respect to its "quality" and to "its benefits to the public." Corps members tended to rate their fellow corps members lower than their staffs; in fact, their lowest rating was given to their fellow corps members for their "ability to help you learn about the en-

Table 3-7

Attributes of the Program Mentioned as Being Not Worthwhile (percentage based on 2962 corps members responding during final week in camp)

	Proportion of Corps Members Who Said Attribute Was:			
Attribute	Not Worthwhile	The Least Worthwhile		
Scheduling				
Time spent waiting around on the work				
for tools, supplies or people	26	21		
Time spent getting to and from work projects Requiring educational activities after	26	9		
hard day of work	19	10		
Nothing to do on rainy days, evenings or	1,9	10		
weekends	14	5		
Requiring recreational activities after				
hard day of work	12	4		
Social and Personal				
Other corps members who didn't do fair share	-			
didn't contribute to program	33	18		
Other corps members who caused trouble	26	11		
Staff who were hard to get along with or		_		
unfair	17 13	9 6		
Too much regimentation Staff who didn't know or care enough about	13	0		
the environment or conservation	8	3		
CHO CHALLOIMICHE OF CONSCIPRATION	J	·		
Work				
General up-keep of buildings and grounds	15	9		
Thinning, stacking brush, weed control	15	8		
Trail building	9	4		
Planting	5	1		
Construction projects	5 5	1 1		
Work program in general Working with fish or wildlife	3	1		
working with fish of wildlife	,	4		
Environmental Education				
Lectures, formal group discussions Film strips, slides or movies on	23	12		
environmental subjects	13	4		

Table 3-8 (Sheet 1 of 2)

Corps Members' Ratings of Select Attributes of the Youth Conservation Corps Program (percent distribution of corps members responding during the final week)

Rating of the Regular Staff:	Excellent	Very Good	Good	<u>Fair</u>	Poor	Total	Number of Respondents
As work leaders	34	39	20	6	1	100	2852
Commitment to the overall program objectives	33	39	20	7	1	100	2983
Concern about the overall environment	34	37	21	7	1	100	2998
Knowledge about the environment	27	41	22	8	2	100	2984
Ability to help you learn about the environment	30	36	21	10	3	100	2972
Rating of Fellow Corps Members:							
As Co-workers	27	44	23	5	1	100	2992
Commitment to the overall							
program objectives	18	38	31	11	2	100	2990
Concern about the overall environment	24	36	26	11	3	100	2996
Knowledge about the	24	30	20	11	J	100	2,7,0
environment	6	28	42	21	3	100	2990
Ability to help you learn							
about environment	10	24	32	24	10	100	2991
Ratings of Youth Leaders:							
As work leaders	28	33	23	12	4	100	1393
Commitment to the overall program objectives	27	36	24	11	2	100	1429
Concern about the		0.0	0.4		2	100	1429
overall environment Knowledge about the	27	36	24	11	Z	100	1429
environment	15	33	33	16	3	100	1428
Ability to help you learn							
about the environment	17	28	29	18	8	100	1387
Rating of Work Accomplished at Camp:							
Amount	37	43	17	3		100	2860
Quality	34	47	16	2	1	100	3005
Benefit to the environment	29	40	22	7	2	100	2995
Benefit to the public	36	40	19	4	1	100	2996

Table 3-8 (Sheet 2 of 2)

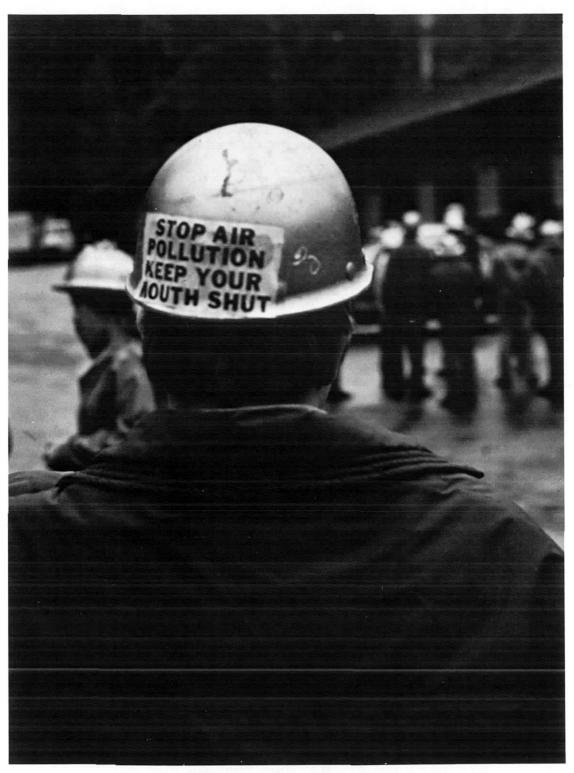
Corps Members' Ratings of Select Attributes of the Youth Conservation Corps Program (percent distribution of corps members responding during the final week)

Rating of Camps:	Excellent	Very Good	Good	<u>Fair</u>	Poor	<u>Total</u>	Number of Respondents
Coordination between the							
work and the environmental							
education program	18	38	26	13	5	100	2984
As community - a place where							
interests are shared and peop	ole						
work and get along well toget	her 40	32	18	8	2	100	2963
Living accomodations							
(residential camps only)	33	35	20	9	3	100	2302
Recreational facilities							
(residential camps only)	35	30	20	11	4	100	2296

vironment." These relatively low ratings applied to fellow corps members in general and to fellow corps members who were assigned the roles of youth leaders. Nevertheless, the overall ratings that corps members gave to their fellow corps members and their camp staffs were generally high.



Tent Site Construction, High Knob Recreation Area, Wise, Va.



YCC Corps Member at Mt. Rainier National Park

Chapter 4

ENVIRONMENTAL CONCERNS, VALUES, AND ATTITUDES

ENVIRONMENTAL CONCERNS

The young people participating in the 1972 Youth Conservation Corps described themselves as having a high degree of environmental concern. At the beginning of the camp session four out of five corps members said they were "very concerned" or "extremely concerned" about environmental problems. Four out of five of the 1971 corps members also used these two categories to describe themselves at the beginning of camp. However, fewer 1972 corps members picked the "extremely concerned" response. (See Table 4-1.)

These youths also expressed a high level of environmental concern when rating the seriousness of problems facing the United States. Of 15 problems rated, the most serious was seen as being air and water pollution. Only 6 percent failed to rate pollution as "extremely" or "very" serious. The problem viewed as next most serious was the rate at which resources are being used up (83%). This was followed by crime and violence (81%) and hunger and poverty (78%). In 1971, air and water pollution were rated separately and both were judged to be extremely or very serious by 92 to 93 percent of the youths. At that time "hunger and poverty" was viewed as the next most serious problem (81%), and "crime and violence" again placed high (80%). The problem of using up resources at a rapid rate was not included in the 1971 list. To the extent that comparable items were presented, the ratings for the two years were remarkably consistent. (See Table 4-2.)

The reasons given for participating in the Youth Conservation Corps furnish additional evidence of environmental concern.

Table 4-1

Overall Concern for Environmental Problems During the First and Final Weeks of Camp

	First <u>Week</u>	Final <u>Week</u>	Change
"In general, how concerned are about environmental problems?" (8:30)	you		
Extremely concerned	33 (43) ¹	37 (38)	4 (-5)
Very concerned	47 (37)	46 (42)	-1 (5)
Moderately concerned	18 (17)	16 (17)	-2 (0)
A little concerned	2 (2)	1 (2)	-1 (0)
Not at all concerned	* (1)	* (1)	0 (0)
Number of Respondents	2728	2839	

^{*}Less than 1/2 of 1 percent.

Numbers in parentheses refer to responses to an identical question in our 1971 YCC evaluation. Cf. R. Marans, B. Driver, and J. Scott, Youth and the Evironment: An Evaluation of the 1971 Youth Conservation Corps. Ann Arbor, Michgan. The University of Michigan, Institute for Social Research (1972), pg. IV-9.

Table 4-2

Changes in Youths' Rating of Problems Facing the Nation
(percent of corps members rating problems as extremely serious,
or very serious during first and final week in camp)1

Environmental Problems	First Week	Final Week	Change
1. Air and water pollution	94 (93,92) ²	93 (89,87)	-1 (-4,-5)
2. The rate at which resources are being used up	83	85	2
3. Litter and trash	77 (78)	80 (78)	3 (0)
4. Overcrowding	69 (68)	76 (72)	7 (4)
Lack of open space and recreation lands	58 (60)	62 (61)	4 (1)
6. Noise pollution	44	54	10
Other Problems			
1. Crime and violence	81 (80)	82 (77)	1 (-3)
2. Hunger and poverty	78 (81)	79 (77)	1 (-4)
3. The war in Southeast Asia	69 (73)	69 (69)	0 (-4)
4. Too few job opportunities	69 (71)	66 (70)	-3 (-1)
5. Drug addiction	68 (74)	67 (69)	-1 (-5)
6. Inflation and high prices	66 (73)	72 (74)	6 (1)
 Lack of national morale and unity 	57 (59)	61 (57)	4 (-2)
8. Race relations	56 (62)	60 (61)	4 (-1)
Inadequate educational opportunities	52 (52)	57 (54)	5 (2)

On the initial and final questionnaire, (see 7:31-27 of Appendix A) the question was: "We'd like to know how serious you think these problems are for the United States today. Please check whether you think it is EXTREMELY SERIOUS, VERY SERIOUS, QUITE SERIOUS, or NOT AT ALL SERIOUS."

²Numbers in parentheses designate responses to identical questions in our 1971 YCC evaluation. Cf. pg. IV-11. In that evaluation, Air and Water Pollution were listed as separate problems, and the two numbers in parentheses refer to each in the order listed above.

In both 1971 and 1972 the most important reason was "a chance to learn about the environment and to do what you can to take care of it." Eighty-six percent said this had been a very important reason for joining the 1972 Youth Conservation Corps. (See Table 4-3.)

It is not at all surprising to find such high levels of expressed concern among young people who have chosen to spend their summer in a program such as the Youth Conservation Corps. Self-selection is one of several factors which lead one to expect a high degree of environmental concern among this group. Another factor which assures a high level of concern is the screening of applicants. While a strong interest in environmental affairs was not always a stated requirement, the program description would have led high school teachers and counselors to recommend persons who were particularly interested in environmental matters. Therefore, finding persons with high levels of concern is likely to be less of a problem than is maintaining that interest and developing the skills and understanding which will allow motivated youths to select environmentally sound life-styles.

There was some evidence of difficulty in maintaining the level of concern during the first year of the program. By the final week there was a 5 percent decline in the number of those describing themselves as extremely concerned about environmental problems. At the end of the summer 4 to 5 percent fewer corps members saw air and water pollution as being extremely serious problems, and of eight environmental problems only two were rated higher than they were in the first week. There was a 2 percent decline in the evaluation given to environmental learning and work as a benefit to be gained from joining the Youth Conservation Corps. At the end of the program in 1971 only 16 percent gave their fellow corps members excellent scores for their concern about the environment.

To some extent the decline in concern suggested by these measures may have been more illusionary than real. Young people who spend a summer in an environment relatively free of air and water pollution may become less aware of these problems. After camp, the contrast between pollution levels in camp and in their hometowns may give rise to increased levels of concern. Pollution is

Table 4-3 (Sheet 1 of 2)

Differences Between the Importance of Specific Reasons for Joining the Youth Conservation Corps and What Benefits were Actually Received (percentage distributions for youths responding during the lirst week in camp and during the final week in camp)

Reasons 1	Reason for <u>Joining</u> First <u>Week</u>	Benefits <u>Received</u> Final <u>Week</u>	<u>Change</u>
 YCC offers a chance to learn about the environment and to do what you can to take care of it. (6:45) 			
Very important Somewhat important Not very important	86 (77) ² 13 (21) 1 (2)	82 (75) 17 (22) 1 (3)	-4 (-2) 4 (1) 0 (1)
 YCC offers experience or training useful for personal development. (6:43) 			
Very important Somewhat important Not very important	65 (64) 33 (33) 2 (3)	70 (66) 28 (30) 2 (4)	5 (2) -5 (-3) 0 (1)
3. YCC offers adventure and new experiences. (6:48)			
Very important Somewhat important Not very important	63 35 2	68 29 3	5 -6 1
4. YCC offers a chance to find out about yourself. (6:46)			
Very important Somewhar important Not very important	58 (51) 35 (38) 7 (11)	65 (68) 30 (27) 5 (5)	7 (17) -5 (-11) -2 (-6)

For format of questions (designated by numbers in parentheses), see Appendix A.

²Numbers in parentheses refer to responses to an identical question in our 1971 YCC evaluation. Cf. R. Marans, B. Driver and J. Scott, Youth and the Environment: An Evaluation of the 1971 Youth Conservation Corps. Ann Arbor, Michigan, The University of Michigan, Institute for Social Research (1972), pg. 4-8.

Table 4-3 (Sheet 2 of 2)

Differences Between the Importance of Specific Reasons for Joining The Youth Conservation Corps and What Benefits Were Actually Received (percentage distributions for youths responding during the first week in camp and during the final week in camp)

	Reason <u>Joinin</u>		Bene Rece	fits ived		
Reasons 1	First <u>Week</u>		Final <u>Week</u>		Change	
5. YCC offers a break from ordinary things. (6:44)						
Very important	44		60		16	
Somewhat important	44		35		-9	
Not very important	12		5		-7	
YCC offers a chance to make a little money. (6:47)						
Very important	27	(30)	26	(34)	-1	(4)
Somewhat important	55	(50)	58	(51)	3	(1)
Not very important	18	(20)	16	(15)	-2	(-5)
Average Number of Respondents	3071	(2290)	3010	(2226)		

Footnotes: See sheet 1 of this table.

the most talked about and visible environmental problem. As the corps members learn of other environmental problems their relative ranking of pollution may be expected to decline somewhat.

The same principle, that additional information often diminishes the relative importance of highly visible subjects, may also explain the reduction in the percent who saw "learning about the environment and working to help improve it" as being a very important benefit of the 1971 program. At the beginning of camp, work and learning were the most obvious objectives of the program and could easily dominate all others. Over the course of the summer the youths became aware of many other benefits they received from the program.

The decline in self-assessed concern for the environment and the fact that at the end of camp only 16 percent rated the environmental concern of their fellow corps members as "excellent" are first year findings which are more difficult to explain. It appears that in 1971 the program did not fully succeed in maintaining the high level of environmental concern that the youths brought with them to camp.

The 1972 results are much more encouraging. Self-assessed concern for the environment increased between the first and final weeks. Nearly a quarter gave their fellow corps members an excellent score on their environmental concern; this suggests that the peer climate in 1972 camps was more supportive of environmental concerns. Five out of six environmental problems showed an increased level of concern at the end of camp, and there was only a 1 percent decline in concern about air and water pollution. Once again there was a decline in the importance attached to learning about the environment and working to take care of it, but even with this drop on the last week's measure, 82 percent still said this was very important as compared with 75 percent in 1971.

In summary, the initial level of environmental concern was quite high in both years, but it seems to have been better maintained at this high level in 1972 than it was during the initial year of the program. However, concern can be hollow if it is not coupled with knowledge and skill in dealing with the problems. In later sections of this report we will examine these aspects of the program.

CORPS MEMBERS' VALUE PREFERENCES & PERCEPTIONS OF PEER AND ADULT VALUES

Having a high level of environmental concern may lead one to hold a system of values which prescribes a life-style consistent with this concern. The <u>Training Manual</u> in environmental education used by the Department of Interior camps presents a system of value preferences:

Some of the YCC educational objectives transcend knowledge and involve attitudes or value preferences. In an attempt to provide a means for concisely stating these objectives and evaluating our success in achieving them, the concept of value spectra has been utilized.

Each of the spectra is stated in terms of extremes. It is to be expected that few people will adhere to positions at the extremes; however, the relative positions on the various spectra will be useful, as indicated above, in allowing a focus on specific areas of environmental education; and, ultimately to evaluate progress toward the educational objectives of the program...

No claim is made that the spectra selected are mutually exclusive or coordinate. On the other hand, it is claimed that collectively the spectra indicate clearly the directions in which value systems within human cultures should move in order to achieve and maintain a world ecosystem sufficiently in balance to support a viable human culture and simultaneously maintain the other living and nonliving components of the ecosystem.

The three following premises will explain the basis for determining the ecologically-oriented objectives:

- Eventually no significant quantities of nonrenewable resources will be available for use or reuse by man. Attrition, entropy, consumption and dispersal all hasten the day that this will necessitate acceptance of premise 2.
- Eventually human cultures, if they are to function at all, must function primarily with a base of renewable resources utilized on a nonexhaustive and/or sustained yield basis.
- 3. Eventually the world, which is an ecosystem, must be managed as an ecosystem. All components of the world ecosystem are inexorably interrelated, therefore, piecemeal and/or nonecologically oriented resource management schemes are doomed to failure.

¹U.S. Department of the Interior, <u>Training Manual: Environmental Education</u> (1972), pp. 6-7.

From these three premises seven continuums have been derived representing an ecological value system.

Think only about the present?	 Think only about the future?
Use only nonrenewable resources?	 Use only renewable resources?
Encourage only those activities which consume resources?	 Encourage only those activities which do not consume resources?
Think only of benefits to man?	 Think only of benefits to things other than man?
Consume resources en- tirely according to wants?	 Consume resources en- tirely according to needs?
Think only of economic benefits?	 Think only of ecological benefits?
Decrease variety in the environment?	 Increase variety in the environment?

It is the value judgment of the authors of this manual that positions toward the right of the spectrum diagram are ecologically more defensible than other positions.

We put these items into question form and during the first week of camp all corps members were asked to locate themselves on each of the value spectra. Each spectrum was scored by assigning "0" to the extreme nonenvironmental position and counting five points for every step toward the extreme favoring the environment. The maximum possible score was 100. All value items rated by the youths had average scores above 50, so corps member values can be characterized as favoring the environment. The value having the highest score was "consume resources entirely according to needs."

The value with the lowest average score was "think only about the future." Several indications were found which strongly suggested that the frame of reference in which this item was treated was far from clear. The youths who took the extreme future positions were less oriented toward environmental activism than those in positions closer to the midpoint. This suggested that for some with high environmental concerns the item was answered within a frame of reference reflecting their feelings of the urgency for

doing something to save the environment before it is too late. For other equally-committed corps members the frame of reference appeared to be support for long range planning. The former would be expected to place themselves somewhat toward the "present" end of the spectrum, while the latter would lean toward the "future" end, yet both could have the same basic motivation for doing what was best for the environment. Because of this apparent confusion we are excluding the present-future item from subsequent analysis.

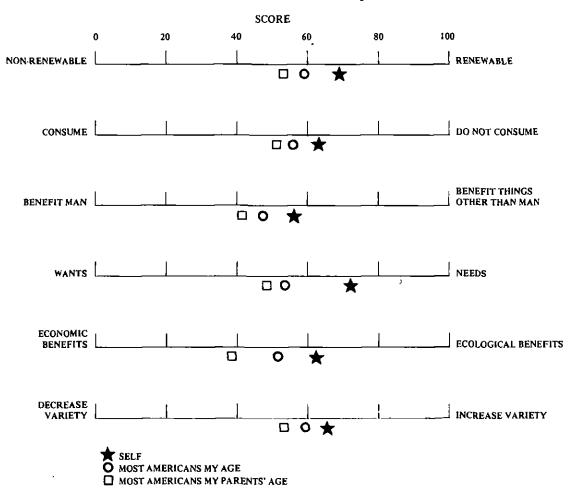
The corps members were also asked to place most Americans of their own age and most Americans of their parents' age on these value scales. When profiles developed from self-placement are compared with the average placements they gave age peers and people in their parents' generation, it is clear that the corps members saw themselves as being more oriented toward ecological value positions than are these reference groups (see Figure 4-1). They placed themselves furthest from their age peers (19 points) when advocating consumption according to "needs" rather than "wants." The generation gap is greatest (13 points between age peers and parents' generation) on the question of considering ecological benefits versus economic benefits. The older generation was seen as highly dollar oriented. The youths differed from their parents most on these same two items (24 points in both cases).

The greatest agreement was on increasing, rather than decreasing, variety in the environment. Only 12 points separate the three ratings, and all are on the ecologically favorable side of the midpoint. Nearly as much agreement is found on the value of encouraging activities which do not consume resources, but in this case the parents' generation was seen as being almost at the midpoint.

While the value spectra show interesting distinctions in the way corps members perceived themselves, their age peers, and their parents, they do not have much analytic payoff. Although relationships with values are found, they are usually weaker than similar relationships with concerns, attitudes, and knowledge. For example, the propensity to take action to benefit the environment is higher for those who placed themselves near the ecological ends of the spectra. However, the straightforward question, "How con-

Figure 4-1

Life-Style Value Spectra Placement of Self, Age Peers, and Parents' Generation During First Week



cerned are you about environmental problems?" is a much better predictor of activity than are these value items. Differences between group means are also observable (see Table 4-4), but these differences are not so large.

Finally, it appears that these value measures are relatively insensitive to change. No value showed an increase. Overall there was a negative shift of approximately 2 percent between the first and the final weeks. The largest change observed was a negative shift of 6 percent. In only two instances was a positive change observed, and these were no larger than one percent. of the changes were small enough to be attributed to measurement Were it not for the fact that they were consistently in the direction of relationships observed with other variables we would be tempted to discount them entirely. An examination of distributions on individual items supports the view that, to a large extent, the slight negative shift is an artifact of measurement. Most change is of two types: 1) tempering of extreme pro-ecological value choices, and 2) greater piling up around the midpoint. This last tendency, which is the stronger of the two, may be attributed to a phenomenon of test-weariness called "running for On the final week measure these value spectra were located at the end of the questionnaire. This tail-end placement may have encouraged those who realized that they were almost done to finish rapidly; this could be done by marking the midpoint all the way down the page. Enough corps members did this to lower the mean values, which were all on the high side of the midpoint.

Having recognized that a measurement problem existed, we were unable to determine how large an effect it produced. The actual change in values, assuming no problem in measurement, may have ranged anywhere from a slight negative shift to a modest positive change.

Because differences in change scores for these value spectra are so small, we will not belabor the data here but will discuss value and attitude relationships jointly.

 $^{^{2}}$ Tables 4-4 through 4-9 follow the end of this chapter.

ENVIRONMENTAL ATTITUDES

We also asked a series of attitudinal questions on environmental topics related to the life-style values. The tests administered in the camps included 27 attitudinal items, each having seven response categories which ran from "agree very strongly" to "disagree very strongly."

A correlation matrix was constructed and nine items which were related conceptually and statistically were selected to form a measure we have called the "anti-exploitation" index. Three other items with the common theme of supporting actions which would reduce the consumption of resources formed a second measure. This was called the "limitations" index. The items included on these two measures of attitudes are listed below.

Anti-Exploitation Index Items

- A. Science is advancing so rapidly that we need not worry about using up our natural resources.
- B. One should live for today and let tomorrow take care of itself.
- C. Industries can't cut down on their pollution and still make a profit.
- D. Most principles of ecology do not apply to man because of his ability to master the environment.
- E. If an endangered species has no economic value to man, it is wasteful to spend money trying to save it.
- F. Land which has high value for other uses should never be used as natural, pen or green space.
- G. Since it helps the economy to grow, people should be encouraged to buy more.
- H. There's nothing wrong with advertisers creating a demand for a new product that people don't really need.
- Because cars are constantly being improved, no one should want to buy a car that would last 10 years or more.

Limitations Index Items

- A. The United States should try to cut down on the amount of resources its citizens use up each year.
- B. I feel strongly enough about preventing overpopulation

- that I would be willing to limit my family to two children other than those I might adopt.
- C. The government should place a horsepower limit on automobiles in order to reduce the rate at which we use petroleum resources.

RELATIONSHIPS OF ATTITUDES & VALUES TO CHARACTERISTICS OF CAMPS & YOUTHS

The major analytic variables that will be used throughout our analysis were presented in Chapter 3. In this analysis both the value and the attitude measures produced only weak relationships to the analytic variables; in most cases the relationships for the two measures were similar. Therefore, we have combined them into a single measure having 12 items. Each item had seven points of agreement which were scored "0" through "6." Total scores on the combined measure of environmental attitudes could range from "0" to "72." Overall means were computed and expressed as a percent of the maximum score of 72.

Our analysis focused on two types of relationships: those which were descriptive of the corps members at the beginning of camp, and those which identified patterns of change. With the descriptive relationships we sought to identify both the program conditions and the corps members which had values and attitudes that were most or least supportive of the environment. At the beginning of the program those who were most supportive had the following characteristics:

BACKGROUND VARIABLES

- 1) Corps members with most education. There was an 18 point spread on attitudes and a 10 point spread on values between 8th and 10th graders. The same was true to a lesser degree for age.
- 2) White corps members. The spread between whites and American Indians was 16 points on attitudes and 5 points on values.
- 3) Those from high income families. Corps members from families with incomes of \$20,000 and over were 10 points higher on attitudes than those from families making less than \$5,000. There was only a 2 point difference for values.
- 4) Those with previous courses in natural sciences. Corps members with previous natural science courses had attitude scores 8 points above those without such courses. There was a 3 point difference on values.

- 5) Those with previous camping experience. These corps members scored 8 points higher on attitudes than those without previous camping experience. There was hardly any difference in values.
- 6) Girls. Girls scored 5 points higher than boys on attitudes and one point higher on values.

There were no differences associated with size of hometown.

CAMP CHARACTERISTICS

- 1) Corps members in BIA camps started about 14 points below those in camps sponsored by other agencies on attitudes, and 4 points lower on values.
- 2) Those in four-week camps started about 4 points higher in attitudes.
- 3) Those in camps with medium high interpersonal relations started about 4 points higher in both values and attitudes.

No other camp differences were large enough to note. EVALUATIONS OF THE PROGRAM

- 1) Those who had rated the program "extremely" or "very" worth-while at the end of camp had entered the program with attitudes which were 8 points higher and with values 3 points higher than those who felt it was not very worthwhile.
- 2) Those who at the end of the summer felt coordination between work and education was poor came in with higher attitude scores (4 points over those saying "excellent," 8 points over "good") and value scores (3 points over "excellent" and 4 points over "good).
- 3) Corps members who "really liked" the program scored 5 points higher on attitudes and 3 points higher on values than those who were neutral or disliked it.

Corps members in camps which emphasized education and in those camps which devoted most time to work had higher attitude scores than corps members in other camps, but there was no consistent pattern.

While there are bases for expecting differences in the values and attitudes of corps members coming to the program from different backgrounds, there is little reason to expect different types of

camps to recruit young people with different attitudes and values. However, the fact that four-week camps did start out with corps members whose attitudes were somewhat more favorable may have had some bearing on their success. It is also possible that a camp director, sensing that the corps members in his camp had favorable attitudes and values, may have encouraged a greater degree of participation by them in matters of camp governance. This in turn would be reflected in higher PI index scores. Thus it becomes difficult to say what is cause and what is effect.

In terms of program evaluations, it is not surprising to find that those who entered with attitudes that were environmentally supportive found the program to be more worthwhile and satisfying than those who did not. What is perhaps surprising is that those who rated coordination between work and education as poor had the most supportive environmental attitudes. It appears that the question on coordination may be revealing as much (or more) about corps member acuity in spotting ways in which the coordination might have been improved as it reveals about poor coordination.

PATTERNS OF CHANGE. Looking at value and attitude changes between the first and the final weeks we find that most change was negative. Some speculations on why this was so have already been made. With regard to corps member characteristics, there is little difference to observe between background factors and this general shift. Although American Indians had the largest negative shift, it was only 2 points greater than that found for whites. The shifts associated with levels of income and schooling merely strengthened the trends, noted earlier, for more favorable attitudes to be held by those from high income families and by those who had completed more education.

The largest negative shift associated with camp characteristics is found in camps sponsored by the Bureau of Indian Affairs. The shift for these camps was larger than that for American Indian youths. Therefore, this shift may be attributed more to agency than to ethnicity—but some interaction is obvious.

The next greatest negative shift was found in those camps with the lowest ratings on participation and interpersonal relations. The corps members in camps which were highest on the PI index showed the most favorable results: no shift on attitudes

and a small positive shift on values. This was the only instance in which a negative shift did not occur on at least one measure. The four-week Forest Service camps showed no shift on attitudes. Camps sponsored by the Bureau of Land Management recorded a 2 point gain on attitudes, and those Interior camps which did not receive the environmental education manual showed no change; these were the only change scores which were not negative for camp characteristics or for corps member characteristics.

When evaluations of the program are considered in conjunction with attitudes and values we see that those who felt the program was not worthwhile showed the greatest negative attitude and value shift. Large negative shifts in attitudes were also observed in those camps where coordination between work and education was judged to be "poor" and among corps members who were neutral or who disliked the program. No shift occurred in camps where emphasis was placed mostly on education.

The only instance in which we did not observe a negative shift in attitudes and values was that in which camps had high participation and interpersonal relations. This finding may reveal a basic condition for influencing attitudes, namely, that attitudes are more likely to shift positively if there is a positive attitude toward the person or persons transmitting them. Also, attitudes are likely to be more firmly held if the individual is a member of a group which shares these attitudes. If the group members have been active participants in the process of arriving at common attitudes, the individual will probably receive support and reinforcement for these attitudes from other members of the group.

The social life of a camp is probably more important than are formal education efforts, from the standpoint of developing attitudes consistent with ecological principles. In social and living situations the corps members have an opportunity to translate attitudes into behavior patterns. The educational techniques appropriate for developing supportive attitudes and life-style awareness can not be limited to the classroom; they require participation by corps members in the everyday life of the camp. In many camps we visited we noted camp members carrying personal drinking cups—such as the Sierra Club cup—to avoid the use of

styrofoam cups. This small instance is one example of things which might be done. Other practices we observed were participation in the planning of ecologically sound meals—and, for contrast, menus which were ecological disasters. This technique can work very well in non-residential camps where lunch is usually prepared at home. Individual lunches can be analyzed noting such features as packaging: Are the sandwiches wrapped in aluminum foil? What about individually canned dessert puddings? How many links in the food cycle were required to produce a given food? Competitions can be arranged for the lunch which is most sound (or unsound) from the standpoint of food, packaging, nutrition or cost.

Environmental plans for the camp should be formulated. These may include features such as assessing the environmental impact of developments on the camp grounds, providing a waste disposal plan which incorporates compost piles, recycling, and minimized waste production. Recreational activities may be evaluated by the corps members against criteria for ecological soundness.

Living plans such as these should come from the corps members—they should never be imposed from the top. The planning and decision making process is a valuable learning experience. More important, acceptance will be greatest when there is participation. Care must be taken not to let one or two outspoken corps members stampede the group into adopting a plan which it is not prepared to live by. Nothing could be more counter-productive than to have the majority of corps members feel they are being coerced by a few "self-righteous ecofreaks" into doing something they do not believe in.

Table 4-4

First Week and Final Week Responses to a Measure of Life-Style Values by Selected Corps Member Characteristics 1

			Gain	
	First	Final	or	Average
Corps Member Characteristics	<u>Week</u>	Week	Loss	<u> </u>
Con				
Sex				
Girls	65	64	-1	1175
Boys	64	61	- 3	1530
Race				
			_	
American Indian	60 50	57 50	-3	140
Black	59	58	-1	163
Spanish surname	65	61	-4	80
White	65	63	- 2	2230
Place of Residence				
Cities over 100,000 and their suburbs	64	62	- 2	805
Towns less than 100,000	65	63	-2	1210
Rural areas	64	62	- 2	660
	- .		_	
Family Income				
Less than \$5,000	63	61	- 2	200
\$5,000-\$9,999	64	62	- 2	640
\$10,000-\$14,999	65	63	- 2	810
\$15,000-\$19,999	6 5	63	- 2	530
\$20,000 or more	65	64	-1	292
Grade Level in School				
8th	55	52	- 3	27
9th	63	60	- 3	435
10th	64	62	- 2	900
11th	65	63	- 2	910
12th	65	64	- 1	416
Previous Natural Science Course				
Yes	65	63	- 2	2282
No	62	6 0	- 2	385
Previous Camping Experience				
	c 1.	60		0517
Yes	64 63	62 61	-2 -2	2516
No	ده	61	-2	200

¹ See Appendix Tables C-1 to C-7 for source of data in this table.

Table 4-5

First Week and Final Week Responses to a Measure of Average Life-Style Score by Selected Camp Characteristics 1

Camp Characteristics	First Week	Final Week	Gain or <u>Loss</u>	Average N
Agency				
Bureau of Indian Affairs Bureau of Land Management Bureau of Reclamation Bureau of Sport Fisheries and Wildlife Forest Service National Park Service	60 63 65 64 65	57 64 64 62 63 63	-2	145 110 166 357 1610 340
Participation-Interpersonal Relationships Camp Index	0,5	03	- 2	340
Low 1	64	61	- 3	320
2	63	61	- 2	265
3 4	6 4 6 7	62 65	-2 -2	1495 350
High 5	65	66	1	275
Use of Environmental Manual and Training				
Forest Service	65	63	- 2	1600
Did not receive manual Received manual, did not use Used manual without training Used manual, had training	61 62 64 66	61 61 65	0 -1 -3 -1	65 140 640 270

 $^{^{1}\}mathrm{See}$ Appendix tables C-8 to C-10 for source of data in this table.

Table 4-6

First Week and Final Week Responses to a Measure of
Average Life-Style Score by Selected Camp and Program Evaluations

Camp and Program Evaluations	First Week	Final Week	Gain or Loss	Average N
Like-Dislike of YCC Experience				
Really liked it Liked it Neutral or disliked it	65 64 62	63 61 60	-2 -3 -2	1810 580 140
Worthwhile YCC Program				
Very worthwhile Somewhat worthwhile Not very worthwhile	65 62 62	63 59 56	- 2 - 3 - 6	2100 400 24
Degree of Coordination				
Excellent Very good Good Fair Poor	65 64 64 65 68	63 62 62 62 66	- 2	490 1000 670 360 150

 $^{^{1}\}mathrm{See}$ Appendix tables C-11 to C-13 for source of data in this table.

Table 4-7

First Week and Final Week Responses to a Measure of
Environmental Attitude by Selected Corps Member Characteristics 1

Corps Member Characteristics Sex	First Week	Final Week	Gain or Loss	Average N
Girls Boys	77 72	75 69	-2 -3	1215 1629
Race and Ethnic Background				
American Indian Black Spanish surname White	60 62 69 76	55 59 65 73	-5 -3 -4 -3	152 178 88 2322
Place of Residence				
Cities over 100,000 and their suburbs Towns less than 100,000 Rural areas	74 74 74	72 71 70	-2 -3 -4	843 1266 697
Family Income				
Under \$5,000 \$5,000-9,999 \$10,000-14,999 \$15,000-19,999 \$20,000 and over	67 72 75 76 77	63 69 72 74 76	-4 -3 -3 -2 -1	226 685 839 549 304
Age				
15 16 17 18	71 73 77 79	67 71 74 76	-4 -2 -3 -3	798 1014 769 249
Grade in School				
8th 9th 10th 11th 12th	56 68 73 76 80	52 64 70 73 78	-4 -4 -3 -3	31 467 943 947 431
Previous Natural Science Courses	<u>.</u>			
Yes No	76 68	73 64	-3 -4	2369 423
Previous Camping Experience				
Yes No	75 68	72 66	-3 -2	2620 236

 $^{^{\}mathrm{1}}$ See Appendix tables D-2 to D-9 for source of data in this table.

First Week and Final Week Responses to a Measure of Invironmental Attitude by Selected Camp Characteristics

Table 4-8 (Sheet 1 of 2)

Camp Characteristics	First Week	Final Week	Gain or <u>Loss</u>	Average
Sex Composition				
Coed, girls	77	75	-2	1061
Coed, boys	72	68	-4	1226
Girls only	77	74	-3	148
Boys only	71	70	-1	403
Type of Camp				
Residential	74	71	-3	2327
Non-residential	73	70	-3	529
Size of Camp				
6-14	76	73	-3	64
15-20	73	70	-3	375
21-29	73	70	-3	572
30-39	75	72	-3	887
40-50	74	71	-3	958
Duration of Camp Session				
Forest Service				
4 weeks	76	76	0	738
5-7 weeks	71	68	-3	124
8 weeks	73	71	-2	784
9 or more weeks	73	70	-3	41
Interior Agencies				
4 weeks	76	70	-6	21
8 weeks	73	69	-4	1104
9 or more weeks	70	64	-6	44
Agency				
Bureau of Indian Affairs	60	53	-7	145
Bureau of Land Management	74	73	-1	114
Bureau of Reclamation	76	72	-4	170
Bureau of Sport Fisheries and	-,	7.0	,	20/
Wildlife	74 74	70 72	-4 -2	384 1687
Forest Service	74 75	72 70	-2 -5	356
National Park Service	73	/ U	ر-	330

 $^{^{\}rm 1}{\rm See}$ Appendix tables D-10 to D-16 for the source of data in this table.

Table 4-8 (Sheet 2 of 2)

First Week and Final Week Responses to a Measure of Invironmental Attitude by Selected Comp Characteristics

Camp Characteristics	First Week	Final <u>Week</u>	Gain or <u>Loss</u>	Average N
Participation-Interpersonal Relations Score				
Low (1)	72	66	-6	336
(2)	73	71	-2	279
(3)	73	70	-3	1586
(4)	77	76	-1	363
High (5)	76	76	0	292
Manual Use and Training				
Did not receive manual	68	64	-4	69
Received manual, did not use	74	69	-5	152
Used manual, without training	73	68	- 5	666
Used manual, had training	74	71	-3	282

Footnote: See sheet 1 of this table.

Table 4-9

First Week and Final Week Responses to a Measure of Environmental Attitude by Evaluations of the Program or Camp

Evaluations of the Camp and Program	First Week	Final Week	Gain or <u>Loss</u>	Average
Satisfaction				
Really liked it Liked it Neutral or disliked it	75 72 70	73 69 65	-2 -3 -5	1907 617 145
Worth of Program				
Extremely or very worthwhile Somewhat worthwhile Not very worthwhile	75 70 67	73 66 59	-2 -4 -8	2217 425 26
Coordination between Work and Education				
Excellent Very good Good Fair Poor	76 73 72 76 80	74 71 69 73 74	-2 -2 -3 -3	518 1062 716 377 153
Relative Emphasis to Work				
l mostly work 2 3 about equal 4 5 mostly education	74 73 73 75 77	72 69 71 73 77	-2 -4 -2 -2 0	128 569 967 727 128
Time Devoted to Work and Education				
1 mostly work 2 3 about equal 4 5 mostly education	76 73 74 74 71	71 70 71 73 66	-5 -3 -3 -1 -5	74 1076 801 419 149

 $^{^{\}mbox{\scriptsize 1}}\mbox{See}$ Appendix tables D-17 to D-21 for the source of data in this table.

Chapter 5

ENVIRONMENTAL BEHAVIOR

INTRODUCTION

The relationship between attitudes and behavior has always been problematic. Supposedly attitudes are expressions of predispositions to behave in given ways, but one does not always find attitudes correlated with behavior. Attitudes are often viewed as "soft" currency ("talk is cheap") while behavior is viewed as "hard" currency. Especially when attitudes are measured in a setting which is highly supportive of certain points of view one may question the reliability of the report. Asking a three-year-old if he believes in Santa Claus when he is in the act of hanging up his stocking on Christmas Eve is what might be called "a damn fool question."

Similarly, to ask young people in YCC camps if they are concerned about the environment is to risk getting an expected answer of agreement—even if their concern is low. We therefore felt it necessary to test the expressions of concerns, values and attitudes that we have discussed in Chapter 4 by inquiring about specific behavior which should be related to them. This inquiry has three aspects which will be discussed in turn. They are: 1) willingness to take action to benefit the environment, 2) the use of sound and unsound consumer goods, and 3) plans for education and environmentally—related careers.

ACTION TO BENEFIT THE ENVIRONMENT

As a behavioral counterpart to concerns we asked about actions that could help deal with the problem of water pollution. These steps ranged from relatively common and non-demanding activities such as not using products that cause pollution, to rather rare and demanding activities such as becoming involved in protest demonstrations.

At the start of camp two-thirds of the corps members said they would be definitely willing to avoid using polluting products. This is a considerable reduction from the 94 percent who saw air and water pollution as a very serious or extremely serious problem and from the 80 percent who described themselves as very concerned or extremely concerned about environmental problems. ever, if one counts only the "extremely concerned" or "extremely serious" expressions, this statement of willingness to act appears to be quite consistent. Some of these items were asked in 1971, and comparisons show little change, except for working with citizen groups and active protests, between the responses for the first and second years of the pilot program. The protest item had a higher degree of expressed willingness in 1971 even though at that time the item was more severely worded, calling for doing "something that might result in your going to jail." This decline may reflect the decline in mass demonstrations which appears to have taken place in the past few years. On the other hand, a stipulation of four or more hours a week was added in 1972 to the question about working with citizen groups. This change in working may account for the decrease in reported willingness to become involved.

Between the first and the final weeks of the camp sessions there was a clear increase in willingness to engage in four of the six activities. The item dealing with protest demonstrations also showed an increase in the average response, but it showed a slight decrease in the percent who were definitely willing to act.

The only item showing an absolute decrease in willingness was working with citizen groups; this was also the only item to show a decrease in willingness in the 1971 measurements. One may question why YCC experience seems to turn young people away from citizen groups. Perhaps the removal of the corps members from normal contacts with their communities may have something to do with this.

Table 5-1

First Week and Final Week Responses to Possible Actions for Dealing with the Problem of Water Pollution

Action and Willingnesa	First <u>Week</u>	Final Week	Change
Not use products that cause pollution			
Definitely yes Might Definitely no	63 35 2	67 32 1	4 -3 -1
Work 4 or more hours a week with citizen groups attempting to do something about the problem			
Definitely yes Might Definitely no	57 (72) ¹ 40 (26) 3 (2)	48 (29)	8(3)
Write letters to governmental officials			
Definitely yes Might Definitely no	51 (48) 44 (48) 5 (4)	52(54) 45(42) 3(4)	1(~6)
Pay higher taxes to cover the cost of government efforts to solve the problem			
Definitely yes Might Definitely no	29(27) 53(52) 18(21)	53 (50)	0(-2)
Pay higher prices for things you buy to cover the manufacturer's cost of solving the problem			
Definitely yes Might Definitely no	22 (27) 51 (52) 27 (21)	30(31) 50(50) 20(19)	-1(-2)
Become involved in protest demonstra- tions and picketing			
Definitely yes Might Definitely no	18 (25) 38 (43) 44 (32)	17 (26) 44 (46) 39 (28)	6(3)
Average number of respondents	3062	2980	

Numbers in parentheses designate responses to the same questions in our 1971 YCC evaluation. Cf. Youth and the Environment. p. IV-14.

Or, it may reflect the friction which can occur between citizen action groups and the government agencies sponsoring the camps. Some citizen groups may have a simplistic or narrow approach to environmental problems. Learning about management practices, system characteristics, and trade-offs may cause corps members to become disaffected with simplistic approaches.

However, if the benefits of YCC are to be taken back to the home community it appears that more attention should be given to environmental action groups. Perhaps one objective of the environmental education program should be to familiarize corps members with the activities of local groups interested in environmental action. This would serve as a counterpart to the instruction given in government agency functions.

The next step from attitudes to behavior is represented by questions asking which actions the corps members had actually taken to help solve the problem of water pollution. As might be expected, the percentage of corps members who had taken action was lower than the percentage of those who expressed a willingness to act--and lower still than the percentage of youths who expressed high levels of concern. However, between the first and final weeks there was an increase in all activities. (See Table 5-2.) Some of this increase was directly related to activities conducted in the camps. On our site visits we observed efforts being made to minimize the use of polluting products in camp. In one instance we also found corps members writing congressmen about pollution problems they had encountered on a field trip. Non-residential camps offered opportunities for the youths to participate in the activities of citizen groups, and in one case we learned of a local recycling center which had been organized by the members of a nonresidential camp.

At first we viewed each action as representing a position on a scale which reflected environmental commitment. The actions were thought of as being ordered from those which required only minimum commitment (avoiding products that pollute) to those which demanded a high level of commitment (becoming involved in protest). If this "ordering" had in fact been the case then those who would engage in the most extreme activity would be willing to engage in all less demanding activities. The stepwise decline in willing-

Table 5-2

Actions Taken to Help Deal with the Problem of Water Pollution
(Percent Saying "Yes" During the First and Final Week)

<u>Action</u>	First <u>Week</u>	Final <u>Week</u>	Change
Have avoided using polluting products	47	54	7
Worked with citizen groups	20	24	4
Written letters to officials	17	19	4
Become involved in protests	7	8	1
Overall average	23	26	3

ness to engage in activities exhibited in the first week responses (See Table 5-1.) appeared to support this mode of environmental behavior. However, the correlations between actions were relatively low and knowing, for example, that a person was willing to engage in active protests did not help predict his or her willingness to avoid the use of polluting products. The model of behavior which one finds is one of alternative forms of activity which may be, to some extent, different means to the same end. The choice of means seems to depend on the individual's preferred mode of expression—some people seem to be natural letter writers, while others are picketers.

Following this model of behavior we decided to form an index of propensity to take environmental action which gave a corps member two points if he had taken an action and was definitely willing to do so again, and a single point if he was definitely willing but had not as yet taken the action. These points were summed, giving us a distribution which we related to the expressions of concern and values discussed in Chapter 4. The relationship between the action index and concerns was very strong. (See Table 5-3.) Similarly those who applied to YCC to do something to help take care of the environment were action oriented, while those who applied to make money were not.

The last panel of Table 5-3 shows that those who had the lifestyle value of considering mostly ecological benefits were more likely to take action to help the environment than were those who considered mostly economic benefits. The other life-style spectra showed similar, though not as strong, relationships, with the exception of the item dealing with present versus future considerations. (See Appendix Table E-3). This item showed an inverted "U" relationship, with those in the middle being more action-oriented than those at the ends. This and similar evidence led us to discard the present-future life-style variable.

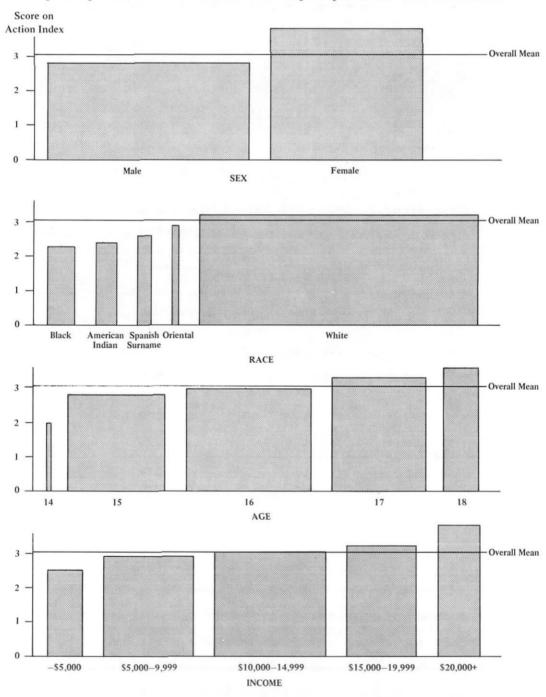
The background characteristics of corps members are also related to propensity to act environmentally. Older corps members, those from high income families, girls, whites, and suburbanites had high action orientations (See Figure 5-1), while younger corps members, those from low income families, boys, blacks, American Indians and those who lived in rural areas were low. These are the

Table 5-3

Means on Index of Propensity to Take Environmental Action by Response to Selected Expressions of Environmental Concern and Values

Attitude	Mean Score on Activity Index	N
How concerned are you about the environment?		
Extremely	4.16	901
Very	2.86	1277
Moderately	1.74	478
Little or not at all	.83	41
How serious is air and water pollution for the U.S.A.?		
Extremely	3.19	2451
Very	2.64	450
Moderately	1.85	135
Little or not at all	1.58	33
Apply YCC to learn about environment and help take care of it Very important	3.16	2643
Somewhat or not important	2.32	430
Apply YCC to make a little money		
Very important	2.70	819
Somewhat important	3.09	1690
Not important	3.34	563
Value ecological benefits vs. value economic benefits		
Ecological 1	3.74	851
2	3.13	624
3	2.70	1215
4	2.40	105
Economic 5	2.10	102

Figure 5-1
Propensity Toward Environmental Action by Corps Member Characteristics



Note: width of bar is proportional to the number of cases.

same characteristics we saw associated with holding environmentally-supportive attitudes. The lone exception is place of residence, which was not associated with attitudes or values. The fact that the index of propensity to take environmental action shows the same pattern of relationships as the attitudinal and value measures strengthens our feeling that these latter relationships are meaningful despite their weaknesses.

USE OF SOUND AND UNSOUND CONSUMER GOODS

Another approach to measuring the behavioral implications of environmental concerns, values, and attitudes was represented by a list of consumer goods. The corps members were asked to indicate how likely it was that they would eventually purchase a given item. The list was made up of a number of pairs, both of which could serve a similar function but one of which was more ecologically "sound" than the other. The list included:

Motorcycle ------ Bicycle

Large car ------ Compact car

Powerboat ----- Canoe

Camper truck ----- Family-sized tent
or trailer

In addition, a number of unpaired sound and unsound items were presented.

Several considerations prompted us to include this list on our questionnaires. First, we wanted to get a measure of intentions which used concrete examples of behavior derived from the life-style values. Second, we wanted to include a measure that did not have an obvious "right" answer. The answer which was desirable from the environmental standpoint was apparent on many of The life-style value, "encourage only those our other measures. activities that do not consume resources," readily lent itself to this purpose. We were able to include goods -- such as water skis, an all-terrain vehicle, and a camper -- which on the surface appeared to denote interest in outdoor activities and in getting close However, these items were counted as "unsound" because to nature. their use consumes non-renewable resources. The items and the likelihood of purchase are reported in Table 5-4. Between the first and final weeks there was an increase in the likelihood of

Table 5-4

I
Likelihood of Buying Sound and Unsound 2
Consumer Goods as Reported in First and Final Weeks

Sound Items	First Week	Final Week	Change
Canoe	55	63	8.
Bicycle	71	77	6
Back pack	74	79	5
Tent	60	64	4
Small car	64	67	3
Total Sound	64.7	70.0	5.3
Unsound Items			
Water skis	47	48	1
Electric can opener	43	44	1
Motorcycle	52	53	1
All-terrain vehicle	57	56	- 1
Large car	43	41	- 2
Powerboat	52	49	- 3
Camper	62	59	- 3
Total Unsound	50.8	50.0	8

¹ Likelihood responses were given a code value of 1QO for "extremely," 75 for "very," 50 for "somewhat," 25 for "not very," and 0 for "not at all likely." The entries in this table are average code values.

 $^{^2}$ The question read, "If money were no problem how likely would it be that someday you would buy each of the following items? Please check the likelihood for each item." See page 14, Appendix A.

purchasing sound items and a small decrease in the overall likelihood for unsound items. This response is encouraging since the attitudinal measures of life-style values and exploitativeness indicated a shift in the opposite direction. It appears that by avoiding questions which had an obviously desirable answer we were able to circumvent the tendency for new corps members to overstate their views when entering the program. Because purchase intentions are concrete exemplifications of abstract values, we are inclined to give greater weight to these results than to the results obtained at the more abstract level.

An item analysis of these purchase intentions shows an orderly pattern of shifting for sound items (see Appendix Table F-1). The pattern for several unsound items is less orderly, suggesting that there were cross currents in the changes which occurred for these items.

An index was created (according to the procedure outlined in Appendix F), which combines sound and unsound purchase intentions and which also incorporates changes toward a more favorable or a less favorable balance between the first and final weeks of camp. The balance is considered to be favorable when the likelihood of buying sound items outweighs the likelihood of buying unsound After looking at the likely use of sound and unsound goods by various types of corps members, we simplified the index by collapsing the seven categories into three. The assumption that those who were most concerned would show the most favorable balance and movement was supported when we examined the index according to degree of environmental concern (see Table 5~5). Those with moderate or low concern were five times more likely to be unfavorably balanced toward the unsound items and there was an orderly progression down the categories of the index. The general trend of these results reinforces earlier findings.

As shown in Table 5-6, we found that maintaining or increasing a sound balance increased with education and was higher for girls than for boys. Girls in girl-only camps showed the most favorable responses and boys in boy-only camps were least favorable. In the co-ed camps girls again showed more favorable responses than did boys, but the differences were not as strong as those noted between the single-sex camps. Corps members in resi-

Environmental Concern by Trend in Likelihood of Making Sound and Environmentally Unsound Consumer Purchases

Table 5-5

Degree of Environmental Concern Moderate Extreme Very or Low Stable sound Became much more sound Became somewhat more sound Stable balanced Became somewhat less sound Became much less sound Stable unsound

Table 5-6 (Sheet 1 of 2)

Trends in Likelihood of Buying Sound and Unsound Consumer Goods by Selected Corps Member and Camp Characteristics

Corps Member Characteristics	Increased Soundness or Stayed Sound	Stayed Balanced	Decreased Soundness or Stayed Unsound	Number of Cases
Sex				
Girls	59	15	26	1071
Boys	46	16	38	1367
Grade in School				
8-9th	44	16	40	386
10th	50	17	33	795
llth	55	15	30	836
12th or higher	5 8	13	29	408
Camp Characteristics				
Sex Composition				
Coed girls	59	15	26	935
Girls only	62	15	23	133
Coed boys	47	16	37	1035
Boys only	42	17	41	332
Residential/Non-residential				
Residential	53	15	32	1983
Non-residential	45	16	39	455
Manual Use and Training				
Interior Agencies			21	
Did not receive manual	63	6	31	51
Received, did not use Used manual without	44	18	38	129
training	49	17	34	561
Used manual, had training	65	12	32	239
Forest Service	51	16	33	1458
Participation-Interpersonal Relations Index				
1 (low)	46	19	35	279
2	52	17	31	244
3	51	15	34	1344
4	53	14	33	309
5 (high)	59	14	27	239

Table 5-6 (Sheet 2 of 2)

Trends in Likelihood of Buying Sound and Unsound Consumer Goods by Selected Corps Member and Camp Characteristics

	Increased Soundness or Stayed _ Sound	Stayed Balanced	Decreased Soundness or Stayed Unsound	Number of Cases
Session Length				
Forest Service 4 weeks 5-7 weeks 8 weeks 9 or more weeks	57	16	27	653
	49	15	36	93
	47	16	37	676
	31	14	55	36
Interior 4 weeks 8 weeks 9 or more weeks	60	20	20	15
	53	16	31	930
	43	14	43	35
Program Evaluation Coordination between Work and Education				
Excellent Very good Good Fair Poor	54	17	29	445
	51	17	32	903
	49	13	38	604
	51	17	32	329
	62	9	29	136

dential camps responded somewhat more favorably than did those in non-residential camps. Training in the use of the environmental education manual also appears to have produced favorable results. Corps members in camps which had good interpersonal relations were 13 percent higher in favorable response than corps members in camps with poor interpersonal relations.

Surprisingly, the longer the camp session, the less favorable was the balance between attitudes toward environmentally sound This was due in part to a tendency for camps and unsound goods. with four-week sessions to recruit members whose positions were more favorable to begin with. But in the Forest Service camps there was also a trend for favorable shifts in the sound-unsound balance to become less frequent with longer camp sessions. Appendix Table F-7). Since there were no indications that corps members were becoming alienated and reacting against the program, this finding is difficult to explain. It may be that as the youths spent more time in natural settings they became less likely to reject goods which, despite being environmentally unsound, would facilitate additional exposure to the out-of-doors. vehicles and camping trucks are likely to be particularly appealing in this regard.) This serves to illustrate some possible conflicts between appreciation and popular forms of on-site use of the environment.

We again find the reverse twist that those who felt coordination between work and education was poor had the most favorable balance in the likelihood of buying sound or unsound consumer goods. This result was due to the fact that those who became most critical of the coordination entered the program with and did not shift away from a favorable balance toward sound items.

PLANS FOR EDUCATION AND ENVIRONMENTALLY-RELATED CAREERS

The final type of behavioral measure we examined deals with plans for future education and employment. In 1972 as in 1971 there was a slight increase in the education expectations of corps members (see Table 5-7). However, we have no basis for saying this happened as a result of the YCC program.

There was also an increase in the percentage of young people in the program who were seriously considering a job which deals

Table 5-7

Youths' Plans for the Future

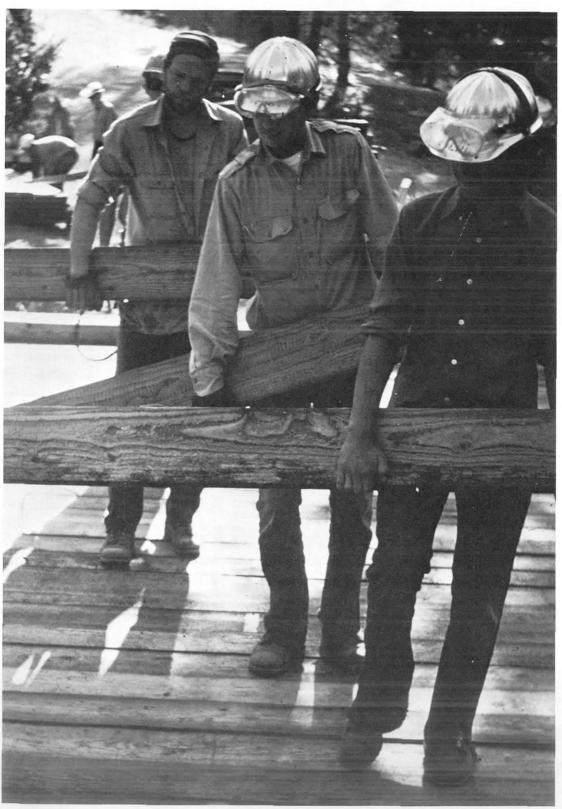
(percent distribution of youths responding during the first and final weeks of camp)

	First Week	Final Week	Change Change
Formal Schooling Expected to be Completed			
High school graduate Some additional technical or trade	7(8) ²	5(7)	-2(-1)
school training Some college	11(9) 14(15)	11(8) 14(14)	0(-1) 0(-1)
Four years of college	30(28)	31 (31)	1(3)
More than four years of college	27 (26)	29 (28)	2(2)
Don't know	11 (14)	10(12)	-1(-2)
"Have you given any thought to the kind of work you would like to do in the future?"			
Yes	90(87)	90(82)	0(-5)
No	10(13)	10(18)	0(5)
"Have you seriously considered a job which deals with planning and managing the physical environment?"			
Yes	59 (55)	61 (54)	2(-1)
No	41 (45)	39 (46)	-2(1)
Average number of respondents:	3000(1926)	2900 (1174)	

The question was: "How much schooling do you think you'll have be the time you finish your formal education?"

 $^{^2}$ Numbers in parentheses designate responses to identical questions in our 1971 YCC evaluation. Cf. Youth and the Environment. p. IV-19.

 $^{^3{\}rm The}$ question was asked only of youths who said they had thought about the kind of work they intended to do in the future.



Corps Members Laying the Deck of a Bridge to a Campground in the Sierra National Forest, Calif.

with planning and managing the physical environment. This is in contrast to 1971 when there was a slight decrease in that response between the first and final weeks. Although slight, this difference is another of the small bits of information which have consistently indicated that the 1972 program was even more successful than the 1971 program. While individually small, when taken together these positive changes may have considerable effect. It is possible that further positive change may result from the interaction of one gain upon another.

Chapter 6

ENVIRONMENTAL KNOWLEDGE AND UNDERSTANDING

This chapter explains the procedures used in evaluating the learning aspects of the 1972 Youth Conservation Corps program and reports the basic results. The following chapter considers these results in more detail by looking at relationships between learning and selected characteristics of the corps members and camps.

INTRODUCTION

In Chapter 1 we pointed out that our 1971 evaluation discovered that the environmental learning objectives of the first-year YCC program had not been met to the degree desired. For this reason our 1972 evaluation has focused on environmental learning. mentioned the difficulty of identifying and measuring all that is We cannot, for example, measure the effects of feeling the warmth of the sun, or discovering the pleasures, challenges, and rewards to be found in the out-of-doors; these experiences could motivate the youths to learn more about natural phenomena. Similarly, we can neither fully identify nor measure the influence which exposure to natural areas might have on increasing the youths' sensitivity to the ways we manage our resources. Nor are the corps members themselves fully aware of all that they have learned; it will take considerable time for many of these experiences to be meaningfully integrated into their thinking.

These general problems of evaluation are accompanied by specific difficulties relating to measurement, several of which were

discussed in our 1971 report. Especially troublesome is the scarcity of useful research on measuring the environmental knowledge of young people. Few alternative measuring techniques have been developed and tested and no research was found which compared the effectiveness of these techniques. The literature provided no reliable test instruments. We therefore had to design our own instruments within a relatively short period of time. Other problems we experienced were those associated with:

- a) The relatively short camp session length (four to eight weeks) over which learning was to be measured without follow-up studies to assess long term effects.
- b) The diversity of camp educational programs made selection of topic areas difficult.
- c) The problems associated with objective tests which emphasized verbal skills, and the likelihood that corps members who had just finished their final course examinations in school would have a limited tolerance of "tests" affected our decisions about test length.
- d) The wide range of corps member characteristics (such as grade level and prior experience). This meant the level of difficulty built into the tests had to be high enough to allow improvement and not so high that giving up and "goofing off" would be common.

The problem of identifying specific environmental education objectives was related to the pilot nature of the program. During that initial year the sponsoring agencies did not have a clear conception about which environmental understanding objectives would be most appropriate nor about which techniques for increasing this understanding would be most effective. So it can be said that our approach to the 1971 evaluation was exploratory.

Our approach to measuring levels of and changes in environmental knowledge during the second year of the pilot program has been accompanied by problems similar to those of 1971, but they have been less severe. We have modified and improved the instruments used in our 1971 evaluation to the point that they appear reasonably valid. It should be emphasized, however, that there is room for further improvement. These measures should be seen as a means of identifying relatively high or low levels of environmental understanding. Differences between groups or across time can be described, but we cannot say at what level environmental



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knowledge is sufficient for a specific need--or how large a gain must be if it is to be called satisfactory.

For the above reasons the 1972 evaluation is directed as much toward determining how future YCC programs can facilitate environmental learning as it is toward evaluating the overall effectiveness or success of this year's program. We will do this by looking for those conditions associated with the largest and smallest gains in knowledge. We prefer, therefore, to view our evaluation as a joint effort with the sponsoring agencies to discover how environmental learning objectives for future programs can be more efficiently defined and implemented.

PROCEDURE

In 1972 two approaches were employed to measure environmental understanding. One approach attempted to measure the levels of environmental understanding as they were <u>subjectively appraised</u> by the corps members during the first and last weeks of the program. The other approach attempted to obtain <u>objective</u> measures of knowledge. Areas of knowledge evaluated were taken from agency guidelines (see Appendix G).

Relationships between these two approaches were analyzed and are reported at the end of this chapter. We will also report the results of several checks performed on the validity of the objective knowledge measure.

SUBJECTIVE MEASURES OF KNOWLEDGE. At the beginning and at the end of the 1971 program we asked the corps members to rate how well they understood natural resource planning and management. Responses were made on a 5 point scale which included the choices of "much above average," "above average," "average," "below average," and "much below average." Corps members were asked to compare their understanding with that of other youths their own age, but it was not specified whether these other youths were corps members or not. We found that the proportion of youths who thought that their level of understanding was either "much above" or "above" average increased 19 percent over the course of the summer.

Because we found in 1971 that the increase in perceived understanding was considerably higher than the increase in objectively measured knowledge we desired better measures of subjectively ap-

praised knowledge in 1972. We were particularly interested in examining perceptions of knowledge about a wide variety of subjects; it was felt that this information would help us assess learning in a way which would not be bound by the limited topic coverage of our objective knowledge tests. The subjective approach would have the added benefit of helping us check the validity of our objective tests. For these reasons, we used the same procedure followed in the 1971 evaluation but we included ten (rather than one) topics for appraisal. Responses for each topic will be considered shortly. 1

The items included in the instrument and the percent of youths in each response category during the first and the last weeks of the program are shown in Table H-1 of Appendix H.

The responses in Table 6-1 are shown in relation to two empirically-defined perceived-knowledge measures. The two measures--Perceived Resource Knowledge and Perceived Understanding of Environmental Planning and Management--were developed by computing inter-item correlations between all responses. This approach was taken to combine items which were both logically and statistically similar into an overall measure which could be used in later analyses. See Table H-2 of Appendix H for the results of these correlation analyses.

In Table 6-I the "above average" and "much above average" categories have been combined into a single "above average" category. Both perceived-knowledge measures show that by the end of the program 19 percent more of the corps members felt their level of knowledge was above average. On both scales there was an increase in perceived understanding for each item. Increases were most pronounced for "understanding natural resource planning and management" (29 percent in 1972 compared with 19 percent in 1971). With the sole exception of "urban planning and management" there was always a decline in the percent of corps members who rated their understanding as "average" or "below average." It should be observed, however, that on no subject did more than three-fifths of the youths appraise their understanding as "above average" at

¹See page 185 in Appendix A for a list of the subjects appraised.

Table 6-1

Item Analysis of Percentage Change in Two Subjective Knowledge Scales¹

Scale I: Perceived Understanding of Natural Resources

Change in Percentage of Corps Members Indicating a Level of Understanding2 Above Below Topics Average Average <u>Average</u> 19 (41)³ 1. Soil resources -9(52)-10(7)2. Water resources 19 (49) -13(46)-6(5)3. Plant resources 26 (55) -15(39)-11(6)4. Animal resources 14 (58) -10(37)-4(5)5. Relationships between above 19 (52) -11 (40) -8(8)resources plus human resources Mean Change -11 - 8 19

Scale II: Perceived Understanding of Environmental Planning and Management 1

		Change in Percentage of Corps Members Indicating a Level of Understanding 2		
	Topics	Above Average	Average	Below Average
1.	Natural resource planning and management	29 (52) ³	-10 (39)	-19 (9)
2.	Urban planning and management	9 (22)	10 (50)	-19 (28)
3.	Applications of principles of ecology to natural environments	21 (57)	-12 (35)	- 9 (8)
4.	Applications of principles of ecology to home environments	16 (57)	-11 (37)	- 5 (6)
	Mean Change	19	- 6	-13

Based on data in Table H-l

²Changes were computed by subtracting first week responses from final week responses of those corps members who indicated a given level of understanding. The average number of respondents for first and last weeks were 3025 and 2975 respectively.

³Values in parentheses designate percentage of youths indicating a specific level of understanding on the <u>final</u> week questionnaire.

This item includes topic 7:55 (see Appendix A) which was not included in Scale I because of its relatively low intercorrelation with the other five topics.

the end of the program. Whether or not these increases in perceived understanding are also accompanied by increases in objectively appraised knowledge is the subject of the last section of this chapter.

OBJECTIVE MEASURES OF KNOWLEDGE. Because perceived levels of understanding do not necessarily reflect actual levels of understanding we also developed instruments to measure knowledge more objectively. These measures covered different subjects and were quite similar to classroom tests; their focus was broad, covering basic concepts and principles of ecology, resource planning and management, and relationships between plant, animal, and human ecology. To a large degree, the topics covered in the tests were taken from the departmental YCC administrative handbooks. permits the sponsoring agencies to have a measure of how well their environmental education objectives were accomplished on these important topics. Following this approach, a total of 14 objective knowledge tests which each included from 2 to 15 questions were developed and administered during both the first and the final weeks of the program.

The agencies' broad view of the environmental education potential of the YCC program is certainly appropriate, but it did increase the difficulty of our evaluation for several reasons, two of which should be mentioned. First, it made the task of instrument design more complex because of the need to write questions about more topics. Second and more relevant to the following interpretation of results, it caused us to include relatively short tests (i.e., tests including only two to five questions) in some instances simply to avoid confronting the corps members with an excessively long questionnaire. In fact, six of the fourteen tests were made up of four or fewer items, a problem which will be elaborated in more detail when we consider the mean or average response to all items in a test. Despite these problems we are glad we were asked to evaluate in breadth rather than focus on one or two subject areas.

Several different types of questions were included in the tests. Some questions used a multiple choice format, others were true or false, and a few required matching pictures with identifying words. A characteristic common to each type of question was

that the answers could be scored either as correct or incorrect so that a percentage of correct responses could be computed for each test.

Because of our desire to examine certain areas in detail there is some overlap among the 76 separate items on the 14 tests. For example, the timber management items are a subset of the more inclusive resource management set. For simplicity in examining relationships between knowledge and other variables we have summed the responses to 56 of the 76 separate items; this reduction was achieved by dropping measures which were less central to the educational objectives of the program (agency functions, urban and human ecology) and tests which were short and therefore less adequate (cultural resources, natural phenomena). This set of 56 items will henceforth be referred to as the "core" questions.

Responses to Individual Questions. Because the objective knowledge scales included questions which could be graded as right or wrong, it was easy to compute mean scores which reflected the average number of correct responses during the first and the last weeks of the program. These mean scores were also easy to convert to average percent-correct scores from which percentage change in correct scores for each scale or test could be determined. Before these overall scores are considered we will look briefly at the responses to the individual topics within each scale.

Individual items making up the 14 knowledge tests are shown in Appendix Tables H-3 to H-16. The breadth of topic areas covered is indicated by these items. The names given the tests reflect the content of the items included. The appendix tables show, item by item, the average percentage of youths giving correct and incorrect responses during the first and final weeks and the percentage changes in correct responses between the two testing periods. Scores are based only on the responses of youths who selected one of the choices offered. In some instances the tables show abbreviated wording of the items or questions. Also, the format of the question is not always indicated in these tables. For these reasons, the question numbers are included in the tables in parentheses for the reader's easy reference to the questionnaire in Appendix A.

The measures are made up of different types of questions. The

illustrated Food Chain test (Table H-5) was made up solely of questions requiring the youths to identify illustrated "links" in the chain (see page of Appendix A). The Analogous Plant and Animal Ecology test (Table H-7) and the Analogous Human Ecology test (Table H-11) both contain identical principles of ecology, but different examples of each concept were given in the lists which the youths were of Appendix A). Some tests, such as Soil asked to match (see page and Water Resources (Table H-4), are more specific in content than others, such as General Systems (Table H-9). Finally, tests ranged in difficulty from those on which fewer than half of the responses were correct (Agency Function) to those with a high percentage of correct responses (Soil and Water); this allowed youths at different knowledge levels to have some questions which were easy and others which were difficult.

Our emphasis will be on the more statistically reliable indexes built from several items on the same topic. Responses to the individual questions are shown in Appendix H. However, three comments about the test questions are appropriate. First, although several of the questions could have been worded more clearly (hindsight is frequently 20-20) the 1972 tests are a great improvement over those used in our 1971 evaluation.

Second, the distribution of correct responses on the first week's measurement appears somewhat flat, with a median of about 66 percent correct as shown in Table 6-2. The distribution suggests that, overall, our tests were moderately difficult, but they included both easy and difficult questions. Consequently our change scores must be viewed within the context that the tests were not easy. Easier tests would have elevated the entering scores, but would not have permitted as much room for change.

Third, there was a tendency for objectively appraised know-ledge to increase. The changes in the percentage correct responses of all 76 items and the 56 "core" items are summarized in Table 6-3. For only 5 questions was there a slight decrease and 65 of the items showed increases ragning from 1 to 24 percent. The overall average is a 6 percent increase. The increases in correct responses to the individual questions indicate small or moderate improvements in knowledge. For some questions, especially those relating to timber management (see Table H-15), the changes are larger. Given the

TABLE 6-2

Distribution of Average Percentage Correct
Scores on 76 Questions During the First Week

- Average Percent Correct		Number of Items	at This Level
		All Items	"Core"
Difficult	0 - 35	· 11	6
	36 - 40	3	2
	41 - 45	3	-
	46 - 50	4	3
	51 - 55	7	5
	56 - 60	4	3
	61 - 65	5	5
	66 - 70	10	9
	71 - 75	8	7
	76 - 80	6	3
	81 - 85	4	4
	86 - 90	8	6
Easy	+90	3	3
		76	5 6

TABLE 6-3

Distribution of Items by Amount of Change
Between First and Final Weeks

Change in Correct Responses		Number of Items	
		All Items	"Core"
Negative	(-1 to -5%)	5	4
No Change	0	4	4
Small Gain	(1 to 5%)	33	23
Medium Small	(6 to 10%)	20	13
Medium Large	(11 to 15%)	8	6
Large Gain	(16 to 25%)	6	6
		76	56

moderate difficulty of the tests we tentatively conclude that the environmental learning programs of the 1972 YCC were reasonably successful. The conclusion must be made with some reservation simply because a 6 percent overall increase is not very large, especially when the amount of room for improvement is considered. The following discussion of the average responses to each scale will consider this relationship between actual and possible change more explicitly.

Average Responses to the Tests. For several reasons it is instructive to examine mean responses to all items in a test. First, it aids comprehension by reducing the amount of data which needs to be remembered. Second, both for statistical and theoretical reasons, several dimensions of a concept, such as natural succession, give a more reliable measure of knowledge of the concept than does any single measure. Third, change scores can be more meaningfully considered. And fourth, the reduction of the data into groups of related questions facilitates establishing relationships between one variable and another, such as between changes in perceived understanding and changes in objectively measured knowledge or between changes in knowledge and selected corps member or camp characteristics.

Table 6-4 shows the distribution of respondents within score classes on each of the 14 objective knowledge scales. Figures are presented showing the results of the first and final tests and changes between these two distributions. Also shown are the mean scores for each test and changes in mean scores between the first and final weeks. The mean scores show the average number of questions answered correctly in each test. In subsequent analyses, these mean scores are converted to a percentage of highest possible scores which puts whem all on the basis of 100 percent and thereby facilitates comparison between tests.

The score range for each test represents the minimum and maximum possible score. Zero is the score that would be given if none of the questions were answered correctly and the top number (which is always equal to the total number of questions in the test) reflects the highest possible score. The score classes reduce the total number of scores into a more comprehensible number of data points. An attempt was made to divide the distribution of scores

Table 6-4 (Sheet 1 of 3)

Raw Score on 14 Objective Knowledge Scales (mean scores and percent distributions of scores for corps members completing both questionnaires)

				Percentage Respondents in Each Score Class			
Scale 1	Score <u>Range</u> 2	Score <u>Class³</u>	First <u>Week</u>	Final Week	Change in <u>Percent</u>		
1. Animal Ecology	0-4 Mean ⁴	0 1-2 3 4	4 3 2 29 35 2.8	4 29 29 38 2.9	0 -3 0 3 0.1		
2. Soil and Water Resources	0-12 Mean	0-2 3-5 6-8 9-11	4 13 28 46 9 8.3	3 10 21 50 16 8.9	-1 -3 -7 4 7 0.6		
3. Illustrated Food Chain	0-4 Mean	0 1 2-3 4	18 16 17 48 2.5	12 12 12 64 2.9	-6 -4 -5 16 0:4		
4. General Relationships	0-12 Mean	0-2 3-5 6-9 10-11 12	6 18 46 27 3 7.6	6 14 39 31 10 8.1	0 -4 -7 4 7 0.5		

¹For questions or items making up each scale see Tables H-3 to H-16 in Appendix H.

²The score range reflects the total number of items or question in each scale. For each question a correct answer was coded as "1" and an incorrect answer was coded as "0". So if a youth answered all questions incorrectly his score for the scale is "0".

³The percentages of corps members getting each of the possible scores were combined into the groups shown for easier interpretation. The final class in each scale represents a perfect response unless the percentage responding perfectly in both tests was "O" or the scale is composed of matching questions in which the last correct response can be obtained by a process of elimination.

⁴The mean score is the average number of correct responses for all respondents.

Table 6-4 (Sheet 2 of 3)

Raw Score on 14 Objective Knowledge Scales (mean scores and percent distributions of scores for corps members completing both questionnaires)

Percentage Respondents in Each Score Class Score₂ Score First Final Change in Scale¹ Class3 Range ~ Week Week Percent 5. Analogous Plant 0-6 0-2 28 26 -2 and Animal 3-4 37 36 -1 5-6 35 38 3 Ecology Mean 3.8 3.8 0 Cultural Resources 0-2 0 21 -3 18 1 46 42 -4 2 33 7 40 1.1 0.2 Mean 1.2 General Systems 0 - 30 13 9 -4 1-2 69 -5 64 3 18 27 9 Mean 1.6 1.8 0.1 8. Natural Phenomena 0 - 30 11 8 -3 1-2 72 66 -6 17 3 26 9 Mean 1.6 1.8 0.2 Analogous Human 0-6 0-2 38 34 -4 3-4 35 -4 **Ecology** 31 5-6 27 35 8 Mean 3.2 3.5 0.3 10. Natural Succession 0 - 40-1 33 27 -6 2-3 55 54 -1 12 19 7 Mean 2.1 2.3 0.2 11. Plant Ecology 0-8 0-2 13 10 -3 3-5 64 53 -11 6-7 21 33 12 8 2 4 2 Mean 4.3 4.8 0.5

Footnotes: See sheet 1 of this table.

Table 6-4 (Sheet 3 of 3)

Raw Score on 14 Objective Knowledge Scales (mean scores and percent distributions of scores for corps members completing both questionnaires)

				Percentage Respondents in Each Score Class			
Scale 1	Score Range ²	Score <u>Class</u> 3	First <u>Week</u>	Final <u>Week</u>	Change in Percent		
12. Resource Management	0-13 Mean	0-3 4-6 7-9 10-11 12-13	11 42 40 7 0 6.2	8 29 43 18 2 7.2	-3 -13 3 11 2		
13. Timber Management	0-6 Mean	0-2 3-4 5 6	47 40 10 3 2.7	32 39 16 13 3.4	-15 -1 6 10 0.7		
14. Agency Function	0-9 Mean	0-2 3-4 5-7 8-9	27 41 28 4 3.8	22 36 36 6 4.1	-5 -5 8 2 0.3		

Footnotes: See sheet 1 of this table.

in such a way that a statistically meaningful number of responses would be in each class while at the same time avoiding the lumping of large numbers of respondents in any one class. This allows the source and direction of shifts to be more meaningfully displayed and interpreted. For example: if the shift is mainly from middle to higher scores, leaving the percentage in the lowest ranges unchanged, this might indicate that the level of instruction was going over the heads of the less knowledgeable. However, if there was an across-the-board shift from lower to higher scores this might indicate a general, more desirable, increase in knowledge. Although we have grouped responses on Table 6-4 we have shown the top (or perfect) score separately; this is because the possible amount of shift or change in correct scores is strongly influenced by the starting or first week score. If 90 percent of the respondents answer correctly the first time, only 10 percent could show any improvement. This would limit the test's sensitivity to It can be observed that the largest positive shifts generally occurred on scales for which less than 30 percent of the youths had a perfect score during the first week.

No test displays a shift toward a lower score class. This reveals an increase in knowledge even for the test on which change was too small to be reflected in the mean score. Had the corps members been marking answers randomly, we would expect positive as well as negative shifts in at least some of the lower score classes.

Table 6-5 is a summary table which shows all mean scores converted to a percentage of the highest possible score (or the mean scores in Table 6-4 divided by the maximum possible score). Also shown are change scores expressed as a percent of possible change (or the change score divided by 100 minus the percentage correct on the first week test). As mentioned previously, the latitude for measuring increase in knowledge is reduced by the proportion having a perfect entering score. Since our tests do not measure all knowledge on a given topic it is reasonable to expect that those who have perfect entry scores continue to learn—even though this learning is beyond the range of our instruments. Likewise, we can measure gains for those with close to perfect entry scores only up to the sensitivity limit of our test. Learning beyond this limit goes unmeasured. This means that analysis groups with high

Table 6-5

Percentage Correct Scores on 14 Objective Knowledge Scales

				_	rcentage sponse2	Change as
Scale	1	Score <u>Range</u>	First <u>Week</u>	Final Week_	Change in Percent Correct	Percent of Possible Change ³
1. A	Animal Ecology	0-4	70	73	3	10
	Soil and Water Resources	0-12	69	74	5	16
3.]	Illustrated Food Chain	0-4	63	73	10	27
4. 0	General Relationships	0-12	63	68	5	14
	Analogous Plant and Animal Ecology	0-6	63	63	0	0
6. 0	Cultural Resources	0-2	55	60	5	11
7. G	General Systems	0-3	53	60	7	15
8. N	Natural Phenomena	0-3	53	60	7	15
	Analogous Human Ecology	0-6	53	58	5	11
10. N	Natural Succession	0-4	53	58	5	11
11. F	Plant Ecology	8-0	54	60	6	13
12. R	Resource Management	0-13	48	56	8	15
13. 1	Timber Management	0-6	45	57	12	22
14. A	Igency Functions	0-9	42	46	4	7

¹For questions or items making up each scale see Tables H-3 to H-16 in Appendix H.

Average percentage correct response was computed by dividing the mean score (see Table 6-2) by the highest possible score on the scale.

³Change as a percent of possible change was computed by dividing the change in percentage correct score by the possible change in percentage correct score (or by the percentage correct the first week subtracted from 100).

initial scores are likely to have some of their gains hidden. For this reason, the change in knowledge expressed as a percentage of possible change may be a truer reflection of learning than are change scores unadjusted for entering scores.

Because of the different number of questions in the knowledge scales some caution is called for when making direct comparisons between the tests. Also, it must be remembered that it is easier to get a higher score on a test which requires matching two lists because of the advantage gained through the process of elimination.

The Illustrated Food Chain scale, the only one comprised solely of illustrated questions, ranked third on entering scores and first in amount of change. The Timber Management test, although next to last on first week scores, ranked a close second in terms of increase. The Agency Function and the Analogous Plant and Animal Ecology scales showed the least increase. The other tests fell in between, obtaining from 10 to 15 percent of the possible increase. It is interesting to note that, while there was no increase on the Analogous Plant and Animal Ecology test, 11 percent of the possible increase was achieved on the Analogous Human Ecology test which had identical questions or concepts (but different examples of the applications of these concepts). This suggests that the corps members were able to generalize their knowledge to new areas.

Twelve of the 14 tests showed gains of 10 or more percent. Whether this constitutes a successful achievement for the environmental education program is a difficult question which can only be given a partial answer at this point. Certainly, we have excellent empirical support to say that there were increases in knowledge. We also know we can measure only a small part of all that was learned. "But," we may ask ourselves, "is what we measured representative of all that was learned in these and other domains of environmental understanding?" Before giving a more definitive answer to the question of the degree to which the 1972 YCC program was successful, we must examine the validity of the measures we employed.

<u>Validity and Reliability of Tests</u>. As stressed above, our tests cannot measure all that corps members learned about the environment. Nevertheless, we have reasons to believe that the mea-

sures we have used do give meaningful and useful results. Several findings support this confidence in the results of our 1972 evaluation.

First, one would expect that entering knowledge levels would be higher for corps members who had completed twelve grades of schooling than for those who had completed only eight or nine grades. If our tests are valid they should show this relationship. When we examine first week results we find exactly this—a stepwise relationship with scores increasing with each grade completed. Those few (31 cases) who had completed only eight grades scored considerably below the others. This also supports the validity of our measure since the minimum age for enrolling in the YCC was 15 and since 15-year—olds would normally be in grades nine to ten. Thus, those who have completed only eight grades are likely to be behind the normal grade level and would therefore be expected to have much lower scores. (See Figure 6-1.)

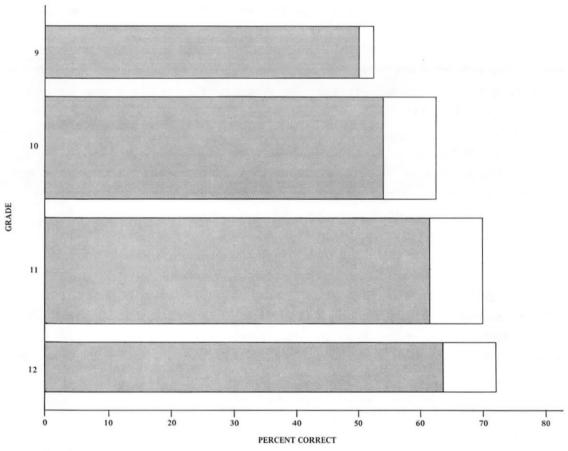
Another revealing statistic is shown in Figure 6-1. This is the fact that the gain in knowledge which occurred between the first and final weeks was roughly equivalent to that associated with another year of schooling: tenth-graders' exit scores were higher than eleventh-graders' entry scores, etc. This is an important finding since it allows us to judge the significance of the amount of learning reported earlier. It appears that the tested knowledge gain resulting from an eight-week learning experience in the YCC is roughly equivalent to 12 months of less intensive environmental learning occurring in typical school and home settings.

A second test of validity is based on the assumption that those who had had a course in natural science should have higher entry scores than those who had not. Figure 6-2 shows that this expectation was also borne out. The reasons for this difference being so large are complex and beyond the scope of our data. We do not know how much experience is included in having had one or more courses in the natural sciences, conservation, or outdoor education. Furthermore, it is impossible to assess the selection factors which may be related to having had such previous experience.

Figure 6-1

Objective Knowledge Scores on Core Items

During First and Final Weeks of Camp by Grade Completed



Note: the thickness of bar is proportional to the number of cases.

First Week

A third check on the validity of our environmental knowledge tests is based on the assumption that there is a relationship between how much a person thinks he knows and what he actually knows. We had expected this relationship to be loose since people are known to have somewhat distorted self-perceptions. We found, however, that there is a clear positive relationship. On our first week measure those who rated their knowledge as above average had higher objective scores than those who rated themselves below average (see Figure 6-3). The subjective judgments were made before the objective tests were taken, so a good or poor performance on the objective questions would not have influenced the subjective ratings.

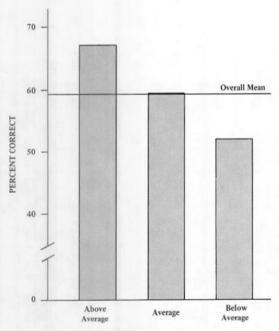
The above three findings give us confidence that the scales are meaningful measures of environmental knowledge. Although these 14 scales do not permit us to measure all environmental knowledge or absolute levels of knowledge, they can be used to identify types of camps, aspects of the program, and corps member characteristics which are associated with large or small gains in knowledge. It should be kept in mind that although a relationship may be observed between knowledge gain and some other variable, the relationship is not necessarily one of cause and effect. In those instances when we do suggest causal influence, our basis for this imputation is often the observations we have made during field visits rather than an analysis of our test data.

A final check on our methodology should be considered before we discuss the relationships between objective knowledge and other variables. Following our 1971 evaluation we received comments about the possibility that the youths "goofed off" or did not take the questionnaire seriously, especially during the final week. This was a matter over which we had little control except through trying to make the tests interesting and enlisting the help of those administering the test to encourage the corps members in giving an honest effort.

For several reasons, we do not believe the "goofing off" has severely affected our overall results. During our site visits and our conversations with program administrators and camp supervisors we attempted to gain a feeling of the extent to which this was a

Figure 6-3

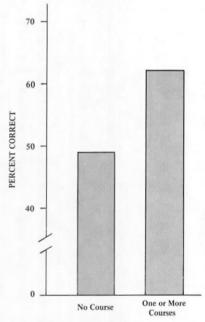
Objective Knowledge Scores by Three Levels of Subjective Understanding During First Week



SUBJECTIVE UNDERSTANDING

Figure 6-2

Entering Objective Knowledge Scores by Previous Natural Science Course



PREVIOUS NATURAL SCIENCE COURSE

problem. Our judgment is that it was much more of a problem in some camps than in others and that it was a serious problem in very More important, we performed an empirical test to gauge the extent of this problem. To do this we selected the six questions to which over 87 percent of the youths had responded correctly during the first week. Our assumption was that if "goofing off" did occur during the final week it would affect all questions, including the easy ones. We built an index of the number of these easy questions answered correctly in the first week and a similar index for the final week questions. We compared the scores each corps member made on these two measures. Those who showed a decline of more than two correct responses between the two tests were suspected of goofing off. Only 2 percent of the corps members fell into this suspect group. The number of such cases was so small that even if all of those who were suspected of goofing off had been doing so our results would hardly have been affected. Although this procedure is not conclusive it has increased our confidence in the data. Future evaluations should include a separate scale of easy questions for this purpose.

RELATIONSHIPS BETWEEN SUBJECTIVE AND OBJECTIVE MEASURES OF ENVIRONMENTAL KNOWLEDGE

Our subjective measures of knowledge showed increases averaging 9 percent. Our objective measures showed a 6 percent increase. Does this mean that the corps members overestimated the amount they learned? Did our objective tests capture only two-thirds of the learning that occurred? Or is there some other explanation?

Certainly there is ample evidence that corps members felt their learning experience was valuable. Seventy percent mentioned environmental learning as being an especially worthwhile feature of the program. They gave the staff very good ratings for their ability to help them learn about the environment, and were well satisfied with the program in general. There can be no doubt that the overwhelming majority of corps members felt the YCC provided them with

lEarlier we reported a 19 percent increase in "much above average" and "above average" ratings. Including those corps members whose self-appraisals remained constant or declined produces an average increase of 9 percent.

a worthwhile learning experience. But did they in their enthusiasm for the program overestimate the gains they made?

We have previously stated that objective tests could measure only a fraction of the learning which occurred. The tests could not show any increase for those who had a perfect score to begin with nor could the tests measure learning on topics they did not cover. Obviously, more learning occurred than was measured by our tests. But does acknowledging that some learning was not measured mean that the tests were biased, or was that portion which was measured representative of all learning?

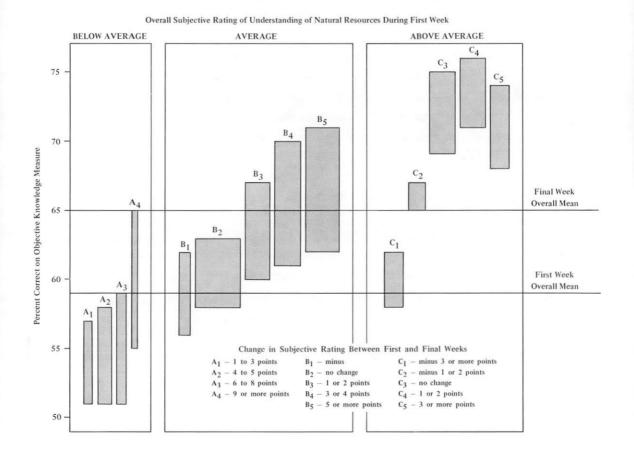
To test this possibility we have looked at the relationship between changes measured subjectively and changes measured objec-We did this by taking three slices from the distribution of subjective scores at the time of entry. The top slice was composed of those whose overall rating fell at the "above average" point on the distribution. The middle slice was made up of corps members whose overall rating was "average," and the bottom slice contained those with a "below average" overall rating. three slices included about 40 percent of all corps members. Within each slice we created subsets based on how they rated themselves in the final week. All told, 58 percent upgraded their self-assessments, 25 percent did not change, and 17 percent lowered their ratings. Movement up was almost universal within the bottom slice, but only about two-fifths of those at the top ranked themselves higher.

The percent of core items answered correctly in the first and final weeks was computed for each subset. All groups, including those who had lowered their self-assessments, showed an increase in objective scores. The general tendency was for those who had upgraded their ratings the most to show the largest gains on objective scores as well (see Appendix Tables H-17 and H-18).

However, the most interesting feature was that changes in subjective ratings were related to entry scores. Those who had originally rated themselves as average but who revised their self-assessment upward in the final week, had in fact achieved higher than average scores on the first week objective tests (see Figure 6-4). These tests were not graded in camp so there was no way for

Figure 6-4

Relationships Between Changes in Subjectively and Objectively Measured Environmental Understanding



picted in this figure and for the method used to obtain these data.

¹The bottom of each bar represents the percent correct during the first week and the top is the percent correct during the final week. The height of each bar shows the amount of objective knowledge gain. Width of each bar is proportional to the number of cases.

2See Appendix Table H-17 and the Addendum to Appendix H for the source of the data de-

a corps member to know how well he did, other than from his own sense of the test having been easy or difficult. However, this would not tell him how well he did with respect to others his age. It appears that changes in subjective scores reflect two types of learning: learning about the environment and learning about oneself. These relationships support the view that the objective tests were fairly representative. Objective and self-placements are correlated, and changes in self-placement are related to increases in objective scores.

Since the difference in amount between objectively and subjectively measured knowledge gain is not an indication of bias we feel it is worth examining other explanations. One of the features of the subjective measure is that it asks corps members to rate their understanding against the standard of "other people your age." Unfortunately, we do not know whom they were using as a comparison group. If they were comparing themselves with other corps members we would interpret the results differently than if they were comparing themselves with others who had not attended YCC camps.

We would normally assume that the average corps member learned at about the same rate as corps members in general. Therefore, if the comparison had been made with other corps members, relative ranking should not show any increase.

If both the first and final comparisons were made with respect to non-YCC young people, an increase does seem reasonable, but the level of increase does not. These young people were in many cases selected because of their interest in the environment. Yet on no measure was the average rating they gave themselves more than 68 percent of the highest possible rating.

A third possibility is that there are many shifts in the basis of comparison, with corps members initially comparing themselves with other corps members—and then comparing themselves with people outside of camp on the final measure.

Another puzzling finding seems to be relevant at this point. It is curious that the decline in pro-ecological attitudes (reported in Chapter 4) should occur at the same time when there is an increase in subjectively rated understanding. Since both are attitudinal measures the common factor of reference group shift may be contributing to both findings.

It seems reasonable to assume that at the start of camp their fellow corps members were a most salient group. Corps members arrived in camps not knowing exactly what to expect, but likely had high expectations for the program and their new companions. The first week tests were administered at a time when there was probably a strong desire for affiliation with others in camp. With their fellow corps members in mind, many youths rated their own understanding as average and expressed strongly pro-environmental attitudes.

The final tests were given when the camp's activities were winding down. In residential camps corps members were packing to It was a time when psychological adjustments were being made for the coming separation from camp friends and for re-entering the old friendship group at school. It is common to find reorientations in reference groups occurring at times like this (for example, college seniors turn from campus values to those of the larger society as graduation approaches). Thus, some corps members who had rated themselves average when comparing themselves with their camp peers increased their relative standing because at this time they were thinking of friends at home. Most of them knew that they had increased their knowledge and no purpose would have been served by denying this change. However, this re-orientation could have the opposite effect on attitudes. As we saw in Figure 4-1, they perceived most American their age as being less environmentally Their desires to reaffiliate themselves with non-YCC friends would produce a tempering of the views they had expressed when seeking to affiliate themselves with their fellow corps members.

In brief, being oriented toward fellow corps members at the beginning of the program and toward persons outside the camp in the final week would have opposite effects for reports of understanding and of attitudes. Knowledge, being compared with a higher standard at the start and with a lower standard at the end, will show an increase. Attitudes, however, tend to have a chameleon quality—being colored by one's affiliative needs and by a desire to hold values like those of positive reference groups. The shift of reference from a high to a low group would depress pro-environmental attitudes.

It should be emphasized that this shift in reference group is only one of several factors contributing to these changes. As we have seen there is also a direct relationship between increases in subjectively measured knowledge and objective test scores.

SUMMARY

Two approaches to measuring environmental understanding were followed. One approach asked the corps members to rate their understanding of selected subjects. The other employed objective tests on 14 topics drawn from the statement of environmental education objectives published by the administering agencies.

We have documented increases in environmental knowledge by administering these tests during the first and final weeks. Our conclusion is that the environmental education objectives were being met and that the 1972 program accomplished more in this respect than did the 1971 program. Nevertheless, there is still considerable room for improvement in future years.

Chapter 7

RELATIONSHIPS BETWEEN ENVIRONMENTAL LEARNING AND SELECTED CORPS MEMBER AND CAMP CHARACTERISTICS

PROCEDURE

Increases in subjectively and objectively appraised environmental knowledge were reported in Chapter 6. In this chapter, we will consider selected characteristics of the corps members and the camps to identify the conditions under which corps members learned the most and those which were associated with the least increase in environmental knowledge.

Three types of characteristics will be analyzed to explain where learning occurred: 1) characteristics of the corps members, 2) characteristics of the camps, and 3) evaluations made of the program or the camp by corps members and by camp directors.

The 56 questions that we believe represent the "core" of the objective knowledge tests will be presented as a single score. Following the same procedure used in Chapter 6 knowledge will be measured by the percentage of responses which were correct during the first and the last weeks, by changes in the percentage of correct responses, and by changes in correct response expressed as a percent of total possible correct responses.

As mentioned in Chapter 6, we feel that "Percent of Possible Gain" may be a better indicator of learning than is the absolute increase in percentage of correct responses. Our reasoning is that each additional increase in environmental knowledge is more diffi-

cult to achieve than was the previous unit of increase. This is because one has to answer more difficult questions correctly and because the opportunities to improve diminish as one approaches the maximum score. The absolute gain or loss figures are also shown in all tables. The patterns of response across the selected characteristics are usually quite similar for the two measures. 1

RESPONSES BY CORPS MEMBER CHARACTERISTICS

Responses to the core questions according to eight background characteristics are shown in Table 7-1. Relatively large gains were made by girls, whites, older corps members, those without previous camping experience, and those with more education. The smallest gains were made by those who had completed only the eighth grade, American Indians, blacks, and corps members whose family income was under \$5000. The general tendency was for small gains to be made by those who correctly answered fewer than half of the questions on the first test. However, corps members with Spanish surnames and those with no previous camping experience were exceptions, making large gains despite low first week scores. At the other extreme, boys did relatively well on the first test but gained less than girls. Otherwise there was little difference between categories of corps members whose first week scores were over 50 percent.

The findings for American Indians, blacks, and corps members with low family incomes are similar to those in our 1971 report. In both years youths from such backgrounds had low initial scores and showed only small increases by the final week. One may speculate that the environmental topics covered by our tests, and probably by the educational program of the Youth Conservation Corps, were less relevant to the interests and needs of youths in these minority subcultures. Had different topics been covered the results might have been quite different. It may also be that entry scores below 50 percent reveal a lack of understanding of fundamentals. Possibly their previous education had not covered those

¹If the reader desires information on responses to a particular scale by the selected characteristics evaluated he should refer to Appendix Tables J-1 to J-20. Those tables are the source of the information discussed in this chapter.

Table 7-1

Percentage Correct Response to 56 Core Objective Knowledge Questions by Selected Corps Member Characteristics 1

Corps Members Characteristics	First Week	Final Week	Gain or <u>Loss</u>	Percent of Possible Gain	Average N
<u>Sex</u>					
Girls Boys	59 60	67 65	8 5	19 12	1215 1629
Race and Ethnic Background					
American Indian Black Spanish Surname White	44 44 49 62	46 47 56 68	2 3 7 6	4 6 13 17	152 178 88 2322
Place of Residence					
Cities over 100,000 and their suburbs Small city or town Rural area	59 60 59	65 66 65	6 6 6	16 15 15	843 1266 897
Family Income					
Under \$5,000 \$5,000-9,999 \$10,000-14,999 \$15,000-19,999 \$20,000 and over	48 56 62 62 66	51 63 68 69 72	3 7 6 7 6	7 15 16 17 17	226 685 839 549 304
Age					
15 16 17 18	55 59 64 66	60 65 71 72	5 6 7 6	10 16 18 18	798 1014 769 249
Grade in School					
8 9 10 11 12	34 50 59 63 67	36 55 65 70 74	2 5 6 7 7	3 9 15 18 20	31 467 943 947 431
Previous Natural Science Courses	<u>s</u>				
Yes No	62 49	68 54	6 5	17 9	2369 423
Previous Camping Experience					
Yes No	60 48	65 56	5 8	14 16	2620 236

 $^{^{\}mathbf{1}}$ See Tables J-1 to J-8 in Appendix J for source of data in this table.

basic facts and concepts which must be grasped before additional learning can occur. If this essential preparation was assumed and not covered by the YCC educational program, or if it takes a relatively long time to assimilate this knowledge, we should not expect large gains in tested knowledge.

Perhaps, too, low initial scores reflect a lack of the skills and experience required to do well on written tests of the type we The problem might not be with environmental learning but rather with our means of measuring it. We included two illustrated questions which made fewer demands on verbal skills than did other questions; one of these is part of the Soil and Water Resources measure, but the other appears separately as the Illustrated Food Chain (see Appendix Tables J-2, J-4, and J-5). can Indians, low income youths, and 15-year-olds got high scores on this test, but so did most other corps members. At the same time, blacks and eighth-graders did poorly on the Illustrated Food Chain The illustrated questions were not entirely nonverbal (terms had to be matched with the pictures), and one staff member who read "precipitation" as "perspiration" demonstrated the reading traps one could fall into. Therefore, we cannot rule out the possibility that our results may be influenced by verbal and reading skills and by test-taking experience.

It is interesting to note that size of home community is unrelated to entering knowledge levels or gains. It might have been assumed that youths from urban backgrounds would have had less exposure to natural environments and consequently would have less environmental knowledge. This does not appear to be the case. The tests covered material similar to that presented in school, especially in natural science courses. The two variables of grade level and natural science background showed stronger relationships to entering knowledge levels than did variables describing exposure to natural environments. (See panels 6 and 7 of Table 7-1.)

RESPONSES BY SELECTED CAMP CHARACTERISTICS

Responses to the core questions by seven characteristics of camps are shown in Table 7-2. As indicated above, girls showed greater increases in knowledge than boys. Some of the sources of these increases are shown in the first panel of Table 7-2. Girls in co-ed camps showed larger gains than did girls in non-co-ed camps, who in turn showed more increase than boys in either type of camp. We cannot explain why boys in the co-ed camps showed the least improvement. It might be that girls display more enthusiasm in the area of environmental education and that the camp staff unconsciously devote more of their attention to them, but this is only speculation.

There was little difference in learning between residential and non-residential camps, with the latter showing a slightly higher increase. It may be that the additional administrative responsibilities of residential programs drain attention and resources away from environmental education efforts. However, the difference is hardly sufficient to justify program policies favoring non-residential camps. It was suggested in Chapter 4 that attitude formation is mediated by social relationships and that residential camps should therefore have greater potential to build environmentally-supportive attitudes and life-styles. Additional study is needed before we can draw more clear cut conclusions about the relative strengths of these two modes of operation.

The size of a camp apparently did not influence learning. Whether camps with more than 50 corps members would show different responses was not determined. We did find during our site visits, however, that there was strong sentiment on the part of camp directors and other camp staff that something would be lost if camp sizes were increased much above 50 corps members.

Our evaluation of length of camp session showed interesting results similar to those found in our 1971 evaluation. Youths in four-week Forest Service camps showed greater increases in know-ledge than did corps members in eight-week camps. However, aside from this exception, knowledge gain tended to increase with length of session, and nine-week camps scored higher than the four-week Forest Service camps. It could be that the youths selected for

Table 7-2 (Sheet 1 of 2)

Percentage Correct Response to 56 Core Objective Knowledge Questions by Selected Camp Characteristics 1

Camp Characteristics	First <u>W</u> cek	Final Week	Gain or Loss	Percent of Possible <u>Gain</u>	Average
Sex Composition					
Coed, girls Coed, boys Girls only Boys only	59 60 59 59	67 64 66 65	8 4 7 6	20 11 16 14	1061 1226 148 403
Type of Camp					
Residential Non-residential	59 58	65 66	6 8	15 18	2327 529
Size of Camp					
6-14 15-20 21-29 30-39 40-50	64 58 59 60 59	69 63 66 66 65	5 7 6 6	15 12 17 15 15	64 375 572 887 958
Duration of Camp Session					
Forest Service					
4 weeks 5-7 weeks 8 weeks 9 or more weeks	63 54 59 58	71 60 67 71	8 6 8 13	21 13 19 30	738 124 784 41
Interior Agencies					
4 weeks 8 weeks 9 or more weeks	61 57 51	59 61 60	- 2 4 9	10 18	21 1104 44
Agency					
Bureau of Indian Affairs Bureau of Land Management National Park Service Bureau of Sport Fisheries and	43 58 58	45 66 61	2 8 3	3 19 7	145 114 356
Wildlife Bureau of Reclamation Forest Service	60 60 60	64 67 68	4 7 8	9 16 20	384 170 1687

 $^{^{\}mathrm{l}}$ See Tables J-9 to J-15 in Appendix J for source of data in this table.

Table 7-2 (Sheet 2 of 2)

Percentage Correct Response to 56 Core Objective Knowledge Questions by Selected Camp Characteristics 1

Camp Characteristics	First <u>Week</u>	Final Week	Gain or <u>Loss</u>	Percent of Possible <u>Gain</u>	Average <u>N</u>
Participation-Interpersonal Relations Score					
Low (1)	57	61	4	10	336
(2)	58	64	6	16	279
(3)	59	65	6	14	1586
(4)	63	71	8	22	363
High(5)	60	67	7	17	292
Manual Use and Training (Interior Agencies)					
Did not receive manual	50	53	3	6	69
Received manual, did not use	58	62	4	10	152
Used manual, without training	57	60	3	6	666
Used manual, had training	58	64	6	15	282

 $^{^{\}scriptsize 1}\textsc{See}$ Tables J-9 to J-15 in Appendix J for source of data in this table.

four-week Forest Service camps were better prepared to learn as indicated by their considerably higher first week scores. The policy implications of this finding suggest that additional study should be made of the influence of session length on learning.

There were definitely lower levels of learning and lower first week scores measured for camps operated by the Bureau of Indian Affairs than for any other agency. If anything, BIA camps did less well than did American Indians as a group. These findings are consistent with those for race discussed above and support the need for additional study, especially since the BIA camps also showed less successful programs in the other areas we evaluated.

National Park Service and Bureau of Sport Fisheries and Wildlife camps also indicated a lower pattern of increase than did the
remaining three agencies shown. It could be that the environmental
knowledge topics included in our questionnaire biased the responses
in favor of the Forest Service, Bureau of Land Management, and Bureau of Reclamation camps. Not surprisingly, youths in Forect Service camps did much better on our Timber Management scale than did
youths in camps operated by other agencies (see Appendix Table
J-13). But the overall pattern shown by agency in Table 7-2 seems
to hold across all nine scales shown in Table J-13, and many of
these scales are not biased in subject content toward the three
agencies showing the highest increases in learning.

Patterns of response across our participation—interpersonal relations index indicate a trend toward increased learning in camps where the corps members rated the camp staffs as open, friendly, and receptive to corps members' suggestions. The camps scoring medium high (or 4) on this index showed the greatest learning. It may be that a friendly but somewhat authoritative approach serves well when transmitting knowledge, but that transmitting values and attitudes requires a higher degree of participation and social support. These camps also were comprised of corps members with the highest first week score, so we cannot be sure of the nature of these interactions between entering knowledge, social climate, and learning.

Because we have focused on environmental learning in our 1972 evaluation, we attempted to see if different approaches to environ-

mental education would influence learning. Specifically, did learning increase in camps where:

- the camp environmental education specialists attended special pre-camp training sessions?
- 2) the available environmental education training manuals were or were not used?
- 3) a list of the concepts and subjects used in our questionnaires was received?

An outline of the procedures we used will be followed by a presentation of the evaluation results.

In conjunction with Drs. Paul Yambert and Gerald Gaffney of Southern Illinois University (SIU), the Department of Interior produced a "Training Manual for Environmental Education" for use in In addition, the environmental education specialists from 11 Interior camps were selected to receive training in the approach to environmental education set forth in the manual. 20 camps which did not submit nominations had originally expressed interest in the training sessions but found that their environmental education specialists had conflicts with teaching and final examinations during the two week-long training periods which were Of the 31 persons who did apply for training 22 were available during the week of May 28th and June 3rd, which was chosen as the training period; 11 trainees were selected from the 22 applicants who were available. Camp characteristics and applicant backgrounds were carefully examined to achieve a group of trainees whose profile reflected the characteristics of all camps and nominees as nearly as possible. This matching is shown in Appendix Table I-1.

Although all Interior camps were to receive the manual, three did not. Seven other camps which did receive the manual chose not to use it. The manual was not distributed to any Forest Service camps. Comparison is possible between Interior camps whose environmental education specialists: a) did not receive the manual, b) received but did not use the manual, c) used it but did not receive training, and d) used the manual and received SIU training. An additional comparison can be made with Forest Service camps which did not receive the manual but which did use other materials and generally had trained specialists. Also, the Forest Service

provided each camp with a list of environmental terms and concepts which had considerable overlap with the terms and concepts contained in our tests. This list was accompanied by a letter instructing camp personnel not to use the list to "prime" the participants. Some camps did use the list for that purpose, but during our site visits we learned that some camps sponsored by other agencies also used our questionnaires for the same purpose. We do not have reliable measures of the extent of either practice.

Comparisons of knowledge scores and attitudes show little difference between these various categories, although there was a tendency for the corps members in Forest Service camps and for those in camps whose specialists received training to score slightly better than corps members in other camps (see Table 7-2).

Comparisons of beginning and end of camp scores show no knowledge improvement that could be attributed simply to the use of the Those Interior camps which used the manual but which did not receive training improved no more than those who did not use it and gained less than Forest Service camps. In fact, camps which chose not to use the manual showed a greater overall knowledge score increase than did those using the manual. Although we have no data to explain this finding it may be that the specialists who chose not to use the manual were more experienced people who had developed their own approaches which they chose to follow. fact that this effect is shown only for knowledge, and not for values and attitudes, lends some support to this interpretation since the values measured were closely related to material covered in the manual but which might not be included in a "home-grown" education program. In contrast, there is evidence that training did result in an increase in knowledge, although the increase among the camps with trained environmental educational specialists was about the same as the increase observed within the Forest Service camps.

It should be noted that the differences between groups with regard to manual use and training were small though fairly consistent. Considering that training lasted only a week and that the total hours a corps member spent in formal environmental education in most cases probably did not come to more than two weeks, it is perhaps surprising that there was any difference at all in learning

between those camps where specialists received training and those where they did not.

The fact that the observed difference appeared to be due to SIU training and not to the manual by itself is not surprising. The research literature on teaching materials is full of examples indicating that materials make little impact when used without training. Training of a larger percentage of the environmental education specialists, therefore, seems appropriate in the future.

Our evaluation of the effect of camp characteristics on learning would be more conclusive had time permitted our using multivariate analysis to search for combinations of camp characteristics that predict learning. Girls in co-ed camps seemed to learn more, as did corps members in Forest Service, Bureau of Land Management, and Bureau of Reclamation camps and in camps which scored high on our participation-interpersonal relations index. However, youths in camps where the environmental education specialists received pre-camp training in the use of the environmental education manual showed increased levels of learning, but these increases were not as large for some of the other characteristics mentioned. It seems reasonable to suggest, however, that combinations of these "predictors" could lead to increased learning in future programs.

Another important finding was the relatively poor showing of the Bureau of Indian Affairs camps. We believe this finding should be of special concern to the sponsoring agencies. However, the concern should not be limited to the Department of the Interior because the larger problem of cultural adaptation is relevant to all the agencies.

RESPONSES BY DIFFERENT QUALITIES OF THE CAMPS AND OF THE YOUTH CONSERVATION CORPS PROGRAM

The final section of this chapter will look at responses to the core questions in conjunction with three appraisals of the program by the youths and two appraisals made by camp directors (see Table 7-3).

The first panel of Table 7-3 shows a clear relationship between how well the corps members liked the Youth Conservation Corps experience and how much they learned. These results are not too

Table 7-3

Percentage Correct Response to 56 Objective Knowledge Questions by Evaluations of the Camp and Program²

<u>Satis faction</u>	First Week	Final Week_	Gain or Loss	Percent of Possible	Average N
Really liked it	60	71	11	28	1907
Liked it	59	64	5	13	617
Neutral or disliked it	56	58	2	3	145
Worth of Program					
Extremely or very worthwhile	60	67	7	17	2217
Somewhat worthwhile	56	60	4	9	425
Not very worthwhile	51	49	-2		26
Coordination between Work and Education					
Excellent	59	66	7	18	518
Very good	58	64	6	15	1062
Good	58	62	4	10	716
Fair	65	70	5	15	377
Poor	66	71	5	14	153
Relative Emphasis to Work and Education					
1 mostly on work	60	69	9	23	128
2	5 7	62	5	11	569
3 about equal	60	6 6	6	14	967
4	60	67	7	17	727
5 mostly on education	64	73	9	25	128
Time Devoted to Work and Education					
l mostly work	60	62	2	4	74
2	58	64	6	14	1076
3 about equal	60	65	5	13	801
4	62	71	9	22	419
5 mostly education	59	61	2	6	149

 $^{^{1}\}mathrm{See}$ Tables J-16 to J-20 in Appendix J for source of data in this table.

surprising. Motivations to learn are certainly related to positive feelings about the learning context.

A similar pattern of response is shown in the second panel in which an even stronger relationship is indicated between the youths' appraisal of the worth of the YCC program and increases in knowledge. The reductions in knowledge for those who felt the program was not very worthwhile are interesting indications that these few corps members (26) were probably "turned off" to the program and our tests.

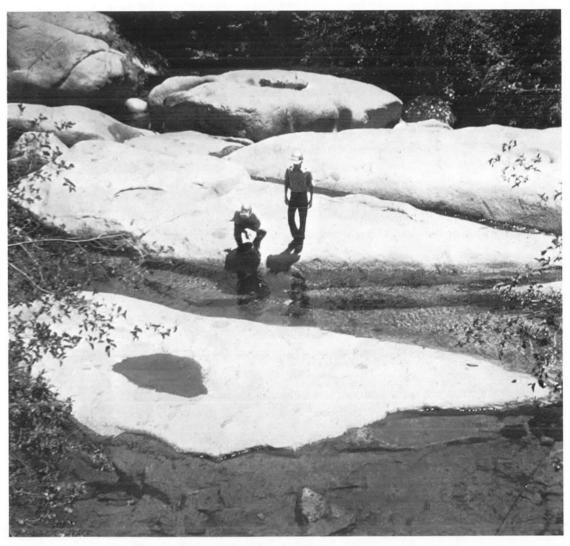
During the last week the corps members were also asked to appraise how well they thought the work and environmental education programs had been coordinated in their camp. Those who were most critical of the coordination also appeared to be the most sophisticated; as noted in Chapter 4, their attitudes were most supportive of the environment. In Table 7-3 we see that they had the highest entry knowledge scores. It is disturbing that the more knowledgeable corps members appear to have found greatest fault with the coordination. This suggests that coordination was probably not as good as the overall appraisals indicate.

The camp directors were asked to rate both the relative emphasis and the time devoted to work and environmental education according to scales which had the polar positions shown in the fourth and fifth panels of Table 7-3. The responses on each of these scales have been grouped into the five classes shown in the table. We have attempted to get a statistically reliable number of camps in each of the five classes.

When either work or education was heavily stressed knowledge gains were greater than when emphasis was more evenly divided. The same pattern holds for most of the nine tests from which the 56 core items were taken (see Appendix Tables J-19 and J-20). A possible explanation for this pattern is that camps with strong emphasis on work might also have had excellent environmental education programs. As we shall see in the next chapter, corps members and camp directors viewed work experience as being a prime source of environmental learning.

The last panel in Table 7-3 indicates that there is a stronger relationship between learning and time allocated to educational

activities than between learning and emphasis on educational activities. These questions were answered by camp directors, and we might expect the director to be more familiar with the time schedule than with how various program objectives were emphasized by staff in the field. If this is so we might expect "time allocation" to be a better indicator of the amount of effort devoted to education than is "emphasis." However, there appear to be problems of question wording in these last two panels. Future research should seek more appropriate ways of obtaining this information.



Planting Trout in a Stream near North Fork, California

Chapter 8

CORPS MEMBERS' AND CAMP DIRECTORS' EVALUATIONS OF THE ENVIRONMENTAL EDUCATION PROGRAM

INTRODUCTION

In Chapter 7 we examined the relationships between environmental learning and selected corps member and camp characteristics. We also considered how learning was related to evaluations of the program made by corps members and camp directors. In this chapter we will see how specific activities and qualities of the program are rated by the participants—staff as well as corps members—in terms of their contribution to learning. We will see how corps members evaluated the contributions made by their peers and by the staff. We will then examine evaluations of specific activities, taking a closer look at the relationship between work and learning. We will conclude with a summary of the specific suggestions made by corps members for improving the environmental education program of the YCC.

EVALUATIONS OF THE PERFORMANCE OF PROGRAM PERSONNEL WITH REGARD TO ENVIRONMENTAL LEARNING

A good teacher should not only be familiar with his subject matter, he should also have the ability to help others learn. One of the qualities often noted in outstanding teachers is a sense of dedication to their field. It has been our feeling (and this view is shared by the sponsoring agencies) that the role of teacher is not limited to those who bear the formal title. People learn from

each other in many situations where a formal student-teacher relationship does not exist. For this reason we have not focused our questions solely on the environmental education specialists in the camps but have also asked about the staff and about the respondents' fellow corps members. We have referred earlier to some of the ratings gathered about the environmental concern and knowledge of these participants in the program. At this point we shall bring this information together with a third rating—the environmental specialists' ability to help the individual learn about the environment. These ratings are presented in Figure 8-1.

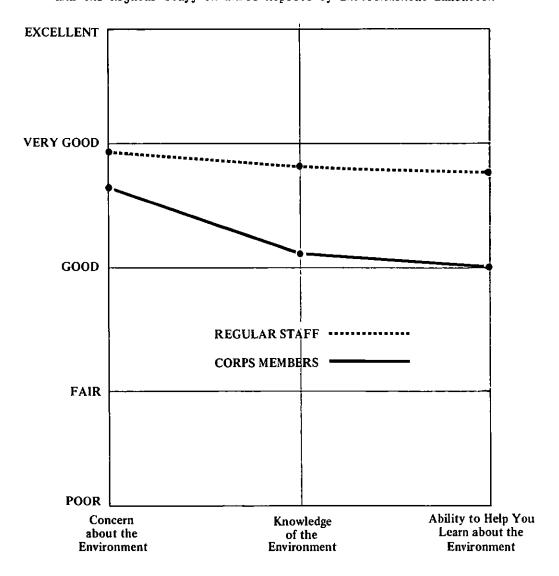
The first feature of these results to be noted is that all ratings fell in the good to very good range. Because we have no basis for setting a standard we can not evaluate these ratings in terms of what is ideal or what is reasonable to hope for. We must limit ourselves, therefore, to noting that the ratings are positive.

The second feature which is apparent is that the staffs are rated higher than are the corps members. This is as it should be, since the staff is in a leadership position. The staff have uniformly high ratings, with a spread of only 4 points between the quality rated highest (concern) and that rated lowest (teaching ability). Balance among these two qualities is certainly desirable. Allowing for measurement error, the degree of balance seems to be quite satisfactory, although one might wish that knowledge and teaching ability were on an exact par with concern.

The youths' ratings of their fellow corps members came closest to matching that of the staff in level of concern. This is important from a motivational standpoint. The knowledge levels and teaching ability of corps members were, however, considerably lower. The corps members show a spread of 17 points between the quality rated highest (concern) and that rated lowest (teaching ability). This profile is appropriate to those in the role of student and we should not expect to find the balanced profile, which we noted for staff, among corps members. It is worth noting that, even though the corps member profile is primarily that of student, learning from fellow corps members is not altogether discounted. The overall rating which they received for helping others to learn was "good."

Figure 8-1

Mean Rating by Corps Members of Their Peers
and the Regular Staff on Three Aspects of Environmental Education



By and large, planning of the educational aspects of the program is an area that corps members were less likely to feel they should be involved in than were other aspects of camp life. This was particularly true during the first week of camp when responses favoring "some" or "a good deal" of corps member participation in planning the environmental education program were 25 percent below those favoring that same degree of participation in planning the recreation program (see Table 8-1). By the final week, however, this difference had been reduced to 18 percent. The desire to participate in the planning of educational aspects of the program showed the greatest increase.

It appears, therefore, that while there may be some tendency to assume the role of passive student corps members do show an increasing interest in becoming involved in planning environmental education activities. Whether this is because of dissatisfaction with existing procedures or because of encouragement to take a greater interest in learning activities cannot be determined at this time.

EVALUATIONS OF ENVIRONMENTAL EDUCATIONAL ACTIVITIES

As mentioned earlier, the program objectives of the Youth Conservation Corps were not organized around a single goal. A series of equal objectives had been established, based on the statement of intent in the original act of Congress establishing the pilot These goals cannot be viewed entirely apart from one program. In Chapter 7 we discussed some questions whose wording another. might be interpreted as viewing the work and the educational objectives of the program as separate and in competition for time and emphasis. The reader will recall that these questions were not very good predictors of environmental learning. Learning was high where emphasis was either heavy on work or heavy on education. Perhaps these results should serve as a reminder that education can occur in a number of settings -- on the job as well as in the class-One of the tests of a multiple objective program such as YCC should measure the extent to which major activities are integrated. That is to say, one of the products of a work project should be At the same time, an education project may also accomplish environmentally useful work.

Table 8-1

Percent of Corps Members Who Felt They Should Participate "Some", or "A Good Deal" in Planning Selected Aspects of the YCC Program¹

	First Week	Last Week	Change
Program Area			
Camp recreational program	97	97	0
Camp work program	87	86	-1
Camp discipline	80	83	3
Environmental education	72	79	7
Average number of cases	3060	3000	

¹ See Questions 6:51-54 of Appendix A.

Table 8-2

Average Ratings of the Educational Value of Various Activities
by Camp Directors and Corps Members

How would you rate the environ-How important were each of the followmental education you received; ing to members' environmental education: Mean 3 Mean 2 Item 1 Score Score Item On field trips, or going 73 82 Field trips along with regular agency employees on their jobs As part of the work 67 82 Work experience program 78 Scheduled environmental In lectures, films 66 and demonstrations education sessions other than those associated with work assignments

82

50

54

Camp Directors

Informal discussion

Environmental games

Independent reading

Corps Members

In informal discussion,

From reading in the camp

rap sessions, etc.

In ecological games and

activities

library

63

51

39

¹See questions 6:32-37 of Appendix A.

²When computing mean scores, values of 100, 75, 50, 25, and 0 were assigned to responses of "excellent", "very good", "good", "fair" and "poor", respectively.

When computing mean scores, values of 100, 75, 50, 25, and 0 were assigned to responses of "extremely important", "very important", "important", "not very important" and "not at all important", respectively.

With this in mind we have asked corps members to rate the environmental education they received in a variety of activities. We also asked camp directors to rate the importance of activities to the environmental education program. Although different scales were employed in the two ratings and the items were worded slightly differently we are presenting them side by side to emphasize the similar results from these two independent sources.

Both sets of ratings placed field trips high, with work rated as being equally important or nearly so. The significant result is that formal educational presentations were ranked behind these two activities by corps members (who ranked them third highest) and camp directors (who ranked them fourth). If both the corps members and camp directors saw work experience as being educationally better than formal lectures, it is no wonder that we found as much learning in camps reported to have an emphasis mostly on work as we found in camps emphasizing education.

It appears that camp directors saw more benefit coming from informal discussions than did corps members. Other information suggests that the two groups may have had slightly different frames of reference when responding to this item. The camp directors appear to have been thinking about "tailgate sessions" during which the crew leaders would hold informal discussions in the field. Corps members were more likely to respond to rap sessions with their fellow corps members.

Neither group gave high ratings to environmental games or independent reading. It is our observation that environmental games were seldom used, perhaps due to a lack of familiarity with such activities on the part of the camp staff. The concept of environmental games (which may include anything from a treasure hunt based on a list of plant and animal specimens, to simulated hearings on the environmental impact of proposed land usages) was perhaps not clear. As familiarity with this activity grows and as ingenuity in devising learning games suitable for corps members increases this may prove to be an activity which deserves greater time or emphasis.

Independent reading and use of camp libraries received low rankings as contributors to environmental learning. Yet there was a feeling that having a library is important to the YCC Program. When asked about this directly, 79 percent of the camp directors

said it was very or extremely important to have a library. We too feel that books are a learning resource that should not be over-There are three questions which might be investigated in order to arrive at means of making better use of reading materials. These are:

- 1) What books should be included in the basic library distributed to camps?
- What additional books should be obtained from local libraries and other loan sources?
- How can books be used most effectively?

With regard to the first question it might be added that quantity is also a consideration. On our site visits we observed that reference books, such as field guides, were often the most sought after Ideally, such books should be available in the field, but large camps seldom had enough copies to permit each crew leader to take them along on the job. Only limited use seems to have been made of local sources. Environmental education specialists should make a practice of seeking out materials of particular relevance to the area in which the camp is located or to the type of work in which the corps members will be engaged. Local histories, reports issued by the state geologist, tour guides for the region, and technical works related to individual projects can often be obtained from the state university if they are not in the libraries of neighboring towns and schools.

Corps members might be given a list, arranged by topic, of some available books; they might also be given information on how they could obtain other books.

Up to this point we have directed our comments mainly toward activities that appeared from the data to be less productive than they might have been. This is not to say that the other activities which were more highly ranked have been fully exploited. remaining comments in this section will be directed toward the two activities ranked highest: field trips and work experience.

It appears that camp directors did not attach as much importance to field trips as corps members did. We suspect there are several reasons for this. For one thing, camp directors are likely to be much more aware of logistical considerations in staging hikes, field trips, and camp-outs. In addition to transportation problems

such activities often necessitate special arrangements for meals, campsites, health, and safety. At the same time, trips usually tend to compete with work objectives. They are means for education and, to some extent, for social and self-development, but they produce little in the way of work accomplishment. Since field trips typically require large blocks of time, they are usually scheduled for non-work days. In our site visits, however, we observed that field possibilities were not always as fully utilized as was possible within these constraints. For example, considerable distances were traveled each day to transport corps members from camp assembly areas to work sites. Between these points the intervening environment was hardly of more consequence to corps members than surface features are to subway riders. However, when the routes from camp to work are examined numerous sites are discovered which could provide an instructive stopping place. Cuts and excavations along the highway often reveal geologic history and examples of erosion are plentiful. Burned over areas might be found along the route to illustrate the types of damage done and the process of regrowth. Water samples can be gathered at significant points along roadside streams to be tested later. Ecotones and significant differences in habitat can be identified along the way. It is possible that slight deviations from the most direct routes will allow stops where additional environmental features or ecological relationships are clearly depicted.

If a 15-minute stop at an instructive site were made every other day it would add little time to the schedule. One of the things corps members most frequently checked as "least worthwhile" about the YCC was the time spent getting to and from work projects (mentioned by 35 percent of the youths). Instructive stops might diminish this sense of wasted time by breaking the monotony of the trip. They might also sensitize the youths to observe their environment and encourage them to develop their skills by trying to unravel the environmental and ecological meaning of what they see as they travel.

The prevailing tendency to compartmentalize activities which is demonstrated in the journey to work is also evident on the job. Educational opportunities do not wait in line for the scheduled hour; much needs to be done to increase the blending of work and

education. A single environmental education specialist cannot be at all work sites simultaneously; each crew should have someone capable of utilizing the opportunities for environmental education that occur on the job. It would probably be easier to train environmentally knowledgeable persons to be work crew leaders than it would be to make crew leaders environmentally knowledgeable. Field guides should be packed along with the first aid kit to be available in the field instead of on the shelves of a library back in camp. Specimen jars and other collecting equipment should be available to every crew.

The time spent waiting around at work for tools, supplies, or people was checked by 47 percent of corps members as one of the least worthwhile aspects of the 1972 YCC. It is our feeling that better coordination between work and environmental education would considerably reduce the annoyance of such delays in work. leader who is also competent as an environmental educator could utilize these inevitable delays to good advantage. crew leader's attention is often required to solve the problem causing a delay it may not be possible to utilize every delay for informal educational discussions, and care should be taken not to give educational activities the image of being a "time filler." might be possible, however, to plan environmental activities which are coordinated with the work and which demand little attention from the crew leader. Examples of such activities would be: to have a trail-building crew write a quide which identifies species, habitats, and interrelationships among the elements in the environment through which the trail passes; or to have a camp ground improvement crew map the vegetation and soil types found at the campsite or do a wildlife census at the site. If the site has received heavy use, comparisons could be made with a similar area nearby which has had less visitor impact.

To some extent the educational opportunities at the work site which have been mentioned are incidental to the work; they are derived from the setting and not from the work activity. However, in addition to taking advantage of learning opportunities presented by the setting, a well-coordinated program will bring out the opportunities presented by the work project itself. The planning of any construction project offers a host of opportunities for

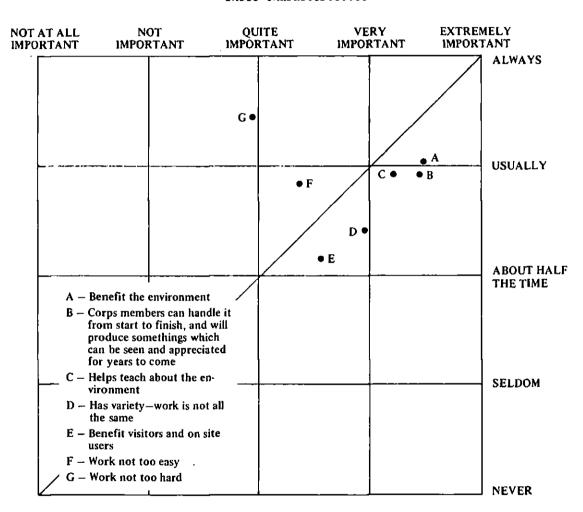
learning about the environment. Even a routine job such as gathering debris from a beach can be used to bring together several facets of environmental learning. Briefing and planning sessions can call attention to the considerations and trade-offs involved in selecting procedures to be followed for different types of debris. Afterwards, there might be a discussion of the types and sources of the debris handled, and this experience might be generalized to other aspects of solid waste disposal.

Obviously the learning from work assignments such as this can take place in a day or even an afternoon; spending additional time would have little educational payoff. To discover what overlap between work and education corps members thought was desirable and how well the projects they worked on fit their priorities, we asked two series of questions. In the first we asked them to rate the importance of selected qualities. The second series of questions asked them to say how often the projects they worked on had these qualities. The average (mean) response for both ratings was computed for each quality. Using the means we located these qualities in two dimensional space as shown in Figure 8-2. most qualities should be located reasonably close to the diagonal line running from the lower left to the upper right of the figure. If a quality is placed well below the diagonal this means that things corps members consider to be important are too often lacking in the projects. If a quality is placed well above the diagonal it may be a sign of waste--something is happening more often than is felt to be necessary. As can be seen in Figure 8-2, those qualities which were judged to be most important tend to fall fairly close to the diagonal. The quality placed in most favorable relation to the diagonal is the opportunity to learn about the environment which the job presents. The quality rated most important -- that the job benefit the environment -- is located slightly further from the diagonal. However, projects were more often viewed as benefiting the environment than as helping to teach about the environment. This may reflect a realization that some important work is dull or routine--or the failure of the staff to develop learning aspects of the work projects.

Figure 8-2

Importance of Job Characteristics and How Often YCC Projects Had

These Characteristics



Doing work which gave a sense of accomplishment was slightly more important to corps members then was doing work which helped them learn, but both were usually found in work projects.

The quality rated as being fairly important which is furthest from the diagonal is variety within a project. The figure shows that it was far more important to the corps members that a job have variety than that a job not be too hard. The corps members were least concerned about the difficulty of a job. Taking into account their complaints about the time wasted on the job while waiting for things to arrive, one might infer that corps members wouldn't have objected to harder work.

It would appear, then, that if the important qualities—environmental benefit, sense of accomplishment, learning, and variety—were being met by a project, corps members would be highly productive. This may account for reports we have received that those camps which had high levels of learning and which were high in participation and interpersonal relations were also high in work accomplishment.

In this review of the contribution to learning made by various activities, we have seen indications that education goes hand in hand with work and with other types of field experience. To view education only as that which occurs in formal educational settings is to overlook a large part of the potential of the Youth Conservation Corps.

SUGGESTIONS FOR IMPROVING THE ENVIRONMENTAL EDUCATION PROGRAM

The data we have presented so far have been based entirely on structured questions with fixed-response categories. We included one additional question which allowed corps members to respond freely. This question was included to draw out insights into ways in which the environmental education program might be improved or might better meet the interests of corps members. It read: "We are interested in any suggestions you have for improving the YCC environmental education program. Please list suggestions below."

Approximately half of the corps members made suggestions and, of those responding, about 5 percent said they liked the program as it was—that nothing should be changed. Another 3 percent suggested

expanding the YCC program to let more people have this educational opportunity.

Specific comments about the program fell into five general areas: 1) educational activities and methods, 2) scheduling and planning, 3) specific topic areas, 4) personnel, and 5) corps member participation. Responses in each of these areas will be presented separately.

In general, the suggestions regarding educational activities which we gathered on this open-ended question confirm our earlier findings from responses to fixed-alternative questions (see Table 8-3). Most suggestions regarding activities were requests for There were some suggestions for "better" activities, but suggestions that there be less of certain activities were rare. on other ratings, field trips and work projects led the list of educational activities that corps members wanted more of. activities that had been included in other ratings were requested here in approximately the same order. Environmental games, however, were not mentioned frequently enough to be counted separately and "individual projects," which were not included on previous lists, drew some mention. The comment was also made by about 3 percent of those responding that more or better explanations of the purpose and environmental reasons for work projects should be given. activities which drew the greatest number of critical suggestions were formal lectures and classroom presentations. This was the only area in which the "less" and "better" suggestions outnumbered the requests for "more."

Scheduling and planning considerations were the next most frequent type of suggestions made. These are shown in Table 8-4. Most of these suggestions concerned coordination or the amount of time devoted to educational activities. The requests for better planning and communication add weight to previous indications that coordination between work and education could be improved. Whether this is a problem peculiar to a few camps or a more general problem in all camps cannot be determined at this time. As indicated in Chapter 7, however, those most critical of coordination also tended to be more knowledgeable about the environment. We might infer from this that the problem was not limited to a few camps.

Percent of Suggestions 2 More Less Better Type of Activity Field trips, hikes, camping 10 * out 1 Learning on the job coordination between work and 1 education, learn by doing 8 Films, audio-visual aids Informal discussions, rap sessions Lecturers, speakers, classroom instruction Individual projects, 2 independent study Explanation of purpose and environmental reasons 2 1 for jobs Library books, reading 2 materials 2 Other activities or methods

^{*}Less than .5 percent.

¹ See Questions 6:74-79 of Appendix A.

 $^{^2\}mathrm{Tables}$ 8-3 through 8-6 show the percentage distribution of the 2220 suggestions received.

Table 8-4

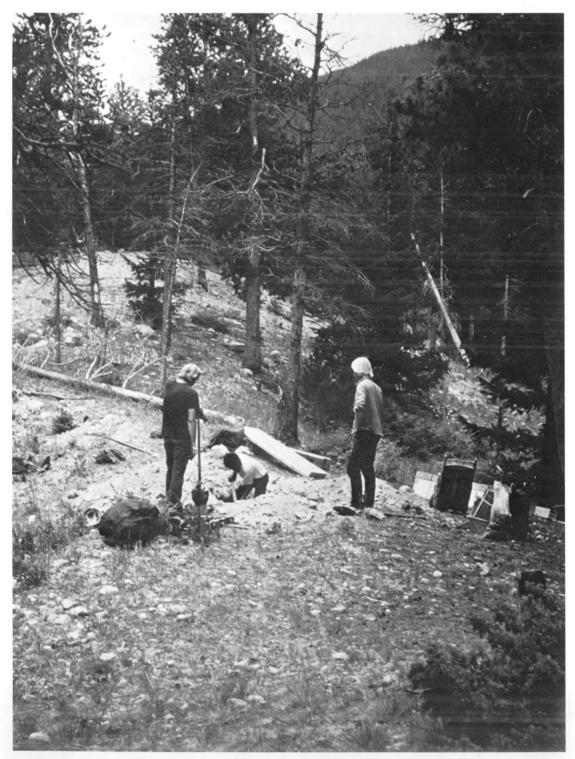
Corps Members' Suggestions Regarding Scheduling and Planning of Environmental Education 1

Percent of Suggestions Suggestion Have more -- didn't get enough education (no specific activity or topic mentioned) 6 Better planning and organization; announce plans in advance; tie in education and "test" 3 Have longer camps Have education program earlier in the day -- not after work or dinner 3 1 Have shorter education sessions 1 Have longer education sessions Have less -- too much time devoted to education (no specific activity 1 or topic mentioned) Have smaller or larger groups 1 2 Other

^{*}Less than .5 percent.

¹See Questions 6:74-79 of Appendix A.

 $^{^2}$ Tables 8-3 through 8-6 show the percentage distribution of the 2220 suggestions received.



Constructing Camping Facilities at the Pool, Rocky Mountain National Park, Colorado

One specific suggestion which camp directors may wish to consider is to have environmental education activities earlier in the day. We observed a number of different schedules for formal educational activities in the camps we visited; our impression was that corps members were more mentally alert and receptive in the morning sessions than they were after a hard day's work. At the same time we realize that a number of work-related considerations, such as the daily temperature cycle, the availability of agency personnel, and visitor activities, enter into scheduling. We would, however, urge that equal weight be given to considerations of work accomplishment and learning so that education does not always end up in the least desirable time slot.

Specific topic areas drew a number of suggestions, most of which were requests for more coverage (see Table 8-5). There appears to be no topic on which a considerable number of corps members had unmet interests. There were small numbers who mentioned certain topics and for these the results speak for themselves.

Although the total number of suggestions falling under the category of personnel and staff was not large, these comments were concentrated in two areas which were among the most frequent categories of response (see Table 8-6, top panel). In general these suggestions point again to the necessity that the staff be knowledgeable, concerned, and able to relate well to the youths.

The lower panel of Table 8-6 reports the suggestions that corps members be allowed to participate more in planning educational activities.

Our analysis of this free-response question did not find any major consideration expressed which had not been covered in the previously analyzed fixed-response questions. The latter questions appear to have covered all of the salient features of the environmental education program. However, examining the free-responses gives us an opportunity to look across the areas which were covered by fixed-response questions and to order them in terms of salience to corps members. Doing this gives increased weight to the role played by educational activities conducted in the field--either on trips or in connection with work projects. It also calls attention to the need for good coordination and planning and for having well

Table 8-5

Corps Member Suggestions Regarding Coverage of Specific Topics in the Environmental Education Program¹

	Percent of	Suggestions ²
	More Coverage	Less <u>Coverage</u>
Topic or Subject		
Wildlife resources or management	3	
Variety and wider coverage	3	*
What individuals can do in their daily life how to get others involved, concerned and solving environmental problems	2	
Should have a choice of topics, get to choose what you want	1	
Government agencies and personnel working with the environment what they do, how they work	1	
Plant, tree, forest, natural area management	1	
Pollution, urban problems, over- population	1	*
Ecological systems interrelation- ships between various elements	1	*
Other	1	

^{*}Less than .5 percent.

¹See Questions 6:74-79 of Appendix A.

 $^{^2{\}rm Tables}$ 8-3 through 8-6 show the percentage distribution of the 2220 suggestions received.

Table 8-6

Corps Members' Suggestions Regarding Staff and the Participation of Corps Members in Environmental Education Programs $^{\!1}$

	Percent of 2
Staff Suggestions	
Speakers/Staff should be better prepared, more knowledgeable, more concerned or interested in topics they talk about	6
Speakers should be able to relate to kids better	4
Other qualities of staff	1
Participation Suggestions	
Corps members should have more say in planning programs, deciding on speakers, field trips, etc.	4
Program should be voluntary no attendance taken	1
Use corps members as speakers, use reports from youth	1

^{*}Less than .5 percent.

¹ See Questions 6:74-79 of Appendix A.

 $^{^2\}mathrm{Tables}$ 8-3 through 8-6 show the percentage distribution of the 2220 suggestions received.

qualified staff who are motivated, knowledgeable, and have the ability to relate to corps members and to help them learn.

Much of what we have discussed in this chapter would probably be considered obvious to experienced educators and to those who designed the YCC program. There frequently is a need, however, to document the obvious and to show that what we believe should be the case is in fact the case. Those who are in charge of administering the day-to-day operations of a camp must attend to so many details that they may occasionally need to remind themselves that certain considerations are basic. It is in this sense that stating the obvious can be useful.

Chapter 9

CONCLUSIONS, RECOMMENDATIONS, AND FUTURE RESEARCH

This chapter is divided into three parts. The first part reviews our major findings and the conclusions we draw from them. The second part consists of recommendations based both on the empirical findings and on our observations made during visits to approximately a quarter of the camps. In the third part we suggest a program for future research including further data analysis and other approaches to evaluating the Youth Conservation Corps.

RESEARCH FINDINGS AND CONCLUSIONS

The summary findings are drawn from the analysis presented in Chapters 3 through 8. The findings and conclusions are organized here by chapter content. The reader who is interested in the statistical basis for any conclusions is advised to refer to the appropriate chapter.

CORPS MEMBER EVALUATIONS OF THE PROGRAM. For the second year in a row the YCC corps members have concluded that the program was a worthwhile experience and they expressed a high level of satisfaction. Their reports of satisfaction and worthwhileness were even higher in 1972 than they were in 1971, the first year of the pilot program. In general, 1972 levels of satisfaction varied less between types of youths than they did in 1971; in other words, the types of persons who expressed less satisfaction in 1971 tended to be more satisfied in 1972. For example, although girls were more satisfied than boys in both years, the difference was 8 percent in

1971 and only 4 percent in 1972. Although differences were smaller, the direction of most relationships was the same in both years. We feel that this confirmation of the direction of the relationship adds some additional weight to the findings, even though in some cases the differences were slight. Those corps members most satisfied with the program are girls, both in mixed and in girl-only camps. Boys in mixed camps expressed a slightly higher level of satisfaction than did boys in boy-only camps. White corps members were more satisfied than corps members from minority groups. Youths from middle and upper income families and those with prior camping experience reported a high degree of satisfaction with the program. Little difference in liking the program is explained by size of hometown or age.

In terms of camp characteristics, slightly higher levels of satisfaction were found in non-residential camps, camps with fewer than 14 corps members, and four-week camps. The level of satisfaction was fairly comparable in the camps operated by all agencies with the exception of those run by the Bureau of Indian Affairs where the corps members reported being much less satisfied. The BIA camp differences, which were also found in 1971, tended to be somewhat larger in 1972.

A strong relationship was observed between the camp score on the participation-interpersonal relations index and corps member satisfaction. Youths in camps where they were allowed to participate in matters of government and where they had friendly and open relations with the staff were more satisfied with the program than were corps members in camps lacking these characteristics.

A number of things were mentioned by corps members as being worthwhile. More than half the corps members mentioned the following things as being worthwhile: having the chance to meet people and make friends; learning general principles of ecology and conservation; learning about nature, identifying and observing plants and wildlife; working and living outdoors and being in a natural setting; being physically active and keeping in shape; seeing new places; and learning to get along with people from different social backgrounds. The work program itself was mentioned by fewer than half of the youths, but when speaking of the single most

worthwhile program attribute, it was mentioned more often than environmental learning. Other high "most worthwhile" ratings were given to: having the chance to meet people and make friends; working and living outdoors and being in a natural setting. These were closely followed by: learning to get along with young people from different social backgrounds; learning about nature, identifying and observing plant wildlife; learning the general principles of ecology and conservation; and finding out about oneself.

Corps members saw the following as being <u>not</u> worthwhile: other corps members who failed to do their share or didn't contribute to the program; other corps members who caused trouble; and the time spent getting to and from work projects or waiting for tools, supplies, or people to arrive. In general the worthwhile mentions far outnumber the negative ones.

When considering specific attributes of camp, corps members evaluated the camp community favorably as a place where interests are shared and people work and get along well together. They also gave high ratings to the work programs for the amount and quality of work performed and its benefits to the public. The work performed was given a somewhat lower rating for its benefits to the environment. With regard to the work program, the lowest ratings were given to the coordination between work and environmental education. When evaluating people in the camp, corps members held a favorable view of the regular staff, a somewhat less favorable view of the youth leaders, and an even less favorable but still positive view of their fellow corps members.

ENVIRONMENTAL ATTITUDES AND CONCERNS. Corps members gave themselves high initial ratings for their concern about the environment and expressed the view that environmental problems are among the most important issues facing the United States today. There was a general tendency for these ratings to increase over the course of the summer's program; this contrasts with the spotty decrease in the level of concern found in 1971. However, when we examine value preferences and attitudes, we find modulation from an initial position which had been highly supportive of ecological values to one which was slightly less so. There are some exceptions to this general tendency; for example, a measure of the general support for

limitation on growth and consumption displayed a slight increase. We find that the shifts from highly supportive ecological attitudes and values were entirely countered in camps which had high interpersonal relations. Elsewhere, declines were the rule although they were least for members who liked the program or felt it was worthwhile. Less than average declines in ecologically supportive attitudes were found in camps where the environmental education leaders had training in the use of the Southern Illinois University Environmental Education Manual and also in camps where coordination between work and education was rated more favorably. Thus, these positive factors may be viewed as inhibiting the previously mentioned influences which reduce supportive attitudes.

ENVIRONMENTAL BEHAVIOR ORIENTATIONS. At the beginning of camp corps members expressed considerable willingness to take actions to help solve the problems of water pollution. During the summer there was an increase in willingness to act—except in willingness to work with citizens'environmental action groups. Reports of actual efforts to help solve the problems of water pollution also increased between the first and final weeks of the program. The index of environmental activism is highly related to concern about the environment.

Another of our measures shows an increasing interest in purchasing environmentally sound consumer goods developing over the course of the summer. This is accompanied by a decreasing interest in the purchase of unsound consumer goods. These trends are strongly related to overall environmental concern. We find that maintaining or moving toward a favorable balance between sound and unsound items was most common in camps having good interpersonal relations and high participation levels. The balance between sound and unsound purchase intentions was more favorable in those camps whose environmental education specialists received the Southern Illinois University training than it was in other camps.

Finally, with regard to environmental outlook, there was an increase during the summer in the proportion of camp members who expected to complete four years of college and also in the proportion who were seriously considering jobs which deal with planning and managing the physical environment. These increases were extremely small however.

ENVIRONMENTAL KNOWLEDGE AND UNDERSTANDING. We have employed two approaches to measuring environmental understanding: subjective ratings and objective tests. When the nine areas of environmental understanding on which corps members were asked to evaluate themselves are combined into a single index, we find a 9 percent increase in the average (mean) level between the first and the final weeks.

Our objective knowledge tests included 76 questions on different domains of environmental knowledge, including management practices and agency functions. These questions were used to form 14 separate tests. On 13 of the 14 tests there was some increase between the first and final weeks in the percent of correct answers. The remaining index showed no change. The increases ranged up to 12 percent, which represents up to 27 percent of the possible gain. The overall average gain on 56 "core items" was 6 percent.

Three checks show that these objective knowledge scores relate to independent measures associated with knowledge. These validity checks show that entering scores on the objective knowledge measures were: 1) higher for each successive grade in school, 2) higher for those who had previous natural science or outdoor education courses, and 3) directly related to subjectively rated understanding.

In terms of gain, those corps members who were in the tenth, eleventh, and twelfth grades left camp with a score which was generally higher than the entering score of persons who were a grade ahead of them. This allows us to say that the knowledge gain is approximately equivalent to that resulting from a year of school.

There is a dual relationship between subjective ratings and objective measures of knowledge. Those who initially rated themselves as being average but who objectively scored higher than average tended to revise their self-ratings upward in the final week to conform with their actual knowledge level. Thus these subjective gains can be described as reflecting both a better understanding of one's own level of knowledge and actual learning.

Although different measures were used in 1971 and 1972, making exact comparison impossible, it is our general impression that the gain in knowledge was two to three times greater in 1972 than it was in 1971.

RELATIONSHIPS BETWEEN ENVIRONMENTAL LEARNING AND CHARACTERISTICS OF CAMPS AND CORPS MEMBERS. There is a close parallel between liking the program and learning. That is, the same types of corps members who had high levels of satisfaction also showed the largest gains in environmental knowledge. This was true for girls, for whites, and for those above the lowest income and age categories. Camp characteristics do not account for much of the difference in knowledge gain. There was a slight tendency for those in nonresidential camps to learn more than those in residential camps. Corps members in medium and large camps appear to have done slightly better than those in small camps. The results by length of camp sessions are unclear. There was a general tendency for knowledge gain to increase with length of camp session -- with the notable exception of the four-week Forest Service camps. Youths in these camps gained more knowledge than those in eight-week camps of either the Forest Service or the Interior. In camps sponsored by the Forest Service, the Bureau of Land Management, and the Bureau of Reclamation, gains appear to have been greatest. Those agencies showing the least knowledge gain were the National Park Service, the Bureau of Sport Fisheries and Wildlife, and the Bureau of Indian Affairs. Within the Department of the Interior camps the greatest knowledge gain was found in those camps whose environmental education specialists received training in the use of the SIU Environmental Education Manual. Use of the manual without training does not appear to have been related to nay improvement in knowledge.

Those corps members who liked the experience and expressed the feeling that the YCC is worthwhile learned more than those who were less satisfied with the program. Youths in camps having a middle-high position on the interpersonal relations participation index learned somewhat more than did those in camps having the highest rating on this index. Those in camps with low participation and poor interpersonal relations showed the least knowledge gain.

CORPS MEMBERS' ATTITUDES ABOUT THE ENVIRONMENTAL EDUCATION PROGRAMS OF THE YOUTH CONSERVATION CORPS. Field trips were more highly rated by the corps members than were any other aspects of the environmental education program. The activities were rated in

the following order for their contribution to environmental learning: 1) field trips, 2) the work program, 3) formal lectures, 4) films and demonstrations of camp, 5) informal discussions and rap sessions, 6) ecological games and activities, and 7) independent reading in the camp library.

When suggesting ways to improve the environmental education programs, most frequent mentions were given to hikes, field trips, and work programs. Camp directors rated the importance of these various activities in a similar order, but gave less emphasis to field trips and hikes. Although neither the camp directors nor the corps members felt that independent reading in the camp library was among the top activities in terms of its importance to environmental education, there was wide agreement among camp directors that the library is important to the Youth Conservation Corps program.

In conclusion, our findings show that, in general, corps members respond very favorably to the program; they are extremely satisfied and feel the YCC to be worthwhile; they show accomplishment in work and learning; and they value the opportunities they have to confront new people and situations. In 1971, our findings identified several shortcomings in the program. Foremost among these was our finding of no appreciable gains in environmental knowledge. We feel that in 1972 the program has shown its ability to produce appreciable amounts of environmental learning. However, we feel that the full educational potential of the program may not yet have been reached and that further increases in the amount of learning are possible.

RECOMMENDATIONS

As we indicated earlier, our recommendations are based both on our systematic analysis of the data gathered from questionnaires administered to corps members and camp directors and on our site visits to a select number of camps. We have attempted to focus our recommendations on those aspects of the program which are most easily manipulated from an administrative standpoint.

COMPOSITION OF CAMPS. As in the first year of the pilot program, girls responded somewhat more favorably to their experiences than did boys. We note with pleasure that, following our recommendation that girls be equally represented in the program, there

was a 5 percent increase in the proportion of corps members who were girls. However, there still remains an under-representation of girls in the program as a whole. We feel that wherever possible efforts should be made to bring the ratio of girls to boys to equality.

On the issue of co-ed versus single-sex camps we note that a clear majority of both corps members and camp directors stated a preference for co-ed camps. Of the corps members, 93 percent expressed this preference, while for camp directors the preference was somewhat lower. If the enrollees could have the option of choosing any camp we feel that there would still be a strong reason for maintaining single-sex camps to which young people might choose to go. However, since corps members do not have a choice of camps it is clear that the desires of more people are met by having co-ed camps than by having single-sex camps. We feel, therefore, that single-sex camps should be maintained only where facilities or the planned program would be poorly suited to the needs of a co-ed camp.

Another organizational feature we have examined is the residential/non-residential character of camps. Seventy-four percent of the youths would choose a residential camp. About the same proportion of camp directors expressed this preference. On the other hand, we find slightly higher satisfaction and learning levels in non-residential camps. We have no measures of work accomplishment, but we see little reason to expect differences. Thus, while performance is as high or higher in non-residential camps, a preference is expressed for residential camps.

We feel, therefore, that the sponsoring agencies should carefully examine the benefits to be gained from residential camps, particularly in light of their higher cost. Major advantages of residential camps appear to be in the areas of developing living patterns and attitudes. If funds were available to transport corps members to distant camps, residential camps might also have the teaching advantage of exposing youths to new and stimulating environments. However, indications are that at this age youths still have much to learn that can be accomplished in environments close to home. Therefore, we feel residential camps should place strong emphasis on helping youths meet, and learn to get along with,

persons of different backgrounds and age levels. Residential camps should also make special efforts to develop attitudes and life-styles which are ecologically sound. Since there is no clear indication of the superiority of one type of camp over another, we feel that both types should be continued and that efforts should be made to introduce the values of the residential setup into non-residential camps.

We feel that efforts should be made in residential camps to make the most of their natural strengths. We also believe that additional information about the nature of "residential camps" be obtained since that category includes a wide spectrum of housing and situational conditions, some of which may be less well adapted to the needs of the YCC program than are non-residential facilities. For example, during our site visits we noted feelings of frustration and separation on the part of corps members housed on college campuses who preferred to be in contact with natural environments during their off-duty hours. The residential camps which appeared most successful are housed in tents, cabins, or other facilities located in a natural setting. Therefore, we urge the use of such settings for housing camps wherever feasible. If it is not possible to provide this type of housing, we suggest that spike camps be used for certain work parties. This would allow corps members to live and work in natural settings for extended periods.

A third aspect of camp organization which is easily manipulated is camp size. We find very little indication that there is an optimum size to be aimed for across the program. We therefore recommend that the current practice of tailoring the size of the camp to the available facilities be continued.

The last aspect of camp organization to which we will address ourselves is that of session length. With one notable exception, it appears that there are benefits which accrue with increased length of the camp session. The tendency is for youths in camps lasting nine weeks or more to learn more than corps members in eight-week camps, who in turn learn more than those in shorter camps. However, within the Forest Service camps, the double-session four-week camps produced almost as much learning as did the camps which ran nine weeks or longer; they surpassed the eight-week

camps. It is very difficult to interpret the meaning of this finding, particularly since all these camps are located in one administrative region. If there is something that has been discovered by these camps which allows the gain of eight weeks to be realized in only four weeks, we feel that this should be tried in other areas of the country. The advantages of being able to reach twice as many young people are clear. We also have incidental information which indicates that there may be a letdown in the second session of dualsession camps. Our measuring procedure allows us no way of knowing whether a letdown is also found in eight-week camps. It may be possible that the first four weeks of eight-week camps are more productive and rewarding than the final four weeks; this would be an interesting area for future investigation. Certainly from an evaluative standpoint it is difficult to make a judgment when experience is limited to a single administrative region. we recommend that split-session four-week camps be encouraged in other regions and agencies so that a careful evaluation of this practice can be made.

Finally, we cannot ignore the poor showing made across the board in the Bureau of Indian Affairs camps. We recommend that a special investigation be made to determine the reasons for such results and urge that corrective action be taken based on the results of that investigation.

ADMINISTRATIVE PROCEDURES AND PRACTICES. Our next series of recommendations deals with camp administrative procedures and practices. We feel that the environmental learning objectives should be on an even par with the other program objectives. find, however, that achieving this equality may be difficult because of the lack of clear specification of learning objectives in camp manuals and in administrative handbooks. Objectives and measures of accomplishment are clearly defined for work accomplishment, and administrators seem most comfortable in handling this area of their multiple responsibilities. Therefore, we feel that clear statements about environmental learning objectives should be included in agency administrative handbooks, with more explicit emphasis given to the relative importance of this dimension of the YCC program. Latitude should be provided, however, for each camp

to build on these basic requirements in its own way by implementing environmental education programs which are most suitable to its individual situation.

We recommend that procedures for internal evaluation of learning accomplishment be devised so that the camp administrative staff is kept as keenly aware of the necessity of accomplishment in this area as they are of more visible accomplishments such as work projects. We also recommend an extension of these internal assessment procedures to the social and group living objectives of the program. These objectives and the procedures for attaining them are even less clearly stated in administrative guidelines than are educational objectives. Assessments of the social climate, interpersonal relations, and participation within the camp should be made and reported back to the camp directors during camp sessions. We also feel that more explicit instructions in such matters as democratic group leadership and ways of involving corps member participation in camp government should be provided to camp administrators.

We have noted that learning is higher when environmental education specialists receive training than when they use a manual without training. We support the general principle that effective use of new educational materials requires that those who are to use them be trained in their application. Therefore, we recommend that training sessions be provided for all environmental education specialists prior to the beginning of the summer program. the teaching and group leadership skills which are needed cannot be developed from scratch in the short training sessions that are possible. The first requirement is that the staff be well qualified Renewed emphasis should be put on the recruitment to begin with. of the staff members. Wherever possible personnel to fill the vital functions of providing camp direction, counseling, and work crew leadership should be recruited early. It is hoped that through earlier recruitment of well qualified senior staff it will be possible to give them more thorough preparation.

We note that the regular staff were rated quite highly by the youths, but we feel that junior staff members are much weaker in the performance of their role than are senior staff. We sense that in residential camps the night counselors and those staff members

responsible for off-duty activities are often operating on a somewhat different frequency. Their duties are seen primarily as social and recreational, and while they frequently express interest in the work activities and environmental learning, they have little opportunity to engage in these activities. There are indications in our data that ecologically-supportive living patterns and attitudes are more likely to be formed during off-duty hours than on the job or in formal education sessions. We feel that this life-style aspect of environmental education should become a prime consideration of those staff members whose duties are primarily in the living situa-If corps members are to carry their YCC experience back to their home living environments, they should also be able to carry what they have learned in work and in the educational program back to their camp living environments. Therefore, every camp should have its plan for living ecologically.

Group norms are important to the development of sound attitudes toward the environment, appreciation of natural settings, and support for learning. We believe that the procedure for recruiting corps members should continue to encourage the selection of enrollees with high levels of environmental concern and motivation. The social and psychological environments of the working, living, and learning situations should be entirely supportive of environmental concern. Those responsible for administering camps should not only attend to the creation of a social environment which would facilitate the attainment of program objectives, but they should also look at features of the physical environment which can be arranged to facilitate working, learning, and living objectives.

Regarding physical settings, all camps should evaluate the environmental soundness of their projects and practices, such as waste disposal. If poor practices are discovered efforts should be made, with the corps members' participation, to improve them. Therefore, we recommend that the sponsoring agency administrators and program implementors strive for better integration of the working, learning, and living dimensions of the program and attempt explicitly to avoid separating these aspects in administrative guidelines. We suggest the use of the term "work-learning projects" rather than "work projects." Because of the connotation associated with the

word education, we feel that it might be beneficial to give less emphasis to that word and refer instead to learning. Education is usually seen as the formal transmission of knowledge which occurs in formal settings, whereas learning opportunities may exist anywhere. By emphasizing the word learning, more attention may be directed to the opportunities that can be found outside formal education programs. The proposition that all staff members should be educators follows from the realization that learning is not confined to formal environmental education sessions; administrators must adjust to the notion that they too are teachers and classroom teachers must adjust to teaching outside the classroom.

The corps members' subjective assessment of their understanding of urban planning and management showed the least gain of any area we asked about. We feel that greater emphasis should be placed on the relevance of conservation practices, work assignments, and environmental learning to wider environmental issues ranging from urbanization and population growth to increased use of our natural resources. This might help to make the program more relevant for urban minorities.

Although there was a general increase in willingness to do things helping the environment, willingness to work with local citizen groups decreased during the summer. We feel that tie-ins with local groups active in environmental affairs should be made wherever possible. One aspect of environmental learning included in program objectives was familiarity with agency functions; this could be extended to include, as a YCC objective, increased familiarity with the environmental activities of citizen groups and acquaintance with opportunities to work with them. At times some of these citizen groups may be somewhat extreme in their orientation, but it is quite possible that one of the benefits of the YCC program would be the introduction of more sophisticated and better-trained young people into these groups.

CORPS MEMBER CHARACTERISTICS. Our final group of recommendations deals with corps member characteristics. We have already noted the outstanding performance of girls in both the 1971 and the 1972 YCC pilot programs. We urge that as many slots be allocated for girls in the program as are allocated for boys. When we examined

response to the program by age of corps members we found that there was little difference other than that 15-year-olds tended to do less well than older campers. We note that there were only about a third as many 18- and 19-year-olds in the program as there were 15-year-If a more equal balance between these younger and older groups could be achieved without diminishing the quality of the 18year-old group, we feel that this might provide more leadership within the corps member group. One reason for the high performance of the older corps member group might be self-selection. Generally, there exist more opportunities for employment and other summer activities which are open to the older youths in the country. Since those 18-year-olds who do choose to come into the YCC may be the most committed young people available and since we have observed that these older corps members often serve as role models and leaders for younger people, a degree of caution should perhaps be used with any efforts to increase the number of 18-year-olds in the program.

We found no differences in performance or in liking the program which were related to the youths' usual place of residence. Corps members from urban and rural areas liked the program equally well and learned about the same amount. We therefore feel that efforts to recruit corps members from as wide a variety of residential backgrounds as possible should be continued.

Young people from families of all income levels, except for those from families having annual incomes under \$5,000, performed equally well. There was lower performance and less liking of the YCC program by young people in the lowest income category. At the present rate of recruitment we feel that this does not place any limitations on the program. We feel that the present policy of recruiting from a representative spectrum of income levels should be continued. However, if there were to be efforts to substantially increase the percentage of young people from low income families, we feel that special attention should be given to the problem of accommodating a larger percentage of youths who as a group have shown less than average benefit from the program.

With regard to race, there appears to be less satisfaction with the program and lower levels of learning among American Indians and

We recommend that studies be continued to see what special needs of American Indian youth and black youth are not being met by the YCC program and to discover how the program may be adapted to better serve these groups. Whereas Indians were over-represented among corps members, blacks were somewhat under-represented in terms of their percentage of the population. While speaking with camp directors we learned of the difficulties encountered in recruiting blacks; frequently the problem appears to be one of "no-shows" or last minute cancellations as other opportunities which would give them more money or other benefits are discovered. We urge that early and extensive recruiting of blacks be done, risking overenrollment in anticipation of attrition. This strategy should result in obtaining a more nearly representative proportion of blacks.

Although compensation should not differ according to family income level or racial background we realize that there are often certain financial problems faced by low income corps members for which special efforts must be made. We refer to the expenses of personal equipment or transportation to camp. Transportation is particularly important for minorities, who sometimes must be recruited from more distant sources than other young people. A number of camps made arrangements to have citizens' conservation and environmental action groups provide equipment or transportation for corps members who could not do so on their own. We feel that sponsoring agencies should recognize the need to go beyond the local area in order to recruit minority group members and should also recognize the need to provide the resultant transportation expenses. However, the special equipment needs are probably best met through working with local resources.

Finally, we repeat our recommendation of last year that "representativeness" of the area's population should not be narrowly interpreted. Wherever population figures suggest recruiting only one or two from minority groups, efforts should be made to get more. One or two youths from racial minorities or from economically disadvantaged groups are likely to have a difficult adjustment if they are placed in camps consisting almost entirely of corps members whose backgrounds are different from theirs. We would also add the

corollary that there should not be camps whose members come largely from any single minority group. We believe the benefits of continuing to seek broadly representative enrollments are reflected in the report by corps members that the most worthwhile aspect of the program was the opportunity it gave to meet people from different backgrounds and to learn to get along with them.

DIRECTIONS FOR FUTURE RESEARCH

A final set of recommendations considers future research and how it might be used in the continued evaluation of the Youth Conservation Corps program. This research can take two directions: first, a continuing analysis of the data collected in 1971 and 1972, and second, the collection of new data beyond 1972.

Throughout this report we have shown relationships between single factors and corps member responses. We have alluded to the necessity of considering several factors simultaneously in relationship to these responses; time and budgetary concerns prevented us from embarking on this expensive form of multivariate analysis. As a first step in working with the existing data we would suggest that several of the more important factors be considered together with respect to important corps member responses.

Turning to the gathering of new data, we have previously mentioned that there should be an internal evaluation of educational attainment as well as of interpersonal relationships and participation in the camps. We feel that it would be beneficial to the environmental education program if knowledge scores at entry could be made available to the educational specialists shortly after the tests are completed; this could tell then which areas needed particular attention in the educational program.

It also would be possible to get an early reading on the participation and interpersonal relations climate of each camp, and feedback should be given on this aspect of camp life as well. The experience which others have had with the utilization of research findings indicates that feedback is of increased value if assistance is given in the interpretation of the results and if suggestions are made for action based on the research findings. We therefore recommend that, in addition to providing internal measurement and

feedback channels, a system for counseling camp administrators and environmental education specialists be developed to assist them in arriving at sound decisions based on the research findings.

We feel that the confirmation which we have received in 1972 on many of the findings of our 1971 evaluation diminishes the need for an across-the-board evaluation such as we performed during the first two years of the program. Consequently, our recommendations for future evaluative research deal mostly with experimental procedures. One possible experiment would be a study of the feedback mechanism suggested above. The internal evaluation and feedback could be arranged so that a sample of camps received feedback without interpretation or counseling while another sample received counseling in addition to the feedback.

Another avenue of investigation is suggested by some unexpected findings from the first two years. One such instance was the success of four-week camps in the Northeastern administrative region of the Forest Service in achieving knowledge gains and levels of satisfaction which were equal to or surpassed those observed in eightweek camps. A second finding similar to this is that non-residential camps seemed to perform as well or better than residential camps. As noted earlier, the location of almost all four-week camps within a single administrative region makes assessment difficult. suggested an experiment in which the four-week model would be extended to other regions. However, we feel that some insight may be gained without such an experiment by doing intensive comparative observation of these and other camps. Similar procedures could also be used to investigate non-residential camps to see what factors might account for the equality of their performance with that of residential camps.

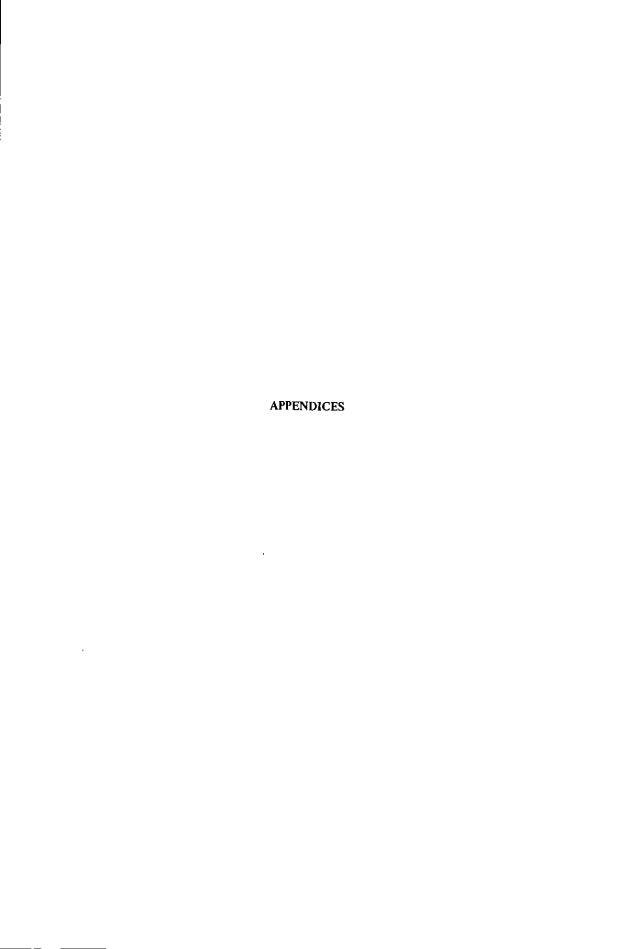
Regarding selection of camps for intensive observation, we note that there have been some camps which have been outstanding in both years and some which have been consistently below average. We could use the data gathered in the first two years of the program to identify camps for intensive observation and to see if factors other than those revealed on the across-the-board test were present which might account for superior or substantial performance.

One further approach to measuring the true effectiveness of the Youth Conservation Corps program is to do follow-up studies of the young people who have participated in the program. limitations to this kind of study since such a short time has elapsed since the first wave of operation was initiated in 1971. Other limitations result from the selection procedures which were employed. We believe it would be beneficial for us to re-contact some of the corps members from the first two summers and ask about their long-term evaluations of the programs. The follow-up procedures should be relatively inexpensive for those camps which recruit from a limited geographical area. We recommend that efforts be made this year to re-contact young people who participated in the 1971 and 1972 YCC. If this is done in camps which recruited mainly within one or two school systems it would, we believe, be beneficial to administer the environmental knowledge test throughout the entire school system. This would allow us to obtain some idea of what levels of environmental understanding exist in the population from which YCC corps members are recruited; this, too, would help place the results of corps member evaluation in perspective and indicate ways in which YCC could better serve the community. If the community at large appears to have low levels of knowledge on certain topics, the YCC program might have greater impact by devoting special attention to these areas. The corps members could be given special information regarding these areas which they, in turn, could share with their peers at home.

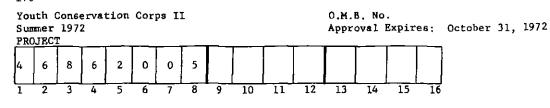
As already mentioned, research should continue to seek a better understanding of how this program can better meet the needs of minority youth. In addition to identifying cultural factors related to program features such as living away from home, working on projects to benefit the environment, and learning about the environment, these investigations should lead to modifications in recruiting methods and program operation.

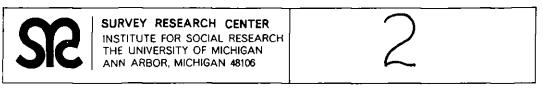
In summary, we have presented a set of findings based on our evaluations of the 1972 Youth Conservation Corps program. We have made several recommendations of ways in which the program might be made even more successful in the future. Finally, we have suggested how future research can be used to monitor the program, both as an

internal feedback mechanism guiding day-to-day operations and as a tool for long-range planning and evaluation. We have been particularly pleased with the response of the sponsoring agencies to our previous recommendations. We feel that the experience gained in the first year of the program has helped build a superior program during the second year of operation; we anticipate that the increased experience gained in the second year will also benefit subsequent years. Therefore, we urge continued monitoring and evaluation to document this experience and to discover means of further strengthening the program.



APPENDIX A





The questions in this section are to help us understand how you feel about your experiences in the Youth Conservation Corps this summer....Particularly, we need to know:

- * What you liked and disliked.
- * What was worthwhile or most meaningful to you and what wasn't.
- * What were the strengths and weaknesses of the camp, the staff and the program.
- 5:17 To begin with, how do you feel about your Youth Conservation Corps experience this summer?
 - 1 I REALLY LIKED IT
 - 2 I LIKED IT
 - [3] I CAN'T SAY I CLEARLY LIKED OR DISLIKED IT
 - [4] I DISLIKED IT
 - [5] I REALLY DISLIKED IT
- 5:18 How worthwhile to you was your Youth Conservation Corps experience this summer?
 - 1 VERY WORTHWHILE
 - 2 SOMEWHAT WORTHWHILE
 - 3 NOT VERY WORTHWHILE
 - 4 NOT AT ALL WORTHWHILE

Here is a list of things that corps members have mentioned as being \underline{most} worthwhile about this summer's YCC. Please put an X in front of those things that you feel were $\underline{especially}$ worthwhile for you.

After you have done this, please look back over the ones you have marked and pick out the single \underline{one} which was the \underline{most} worthwhile. Put $\underline{another~X}$ in front of it.

	Personal
5:19	Finding out about myself
5:20	Being on my own - the independence
5:21	Earning money
5:22	Being physically active and keeping in shape
5:23	Working or living outdoors, being in a natural setting
5:24	Seeing new places
	Social
5:25	Learning to get along with young people from different social backgrounds
5:26	Learning to get along with adults
5:27	The chance to meet people and make friends
5;28	Social or recreational activities and events
	Work
5:29	General up-keep or repair of buildings or grounds, litter pick-up
5:30	Construction projects bridges, shelters, fireplaces, etc.
5:31	Trail building
5:32	Thinning or clearing areas, stacking brush, weed control
5:33	Planting (trees or seeds)
5:34	Working with fish or wildlife
5:35	The work program in general
	Environmental Learning
5:36	Learning general principles of ecology and conservation
5:37	Learning practices of natural resource management and how government agencies work in these areas.
5:38	Learning about nature - identifying and observing plant and wildlife
5: 39	If something you feel was very worthwhile is not included in this list, please describe it here.

Here is a list of things that corps members have mentioned as being $\underline{least\ worth-while}$ about this summer's YCC. Please put $\underline{an\ X}$ in front of those things that you feel were \underline{least} worthwhile for you.

After you have done this, please look back over the ones you have marked and pick out the single one which was the \underline{least} worthwhile. Put $\underline{another~X}$ in front of it.

	Scheduling							
5:40	The time spent getting to and from work projects							
5:41	Time spent waiting around on the work for tools, supplies or people							
5:42	Requiring educational activities after hard day of work							
5:43	Requiring recreational activities after hard day of work							
5:44	Nothing to do on rainy days, evenings or weekends							
	Social and Personal							
5:45	Other corps members who didn't do fair share - didn't contribute to program							
5:46	Other corps members who caused trouble							
5:47	Staff who were hard to get along with or unfair							
5:48	Staff who didn't know or care enough about the environment or conservation							
5:49	Too much regimentation							
	Work							
5:50	General up-keep or repair of buildings or grounds, litter pick-up							
5:51	Construction projects bridges, shelters, fireplaces, etc.							
5:52	Trail building							
5:53	Thinning or clearing areas, stacking brush, weed control							
5:54	Planting (trees or seeds)							
5:55	Working with fish or wildlife							
5:56	The work program in general							
	Environmental Education							
5:57	Lectures, formal group discussions							
5:58	Film strips, slides or movies on environmental subjects							
5:59	If something you feel was <u>least</u> worthwhile is not included on this list, please describe it here.							

Here are some of the things which may be kept in mind when camps select work projects. Please show how important you feel each of these considerations should be.

5:60	Choose projects that corps members can	E_{X} t_{remely} $I_{mportaric}$	V_{ery} Importent	$l_{mportant}$	$I_{mport_{a,t}}$	Not at all
pr	handle from start to finish and will produce something which can be seen and appreciated for years to come.	Ί	2	[3]	4	[3]
5:61	Choose projects which benefit the environment.					
5:62	Choose projects where the work is not all the same and repetitious.					
5:63	Choose projects which benefit visitors or other on-site users.					
5:64	Choose projects that help teach corps members about the environment.					
5:65	Choose projects that are not too hard for most corps members.					
5:66	Choose projects that are not too easy for most corps members.					

How often did the projects you worked on this summer meet these considerations?

		Always	v_{suall_y}	About half the time	Seldom	Ne i'er
		41	18 ₁	Ab	Se	Ne
5:67	The corps members could handle them from start to finish and produced something which can be seen and appreciated for years to come.	1	[2]	3	4	[5]
5:68	The projects will benefit the environment.					
5:69	The work was all the same and repetitious.					
5:70	The projects will benefit visitors or other on-site users.					
5:71	The projects helped me learn about the environment.					
5:72	The work was too hard for me.					
5:73	The work was too easy for me.					

4	6	8	6	2	0	0	6				
1	2	3	4	5	6	7	8	9	10	11	12

Here are some questions about how you would rate specific parts of the Youth Conservation Corps.

How w	ould you rate the Regular Staff	Excellent	Very Good	Cood	Fair	Poor
6:13	as work leaders?	I	2	[3]	4	[5]
6:14	as to their commitment to the overall objectives of the YCC program?					
6:15	as to their concern about the environment?					
6:16	as to their knowledge of the environment?					
6:17	as to their ability to help you learn about the environment?					
How w	ould you rate the Youth Leaders:					
6:18	as work leaders?					
6:19	as to their commitment to the overall objectives of the YCC program?					
6:20	as to their concern about the environment?					
6:21	as to their knowledge of the environment?					
6:22	as to their ability to help you learn about the environment?					
How w	ould you rate your fellow corps members:					
6:23	as co-workers?					
6:24	as to their commitment to the overall objectives of the YCC program?					
6:25	as to their concern about the environment?					
6:26	as to their knowledge of the environment?					
6:27	as to their ability to help you learn about the environment?					

How would you rate the work accomplished by corps members at your camp:	Excellent	Very Good	200g	Fair	Poor
6:28 as to amount?	1	2	3	4	[5]
6:29 as to quality?					
6:30 as to its benefit to the environment?					
6:31 as to its benefit to the public?					
How would you rate the environmental education you received:					
6:32 from reading in the camp library?					
6:33 as part of the work program?					
6:34 on field trips or going along with regular agency employees on their jobs?					
6:35 in lectures, films, and demonstrations in camp?					
6:36 in ecological games and activities?		□.			
6:37 in informal discussions, rap sessions, etc	. 🗆				
6:38 in terms of its application to your post- camp life?					
6:39 How would you rate the coordination between the work and the environmental education program how well did one tie into the other?					
6:40 How would you rate your camp as a community a place where interests are shared and people work well and get along well together?					
ANSWER THE NEXT 2 QUESTIONS ONLY IF YOU WERE IN	N A RESIDENT	TAL CA	MP		
6:41 How would you rate the living accomodations	s?				
6:42 How would you rate the recreational facilities?					

Here are some of the main things that different people might get out of joining the Youth Conservation Corps. Please mark each item by putting an X through the box that tells how important it was to you.

6:43 Youth Conservation Corps offers experience or training that will be useful in one's personal development or later career.

1. VERY IMPORTANT

3. SOMEWHAT IMPORTANT

5. NOT VERY IMPORTANT

6:44 Youth Conservation Corps offers a break from ordinary things -- a chance to get away.

1. VERY IMPORTANT

3. SOMEWHAT IMPORTANT

5. NOT VERY IMPORTANT

6:45 The Youth Conservation Corps offers a chance to <u>learn about the environment</u> and to do what you can to take care of it.

1. VERY IMPORTANT

3. SOMEWHAT IMPORTANT

5. NOT VERY IMPORTANT

6:46 The Youth Conservation Corps offers a chance to find out about yourself -- what you can do and how you can get along in new situations.

1. VERY IMPORTANT

3. SOMEWHAT IMPORTANT

5. NOT VERY IMPORTANT

6:47 The Youth Conservation Corps offers a chance to make a little money.

1. VERY IMPORTANT

3. SOMEWHAT IMPORTANT

5. NOT VERY IMPORTANT

6:48 The Youth Conservation Corps offers adventure and new experiences.

1. VERY IMPORTANT

3. SOMEWHAT IMPORTANT

5. NOT VERY IMPORTANT

Here are some things that young people are sometimes bothered about when they enter the Youth Conservation Corps. We would like to know how these things actually bothered you.

6:49 How about following camp rules and regulations? Was this a problem for you, and if so, how much did it bother you?

NO PROBLEM

HARDLY BOTHERED
AT ALL

BOTHERED
A LITTLE

PRETTY MUCH

5. BOTHERED
A LOT

6:50 How about <u>living by a schedule</u> and not being able to do things when you wanted to?

NO PROBLEM

HARDLY BOTHERED

3. BOTHERED

4. PRETTY MUCH

5. BOTHERED

Some people think corps members should participate in running the Youth Conservation Corps camps. Others think the camp supervisory staff should decide everything. In each of the following areas please tell us what you think is best.

6:51 How much do <u>you</u> think corps members should participate in planning the camp work program?

1. A GOOD DEAL 2. SOME 3. VERY LITTLE 4. NOT AT ALL

6:52 How much do you think corps members should participate in planning the camp recreational program?

1. A GOOD DEAL 2. SOME 3. VERY LITTLE 4. NOT AT ALL

6:53 How much do you think corps members should participate in planning the environmental education program?

1. A GOOD DEAL 2. SOME 3. VERY LITTLE 4. NOT AT ALL

6:54 How much do <u>you</u> think corps members should participate in deciding on camp discipline?

1. A GOOD DEAL 2. SOME 3. VERY LITTLE 4. NOT AT ALL

Now we would like to know your views on some other things.

6:55 If a family of a different race (but same level of education and income) moved next door to you, how would you feel about it?

1. I'D MIND IT A LOT 3. I'D MIND IT A LITTLE 5. I WOULDN'T MIND IT AT ALL

- 6:56 If you were to participate in the YCC program again, would you prefer to be in:
 - 1 A camp where all corps members were of the same sex
 - 2 A co-ed camp
- 6:57 Would you prefer:
 - 1 A residential camp
 - 2 A non-residential camp

Almost Always

These next questions give us additional information on how you feel about the camp and its staff. The questions are designed to determine how the staff and corps members have worked together this summer and are important to the planning of future Youth Conservation Corps programs. Therefore, we would like you to answer each question as thoughtfully and frankly as possible. Remember this is not a test and there are no right or wrong answers.

Next to each question is a line with words explaining what each end of the line means. We want you to place an \underline{X} at the point along the line which, in your experience, best describes how your camp was. For example, if on the first question you feel your camp staff was rarely friendly and supportive, you would put an \underline{X} on the far left end of the line. If you think the staff was almost always friendly and supportive you would put the \underline{X} on the far right end of the line. If your experience was somewhere in between, please place an X where you think it belongs.

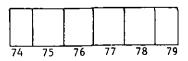
Rare1v

6:58	How often was the behavior of the camp staff friendly and supportive?		
6:59	How often did the staff ask for and use your ideas about:	Rarely	Very Frequently
	a. Program matters such as work assignments and topics studied?		
	b. Non-program matters such as dis- cipline and free time activities?	Rarely	Very Frequently
6:60	To what extent was the staff willing to try new ways of doing things in order to improve the corps program?	Practically never	A very great extent
6:61	To what extent did you consider indi- vidual members of the staff as friends?	Practically never	A very great extent
6:62	To what extent was the staff willing to share information with corps members about the camp and its operation?	Practically never	A very great extent
6:63	To what extent did the staff give <u>positive</u> rather than <u>negative</u> comments or criticisms in discussing the work of corps members?	Practically never	A very great extent
6:64	How well did you feel you understood the goals and objectives of the Youth Conservation Corps program?	Not Well	Very Well

		Not Well	Very Well		
6:65	How well do you think the staff did in running the camp?				
6:66	How well were the work and study assignments organized and clearly planned?	Not Well	Very Well		
6:67	To what extent did one or two of the staff seem to make most of the decisions in camp?	Practically never	A very great extent		
6:68	To what extent did you feel free to talk to members of the staff?	Practically never	A very great extent		
6:69	To what extent did the staff treat you as an individual rather than just another member of the group?	Practically never	A very great extent		
6:70	How much were you involved in making decisions about running the camp and its programs?	Rarely	Very Frequently		
6:71	How often did the staff and corps members meet together to discuss camp problems?	Rarely	Very Frequently		
6:72	To what extent did the staff try to understand your personal problems and help you deal with them?	Practically never	A very great extent		
6:73		Practically none	A very great deal		

We are interested in any suggestions you have for improving the YCC environmental education program. Please list your suggestions on the lines below.

Α.	 -							
	 		•			·	 	
	 						 	
	 			_	<u> </u>	, 	<u> </u>	
В.								
	 	··· · · ·						
c								
С.								



4	6	8	6	2	0	0	7				_
7	2	3	4	5	- 6	7	8	9	10	11	12

Here is a list of problems facing the nation. We'd like to know how serious you think these problems are $\underline{\text{for the United States}}$ today.

(CHECK ONE BOX FOR EACH LINE)

	PROBLEM	1. EXTREMELY SERIOUS	2. VERY SERIOUS	3. QUITE SERIOUS	4. NOT VERY SERIOUS	5. NOT AT ALL SERIOUS
7:13	Lack of open space and recreation lands	Ī	2	[3]	4	5
7:14	Lack of national morale and unity					
7:15	Too few job opportunities					
7:16	The rate at which fixed resources are being used up					
7:17	Air and water pollution					
7:18	Inadequate educational opportunities	1	[2]	[3]	[4]	[5]
7:19	Drug addiction					
7:20	Litter and trash					
7:21	Hunger and poverty					
7:22	Crime and violence					
7:23	Overcrowding	1	2	3	4	[3]
7:24	Race relations					
7: 2 5	Inflation and high prices					
7:26	The war in Southeast Asia					
7:27	Noise pollution					

If money were no problem, how likely would it be that someday you would buy each of the following items? Please check the likelihood for each item.

		l. EXTREMELY LIKELY	2. VERY LIKELY	3. Somewhat Likely	4. NOT VERY LIKELY	5. NOT AT ALL LIKELY
	<u>ITEM</u>					
7:28	A motorcycle	1	2	3	4	5
7:29	A large car					
7:30	A canoe					
7:31	A family-sized tent	1	2	3	4	5
7:32	A bicycle					
7:33	A power boat					
7:34	A camper (truck or trailer)	I	[2]	3	4	[5]
7:35	A compact car					
7:36	An all-terrain vehicle					
7:37	An electric can opener		2	3	4	[5]
7:38	Water skis					
7:39	Backpacking equipment					

Here are some of the ways in which it has been suggested that an individual can help deal with the problem of <u>water pollution</u>. Please check how willing you would be to take each of the following actions in dealing with this problem.

		1. DEFINITELY WILLING	3. MIGHT BE WILLING	5. DEFINITELY NOT WILLING
7:40	Not use products that cause pollution	ī	3	5
7:41	Write letters to government officials			
7:42	Pay higher taxes to cover the cost of government efforts to solve the problem			
7:43	Pay higher prices for the things you buy to cover the manufacturer costs of solving the problem	¹ g		
7:44	Work 4 or more hours a week with citizen groups attempting to do something about the problem			
7:45	Become involved in protest demonstrations and picketing			
solv	se check which, if any, of these are the problem of water pollution. 1. THINGS I HAVE DONE	ctions you have a	lready taken to	o help
7:46	Not used products that caus	se pollution.		
7:47	Written letters to governme	ent officials.		
7:48	Worked 4 or more hours a we something about the problem		tempting to do	
7:49	Become involved in protest water pollution	demonstrations or	picketing abo	ut
7:50	NONE OF THESE			

Compared with other people of your age, how would you rate your general level of understanding of the following subjects:

		1. MUCH ABOVE AVERAGE	2. ABOVE AVERAGE	3. AVERAGE	4. BELOW AVERAGE	5. MUCH BELOW AVERAGE
7:51	Soil resources	1	2	3	4	5
7:52	Water resources					
7:53	Plant (including timber) resources					
7:54	Animal resources	1	2	3	4	5
7:55	Human resources					
7:56	The relationships between the five types of resources listed above					
7:57	Natural resource plan- ning and management	1	2	3	4	5
7:58	Metropolitan or urban planning and management					
7:59	The application of basic concepts and principles of ecology to natural environments					
7:60	The application of basic concepts and principles of ecology to your home environment and daily life					

7:61	Are you a Youth Leader in the YCC?
	1. YES 5. NO
7:62	How much schooling do you think you'll have by the time you finish your formal education? (CHECK ONLY ONE BOX)
	1. Less than high school
	2. High school graduate
	3. Some additional technical or trade school training
	4. Some college
	5. Four years of college
	6. More than four years of college
	8. Don't know
7:63	Will you be returning to school or going to college this fall
	1. YES 5. NO → SKIP TO 7:66
7:64	Do you plan to take any courses in the natural or biological sciences or environmental education courses?
	1. YES 5. NO → SKIP TO 7:66
7:65	Is this partly the result of interest or knowledge gained in the YCC this summer?
	1. YES 5. NO
7:66	Have you given any thought to the kind of work you would like to do in the future?
	1. YES 5. NO SKIP TO QUESTION 8:13
7:67	Have you seriously considered a job which deals with planning and management of the physical environment?
	1. YES 5. NO

4	6	8	6	2	0	0	8				
1	2	3	- 4	5	6	7	8	9	10	11	12

We are asking the following questions to find out about your understanding of the physical environment and environmental problems.

8:13	Ecology is usually defined as:
	1. A major environmental problem throughout the world. 2. The study of relationships between one plant or animal and another 3. The study of interdependencies between plants and animals and relationships between them and their environments 4. The science of plants and animals 5. A branch of economics except that it deals with plants and animals instead of goods and services
8:14	A watershed most commonly refers to:
	1. A drainage area, especially of a river or stream 2. A warehouse or tank for storing water 3. A type of outhouse 4. Paved streets and other surfaces that water runs off quickly 5. A protective covering used by outdoorsmen during rain storms
8:15	Habitat refers to:
	1. The sleeping cycle of wild animals 2. A type of fish endangered by mercury pollution 3. The tendency of salmon to return to their birthplace to spawn 4. The natural abode or environment of a plant or animal 5. A new urban housing program sponsored by the U. S. Department of Housing and Urban Development
8:16	A water table is:
	1. A chart for measuring how much water flows in a stream or river 2. The upper limit of ground or earth saturated with water 3. A piece of furniture used next to a waterbed 4. A place where underground streams can always be found 5. A meter used in determining the amount of water consumed in a household
8:17	A temperature inversion
	1. Explains why it is winter in the northern hemisphere when it is summer in the southern hemisphere 2. Can be broken with aspirin and a lot of rest 3. Concentrates air pollution in parts of the country 4. Is an index of thermal pollution 5. Explains why the desert is dry

8:18	A food chain is:
	1. A term used to describe the eating habits of sick animals 2. A row of different foods on the shelf of a grocery store 3. A series of organisms through which energy flows 4. An animal's digestive tract 5. The process of feeding prisoners on a chain gang
6 - 10	
8:19	Migration in wildlife management refers to:
	1. Digging ditches to drain swamps (the opposite of irrigation) 2. A seasonal worker 3. The practice of trimming the horns of certain animals 4. The periodic movement of animals from one habitat to another 5. The range over which different types of animals gather food
8:20	Which one is not an example of sustained yield management?
	1. Harvesting trees on a rotation basis 2. Recharging ground water supplies 3. Mining peat from a swampy area 4. Cutting mature trees to provide deer browse 5. Matching hunting quotas to wildlife population levels
8;21	Ecologically, a limiting factor is:
	1. An anti-pollution device 2. Any insufficiency in requirements for growth and survival 3. Any extinct species 4. The unwillingness of most citizens to recycle bottles, cans and paper 5. The maximum number of campers permitted to use a campground
8:22	"Spaceship Earth" means:
	1. Environmental problems can be solved by bringing resources back from outer space 2. That the earth rotates through space around the sun 3. That the earth was formed when two giant worlds collided 4. We can discover many new earth resources by using satellite research stations 5. The earth is a closed system with limited resources
8:23	The optimal population which an area can support indefinitely and without depletion is called the:
	1. Carrying capacity 2. Critical zone 3. Saturation level 4. Equilibrium state 5. Ecological apex

8:24	Which of the following is <u>not</u> an example of a <u>heritage resource</u> ?
	1. The Liberty Bell 2. The cliff dwellings at Mesa Verde 3. San Francisco cable cars 4. Coal deposits
	5. The Gettysburg battle field
8:25	The earth's water supply is:
	1. Decreasing rapidly because of overuse 2. Relatively fixed but can be misused 3. Not fixed but probably sufficient for some time to come 4. Decreasing through evaporation 5. Increasing as the polar ice caps melt
8:26	Where does water from most sanitary sewer systems go after treatment?
	1. Large cross-country pipe lines 2. Into artesian wells 3. Back into the water supply system of that city or town 4. Into large evaporating tanks or ponds 5. Into a river or lake
8:27	The change of plant communities from lichens on bare rock to a climax forest is called:
	1. Adaptation 2. Tolerance 3. Biotic succession 4. Mutual adjustment 5. Food chain evolution
8:28	Which one of the following is not an example of resource exploitation?
	1. Clearcutting forests without providing for reproduction 2. Overgrazing rangeland to the point that run-off causes erosion 3. Owning high horse-power cars for in-town use 4. Endangering a species of animal to obtain fur for coats 5. Charging the public for using national parks, shorelines and forest campgrounds
8:29	<u>Dominance</u> in ecology refers to:
	1. Superior strength and/or vigor of certain plants or animals 2. The right of man to control nature 3. The three basic domains of plant, animal, and mineral 4. A theory which explains why trees knock one another down during wind storms 5. The sleeping or resting time in the life cycle of certain plants and animals

8:30 In general how concerned are you about environmental problems?

1. EXTREMELY CONCERNED	2 VERY CONCERNED	3. MODERATELY CONCERNED	4
------------------------	---------------------	-------------------------	---

Here are some government agencies that deal with environmental resources. For each agency decide which of the numbered descriptions best describes some part of the agency's work, and write its number in the blank beside the agency. The first one is completed as an example.

A LITTLE

CONCERNED

NOT AT ALL CONCERNED

10 Bureau of Outdoor Recreation

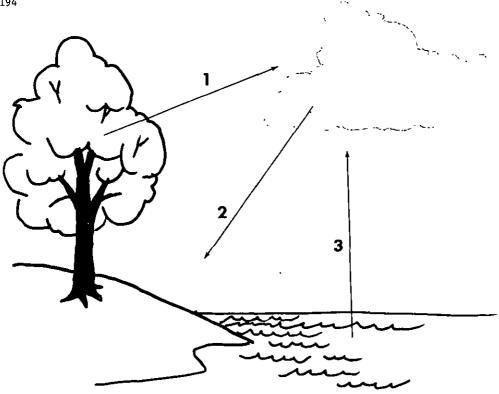
	AGENCY		DESCRIPTION
8:31	 Park Service	1.	Irrigation
8:32	 Environmental Protection Agency	2.	Multiple use and Wilderness
8 :33	 Bureau of Reclamation	3.	Environmental impact statements
8:34	 Bureau of Sport Fisheries and Wildlife	4.	Flood control
8:35	 Corps of Engineers	5.	Public domain and off- shore oil
8:36	 Soil Conservation Service	6.	Watershed protection
8:37	 Bureau of Indian Affairs	7.	Refuges
8:38	 Forest Service	8.	Yellowstone and Yosemite
8:39	 Bureau of Land Management	9.	Reservations
		10.	Golden Eagle

In this section we are interested in your opinions. Please don't worry about your answer being right or wrong. Just read each statement below, and then decide how you feel.

	(CHECK ONE BOX ON EACH LINE)	Agree very strongly	Agree	Agree somewhat	Undecided or neutral	Disagree somewhat	Disagree	Disagree strongly
8:40	Hunters should never be permitted to shoot doe deer.	1	2	3	4	[5]	6	7
8:41	There would be \underline{no} air and water pollution without man.							
8:42	It really doesn't matter much if rare and endangered species of wildlife become extinct.							
8:43	Science is advancing so rapidly that we need not worry about using up our natural resources.							
8:44	Clearcutting is a practice in forestry which should never be used.							
8:45	One should live for today and let tomorrow take care of itself.							
8:46	Generally, the best way to increase wildlife populations is to eliminate animals which prey on other animals.							
8:47	The United States should try to cut down on the amount of resources its citizens use up each year.							
8:48	A man should have the right to use, develop or destroy his own land in any way he wishes.							
8:49	Most insects do more good than harm.							
8:50	I feel strongly enough about preventing overpopulation that I would be willing to limit my family to two children other than those I might adopt.							
8:51	Simple ecological systems are usually more stable than complex systems.							

		Agree very strongly	Agree	Agree somewhat	Undecided or neutra]	Disagree somewhat	Disagree	Disagree strongly
8:52	Generally, the greater the variety of plants and animals in a natural area, the more likely these plants and animals will be healthy and survive.	1	2	3	4	5	6	7
8:53	Industries can't cut down on their pollution and still make a profit.							
8:54	One of the amazing things about nature is that it goes on undisturbed regardless of what happens.							
8:55	Most principles of ecology do not apply to man because of his ability to master the environment.							
8:56	If an endangered species has no economic value to man, it is wasteful to spend money trying to save it.							
8:57	The major reason that nature seems so calm and peaceful is because there is little conflict or competition in nature.							
8:58	The person who tries to plan very far ahead is bound to be disappointed.							
8:59	Land which has high value for other uses should never be used as natural, open or green space.							
8:60	In order to conserve a scarce natural resource, we should use metal telephone poles instead of wooden poles.							
8:61	Since it helps the economy to grow, people should be encouraged to buy more.							
8:62	There's nothing wrong with advertisers creating a demand for a new product that people don't really need.							
8:63	Trees should never be managed as if they were a crop to be harvested on a rotating basis.							

petroleum resources.



Please indicate which stages in the water cycle are illustrated by the arrows in the above drawing by writing the number of an arrow beside each word below.

8:69 ____ Evaporation

8:70 ____ Transpiration

8:71 ____ Precipitation

4	6	8	6	2	0	0	9				
Ψ	<u></u>	3	4	٣-	 -	'	8	<u>-</u>	10	11	

Now for each statement below, please indicate whether you think it is $\underline{\text{true}}$ or $\underline{\text{false}}$. If you $\underline{\text{do not know}}$ please mark that box. Be sure to mark one box on each line.

		TRUE	FALSE 0	DO NOT KNOW 8
9:13	More natural resources are used by the average citizen in a rich country than in a poor one.			
9:14	One of the problems of managing natural resources is that some of them move from one government's area of control to another.			
9:15	There is little competition in a "balanced" ecosystem.			
9:16	Visual pollution does not refer to eye irritation caused by dust and chemicals in the air.			
9: 17	If people would be more careful, there would be no forest fires.			
9:18	One of the major costs of operating outdoor recreation areas is cleaning up trash and litter.			
9:19	The "producers" in the food chain are green plants.			
9:20	In a windy city air pollution is generally not a serious problem.			
9:21	It is possible to establish wildlife reserves and other natural areas within large cities.			
9:22	There is little a citizen can do as an individual to help improve the quality of the environment.			
9:23	Almost all environmental problems are caused by industries or businesses.			
9:24	If sewage treatment plants were totally effective, disposal of solid wastes would still be a major environmental problem.			

		TRUE 1	FALSE 0	DO NOT KNOW 8
9:25	We are running out of open and undeveloped land in the United States.			
9:26	Level river and creek bottoms which are subject to flooding are often best used for recreational purposes.			
9:27	Wildflowers should never be picked.			
9:28	We are rapidly using up our fixed supply of timber resources.			
9:29	An open system takes things from its environment and gives things to its environment.			
9:30	We should use aluminum Christmas trees instead of cutting down real trees.			
9:31	Decomposers, such as fungi and bacteria, are important in the cycling and recycling of nutrients and minerals.			
9:32	It is not possible to stop the production of all pollutants because some of them are the result of natural processes'.			
9:33	Among wildlife, competition is always between members of <u>different</u> , rather than the <u>same</u> , species.			
9:34	The cliff dwellings preserved by the U. S. Park Service are examples of cultural resources.			
9:35	Fire can be a useful tool in forest management.			
9:36	In a closed system energy can neither be created nor destroyed, but it can become less available for useful work.			
9:37	The science of ecology does not include man.			

For each concept in the following list there is an example from <u>plant and animal ecology</u> which best fits the concept. Please enter the number of the example which best fits the concept in the space before the concept. The correct answer is given for the first concept to show how it should be done.

	CONCEPTS	EXAMP LES
	4COMPETITION	
9:38	NICHE	 Mold growing on a damp log.
9:39	DENSITY	2. Bees and Flowers
9:40	TERRITORIALITY	3. A nesting bird's "area"
9:41	SYMBIOTIC RELATIONSHIP	4. Survival of the fittest
9:42	SUCCESSION	Number of grizzly bears per 100 square miles
9:43	SPECIALIZATION AND DIVISION OF LABOR	 The development from pioneer species to climax associations

Here are the same concepts, but this time the examples are drawn from https://www.human.and.urban.ecology. Please match the concepts and examples as you did before. Again, the correct answer is given for the first concept to show how it should be done.

7. A beehive

	CONCEPTS	EXAMPLES
9:44	NICHE	1. A person's profession
9 :45	DENS ITY	 Auto manufacturers and rock salt producers
9:46	TERRITORIALITY	3. A "changing" neighborhood
9:47	SYMBIOTIC RELATIONSHIP	4. Assembly line production
9 :48	succession	5. Free enterprise system
9:49	SPECIALIZATION AND DIVISION OF LABOR	Dwelling units per acre
	DIVISION OF LABOR	7. Zoning laws

In the left hand column are five terms. Please match each of these terms with the answers listed on the right by writing the number of the answer you select in the blank before the term.

	<u>TERMS</u>
9:50	Transpiration
9:51	Chain
9:52	61
9:52	Slope
9:53	Soil Saturation Point
9:54	Run-off

ANSWERS

- "Loss" of water to the atmosphere through green plants.
- 2. Water that can not be held in the soil.
- 3. Measure of distance
- The movement of objects from one place to another
- "Loss" of water to the atmosphere from the surface of lakes and oceans.
- Relationship between vertical and horizontal distance.
- Point at which no more water can be absorbed.
- 0. None of the above.

Here are some more terms and answers to be matched.

		TERMS		ANSWERS
9:55		Food Chain	1.	A measure of air pollution.
9:56		Seedlings	2.	Inbreeding of a species.
9:57		Pioneer Species	3.	A measure of water quality.
9:58		Climsx Association	4.	Very small trees.
9:59		Dissolved Oxygen	5.	First group of plants to inhabit an area following a major ecological change. First group in natural succession.
			6.	Clearcutting a forest.
			7.	Recycling of bottles and cans.
			0.	None of the above.
9:60	Heredity	is the big factor in determ	uning ho	w tall any <u>one</u> pine tree will grow.
		1. TRUE	O. FAL	SE
9:61		succession refers to the fac hich were there before.	t that n	ew plants are the offspring of the
		1. TRUE	0. FAL	SE
9:62	Green le	aves, water and sunlight mak	e food f	or plants.
		1. TRUE	O. FAL	SE

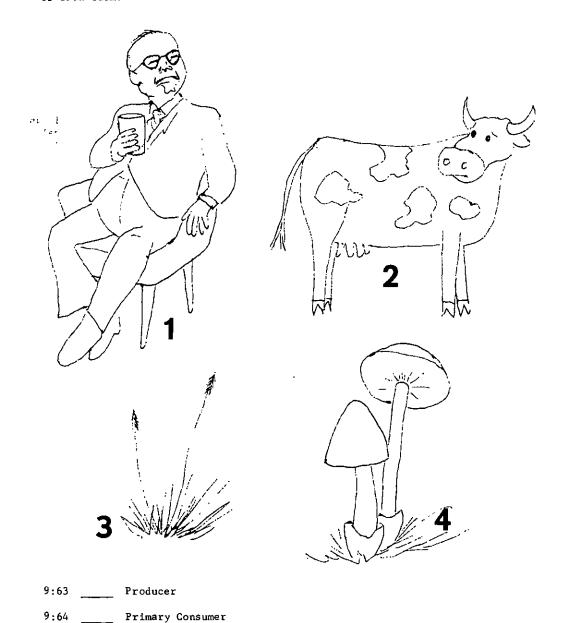
9:65

9:66

Secondary Consumer

Reducer

These drawings show four links in the food chain. A description of each link is given below. Please write the number of the right picture in the blank in front of each term.



On this page we have listed a number of opposing views about the environment and resource use. Each pair of opposing views is connected by a divided line. We want you to place an X at the point along the line which best describes how you stand between the two extremes. For example, if on the first question you feel we should think only about the present, you would put an X on the far left end of the line. If you feel we should think of both, you would put an X on the far right end of the line. If you feel we should think of both, you would put an X somewhere between the two ends to best describe where you stand.

DO YOU FEEL WE SHOULD:

9:67	Think only about the present		Think only about the future
9:69	Use only renewable resources		Use only non-renewable resources?
9: 71	Encourage only those activities which do not consume resources?		Encourage only those activities which consume resources?
9:73	Think only of benefits to things other than man?		Think only of benefits to man?
9:75	Consume resources entirely according to wants?		Consume resources entirely according to needs?
9:77	Think only of ecological benefits?		Think only of economic penefits?
9:79	Decrease variety in the environment?		Increase variety in the environment?

4	6	8	6	2	0	1	0				
1	2	3	4	5	6	7	R	Q.	10	11	12

On this page we would like you to place $\underline{X's}$ to show where you would guess most other Americans of your age stand. Of course no one knows exactly where others stand, so it's how you feel they stand that's important.

MOST AMERICANS OF MY AGE FEEL WE SHOULD:

10:13	Think only about the present	Think only about the future
10: 15	Use only renewable resources	Use only non-renewable resources?
10: 17	Encourage only those activities which do not consume resources?	Encourage only those activities which consume resources?
10: 19	Think only of benefits to things other than man?	Think only of benefits to man?
10:21	Consume resources entirely according to wants?	Consume resources entirely according to needs?
10: 23	Think only of ecological benefits?	Think only of economic benefits?
10: 25	Decrease variety in the environment?	Increase variety in the environment?

Now please mark this page to show where you feel most Americans of your parents' age stand.

MOST AMERICANS OF MY PARENTS' AGE FEEL WE SHOULD:

10:27	Think only about the present?		Think only about the future
10:29	Use only renewable resources?		Use only non-renewable resources?
10:31	Encourage only those activities which do not consume resources?		Encourage only those activities which consume resources?
10:33	Think only of benefits to things other than man?		Think only of benefits to man?
10:35	Consume resources entirely according to wants?		Consume resources entirely according to needs?
10:37	Think only of ecological benefits?		Think only of economic benefits?
10:39	Decrease variety in the environment?		Increase variety in the environment?
10:41	Did you complete a University entered camp?	of Michigan questionnaire a	t the time you
	1. YES This is all	the information we need. T	hank you.

5. NO Please complete background information on next three pages.

· 								
4 6 8 6 2 0 0 4 (PUNCH 9 IN 13 - 41)								
1 2 3 4 5 6 7 8 9 10 11 12								
The questions in this section give us some background information about you, where you've, and what you've done. In reporting the results of this study, we will not disclose information that will identify any individual by name. Instead, we will report our findings by broad categories such as "10th grade," "all girls," "all 18 year olds," etc. We also want to know how well the camps are working out for people with different backgrounds. Therefore, these questions are very important to us. It you see a question that you prefer not to answer, however, simply leave it blank.								
4:42 What is your sex? 1 Female 2 Male								
4:43 What is your race or ethnic background?								
1 American Indian 2 Black 3 Oriental 4 Spanish Surname								
5 White Other (PLEASE SPECIFY)								
4:44 How old were you on your last birthday?								
15 16 17 18 Other (SPECIFY)								
4:46 What was the last grade in school you completed before coming here to camp?								
08 09 10 11 12 First Year of College								
Other								
4:48 Have you completed a course in natural science, biology, conservation, or outdoor education in school?								

4:49 Was your decision to join the Youth Conservation Corps partly the result of interest or knowledge gained in such courses?

5 NO --- (SKIP TO QUESTION 4:50)

1 YES 5 NO

4:50	BL	ANK		./ ፣	2	
					ðu-	
4:51	Wh:	ich of the following best describes the place where	e your home i	is located?		
		1. A large city of more than 500,000 people		Strenjan. Li - J - Ay:		
		2. A medium size city of 100,000 to 500,000 peop	le	ı		
		3. A suburb of a medium or large city		J 1 1 11 167	94:4	
		4. A small city of 25,000 to 100,000 people		<i>ក្</i> កាថ. ១៤៩		
		5. A small town of less than 25,000 people		,		
		6. A rural area				
		7. Other (PLEASE DESCRIBE)	£			
		oming to the Youth Conservation Corps Camp this year to have you had? (CHECK ALL YOU HAVE DONE)	ar, what camp	oing .	7. Esta)	
4:52		Enrolled in YCC camp in 1971	, r	בנות יו	4:6	
4:53		Residential (or travel) summer camps such as Scou private camps for one week or longer at a time	•	nürch ⁹ ðr , o o o	4:70 4:	
4:54		Organized overnight camping with groups such as t for periods shorter than a week		nurchés, etc	4:7. 4:7	
4:55		Group day-camping (non-residential)	9.'. 1	. ""	4:74	
4:56		Backpacking alone or with a small group of friends or family and the control of the standard o				
4:57		Campground or trailer camping with family or frie				
4:58		Other camping experience (PLEASE DESCRIBE)				
					_	
4:59			- AI 41*	10 90	4:10	
			of all asoli a n' dide			
Do yo	u be	terested in the kinds of clubs and organizations yelong to any of these groups or clubs at school other places? (CHECK ALL YOU BELONG TO)	oung people l , in your, nei	pelong to. (n ighborhood, 7	;ı ~	
277220		(onder the foodbloke to)		27 : "		
4:60		Scouts, 4-H, Y's, etc.	• •	- · · · · · · · [£	-	
4:61		A conservation or environmental action group)·,	57 \$1.,.n ∓	~	
4:62		A natural science group, such as a biology of Audroon Society.	•	71 - 47 5 - 47 320		
4:63		An outdoor recreation group, such as a backpacking, canoeing, caving, or skiing club.				
4:64	П	I don't belong to any of these.				

- 1 \$5,00 7,499
- 2 \$7,500 9,999
- [3] \$10,000 12,499
- 4 \$12,500 14,999
- 5 \$15,000 17,499
- 6 \$17,500 19,999
- 7 \$20,000 or over

APPENDIX B

Table B-1

Comparison of Average Scores for
Interpersonal Relations Index Items - 1971 and 1972¹

		1971 Score	1972 Score	Change
A	How often was the behavior of the camp staff friendly and supportive?	72.5	77.5	5.0
В	To what extent do you consider individual members of the camp staff as friends?	68.5	75.5	7.0
C	To what extent did the staff give positive rather than negative comments or criticisms in discussing the work of corps members?	62.5	68.0	5.5
D	To what extent did you feel free to talk to members of the staff?	69.5	75.5	6.0
E	To what extent did the staff treat you as an individual rather than just another member of the group?	67.0	72.0	5.0
F	How much trust and confidence was shown by the camp staff in working with corps members?	64.0	73.0	9.0
0 v	verall score for 6 Items	67.3	73.6	6.3

IAverage scores are based on a coding scheme where the undesirable end of the scales (or "rarely") was coded 0 and the desirable attribute (or "almost always") was coded 20. See pages 10 and 11 in Appendix A. The values shown are percent of possible scores, or mean scores to each scale divided by 20.

Table B-2

Comparison of Average Scores for Participation Index Items - 1971 and 1972

		1971 Score	1972 Score	Change
A'	How often did the staff ask for and use your ideas about program matters such as work assignments and topics studied?	47.0	49.5	2.5
В'	How often did the staff ask for and use you, ideas about non-program matters such as discipline and free time activities?	55.0	59.0	4.0
C'	To what extent was the staff willing to try new ways of doing things in order to improve the corps program?	61.0	65.5	4.5
ם י	To what extent was the staff willing to share information with corps members about the camp and its operation:	67.0	74.5	6.5
E '	How much were you involved in making decisions about running the camp and its programs?	44.5	46.0	1.5
F'	How often did the staff and corps members meet to discuss corps problems?	57.5	55.5	-2.0
0ve	erall score for 6 Items	55.3	5 8. 5	3.2

laverage scores are based on a coding scheme where the undesirable end of the scales (or "rarely") was coded 0 and the desirable attribute (or "almost always") was coded 20. See pages 10 and 11 in Appendix A. The values shown are percent of possible scores, or mean scores to each scale divided by 20.

Table B-3

Interpersonal Relations Index Item Correlations (correlations are based on a 15 percent sample of corps members, responding during final week of 1971 program)

		<u>A</u>	<u>B</u>	<u>c</u>	<u>D</u>	<u>E</u>	<u>F</u>
Α.	How often was the behavior of the camp staff friendly and supportive?						
В.	To what extent do you consider individual members of the camp staff as friends?	.53					
c.	To what extent did the staff give positive rather than negative comments or criticisms in discussing the work of corps members?	.38	.42				
D.	To what extent did you feel free to talk to members of the staff?	.49	.52	.47			
E.	To what extent did the staff treat you as an individual rather than just another member of the group?	.48	.40	.48	.60		
F.	How much trust and confidence was shown by the camp staff in working with corps members?	.50	.47	.47	.57	.58	

Table B-4

Participation Index Item Correlations
(correlations are based on a 15 percent sample of corps members responding during final week of 1971 program)

		<u>A</u> '	$\mathbf{\underline{B}}^{t}$	<u>c</u> '	<u>D</u> '	<u>E</u> 1	<u>F</u> '
A ¹	How often did the staff ask for and use your ideas about program matters such as work assignments and topics studied?						
В	How often did the staff ask for and use your ideas about non-program matters such as discipline and free time activities?	.55					
c'	To what extent was the staff willing to try new ways of doing things in order to improve the corps program?	.40	.40				
D'	To what extent was the staff willing to share information with corps members about the camp and its operation?	.33	.35	.49			
E 1	How much were you involved in making decisions about running the camp and its programs?	.48	.39	.45	.35		
F	How often did the staff and corps members meet to discuss corps problems?	.32	.35	.39	.41	.46	

Table B-9

Relationship Between Participation Index Items and Interpersonal Relations Index Items (correlations based on 15 percent sample of corps members

(correlations based on 15 percent sample of corps member responding during final week of 1971 program)

		Inter	personal	Relat	ions In	dex Ite	ms ¹
_	Participation Index Items ²	_A_	<u>B</u>	<u>C</u>	<u>D</u>	E	F
	A ¹	.27	. 34	. 32	. 19	. 19	. 46
	В'	.26	.35	. 43	.26	.28	.51
	C'	.26	,25	. 40	.37	. 35	.52
	D'	. 30	. 36	. 48	.36	. 39	.52
	E †	. 30	.33	. 48	. 39	.35	. 49
	F'	. 35	. 29	. 50	. 36	.43	.56

1The items were:

- A How often was the behavior of the camp staff friendly and supportive?
- B To what extent do you consider individual members of the camp staff as friendly?
- C To what extent did the staff give positive rather than negative comments or criticisms in discussing the work of corps members?
- D To what extent did you feel free to talk to members of the staff?
- E To what extent did the staff treat you as an individual rather than just another member of the group?
- F How much trust and confidence was shown by the camp staff in working with corps members?

²The items were:

- A¹ How often did the staff ask for and use your ideas about program matters such as work assignments and topics studied?
- B' How often did the staff ask for and use your ideas about non-program matters such as discipline and free time activities?
- C' To what extent was the staff willing to try new ways of doing things in order to improve the corps program?
- D To what extent was the staff willing to share information with corps members about the camp and its operation?
- How much were you involved in making decisions about running the camp and its programs?
- F' How often did the staff and corps members meet to discuss corps problems?

APPENDIX C

Table C-1
Percentage ¹ Change in Response to Six Life-Style Norms by Sex

Life Style Norm	<u>Week</u>	<u>Female</u>	Male
Non-renewable versus	First	69	68
renewable resources	Last	66	64
Inches I case I	Change	-3	-4
Resource consumptive versus	First	64	62
		64	
non-consumptive activities	Last	· ·	61
	Change	0	-1
Benefits to man versus to	First	56	56
things other than man	Last	56	55
J	Change	0	-1
Consume resources according	First	74	70
to wants versus needs	Last	72	67
to wanto verbas needs	Change	-2	-3
	Change	-	7
Economic versus	First	63	61
ecological benefits	Last	62	59
	Change	-1	-2
Decrease versus increase in	First	64	66
variety in environment	Last	63	62
value y in chivilonadha	Change	-1	-4
	o,,unge	-	
Overall Averages	First	65.0	63.8
	Last	63.7	61.3
	Change	-1.3	-2.5
Average Number of Respondents		1170	1520

Percentage scores were computed by expressing first and last week mean response (on 0-20 point scale) as a percent of the highest possible acore (or 20), which designated the most environmentally sound pole of the scale. For format, see Questions 9:67 - 9:79 in Appendix A.

Table C-2

Percentage ¹ Change in Response to Six Life-Style Norms by Race and Ethnic Background

Life Style Norm	Week	American Indian	<u>Black</u>	Spanish Surname	<u>W</u> hite
Non-renewable versus renewable resources	First	62	66	74	6 9
	Last	57	61	66	66
	Change	-5	-5	-8	-3
Resource consumptive versus non-consumptive activities	First	55	56	61	64
	Last	57	54	60	63
	Change	2	-2	-1	-1
Benefits to man versus to things other than man	First Last Change	60 56 -4	53 57 4	60 58 -2	5 6 55 - 1
Consume resources according to wants versus needs	First	67	67	71	73
	Last	61	65	66	70
	Change	-6	-2	-5	-3
Economic versus ecological benefits	First	59	52	64	60
	Last	55	55	59	61
	Change	-4	3	-5	1
Decrease versus increase in variety in environment	First	59	60	62	66
	Last	56	59	57	63
	Change	-3	-1	-5	-3
Overall Averages	First	60.3	58.9	65.2	65.0
	Last	57.0	58.3	61.0	63.0
	Change	-3.3	6	-4.2	-2.0
Average Number of Respondents	J	140	163	8 0	2230

Percentage scores were computed by expressing first and last week mean response (on a 0-20 point scale) as a percent of the highest possible score (or 20), which designated the most environmentally sound pole of the scale. For format, see Questions 9:67 - 9:79 in Appendix A.

Table C-3

Percentage Change in Response to Six Life-Style Norms by Size or Type of Place of Residence

Life Style Norm	<u>Week</u>	Cities Over 100,000 or Their Suburbs	Towns Lesa chan 100,000	Rural Areas
Non-renewable versus renewable resources	First	70	69	67
	Last	66	65	63
	Change	-4	-4	-4
Resource consumptive versus non-consumptive activities	First	63	64	61
	Last	63	62	61
	Change	0	-2	0
Benefits to man versus to things other than man	First	55	55	5 8
	Last	5 6	55	56
	Change	1	0	-2
Consume resources according to wants versus needs	First	72	72	71
	Last	69	69	68
	Change	-3	-3	-3
Economic versus ecological benefits	First	62	62	62
	Last	61	60	60
	Change	-1	-2	-2
Decrease versus increase in variety in environment	First	65	66	64
	Last	62	62	62
	Change	-3	-4	-2
Overall Averages	First	64.4	64.6	63.8
	Last	62.9	62.3	61.7
	Cnange	-1.5	-2.3	-2.1
Average Number of Respondents		805	1210	660

 $^{^1}$ Percentage scores were computed by expressing first and last week mean response (on a 0-20 point scale) as a percent of the highest possible score (or 20), which designated the most environmentally sound pole of the scale. For format, see Questions 9:67 - 9:79 in Appendix A.

Table C-4

Percentage ¹ Change in Response to Six Life-Style Norms by Family Income

Life Style Norm .	<u>Week</u>	Under \$5,000	\$5,000 -9,999	\$10,000 -14,999	\$15,000 -19,999	\$20,000 and Over
Non-renewable versus	First	67	66	70	70	69
renewable resources	Last	64	65	65	66	68
	Change	-3	-1	-5	-4	-1
Resource consmuptive versus	First	57	63	63	64	65
non-consumptive activities	Last	60	61	63	62	64
	Change	3	-2	0	-2	-1
Benefits to man versus to	First	58	57	55	56	56
things other than man	Last	57	57	55	55	54
	Change	-1	0	0	-1	-2
Consume resources according	First	71	71	72	73	73
to wants versus needs	Last	67	67	70	70	72
	Change	-4	-4	-2	-3	-1
Economic versus	First	61	60	63	63	64
ecological benefits	Last	57	59	61	61	63
	Change	-4	-1	-2	-2	-1
Decrease versus increase in	First	62	65	66	66	66
variety in environment	Last	60	61	63	62	64
	Change	-2	-4	-3	-4	-2
Overall Averages	First	62.8	63.5	64.9	65.2	65.4
-	Last	61.0	61.5	62.7	62.7	64.0
	Change	-1.8	-2.0	-2.2	-2.5	-1.4
Average Number of Respondents		200	640	810	530	292

¹Percentage scores were computed by expressing first and last week mean response (on a 0-20 point scale) as a percent of the highest possible score (or 20), which designated the most environmentally sound pole of the scale. For format, see Questions 9:67 - 9:79 in Appendix A.

 ${\it Table C-5} \\ {\it Percentage}^1 {\it Change in Response to Six Life-Style Norms by Grade Level in School} \\ {\it Change in Response to Six Life-Style Norms by Grade Level in School} \\ {\it Change in Response to Six Life-Style Norms by Grade Level in School} \\ {\it Change in Response to Six Life-Style Norms by Grade Level in School} \\ {\it Change in Response to Six Life-Style Norms by Grade Level in School} \\ {\it Change in Response to Six Life-Style Norms by Grade Level in School} \\ {\it Change in Response to Six Life-Style Norms by Grade Level in School} \\ {\it Change in Response to Six Life-Style Norms by Grade Level in School} \\ {\it Change in Response to Six Life-Style Norms by Grade Level in School} \\ {\it Change in Response to Six Life-Style Norms by Grade Level in School} \\ {\it Change in Response to Six Life-Style Norms by Grade Level In School} \\ {\it Change in Response to Six Life-Style Norms by Grade Level In School} \\ {\it Change in Response to Six Life-Style Norms by Grade Level In School} \\ {\it Change in Response to Six Life-Style Norms by Grade Level In School} \\ {\it Change in Response to Six Life-Style Norms by Grade Level In School} \\ {\it Change in Response to Six Life-Style Norms by Grade Level In School} \\ {\it Change in Response to Six Life-Style Norms by Grade Level In School} \\ {\it Change in Response to Six Life-Style Norms by Grade Level In School} \\ {\it Change in Response to Six Life-Style Norms by Grade Level In School} \\ {\it Change in Response to Six Life-Style Norms by Grade Level In School} \\ {\it Change in Response to Six Life-Style Norms by Grade Level In School} \\ {\it Change in Response to Six Life-Style Norms by Grade Level In School} \\ {\it Change in Response to Six Life-Style Norms by Grade Level In School} \\ {\it Change in Response to Six Life-Style Norms by Grade Level In School} \\ {\it Change in Response to Six Life-Style Norms by Grade Level In School} \\ {\it Change in Response to Six Life-Style Norms by Grade Level In School} \\ {\it Change in Response to Six Life-Style Norms by Grade Level In School} \\ {\it Change in$

Life Style Norm	Week	8th <u>Grade</u>	9th <u>Grade</u>	10th <u>Grade</u>	llth <u>Grade</u>	12th <u>Grade</u>
Non-renewable versus renewable resources	First	65	67	68	69	69
	Last	53	63	65	65	68
	Change	-12	-4	-3	-4	-1
Resource consumptive versus non-consumptive activities	First	49	61	62	63	65
	Last	55	58	62	63	66
	Change	6	-3	0	0	1
Benefits to man versus to things other than man	First	56	59	56	56	54
	Last	49	57	55	56	54
	Change	-7	-2	-1	0	0
Consume resources according to wants versus needs	First	55	68	71	74	74
	Last	53	65	69	70	72
	Change	-2	-3	-2	-4	-2
Economic versus ecological benefits	First	50	61	61	63	64
	Last	47	58	59	62	63
	Change	-3	-3	-2	-1	-1
Decrease versus increase in variety in environment	First	55	63	65	66	66
	Last	56	59	61	63	64
	Change	1	-4	-4	-3	-2
Overall Averages	First	55.0	63.0	64.0	65.2	65.4
	Last	52.1	60.3	61.8	63.1	64.3
	Change	-2.9	- 2.7	-2.2	-2.1	-1.1
Average Number of Respondents		27	435	900	910	416

Percentage scores were computed by expressing first and last week mean response (on a 0-20 point scale) as a percent of the highest possible score (or 20), which designated the most environmentally sound pole of the scale. For format, see Questions 9:67 - 9:79 in Appendix A.

Table C-6

Percentage 1 Change in Response to Six Life-Style Norms by Whether Corps Members Did or Did Not Have a Natural Science Course Prior to the Youth Conservation Corps Program

Life Style Norm	Week	Yes	<u>No</u>
Non-renewable versus renewable resources	First	69	67
	Last	66	64
	Change	-3	-3
Resource consumptive versus non-consumptive activities	First	63	59
	Last	62	60
	Change	-1	1
Benefits to man versus to things other than man	First	56	57
	Last	55	57
	Change	-1	0
Consume resources according to wants versus needs	First	73	67
	Last	70	65
	Change	-3	-2
Economic versus ecological benefits	First	62	60
	Last	61	58
	Change	-1	-2
Decrease versus increase in variety in environment	First	66	62
	Last	63	58
	Change	-3	-4
Overall Averages	First	64.8	62.1
	Last	62.8	60.2
	Change	-2.0	-1.9
Average Number of Respondents		2282	385

 $^{^{1}\}text{Percentage}$ scores were computed by expressing first and last week mean response (on a 0-20 point scale) as a percent of the highest possible score (or 20), which designated the most environmentally sound pole of the scale. For format, see Questions 9:67 - 9:79 in Appendix A.

Table C-7 $\textit{Percentage}^{\hat{1}} \textit{ Change in Response to Six Life-Style Norms by } \\ \textit{Whether or Not Corps Members Had Previous Camping Experience}$

Life Style Norm	<u>Week</u>	Yes	No
Non-renewable versus renewable resources	First	69	67
	Last	65	64
	Change	-4	-3
Resource consumptive versus non-consumptive activities	First	63	61
	Last	62	58
	Change	-1	-3
Benefits to man versus to things other than man	First	56	58
	Last	56	57
	Change	0	-1
Consume resources according to wants versus needs	First	72	70
	Last	69	67
	Change	-3	-3
Economic versus ecological benefits	First Last Change	62 61 -1	
Decrease versus increase in variety in environment	First	65	62
	Last	62	61
	Change	-3	-1
Overall Averages	First Last Change	64.3 62.3 -2.0	60.7
Average Number of Respondents		2516	200

 $^{^{\}rm 1}$ Percentage scores were computed by expressing first and last week mean response (on a 0-20 point scale) as a percent of the highest possible score (or 20), which designated the most environmentally sound pole of the scale. For format, see Questions 9:67 - 9:79 in Appendix A.

				Agen	cy ²		
Life Style Norm	<u>Week</u>	BIA	BLM	BR	BSFW	FS	NPS
Non-renewable versus	First	62	67	71	68	69	71
renewable resources	Last	58	66	68	64	65	67
	Change	-4	-1	-3	-4	-4	-4
Resource consumptive versus	First	57	60	65	64	63	65
non-consumptive activities	Last	59	65	68	63	61	63
	Change	2	5	3	-1	-2	-2
Benefits to man versus to	First	57	54	56	56	56	56
things other than man	Last	54	57	56	55	56	57
_	Change	-3	3	0	-1	0	1
Consume resources according	First	66	72	72	71	72	73
to wants versus needs	Last	59	71	72	68	69	71
	Change	-7	-1	0	-3	-3	-2
Economic versus	First	57	59	64	63	62	63
ecological benefits	Last	54	61	63	59	61	62
G	Change	-3	2	-1	-4	-1	-1
Decrease versus increase in	First	59	65	64	65	66	64
variety in environment	Last	59	66	61	63	63	60
•	Change	0	1	-3	-2	-3	-4
Overall Averages	First	59.6	62.7	65.4	64.4	64.6	65.2
	Last	57.0	64.0	64.5	62.1	62.4	63.1
	Change	-2.6	1.3	-0.9	-2.3	-2.2	-2.1
Average Number of Respondents		145	110	166	357	1610	340

 $^{^1}$ Percentage scores were computed by expressing first and last week mean response (on a 0-20 point scale) as a percent of the highest possible score (or 20), which designated the most environmentally sound pole of the scale. For format, see Questions 9:67 - 9:79 in Appendix A.

²BIA, BLM, BR, BSFW, FS and NPS refer to Bureau of Indian Affairs, Bureau of Land Management, Bureau of Reclamation, Bureau of Sport Fisheries and Wildlife, Forest Service and National Park Service, respectively.

Table C-9

Percentage ¹ Change in Response to Six Life-Style Norms by Camp Score on Participation-Interpersonal Relations Index

Participation-Interpersonal Relations Index² Low High Life Style Norm 3 4 Week 1 5_ Non-renewable versus First 67 68 68 72 69 renewable resources Last 64 64 65 67 68 -3 Change -4 -3 -5 -1 Resource consumptive versus First 62 61 62 66 64 non-consumptive activities Last 63 61 64 65 Change -2 Benefits to man versus to 58 57 55 First 56 56 things other than man Last 56 54 57 Change -2 -3 1 Consume resources according First 71 71 71 75 74 to wants versus needs Last 66 68 68 73 74 Change -5 -3 -3 62 60 65 Economic versus First 61 64 ecological benefits Last 59 60 63 63 Change -3 -1 Decrease versus increase in First 65 64 65 67 64 variety in environment Last 61 63 61 64 66 Change -4 -1 -4 -3 Overall Averages First 64.0 63.4 63.9 66.6 65.0 Last 61.3 61.7 61.6 64.3 65.5 Change -2.7 -1.7 -2.3 -2.3 Average Number of Respondents 320 265 1495 350 275

¹ Percentage scores were computed by expressing first and last week mean response (on a 0-20 point scale) as a percent of the highest possible score (or 20), which designated the most environmentally sound pole of the scale. For format, see Questions 9:67 - 9:79 in Appendix A.

 $^{^2}$ See Chapter 3 for a discussion of the development of this index.

Table C-10

Percentage ¹ Change in Response to Six Life-Style Norms by Use of Environmental Education Manual and Training

			Interior Agencies				
<u>Life Style Norm</u>	<u>Week</u>	Forest Service	Did Not Receive <u>Manual</u>	Received Manual, Did Not Use	Used Manual Without Training	Used Manual, Had <u>Training</u>	
Non-renewable versus renewable resources	First	69	60	67	69	70	
	Last	65	62	63	64	69	
	Change	-4	2	-4	-5	-1	
Resource consumptive versus non-consumptive activities	First	63	57	62	64	63	
	Last	61	60	61	63	67	
	Change	-2	3	-1	-1	4	
Benefits to man versus to things other than man	First	56	52	54	57	57	
	Last	56	58	52	56	57	
	Change	0	6	-2	-1	0	
Consume resources according to wants versus needs	First	72	70	70	70	76	
	Last	69	63	68	68	72	
	Change	-3	-7	-2	-2	-4	
Economic versus ecological benefits	First	62	64	59	61	63	
	Last	61	60	59	59	63	
	Change	-1	-4	0	-2	0	
Decrease versus increase in variety in environment	First	66	62	62	64	65	
	Last	63	61	60	61	61	
	Change	-3	-1	-2	-3	-4	
Overall Averages	First	64.6	60.7	62.1	64.0	65.8	
	Last	62.4	60.7	60.6	61.5	64.7	
	Change	-2.2	0.0	-1.5	-2.5	-1.1	
Average Number of Respondents		1600	65	140	640	270	

Percentage scores were computed by expressing first and last week mean response (on a 0-20 point scale) as a percent of the highest possible score (or 20), which designated the most environmentally sound pole of the scale. For format, see Questions 9:67 - 9:79 in Appendix A.

Table C-11

Percentage ¹ Change in Response to Six Life-Style Norms by
How Much the Corps Members Liked the
Youth Conservation Corps Experience

		Corps Members' Response					
Life Style Norm	<u>Week</u>	Really Liked it	<u>Liked it</u>	Neutral or Disliked it			
Non-renewable versus renewable resources	First	69	68	64			
	Last	66	64	60			
	Change	-3	-4	-4			
Resource consumptive versus non-consumptive activities	First	64	62	61			
	Last	63	61	60			
	Change	-1	-1	-1			
Benefits to man versus to things other than man	First	56	56	54			
	Last	56	55	55			
	Change	0	-1	1			
Consume resources according to wants versus needs	First	73	71	67			
	Last	70	67	64			
	Change	-3	-4	-3			
Economic versus ecological benefits	First	62	62	60			
	Last	61	60	57			
	Change	-1	-2	-3			
Decrease versus increase in variety in environment	First	65	66	63			
	Last	63	61	5 9			
	Change	-2	-5	-4			
Overall Averages	First	64.9	64.1	61.5			
	Last	63.3	61.3	59.1			
	Change	-1.6	-2.8	-2.4			
Average Number of Respondents		1810	580	140			

 $^{^1}$ Percentage scores were computed by expressing first and last week mean response (on a 0-20 point scale) as a percent of the highest possible score (or 20), which designated the most environmentally sound pole of the scale. For format, see Questions 9:67 - 9:79 in Appendix A.

Table C-12

Percentage ¹ Change in Response to Six Life-Style Norms by How Worthwhile the Corps Members Thought the Youth Conservation Corps Program Was

		Corps M	embers' Appr	Appraisal			
Life Style Norm	Week	Very <u>Worthwhile</u>	Somewhat Worthwhile	Not Very Worthwhile			
Non-renewable versus renewable resources	First Last Change	69 66 - 3	67 62 - 5	67 61 -6			
Resource consumptive versus non-consumptive activities	First	64	61	54			
	Last	63	59	55			
	Change	-1	- 2	1			
Benefits to man versus to things other than man	First	56	54	59			
	Last	56	54	53			
	Change	0	0	-6			
Consume resources according to wants versus needs	First	73	70	67			
	Lasc	70	64	61			
	Change	-3	-6	- 6			
Economic versus ecological benefits	First	63	59	62			
	Last	61	58	49			
	Change	-2	-1	-13			
Decrease versus increase in variety in environment	First	66	63	65			
	Last	63	59	60			
	Change	-3	-4	- 5			
Overall Averages	First	65.0	62.3	62.3			
	Last	63.3	59.4	56.5			
	Change	-1.7	-2.9	-5.8			
Average Number of Respondents		2100	400	24			

Percentage scores were computed by expressing first and last week mean response (on a 0-20 point scale) as a percent of the highest possible score (or 20), which designated the most environmentally sound pole of the scale. For format, see Questions 9:67 - 9:79 in Appendix A.

Table C-13

Percentage ¹ Change in Response to Six Life-Style Norms by the Corps Members'
Appraisal of the Degree of Coordination Between Work and Environmental Education Program

		Degree of Coordination						
Life Style Norm	<u>Week</u>	Excellent	Very_Good	Good	<u>Fair</u>	Poor		
Non-renewable versus	First	69	69	68	68	70		
renewable resources	Last	66	66	64	64	69		
	Change	-3	-3	-4	-4	-1		
Resource consumptive versus	First	65	62	61	64	67		
non-consumptive activities	Last	64	61	61	62	66		
	Change	-1	-1	0	-2	-1		
Benefits to man versus to	First	56	56	56	55	58		
things other than man	Last	56	57	56	53	57		
	Change	0	1	0	-2	-1		
Consume resources according	First	73	72	70	73	76		
to wants versus needs	Last	70	68	68	70	72		
	Change	-3	-4	-2	-3	-4		
Economic versus	First	63	62	60	63	66		
ecological benefits	Last	61	60	59	60	64		
	Change	-2	-2	-1	-3	-2		
Decrease versus increase in	First	65	64	65	66	68		
variety in environment	Last	63	62	61	63	62		
	Change	-2	-2	-4	-3	-6		
Overall Averages	First	65.0	64.1	63.5	64.8	67.5		
<u>-</u>	Last	63.3	62.2	61.4	62.0	65.1		
	Change	-1.7	-1.9	-2.1	-2.8	-2.4		
Average Number of Respondents		490	1000	670	360	150		

 $^{^1}$ Percentage scores were computed by expressing first and last week mean response (on a 0-20 point scale) as a percent of the highest possible score (or 20), which designated the most environmentally sound pole of the scale. For format, see Questions 9:67 - 9:79 in Appendix A.

APPENDIX D

Table D-1

Pearson Product Moment Intercorrelations Among Items Making Up Two Measures of Environmental Attitude

Ant	i-exploitation_									
	Abbreviated Item		<u>8:43</u>	<u>8:45</u>	<u>8:53</u>	<u>8:55</u>	<u>8:56</u>	<u>8:59</u>	<u>8:61</u>	8:62
	Science will solve resource problems	(8:43)	1.0							
	One should live for today	(8:45)	.32	1.0						
	Industry cannot reduce pollution	(8:53)	. 28	.35	1.0					
	Ecology does not apply to man	(8:55)	.36	.36	.40	1.0				
	Endangered species are a waste of money	(8:56)	.41	.39	.47	.41	1.0			
	Never use high value land for open space	(8:59)	. 29	. 29	.43	.35	.47	1.0		
	People should buy more to help economy	(8:61)	.45	.41	.31	. 39	.32	.38	1.0	
	Nothing wrong with advertising	(8:62)	.26	. 27	.37	.36	. 37	.40	.39	1.0
	Do not buy cars which last 10 years	(8:66)	.27	. 22	. 26	. 26	.26	. 29	.34	.29
Lir	nitations									
	Abbreviated Item			<u>8:47</u>	8:50					
	${\tt U}.{\tt S}.{\tt should}$ cut down on resource use	(8:47)	1.0						
	Willing to limit children to two	(8:50)	. 24	1.0					
	Government should limit horsepower on o	cars (8:68)	.20	. 24					

 $^{^{1}}_{ ext{Numbers}}$ in parentheses designate question numbers in last week questionnaire in Appendix A

 $\begin{tabular}{ll} Table D-2 \\ Responses to Two Measures of Environmental Attitude by Sex \end{tabular}^1$

<u>Scale</u>	<u>Week</u>	<u>Female</u>	Male
Anti-exploitation	First	79	74
	Last	75	69
	Change	-4	-5
Limitations	First	72	66
	Last	73	68
	Change	1	2
Overall	First	77.0	71.7
	Last	74.5	68.8
	Change	-2.5	-2.9
Overall Number of Respondents		1215	1629

 $^{^{\}mbox{\scriptsize 1}}\mbox{See}$ note at the beginning of this appendix which explains the computations and the attitude measures.

Table D-3

Responses to Two Measures of Environmental Attitude by Race and Ethnic Background¹

<u>Scale</u>	<u>Week</u>	American <u>Indian</u>	Black	Spanish Surname	White
Anti-exploitation	First	61	63	70	78
	Last	54	58	64	74
	Change	-7	-5	-6	-4
Limitations	First	56	60	65	69
	Last	60	63	66	71
	Change	4	3	1	2
Overall	First	59.7	62.3	68.7	76.1
	Last	55.3	59.6	64.4	73.4
	Change	-4.4	-2.7	-4.3	-2.7
Overall Number of Respondents		152	178	80	2322

 $^{^{\}rm I}_{\rm See}$ note at the beginning of this appendix which explains the computations and the attitude measures.

Table D-4

Responses to Two Measures of Environmental Attitude by Size or Type of Place of Residence 1, 2

<u>Scale</u>	<u>Week</u>	Cities over 100,000 and Their Suburbs	Towns Less than 100,000	Rural Areas
Anti-exploitation	First	76	76	75
	Last	73	72	70
	Change	-3	-4	-5
Limitations	First	69	6 8	68
	Last	71	70	70
	Change	2	2	2
Overall	First	74.5	74.2	73.4
	Last	72.2	71.5	69.8
	Change	-2.3	-2.7	-3.6
Overall Number of Respondents		843	1266	697

See note at the beginning of this appendix which explains the computations and the attitude measures.

 $^{^2}$ See Question 4:51 in Appendix A.

<u>Scale</u>	<u>Week</u>	Less than \$5,000	\$5,000 -9,999	\$10,000 -14,999	\$15,000 -19,999	\$20,000 <u>or More</u>
Anti-exploitation	First	67	74	78	78	79
	Last	61	69	73	74	77
	Change	-6	-5	-5	-4	-2
Limitations	First	66	67	68	69	72
	Last	68	69	70	72	74
	Change	2	2	2	3	2
Overal1	First	66.9	72.1	75.5	75.9	77.2
	Last	62.7	69.1	72.3	73.5	76.0
	Change	-4.2	-3.0	-3.2	-2.4	-1.2
Overall Number of						
Respondents		226	685	839	549	304

See note at the beginning of this appendix which explains the computations and the attitude measures.

 $\label{eq:Table D-6}$ Responses to Two Measures of Environmental Attitude by ${\it Age}^1$

			Ag	e	
<u>Scale</u>	<u>Week</u>	15	<u>16</u>	17	18
Anti-exploitation	First	73	75	79	80
	Last Change	67 -6	71 -4	75 -4	76 -4
Limitations	First	66	67	70	73
	Last Change	68 2	71 4	71 1	75 2
Overall	First Last Change	71.1 67.5 -3.6	73.3 71.0 -2.3	76.7 74.0 -2.7	78.6 76.0 -2.6
Overall Number of Respondents		798	1014	769	249

 $^{^{\}rm 1}{\rm See}$ note at the beginning of this appendix which explains the computations and the attitude measures.

 ${\tt Table\ D-7}$ Responses to Two Measures of Environmental Attitude by Grade Level in School 1

<u>Scale</u>	<u>Week</u>	8th Grade	9th <u>Grade</u>	10th <u>Grade</u>	llth <u>Grade</u>	12th Grade
Anti-exploitation	First	53	70	75	78	82
	Last	48	63	71	74	78
	Change	-5	-7	-4	-4	-4
Lîmitations	First	66	65	67	69	73
	Last	61	68	69	71	75
	Change	-5	3	2	2	2
Overall	First	55.9	68.5	73.2	75.8	79.7
	Last	51.6	64.3	70.6	73.3	77.5
	Change	-4.3	-4.2	-2.6	-2.5	-2.2
Overall Number of Respondents		31	467	943	947	431

 $^{^{1}\}mbox{See}$ note at the beginning of this appendix which explains the computations and the attitude measures.

Table D-8

Responses to Two Measures of Environmental Attitude by Whether Corps Members Did or Did Not Have a Natural Science Course Prior to the Youth Conservation Corps Program^{1,2}

<u>Scale</u>	<u>Week</u>	Yes	No
Anti-exploitation	First	77	69
	Last	73	63
	Change	-4	-6
Limitations	First	69	64
Himitacions	Last	71	67
	Change	2	3
Overall	First	75.4	67.9
0702421	Last	72.8	64.2
	Change	-2.6	-3.7
Overall Number of Respondents		2369	423

 $^{^{\}rm 1}{\rm See}$ note at the beginning of this appendix which explains the computations and the attitude measures.

²See Question 4:48 in Appendix A.

Table D-9

Responses to Two Measures of Environmental Attitude by Whether or Not Corps Members Had Previous Camping Experience 1

		Сап	vious ping rience ²
Scale	<u>Week</u>	<u>No</u>	<u>Yes</u>
Anti-exploitation	First	68	76
	Last	66	72
	Change	-2	-4
Limitations	First	66	68
	Last	66	71
	Change	0	3
Overal1	First	67.4	74.5
	Last	65.7	71.7
	Change	-1.7	-2.8
Overall Number of Respondents		236	2620

 $^{^{\}mbox{\scriptsize 1}}\mbox{See}$ note at the beginning of this appendix which explains the computations and the attitude measures.

 $^{^2}$ See Questions 4:52 - 4:59 in Appendix A.

Table D-10

Responses to Two Measures of Environmental Attitudes by Sex Composition of the Camps 1

		Coed	Camps	ps Non-Coed Camps			
<u>Scale</u>	<u>Week</u>	Coed Girls	Coed Boys	Girls Only	Boys Only		
Anti-exploitation	First	79	74	79	73		
	Last	75	68	75	70		
	Change	-4	-6	-4	-3		
Limitations	First	72	66	73	65		
	Last	73	69	73	67		
	Change	1	3	0	2		
Overall	First	77.1	72.0	77.3	70.9		
	Last	74.6	68.5	74.5	69.5		
	Change	-2.5	-3.5	-2.8	-1.4		
Overall Number of Respondents		1061	1226	148	403		

¹See note at the beginning of this appendix which explains the computations and the attitude measures.

 $\textit{Table D-11} \\ \textit{Responses to Two Measures of Environmental Attitude by Type of Camp}^1$

<u>Scale</u>	<u>Week</u>	<u>Residential</u>	Non-Residential
Anti-exploitation	First	76	74
	Last	72	71
	Change	-4	-3
Limitations	First	68	68
	Last	71	70
	Change	3	2
Overall	First	74.1	72.9
	Last	71.4	70.4
	Change	-2.7	-2.5
Overall Number of Respondents		2327	529

 $^{^{\}mbox{\scriptsize 1}}\mbox{See}$ note at the beginning of this appendix which explains the computations and the attitude measures.

 ${\it Table D-12} \\ {\it Responses to Two Measures of Environmental Attitude by Size of Camp}^1$

		Number of Corps Members				
Scale	<u>Week</u>	<u>6-14</u>	<u>15-20</u>	<u>21-29</u>	<u>30-39</u>	<u>40-50</u>
Anti-exploitation	First	79	75	75	76	76
	Last	75	71	71	72	71
	Change	-4	-4	-4	-4	-5
Limitations	First	65	68	67	70	68
	Last	68	70	69	72	70
	Change	3	2	2	2	2
Overall	First	75.8	73.3	72.8	74.7	74.0
	Last	72.9	70.4	70.3	72.2	70.9
	Change	-2.9	-2.9	-2.5	-2.5	-3.1
Overall Number of						
Respondents		64	375	572	887	958

 $^{^{\}rm L}{\rm See}$ note at the beginning of this appendix which explains the computations and the attitude measures.

 ${\it Table D-13}$ Responses to Two Measures of Environmental Attitude by Length of Session 1

		F	Forest Service				ior Ag	encies
Scale	<u>Week</u>	4_	<u>5-7</u>	8	9_	4_	8	9_
Anti-exploitation	First	79	72	75	75	80	75	70
	Last	77	67	71	72	73	69	62
	Change	-2	- 5	-4	-3	-7	-6	-8
Limitations	First	69	68	67	66	64	68	68
	Last	73	69	69	65	64	70	67
	Change	4	1	2	-1	0	2	-1
Overall	First	76.3	70.8	73.3	72.9	75.8	73.3	69.8
	Last	76.0	67.8	70.8	69.9	70.3	69.0	63.7
	Change	3	-3.0	-2.5	-3.0	-5.5	-4.3	-6.1
Overall Number of								
Respondents		738	124	784	41	21	1104	44

See note at the beginning of this appendix which explains the computations and the attitude measures.

Table D-14 $\textit{Responses to Two Measures of Environmental Attitude by Agency}^{\text{I}}$

		Agency ²					
<u>Scale</u>	Week	<u>BIA</u>	BLM	BR	BSFW	FS	NPS
Anti-exploitation	First	61	76	79	76	77	76
	Last	50	73	73	71	74	70
	Change	-11	-3	-6	-5	-2	-6
Limitations	First	61	68	70	69	68	70
	Last	65	70	72	70	71	71
	Change	4	2	2	1	3	1
Overall	First	60.8	74.0	76.7	74.4	74.4	75.0
	Last	53.7	72.6	72.4	70.6	72.8	70.2
	Change	-7.1	-1.4	-4.3	-3.8	-1.6	-4.8
Overall Number of Respondents		145	114	170	384	1687	356

 $^{^{\}mbox{\scriptsize 1}}\mbox{See}$ note at the beginning of this appendix which explains the computations and the attitude measures.

²BIA, BLM, BR, BSFW, FS and NPS refer to Bureau of Indian Affairs, Bureau of Land Management, Bureau of Reclamation, Bureau of Sport Fisheries and Wildlife, Forest Service, and National Park Service, respectively.

Table D-15

Responses to Two Measures of Environmental Attitude by Camp Score on Participation-Interpersonal Relations Index

		Participation-Interpers Relations Index ²				ona l
<u>Scale</u>	Week	Low 1	2_	3	_4_	High 5
Anti-exploitation	First	74	75	75	79	78
	Last	66	71	71	77	76
	Change	-8	-4	-4	-2	-2
Limitations	First	67	68	68	71	71
	Last	67	70	69	74	74
	Change	0	2	1	3	3
Overall	First	71.9	73.0	73.3	77.3	76.1
	Last	66.3	70.9	70.3	76.3	75.6
	Change	-5.6	-2.1	-3.0	-1.0	5
Overall Number of Respondents		336	279	1586	363	292

 $^{^{\}mbox{\scriptsize l}}\mbox{See}$ note at the beginning of this appendix which explains the computations and the attitude measures.

 $^{^2}$ See Chapter 3 for a discussion of the development of this index

Table D-16

Responses to Two Measures of Environmental Attitude by Use of Environmental Education Manual and Training

			Interior Camps					
<u>Scale</u>	Week	USFS Camps	Did Not Receive Manual	Received Manual, Did Not Use	Used Manual Without Training	Used Manual Had Training		
Anti-exploitation	First	77	69	75	74	76		
	Last	74	63	69	68	71		
	Change	-3	-6	-7	-6	-5		
Limitations	First	68	64	71	68	68		
	Last	71	66	69	70	72		
	Change	3	2	-2	2	4		
Overæ11	First	74.4	68.1	74.3	72.9	74.4		
	Last	72.8	63.7	69.1	68.2	71.5		
	Change	-1.6	-4.4	-5.2	-4.7	-2.9		
Overall Number of Respondents		1681	69	152	666	282		

¹See note at the beginning of this appendix which explains the computations and the attitude measures.

Responses to Two Measures of Environmental Attitude by
How Much the Corps Members Liked the
Youth Conservation Corps Experience

Table D-17

Corps Members' Response 2 Really Liked Neutral or Scale Week Liked_it Disliked it it Anti-exploitation 77 74 First 71 Last 74 64 69 Change -3 -7 -5 Limitations 70 66 First 64 Last 72 67 67 2 Change 3 Overall First 75.5 71.9 69.6 Last 73.2 68.5 64.4 Change -2.3 -3.4 -5.2 Overall Number of Respondents 1907 617 145

 $^{^{\}mathrm{l}}$ See note at the beginning of this appendix which explains the computations and the attitude measures.

²See Question 5:17 in Appendix A.

Table D-18

Responses to Two Measures of Environmental Attitude by How Worthwhile the Corps Members Thought the Youth Conservation Corps Program Was¹

		Corps Members' Appraisal ²				
<u>Scale</u>	Week	Very Worthwhile	Somewhat Worthwhile	Not Very Worthwhile		
Anti-exploitation	First	77	72	69		
	Last	73	66	56		
	Change	-4	-6	-13		
Limitations	First	70	64	61		
	Last	72	64	69		
	Change	2	0	8		
Overall	First	75.3	69.9	67.4		
	Last	72.9	65.7	59.4		
	Change	-2.4	-4.2	-8.0		
Overall Number of Respondents		2217	425	26		

 $^{^{1}\}mbox{See}$ note at the beginning of this appendix which explains the computations and the attitude measures.

²See Question 5:18 in Appendix A.

Table D-19

Responses to Two Measures of Environmental Attitude by the Corps Members'
Appraisal of the Degree of Coordination Between
Work and Environmental Education Program¹

		Degree of Coordination ²				
<u>Scale</u>	<u>Week</u>	Excellent	Very Good	<u>Good</u>	<u>Fair</u>	Poor
Anti-exploitation	First	77	75	74	78	82
	Last	73	71	69	74	73
	Change	-4	-4	-5	-4	-9
Limitations	First	71	67	66	70	72
	Last	75	69	68	71	75
	Change	4	2	2	1	3
Overall	First	75.9	72.8	71.9	76.0	79.8
	Last	73.7	70.6	68.5	73.4	73.8
	Change	-2.2	-2.2	-3.4	-2.6	-6.0
Overall Number of Respondents		51 8	1062	716	377	153

See note at the beginning of this appendix which explains the computations and the attitude measures.

 $^{^2}$ See Question 6:39 in Appendix A.

Table D-20

Responses to Two Measures of Environmental Attitude by Relative Emphasis on Work and on Environmental Education 1

		_	Re	lative	Emphas	is ²
<u>Scale</u>	<u>Week</u>	Mostly on Work 1	2_	About Equal	4	Mostly on Environmental Education 5
Anti-exploitation	First	77	74	75	76	79
	Last	73	68	71	73	78
	Change	-4	-6	-4	-3	-1
Limitations	First	65	68	66	70	72
	Last	68	69	69	72	77
	Change	3	1	3	2	5
Overall	First	74.2	72.7	72.8	74.8	77.4
	Last	71.9	68.5	70.6	72.5	77.6
	Change	-2.3	-4.2	-2.2	-2.3	.2
Overall Number of Respondents		128	569	967	727	128

See note at the beginning of this appendix which explains the computations and the attitude measures.

 $^{^2\}mathrm{The}$ 5-point scale designating relative emphasis given to work and to environmental education was condensed from the 20-point scale to which camp directors responded.

Table D-21

Responses to Two Measures of Environmental Attitude by Relative Amount of Time Devoted to Work and To Environmental Education¹

				Relativ	e Time	2
<u>Scale</u>	<u>Week</u>	Mostly to Work 1		About Equal	4	Mostly to Environmental Education 5
Anti-exploitation	First	77	75	76	76	73
	Last	71	70	72	74	66
	Change	-6	-5	-4	-2	-7
Limitations	First	71	67	69	68	65
	Last	69	70	70	71	68
	Change	-2	3	1	3	3
Overall	First	75.8	72.9	74.2	74.0	71.4
	Last	70.5	70.2	71.4	73.4	66.1
	Change	-5.3	-2.7	-2.8	6	-5.3
Overall Number of Respondents		74	1076	801	419	149

See note at the beginning of this appendix which explains the computations and the attitude measures.

 $^{^2{\}rm The}$ 5-point scale designating relative time devoted to work and to environmental education was developed based on distribution of camp directors' responses to a similar scale.

APPENDIX E Table E-1

Mean Scores on Index of Propensity To Take Environmental Action by Corps Member Characteristics (First Week Scores)

	<u>Mean</u>	Number of Corps Members
Sex of Corps Members		
Girls Boys	3.78 2.76	1318 1756
Race and Ethnic Background		
White Black American Indian Spanish surname Oriental	3.16 2.32 2.37 2.56 2.95	2486 202 169 103 49
Place of Residence		
Large city of more than 500,000 people Medium size city of 100,000 to	3.04	267
Suburb of medium or large city Small town of 25,000 - 100,000 people Small town of less than 25,000 people Rural area or Indian reservation	3.20 3.47 3.13 2.94 2.80	370 279 502 864 751
Family Income		
Under \$5,000 \$5,000 ~ 9,999 \$10,000 - 14,999 \$15,000 - \$19,999 \$20,000 and over	2.48 2.91 3.04 3.20 3.79	256 745 9 08 577 323

Table E-2

Mean Score on an Index of Propensity to Take Environmental Action by Reason for Applying to YCC (First Week Scores)

	Mean <u>Score</u>	Number of Corps Members
Experience or Training (6:43) ¹		
Very important Somewhat important Not very important	3.33 2.48 2.30	2009 1002 60
A Chance to Get Away and Take a Break From Ordinary Things (6:44)		
Very important Somewhat important Not very important	3,30 2,73 2,95	1349 1352 1086
Learning About the Environment and Doing Something to Help Care For It (6:45)		
Very important Somewhat important Not very important	3.16 2.22 2.84	2643 411 19
Self Discovery (6:46)		
Very important Somewhat important Not very important	3.17 2.85 2.73	1778 1089 207
Making Money (6:47)		
Very important Somewhat important Not very important	2.70 3.09 3.34	819 1690 563
To Have New Experiences and Adventures (6:48)		
Very important Somewhat important Not very important	3.14 2.88 2.85	1927 1066 78

The numbers in parentheses identify the question in Appendix A.

Table E-3 (Sheet 1 of 2)

Mean Scores on an Index of Propensity to Take Environmental
Action by Life-Style Value Placements For Self
(First Week Scores)

<u>Value</u> ¹	Mean Score	Number of Cases
Orientation		
1 Future ² 2 3 4 5 6 7 Present	2.67 3.23 3.17 3.15 2.81 2.15 2.10	152 175 471 1808 128 87 91
Consumption		
1 Renewable 2 3 4 5 6 7 Non-renewable	3.53 3.29 2.91 2.64 2.76 2.80 2.89	631 716 556 848 85 26 53
Activities		
1 Non-consumption 2 3 4 5 6 7 Consumption	3.59 3.53 3.12 2.71 2.39 2.67 2.72	392 548 646 1065 122 51 76
Benefits		
1 To other things 2 3 4 5 6 7 To man	3,27 3,08 3,18 3,10 2,56 2,26 2,44	252 255 404 1651 195 69 63

See Questions 9:67-79 of Appendix A.

 $^{^2}$ Three response points on the spectrum scale are grouped together in each of the seven points reported in this table.

Table E-3 (Sheet 2 of 2)

Mean Scores on an Index of Propensity to Take Environmental Action by Life-Style Value Placements For Self (First Week Scores)

Value ¹	Mean <u>Score</u>	Number of Cases
Consume According to:		
1 Needs 2 3 4 5 6 7 Wants	3.42 3.22 2.99 2.85 2.32 2.28 2.45	885 586 590 584 78 83
Benefits		-1-1
1 Ecological 2 3 4 5 6 7 Economic	3.74 3.74 3.13 2.70 2.29 1.93 2.21	321 530 624 1215 105 41 61
Variety in the Environment 1 Increase 2 3 4 5 6 7 Decrease	3.36 3.26 2.85 2.92 2.70 3.21 2.85	590 478 491 1129 84 61 59

APPENDIX F

Method of Constructing an Index of the Likelihood of Making Sound and Unsound Consumer Purchases

The consumer purchase index is based on the concept of balance. If the likelihood of buying sound items outweighs the likelihood of buying unsound items, the balance is considered to be favorable. The index also incorporates change toward a more favorable or less favorable balance between the first and final weeks. It was constructed by summing the likelihood values for all sound and all unsound items. A distribution of these total scores for all corps members was obtained. The first week distribution was broken into three parts, called high, medium and low. The cutting points were determined by the number of corps members in each part; an effort being made to create equal categories on the first week measure. The same cutting points were then applied to the final week distribution. Because of shifts in likelihood of purchasing sound and unsound items, the final week categories are not equal in size. A matrix was formed for each time of measurement combining the sound and unsound categories. The cells in each matrix were then numbered as indicated below:

First Week					Final Week			
Unsound				Unsound				
	HI	MED.	LOW			ΗI	MED.	LOW
HI	6	3	1	ਧ	HI	6	3	1
MED.	8	5	2	Sound	MED.	8	5	2
LOW	9	7	4		LOW	9	7	4

The final week matrix numbers were subtracted from the first week matrix numbers. Positive values represented an increase in soundness and negative values a decrease. Those corps members who showed no change were grouped according to their starting position; those from cells 1 through 3 were labeled as stable sound; cells 4 through 6 were labeled stable balanced and cells 7 through 9 were labeled stable unsound.

The change scores were then collapsed with persons showing increases of four to eight points being grouped as a "large gain" category, and one to three points were called small gains. Losses were called small if they were one or two points and large if they were three through eight points.

Sound

Table F-1 (Sheet 1 of 3)

Sound Consumer Purchases

	Item	Likelihood of Buying	First <u>Week²</u>	Final Week ³	Change
1.	A canoe	1. Extremely Likely	24	33	9
		2. Very Likely	19	20	1
		Somewhat Likely	23	21	- 2
		4. Not Very Likely	18	15	- 3
		Not at all Likely	16	11	- 5
		Mean ⁴	2.8	2.5	-0.3
2.	A tent	1. Extremely Likely	25	29	4
		2. Very Likely	24	25	1
		3. Somewhat Likely	25	23	- 2
		4. Not Very Likely	16	15	-1
		5. Not at all Likely	10	8	- 2
		Mean	2.6	2.4	-0.2
3.	A bicycle	1. Extremely Likely	44	51	7
٠.	.,,	2. Very Likely	21	22	1
		3. Somewhat Likely	16	13	- 3
		4. Not Very Likely	11	9	- 2
		5. Not at all Likely	8	5	- 3
		Mean	2.2	1.9	-0.3

¹The question (on page 14 of Appendix A) asked the youths how likely would it be that some day they would buy each item listed. Percentages include only those youths who picked one of the five levels of likelihood, so non-respondents are excluded.

 $^{^{2}\}mathrm{The}$ average number of respondents for the first week was 3025.

 $^{^{3}\}mathrm{The}$ average number of respondents for the final week was 2975.

⁴Means were computed using the numbers assigned to the possible choices with "1" = Extremely Likely and "5" = Not at all Likely. Note that a positive change in mean score reflects <u>less</u> likelihood.

Table F-1 (2 of 3)

Percentage Response to Sound and Unsound Consumer Purchase Questions ¹

	<u>Item</u>	Likelihood of Buying	First Week ²	Final Week ³	Change
4.	A small car	 Extremely Likely Very Likely 	32 25	33 27	1
			_ _	27	2
		3. Somewhat Likely	21	21	0
		4. Not V e ry Likely	13	12	-1
		Not at al Likely	9	7	- 2
		Mean	2.4	2.3	-0.1
5.	A backpack	l. Extremely Likely	46	53	7
		Very Likely	24	23	-1
		Somewhat Likely	16	14	- 2
		4. Not Very Likely	9	6	- 3
		5. Not at all Likely	5	4	-1
		Mean	2.0	1.8	-0.2

Table F-1 (3 of 3)

Percentage Response to Sound and Unsound Consumer Purchase Questions 1

Unsound Consumer Purchases

		Likelihood of Buying	First Week ²	Final Week 3	Change
1.	A motorcycle	 Extremely Likely Very Likely Somewhat Likely Not Very Likely Not at all Likely 	25 14 22 20 19	26 15 22 18 19	1 1 0 -2 0
		Mean ⁴	2.9	2.9	0
2.	A large car	 Extermely Likely Very Likely Somewhat Likely Not Very Likely Not at all Likely 	15 13 22 30 20	13 13 22 29 23	-2 0 0 -1 3
		Mean	3.3	3.3	0
3.	A power boat	 Extermely Likely Very Likely Somewhat Likely Not Very Likely Not at all Likely 	23 18 21 21 17	20 18 20 24 18	-3 0 -1 3 1
		Mean	2.9	3.0	0.1
4.	A camper	 Extremely Likely Very Likely Somewhat Likely Not Very Likely Not at all Likely 	32 22 20 15 11	29 21 20 16 14	-3 -1 0 1 3
		Mean	2.5	2.7	0.2
5.	An all terain vehicle	 Extremely Likely Very Likely Somewhat Likely Not Very Likely Not at all Likely 	30 17 20 19 14	28 18 20 19 15	-2 1 0 0
		Mean	2.7	2.7	0
6.	An electric can opener	 Extremely Likely Very Likely Somewhat Likely Not Very Likely Not at all Likely 	17 13 20 22 28	16 14 22 22 26	-1 1 2 0 -2
		Mean	3.3	3.3	0
7.	Water skiis	1. Extremely Likely 2. Very Likely 3. Somewhat Likely 4. Not Very Likely 5. Not at all Likely	20 14 21 22 23	20 16 20 22 22	0 2 -1 0 -1
_		Mean	3.1	3.1	0

Table F-2

Trends in the Likelihood of Buying Sound and Unsound Consumer Goods by Sex of Corps Member and Camp

	Girls				
	Co~ed Camps	Girls only Camps	All Girls in YCC		
Stable sound	20	19	20		
Became much more sound	8	9	8		
Became somewhat more sound	31	34	32		
Stable balanced	15	15	15		
Became somewhat less sound	14	14	14		
Became much less sound	6	4	6		
Stable unsound	6	5	5		
Total % and (N)	100(935)	100(133)	100(1068)		

	Boys				
	Co-ed <u>Camps</u>	Boys only Camps	All Boys in YCC		
Stable sound	12	7	11		
Became much more sound	5	8	6		
Became somewhat more sound	30	28	29		
Stable balanced	16	17	16		
Became somewhat less sound	16	14	16		
Became much less sound	8	10	8		
Stable unsound	13	17	14		
Total % and (N)	100(1035)	100(332)	100(1767)		

Table F-3

Trends in the Likelihood of Buying Sound and Unsound Consumer Goods by Grade in School

	Grades Completed				
	8 or 9	<u>10</u>	<u>11</u>	12-13	
Stable sound	8	12	16	25	
Became much more sound	8	7	8	4	
Became somewhat more sound	28	31	31	29	
Stable balanced	16	17	15	13	
Became somewhat less sound	15	14	15	18	
Became much less sound	9	8	7	4	
Stable unsound	16	11	8		
Total % and (N)	100 (386)	100 (795)	100 (836)	100 (408)	

Table F-4

Trends in the Likelihood of Buying Sound and Unsound Consumer Goods by Residential Character of Camp

	<u>Residential</u>	Non-Residential
Stable sound	15	12
Became much more sound	7	5
Became somewhat more sound	31	28
Stable balanced	15	16
Became somewhat less sound	16	14
Became much less sound	7	10
Stable unsound	9	15
		_
Total % and (N)	100(1983)	100(455)

Table F-5

Trends in the Likelihood of Buying Sound and Unsound
Consumer Goods by Manual Use and Training
(Interior Agencies Only)

	Did Not Receive	Received Did Not Use	Used Without Training	Used And Had <u>Training</u>
Stable sound	16	10	13	21
Became much more sound	16	9	5	9
Became somewhat more sound	31	25	31	35
Stable balanced	6	18	17	12
Became somewhat less sound	17	19	15	4
Became much less sound	10	6	7	4
Stable unsound	4	13	12	5
	 -			
Total % and (N)	100(51)	100(129)	100(561)	100 (239)

Table F-6

Trends in the Likelihood of Buying Sound and Unsound

Consumer Goods by Camp Participation-Interpersonal Relations Index

	P-1 Index					
	Low				High	
	1	2	3	4	5	
Stable sound	14	13	14	19	14	
Became much more sound	4	8	7	5	9	
Became somewhat more sound	28	31	30	29	36	
Stable balanced	19	17	15	14	14	
Became somewhat less sound	16	16	15	17	15	
Became much less sound	9	5	7	9	5	
Stable unsound	10	10	12			
Total % and (N)	100 (279)	100 (244)	100 (1344)	100 (309)	100 (239)	

Table F-7 Trends in the Likelihood of Buying Sound and Unsound Consumer Goods by Session Length of Camps

	Forest Service Camps				
	4 <u>Weeks</u>	5-7 Weeks	8 <u>Weeks</u>	9 <u>Weeks</u>	
Stable Sound Became much more sound Became somewhat more sound Stable balanced Became somewhat less sound Became much less sound Stable unsound	19 8 30 16 13 7 7	9 8 31 15 15 9	12 6 29 16 17 7	6 25 14 17 27 11	
Total % and (N)	100(653)	100(93)	100(676)	100 (36)	

	Interior Agency Camps				
	4 <u>Weeks</u>	5-7 <u>Weeks</u>	8 Weeks	9 Weeks	
Stable sound	33		15	3	
Became much more sound	7		7	3	
Became somewhat more sound	20		31	37	
Stable balanced	20		16	14	
Became somewhat less sound	7		15	23	
Became much less sound	6		7	3	
Stable unsound	7		9	17	
					
Total % and (N)	100(15)		100(930)	100 (35)	

Table F-8

Trends in the Likelihood of Buying Sound and Unsound

Consumer Goods by Evaluation of Coordination Between Work and Education

	Evaluation of Coordination				
	Excellent	Very Good	Good	Fair	<u>Poor</u>
Stable sound	14	12	14	18	27
Became much more sound	9	8	5	6	4
Became somewhat more sound	32	31	30	27	32
Stable balanced	17	17	13	17	9
Became somewhat less sound	14	15	15	17	15
Became much less sound	6	7	9	6	7
Stable unsound	8	10	14	9	6
Total % and (N)	100 (445)	100 (903)	100 (604)	100 (329)	100(136)

APPENDIX G

SPONSORING AGENCIES' DEFINITION OF ENVIRONMENTAL KNOWLEDGE AREAS OF PARTICULAR IMPORTANCE TO YCC PROGRAM

The Department of Interior and the U.S. Forest Service both issued the following statement defining areas in which corps members were expected to be knowledgable at the end of the program:1

"Upon completing the program the enrollee will have an increased awareness about natural laws and ecological principles that govern the natural environment. By the end of the YCC experience, he should be able to:

- 1. Identify the basic elements of the ecosystem within his geographic area.
 - Demonstrate a basic understanding of the biological elements inherent in that ecosystem.
 - (1) Plants
 - (2) Animals (including man)
 - b. Demonstrate a basic understanding of the physical elements inherent in that ecosystem.
 - (1) Minerals (soil, etc.)
 - (2) Water
 - (3) Air
- 2. Describe the interrelationships of the basic elements in the:
 - a. Food chain
 - b. Water cycle
 - c. Energy cycle
 - d. Carrying capacity
 - e. Biotic succession
 - f. Plant animal cooperation
 - g. Plant and animal competition
 - h. Limiting factors
- 3. Discuss effects of natural phenomena occurring within the ecosystem.
 - a. Fire
 - b. Flood
 - c. Weather disastersd. Earthquake
- 4. Describe man's economic, social, cultural, and physical dependence and resulting impact upon the natural environment.
 - a. Historical
 - (1) Primitive to beginning of modern technology
 - b. Present through the future
 - Satisfaction of basic needs (and wants) (1)
 - (2) Higher population concentrations and pressures
 - (3) Higher demands upon renewable and nonrenewable resources
 - (4) Rapid changes in modern technology

¹Source: Section 11, Forest Service YCC Handbook, July 1972 and pages 3 - 5, Department of The Interior's Environmental Education Training Manual, 1972.

- 5. Explain man's capabilities to manage and change an environment.
 - a. Manage resources wisely to meet basic needs
 - b. Use resources wisely to satisfy his cultural and social needs
 - Accept trade-offs and priorities to prevent shortages and exhaustion of resources (recycling, aesthetic vs. commercial, etc.)
 - d. Understand the functions and philosophies of land and natural resources management agencies (Federal, State, local, private)
- 6. Construct a plan of action for the following:
 - a. Identify, analyze, and propose at least two alternate plans of management for a predetermined area of land based on the summer work experience.
 - b. Identify a local environmental issue or concern and prescribe at least two alternate ways to affect that issue or concern.
- Describe at least three ways in which these work experiences will help him better understand the community in which he lives."

APPENDIX H

Table H-1 (Sheet 1 of 3)

Level of Perceived Understanding of Nine Topics Making Up Two Subjective Knowledge Scales (percent of corps members selecting different fixed responses during the first and final weeks)

Level of Understanding	First3 Week	Final ⁴ <u>Week</u>	Change
Perceived Understanding of Natural Resources			
Soil Resources			
Much above average	3	6	3
Above average	18	34	16
Average	61	52	- 9
Below average	16	7	- 9
Much below average	2	1	- 1
Mean 5,6	2.9	2.6	-0.3
Water Resources			
Much above average	4	9	5
Above average	26	41	15
Average	59	46	-13
Below average	10	4	- 6
Much below average	1	0	-]
Mean	2.8	2.5	-0.3

¹The question (1:51 in Appendix A) asked the youths to compare themselves with other young people of the same age in their understanding of the items listed.

²Percentages are based on number of youths who picked one of the five levels of understanding, so non-respondents are excluded.

³The number of respondents for the first week was 3083.

⁴The number of respondents for the final week was 3211.

⁵Hean scores were computed using the numerical values assigned to the level of understanding; "l" = much above average and "5" much below average.

⁶Changes in mean scores are not on a percentage basis but reflect the coding explained in footnote 5 with an <u>increase</u> in perceived understanding designated by a negative change in mean score.

Table H-1 (Sheet 2 of 3)

Level of Perceived Understanding of Nine Topics
Making Up Two Subjective Knowledge Scales
(percent of corps members selecting different
fixed responses during the first and final weeks)

Level of Understanding	First Week	Final Week	Change
Plant Resources Much above average Above average Average Below average Much below average Mean	5 24 54 15 2 2.8	14 41 38 6 1	9 17 -16 -9 -1
Animal Resources Much above average Above average Average Below average Much below average Mean	10 33 47 9 1 2.6	14 44 38 4 0 2.3	4 11 -9 -5 -1
Relationships between Resources Listed Plus Human Resources Much above average Above average Average Below average Much below average Mean	6 27 51 14 2 2.8	12 40 40 7 1 2.5	6 13 -11 -7 -1 -0.3
Perceived Understanding of Environmental Planning and Management Natural Resource Planning and Management Much above average Above average Average Below average Much below average Mean	4 19 49 25 3	14 38 39 8 1 2.4	-17 -2
Metropolitan or Urban Planning and Management Much above average Above average Average Below average Much below average Mean	2 11 41 38 8 3.4	4 18 50 24 3	2 7 9 -13 -5 -0.4

Table H-1 (Sheet 3 of 3)

Level of Perceived Understanding of Nine Topics
Making Up Two Subjective Knowledge Scales
(percent of corps members selecting different
fixed responses during the first and final weeks)

Level of Understanding	First Week	Final Week	Change
Perceived Understanding of Human Resources (Continued)			
Application of Concepts and Principles of			
Ecology to Natural Environments			
Much above average	8	1.6	8
Above average	28	41	13
Average	46	34	-1.2
Below average	15	8	- 7
Much below average	3	1	- 2
Mean	2.8	2.4	-0.4
Application of Basic Concepts and Principles of Ecology to Corps Member's Home Environment and Daily Life			
Much above average	8	16	8
Above average	32	41	9
Average	48	37	-11
Below average	10	5	- 5
Much below average	2	1	- 1
Mean	2.6	2.3	-0.3
Human Resources 7			
Much above average	9	12	3
Above average	31	40	9
Average	53	44	- 9
Below average	6	4	- 2
Much below average	1	0	- 1
Mean	2.6	2.4	-0.2
			. ,

 $^{^{7}\}mathrm{The}$ scales were defined empirically in terms of intercorrelations between items. Thus item "Human Resources" did not meet the criterion for inclusion.

Table H-2

Pearson Product Moment Intercorrelations Among Items Making Up Two Subjective Knowledge Scales

Scale 1: Perceived Resource Knowledge

		<u>7:51</u>	<u>7:52</u>	<u>7:53</u>	<u>7:54</u>	<u>7:56</u>
Soil Resources	(7:51) ¹	1.0				
Water Resources	(7:52)	.70	1.0			
Plant Resources	(7:53)	.61	. 64	1.0		
Animal Resources	(7:54)	.50	.51	.56	1.0	
Relationships among	2					
Above	(7:56) ²	.60	. 58	. 52	.54	1.0

Scale 2: Perceived Understanding of Environmental Planning and Management

Applications of				
Principles of Ecology to:	<u>7:59</u>	7:60	7:57	7:58
Natural Environments (7:59)1	1.0			
Home Environments (7:60)	.53	1.0		
Nat. Res. Plan & Mngt. (7:57)	.48	.31	1.0	
Urban Plan. & Mngt. (7:58)	.43	. 27	.42	1.0

lumbers in parentheses (and with colons) designate question number. See Appendix A.

 $^{^2}$ This item also referred to Item No. 7:55 "Human Resources" which was excluded from the scale because of low correlation coefficients.

Table H-3

Item Analysis for Animal Ecology Scale
(percent of youths giving correct and other answers during first and final weeks1)

<u>It</u>	<u>em</u>	First Week <u>Response</u>	Final Week Response	Change in Correct Response
1.	Migration in wildlife management refers to: (8:19)			
	The periodic movement of animals between habitats Other 2	92 8	92 8	0
2.	Competition is always internever intra-specific: (9:33)			
	False Other	73 27	76 24	3
3.	An example of the use of the term territoriality in plant and animal ecology is: (9:40)			
	A nesting bird's "area" Other	66 34	70 30	4
4.	An example of the use of the concept specialization and division of labor is: (9:43)			
	A beehive Other	65 35	67 33	2
	Average Number of Respondents:	3000	2925	

 $^{^{1}\}mbox{Percentages}$ are for corps members who answered one of the choices offered, so non-respondents are excluded.

 $^{^2\}mathrm{For}$ other response choices, see the complete question (designate by the number in parentheses) in Appendix A.

Table H-4 (Sheet 1 of 2)

Item Analysis of Soil and Water Resources Scale (percent of youths giving correct and other answers during first and final weeks1)

<u>Item</u>	First Week Response	Final Week Response	Change in Correct Response
1. A watershed refers to: (8:14)			
A drainage area Other $^{\mathrm{2}}$	65 35	84 16	19
2. A water table is: (8:16)			
The upper limit of ground saturated with water Other	48 52	60 40	12
 Decomposers are important in recycling nutrients and minerals: (9:31) 			
True Other	93 7	93 7	0
4. Slope is a: (9:52)			
Relationship between horizontal and vertical distance Other	75 25	76 24	1
5. Soil saturation point is a: (9:53)			
Point at which no more water can be absorbed Other	81 19	81 19	0
6. Run-off is: (9:54) Water that can not be held in the soil Other	69 31	75 25	6

Percentages are for corps members who answered one of the choices offered, so non-respondents are excluded.

 $^{^2\}mbox{For other response choices, see the complete question (designated by the number in parentheses) in Appendix A.$

Table H-4 (Sheet 2 of 2)

Item Analysis of Soil and Water Resources Scale

Item Analysis of Soil and Water Resources Scale (percent of youths giving correct and other answers during first and final weeks $^{\rm I}$)

<u>Item</u>	First Week Response	Final Week <u>Response</u>	Change in Correct Response
7. The earth's water supply is: (8:25) Relatively fixed but can be misused Other	45 55	49 51	4
 The stage in the water cycle indicated by the arrow from the water to the atmosphere is: (8:69) 			
Evaporation Other	93 7	96 4	3
 The stage in the water cycle indicated by the arrow from the tree to the atmosphere is: (8:70) 			
Transpiration Other	88 12	91 9	3
10. The stage in the water cycle indicated by the arrow from the atmosphere to the ground is: (8:71)			
Precipitation Other	89 11	91 9	2
11. Transpiration is: (9:50)			
The "loss" of water to the atmosphere through green plants Other	83 17	87 13	4
12. Dissolved oxygen is: (9:59)			
A measure of water quality Other	30 70	44 56	14
Average Number of Respondents:	3000	2925	

Table H-5

Item Analysis for Illustrated Food Chain Scale (percent of youths giving correct and other answers during first and final weeks¹)

<u>Item</u>		First Week <u>Response</u>	Final Week <u>Response</u>	Change in Correct Response
 The drawing which cor producer is: (9:63) 	responds to a			
Picture of a plant Other ²		71 29	81 19	10
The drawing which cor primary consumer is:	-			
Picture of a cow Other		56 44	69 31	13
3. The drawing which cor secondary consumer is	•			
Picture of a man Other		53 47	68 32	15
4. The drawing which correducer is: (9:66)	responds to a			
Picture of a mushroom Other	1	67 33	76 24	9
Average Number of Res	pondents:	3000	2925	

Percentages are for corps members who answered one of the choices offered, so non-respondents are excluded.

 $^{^2\}mbox{For other response choices, see the complete question (designated by the number in parentheses) in Appendix A.$

Table H-6 (Sheet 1 of 2)

Item Analysis for General Relationships Scale (percent of youths giving correct and other answers during first and final weeks1)

<u>Item</u>	First Week Response	Final Week <u>Response</u>	Change in Correct Response
1. Ecology is usually defined as: (8:13)			
Study of interdependencies between plants and animals and their environment Other ²	69 31	74 26	5
2. Habitat refers to: (8:15)			
Natural environment of plant or animal Other	90 10	91 9	1
3. A food chain is: (8:18)			
A series of organisms through which energy flows Other	74 26	80 20	6
4. A limiting factor is: (8:21)			
Any insufficiency in growth and survival requirements Other	62 38	67 33	5
5. Optimal population of an area is: (8:23)			
Carrying capacity Other	2 6 74	50 50	24
6. <u>Dominance is: (8:29)</u>			
Superior strength or vigor of certain plants or animals Other	66 34	76 24	10
7. There is little competition in a "balanced" ecosystem (9:15)			
False Other	74 26	79 21	5

 $^{^{\}mathrm{l}}$ Percentages are for corps members who answered one of the choices offered, so non-respondents are excluded.

 $^{^2}$ For other response choices, see the complete question (designated by the number in parentheses) in Appendix A.

Table H-6 (Sheet 2 of 2)

Item Analysis for General Relationships Scale (percent of youths giving correct and other answers during first and final weeks1)

<u>It</u>	<u>em</u>	First Week <u>Response</u>	Final Week Response	Change in Correct Response
8.	An example of the use of the concept of niche in plant and animal ecology is: (9:38)			
	Mold growing on a damp log Other	53 47	52 48	-1
9.	An example of the use of the concept of density in plant and animal ecology is: (9:39)	-		
	Number of bears per 100 square miles Other	76 24	80 20	4
10.	An example of the use of the concept of symbiotic relationship in plant and animal ecology is: (9:41)			
	Bees and flowers Other	68 32	66 34	-2
11.	An example of the use of the concept of succession in plant and animal ecology is: (9:42)			
	Development from pioneer species to climax associations Other	64 36	70 30	6
12.	A matching definition for food chain is: (9:55)			
	None of the above Other	71 29	74 26	3
	Average of number of respondents:	3000	2 92 5	

Table H-7 (Sheet 1 of 2)

Item Analysis of Analogous Plant and Animal Ecology Scale (percent of youths giving correct and other answers during first and final weeks!)

<u>It</u>	<u>en</u>	First Week <u>Response</u>	Final Week <u>Response</u>	Change in Correct Response
1.	An example of the use of the concept of niche in plant and animal ecology is: (9:38)			
	Mold growing on a damp log Other ²	53 47	52 48	-1
2.	An example of the use of the concept of density in plant and animal ecology is: (9:39)			
	Number of grizzly bears per 100 square miles Other	76 24	80 20	4
3.	An example of the use of the concept of territoriality in plant and animal ecology is: (9:40)			
	A nesting bird's "area" Other	66 34	70 3 0	4
4.	An example of the use of the concept of symbiotic relationship in plant and animal ecology is: (9:41)			
	Bees and flowers Other	68 32	6 6 34	-2
5.	An example of the use of the concept of succession in plant and animal ecology is: (9:42)			
	The development from pioneer species to climax associations Other	64 36	70 30	6

 $^{^{\}rm 1}\textsc{Percentages}$ are for corps members who answered one of the choices offered, so non-respondents are excluded.

 $^{^2 \}rm{For}$ other response choices, see the complete question (designated by the number in parentheses) in Appendix A.

Table H-7 (Sheet 2 of 2)

Item Analysis of Analogous Plant and Animal Ecology Scale (percent of youths giving correct and other answers during first and final weeks1)

	<u>Item</u>	First Week <u>Response</u>	Final Week <u>R</u> esponse	Change in Correct Response
Sį	n example of the use of the concept of pecialization and division of labor in lant and animal ecology is: (9:43)			
Α	beehive	65	67	2
0	ther	35	33	
A	verage Number of Respondents	3000	2925	

Table H-8

Item Analysis of Cultural Resources Scale (percent of youths giving correct and other answers during the first and final weeks1)

<u>Item</u>	First	Final	Change in
	Week	Week	Correct
	<u>Response</u>	<u>Response</u>	Response
 An example which is not a heritage resource is: (8:24) 			
A coal deposit	46	54	8
Ocher ²	54	46	
 Preserved cliff dwellings are culture resources: (9:34) 	a1 —		
True	88	86	-2
Other	12	14	
Average Number of Respondents:	3000	2925	

Percentages are for corps members who answered one of the choices offered, so non-respondents are excluded.

 $^{^2}$ For other response choices, see the complete question (designated by the number in parentheses) in Appendix A.

Table H-9

Item Analysis for General Systems Scale (percent of youths giving correct and other answers during first and final weeks1)

<u>It</u>	<u>em</u>	First Week <u>Response</u>	Final Week <u>Response</u>	Change in Correct Response
1.	"Spaceship Earth" means: (8:22)			
	Earth is a closed system with limited resources Other ²	64 36	76 24	12
2.	Open systems exchange things with environment (9:29)			
	True	85	85	0
	Other	15	15	
3.	In closed systems, amounts of energy are constant but their form and usefulness may change (9:36)			
	True	76	78	2
	Other	24	22	
	Average Number of Respondents:	3000	2925	

Percentages are for corps members who answered one of the choices offered, so non-respondents are excluded.

 $^{^2\}mbox{For other response choices, see the complete question (designated by the number in parentheses) in Appendix A.$

Table H-10

Item Analysis of Natural Phenomena Scale (percent of youths giving correct and other answers during the first and final weeks1)

<u>It</u>	<u>em</u>	First Week <u>Response</u>	Final Week Response	Change in Correct Response
1.	A temperature inversion: (8:17)			
	Concentrates air pollution in parts of the country $\label{eq:contraction} Other^2$	30 70	40 60	10
2.	If people would be more careful, there would be no forest fires: (9:17)			
	False Other	71 29	80 20	9
3.	Some pollutants result from natural processes: (9:32)			
	True	80	83	3
	Other	20	17	
	Average Number of Respondents:	3000	2925	

 $^{^{\}mbox{\scriptsize 1}}\mbox{\scriptsize Percentages}$ are for corps members who answered one of the choices offered, so non-respondents are excluded.

 $^{^2\}mbox{For other response choices, see the complete question (designated by the number in parentheses) in Appendix A.$

Table H-11

Item Analysis of Analogous Human Ecology Scale (percent of youths giving correct and other answers during first and final weeks 1)

<u>Ite</u>	<u>m</u>	First Week <u>Response</u>	Final Week Response	Change in Correct Response
1.	An example of the use of the concept of niche in human ecology is: (9:44)			
	A person's profession Other ²	45 55	57 43	12
2.	An example of the use of the concept of density in human ecology is: (9:45)			
	Dwelling units per acre Other	77 23	79 21	2
3.	An example of the use of the concept of territoriality in human ecology is: (9:46)			
	Zoning laws Other	66 34	68 32	2
4.	An example of the use of the concept of symbiotic relationship in human ecology is: (9:47)			
	Auto manufacturers and rock salt producers Other	58 42	62 38	4
5.	An example of the use of the concept of succession in human ecology is: (9:48)			
	A "changing" neighborhood Other	52 48	59 41	7
6.	An example of the use of the concept of specialization and division of labor in human ecology is: (9:49)			
	Assembly line production Other	44 56	49 51	5
	Average Number of Respondents	3000	2925	

¹Percentages are for corps members who answered one of the choices offered, so non-respondents are excluded.

 $^{^2{\}rm For}$ other response choices, see the complete question (designated by the number in parentheses) in Appendix A.

Table H-12

Item Analysis for Natural Succession Scale (percent of youths giving correct and other answers during first and final weeks 1)

<u>Item</u>	First Week Response	Final Week <u>Response</u>	Change in Correct Response
 A change in plant communities from lichens on bare rock to a climax forest is called: (8:27) 			
Biotic succession Other ²	53 47	69 3 1	16
2. An example of the use of the term "succession" in plant and animal ecology is: (9:42)			
Development from pioneer species to climax associations Other	64 3 6	70 30	6
3. A matching definition for pioneer species is: (9:57)			
First group of plants in natural succession Other	70 30	74 26	4
4. A matching definition for a climax association is: (9:58)			
None of the above Other	28 72	30 70	2
Average Number of Respondents:	3000	2925	

Percentages are for corps members who answered one of the choices offered, so non-respondents are excluded.

 $^{^2}$ For other response choices, see the complete question (designated by the number in parentheses) in Appendix A.

Table H-13 (Sheet 1 of 2)

Item Analysis for Plant Ecology Scale (percent of youths giving correct and other answers during first and final weeks¹)

<u>Item</u>	First Week <u>Response</u>	Final Week <u>Response</u>	Change in Correct Response
 A change in plant communities from lichens on bare rock to a climax forest is called: (8:27) 			
Biotic succession Other ²	53 47	69 31	16
2. The producers in the food chain are green plants: (9:19)			
True Other	88 12	91 9	3
 We are rapidly using up our fixed supply of timber resources: (9:28) 			
False Other	26 74	47 53	21
4. A matching definition for a seedling is: (9:56)			
Very small tree Other	87 13	88 12	1
 A matching definition for a pioneer species is: (9:57) 			
First group of plants in natural succession Other	70 30	74 26	4
6. A matching definition for a climax association is: (9:58)			
None of the above Other	28 72	30 70	2

¹Percentages are for corps members who answered one of the choices offered, so non-respondents are excluded.

 $^{^2\}mbox{For other response choices, see the complete question (designated by the number in parentheses) in Appendix A.$

Table H-13 (Sheet 2 of 2)

Item Analysis for Plant Ecology Scale (percent of youths giving correct and other answers during first and final weeks $^{\rm l}$)

<u>Item</u>	First	Final	Change in
	Week	Week	Correct
	<u>Response</u>	<u>Response</u>	Response
 Natural succession refers to the fact that new plants are the offspring of existing plants in an area: (9:61) 			
False	27	33	6
Other	73	67	
8. Green leaves, water and sunlight make food for plants: (9:62)			
Tru e	80	84	4
Other	20	16	
Average Number of Respondents:	3000	2925	

Table H-14 (Sheet 1 of 2)

Item Analysis of Resource Management Scale (percent of youths giving correct and other answers during first and final weeks¹)

<u>Item</u>	First Week Response	Final Week <u>Response</u>	Change in Correct Response
 Which one of the following is <u>not</u> an example of resource exploitation: (8:28) 			
Charging public for use of public recreation areas Other ²	52 48	57 43	5
 Clearcutting is a practice of forestry which should never be used: (8:44) 			
Disagree Other	39 61	58 42	19
 Expensive land should not be used for recreation: (8:59) 			
Disagree Other	69 31	65 35	-4
4. Trees should not be harvested on a rotating basis: (8:63)			
Disagree Other	59 41	67 33	8
 One problem of natural resource management is that some resources move from one government's jurisdiction to another: (9:14) 			
True Other	73 27	82 18	9
 One major operating cost in outdoor recreation areas is cleaning up trash and litter: (9:18) 			
True Other	90 10	89 11	-1

 $^{^{1}\}mbox{Percentages}$ are for corps members who answered one of the choices offered, so non-respondents are excluded.

 $^{^2{\}rm For}$ other response choices, see the complete question (designated by the number in parentheses) in Appendix A.

Table H-14 (Sheet 2 of 2)

Item Analysis of Resource Management Scale (percent of youths giving correct and other answers during first and final weeks 1)

<u>It</u>	<u>em</u>	Pirst Week Response	Final Week <u>Response</u>	Change in Correct Response
7.	Wildlife reserves can be established within cities: (9:21)			
	True Other	53 47	59 41	6
8.	Recreation is often the best use of flood plains: (9:26)			
	True Other	24 76	30 70	6
9.	We should use aluminum Christmas trees: (9:30)			
	False Other	63 37	73 27	10
10.	Fire can be a useful tool in forest management: (9:35)			
	True Other	70 3 0	86 14	16
11.	A matching definition for the term "chain" is: (9:51)			
	A measure of distance Other	12 88	25 75	13
12.	We should use metal telephone poles to conserve timber: (8:60)			
	Disagree Other	47 53	50 50	3
13.	More natural resources are used per capita in a rich country: (9:13)			
	True Other	82 18	89 11	7
	Average Number of Respondents:	3000	2925	

Table H-15

Item Analysis of Timber Management Scale (percent of youths giving correct and other answers during the first and final weeks!)

<u>Item</u>	First	Final	Change in
	Week	Week	Correct
	<u>Response</u>	<u>Response</u>	Response
 Clearcutting is a practice in forestry which should never be used: (8:44) 			
Disagree	39	58	19
Other ²	61	42	
2. In order to conserve a scarce natural resource, we should use metal telephone poles instead of wooden poles: (8:60)			
Disagree	47	50	3
Other	53	50	
 Trees should never be managed as if they were a crop to be harvested on a rotation basis: (8:63) 			
Disagree	59	67	8
Other	41	33	
 We are rapidly using up our fixed supply of timber resources: (9:28) 	, -		
False	26	47	21
Other	74	53	
5. We should use aluminum Christmas trees instead of cutting down real trees: (9:3	<u>10)</u>		
False	63	73	10
Other	37	27	
6. Fire can be a useful tool in forest management: (9:35)			
True	70	86	16
Other	30	14	
Average Number of Respondents:	3000	2925	

Percentages are for corps members who answered one of the choices offered, so non-respondents are excluded.

 $^{^2\}mbox{For other response choices, see the complete question (designated by the number in parentheses) in Appendix A.$

Table H-16 (Sheet 1 of 2)

Item Analysis for Agency Functions Scale (percent of youths giving correct and other answers during the first and final weeks¹)

<u>Item</u>	First	Final	Change in
	Week	Week	Correct
	<u>Response</u>	<u>Response</u>	Response
1. An area dealt with by the Park Service is: (8:31)	e 		
Yellowstone and Yosemite	79	84	5
Other ²	21	16	
 A program dealt with by the Environmental Protection Agency involves: (8:32) 			
Environmental impact statements	44	50	6
Other	56	50	
3. A program dealt with by the Bureau of Reclamation is: (8:33)			
Irrigation	14	18	4
Other	86	82	
 An area dealt with by the Bureau of Sport Fisheries and Wildlife is: (8:34) 			
Refuges	39	52	13
Other	61	48	
 An area dealt with by the Corps of Engineers is: (8:35) 			
Flood control	32	38	6
Other	68	62	
 An area dealt with by the Soil <u>Conservation Service is: (8:36)</u> 			
Watershed protection	26	30	4
Other	74	70	

Percentages are for corps members who answered one of the choices offered, so non-respondents are excluded.

 $^{^2}$ For other response choices, see the complete question (designated by the number in parentheses) in Appendix A.

Table H-16 (Sheet 2 of 2)

Item Analysis for Agency Functions Scale (percent of youths giving correct and other answers during the first and final weeks1)

<u>Item</u>		First Week <u>Response</u>	Final Week Response	Change in Correct Response
7.	An area dealt with by the Bureau of Indian Affairs is: (8:37)			
	Reservations Other	90 10	91 9	1
8.	An area dealt with by the Forest Service is: (8:38)			
	Multiple use and wilderness Other	51 49	59 41	8
9.	An area dealt with by the Bureau of Land Management is: (8:39)			
	Public domain and offshore oil Other	15 85	18 82	3
	Average Number of Respondents	3000	2925	

ADDENDUM TO APPENDIX H

Note of Explanation for Tables H-17 and H-18

Environmental knowledge was measured by asking corps members to rate their own levels of understanding for each of nine topics (the subjective measure) and by counting the number of correct responses to 56 knowledge questions (the objective measure).

The relationship between subjective and objective measurements is straightforward as shown in figure 6-3. The examination of the relationships between changes in the subjective measure and changes in the objective measure is far more complex. Tables H-17 and H-18 report these relationships for three points along the total distribution of subjective ratings. These three points, comprised of those whose overall subjective placement was above average, average and below average during the first week, include about two-fifths of all corps members.

The overall ratings were obtained by dividing the nine topics on which self-ratings were obtained into two indexes. Table H-17 shows the Natural Resources index containing five items, and Table H-18 shows the Environmental Planning and Management index containing four items. Responses to each item were scored from 1 (much below average) to 5 (much above average) and these values were summed for all items on an index. The range of possible index scores for Natural Resources ran from 5 (much below average) to 25 (much above average) with 15 representing an overall score of average. Although an overall index score of average could be obtained by counter-balancing high and low scores on different items, the most common way of obtaining it was to have an average score on all five items.

The same scoring procedure was followed for both the first and the final weeks' subjective measures. One method of observing the relationships between changes on subjective measures and changes on objective measures would be to subtract the first week index score from the final week index score. However, there are several limitations to this approach. It would treat a gain of five points from much below average the same as a gain of five points from above average. It would also conceal the fact that those at the very bottom had no opportunity to move to a lower rating and those at the very top had no opportunity to move to a higher rating. Finally, we observed that there was a strong tendency for those with low initial ratings to move up to average on the final rating. This produced numeric increases that, because of the "ceiling" effect, were often larger than it was possible for those with high initial ratings to achieve.

For these reasons we chose to examine changes from specific starting points by taking the three above mentioned starting points out of the total distribution of first week scores. We chose points which would include both high and low self-assessments, yet would permit change in either direction. These three points had the additional advantages of being nodal points in the distribution, and being easily identified (or labeled) as above average, average, and below average. There were sufficient cases at the "average" point on both indexes to allow us to use only one score class as that starting point. However, in order to include sufficient cases for statistical reliability, we had to increase the range of our "above average" and "below average" starting points by including three index scores in each of these points.

Each of the starting groups was then subdivided according to their final-week subjective ratings. For example, on Table H-17 the starting group comprised of those who initially rated themselves as average is subdivided into a small group who rated themselves somewhat lower during the final week, a much larger group who again rated themselves as average during the final week, and three medium-sized groups which increased their self-assessments in varying degrees. Thus, the subcategories represent amounts of change in self-rating measured from a common starting point.

For each of these change classifications we computed the average correct response on the knowledge tests. The first column, starting on

the left shows the first week results. The second column shows the final week results and the gain is shown in the third column.

Because our knowledge tests had a "ceiling" above which improvement could not be measured, the fourth column shows the gain as a percent of what was possible. The number of cases was limited (see column 5), which forced us to bracket varying degrees of subjective change in forming sub-categories. This was done to obtain a sufficient number of cases in each sub-category to compute meaningful test statistics. Even so, the numbers are often smaller than one might wish.

The changes in correct response shown in Table H-17 are displayed graphically in Figure 6-4. Two features found in these relationships should be noted. The most obvious relationship is that from each starting point changes in self-assessment reflect performance on the objective tests. Those who originally judged their understanding to be average, but later revised it upward, had above average objective test scores, while those who lowered their self-assessment had below average scores. The second feature to be noted is that those who increased their subjective ratings the most also tended to show the largest gains in the objective tests. This is especially clear in the gains as a percent of possible gain.

Table H-17
Relationships Between Changes in Perceived Understanding of
Natural Resources and Objective Knowledge

Cumulative Score on Subjective Knowledge Scale		Percent Correct Response to 56 Objective Knowledge Questions ²				
First Week Score	Change in Score ³	First Week	Last <u>Week</u>	Percent Change	Percent of Possible ⁴	Average N
19,20 or 21 (above average) ⁵	3 or more 1 or 2 0 -1 or -2 -3 or more	68 71 69 65 58	74 76 75 67 62	6 5 6 2 4	20 17 19 6 10	86 106 111 79 81
15 (average)	5 or more 3 or 4 1 or 2 0 -1 or more	62 61 60 58 56	71 70 67 63 62	9 9 7 5 6	22 23 17 11 14	141 107 129 198 49
9, 10 or 11 (below average) ⁵	9 or more 6 to 8 4 or 5 1 to 3	55 51 51 51	65 59 58 57	10 8 7 6	22 16 14 13	24 38 58 34

There were five items in the scale (see Table 6-1), each of which responded to on a 5-point scale. The cumulative score would, therefore, range from 5 (much below average) to 25 (much above average).

Note: See Addendum to Appendix H for explanation of this table.

²The 56 questions are those making up the first seven scales listed in Tables J-1 to 20 in Appendix J.

³Change in score is cumulative last week perceived understanding score minus cumulative first week score.

⁴Change expressed as a percent of possible (or 1.0 minus first week score divided into percent change in correct response).

 $^{^5}$ To increase sample size, three levels of cumulative score at the "above" and "below" average scale points were used as the first week level.

Table H-18

Relationships Between Changes in Perceived Understanding of Environmental Planning and Management and Objective Knowledge

Cumulative Subjective Kno	Percent Correct Response to 56 Objective Knowledge Questions ²					
First WeekScore	Change in Score ³	First Week	Last Week	Percent Change	Percent of <u>Possible⁴</u>	Average
15,16 or 17	2 or more	67	74	7	22	52
(above -	1	67	72	5	14	90
average) ⁾	0	69	74	5	16	85
	-1 or -2	65	69	4	11	96
	-3 or more	5 2	56	4	9	56
12	5 or more	63	70	7	20	57
(average)	3 or 4	64	72	8	21	127
	1 or 2	62	70	8	21	146
	0	56	60	4	10	154
	-1 or more	56	62	6	15	69
7,8 or 9	7 or more	58	68	10	24	49
(below	5 or 6	57	64	7	16	74
average)5	3 or 4	51	57	6	13	107
<u>.</u>	1 or 2	51	56	5	11	72
	0 or less	53	5 7	4	9	36

There were 4 items in the scale (see Table 6-1), each of which were responded to on a 5-point scale. The cumulative score would, therefore, range from 4 (much below average) to 20 (much above average).

Note: See Addendum to Appendix H for explanation of this table.

²The 56 questions are those making up the first seven scales listed in Tables J-1 to 20 in Appendix J.

 $^{^{3}}$ Change in score is cumulative last week perceived understanding score minus cumulative first week score.

Change expressed as a percent of possible (or 1.0 minus first week score divided into percent change in correct response).

 $^{^{5}}$ To increase sample size, three levels of cumulative score at the "above" and "below" average scale points were used as the first week level.

APPENDIX I

Table I-1

Representativeness of Camp Environmental Education Specialists Selected For Training

(Camp Characteristics)

Number of Camps With Designated Characteristics

Camp Characteristics	All Interior Camps	Camps Selected For Training
Agency		
Bureau of Sport Fisheries,		
and Wildlife	19	5
National Parks Service	13	3
Bureau of Indian Affairs	6	1
Bureau of Land Management	6	1
Bureau of Reclamation	6	1
Size (Number of Corps Members)		
40-50	11	3
30-39	11	ī
20-29	24	6
Under 20	5	1
<u>Other</u>		
New Camp	13	6
1971 Camp	33	5
Residential	23	6
Non-Residential	8	5
Agency Operated	29	9
Contract	22	2
	- 4	
Urban Enrollees	16	6
Rural Enrollees	15	5

Table I-2

Representativeness of Camp Environmental

Education Specialists Selected For Training

(Nominee Characteristics)

Nominee Characteristics	All Nominations	Trainees
Occupation		
Student	3	1
Educator	23	8
Refuge Manager	3	1
Park Manager	1	1
Self-Employed	1	0
Academic Degree		
Bachelor candidate	1	0
Bachelor degree	20	10
Masters degree	9	1
PhD degree	· 1	0
Background in Science		
Yes	22	7
No	9	4
uo	,	7
Previous YCC Experience		
Yes	9	4
No	22	7
110	~~	•
Region		
East	12	4
Central	6	3
West	13	4

APPENDIX J Table J-1

Percentage Correct Response to Nine Objective Knowledge Scales by Sex

<u>Scale</u>	<u>Week</u>	Female	Male
Animal Ecology (4 questions)	First Last Change	72 75 3(11) ¹	69 70 1(3)
Soil and Water Resources (12 questions)	First Last Change	69 76 7 (23)	70 73 3(10)
Illustrated Food Chain (4 questions)	First Last Change	62 74 12 (32)	61 72 9 (23)
General Relationships (12 questions)	First Last Change	65 71 6(17)	62 65 3(8)
General Systems (3 questions)	First Last Change	51 63 12 (25)	54 60 6(13)
Plant Ecology (8 questions)	First Last Change	53 61 8(17)	54 59 5(11)
Resource Management (13 questions)	First Last Change	46 55 9(17)	50 56 6(12)
Timber Management (6 questions)	First Last Change	40 54 14(23)	49 58 9(18)
Natural Succession (4 questions)	First Last Change	55 61 6(13)	50 56 6(12)
Overall Averages ² (56 questions)	First Last Change	59.4 67.0 7.6(18.7)	59.5 64.3 4.8(11.9)
Average Number of Respondents	-	1215	1629

¹For each scale, average percent correct scores were computed for the first and last week tests. The difference (or change in percent correct responses) was then divided by the total possible change (or 1.00 minus the first week average percent correct score) to give the values shown in parentheses.

²Overall averages were computed using the 56 items which were included in the nine scales. The items in the Timber Management and Natural Succession scales overlap with other scales and are excluded in the overall average.

Table J-2

Percentage Correct Response to Nine Objective Knowledge Scales by Race and Ethnic Background

Scale	Week	American Indian	Black	Spanish Surname	White
Animal Ecology (4 questions)	First Last Change	45 45 0(0) ¹	48 50 2(6)	57 59 2(5)	74 76 2(8)
Soil and Water Resources (12 questions)	First Last Change	50 54 4(8)	48 54 6(12)	57 64 7(16)	73 78 5(19)
Illustrated Food Chain (4 questions)	First Last Change	43 54 11(19)	42 48 6(10)	49 65 16(31)	65 77 12 (34)
General Relationships (12 questions)	First Last Change	45 44 - 1	47 47 0(0)	52 59 7 (15)	66 71 5(15)
General Systems (3 questions)	First Last Change	44 49 5(9)	44 51 7(13)	45 52 7(13)	54 63 9(20)
Plant Ecology (8 questions)	First Last Change	41 42 1(2)	42 46 4(7)	45 49 4(7)	56 63 7(16)
Resource Management (13 questions)	First Last Change	39 40 1(2)	38 40 2(3)	40 46 6(10)	50 58 8(16)
Timber Management (6 questions)	First Last Change	38 40 2(3)	33 39 6(9)	34 45 11(17)	47 60 13 (25)
Natural Succession (4 questions)	First Last Change	31 33 2(3)	35 37 2(3)	37 42 5(8)	56 62 6(14)
Overall Averages ² (56 questions)	First Last Change	43.9 46.1 2.2(3.9)	43.8 47.0 3.2(5.7)	49.0 55.8 6.8(13.3)	62.3 68.7 6.4(17.0)
Average Number of Respondents		152	178	88	2322

¹For each scale, average percent correct scores were computed for the first and last week tests. The difference (or change in percent correct responses) was then divided by the total possible change (or 1.00 minus the first week average percent correct score) to give the values shown in parentheses.

²Overall averages were computed using the 56 items which were included in the nine scales. The items in the Timber Management and Natural Succession scales overlap with other scales and are excluded in the overall average.

Table J-3

Percentage Correct Response to Nine Objective Knowledge Scales by Size or Type of Place of Residence I

Scale		Cities Over	Towns Less than	Rural
Animal Ecology (4 questions)	Week T First Last Change	70 73 3(10) ²	72 72 0(0)	69 71 2(6)
Soil and Water Resources (12 questions)	First Last Cnange	68 73 5(16)	71 76 5(17)	69 74 5(16)
Illustrated Food Chain (4 questions)	First Last Change	63 73 10(27)	61 75 14(36)	61 71 10(26)
General Relationships (12 questions)	First Last Change	64 69 5(14)	64 68 4(11)	62 67 5(13)
General Systems (3 questions)	First Last Change	53 61 8(17)	54 62 8(17)	51 61 10(20)
Plant Ecology (8 questions)	First Last Change	54 61 7 (15)	54 61 7(15)	52 59 7(15)
Resource Management (13 questions)	First Last Change	48 55 7(13)	49 56 7(14)	48 55 7(13)
Timber Management (6 questions)	First Last Change	44 56 12(21)	46 58 12 (22)	44 55 11(20)
Natural Succession (4 questions)	First Last Change	54 60 6(13)	53 58 5(11)	49 55 6(12)
Overall Averages ³ (56 questions)	First Last Change	59.3 65.6 6.3(15.5)	60.4 66.2 5.8(14.7)	58.6 64.8 6.2(15.0)
Average Number of Respondents		843	1266	897

¹See Question 4:51 in Appendix A

²For each scale, average percent correct scores were computed for the first and last week tests. The difference (or change in percent correct responses) was then divided by the total possible change (or 1.00 minus the first week average percent correct score) to give the values shown in parentheses.

³Overall averages were computed using the 56 items which were included in the nine scales. The items in the Timber Management and Natural Succession scales overlap with other scales and are excluded in the overall average.

Table J-4

Percentage Correct Response to Nine Objective Knowledge Scales by Family Income

Scale	<u>Week</u>	-\$5,000	\$5,000- 9,999	\$10,000- 14,999	\$15,000- 19,999	\$19,999+
Animal Ecology (4 questions)	First Last Change	53 54 1(2) ¹	67 69 2(6)	74 75 1(4)	73 76 3(11)	80 80 0(0)
Soil and Water Resources (12 questions)	First Last Change	55 58 3(7)	66 72 6(18)	73 78 5(19)	72 77 5(18)	77 82 5(22)
Illustrated Food Chain (4 questions)	First Last Change	43 57 14(25)	58 69 11(26)	66 77 11(32)	67 78 11(33)	69 80 11(35)
General Relationships (12 questions)	First Last Change	48 51 3(6)	59 64 5(12)	67 71 4(12)	66 71 5(15)	71 76 5(17)
General Systems (3 questions)	First Last Change	46 5 2 6(11)	51 61 10(20)	55 63 8(18)	53 63 10(21)	59 65 6(15)
Plant Ecology (8 questions)	First Last Change	45 47 2(4)	50 58 8(16)	56 62 6(14)	56 63 7(16)	59 66 7(17)
Resource Management (13 questions)	First Last Change	42 44 2 (3)	46 52 6(11)	50 57 7(14)	50 58 8(16)	53 61 8(17)
Timber Management (6 questions)	First Last Change	40 44 4(7)	43 54 11(19)	47 59 12(23)	47 59 12 (23)	50 62 12(24)
Natural Succession (4 questions)	First Last Change	37 41 4(6)	46 53 7(13)	56 62 6(14)	57 64 7(16)	62 67 5(13)
Overall Averages ² (56 questions)	First Last Change	47.6 51.1 3.5(6.7)	56.3 62.8 6.5(14.9)	62.5 68.4 5.9(15.7)	61.9 68.5 6.6(17.3)	66.4 72.2 5.8(17.3)
Average Number of Respondents		226	685	839	549	304

¹For each scale, average percent correct scores were computed for the first and last week tests. The difference (or change in percent correct responses) was then divided by the total possible change (or 1.00 minus the first week average percent correct score) to give the values shown in parentheses.

 $^{^2}$ Overall averages were computed using the 56 items which were included in the nine scales. The items in the Timber Management and Natural Succession scales overlap with other scales and are excluded in the overall average.

Table J-5

Percentage Correct Response to Nine Objective Knowledge Scales by Age

		·	Age	<u> </u>	
Scale	Week	15	16	17	18
Animal Ecology (4 questions)	First Last Change	64 65 1(3) ¹	70 71 1(3)	75 77 2(8)	77 78 1(4)
Soil and Water Resources (12 questions)	First Last Change	64 68 4(11)	6 9 74 5(16)	74 79 5(19)	76 81 5(21)
Illustrated Food Chain (4 questions)	First Last Change	54 67 13(28)	63 74 11(30)	68 7 8 10(31)	65 76 11(31)
General Relationships (12 questions)	First Last Change	58 61 3(7)	63 67 4(11)	67 74 7(21)	71 75 4(14)
General Systems (3 questions)	First Last Change	49 56 7(14)	52 62 10(21)	56 65 9(20)	58 66 8(19)
Plant Ecology (8 questions)	First Last Change	49 54 5(10)	54 60 6(13)	56 64 8(18)	59 66 7(17)
Resource Management (13 questions)	First Last Change	45 50 5(9)	47 55 8(15)	51 58 7(14)	53 61 8(17)
Timber Management (6 questions)	First Last Change	43 51 8(14)	44 57 13 (23)	47 59 12 (23)	48 61 13(25)
Natural Succession (4 questions)	First Last Change	45 49 4(7)	51 57 6(12)	57 66 9(21)	62 68 6(16)
Overall Averages ² (56 questions)	First Last Change	54.7 59.4 4.7(10.4)	59.1 65.5 6.4(15.6)	63.5 70.2 6.7(18.4)	65.4 71.6 6.2(17.9)
Average Number of Respondents		7 9 8	1014	769	249

¹ For each scale, average percent correct scores were computed for the first and last week tests. The difference (or change in percent correct responses) was then divided by the total possible change (or 1.00 minus the first week average percent correct score) to give the values shown in parentheses.

²Overall averages were computed using the 56 items which were included in the nine scales. The items in the Timber Management and Natural Succession scales overlap with other scales and are excluded in the overall average.

Table J-6

Percentage Correct Response to Nine Objective Knowledge Scales by Grade Level in School

Scale	<u>Week</u>	8th Grade	9th Grade	10th Grade	11th Grade	12th Grade
Animal Ecology (4 questions)	First Last Change	29 43 14(20) ¹	58 59 1(2)	70 71 1(3)	74 76 2(8)	80 81 1(5)
Soil and Water Resources (12 questions)	First Last Change	35 37 2(3)	59 63 4(10)	68 73 5(16)	74 79 5(19)	7 8 84 6(27)
Illustrated Food Chain (4 questions)	First Last Change	35 35 0(0)	47 61 14(26)	61 74 13(33)	67 78 11(33)	70 80 10(33)
General Relationships (12 questions)	First Last Change	31 32 1(1)	52 55 3(6)	63 66 3(8)	66 72 6(18)	73 78 5(19)
General Systems (3 questions)	First Last Change	41 32 -9(0)	46 52 6(11)	51 61 10(20)	55 64 9(20)	60 69 9(23)
Plant Ecology (8 questions)	First Last Change	37 38 1(2)	45 50 5(9)	54 60 6(13)	56 63 7(16)	59 68 9(22)
Resource Management (13 questions)	First Last Change	32 34 2(3)	44 48 4(6)	47 54 7(13)	49 57 8(16)	54 61 7(15)
Timber Management (6 questions)	First Last Change	30 31 1(1)	41 48 7(12)	44 57 13 (23)	46 59 13(24)	49 62 13(26)
Natural Succession (4 questions)	First Last Change	24 25 1(1)	39 42 3(5)	51 56 5(10)	56 63 7(16)	63 71 8(22)
Overall Averages ² (56 questions)	First Last Change	33.8 35.5 1.7(2.6)	50.3 54.7 4.4(8.9)	58.7 64.7 6.0(14.5)	62.5 69.1 6.6(17.6)	67.3 73.8 6.5(19.9)
Average Number of Respondents		31	467	943	947	431

¹For each scale, average percent correct scores were computed for the first and last week tests. The difference (or change in percent correct responses) was then divided by the total possible change (or 1.00 minus the first week average percent correct score) to give the values shown in parentheses.

²Overall averages were computed using the 56 items which were included in the nine scales. The items in the Timber Management and Natural Succession scales overlap with other scales and are excluded in the overall average.

Table J-7

Percentage Correct Response to Nine Objective Knowledge Scales by Whether Corps Members Did or Did Not Have a Natural Science Course Previous to the Youth Conservation Corps Program¹

Scale	<u>Week</u>	Yes	No
Animal Ecology	First	74	54
(4 questions)	Last	75	57
	Change	1(4)	3(7)
Soil and Water	First	72	57
Resources	Last	77	62
(12 questions)	Change	5(18)	5(12)
Illustrated Food Chain	First	65	46
(4 questions)	Last	76	62
	Change	11(31)	16(30)
General Relationships	First	66	51
(12 questions)	Last	71	54
	Change	5(15)	3(6)
General Systems	First	54	45
(3 questions)	Last	64	50
	Change	10(22)	5(9)
Plant Ecology	First	56	44
(8 questions)	Last	62	50
	Change	6(14)	6(11)
Resource Management	First	49	44
(13 questions)	Last	57	47
	Change	8(16)	3(5)
Timber Management	First	46	41
(6 questions)	Last	59	47
	Change	13 (24)	6(10)
Natural Succession	First	55	38
(4 questions)	Last	61	43
•	Change	6(13)	5(12)
Overall Averages ³	First	61.8	49.0
(56 questions)	Last	68.1	53.8
	Change	6.3(16.5)	4.8(9.4)
Average Number			
of Respondents		2369	423

¹See Question 4:48 in Appendix A.

²For each scale, average percent correct scores were computed for the first and last week tests. The difference (or change in percent correct responses) was then divided by the total possible change (or 1.00 minus the first week average percent correct score) to give the values shown in parentheses.

 $^{^3}$ Overall averages were computed using the 56 items which were included in the nine scales. The items in the Timber Management and Natural Succession scales overlap with other scales and are excluded in the overall average.

Table J-8

Percentage Correct Response to Nine Objective Knowledge Scales by Whether or Not Corps Had Previous Comping Experience

Previous Camping Experience Scale Week Yes Νo Animal Ecology First 71 53 (4 questions) 60 Last 73 2(7)² 7(15) Change Soil and Water 70 55 First Resources Last 75 64 5(17) 9(20) (12 questions) Change Illustrated Food Chain First 62 48 (4 questions) Last 60 12 (32) 12(23) Change General Relationships First 64 51 (12 questions) Last 69 57 Change 5(14) 6(12) 45 53 General Systems First (3 questions) Last 62 56 9(19) 11(20) Change Plant Ecology First 54 44 60 53 (8 questions) Last 6(13) 9(16) Change 49 40 Resource Management First (13 questions) 53 49 Last 4(8) 9(15) Change First 45 36 Timber Management (6 questions) Last 57 47 Change 12(22) 11(17) Natural Succession 53 40 First (4 questions) 59 Last 47 Change 6(13) 7(12) Overall Averages 60.1 47.9 **First** (56 questions) 65.5 56.3 Last 8.4(16.1) Change 5.4(13.5) Average Number of Respondents 2620 236

¹See Questions 4:52-59 in Appendix A.

²For each scale, average percent correct scores were computed for the first and last week tests. The difference (or change in percent correct responses) was then divided by the total possible change (or 1.00 minus the first week average percent correct score) to give the values shown in parentheses.

³Overall averages were computed using the 56 items which were included in the nine scales. The items in the Timber Management and Natural Succession scales overlap with other scales and are excluded in the overall average.

Table J-9

Percentage Correct Response to Nine Objective Knowledge Scales by Sex Composition of the Camps

		Coed	<u>Camps</u>	Non-Coed Camps	
Scale	<u>Week</u>	Coed Girls	Coed Boys	Girls Only	Boys Only
Animal Ecology (4 questions)	First Last Change	72 75 3(11) ¹	69 69 0(0)	74 74 0(0)	68 70 2(6)
Soil and Water Resources (12 questions)	First Last Change	69 76 7(23)	70 73 3(10)	69 75 6(19)	70 75 5(17)
Illustrated Food Chain (4 questions)	First Last Change	63 75 12(32)	61 73 12(31)	58 68 10(24)	60 72 12(30)
General Relation- ships (12 questions)	First Last Change	66 72 6(18)	62 65 3(8)	66 70 4(12)	61 65 4(10)
General Systems (3 questions)	First Last Change	51 63 12(24)	54 60 6(13)	49 63 14(27)	53 61 8(17)
Plant Ecology (8 questions	First Last Change	53 62 9(19)	54 59 5(11)	52 59 7(15)	54 60 6(13)
Resource Management (13 questions)	First Last Change	46 55 9(17)	50 55 5(10)	46 55 9(17)	50 57 7(14)
Timber Management (6 questions)	First Last Change	40 54 14(23)	4 8 57 9(17)	40 55 15(25)	51 62 11(22)
Natural Succession (4 questions)	First Last Change	55 62 7(16)	51 56 5(10)	57 59 2(4)	49 55 6(12)
Overall Averages ² (56 questions)	First Last Change	59.4 67.3 7.9(19.5)	59.6 64.1 4.5(11.1)	59.1 65.7 6.6(16.1)	59.5 65.2 5.7(14.1)
Average Number of Respondents		1061	1226	148	403

For each scale, average percent correct scores were computed for the first and last week tests. The difference (or change in percent correct responses) was then divided by the total possible change (or 1.00 minus the first week average percent correct score) to give the values shown in parentheses.

²Overall averages were computed using the 56 items which were included in the nine scales. The items in the Timber Management and Natural Succession scales overlap with other scales and are excluded in the overall average.

Table J-10

Percentage Correct Response to Nine Objective Knowledge

Scales by Type of Camp¹

<u>Scale</u>	Week	Residential	Non- Residential
Animal Ecology (4 questions)	First	70	69
	Last	72	73
	Change	2(7) ²	4(13)
Soil and Water	First	70	68
Resources	Last	74	75
(12 questions)	Change	4(13)	7(22)
Illustrated	First	66	58
Food Chain	Last	72	77
(4 questions)	Change	6(18)	19(45)
General Relation-	First	63	62
ships	Last	67	68
(12 questions)	Change	4(11)	6(16)
General Systems (3 questions)	First	53	52
	Last	62	59
	Change	9(19)	7(15)
Plant Ecology (8 questions)	First Last Change	54 60 6(13)	51 59 8(16)
Resource Management (13 questions)	First	48	47
	Last	55	54
	Change	7(13)	7(13)
Timber Management (6 questions)	First Last Change	45 5 7 12(22)	43 52 9(16)
Natural Succession (4 questions)	First Last Change	53 58 5(11)	49 56 7(14)
Overall Averages ³ (56 questions)	First	59.5	58.0
	Last	65.4	65.6
	Change	5.9(14.6	5) 7.6(18.1)
Average Number of Respondents		2327	529

Non-residential camps were those where the corps members lived at home rather than in special YCC housing.

²For each scale, average percent correct scores were computed for the first and last week tests. The difference (or change in percent correct responses) was then divided by the total possible change (or 1.00 minus the first week average percent correct score) to give the values shown in parentheses.

^{3.} Overall averages were computed using the 56 items which were included in the nine scales. The items in the Timber Management and Natural Succession scales overlap with other scales and are excluded in the overall average.

Table J-11

Percentage Correct Response to Nine Objective Knowledge Scales by Size of Camp

		Number of Corps Members 1				
Scale	Week	6-14	15-20	21-29	30-39	40-50
Animal Ecology (4 questions)	First Last Change	77 82 5 (22) ²	70 73 3(10)	69 70 1(3)	70 73 3(10)	70 71 1(3)
Soil and Water Resources (12 questions)	First Last Change	78 81 3(14)	68 72 4(13)	69 75 6(19)	70 75 5(17)	68 74 6(19)
Illustrated Food Chain (4 questions)	First Last Change	71 82 11(38)	61 72 11(28)	60 74 14(35)	61 72 11(28)	62 74 12 (32)
General Relationships (12 questions)	First Last Change	67 73 6(18)	62 66 4(11)	62 68 6(16)	64 69 5(14)	63 67 4(11)
General Systems (3 questions)	First Last Change	50 60 10(20)	52 56 4(8)	52 64 12(25)	55 64 9(20)	51 61 10(20)
Plant Ecology (8 questions)	First Last Change	56 62 6(14)	53 58 5(11)	52 60 8(17)	54 60 6(13)	53 61 8(17)
Resource Management (13 questions)	First Last Change	50 53 3(6)	46 51 5(9)	48 56 8(15)	48 56 8(15)	49 56 7(14)
Timber Management (6 questions)	First Last Change	44 50 6(11)	42 50 8(14)	46 57 11(14)	44 57 13(23)	46 59 13(24)
Natural Succession (4 questions)	First Last Change	58 68 10(24)	52 57 5(10)	50 66 16(32)	54 58 4 (9)	51 58 7(14)
Overall Averages ³ (56 questions)	First Last Change	63.7 69.2 5.5(15.1)	58.2 63.0 4.8(11.5)	58.6 65.5 6.9(16.7)	60.0 66.0 6.0(15.0)	59.1 65.4 6.3(15.4)
Average Number of Respondents		64	375	572	887	958

¹ Number of corps members refers to size of camp.

²For each scale, average percent correct scores were computed for the first and last week tests. The difference (or change in percent correct responses) was then divided by the total possible change (or 1.00 minus the first week average percent correct score) to give the values shown in parentheses.

³Overall averages were computed using the 56 items which were included in the nine scales. The items in the Timber Management and Natural Succession scales overlap with other scales and are excluded in the overall average.

Table J-12 (Sheet 1 of 2)

Percentage Correct Response to Nine Objective Knowledge Scales by Length of Session (in weeks)

		Forest Service				
<u>Scale</u>	Week	4	5-7	8	9	
Animal Ecology (4 questions)	First Last Change	75 77 2(8) ¹	65 63 -2	69 71 2(6)	69 75 6(19)	
Soil and Water Resources (12 questions)	First Last Change	74 79 5(19)	63 68 5(13)	69 76 7(22)	68 83 15(47)	
Illustrated Food Chain (4 questions)	First Last Change	66 76 10 (29)	55 64 9(20)	60 75 15(37)	58 75 17(40)	
General Relationships (12 questions)	First Last Change	66 72 6(18)	58 62 4(9)	63 69 6(16)	60 72 12(30)	
General Systems (3 questions)	First Last Change	56 66 10(22)	45 60 15(27)	52 63 11(23)	49 59 10(20)	
Plant Ecology (8 questions)	First Last Change	57 65 8(19)	48 55 7(14)	53 61 8(17)	51 65 14(29)	
Resource Management (13 questions)	First Last Change	52 63 11(23)	46 52 6(11)	48 56 8(15)	51 62 11(22)	
Timber Management (6 questions)	First Last Change	49 69 20(39)	45 58 13(24)	46 60 14(26)	50 65 15(30)	
Natural Succession (4 questions)	First Last Change	57 63 6(14)	42 50 8(14)	52 58 6(13)	46 60 14(26)	
Overall Averages ² (56 questions)	First Last Change	63.4 71.1 7.7(21.0)	54.5 60.4 5.9(13.0)	59.0 66.6 7.6(18.5)	58.4 70.9 12.5(30.0)	
Average Number of Respondents		738	124	784	41	

¹For each scale, average percent correct scores were computed for the first and last week tests. The difference (or change in percent correct responses) was then divided by the total possible change (or 1.00 minus the first week average percent correct score) to give the values shown in parentheses.

²Overall averages were computed using the 56 items which were included in the nine scales. The items in the Timber Management and Natural Succession scales overlap with other scales and are excluded in the overall average.

Table J-12 (Sheet 2 of 2)

Percentage Correct Response to Nine Objective Knowledge Scales by
Length of Session
(in weeks)

		Interior Agencies				
Scale	Week	4	8	9		
Animal Ecology (4 questions)	First Last Change	69 66 -3	68 69 1(3)	64 68 4(11)		
Soil and Water Resources (12 questions)	First Last Change	72 72 0(0)	66 70 4(12)	66 69 3(9)		
Illustrated Food Chain (4 questions)	First Last Change	62 62 0(0)	60 71 11(27)	59 70 11(27)		
General Relationships (12 questions)	First Last Change	62 59 -3	61 64 3(8)	57 59 2(5)		
General Systems (3 questions)	First Last Change	46 52 6(11)	51 57 6(12)	54 58 4(9)		
Plant Ecology (8 questions)	First Last Change	51 49 -2	52 55 3(6)	48 5 6 8(15)		
Resource Management (13 questions)	First Last Change	55 49 -6	46 49 3(5)	43 47 4(7)		
Timber Management (6 questions)	First Last Change	48 50 2(4)	40 45 5(8)	41 43 2(3)		
Natural Succession (4 questions)	First Last Change	53 53 0(0)	50 55 5(10)	46 51 5(9)		
Overall Averages ² (56 questions)	First Last Change	60.7 58.6 -2.1	57.3 61.4 4.1(9.6)	50.5 59.6 9.1(18.4)		
Average Number of Respondents		21	1104	44		

Table J-13

Percentage Correct Response to Nine Objective Knowledge Scales by Agency

<u>Age</u>ncy^l Scale. Week BIA BLM NPS BSFW ₿R FS Animal Ecology First 45 70 70 72 69 71 (4 questions) 46 Last 72 71 73 73 73 1(2)2 Change 2(7) 1(3) 1(4) 4(13) 2(7)Soil and Water 48 69 68 First 70 70 71 Resources Last 49 76 72 74 74 77 7(23) 4(12) (12 questions) 1(2) Change 4(13) 4(13) 6(21) 37 Illustrated Food First 58 64 63 65 62 54 78 70 Chain Last 71 80 75 (4 questions) 17(27) Change 20(48) 6(17) 8(22) 15(43) 13 (34) General First 44 62 63 65 65 64 Relationships Last 41 69 64 68 72 70 (12 questions) Change -3 --7(18) 1(3) 3(9) 7(20) 6(17) General Systems First 42 51 50 53 56 53 (3 questions) Last 48 60 57 56 65 64 Change 6(10)9(18) 7(14) 3(6) 9(20) 11(23) 40 50 53 54 52 Plant Ecology First 53 (8 questions) Last 42 59 55 58 59 63 2(3) Change 9(18) 2(4) 4(9) 7(15) 10(21) Resource First 40 48 46 47 47 49 Management Last 40 55 48 51 53 59 0(0)7(13) (13 questions) Change 2(4) 4(7) 6(11) 10(20) Timber First 37 46 37 43 42 48 Management Last 38 55 42 46 49 64 (6 questions) Change 1(2) 9(17) 5(8) 3(5)7(12) 16(31) Natural First 32 46 52 54 51 53 Succession Last 32 58 57 58 60 61 0(0) 5(10) (4 questions) Change 12(22) 4(9) 10(20) 7(15) Overall First 42.7 58.3 58.5 60.2 59.9 60.5 Averages³ Last 44.2 66.4 61.2 63.7 66.5 68.2 Change 1.5(2.6)(56 questions) 8.1(19.4)2.7(6.5)3.5(8.8)6.6(16.4) 7.7(19.5) Average Number of Respondents 145 114 384 356 170 1687

¹BIA, BLM, NPS, BSFW, BR and FS refer to Bureau of Indian Affairs, Bureau of Land Management, National Park Service, Bureau of Sport Fisheries and Wildlife, Bureau of Reclamation and Forest Service respectively.

²For each scale, average percent correct scores were computed for the first and last week tests. The difference (or change in percent correct responses) was then divided by the total possible change (or 1.00 minus the first week average percent correct score) to give the values shown in parentheses.

³Overall averages were computed using the 56 items which were included in the nine scales. The items in the Timber Management and Natural Succession scales overlap with other scales and are excluded in the overall average.

Table J-14

Percentage Correct Response to Nine Objective Knowledge Scales by Camp Score on Participation-Interpersonal Relations Index

		Participation-Interpersonal Relations Index 1						
<u>Scale</u>	Week	Low 1	2	3	4	High 5		
Animal Ecology	First	65	68	70	74	75		
(4 questions)	Last	67	68	71	78	76		
	Change	2(6)2	0(0)	1(3)	4(15)	1(4)		
Soil and Water	First	66	66	69	73	70		
Resources	Last	71	72	74	80	77		
(12 questions)	Change	5(15)	6(18)	5(16)	7(26)	7(23)		
Illustrated Food Chain	First	57	59	62	67	59		
(4 questions)	Last	69	74	73	80	71		
	Change	12(28)	15(37)	11(29)	13(39)	12(29)		
General Relationships	First	59	61	63	66	67		
(12 questions)	Last	62	66	67	74	72		
	Change	3(7)	5(13)	4(11)	8(24)	5(15)		
General Systems	First	52	55	52	53	50		
(3 questions)	Last	57	61	61	63	64		
	Change	5(10)	6(13)	9(19)	10(21)	14(28)		
Plant Ecology	First	52	53	53	57	53		
(8 questions)	Last	56	61	59	66	58		
	Change	4(8)	8(17)	6(13)	9(21)	5(11)		
Resource Management	First	48	47	48	51	46		
(13 questions)	Last	51	54	55	59	55		
	Change	3(6)	7(13)	7(14)	8(16)	9(17)		
Timber Management	First	46	43	45	46	40		
(6 questions)	Last	52	56	57	63	52		
	Change	6(11)	13(23)	12 (22)	17(32)	12(30)		
Natural Succession	First	49	51	51	57	57		
(4 questions)	Last	53	59	69	65	59		
	Change	4(8)	8(16)	18(37)	8(19)	2(5)		
Overall Averages	First	56.9	57.6	59.1	62.5	60.1		
(56 questions)	Last	61.1	64.3	65.0	70.7	66.8		
•	Change	4.2(9.7)	6.7(15.8)	5.9(14.4)	8.2(21.9)	6.7(16.3)		
Average Number of								
Respondents		336	279	1586	363	292		

See Chapter 3 for a discussion of the development of this index.

²For each scale, average percent correct scores were computed for the first and last week tests. The difference (or change in percent correct responses) was then divided by the total possible change (or 1.00 minus the first week average percent correct score) to give the values shown in parentheses.

³Overall averages were computed using the 56 items which were included in the nine scales. The items in the Timber Management and Natural Succession scales overlap with other scales and are excluded in the overall average.

Table J-15 (Sheet 1 of 2)

Percentage Correct Response to Nine Objective Knowledge Scales by Use of Environmental Education Manual and Training

			Interior Agencies 1						
<u>Scale</u>	<u>Week</u>	Forest Service	Did Not Receive <u>Manual</u>	Received Manual, Did Not Use	Used Manual Without Training	Used Manual, Had Training			
Animal Ecology (4 questions)	First Last Change	71 73 2(7) ²	60 60 0(0)	66 68 2(6)	67 68 1(3)	71 74 3(10)			
Soil and Water Resources (12 questions)	First Last Change	71 77 6(21)	58 58 0(0)	67 72 5 (15)	68 70 2(6)	66 74 8(24)			
Illustrated Food Chain (4 questions)	First Last Change	62 75 13(34)	51 60 9(18)	62 76 14(37)	59 70 11(27)	63 72 9(24)			
General Relationships (12 questions)	First Last Change	64 70 6(17)	50 56 6(12)	62 65 3(8)	61 63 2 (5)	64 68 4(11)			
General Systems (3 questions)	First Last Change	53 64 11(23)	42 49 7(12)	53 58 5(11)	53 57 4(9)	49 60 11(22)			
Plant Ecology (8 questions)	First Last Change	54 63 9(20)	49 50 1(2)	53 56 3(6)	51 54 3(6)	51 54 3(6)			
Resource Management (13 questions)	First Last Change	49 59 10(20)	40 42 2(3)	47 50 3(6)	47 49 2 (4)	46 52 6(11)			
Timber Management (6 questions)	First Last Change	48 64 16(31)	40 40 0(0)	40 46 6(10)	41 44 3(5)	40 49 9(15)			

 $^{{}^{1}}_{ ext{Manuals}}$ were distributed only to Department of Interior Agencies.

²For each scale, average percent correct scores were computed for the first and last week tests. The difference (or change in percent correct responses) was then divided by the total possible change (or 1.00 minus the first week average percent correct score) to give the values shown in parentheses.

 $^{^3}$ Overall averages were computed using the 56 items which were included in the nine scales. The items in the Timber Management and Natural Succession scales overlap with other scales and are excluded in the overall average.

Table J-15 (Sheet 2 of 2)

Percentage Correct Response to Nine Objective Knowledge Scales by

Use of Environmental Education Manual and Training

Interior Agencies 1 Used Used Received Manual, Did Not Manual, Manual Did Not Without Had Forest Receive Sca1e Training Training Week Service Manual_ Use Natural Succession First 53 44 53 48 53 (4 questions) Last 60 51 57 52 60 Change 7(15) 7(12) 4(9) 4(8) 7(15) Overall Averages 3 First 60.5 49.6 58.2 57.5 58.4 (56 questions) Last 69.1 52.5 62.3 60.5 64.6 Change 8.6(21.8) 2.9(5.7) 4.1(9.8) 3.0(5.7) 6.2(14.9) Average Number of Respondents 1687 69 152 666 282

Table J-16 (Sheet 1 of 2)

Percentage Correct Response to Nine Objective Knowledge Scales by How Much the Corps Members Liked the YCC Experience

	Corps Members' Response									
Scale	Week	Really <u>Liked it</u>	Liked it	Neutral or Disliked it						
Animal Ecology (4 questions)	First Last	72 74 ₂	69 70	65 61						
(4 questions)	Change	⁷⁴ 2 (7 ²)	1 (3)	-4						
Soil and Water Resources	First	71	69	64						
(12 questions)	Last Change	76 5 (17)	73 4 (13)	65 1 (3)						
Illustrated Food Chain	First	62	61	57						
(4 questions)	Last Change	74 12 (32)	74 13 (33)	72 15 (35)						
General Relationships	First	65	62	60						
(12 questions)	Last	70	65	58						
	Change	5 (14)	3 (8)	-2						
General Systems (3 questions)	First Last	53 63	53 60	50 54						
(* 122222)	Change	10 (21)	7 (15)	4 (8)						
Plant Ecology	First	54 61	53 59	50 55						
(8 questions)	Last Change	7 (15)	6 (13)	5 (10)						
Resource Management	First	48	48	47						
(13 questions)	Last Change	57 9 (17)	54 6 (12)	48 1 (2)						

¹ See question 5:17 in Appendix A.

²For each scale, average percent correct scores were computed for the first and last week tests. The difference (or change in percent correct responses) was then divided by the total possible change (or 1.00 minus the first week average percent correct score) to give the values shown in parentheses.

³Overall averages were computed using the 56 items which were included in the nine scales. The items in the Timber Management and Natural Succession scales overlap with other scales and are excluded in the overall average.

Table J-16 (Sheet 2 of 2)

Percentage Correct Response to Nine Objective Knowledge Scales by How Much the Corps Members Liked the YCC Experience

	Corps Members' Response									
Scale	<u>Week</u>	Really Liked It	Liked		ral or iked It					
Timber Management (6 questions)	First Last Change	44 58 14 (21)	46 56 10 (4	2 8 6 (10)					
Natural Succession (4 questions)	First Last Change	53 60 7 (15)	51 56 5 (.8 i3 5 (10)					
Overall Averages ³ (56 questions)	First Last Change	60.4 71.6 11.2 (28.3	58.8 64.1 3) 5.3 (56. 57. (12.9) 1.	7					
Average Number of Respondents	_	1907	617	14	ı 5					

Table J-17 (Sheet 1 of 2)

Percentage Correct Response to Nine Objective Knowledge Scales by How Worthwhile the Corps Members Thought the YCC Program was

		Corps Members' Appraisal ¹						
Scale	<u>Week</u>	Very <u>Worthwhile</u>		Somewhat <u>Worthwhile</u> .		Not Very Worthwhile		
Animal Ecology (4 questions)	First Last	72 74		65 65		56 48		
(4 quescions)	Change	2	(7 ²)		(0)	-8		
Soil and Water Resources	First	71		66		58		
(12 questions)	Last Change	76 5	(17)	69 3	(7)	54 -4		
Illustrated Food Chain	First	63		57		51		
(4 questions)	Last Change	75 12	(32)	71 14	(33)	63 12	(24)	
General Relationships	First	65		60		52		
(12 questions)	Last Change	70 5	(14)	61 1	(2)	44 -8		
General Systems	First	53		51		38		
(3 questions)	Last Change	63 10	(21)	56 5	(10)	42 4	(6)	
Plant Ecology	First	54		51		48		
(8 questions)	Last Change	61 7	(15)	56 5	(10)	47 -1		
Resource Management	First	48		46		47		
(13 questions)	Last Change	56 8	(15)	51 5	(9)	46 -1		

¹See Question 5:18 in Appendix A.

²For each scale, average percent correct scores were computed for the first and last week tests. The difference (or change in percent correct responses) was then divided by the total possible change (or 1.00 minus the first week average percent correct score) to give the values shown in parentheses.

³Overall averages were computed using the 56 items which were included in the nine scales. The items in the Timber Management and Natural Succession scales overlap with other scales and are excluded in the overall average.

Table J-17 (Sheet 2 of 2)

Percentage Correct Response to Nine Objective Knowledge Scales by How Worthwhile the Corps Members Thought the YCC Program Was

		Corps Members' Appraisa1							
Scale	<u>Week</u>	Very <u>Worthwhile</u>	Somewhat Worthwhile	Not Very <u>Worthwhile</u>					
Timber Management (6 questions)	First Last	45 58	44 52	43 45					
	Change	13 (24)	8 (14)	2 (4)					
Natural Succession	First Last	53 60	48 53	40 40					
(4 questions)	Change	7 (15)	5 (10)	0 (0)					
Overall Averages 3	First	60.4	56.4	51.1					
(56 questions)	Last Change	67.3 6.9 (17.4)	60.5 4.1 (9.4)	48.8 -2.3					
Average Number of Respondents		2217	425	26					

Table J-18

Percentage Correct Response to Nine Objective Knowledge Scales by the Corps Members'
Appraisal of the Degree of Coordination Between
Work and Environmental Education Programs

		Degree of Coordination 1									
<u>Scale</u>	<u>Week</u>	<u>Excellent</u>	Very Good	Good	Fair	Poor					
Animal Ecology	First	71	68	67	78	78					
(4 questions)	Last	73	70	69	77	79					
	Change	⁷³ (7) ²	2(6)	2(6)	-1	1(5)					
Soil and Water	First	69	68	66	75	7 7					
Resources	Last	75	73	71	80	80					
(12 questions)	Change	6(19)	5(16)	5(15)	5(20)	3(13)					
Illustrated Food Chain	First	60	60	58	70	69					
(4 questions)	Last	71	72	70	79	82					
	Change	11(27)	12(30)	12 (29)	9(30)	13 (42)					
General Relationships	First	63	62	60	70	70					
(12 questions)	Last	69	66	64	74	73					
	Change	6(16)	4(11)	4(10)	4(13)	3(10)					
General Systems	First	54	52	50	57	55					
(3 questions)	Last	65	61	57	65	65					
	Change	11(24)	9(19)	7(14)	8(19)	10(22)					
Plant Ecology	First	52	52	52	58	60					
(8 questions)	Last	59	59	58	65	65					
	Change	7(15)	7(15)	6(12)	7(17)	5(12)					
Resource Management	First	47	48	46	51	54					
(13 questions)	Last	57	55	52	57	60					
	Change	10(19)	7(13)	6(11)	6(12)	6(13)					
Timber Management	First	42	44 .	44	49	50					
(6 questions)	Last	57	57	54	59	59					
•	Change	15(26)	13(23)	10(18)	10(20)	9(18)					
Natural Succession	First	52	49	48	60	62					
(4 questions)	Last	58	56	55	66	67					
	Change	6(12)	7(14)	7(13)	6(15)	5(13)					
Overall Averages ³	First	59.0	58.3	58.0	64.9	66.2					
(56 questions)	Last	66.4	64.6	62.3	70.1	70.9					
(31]00001010)	Change	7.4(18.1)	6.3(15.1)	4.3(10.2)	5.2(14.8)	4.7(13.9)					
Average Number	-										
of Respondents		518	1062	716	377	153					

¹ See Question 6:39 in Appendix A.

²For each scale, average percent correct scores were computed for the first and last week tests. The difference (or change in percent correct responses) was then divided by the total possible change (or 1.00 minus the first week average percent correct score) to give the values shown in parentheses.

³Overall averages were computed using the 56 items which were included in the nine scales. The items in the Timber Management and Natural Succession scales overlap with other scales and are excluded in the overall average.

Table J-19 (Sheet 1 of 2)

Percentage Correct Response to Nine Objective Knowledge Scales by Relative Emphasis on Work and on Environmental Education

Relative Emphasis Mostly to Mostly on Env. Educ. Work About Equal 5 Scale Week 66 68 70 72 76 Animal Ecology First 69 70 74 85 (4 questions) Last 75 9 (26)² 1 (3) 0 (0) 2 (7) 9 (38) Change Soil and Water First 70 66 70 71 74 79 Resources Last 80 70 5 (19) (12 questions) Change 10 (33) 4 (12) 4 (13) 6 (21) 68 64 Illustrated Food First 65 59 61 82 Chain 72 72 75 Last 80 11 (28) 11 (31) 14 (44) (4 questions) Change 15 (43) 13 (32) 63 63 63 General First 61 79 Relationships 72 67 69 Last 11 (34) (12 questions) Change 9 (24) 3 (8) 4 (11) 6 (16) 51 55 54 51 51 General Systems First (3 questions) Last 56 60 62 61 62 8 (17) 10 (20) 7 (16) 5 (10) 9 (18) Change 59 51 54 54 Plant Ecology First 54 69 (8 questions) 65 60 61 Last 56 10 (24) 6 (13) 7 (15) Change 11 (24) 5 (10)

¹The 5-point scale designating relative emphasis to work and to environmental education was developed based on distribution of camp directors' responses to a similar scale.

²For each scale, average percent correct scores were computed for the first and last week tests. The difference (or change in percent correct responses) was then divided by the total possible change (or 1.00 minus the first week average percent correct score) to give the values shown in parentheses.

 $^{^3}$ Overall averages were computed using the 56 items which were included in the nine scales. The items in the Timber Management and Natural Succession scales overlap with other scales and are excluded in the overall average.

Table J-19 (Sheet 2 of 2)

Percentage Correct Response to Nine Objective Knowledge Scales by Relative Emphasis on Work and on Environmental Education

Relative Emphasis 1 Mostly to Mostly on Work About Equal Env. Educ. Scale 1 Week 2 3 5 49 46 48 48 49 Resource First Management Last 55 51 56 56 60 (13 questions) 5 (9) Change 6 (12) 8 (15) 8 (15) 11 (22) 42 42 47 45 45 Timber First 56 49 59 59 Management Last 61 (6 questions) Change 14 (24) 7 (12) 12 (23) 14 (25) 16 (29) Natural First 51 50 52 53 59 Succession Last 67 56 56 59 73 (4 questions) Change 16 (33) 6 (12) 4 (8) 14 (34) 6 (13) Overall First 59.6 57.1 59.6 60.1 63.6 Averages³ Last 68.8 65.4 61.9 66.8 72.6 (56 questions) Change 9.2 (22.8) 4.8 (11.2) 5.8 (14.4) 6.7 (16.8) 9.0 (24.7) Average Number 128 of Respondents 569 967 727 128

Table J-20 (Sheet 1 of 2)

Percentage Correct Response to Nine Objective Knowledge Scales by Relative Amount of Time Devoted to Work and to Environmental Education

		Relative Time 1									
Scale	<u>Week</u>		ly to √ork 1		2	About	Equal		4		tly to . Educ. 5
Animal Ecology (4 questions)	First Last Change	70 75 5	(17)2	69 70 1	(3)	70 72 2	(7)	73 77 4	(15)	64 68 4	(11)
Soil and Water Resources (12 questions)	First Last Change	66 70 4	(12)	67 72 5	(15)	70 75 5	(17)	75 82 7	(28)	65 70 5	(14)
Illustrated Food Chain (4 questions)	First Last Change	64 69 5	(14)	60 7 3 13	(33)	63 73 10	(27)	64 77 13	(36)	53 73 20	(43)
General Relationships (12 questions)	First Last Change	65 66 1	(3)	62 66 4	(11)	64 68 4	(11)	64 72 8	(22)	59 63 4	(10)
General Systems (3 questions)	First Last Change	53 49 -4		52 61 9	(19)	52 61 9	(19)	55 65 10	(22)	48 56 8	(15)
Plant Ecology (8 questions)	First Last Change	55 56 1	(2)	53 59 6	(13)	54 60 6	(13)	55 65 10		51 59 8	(16)

¹The 5-point scale designating relative time devoted to work and to environmental education was developed based on distribution of camp directors' responses to a similar scale.

²For each scale, average percent correct scores were computed for the first and last week tests. The difference (or change in percent correct responses) was then divided by the total possible change (or 1.00 minus the first week average percent correct score) to give the values shown in parentheses.

³Overall averages were computed using the 56 items which were included in the nine scales. The items in the Timber Management and Natural Succession scales overlap with other scales and are excluded in the overall average.

Table J-20 (Sheet 2 of 2)

Percentage Correct Response to Nine Objective Knowledge Scales by Relative Amount of Time Devoted to Work and to Environmental Education

Relative Time Mostly to Mostly to Env. Educ. Work About Equal Scale | 2 Week Resource First 49 47 47 50 48 Management Last 50 55 54 60 50 (13 questions) Change 1 (2) 8 (15) 7 (13) 10 (20) 2 (4) Timber First 45 45 44 47 46 56 50 56 52 Management Last 62 12 (21) (6 questions) Change 5 (9) 11 (20) 15 (28) 6 (11) Natural First 53 51 53 53 49 Succession 56 58 Last 60 63 53 (4 questions) Change 7 (15) 5 (10) 5 (11) 10 (21) 4 (8) Overall Averages First 59.9 58.2 60.0 62.0 59.2 Last 61.5 64.2 65.3 70.5 61.5 Change (56 questions) 1.6(4.0)6.0 (14.4) 5.3 (13.3) 8.5 (22.4) 2.3 (5.6) Average Number of Respondents 74 1076 801 419 149

