

**EVALUATING AN EXTENSION PROGRAM: THE TEXAS 4-H WILDLIFE  
HABITAT EVALUATION PROGRAM**

A Thesis

by

ANDREA MARIE FELDPAUSCH

Submitted to the Office of Graduate Studies of  
Texas A&M University  
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

August 2006

Major Subject: Wildlife and Fisheries Sciences

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## ABSTRACT

Evaluating an Extension Program: The Texas 4-H Wildlife Habitat Evaluation Program.

(August 2006)

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Chair of Advisory Committee: Dr. R. Neal Wilkins

In times of heightened environmental consciousness, conservation education programming has proven useful for providing information and promoting natural resource conservation and stewardship. In a study of the 2005 Texas 4-H Wildlife Habitat Evaluation Program (WHEP), a contest teaching youth about the fundamentals of wildlife science and management, I sought to determine if WHEP was successfully reaching its primary goal: promoting conservation by increasing knowledge and skills of youth in the wildlife field.

Through a series of facilitator-led interviews with WHEP participants (n = 35) and a combination of internet and on-site surveys (consisting of 35 current participants, 22 control youth, 19 past participants, 25 parents, and 7 coaches obtained from program registration lists), I explored the influence of program participation on wildlife management knowledge, social and leadership skills, attitudes, and understanding of stewardship. I found that WHEP had a significant impact on knowledge of wildlife management techniques and ecological concepts. The program had little influence on attitudes because most youth had positive perceptions of natural resources management

prior to program involvement. I also found that past participants of WHEP claimed a significant increase in skills after program participation, but current participants could not determine their own progress. This suggested a longer period of time was needed to gauge self improvement. Parents and coaches claimed the program had a large impact on youth through instilling knowledge and values, but also improving their social, cognitive, and leadership competencies. Adults also discussed issues with participation, including a lack of program expansion and support.

From these results, I determined that WHEP was achieving its program goals, but needs to address the issue of expansion because of its low level of operation compared to other 4-H programs in Texas. Suggestions for program growth include targeting youth groups and counties, cross promoting with other conservation programs, and continuing recruitment in currently participating counties.

## **DEDICATION**

*I would like to dedicate this research to my mother and father who have shown me that I am stronger than I give myself credit for, and more determined than I thought possible. I would also like to recognize my friend Jesse who has been my voice of reason, and my siblings, Renee and Loren, who have always been on the other end when I needed to hear a familiar voice. Thank you.*

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Next I would like to thank the Texas WHEP program coordinator, Dr. James Cathey, and steering committee (Larry Hysmith, Jenny Sanders, Dr. Ron Howard, Dr. Michael Masser, Peter Wood, Mike Whiteman, and Cody Denison) for all their assistance during the duration of this study. This group went out of their way to accommodate and assist me whenever I needed a hand or an interview or survey. I hope I may have the privilege to work with these people on future projects.

I would also like to thank a few individuals who made my research possible such as Garrett Anderson, who designed my web-based surveys, Bret Collier, who spent countless hours explaining statistics to me along with making some complicated figures, and Laura Law, who helped me through many an odd office emergency.

Finally I would like to extend a large thank you to all my fellow graduate students for their support and guidance through graduate school, and all of the 4-H

county extension agents, coaches, parents, and youth involved in WHEP who made my research possible. Without my friends, I would most likely have missed multiple OGS deadlines, and without the WHEP participants, well, I would not have had this opportunity to do research or meet a wonderful group of people interested, like myself, in the conservation of our natural resources.

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## TABLE OF CONTENTS

	Page
ABSTRACT .....	iii
DEDICATION .....	v
ACKNOWLEDGEMENTS .....	vi
TABLE OF CONTENTS .....	viii
LIST OF FIGURES .....	x
LIST OF TABLES .....	xi
INTRODUCTION .....	1
History of the Texas 4-H & Youth Development Program .....	1
History of the WHEP Contest.....	2
Wildlife Values, Conservation, and Stewardship .....	3
Need for Program Evaluation .....	6
Evaluation Design.....	8
Past Evaluations of WHEP .....	10
Problem Statement and Objectives .....	14
METHODS.....	15
Study Area .....	15
Study Participants .....	15
Quantitative Evaluation Methods .....	16
Qualitative Evaluation Methods .....	21
RESULTS.....	24
Survey Response Rates.....	24
WHEP Demographics.....	25
Knowledge Gain .....	31
Attitude Change .....	38
Perceived Change in Skills .....	43
WHEP Participation and Dynamics.....	51

	Page
DISCUSSION.....	62
Attitudes.....	63
Life Skills.....	67
Wildlife Knowledge.....	70
Dynamics of WHEP Participation.....	73
Program Issues Associated with Participation.....	76
Study Issues and Future Research .....	78
CONCLUSION AND STUDY IMPLICATIONS .....	81
Program Expansion.....	81
Program Suggestions for Improvement from Adults and Youth.....	82
Methods for Future Evaluations .....	85
LITERATURE CITED.....	86
APPENDICES .....	93
VITA.....	178

## LIST OF FIGURES

FIGURE		Page
1	Interactions among wildlife values, conservation, and stewardship.....	4
2	Cognitive hierarchy of the values to behavior process (modified from Decker et al. 2001).....	7
3	Mean knowledge scores of WHEP participants (treatment) and 4-H'ers not involved in WHEP (controls) over the 3 survey period, 2005.....	33
4	Odds ratio estimates with confidence intervals for pre-contest to post-contest surveys for WHEP non-home-schooled and home-schooled youth, 2005.....	46
5	Odds ratio estimates with confidence intervals for post-contest to 6-month post contest surveys for WHEP non-home-schooled and home-schooled youth, 2005.....	47
6	Odds ratio estimates with confidence intervals for pre-contest to 6-month post contest surveys for WHEP non-home-schooled and home-schooled youth, 2005.....	48
7	Percentage of coaches (by survey) claiming an impact on knowledge of ecological systems, interest in learning, confidence in abilities, understanding need for resource management and sustainability, feelings of respect and responsibility for the environment, and ideas about a career in natural resources management attributed to participation in WHEP, 2005.....	55
8	Percentage parents (by survey) claiming an impact on knowledge of ecological systems, interest in learning, confidence in abilities, understanding need for resource management and sustainability, feelings of respect and responsibility for the environment, and ideas about a career in natural resources management attributed to participation in WHEP, 2005.....	56

## LIST OF TABLES

TABLE		Page
1	Response rates for the past participant survey and the pre, post, and 6-month post contest surveys for coaches, parents, WHEP participants, and controls, 2005.....	24
2	Demographic information on WHEP participants and 4-H'ers not involved in the WHEP contest (control group), 2005.....	26
3	Demographic information on past participants of the WHEP contest between the ages of 18 and 25 years old, 2005.....	28
4	Outdoor recreational and extracurricular activities of WHEP participants and 4-H'ers not involved in the WHEP contest (control group), 2005.....	30
5	Mean differences between WHEP participant and control knowledge scores (percent correct) as measured by paired sample t-tests for the pre, post, and 6-month post contest surveys, 2005...	32
6	Mean difference between survey periods of WHEP participant and control (non-WHEP 4-H'ers) knowledge scores (percent correct) as measured by paired sample t-tests, 2005.....	34
7	Effect of variables on WHEP participant knowledge scores as measured by a Generalized Linear Model (GLM), 2005.....	35
8	Mean difference in knowledge scores (percent correct) of home-schooled and non-home-schooled youth in WHEP as measured by paired sample t-tests, 2005.....	35
9	Mean responses to individual attitude statements by WHEP participants between pre and post-contest surveys, 2005.....	39
10	Mean responses to individual attitude statements by WHEP participants between post and 6-month post-contest surveys, 2005.....	40

TABLE	Page
11 Effect of treatment (treatment vs. control), time (over the 3 survey periods) and the variables of age, years involved in program, gender, and treatment*time on WHEP participant skill ratings as measured by a linear mixed-effects model fit by maximum likelihood, 2005.....	44
12 Mean difference in life skill rates of past participants before and after participation in WHEP as measured by paired sample t-tests, 2005.....	49

## INTRODUCTION

### **History of the Texas 4-H & Youth Development Program**

The Texas 4-H Youth Development Program, initially created in 1908 by a county agriculture agent, was originally an education-oriented program targeted toward rural American families. The original goal of the program was to educate farming families in new farming techniques, thus creating youth groups such as the corn and tomato clubs and later beef calf and pig clubs. As the program expanded and population demographics changed, the goal of 4-H evolved to the mission of “preparing youth to meet the challenges of childhood, adolescence and adulthood, through a coordinated, long-term, progressive series of educational experiences that enhance life skills and develop social, emotional, physical, and cognitive competencies” (Texas 4-H 2006). As a result, a major goal of most 4-H programs became youth leadership development (Seevers and Dormody 1995). This is achieved by providing youth leadership training and workshop opportunities as well as creating activities geared toward the use of these skills.

The target group for Texas 4-H was originally rural youth, but has since expanded to include youth of varied backgrounds between the ages of 5 and 19 years old (ages 5-8: clover kids; ages 9-13: sub-juniors, juniors, and intermediates; ages 14-19: senior 4-H). As of 2001, 1.17 million youth were enrolled in the 4-H & Youth Development Program. To date, 100 project areas, ranging from agriculture and natural

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This thesis follows the journal style of the Journal of Wildlife Management.

resources to economics and public policy, are offered to Texas youth, who may also participate in other 4-H activities, events, contests, and trips throughout the year (Texas 4-H 2006).

### **History of the WHEP Contest**

The Wildlife Habitat Evaluation Program (WHEP) was started in 1977 by Drs. James Byford and Tom Hill at the Tennessee Agricultural Extension Service under the title “Wildlife Judging Project” (Neilson 1992). In 1987, the Wildlife Judging Project expanded throughout several southern states, where regional events were held. By 1991, WHEP had become a nation-wide contest with a state program in Texas starting in 1993.

WHEP was designed as a learning experience in a contest format. The program was created to teach youth about wildlife and wildlife management, while at the same time building important life skills, often considered a program criteria for 4-H. In WHEP, knowledge and skills are learned by competing in 5 activities:

1. Identifying wildlife foods;
2. Interpreting wildlife habitat from aerial photographs;
3. Making on-site habitat management recommendations;
4. Writing wildlife management plans; and
5. Writing urban landscape and backyard habitat plans.

Concepts integrated into these activities include habitat requirements, featured species, species richness, plant succession and its effect on wildlife, vertical structure, arrangement and interspersions, edges and contrast, area sensitive species, migration and

home range, carrying capacity, pond dynamics and balance, wildlife damage management, and food webs.

In Texas, participants are divided into 2 age classes: juniors and seniors. The junior class consists of 8 to 13 year old students and the senior class consists of 14 to 19 year old students. Due to the difference in age and skill of the 2 classes, the juniors are given an abbreviated test in wildlife foods and do not have to participate in the “oral reasons” portion of the aerial photograph activity. Only seniors are eligible to participate in the national competition, which is held in a different eco-region each year.

### **Wildlife Values, Conservation, and Stewardship**

To better understand the impacts of a program geared toward natural resources education, such as the WHEP contest, one needs to recognize the values generally associated with wildlife, and how the concepts of conservation and stewardship come into play to influence those values (Figure 1). As defined in Decker et al. (2001:40), “values are general mental constructs that reflect our most basic desires and goals and define what’s important to us. They reflect a state of being that embodies our ultimate interests, such as family, honor, and fairness.” According to King (1947), wildlife values can be classified into 6 categories, though some overlap does exist. These values include:

1. Recreational values – the pursuit of sport and hobbies involving wildlife (e.g. hunting, wildlife viewing, camping).
2. Aesthetic values – an appreciation for beauty and peace of mind attributed to wildlife (considered to have much overlap with recreational values).

3. Educational values – the natural world as a classroom for various fields of study.
4. Biological values – an understanding of ecosystem function as it benefits humans (e.g. nutrient cycling, pollination) as well as the biosphere as a whole and its related parts.
5. Sociocultural values – the cultural benefits to a community as a whole in relation to their traditions associated with wildlife.
6. Commercial values – local, regional, national, and international economic benefits attributed to wildlife as a resource and a means of employment (e.g. wildlife and fisheries managers).

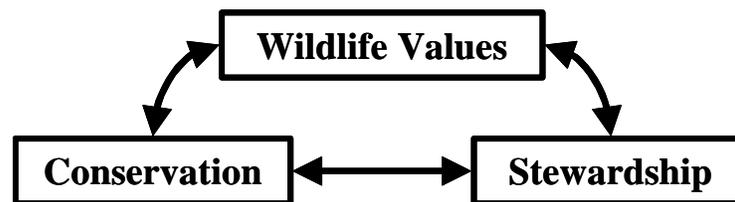


Figure 1. Interactions among wildlife values, conservation, and stewardship.

Therefore, the idea of conservation is closely tied to these wildlife values since it is a “value driven discipline” focused on the maintenance of species diversity, ecosystem function, and other natural processes (Miller et al. 2004). As described by Aldo Leopold in *A Sand County Almanac*, “the individual is a member of a community of interdependent parts...the land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively the land” (Leopold 1966: 239).

Aldo Leopold's idea of a land ethic not only described a conservation value system, but also laid the foundations for the conservation movement and the notion of conservation stewardship, two ideas strongly rooted in Leopold's vision. But to understand the idea of stewardship as it relates to wildlife values and conservation, the concept must first be understood. Stewardship has been defined as both a social and spiritual responsibility (Peterson et al. 2002). Expanding on this broad definition of stewardship by relating it to nature, natural stewardship (also known as conservation stewardship or environmental stewardship) is described as the "guidance of natural resources and captive populations" (Caro et al. 1994:847). The term "conservation stewardship" also implies environmental sensitivity, knowledge and understanding of the resource, and feelings of empowerment to do what is right for the resource (Siemer and Knuth 2001). In an attempt to categorize the various justifications for stewardship, Cooper (1999) developed five common themes including:

1. A right to life on the organism level, or that each animal has an individual right to existence.
2. A right to life on a species level, including thoughts about species sustainability (e. g., the right to exist and flourish).
3. Wildlife survival at the species and community levels as it benefits human beings in the form of resources.
4. Wildlife survival at the species and community levels to benefit ecosystem function, thus preventing the degradation of a system.
5. A God-given responsibility to take care of the wildlife entrusted to humans.

Though these stewardship themes are related to different wildlife values, sometimes falling on opposite ends of the environmental beliefs paradigm, conservation is still the end goal.

### **Need for Program Evaluation**

The aim of conservation and environmental education programming plays a substantial role in producing an environmentally aware general public (Bogner 1999, Whitt 1999, Rovira 2000, Zint et al. 2002). According to Schroeder (2004: 2), “environmental stewardship education programming, by definition, strives to empower learners with skills to address environmental issues and to take positive environmental action with a sense of personal and civic responsibility within their community (Athman and Monroe 2001).” Conservation programs therefore attempt to achieve these goals by increasing knowledge about the wise use of natural resources and exploring the issues that lead to a more environmentally conscious and responsible attitude<sup>1</sup> (Figure 2). Therefore it is necessary to evaluate programs to understand their effectiveness and determine how they can be improved upon. Evaluation not only examines program effectiveness by the attainment of goals, but also suggests program improvements and whether the goals are an adequate judgment of the program’s success or failure (Kleiman et al. 2000).

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<sup>1</sup>Attitudes are defined as “individual mental processes which determine both the actual and potential responses of each person in a social world. Since an attitude is always directed toward some object it may be defined as ‘the state of mind of the individual toward a value’” (Allport 1935:6 as cited in Dawes 1972:16).

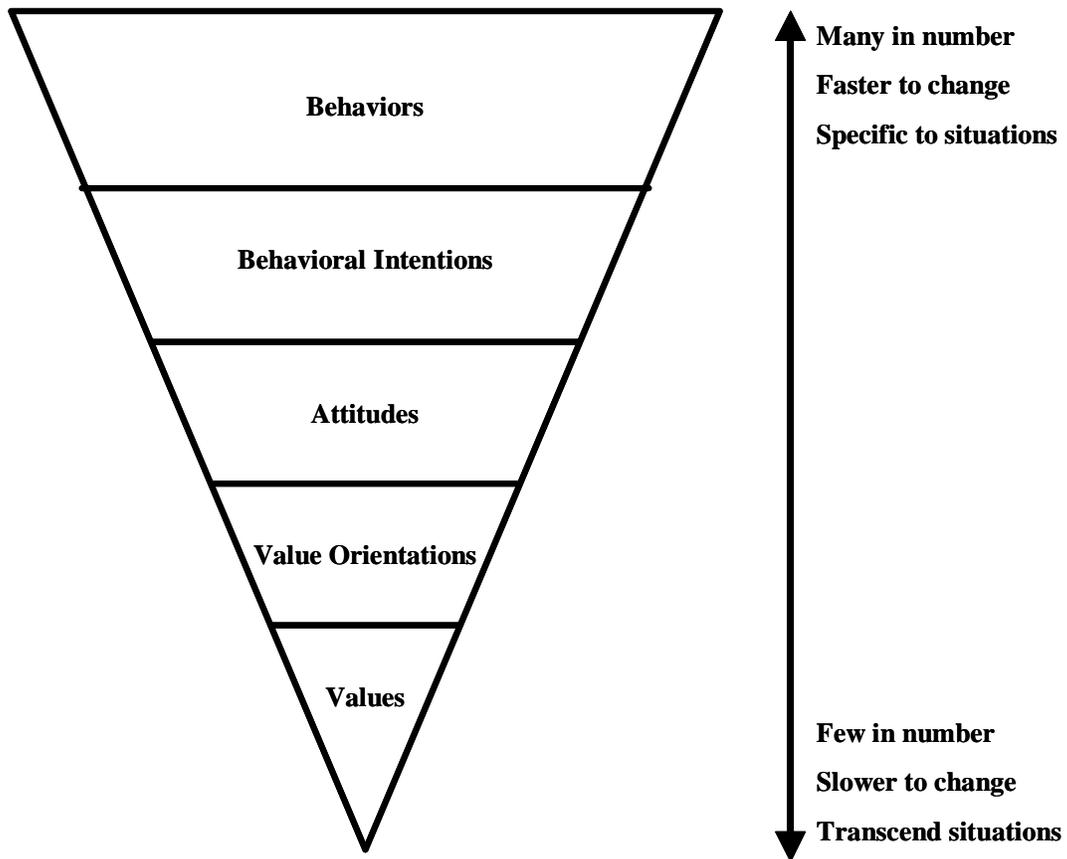


Figure 2. Cognitive hierarchy of the values to behavior process (modified from Decker et al. 2001).

## Evaluation Design

Program evaluation can be achieved by many different methods. According to Kleiman et al. (2000), evaluation can be categorized as one of 2 types: external and internal evaluations. Each evaluation type focuses on different levels within a program. External evaluations are more formal, generally peer reviewed, occur less frequently, and are done by individuals independent of the program itself. Internal evaluations are usually annual, less formal, and come in the form of progress reports from the program staff. These evaluations could also be classified further as either formative (e.g., taking place during the course of the program) or summative (e.g., occurring after the program's completion) (Norris and Jacobson 1998).

Both external and internal evaluations can be approached by either the quantitative method or qualitative method, though a combination can also be used (Heffernan 1998). Each of these methods addresses a different type of question. Quantitative evaluations assess questions asking "how much?" An example would be "How much did participants' knowledge increase from involvement in the program?" (R. B. Ditton, Texas A&M University, personal communication). This method requires *a priori* hypothesis development, producing numerical data that can be examined statistically to determine if a significant change has occurred (Lincoln and Guba 1985). A common quantitative method used in program evaluations is pre-program and post-program surveys, either in the form of questionnaires or tests (Weiss 1998). Norris and Jacobson (1998) also suggest long term or follow-up studies examining program effects

on participants at least 6 months after program completion, or a 6 month post-program survey.

Qualitative evaluations, on the other hand, assess questions asking “how well?” An example would be “How well did the program perform at changing participants’ attitudes about conservation?” Unlike quantitative data, qualitative data do not produce numbers, but instead produce general themes based on peoples’ thoughts and feelings about a program. Also unlike the quantitative method, hypotheses are formed *a posteriori*, or after data collection, and do not require any form of manipulation to its subjects (Lincoln and Guba 1985). Examples of qualitative methods include interviews, focus groups, and observations (Marshall and Rossman 1999).

Each of these methods has its advantages and disadvantages. Limitations of the quantitative method occur with the use of testing, possibly causing confounded results from the one test cueing the other. Limitations in qualitative evaluation come from the response effect, in which the participants feel they must give a “correct” response to the interviewer (Heffernan 1998). Therefore, choosing which method to use, or choosing to combine the 2 methods, should be determined by the question or questions being addressed.

For assistance in developing evaluations, Jacobson (1991) created a model for program development, implementation, and evaluation. The model consists of 3 tiers made up of program planning, process, and product. Each tier contains a list of procedures with a feedback loop between each tier (Appendix A). The product tier provides a roadmap for what to look for during program evaluation, such as objective

achievement, long-term effects of program participation (looking at past participants), modifications needed to the program, information dissemination, and future needs of the program. From the product tier, decisions can be made to improve or expand the evaluated program as well as the evaluation process.

Howard et al. (2001) suggests using of an online evaluation instrument for 4-H programs. The evaluation process, broken down into 5 sections, includes universal youth development skills, program impact, program satisfaction, demographics, and a section devoted to suggestions. Various Likert Scaling systems gauge the extent of change in the skills, program impact, and program satisfaction sections. The demographics section reveals and characterizes youth using the program, including gender, race, community population, age, grade level, and school type of its participants. The suggestion section is left open-ended to allow for verbal feedback, especially on issues not addressed in the other 4 sections of the evaluation.

### **Past Evaluations of WHEP**

Since the inception of WHEP in 1977, at least 5 formal studies have been conducted with WHEP as a focus or a component. In general these studies occurred at the state level. These studies included the examination of career choice, knowledge gain, knowledge retention, handbook usefulness, and wildlife orientation.

In 1981, a nation-wide study was conducted to determine current, short-term, and long-term effects of participation in 4-H natural resources programs including the Wildlife Judging Project (J. L. Byford. 1981. National 4-H Natural Resources Committee Report, University of Tennessee Agricultural Extension Service, Knoxville,

Tennessee, USA). Using quantitative techniques, Byford found 43% of surveyed project members (current 4-H'ers) planning on attending college were considering a natural resource major. Of the surveyed program alumni, 24% of those in college were studying natural resources-related subjects, whereas 14% of those not attending or already out of college had natural resources-related employment. While the proportion of past participants who actually pursued natural resource-related employment was less than the proportion of current participants who said they wanted to seek such employment, survey respondents claimed to have been positively influenced in life decisions from their participation in the programs.

A similar study was conducted in 1984 to examine long term knowledge retention of 4-H Wildlife Project alumni who attended the annual Tennessee 4-H Wildlife Conference, and to compare alumni scores in wildlife knowledge and attitudes to scores from a cross-section of the American public (Byford and Munsey 1984). The conference, held annually between 1973-1981, targeted youth between the ages of 13 and 15 who excelled in the 4-H Wildlife Project. Here, youth were given a post-test after conference completion. Years later, alumni of the conferences were re-tested to determine knowledge retention. The study found that knowledge retention among conference alumni was high, even when comparing years since attending the conference. It was also found that when comparing alumni test scores to test scores of the American public, the alumni's scores were consistently higher in knowledge, though there seemed to be no difference in attitudes toward wildlife.

In 1992, a quantitative evaluation of the National 4-H WHEP handbook was completed to determine the effectiveness of a new prototype (Neilson 1992). This new handbook was used by WHEP participants to prepare for the 1990 national contest. If the prototype handbook proved to be adequate, it would replace the existing materials provided to teams at the national level. After surveying 4-H participants and leaders using pre and post-workshop tests, the handbook was determined to be a sufficient instructional instrument for the WHEP contest, and was therefore accepted as the new handbook for WHEP.

In 1996, the Kansas WHEP contest was also quantitatively evaluated, with additional information from Tennessee, Alabama, and Maryland (Naylor 1996). This evaluation examined current participants with controls, past participants, and leaders to determine if participation in the program led to an increase in wildlife knowledge. This was achieved using mailed surveys with questions addressing knowledge (test within the survey), socioeconomic characteristics, parental influence, rural vs. urban residence, education, and gender. This evaluation found that participants experienced a significant increase in knowledge. An additional benefit was that people associated with the program (including current participants, past participants, and leaders) all shared this knowledge with people outside of the program, or have influenced non-participants through implementation of management plans. Evidence was also found that rival causal factors such as lower annual family income, farming parents, farm residence and WHEP involvement through Vocational Agriculture (Vo-Ag.) positively influenced wildlife test scores.

A qualitative case study was conducted in 1998 to evaluate an Alabama team's experience with the WHEP contest (Cromwell 1998). The coach and team went through an interview process and were observed during team training sessions. Thematic analysis was used to develop the following 3 themes:

1. The team had prior experience with nature before participating in the WHEP contest.
2. The greater the team's experience with nature, the less competitive they were at the state WHEP contest.
3. There was a symbolic relationship between the Tbilisi objectives (environmental education objectives set forth by the United Nations at the Tbilisi conference) of environmental knowledge, attitudes, awareness, skills, and participation and the WHEP contest objectives.

The 3 environmental education objectives of the conference were "to foster clear awareness of, and concern about, economic, social, political, and ecological interdependence in urban and rural areas; to provide every person with opportunities to acquire the knowledge, values, attitudes, commitment, and skills needed to protect and improve the environment; to create new patterns of behavior of individuals, groups, and society as a whole toward the environment" (Jeske 1978 as cited in Cromwell 1998).

While these studies address career choice, knowledge, or value orientation, it is important to understand the cumulative effects of knowledge, attitude, and leadership skills as they relate to conservation and the concept of stewardship.

## **Problem Statement and Objectives**

Texas 4-H WHEP has not been evaluated to determine if the program is reaching its desired goals: changing attitudes and adding to life skills and wildlife knowledge. In this study I sought to examine program effectiveness, as an external evaluator, of the 2005 Texas 4-H WHEP contest using both quantitative and qualitative methods of evaluation. Specifically, I sought to determine if youth developed the following:

1. A change in participant attitude toward stewardship of natural resources through learning the fundamentals of wildlife science and management.
2. An increase in skills consisting of:
  - a. group interpersonal/social skills;
  - b. leadership;
  - c. decision making;
  - d. oral and written communication; or
  - e. team work.
3. An increase in knowledge of ecological systems through lessons from the contest preparation materials provided by the Texas 4-H & Youth Program.
4. Ideas of a future career in natural resources.

I also sought to determine if past WHEP participants attribute the following to involvement in WHEP while in 4-H:

1. A change in attitude toward wildlife science and management.
2. Attending college with a major in natural resources or a related major.
3. A career in a natural resources or related field.

## **METHODS**

### **Study Area**

I collected the majority of my data through internet correspondence (e.g., e-mail and the WHEP website) and through direct interactions with attendees of the 2005 Houston Livestock Show and Rodeo (HLSR) on March 12, 2005 in Houston, Texas and the 2005 State 4-H WHEP Contest on April 23, 2005 at the Katy Prairie Conservancy in Katy, Texas. The HLSR contest was used as a pilot study for facilitator-led focus groups. Participants of this contest were asked to volunteer for this pilot study during registration. Internet and written surveys were given to participants, controls, and parents/coaches of the state competition, and later to past participants of WHEP (Appendix B). Audio-taped focus groups were also conducted with all participating teams at the state contest.

I collected additional qualitative data through use of telephone interviews and e-mail correspondence with parents/coaches, 4-H county extension agents, and steering committee members throughout the 2005 study season (February to December). I also used participant comments on the internet and written surveys from the quantitative portion of the study. An observation was also conducted in November on a county who participated in the 2005 contests.

### **Study Participants**

After receiving approval from the Institutional Review Board for a study involving minors (protocol number 2005-0060), I generated a contact list of WHEP contest participants, their parents, and coaches from team registration forms for the 2005

state contest. A list of controls, consisting of youth involved in 4-H Shooting Sports and other outdoor oriented clubs, was also generated with assistance from the Texas 4-H & Youth Program. I also attempted to match the number of youth serving as the control group to the number of WHEP participants. A list of prior participants of the WHEP contest was also generated from past registration forms and communication with current coaches from 1993 to 2004. For the purposes of this study, all teams and their members and contacted past participants were asked to participate in the evaluation. There were 9 teams and 5 additional individuals, including both junior (ages 8 to 13 years old) and senior (ages 14 to 19 years old) age classes, registered for the 2005 state contest. Teams were made up of either 3 or 4 members. A total of 36 youth participated in the 2005 state WHEP contest out of over 50 who were initially registered. All 36 youth of the 2005 contest were included in the study.

### **Quantitative Evaluation Methods**

*Survey Procedure.*--I sent 4-H & Youth County Extension Agents e-mails informing them of an online registration form for the state WHEP contest. They were also informed of a research study being conducted on WHEP during the 2005 contest season. This information was relayed to WHEP coaches in their respective counties. A coach survey, followed by a team registration form, was posted on the WHEP website (<http://whep.tamu.edu/Registration.cfm>) at the end of January 2005 (Appendix B). I then used contact information from the registration forms to send letters and e-mails to contest participants and their parents, informing them of the research study and location of the surveys and study consent forms that were made available in mid February 2005

(Dillman 2000, Schonlau et al. 2002). The letters directed the youth and parents to the website address, where they could access the pre-contest surveys and information about the upcoming WHEP contests. Website and e-mail correspondence were the main forms of communication between the WHEP steering committee and the coaches, participants, and parents. I used letters, and later phone calls, to remind participants and their parents to fill out the internet pre-contest survey, or to request a written copy if they do not have access to the internet. Return envelopes and postage were included with the mailed surveys.

I contacted individuals from the control group, made up of Shooting Sports and other outdoor oriented 4-H clubs, through e-mail correspondence with their club leaders, and attendance to 4-H meetings. Presentations were given to the clubs to encourage study participation. I gave out consent forms and written directions to the online pre-contest surveys after presentations. Information was left with club leaders if more youth were interested, but not in attendance. To be consistent with the participant pre-contest surveys, control surveys were made available in mid-February 2005. I also made written surveys available to control study participants upon request.

Post-contest surveys for coaches, participants, and parents were administered the day of the state WHEP contest. I gave written surveys to all those in attendance, and collected the surveys before the contest awards ceremony. The control post-contest survey and all of the 6 month post-contest surveys (including WHEP participants, parents, coaches, and controls) were made available again online, using the same contact procedure as the pre-contest surveys.

I also created a list of past WHEP participants (18 years and older only) using past registration forms provided by the steering committee as well as word-of-mouth from current coaches and other past participants. Contact was made with an announcement letter and emails about the study. Announcements also contained directions to the online survey and consent form, or had a direct link to the website. The online survey was posted in July 2005. Reminders after initial contact followed the same procedures as other surveys.

*Survey Content.*--The 3 surveys (pre, post, and 6-month) for participants and controls covered knowledge, attitude, and leadership and social skills related to wildlife and wildlife management. Surveys included knowledge questions from the WHEP study material to gauge wildlife knowledge gained prior to and after competition, as well as questions about perceived skill experience, outdoor recreation, and extracurricular activities. I set up the knowledge section of pre-contest surveys to make comparisons between later knowledge scores to determine if there was an increase in knowledge from contest participation as well as between treatment and control (Naylor 1996). There were a total of 20 knowledge questions that were either multiple choice or matching. An attitude test was incorporated into the survey to measure pro management orientation (belief in a need to manage wildlife because of wildlife values; Dunlap and Van Liere 1978, Di Mauro and Dietz 2001). I based the above attitude test on 12 questions from another program evaluation study (Bonneau 2003). The youth had 5 choices ranging from “strongly agree” to “strongly disagree” with the statement in question to evaluate how each participants’ attitudes compare along the environmental paradigm. Perceived

leadership and social skills were also rated using a scale with 4 choices including “not at all,” “somewhat,” “pretty good,” and “excellent” as the possibilities to best describe their skill according to one of 12 statements (Jenke 2003). Like the knowledge test, comparisons could be made between survey periods and between treatments for the attitude and skill statements to determine if a positive change had occurred. Finally, I included demographic and background questions, such as participation in outdoor recreation and extracurricular activities, in the surveys to better understand variation and level of youth activity within the participant group as well as between treatment and controls. This information was requested only in the pre-contest surveys.

I used parent and coach surveys to gather information on their observations of the participants’ leadership and social skills as well as possible contributions from contest participation. Questions addressed participant behavior, future career thoughts, program satisfaction, and demographics. I also provided space at the end of the questionnaire to allow for the sharing of additional information not addressed within the survey.

I used past participant surveys to examine choices made by youth who have been through the WHEP program. Questions covered past participants’ schooling, career choices, and perceived contributions from program involvement. Like the current participants, past participants were given an attitude test and asked to rank their leadership and social skills prior to and after their experiences with WHEP. Demographic questions were also asked to determine if any trends existed in WHEP participation.

*Survey Data Analysis.*--For purposes of examination, I stratified participants and controls by age, gender, residence, level of participation, years involved in the program, and type of schooling (e.g., home-school, public, or private). I used paired sample t-tests and descriptive statistics<sup>2</sup> to make comparisons between the treatment and control groups in knowledge scores (mean scores and by question), as well as attitude and skill ratings. Comparisons were also made between the 3 survey periods for participants and controls to determine program effect over time, such as knowledge gain, increase in life skills, or change in attitude. This also included a paired sample t-test comparing past participant attitudes to current WHEP participants' post-contest survey attitudes.

To determine the effects of demographic variables on participants' knowledge and perceived leadership and social skills, I used Generalized Linear Models and Linear Mixed-Effects Models. The linear mixed-effects model fit by maximum likelihood was used to verify perceived changes in social and leadership skills. In order to do this, the data was reconfigured into a binomial data set (negative change or no change = 0, positive change = 1) to determine if treatment (involvement in WHEP), time, and the predictor variables of age, years involved in the program, and gender had an effect on perceived increase in life skills. Odds Ratio Estimates were also conducted to determine the effect of years involved in the program on perceived increase in skills by past participants before and after participation in WHEP, for type of schooling (e.g., home-

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<sup>2</sup> The Statistical Package for the Social Sciences (SPSS Inc. 2001) and the Statistical Analysis System (SAS Institute, Inc. 2002) were the statistical software programs used for study analysis.

schooled vs. public/private school) for youth currently involved in the program.

I used descriptive statistics to illustrate parent and coach perceptions of youth skill as well as contributions attributed to youth involvement such as an interest in learning or a possible career in wildlife and fisheries management. I calculated frequencies and percentages to compare treatments and controls by demographics and activity orientation, and to compare choice of career or major choice of past participants.

### **Qualitative Evaluation Methods**

*Focus Group Procedure and Content.*--I asked all willing teams who participated at either the HLSR or the State contests to participate as a team in a facilitator-led focus group after completion of each contest. The HLSR focus groups were held as a pilot study to determine effectiveness of the qualitative method proposed. The focus group method was chosen for this study because it saves time and also allows individuals to build off of their team-members' comments. According to Marshall and Rossman (1999), focus groups are beneficial because they allow informants a chance to listen to others' thoughts and ideas, giving them an opportunity to reflect and form their own thoughts more clearly. The participants are also under less pressure to answer every question compared to a face-to-face interview. This is especially important when dealing with younger kids who are easily frustrated when trying to relay a thought, or older youth who are more comfortable talking when around their peers. Marshall and Rossman (1999) also mentioned that when interviewing children, age and role of the interviewer must be taken into consideration. In the WHEP focus groups I, along with 4 assistants, attempted to take on the role of friend; noted as being the most fruitful when

working with youth because it is a more trusted role and it downplays authority (Marshall and Rossman 1999). We also attempted to limit the possibility of a verbally dominant focus group member by giving all youth an opportunity to express their thoughts and opinions during the group sessions.

The focus group interview process consisted of myself or a research assistant asking questions in a non-directive, open-ended form with no time limit given (Peterson et al. 1994, Heffernan 1998, Patton 2002). Asking non-directive questions during the interview process attempted to reduce the limitation of a response effect typical of qualitative evaluations. The opening interview questions addressed the objectives of the program. Focus group interviews were audio-taped and later transcribed using data preparation and transcription techniques (McLellan et al. 2003).

Telephone interviews and email correspondence with the program's adults were less formal. These occurred while contacting parents and coaches about filling out online surveys and, for the 4-H county agents and WHEP steering committee members, during business calls about the 2005 workshop and 2006 contests. I approached the interview questions in the manner of clarification of specific topics with the knowledge that information was being gathered for research purposes. Interview information was recorded on available notebook paper to be added later with the e-mail correspondence to a spreadsheet in Microsoft Excel.

*Observation Procedure and Content.*--One volunteer team from the 2005 State contest was observed during their fall 4-H meeting. I observed the meeting as a participant to reduce bias and discomfort on the side of the youth and leaders.

Information was recorded throughout the meeting in a notebook and then again directly after the session using an audio-tape recorder to fill in any details, questions, or thoughts left out of the written field notes. I used the beginning of the observational process (5 to 10 minutes before start of meeting) to make initial impressions of the scene and informants. The rest of the observation focused more on key events and incidents. My personal reactions and reflections about these reactions were also recorded in the field notes (Emerson et al. 1995). All field notes were later transferred to a word document and then to an Excel spreadsheet with the other field notes.

*Interview and Observation Data Analysis.*--Analysis of the team-meeting observation notes, focus group transcriptions, telephone interview and correspondence notes, and WHEP survey comments were done using thematic analysis, which consisted of 5 steps: “Search for individual themes in each transcript; develop each of the themes identified in step one; determine relative significance of themes; search for oppositions among themes, and thematic hierarchies; compare thematic hierarchies and oppositions across transcripts” (Peterson et al. 1994:206). According to Aronson (1994), “themes are defined as units derived from patterns such as ‘conversation topics, vocabulary, recurring activities, meanings, feelings, or folk sayings and proverbs’ (Taylor & Bogdan, 1984, p. 131).” For organizational purposes, analysis was done using a color coding system in Microsoft Excel. I assigned codes to study participants for purposes of confidentiality.

## RESULTS

### Survey Response Rates

Out of the 36 youth involved in the state WHEP competition, survey response varied from 72% for the pre-contest and 6-month post-contest surveys to 97% for the post-contest surveys (Table 1). Study controls varied in response from 100% to 59%. WHEP coaches and parents also had scattered survey participation over the 3 survey process. Because it was administered onsite, survey participation was highest during the post-contest survey for WHEP participants, coaches, and parents. Survey participation for study controls gradually decreased over time. The past participant survey response rate was lowest at 25%.

Table 1. Response rates for the past participant survey and the pre, post, and 6-month post contest surveys for coaches, parents, WHEP participants, and controls, 2005.

Surveyed Group	Surveys Completed	Total	Rate (%)
Past Participant	19	77	25%
Current Participant Pre-Contest	26	36	72%
Current Participant Post-Contest	35	36	97%
Current Participant 6-Month Post-Contest	26	36	72%
Parent Pre-Contest	13	36	36%
Parent Post-Contest	25	36	69%
Parent 6-Month Post Contest	11	36	31%
Coach Pre-Contest	7	7	100%
Coach Post-Contest	6	6	100%
Coach 6-Month Post-Contest	4	6	67%
Control Pre-Contest	22	22	100%
Control Post-Contest	17	22	77%
Control 6-Month Post-Contest	13	22	59%

## **WHEP Demographics**

*Survey Results.*--Sixty-nine percent of WHEP participants were male (Table 2). Past participants were 63% male (Table 3). Ages of participants were split roughly in half between juniors (ages 8-13) and seniors (ages 14-19). The age range was between 9 and 18 years old, with 72% between the ages of 12 and 15. The study control group contained more males (82%) than the WHEP participants, but had a similar age breakdown. Overall, the average age for study controls was 12 years old, whereas participants' average age was 14 years.

The ethnicity of responding current WHEP participants was 100% Anglo American. Past participants were 90% Anglo American and 10% Native Hawaiian/Pacific Islander. This was slightly different from the control group who was 86% Anglo American and 14% Hispanic.

Parents of program participants were, for the most part, highly educated (68% with Bachelor's degree or higher) and had family incomes greater than \$50,000 per year. The majority of WHEP families resided in rural areas 67%. Only 13% of participants lived in small towns (population less than 25,000) and 20% lived in urban areas (population between 25,000 and 100,000). No parents or coaches (most parents served as team coach) reported a career in the wildlife and/or fisheries profession or any other natural resources related profession.

Past participants had a wide range of incomes, levels of education, and residencies. All respondents were between the ages of 18 and 25 years, so some were still in school during the time of the survey and were still dependent financially on

Table 2. Demographic information on WHEP participants and 4-H'ers not involved in the WHEP contest (control group), 2005.

Demographic Variable	Participant Type			
	WHEP		Non-WHEP	
	Frequency	Percent	Frequency	Percent
<b>Gender</b>				
Male	24	68.6	18	82.0
Female	11	31.4	4	18.0
<b>Age</b>				
Juniors (8-13)	18	51.4	12	54.5
Seniors (14-19)	17	48.6	10	45.5
<b>Race/Ethnicity</b>				
White/Anglo American	25	100.0	19	86.4
Spanish/Hispanic/Latino	0	0.0	3	13.6
<b>Annual Household Income</b>				
\$25,000 - 49,999	0	0.0	6	30.0
\$50,000 - 74,999	6	33.3	4	20.0
\$75,000 - 99,999	6	33.3	3	15.0
\$100,000 - 149,999	6	33.3	7	35.0

Table 2 Continued.

Demographic Variable	Participant Type			
	WHEP		Non-WHEP	
	Frequency	Percent	Frequency	Percent
Highest Degree in Family				
High School Diploma or GED	3	12.0	0	0.0
Vocational or Trade School	1	4.0	0	0.0
Some College	2	8.0	0	0.0
Associate's Degree	2	8.0	0	0.0
Bachelor's Degree	11	44.0	0	0.0
Master's Degree	4	16.0	2	40.0
PhD.	0	0.0	3	60.0
Professional Degree	2	8.0	0	0.0
Residence				
Rural, Farm	14	46.7	0	0.0
Rural, No Farm	6	20.0	6	27.4
Small Town, <25,000	4	13.3	2	9.0
Urban Area, 25,000 - 100,000	6	20.0	11	50.0
Metropolitan Area, >100,000	0	0.0	3	13.6

Table 3. Demographic information on past participants of the WHEP contest between the ages of 18 and 25 years old, 2005.

Demographic Variable	Past Participants	
	Frequency	Percent
Gender		
Male	12	63.2
Female	7	36.8
Race/Ethnicity		
White/Anglo American	17	89.5
Native Hawaiian/Pacific Islander	2	10.5
Annual Household Income		
<\$24,999	2	28.6
\$25,000 - 49,999	2	28.6
\$75,000 - 99,999	2	28.6
\$150,000 - 199,999	1	14.2
Highest Degree		
High School Diploma or GED	4	21.0
Some College	9	47.4
Associate's Degree	2	10.5
Bachelor's Degree	3	15.8
Master's Degree	1	5.3
Residence		
Rural, Farm	5	26.3
Rural, No Farm	2	10.5
Small Town, <25,000	1	5.3
Urban Area, 25,000 - 100,000	9	47.4
Metropolitan Area, >100,000	2	10.5

family or student loans. College majors and career choices of this group included 22% in agriculture, 6% in communication, 11% in computer science, 6% in education, 11% in engineering, 11% in medicine, 22% in wildlife and fisheries sciences, and 11% in zoology/marine biology (Appendix C).

When examining the outdoor and extracurricular activities of current participants and their control counterparts from the pre-contest surveys, I found both groups were highly active in various forms of outdoor recreation and extracurricular activities in school (Table 4). Only slight differences existed in the number of youths in each activity. Participation in Extension programs did vary between the two groups. Youth participating in WHEP tended to be involved in more animal husbandry and natural resources oriented programs like 4-H livestock projects, Field and Stream, and Texas Brigades. Only 28% of participants were involved in Shooting Sports; the program making up the majority of the study control group. Overall, WHEP participants and non-WHEP 4-H'ers were similar in their preferences for outdoor and extracurricular activities.

*Interview Results.*--During the focus group interviews at the state contest, youth talked about their outdoor activities prior to and while participating in WHEP such as hiking, canoeing, camping, sports and working with livestock. This raised the possibility that these youth were more inclined or predisposed to program involvement than youth not active in outdoor recreation. Some of the statements made by youth about their outdoor experiences included a statement from a senior level participant who said "I've been in boy scouts forever, and... my family has a wilderness survival camp.

Table 4. Outdoor recreational and extracurricular activities of WHEP participants and 4-H'ers not involved in the WHEP contest (control group), 2005.

Activity Variable	Participant Type			
	WHEP		Non-WHEP	
	Frequency	Percent	Frequency	Percent
<b>Outdoor Activities</b>				
Hunting	16	44.4	10	47.6
Trapping	6	16.7	3	15.0
Fishing	25	69.4	12	57.1
Kayaking/Canoeing	14	38.9	9	42.9
Snorkeling	2	5.6	3	15.0
Hiking	27	75.0	14	66.7
Climbing	9	25.0	6	30.0
Biking	2	5.6	3	15.0
Nature Viewing	18	50.0	10	50.0
Camping	22	61.1	8	40.0
Back Packing	3	8.3	1	5.0
Photography	15	41.7	6	30.0
Motorized Vehicles	22	61.1	9	45.0
<b>Extension Programs</b>				
Animal Husbandry	16	44.4	0	0.0
Horticulture	4	11.1	3	14.3
Entomology	2	5.6	0	0.0
Shooting Sports	10	27.8	18	85.7
Sportfishing	2	5.6	3	14.3
Sportfishing Camp	3	8.3	1	4.8
Photography	11	30.6	1	4.8
4-H & Youth Camp	2	5.6	0	0.0
Field and Stream	3	8.3	0	0.0
Aquatic & Hunter Ed.	2	5.6	1	4.8
Texas Brigades	2	5.6	0	0.0
<b>Extracurricular Activities</b>				
Sports	18	50.0	14	66.7
Band/Choir/Drama	7	19.4	6	28.6
Student Government	1	2.8	1	4.8
National Honor Society	7	19.4	2	9.5
ROTC	1	2.8	0	0.0
Scouting	6	16.7	3	14.3
Church	11	30.6	12	57.1

So, I teach wilderness survival skills. And I'm always outdoors" (HLSR4-1). Another junior level youth described his reasoning for outdoor activities verses staying indoors by saying "...when you're watching TV its like you just sit there and you're not really doing anything... it looks pretty, but when you just get out and go outside and going hiking and stuff, it's a lot more fun and it looks a lot better" (HLSR2-1).

Many of these same youth also stated they or their family members participated in the hunting and fishing of wild game such as deer, duck, quail, bass and bluegill such as one junior level participant who stated "I like to go hunting a lot" (HLSR2-1). A senior level youth echoed the claim saying "I hunt and fish a lot...That kind of stuff...all the time" (HLSR4-3, senior). Therefore most youth were familiar with the concept of game species management. With prior knowledge of game animals, many youth expressed interest in learning more about non-game wildlife such as song birds like the Red-Eyed Vireo and Brown Thrasher or birds-of-prey like the American kestrel, thus leading into the youth's perceived benefits to participating in WHEP such as knowledge gain.

### **Knowledge Gain**

*Survey Results*--I found significant differences when comparing mean knowledge scores (percent correct) of WHEP participants to study control youth over the 3 survey period (Table 5). Participants scored an average of 23% better than their control counterparts (Figure 3). I found no significant differences between the 3 surveys for participants when looking at knowledge gain over time (Table 6). The study control group showed no difference when comparing the pre-contest and post-contest scores or

Table 5. Mean differences between WHEP participant and control knowledge scores (percent correct) as measured by paired sample t-tests for the pre, post, and 6-month post contest surveys, 2005. (Difference significant at  $*P<0.05$ ).

Survey Period	Mean Diff.	SD	Lower CI (95%)	Upper CI (95%)	P-value
Pre-Contest	0.23	0.233	0.128	0.335	0.000*
Post-Contest	0.17	0.284	0.014	0.317	0.034*
6-Month Post Contest	0.34	0.201	0.214	0.469	0.000*

the post-contest to 6-month post-contest scores, but there was a significant difference between the pre-contest to 6-month post-contest scores. Control scores were lower in the 6-month post-contest surveys than pre-contest surveys, possibly contributed to by the decrease in survey participation.

I found little difference when examining participant knowledge scores by question (number of youth who answered the question correct) over the 3 survey period. The only significant differences occurred in the answering of question 10 in the pre-contest to post-contest comparison, and questions 9 and 16 in the pre-contest to 6-month post-contest comparison (Appendix B). Question 10 (question addressing management practices that benefit bluebirds) was answered correctly by more youth in the post-contest survey than in the pre-contest survey. Question 9 (question asking what species utilize bark as a food source), on the other hand, was answered correctly by more youth in the pre-contest survey than 6-month post-contest survey. Question 16 (question asking for the definition of species richness) was answered correctly more in the 6-month post-contest survey than in the pre-contest survey. There was no significant difference in the answering of any of the questions from the post-contest and 6-month post contest surveys (Appendix C).

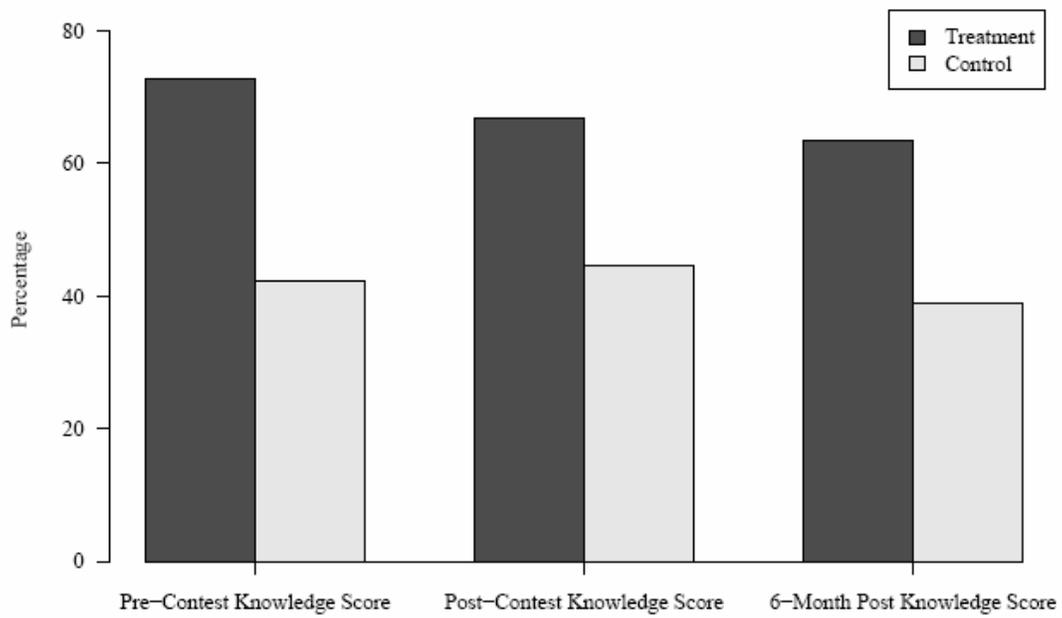


Figure 3. Mean knowledge scores of WHEP participants (treatment) and 4-H'ers not involved in WHEP (controls) over the 3 survey period, 2005.

Table 6. Mean difference between survey periods of WHEP participant and control (non-WHEP 4-H'ers) knowledge scores (percent correct) as measured by paired sample t-tests, 2005. (Difference significant at \* $P < 0.05$ ).

Group	Comparison	Mean Diff.	SD	Lower CI (95%)	Upper CI (95%)	P-value
WHEP Participants	Post vs. Pre	0.03	0.226	-0.057	0.126	0.442
WHEP Participants	6-month vs. Post	0.03	0.263	-0.076	0.137	0.557
WHEP Participants	6-month vs. Pre	0.07	0.252	-0.036	0.167	0.198
Non-WHEP 4-H'ers	Post vs. Pre	0.05	0.215	-0.061	0.168	0.338
Non-WHEP 4-H'ers	6-month vs. Post	0.09	0.215	-0.045	0.228	0.168
Non-WHEP 4-H'ers	6-month vs. Pre	0.17	0.123	0.092	0.249	0.001*

When examining the impacts of age, residency, gender, years involved in program, and years involved in program times gender, I found no significant differences (Table 7). The paired sample t-test, used to determine if there was a difference in mean knowledge scores (percent correct) of youth who were home-schooled (35% of youth in WHEP) versus those who attended a public or private school (65% of youth in WHEP), showed no significant difference (Table 8). However post and 6-month post-contest surveys did show trends of home-schoolers obtaining higher scores than youth not home-schooled, averaging 7% higher on post-contest surveys and 9% higher on 6-month post-contest surveys.

Table 7. Effect of variables on WHEP participant knowledge scores as measured by a Generalized Linear Model (GLM), 2005. (Effect significant at  $*P<0.05$ ).

Variable	Pre-contest		Post-contest		6-month Post-contest	
	F-value	Pr > F	F-value	Pr > F	F-value	Pr > F
Age	0.00	0.996	0.02	0.904	1.31	0.272
Residence	1.20	0.356	0.61	0.616	0.72	0.556
Gender	2.17	0.163	0.96	0.338	0.17	0.690
Years Involved	0.45	0.514	0.87	0.362	0.56	0.465
Years Involved*Gender	0.28	0.604	1.24	0.278	0.57	0.462

Table 8. Mean difference in knowledge scores (percent correct) of home-schooled and non-home-schooled youth in WHEP as measured by paired sample t-tests, 2005. (Difference significant at  $*P<0.05$ ).

Survey Period	Mean Diff.	SD	Lower CI (95%)	Upper CI (95%)	P-value
Pre-Contest	0.00	0.170	0.122	0.000	1.000
Post-Contest	0.07	0.214	0.212	1.059	0.315
6-Month Post Contest	0.09	0.220	0.258	1.209	0.261

*Interview Results.*--Focus group conversations revealed an interest in learning more about wildlife--to discover animals unknown to them along with facts and trivia about animals such as where they live and what they eat. Therefore, youth were seeking to understand animal habitat requirements for survival, or as stated by one contest participant when describing what wildlife management meant to him (senior age), "Managing an area for certain wildlife to improve their living conditions and to help them survive." Through this understanding of habitat and ecosystems, youth believed they could learn to manage for wildlife, as one youth (junior age) put it, to "provide a life balance between the natural resources, wildlife, and human interaction" (also related to the concept of conservation stewardship). Further examples of youth expressing interest in learning more about wildlife included statements by 3 junior level participants. One youth stated how she likes "doing stuff and [I] like animals, and stuff like...just finding out what...everything...bird watching and everything. Just to find out like, what they do" (HLSR3-2). Another youth talking about his WHEP experiences said "I'd say a lot, cause I mean WHEP...it's a good program and everything, and it teaches you about animals; what they eat, where they live, how to improve their living...uh, can't really describe it right now" (HLSR3-1). The same youth went on to discuss where he felt his knowledge was originally lacking, stating "There's some animals, I didn't even know there's some animal I know, I didn't know the red-eyed vireo, well (laughing)...I didn't know what that was, but I do now" (HLSR3-1). A third youth, in his attempt to express what he had learned through program involvement, said

with some frustration at his lack of finding the right words “Um...there’s a lot more stuff out there than I really thought about” (STAT2-1).

Unlike most of the younger participants of the WHEP program, many of the senior level youth had an easier time articulating their feelings about the program’s contribution to their wildlife knowledge. One example was of a senior level competitor at the Houston Livestock Show and Rodeo who stated “This contest enhances you ability to be able to manage different areas...and analyze areas that you know...what species would be particularly inclined to use that area thanks to this contest. You learn about the animals, you learn what each animal desires for its habitat, and you learn what to do to create that habitat for that animal” (HLSR1-2). Echoing this statement, another senior youth described his experience, speaking to his “Understanding more about wildlife and getting a better picture in your mind of how everything fits together and works” (HLSR4-2). A final youth related his new knowledge to outdoor recreation saying “I can help people know how to...manage their land so they can hunt, and get...better shots” (STAT5-2).

The majority of statements made during the focus groups, including those above, were geared toward an increase in the youths’ wildlife knowledge. Most of these statements, though some better articulated than others, indicated a development or fine tuning of the youths’ understanding of the connections between a curiosity with wildlife and the need for conservation. This was most apparent in the senior level youth compared to the junior level, but all showed interest in applying their new found knowledge in one fashion or another.

## **Attitude Change**

*Survey Results.*--I found only a few significant differences in my comparisons of WHEP participants over time to determine a change in response to specific attitude statements involving wildlife management techniques (Appendix C). In the pre-contest to post-contest comparison, there were significant changes between attitude statements 5 and 10 (Table 9). Youth, in response to attitude statement 5 (dealing with the acceptability of eliminating predators that prey on threatened or endangered species), were less likely to agree with this management action. Youth responded differently on attitude state 10 (the management of public forests for multiple purposes), adopting a more positive attitude about this statement from the pre-contest to post-contest surveys. In the pre to 6-month post-contest comparison and the post to 6-month post contest comparison, only statement 12 (hunting as an acceptable natural resource management practice) showed a significant change in direction (Table 10). Youth continued to have a more positive response to this statement after program involvement.

Comparisons made for the study control group to determine responses to attitude statements stayed consistent over the 3 survey period. I found no significant differences in survey response. Therefore, the non-WHEP 4-H youth were unwavering in their attitudes toward various wildlife management practices throughout the study.

My third set of comparisons between WHEP participants and study controls showed similar responses to all attitude statements but one in the pre-contest survey; statement 5 relating to predation on endangered or threatened species (Appendix C). WHEP youth found it more acceptable to control predators that predate on protected

Table 9. Mean responses to individual attitude statements by WHEP participants between pre and post-contest surveys, 2005. Possible responses were 1 = Disagree Completely, 2 = Somewhat Disagree, 3 = Uncertain, 4 = Somewhat Agree, and 5 = Agree Completely. Direction of change implies movement towards pro or anti-management attitudes. (Difference significant at \* $P < 0.10$  and \*\* $P < 0.05$ )

Attitude Statement	Pre-contest Mean	Post-contest Mean	Change (Post-Pre)
Natural resources must be managed to ensure their availability for future generations.	4.5	4.5	0.0
With respect to natural resources, nature should be allowed to take its course without human interference.	3.6	3.7	0.1
Prescribed fire destroys natural habitats.	2.2	2.5	0.3
Prescribed fire can improve habitat conditions for wildlife.	4.5	4.4	-0.1
It is acceptable to eliminate predators that prey on threatened and endangered species.	4.1	3.8	-0.3 **
It is acceptable to eliminate predators that prey on game species.	2.5	3.1	0.6
Grazing is destructive to natural vegetation.	2.3	2.6	0.3
Grazing can be used to enhance wildlife habitat.	3.5	3.5	0.0
Harvesting timber permanently harms forests.	2.8	2.5	-0.3
Public forests should be managed for multiple uses (wildlife, timber, recreation, etc.).	3.7	4.4	0.7 **
It is important to have a variety of successional stages in a forest.	N/A	4.5	N/A
Hunting is an acceptable natural resource management practice.	3.5	4.2	0.7

Table 10. Mean responses to individual attitude statements by WHEP participants between post and 6-month post-contest surveys, 2005. Possible responses were 1 = Disagree Completely, 2 = Somewhat Disagree, 3 = Uncertain, 4 = Somewhat Agree, and 5 = Agree Completely. Direction of change implies movement towards pro or anti-management attitudes. (Difference significant at  $*P<0.10$  and  $**P<0.05$ )

Attitude Statement	Post-contest Mean	6-Month Post-contest Mean	Change (Post - 6-Month)
Natural resources must be managed to ensure their availability for future generations.	4.5	4.7	0.2
With respect to natural resources, nature should be allowed to take its course without human interference.	3.7	3.5	-0.2
Prescribed fire destroys natural habitats.	2.5	2.7	0.2
Prescribed fire can improve habitat conditions for wildlife.	4.4	4.3	-0.1
It is acceptable to eliminate predators that prey on threatened and endangered species.	3.8	3.7	-0.1
It is acceptable to eliminate predators that prey on game species.	3.1	3	-0.1
Grazing is destructive to natural vegetation.	2.6	2.5	-0.1
Grazing can be used to enhance wildlife habitat.	3.5	3.8	0.3
Harvesting timber permanently harms forests.	2.5	2.7	0.2
Public forests should be managed for multiple uses (wildlife, timber, recreation, etc.).	4.4	4.1	-0.3
It is important to have a variety of successional stages in a forest.	4.5	4.7	0.2
Hunting is an acceptable natural resource management practice.	4.2	4.6	0.4 **

wildlife than youth not involved in WHEP. This particular statement was consistently different throughout the 3 surveys, with a post-contest p-value of  $P = 0.014$  and 6-month post-contest p-value of  $P = 0.004$ . In the post-contest surveys, other than statement 5, WHEP youth had a difference in reaction to 2 other attitude statements. WHEP youth tended to be more uncertain than their control counterparts about prescribed fire destroying natural habitats (statement 3). They also agreed more with the multiple use of public forest land than those not involved in WHEP (statement 10). Similar to the post-contest results, the 6-month surveys also showed a difference in 2 attitude statements besides statement 5. There was a difference of opinion about prescribed fires as a means to improve habitat conditions for wildlife (statement 4). WHEP youth were much more receptive to this idea than the non-WHEP youth. Along the same lines WHEP youth were also more sympathetic to the idea of predator control for game species (statement 6), though their general response was to rate this statement as “uncertain.”

In a comparison between the post-contest survey responses of WHEP participants and those of past participants, two statements were found to be statistically different in mean response (Appendix C). Current participants tended to agree more with the statement “with respect to natural resources, nature should be allowed to take its course without human interference” ( $P = 0.028$ ). Past participants seemed to be unsure about this statement. Past participants tended to disagree with the statement that prescribed fire destroys natural habitats, whereas current participants either somewhat disagreed or were uncertain about the statement (statement 3,  $P = 0.009$ ).

*Interview Results.*--Similar to the survey data, interviews with participants showed positive attitudes toward wildlife management as well as the development of thoughts related to conservation stewardship. In a statement by a senior level youth on a survey taken 6 months after participating in the state contest, wildlife management to him was “preserving the land for future generations.” This statement expressed developed thoughts related to environmental ethics.

Though most youth in the focus groups articulated some concept of environmental stewardship, a complete grasp of the term itself was somewhat age and experience dependent. In an example of 3 youth at the HLSR contest, the following statements showed the spectrum of understanding of stewardship:

1. HLSR4-1: “I was [a steward] prior [to participating in WHEP]...I mean, it’s just how I grew up” (senior level youth).
2. HLSR3-3 in response to the question if they considered themselves an environmental steward: “In a way you do, but then you don’t. I don’t know...” (junior level youth).
3. HLSR4-2: “I... I really didn’t consider myself a steward before this, but now I do. I was...more of a laid back...I liked camping, I like hiking, but that’s about it. I didn’t really look past...the enjoyable stuff, and just look at nature and see it for what it is” (senior level youth).

These remarks reflected most of the thoughts among youth who were interviewed, with the younger children responding with uncertainty and the older youth with a clearer understanding of the term and how it relates to the management of wildlife. All youth

though had some degree of difficulty expressing their own definition of stewardship.

Most of the youth chose to respond to the question with a simple yes or no answer, thus avoiding the frustrating process of articulating their thoughts to the group.

### **Perceived Change in Skills**

*Survey Results.*--From the linear effects model, I found only treatment, time, and the combination of treatment and time had any effect on skill increase (Table 11). The skills experiencing a significant increase by youth due to participation and across the 9-month study period included “confidence in team discussions,” efforts to “allow everyone a chance to speak” during team discussions, ability to “help end disputes between team members,” and “comfort in sharing ideas” with team members. All skills demonstrating an increase had some relationship to the overarching skill of teamwork, a major necessity for 2 out of the 5 activities in WHEP (writing of urban and rural management plans as a team). According to the rest of the results, age, years involved, and gender showed no significant impact on youth skill, but age did seem to have a mild effect on the “guidance of new members,” indicating a positive relationship between increasing in age and feeling more comfortable leading program beginners. Gender also seemed to exhibit influence on “ending disputes,” “sharing ideas,” and “confidence in writing.” Female participants of the WHEP contests were more likely to claim an increase in these 3 skills than their male counterparts.

From the odds ratio estimates examining impact of home-schooling on WHEP participants’ perceived skill increase, I found youth who attend public or private schools were more likely to claim an increase in skills over the time period between the pre-

Table 11. Effect of treatment (treatment vs. control), time (over the 3 survey periods) and the variables of age, years involved in program, gender, and treatment\*time on WHEP participant skill ratings as measured by a linear mixed-effects model fit by maximum likelihood, 2005. (Effect significant at \* $P < 0.05$ ).

Skill	Treatment		Time		Age		Years Involved		Gender		Treatment*Time	
	Estimate	P-value	Estimate	P-value	Estimate	P-value	Estimate	P-value	Estimate	P-value	Estimate	P-value
Get Along	-2.54	0.109	-2.67	0.064	0.02	0.823	-0.04	0.857	-0.48	0.385	1.34	0.169
Team Discussion	-5.08	0.009*	-3.91	0.008*	0.03	0.766	0.07	0.717	-0.20	0.694	2.62	0.017*
Chance To Speak	-3.91	0.011*	-4.71	0.001*	-0.15	0.148	0.05	0.815	-0.78	0.196	2.61	0.004*
End Disputes	-4.23	0.010*	-3.37	0.014*	-0.16	0.104	-0.06	0.765	-0.89	0.099	2.39	0.012*
Difficult Concepts	-3.07	0.063	-2.53	0.0742	-0.02	0.864	-0.13	0.536	-0.28	0.599	1.27	0.203
Guide New Members	-3.27	0.086	-2.46	0.091	-0.18	0.095	0.22	0.252	0.15	0.778	2.02	0.061
Sharing Ideas	-4.16	0.009*	-5.03	0.001*	0.02	0.849	-0.10	0.630	-0.98	0.088	2.52	0.010*
Decision Making	-2.78	0.071	-2.58	0.062	0.07	0.434	-0.20	0.331	-0.47	0.371	1.28	0.162
Judgement Calls	-1.43	0.353	-1.56	0.262	-0.16	0.118	-0.03	0.89	-0.71	0.208	0.51	0.597
Ability To Talk	-1.31	0.399	-1.18	0.388	0.03	0.755	0.01	0.94	-0.65	0.241	0.59	0.531
Taking Notes	-1.58	0.287	-1.95	0.150	-0.03	0.785	0.03	0.859	-0.64	0.228	0.60	0.519
Written Paper	-1.09	0.482	-1.94	0.188	-0.08	0.442	0.10	0.624	-1.16	0.060	0.41	0.684

contest survey and post-contest survey (as indicated with a value less than one, Figures 4-6). Home-schooled youth were more likely to see a change in their skills (as indicated with a value greater than one) after participation in the program, or between the post-contest survey and 6-month post-contest survey. The only exceptions to this statement were for the following skills where more public/private school youth claimed an increase after program participation: “getting along with team members” and “giving others a chance to speak” in group discussions. These tests indicated a delayed reaction in perceived skill increase for home-schooled youth compared to their public/private school counterparts.

In a comparison of past participants’ skill ratings before and after program participation, I found past participants experienced a significant increase in skills attributed to program involvement (Table 12). Past participants believed WHEP helped them improve in all 12 of the social and leadership skills listed in the survey. Using an odds ratio estimate to look at length of involvement as a predictor of skill increase, I found respondents were more likely to claim a significant increase in only 2 of the 12 skill statements the longer they were involved in the program (Appendix C). The statements were a “confidence in team discussion” and “allowing everyone a chance to speak in team discussion.”

*Interview Results.*--Along with learning about wildlife, the other major benefit of participating in the WHEP contests according to youth during their focus group sessions was learning life and leadership skills such as teamwork and public speaking. As shown in the following statements made by WHEP contest participants, these apparent benefits

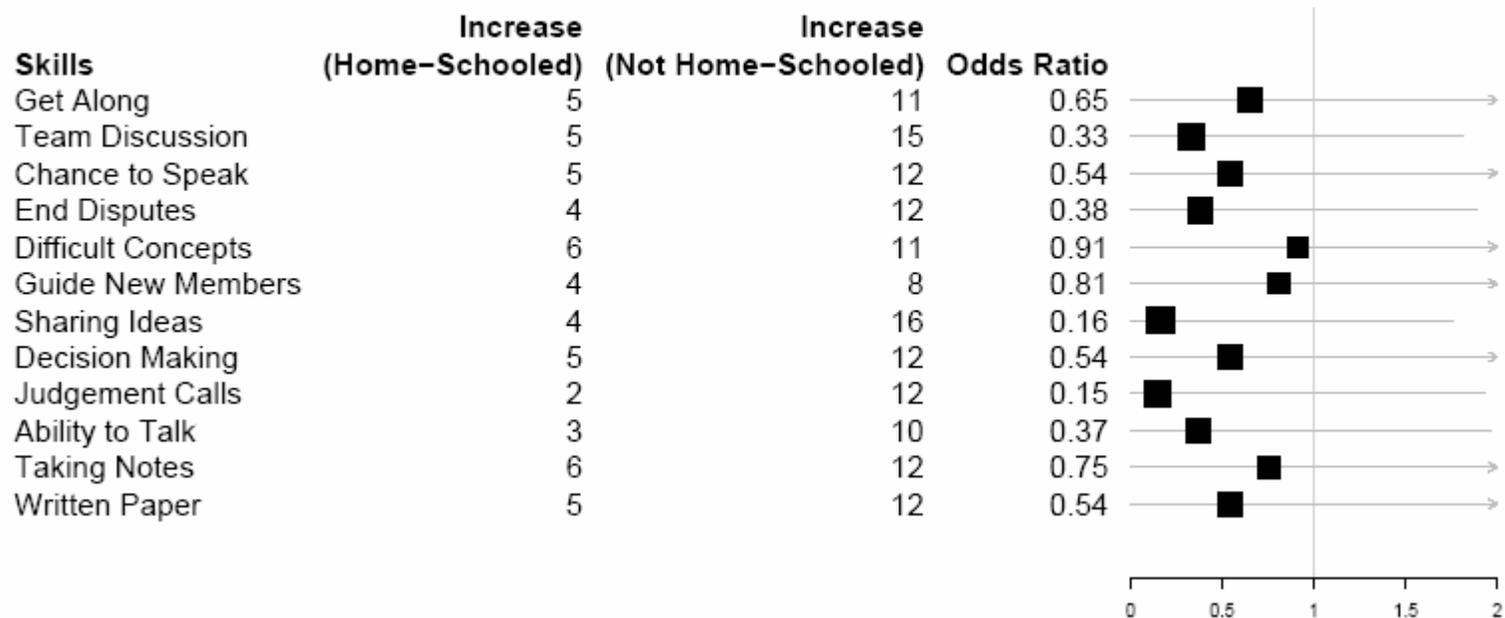


Figure 4. Odds ratio estimates with confidence intervals for pre-contest to post-contest surveys for WHEP non-home-schooled and home-schooled youth, 2005. Estimates less than 1 indicate that non-home-schooled youth in WHEP were more likely to claim an increase in skill than the home-schooled youth during that time period. Estimates greater than 1 indicate that home-schooled youth were more likely to claim an increase in skill during that time period than the non-home-schooled youth.

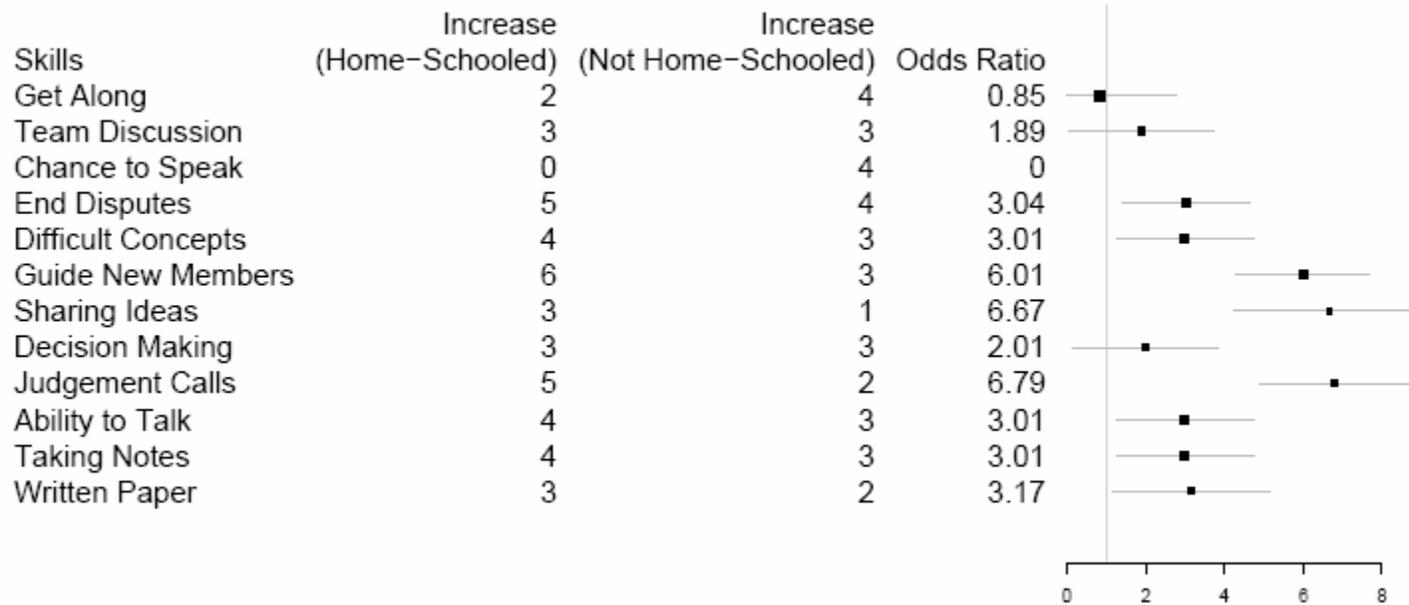


Figure 5. Odds ratio estimates with confidence intervals for post-contest to 6-month post-contest surveys for WHEP non-home-schooled and home-schooled youth, 2005. Estimates less than 1 indicate that non-home-schooled youth in WHEP were more likely to claim an increase in skill than the home-schooled youth during that time period. Estimates greater than 1 indicate that home-schooled youth were more likely to claim an increase in skill during that time period than the non-home-schooled youth.

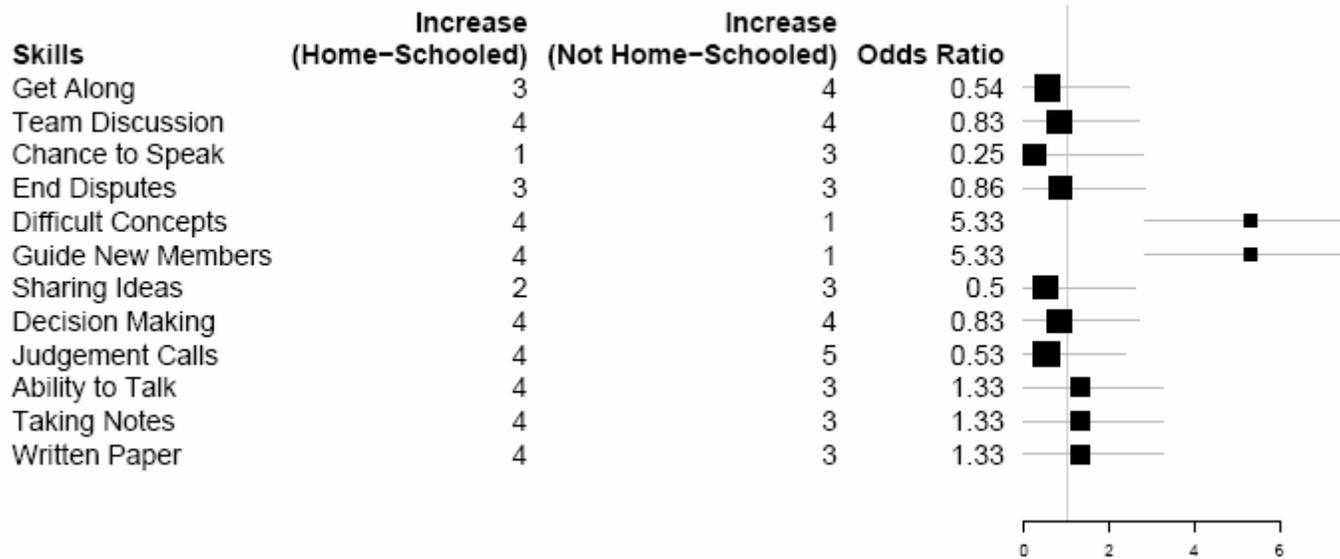


Figure 6. Odds ratio estimates with confidence intervals for pre-contest to 6-month post-contest surveys for WHEP non-home-schooled and home-schooled youth, 2005. Estimates less than 1 indicate that non-home-schooled youth in WHEP were more likely to claim an increase in skill than the home-schooled youth during that time period. Estimates greater than 1 indicate that home-schooled youth were more likely to claim an increase in skill during that time period than the non-home-schooled youth.

Table 12. Mean difference in life skill rates of past participants before and after participation in WHEP as measured by paired sample t-tests, 2005. (Difference significant at \* $P < 0.05$ ).

Skills	Mean Diff.	SD	Lower CI (95%)	Upper CI (95%)	P-value
Get Along	-0.32	0.478	-0.546	-0.086	0.010*
Team Discussion	-0.68	0.582	-0.965	-0.404	0.000*
Chance To Speak	-0.58	0.607	-0.872	-0.286	0.001*
End Disputes	-0.63	0.684	-0.961	-0.302	0.001*
Help With Diff Concepts	-0.63	0.761	-0.998	-0.265	0.002*
Guide New Members	-0.89	0.937	-1.346	-0.443	0.001*
Sharing Ideas	-1.05	0.848	-1.461	-0.644	0.000*
Decision Making	-0.84	0.765	-1.211	-0.474	0.000*
Judgement Calls	-1.05	0.705	-1.392	-0.713	0.000*
Ability To Talk	-1.37	0.895	-1.800	-0.937	0.000*
Taking Notes	-0.95	0.705	-1.287	-0.608	0.000*
Written Paper	-0.68	0.671	-1.008	-0.361	0.000*

to program involvement were somewhat age dependent, with the older youth putting more emphasis on learning these skills than the younger children. According to one senior level youth at the Houston Livestock Show and Rodeo:

It constricts your ability to be able to express yourself as to...and defend your opinions on your aerial photographs. Aerial photographs really...makes you...study very hard on the animals that you are managing on because you have to know exactly the...requirements for each animal in order to orally defend yourself, and say “this is the reason that I picked these aerial photographs this way; this is what this animal needs and this is why I did it (HLSR1-2).

Following the lead of his team member, another senior level youth went on to explain how WHEP “also helps just in...character building, to be able to speak in front of people and give your opinion, and be able to back up what you’re reading and why you’re doing what you’re doing” (HLSR1-3). In another focus group, one senior youth went so far as to complain about the contest because the program coordinators had cut oral reasons out of the HLSR contest due to a time constraint. The youth went on to say

“one thing is...with this contest, what I didn’t like is they didn’t do the oral reasoning’s...cause that’s like a huge, important thing. You have to be able to talk and...really know your stuff to explain it...”

Additional comments about the importance of oral reasons in activity 2 by older participants included the statement by one female youth, who said “I can tell people what to do if they want a certain animal on the land now. They...come to me if they have questions, like part of my family.” The same youth went on to say later in a conversation about the oral reasons portion of activity 2 in the WHEP contest “...it’s a really good thing to help you learn...good speaking skills for when you have an interview for a job. And that will help you become in sync with why you need to do that. So it does help you” (HLSR5-3). Her teammate then added:

Well oral reasons, I mean...that’s just pretty much coming with everything that you know, and...You know, you have to take everything that you’ve learned about that species and you just have to put it into one...and describe the set of aerals that you’ve got and why one’s better...drop on everything that you know. So it looks like...you have to be able to remember everything. You have to have good memory skills. You also have to have good writing skills and just like she said, speaking skills to get your point across (HLSR5-2).

In comparison to the statements of older participants, most of the younger kids were more uncertain about their skills. They tended to vary in their level of comfort with doing activities, especially those involving public speaking. Examples of this disparity include 2 statements from junior level youths at the state WHEP competition. The first youth claimed to “like doing oral reasons for some reason” (STAT1-1), whereas the second youth from the same team said “I don’t like them [oral reasons]...I’m very talkative, but I don’t want to do the oral reasons” (STAT1-3). In the

case of speaking to one's own team, one youth responded "Yeah...well...I feel really confident cheering, like with a team and stuff. When we have practices together with our other team, I would feel confident sharing stuff" (STAT2-1). Statements such as these demonstrated the existence of a maturity gradient in relation to the importance of learning life skills for future use by participants.

On top of learning life skills while in WHEP, an additional perceived benefit (though usually not mentioned directly) was the general enjoyment of participating in a contest. The youth expressed how they liked to compete in activities, often remarking as an afterthought how much fun they had had in the preparation as well as competition itself. One team at the state contest even went so far as to create an additional management plan of outdoor enthusiasts. One of the youth from this junior level team went on to say "It's a good program and everything. I mean, I like it... you know if anybody was thinking about canceling it, I'd have to protest" (HLSR3-1).

### **WHEP Participation and Dynamics**

*Career Recruitment from WHEP Participation.*--Four out of 21 participants expressed an interest in becoming a wildlife manager. One senior level youth expressed his interest in a career in wildlife, stating "I've learned that...it showed me that...I want to study wildlife management when I go to college. And then hopefully be a wildlife manager. And this has helped me decide that's what I really want to do" (HLSR4-3). A junior youth at the state WHEP contest was a little less sure of his future career, saying "I'd kind of like being a teacher, but I...want to be a wildlife biologist now" (STAT1-3).

Youth who did not articulate an interest in becoming a wildlife manager felt they could incorporate their wildlife knowledge into other aspects of life, education, and work such one senior youth, who explained “If I go to University X...I hope to get into agriculture, but...I don’t know, like if...the professor gives us an assignment, I might know what he’s talking about more” (HLSR6-3).

*Adult Perceptions of Program and Reasons for Involvement.*--According to the parents of youth involved in WHEP and the coaches guiding them, the benefits to participation included learning about wildlife, management techniques, social and leadership skills, ideas about environmental stewardship, and options for a future career in natural resources as well as the overall life experience from participation in an extracurricular activity. A parent at the Houston Livestock Show and Rodeo, addressing his kids’ knowledge about wildlife, stated “I do know they didn’t know a lot of these species until they started this. Some of the species we’re going to manage for, they did not know what they were. Just for an example, the American kestrel. They did not know what it was until they did WHEP” (B1-P1). Another parent commented at the end of their post-contest parent survey: “The WHEP program is a very good program. I feel that our kids have learned a lot and they enjoy it” (B1-P2).

Most of the perceived benefits to program involvement were shared with the youth, though certain benefits received more emphasis from the parents and coaches than others such as learning social and leadership skills (mentioned most often). According to the same parent who spoke above about his children’s increase in knowledge, “...this program also makes them talk it out...work it out. You got a

difference of opinion...you got the book there...it's where they can discuss it out and rational[ize]...as young adults" (B1-P1). Another parent described how her daughter was benefiting from participation because the program gave her child experience with leadership responsibilities. She said "She is so much younger than the others on the team, so it will be a while before she can lead any part; this is great for developing her skills in this leadership area as well as the wildlife skills. It's a great program" (H3-P1). A third parent spoke about the program's benefits to public speaking skills, saying "WHEP is helping [youth] to work together as a team - contest helps learn the importance of learning to take care of property and animals. Oral reasons help to express themselves and prepare for interviews in the future" (B1-P2). A team coach stated her feelings of WHEP best, saying "WHEP is a great venue for the kids to learn life skills, leadership and self-esteem by learning, doing and teaching" (D2-C)

Besides knowledge and skill increase, other advantages to participating in WHEP were noted. According to one parent, who commented on the program's educational style:

The WHEP program is by far the best part of 4-H for our family. It is a great complement to the classically academic education that they are receiving, with the WHEP's emphasis on obtaining information (e.g. through memorization) and use of rhetoric (as with the written plan) in contest. We would like to see even more intellectual challenge, keep balance in all of these areas (H3-P1).

Other benefits were more environmental in nature, speaking to the program's influence on youths' feelings on conservation stewardship. One parent stated in the comments section of a parent survey "WHEP is a good program for young kids to understand about there environment. And that it needs to be managed and taken care of because the world

we live in is not getting bigger” (L5-P1). A final benefit to participating, according to program coordinators, was their ability to broaden the youths’ options in future careers, such as a career in wildlife, fisheries, or a related natural resources field.

*Adult Survey Results for Contributions Attributed to WHEP.*--From a 3 survey process (similar to the ones administered to WHEP participants and controls) involving parents and coaches of the WHEP contest, I found parents and coaches could not determine a change in social and leadership skills in their youth over time (Appendix C). They did, however, tend to rate the youths’ skills as high, especially “get along with members of their team” and “feel comfortable sharing ideas.” Two of the lowest rated skills were “ability to make judgment calls when team is undecided” and “feeling confident when turning in a paper they have written.” Parents, coaches, and past participants of the program were also asked questions pertaining to WHEP’s contribution to the following items: knowledge of ecological systems, interest in learning, confidence in abilities, understanding need for resource management and sustainability, feelings of respect and responsibility for the environment, and ideas about a career in natural resources management. According to the results (Figures 7-8), all items received a high percentage of positive responses with “knowledge of ecological systems” ranking the highest. Though still receiving a high percentage of “yes” answers, “ideas about a career in natural resources management” was lowest. The percent contributed to WHEP by past participants included 100% for ecosystem knowledge, 79% for their interest in learning, 95% for increase in confidence, 100% for

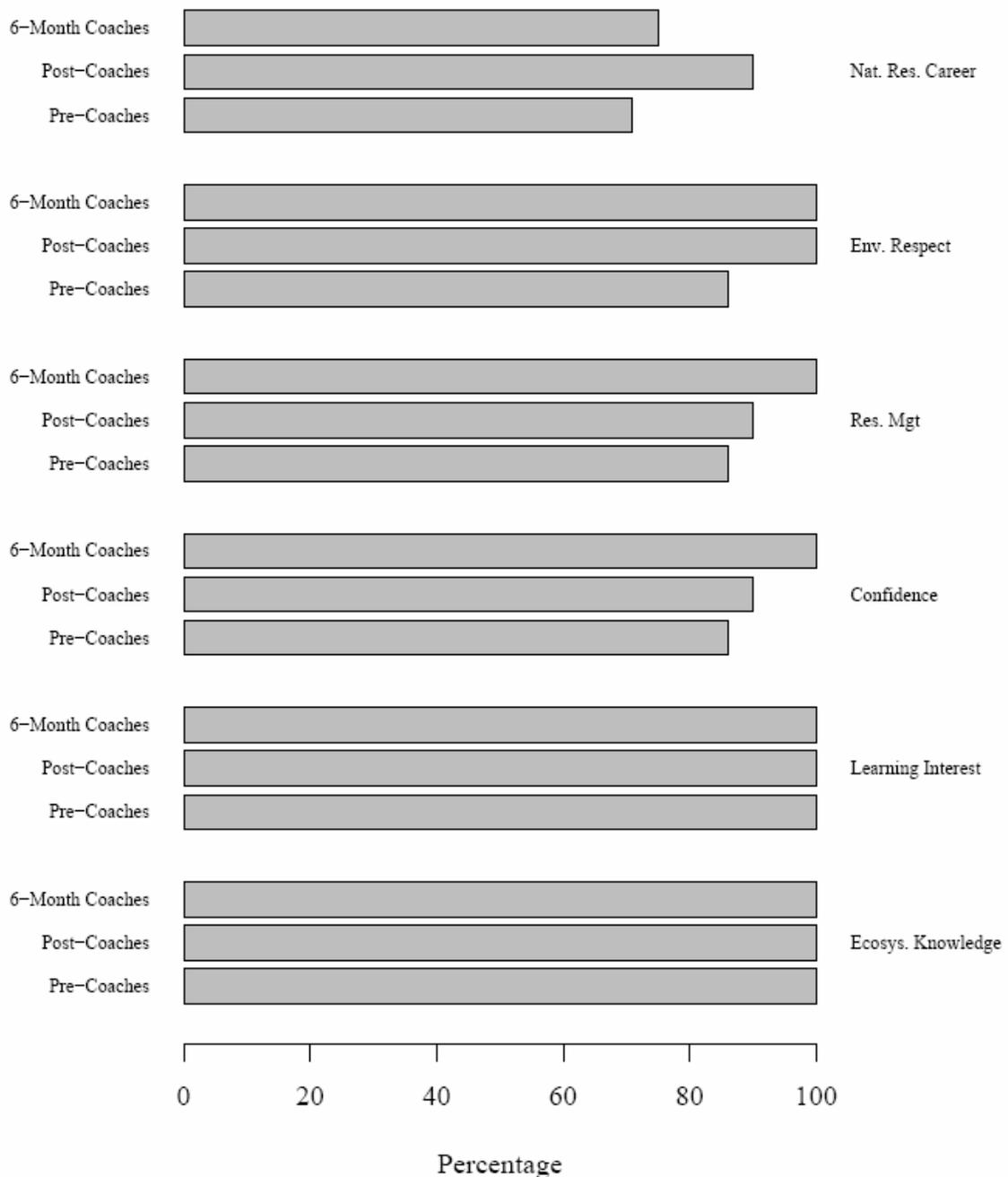


Figure 7. Percentage of coaches (by survey) claiming an impact on knowledge of ecological systems, interest in learning, confidence in abilities, understanding need for resource management and sustainability, feelings of respect and responsibility for the environment, and ideas about a career in natural resources management attributed to participation in WHEP, 2005.

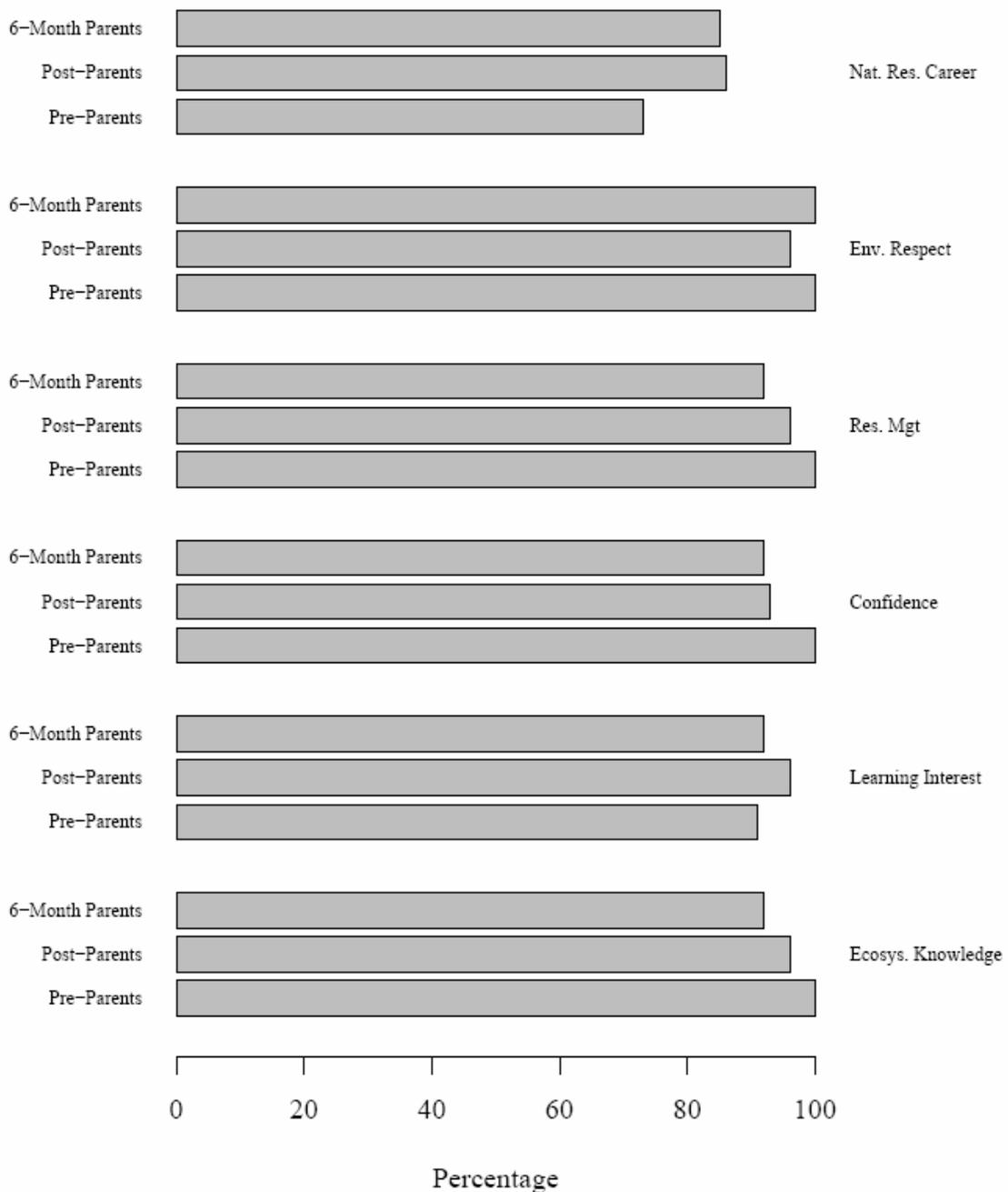


Figure 8. Percentage of parents (by survey) claiming an impact on knowledge of ecological systems, interest in learning, confidence in abilities, understanding need for resource management and sustainability, feelings of respect and responsibility for the environment, and ideas about a career in natural resources management attributed to participation in WHEP, 2005.

understanding a need for natural resource management, 89% for environmental respect, and 89% for ideas about a natural resource career.

*Program Concerns.*--During discussions with parents, coaches, and program coordinators, most of the dialogue focused on perceived issues with specific aspects of the contest and its participants (though the adults generally praised the contest as a whole). These issues tended to fall into one of two categories: internal frustrations (within team) or external frustrations (outside of team). Most of the internal frustrations either expressed by the parents and coaches or observed by myself were issues with determining a practice schedule, other scheduling conflicts with team practices, disputes among families, or disputes between a family and the coach. In a phone interview with one coach, he mentioned a “falling out” with a family, stating how youth from this family were “too independent, didn't follow rules, and didn't work well in a team.” A past WHEP coach said she had a similar experience, eventually leading to the discontinuation of the program in her county.

Unlike the internal frustrations, external concerns were generally between parents/coaches and Extension or parents/coaches/4-H county agents and the WHEP steering committee (program coordinators). The complaints from parents and coaches involved lack of communication with program coordinators, poor information dissemination, inconsistencies with the contests (year to year and between contests within the same year), lack of sponsorship to help with contest expenses, and lack of assistance to those who did not feeling qualified to teach material (usually parents and new coaches). Three parents stated how they did not feel knowledgeable enough about

the subject to help their kids, much less provide instruction on what was provided in the WHEP practice manual. They followed these sentiments with requests for support from contest coordinators. Additional examples of coaches expressing their concerns with WHEP and Extension were as follows:

1. “The program needs more support from State Extension. Most of the time it feels like this contest is a poor stepchild to other programs that are not nearly as worthwhile” (H3-C).
2. “The program is not consistent [from year to year]” (R7-C).
3. “We have been part of WHEP program for X years and have found that the program lacks consistency in how the contests are run and scored. I would also like to see more opportunities for contests, the idea of San Antonio is nice. In the future I think it would be nice to receive information in a more timely manner. Overall the program is wonderful, it just needs fine tuning!” (L5-C).

WHEP participants also mentioned some concerns with the 2005 contests. Since all focus groups were conducted directly after the HLSR and State WHEP contests, most youth shared their feelings about how the contests were run. From these statements it was observed that youth generally complained or made comments about anything that took away from their contest experience or impacted their sense of enjoyment in competition. In the following statement, one senior level youth from the Houston Livestock Show and Rodeo contest relayed his frustration with having to use the same location every year, finding it less exciting and possibly less challenging than if the contest was held at a new location. He said “I mean, it’s nice and everything, you know.

The facility is nice and the land is nice...but...we've done it for the past, what, three or four years here" (HLSR5-2). Another youth, junior level, made the comment after the state contest explaining her annoyance with having to wait to present oral reasons, "Yeah, they should have more places where we can...or more people you can tell because we couldn't go for like an hour and thirty minutes" (STAT1-3).

Other complaints made by youth were mostly influenced by comments I observed being made by parents and coaches in the youths' presence. When youth were asked in the focus groups if they had anything they would like to share about the contest that day, they would generally repeat the same statement made earlier by an adult from the same team. I therefore assumed youth would have been clueless to the perceived flaw if they would not have overheard the adults' discussion.

From the perspective of the program coordinators, their frustrations consisted of issues with program participants and meeting their demands. Program coordinators articulated difficulties in catering to all groups and their needs with a limited amount of resources, time, people (almost all of whom were volunteers), and funding. In a statement from a steering committee member after having to cancel the WHEP workshop scheduled for December 5, 2005 due to a lack of commitment from counties interested or currently participating in WHEP: "And I thought [coordinating] research projects were hard!" (SCM-1).

*Home-schooling in WHEP.*--An interesting discovery made while evaluating the WHEP contests was the high number of home-schoolers who participated in the program. From telephone interviews with 4 coaches, I found this was a common trend

not only in WHEP, but also in the rest of the Texas 4-H and Youth Development Program, since 4-H expresses similar values as those exhibited in home-schooling families. According to two of the interviewed coaches who had home-schooled youth on their teams at one point or another, home-schooling families generally used the program in one of three ways: as a supplement to or a part of their science curriculum, as an academic-oriented extracurricular activity, or as a way to socialize their children. The first use mentioned (part of science curriculum) has been a point of contention amongst the competition participants for a long time since coaches and parents with youth in public or private schools felt their kids were at a disadvantage to youth who had more time to spend on the material. They believed WHEP was part of the home-schoolers' studies, not just an extracurricular activity (statement unsupported by knowledge tests, Table 8). According to one of the coaches with home-schoolers, only a small portion of parents that home-school their children used the contest material for the purpose of curriculum supplementation.

*Levels of Participation in WHEP.*--Because the Texas 4-H WHEP contests function at such low levels of participation compared to other 4-H programs (36 youth at the 2005 state contest, 26 youth at the 2006 state contest), I wanted to examine how people participated in WHEP and for how long. From observations and discussions with parents and coaches both current and past, I found participants come into the program in either one of two ways: with the help of a 4-H county agent or someone else in 4-H (71% of coaches and 92% of parents) or by self discovery of the program (29% of coaches found out about WHEP through trainings, 21% of parents found out from a

friend or relative). Since it was revealed that WHEP is not a highly promoted program in Extension (except for in a few stronghold counties), the program has depended on parents stumbling across it randomly and recruiting youth through their children's 4-H clubs, friends, and neighbors. One coach, whose children were past participants of the program, mentioned that he went to 4-H clubs all around his county to promote the contest in order to keep it going, though he also had extensive help from his 4-H county agent. I also found that most coaches were parents who had children currently in the program or had children participate in the past. In two cases county agents themselves were the coaches, though one of these agents had his own children in the program at one point and the other has since left that county.

Besides answering how people entered WHEP, I also was interested in how long they stayed in the program. I observed that counties with actively promoting county Extension offices tended to have more staying power than counties with teams led by parents since most parents only coached until their own children were finished with the program. I found only two exceptions where a parent continued to coach after their own children were too old to participate. Other teams coached by parents would tend to dissolve. Factors that influenced the youth's duration of involvement were the youth's initial and continued interest in learning about wildlife as well as their participation in other extracurricular and social activities.

## DISCUSSION

Positive attitudes toward wildlife science and management and developed thoughts of conservation stewardship are the goals of the Texas 4-H Wildlife Habitat Evaluation Program. Realizing these goals, it is understood that wildlife values and concepts of conservation and stewardship are interrelated (Cooper 1999). Required components of these concepts include environmental sensitivity, knowledge, and empowerment through social and leadership skills (Siemer and Knuth 2001). It is also understood that attitudes are influenced by ones values, and that these values are determined during a youth's development. According to Kidd and Kidd (1996: 119) "life-long attitudes and behaviors toward all animals are based in large part on childhood experiences." Therefore, through examination of knowledge, attitude, and life skills of WHEP youth, success of WHEP as a conservation education and 4-H program may be discovered.

According to the findings of the 2005 study, the Texas 4-H WHEP contest had an impact in respect to its goals of teaching youth about wildlife management and life skills as well as promoting ideas of environment stewardship and career options in the natural resources field. Overall an increase in wildlife knowledge was the most obvious benefit to program involvement with WHEP participants receiving an average score 24% higher than the control group. Attitudes of the youth were pro-management, but most came into the program with this stance due to their backgrounds in outdoor recreation. WHEP youth were also at various stages in the developmental process of becoming conservation stewards, generally with older youth feeling more aware of environmental

issues and needs than younger participants. The perceived increase in life skills over the 9 month survey period was less apparent to youth, but past participants claimed a significant increase when reflecting on their experiences with the program. Parents and coaches also gave high ratings to current participants' life skills when asked about their observations, but WHEP could attempt to focus more energy in this aspect of the program. When it came to career options, only 19% of current participants expressed an interest in a career in wildlife management, but 22% of past participants were either in school or employed in a wildlife related profession. Another 11% were in related programs such as zoology and marine biology. These results therefore demonstrated various degrees of success in obtaining program goals, thus legitimizing the goals as acceptable objectives for program involvement.

In the rest of the section, I will first address the 3 components mentioned above: attitudes toward wildlife and conservation, life skills, and wildlife knowledge of program participants. Career recruitment and long-term program impact (examination of past participants' attitudes and career choices) follows. Then discussion moves to the dynamics of WHEP involvement including participant demographics and length of county activity. Finally, the last portion of the discussion concentrates on program issues associated with participation.

### **Attitudes**

*Attitudinal Shifts.*--According to Kellert (1983), participants of environmental programs such as WHEP knew about animals and were interested in the wellbeing of wildlife and the environment, thus having attitudes that favored conservation. During

the 9 month survey process, I found that WHEP participants experienced little change in attitude statements because they already had positive views toward wildlife management and conservation. This differed drastically from an attitude study on the Texas Master Naturalist program where participants changed their attitudes on half the statements after being in the program (Bonneau 2003). Significant changes in WHEP youth response included more acceptable reactions to hunting as a management practice and the management of public forests for multiple uses. Youth were more uncertain about the acceptability of eliminating predators that prey on threatened or endangered species.

Additionally, less significant directional change occurred in response to other statements suggesting that WHEP participants already had well established attitudes toward wildlife and wildlife management techniques. Most responses to the attitude statements hovered in the area of uncertainty. Youth may have understood that some statements were more complex in nature, and depended on the present situation. The response to 2 statements were more concrete in their rating choice, such as the youths' strong agreement with the statements "Natural resources must be managed to ensure their availability for future generations" and "It is important to have a variety of successional stages in a forest." These attitude ratings demonstrated a strong belief in the necessity for management, thus demonstrating a pro-conservation stance. Past participants rated all but 2 statements in a similar manner, suggesting that attitudes would not easily change in respect to wildlife management and related practices after program involvement.

In the comparisons between WHEP participants and control youth responses, there were also few differences found. These differences were in reference to the use of prescribed fires as a management practice (WHEP participants more receptive to this idea) as well as the elimination of predators preying on threatened or endangered animals (WHEP youth more accepting) and managing forests for multiple use (WHEP participants agreed with statement). This indicated that WHEP youth were more accepting of some of the management actions listed, but were in overall agreement with their control counterparts on their feelings toward wildlife management. This lack of variation between the two groups suggested a strong influence from their wildlife values (e.g. recreational, aesthetical, and educational) since WHEP participants and controls had similar recreational and extracurricular backgrounds (hunting, camping, nature viewing, hiking, scouting, sports, etc.). This was supported by Kellert and Berry's (1979) survey findings, stating that a person's attitude toward wildlife is not only influenced by their education, but also their animal experiences and participation in wildlife related activities.

*Conservation Orientations of Similar Programs.*--In a rough comparison between the Texas Master Naturalist Program and Texas 4-H WHEP contest (considered a rough comparison because rating scales were slightly different for youth surveys) it was found that both groups had similar reactions to the 12 attitude statements addressing wildlife management practices after program participation. In Bonneau's (2003) study of the Texas Master Naturalist Program, there were a total of 24 attitude statements used to gauge conservation orientation of its statewide members. A scaled-down version was

administered to current WHEP participants, control youth, and past WHEP participants. The mission statement of the Master Naturalist program also had similar characteristics to WHEP. The statement read “The Texas Master Naturalist program is a venture directed toward developing local corps of ‘master volunteers’ to provide education, outreach, and service dedicated to the beneficial management of natural resources and natural areas within their community” (Texas Master Naturalist 2006). Both programs therefore gear themselves toward increasing knowledge of natural systems and leadership skills with the understanding that a well informed public leads to better conservation efforts. Since the Master Naturalist program includes youth education as one of its community services, there could be an opportunity for expansion of WHEP with the assistance of local Master Naturalist chapters.

*Stewardship.*--During interview sessions, the concept of stewardship was addressed to better understand youth feelings and actions toward wildlife conservation. Unlike the discussion about knowledge, where youth enthusiastically pointed out specific animals or concepts they had learned while practicing for the contest, stewardship dialogue was not as forthcoming. For the majority of youth, facilitators had to define stewardship and then give examples of how one would recognize these feelings of responsibility for wildlife. Even with a better idea of the term and what it entailed, a few of the youth were either uncertain or did not recognize themselves as stewards. It was generally older participants who were more inclined to consider themselves conservation stewards due to their experiences and greater understanding of environmental concepts.

The younger children showed signs of being more in the developmental stages of wildlife appreciation, not yet understanding the concept of cause and effect or importance of their own actions. In a study by Kidd and Kidd (1996), it was shown that youth between the ages of 3 and 5 years old expressed egocentrism, focusing on an animal's behavior, appearance, and enjoyable qualities. They also were learning to identify animals, domestic and wild, as well as specific aspects of their appearance and behavior. Between the ages of 6 and 8, they started to demonstrate elements of sympathy and concern for wildlife and their possible endangerment as they learned about animal habitats and classifications. Finally, between the ages of 9 and 12, youth were articulating opposition to what they perceived as unnecessary death of animals (for exhibition, mounting, etc.). At this stage, youth had already learned about animal husbandry and protection as well as the endangerment of species. Though this study was in reference to youths' experiences at a museum in California, it demonstrated the development process of attitudes to stewardship, which was similar progression exhibited in the WHEP participants, ages 8 to 19.

### **Life Skills**

*Skill Statement Responses.*--In the skills section of the results, I found that time and treatment (participants vs. controls) had an effect on perceived increase of 4 skills, all of which were related to teamwork and team leadership dynamics. These skills are important qualities for participants since 2 out of the 5 WHEP contest activities involve working as a team to develop management plans (rural and urban). WHEP youth ratings of the other 8 skill statements were consistent with non-WHEP 4-H youth, and did not

experience significant change over time (though some minor increases did occur). Since all 4-H programs promote “life” skills, it could be assumed that there would be similarities in skill ratings between the two groups.

The majority of the control group was made up of youth involved in Texas 4-H Shooting Sports. According to Jenke (2003), participation in the Texas 4-H shooting sports program had a positive impact on life skills gained by youth. These skills included “interest in conservation,” “interest in school and education,” “ability to talk to parents and adults,” and “ability to get along with people.” Most of these skill statements were comparable to WHEP study statements such as “I get along well with members of my team” and “I have the ability to talk to family and others about wildlife and wildlife management.” These statements also received relatively similar ratings between WHEP participants and study controls containing Shooting Sports youth, demonstrating the benefits of involvement in Texas 4-H & Youth Development programs.

*Skill Importance.*--During the interview sessions, youth talked mostly about developing their teamwork and leadership abilities. Many of the younger participants focused most of their discussion on working as a team, sharing ideas and supporting one another in their achievements. Though they agreed public speaking skills were important, they dreaded participation in the activity. Older youth, on the other hand, believed public speaking was an important part of the contest experience because it forced them to think critically and articulate their thoughts to others. They had a better grasp on the importance of learning these skills because of their experiences either in

school or work. The older participants were probably already starting to apply these skills in other avenues. This gradual realization of the value of learning life skills on the part of the participants demonstrated perfectly the youth development process.

*Variable Effects on Life Skills.*--No strong effects from predictor variables such as age, years involved in program, and gender could be determined. A larger number of participants would be needed to find trends in the data. Age and gender potentially influenced perceived skill increase, demonstrating a possible effect on program involvement if more youth were added to the study.

Unlike the other indicator variables, type of schooling did have an effect on skill gain as youth progressed through the program. Study results indicated that youth who were home-schooled had a delayed reaction in their perceived increase in skills since they were more likely to claim an impact 6 months after contest completion as opposed to during contest training. They were also less likely to claim an impact on 2 social skills even after the 6-months. This finding contradicted a paper on home-schoolers that referenced multiple studies where home-schooled youth appeared well socialized in comparison to their non-home-schooled counterparts. Socialization was defined as “the process whereby people acquire the rules of behavior and systems of beliefs and attitudes that equip a person to function effectively as a member of a particular society” (Durkin 1995b:614 as cited in Medlin 2000).

According to interview informants, the main reasons for participation from this subgroup of WHEP participants were interests in wildlife and competition for the youth, and socialization and practice in test taking from the parents' perspective. Recent

observations of the 2006 HLSR contest brought to attention some other discoveries with this group, such as a difference in test taking styles and more difficulty in dealing with scantron (bubble sheet) usage. Two home-schoolers in particular were much slower in their timed activity sessions, and more easily distracted by their surroundings than the other youth. Even with the time lag on skills increase and other anomalies, home-schooled youth do seem to benefit from program involvement when it comes to improving their social and leadership skills.

*Program Reflection in Relation to Skills.*--Unlike the current participants and non-WHEP 4-H'ers, past participants of the program claimed to have seen an improvement in all skills when reflecting on their experiences. This suggests a longer period of time was needed to gauge self improvement in relation to program participation. Years involved in WHEP seemed to have mild effects on life skills. Similar results were found in a study involving 4-H alumni from Nebraska. Fox et al. (2003) found that 4-H club experiences had a positive impact on a youth's technical, communication, personal/social, and leadership skills, especially the development of responsibility. Alumni varied in their length of participation, ranging from 3 to 13 years. Average participation was 9.2 years.

### **Wildlife Knowledge**

*Knowledge Score Dynamics.*--From the results I found WHEP participants' mean knowledge scores were higher than their control counterparts, but little to no change in scores (mean scores and scores by question) occurred as youth proceeded through the program. This lack of change between pre-contest and post-contest scores could be due

to receiving some pre-contest surveys late, causing a disruption in study design. Also, some counties were experiencing last minute changes in their team line-ups (due to time conflicts with other commitments, illness, or program drop-out); so, not all youth at the state contest filled out pre-contest surveys. These two reasons, along with the possibility that youth change their focus from knowledge gain to skill increase after a few years in the program, could have led to a lack of change in mean scores during this time period. Cromwell (1998) made a similar discovery with his Alabama WHEP youth, reporting a lack of competitive behavior the greater their experience with nature. As a contrast to the above statement, I found the lack of change between the post and 6-month post-contest surveys to be a positive result, suggesting high retention of knowledge up to 6 months after contest completion. This supported Byford and Munsey's (1984) findings of high knowledge retention in their Tennessee WHEP alumni.

*Variables Impacting Knowledge Scores.*--In an attempt to determine what factors (age, residence, gender, years involved in program, and years involved times gender) had an effect on participant knowledge scores, no strong predictors were present. It was possible that a larger sample of youth would be required to develop any such trends, but this would necessitate more youth participating in the program. In the study conducted by Naylor (1996: 39) on the Kansas WHEP contest, he also found no influence from gender or residence on mean knowledge scores. Naylor did find that income (youth from lower income families had higher scores) and experience in the Vocational Agriculture program were significant factors in producing higher mean knowledge scores.

During focus group interviews, youth from rural areas tended to note the possibility of having an advantage over youth in more populated areas because they had better access to wildlife on a daily basis, and could practice management on their own properties. According to one senior level youth “It’s great...It’s great for kids that... [live in] cities that want to learn about the outdoors. You know, cause we already... [live] close to the woodlands. We’re outdoors, we’re [in] a rural area, but they don’t have as much chance...” (STAT5-3). Though no solid trends existed in relation to residence, rural youth felt they had a better knowledge of wildlife going into the contest.

Type of schooling was also a variable considered for assessment. As mentioned during an interview with a WHEP coach, there have been feelings of inequality between teams with home-schooled youth and those without. According to a few coaches, this perceived unfair advantage stems from the belief that home-schoolers have more time to spend with the material since they either use it as part of their science curriculum or they just are not involved in many other extracurricular activities. Though there was no significant difference was found, the trends lent some credence to the accusations of a time advantage.

*Perceived Knowledge Gain.*--Besides the knowledge scores from the survey portion of the study, the interview data also demonstrated a perceived gain in wildlife knowledge amongst WHEP participants. As mentioned in the results, most junior level youth reported a high interest in learning more about animals and the outdoors. They talked about paying better attention to outdoor occurrences, and learning more about animals they had not heard of until they started studying the material. Children chatted

most often about how they wanted to know information such as where animals lived and what they ate; dropping words like habitat and ecosystem during their discourse. Older youth also talked about these same interests in learning more about the wildlife, but they went a step farther, wanting to better understand how to manage for wildlife. Some of these older participants discussed how they were trying to implement management plans on their own properties with the help of their families, thus applying their knowledge to real life. This was similar to Naylor's findings (1996), where 44% of Kansas youth developed and implemented a wildlife management plan after participating in WHEP, 56% applied their knowledge to other school projects, 32% taught other WHEP participants about wildlife, and 61% taught people not involved in WHEP about wildlife as a result of their own participation.

### **Dynamics of WHEP Participation**

*Parental Reasons for Involvement.*--Parents who have discovered the WHEP program either through a 4-H agent or friend have entered their children in the program to encourage their interests in wildlife as well as improve their life skills. Though none of the parents were in a natural resource related profession, they wanted their youth to have a grasp on conservation issues. According to Kidd and Kidd (1996), parental attitudes toward animals (this could be expanded to conservation) influence youth attitudes. Since most of the youth were active outdoors with their family, it could be assumed that these parents considered themselves conservation stewards to one degree or another, and wanted their children to have a similar understanding of and respect for conservation and natural resource management. Though a career in wildlife was not

considered a reason for participation, it was seen as a benefit; opening the youths' minds to different future employment options.

Besides instilling wildlife values and knowledge in their children, parents also wanted them to have an opportunity to improve their social, cognitive, and leadership competencies. Overall parents found WHEP to be a rigorous contest, addressing these needs through activities that require determination, confidence in abilities, teamwork and leadership qualities. Home-schooling parents especially found this program beneficial since it gave their children a chance to interact with others as well as hone their test taking skills in preparation for further schooling outside the home. According to Medlin (2000), parents that home-school their children are strongly committed to finding positive opportunities for socialization. For them, social settings should be age-integrated and under sponsorship of the family (Tillman 1995, Medlin 2000). To many of the home-schooling parents involved in WHEP, the contest tended to fit these requirements.

*Youth Reasons for Involvement.*--Initial program involvement by youth was mostly due to parental coaxing, since it was the parents who originally sought out the program as an extracurricular activity. Afterwards youth generally entered into the program because their friends or older siblings were participating. Consequently, youths' early reasons for joining WHEP were primarily to socialize with others, though once involved other interests kept them in the program. Also, because WHEP is a time intensive activity, youths' continued participation was contingent upon personal priorities, maturity, and availability of free time.

Youth who participated in the 2005 WHEP contests tended to be highly active in the outdoors, therefore it was no surprise they were interested in learning more about wildlife. According to Cromwell (1998:v), in a qualitative study of a WHEP team in Alabama, his data indicated that participants had “experiences with nature prior to their WHEP participation,” thus affecting their interest in the program. Most of the youth were also from rural areas, residing either on a farm or just living in the country, and so readily had access to natural areas. These outdoor experiences and general interest in animals were a major determinant of participation for the younger kids involved in WHEP. Though the older youth were still fascinated in learning about animals, their interests deepened into learning about wildlife habitats and how to conserve ecosystems. Other interests such as learning life skills and becoming more environmentally aware became of greater importance. Youth continued to participate in contests because it gave them an opportunity to become more competitive and hone their teamwork, public speaking, and leadership abilities. Older participants were also making connections between the sustainable use of natural resources through management and having these resources available for future generations, a major goal of conservation education programming (Bogner 1999, Whitt 1999, Rovira 2000, and Zint et al. 2002).

An additional reason for involvement in WHEP by some of the youth was their interest in a career in wildlife management or a related profession. A few of the youth made reference to their wildlife knowledge giving them a head start in their future college programs. Seventeen out of the 19 past participants claimed that WHEP gave them ideas about a career in natural resources management or a related field, with 33%

actively pursuing an education in wildlife management or a related wildlife field. These results were close to Byford's 1981 study, where 43% of current project members were interested and 24% were studying in preparation for a natural resources career.

*Fluctuation in County Participation.*--Participation at the county level seemed to be contingent upon the determination of a few county 4-H agents and the parents who serve as coaches. Counties that made up the WHEP contest "stronghold" were counties that have been involved in the program since its inception (group comprised of about 3 counties). Other counties (there have been a total of 17 counties in the last 14 years) have had less staying power, generally participating for a few years and then disappearing again. These short-lived counties tend to struggle with finding youth to keep the program going. Most depend on the participation of a few families (with one of the parents as the coach) and a few odd friends. Though the same could be said with the more long-standing counties, program sustainability in these counties seemed contingent upon continuous recruitment of youth. The county 4-H agents and coaches of these counties tended to actively promote the program (e.g., giving talks at 4-H club meetings and providing training opportunities and practice facilities for the youth), seeking out youth who would be interested in a wildlife oriented contest. Consequently program recruitment at the county level (especially by 4-H county agents) seems to be a key factor in the longevity of the Texas 4-H WHEP contests.

### **Program Issues Associated with Participation**

During discussions with parents and coaches and through attendance of numerous steering committee meetings, multiple program concerns were addressed,

including internal (within county) and external (state program) issues. Focusing on the external issues since they were related to program participation (internal issues tended to be team related disputes between parents or parents and coaches), communication breakdowns, program inconsistencies, and an overall lack of assistance from Extension were listed as the 3 greatest problems. Disseminating information to coaches, parents, and youth was one of the biggest challenges for program coordinators, since contact information was not always current and each group had a preferred mode of communication. Most information was disseminated using e-mail and the WHEP website. Unfortunately, not everyone made on the mailing list and a few of the coaches and parents did not have access to the internet.

Besides communication mishaps, many of the coaches and parents also complained about inconsistencies between the HSLR and state contests as well as the state contest over time. Since the Houston contest was run by the HSLR instead of WHEP, the program coordinator and steering committee was forced to make accommodations for the livestock show to the frustration of participants. The state contest, on the other hand, was run in accordance with the national contest. The state contest had also gone through some transformations with a short list of program coordinators. Each coordinator approached the program differently, thus creating discrepancies in the eyes of long-time coaches and 4-H county agents.

In reference to the issue involving Extension's lack of assistance, 2 points of contention were expressed by adults involved with WHEP. The first was that the 4-H & Youth Development Program put little emphasis on WHEP as one of their programs.

Few counties in Texas are actually known to be promoting this program. Most 4-H county agents are also unfamiliar with the contest, and are already preoccupied with other more established 4-H programs such as livestock showing and shooting sports. The second complaint was targeted at the WHEP steering committee and their lack of support for new parents and coaches. New teams felt disadvantaged when competing against teams that had more experience. New coaches, therefore felt it was up to the program coordinator to provide training opportunities and learning supplies. From the standpoint of the coordinator and steering committee, trainings could be (and were) arranged, but teaching tactics are up to the coaches. Also with a limited supply of volunteers to promote, plan, and implement the WHEP contests, accommodations for all interested parties have not been addressed.

### **Study Issues and Future Research**

*Problems Discovered during Study.*--Over the course of this study, various issues and complications arose. For the quantitative portion of the study, survey response was a major concern. For current participants, parents, and coaches of the 2005 contests, survey response was lowest in the pre-contest and 6-month post-contest surveys. This fluctuation tended to be a result of last minute change-ups in youth participation before contests, and a general lack of interest after contest completion since the 6-month post-contest survey took place during the "WHEP off season." The past participant survey response rate was low due to old contact records (major culprit of the poor response rate) and a general lack of interest in study participation. Control group study participation was difficult for two reasons. First was finding 4-H clubs who were willing to

participate in a study that had no direct impact on them. Second was keeping youth involved in the study. Almost half of the control youth lost interest in the project by the last survey. Overall it was hard to obtain high response rates from multiple groups over the 9 month, 3 survey period.

During the course of the qualitative portion of this study, much valuable information was obtained through the focus group and observation process.

Unfortunately some technical issues occurred during these sessions including:

1. Leading during interviews by facilitator and peers – this problem occurred more with younger teams than older because younger kids had more difficulty expressing their thoughts, in which case the investigator tried to assist.
2. Short and/or formal responses from some of the teams – in these cases, youth generally answered in a “yes ma’am” or “no ma’am” fashion. This was attributed mostly to nerves, but also to some extent, youth attempting to be respectful to an adult in an authoritative position even though the facilitator made an effort not to take on this role.
3. Difficulty with the stewardship question – this question would have been more rewarding if lead-in questions were used when attempting to understand youths’ ideas of stewardship. The tactic used tended to confuse youth more than clarify, since many of the kids seemed unfamiliar with the term when first mentioned.

*Possibilities for Future Research of the Texas WHEP Contest.*--During the course of my research, I discovered many avenues for further investigation. One topic in particular seemed to be of great importance for the continuation of WHEP, not only in

Texas, but also nationally. In discussions with program coordinators in other states, I found that participant numbers varied drastically throughout the country. Certain states such as Alabama and Tennessee had much higher participation than states like Texas. States such as Utah, who no longer have a program, would like to restart. I briefly touched upon this topic during my interviews with team coaches and steering committee members, but did not pursue it to the full extent needed.

Besides researching reasons for low state participation, length of program participation would also be of interest. It would greatly benefit WHEP coordinators to know how they can keep kids involved in the program, and not loose them to other 4-H programs and extracurricular activities.

## CONCLUSION AND STUDY IMPLICATIONS

### Program Expansion

The WHEP contest has existed for the last 14 years on a low level of participation, and had actually decreased in the number of participants from the 2005 contests to the 2006 contests. Program expansion has therefore been an issue since the contest's initiation into the Texas 4-H and Youth Development Program family. Based on these results, I would like to make the following recommendations for program growth:

1. The Texas 4-H WHEP contest could attempt to expand, through program promotion with county extension offices and 4-H county agents, to other counties not currently participating. Possible target groups would include youth already interested in the outdoors (since this was the case for current participants) as well as home-schooling associations looking for rigorous extracurricular activities that provide opportunities for socialization and test taking skills.
2. Focusing on counties with major wildlife and fisheries commodities would also be promising recruitment option (with the belief that WHEP would be well received among people familiar with natural resources management practices).
3. The program could also attempt to target a more diverse audience since the majority of participants were from one ethnic group (Anglo American) living predominantly in rural areas. The program has been adopted in a few denser populated areas, but their continued involvement is not guaranteed. The current

split between the genders also indicated that more males were attracted to the program (69%) than females (31%).

4. Program coordinators could cross-promote WHEP with other natural resources/outdoor-oriented programs such as the Texas 4-H Shooting Sports program, Field & Stream, Texas Brigades, and Texas Master Naturalist. Interest in WHEP was already shown by members of the control group (control group comprised of Shooting Sports and Field & Stream youth). One mother to a control group member said that her son was so curious about the right answers after taking the knowledge portion of the survey that he tried to look up information afterwards.
5. Program coordinators could also continue vigorous recruitment tactics within counties already active through use of county extension offices and 4-H county agents so these counties are not lost when current participating families reach the competition age limit. Counties that seem to make up the stronghold of Texas WHEP are counties with 4-H agents and club leaders who aggressively promote and sometimes even coach the contest.

### **Program Suggestions for Improvement from Adults and Youth**

During discussions with coaches and parents at WHEP contests or during the team observation session, suggestions were given. These ideas addressed ways of improving study time for youth, and providing more training opportunities for adults who felt inadequate in their own wildlife knowledge and teaching methods. Suggestions were as follows:

1. Provide an interactive practice CD for youth – would give youth an opportunity to view sites and aerial photographs, study different scenarios, and practice activities without traveling.
2. Day-long weekend regional trainings for adults – trainings would incorporate talks about effective study methods, hands-on activities that could be used during practices to build different skills, and a field trip to a site where adults could learn how to evaluate a management area for themselves. Weekend trainings were preferred over evening workshops because there would be less conflict with work schedules and more time to do outdoor activities. Also the suggestion of having regional trainings instead of a single training would cut down on travel time for certain counties since the counties active in WHEP are spread out throughout the state.
3. If a county is unable to attend workshops/trainings, make presentations/handouts available on website – this would give counties who have scheduling conflicts an opportunity to benefit somewhat from the workshops they are unable to attend.
4. WHEP practice kit with materials for hands-on learning (e.g. practice foods, aerial photos, laminated flashcards, wildlife trivia games, etc.) – this would mostly benefit new coaches and teams who are unfamiliar with the contest and have not yet developed a study approach. Also, some youth learn better if they have visual aids instead of just a manual from which to study. If kits are too expensive, an alternative would be providing directions on the website of how best to put a kit together.

5. Participation certificates at state contest – one parent suggested this as a way to boost self esteem of participants who did not receive a team or individual award. She thought youth would have more pride in their achievements, large or small, if they had their names announced and were given a certificate at the awards ceremony.

Youth also made suggestions in order to make the WHEP contests more exciting as well as run more smoothly. The major interest of the participants was to have a contest that was both educational and enjoyable. Places they proposed improvement were generally related to program issues that took away from their contest experience. Their comments included:

1. New locations for the HLSR contest because it has been located in the same area for the last few years – youth believe this contest is less of a challenge because they have previous experience with the site.
2. More judges for oral reasons – youth felt this part of activity II was a bottleneck, and consequently slowed down the rest of the contest. They also tended to get bored during the wait, losing their focus for the activity. Youth believed that by having more judges, possibly some for judging juniors only (since it is just practice, and not actually part of their score) and likewise for seniors, the process would go much quicker.
3. Field trip after completion of contest – one youth felt it would be beneficial to see a management plan in action. This would give participants an opportunity to

witness real world application of the material they had practiced as well as demonstrate what management all entails.

### **Methods for Future Evaluations**

Evaluation methodology using both qualitative and quantitative research techniques, used to assess WHEP, should be useful in the third party assessment of other conservation education programs. Each technique was designed to address different questions significant to program evaluation. These questions include the amount of participant improvement due to program involvement (quantitative) and how well the program did at reaching its goals as well as the legitimacy of the goals themselves (qualitative). These techniques, when combined, are also complementary to one another. Together they provide more in-depth answers to questions aimed at assessment, and also help minimize the limitations of each method if used independently.

The specific evaluation process used for the study of the Texas 4-H WHEP contests could also be used as a model or as guidance for future WHEP evaluations and other 4-H contests. Each program evaluation though should be catered directly to that particular program and its goals. By providing some form of standardization amid evaluations, it would be easier to make comparisons between programs as well as continued examinations of the same program over an extended time period. Since 4-H has an overarching goal of better adapting youth for the future, and conservation education programs' goal of contributing to a more environmentally aware public, it would make sense that their programs be evaluated in a comparable fashion.

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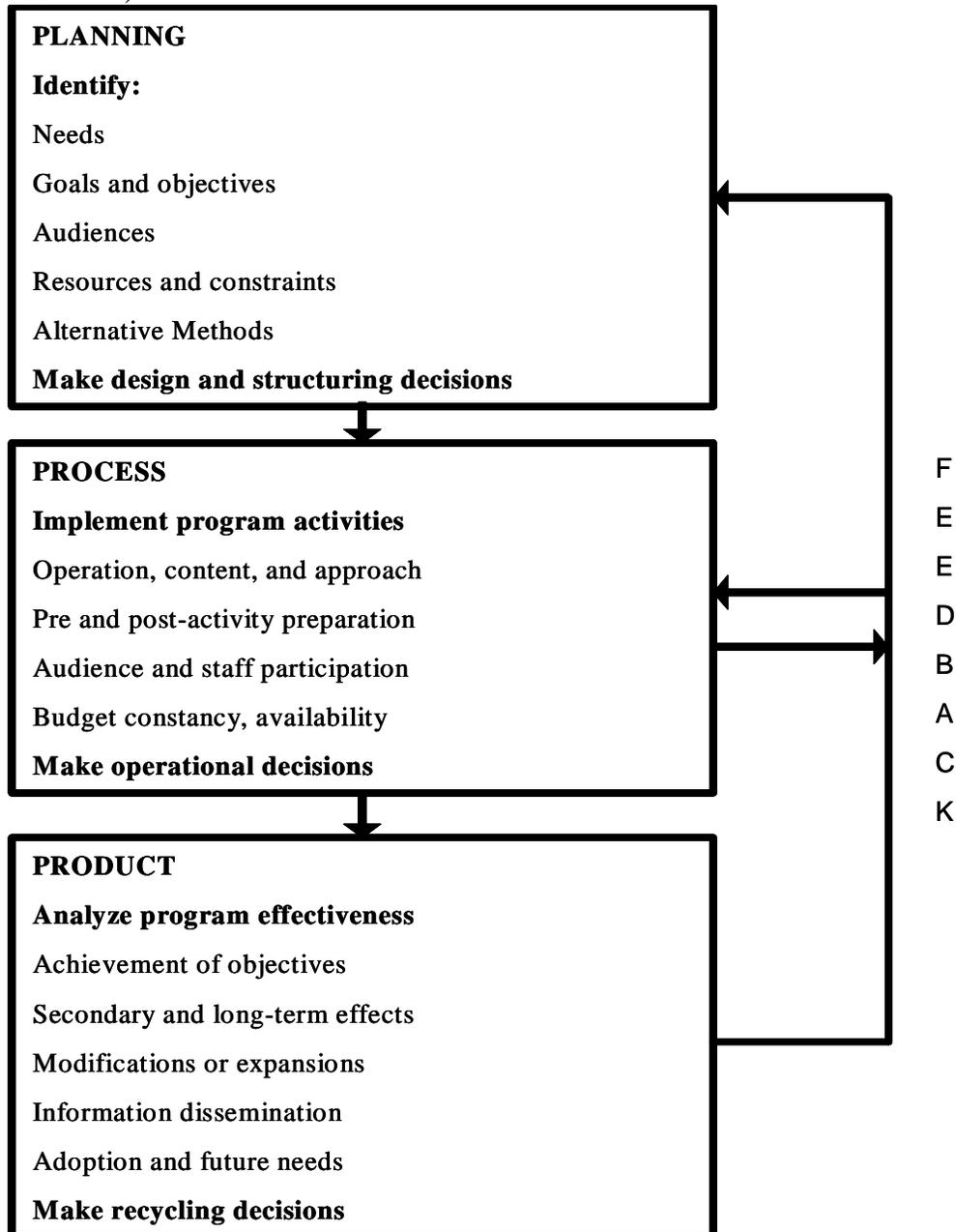
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**APPENDICES**

## APPENDIX A

Figure A.1. Diagram of the Planning-Process-Product evaluation model (from Jacobson 1991:144)



## APPENDIX B

### Texas 4-H Wildlife Habitat Evaluation Program Team Interview Questions

Opening dialogue: Hi, I my name is \_\_\_\_\_, and I am going to be doing an interview with your team today. This interview is for the evaluation of the state WHEP contest, along with the surveys you all have been filling out online, and today at the contest. All we are going to do here is talk about your experiences with WHEP, so feel free to share whatever you would like. I am going to start out with a few questions. If you would like to share other experiences involving WHEP as well, please feel free. As a reminder, I will be doing an audio recording of this session, as mentioned in the release form. So...

1. What is your team's name?
2. Do you all like outdoor activities?
3. Did you do a lot of outdoor stuff before you started in WHEP? Has that changed?
4. Do you like to learn about wildlife? Why?
5. What do you think about WHEP as a program?
6. What types of things have you learned from participating in WHEP?
7. Do you all consider yourselves wildlife stewards? What is a wildlife steward to you?
8. What do you think you have learned from being a part of a team? What skills have you developed?
9. Do you have anything else you would like to share with me?

## Texas 4-H Wildlife Habitat Evaluation Program Pre-Contest Coach/Leader Survey

The Texas 4-H Wildlife Habitat Evaluation Program (WHEP) has been available to youth in 4-H since 1993. This instrument is intended to assist in an evaluation of the Texas WHEP contest to determine program effectiveness. There are a total of 3 coach/leader surveys. This is the pre-contest survey. There will also be a written survey available at the end of the contest and another online survey available six months after contest completion. Your cooperation in this evaluation will be much appreciated and will help improve and/or expand the program. Registration for the state contest will be accessible after completion of this survey. Please take a few moments to fill out this survey. Thank you.

### **Contact Information (this information is needed so you can be contacted for surveys available 6 months after contest completion):**

Your name: \_\_\_\_\_

Date survey was completed: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_\_

Email: \_\_\_\_\_

Name of your team's 4-H club: \_\_\_\_\_

### **About WHEP:**

Number of years you have been involved in WHEP? \_\_\_\_\_

How did you get involved with WHEP? \_\_\_\_\_

Number of children in the club participating in the 2005 State WHEP contest: \_\_\_\_\_

Number of females: \_\_\_\_\_ Number of males: \_\_\_\_\_

Age range: \_\_\_\_\_

Please list the motivations for the youths' participation in this program (e.g. a friend of a participant joined, the youth is interested in the out-of-doors): \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Please estimate the total time (hours) your youth have spent in preparation for the 2005 State WHEP competition thus far: \_\_\_\_\_

Please rate the youths' current skills in the following areas using the numbered scale listed below.

	Not at all	Somewhat	Pretty Good	Excellent
Get along well with members of the team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel confident in team discussion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Make sure that everyone has a chance to speak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to help end disputes between team members	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel comfortable in helping others with difficult concepts (team members, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel confident in guiding newer members in the learning process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel comfortable sharing ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to assist with group decision making	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to make judgement calls when the team is undecided	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to talk to family and others about wildlife and wildlife management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel comfortable taking notes and sharing them with the team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel confident when turning in a paper they have written	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Not at all	Somewhat	Pretty Good	Excellent

So far, do you feel that WHEP has contributed to the following? (write yes or no):

\_\_\_\_\_ Increased the youths' knowledge of ecological systems

\_\_\_\_\_ Increased their interest in learning

\_\_\_\_\_ Increased their confidence in their abilities

\_\_\_\_\_ Helped them understand a need for resource management and sustainability

\_\_\_\_\_ Given them a feeling of respect and responsibility for the environment

\_\_\_\_\_ Given them ideas about a career in natural resources management or a related field

What resources are available to your youth for practice for WHEP? (circle all that apply):

- a. National manual
- b. Coach/leader
- c. Natural resources professional (i.e. local biologist)
- d. Internet
- e. Books
- f. Topic specific workshops/field days
- g. Other \_\_\_\_\_

Do you have anything else you would like to share? \_\_\_\_\_

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**Background Information:**

What is your gender? (circle one): Male    Female

Your age: \_\_\_\_\_

Your race or ethnicity (circle one):

- a. White or Anglo American
- b. Black or African American
- c. Spanish/Hispanic/Latino
- d. American Indian or Alaska Native
- e. Asian
- f. Native Hawaiian or Other Pacific Islander
- g. Other \_\_\_\_\_

Please estimate your family's annual household income (circle one):

- a. \$24,999 or less
- b. \$25,000...\$49,999
- c. \$50,000...\$74,999
- d. \$75,000...\$99,999
- e. \$100,000...\$149,999
- f. \$150,000...\$199,999
- g. \$200,000 or more

Highest level of formal education you have received (circle one):

- a. Some high school education
- b. High school diploma or GED equivalent
- c. Vocational or trade school
- d. Some college education
- e. Associate's degree
- f. Bachelor's degree
- g. Master's degree
- h. Ph.D.
- i. Professional degree (e.g. medical doctor)

Current residence (circle one):

- a. Rural, farm
- b. Rural, no farm
- c. Small town, less than 25,000 residents
- d. Urban area, 25,000-100,000 residents
- e. Metropolitan area, greater than 100,000 residents

Your occupation: \_\_\_\_\_

## Texas 4-H Wildlife Habitat Evaluation Program Pre-Contest Parent/Guardian Survey

The Texas 4-H Wildlife Habitat Evaluation Program (WHEP) has been available to youth in 4-H since 1993. This instrument is intended to assist in an evaluation of the Texas WHEP contest to determine program effectiveness. There are a total of 3 parent/guardian surveys. This is the pre-contest survey. There will also be a written survey available at the end of the contest and another online survey available six months after contest completion. Your cooperation in this evaluation will be much appreciated and will help improve and/or expand the program. Please take a few moments to fill out this survey. Thank you.

**Contact Information (this information is needed so you can be contacted for surveys available 6 months after contest completion):**

Your name: \_\_\_\_\_

Date survey was completed: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_\_

Email: \_\_\_\_\_

Name of your child's 4-H club: \_\_\_\_\_

**About WHEP:**

Number of your children participating in WHEP: \_\_\_\_\_

Number of females: \_\_\_\_\_ Number of males: \_\_\_\_\_

Age(s): \_\_\_\_\_

Number of years involved: \_\_\_\_\_

Please list the motivations for your children to participate in this program (e.g. your child's friend participates in the program, your child is interested in the out-of-doors):

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How did you hear about WHEP?

- a. Friend or relative
- b. 4-H agent/teacher or other educator
- c. Internet
- d. Publication (e.g. pamphlet, magazine or newspaper article)
- e. Other \_\_\_\_\_

Please estimate the total time (hours) your child (children) have spent in preparation for the 2005 State WHEP competition thus far: \_\_\_\_\_

Please rate your child's (children's) current skills in the following areas using the numbered scale listed below.

	Not at all	Somewhat	Pretty Good	Excellent
Get along well with members of the team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel confident in team discussion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Make sure that everyone has a chance to speak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to help end disputes between team members	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel comfortable in helping others with difficult concepts (team members, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel confident in guiding newer members in the learning process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel comfortable sharing ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to assist with group decision making	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to make judgement calls when the team is undecided	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to talk to family and others about wildlife and wildlife management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel comfortable taking notes and sharing them with the team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel confident when turning in a paper they have written	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Not at all	Somewhat	Pretty Good	Excellent

So far, do you feel that WHEP has contributed to the following? (write yes or no):

- \_\_\_\_\_ Increased your child's (children's) knowledge of ecological systems
- \_\_\_\_\_ Increased their interest in learning
- \_\_\_\_\_ Increased their confidence in their abilities
- \_\_\_\_\_ Helped them understand a need for resource management and sustainability
- \_\_\_\_\_ Given them a feeling of respect and responsibility for the environment
- \_\_\_\_\_ Given them ideas about a career in natural resources management or a related field

Do you have anything else you would like to share? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Background Information:**

What is your gender? (circle one): Male    Female

Your age: \_\_\_\_\_

Your race or ethnicity (circle one):

- a. White or Anglo American
- b. Black or African American
- c. Spanish/Hispanic/Latino
- d. American Indian or Alaska Native
- e. Asian
- f. Native Hawaiian or Other Pacific Islander
- g. Other \_\_\_\_\_

Please estimate your family's annual household income (circle one):

- a. \$24,999 or less
- b. \$25,000...\$49,999
- c. \$50,000...\$74,999
- d. \$75,000...\$99,999
- e. \$100,000...\$149,999
- f. \$150,000...\$199,999
- g. \$200,000 or more

Highest level of formal education you have received (circle one):

- a. Some high school education
- b. High school diploma or GED equivalent
- c. Vocational or trade school
- d. Some college education
- e. Associate's degree
- f. Bachelor's degree
- g. Master's degree
- h. Ph.D.
- i. Professional degree (e.g. medical doctor)

Current residence (circle one):

- a. Rural, farm
- b. Rural, no farm
- c. Small town, less than 25,000 residents
- d. Urban area, 25,000-100,000 residents
- e. Metropolitan area, greater than 100,000 residents

You and your spouse's (if any) occupation(s):

Yours \_\_\_\_\_  
Spouse \_\_\_\_\_

Please contact Andrea Feldpausch at Texas A&M University if there are any questions about the survey or evaluation process at (979) 458-0708 or feld36@tamu.edu.

Thank you for your cooperation in making WHEP a better program!

## **Texas 4-H Wildlife Habitat Evaluation Program Pre-Contest Current Participant Survey**

The Texas 4-H Wildlife Habitat Evaluation Program (WHEP) has been available to 4-Her's since 1993. This instrument is intended to assist in an evaluation of the Texas WHEP contest to determine program effectiveness. There are a total of 3 current participant surveys. This is the pre-contest survey. There will also be a written survey available at the end of the contest and another online survey available six months after contest completion. Your cooperation in this evaluation will be much appreciated and will help improve and/or expand the program. Please take a few moments to fill out this survey. Thank you.

**Contact Information (this information is needed so you can be contacted for surveys available 6 months after contest completion):**

Your name: \_\_\_\_\_

Date survey was completed: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_\_

Email: \_\_\_\_\_

Name of your 4-H club: \_\_\_\_\_

**About WHEP:**

Number of years involved in WHEP: \_\_\_\_\_

At what level will you participate this year? (Circle one): Junior    Senior

What other outdoor related 4-H/Extension programs do you participate in? (Circle all that apply):

- a. Animal husbandry (beef, dog, horse, rabbit, sheep, goat, and/or swine)
- b. Horticulture (row crops, vegetables, fruit, flowers, etc.)
- c. Entomology
- d. Shooting Sports
- e. Sportfishing
- f. Sportfishing Camp
- g. Photography
- h. Outdoor Explorers
- i. H.S. Estelle 4-H and Youth Camp
- j. Field and Stream
- k. Aquatic Camp
- l. Aquatic and Hunter Education
- m. Texas Brigades
- n. Other \_\_\_\_\_

What activities do you participate in? (circle all that apply):

- a. Sports
- b. Band/choir/drama
- c. Student government
- d. National honors society
- e. Science related clubs
- f. Other clubs
- g. FFA
- h. ROTC
- i. Scouting
- j. Church
- k. Other \_\_\_\_\_

Since this time last year, how many days did you participate in the following outdoor activities? (if none, please enter 0):

\_\_\_\_\_ Hunting

\_\_\_\_\_ Trapping

\_\_\_\_\_ Fishing

\_\_\_\_\_ Kayaking/canoeing/tubing

\_\_\_\_\_ Snorkeling/scuba diving

\_\_\_\_\_ Hiking/walking/running

- \_\_\_\_\_ Climbing/caving
- \_\_\_\_\_ Mountain biking
- \_\_\_\_\_ Nature study and viewing
- \_\_\_\_\_ Camping
- \_\_\_\_\_ Backpacking
- \_\_\_\_\_ Outdoor photography
- \_\_\_\_\_ Motorized activities (i.e. boating, 4-wheeling)
- \_\_\_\_\_ Other outdoor activities

Who do you participate with most often in outdoor activities? (Circle one):

- a. By yourself
- b. Family
- c. Friends
- d. Family and friends together
- e. Club
- f. Other \_\_\_\_\_

How did you hear about WHEP?

- a. Friend or relative
- b. 4-H agent/teacher or other educator
- c. Internet
- d. Publication (e.g. pamphlet, magazine or newspaper article)
- e. Other \_\_\_\_\_

Please estimate the total time (hours) you have spent in preparation for the 2005 State WHEP competition thus far: \_\_\_\_\_

What resources are available to you for practice for WHEP? (circle all that apply):

- a. National manual
- b. Coach/leader
- c. Natural resources professional (i.e. local biologist)
- d. Internet
- e. Books
- f. Topic specific workshops/field days
- g. Other \_\_\_\_\_

Please rate your current skills in the following areas using the numbered scale listed below.

	Not at all	Somewhat	Pretty Good	Excellent
I get along well with members of my team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel confident in team discussion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I make sure that everyone has a chance to speak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to help end disputes between team members	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable in helping others with difficult concepts (team members, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel confident in guiding newer members in the learning process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable sharing ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to assist with group decision making	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to make judgement calls when my team is undecided	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to talk to family and others about wildlife and wildlife management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable taking notes and sharing them with the team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel confident when turning in a paper I have written	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Not at all	Somewhat	Pretty Good	Excellent

Do you have anything else you would like to share? \_\_\_\_\_

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**Background Information:**

What is your gender? (circle one): Male    Female

Your age: \_\_\_\_\_

Grade in school: \_\_\_\_\_

**Attitude Test:**

Please rate how well you agree or disagree with the following statements using the scale listed below (fill in one bubble per row). Please do this on your own. It is your thoughts we are interested in.

	Disagree Completely	Somewhat Disagree	Uncertain	Somewhat Agree	Agree Completely
Natural resources must be managed to ensure their availability for future generations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
With respect to natural resources, nature should be allowed to take its course without human interference.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prescribed fire destroys natural habitats.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prescribed fire can improve habitat conditions for wildlife.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is acceptable to eliminate predators that prey on threatened and endangered species.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is acceptable to eliminate predators that prey on game species.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grazing is destructive to natural vegetation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grazing can be used to enhance wildlife habitat.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Harvesting timber permanently harms forests.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Public forests should be managed for multiple uses (wildlife, timber, recreation, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to have a variety of successional stages in a forest.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hunting is an acceptable natural resource management practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Disagree Completely	Somewhat Disagree	Uncertain	Somewhat Agree	Agree Completely

**Knowledge Test:**

This portion of the survey is to determine your “on the spot” knowledge of wildlife prior to participation in the 2005 State WHEP competition. Please do not use any resources (including your parents, coaches, manuals, and the internet) to assist you in this test. This test has no impact on your participation in the state competition.

What does WILDLIFE MANAGEMENT mean to you?

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Multiple Choice Questions: Circle the answer (only one) that best fits the question.

1. Controlled (prescribed) burning generally benefits which one of the following species?
  - a. Great-horned owl
  - b. Northern bobwhite
  - c. Red-eyed vireo
  - d. Wood duck
  
2. What would be a good physical description of a Southeast Mixed or Outer Coastal Plain Forest?
  - a. The terrain is rolling hills to mostly flat with numerous wetlands. The average annual precipitation ranges from 40 to 60 inches. Precipitation is received year round. Summers are hot and winters are mild.
  - b. The terrain is relatively flat to rolling with isolated buttes and mountains. Annual precipitation varies from 2 to 25 inches depending on elevation. Moisture is usually received in the summer and fall. Summers are hot, winters cool.
  - c. The terrain is steeply sloping mountains crossed by many valleys. Average annual precipitation ranges from 30 to 150 inches. The majority of the moisture comes in winter and early spring.
  - d. The terrain is characterized by flat to rolling plains. Average annual precipitation ranges from 20 to 40 inches. Precipitation is received primarily as summer rain and winter snow. Winters are cold, summers are hot.
  
3. Which one of the following species would not be present in a Hot Desert?
  - a. Mule deer
  - b. Black-throated sparrow
  - c. Desert cottontail
  - d. Wood duck
  
4. Which one of the following species does not eat eggs?
  - a. Fox
  - b. Mole
  - c. Snake
  - d. Otter

5. Planting mast trees generally benefits which of these species?  
1-Woodpeckers 2-Raccoon 3-Wild turkey 4-Grouse
- 2 and 3 only
  - 1 and 3 only
  - 1, 3, and 4
  - all of the above
6. Which one of the following species is considered a non-game species?
- American Kestrel
  - Bluegill
  - Eastern cottontail
  - Wild turkey
7. Which habitat requirement is most limiting for White-tailed deer in a 300 acre tract of Great Plains Grassland? The habitat is made up of irrigated cropland and adjacent fallow fields that were taken out of rotation. The fallow fields are at stages 2 and 3 in plant succession (annual forbs and grasses, perennial grasses and forbs).
- Water
  - Cover
  - Food
  - Space
8. Which one of the following are brush piles most useful for?
- Providing forage for deer
  - Preventing succession
  - Cover for coyotes
  - Cover for rabbits and quail
9. Which one of the following species eats bark?
- Pronghorn
  - Deer
  - Woodpecker
  - Shrew
10. In an urban setting, which one of the management actions would not benefit bluebirds?
- Bird feeders
  - Nest boxes
  - Planting of shrubs and trees
  - Bird bathes

Matching: Match the wildlife species in column A to the general habitat preference description in column B (use each letter only once, not all descriptions have a species).

For reference: Stage 1 - Bare ground

Stage 2 – Annual forbs and grasses

Stage 3 – Perennial forbs and grasses

Stage 4 – Shrubs

Stage 5 – Young woodland

Stage 6 – Mature woodland

<u>Column A</u>	<u>Column B</u>
_____ 11. Mallard (winter habitat only)	a. Ponds, lakes, and slow moving rivers.
_____ 12. Coyote	b. It occurs in a wide variety of forested habitats, mainly open woodlands of stages 5 and 6 of succession, interspersed with areas of stages 2, 3, and 4.
_____ 13. Hairy woodpecker	c. Wetlands with open water, harvested grain crops, and riparian areas with open water.
_____ 14. Raccoon	d. Stages 4, 5, and 6 of plant succession are best habitat. It will use stage 3 of plant succession if areas with mature trees are nearby. They also use wooded urban and riparian areas.
_____ 15. Great-horned owl	e. Stages 2, 3, and 4 are primary habitats for this species, particularly grasslands and areas where timberlands have been cleared for agriculture.
	f. Stages 2 and 3 with interspersed with wetlands.
	g. It occurs most often near water, riparian areas, and lands adjacent to wetlands. Stages 5 and 6 are ideal.

Matching: Match the terms in column A to the definitions in column B (use each letter only once, not all definitions have a term).

<u>Column A</u>	<u>Column B</u>
_____ 16. Species Richness	a. Travel that occurs during different seasons of the year and times of the day.
_____ 17. Edge	b. The area of constant use by a species.
_____ 18. Migration	c. The change in plant cover and species over time.
_____ 19. Carrying Capacity	d. How different successional stages of vegetation types are situated in relation to each other.
_____ 20. Succession	e. The boundary where two or more types of vegetation or successional stages meet.
	f. The number of different kinds of wildlife species that are found in an area.
	g. The limit to how many animals can live in a habitat.
	h. The life requirements of wildlife that must be supplied by the habitat to ensure their well being.

Please contact Andrea Feldpausch at Texas A&M University if there are any questions about the survey or evaluation process at (979) 458-0708 or feld36@tamu.edu.

Thank you for your cooperation in making WHEP a better program!

## Texas 4-H Wildlife Habitat Evaluation Program Pre-Contest Control Survey

The Texas 4-H Wildlife Habitat Evaluation Program (WHEP) has been available to 4-Her's since 1993. This instrument is intended to assist in an evaluation of the Texas WHEP contest to determine program effectiveness. There are a total of 3 control surveys. This is the pre-contest survey. There will also be an after contest survey and another survey six months after contest completion. Your cooperation in this evaluation will be much appreciated and will help improve and/or expand the program. Please take a few moments to fill out this survey. Thank you.

### Contact Information (this information is needed so you can be contacted for surveys available 6 months after contest completion):

Your name: \_\_\_\_\_ Address: \_\_\_\_\_

Phone number: \_\_\_\_\_ Email: \_\_\_\_\_

Name of your 4-H club: \_\_\_\_\_

Date survey was completed: \_\_\_\_\_

### About 4-H:

What outdoor related 4-H/Extension programs do you participate in? (Circle all that apply):

- a. Animal husbandry (beef, dog, horse, rabbit, sheep, goat, and/or swine)
- b. Horticulture (row crops, vegetables, fruit, flowers, etc.)
- c. Entomology
- d. Shooting Sports
- e. Sportfishing
- f. Sportfishing Camp
- g. Photography
- h. Outdoor Explorers
- i. H.S. Estelle 4-H and Youth Camp
- j. Field and Stream
- k. Aquatic Camp
- l. Aquatic and Hunter Education
- m. Texas Brigades
- n. Other \_\_\_\_\_

What activities do you participate in? (circle all that apply):

- a. Sports
- b. Band/choir/drama
- c. Student government
- d. National honors society
- e. Science related clubs
- f. Other clubs
- g. FFA
- h. ROTC
- i. Scouting
- j. Church
- k. Other \_\_\_\_\_

Since this time last year, how many days did you participate in the following outdoor activities? (if none, please enter 0):

\_\_\_\_\_ Hunting

\_\_\_\_\_ Trapping

\_\_\_\_\_ Fishing

\_\_\_\_\_ Kayaking/canoeing/tubing

\_\_\_\_\_ Snorkeling/scuba diving

\_\_\_\_\_ Hiking/walking/running

\_\_\_\_\_ Climbing/caving

\_\_\_\_\_ Mountain biking

\_\_\_\_\_ Nature study and viewing

\_\_\_\_\_ Camping

\_\_\_\_\_ Backpacking

\_\_\_\_\_ Outdoor photography

\_\_\_\_\_ Motorized activities (i.e. boating, 4-wheeling)

\_\_\_\_\_ Other outdoor activities

Who do you participate with most often in outdoor activities? (Circle one):

- a. By yourself
- b. Family
- c. Friends
- d. Family and friends together
- e. Club
- f. Other \_\_\_\_\_

Please rate your current skills in the following areas using the numbered scale listed below.

	Not at all	Somewhat	Pretty Good	Excellent
I get along well with members of my team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel confident in team discussion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I make sure that everyone has a chance to speak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to help end disputes between team members	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable in helping others with difficult concepts (team members, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel confident in guiding newer members in the learning process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable sharing ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to assist with group decision making	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to make judgement calls when my team is undecided	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to talk to family and others about wildlife and wildlife management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable taking notes and sharing them with the team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel confident when turning in a paper I have written	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Not at all	Somewhat	Pretty Good	Excellent

Do you have anything else you would like to share? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Background Information:**

What is your gender? (circle one): Male    Female

Your age: \_\_\_\_\_

Grade in school: \_\_\_\_\_

Your race or ethnicity (circle one):

- a. White or Anglo American
- b. Black or African American
- c. Spanish/Hispanic/Latino
- d. American Indian or Alaska Native
- e. Asian
- f. Native Hawaiian or Other Pacific Islander
- g. Other \_\_\_\_\_

Please estimate your family's annual household income (circle one):

- a. \$24,999 or less
- b. \$25,000...\$49,999
- c. \$50,000...\$74,999
- d. \$75,000...\$99,999
- e. \$100,000...\$149,999
- f. \$150,000...\$199,999
- g. \$200,000 or more

Highest level of formal education your parent(s) or guardian(s) (circle all that apply):

- a. Some high school education
- b. High school diploma or GED equivalent
- c. Vocational or trade school
- d. Some college education
- e. Associate's degree
- f. Bachelor's degree
- g. Master's degree
- h. Ph.D.
- i. Professional degree (e.g. medical doctor)

Your current residence (circle one):

- a. Rural, farm
- b. Rural, no farm
- c. Small town, less than 25,000 residents
- d. Urban area, 25,000-100,000 residents
- e. Metropolitan area, greater than 100,000 residents

Your parent(s) or guardian(s) occupation(s):

Mother (female guardian) \_\_\_\_\_

Father (male guardian) \_\_\_\_\_

### Attitude Test:

Please rate how well you agree or disagree with the following statements using the scale listed below (fill in one bubble per row). Please do this on your own. It is your thoughts we are interested in.

	Disagree Completely	Somewhat Disagree	Uncertain	Somewhat Agree	Agree Completely
Natural resources must be managed to ensure their availability for future generations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
With respect to natural resources, nature should be allowed to take its course without human interference.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prescribed fire destroys natural habitats.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prescribed fire can improve habitat conditions for wildlife.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is acceptable to eliminate predators that prey on threatened and endangered species.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is acceptable to eliminate predators that prey on game species.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grazing is destructive to natural vegetation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grazing can be used to enhance wildlife habitat.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Harvesting timber permanently harms forests.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Public forests should be managed for multiple uses (wildlife, timber, recreation, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to have a variety of successional stages in a forest.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hunting is an acceptable natural resource management practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Disagree Completely	Somewhat Disagree	Uncertain	Somewhat Agree	Agree Completely

**Knowledge Test:**

This portion of the survey is to determine your “on the spot” knowledge of wildlife. Please do not use any resources (including your parents, books, and the internet) to assist you in this test.

What does WILDLIFE MANAGEMENT mean to you?

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Multiple Choice Questions: Circle the answer (only one) that best fits the question.

1. Controlled (prescribed) burning generally benefits which one of the following species?
  - a. Great-horned owl
  - b. Northern bobwhite
  - c. Red-eyed vireo
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Matching: Match the wildlife species in column A to the general habitat preference description in column B (use each letter only once, not all descriptions have a species).

For reference: Stage 1 - Bare ground

Stage 2 – Annual forbs and grasses

Stage 3 – Perennial forbs and grasses

Stage 4 – Shrubs

Stage 5 – Young woodland

Stage 6 – Mature woodland

Column A

Column B

- |   |   |
|---|---|
| <p>_____ 11. Mallard (winter habitat only)</p> <p>_____ 12. Coyote</p> <p>_____ 13. Hairy woodpecker</p> <p>_____ 14. Raccoon</p> <p>_____ 15. Great-horned owl</p> | <p>a. Ponds, lakes, and slow moving rivers.</p> <p>b. It occurs in a wide variety of forested habitats, mainly open woodlands of stages 5 and 6 of succession, interspersed with areas of stages 2, 3, and 4.</p> <p>c. Wetlands with open water, harvested grain crops, and riparian areas with open water.</p> <p>d. Stages 4, 5, and 6 of plant succession are best habitat. It will use stage 3 of plant succession if areas with mature trees are nearby. They also use wooded urban and riparian areas.</p> <p>e. Stages 2, 3, and 4 are primary habitats for this species, particularly grasslands and areas where timberlands have been cleared for agriculture.</p> <p>f. Stages 2 and 3 with interspersed with wetlands.</p> <p>g. It occurs most often near water, riparian areas, and lands adjacent to wetlands. Stages 5 and 6 are ideal.</p> |
|---|---|

Matching: Match the terms in column A to the definitions in column B (use each letter only once, not all definitions have a term).

<u>Column A</u>	<u>Column B</u>
_____ 16. Species Richness	a. Travel that occurs during different seasons of the year and times of the day.
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_____ 19. Carrying Capacity	d. How different successional stages of vegetation types are situated in relation to each other.
_____ 20. Succession	e. The boundary where two or more types of vegetation or successional stages meet.
	f. The number of different kinds of wildlife species that are found in an area.
	g. The limit to how many animals can live in a habitat.
	h. The life requirements of wildlife that must be supplied by the habitat to ensure their well being.

Please contact Andrea Feldpausch at Texas A&M University if there are any questions about the survey or evaluation process at (979) 458-0708 or feld36@tamu.edu.

Thank you for your cooperation in making WHEP a better program!

**Texas 4-H Wildlife Habitat Evaluation Program  
Post Contest Coach/Leader Survey**

This is the post contest survey. Another survey will be administered online six months after the State WHEP contest. Most survey questions are identical to questions asked in the first survey. This is because some of your answers may have changed from the first survey, even during a short period of time. Your cooperation in this evaluation will be much appreciated and will help improve and/or expand the WHEP contest. Please take a few moments to fill out this survey. Thank you.

**Survey Code (given on nametag):** \_\_\_\_\_

Did you participate in the online survey (circle one)? Yes No

**About WHEP:**

Please estimate the total time (hours) your youth have spent in preparation for the 2005 State WHEP competition: \_\_\_\_\_

Did your youth participate in the Houston Livestock Show and Rodeo WHEP contest (circle one)? Yes No

If yes, was the contest helpful in their preparation for the State WHEP contest (circle one)? Yes No

Please rate your youth's current skills in the following areas using the below scale (fill in one bubble per row).

	Not at all	Somewhat	Pretty Good	Excellent
Get along well with members of the team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel confident in team discussion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Make sure that everyone has a chance to speak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to help end disputes between team members	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel comfortable in helping others with difficult concepts (team members, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel confident in guiding newer members in the learning process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel comfortable sharing ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to assist with group decision making	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to make judgement calls when the team is undecided	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to talk to family and others about wildlife and wildlife management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel comfortable taking notes and sharing them with the team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel confident when turning in a paper they have written	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Not at all	Somewhat	Pretty Good	Excellent

Do you feel that WHEP has contributed to the following? (write yes or no):

\_\_\_\_\_ Increased the youths' knowledge of ecological systems

\_\_\_\_\_ Increased their interest in learning

\_\_\_\_\_ Increased their confidence in their abilities

\_\_\_\_\_ Helped them understand a need for resource management and sustainability

\_\_\_\_\_ Given them a feeling of respect and responsibility for the environment

\_\_\_\_\_ Given them ideas about a career in natural resources management or a related field

What resources were available to your youth for practice for WHEP? (circle all that apply):

- a. National manual
- b. Coach/leader
- c. Natural resources professional (i.e. local biologist)
- d. Internet
- e. Books
- f. Topic specific workshops/field days
- g. Other \_\_\_\_\_

Do you have anything else you would like to share? \_\_\_\_\_

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Please contact Andrea Feldpausch at Texas A&M University if there are any questions about the survey or evaluation process at (979) 458-0708 or feld36@tamu.edu.

Thank you for your cooperation in making WHEP a better program!

**Texas 4-H Wildlife Habitat Evaluation Program  
Post Contest Parent/Guardian Survey**

This is the post contest survey. Another survey will be administered online six months after the State WHEP contest. Most survey questions are identical to questions asked in the first survey. This is because some of your answers may have changed from the first survey, even during a short period of time. Your cooperation in this evaluation will be much appreciated and will help improve and/or expand the WHEP contest. Please take a few moments to fill out this survey. **If you have more than one child, please fill out a survey for each child.** Thank you for your time.

**Survey Code (given on child's nametag):** \_\_\_\_\_

Did you participate in the online survey (circle one)? Yes No

**About WHEP:**

Please estimate the total time (hours) your child have spent in preparation for the 2005 State WHEP competition: \_\_\_\_\_

Did your child participate in the Houston Livestock Show and Rodeo WHEP contest (circle one)? Yes No

If yes, was the contest helpful in his/her preparation for the State WHEP contest (circle one)? Yes No

Please rate your child's current skills in the following areas using the scale listed below (fill in one bubble per row).

	Not at all	Somewhat	Pretty Good	Excellent
Get along well with members of the team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel confident in team discussion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Make sure that everyone has a chance to speak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to help end disputes between team members	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel comfortable in helping others with difficult concepts (team members, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel confident in guiding newer members in the learning process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel comfortable sharing ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to assist with group decision making	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to make judgement calls when the team is undecided	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to talk to family and others about wildlife and wildlife management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel comfortable taking notes and sharing them with the team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel confident when turning in a paper they have written	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Not at all	Somewhat	Pretty Good	Excellent

Do you feel that WHEP has contributed to the following? (write yes or no):

\_\_\_\_\_ Increased your child's knowledge of ecological systems

\_\_\_\_\_ Increased his/her interest in learning

\_\_\_\_\_ Increased his/her confidence in their abilities

\_\_\_\_\_ Helped him/her understand a need for resource management and sustainability

\_\_\_\_\_ Given him/her a feeling of respect and responsibility for the environment

\_\_\_\_\_ Given him/her ideas about a career in natural resources management or a related field



**Texas 4-H Wildlife Habitat Evaluation Program  
Post Contest Current WHEP Participant Survey**

This is the post contest survey. Another survey will be administered online six months after the State WHEP contest. Most survey questions are identical to questions asked in the first survey. This is because some of your answers may have changed from the first survey, even during a short period of time. Your cooperation in this evaluation will be much appreciated and will help improve and/or expand the WHEP contest. Please take a few moments to fill out this survey. Thank you.

**Survey Code (given on nametag):** \_\_\_\_\_

Did you participate in the online survey (circle one)? Yes No

**About WHEP:**

Please estimate the total time (hours) you have spent in preparation for the 2005 State WHEP competition: \_\_\_\_\_

Did you participate in the Houston Livestock Show and Rodeo WHEP contest (circle one)? Yes No

If yes, was the contest helpful in your preparation for the State WHEP contest (circle one)? Yes No

What resources were available to you for practice for WHEP? (circle all that apply):

- a. National manual
- b. Coach/leader
- c. Natural resources professional (i.e. local biologist)
- d. Internet
- e. Books
- f. Topic specific workshops/field days
- g. Other \_\_\_\_\_

Please rate your current skills in the following areas using the scale listed below (fill in one bubble per row).

	Not at all	Somewhat	Pretty Good	Excellent
I get along well with members of my team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel confident in team discussion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I make sure that everyone has a chance to speak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to help end disputes between team members	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable in helping others with difficult concepts (team members, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel confident in guiding newer members in the learning process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable sharing ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to assist with group decision making	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to make judgement calls when my team is undecided	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to talk to family and others about wildlife and wildlife management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable taking notes and sharing them with the team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel confident when turning in a paper I have written	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Not at all	Somewhat	Pretty Good	Excellent

Do you have anything else you would like to share? \_\_\_\_\_

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**Attitude Test:**

Please rate how well you agree or disagree with the following statements using the scale listed below (fill in one bubble per row). There are no right or wrong answers. It is your thoughts we are interested in.

	Disagree Completely	Somewhat Disagree	Uncertain	Somewhat Agree	Agree Completely
Natural resources must be managed to ensure their availability for future generations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
With respect to natural resources, nature should be allowed to take its course without human interference.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prescribed fire destroys natural habitats.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prescribed fire can improve habitat conditions for wildlife.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is acceptable to eliminate predators that prey on threatened and endangered species.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is acceptable to eliminate predators that prey on game species.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grazing is destructive to natural vegetation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grazing can be used to enhance wildlife habitat.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Harvesting timber permanently harms forests.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Public forests should be managed for multiple uses (wildlife, timber, recreation, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to have a variety of successional stages in a forest.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hunting is an acceptable natural resource management practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Disagree Completely	Somewhat Disagree	Uncertain	Somewhat Agree	Agree Completely

**Knowledge Test:**

This portion of the survey is to determine your “on the spot” knowledge of wildlife after participation in the 2005 State WHEP competition. Please do not use any resources (including your parents, coaches, manuals, and the internet) to assist you in this test. This test has no impact on your participation in the state competition.

What does WILDLIFE MANAGEMENT mean to you?

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Multiple Choice Questions: Circle the answer (only one) that best fits the question.

1. Controlled (prescribed) burning generally benefits which one of the following species?
  - a. Great-horned owl
  - b. Northern bobwhite
  - c. Red-eyed vireo
  - d. Wood duck
  
2. What would be a good physical description of a Southeast Mixed or Outer Coastal Plain Forest?
  - a. The terrain is rolling hills to mostly flat with numerous wetlands. The average annual precipitation ranges from 40 to 60 inches. Precipitation is received year round. Summers are hot and winters are mild.
  - b. The terrain is relatively flat to rolling with isolated buttes and mountains. Annual precipitation varies from 2 to 25 inches depending on elevation. Moisture is usually received in the summer and fall. Summers are hot, winters cool.
  - c. The terrain is steeply sloping mountains crossed by many valleys. Average annual precipitation ranges from 30 to 150 inches. The majority of the moisture comes in winter and early spring.
  - d. The terrain is characterized by flat to rolling plains. Average annual precipitation ranges from 20 to 40 inches. Precipitation is received primarily as summer rain and winter snow. Winters are cold, summers are hot.
  
3. Which one of the following species would not be present in a Hot Desert?
  - a. Mule deer
  - b. Black-throated sparrow
  - c. Desert cottontail
  - d. Wood duck
  
4. Which one of the following species does not eat eggs?
  - a. Fox
  - b. Mole
  - c. Snake
  - d. Otter

5. Planting mast trees generally benefits which of these species?  
1-Woodpeckers 2-Raccoon 3-Wild turkey 4-Grouse
- 2 and 3 only
  - 1 and 3 only
  - 1, 3, and 4
  - all of the above
6. Which one of the following species is considered a non-game species?
- American Kestrel
  - Bluegill
  - Eastern cottontail
  - Wild turkey
7. Which habitat requirement is most limiting for White-tailed deer in a 300 acre tract of Great Plains Grassland? The habitat is made up of irrigated cropland and adjacent fallow fields that were taken out of rotation. The fallow fields are at stages 2 and 3 in plant succession (annual forbs and grasses, perennial grasses and forbs).
- Water
  - Cover
  - Food
  - Space
8. Which one of the following are brush piles most useful for?
- Providing forage for deer
  - Preventing succession
  - Cover for coyotes
  - Cover for rabbits and quail
9. Which one of the following species eats bark?
- Pronghorn
  - Deer
  - Woodpecker
  - Shrew
10. In an urban setting, which one of the management actions would not benefit bluebirds?
- Bird feeders
  - Nest boxes
  - Planting of shrubs and trees
  - Bird bathes

Matching: Match the wildlife species in column A to the general habitat preference description in column B (use each letter only once, not all descriptions have a species).

For reference: Stage 1 - Bare ground

Stage 2 – Annual forbs and grasses

Stage 3 – Perennial forbs and grasses

Stage 4 – Shrubs

Stage 5 – Young woodland

Stage 6 – Mature woodland

Column A

Column B

- |   |   |
|---|---|
| _____ 11. Mallard (winter habitat only) | a. Ponds, lakes, and slow moving rivers.  |
| _____ 12. Coyote                        | b. It occurs in a wide variety of forested habitats, mainly open woodlands of stages 5 and 6 of succession, interspersed with areas of stages 2, 3, and 4.                                |
| _____ 13. Hairy woodpecker              | c. Wetlands with open water, harvested grain crops, and riparian areas with open water.   |
| _____ 14. Raccoon                       | d. Stages 4, 5, and 6 of plant succession are best habitat. It will use stage 3 of plant succession if areas with mature trees are nearby. They also use wooded urban and riparian areas. |
| _____ 15. Great-horned owl              | e. Stages 2, 3, and 4 are primary habitats for this species, particularly grasslands and areas where timberlands have been cleared for agriculture.                                       |
|   | f. Stages 2 and 3 with interspersed with wetlands.  |
|   | g. It occurs most often near water, riparian areas, and lands adjacent to wetlands. Stages 5 and 6 are ideal.   |

Matching: Match the terms in column A to the definitions in column B (use each letter only once, not all definitions have a term).

<u>Column A</u>	<u>Column B</u>
_____ 16. Species Richness	a. Travel that occurs during different seasons of the year and times of the day.
_____ 17. Edge	b. The area of constant use by a species.
_____ 18. Migration	c. The change in plant cover and species over time.
_____ 19. Carrying Capacity	d. How different successional stages of vegetation types are situated in relation to each other.
_____ 20. Succession	e. The boundary where two or more types of vegetation or successional stages meet.
	f. The number of different kinds of wildlife species that are found in an area.
	g. The limit to how many animals can live in a habitat.
	h. The life requirements of wildlife that must be supplied by the habitat to ensure their well being.

Please contact Andrea Feldpausch at Texas A&M University if there are any questions about the survey or evaluation process at (979) 458-0708 or feld36@tamu.edu.

Thank you for your cooperation in making WHEP a better program!

## Texas 4-H Wildlife Habitat Evaluation Program Post Contest Control Survey

This is the post contest survey. Another survey will be administered online six months after the State WHEP contest. Most survey questions are identical to questions asked in the first survey. This is because some of your answers may have changed from the first survey, even during a short period of time. Your cooperation in this evaluation will be much appreciated and will help improve and/or expand the WHEP contest. Please take a few moments to fill out this survey. Thank you.

**Name:** \_\_\_\_\_

### Your Current Life Skills:

Please rate your current skills in the following areas using the scale listed below (fill in one bubble per row).

	Not at all	Somewhat	Pretty Good	Excellent
I get along well with members of my team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel confident in team discussion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I make sure that everyone has a chance to speak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to help end disputes between team members	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable in helping others with difficult concepts (team members, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel confident in guiding newer members in the learning process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable sharing ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to assist with group decision making	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to make judgement calls when my team is undecided	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to talk to family and others about wildlife and wildlife management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable taking notes and sharing them with the team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel confident when turning in a paper I have written	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Not at all	Somewhat	Pretty Good	Excellent

**Attitude Test:**

Please rate how well you agree or disagree with the following statements using the scale listed below (fill in one bubble per row). There are no right or wrong answers. It is your thoughts we are interested in.

	Disagree Completely	Somewhat Disagree	Uncertain	Somewhat Agree	Agree Completely
Natural resources must be managed to ensure their availability for future generations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
With respect to natural resources, nature should be allowed to take its course without human interference.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prescribed fire destroys natural habitats.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prescribed fire can improve habitat conditions for wildlife.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is acceptable to eliminate predators that prey on threatened and endangered species.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is acceptable to eliminate predators that prey on game species.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grazing is destructive to natural vegetation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grazing can be used to enhance wildlife habitat.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Harvesting timber permanently harms forests.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Public forests should be managed for multiple uses (wildlife, timber, recreation, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to have a variety of successional stages in a forest.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hunting is an acceptable natural resource management practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Disagree Completely	Somewhat Disagree	Uncertain	Somewhat Agree	Agree Completely

**Knowledge Test:**

This portion of the survey is to determine your “on the spot” knowledge of wildlife. Please do not use any resources (including your parents, books, and the internet) to assist you in this test.

What does WILDLIFE MANAGEMENT mean to you?

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Multiple Choice Questions: Circle the answer (only one) that best fits the question.

1. Controlled (prescribed) burning generally benefits which one of the following species?
  - a. Great-horned owl
  - b. Northern bobwhite
  - c. Red-eyed vireo
  - d. Wood duck
  
2. What would be a good physical description of a Southeast Mixed or Outer Coastal Plain Forest?
  - a. The terrain is rolling hills to mostly flat with numerous wetlands. The average annual precipitation ranges from 40 to 60 inches. Precipitation is received year round. Summers are hot and winters are mild.
  - b. The terrain is relatively flat to rolling with isolated buttes and mountains. Annual precipitation varies from 2 to 25 inches depending on elevation. Moisture is usually received in the summer and fall. Summers are hot, winters cool.
  - c. The terrain is steeply sloping mountains crossed by many valleys. Average annual precipitation ranges from 30 to 150 inches. The majority of the moisture comes in winter and early spring.
  - d. The terrain is characterized by flat to rolling plains. Average annual precipitation ranges from 20 to 40 inches. Precipitation is received primarily as summer rain and winter snow. Winters are cold, summers are hot.
  
3. Which one of the following species would not be present in a Hot Desert?
  - a. Mule deer
  - b. Black-throated sparrow
  - c. Desert cottontail
  - d. Wood duck
  
4. Which one of the following species does not eat eggs?
  - a. Fox
  - b. Mole
  - c. Snake
  - d. Otter

5. Planting mast trees generally benefits which of these species?  
1-Woodpeckers 2-Raccoon 3-Wild turkey 4-Grouse
- 2 and 3 only
  - 1 and 3 only
  - 1, 3, and 4
  - all of the above
6. Which one of the following species is considered a non-game species?
- American Kestrel
  - Bluegill
  - Eastern cottontail
  - Wild turkey
7. Which habitat requirement is most limiting for White-tailed deer in a 300 acre tract of Great Plains Grassland? The habitat is made up of irrigated cropland and adjacent fallow fields that were taken out of rotation. The fallow fields are at stages 2 and 3 in plant succession (annual forbs and grasses, perennial grasses and forbs).
- Water
  - Cover
  - Food
  - Space
8. Which one of the following are brush piles most useful for?
- Providing forage for deer
  - Preventing succession
  - Cover for coyotes
  - Cover for rabbits and quail
9. Which one of the following species eats bark?
- Pronghorn
  - Deer
  - Woodpecker
  - Shrew
10. In an urban setting, which one of the management actions would not benefit bluebirds?
- Bird feeders
  - Nest boxes
  - Planting of shrubs and trees
  - Bird bathes

Matching: Match the wildlife species in column A to the general habitat preference description in column B (use each letter only once, not all descriptions have a species).

For reference: Stage 1 - Bare ground

Stage 2 – Annual forbs and grasses

Stage 3 – Perennial forbs and grasses

Stage 4 – Shrubs

Stage 5 – Young woodland

Stage 6 – Mature woodland

Column A

Column B

\_\_\_\_\_ 11. Mallard (winter habitat only)

\_\_\_\_\_ 12. Coyote

\_\_\_\_\_ 13. Hairy woodpecker

\_\_\_\_\_ 14. Raccoon

\_\_\_\_\_ 15. Great-horned owl

- a. Ponds, lakes, and slow moving rivers.
- b. It occurs in a wide variety of forested habitats, mainly open woodlands of stages 5 and 6 of succession, interspersed with areas of stages 2, 3, and 4.
- c. Wetlands with open water, harvested grain crops, and riparian areas with open water.
- d. Stages 4, 5, and 6 of plant succession are best habitat. It will use stage 3 of plant succession if areas with mature trees are nearby. They also use wooded urban and riparian areas.
- e. Stages 2, 3, and 4 are primary habitats for this species, particularly grasslands and areas where timberlands have been cleared for agriculture.
- f. Stages 2 and 3 with interspersed with wetlands.
- g. It occurs most often near water, riparian areas, and lands adjacent to wetlands. Stages 5 and 6 are ideal.

Matching: Match the terms in column A to the definitions in column B (use each letter only once, not all definitions have a term).

<u>Column A</u>	<u>Column B</u>
_____ 16. Species Richness	a. Travel that occurs during different seasons of the year and times of the day.
_____ 17. Edge	b. The area of constant use by a species.
_____ 18. Migration	c. The change in plant cover and species over time.
_____ 19. Carrying Capacity	d. How different successional stages of vegetation types are situated in relation to each other.
_____ 20. Succession	e. The boundary where two or more types of vegetation or successional stages meet.
	f. The number of different kinds of wildlife species that are found in an area.
	g. The limit to how many animals can live in a habitat.
	h. The life requirements of wildlife that must be supplied by the habitat to ensure their well being.

Please contact Andrea Feldpausch at Texas A&M University if there are any questions about the survey or evaluation process at (979) 458-0708 or feld36@tamu.edu.

Thank you for your cooperation in making WHEP a better program!

## Texas 4-H Wildlife Habitat Evaluation Program 6 Month Post Contest Coach/Leader Survey

This is the 6 month post contest survey. Most survey questions are identical to questions asked in the first and second surveys. This is because some of your answers may have changed from the first two surveys. Your cooperation in this evaluation will be much appreciated and will help improve and/or expand the WHEP contest. Please take a few moments to fill out this survey. Thank you.

**Name:** \_\_\_\_\_

Did you participate in the survey process at the state contest (circle one)? Yes No

### About WHEP:

Please rate your youth's current skills in the following areas using the below scale (fill in one bubble per row).

	Not at all	Somewhat	Pretty Good	Excellent
Get along well with members of the team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel confident in team discussion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Make sure that everyone has a chance to speak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to help end disputes between team members	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel comfortable in helping others with difficult concepts (team members, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel confident in guiding newer members in the learning process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel comfortable sharing ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to assist with group decision making	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to make judgement calls when the team is undecided	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to talk to family and others about wildlife and wildlife management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel comfortable taking notes and sharing them with the team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel confident when turning in a paper they have written	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Not at all	Somewhat	Pretty Good	Excellent

Do you feel that, over the 6 month period since the contest, WHEP has had a continuing affect on the following? (write yes or no):

- \_\_\_\_\_ Increased the youths' knowledge of ecological systems
- \_\_\_\_\_ Increased their interest in learning
- \_\_\_\_\_ Increased their confidence in their abilities
- \_\_\_\_\_ Helped them understand a need for resource management and sustainability
- \_\_\_\_\_ Given them a feeling of respect and responsibility for the environment
- \_\_\_\_\_ Given them ideas about a career in natural resources management or a related field

Do you have anything else you would like to share? \_\_\_\_\_

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Please contact Andrea Feldpausch at Texas A&M University if there are any questions about the survey or evaluation process at (979) 458-0708 or [feld36@tamu.edu](mailto:feld36@tamu.edu).

Thank you for your cooperation in making WHEP a better program!

## Texas 4-H Wildlife Habitat Evaluation Program 6 Month Post Contest Parent/Guardian Survey

This is the 6 month post contest survey. Most survey questions are identical to questions asked in the first and second surveys. This is because some of your answers may have changed from the first two surveys. Your cooperation in this evaluation will be much appreciated and will help improve and/or expand the WHEP contest. Please take a few moments to fill out this survey. Thank you.

**Name:** \_\_\_\_\_

Did you participate in the survey process at the state contest (circle one)? Yes No

### About WHEP:

Please rate your child's current skills in the following areas using the scale listed below (fill in one bubble per row).

	Not at all	Somewhat	Pretty Good	Excellent
Get along well with members of the team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel confident in team discussion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Make sure that everyone has a chance to speak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to help end disputes between team members	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel comfortable in helping others with difficult concepts (team members, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel confident in guiding newer members in the learning process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel comfortable sharing ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to assist with group decision making	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to make judgement calls when the team is undecided	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to talk to family and others about wildlife and wildlife management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel comfortable taking notes and sharing them with the team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel confident when turning in a paper they have written	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Not at all	Somewhat	Pretty Good	Excellent



## Texas 4-H Wildlife Habitat Evaluation Program 6 Month Post Contest Current WHEP Participant Survey

This is the 6 month post contest survey. Most survey questions are identical to questions asked in the first and second surveys. This is because some of your answers may have changed from the first two surveys. Your cooperation in this evaluation will be much appreciated and will help improve and/or expand the WHEP contest. Please take a few moments to fill out this survey. Thank you.

**Name:** \_\_\_\_\_

Did you participate in the survey process at the state contest (circle one)? Yes No

### About WHEP:

Please rate your current skills in the following areas using the scale listed below (fill in one bubble per row).

	Not at all	Somewhat	Pretty Good	Excellent
I get along well with members of my team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel confident in team discussion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I make sure that everyone has a chance to speak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to help end disputes between team members	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable in helping others with difficult concepts (team members, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel confident in guiding newer members in the learning process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable sharing ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to assist with group decision making	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to make judgement calls when my team is undecided	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to talk to family and others about wildlife and wildlife management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable taking notes and sharing them with the team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel confident when turning in a paper I have written	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Not at all	Somewhat	Pretty Good	Excellent

Do you have anything else you would like to share? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### Attitude Test:

Please rate how well you agree or disagree with the following statements using the scale listed below (fill in one bubble per row). There are no right or wrong answers. It is your thoughts we are interested in.

	Disagree Completely	Somewhat Disagree	Uncertain	Somewhat Agree	Agree Completely
Natural resources must be managed to ensure their availability for future generations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
With respect to natural resources, nature should be allowed to take its course without human interference.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prescribed fire destroys natural habitats.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prescribed fire can improve habitat conditions for wildlife.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is acceptable to eliminate predators that prey on threatened and endangered species.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is acceptable to eliminate predators that prey on game species.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grazing is destructive to natural vegetation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grazing can be used to enhance wildlife habitat.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Harvesting timber permanently harms forests.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Public forests should be managed for multiple uses (wildlife, timber, recreation, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to have a variety of successional stages in a forest.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hunting is an acceptable natural resource management practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Disagree Completely	Somewhat Disagree	Uncertain	Somewhat Agree	Agree Completely

### Knowledge Test:

This portion of the survey is to determine your “on the spot” knowledge of wildlife after participation in the 2005 State WHEP competition. Please do not use any resources (including your parents, coaches, manuals, and the internet) to assist you in this test. This test has no impact on your participation in the state competition.

What does WILDLIFE MANAGEMENT mean to you?

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Multiple Choice Questions: Circle the answer (only one) that best fits the question.

1. Controlled (prescribed) burning generally benefits which one of the following species?
  - a. Great-horned owl
  - b. Northern bobwhite
  - c. Red-eyed vireo
  - d. Wood duck
  
2. What would be a good physical description of a Southeast Mixed or Outer Coastal Plain Forest?
  - a. The terrain is rolling hills to mostly flat with numerous wetlands. The average annual precipitation ranges from 40 to 60 inches. Precipitation is received year round. Summers are hot and winters are mild.
  - b. The terrain is relatively flat to rolling with isolated buttes and mountains. Annual precipitation varies from 2 to 25 inches depending on elevation. Moisture is usually received in the summer and fall. Summers are hot, winters cool.
  - c. The terrain is steeply sloping mountains crossed by many valleys. Average annual precipitation ranges from 30 to 150 inches. The majority of the moisture comes in winter and early spring.
  - d. The terrain is characterized by flat to rolling plains. Average annual precipitation ranges from 20 to 40 inches. Precipitation is received primarily as summer rain and winter snow. Winters are cold, summers are hot.
  
3. Which one of the following species would not be present in a Hot Desert?
  - a. Mule deer
  - b. Black-throated sparrow
  - c. Desert cottontail
  - d. Wood duck

4. Which one of the following species does not eat eggs?
  - a. Fox
  - b. Mole
  - c. Snake
  - d. Otter
  
5. Planting mast trees generally benefits which of these species?  
1-Woodpeckers 2-Raccoon 3-Wild turkey 4-Grouse
  - a. 2 and 3 only
  - b. 1 and 3 only
  - c. 1, 3, and 4
  - d. all of the above
  
6. Which one of the following species is considered a non-game species?
  - a. American Kestrel
  - b. Bluegill
  - c. Eastern cottontail
  - d. Wild turkey
  
7. Which habitat requirement is most limiting for White-tailed deer in a 300 acre tract of Great Plains Grassland? The habitat is made up of irrigated cropland and adjacent fallow fields that were taken out of rotation. The fallow fields are at stages 2 and 3 in plant succession (annual forbs and grasses, perennial grasses and forbs).
  - a. Water
  - b. Cover
  - c. Food
  - d. Space
  
8. Which one of the following are brush piles most useful for?
  - a. Providing forage for deer
  - b. Preventing succession
  - c. Cover for coyotes
  - d. Cover for rabbits and quail
  
9. Which one of the following species eats bark?
  - a. Pronghorn
  - b. Deer
  - c. Woodpecker
  - d. Shrew

10. In an urban setting, which one of the management actions would not benefit bluebirds?
- a. Bird feeders
  - b. Nest boxes
  - c. Planting of shrubs and trees
  - d. Bird bathes

Matching: Match the wildlife species in column A to the general habitat preference description in column B (use each letter only once, not all descriptions have a species).

For reference: Stage 1 - Bare ground

Stage 2 – Annual forbs and grasses

Stage 3 – Perennial forbs and grasses

Stage 4 – Shrubs

Stage 5 – Young woodland

Stage 6 – Mature woodland

Column A

Column B

- |   |   |
|---|---|
| <p>_____ 11. Mallard (winter habitat only)</p> <p>_____ 12. Coyote</p> <p>_____ 13. Hairy woodpecker</p> <p>_____ 14. Raccoon</p> <p>_____ 15. Great-horned owl</p> | <p>a. Ponds, lakes, and slow moving rivers.</p> <p>b. It occurs in a wide variety of forested habitats, mainly open woodlands of stages 5 and 6 of succession, interspersed with areas of stages 2, 3, and 4.</p> <p>c. Wetlands with open water, harvested grain crops, and riparian areas with open water.</p> <p>d. Stages 4, 5, and 6 of plant succession are best habitat. It will use stage 3 of plant succession if areas with mature trees are nearby. They also use wooded urban and riparian areas.</p> <p>e. Stages 2, 3, and 4 are primary habitats for this species, particularly grasslands and areas where timberlands have been cleared for agriculture.</p> <p>f. Stages 2 and 3 with interspersed with wetlands.</p> <p>g. It occurs most often near water, riparian areas, and lands adjacent to wetlands. Stages 5 and 6 are ideal.</p> |
|---|---|

Matching: Match the terms in column A to the definitions in column B (use each letter only once, not all definitions have a term).

<u>Column A</u>	<u>Column B</u>
_____ 16. Species Richness	a. Travel that occurs during different seasons of the year and times of the day.
_____ 17. Edge	b. The area of constant use by a species.
_____ 18. Migration	c. The change in plant cover and species over time.
_____ 19. Carrying Capacity	d. How different successional stages of vegetation types are situated in relation to each other.
_____ 20. Succession	e. The boundary where two or more types of vegetation or successional stages meet.
	f. The number of different kinds of wildlife species that are found in an area.
	g. The limit to how many animals can live in a habitat.
	h. The life requirements of wildlife that must be supplied by the habitat to ensure their well being.

Please contact Andrea Feldpausch at Texas A&M University if there are any questions about the survey or evaluation process at (979) 458-0708 or feld36@tamu.edu.

Thank you for your cooperation in making WHEP a better program!

## Texas 4-H Wildlife Habitat Evaluation Program 6 Month Post Contest Control Survey

This is the 6 month post contest survey. Most survey questions are identical to questions asked in the first and second surveys. This is because some of your answers may have changed from the first two surveys. Your cooperation in this evaluation will be much appreciated and will help improve and/or expand the WHEP contest. Please take a few moments to fill out this survey. Thank you.

**Name:** \_\_\_\_\_

### Your Current Life Skills:

Please rate your current skills in the following areas using the scale listed below (fill in one bubble per row).

	Not at all	Somewhat	Pretty Good	Excellent
I get along well with members of my team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel confident in team discussion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I make sure that everyone has a chance to speak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to help end disputes between team members	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable in helping others with difficult concepts (team members, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel confident in guiding newer members in the learning process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable sharing ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to assist with group decision making	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to make judgement calls when my team is undecided	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to talk to family and others about wildlife and wildlife management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable taking notes and sharing them with the team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel confident when turning in a paper I have written	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Not at all	Somewhat	Pretty Good	Excellent

**Attitude Test:**

Please rate how well you agree or disagree with the following statements using the scale listed below (fill in one bubble per row). There are no right or wrong answers. It is your thoughts we are interested in.

	Disagree Completely	Somewhat Disagree	Uncertain	Somewhat Agree	Agree Completely
Natural resources must be managed to ensure their availability for future generations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
With respect to natural resources, nature should be allowed to take its course without human interference.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prescribed fire destroys natural habitats.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prescribed fire can improve habitat conditions for wildlife.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is acceptable to eliminate predators that prey on threatened and endangered species.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is acceptable to eliminate predators that prey on game species.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grazing is destructive to natural vegetation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grazing can be used to enhance wildlife habitat.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Harvesting timber permanently harms forests.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Public forests should be managed for multiple uses (wildlife, timber, recreation, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to have a variety of successional stages in a forest.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hunting is an acceptable natural resource management practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Disagree Completely	Somewhat Disagree	Uncertain	Somewhat Agree	Agree Completely

**Knowledge Test:**

This portion of the survey is to determine your “on the spot” knowledge of wildlife. Please do not use any resources (including your parents, books, and the internet) to assist you in this test.

What does WILDLIFE MANAGEMENT mean to you?

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Multiple Choice Questions: Circle the answer (only one) that best fits the question.

1. Controlled (prescribed) burning generally benefits which one of the following species?
  - a. Great-horned owl
  - b. Northern bobwhite
  - c. Red-eyed vireo
  - d. Wood duck
  
2. What would be a good physical description of a Southeast Mixed or Outer Coastal Plain Forest?
  - a. The terrain is rolling hills to mostly flat with numerous wetlands. The average annual precipitation ranges from 40 to 60 inches. Precipitation is received year round. Summers are hot and winters are mild.
  - b. The terrain is relatively flat to rolling with isolated buttes and mountains. Annual precipitation varies from 2 to 25 inches depending on elevation. Moisture is usually received in the summer and fall. Summers are hot, winters cool.
  - c. The terrain is steeply sloping mountains crossed by many valleys. Average annual precipitation ranges from 30 to 150 inches. The majority of the moisture comes in winter and early spring.
  - d. The terrain is characterized by flat to rolling plains. Average annual precipitation ranges from 20 to 40 inches. Precipitation is received primarily as summer rain and winter snow. Winters are cold, summers are hot.
  
3. Which one of the following species would not be present in a Hot Desert?
  - a. Mule deer
  - b. Black-throated sparrow
  - c. Desert cottontail
  - d. Wood duck
  
4. Which one of the following species does not eat eggs?
  - a. Fox
  - b. Mole
  - c. Snake
  - d. Otter

5. Planting mast trees generally benefits which of these species?  
1-Woodpeckers 2-Raccoon 3-Wild turkey 4-Grouse
- 2 and 3 only
  - 1 and 3 only
  - 1, 3, and 4
  - all of the above
6. Which one of the following species is considered a non-game species?
- American Kestrel
  - Bluegill
  - Eastern cottontail
  - Wild turkey
7. Which habitat requirement is most limiting for White-tailed deer in a 300 acre tract of Great Plains Grassland? The habitat is made up of irrigated cropland and adjacent fallow fields that were taken out of rotation. The fallow fields are at stages 2 and 3 in plant succession (annual forbs and grasses, perennial grasses and forbs).
- Water
  - Cover
  - Food
  - Space
8. Which one of the following are brush piles most useful for?
- Providing forage for deer
  - Preventing succession
  - Cover for coyotes
  - Cover for rabbits and quail
9. Which one of the following species eats bark?
- Pronghorn
  - Deer
  - Woodpecker
  - Shrew
10. In an urban setting, which one of the management actions would not benefit bluebirds?
- Bird feeders
  - Nest boxes
  - Planting of shrubs and trees
  - Bird bathes

Matching: Match the wildlife species in column A to the general habitat preference description in column B (use each letter only once, not all descriptions have a species).

For reference: Stage 1 - Bare ground

Stage 2 – Annual forbs and grasses

Stage 3 – Perennial forbs and grasses

Stage 4 – Shrubs

Stage 5 – Young woodland

Stage 6 – Mature woodland

Column A

Column B

- |   |   |
|---|---|
| <p>_____ 11. Mallard (winter habitat only)</p> <p>_____ 12. Coyote</p> <p>_____ 13. Hairy woodpecker</p> <p>_____ 14. Raccoon</p> <p>_____ 15. Great-horned owl</p> | <p>a. Ponds, lakes, and slow moving rivers.</p> <p>b. It occurs in a wide variety of forested habitats, mainly open woodlands of stages 5 and 6 of succession, interspersed with areas of stages 2, 3, and 4.</p> <p>c. Wetlands with open water, harvested grain crops, and riparian areas with open water.</p> <p>d. Stages 4, 5, and 6 of plant succession are best habitat. It will use stage 3 of plant succession if areas with mature trees are nearby. They also use wooded urban and riparian areas.</p> <p>e. Stages 2, 3, and 4 are primary habitats for this species, particularly grasslands and areas where timberlands have been cleared for agriculture.</p> <p>f. Stages 2 and 3 with interspersed with wetlands.</p> <p>g. It occurs most often near water, riparian areas, and lands adjacent to wetlands. Stages 5 and 6 are ideal.</p> |
|---|---|

Matching: Match the terms in column A to the definitions in column B (use each letter only once, not all definitions have a term).

<u>Column A</u>	<u>Column B</u>
_____ 16. Species Richness	a. Travel that occurs during different seasons of the year and times of the day.
_____ 17. Edge	b. The area of constant use by a species.
_____ 18. Migration	c. The change in plant cover and species over time.
_____ 19. Carrying Capacity	d. How different successional stages of vegetation types are situated in relation to each other.
_____ 20. Succession	e. The boundary where two or more types of vegetation or successional stages meet.
	f. The number of different kinds of wildlife species that are found in an area.
	g. The limit to how many animals can live in a habitat.
	h. The life requirements of wildlife that must be supplied by the habitat to ensure their well being.

## Texas 4-H Wildlife Habitat Evaluation Program Past Participant Survey

The Texas 4-H Wildlife Habitat Evaluation Program (WHEP) has been available to youth in 4-H since 1993. This instrument is intended to assist in an evaluation of the Texas WHEP contest to determine program effectiveness. Your cooperation in this evaluation will be much appreciated and will help improve and/or expand the program. Please take a few moments to fill out this survey. Thank you.

**Name:** \_\_\_\_\_

### **About WHEP:**

How many years did you participate? \_\_\_\_\_

Please list your past motivations for having participated in the program (e.g. your friends participate in the program, you were interested in the out-of-doors): \_\_\_\_\_

\_\_\_\_\_

How did you hear about WHEP?

- a. Friend or relative
- b. 4-H agent/teacher or other educator
- c. Internet
- d. Publication (e.g. pamphlet, magazine or newspaper article)
- e. Other \_\_\_\_\_

Please rate your skill level prior to participation in WHEP in the following areas using the numbered scale listed below.

	Not at all	Somewhat	Pretty Good	Excellent
I get along well with members of my team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel confident in team discussion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I make sure that everyone has a chance to speak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to help end disputes between team members	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable in helping others with difficult concepts (team members, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel confident in guiding newer members in the learning process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable sharing ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to assist with group decision making	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to make judgement calls when my team is undecided	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to talk to family and others about wildlife and wildlife management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable taking notes and sharing them with the team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel confident when turning in a paper I have written	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Not at all	Somewhat	Pretty Good	Excellent

Please rate your skill level after participation in WHEP in the following areas using the numbered scale listed below.

	Not at all	Somewhat	Pretty Good	Excellent
I get along well with members of my team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel confident in team discussion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I make sure that everyone has a chance to speak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to help end disputes between team members	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable in helping others with difficult concepts (team members, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel confident in guiding newer members in the learning process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable sharing ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to assist with group decision making	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to make judgement calls when my team is undecided	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the ability to talk to family and others about wildlife and wildlife management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable taking notes and sharing them with the team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel confident when turning in a paper I have written	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Not at all	Somewhat	Pretty Good	Excellent

Do you feel that WHEP contributed to the following? (write yes or no):

\_\_\_\_\_ Increased my knowledge of ecological systems

\_\_\_\_\_ Increased my interest in learning

\_\_\_\_\_ Increased my confidence in my abilities

\_\_\_\_\_ Helped me understand a need for resource management and sustainability

\_\_\_\_\_ Gave me a feeling of respect and responsibility for the environment

\_\_\_\_\_ Gave me ideas about a career in natural resources management or a related field

Do you have anything else you would like to share? \_\_\_\_\_

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**Background Information:**

What is your gender? (circle one): Male    Female

Your age: \_\_\_\_\_

Your race or ethnicity (circle one):

- a. White or Anglo American
- b. Black or African American
- c. Spanish/Hispanic/Latino
- d. American Indian or Alaska Native
- e. Asian
- f. Native Hawaiian or Other Pacific Islander
- g. Other \_\_\_\_\_

Please estimate your family's annual household income (circle one):

- a. \$24,999 or less
- b. \$25,000...\$49,999
- c. \$50,000...\$74,999
- d. \$75,000...\$99,999
- e. \$100,000...\$149,999
- f. \$150,000...\$199,999
- g. \$200,000 or more

Highest level of formal education you have received (circle one):

- a. Some high school education
- b. High school diploma or GED equivalent
- c. Vocational or trade school
- d. Some college education
- e. Associate's degree
- f. Bachelor's degree
- g. Master's degree
- h. Ph.D.
- i. Professional degree (e.g. medical doctor)

Current residence (circle one):

- a. Rural, farm
- b. Rural, no farm
- c. Small town, less than 25,000 residents
- d. Urban area, 25,000-100,000 residents
- e. Metropolitan area, greater than 100,000 residents

You and your spouse's (if any) occupation(s) or Major in college (if you are not yet attending college, please type what major you are planning to pursue):

Yours \_\_\_\_\_ Spouse \_\_\_\_\_

**Attitude Test:**

	Disagree Completely	Somewhat Disagree	Uncertain	Somewhat Agree	Agree Completely
Natural resources must be managed to ensure their availability for future generations.	<input type="radio"/>				
With respect to natural resources, nature should be allowed to take its course without human interference.	<input type="radio"/>				
Prescribed fire destroys natural habitats.	<input type="radio"/>				
Prescribed fire can improve habitat conditions for wildlife.	<input type="radio"/>				
It is acceptable to eliminate predators that prey on threatened and endangered species.	<input type="radio"/>				
It is acceptable to eliminate predators that prey on game species.	<input type="radio"/>				
Grazing is destructive to natural vegetation.	<input type="radio"/>				
Grazing can be used to enhance wildlife habitat.	<input type="radio"/>				
Harvesting timber permanently harms forests.	<input type="radio"/>				
Public forests should be managed for multiple uses (wildlife, timber, recreation, etc.).	<input type="radio"/>				
It is important to have a variety of successional stages in a forest.	<input type="radio"/>				
Hunting is an acceptable natural resource management practice.	<input type="radio"/>				
	Disagree Completely	Somewhat Disagree	Uncertain	Somewhat Agree	Agree Completely

Thank you for your cooperation in making WHEP a better program!

## APPENDIX C

### LIST OF TABLES

TABLE		Page
C.1	Past WHEP participants' college majors and/or fields of specialization as reported in past participant survey, 2005.....	166
C.2	Mean difference in WHEP participant knowledge scores between pre and post-contest surveys (percent correct) by question as measured by paired sample t-tests, 2005. ....	167
C.3	Mean difference in WHEP participant knowledge scores between post and 6-month post-contest surveys (percent correct) by question as measured by paired sample t-tests, 2005.....	168
C.4	Mean difference in WHEP participant knowledge scores between pre and 6-month post-contest surveys (percent correct) by question as measured by paired sample t-tests, 2005.....	169
C.5	Mean responses (and standard deviations) to individual attitude statements by WHEP participants and study controls over the 3 survey period, and past participants, 2005.....	170
C.6	Mean difference in WHEP participant attitude ratings between pre and post-contest surveys by attitude statement as measured by paired sample t-tests, 2005.....	171
C.7	Mean difference in WHEP participant attitude ratings between post and 6-month post-contest surveys by attitude statement as measured by paired sample t-tests, 2005.....	171
C.8	Mean difference in WHEP participant attitude ratings between pre and 6-month post-contest surveys by attitude statement as measured by paired sample t-tests, 2005.....	172
C.9	Mean difference in control attitude ratings between pre and post-contest surveys by attitude statement as measured by paired sample t-tests, 2005.....	172
C.10	Mean difference in control attitude ratings between post and 6-month post-contest surveys by attitude statement as measured by paired sample t-tests, 2005.....	173

TABLE		Page
C.11	Mean difference in control attitude ratings between pre and 6-month post-contest surveys by attitude statement as measured by paired sample t-tests, 2005.....	173
C.12	Mean difference between WHEP participant and control pre-contest attitude ratings by attitude statement as measured by paired sample t-tests, 2005.....	174
C.13	Mean difference between WHEP participant and control post-contest attitude ratings by attitude statement as measured by paired sample t-tests, 2005.....	174
C.14	Mean difference between WHEP participant and control 6-month post-contest attitude ratings by attitude statement as measured by paired sample t-tests, 2005.....	175
C.15	Mean difference between current WHEP participant post-contest and past WHEP participant attitude ratings by attitude statement as measured by paired sample t-tests, 2005.....	175
C.16	Mean responses (and standard deviations) to individual skill statements by WHEP participants and study controls over the 3 survey period, and past participants, 2005.....	176
C.17	Mean responses (and standard deviations) to individual skill statements by WHEP coaches and parents over the 3 survey period, 2005.....	177
C.18	Odds ratio estimates for past participant skills before and after participation in WHEP based on years involved, 2005.....	177

Table C.1. Past WHEP participants' college majors and/or fields of specialization as reported in past participant survey, 2005.

Majors/Field of Specialization	Frequency	Percent
Agriculture	4	22.2
Communication	1	5.6
Computer Science	2	11.1
Education	1	5.6
Engineering	2	11.1
Medicine	2	11.1
Wildlife/Fisheries Sciences	4	22.2
Zoology/Marine Biology	2	11.1
Total	18	100.0

Table C.2. Mean difference in WHEP participant knowledge scores between pre and post-contest surveys (percent correct) by question as measured by paired sample t-tests, 2005. (Difference significant at  $*P<0.05$ ).

Question	Mean Diff.	SD	Lower CI (95%)	Upper CI (95%)	P-value
1	-0.04	0.528	-0.252	0.175	0.713
2	-0.04	0.445	-0.218	0.141	0.664
3	0.04	0.196	-0.041	0.118	0.327
4	0.04	0.200	-0.043	0.123	0.327
5	0.04	0.720	-0.252	0.329	0.788
6	0.08	0.277	-0.034	0.194	0.161
7	0.19	0.491	-0.006	0.391	0.057
8	-0.04	0.351	-0.185	0.105	0.574
9	0.00	0.283	-0.114	0.114	1.000
10	-0.19	0.402	-0.355	-0.030	0.022*
11	0.04	0.662	-0.229	0.306	0.770
12	0.12	0.526	-0.097	0.337	0.265
13	0.28	0.678	0.000	0.560	0.050
14	0.20	0.764	-0.115	0.515	0.203
15	0.24	0.597	-0.007	0.487	0.056
16	0.04	0.550	-0.191	0.274	0.714
17	0.12	0.332	-0.017	0.257	0.083
18	0.08	0.277	-0.034	0.194	0.161
19	0.04	0.359	-0.110	0.193	0.575
20	-0.08	0.504	-0.296	0.129	0.426

Table C.3. Mean difference in WHEP participant knowledge scores between post and 6-month post-contest surveys (percent correct) by question as measured by paired sample t-tests, 2005. (Difference significant at  $*P<0.05$ ).

Question	Mean Diff.	SD	Lower CI (95%)	Upper CI (95%)	P-value
1	0.23	0.587	-0.006	0.468	0.056
2	0.23	0.587	-0.006	0.468	0.056
3	0.12	0.431	-0.059	0.290	0.185
4	0.16	0.554	-0.069	0.389	0.161
5	0.12	0.711	-0.172	0.403	0.416
6	0.08	0.392	-0.082	0.235	0.327
7	-0.15	0.464	-0.341	0.034	0.103
8	0.04	0.351	-0.105	0.185	0.574
9	0.19	0.491	-0.006	0.391	0.057
10	0.15	0.613	-0.094	0.401	0.212
11	-0.12	0.526	-0.337	0.097	0.265
12	0.00	0.500	-0.206	0.206	1.000
13	-0.20	0.646	-0.466	0.066	0.134
14	-0.20	0.646	-0.466	0.066	0.134
15	-0.08	0.584	-0.330	0.163	0.491
16	-0.13	0.548	-0.367	0.107	0.266
17	0.13	0.537	-0.102	0.352	0.266
18	0.04	0.359	-0.110	0.193	0.575
19	0.08	0.408	-0.089	0.256	0.328
20	0.04	0.638	-0.232	0.319	0.747

Table C.4. Mean difference in WHEP participant knowledge scores between pre and 6-month post-contest surveys (percent correct) by question as measured by paired sample t-tests, 2005. (Difference significant at  $*P < 0.05$ ).

Question	Mean Diff.	SD	Lower CI (95%)	Upper CI (95%)	P-value
1	0.19	0.602	-0.083	0.464	0.162
2	0.24	0.539	-0.007	0.483	0.056
3	0.14	0.359	-0.020	0.306	0.083
4	0.14	0.478	-0.075	0.360	0.186
5	0.10	0.539	-0.150	0.341	0.428
6	0.15	0.366	-0.021	0.321	0.083
7	0.05	0.384	-0.127	0.223	0.576
8	-0.05	0.218	-0.147	0.052	0.329
9	0.19	0.402	0.007	0.374	0.042*
10	-0.14	0.478	-0.360	0.075	0.186
11	0.00	0.548	-0.249	0.249	1.000
12	0.15	0.489	-0.079	0.379	0.186
13	-0.05	0.510	-0.289	0.189	0.666
14	0.05	0.686	-0.271	0.371	0.748
15	0.15	0.671	-0.164	0.464	0.330
16	-0.42	0.507	-0.666	-0.177	0.002*
17	0.16	0.375	-0.023	0.338	0.083
18	0.05	0.229	-0.058	0.163	0.331
19	0.00	0.343	-0.171	0.171	1.000
20	-0.16	0.602	-0.448	0.132	0.268

Table C.5. Mean responses (and standard deviations) to individual attitude statements by WHEP participants and study controls over the 3 survey period, and past participants, 2005. Possible responses were 1 = Disagree Completely, 2 = Somewhat Disagree, 3 = Uncertain, 4 = Somewhat Agree, and 5 = Agree Completely.

Attitude Statement	Participant Mean (SD)			Control Mean (SD)			Mean (SD)
	Pre	Post	6-month post	Pre	Post	6-month post	Past Participant
Natural resources must be managed to ensure their availability for future generations.	4.5 (0.7)	4.5 (0.8)	4.7 (0.5)	4.3 (0.8)	4.6 (0.6)	4.5 (0.7)	4.7 (0.7)
With respect to natural resources, nature should be allowed to take its course without human interference.	3.6 (1.0)	3.7 (1.2)	3.5 (1.3)	3.4 (1.1)	3.6 (1.1)	3.0 (0.9)	3.1 (1.2)
Prescribed fire destroys natural habitats.	2.2 (1.3)	2.5 (1.5)	2.7 (1.4)	2.5 (1.3)	2.4 (1.4)	3.1 (1.4)	1.6 (0.8)
Prescribed fire can improve habitat conditions for wildlife.	4.5 (0.6)	4.4 (0.9)	4.3 (0.8)	4.0 (1.2)	4.0 (1.2)	3.5 (1.3)	4.8 (0.4)
It is acceptable to eliminate predators that prey on threatened and endangered species.	4.1 (1.0)	3.8 (1.2)	3.7 (1.3)	3.0 (1.3)	2.8 (1.0)	2.8 (1.1)	3.0 (1.2)
It is acceptable to eliminate predators that prey on game species.	2.5 (1.5)	3.1 (1.5)	3.0 (1.4)	2.1 (1.2)	2.3 (1.1)	2.3 (1.2)	2.1 (1.2)
Grazing is destructive to natural vegetation.	2.3 (1.3)	2.6 (1.4)	2.5 (1.3)	2.5 (1.4)	2.3 (1.2)	2.0 (1.2)	2.7 (1.2)
Grazing can be used to enhance wildlife habitat.	3.5 (1.3)	3.5 (1.2)	3.8 (1.2)	3.7 (0.8)	3.7 (0.9)	3.8 (1.0)	3.9 (1.2)
Harvesting timber permanently harms forests.	2.8 (1.5)	2.5 (1.4)	2.7 (1.4)	3.2 (1.4)	2.9 (1.1)	2.8 (1.5)	2.3 (1.2)
Public forests should be managed for multiple uses (wildlife, timber, recreation, etc.).	3.7 (1.4)	4.4 (0.7)	4.1 (1.0)	3.9 (0.8)	3.4 (1.2)	3.3 (1.3)	3.9 (1.2)
It is important to have a variety of successional stages in a forest.		4.5 (0.6)	4.7 (0.5)		4.3 (0.9)	4.1 (0.9)	4.5 (1.0)
Hunting is an acceptable natural resource management practice.	3.5 (1.6)	4.2 (1.0)	4.6 (0.6)	4.2 (1.0)	4.1 (1.0)	4.0 (1.3)	4.5 (0.8)

Table C.6. Mean difference in WHEP participant attitude ratings between pre and post-contest surveys by attitude statement as measured by paired sample t-tests, 2005. (Difference significant at  $*P<0.05$ ).

Attitude Statement	Mean Diff.	SD	Lower CI (95%)	Upper CI (95%)	P-value
Attitude 1	0.04	1.207	-0.458	0.538	0.870
Attitude 2	-0.40	1.633	-1.074	0.274	0.233
Attitude 3	-0.42	1.886	-1.213	0.380	0.290
Attitude 4	0.25	0.794	-0.085	0.585	0.137
Attitude 5	0.64	1.319	0.096	1.184	0.023*
Attitude 6	-0.08	1.778	-0.814	0.654	0.824
Attitude 7	-0.21	1.693	-0.923	0.507	0.553
Attitude 8	-0.08	1.909	-0.890	0.723	0.833
Attitude 9	0.36	1.955	-0.447	1.167	0.366
Attitude 10	-0.60	1.384	-1.171	-0.029	0.040*
Attitude 11	-0.50	0.707	-6.853	5.853	0.500
Attitude 12	-0.32	1.547	-0.959	0.319	0.311

Table C.7. Mean difference in WHEP participant attitude ratings between post and 6-month post-contest surveys by attitude statement as measured by paired sample t-tests, 2005. (Difference significant at  $*P<0.05$ ).

Attitude Statement	Mean Diff.	SD	Lower CI (95%)	Upper CI (95%)	P-value
Attitude 1	-0.27	1.079	-0.705	0.167	0.215
Attitude 2	0.23	1.773	-0.485	0.947	0.513
Attitude 3	-0.08	2.397	-1.069	0.909	0.869
Attitude 4	0.04	1.485	-0.573	0.653	0.894
Attitude 5	-0.15	2.053	-0.983	0.675	0.706
Attitude 6	0.00	2.020	-0.816	0.816	1.000
Attitude 7	0.00	1.979	-0.817	0.817	1.000
Attitude 8	-0.50	1.860	-1.251	0.251	0.183
Attitude 9	-0.23	1.966	-1.025	0.563	0.555
Attitude 10	0.27	1.041	-0.151	0.690	0.199
Attitude 11	-0.27	0.874	-0.622	0.084	0.129
Attitude 12	-0.54	1.303	-1.065	-0.012	0.045*

Table C.8. Mean difference in WHEP participant attitude ratings between pre and 6-month post-contest surveys by attitude statement as measured by paired sample t-tests, 2005. (Difference significant at  $*P<0.05$ ).

Attitude Statement	Mean Diff.	SD	Lower CI (95%)	Upper CI (95%)	P-value
Attitude 1	-0.20	0.816	-0.537	0.137	0.233
Attitude 2	-0.08	1.730	-0.794	0.634	0.819
Attitude 3	-0.28	2.189	-1.184	0.624	0.529
Attitude 4	0.16	1.281	-0.369	0.689	0.538
Attitude 5	0.48	1.610	-0.185	1.145	0.149
Attitude 6	-0.04	2.189	-0.943	0.863	0.928
Attitude 7	-0.32	1.701	-1.022	0.382	0.356
Attitude 8	-0.46	1.744	-1.195	0.278	0.211
Attitude 9	0.12	2.128	-0.758	0.998	0.780
Attitude 10	-0.32	1.626	-0.991	0.351	0.335
Attitude 11	0.50	2.121	-18.559	19.559	0.795
Attitude 12	-0.84	1.700	-1.542	-0.138	0.021*

Table C.9. Mean difference in control attitude ratings between pre and post-contest surveys by attitude statement as measured by paired sample t-tests, 2005. (Difference significant at  $*P<0.05$ ).

Attitude Statement	Mean Diff.	SD	Lower CI (95%)	Upper CI (95%)	P-value
Attitude 1	-0.31	1.078	-0.887	0.262	0.264
Attitude 2	-0.13	1.360	-0.850	0.600	0.718
Attitude 3	0.00	1.789	-0.953	0.953	1.000
Attitude 4	0.19	1.276	-0.493	0.868	0.566
Attitude 5	0.13	1.544	-0.698	0.948	0.751
Attitude 6	-0.06	1.652	-0.943	0.818	0.882
Attitude 7	0.25	1.880	-0.752	1.252	0.603
Attitude 8	0.13	1.310	-0.573	0.823	0.708
Attitude 9	0.63	1.408	-0.125	1.375	0.096
Attitude 10	0.47	1.457	-0.340	1.274	0.235
Attitude 11	-0.75	0.957	-2.273	0.773	0.215
Attitude 12	0.25	1.000	-0.283	0.783	0.333

Table C.10. Mean difference in control attitude ratings between post and 6-month post-contest surveys by attitude statement as measured by paired sample t-tests, 2005. (Difference significant at  $*P<0.05$ ).

Attitude Statement	Mean Diff.	SD	Lower CI (95%)	Upper CI (95%)	P-value
Attitude 1	0.08	0.996	-0.550	0.716	0.777
Attitude 2	0.17	1.337	-0.683	1.016	0.674
Attitude 3	-0.58	2.392	-2.103	0.936	0.416
Attitude 4	0.33	1.969	-0.918	1.585	0.570
Attitude 5	-0.25	1.215	-1.022	0.522	0.491
Attitude 6	-0.17	1.749	-1.278	0.945	0.748
Attitude 7	0.00	1.651	-1.049	1.049	1.000
Attitude 8	-0.25	1.288	-1.068	0.568	0.515
Attitude 9	0.08	2.234	-1.336	1.503	0.900
Attitude 10	-0.08	1.730	-1.182	1.016	0.870
Attitude 11	0.09	1.375	-0.833	1.015	0.831
Attitude 12	0.25	1.288	-0.568	1.068	0.515

Table C.11. Mean difference in control attitude ratings between pre and 6-month post-contest surveys by attitude statement as measured by paired sample t-tests, 2005. (Difference significant at  $*P<0.05$ ).

Attitude Statement	Mean Diff.	SD	Lower CI (95%)	Upper CI (95%)	P-value
Attitude 1	-0.33	1.155	-1.067	0.400	0.339
Attitude 2	0.25	1.485	-0.693	1.193	0.571
Attitude 3	-0.42	1.084	-1.105	0.272	0.210
Attitude 4	0.67	1.923	-0.555	1.888	0.255
Attitude 5	0.00	1.651	-1.049	1.049	1.000
Attitude 6	-0.17	1.115	-0.875	0.542	0.615
Attitude 7	0.42	1.676	-0.649	1.482	0.408
Attitude 8	0.08	1.730	-1.016	1.182	0.870
Attitude 9	0.67	2.015	-0.614	1.947	0.276
Attitude 10	0.64	1.804	-0.576	1.848	0.269
Attitude 11	N/A	N/A	N/A	N/A	N/A
Attitude 12	0.58	1.165	-0.157	1.323	0.111

Table C.12. Mean difference between WHEP participant and control pre-contest attitude ratings by attitude statement as measured by paired sample t-tests, 2005. (Difference significant at \* $P < 0.05$ ).

Attitude Statement	Mean Diff.	SD	Lower CI (95%)	Upper CI (95%)	P-value
Attitude 1	0.32	0.894	-0.078	0.714	0.110
Attitude 2	0.00	1.604	-0.711	0.711	1.000
Attitude 3	-0.05	2.149	-0.998	0.907	0.922
Attitude 4	0.45	1.371	-0.153	1.062	0.135
Attitude 5	1.14	1.642	0.409	1.864	0.004*
Attitude 6	0.82	2.085	-0.106	1.743	0.080
Attitude 7	-0.27	2.028	-1.172	0.626	0.535
Attitude 8	-0.52	1.436	-1.177	0.130	0.110
Attitude 9	-0.32	1.810	-1.121	0.484	0.419
Attitude 10	0.10	1.221	-0.460	0.651	0.724
Attitude 11	N/A	N/A	N/A	N/A	N/A
Attitude 12	-0.50	1.994	-1.384	0.384	0.253

Table C.13. Mean difference between WHEP participant and control post-contest attitude ratings by attitude statement as measured by paired sample t-tests, 2005. (Difference significant at \* $P < 0.05$ ).

Attitude Statement	Mean Diff.	SD	Lower CI (95%)	Upper CI (95%)	P-value
Attitude 1	-0.13	1.025	-0.671	0.421	0.633
Attitude 2	0.56	1.711	-0.349	1.474	0.208
Attitude 3	1.13	1.995	0.028	2.238	0.045*
Attitude 4	0.20	1.699	-0.741	1.141	0.655
Attitude 5	1.06	1.526	0.249	1.876	0.014*
Attitude 6	0.94	1.948	-0.101	1.976	0.073
Attitude 7	0.47	1.552	-0.393	1.326	0.264
Attitude 8	-0.38	1.408	-1.125	0.375	0.304
Attitude 9	-0.06	1.843	-1.044	0.919	0.894
Attitude 10	0.94	1.389	0.197	1.678	0.016*
Attitude 11	0.27	1.100	-0.342	0.876	0.364
Attitude 12	-0.19	1.328	-0.895	0.520	0.580

Table C.14. Mean difference between WHEP participant and control 6-month post-contest attitude ratings by attitude statement as measured by paired sample t-tests, 2005. (Difference significant at  $*P<0.05$ ).

Attitude Statement	Mean Diff.	SD	Lower CI (95%)	Upper CI (95%)	P-value
Attitude 1	0.17	0.577	-0.200	0.533	0.339
Attitude 2	-0.17	1.697	-1.245	0.911	0.740
Attitude 3	-1.08	2.151	-2.450	0.284	0.109
Attitude 4	1.25	1.545	0.268	2.232	0.017*
Attitude 5	1.25	1.215	0.478	2.022	0.004*
Attitude 6	1.08	1.564	0.089	2.077	0.035*
Attitude 7	0.50	2.195	-0.895	1.895	0.447
Attitude 8	0.17	1.586	-0.841	1.174	0.723
Attitude 9	-0.25	1.815	-1.403	0.903	0.643
Attitude 10	0.83	1.697	-0.245	1.911	0.117
Attitude 11	0.50	0.905	-0.075	1.075	0.082
Attitude 12	0.67	1.231	-0.115	1.449	0.087

Table C.15. Mean difference between current WHEP participant post-contest and past WHEP participant attitude ratings by attitude statement as measured by paired sample t-tests, 2005. (Difference significant at  $*P<0.05$ ).

Attitude Statement	Mean Diff.	SD	Lower CI (95%)	Upper CI (95%)	P-value
Attitude 1	-0.05	0.911	-0.492	0.387	0.804
Attitude 2	0.84	1.537	0.101	1.583	0.028*
Attitude 3	1.11	1.605	0.313	1.909	0.009*
Attitude 4	-0.50	1.249	-1.121	0.121	0.108
Attitude 5	0.79	1.873	-0.113	1.692	0.083
Attitude 6	0.95	2.297	-0.160	2.054	0.089
Attitude 7	0.28	2.109	-0.771	1.327	0.584
Attitude 8	-0.32	1.635	-1.104	0.472	0.411
Attitude 9	0.32	2.212	-0.751	1.382	0.542
Attitude 10	0.33	1.237	-0.282	0.948	0.269
Attitude 11	0.05	0.780	-0.323	0.429	0.772
Attitude 12	-0.63	1.422	-1.317	0.054	0.069

Table C.16. Mean responses (and standard deviations) to individual skill statements by WHEP participants and study controls over the 3 survey period, and past participants, 2005. Possible responses were 1 = Not at All, 2 = Somewhat, 3 = Pretty Good, and 4 = Excellent.

Skill Statement	Participant Mean (SD)			Control Mean (SD)			P.P. Mean (SD)	
	Pre	Post	6-Month	Pre	Post	6-Month	Before	After
I get along well with members of my team.	3.4 (0.7)	3.4 (0.7)	3.6 (0.6)	3.4 (0.6)	3.4 (0.6)	3.5 (0.5)	3.4 (0.6)	3.7 (0.5)
I feel confident in team discussion.	3.0 (0.6)	3.3 (0.6)	3.4 (0.7)	3.1 (0.7)	2.8 (0.9)	3.0 (0.6)	2.7 (0.7)	3.3 (0.5)
I make sure that everyone has a chance to speak.	3.3 (0.6)	3.3 (0.7)	3.2 (0.7)	3.1 (0.7)	3.3 (0.7)	3.2 (0.9)	2.9 (0.7)	3.5 (0.5)
I have the ability to help end disputes between team members.	2.7 (0.9)	2.8 (0.9)	3.0 (0.9)	2.4 (0.9)	2.6 (0.6)	3.1 (0.8)	2.4 (0.5)	3.0 (0.7)
I feel comfortable in helping others with difficult concepts (team members, etc.).	3.1 (0.8)	3.0 (0.9)	3.1 (0.8)	2.9 (0.9)	3.3 (0.7)	3.2 (0.4)	2.6 (0.8)	3.2 (0.6)
I feel confident in guiding newer members in the learning process.	3.1 (0.8)	2.8 (1.0)	3.0 (0.9)	2.8 (0.8)	2.7 (0.7)	2.9 (1.0)	2.5 (0.7)	3.4 (0.7)
I feel comfortable sharing ideas.	3.1 (0.8)	3.4 (0.7)	3.3 (0.6)	2.8 (0.8)	2.9 (1.0)	3.2 (0.6)	2.3 (0.9)	3.4 (0.5)
I have the ability to assist with group decision making.	3.2 (0.8)	3.3 (0.7)	3.5 (0.6)	2.7 (0.7)	2.7 (1.0)	3.0 (0.8)	2.6 (0.8)	3.4 (0.6)
I have the ability to make judgement calls when my team is undecided.	2.8 (0.9)	2.9 (0.8)	3.0 (0.8)	2.4 (0.9)	2.6 (1.0)	2.7 (0.9)	2.2 (0.8)	3.3 (0.6)
I have the ability to talk to family and others about wildlife and wildlife management.	3.4 (0.9)	3.1 (1.0)	3.4 (0.9)	3.0 (0.9)	2.5 (1.1)	3.0 (1.0)	2.1 (0.9)	3.4 (0.7)
I feel comfortable taking notes and sharing them with the team.	2.8 (0.9)	2.9 (1.0)	2.9 (0.8)	2.5 (1.0)	2.5 (0.8)	2.7 (0.9)	2.4 (0.6)	3.4 (0.6)
I feel confident when turning in a paper I have written.	3.0 (0.9)	3.1 (0.8)	3.1 (0.8)	2.8 (1.1)	2.6 (0.8)	2.9 (0.6)	2.5 (0.7)	3.2 (0.6)

Table C.17. Mean responses (and standard deviations) to individual skill statements by WHEP coaches and parents over the 3 survey period, 2005. Possible responses were 1 = Not at All, 2 = Somewhat, 3 = Pretty Good, and 4 = Excellent.

Skills of team	Coach Mean (SD)			Parent Mean (SD)		
	Pre (N = 7)	Post (N = 10)	6-Month (N = 4)	Pre (N=11)	Post (N = 28)	6-Month (N = 13)
Get Along	3.9 (0.4)	3.2 (0.4)	3.5 (0.6)	3.5 (0.7)	3.5 (0.6)	3.8 (0.6)
Team Discussion	3.0 (1.0)	3.2 (0.4)	3.5 (0.6)	3.4 (0.8)	3.3 (0.7)	3.5 (1.0)
Chance To Speak	2.7 (0.5)	3.2 (0.4)	2.5 (0.6)	3.1 (0.7)	3.4 (0.5)	3.4 (0.7)
End Disputes	3.0 (0.8)	3.1 (0.6)	3.0 (0.8)	3.1 (0.8)	3.0 (0.5)	3.2 (0.8)
Help With Diff Concepts	3.1 (0.9)	3.2 (0.6)	3.3 (1.0)	3.5 (0.7)	3.0 (0.8)	3.5 (0.9)
Guide New Members	3.4 (0.5)	3.2 (0.6)	3.3 (1.0)	3.3 (0.8)	3.1 (0.8)	3.5 (0.7)
Sharing Ideas	3.1 (0.7)	3.4 (0.5)	3.3 (0.5)	3.0 (0.6)	3.4 (0.6)	3.7 (0.6)
Decision Making	2.9 (1.1)	3.1 (0.3)	3.0 (0.8)	3.3 (0.6)	3.2 (0.7)	3.5 (0.8)
Judgement Calls	2.7 (1.0)	3.4 (0.5)	2.5 (0.6)	2.9 (0.8)	2.9 (0.7)	3.3 (0.9)
Ability To Talk	3.0 (0.8)	3.4 (0.5)	3.3 (1.0)	3.5 (0.7)	3.3 (0.6)	3.5 (0.9)
Taking Notes	2.7 (0.8)	3.4 (0.7)	3.0 (0.0)	3.0 (0.9)	3.2 (0.7)	3.2 (1.0)
Written Paper	2.4 (1.0)	3.2 (0.6)	3.3 (0.5)	2.8 (0.9)	3.1 (0.6)	3.1 (0.9)

Table C.18. Odds ratio estimates for past participant skills before and after participation in WHEP based on years involved, 2005. Estimates greater than 1 indicate a perceived increase in skill level. (Increase significant at \* $P < 0.05$ ).

Skill	Point Estimate	Lower CI (95%)	Upper CI (95%)
Get Along	1.058	0.646	1.733
Team Discussion	2.962*	1.027	8.544
Chance To Speak	2.467*	1.037	5.866
End Disputes	1.106	0.632	1.935
Help With Diff Concepts	1.716	0.932	3.161
Guide New Members	1.707	0.866	3.365
Sharing Ideas	2.097	0.817	5.383
Decision Making	1.291	0.754	2.208
Judgement Calls	2.492	0.728	8.535
Ability To Talk	4.565	0.665	31.351
Taking Notes	2.097	0.817	5.383
Written Paper	1.072	0.718	1.599

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