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## **UNDERGRADUATE STUDENT INTERNSHIPS IN NATURAL RESOURCES AT VIRGINIA 4-H EDUCATIONAL CENTERS**

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**ABSTRACT:** Virginia has six 4-H educational centers that provide residential camping experiences for over 22,000 youth per year, the second largest 4-H camping program in the United States. These children have many learning opportunities in the areas of natural resources and outdoor living skills. Beginning in 1995, the Chesapeake Bay Program in cooperation with the Virginia Division of Soil and Water Conservation provided funds for water quality instructors at each of the 4-H Centers. In 1998, the Virginia Forestry Educational Foundation began supporting a similar internship program for undergraduate students to serve as forestry instructors. Nearly 50 undergraduate students have now served as natural resource interns at the 4-H Centers. A description of the two internship programs, the process followed, and future directions are discussed.

### **INTRODUCTION**

4-H is a youth development program administered through the land-grant universities in each state, and was originally developed as a way to rapidly introduce change into the economic life of citizens through youth education (Wessel and Wessel, 1982). It remains a powerful force as the nation's largest youth educational program (Meadows, 2002). In Virginia, the 4-H program is administered through Virginia State (the 1890 land-grant university) and Virginia Tech. Leadership for 4-H natural resources programs is provided by Extension Specialists on both campuses. Extension Agents in each city or county manage a comprehensive 4-H program that includes camping as one of three delivery modes for 4-H curriculum.

Virginia 4-H camping programs began in 1917, and the first 4-H Camp built specifically for 4-H'ers was in 1928 (Meadows and Garst, 2001). In the late 1950s, Virginia embarked on a plan to develop regional 4-H educational centers that could be used year-round and by groups other than 4-H (VCES, 1987). Today there are six 4-H educational centers serving more than 31,000 youths annually (Figure 1). The largest numbers of these youths attend junior 4-H camps held during the summer months for ages 9-13. Each year, every county and city in Virginia conducts a junior 4-H camp program at one of the 4-H educational centers.



**Figure 1. Virginia 4-H Educational Centers**

4-H Centers are staffed in the summer months by college-age (18-24) seasonal employees who seek career-related employment away from home. These paid employees teach morning classes, supervise afternoon recreation, and conduct evening programs and special events. Each week, county/city Extension Agents provide their own 4-H teen and adult volunteer staff who supervise campers at night and supplement the programs offered by summer staff. Every 4-H Center has a year-round Program Director who is responsible for hiring summer staff and coordinating camp planning with county/city Extension Agents.

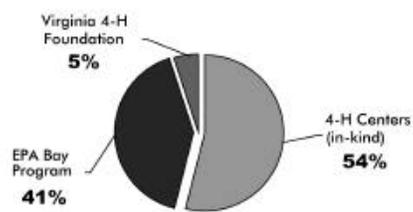
4-H camp is an inexpensive experience designed to develop youths' life skills using exciting, hands-on, educational programs conducted in an outdoor setting. When children come to camp they have a wide variety of camp classes to choose from:

- Forestry
- Water Quality/Aquatic Education
- Paddling (canoeing, kayaking)
- Shooting Sports Education (archery, small bore rifle, shotgun)
- Computer Science
- Performing Arts
- Outdoor Adventure/Outdoor Living Skills
- Low Ropes/High Ropes/Climbing
- Swimming
- Animal Science (equine/small animals)

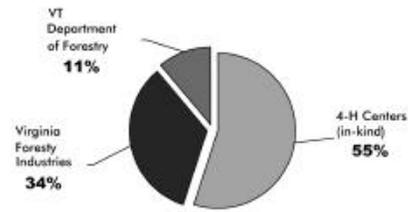
A 2001 survey of 9,000 youth campers ages 9-13 indicated that 4-H camp participation increased participants' life skills in the areas of developing social relationships with new friends and developing new skills (Garst and Bruce, 2001). Furthermore, parents/guardians indicated that Junior 4-H Camp participation made their child more likely to take care of his/her own things, share work responsibilities, and take initiative to complete tasks.

### INTERNSHIP PROCESS

The internship program begins with discussions between the Program Directors at each 4-H Center and the campus-based Extension Specialists to determine if there is a need for a summer intern to teach natural resources. Almost without exception, 4-H Centers have requested an intern. After the need is determined, the Specialists solicit grant money for the position. Once grant money has been received, the search for interns begins on the Virginia Tech and Virginia State campuses in January. Interns are interviewed by the 4-H Center Program Directors and are generally hired by March 15. Camp sessions begin in mid-June and continue through late August. Typical pay is \$1,900. The 4-H Centers provide room and board, which represents roughly half of the cost of providing an intern (Figures 2 and 3).



**Figure 2. Funding Sources for the Water Quality Internship**



**Figure 3. Funding Sources for the Forestry Internship Program**

Interns receive 3-4 days of state-level intensive training in May, before the summer camping season begins. This training includes two days of specialized subject-matter training in forestry and water quality. The other days are spent learning how to work as a team to run a residential camp program. In addition, interns receive 5 days of on-site training just prior to the start of camp at their respective 4-H Centers. This training provides interns with the opportunity to prepare their program areas, develop lesson plans, and continue to develop a strong working relationship with other program staff. Training topics may include risk management, diversity, managing youth behavior, providing quality programs, song leading, and others.

During summer camp, interns are expected to teach morning/afternoon classes in water quality or forestry, supervise afternoon recreation, and lead evening programs. They do not work weekends. The process repeats itself with a different county/city camp group each week of the summer. Whenever possible, interns organize whole group activities that teach water quality and/or forestry to the entire camping group (in addition to the instruction provided to each morning/afternoon class). At the end of the summer, the intern program is evaluated through interviews and questionnaires.

### UNDERGRADUATE INTERNSHIPS IN WATER QUALITY

The water quality internships began in 1995 when the Chesapeake Bay Program of the Environmental Protection Agency provided funding to hire undergraduate interns at each of the six 4-H Centers. Under the direction of the Extension Specialist at Virginia State, a curriculum was developed that teaches the major sources and types of point and nonpoint source water pollution, Best Management Practices, water quality monitoring methods, and stream/lake structure and processes. Interns supplement this information with activities from Project WET and Aquatic WILD, two nationally recognized environmental education curricula. During their week at camp, youngsters collect and observe collect fish and aquatic macro-invertebrates, conduct chemical tests (pH, dissolved oxygen, etc.), explore stream/river/lake watersheds, and learn the many processes and issues concerning watershed function and protection. Evaluations show an average 89 percent approval rating. Pre/posttesting indicates an average increase in knowledge and understanding of water resource processes and issues ranging from 40-72 percent.

### UNDERGRADUATE INTERNSHIPS IN FORESTRY

The forestry internship began in 1998 with one donation from a forest products company with an interest a nearby 4-H Center. The Extension Specialist at Virginia Tech developed a curriculum that teaches the ten most economically important trees of Virginia, the forest products that are made from trees in Virginia, and the tools that foresters use to protect the health of trees and forests. Within two years the Extension Specialist was able to obtain additional funding to support five interns, the number requested by 4-H Center Program Directors.

One of the unique goals of the forestry instructor position is to encourage undergraduates to explore a career in Extension as a way to increase the number of agents trained in natural resources. All recruitment for forestry

interns is done within the VT College of Natural Resources, as are the initial round of job interviews. Forestry interns are also interviewed on campus at the end of the summer. Results show that interns unanimously agree their experience was meaningful and that their forestry training was adequate. On a scale of 4.0 (highest) they rate their interest in an environmental education career as 3.2, and their interest in an Extension career as 2.6.

### **BENEFITS TO UNDERGRADUATE STUDENTS**

Undergraduates benefit from the internship experience. They receive career-related work experience. Many are working away from home for the first time, learning how to live and work independently. They meet a wide variety of Extension employees and are exposed to Extension strengths, such as community and volunteer development. They must work together as a team, both as a summer staff and in collaboration with city/county volunteers who arrive each week with each new camping group. The forestry interns have frequent contact on campus with the Extension Specialist. Finally, each intern receives training and practical experience in environmental education.

### **FUTURE DIRECTIONS**

Classes taught by interns reach a small subset of the total 4-H camper population. Whole-group activities, such as leaf relays, quiz bowls, and campfire programs, can be designed to teach important concepts related to natural resources. In the future, these activities will be encouraged in order to increase the number of youths reached. In addition, 4-H project guides that can be started at camp and taken home for completion are being developed. Financial resources are always a challenge. Since the forestry program is underfunded compared with the water quality program, more industry support will be sought, with the goal of having at least one industry connected financially and personnel-wise with each center. The water quality program would like to have ground and surface water (enviroscape) models to help 4-H campers visualize non-point source water pollution. Finally, more on-campus follow-up and volunteer opportunities with interns is desired to increase undergraduate career development in the area of natural resources education.

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