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United States Forest Service: A resource for California's education and environment initiative

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UNITED STATES FOREST SERVICE: A RESOURCE FOR CALIFORNIA'S EDUCATION AND THE ENVIRONMENT INITIATIVE

A Thesis

Presented to the

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California State University,

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In Partial Fulfillment

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in

Education:

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by

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ABSTRACT

The United States Forest Service has been involved in educating the public about environmental concerns since its inception in 1905. By the year 2010, California planned to implement new environmental education standards requiring schools to do the same. With environmental resources scarce in the classroom, it seemed only natural to assume that the United States Forest Service would make an ideal resource for California Schools. This study sent a survey to various recreation and resource employees about their knowledge and training in environmental themes and curriculum. The survey included several multiple choice as well as four open-ended questions. Thirty two participants responded. The survey found that while most are highly knowledgeable in environmental themes, many were also under trained in environmental curriculum. Shocking was the fact that few were trained in programs that were developed and promoted by the forest service itself. Also, employees were surveyed to see if they felt the forest service was a well qualified resource for school. Most reported that they felt the service was a well qualified resource, but lack of funding, employee shortages, and time constraints made being a dependable resource unlikely. The conclusion was that without

funding and more training, the United States Forest Service could not be a consistent resource for California Schools to implement the Education and Environment Initiative.

ACKNOWLEDGEMENTS

I would like to acknowledge Dr. Stoner for the insight to create this program, Omar Safie for helping to continue her vision even when it was being dissolved, and my cohort for not giving up and not giving in. I would like to thank Dr. Brunkhorst for seeing me through to the end.

DEDICATION

I would like to dedicate this thesis to everyone who had to put up with my antics. My mom for never letting me quit, my brothers for letting me vent, and my troop who allowed me to become a ghost scoutmaster in order to complete this paper. Thanks guys.

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CHAPTER ONE

BACKGROUND

Introduction

The United States Forest Service has been involved in educating the public since its inception in 1905 (United States Department of Agriculture, 2007b). In the 1920's, its primary goal was to produce a citizenry who knew the dangers of catastrophic events, such as wildfires, and how to prevent and overcome their devastation through prevention and intervention programs. The Forest Service also worked closely with schools to educate youth on replanting and reviving over-harvested and abandoned forest lands (Forest History Society, 2008).

In 1944, the U.S. Forest service introduced the world to a little brown bear with a simple message: "Only You Can Prevent Forest Fires" (United States Department of Agriculture, 1999, p.31). Smokey was the newest segment to the U.S. Forest Service's Conservation Education (CE) programs that began in the 1930's with the Civilian Conservation Corps and the Youth Conservation Corps (Whitnah, 1983). In 1950, the Forest Service had developed and introduced the Junior Ranger Program. By 1962, the Forest Service had established ranger stations,

interpretive centers, and information kiosks throughout the National Forests (Forest History Society, 2008). After the passage of the National Environmental Protection Act, the Environmental Education Act of 1970, and the Tbilisi Declaration of 1977, the U.S. Forest Service switched their emphasis from Conservation Education to Environmental Education (United States Department of Agriculture, 1999).

Purpose of the Study

The purpose of this study is evaluate whether the employees of the U.S. Forest Service believe the forest service is qualified to be a resource for California's Education and the Environment Initiative (EEI). Forest Rangers and Interpreters will be surveyed to discover their training in Environmental Education Programs (such as Project Wild, Project Learning Tree, and Project WILD Aquatics), their knowledge of the EEI, and whether they feel the forest service is prepared to become a resource for the EEI. With the state of California adopting environmental education curriculum in 2010, and several other states that already have environmental education requirements for schools, the Forest Service is a possible resource (Cal/EPA 2009). The outcome of this study will

evaluate if the individuals within the Forest Service view themselves as conservation or environmental educators and whether they consider themselves a resource for teachers and classrooms. Before the study begins, definitions of Environmental Education, Conservation Education, and what the U.S. Forest Service has previously done for these programs must be established.

Limitations

During the development of the project, a few limitations were noted. These limitations are presented in the next section. The following limitations apply to the thesis:

1. In order to survey employees within the USFS permission was required from the Department of Agriculture, the Region 9 Executive Office, and the Region 9 Recreation and Resource individuals. It was a three month process.
2. The number of e-mail actually sent out could not be counted. The USFS Region 9 Recreation and resource assistant directors attached the consent letter to a message and sent it out through a mass e-mail list.

Definition of Terms

Before the study may begin, the definition of following terms needs to be established as they relate to this thesis.

Environmental Education - Environmental education is emphasizing an awareness to issues associated with the environment, instilling a knowledge or an understanding of how the environment works, how various ecosystems are interrelated, how people interact within those ecosystems, and what steps can be taken to resolve environmental problems.

Conservation Education - Conservation Education is a narrower concept within environmental education that deals specifically with the wildlife ecology, the interrelatedness of organisms and the conservation of natural resources in general.

U.S. Forest Service- an agency within the United States Department of Agriculture that manages 155 national forests and 20 national grasslands. Within the state of California, it manages twenty million acres of land within 18 National Forests and one national grassland.

Organization of the Thesis

This thesis was divided into five chapters. Chapter One provided an introduction to the context of the problem, purpose of the thesis, significance of the thesis, limitations and delimitations and definitions of terms. Chapter Two consisted of a review of relevant literature. Chapter Three documented the steps used in developing the thesis. Chapter Four presented the results and discussion from the thesis. Chapter Five presented conclusions and recommendations drawn from the development of the thesis. The Appendices for the thesis consisted of: Appendix A - ORGANIZATIONAL CHART OF THE UNITED STATES FOREST SERVICE; Appendix B - USFS AND CONSERVATION EDUCATION SURVEY; and Appendix C - E-MAIL / LETTER OF CONSENT. Finally, the thesis references are listed in alphabetical order.

CHAPTER TWO

LITERATURE REVIEW

Introduction

For the purpose of establishing a base for this study, an established definition of environmental education and conservation education will be presented, and a brief description of the goals of the U.S. Forest Service and the laws that helped to create its current education program will follow. The literature reviewed will provide the foundation from which this study will take place.

Environmental Education

Environmental education (EE) generally refers to curriculum and programs which aim to teach people to understand the human impact on the environment. While EE has its roots in nature study, conservation education, and outdoor education, it is distinctly different from these earlier movements. Whereas these areas focus on nature, wise use of natural resources, and the use of the outdoors to teach, EE is concerned with the interaction between humans and the environment (Disinger, 2001).

In 1969 William Stapp described the first functional definition of EE "aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems, and motivated to work toward their solution" (Stapp, 1969, p.30). Stapp created the premise and outline for all later definitions of EE. He and his collogues began a worldwide movement to give an educationally sound objective to the environmental programs emerging during that time. From Stapp's definition, world leaders would expand and finalize the principles for future EE programs.

In 1977, the United Nations held the Tbilisi Conference where the goals, objectives, and principles for EE were developed. The Conference expanded on Stapp's idea of creating a knowledgeable citizenry for sustainable practices. EE programs today, especially those within the U.S Forest Service, still use the principles and guidelines developed at the Tbilisi Conference. Some of the timeless themes created at the conference are:

- EE is a continuous lifelong process.
- EE is an interdisciplinary approach that allows students to examine environmental issues from various points of view.

- EE develops awareness, knowledge, attitude, skills, and participation from its students that are used to promote cooperation from various levels (local, state, national, or world) in the prevention and solution of environmental problems.
- And lastly, EE will enable learners to have a role in planning their experiences related to environmental sensitivity, develop critical thinking skills, and utilize a diverse curriculum to learn about and from the environment (Tbilisi Declaration, 1977).

The Environmental Protection Agency (EPA, 2008) defines EE as increased public awareness and knowledge about environmental issues, providing the skills necessary to make informed decisions and take responsible actions. It is based on scientifically proven and objective information (EPA, 2008). The EPA does not advocate a particular viewpoint or course of action. Instead, it teaches individuals how to consider various viewpoints of an issue through critical thinking that will ultimately enhance their own problem-solving and decision making skills. Today, most EE programs within the United States try to follow the EPA's definition of environmental education. The programs try to educate the public about current environmental issues, but do not try to influence

the individual's choices on how to react to those issues. Even though the U.S. Forest Service is a leader in Environmental Education programs, they tend to call their curriculum Conservation Education.

Conservation Education

Conservation Education (CE) was developed in the early 1900's. The emphasis of conservation education was the conservation of human resources. As the nation began to embrace conservation education, Federal agencies were formed to tackle the environmental issues that resulted from natural resource misuse and destruction. The U.S. Forest service was created as a means to manage and conserve the nation's forests and public grasslands (Disinger, 2001). Today Conservation Education is defined as the process of increasing people's knowledge, influencing individuals' attitudes, and teaching behaviors about wildlife and wild places (International Zoo Educators Association, 2008). Conservation educators believe that through involvement, people will become aware of the value of natural resources, recognize the threats to the environment, and become motivated to work towards the improvement of natural resource management (International Zoo Educators Association, 2002). As in

the past, conservation education emphasizes "wise use" and "natural resources management" (Disinger, 2001).

Connection between Environmental Education and Conservation Education

Today, conservation education uses the objectives of environmental education set forth by the Tbilisi Declaration of 1977. Both programs emphasize awareness or sensitivity to issues associated with the environment, knowledge or an understanding of how the environment works, how people interact with the environment, and how environmental problems can be resolved. Both environmental and conservation education are concerned with altering people's attitudes to include a concern for the environment and the personal commitment to participate in environmental improvement and protection. Both want to refine the skills needed to identify and investigate environmental issues and to contribute to their resolution. Finally, both programs try to increase participation by encouraging active involvement in working towards the resolution of environmental issues (Tbilisi, 1977; International Zoo Educators Association, n.d.; United States Department of Agriculture, 2007a).

The difference between EE and CE is more of a definition issue than a practice. Conservation Education is by definition a more specific category within Environmental Education. CE stresses only the wildlife interactions portion of Environmental Education, while EE encompasses all aspects of the human nature interaction. Conservation Education is a way of teaching people "to manage in a sustainable way" (International Zoo Educators Association, 2002, p.25). CE stresses a focus on wildlife ecology, the interrelatedness of organisms and conservation. Environmental Education, on the other hand, teaches people the same principles, but with a much broader focus. Since CE is a small part of Environmental education, EE does include wildlife ecology, but it also expands its scope to include the urban wildlife interface, environmental issues such as pollution, water quality, habitat loss, and teaching populations to create and implement solutions surrounding the issues.

History and Goals of the United States Forest Service

In 1876, Congress created an office of Special Agent within the Department of Agriculture to assess the state of the forests in the United States. The office was

expanded into the Division of Forestry in 1881. By 1901, the Division of Forestry had been renamed the Bureau of Forestry and transferred over to the United States Department of Agriculture (USDA). The Transfer Act of 1905 transferred the management of forest reserves from the General Land Office of the Interior Department to the Bureau of Forestry, reclassifying it as the USDA Forest Service. The mission of the Forest Service was simple: custodial management and supplier of natural resources from public forest lands (Whitnah, 1983).

In 1905, the Forest Service was restructured to manage public lands in national forests and grasslands now totaling over 193 million acres. With the passage of the National Environmental Policy Act in 1969, the Forest Service was forced to expand its vision from custodial management to sustainable protector (Forest History Society, 2008).

The current mission of the USDA Forest Service is to sustain the health, diversity, and productivity of the United State's forests and grasslands to meet the needs of present and future generations. In order to fulfill their mission, the forest service dedicated itself to "developing and providing scientific and technical knowledge aimed at improving [their] capability to

protect, manage, and use forests and rangelands, and provide work, training, and education to the unemployed, underemployed, elderly, youth, and disadvantaged in pursuit of [their] mission."(Forest Service Manual: Mission, 2006, p.3) With these goals in mind, the U.S. Forest service has proved itself a leader in Environmental Education.

Organization of the Forest Service

Under the management of the Department of Agriculture, the United States Forest System had an associate chief within the Office of the Chief. The associate chief oversaw four departments, four deputy chiefs, and the National Forests and grasslands (Appendix A). The deputy chiefs ran the various programs within the Forest Service, including the Conservation Education. The National Forests are divided into nine regions (United States Department of Agriculture, 2005). Each region is separated into National Forests. Within each forest were several ranger districts that consisted of a staff of 10-100 employees. Each district had a responsibility for trail maintenance, public recreation, wildfire prevention, and forest resource conservation (United States Department of Agriculture, 2009).

Forest Service and Environmental Education

At the end of the 1970s, the U.S. Forest Service was the governmental leader in environmental education (United States Department of Agriculture, 2007a). It created, funded, and distributed numerous curricula based on the National Environmental Education Act of 1970 (United States Department of Agriculture, 1999). Interpretive centers and educational trails were established to educate the public about local environments and issues concerning specific areas (United States Department of Agriculture, 2008b). The U.S. Forest Service entered in to partnerships with Project Learning Tree, Project WET, and Project WILD, and also created Woodsy Owl as the forest environmental activist (United States Department of Agriculture, 2008a). By 1996, concern that the scattering of the U.S. Forest Service's resources would diminish their ultimate goal of forest conservation resulted in the creation of the Forest Service Conservation Education Department (United States Department of Agriculture, 2007a). While the Forest Service was a leader in training the public about environmental awareness, they were straying from their ultimate goal of sustaining and managing the productivity of the United State's forests and grasslands.

In 1999, a Conservation Education staff was established within the State and Private Forestry to support Forest Service efforts in conservation education, including Smokey Bear and Woodsy Owl. The CE staff provides leadership for a renewed focus on conservation education reflecting themes of sustainability of natural and cultural resources in forest, grassland, and aquatic ecosystems, and awareness and understanding of interrelationships in natural systems and between people and the land. Today, the Forest Service's Conservation Education department is devoted to "connecting people to the land by providing them with the tools they need to take informed actions related to sustaining natural and cultural resources" (United States Department of Agriculture, 2008b, p.1).

Even with calling the program Conservation Education, the U.S. Forest Service's education program is still within the realms of EE. The Forest Service works with several youth groups, such as scouts and 4-H, to teach action based programs such as Project Learning Tree (PLT) and Project WILD. Within these programs, students work with concepts developing relationships among animals and habitats. They then are immersed in EE by examining, analyzing, and developing solutions to environmental

issues such as water pollution, habitat destruction, and litter that goes beyond what CE teaches.

According to Conservation Education in the Forest Service report (1999, p.7-8), the Forest Service has three conservation education niches that it is well qualified to fill:

- Science-based Information and Conservation Education Research: The Forest Service Research is the Nation's premier natural resource research organization and therefore is a source of natural resource science-based information. Experiences from numerous Forest Service specialists provide a tremendous resource for conservation education materials available to teachers and students.
- Experiential Learning: The National Forest System provides outstanding locations where hands-on experiential learning can take place.
- Delivery Network: The Forest Service has a huge network dedicated to delivering a well established conservation education to visitor centers, interpreter centers, and ranger stations. It is also dedicated to the creation of curriculum materials to be used for those conservation education programs.

California's Education and the Environment Initiative

California's Education and the Environment Initiative, (EEI), is a collaboration between the California Environmental Protection Agency and the California Integrated Waste Management Board used to develop Environmental Principles and Concepts for schools in cooperation with the Resources Agency, State Department of Education, State Board of Education, and Secretary for Education (CAL/EPA, 2008a). Together, these agencies have developed the Environmental Principles and Concepts. The Principles and Concepts were used to introduce Environmental Education mandates within California public schools in seven phases beginning in 2004 and ending in 2010 (CAL/EPA, 2008b). Phase one was developing a draft set of Environmental Principles and Concepts (EP&C) to be reviewed by over one hundred different representatives from various state, federal, university, non-governmental organizations and educators. After approval from the California EPA, the EP&C was sent through the second phase: Alignment with the California Academic Content standards. During phase three, a model curriculum plan was developed. An educator needs assessment was reviewed, a scope and sequence completed, and a budget for

curriculum materials and training established. The current phase four is the actual development of the planned model curriculum. Currently, the EEI board plans to use Project WILD, Project Learning Tree, and Project WILD Aquatics. Phases five through seven are training educators to use the EEI, testing and assessing the curriculum, and getting the EEI out to school districts with resources, funding, and support from local agencies. With the introduction of new Environmental Education standards, teachers will be looking for available resources to help integrate them into the classroom.

Project WILD, Project WET, and Project Learning Tree

According to the *Conservation education strategic plan to advance environmental literacy* (2007a), the USFS will have used Project WILD and Project Learning Tree (PLT) to help bring environmental literacy to the youth they served. According to the EEI, Project WILD, Project WET, and PLT were acceptable resources for California schools, (CAL/EPA, 2008c). Project WILD began in 1983 through the cooperation of many groups including Council of Environmental Education, the Western Association of Fish and Wildlife Agencies and state departments of

education (CEE, 2009). Its goal is to provide wildlife-based conservation and environmental education that promotes responsible actions toward wildlife and related natural resources through activities and instructional materials intended for use in both classroom and informal settings (Department of Fish and Game, 2009). Project WET began in 1984 by the North Dakota State Water Commission to educate the public about water resources and their management by creating activities that engage students with hands-on, interdisciplinary lessons about water (Project WET, 2008). Project Learning Tree (PLT) began in 1973 when the American Forest Institute began a partnership with the Western Regional Environmental Education Council (WREEC) to produce an educational program for use in the elementary and secondary schools. PLT was designed to increase children's understanding of the natural world and show how trees and forests are "tied not only to the natural community but also to the human community and the economy," (Minnesota Department of Natural Resources, 2009).

CHAPTER THREE

METHODOLOGY

Introduction

Within the state of California, the USFS managed eighteen National Forests and grassland. Within each forest were several ranger districts that consisted of a staff of 10-100 employees. Each district had a responsibility for trail maintenance, public recreation, wildfire prevention, and forest resource conservation. Part of the forest service's resource conservation included ranger stations, interpreter areas, and nature centers (United States Department of Agriculture, 2009). Several areas such as the San Bernardino Children's Forest or the Big Bear Discovery Center offered several programs that could have been used to help California teachers comply with the new EEI.

Development

Before teachers could begin to use the USFS as a resource for California's EEI, the forest service needed be surveyed to discover if they are qualified to be a valid environmental education resource. The forest service claimed to be a conservation education resource,

with an entire division started in 1998 dedicated Conservation Education. Even with this division, there was no research to substantiate their claim within the realm of the EEI. Resource rangers, recreation rangers and interpreters were asked to participate in a survey that assessed their current training in various environmental education programs founded or supported by the USFS. The survey also asked participants to define environmental education, conservation education, and to identify which one they believed their education training most resembled.

The survey (Appendix B) was developed using a combination of single answer demographic information, a modified Likert-type scale for training, and open-ended questions to assess understanding of Environmental and Conservation education. The survey was created using a survey website to help ensure anonymity among participants. Participants were contacted using e-mail with permission and addresses obtained from the USFS Region 5 administration. Attached to the e-mails was a consent form (Appendix C) including the link to the survey indicated. Participants could have chosen to click onto the survey site or ignore the e-mail completely. The survey was a one time, 15-minute multiple-choice Likert-

type scale. The questions asked participants to rate their level of knowledge on environmental/ecology point ('never heard of it' to 'can teach it') and training ('never heard of it' to 'facilitator'). There were a few open-ended questions at the end to assess the participant's understanding of environmental and conservation education. The open ended questions were:

- Briefly, what is your definition of environmental Education?
- Briefly, what is your definition of environmental Education?
- Do you consider yourself more of a conservation educator, and environmental educator, or a little of both? Please explain.
- Explain your answer to: Do you feel the forest service is well qualified to be a resource California schools can use to fulfill Environmental Education requirements?

Data Analysis Procedures

The survey was completed using a Safety Secure Link (SSL) and no IP addresses were marked or saved. All information was stored in numerical form, with exception

to the open-ended questions. As an added precaution, all data was also password protected.

Once completed, the data from the surveys was tallied and recorded as percentages. Knowledge and training questions were converted into numerical representations to calculate the average knowledge and training of the survey participants. Open-ended questions were recorded exactly how the participants typed them and were analyzed for common themes.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

After getting approval from the Institutional Review Board of California State University, California, the Deputy Director for Recreation, Lands, Wilderness, and Heritage Resources, USDA Forest Service Pacific Southwest Region sent out a mass e-mail of the cover letter to all employees on the group list. In following the Department of Agriculture requirements, the survey link was active for 30 days. It is unknown how many e-mails were originally sent, but 32 individuals responded.

Demographics

Of the 32 respondents, 20 were age 40 or older, 8 were under 40 but over 25, and only 3 were 25 or younger (See Table 1). 16 of them reported they had a bachelor's degree, 11 reported having a master's, Ph.D, or other higher degree, 2 participants reported to have an associate's degree, one had completed a certificate program and one stated to be a high school graduate (See Table 2). Out of the 32, 6.5% had less than one year experience working for the Unites states Forest Service,

19.4% had between 1-3 years experience, 6.5% had 4-7 years, and 67.7% reported having 8 or more years' experience (See Table 3).

Table 1. Age of Participants

	Response
25 or younger	3
26-40	8
40-55	10
55 or older	10

Table 2. Education Level

	Response
High school graduate	1
Certificate Program	1
Associate degree	2
Bachelor's Degree	16
Master/Ph.D or equivalent	11

Table 3. Experience in the Forest Service

Years of Experience	Response
Less than 1 year	2
1-3 years	6
4-7 years	2
8 or more years	21

Knowledge and Training

Before assessing the knowledge and training levels of the survey participants, a description of their positions within the forest service was determined (See Table 4). 27.6% reported themselves as forest rangers, 27.6% reported being forest interpreters, and 44.8% reported being forest resource specialists.

Table 4. Job Description

Description	Response
Forest Ranger	27.60%
Forest Interpreter	27.60%
Forest Resource Specialist	44.80%

Knowledge of environmental themes was determined by a series of multiple-choice Likert-type questions. The answers varied in degrees of knowledge from having no knowledge to being able to teach it. The answers were then given numerical values (None = 1, Have some knowledge = 2, Highly Knowledgeable = 3, Can teach it = 4) to determine the mean plus or minus ($\pm$) the confidence interval (C.I. =95%) and standards deviation of knowledge for all participants (See Table 5). The higher the mean, the more knowledge the participants were in that topic. In all topics, the participants scored around the highly knowledge range of 3. Natural resources was 3.09 $\pm$0.31, Conservation of Natural resources was 2.94 $\pm$0.36, Local Wildlife rated at 2.69 $\pm$0.28, Local Plant life was 2.72 $\pm$0.36 Endangered Species (localized) scored 2.41 $\pm$0.29, Endangered species (worldwide) scored 2.06 $\pm$0.29, Ecology rated 2.71 $\pm$0.39, Environmental Issues was 2.69 $\pm$.029, Habitat scored 2.77 $\pm$0.41, and Population Impact rated 2.59 $\pm$0.32.

Table 5. Knowledge of Environmental Themes

	Mean	Standard Deviation
Natural resources	3.09	0.80
Conservation of Natural Resources	2.94	0.86
Local Wildlife	2.69	0.77
Local Plant life	2.72	0.76
Endangered Species (localized)	2.41	1.11
Endangered species (worldwide)	2.06	0.44
Ecology	2.71	0.91
Environmental Issues	2.69	0.95
Habitat	2.77	0.87
Population Impact	2.29	0.90

None = 1, Have some knowledge = 2, Highly Knowledgeable = 3, Can teach it = 4

Training of various environmental curriculums was determined by a series of multiple-choice Likert-type questions. The answers varied in degrees from having never heard of the program to being a facilitator who taught it. The answers were then given numerical values (Never heard of it = 1, heard of it but not trained = 2, trained = 3, a facilitator = 4) to determine the mean plus or minus ($\pm$) the confidence interval (C.I. =95%) and standards deviation of training for all participants (See Table 6). The higher the mean, the more trained the participants were in that topic. Only thirty participants

answered this portion of the survey. The average training level for Project WILD was 2.22 ±0.21. The mean for Project WILD Aquatic was 1.91 ±0.34, Project Learning tree was 2.5 ±1.06, Population Connection was 1.29 ±0.26, Project WET was 1.88 ±0.12, Leave No Trace was 2.78 ±0.30, Forest Institute for Teachers averaged 1.43 ±0.07, Conservation Education averaged 2.68 ±0.22, and Environmental Education averaged 2.74 ±0.34. Few individuals surveyed reported they were facilitators, with only one able to teach most of the curriculum surveyed.

Table 6. Training in Environmental Curriculum

Training Program	Mean	Standard Deviation
Project WILD	2.22	0.74
Project WILD Aquatic	1.91	0.84
Project Learning Tree	2.50	1.06
Population Connection	1.29	0.52
Project WET	1.88	0.82
Leave No Trace	2.78	0.74
Forest Institute for Teachers	1.43	0.56
Conservation Education	2.68	0.74
Environmental Education	2.74	0.76

Never heard of it = 1, Heard of it, but not trained = 2, Trained = 3, I am a Facilitator = 4

Open-Ended Questions

In order to assess the participants' understanding of environmental and conservation education, the participants were asked to first define environmental education, then to define conservation education. When defining environmental education, sixteen of the responses agreed with Disinger (2001) and Stapp (1969) that environmental education was concerned with the inter-consecutiveness between the environment and humans (web of life, food chains, ecosystems, ecology, etc). Eight reported that environmental education was about teaching a way to balance the natural environment with responsible actions (leave no trace, tread lightly, and recycling). All respondents reported that environmental education promotes connectivity to nature and an individual awareness about the responsibility needed to create a sustainable natural world. Eight did not respond.

Five of the participants described conservation education the "same as environmental education." No one agreed with Disinger (2001) that conservation education is just "wise use" and "natural resource management." Sixteen agreed more with the International Zoo Educators Association (2002) that conservation education was more of an action-based or hands-on learning "to manage in a

sustainable way" (p.25). One reported conservation education as the "next step in environmental education" to put into practice a way to "decrease the human footprint on the environment". Three just reiterated the mission statement of the U.S. Forest service "to provide work, training, and education to the unemployed, underemployed, elderly, youth, and disadvantaged in pursuit of sustaining and managing the productivity of the United State's forests and grasslands"(Forest Service Manual: Mission, 2006, p.3). All that responded agreed with the Tbilisi Conference that environmental and/or conservation education is an interdisciplinary approach (Tbilisi Declaration, 1977). Most saw environmental education as the concepts, conservation education as the application of those concepts. Five did not respond.

When asked whether the participants classified themselves more as an environmental educator, a conservation educator, or a little of both most agreed with the International Zoo Educators Association (2002) that the difference was how you wanted to say it. Only two reported they were more environmental educators. Like the International Zoo Educators twenty-two reported they were a little of both. According to one the difference "is just semantics," to others "they are one and the

same." One responded to be a resource specialist and reported to be both with a little more emphasis on conservation due to forest service goals. One claimed to be neither, just someone who runs "the mini-activities before and after the nature walks." Six did not respond to the question.

When asked about their knowledge of California's Environmental Education Initiative, only 41.9% reported that they had heard about it. 6.5% were not sure if they had heard of it and 51.6% reported they had not yet heard of the initiative. When asked if they thought the U.S. Forest Service is well qualified to be a resource California schools could use to fulfill requirements of the initiative, 65.4% reported yes, 19.2% reported no, and 15.4% declined to answer. While most reported yes to the forest service being a well qualified resource, when asked to explain their response almost all cautioned the usefulness of such a resource. Many expressed concerns about staffing time commitments, lack of funding, and a need for some sort of coordinated effort. Most stated while they had programs available for students, most of the resources available are used to manage the 22 million acres of forest land within an ever shrinking budget. Those that reported no also stated that they were speaking

mostly for their own areas that were understaffed or had no working educational programs for youth. Three discussed how the Department of Agriculture had a Conservation Education staff, but there is no communication from the staff to the resource individuals who would be implementing the programs to schools. Twelve participants did not respond to this question.

Discussion of Findings

Forest Rangers and Interpreters were surveyed to discover their knowledge of common environmental themes. The results found that most of those surveyed were highly knowledgeable and believed themselves able to teach about natural resources and the conservation of natural resources. These findings were found legitimate with average scores hovering around 3. Concepts of Local plant and wildlife were among the knowledgeable range as were endangered species, ecology, habitat, and environmental issues.

The Forest Rangers and Interpreters were also surveyed to discover their training in various environmental education programs. The results found those surveyed were trained in programs well associated with the forest service such as Leave No Trace, Conservation

Education, and Environmental Education with average scores from 2.68-2.78. Areas of environmental education curriculum found that overall most participants had heard of, but were not trained in Projects WILD, Learning Tree, and Wet with most scores lower than 2. Most had never heard of the Forest Institute for Teachers even though part of the program was developed by the U.S. Forest Service Conservation Education department. Few individuals surveyed reported they were facilitators, with only one able to teach most of the curriculum surveyed.

The outcome of this study evaluated if the individuals within the Forest Service viewed themselves as conservation or environmental educators and whether they considered themselves a resource for teachers and classrooms. Most said they were both environmental and conservation educators. This result is conclusive with the findings of the International Zoo Educators Association (2002), who interviewed over 400 zoo educators and found the definitions to be integral and a mere matter of semantics. This study found that most of the employees surveyed agreed with William Stapp (1969) that their jobs are "aimed at producing a citizenry that is knowledgeable... and motivated to work towards" the conservation of the National Forests (Stapp, 1969, p.30).

Even though, most of the participants surveyed stated the Forest Service would be an excellent resource for California's EEI, most agreed that funding, lack of coordination, and training were the largest obstacles that needed to be overcome.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

Introduction

The purpose of this study was to evaluate whether the employees of the U.S. Forest Service believe the forest service is qualified to be a resource for California's Education and the Environment Initiative (EEI). Forest Rangers and Interpreters were surveyed to discover their training in Environmental Education Programs (such as Project Wild, Project Learning Tree, and Project WILD Aquatics), their knowledge of the EEI, and whether they felt the forest service was prepared to become a resource for the EEI. This section will discuss the conclusions of the study and give recommendations for further research.

Conclusions

According to the Department of Agriculture, the United States Forest Service had a Conservation Education department devoted to "connecting people to the land by providing them with the tools they need to take informed actions related to sustaining natural and cultural resources (United States Department of Agriculture, 2008b, p.1). According to this study, most employees within

California's National Forests resource departments were over age 40, had a bachelor's degree or higher and have been working within the forest service for eight or more years. It is the conclusion of this study that employees within the forest service perceive themselves highly knowledgeable in environmental themes, but are not adequately trained to facility environmental education programs (Project WET, Project WILD, and Project Learning Tree). These findings were surprising considering that within the Forest service, the Conservation Education department has trained and promoted the use of these environmental programs since 1999 (Department of Agriculture, 2007a). There is also a need for more training opportunities for employees to become facilitators of these various programs. Although many of those surveyed reported having local programs for the classroom, they also reported having too few employees and not enough funding to bring the programs to schools. While the Tbilisi Declaration (1977) stated environmental education would promote cooperation from various levels (local, state, and national) this study made it clear that such cooperation was lacking in organization, funding, and support. Some of those surveyed even indicated that the communication between their programs and the Conservation

Education Department was not adequate or was non-existent. In conclusion, while those surveyed were highly knowledgeable and willing to become a resource, without more training and funding, the U.S. Forest service would not make an adequate teaching resource for the California EEI.

Recommendations

Recommendations for this study are to expand the study to research the types of programs offered by the U.S. forest Service Recreation and Resource departments. An inquiry into the communication between the resource departments and the Conservation Education departments needs to be refined and expanded. Also, it is recommended to expand this study to include teachers affected by the California's Education and the Environment Initiative and more employees within the Forest Service Conservation education department to include a better needs assessment. Since both the Conservation Education Department (Department of Agriculture, 2007a) and the California's Education and the Environment Initiative (CAL/EPA, 2008c) supported the use of Project WILD and Project Learning Tree, it is recommended that schools and local forest resource staff work together for training and

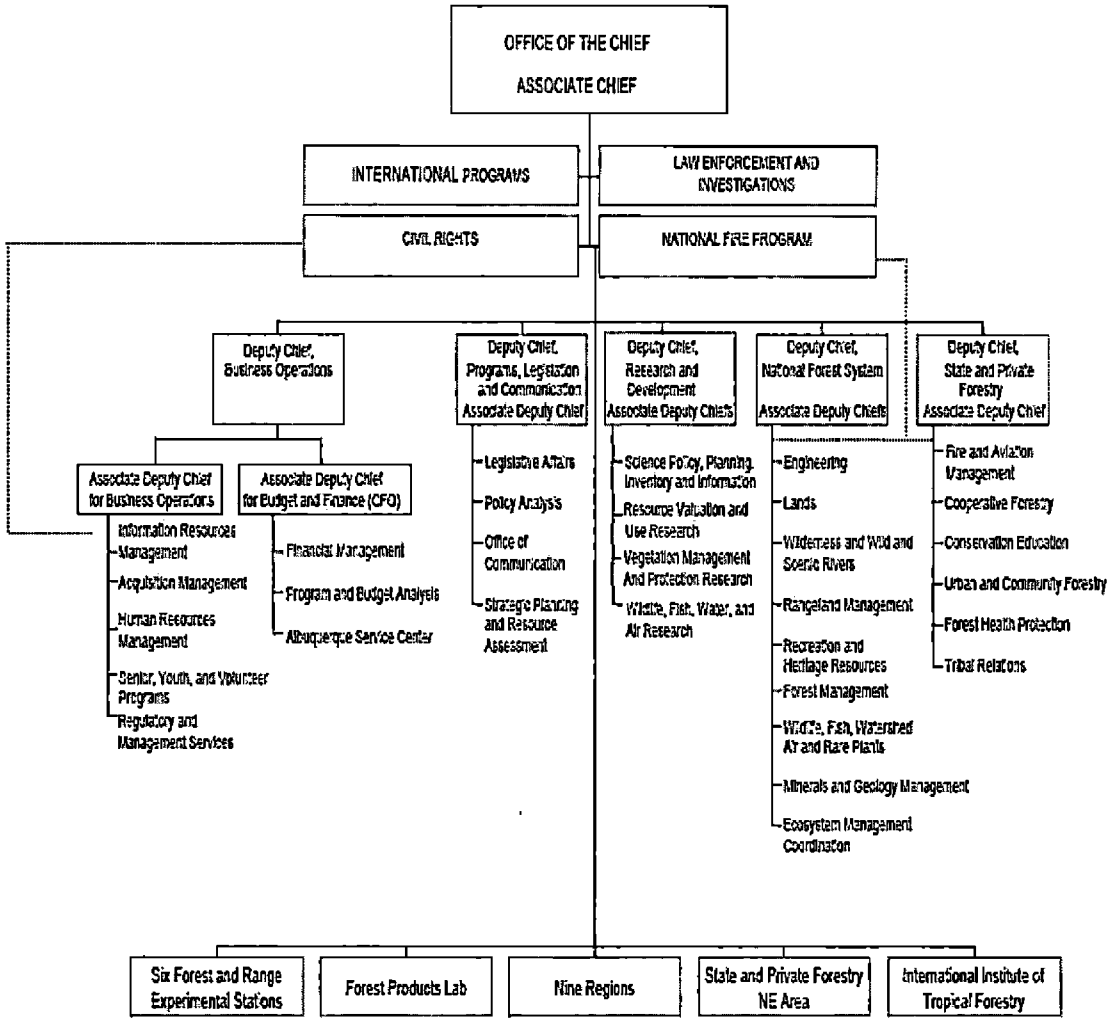
implementation of these programs. Further studies need to be done to assess the staffing and funding requirements needed to bring either the students to the forest service programs or the forest service programs to the classroom. The Forest Service needs to have a direct communication link from the Conservation Education department to the local ranger districts to assess training needs and program allocations.

APPENDIX A

ORGANIZATIONAL CHART OF THE UNITED STATES FOREST SERVICE

U.S. Department of Agriculture

FOREST SERVICE



(United States Department of Agriculture, 2005)

APPENDIX B

UNITED STATES FOREST SERVICE AND CONSERVATION EDUCATION SURVEY

1. Background

Thank you for helping me with my Master's Thesis. This survey will be used to evaluate how individuals within the Forest Service view environmental education. Also, this survey will gauge if these individuals feel qualified for, or are willing to be, a resource for Environmental Education within California Schools.

The following questions will ask a little about your background in the Forest Service.

1. How long have you been with the Forest Service?

- ◯ Less than 1 year
- ◯ 1-3 years
- ◯ 4-7 years
- ◯ 8 or more years

2. What is your highest education level?

- ◯ High school graduate
- ◯ Certificate Program
- ◯ Associate degree
- ◯ Bachelor's Degree
- ◯ Master/Ph.D or equivalent
- ◯ Decline to answer

3. What is your age?

- ◯ 25 or younger
- ◯ 26-40
- ◯ 40-55
- ◯ 55 or older

4. Do you consider yourself more as a:

- ◯ Forest Ranger
- ◯ Forest Interpreter
- ◯ Forest Resource Specialist

2. Knowledge and Training

The following questions will ask about your knowledge and training in various Conservation and Environmental Programs.

1. In general, what is your knowledge of:

	None	Have some knowledge	Highly Knowledgeable	Can teach it
Natural resources	○	○	○	○
Conservation of Natural Resources	○	○	○	○
Local Wildlife	○	○	○	○
Local Plant life	○	○	○	○
Endangered Species (localized)	○	○	○	○
Endangered species (worldwide)	○	○	○	○
Ecology	○	○	○	○
Environmental Issues	○	○	○	○
Habitat	○	○	○	○
Population Impact	○	○	○	○

2. Which of the following best describes your level of training for:

	Never heard of it	Heard of it, but not trained	Trained	I am a Facilitator
Project WILD	☐	☐	☐	☐
Project WILD Aquatic	☐	☐	☐	☐
Project Learning Tree	☐	☐	☐	☐
Population Connection	☐	☐	☐	☐
Project WET	☐	☐	☐	☐
Leave No Trace	☐	☐	☐	☐
Forest Institute for Teachers	☐	☐	☐	☐
Conservation Education	☐	☐	☐	☐
Environmental Education	☐	☐	☐	☐

3. Educational/Outreach Programs

This page will assess your knowledge and participation in Forest Service Education Programs

1. Do you now, or have you ever, participated in an Interpreter program?

- ◯ Yes
- ◯ No

2. If yes, where do you (did you) participate?

- ◯ Ranger Station
- ◯ Interpreter Center
- ◯ Nature Center
- ◯ Camp
- ◯ Classroom
- ◯ Other location

3. Did you know that California has an Environmental Education Initiative that requires Environmental Education to be implemented in schools in 2010?

- ◯ Yes
- ◯ No
- ◯ Not Sure

4. Does the Forest Service in your area provide:

	Yes	No	Not Sure
Training programs for teachers?	◯	◯	◯
Classroom materials for teachers?	◯	◯	◯
Field trip opportunities?	◯	◯	◯
Student Outreach programs?	◯	◯	◯
Science/Nature Camps?	◯	◯	◯
Weekend Outdoor Programs?	◯	◯	◯
Classroom visitation programs?	◯	◯	◯

4. Opinion Section

The following questions ask for your personal opinion. The answers will be used for my Master's Thesis only.

1. Briefly, what is your definition of Environmental Education?

2. Briefly, what is your definition of Conservation Education?

3. Do you classify yourself more as a Conservation educator, an Environmental educator, or a little of both? Please explain.

4. Do you feel that the Forest Service is well qualified to be a resource California schools can use to fulfill Environemtal Education requirements?

- ◯ Yes
- ◯ No
- ◯ Decline to Answer

5. Briefly explain your answer for question 4.

APPENDIX C

E-MAIL / LETTER OF CONSENT

Dear United States Forest Service Employee:

My name is Summer Pearson and I am currently a Master's student in the Environmental Education program under the Supervision of Prof. Herbert Brunkhorst, California State University, San Bernardino, Department of Science, Math and Technology. You are being asked to participate in a survey that will assist me in fulfilling a course requirement. The attached survey will provide insightful information on the training and attitudes Forest Service employees have in Environmental Education. The data will also be used to determine how qualified the USFS would be as a resource for California schools to use in compliance with the EEI.

As per a requirement of the Institutional Review Board at CSUSB, the data obtained from this survey will be used for research purposes only. All responses are voluntary and confidential. Your participation and completion of all parts of this survey is completely voluntary.

If you choose to participate, please follow the link below to the survey website. The survey will take between 7-10 minutes to complete. If you do not wish to answer a question, please leave the response section blank and proceed to the following question.

To access the survey, please click on the link below or paste the entire web address into your browser's window:

https://www.surveymonkey.com/s.aspx?sm=sGRrwRpmvq9tJoUmZHBo8A_3d_3d

This research has been reviewed and approved by the California State University, San Bernardino, Institutional Review Board. If you have any questions please feel free to contact my Science, Mathematics and Technology Education department chair, Prof. Herbert Brunkhorst at hkbrunkh@csusb.edu or (909) 537-5613. Thank you for your cooperation and the valuable information you are providing in this survey.

Sincerely,
Summer Pearson
Cal State University, San Bernardino
Master's Student

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