

HOW SIGNIFICANT AND FOR WHOM?
INVESTIGATING THE INFLUENCE OF CONSERVATION CORPS PROGRAMS
ON ENVIRONMENTAL ATTITUDES

by
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ABSTRACT

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Conservation corps are programs for teenagers and young adults that provide education, job training and valuable work experience in community service and natural resource management. The past research on conservation corps (hereafter corps) has been infrequent and has mainly focused on the personal and leadership development of members and alumni. Using Tanner's (1980) theory of Significant Life Experiences, this thesis sought to add to the existing literature on corps by focusing more closely on participants' interactions with the environment and the influence the corps experience may have on environmental attitudes and actions. The research is inconclusive about the role of corps on environmental thought and actions, because participants as a group had a high score on Dunlap et al.'s New Ecological Paradigm (2000), suggesting corps could be both influencing these opinions and attracting participants that are more environmentally inclined than the average US population. Qualitative analysis reveals that corps are extremely significant to participants in multiple areas of their lives and are transformative experiences to many alumni.

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Chapter 1: Review of the Literature

Introduction

A review of environmental education literature reveals that “significant life experiences” can be used as metrics to evaluate the effectiveness of environmental and experiential education in terms of environmental awareness, sensitivity and advocacy. Past evaluation of environmental and experiential education programming uses the existence of significant life experiences to assert that these programs are often effective in changing behaviors of participants, and are successful in promoting altered environmental attitudes. However, the literature lacks assessment regarding the role of significant life experiences in conservation corps programming, a form of experiential education where teens and young adults work in natural resource management in teams or crews, over several weeks. These programs often provide monetary compensation, unlike summer camps or adventure education programs, such as Outward Bound or trips offered by the National Outdoor Leadership School (NOLS) that often have steep tuition rates. In this way, conservation corps programs may reveal a more diverse participant pool than the majority of outdoor programs, making them worthy of further academic study.

There are multiple studies about the effectiveness of environmental education to increase students’ environmental literacy and interest in environmental issues, however, few examine the long term influence of environmental and experiential education on environmental thought and action of students turned adults. Long term evaluation of youth conservation corps’ programming, especially evaluation that investigates the influence of significant life experiences, is needed. Conservation programs have the

potential to alter participant's career choices, hobbies, interests and actions on environmental issues, but more research is needed to say this with certainty.

This literature review will investigate previous research in the field of environmental education, including the challenges to teaching about the environment in a traditional classroom setting, and the potential risks of teaching about environmental challenges to the personal development of children (Sobel 1996, 2005; Ellison 2003). The literature review will also summarize the expansion of environmental education into the realms of experiential education, wilderness therapy and ecotherapy and the potential influences of these programs. The development of evaluation tools and methods to investigate the effectiveness of environmental education, specifically the use of significant life experiences as a gauge of program effectiveness is used to provide context for this study's goals and questions. Academic theories, including place-based theory, social learning theory and constructivist theory are also examined to provide further context and justification for the study design. The role of environmental service learning, especially the use of the Civilian Conservation Corps model for the personal, social and work skill development of teens and young adults is investigated, as is the history of academic research on conservation corps. Finally, the need for further research is summarized and discussed.

Environmental Education in the Classroom

Environmental education (EE) was recognized as an academic discipline in the 1960s when it was introduced by William B. Strapp and colleagues (1969), with the journal article *The Concept of Environmental Education*. According to Strapp et al., (1969) EE

“is aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve [environmental] problems, and motivated to work toward their solutions” (p. 34). Environmental education has developed as a field in the last 45 years, and has now come to include both formal classroom education experiences as well as experiential education. The latter field encompasses other program types including wilderness therapy, adventure education and environmental service learning.

Despite increasing discussions about the need for environmental education in the classroom, instructors have struggled to teach this subject effectively (Hankins 1993; Hosley 1974; Loskota 2004; Louv 2008; Saylan and Blumstein 2011). Educators need to be creative to incorporate environmental education into classroom environments where education standards and state testing often dictate curriculum (Louv 2008). A study of an urban high school climate change education program in a classroom setting was completed in 2008. The study was created to “assist urban high school students in making meaningful connections to information from the current scientific literature that has implications for Earth’s climate” (Rule and Meyer 2009, p. 337). The curriculum exposed students to climate change concepts, as well as biological drivers of climate change, and expected the students to investigate organisms that are being affected by climate change in some way, including habitat changes, phenology offsets, and temperatures effecting mortality and predation. Additionally, these lessons involved many opportunities for group work, and incorporated graphing lessons to meet state mathematics standards. The students were surveyed after their participation in the multi-week lesson about what they learned and enjoyed, and the majority of participants liked multiple aspects of the

program. They felt the graphing lessons had provided them with new skills, they enjoyed learning about different animals in their nearby ecoregions, and they had felt the group work was empowering. Some students commented that, “they were glad to finally understand what global warming was all about, and benefitted from the thought-provoking lesson” (p. 341). The post-survey questions also included requests for suggestions from students on ways to improve the lesson. Many of the participants wanted a “phase-two” style of lessons, incorporating ways they could be involved in stopping climate change. Students suggested ecology or conservation projects that they could be involved with in a classroom setting (*ibid.*).

The example above (Rule and Meyer 2009) demonstrates that the interests and passions of students have the potential to reach beyond the training and expertise of their teachers. Elementary school teachers are often not experts in scientific and environmental fields, and feel uncomfortable teaching about unfamiliar subjects, so they tend to avoid these fields in their teaching programs (Ernst, 2007). An example of this disconnect comes from the Pacific Northwest. The introduction of an invasive crayfish species in Washington State had researchers confused as to the cause, since regulations on boats and other watercrafts are very strict. It was eventually discovered that the crayfish were included in a curriculum “kit” for elementary school teachers, as part of a lesson allowing the students to care for the crayfish for several weeks, learning about their needs, diet and habitat. At the end of the unit on crayfish, many were released into local streams, or given to children to take home. This resulted in the invasive population growing rapidly (Larson & Olden, 2008).

Though rare, when educators have the time, confidence and resources to prioritize environmental topics, there are risks of causing ecological damage, as can be seen from the example above. Psychological damage to students is another risk of teaching about environmental issues and problems. Ellison (2003) writes in her personal essay *Starting Small*, about how big environmental issues created frustration for her own children, and resulted in them feeling utterly powerless to improve a world they were told was in serious danger. Often teaching young children about global problems like climate change or the destruction of the Amazon rainforest can lead to increased apathy because there are no immediate solutions. David Sobel (1996; 2005), a proponent of place-based education, argues that expecting young children to be able to tackle big environmental problems, like climate change or the the Valdez oil spill, before they understand the basic ecology of their neighborhood or local state park causes frustration and confusion in young minds. Problems of a global scale, which cannot be solved by children or adults individually, can become so big and insurmountable, that young children may disengage from environmental issues altogether. The literature shows overwhelmingly (Tanner 1980; Vaske and Kobrin 2001; Chawla 1999; 2006; 2008) that environmental activism is not the result of fear or anger over global environmental problems, but rather the result of childhood interaction with nature and subsequent attachment to natural areas as both a young person and an adult.

James Swan (2010), a psychology researcher also writes about the sense of helplessness that often accompanies environmental education, calling it “well informed futility.” Swan (2010) refers to Aldo Leopold’s (1949) so-called “ecological conscience” when he calls for the use of “nature bonding” or immersion in natural environments as a

tool to allow young people to engage more fully with their environment and feel they have the power to solve environmental problems. David Sobel (1996, 2004) and Richard Louv (2008) also argue for more time of unstructured play in nature as a child and young person. Arguments for more unstructured play are supported by Bixler et al. (2002) who researched several aspects of the “childhood play hypothesis,” (the idea that children need unstructured time playing in natural areas to gain attachment to nature.) Combined, these studies confirm the earlier work of Tanner (1980) that emotional attachment and understanding of ecosystems happens at many stages of life, but most often as a child, and these early opportunities to learn have the greatest probability of creating environmental advocates.

An earlier study by Bixler and colleagues (1999) investigated “disgust sensitivity” in young people with regard to their interest in engaging with the environment. It was found that those with higher levels of disgust sensitivity (essentially, people who are more prone to experience a deep aversion to a wide range of things or circumstances, like dirt or insects) would show aversion to more environmental activities. Disgust, according to Levenson (1992) and Mandler (1984, as cited by Bixler et al. 1999, p. 3), “has evolutionary, cognitive, social, and cultural components.” Bixler and colleagues’ (1999) research concludes with the recommendation that more effort be made to expose young children to nature, as disgust for organic materials and insects is seen as a learned behavior. Additionally, Bixler (1999) and Crompton and Sellar (1981) call for prolonged exposure to nature especially for urban youth, to break down socialized aversion to aspects of the environment. This concern can be addressed through many types of outdoor programming, including conservation corps.

Place-based education has emerged as a potential solution to the issues of inadequate educator knowledge and environmental apathy. Place-based education seeks to expose young people to environmental knowledge, problems and solutions that are locally oriented, and are often solvable at the local level (Gruenewald, 2003; Hill, 2008; Louv, 2008). Additionally, place-based education is not solely focused on the environment, but can be realized in multiple ways, such as allowing children to learn about accounting at a local business, or civics at a town hall meeting (Sobel 2004).

The increasing popularity of place-based education has led to the formation of multiple outdoor schools, like the North Cascades Institute in Washington, the McCall Outdoor Science School in Idaho, or the Great Smoky Mountains Institute in Tennessee. These are places where school-aged children can come spend a day or week learning about a relatively local ecosystem, by playing outdoors and doing a variety of science projects under the supervision of instructors and chaperones. These programs often aim to discuss the needs and challenges of these ecosystems, and work to empower children to actively engage in solutions to these issues when they return home. Outdoor Schools are increasing in popularity, especially in the western United States; however, these alternative programs are often not available to underfunded school districts, reinforcing issues of limited exposure to nature for urban students (Saylan and Blumstein 2011; Gruenewald 2004).

Experiential Education

Outdoor science schools fall under the definition of experiential education which has emerged from environmental education. Experiential education includes wilderness

therapy, adventure education, and environmental service learning (Itin 1999).

Environmental service learning programs, which include conservation corps, have become regarded as influential in creating environmental awareness, and are increasingly the subject of academic research and evaluation (Furco 1996; Seaman and Gass 2004).

Wilderness Therapy

Wilderness therapy has an extremely varied definition and also encompasses multiple theories of practice. Keith Russell (2001) synthesized all definitions of wilderness therapy used by groups claiming to offer wilderness therapy as a service. He concluded that there was the need for better definitions for parents and educators, but ultimately he called for individual organizations to define themselves and their program goals explicitly. Wilderness therapy is a popular treatment method for young people who have troubles with substance abuse, behavior management or have been convicted of criminal activity (often referred to as “at risk,” “disconnected” or “opportunity” youth (Bridgeland and Milano, 2012). Outward Bound, a well-known wilderness therapy program, was evaluated in 1971, and found to be significantly effective at reducing recidivism rates of juvenile offenders one year after treatment. However, after four years, the difference in recidivism between treatment and control groups had disappeared (Kelly and Baer 1971; Kelly 1974).

A meta-analysis of evaluations of wilderness therapy programs by Lipsey and Wilson (2010) found that programs are significantly effective at reducing the recidivism rates for Caucasian men who had already been arrested, but were not significantly effective for women or other racial categories. This conclusion led the authors to call for

further research into effects on women and minority groups, as well as future comparisons between therapy programs and programs where community service is emphasized (like conservation corps).

Further, Lipsey and Wilson (2000) also found that programs that extend more than 5 or 6 weeks begin to lose effectiveness, counter to the assertions about length of childhood nature exposure being an important aspect of programming (Bixler 1999; 2002; Louv 2008; Swan 2010). Lipsey and Wilson (2000) conclude that shorter (and therefore more cost effective) wilderness immersion programs may actually be more effective for “at risk” youth undergoing levels of therapy (*ibid.*).

In a study of the effectiveness of a specific adventure-based therapy program that involved structured lessons and reflection, Gillis et al. (2008) found that juvenile offenders who underwent the wilderness adventure model of treatment had improved mental health scores and had significantly fewer arrests over a 3 year study period in comparison with other forms of outdoor programming (Gillis et al., 2008). This study refuted its predecessor that had showed no significant influence of wilderness therapy programs in juvenile offenders (Jones et al. 2004). Jones et al. (2004), used a broad definition of wilderness therapy that encompassed multiple types of programming, including programs based entirely on outdoor immersion with few structured “therapy” sessions, as well as those with education group activities, challenges and expectations of improved performance. By narrowing the definition of wilderness therapy to include only programs with active education and therapy sessions Gillis et al. (2008), found that wilderness therapy programs resulted in significant improvements in participant behavior after leaving the program when compared to a control group.

Environmental Service Learning

Service learning, as an extension of experiential education, has three goals: “allowing students to become more effective change agents, developing students’ sense of belonging in [their] communities... and developing student competence” (Carver 1997, p. 143). Environmental service learning, as described by Curry et al. (2002) is an opportunity to meet the goals of experiential education, while also creating attachment to a place and environmental stewards.

Simon and Wang (2002) conducted a study on the influence of AmeriCorps service on participants. The AmeriCorps program was implemented in 1994 and has become a well-known and respected government initiative that provides valuable work experiences for young people after high school or college. AmeriCorps does not focus specifically on environmental issues; however, many of its programs focus on disaster management and preparedness, natural resources conservation or sustainability education. The study found that AmeriCorps service was influential in increasing participant’s interest in joining community groups. Additionally, participants demonstrated shifts in personal and social values; notably they ranked survey items about personal freedom and friendship higher after their service than they had before it. Similarly, Frumkin et al. (2009) and Nesbit and Brudney (2010) found that AmeriCorps participants showed increased interest in community involvement, civic activities such as voting and volunteering, and showed greater interest in working in the public sector and for government organizations in the future.

Conservation corps are very similar to environmental service learning, much more so than other forms of experiential education. Current corps programs emphasize the

importance of service to both the environment and their community in their programming (www.thecorpsnetwork.org). Corps service is often located in a specific geographic location, leading to place attachment and increased environmental interest, as mentioned by Curry (2002). Additionally, many corps work specifically in disaster relief and recovery, lending many young and able members to help in the aftermath of natural disasters, such as 2012's Hurricane Sandy in the Northeast United States (www.thecorpsnetwork.org, 2013).

Socio-Economic Limitations to Participation in Experiential Education

Participation in experiential education programs is often limited by social and economic factors (Rodriguez & Roberts, 2005; Orren & Werner, 2007). Many experiential education programs (such as outdoor schools discussed previously) have fees that must be met either by school districts or individuals for youth participation. Additionally, in residential environmental education programs, organizations depend on parental or community chaperones to volunteer in behavior management and dissemination of material to participants (Stern et al, 2008). In predominately working class communities, taking several days off work to chaperone a field trip is extremely difficult.

In addition to the financial and personal obligations felt by poor and minority groups that limit participation in environmental and outdoor education, the history of minority racial groups' environmental interactions reveals that there may be learned aversion of many non-white groups that negatively influences their interest in the environment and in becoming engaged in environmental issues. Byrne and Wolch's (2009) research on the history of parks reveals that city, state and national parks were

originally intended to be places of leisure and vacation for wealthy white people, even as they often were located in, and ultimately displaced, many low-income and minority neighborhoods. Rosenzweig and Blackmar (1992) discuss early parks in the United States: “African-Americans and Irish [-American] families... were evicted from Seneca Village when it was razed to create Central Park. Like other early parks, Central Park was far from public transportation and beyond walking distance from working class tenements.”

Rosenzweig and Blackmar (1992), use case studies of well-known urban parks to argue that in most urban areas, access to green space is extremely disproportionate among socio-economic groups. Low-income and minority residents often have limited access to natural spaces within their neighborhoods, and fewer resources to access green spaces that are of significant distance from them.

Bixler and Carlisle (1994) investigated the fears of urban students when out in wild spaces. One of the major reasons for engaging in their research was that, at the time of writing, the majority of visitors to recreational parks and forests, as well as wilderness areas were white, middle-class, well-educated, and often male. Critics argue that the outreach and interpretation by parks perpetuates the low diversity of visitors by only reaching out to those who are already visiting. The authors argue that better understanding the experiences, both positive and negative, of students that visit parks in structured, and often mandatory settings, is a unique and useful tool to understand urban and minority groups’ aversions to visiting parks, forests, and other wild spaces.

Bixler and Carlisle (1994) found that many urban youth had fears of megafauna that were not present in the park, or in the nearby ecosystem. Fears of bears, lions and tigers were cited often, revealing that many of the urban students learned about science

and nature from watching movies and television, and had limited access to place-based education. Additionally, fear of snakes and insects were mentioned in the majority of urban students' observed responses. Further findings of the study showed that most of the urban students reacted emotionally to the threats they assumed were present, such as strangers in the woods or bears, instead of reacting to something they saw, smelled or heard that made them feel threatened. This led the researchers to conclude that the urban students had "developed misconceptions about wildland areas from other sources" long before exposure to wild spaces (Bixler and Carlisle, 1994).

Cassandra Johnson (1998) investigated a similar topic, researching the impact of the collective memory of African Americans and its impact on their interest in wilderness areas. Johnson (1998) found, through use of a place attachment scale, developed by Williams (1992), that African Americans were less likely to have an appreciation of wildlands than white people, and that women were less likely to appreciate wildlands than men, regardless of race. Johnson (1998) argues that this difference was directly related to the social history of slavery, sharecropping and lynching, though participants were not asked directly if the reasons for aversion had to do with these memories or familial experiences. Additionally, Johnson (1998) implies that it can be assumed the parents and adult role models of the observed youth share similar assumptions about the environment, and similarly gain information about nature from unreliable sources like television.

An expanded form of experiential education, adventure education, can be extremely expensive, including the rental of technical gear for activities like kayaking, rock climbing, or backcountry camping, as well as transportation to remote locations.

Inclusion in these activities is usually reserved for kids and teens whose families have expendable income. The National Outdoor Leadership School (NOLS) is one of many adventure programming groups that provide scholarships; however, they are difficult to get, and extremely limited. Some wilderness therapy programs can be partially paid for by medical insurance plans, if the individual has insurance or by state agencies as a form of rehabilitative programming for troubled individuals.

Medina (2001) writes about the socio-economic factors that contribute to the large proportion of white participants and leaders in environmental and adventure programs. One of the major factors she points to is the required training that outdoor leaders must complete, including wilderness first aid, or wilderness first responder training, which can cost upwards of \$700, and is very rarely paid for in-full by employers (Medina, 2001). Additionally, work as an outdoor or adventure leader is often seasonal, and unlike other seasonal jobs like wildland fire-fighting, outdoor leaders rarely make enough money in a season to sustain themselves when the season's activities end, nor is there an option for unemployment benefits during the off season. These financial issues in concert mean that outdoor leaders must travel for other seasonal jobs (for example as a river raft guide and then a ski lift operator) or be dependent on support from family members during off seasons. Lastly, outdoor and adventure programs (including programs like Outward Bound) also often require a season of internship for very little pay before being hired as staff at regular pay rates. These factors all lead to low diversity in leader populations, and can contribute to discouragement in youth participants that wish to continue in the outdoor leadership field.

Service learning programs represent a growing opportunity for American youth. Environment service learning is a part of experiential education that has had notable positive effects on minority youth, particularly African American and Hispanic young men and women (Nesbit and Brudney 2010, Jastrzab et al. 1997) A recent privately-funded report on “Opportunity Youth” by Peter D. Hart Research Associates found that nearly 1/6 of young people 16 to 24 years old are out of school and un-or under-employed. The opportunity youth cohort is made up of more young women than men, and more than half are youth of color. This group is at risk of incarceration, homelessness and huge social and financial strain on society (Bridgeland and Milano, 2012). State and Nationally-based corps programs are listed in the report as a promising opportunity for opportunity youth, because corps programs often provide education, job training, and, in some cases, assistance in finding jobs or paying for school after participation (Bridgeland and Milano, 2012). Jastrzab et al. (1997) investigated corps programs that specifically target minority and poor communities, concluding that corps programs provide valuable and meaningful experiences that increase participants’ ability to find employment or receive education than similar young men and women with no corps experience (ibid.).

Evaluating Environmental and Experiential Education Programs: Significant Life Experiences

There is an abundance of research evaluating different forms of both environmental and experiential education. Most environmental educators and proponents of place-based education, adventure education and wilderness therapy believe strongly that programs for young people ranging from elementary school students to teenage inmates in juvenile

detention centers not only help to mitigate behavioral and social issues, but also are successful at creating environmental stewards and future environmental advocates (Loskota 2004; Louv 2008; Browne, Garst & Bialeschki, 2011; Swan 2010). Louv (2008) has promoted this opinion quite successfully, in his popular and influential book *Last Child in the Woods*. Louv (2008) writes about the ability of natural spaces to help young people cope with ailments like Attention Deficit Disorder and also about the potential long term effects of unstructured play in nature as an extremely meaningful activity to the current and future generation's environmental stewards (Frumkin & Louv 2007; Louv 2008).

Kollmuss and Agyeman (2002) studied how educators can help people transition from being knowledgeable about the environment to taking pro-environmental actions. "Pro-environmental behavior" they define as: "behavior that consciously seeks to minimize the negative impact of one's actions on the natural and built world." In their investigation, they concluded that simply having knowledge of environmental issues does not automatically translate into action on behalf of nature (ibid.). Kollmuss and Agyeman (2002) do not conclude their study with concrete recommendations, but they do point out that a multitude of factors, including demographic background, economic need and mobility, social capital, and cultural beliefs, among others, should all be taken into consideration when attempting to evaluate the reasoning behind action or inaction, specifically in regard to environmental issues.

Kollmuss and Agyeman (2002) also discuss the importance of attaching value to a place in order to feel the need to take action to protect it. A variety of recent research points out that places that evoke emotional and value-laden responses are imperative to

the creation of future environmental activists (Chawla & Cushing 2007; Chawla 2008; Louv 2008; Swan 2010). One classification of emotional attachment to place developing environmental interest and advocacy is the term “significant life experience.”

Thomas Tanner (1980) introduced the concept of Significant Life Experiences (SLE) as a potential gauge to evaluate the effectiveness of environmental and experiential education programming. Tanner (1980) asserts that if the goal of environmental education is to create people interested in and willing to work for the betterment of the environment, then educators must know the best ways to engage students so that they will be interested in nature many years after an outdoor experience. Tanner (1980) invited environmental leaders from groups including the National Wildlife Federation, The Nature Conservancy, National Audubon Society and the Sierra Club to share information regarding their influences in becoming interested in the environment and the age(s) at which this happened. The invitation did not explain Tanner’s hypotheses about SLEs but the results showed that each respondent attributed their environmentalism to positive experiences spent in nature as a younger person, and many attributed their environmental work to the encouragement of parents, teachers or other adults to engage with the outdoors (Tanner 1980). Similarly, Swan (2010) relates the five avenues through which people become interested in environmental issues including 1) personal health, 2) desire for increased social justice, 3) concern for the public and 4) becoming well-informed, but makes the argument that it is 5) “profound emotional/spiritual experiences” that are most often the cause of increased environmental interest and action. Swan (2010) writes, “the Achilles Heel of the environmental movement is the need to use fear to continually motivate people.” Swan (2010) argues that it is not a fear of a destroyed planet that will

motivate action on behalf of the environment, but rather positive, significant life experiences in natural areas that are effective.

While the majority of environmental education literature focuses on the education of children, Tanner's (1980) results do not necessarily call for this. The participants' responses reference multiple experiences growing up, including times as teenagers and young adults, implying that a multitude of opportunities exist to engage people of multiple ages and backgrounds in environmental education, and thus create a more informed citizenry. Chawla (1998) provides a review of the subsequent research on SLEs, which had, up until that time been focused primarily on environmental leaders, and the factors that influenced a lifetime of advocacy and outreach in nature and conservation activities. Tanner (1980), Chawla (1998) and Swan (2010) all reference the "grandparents" of the environmental movement, John Muir, Rachel Carson, and Aldo Leopold as well as current leaders in environmentally-focused organizations, as people who had significant interactions with nature as children, and often attribute those moments to their lifelong commitment to environmental advocacy. However, as Chawla (1998; 1999) points out, the research concerning SLEs of adults who are not career environmental activists is sparse. There has not yet been a study discussing SLEs that uses a control to compare the childhood nature experiences of environmental leaders with those that have not devoted lives and careers to environmental education and advocacy.

Significant Life Experiences, the outdoor play hypothesis, and the efficacy of environmental education programs were examined together by Wells and Lekies (2006). Taking the conclusions of Chawla (1998; 1999) they surveyed a large pool of adults taken from the general public and investigated the impact of environmental interactions

as children (separated into ‘wild’ and ‘domesticated’ nature experiences) on their decision making as adults. The researchers found that children who participated in “wild nature” activities, including hiking, camping, hunting or fishing in natural areas before they were 11 years old were more likely to show pro-environmental behavior as adults. The authors took care to mention that it is adult and parental environmental behavior that is often necessary to provide those significant life experiences for children (Wells and Lekies 2006 p. 13).

Arnold and colleagues (2009) also investigated the reach of SLEs in nature on adult environmental attitudes and actions. Using qualitative interviews, the researchers investigated the early life influences that had led the small sample size of 12 teenage (ages 16-19) environmental leaders to become involved in education, activism and sustainability with regard to the environment. The responses from participants were grouped into two categories: influential experiences and influential people. While some youth were more influenced by friends or teachers, all participants mentioned time spent in nature as an influential experience that had inspired their interest in environmental leadership. One participant specifically discussed a conservation corps-like experience, saying that her experience with a backcountry wilderness operations crew was “the greatest experience of [her] life” (ibid.).

Arnold and colleagues’ (2009) study speaks to the need of more and continued environmental interaction for today’s youth, mentioned by Louv (2008) Sobel (1996, 2004) and Chawla (1998); however, they do not address any of the limitations, in terms of poor and minority access to the environment and natural spaces, that Wells and Lekies (2006) attempted to address with their expansive survey effort. The qualitative

methodology used by Arnold and colleagues' (2009) may have allowed the researchers to delve deeper into the specific combination of factors that had influenced the young environmental leaders who participated in their study. The conclusions Arnold and colleagues' (2009) assert reveal that youth interest in the environment is likely the result of many factors, including parental involvement in outdoor/environmental activities, family income level, geographic location, gender and race.

Theories to Evaluate Environmental and Experiential Education

One of the fundamental problems researchers face when attempting to evaluate environmental and experiential education programs is in defining what kind of programming they are evaluating. There are multiple theories that researchers may find useful in evaluating environmental and experiential education programs. Place-based education, social learning, constructivist, and Foucaudian theories are all used in the literature as potentially relevant tools with which to evaluate environmental programs. They are briefly defined below:

Place-based learning theory, also called the pedagogy of place, was made popular by Sobel (2006). Place-based education is multidisciplinary and encourages students and teachers to focus learning on a specific place, natural or socially constructed. Social-learning theory, first presented by Bandura (1977) asserts that, in group environments learning happens from the social interactions between people as well as from the experience itself. Constructivist theory similarly evaluates an experience by an individual participant's construction of that experience. In constructivist theory, learning happens from people, including peers and formal educators, the natural or built environment, and

through the processing of the experience by the individual. Foucauldian theory (Foucault, 1972) aims to investigate the social and political structures and practices in place that create the reality of an experience and works to critique them. Additionally, Foucauldian theory investigates and questions the participants of an experience, noting who is involved and who is left out (ibid.).

Seaman and Gass (2004) write about the need for a reevaluation of current theories and practices of the fields of both environmental service learning and outdoor/adventure programming, writing that they must be treated as distinct disciplines, and not as expansions of the same field. This is a problem also discussed by Haluza-Delay (2001) in his investigation of adventure programming: the theories used in environmental/experiential education are not always sufficient. Gruenewald (2004) discusses the need for more critical views of environmental and experiential education by calling for the implementation of a Foucauldian perspective in environmental education programming. Gruenewald (2004) strongly questions the purpose of environmental education that aims to work harmoniously within school standards, writing that the act of supporting standards simultaneously supports a larger socio-political system that regularly harms the natural environment and disadvantaged groups of people disproportionately (ibid.).

Many long-term environmental education programs are evaluated using constructivist learning theory and/or social learning theory, working under the assumption that the outdoor environment and the group atmosphere of most programs are teaching participants in multiple ways. Quay (2003) argues that constructivism, social construction and cultural discourses should be used together to evaluate any experiential

education program. Constructivist learning theory is criticized by Haluza-Delay (2001) as falling short of the actual goals of environmental education assessments. He writes: “constructivist learning theory proposes that learners are actors in the knowledge making process... however much of the research in environmental education (EE) has been deterministic.” The goal of most environmental programs to change the future actions of participants from what they might have been to those focused on the environment goes against constructivist learning theory, in that it removes the agency of constructing the experience from the participants themselves.

All of the above theories could be used to evaluate corps programs. Foucauldian theory is likely best used in evaluating the intentions of corps as a national movement, and not individual corps. Place-based education has the potential to be very powerful in the corps environment. Because corps often complete work in relatively small geographic areas and in specific communities, providing place-based educational opportunities would likely be meaningful and would add positively to the corps experience; especially for younger participants. However, corps that focus on work with young adults who are over the age of 18 often attract participants from a variety of locations (www.thecorpsnetwork.org, personal communications, April 2013). Because of this, place-based education should be used as McInerney (2011) writes, with a critical perspective and should “encourage young people to connect local issues to global environmental, financial and social concerns, such as climate change, water scarcity, poverty and trade” (ibid).

Social learning and constructivist theories are also useful to evaluate corps because corps programs are inherently interdisciplinary. Corps work in natural resource

management, urban renewal, agriculture, and sustainability. Corps participants recruit volunteers, provide aid to victims of natural disasters, and provide assistance and support to low income communities. Additionally, corps participants work in challenging conditions under a variety of leaders and leadership styles, in a variety of geographic locations and very closely with a group of peers that often start out as strangers. Because of this, both social learning and constructivist theories are important lenses with which to view these programs, as learning is likely happening on a variety of levels.

Methods for Evaluation

Methods for assessing environmental education and experiential education programs are diverse. The most common method portrayed in the literature is surveying, as seen in the work of Stern and colleagues (2008), who surveyed elementary school students in a short-term longitudinal study who had been a part of a 3-or 5-day residential program at Great Smoky Mountain National Park (Stern et al. 2008). Hanna (1995), Dempsey (2012) and Maravilla (2012) all used surveying methods with children and teenagers to collect all or portions of their data; however, administering surveys to young people has been questioned in the literature (Borgers et al. 2000). Children and teens are very “context sensitive” and may not engage with researchers with comfort, influencing their participation and quality of responses. Additionally, the reading level of children and teens (and adults) may have influence of the quality of responses and data quality in general because teen and child participants with low reading skills are more likely to skip questions (ibid.).

Referencing the work of Chawla (1998) and Tanner (1980), Haluza-Delay (2001) studied the effect of SLEs in environmental programs. He investigated how teenagers in adventure education programs are actually constructing their experiences through qualitative observations, and used two phases of semi-structured interviews. In her assessment of the influence of an environmental education program called Sea Camp Maravilla (2012), used both survey data and semi-structured interviews with youth participants to reach the conclusion that the Sea Camp experience was important to most participants, but especially so with the guidance of an invested adult mentor. Similar to the work of Arnold and colleagues (2009), the interviews necessitated a smaller sample size; however, also revealed the intricacies of each youth participant's experience.

Past Research Conclusions

The conclusions of many evaluative studies of environmental/experiential education programs are actually quite disheartening. Haluza-Delay (2001) found that adventure programming removed from home environments was successful in alienating participants further from nature, in that they felt it was not something they interacted with on a regular basis, but a pristine and peaceful place far away. Haluza-Delay (2001) ended his assessment with a call for improved programming that provides connections between wilderness spaces (where adventure and environmental education alike is often placed) and the participants' home environments. The quantitative study *What Difference Does it Make* (Stern et al. 2008) came to similar conclusions. While this study was focused on 3- and 5-day residential education programs in the Great Smoky Mountains National Park, as opposed to the 12-day adventure education program with teenagers in Haluza-Delay's

(2001) study, the results were similar. The largest percentage retention of subject matter over a 90 day gap after the environmental program's conclusion was directly related to the preparation and interest of park educational staff, the children's classroom teachers and the adult chaperones.

Hanna (1995) also writes about the need for programmatic structure in environmental and experiential education programming, including adults and educators who can assist in making environmental concepts relatable. In Hanna's (1995) study, an Audubon Society sponsored field ecology program and an Outward Bound adventure program were compared in terms of increased environmental knowledge, knowledge retention, and continued interest in environmental interactions. While both programs showed dramatic increases in both knowledge and interest in nature, the most structured program, the Audubon Backcountry Adventure program designed for youth participants had the highest scores on all evaluations, and the highest levels of knowledge retention. The adventure-based Outward Bound programs showed very low knowledge retention rates (Hanna, 1995).

Proponents of place-based environmental education use Haluza-Delay's (2001) conclusions to argue for less spectacular, but more financially and logistically possible alternatives to connect children and teens with nature, and Sobel's (2004) book introducing place-based education urges educators and parents to allow students and children to understand that they are a part of nature, not outside and looking in on it. Haluza Delay's (2001) study is evidence that immersion programs with no curriculum or context have the potential to be as damaging as charging children with solving problems like climate change (Ellison 2007), they can result in increased apathy and helplessness.

Conservation Corps in Experiential Education Evaluations

One aspect of experiential education that is largely overlooked in the literature is the role of conservation corps programming in regard to future environmental attitudes of participants. The Corps model has taken many forms since beginning in 1933. The Civilian Conservation Corps (CCC) was created by President Franklin Delano Roosevelt as part of the New Deal. The CCC was intended as a job training program for young men who would stay busy and active and earn small stipends to send to families struggling during the Great Depression. In addition to earning small wages and traveling the country, CCC participants performed an incredible amount of work in the US National Forest and National Park systems, planted thousands of trees, fought wildfires, and built and maintained hundreds of miles of recreational trail still in use today. The CCC model has been reincarnated many times, including the emergence of the Youth Conservation Corps (YCC) of the 1970s, which began out of a similarly low, but not nearly as devastating economic situation as the Great Depression in the United States. The YCC was an attempt to put teenagers and young adults to work during the summer months to keep them busy, out of trouble, and doing important work for their country. The YCC no longer exists, but in its place are multiple state and regionally-directed conservation corps programs that are continued by non-profits through contract work, as well as budgeting through federal AmeriCorps funding. AmeriCorps was implemented as a federal initiative in 1994 by President Clinton. AmeriCorps programming is not solely directed to corps programs, but many corps receive AmeriCorps funding and have grown under the support of this federal program.

Corps programming is a widely utilized transitional service for young people after high school or college, as well as a source of labor for many forms of environmental and social services. However, there has been limited research into whether or not these programs provide the type of significant life experiences and experiential education outcomes previously discussed. Evaluations of various types of conservation corps programming have been done periodically in the last 25 years, but none have incorporated qualitative methods focused specifically on how participants feel about the environment (Jastrzab et al. 1997; Driver 1984; Dempsey 2012).

Additionally, there is no current research that defines what exactly a conservation corps is. Some corps programs are voluntary, and participants earn a small volunteer stipend, others pay hourly wages, some have mandatory environmental education components, while others rely on spontaneous interactions with the found environment. This makes corps programs difficult to evaluate, and difficult to prescribe a particular learning theory to their process. Many corps programs, like Northwest Youth Corps (NYC) in Oregon, have an environmental education component, and participants are given the option of completing high school science and education credit while a part of the program. The corps members at NYC are administered an identical pre-and post-session test on scientific concepts including biology, ecology and current environmental issues, as well as lessons on various professional behaviors, such as writing a resume or interviewing for a job, to gauge knowledge retention over the course of their experience, based on mandatory hour-long lessons called SEED (Something Educational Every Day). However, there is no testing later in the school year to see if knowledge was retained over the long term.

Early evaluations of the YCC (Marans et al, 1972; Driver & Johnson, 1984) found that the majority of participants found the program enjoyable, and felt they had gained valuable knowledge and skills from the experience. Using pre-and post-experience surveys—most YCC programs were 8 weeks long— Marans et al. (1972) found that knowledge, attitudes and interest in environmental issues, especially natural resources management, improved during the course of the experience. The Department of the Interior funded Marans and colleagues (1972) to research YCC’s impact on five areas: 1) participant’s attitudes about their YCC experience, 2) changes in understanding of environmental and ecological issues, 3) changes in attitudes and relationships with peers and adults, 4) changes in recreational and work skills and 5) changes in self-concept or perceptions of self (p. 1-2). Overall, participants were found to have improved in all areas when compared to their pre-corps selves.

Marans and colleagues (1972) were careful to point out that while the majority of their participants reported positive changes and positive impressions of their time in the YCC, the results do not conclude that these positive changes were entirely the result of YCC participation. Because the participants were quite young and going through maturity during the study, some of the positive changes may have happened organically within each participant as they were exposed to a variety of job and life experiences.

In Marans and colleagues’ (1972) study, participant interest in environmental issues, the fifth criteria for evaluation, showed the most modest improvement. While participants entered and exited the program with high levels of environmental concern, their understanding of environmental issues, and their general knowledge about nature and the environment increased only marginally. The researchers found that the highest

levels of improvement were found in crews that emphasized education more than work, or that had well-coordinated education and work programs. These findings echo the research of Haluza Delay (2001) and Hanna (1995) who call for structure in immersion programs to retain effectiveness, especially when learning about the environment.

Marans et al (1972) present concerns about the conclusiveness of the research. The authors point out that the youth participants in the first years of the YCC were chosen among many applicants. The selection process could have biased the results in favor of young people who would show the greatest improvements in the study areas, as well as those that would show the greatest interest and engagement in the programming they were provided. Additionally, another flaw cited is the lack of follow-up on the retention of knowledge and positive environmental attitudes several months or years after completing a summer of work with YCC. Long-term studies of environmental and experiential education programs require substantial resources and are largely missing from the evaluation literature.

Driver and Johnson (1984) completed a pilot study investigating the potential long-term effectiveness of the YCC. By surveying former YCC participants and parents of participants, the researchers investigated whether the YCC was influential in influencing positive behavior in five broad categories: 1) increased environmental awareness and appreciation 2) improved work attitudes, habits and skills 3) improved ability to get along with others 4) increased self-confidence 5) improved basic orientations to life (e.g., education and career objectives). Alumni and parents felt the YCC had moderately to greatly influenced participants' environmental awareness, outdoor recreation interest and ability to work with others, among others (ibid.).

Female respondents and parents of female participants reported that female enrollees were significantly influenced by the YCC experience. Male YCC alumni and their parents did not report significant influence of the experience. Young women “had significantly higher scores on scales which define attributes that are probably more commonly associated with males. These include Tool Skills and Safety, Practical Outdoor Skills, Outdoor Work Enjoyment and Physical Fitness” (Driver and Johnson 1984, p. 7).

Abt and Associates sponsored an evaluation of youth corps in 1997 (Jastrzab et al. 1997). The study was focused largely on urban-based youth corps programs, including two youth corps west, and 6 youth corps east of the Mississippi. With the exception of the Washington State Service Corps, all were based in cities or largely urban counties. Jastrzab et al. (1997) analyzed nine outcome categories for participants: 1) civic, social and personal development, 2) current and planned involvement in community service, 3) current or planned involvement in other service, such as Volunteers in Service to America (VISTA) or the military, 4) voting behavior, 5) education and training plans and achievements, 6) employment and earnings, 7) involvement with risk behavior, 8) educational aspirations and expectations, and 9) work performance. Many of the effects of corps programs were positive but not significant, leading the researchers to conclude: “Collectively, the findings suggest that the programs generate positive, if not robust, effects on participants” (Jastrzab et al. 1997, p. 17). Among the insignificant results, two significant conclusions were reached: first, arrest rates decreased in youth corps participants compared to control group. Secondly, corps participants were significantly less likely to pursue degree or trade programs after participation. Additionally, all

demographic groups, including all participants of color and white women, were found to have improved success in finding employment after their corps experience, especially African American males (ibid.).

Dempsey (2012) examined the importance of conservation programs, specifically the California Conservation Corps on the “young adult transition.” The study utilized the alumni website for the California Conservation Corps, where Dempsey’s survey was posted for nearly a year, allowing past participants to reflect on their experiences from as long as twenty five years ago. The California Conservation Corps is the longest running conservation program in the United States, and their alumni network is well-developed and established. Dempsey’s (2012) study is the only long-term evaluative study of corps programs currently published.

Dempsey’s (2012) survey investigated several aspects important to experiential educators including ethnicity, gender and age demographics, initial reasons for joining, employment opportunities after, influence in career choice later in life and interest in environmental issues. The study found that 69% of respondents felt their participation in the California Conservation Corps “greatly influenced” their environmental decisions later in life (Dempsey, 2012).

A recent study on conservation programs in the United States has been undertaken by Duerden et al. (2013) and was funded by the Public Lands Service Coalition (PLSC). The study found that corps were influential in changing participants’ attitudes toward service and environmental activism and increased interest in environmental recreation. In an upcoming manuscript, Duerden et al. and PLSC organizations identified three priorities of their programming that should be evaluated (Duerden et al. in press). The

research sought to investigate corps participants' intention to pursue natural resource management careers or education, positive attitudes towards public lands and environmental activism as a result of corps participation (Duerden et al. in press).

The research concluded that of 10 Public Land Service Coalition (PLSC) organizations based in western states (Montana, Utah, Colorado, Arizona, New Mexico and California) that worked with teens and young adults (ages 18 to 25), all were successful in meeting the three desired outcomes of the Corps Network. The study used an online survey community composed of youth who had never participated in a conservation corps, and were located in the same states as the experimental group. While the study showed conservation corps to be significant life experiences, they found no significant influences of gender, age or racial identity on participants' experiences.

Duerden et al.s' (2013; in press) research continues. In the summer of 2012, they continued investigating the Corps Network's priorities with several more conservation corps, this time focusing on a larger spectrum of participants, aged 14-26 years old. The corps participants were compared to a control group that represented the same age, gender and racial ratio as corps participants. After one year of data collection, Duerden et al. (2013; in press) have concluded that participation in a conservation corps is a fun and exciting experience and had the result of inspiring participants to be more interested in natural resources based careers, outdoor recreation, and to continue to be involved in corps programs in the future (Duerden et al. 2013; in press). This research will continue for multiple seasons, and employs retrospective survey techniques, and a control group.

The conclusions of Duerden et al. (in press) and Dempsey (2012) are exciting for the field of environmental service learning and experiential education. Dempsey's (2012)

finding with the California Conservation Corps, that an experience as a young adult can influence environmental thoughts and feelings 25 years later, accompanied by the body of literature about the social and behavioral influence of environmental experiences on youth reveals the needs for more longitudinal studies of youth programs, like those currently underway by Duerden et al. (in press).

The Corps Network and its thousands of participants and volunteers would greatly benefit from continued academic understanding of corps' influence on the environment from a long-term perspective that encompasses both policy and advocacy. Additionally, the literature shows a lack of inclusion of creative research methodology. The heavy prevalence on survey data collection could be leaving out audiences that do not learn well in that context, or who could better express themselves through qualitative research methods like group or individual interviews. The following study will attempt to supplement survey data with qualitative interviews and will attempt to utilize the recent research methodology of Dempsey (2012) and Duerden et al. (2013; in press) by engaging alumni from multiple conservation corps organizations to investigate the influence of their conservation corps experience on their adult life.

Chapter 2: Article Manuscript
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Introduction

Conservation corps are defined by the Corps Network as: “comprehensive youth development programs that provide their participants with job training, academic programming, leadership skills, and additional support through a strategy of service that improves communities and the environment” (www.thecorpsnetwork.org/about). The following study attempts to shed light on the potential of conservation corps to be a solution to two ongoing needs. The first is “nature deficit disorder” a term coined by Richard Louv to describe the personal and ecological consequences to young people’s increased aversion to nature. Louv’s (2008) recent environmental education classic, *Last Child in the Woods*, makes the case for the need to expose young people to the outdoors. Louv (2008) writes about the damage caused by being perpetually “plugged in” to cell phones, the internet, television and social media (pp. 59-64). Additionally, Louv (2008) argues that it is often the exaggerated fear of injury or danger that keeps many parents from encouraging their children to play outside, or from prioritizing outdoor activities like hiking or camping as a family (p. 121).

The second need conservation corps (hereafter “corps”) address is the high rate of unemployment of young people in the United States. Conservation corps have a long history of providing employment to young men and women in times of economic hardship. The Civilian Conservation Corps was created by President Franklin D. Roosevelt in 1933 in response to the Great Depression. Currently, the now five-year-old

economic recession may be slowly turning around; however, the youth employment crisis is not yet solved, and most likely will not be for many years to come (Bridgeland and Milano 2012). The young adult demographic, especially the group labeled “The Forgotten Half,” or “Opportunity Youth” which represents the 55% of young people ages 16 to 24 who are unemployed, has undoubtedly suffered in their transition to adulthood as the economy has continued to stagnate (Bridgeland and Milano 2012; Dempsey 2012). By providing employment, modest payment, education assistance and job training, corps are a welcome alternative to fast food or other entry-level jobs that are currently available to young people.

The Corps Network serves as the national representative for state and county-based corps. The Corps Network website, informs visitors that more than 30,000 young men and women are enrolled in corps programs annually and that “each year corps organize an additional 289,000 community volunteers who work alongside corps members to generate 13.5 million hours of service every year” (www.corpsnetwork.org/about 2013). In conservation corps programs, youth (usually between the ages of 14 and 25) do a multitude of tasks ranging from trail construction and maintenance in National Parks and Forests to filling sandbags in the face of floods and hurricanes. Corps members often work in natural resource management, completing projects for the United States Forest Service, the National Park Service, the Bureau of Land Management, and others. Projects are often completed while camping in natural environments, where crews must live and work as a unit for many days, weeks or months. Through sweat, teamwork and occasional tears, these young men and women accomplish major projects and often do the work many adults do not want to do.

Many conservation corps programs also have formal education components. These can range from high school-level biology lessons to in-depth seminar-style discussions about the role of race in group dynamics, debating politically-sensitive issues like state testing standards, to lessons about how to write a cover letter and resume. Natural resource-based corps programs are often immersion-style, meaning that the participants live together for many days, weeks and sometimes months in an outdoor environment. This setting provides for challenging, and at times dangerous, situations that require communication, teamwork and leadership, in addition to physical strength and endurance.

This study was designed to determine whether participation in a corps program as a teenager or young adult is a significant life experience. Specifically, the data collection materials were designed to gauge general feelings about each participant's experience(s) with a conservation program, their impressions about the environment in relation to the corps program, and their impressions about the value of their social and personal development (or lack thereof) during the corps experience. The research was most concerned with the impact corps participation had on interest in and action on environmental issues. This was achieved by the inclusion of a vetted environmental attitude scale, the New Ecological Paradigm (Dunlap 1978, 2000). Specifically, the study aimed to answer the following research questions: 1) Does participation in a conservation corps program as a teenager provide experiences in nature that are significant in influencing participants' attitudes toward the environment later in life? 2) Does participation in a conservation corps as a teenager or young adult have immediate effects on participants' environmental interests and attitudes? 3) Was participation in a

conservation corps program significant in helping participants develop social and leadership skills? 4) Are demographic characteristics (age, sex, gender, income, etc.) of participants related to their interest in environmental issues?

Review of the Literature

Environmental education (EE) has been a recognized academic discipline since the late 1960s. Strapp et al. (1969) first brought forth the idea of education with the purpose of producing citizens that are invested in protecting the environment and advocating on its behalf. Experiential education has grown from the EE movement and encompasses multiple forms of programming including wilderness therapy, ecotherapy and environmental service learning (Itin 1999). Experiential education looks to multiple theories to evaluate program effectiveness, including place-based, constructivist and social learning theories (Sobel 2004; Haluza Delay 2001). Experiential programming allows for environmental education and facilitates productive group interactions through planned challenges and group activities, as well as by letting the natural environment (and subsequent weather events, wildlife interactions, and physical challenges) be a part of the learning and teaching process (Itin 1999; Quay 2003; Seaman and Gass 2011).

A review of the literature on both environmental and experiential education reveals that “significant life experiences” (SLEs) can be used as metrics to evaluate the long term effectiveness of these programs in terms of facilitating changes in environmental awareness, sensitivity and advocacy (Tanner 1980; Chawla 1998; Haluza Delay 2001). Past evaluation of environmental and experiential education programming uses the existence of SLEs to assert that experiential education is often effective in

changing behaviors of participants, and is successful in promoting altered environmental attitudes (ibid.). Nevertheless, the literature lacks assessment regarding the role of significant life experiences in conservation corps programming, despite the fact that corps exemplify many tenets of experiential and environmental education.

Communities of color and families with low socio-economic status often have difficulty accessing environmental programs. Tuition rates, poor geographic access and a lack of outdoor leaders from racial minorities or disadvantaged socio-economic upbringing have a negative affect on minority and low-income communities' exposure to outdoor work. Lack of exposure and education results in lower rates of recreational activity in environmental spaces and lower levels of interest in environmental issues and actions than more privileged demographic groups and can result in learned aversion-to-nature attitudes (Medina 2001; Johnson 1998; Bixler 1994).

Corps have the potential to access these communities because of the diversity of programs they offer, which includes job training, education, community involvement and monetary compensation. Evaluation of corps programs show that they have positive influences on participants' abilities to find employment, and show significantly reduction in the incarceration rates of youth (Jastrzab et al. 1997; Bridgeland and Milano 2012). Additionally, studies show that corps are effective at engaging disadvantaged youth and improving their prospects in the job market (Bridgeland and Milano 2012).

Arnold and colleagues' (2009) investigation of SLEs on adult environmental attitudes and actions found that all participants attributed their interests in the environment to influential people and/or influential experiences. Corps usually provide mentorship to participants through staff and trained crew or corps leaders. Often these

leaders have moved up from member to leader, giving participants an example and goal to one day lead crews (www.corpsnetwork.org; personal communication, April, 2013).

Corps have not yet been evaluated by their potential to provide SLEs to participants. Evaluation of the Youth Conservation Corps (YCC) (Marans et al. 1972, Driver and Johnson 1984) using pre- and post-experience surveys found that knowledge, attitudes and interest in environmental issues, especially natural resources management, improved during the course of the experience, implying that corps participation was quite influential. Unfortunately, this analysis was not repeated as participants became adults to investigate long term effect of the YCC. Dempsey (2012) examined the importance of the California Conservation Corps on the “young adult transition” and is the only research published to-date on conservation corps that investigates the long-term effect of corps on participants. Dempsey (2012) found that 69% of respondents felt their participation in the California Conservation Corps “greatly influenced” their environmental decisions later in life (ibid.).

A recent study on conservation programs in the United States has been completed by Duerden et al. (2013) and was funded by the Public Lands Service Coalition (2012; unpublished manuscript, expected 2013). The study showed that participation in a corps program produced a variety of positive effects, including greater interest in outdoor recreation and increased intention to pursue natural resource management careers when compared with a control group. The study showed conservation corps to be significant life experiences, however, no significant influences of gender, age or racial identity on participants’ experiences were found when compared with a control. Research on corps by Duerden et al. has continued (in press) and is planned to continue in the upcoming

years; employing retrospective survey techniques, and a control group to investigate effect of corps participation over several years.

The following study will attempt to supplement these quantitative survey studies with qualitative interviews and open-ended survey responses. It will use the research methodology of both Dempsey (2012) and Duerden et al. (2013; in press) by engaging alumni from multiple conservation corps organizations to discuss the impact of their conservation corps experience on their adult life. Based on the literature, it was assumed that the following study would find an overall significant influence of corps participation on alumni participants' environmental attitudes. Additionally, it was assumed that demographic variables would prove to be influential in participants' feelings about their corps participation.

Methods

Participants:

In order to answer interdisciplinary research questions posed by this study, a mixed methods research approach was employed. A total of 390 adult alumni of conservation corps programs began a questionnaire about their experiences via an online survey found at [surveymonkey.com](https://www.surveymonkey.com). A total of 330 participants answered the final question of the survey, implying they finished the survey in entirety. A strict vetting process was followed for all statistical analyses. Of the 330 complete surveys, 274 were concluded to be eligible for all statistical analyses, including the summaries of demographic information. Answers to qualitative questions were retained, regardless of the participant's inclusion in other analyses.

Participants were contacted using alumni lists of the following organizations: Northwest Youth Corps, Southwest Conservation Corps, Rocky Mountain Youth Corps, Montana Conservation Corps and Mile High Youth Corps (for more about individual organizations, see Chapter 3). Participants who are alumni of other corps (such as the Washington Conservation Corps or Student Conservation Association, among others) were also represented, but were not encouraged to take the survey by staff at those organizations (see Figure 1). Participants were predominately white (86.5%), young, and had a variety of education levels. More women (57%) completed the survey than men, and more participants thought of their family as middle income (63.5%) than any other income level (for complete demographic data on participants, see Appendix B). A sub-set of survey participants were contacted for short phone interviews to elaborate on their survey responses. A total of nine participants were interviewed.

Sessions and Seasons Completed by Survey Respondents

All survey respondents had worked with a conservation corps at least once in their past. The majority of participants (94.2%) had completed at least one session as a crew member. The remaining 5.8% had worked as crew leaders only. Crew leaders were not specifically encouraged to complete the survey, but there were not clear instructions discouraging leaders to participate. The majority of participants had completed one or two sessions or seasons as a crew member, about a quarter of participants had completed three or more sessions. The majority of the survey participants never worked as crew leaders (62%). Of those that did, more than half completed just one crew leader season or session (see Appendix B).

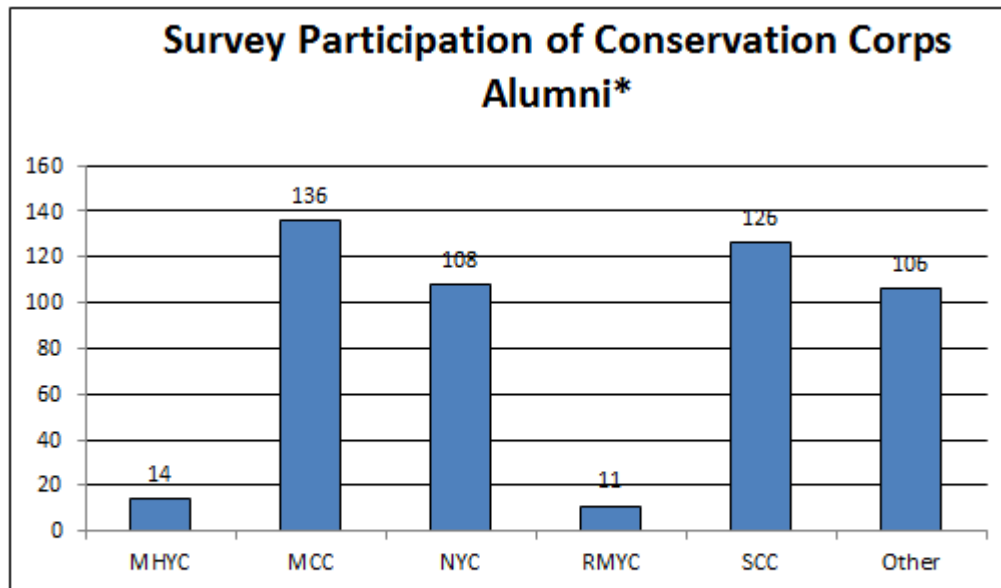


Figure 1: Survey Participation by Conservation Corps “Other” denotes the number of times corps other than the five participating organizations mentioned by survey participants. *Some participants are represented in multiple corps.

Data Collection

Each conservation corps organization was contacted to develop a method for recruiting alumni survey participants. Each organization used varying methods to recruit alumni participation. The survey was most commonly posted on organizations’ Facebook pages, but was also posted on corps websites and/or emailed to alumni via specific alumni email mailing lists, and in a newsletter format. In all cases, the organizations were in charge of how and when the survey was posted to various sites. Each survey was also posted for varying lengths of time, ranging from several months in some cases, to 2-3 weeks in other cases; however, nearly all survey activity was seen within a few days of posting, and very little activity was seen one week after posting. It can be concluded that survey availability was likely not a significant factor in the participation of alumni from any particular group.

Each organization was provided with a short biography of the researcher, stating specifically that the researcher had previous conservation corps experience. The biography also stated briefly what the purpose of the research was, and provided all participants with the researcher's academic email address. No participants contacted the researcher independently.

The survey included a total of 46 questions, divided into three sections. The first section asked for demographic information, including the participant's age, sex, racial identity, family financial status at the time of corps participation, and the number of seasons completed with a corps working as both a crew member and a crew leader. This section also included two open-ended questions: one asking participants to list what organizations they had worked with, and another asking participants to describe the types of projects they had engaged in as a corps member. The second section of the survey consisted of questions developed by the researcher, referred to throughout this paper as the Experience Survey. These questions pertained to impressions about participation in a conservation corps and addressed the following themes: 1) broad, general feelings about their experience in a conservation corps, (referred to as "general") 2) impressions about the role of the environment in their experience in a conservation corps (referred to as "environmental") and 3) impressions about their opportunities for personal and social development during their experience in a conservation corps (referred to as "social")

The Experience Survey questions were all placed on a five-point Likert scale, asking participants to rate a statement from strongly disagree to strongly agree; "neutral" represented the mid-scale response. The third section of the survey was Dunlap and Van Liere's revised New Ecological Paradigm (NEP) (1978, 2000). The NEP is the most

well-recognized and used survey tool for quantifying environmentalism (Dunlap 2000) The survey asks participants to rate 15 statements on a 5-point scale from strongly disagree to strongly agree, the mid-point of the scale is “unsure.” The highest score achievable is 75. The questions rotate positive environmental statements and negative environmental statements, so that participants would be unlikely to pick one score for every response (see Appendix A for complete data collection tools).

In a pilot test of the complete survey for alumni, one participant with an advanced ecology degree commented that many of the statements on the NEP were far too broad and simple to be relevant, and therefore answered “unsure” on many questions. This concern had been previously raised in regard to the original version of the NEP (Lalonde and Jackson, 2002) in a study where the researchers used qualitative methods to investigate the usefulness of the NEP for a group of participants with advanced degrees, who similarly, had concerns with the simplicity of the questions. Nevertheless, because the NEP is so well-recognized and widely used, it was concluded that it was the best potential survey to give to a diverse audience. A comment box was added after the 15 NEP questions to allow participants to relate any frustrations they may have had while answering the questions. Additionally, the open-ended question inadvertently provided many participants an opportunity to voice their own political thoughts and concerns.

At the end of the survey, participants were given the opportunity to write anything additional about their time with a conservation corps, or about the survey. This was a tool used by Dempsey (2012) and allowed many participants to relate very personal connections with their experience. The last two questions asked participants if they would be willing to participate in an interview with the researcher. Participants could then enter

their name and contact information to be reached at a later time. Out of the total 330 participants that answered this question, 237 (71%) consented to be contacted for an interview. Participants were eligible to be interviewed, even if they had not completed the survey in full and were not included in the statistical analyses. The survey for adult alumni remained active on various sites from January 28th until April 15th 2013.

Statistical Analyses

Multiple statistical tests were employed to analyze the quantitative survey data. The scored data on the NEP and the Conservation Corps Experience sections were not normally distributed, and did not become so in any attempted transformation. Resampling methods (10,000 permutations) were used to conduct both Analysis of Variance (ANOVA) tests on participant demographics and scores on both sections of the survey, and to conduct non-parametric t-tests, comparing scores on the NEP and Experience surveys within each demographic variable.

Simple Linear Regression was used to examine relationships among continuous variables. The number of sessions participants completed as crew members and crew leaders were compared against their scores on the NEP and Experience Surveys. Additionally, regression analysis was used to compare each participant's NEP score to their Experience score and their mean score on each individual section (general, environment, social) of the Experience Survey.

Statistical software PCORD (version 6) was employed to conduct multivariate analysis of the survey data, investigating relationships among participants' overall survey responses with eight demographic variables: age, gender identity, family income, racial

identity, parental involvement, level of education, and the number of sessions completed with a conservation corps, both as a crew member and a crew leader. A Euclidian distance measure was used in Multiresponse Permutation Procedures (MRPP) to identify significant demographic indicators in group responses for all Likert scale questions, as well as the Experience Survey and NEP separately. Pairwise comparisons were conducted for each MRPP to identify significant differences in responses among groups. An Indicator Species Analysis (ISA—hereafter referred to as the Indicator Question Analysis (IQA)) was used in PC-ORD to identify questions that had significantly different responses from one group within a particular demographic. The IQA was used on all grouping variables, regardless of significance of MRPP results.

Qualitative Analysis

Multiple methods were employed to select interview participants. From the survey data, multivariate statistics were used to create a dual axis Ordination chart, so that respondents could be grouped into similar clusters. Participants were chosen from the clusters, as potential interviewees. Single axis ordination charts and randomization were also used to identify potential interview subjects. If the participant had consented to be contacted, s/he was emailed or called to set up a time for an interview. Approximately 50 survey respondents were identified to be interviewed through the methods above. Of those, approximately 30 had consented to be contacted for an interview, and nine interviews were conducted. It was noticed through these processes that participants with negative corps experiences and comments most often did not consent to be contacted for an interview, which may have biased our findings.

All interviews were recorded and transcribed by the researcher. Qualitative software Dedoose (www.dedoose.com) was used to code the interviews and open-ended survey responses. Excerpts were taken from each interview and particular comments were kept for coding from the survey responses. The qualitative codes were grouped into eight umbrella categories: 1) “Corps Experience,” 2) “Social Development,” 3) “Environment,” 4) “Pre-Corps,” 5) “Testimonials,” 6) “Crew Leader Experiences” and 7) “Survey Comments.” “Corps Experience” was used to cluster excerpts and quotations that discussed multiple aspects of participants’ corps experiences. This included logistics information regarding the types of projects and crew living experiences respondents had, as well as personal reflections about people who were found to be challenging, significant or who participants had learned from. Additionally, “Corps Experience” included reflections about what the experience had meant to participants and included both positive and negative comments.

“Social Development” and “Environment” referred to instances where participants directly referenced aspects of leadership development or personal growth, or of nature/environment interaction, respectively. The code “Testimonials” was created for comments from participants who chose to relate personally important aspects of their corps experience without any prompting from the survey questions. Many participants told stories about their crews or projects in narrative form, and several commented about their experience with emotional and personal statements. As much as possible, the coding process attempted to mirror the three categories of questions from the Experience Survey: Environment, Social/ Personal Growth, and General Impressions about the program.

Additional categories were created specific to the NEP responses, and were grouped into 5 areas: positive, negative, explanatory (referring to participants who chose to defend their answers on the survey with examples), environmental concern (many participants took the opportunity to voice their own concerns and frustrations about environmental issues or policies) and personal criticism (some respondents who did not like the NEP chose to criticize the researcher personally).

Results

New Ecological Paradigm

Resampled Analysis of Variance (ANOVA) was used to investigate the effect of eight demographic variables on participants' NEP score. Gender was the only significant effect on NEP score (Table 1). Women as a group scored nearly 4 points higher on the NEP than their male counterparts.

Variable	SS Among	p value
Age	25.386	0.811
Gender	1128.356	<0.0005
Race	107.534	0.782
Education	228.999	0.579
Income	46.161	0.863
Parental Presence	255.898	0.752
Number of Sessions Completed	429.86	0.32
Number of Sessions Completed as a Crew Leader	522.818	0.135

Table 1: Analysis of Variance of Group NEP Scores. Values found using resampled ANOVAs in Microsoft Excel 2010.

Resampled t-tests were also completed investigating the effect of demographic variables and NEP score. Three significant responses were found: gender ($p < 0.005$),

number of sessions completed as a crew member ($p = 0.016$), and parental presence when participants were growing up ($p = 0.048$) (see Figure 2). Participants who grew up with both parents scored lower on the NEP than participants who grew up in other family situations, including participants with divorced parents, single parents, grandparents or other family members, and adoptive or foster parents. Participants who had worked only as crew leaders and never as crew members were excluded from the test examining the effect of number of sessions completed.

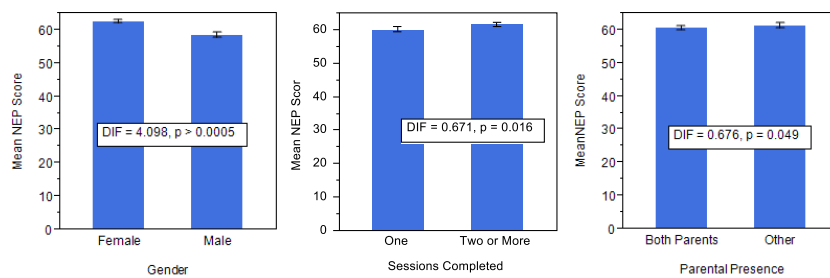


Figure 2: Significant Results of Group Scores on the New Ecological Paradigm. Scores out of 75.

Experience Survey

The survey respondents had a group mean on the Experience Survey of 65.288 out of a possible 80. Resampled ANOVAs investigating the relationship between demographic variables and participants' score on the Experience Survey produced two significant results and two nearly-significant results (Table 2). The number of sessions participants completed (including participants who had worked only as crew leaders), significantly affected participants' Experience scores ($p = 0.035$) (Figure 3). Excluding participants who had never worked as a crewmember on a corps produced a more significant effect on Experience score ($p < 0.0005$). Race was also a significant effect on Experience score

($p = 0.03$); Native Americans ($n = 7$) had the highest mean Experience score (68.571)

The ANOVA tests also showed two nearly significant effects: the age of participants at the time of taking the survey ($p = 0.065$) and participant's level of education when taking the survey ($p = 0.084$).

Demographic Variables	SS Among	p value
Age	38.817	0.065
Race	243.126	0.03
Education	477.754	0.084
Income	124.253	0.434
Parental Presence	348.95	0.434
Number of Sessions Completed as a crew member (including zero)	671.232	0.035
Number of sessions completed as a crew member (excluding zero)	4786.671	$p < 0.0005$
Number of Sessions Completed as a Crew Leader (including zero)	341.169	0.237
Number of Sessions Completed as a Crew Leader (excluding zero)	204.188	0.357

Table 2: Resampled Analysis of Variance of Group Experience Survey Scores.

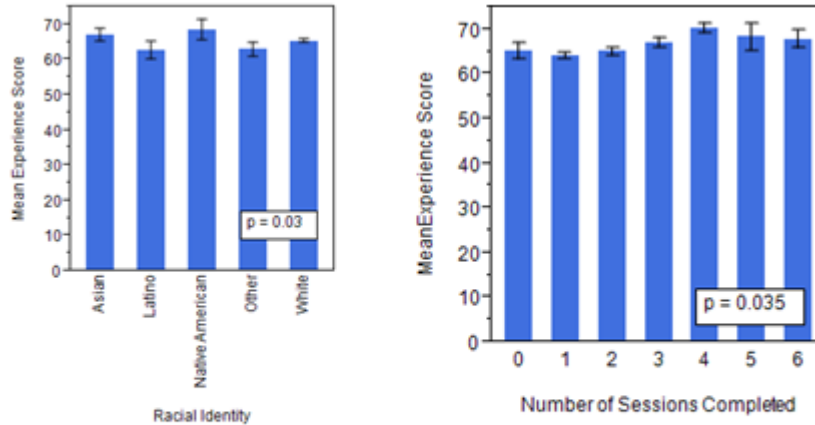


Figure 3: Significant ANOVA Results of Group Experience Survey Scores. "Other" denotes both Pacific Islanders and African Americans as well as any respondent that identified with two or more non-white racial groups.

The effect of demographic variables on Experience score was also analyzed with resampled t-tests (Table 3) and produced one significant result: number of sessions completed (Figure 4). Participants who had completed only one session with a corps had, as a group, a significantly lower average Experience score than participants who had completed two or more sessions with a corps ($p = 0.010$). Resampled t-tests comparing scores on the Experience Survey of white and non-white survey participants were not significant ($p = 0.570$), suggesting that the significant ANOVA result (Figure 3) was the result of significant differences among minority groups.

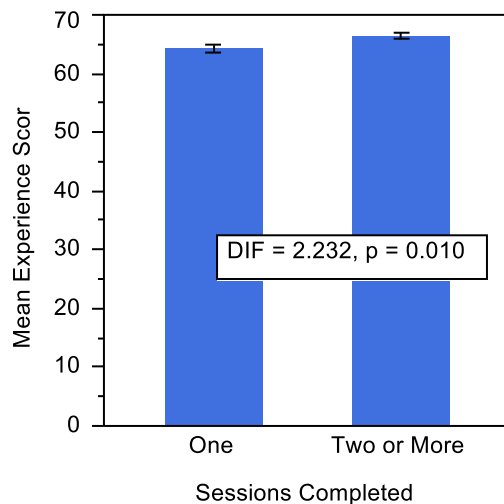


Figure 4: Effect of Number of Sessions Completed on Experience Survey Score. Scores are out of 80. Survey participants who had not completed any sessions as a crew member were not included in this analysis.

Variable A	Variable B	p value
Male Score (mean = 65.763)	Female Score (mean 64.929)	p = 0.341
25 years and younger (mean = 65.473)	26 years and older (mean = 65.065)	p = 0.628
Degree Holders (mean = 64.613)	No Degree (mean = 66.105)	p = 0.082
White (mean = 65.384)	Non-White (mean = 64.676)	p = 0.570
1 session completed (mean = 64.205)	More than 1 session completed (mean = 66.437)	p = 0.010
Leader (mean = 66.192)	Never Leader (mean = 64.735)	p = 0.097
Both Parents (64.860)	Divorced parents, Single Parent or Other family situation* (mean = 66.193)	p = 0.146
Poor (mean = 62.818)	Other Financial Status (mean = 65.392)	p = 0.273

Table 3: Experience Survey Scores Compared Within Demographic Groups. Participants that had not completed a session as a corps member were not included in the comparison of sessions completed. * Other family situations includes participants grew up in foster care, with adoptive parents or with grandparents or a combination therein.

Regression

Participant responses on the NEP and the Experience sections of the survey were analyzed separately and against one another using multiple methods. Simple Linear Regression was used to investigate the relationship between the two survey scores. Participants' score on the Experience survey was positively and significantly associated with participants' NEP score ($R^2 = 0.03$, $p = 0.004$) (Figure 5). The three sections of the Experience survey were also analyzed separately against participant NEP score. Scores on the "environment" and "social and personal development" sections were positively and significantly associated with NEP scores ($R^2 = 0.024$, $p = 0.011$, $R^2 = 0.034$, $p = 0.002$). The "general impressions" section of the survey was not statistically related to participants' NEP score ($R^2 = 0.006$, $p = 0.190$) (see Appendix C).

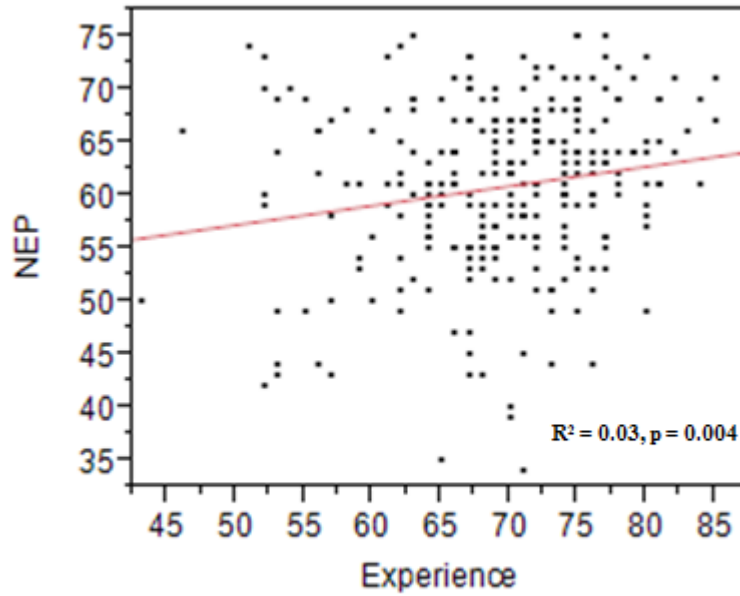


Figure 5: Association of NEP and Experience Survey Scores.

Community Analysis

Multivariate tests performed in PCORD (version 6) showed significantly that there was more difference than would be expected by chance among two demographic variables and all Likert Scale survey responses: gender ($A = 0.007$, $p < 0.005$), and participant level of education ($A = 0.004$, $p = 0.013$) (Table 4) were found to be small but significant effects on survey responses. The number of sessions a participant completed (excluding zero) was nearly significant ($p = 0.102$).

Demographic Effect	A Statistic	p-value
GENDER	0.007	$p < 0.005$
EDUCATION	0.004	0.013
AGE	0.001	0.233
RACE	-0.001	0.591
PARENT	0.002	0.131
INCOME	-0.0002	0.523
MEMBER SESSIONS	0.002	0.102
LEADER SESSIONS	0.001	0.395

Table 4: Effect of Demographic Variables on Survey Responses. Includes all Likert scale questions in the Experience Survey and the New Ecological Paradigm. Found with MRPP analysis using a Euclidian distance measure.

MRPP Analysis using only participant responses on the NEP showed similar results. The effect size of gender (Figure 6) was larger using only the NEP data, but equally as significant ($A = 0.011$, $p < 0.005$). Level of education remained a small but significant effect ($A = 0.007$, $p = 0.005$).

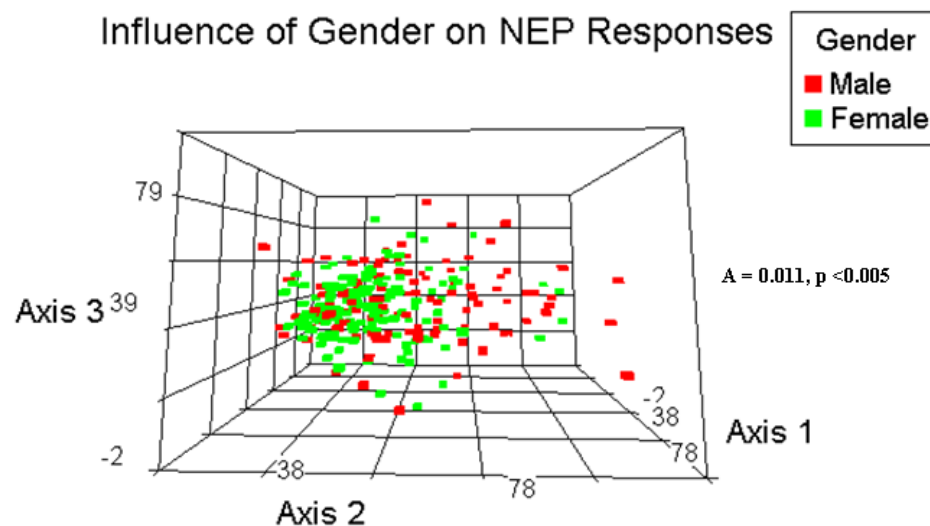


Figure 6: Gender Effect on NEP Responses. Men and Women answered 10 of the 15 questions on the NEP statistically differently.

Analysis of the effect of demographic variables on Experience Score using MRPP had one significant result. The number of sessions completed as a crew member (excluding zero), was a significant effect on participants' score on the Experience survey ($A = 0.007$, $p = 0.007$).

Indicator Question Analysis (IQA) was used to identify questions that participants answered significantly differently within demographic groups (Appendix C). Gender had the largest effect on answers to specific questions. Of the 31 Likert Scale survey

questions, 13 were significantly affected by gender; 8 were male identified and 5 were female identified (Appendix B). Women in general answered more similarly on the survey questions as a whole, and answered more positively on the NEP. Men as a group answered with more disagreement than women on the NEP but answered more positively than women on the three statistically significant indicator questions from the Experience survey (see Appendix C).

Open-Ended Survey Responses

There were four open-ended questions on the participant survey. The first asked participants to list the conservation corps they had worked with in the past. The second asked participants to describe some projects they had worked on. The last two open-ended questions were clearly optional. One asked participants to comment on the NEP section of the survey, and the last asked participants to add anything additional about their experience and/or the survey itself. Questions that were clearly optional received much less participation than those that were not. There was a wide variety of responses. Results for these questions are summarized below:

Open-ended 1: What Conservation Corps Have You Worked For?

This question was mainly straightforward. Most respondents simply listed the corps they had served with. There was a surprising number of participants that had worked for two or more corps previously; 28 participants listed 3 or more corps that they had worked for as a crew member or crew leader. Some respondents elaborated, describing the type of crew they had been a part of; this was most common for crews like “saw crew” “cut and run crew” or, in the case of participants from NYC, respondents that had participated in

exclusively backcountry leadership programs made sure to include that information.

Similarly, participants who had served with immersion crews, living in the backcountry for many weeks referenced that aspect of their corps experience.

Open-ended 2: What types of projects did you work on with your crew? For instance, tell me what types of projects you did and where you camped/stayed while doing conservation work.

The responses to this question were varied. Some respondents answered briefly, listing one or two projects, or the general work of their crew, like “installed high-efficiency shower heads in low-income households.” Other participants described in detail all the projects they had completed, like this person:

“My crew was a cut-and-run crew... We completed over five-hundred miles of trail in two months, in 9-day on, 5-day off rotations. We cleared these trails along the way of fallen trees, branches, etc. We also rehabilitated the trails themselves. We built structures into trails to guide water away from the trail and into common water sources, as well as to build up a trail when sediment moves down with water. We camped in tents, mostly far away from our vehicle. We camped near water sources such as streams, creeks and lakes. The views were remarkable. We stayed up to 10,000 feet up into the mountains.”

Other participants took this opportunity to talk about why their time in a corps was important to them. Many made comments like “good times” or “awesome” somewhere in their descriptions. Others, like this participant discussed their personal transformation (these types of comments were coded under “Testimonials”):

I went from searching for an identity and a place to fit in to a coolheaded, self-reliant individual... My crew did most of our work in The Bob [Marshall], the Scapegoat, the Selway-Bitterroot, and the Frank Church Wildernesses. Only a handful of times did we receive stock support. Most hitches we looked like a backcountry version of the Beverly Hillbillies; 9-10 days worth of food, tools, and gear strapped to every inch of our packs, hiking up to 70 miles. I still look back on those days with a great big smile.

Open-Ended 3: Responses to the New Ecological Paradigm

The majority of the comments on the NEP were negative or critical. Out of a total of 82 comments that were relevant to the NEP, 36 comments (44%) were coded as “NEP Negative.” Many participants took issue with the middle point on the Likert Scale being “unsure” instead of neutral. There were also many comments about the wording of the survey, specifically in the question: “The balance of nature is strong enough to cope with the impacts of modern industrial nations.” There were several comments about the phrase “the balance of nature,” provoking many participants to say those words did not make sense, or there was no way to quantify that statement. Other participants commented that this section of the survey seemed written by an “activist” or otherwise commented that the survey had a political agenda or bias to it. While it was made clear that this survey was a well-known and widely-used survey, many participants seemed to think that the survey was written by the researcher, and so directed occasional personal criticism at the researcher.

The feelings of participants that the researcher had a bias could also be seen in the many responses that attempted to explain their answers to the survey. Many chose to define what they felt nature or the environment was, or to quantify their answer in some way, like this respondent: “I agree that we need a balance between us and nature. But in the natural order of things, life dies and moves on. We cannot expect to keep everything around forever. The environment can adapt if things are allowed to die out.”

Nevertheless, there were also a small number of respondents that reacted positively to the survey; 6 responses (7%) were coded as “NEP Positive”. Many respondents felt that this open-ended question was an appropriate place to discuss their own personal environmental beliefs or concerns, saying things like: “We have PASSED

the limit of the number of people the earth can support.” Or, “Most people are either not fully aware of the full extent of the impact humans are having on the Earth and the ones that do have some idea would rather have their cushy houses and fancy cars than save the most important resource we have, the Earth itself.” The reactions to the NEP are discussed more fully in Chapter 3.

Open-ended 4: Final Comments on Corps Experience/Survey

There were a variety of responses to this question. There were multiple participants that requested to read the final results of the study, or expressed personal or academic interest in the results. Most participants had positive comments about their experience, like: “Yah! Conservation! One of the true highlights of my life!”; “[Corps] changed my life (for the better of course). I wish everyone did it at some point in their youth.”; “It was a life-changing experience.”; “Conservation work has inspired me to truly dream and has given me confidence in my abilities to succeed”; “I think that conservation corps are the best way for an individual [to] gain an appreciation for public land, the environment, manual labor and teamwork.”

There were a small number of negative responses; a total of 11 survey comments (8%) were coded as “Negative Corps Comments.” The negative comments included statements that the participant would not work with a corps again if given the chance and comments about working long hours or dislike of the food. Others (of which there were very few) were quite scathing:

My experience with [a conservation corps] has led me to believe that these non-profit groups predate on relatively un-educated, low income young people who are too inexperienced to realize that they are being taken advantage of. Many of the crew members I came into contact with were either college dropouts or had no education past high school. I understand the premise behind the conservation corps is to provide training and skills to people with very little work experience or education. However, these positions often pay less than fast-food jobs and provide little, if any, marketable job

skills. The inclusion of first aid training, red card certificates, and the like would greatly improve the utility of these programs from the perspective of the employee. As a member of a trail crew, I received almost no training on how to correctly use the tools required by this job. I felt that the trail work completed by my crew was poorly done. The food we were provided on my trail crew was wholly inadequate and unhealthy (think cut up hot dogs in mac'n cheese). Upon returning to camp after a day's trail work, the mandatory meal preparation/clean-up/and environmental kum-ba-yah sessions sucked up the rest of the evening despite the fact we weren't getting paid to do any of that. I would have much preferred to take care of my own quick meal and gone on a hike or sat in a lawn chair and read a book. I find it impossible to understand how this oppressively structured environment is supposed to teach young people to work as part of a team and be "responsible". What's more, the crew supervisors are saddled with an immense amount of pressure for just a pittance more in remuneration, leading them into petty power trips and emotional breakdowns.

The above comment represents the minority of the survey respondents. The majority of participants who took the time to add a response had very positive comments. A coding category called "Transformative Experiences" was added to house all survey comments that directly referred to their lives being changed in some way by the experience in a corps, like this participant:

I owe a lot of who I discovered myself to be to [a conservation corps]. My crew leader fostered a supportive environment in which I was able to develop and realize my true self. I cherish my time in the woods dearly and will never forget or stop missing my crew and experience. I sincerely believe that all young people should experience something similar to [a conservation corps] because it aids development so readily.

A total of 52 responses (38%) were coded as being evidence of transformative experiences.

Interview Responses

A small subset of nine survey respondents who were willing and available, were contacted for follow-up interviews. The interviews were all conducted over the phone, and each lasted between 15 and 30 minutes. Four alumni from Montana Conservation Corps, two from Southwest Conservation Corps, one from Northwest Youth Corps, one from Rocky Mountain Youth Corps and one from Mile High Youth Corps were interviewed. The survey participants were very different from one another. One

participant was a corps member 13 years ago, several had completed seasons with a corps within the last 3-5 years. One participant was still with a corps, serving on a veteran fire crew. One participant now works full time with a conservation corps. Three of the nine had served as crew leaders at least once. Each interviewee said they would recommend the corps experience, and would send their own children, nieces or nephews to a corps because they had personally found it a worthwhile experience. One participant commented that s/he would recommend a conservation corps because: “it builds character.”

Eight of the nine interview participants had continued to work in similar fields as conservation corps for some time after their corps season. These jobs and activities included leading backpacking trips, working for the US Forest Service or helping with disaster recovery with other organizations. Many interviewees commented that they were happiest doing the type of work they had done with a corps, included things like working in a team, doing physical outdoor labor, and being challenged regularly. Eight of the nine answered that yes, their interest in the environment increased after their time on a conservation corps. One participant mentioned that before corps s/he had been idealistic about environmental issue, but after participation in corps s/he “went from nominally interested to genuinely and passionately involved.” The ninth participant felt that her/his interest in the environment had remained the same. All expressed that they had enjoying many of the same hobbies and outdoor activities before their time with a corps, included hiking, biking, snowboarding, gardening and hunting. Several interview participants felt their interest in these hobbies had been amplified by their corps experience, or had brought them to a geographic location where these activities could be enjoyed more

regularly. All interviewees felt they had changed in some way during their time with a corps:

It totally changed where I was headed with my life. I mean nothing bad was going on or anything, but I mean I didn't have a job that I loved, just work at the time before I did [corps]... it helped me kind of realize that I wanted to have something to do with working outdoors in the forest... something that I don't think I ever would have realized if I had stayed in Minnesota that year. And, I think it also, it helped me be a little more outgoing and learn some leadership skills and how to work with a co-leader, and get through some of those challenges. I'm realizing things I learned after the fact that I didn't realize I learned at the time.

Discussion

Effect of Corps Experience on Environmental Attitudes

The effect of conservation corps on participants' environmental attitudes is not strongly conclusive based on the data gathered. The significant effect of the number of sessions a participant completed on both the New Ecological Paradigm and Experience Survey scores may imply that corps participation has an effect on participants' environmental attitudes. However, the average score of all survey participants on the NEP was 60.825, translating to an average per-question score of 4.055, or "mildly agree" to each NEP question. This is substantially higher than the mean NEP scores found by Rideout et al. (2005) who surveyed college students in person and by email and found mean NEP scores of 51.3 and 54.0 respectively, and Gallagher (2013) who used the NEP to survey inmates in Washington State finding mean NEP scores of 54 in the experimental study groups. Additionally, Gardner and Stern (2002) place the mean NEP score of 45 as the threshold between agreement with the paradigm and ambivalence to the concepts addressed, placing the corps alumni from this study far above this threshold. Given the significant among group effect ($p < 0.0005$) of numbers of sessions completed as a corps

member (excluding zero), it cannot be concluded with certainty that conservation corps influence interest and action on environmental issues. It is also quite likely that people who are pre-disposed to be environmentally interested may be more attracted than average to corps programs, or may readily seek them out.

The qualitative data suggest that changing environmental attitudes is not seen as a significant part of the corps mission or experience. The experience of living outside in National Forests or wilderness areas for many weeks was mentioned several times as a highlight of the corps experience, but answers specific to the environment were rare in both the interviews and qualitative survey responses. When participants were asked about their favorite parts of the program, seeing new places, living outside, and getting to do meaningful work were mentioned often, which could be concluded to mean that the environment as a setting for a challenging and enjoyable experience was a significant part of the corps experience. However, when asked the question: “Do you think you became any more or less interested in the environment or in environmental issues after your time in a conservation corps?” most interview participants answered that they became more interested, and referenced several times that they became more aware of environmental issues through the experience. The answers to this question were usually short in comparison with their answers about their crew, or how they had changed while a member of a conservation corps. Unfortunately, these data cannot lead to conclusions about the effect of a corps experience over time on environmental thought and action. Past studies on corps (Marans et al. 1972, Driver and Johnson, 1984, Dempsey, 2012, Duerden et al. 2013, Duerden and Edwards, in press) show increased environmental interest in corps participants when compared with control groups. These studies lend

themselves to the possibility of corps participation being a likely effect on NEP scores and environmental interest in general.

Effect of Conservation Corps Experience on Social and Personal Development

In the qualitative analysis, the effect of an experience with a conservation corps did appear to be significant to participants in terms of their social and personal development, which supports the previous conclusions made by Dempsey (2012) and Duerden et al. (2013; in press) that corps participants feel more capable and apt to challenge themselves. Many participants commented that their time in a corps changed their lives. In the unsolicited open-ended question in the survey, participants were asked to add anything they wanted about their time in a corps, and many respondents (approximately 52 individuals, 18%) chose to give a type of testimonial about how they had been influenced positively by their time in corps (only 8% responded negatively). Additionally, because these transformative experiences were often happening in State Parks or National Parks and Forests, corps could be influencing public perception of these areas. This effect was alluded to in several interviews, though actual change in perception as an effect of corps participation cannot be concluded with the available data.

Usefulness of the New Ecological Paradigm

The last conclusion that can be drawn from this study is the questionable usefulness of the NEP in surveying a diverse group of respondents. The survey, updated in 2000 (Dunlap et al. 2000), did not seem to be relevant to many survey participants, who took issue with the vague wording and broad generalizations of many of the questions. Several survey participants stopped taking the survey entirely when they reached the NEP. There

is no way to know if that was simply due to fatigue with the survey as a whole, or if participants found it offensive or irrelevant. Regardless, the number of incomplete surveys is evidence against posting the NEP at the end of a survey (as was done in this study) in the future.

Additionally, a few participants expressed confusion at the inclusion of the survey, commenting that corps do not often talk about the macro-level environmental effect of their actions, making the survey seem abstract and foreign to this community. Duerden and Edwards (in press) employed the Environmental Movement Activism Scale (Milfont and Duckitt 2010), which may have been more appropriate to measure intent to be involved in environmental programs; however, it may have been potentially less useful in discerning participants' broad environmental attitudes.

Despite the negative response to the NEP's inclusion in the survey, the significant difference in responses between men and women does support previous studies (Zelenzny et al. 2000) that show women tend to answer quite differently, usually more positively, on the NEP and other scales of environmental attitudes (Tindall et al. 2003). In this study, women, on average, scored nearly 4 points higher than their male counterparts on the survey. The effect of gender is discussed more fully in Chapter 3.

Conclusion

Based on the data collected, it cannot be said with certainty that conservation corps are significant life experiences in influencing participants' environmental interests and attitudes. The significantly higher score on the Experience and NEP surveys for corps

members that had completed more sessions implies an effect of corps participation. However, the high group mean NEP score also implies that corps participants may be more environmentally inclined than average. The qualitative data does suggest that corps participation is seen as a very important experience to many alumni, and implies that corps are significant life experiences for some participants. The results of this study coupled with the small but growing literature on corps suggest that corps have the potential for great influence on participants, and in the current economic recession in the United States, these programs are needed (and are in need of further evaluation and development) just as much as they were back in 1933. Continued research on the influence of conservation corps is needed.

Chapter 3: Expanded Methods, Results and Discussion

This chapter contains the researcher's personal interest and justification for completing this thesis. Additionally, a brief history of the conservation corps movement in the United States is outlined and the five corps that participated in this research are discussed. This chapter also contains the expanded methods, results and discussion from the study and contains recommendations for future research with corps and continued use of the survey tools. Last, the interdisciplinary nature of this study is discussed.

Personal Interest in Conservation Corps

As a former leader of conservation corps, I can attest personally to the amazing outcomes of programs that expect great things from young people in the outdoors. I have also felt certain that these programs are beneficial to the environment for several important reasons. First, the work done by corps often involves improving recreational areas, work I see as environmentally beneficial because it discourages users from disturbing wilderness areas that have not been designated for recreational use. Second, educational lessons are more relevant in the natural environment when an ecosystem can be studied up close, leading to more engaging environmental lessons (Sobel, 2004; Louv 2008). Third, and most importantly to me, I felt that exposing young people to nature in the ways corps programs do, for several days or weeks at a time encourages pro-environmental behavior because leadership development and personal growth is occurring in a dynamic natural setting.

To investigate this, I carried out a small pilot study in the summer of 2012 with leaders of experiential education programs. A small group of outdoor leaders completed online surveys and were interviewed for my study. The interviews were intended to

assess the goals and intentions of the adult leaders and supervisors of youth outdoor education including work, volunteer, and therapy programs. Additionally, the research was intended to investigate what these leaders felt about their roles, and the importance of the work they did or do currently, both in the lives of the youth participants, and for the environment. Analysis of these data led to the conclusion that it is an interest in the outdoors, and not in youth education that leads people into outdoor leadership programs. Additionally, the leaders, without exception, noticed positive changes and growth in the youth over the course of an outdoor program, and the influence on the youth participants' personal growth and development was seen as the sole purpose of these programs. I was curious then, if the participants themselves felt the same, which was the rationale for this investigation into the attitudes and perspectives of conservation corps alumni.

Historical Background of Corps

The work of conservation corps has proved to be meaningful and effective during times of economic hardship in the United States. As the United States makes its way slowly out of a recession, the work of conservation corps programs is more important than ever. In 1933, Franklin D. Roosevelt created the Civilian Conservation Corps (CCC), saying to congress:

I propose to create a civilian conservation corps to be used in simple work not interfering with normal employment, and confining itself to forestry, the prevention of soil erosion, flood control and similar projects. I call your attention to the fact that this type of work is of definite practical value, not only through the prevention of great present financial loss, but also as a means of creating future national wealth. This is brought home by the news we are receiving today of vast damage caused by floods on the Ohio and other rivers.

... This enterprise is an established part of our national policy. It will conserve our precious natural resources. It will pay dividends to the present and future generations. It will make improvements in national and state domains which have been largely forgotten in the past few years of industrial development.

More important, however, than the material gains will be the moral and spiritual value of such work. The overwhelming majority of unemployed Americans, who are now walking the streets and receiving private or public relief, would infinitely prefer to work. We can take a vast army of these unemployed out into healthful surroundings. We can eliminate to some extent at least the threat that enforced idleness brings to spiritual and moral stability. It is not a panacea for all the unemployment but it is an essential step in this emergency. I ask its adoption. (Taken from FDR's "Three Essentials for Unemployment Relief" speech to Congress, 1933)

This New Deal initiative would remain in place for nine years and provide employment, job skills training, much needed stipends and new hope for more than 2.5 million young men as the United States slowly crawled out of the Great Depression (Salmond, 1967, p. v). Similarly, many presidents since that time have looked for ways to get young people outside and working. The CCC model has taken on several forms throughout the years, including the Youth Conservation Corps movement of the 1970s, and AmeriCorps, put into place by President Clinton in 1994. Most recently, the Obama administration has passed initiatives to get more young people outside with summer employment on public lands through providing additional funding to corps programs in 2012 (<http://www.doi.gov/news/pressreleases/Obama-Administration-to-Hire-20000-Young-People-for-Summer-Work-on-Public-Lands.cfm>).

The work of many conservation programs is to not only provide employment for youth, but to also provide both experiential and formalized education experiences, job training and exposure to new places and people. In this way, conservation corps are naturally interdisciplinary. Corps engage diverse participants, often focusing on urban and rural youth, they provide diverse education that creates understanding of both ecology and biology as well as policy and they allow member to learn more about the importance of community involvement. The work of each of the conservation corps included in this study is discussed below.

Corps Participation

The five conservation corps programs included in this study have many similarities and differences; however, it was concluded that because each has a similar mission, the inclusion of all corps in the data collection and analysis processes was appropriate. Each corps uses language in its mission statement about creating opportunities for young adults, providing job training and education, exposure to the outdoors, and exposure to a healthy lifestyle, as well as providing participants with the tools and knowledge to become stewards of the earth. Below is a brief description of the program offerings of the five corps that participated in this study.

Northwest Youth Corps

Northwest Youth Corps (NYC) is located in Eugene, OR. It is one of the oldest conservation programs in the United States. Started in 1984, NYC was intentionally modeled after the CCC and YCC programs that came before it. NYC was created with the intention of providing a job training and educational program for Pacific Northwest Youth. The first year of programming provided 52 teenagers summer employment and work experience, by assigning them work in the outdoors. These youth were mainly building slash piles from waste branches and debris left over from logging projects in Oregon.

From those small beginnings, NYC has grown tremendously. In 2011, NYC served 1,100 youth through five areas of programming (Northwest Youth Corps 2011 Annual Report). Currently, NYC completes projects through work contracts with the US Forest Service, the Bureau of Land Management, The Nature Conservancy and other land

management agencies in Oregon, Washington, California, Idaho and Arizona. Projects include trail construction and maintenance, invasive species eradication, fuels reduction through slash piling and tree thinning, and other restoration projects including planting native vegetation or participating in threatened species surveys.

In addition to 4-6 weeks of nearly 40 hours per week of manual labor, youth participants are given the opportunity to earn high school physical education and science credit through daily educational lessons called SEED (Something Educational Every Day). These lessons involve natural science topics ranging from forest succession to the salmon life cycle, as well as job training sessions, where youth participants learn about better practices for applying for jobs through resume and cover letter writing, and mock interviews.

Montana Conservation Corps

Started in 1991, Montana Conservation Corps (MCC) enrolls more than 200 young adults ages 18 to 26 from across the country annually in AmeriCorps programs to work as crew leaders or crew members on adult conservation crews. Additionally, MCC enrolls more than 100 Montana teenagers between the ages of 15 to 17, in Youth Service Expedition programs. Adult participants earn small living stipends and education awards through the AmeriCorps program. Youth participants meet volunteer requirements for high school and earn small service awards.

MCC has five state offices, located in Missoula (called Western Wildlands by members), Helena (Continental Divide), Bozeman (Greater Yellowstone), Kalispell (Northern Rockies) and Billings (Eastern Wildlands). Crews complete projects both local

communities helping with disaster relief, various volunteer events and helping low-income communities prepare their homes for winter through weatherization assistance. MCC members also work in wild spaces, such as National Forests, State and National Parks, wildlife refuges and federally designated wilderness areas doing a variety of natural resource management and recreation-focused tasks.

Adult crews work together on “hitches” that vary in length from 6 to 12 days at a time, and remain together for the duration of their service with the corps. Youth crews serve for 4 weeks total, often changing projects every week or two, and exploring Montana on the weekends. Both youth and adult crews have mandatory education lessons where members discuss the importance of environmental stewardship, community service and leadership (mtcorps.org/about).

Southwest Conservation Corps

Started in 1998, the Southwest Conservation Corps (SCC) offers year-round programs throughout the southwestern United States. SCC was modeled after the CCC and has grown very quickly to currently offer programming based in three states, operating out of four regional offices in: Durango, CO; Salida, CO; Acoma, NM and Tucson, AZ. SCC is a member of the Mountain Alliance of Conservation Corps as well the Colorado Youth Corps Association; both are organizations that provide support for multiple regional corps. SCC programs involve young people between the ages of 12 to 25 in a variety of programs. Corps members provide support to local and urban communities in a variety of ways. Most recently, SCC corps members have been a part of the Hurricane Sandy relief effort in the Northeastern United States.

In addition to community service programs SCC corps members do many natural resource based projects in natural and wild spaces throughout the Southwest. Work projects include the work of the Sustainable Forestry team, where members learn how to operate chainsaws safely and effectively to reduce hazardous trees in forests through thinning methods. Other work projects include trail building, fencing construction and removal, erosion control, pollution and litter control assignments and invasive vegetation eradication.

SCC offers corps members opportunities to gain skills and certifications that they can take out into the work force. Additionally, many of the SCC's positions allow participants the opportunity to earn an AmeriCorps education award to continue their education after their service. Participants also have the opportunity to work in SCC's crew leader development program, where they learn the skills necessary to be an effective outdoor leader. Lastly, SCC is home to a very successful Veteran Fire Corps program employing men and women who have recently been discharged from the military in projects and trainings that will prepare them for careers with the Forest Service, Bureau of Land Management and other federal and state agencies (scc.org/about)

Rocky Mountain Youth Corps

Rocky Mountain Youth Corps (RMYC) was started in 1993 by the city of Steamboat Springs, CO, and is also a member of the Colorado Youth Corps Association. RMYC was created with the intention of providing better employment opportunities for the area's youth and young adults and in 1999 became its own non-profit allowing the organization to expand their program reach and serve more teenagers and young adults in the local area.

RMYC has five types of programming: Conservation Corps, Community Youth Corps, Yampa Valley Science School, Historic Preservation Crew and Service Learning Corps. RMYC's Conservation Corps program serves 100-150 young people between the ages of 16 to 25 each year through 6 areas of conservation corps programming. The Regional Conservation Crews for ages 16-18; the Colorado Fourteeners Crews; the Leadership Development Crews; the Continental Divide Trail Crews; the Chainsaw Crews; and the Veterans Corps. Members in the Conservation Corps programs complete a variety of projects including environmental restoration through watershed improvement projects, removal of hazardous and fuel trees caused by beetle kill and invasive species removal. Additionally, these crews work on improving the recreational opportunities in the local area by working on trail construction and maintenance and maintenance of parks and campsites.

RMYC also offers a variety of community-based programs. Yampa Valley School is a week long and science and service experience where high school students get the opportunity to teach and mentor 6th-grade students from the local community. The Community Youth Corps programs enroll more than 50 youth annually in two-week service projects for their communities. Last, the Historic Preservation Crew works to restore historically significant buildings and structures in Routte County (where RMYC is located) during the summer months.

Mile High Youth Corps

Based in Denver, CO, Mile High Youth Corps (MHYC) was also founded on the ideals and structure of the CCC. MHYC was originally founded by Boulder County Commissioner Josie Heath in 1992 and was created to address the employment and

educational needs of youth by putting them to work on projects that benefited the community. The main focus of MHYC's work is on improving conservation and local neighborhoods in the greater Denver areas. In 2009 MHYC expanded their programming to including work and opportunities for young people out of an office in Colorado Springs.

MHYC is also a member of the Colorado Youth Corps Association, and offers three major areas of programming for young adults. First is the 11-month long AmeriCorps Leadership and Conservation program where members learn new skills in sustainability, conservation and outdoor work before becoming supervisors of crews during the summer and fall sessions of programming. The second opportunity for youth is the Water and Energy Conservation program, where members work with local community members to install high efficiency showerheads and toilets for low-income neighborhoods and community non-profits. The third major area of programming is the Land Conservation program, divided into the Summer of Service or Fall Forestry sessions. These are 12-week long programs where members work within the local community and also complete "hitches" in outdoor areas doing work in natural resource management and conservation. The Land Conservation programs have a required environmental education component.

MHYC has grown tremendously and has been able to successfully cultivate the number and types of programs it offers Colorado and the Nation's youth in a short time. Additionally, MHYC offers education, job training and educational awards to members in a highly urban area. In 2009, MHYC was awarded two 'Project of the Year' awards

from The Corps Network for outstanding community programming and opportunities for participants.

Expanded Methods

Different Survey for Northwest Youth Corps Alumni

Because of mid-research complications and changes, Northwest Youth Corps (NYC) had a slightly different survey than Southwest Conservation Corps, Mile High Youth Corps, Montana Conservation Corps and Rocky Mountain Youth Corps. The survey provided to alumni of NYC asked questions specific to participants' time working with that organization, and referenced NYC in several questions. Alumni from other organizations' were provided a more generalized survey that was relevant to multiple conservation corps.

Social Media: Outreach to Alumni

To reach the alumni of the multiple groups willing to help with this project, social media were utilized in several ways. The majority of participants were made aware of my project and how they could share about their experience via an email sent out by the organization, or a posting on corps' Facebook pages.

This form of reaching alumni had multiple limitations. Social media is a fairly recent phenomenon, and therefore, the majority of users of these tools represent relatively young alumni. The majority of the participants were between the ages of 18 and 25. While this is an important demographic to reach, it may not be the most representative of the long-term impacts of participation in a youth conservation corps on participants' life choices.

The major concern in the collection of survey and interview responses was in the use of Facebook as a recruitment tool. People who would see the posts of an organization have to literally “like” the organization’s page to access their posts. Because of this, the people with the most access to my survey methods were those that were more likely to have enjoyed their experience with a conservation program. This was also likely to be the case with the use of email or electronic newsletters to access alumni responses. Maintaining an up-to-date email address with an organization is largely the role of the participant, and they are more likely to do this if they enjoyed their time, agree with the mission of the group, and want to remain in contact with them. In this way the results were probably fairly biased. With unlimited resources and time, there may have been other ways to gain access to the contact information of alumni that did not love or appreciate their experience in youth corps. However, those methods were impossible given the time-frame allowed.

Participants Representing Multiple Conservation Corps

The survey participants represented many more conservation programs than was anticipated. Additionally, many participants had completed a session or two with more than one conservation corps, making it impossible to identify how they had received the survey. There was also much more diversity in the types of tasks former corps members had been involved in with a conservation organization than expected. For instance, Mile High Youth Corps had many participants who had spent the majority of their time working with the corps in urban areas, doing tasks like installing water-saving shower heads and doing energy audits for community members. These tasks were usually in

addition to at least some time spent in natural-resource-based tasks with land management agencies; however, it was difficult to decide if these participants should be grouped with the rest. Ultimately, these participants were included in the analyses and results.

Additionally, several participants, specifically from Southwest Conservation Corps, were involved in a Veteran Fire Corps (VFC) program. The VFC programs are a relatively recent development in multiple corps organizations. They provide training and employment to military veterans who are transitioning into civilian life, with the expectation that the veterans will eventually find employment with the Forest Service, Bureau of Land Management, Bureau of Indian Affairs or other management agency. One VFC participant was interviewed about their experience for this study, and the VFC experience was found to be similar in many ways to the youth corps experience conveyed by other interview participants. However, the experience of veterans in conservation corps is an area in need of more research and investigation.

Expanded Results

Expanded Statistical Analysis

Regression analysis was performed on continuous demographic variables. The number of sessions a participant had completed, and the number of sessions completed as a crew leader, was analyzed against scores on the NEP and the Experience section of the survey (Figure 7). The number of sessions completed with a corps was significantly, but only

marginally associated, with participant score on the Experience Survey ($R^2 = 0.041$, $p = 0.001$). Number of sessions was negatively and significantly associated with score on the NEP ($R^2 = -0.015$, $p = 0.047$). Scores on the NEP seemed to “peak” among alumni who had completed 3-4 sessions, and then began to decline.

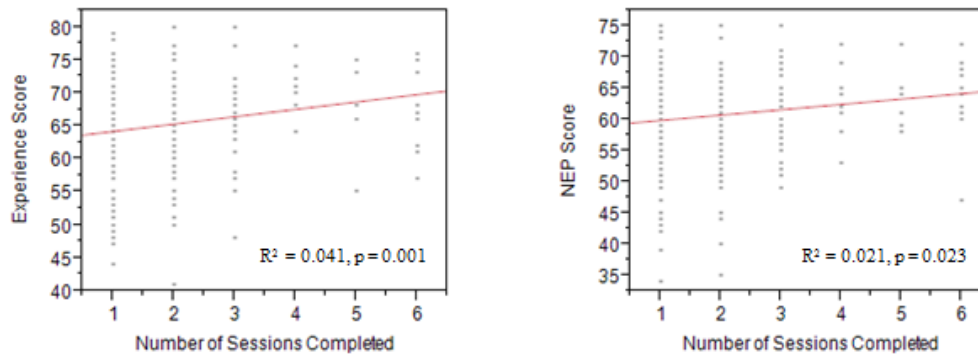


Figure 7: Effect of Number of Sessions Completed on Survey Scores. Participants who had completed no sessions as a crew leader were not included.

Pairwise Comparisons

MRPP analysis also tested for pairwise comparisons within demographic groups (Table 5). Level of Education showed multiple statistically significant and nearly significant results. Participants who had earned a Bachelor’s Degree and participants who had less than a high school diploma had the highest mean and median NEP scores (61.59 and 61.25 respectively, median score 62). In general, unlikely groups had more similar and more different average NEP scores based on their level of education. All respondents, regardless of education had relatively similar Experience scores (between 67 and 66); the exception is participants who had earned a High School Degree, those participants had a mean Experience score of 63.14. Additionally, participants who had grown up with adoptive parents ($n = 2$) had nearly-significantly different respondents than those that grew up in more “alternative” family situations including foster care, multiple home

environments or living with siblings (n = 11) however the small sample sizes make it difficult to trust this result.

A Bonferroni Correction calculated that the p-value of each pairwise comparison should be 0.003 or lower to represent a significant interaction. There is a trend toward significance, but none of these comparisons are statistically significant when corrected for multiple permutations.

Demographic Variable	Group 1	Group 2	p value
EDUCATION			
	Some College--No Earned Degree	Bachelor's Degree	0.015
	Some College--No Earned Degree	Master's Degree	0.055
	Bachelor's Degree	High School Degree or Equivalent	0.014
	Master's Degree	High School Degree or Equivalent	0.039
PARENTAL PRESENCE			
	Adoptive Parents	"Other" Family Situations *	0.052

Table 5: Significant Pairwise Comparisons. Found in MRPP analysis using a Euclidian Distance Measure. * Defined as participants who reported growing up in multiple family situations. Includes foster experiences, living with multiple relatives and/or friends.

Reaction to the New Ecological Paradigm

There was a variety of reactions to the use of the New Ecological Paradigm (NEP) from survey participants. An early pilot of the survey to a participant with an advanced degree in ecology led me to include an open-ended question at the end of the survey asking for any comments on this portion of the survey. Some participants took this question to mean comments on the entire survey up to that point and had a large array of answers. The

majority of participants chose not to comment (70.1%). The participants who did comment specifically on the NEP had quite polarized reactions. The participants either agreed very much with the survey or strongly disagreed with the survey for several reasons. Some participants questioned the validity of the survey, saying it was poorly worded, vague, and should not be used for academic research in the future. Many had issues with specific questions, saying they felt the available Likert Scale responses were not adequate for them to express their opinion. Some participants were quite frustrated or angered by the survey.

The term “balance of nature” was both confusing and upsetting for many participants. Many commented that these questions were “idiotic” or argued their stance on a particular question, some saying that humans did have the right to alter Earth, or that they did not “believe in nature” so these questions were irrelevant to them. Additionally, the scores on the NEP, which could range from as low as 15 to as high as 75, were quite varied (mean = 60.8; median = 61; highest score = 75; lowest score = 35).

Expanded Discussion

Reasons for Differences in NEP Reaction

The reasons for the diversity of scores on the NEP are many. The geographical location of each corps, could be extremely influential, especially for participants who were under the age of 18 upon participating in a corps, Northwest Youth Corps is based in Eugene, OR, a city and state with extremely liberal political, social and environmental leanings. The Southwest Conservation Corps works in Utah, Arizona, New Mexico and

Colorado—three of the four are majority moderate or Republican politically, and are also home of high levels of natural resource extraction.

One participant pointed out that organizational and crew culture could be extremely different between corps programs. Additionally, within each organization, it is often in the hands of the crew leader to truly impart knowledge or discussion onto their crews. A crew leader with pro-environmental leanings is more likely to influence this thinking in their crew, especially if they work with teenagers rather than adults.

The types of projects crews have the opportunity to work on also could strongly influence the environmental effect they perceive themselves of making. Crews in the southwestern United States reported working on crews that were assigned to pick up litter along the US/Mexico border. Additionally, some corps participants, specifically alumni from Mile High Youth Corps work largely in urban areas improving the sustainability and energy efficiency of low income households. It is likely it would be more difficult to feel inspired by nature in these scenarios, than in restoring an old trail on Mt. Hood in Oregon or in the Bridger-Teton National Forest in western Wyoming. A better control to account for the variability of project work is needed for future studies into this topic.

Effect of Gender

Gender had a significant effect on participants' survey responses. Corps have been historically utilized by men more than women, however, currently there are now many young women participating in corps, both as members and as leaders. The Indicator "Question" Analysis showed that more often than not, women answered questions more positively than their male counterparts on the New Ecological Paradigm. Men scored

higher on the Experience section of the survey, but this difference was not significant (effect = 0.834, $p = 0.341$).

The women who participate in conservation corps may be more interested in the environmental aspects of these programs and less-so in the work experience aspect of corps. Women may also be more agreeable in surveys. Additionally, all survey participants were made aware that the researcher was female, and most were informed that the researcher had previous corps experience, both of which may have influenced responses. Traditional gender roles placing women in domestic occupations and men in occupations where manual labor is prevalent, may lead women in corps to feel more pride in their accomplishments and value in their work, though there is no documented evidence regarding this.

In the follow-up interviews, six interview participants were female and three were male. None of the participants mentioned anything specific about their experience as a man or woman on a conservation crew; however, they were not asked explicitly if they felt their experience was impacted by their gender.

According to the Pew Research Center, young women spend more time online and on social networking sites than their male counterparts (Pew Research Center 2013). Of the 274 survey participants, 156 (56.9%) of them were female. Additionally, a total of 390 surveys were started by participants and 116 (30%) were thrown out because they were incomplete. Of the surveys thrown out, 56% were female. This may be an indicator that women were more interested in taking the survey to begin with, or that they had more immediate access to the surveys posted on Facebook than men.

Effect of Race

The survey respondents were overwhelmingly white (86%). Race was found to be an insignificant effect in all analyses. The Indicator Question Analysis found two questions answered statistically differently by racial groups (Appendix B). Participants who identified themselves as Native American (n = 7) answered the question *My career and educational interests changed after my experience with a conservation corps* more positively than average, indicating that corps may have been influential in helping this demographic group to learn about new options or opportunities for them in the future, or had given them more education on the types of jobs encompassed by corps.

Asian Americans (n = 7) answered the question *Human ingenuity will insure that we do not make the earth unlivable*, a question included in the NEP, more negatively than average (absolute difference = 0.98). This suggests that this demographic is for some reason more doubtful of the abilities of human intervention to stop or fix environmental problems. Both of these statistically significant responses are interesting; however, they come from an extremely small sample size. Native Americans and Asians as racial groups each made up only 2.5% of the survey population respectively, each consisted of seven participants. With a larger sample size these statistics would be more conclusive.

Similarities Within Sample

Of the six demographic variables analyzed in this study (age, gender, race, parental presence, income and education), three had majority representation. The survey respondents were 86% white, 68% of participants grew up with both parents, and 55% were 25 years of age or older. Additionally, women made up 57% of the survey

population. The homogeneity of the data may have contributed to the lack of effect of race, income and parental presence in the MRPP analyses.

Recommendations for Future Research

To more-fully answer the question of how effective conservation corps participation has been on participants' environmental interests and attitudes, there are many additions to be made to this study. These additions include: the use of a control group, additional questions pertaining to participants' environmental interaction growing up, including the interest their parents showed in recreating out of doors, and/or advocating on environmental issues.

The study would also benefit from the addition of retrospective questions asking participants to rate statements as they think they might have done before their corps experience and also currently. Retrospective survey techniques might have the possibility of showing the changes participants had gone through from the individual participant's perspective. In addition, less questions about participant overall experience and more about the environment would make the effect of corps on environmental interest more apparent.

More open-ended questions pertaining to pre-and-post-corps actions on environmental issues would provide a more complete picture of potential corps effects. Many survey participants mentioned that they felt the survey would be more representative if more questions allowed alumni to elaborate on their responses. This was the case for questions on the Experience Survey and on the New Ecological Paradigm. Using a qualitative focus to answer the same research questions as posed by this study

may prove to be effective because corps have a variety of programming and work with quite diverse audiences.

The primary goal of conservation corps is not necessarily to create environmental advocates, but to empower young people through hard work and community service. Because of this, the inclusion of the NEP and environmentally-focused questions was novel and even confusing to some participants. The NEP seemed to frustrate survey participants, which could have negatively affected overall results. Had the environmental questions been introduced with more clarity, a stronger effect might have been apparent.

Interdisciplinary Aspects of this Study

This thesis project reflects the interdisciplinary focus of The Evergreen State College's Graduate Program on the Environment in several ways. First, conservation corps programs are themselves interdisciplinary. Corps engage young people from a variety of backgrounds and geographic locations to work in natural resource management, maintenance of recreation areas, sustainability initiatives and disaster recovery, crossing a variety of professional disciplines. The focus on teamwork creates a challenge that prepares participants for work projects in professional and academic arenas. Most corps participants are relatively young when starting work with a conservation corps, making corps quite influential on the psychology of young minds by exposing participants to new people and new experiences.

In the creation of the survey and interview materials used for this study, several aspects of group development, environmental behaviors, and methods for teaching and facilitating environmental and experiential education were considered. The personal,

social and psychological effects of conservation corps participation was addressed in the survey questions, as was the environmental focus of corps. Additionally, the research attempted to address the social factors leading to participant interest in the environment and the influence of socio-economic variables on corps participation. The use of both quantitative and qualitative survey questions as well as the addition of interviews contributed to a rich, interdisciplinary data set that has really only begun to be analyzed. There are many more questions to ask and answer just about this group of participants and these five organizations.

The dissemination of the survey materials was collaborative and novel. High levels of communication and collaboration were needed between the researcher and the five conservation corps included in this study in order to post the survey at the appropriate time and in the appropriate place to encourage alumni participation. The use of Facebook and other social media platforms was extremely successful, and hopefully represents a new way to conduct research and hear about the influence of programs long after their completion. Lastly, this study has revealed some of the cautions and limitations to using social media as a data collection tool and likely informs future research.

In all, this thesis has been an attempt to continue research and discussion about the incredible work that conservation corps and their young adult participants do for a variety of communities. Conservation corps represent a mutually beneficial avenue to address needed environmental and recovery work, while providing participants opportunities to improve their lives. Continued and ongoing research is needed to truly understand the effect of the corps experience.

Appendix A: Data Collection Tools

Survey Administered to Corps Alumni

Survey to be administered to Northwest Youth Corps (NYC), Southwest Conservation Corps (SCC), the Montana Conservation Corps (MCC), and Rocky Mountain Youth Corps (RMYC), in the spring of 2013.

Demographic Information:

This section of the survey is to gather a bit of information about you. This information will not be used to identify you.

1. What is your age?

18-25

26-35

36-45

46 or over

2. What is your gender?

Male

Female

3. What race or ethnicity do you identify with? (Choose as many as apply)

Caucasian

African American

Hispanic/Latino

Asian

Pacific Islander

Native American

Other—please specify

4. What is the highest level of school you have completed or the highest degree you have earned?

Less than a high school degree

High school degree or equivalent

Some college but no degree

Associate's Degree

Bachelor's Degree

Master's Degree

Other—please specify

5. When you were growing up, who did you live with? (Choose all that apply)

- Both parents
- Split custody with both parents
- One parent—mother
- One parent--father
- Grandparents
- Adoptive parents
- Foster parents
- Other—please specify

6. Please tell me what conservation organization(s) you have worked with (for example: Montana Conservation Corps, the Student Conservation Association, etc.)

7. How old were you when you were first a crew member on a conservation corps?

- Under 15 years old
- 15-19
- 20-25
- 26-30
- Over 30 years old

8. At the time of your participation in a conservation corps, how would you describe your family's economic situation?

- Poor
- Low income
- Middle income
- High income

9. How many seasons did you serve as a crew member of a conservation corps?

- 1
- 2
- 3
- 4
- 5 or more

10. How many seasons (if any) were you a crew leader with a conservation corps?

- 1
- 2
- 3
- 4
- 5 or more

11. Please tell me a bit about the types of crews you were on. For instance, tell me what types of projects you did and where you camped/stayed while doing conservation work.

Experience Working with a Conservation Corps:

This section asks you to rate aspects of your experience working with a conservation corps from 1 to 5 accordingly to the following scale:

1	2	3	4	5
Disagree	Strongly Disagree	Neutral	Agree	Strongly Agree

12. I enjoyed my time as a crew member of a conservation corps

1 2 3 4 5

13. I felt the work was too hard and I did not get the chance to enjoy the outdoors during my time working in conservation

1 2 3 4 5

14. I feel I changed for the better during my time with a conservation corps

1 2 3 4 5

15. I would be the same person I am today if I had never participated in a conservation corps

1 2 3 4 5

16. I feel the work I participated in, as a crew member was important and helpful to the environment

1 2 3 4 5

17. I was at times confused about whether the work my crew did was actually helpful to the environment

1 2 3 4 5

18. I was more interested in environmental problems after my time on a conservation corps than before

1 2 3 4 5

19. I do not feel my interest in environmental issues changed after my time with a conservation corps

1 2 3 4 5

20. Regular educational lessons, taught by my crew leaders and others, about the environment and other topics were part of my conservation corps experience

Yes

No (If you answer 'no', please proceed to question 23)

21. The educational lessons I was taught made the work I was doing with my crew more relevant

1 2 3 4 5

22. I did not learn new things from the educational lessons

1 2 3 4 5

23. I feel I learned a lot about the environment simply by being outside for several weeks.

1 2 3 4 5

24. I was challenged personally and socially during my time with a conservation corps

1 2 3 4 5

25. I felt the crew environment was too "campy" and did not challenge me

1 2 3 4 5

26. I felt that physical strength was the most important attribute on my crew, and not communication or teamwork

1 2 3 4 5

27. I felt my skills and talents were appreciated and fostered by my crew and crew leader

1 2 3 4 5

28. My career and educational interests changed after my experience with a conservation corps

1 2 3 4 5

29. Conservation corps programs are important to the social development of young people

1 2 3 4 5

New Ecological Paradigm

You're almost done!! This last section is a recognized survey titled The New Ecological Paradigm, created by Riley E. Dunlap. It is just 15 questions that you rank from 1 to 5 on a slightly different scale as the previous section

1	2	3	4	5
Strongly Disagree	Mildly Disagree	Unsure	Mildly Agree	Strongly Agree

30. We are approaching the limit of the number of people the earth can support

1	2	3	4	5
---	---	---	---	---

31. Humans have the right to modify the natural environment to suit their needs

1	2	3	4	5
---	---	---	---	---

32. When humans interfere with nature, it often produces disastrous consequences

1	2	3	4	5
---	---	---	---	---

33. Human ingenuity will insure that we do not make the earth unlivable

1	2	3	4	5
---	---	---	---	---

34. Humans are severely abusing the earth

1	2	3	4	5
---	---	---	---	---

35. The earth has plenty of natural resources if we just learn how to develop them

1	2	3	4	5
---	---	---	---	---

36. Plants and animals have as much right as humans to exist

1	2	3	4	5
---	---	---	---	---

37. The balance of nature is strong enough to cope with the impacts of modern industrial nations

1	2	3	4	5
---	---	---	---	---

38. Despite our special abilities, humans are still subject to the laws of nature

1	2	3	4	5
---	---	---	---	---

39. The so-called "ecological crisis" facing humankind has been greatly exaggerated

1	2	3	4	5
---	---	---	---	---

40. The earth is like a spaceship with very limited room and resources

1	2	3	4	5
---	---	---	---	---

41. Humans were meant to rule over the rest of nature

1	2	3	4	5
---	---	---	---	---

42. The balance of nature is very delicate and easily upset

1 2 3 4 5

43. Humans will eventually learn enough about how nature works to be able to control it

1 2 3 4 5

44. If things continue on their present course, we will soon experience a major environmental catastrophe

1 2 3 4 5

45. Do you have any comments about this portion of the survey?

46. I would be willing to talk more with the researcher in an interview if contacted

Yes

No

47. Contact Information

48. If you would like, please add any additional comments you have about your experience with a conservation corps, or about this survey.

Interview Questions for Former Participants of Youth Conservation Corps

Warm Up:

- To start, will you tell me a bit about your job, hobbies and interests?

- Do you like to be outside, either for work or for fun?

Main Body of Interview:

- When were you part of a conservation corps?

- What did your friends and family think of your participation?

- Do you remember what types of projects you worked on with your crew? Can you tell me about them?

- Please tell me a bit about your crew.

- Please tell me about your crew leaders.

- What was your favorite part of your time on a conservation corps?

- What was the hardest or least enjoyable part of your time with a conservation corps?

- Do you think that your time with a corps (specific to participant) changed you in any way?

- Did your hobbies or interests change in any way after your time in conservation?

- Do you think about (specific corps) ever, now, in your adult life?
- Do you think that you became any more or less interested in nature after your time with (specific corps)?
- Were you involved in any with conservation corps after your participation as a corps member? For instance, did you ever crew lead for a corps, or contribute financially?

Cool Down:

- If you could explain your corps experience in just one minute, what would you say?
- Would you ever send your kids, nephews, nieces, etc. to a youth corps program? Why or why not?

Appendix B: Survey Participant Demographic Information

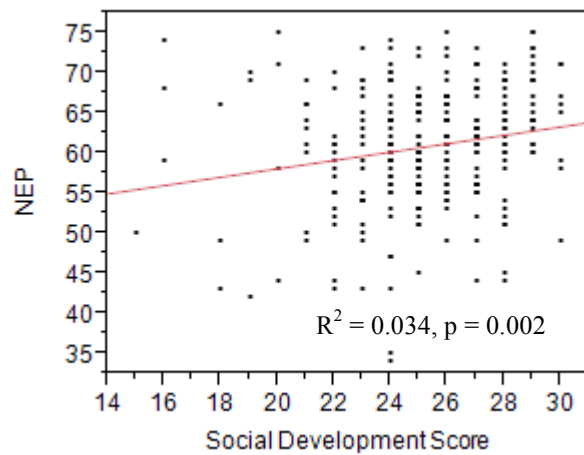
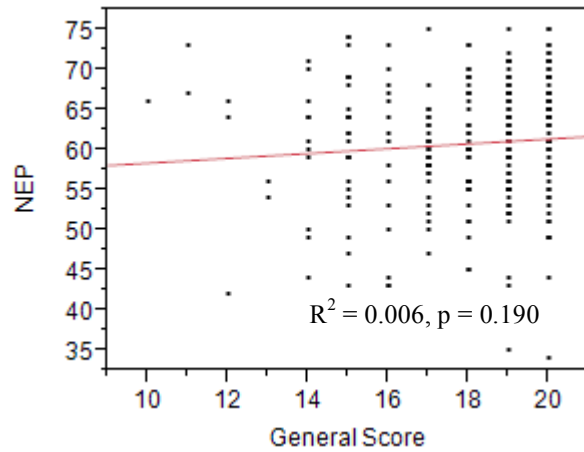
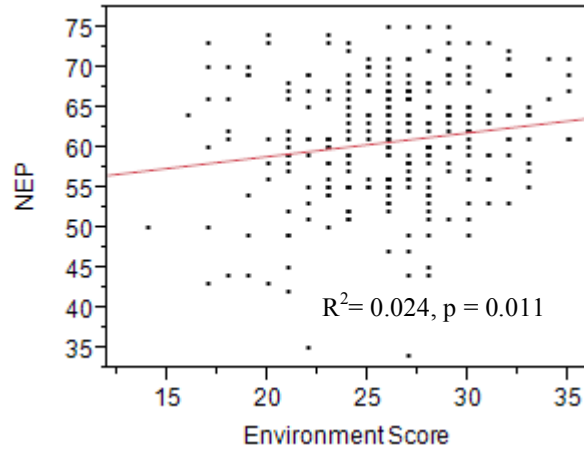
<i>Age</i>	18-25	26-35	36-45				
	54.70%	39.80%	5.50%				
<i>Gender</i>	Male	Female					
	43.10%	56.90%					
<i>Race</i>	White	Hispanic	Asian	Native American	Other*		
	86.50%	3.60%	2.50%	2.50%	4.70%		
<i>Level of Education</i>	Less than HSD	HSD or equivalent	Some College	Associates/Trade	BA/BS	MA/MS or beyond	
	3.00%	10.10%	27.40%	4.70%	47.10%	7.70%	
<i>Parental Presence</i>	Both Parents	Split Custody	Mother	Father	Grandparents	Adopted	Other*
	67.90%	11.70%	10.60%	3.30%	1.10%	1%	4.10%
<i>Income</i>	Poor	Low	Middle	High			
	4.00%	21.20%	63.50%	11.30%			
<i>Crew Member</i>	Zero	One	Two	Three	Four	Five	Six or More
	5.80%	48.20%	23.70%	12.40%	4.02%	2.20%	3.60%
<i>Crew Leader</i>	Zero	One	Two	Three	Four	Five or More	
	62.20%	19.00%	8.40%	5.80%	1.1	3.6	

Appendix C: Indicator Species Analysis

Demographic Group	Question	Indicating For	Mean Score	Group Mean Score	p value
GENDER					
	Exp.9: The educational lessons I was taught made the work I was doing with my crew more relevant	Men	3.695	3.551	0.022
	Q12: I was challenged personally and socially during my time with a conservation corps	Women	4.533	4.641	0.002
	Q13: I felt the crew environment was too "campy" and did not challenge me	Men	3.916	3.864	0.055
	NEP1: We are approaching the limit of the number of people the earth can support.	Women	4.46	4.281	0.0006
	NEP2: Humans have the right to modify the natural environment to suit their needs	Men	3.152	3.737	0.0002
	NEP3: When humans interfere with nature, it often produces disastrous consequences	Women	4.237	4.058	0.001
	NEP4: Human ingenuity will insure that we do not make the earth unlivable	Men	3.263	3.427	0.029
	NEP6: The earth has plenty of natural resources if we just learn how to develop them	Men	2.644	2.814	0.043
	NEP8: The balance of nature is strong enough to cope with the impacts of modern industrial nations	Men	4.025	4.179	0.023
	NEP10: The so-called "ecological crisis" facing humankind has been greatly exaggerated	Men	4.079	4.186	0.009
	NEP12: Humans were meant to rule over the rest of nature	Men	4.322	4.482	0.013
	NEP14: Humans will eventually learn enough about how nature works to be able to control it	Men	3.966	4.150	0.007
	NEP15: If things continue on their present course, we will soon experience a major environmental catastrophe	Women	4.429	4.259	0.0006
RACE					
	Exp. 16: My career and educational interests changed after my experience with a conservation corps	Native Americans	4.571	3.799	0.021
	NEP4: Human ingenuity will insure that we do not make the earth unlivable	Asian Americans	3.427	2.429	0.019
INCOME					
	Exp. 14: I felt that physical strength was the most important attribute on my crew, and not communication or teamwork	Poor	3.636	4.127	0.041
	NEP9: Despite our special abilities, humans are still subject to the laws of nature	Wealthy	4.903	4.675	0.004
NUMBER OF SESSIONS AS A CREW MEMBER					
	Exp. 6: I was at times confused about whether the work my crew did was actually helpful to the environment	5 sessions	3.000	3.168	0.051
	NEP3: When humans interfere with nature, it often produces disastrous consequences	5 sessions	4.500	4.058	0.035

Significant Indicator Question Analysis Results. Each response is significantly different from total demographic group response on specific Likert-Scale survey questions. Group mean score is compared to the larger demographic group score for each question.

Appendix D: Regression Analysis of Three Sections of Experience Survey Scores v. NEP Score



Association of Experience Survey Sections and Total NEP score. The Experience Survey was grouped by three themes: general feelings about time with a corps, impressions about the environment as part of the corps experience, and impressions about social and personal development as part of corps participation.

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