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# **San Francisco Zoo Nature Trail Thirtieth Anniversary Evaluation**

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This evaluation was prepared for the San Francisco Zoo. It was conducted by Dr. Sheldon Gen, Tiffany Green, and Sai Seigel, all of San Francisco State University's Public Administration Program.

All findings and opinions expressed in this report are the authors' alone, and not necessarily those of San Francisco State University nor the San Francisco Zoo.

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## **Introduction**

The San Francisco Zoo founded the Nature Trail Program in 1976 with goals of fostering the development of biophilia (the human need to affiliate with nature), environmental stewardship, and conservation values. This is accomplished by training and developing young participants in the areas of public speaking and presentation, team building and animal care. Through a unique continuum of development activities, participants are exposed to careers in zoology and related fields. Volunteers begin from ages 12 to 15 in the Nature Trail program, and can continue participating from ages 14 to 20 as Junior Zoologists, and later as young adult paid interns.

In its 30-year existence roughly 1,800 alumni have graduated from various stages of the program. However, over the course of the program's existence, very little data has been collected from the adult alumni regarding the long-term impacts of the Nature Trail Program with respect to these goals.

Thus, the San Francisco Zoo commissioned this evaluation of the Nature Trail Program, on its 30<sup>th</sup> anniversary year. This effort focuses on the program's long-term impacts on alumni behavior consistent with the desired outcomes set forth by the San Francisco Zoo. Specifically, the evaluation assesses the impact of participating in the Nature Trail program on alumni's educational and career choices, volunteerism, and environmental activism.

## **Background**

The San Francisco Zoo founded the Nature Trail program in 1976. It is one of the oldest zoo programs for teens in the country. It operates out of the Animal Resource

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Center (ARC), which houses 65 animals used in the zoo's outreach and education programs. The Nature Trail is comprised of eleven thematic stations set up along a trail within the Children's Zoo. At each station a pair of Nature Trail volunteers, aged 12 to 15, is stationed with an animal or artifact such as a skeleton or fossil. The volunteers engage zoo visitors, providing facts about the animal, its habitat, and wildlife conservation. Over 50,000 visitors walk the Nature Trail each year. When appropriate, visitors can touch the animals, which are primarily small amphibians, reptiles, and mammals. All the animals on the Nature Trail were injured, orphaned, or abandoned pets. Consequently, Nature Trail volunteers emphasize the message that these and other wild animals are not appropriate pets. The Nature Trail program operates from Memorial Day through the Labor Day weekend each year. Youth volunteer twice a week for 6.5-hour shifts. Each volunteer pays a program fee to participate, but scholarships are available to youth who demonstrate a financial need. Nature Trail volunteers are primarily from San Francisco, with some participants coming from surrounding communities in the Bay Area.

Currently, about 84 youth participate as Nature Trail volunteers each year. Interested youth submit an application, attend an information session, and participate in a group interview. Youth are typically recruited for the program from local schools, families of zoo members, and from the general public. Once accepted into the program, Nature Trail volunteers attend a two-day training session. Volunteers learn the natural history and conservation of each animal in the Nature Trail as well as how to handle the animals. In addition, volunteers are taught interpretive skills, teaching techniques, and how to interact with the general public and work in teams. The Nature Trail has rules

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around appearance, attendance, and behavior. Rules are strictly enforced in an effort to teach participants responsibility and accountability. Overall, these experiences are meant to not only to foster interests in animal sciences, but also to more broadly develop their environmental awareness and build their interpersonal skills.

Nature Trail volunteers can go on to serve as Junior Zoologists and ARC Interns. There are currently about 20 Junior Zoologists each year, aged 14 to 20, who work 8-hour days two days a week throughout the year. Junior Zoologists learn advanced animal husbandry, and perform a variety of duties including preparing diets, cleaning cages, exercising animals, and educating visitors about conservation, animals, and the environment. Currently there are typically five paid ARC Interns each year, a mix of year-round and summer full-time positions. Interns assist staff in coordinating and supervising volunteers and are trained in advanced animal husbandry. One of the summer interns coordinates and oversees the Nature Trail volunteers, and others learn more in-depth animal husbandry and conduct medical work.

The Nature Trail has two primary short-term goals and three long term goals , as summarized in Table 1.

*Table 1: Program goals of the Nature Trail for its volunteers*

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Short term goals	Long term goals
<ul style="list-style-type: none"><li>• To educate volunteers about animals and their habitats</li><li>• To introduce volunteers to basic job skills and responsibilities</li></ul>	<ul style="list-style-type: none"><li>• To advance biophilia, the human need to affiliate with nature</li><li>• To nurture environmental stewardship</li><li>• To promote conservation values</li></ul>

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The Nature Trail developed these goals and a logic model through its participation in the Zoo and Aquarium Teen Program Assessment Consortium (ZATPAC). The program's logic model shows that participants will learn public speaking, teamwork, animal husbandry and caring, and environmentalism during the Nature Trail program. Program outcomes include the development of work skills and increased knowledge and interest in conservation, nature, and science.

It is in this context that the San Francisco Zoo commissioned this current program evaluation. The specific objectives of this evaluation are to assess the long-term influence of the Nature Trail program on its adult alumni.

## **Method**

The method of evaluation consisted of two major tasks. First, a literature review was conducted to gather information on similar youth volunteer programs. In particular, literature was reviewed to find studies on the long-term impacts of volunteering on later life choices in education, career, and volunteer activities. In addition, all past evaluations of the Nature Trail were reviewed. This included its 20<sup>th</sup> anniversary survey, and its annual exist surveys of its volunteers. Relevant results are discussed in the Findings section.

Second, an original survey of adult alumni was conducted. This was the primary effort of this evaluation, and consisted of a paper survey assessing the long-term impacts of participating in the Nature Trail program. At the time the survey was conducted there were 1,425 Nature Trail alumni over the age of 18. Two major efforts were made to provide each of them with the survey. First, surveys were distributed to

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all adult alumni at the Nature Trail program's 30<sup>th</sup> anniversary celebration held at the zoo on August 12, 2006. Alumni not present at the event were sent a paper survey in mid-August 2006. Nature Trail staff called all 1,200 alumni 18 and over in its database in an effort to get a current mailing address. It is estimated that there are approximately 225 adult alumni for whom the zoo has no contact information. Overall, 172 adult alumni received the survey at the anniversary event and 1,191 alumni were sent the survey through the mail. Of the latter, 13 surveys were returned due to bad addresses. A total of 189 completed surveys were collected through these two means. Thus, the overall response rate was 14%.<sup>1</sup>

The four-page survey covered six topics: level of participation in the Nature Trail program, reasons for joining and lessons learned from the program, current environmentalism and volunteerism, education and employment after program participation, opinions about the Nature Trail program, and demographic information. The survey was composed of 24 questions and included a mix of open-ended, discrete choice, and Likert scale questions. Some questions were taken from a survey of current and past participants conducted in 1996. The survey was designed by this evaluation's authors and reviewed by Joe Fitting, Jessie Bushell, and Tracy Nappi, staff of the San Francisco Zoo. The survey instrument is attached as Appendix A.

## **Findings**

### ***Literature Review***

The review of academic and professional literature focused on evaluations of general youth development programs and conservation education programs offered by

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<sup>1</sup> 189 completed surveys/(172 at event + [1191 mailed - 13 bad addresses]) = 14% response rate

zoos, in order broadly understand such programs' specific outcomes and social efficacy. Very little quantitative analyses has been conducted on program based outcomes regarding zoo education for youths and no literature was found to demonstrate the long-term impacts of such programs on adults. However, available studies were unanimous in their findings that environmental and zoo education increased general knowledge and impacted youth attitudes towards conservation during and shortly after their experiences. Studies also demonstrated the need for conservation education/development programs for youth due to the waning ability of formal educational institutions to deliver these programs and services.

*Program Need*

Ogden, Gentile, and Rovard (2004), in a report published by the American Zoological Association, identified three trends that pointed to the emerging need for conservation education programs for youth: 1) schools continue to decline in resources and therefore science and environmental education, 2) middle and high school students are less engaged in activities involving science and animal education, and 3) students have an increased level of unsupervised after school time. Zoos are predicted to fill in a very important niche by supplementing youth education in the sciences.

Beyond the need for environmental education, Eccles (1999) and Larner, et. al. (1999), pointed to the necessity of after-school programs for the development of youth self-esteem, peer relationships and leadership based on adolescent needs during various stages of development. They claim that such programs serve an important role in providing both after school and summer educational programs, encouraging

educational, social, personal and leadership development of youth. These studies indicate, that youth education development programs will potentially have a long-term impact on the development both academically and socially of participants.

### *Programmatic Outcomes*

Three additional studies examined were found to demonstrate the specific program impacts of environmental and conservation programs both in the U.S. and abroad. Kruse and Card (2004) provided evidence showing the relationship between student involvement in a zoo summer education program in Florida and increased knowledge and positive attitudes of participants towards animal conservation. Youth between the ages of 10 and 18 were surveyed using a method adapted from the St. Louis Zoo environmental literacy evaluation. The study provided a pretest, posttest (immediately after completion), and delayed posttest (a month after completion), asking varied questions regarding student attitudes and knowledge before and after the 10-week summer camp. The results of the study showed that participants increased their knowledge of animal conservation and strengthened their attitudes toward environmental protection.

In a longitudinal study, Cullen and Mony (1994) used a modified version of the middle school evaluation of environmental education instrument, MSEL, to test youth ages 11 to 17 on their knowledge of ecology and to associate that knowledge with their participation in environmental education activities. The tests were administered in 1998 on 170 students and again in 2001 on 66 students. The sample included youths who participated in environmental education activities and those who did not. The study

drew mixed conclusions regarding the impact of environmental education on environmental knowledge and behavior: 1) education increased students' knowledge of ecology, but 2) environmental education did not significantly increase "responsible environmental behavior" in the prior 6 months. The research concluded that although environmental education increased knowledge, responsible environmental behavior must be a focus of curriculum in order to influence the behavior of students long term.

A final study by de White and Jacobsen (1994) surveyed 1,000 elementary school students from Cali, Columbia, assessing their environmental awareness and environmental attitudes as a result of specific environmental activities. Forms were administered before and after students had been exposed to one of the following three activities: a visit to the zoo, a visit to the zoo preceded by and audiovisual show, and a workshop with teachers followed by a trip to the zoo. This study also contained a control group of students who filled out the evaluation but did not attend the zoo at all. The most salient finding in this study is that although some environmental education took place in the classroom, the more students were involved in hands-on learning, the greater knowledge and awareness they demonstrated. The other activities, a trip to the zoo and a trip preceded by an audiovisual show, yielded insignificant results.

While these studies demonstrate the need for environmental education and the impacts it can have on youth, more research is needed to measure the long-term effects of such programs on adult alumni.

***Nature Trail's Past Evaluative Efforts***

The Nature Trail's most substantial evaluation effort prior to this study was the 20<sup>th</sup> anniversary evaluation, conducted in 1996 by Quality Research Consulting. The survey was mailed to all alumni, including minors, which totaled between 500 and 700 individuals. Two hundred fifty-one surveys were returned; the majority (85.9%) handed in in-person at that year's 20<sup>th</sup> anniversary reunion. The survey contained 26 questions, a mix of Likert scale and open-ended questions. The survey asked about the impact of participation on self esteem, life skills, education and career choices, and things learned through the Nature Trail. Participants were also asked for education and career history, their age and length of participation in the program.

In general, the survey results were positive. Respondents felt that participation had a positive impact on self esteem and making friends, improved their public speaking skills, developed a sense of responsibility and a feeling of being engaged in something important. Respondents also showed that they learned about animals and environmentalism from the Nature Trail. The researchers did not test any relationship between participation in the Nature Trail and career choices, but 36% of the working alumni, or 33 individuals, stated that they were employed or interning in biology or animal-related positions.

The twentieth anniversary survey went to all alumni, regardless of age. One half of respondents were under the age of 16 and current Nature Trail participants. The survey and analysis did not distinguish between short- and long-term impacts of participating in the program.

The Nature Trail has not conducted any other surveys to assess the long-term impacts of participation, but its evaluations of the current volunteers' experiences have been evolving. Since 2003 the staff has conducted pre-/post-participation evaluations for current participants. The Nature Trail's evaluation plans and processes are evolving with its participation in the ZATPAC program, so they are not uniform and cannot be compared across the last three years. While the evaluations cannot measure long-term impacts, the results do show positive short-term outcomes. The 2003 pre-/post-evaluation showed positive impacts for first time participants in several areas, including caring about animals, believing that recycling is important, and confident public speaking. Interestingly, similar results were not seen in the evaluations of returning participants, suggesting that participation beyond the first year does not result in higher levels of change in environmentalism, biophilia, and life skills development. Results for the 2005 pre-/post-participation evaluations were similar. Respondents showed greater understanding of environmental problems and greater understanding of environmental advocacy after participation.

### ***30<sup>th</sup> Anniversary Survey***

For the current evaluative effort, a total of 189 surveys were completed by adult alumni of the Nature Trail. Descriptive statistical analyses were conducted for each survey question and the complete results are reported in Appendix B. These include frequency distributions, bar charts, and calculations of central tendencies and variance, depending upon the type of data. Complete listings of the responses to the open-ended questions are reported in Appendix C. These were organized into several major

categories of responses, as shown in that appendix. Select multivariate analyses were also conducted to test associations between the length of participation in the Nature Trail and later outcomes in life, including education and career focus and achievement, volunteerism, and animal and environment related activities and interests. Analyses were also conducted to test whether these outcomes differed depending on which program respondents participated in. These analyses included Pearson's correlation coefficient, independent samples t-tests, chi-square tests of independence, and analyses of variance (ANOVA). Detailed results of the multivariate analyses are reported in Appendix D.

The following narrative highlights key findings of the descriptive and multivariate analyses that looked at several relationships to assess the long-term impact of participation in the Nature Trail on the programs' goals of instilling biophilia and environmental stewardship. Specifically we looked at the length of participation and depth of participation, as demonstrated by how many programs respondents have participated in, to see if Nature Trail participants, Junior Zoologists, and ARC interns had qualitatively different experiences and outcomes. We examined these variables in conjunction with questions on volunteerism, educational achievement, careers, environmentalism, and the development of life skills.

### *Program Participants*

A majority of survey respondents were female (67.4%) and White (62.5%). Analysis was conducted to determine whether there was a relationship between race/ethnicity and gender on length of participation in the Nature Trail program and

depth of experience, as represented by progression from the Nature Trail into Junior Zoologists and ARC Interns. No significant difference was found between males and females respondents, indicating that both are well represented in the program.

Race/ethnicity was not found to be a factor on depth of experience, but there was an anomalous finding related to length of participation. Respondents who identified themselves as “multicultural” and “other” were found to participate for significantly fewer years than Hispanic respondents.<sup>2</sup> However, no other significant results were found regarding race/ethnicity.

### *Overall Assessments*

Overall, respondents reported very positive experiences in the Nature Trail programs. Ninety-two percent stated that they were glad they participated in the program (see Figure 1), and 86% stated that they would encourage their children to participate. A significant difference<sup>3</sup> was found between Junior Zoologists and Nature Trail alumni, with Junior Zoologists agreeing more strongly with the statement, “I am glad that I participated in the Nature Trail program.” No differences were found between Nature Trail alumni and ARC Interns or Junior Zoologists and ARC Interns. Serving longer in all three programs was correlated with a higher level of agreement with this statement. This relationship was found to be very significant<sup>4</sup>, meaning that there is a positive relationship in that the more years served across the three programs, the more likely one is to be glad that he/she participated in the Nature Trail.

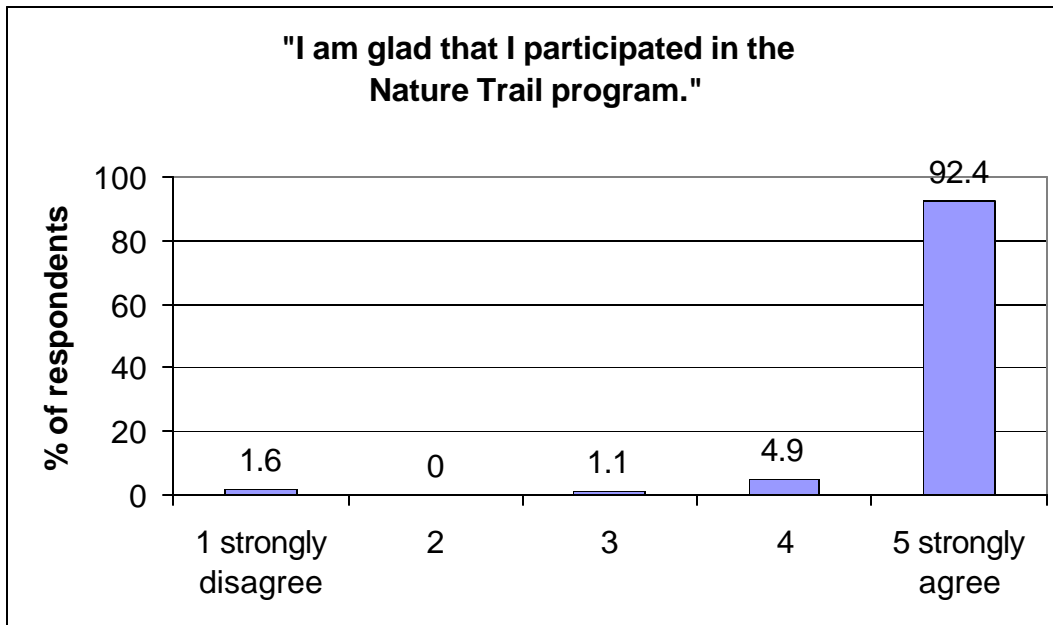
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<sup>2</sup> F=2.098, significant at 0.05 level.

<sup>3</sup> F=2.492, significant at the 0.05 level.

<sup>4</sup> r=.194, significant at the 0.01 level.

Figure 1: Overall satisfaction



Respondents were also asked three open-ended questions regarding what they learned and/or accomplished in the Nature Trail, their favorite memories, and general feedback on improvement of the Nature Trail. Responses were coded by theme and category. When asked about the most significant accomplishments and knowledge gained in the program, 26.8% (52) respondents wrote that they received education concerning animals, and animal advocacy and protection values. Some respondents also noted that the Nature Trail gave them tools to actively advocate on behalf of animals through conversations with others and helped them to make environmentally conscious decisions. A total of 19.6% (38) respondents wrote that they increased their public speaking and or communication ability and 19.1% (37) responses fell into the

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“other” category, which included multiple comments across categories<sup>5</sup>. In the final three categories, 15.5% (30) respondents commented that the Nature Trail program aided in their personal development, (e.g. decreased shyness and improved confidence), and 13.4% (26) reported that the program encouraged and developed either teamwork, social, or relational skills. Finally, 5.7% (11) reported that the program promoted their interest in the sciences or lead them to a career in a related field.

When alumni were asked to write their favorite memories in the nature trail. Respondents generally wrote relational or animal anecdotes, 19.6% (38) and 15.5% (30), respectively. Below are a few examples:

- *I met a lot of great people during my time at the Zoo. Working with the public was one of my most gratifying achievements*
- *I will never forget the faces of awe on both children and adults as they got to see, touch, and learn about animals such as opossums, chinchillas, and ferrets. It felt so great to be able to provide such an experience to the visitors of the Nature Trail*
- *I remember on one occasion, I was sitting at "Big Bird Station" (that used to be by the old entrance) with Gwenevere the red tailed hawk, and some zoo visitor came up to me and told me that he'd heard me talk about environmental conservation a few weeks ago, and was now a vegetarian*

Alumni were also asked to make suggestions on improving the Nature Trail program. Of the 89 comments recorded, 15.7% (14) commented on the conduct of Nature Trail volunteers while on the trail, and 12.4% (11) made suggestions to improve the structure and/or organization of the physical trail, which included the size of the trail and population of animals. In addition, 7.9% (7) made suggestions to improve the structure/organization of the Nature Trail program. Other miscellaneous suggestions

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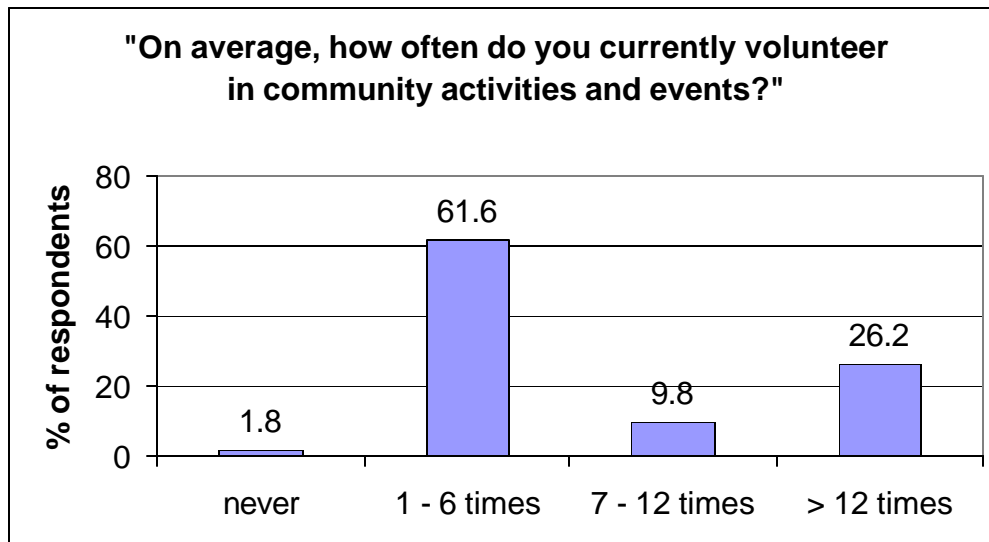
<sup>5</sup> Responses recorded in the “other/multiple comments” category were listed once as verbatim responses and were then counted and applied to additional categories which were recorded in a table (see appendix C and corresponding footnote).

focused on the program’s curriculum, activities, application and selection process, uniforms, and marketing. See Appendix C for a complete listing of suggestions.

*Volunteerism*

In general, Nature Trail alumni were found to be active volunteers. One hundred sixty-one respondents, or 97.8%, volunteer at least one to six times a year, and nearly 60, or 36%, volunteer seven or more times a year. See Figure 2. The total number of years served in the Nature Trail was found to have a very significant<sup>6</sup> correlation with agreement to the statement that “the Nature Trail inspired me to volunteer later in life.”

*Figure 2: Current volunteerism of alumni*



Thus, longer engagement in the Nature Trail program is related to increased levels of volunteerism later in life. Thirty-eight percent of respondents volunteer with youth

<sup>6</sup>  $r=.216$ , significant at the 0.01 level.

related organizations, 30.4% volunteer with animal related organizations, and 23.7% volunteer with environmental organizations. We analyzed whether length of service in the program is related to volunteer frequency and did not find a clear pattern. We also examined whether length of service was correlated with specific volunteer activities. No relationship was found for volunteer efforts with animal, environmental, or youth focused organizations. We also looked at whether volunteering was related to the depth of participation, or differences between Nature Trailers, Junior Zoologists, or ARC interns. We found marginally significant relationships between being an ARC intern and current volunteer efforts with animal related<sup>7</sup> and environmental organizations.<sup>8</sup>

### *Environmentalism*

The survey included nine questions that asked about current activities related to environmentalism. In general, responses show that respondents practice environmentally friendly activities. Eighty-one percent almost always recycle at home, 57% almost always buy recycled products, and 66% almost always conserve energy. For an overall sense of environmental related activities, we calculated an index score composed of the mean scores for each of the nine questions on this issue<sup>9</sup>. This score, of 3.25, is on a scale of 1, meaning rarely practicing environmentalism, to 5, meaning almost always practicing environmentalism. No significant relationships were found between environmentalism and length or depth of Nature Trail service. This may be due to self selection bias, as those who enroll in the Nature Trail may already be prone to environmentally friendly behaviors.

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<sup>7</sup>  $\chi^2=5.159$ , significant at the 0.1 level.

<sup>8</sup>  $\chi^2=5.324$ , significant at the 0.1 level.

<sup>9</sup> For environmentally unfriendly behaviors, scores were reversed before the index was calculated.

*Education*

Overall, the overwhelming majority of respondents have high school degrees (93%) and some college education, with 56.4% having a bachelors or masters degree. We tested whether attaining a high school degree was associated with the number of years served in the Nature Trail but did not find a significant result. We also tested whether there was a difference in post high school education based on the total number of years served in the three Nature Trail programs. Again, we did not find a significant relationship.

We then examined whether there was a difference in attaining a high school degree and post high school education among participants in the Nature Trail, Junior Zoologists, and ARC interns. We found significant results, but there is no clear pattern that demonstrates a consistent relationship between the program respondents participated in and their educational achievement.

Still, respondents reported that the Nature Trail had a positive impact on their education. While their experience did not seem to have an overwhelming impact on education achievement in general, it did increase an interest in science (43.9% strongly agree) and gave guidance in seeking a college or specialized degree (37.3% strongly agree). Length of service in the Nature Trail was significantly correlated<sup>10</sup> with an index score that we calculated to show a positive impact on education achievement and interest. This was the case for Nature Trail volunteers, but not for Junior Zoologists or ARC interns who gave lower scores on educational impact questions.

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<sup>10</sup> R=.318, significant at the 0.01 level.

*Career*

Survey responses showed that respondents are currently or were formerly employed in a number of fields related to Nature Trail experiences. Fourteen percent have teaching experience, 10% have worked as animal keepers, and 8% have worked in veterinary services. Overall, respondents reported positive impacts of Nature Trail experience on exposure to and preparation for science related careers. We calculated an index score to assess the overall impact of Nature Trail experience on career choices and yielded a mean score of 3.58, with 1 meaning that the Nature Trail experience had no impact on career choices and 5 meaning a strong impact. We found that length of service was very significantly<sup>11</sup> correlated with high scores in this area. This shows that those with longer volunteer experiences in the Nature Trail are more likely to feel that the experience positively impacted their career choices. We further investigated this relationship by testing whether the index score on career choice was related to depth of service in the Nature Trail. We found that Nature Trail volunteers reported higher scores in this area, reflecting more positive impacts on career choices, than Junior Zoologists and ARC Interns. The result is very significant<sup>12</sup>, and does not seem in concert with the previous finding that length of service is correlated with a higher score. We recommend further investigation of this relationship in future evaluation efforts to determine the nature of these relationships. Ninety-five respondents, or 54.3%, have been employed in jobs related to animals or natural sciences. This was found to have a very significant relationship<sup>13</sup> with number of years served in the Nature Trail, meaning that the longer the service, the more likely one is to

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<sup>11</sup> R=.271, significant at the 0.01 level.

<sup>12</sup> F=7.943, significant at the 0.01 level.

<sup>13</sup> t=4.039, significant at the 0.01 level

go on to related employment with animals or science. Depth of experience with the Nature Trail program was not found to be significantly related to employment in these fields.

### *Life Skills*

The survey asked respondents about the impact of the Nature Trail experience on a number of life skills such as public speaking, interpersonal skills, teamwork, and making friends. The mean scores in each of the six life skills were very positive and above 4.3 on a scale of 1 meaning no impact and 5 meaning strong impact. The overall index score calculated for all six of these questions was a mean of 4.46. A positive index score is strongly correlated<sup>14</sup> with length of service. Interestingly, results varied based on the depth of experience. Nature Trailers reported significantly higher index scores than Junior Zoologists and ARC interns<sup>15</sup>.

### **Conclusion**

In general, the results of the 30<sup>th</sup> Anniversary survey are very positive and demonstrate an impact on participants' volunteerism, educational interests and achievement, career choice, and life skills development. However, we did not see a consistent increase in positive impacts associated with longer volunteer service or participation in the Junior Zoologist and ARC internships.

It is important to note that these statistical analyses do not prove causality, only correlations as noted. While it is possible the participation in the Nature Trail program led to increased biophilia and environmental stewardship, it is likely that these traits

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<sup>14</sup>  $r=.311$ , significant at the 0.01 level.

<sup>15</sup>  $F=16.902$ , significant at the 0.01 level.

were present in applicants to the program before they began volunteering. Future annual evaluative efforts of current participants should assess actions and opinions in these areas pre- and post-participation. Still, when respondents were directly asked to rate the impacts of the Nature Trail on their subsequent educational, professional, and personal endeavors, the responses were generally very positive.

One limitation to this evaluation must be noted. The response rate of 14% is low, making the results vulnerable to sampling biases. One example of this is the possibility that participants with more positive experiences and memories of the program are more likely to respond to a survey. Conversely, participants with poor experiences may be less likely to both keep their mailing addresses up to date with the San Francisco Zoo and to respond to a survey. For the next evaluation, efforts need to be made to increase the overall response rate.



5. Please mark your level of agreement with the following statements.

As a result of my participation in the Nature Trail, ...

	Strongly disagree				Strongly agree
	1	2	3	4	5
a. ... I now know how to treat animals	?	?	?	?	?
b. ... I now understand animal behavior	?	?	?	?	?
c. ... I am aware of environmental issues	?	?	?	?	?
d. ... I base everyday decisions on what is best for the environment	?	?	?	?	?
e. ... I didn't learn anything new about the environment	?	?	?	?	?
f. ... I didn't change any behaviors affecting the environment	?	?	?	?	?

*Next we'd like to gather some information about your activities related to environmentalism and volunteerism.*

6. To what extent do you currently engage in the following activities?

	Rarely				Almost always
	1	2	3	4	5
a. Recycle at home	?	?	?	?	?
b. Buy recycled products	?	?	?	?	?
c. Buy organic produce and groceries	?	?	?	?	?
d. Compost	?	?	?	?	?
e. Take public transportation	?	?	?	?	?
f. Conserve energy	?	?	?	?	?
g. Participate in an environmental club	?	?	?	?	?
h. Help with habitat restoration	?	?	?	?	?
i. Drive a car	?	?	?	?	?

7. On average, how often do you currently volunteer in community activities and events?

- Never
  7 to 12 times per year  
 1 to 6 times per year
  More than 12 times per year

8. Do you currently volunteer for the following types of organizations on a regular basis?

- |                                 |       |      |                                  |       |      |
|---------------------------------|-------|------|----------------------------------|-------|------|
| a. Animal related organizations | ? yes | ? no | c. Youth related organizations   | ? yes | ? no |
| b. Environmental organizations  | ? yes | ? no | d. Homeless shelter or food bank | ? yes | ? no |
|                                 |       |      | e. Other _____                   | ? yes | ? no |

9. Please mark your level of agreement with the following statement.

	Strongly disagree				Strongly agree
	1	2	3	4	5
The Nature Trail experience inspired me to volunteer later in my life.	?	?	?	?	?

Next we'd like to gather some information about your education and employment after participating in the Nature Trail program.

10. Please list your education after participating in the Nature Trail program:

	Major	School attended	Degree awarded?	Year awarded
High School	NA			
College				
Graduate school				

11. Please mark your level of agreement with the following statements.

Participating in the Nature Trail program ...

	Strongly disagree	1	2	3	4	5	Strongly agree
a. ...helped me do better in school	?		?	?	?	?	?
b. ...increased my interest in science	?		?	?	?	?	?
c. ...encouraged me to finish high school	?		?	?	?	?	?
d. ...gave me guidance in seeking a college/specialized degree	?		?	?	?	?	?

12. Please list your employment after participating in the Nature Trail program:

Institution	Position Description	# Years

13. Have any of the positions in your employment history been related to animals or natural sciences?

? yes ? no

14. Please mark your level of agreement with the following statements.

Participating in the Nature Trail experience...

	Strongly disagree	1	2	3	4	5	Strongly agree
a. ... gave me information about possible career choices	?		?	?	?	?	?
b. ... affected my career choice	?		?	?	?	?	?
c. ... gave me a head start on a career in science	?		?	?	?	?	?
d. ... helped prepare me for a career in working with animals	?		?	?	?	?	?

15. How often does your current job involve the following activities?

	Rarely	1	2	3	4	5	Almost Always
a. Public speaking	?		?	?	?	?	?
b. Teaching	?		?	?	?	?	?
c. Working with youth	?		?	?	?	?	?
d. Care or advocacy for animals	?		?	?	?	?	?
e. Environmental advocacy or stewardship	?		?	?	?	?	?

*Next we'd like to get some general information on how you feel about the Nature Trail program.*

16. Please mark your level of agreement with the following statements.

Participating in the Nature Trail program ...

	Strongly disagree					Strongly agree
	1	2	3	4	5	
a... improved my public speaking skills	?	?	?	?	?	?
b... improved my interpersonal skills	?	?	?	?	?	?
c... improved my ability to work as a member of a team	?	?	?	?	?	?
d... made me feel I was doing something important	?	?	?	?	?	?
e... gave me a sense of responsibility	?	?	?	?	?	?
f... helped me make new friends	?	?	?	?	?	?

17. Please mark your level of agreement with the following statement.

	Strongly disagree				Strongly agree	
	1	2	3	4	5	N/A
a. I would (have) encourage(d) my child(ren) to participate in the Nature Trail program	?	?	?	?	?	?
b. I am glad that I participated in the Nature Trail program.	?	?	?	?	?	

18. What was the most important thing you learned or accomplished in the Nature Trail program?

19. Do you have a special or favorite memory to share about Nature Trail that can go into the Zoo's ARCives?

20. What suggestions do you have for improving the Nature Trail program?

*Last, we'd like to gather some information about you.*

22. What is your current age? \_\_\_\_\_

23. What is your gender?     Male             Female

24. Which ethnic group do you most identify with?

? African American                      ? White                                      ? Other \_\_\_\_\_  
? Asian                                      ? Native American  
? Hispanic                                  ? Multicultural

---

Thank you for your participation! Please return your completed survey at the Nature Trail reunion, or by mail by August 30<sup>th</sup> to:

Sheldon Gen, Ph.D.  
Public Administration Program  
San Francisco State University  
1600 Holloway Avenue  
San Francisco, CA 94132

## Appendix B: Descriptive Statistical Analysis of Survey Responses

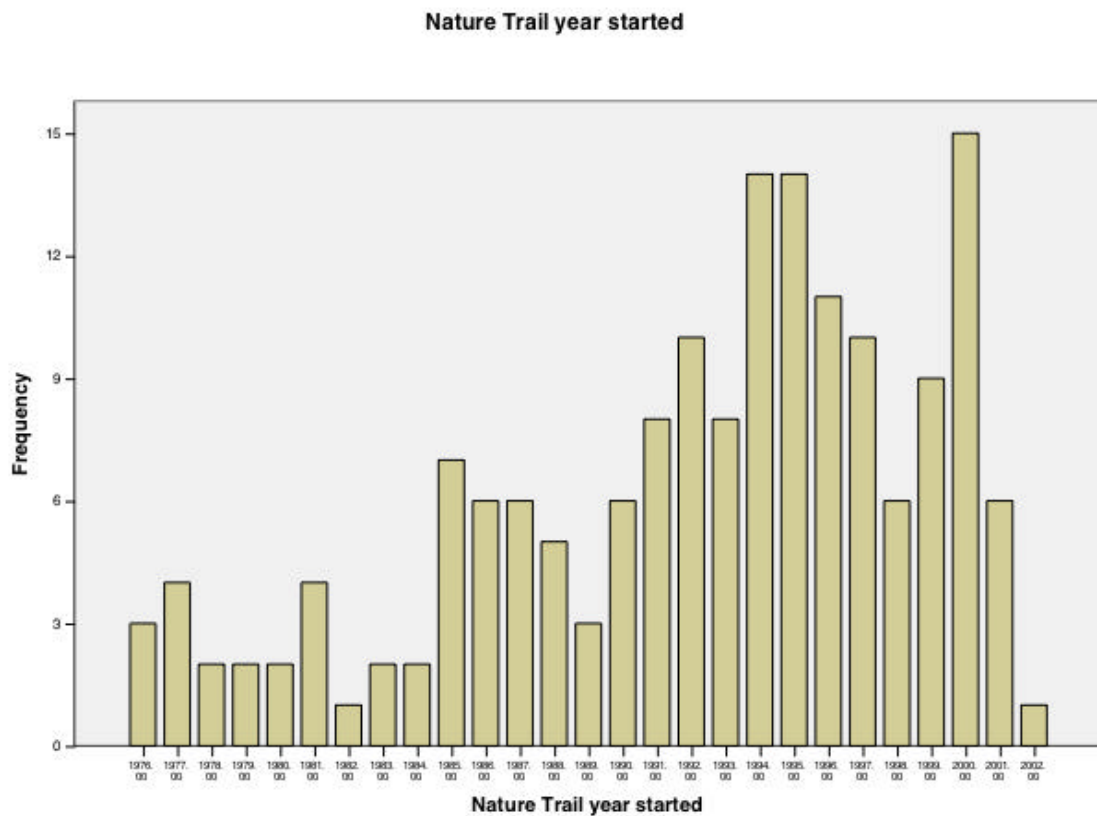
### *Level of participation with the Nature Trail program*

1. Were you a Nature Trail volunteer?

Yes	No	n
185	6	191

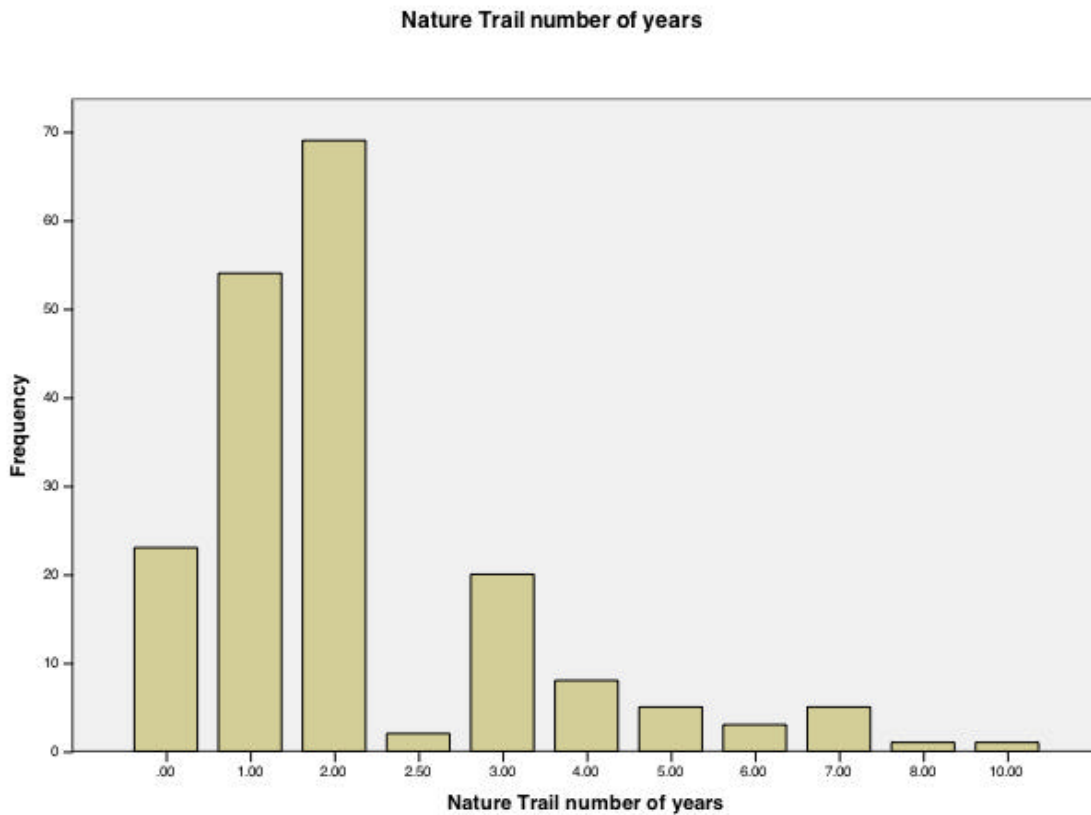
1a. Year started

min.	mean	med.	max	sd	n
1976	1992	1994	2002	6.60	167



1b. Number of years of participation

min.	mean	med.	max	sd	n
1	2.02	2	10	1.65	191

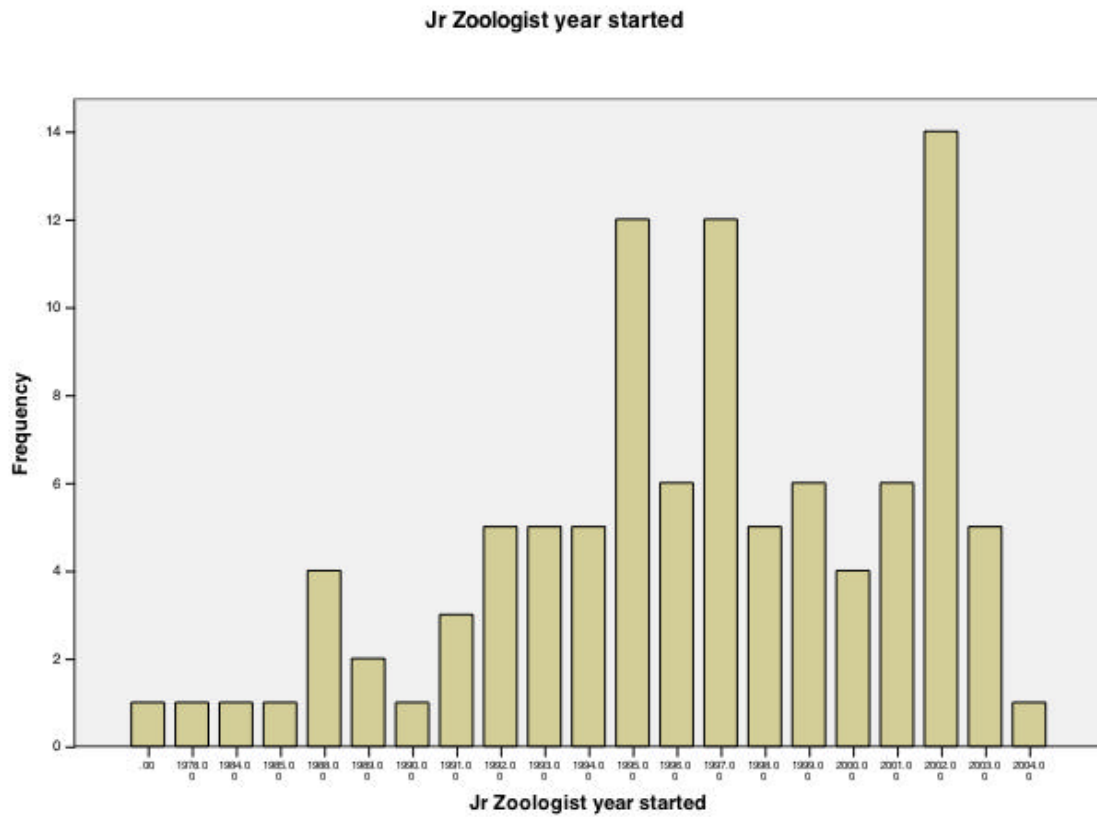


2. Were you a Junior Zoologist?

Yes	No	n
98	92	190

2a. Year started

min.	mean	med.	max	sd	n
1978	1976	1997	2004	199.74	100



2b. Number of years of participation

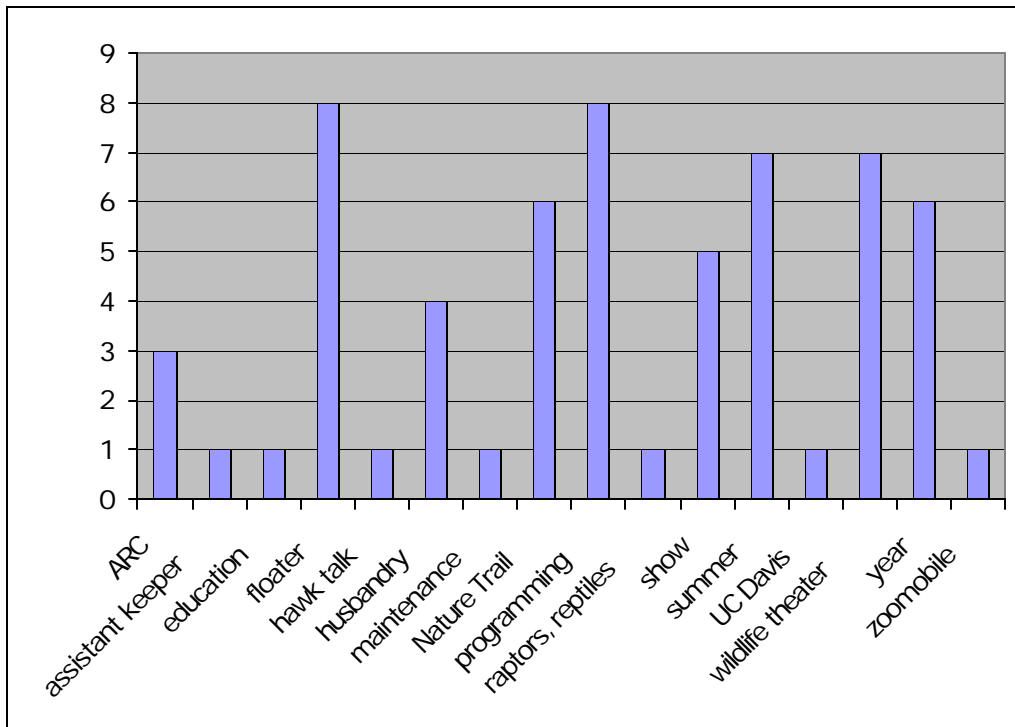
min.	mean	med.	max	sd	n
1	1.98	1	7.5	2.26	96

3. Were you an ARC intern?

Yes	No	n
57	134	191

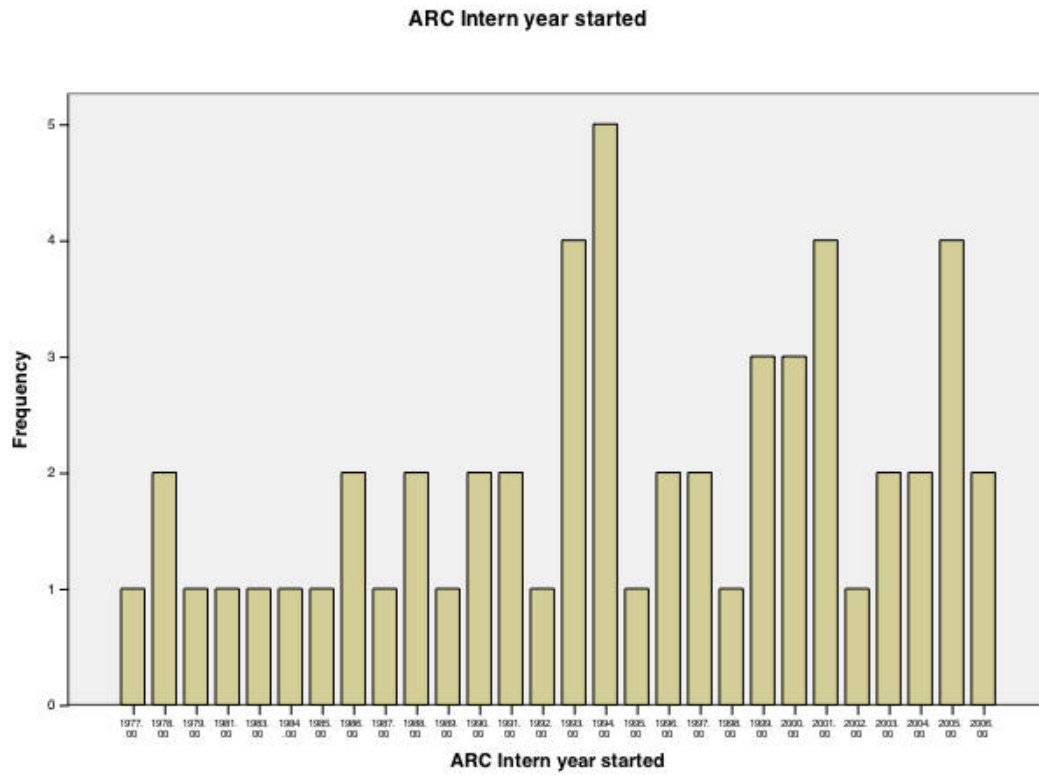
3a. Which internship did you participate in?

<b>ARC</b>	<b>Asst. Keeper</b>	<b>Education</b>	<b>Floater</b>	<b>Hawk Talk</b>	<b>Hus-bandry</b>	<b>Maintenance</b>	<b>Nature Trail</b>	<b>Program-ming</b>	<b>Raptors/Reptiles</b>	<b>Show</b>	<b>Summer</b>	<b>UC Davis</b>	<b>Wildlife Theater</b>	<b>Year</b>	<b>Zoo-mobile</b>
3	1	1	8	1	4	1	6	8	1	5	7	1	7	6	1



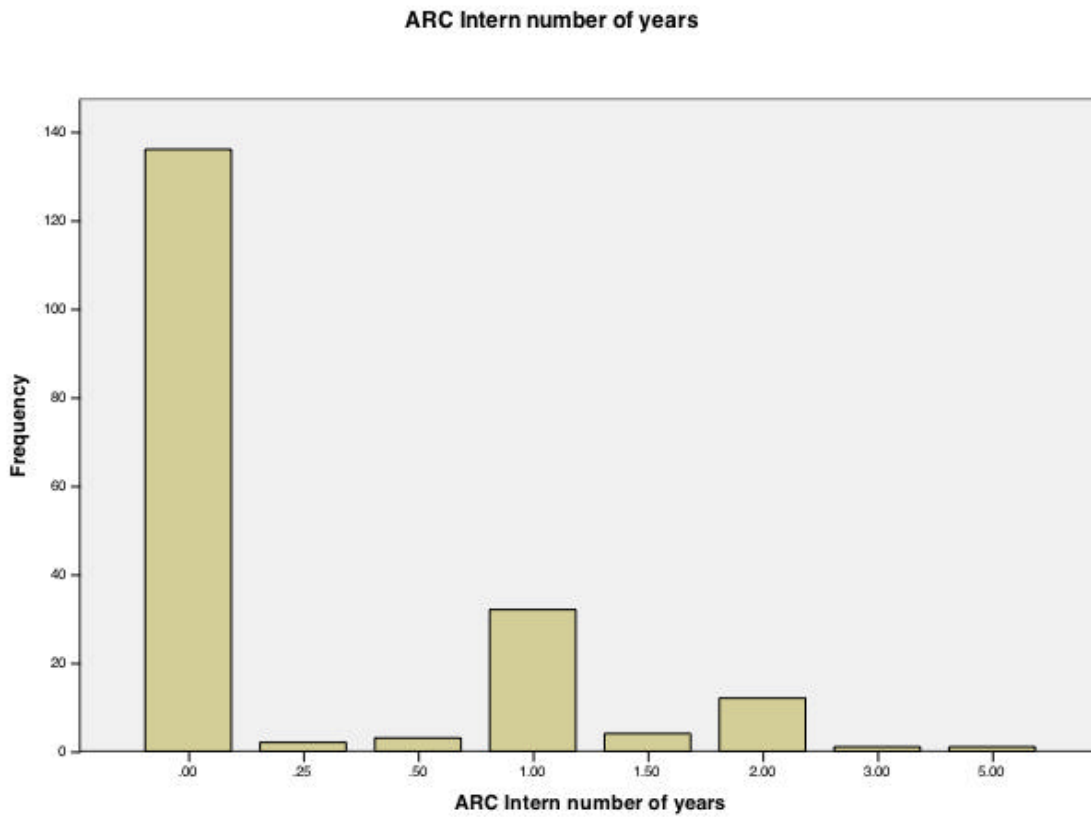
3b. Year started

min.	mean	med.	max	sd	n
1977	1994	1994	2006	7.98	55



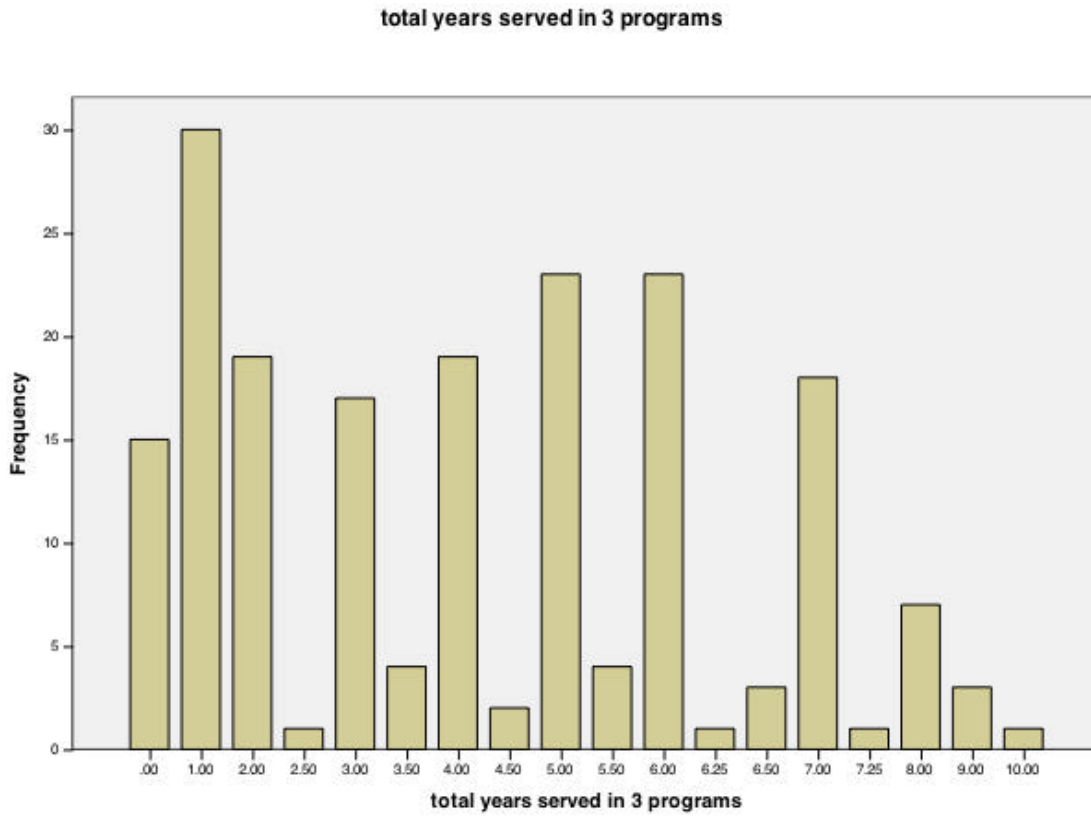
3c. Number of years of participation

min.	mean	med.	max	sd	n
.25	.38	0	5	.71	55



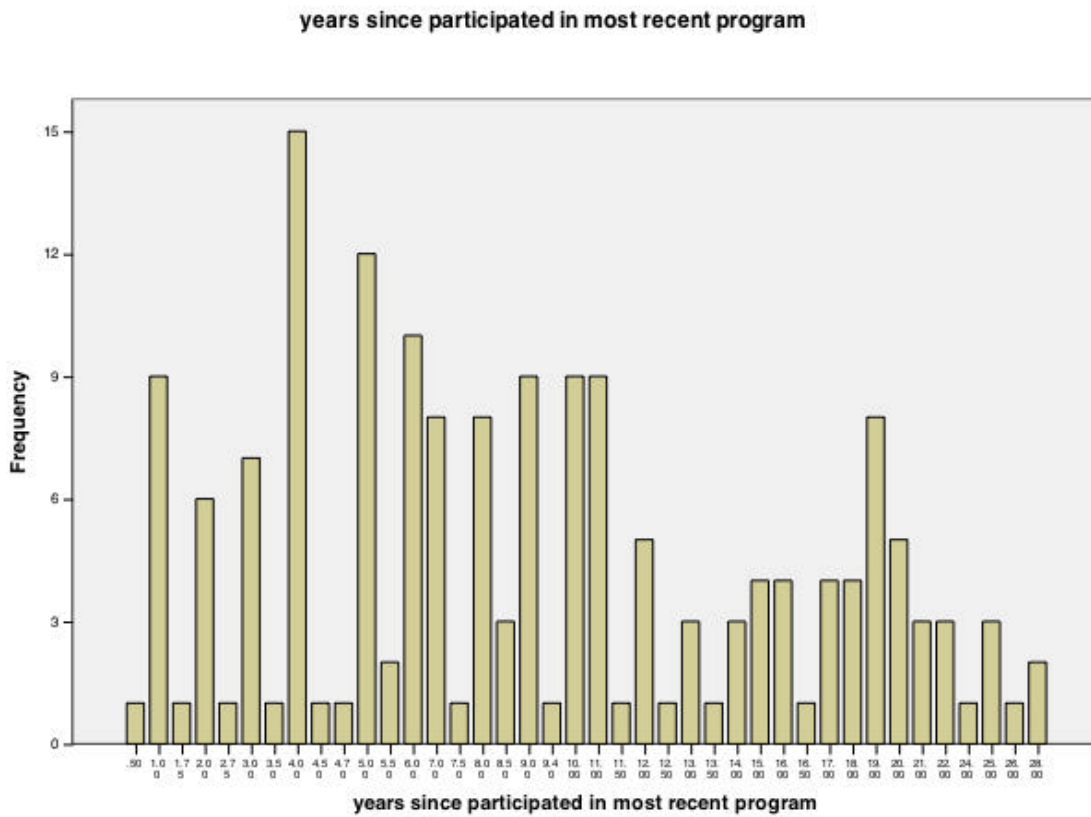
Total years of participation in all three programs

<b>min.</b>	<b>mean</b>	<b>med.</b>	<b>max</b>	<b>sd</b>	<b>n</b>
0	3.91	4.0	10.0	2.46	191



Years since participation in most recent program

min.	mean	med.	max	sd	n
.50	9.91	8.5	28.0	6.63	172



Highest program participated in

	Nature Trail	Junior Zoologist	ARC Intern	None
<b>frequency</b>	67	64	57	3
<b>%</b>	35.1	33.5	29.8	1.6

***Reasons for joining the Nature Trail program***

4. Please mark your level of agreement with the following statements.

I joined the Nature Trail ...

a. ... to work with and learn about animals

	<b>strongly disagree</b>				<b>strongly agree</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>		<b>mean</b>	<b>sd</b>	<b>n</b>
<b>frequency</b>	3	3	6	19	154		4.72	.75	187
<b>%</b>	1.6	1.6	3.2	10.7	82.9				

b. ... to gain community service hours

	<b>strongly disagree</b>				<b>strongly agree</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>		<b>mean</b>	<b>sd</b>	<b>n</b>
<b>frequency</b>	72	21	38	17	29		2.51	1.5	179
<b>%</b>	40.2	11.7	21.2	10.1	16.8				

c. ... to gain job skills

	<b>strongly disagree</b>				<b>strongly agree</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>		<b>mean</b>	<b>sd</b>	<b>n</b>
<b>frequency</b>	27	19	34	41	63		3.51	.77	185
<b>%</b>	14.7	10.3	18.5	22.3	34.2				

d. ... to have fun

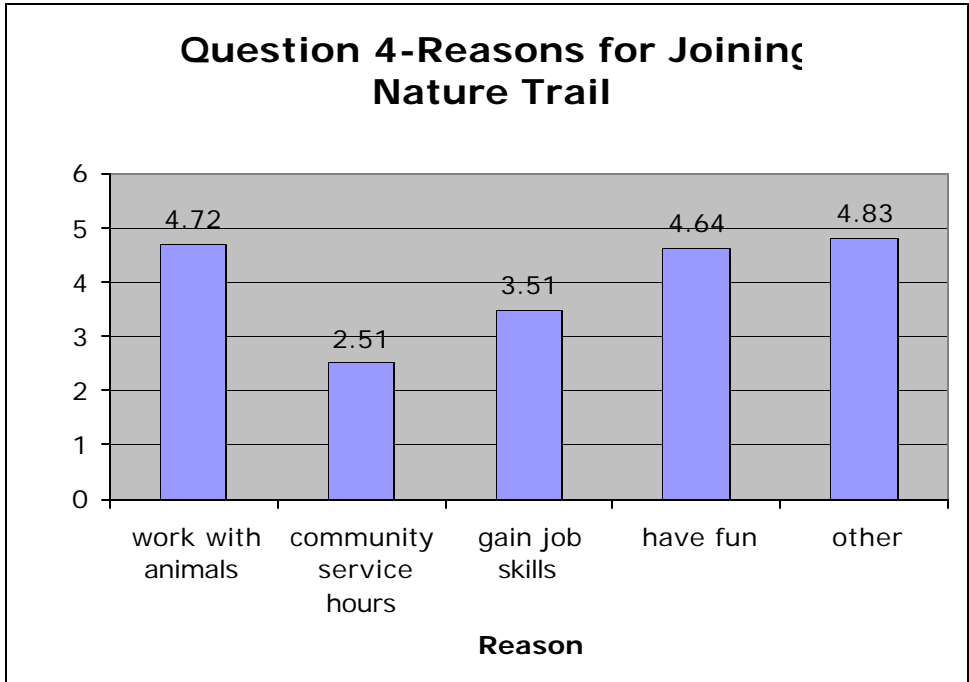
	<b>strongly disagree</b>				<b>strongly agree</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>		<b>mean</b>	<b>sd</b>	<b>n</b>
<b>frequency</b>	3	3	6	33	142		4.64	.77	185
<b>%</b>	1.6	1.6	3.2	17.6	75.9				

e. Other

	<b>strongly disagree</b>				<b>strongly agree</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>		<b>mean</b>	<b>sd</b>	<b>n</b>
<b>frequency</b>	0	0	0	5	24		4.83	.38	29
<b>%</b>	0.0	0.0	0.0	17.2	82.8				

Other responses for reasons to join the Nature Trail

reason	frequency	% frequency
animals	5	21%
family	2	8%
friends	7	29%
gain experience	8	33%
nature	2	8%



5. Please mark your level of agreement with the following statements.  
As a result of my participation in the Nature Trail, ...

a. ... I now know how to treat animals

	<b>strongly disagree</b>					<b>strongly agree</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>mean</b>	<b>sd</b>	<b>n</b>		
<b>frequency</b>	4	1	11	32	139	4.61	.80	187		
<b>%</b>	2.1	0.5	5.8	17.1	74.3					

b. ... I now understand animal behavior

	<b>strongly disagree</b>					<b>strongly agree</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>mean</b>	<b>sd</b>	<b>n</b>		
<b>frequency</b>	3	6	18	53	106	4.36	.90	186		
<b>%</b>	1.6	3.2	9.7	28.5	57					

c. ... I am aware of environmental issues

	<b>strongly disagree</b>					<b>strongly agree</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>mean</b>	<b>sd</b>	<b>n</b>		
<b>frequency</b>	5	5	23	58	96	4.26	.90	187		
<b>%</b>	2.7	2.7	12.3	31	51.3					

d. ... I base everyday decisions on what is best for the environment

	<b>strongly disagree</b>					<b>strongly agree</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>mean</b>	<b>sd</b>	<b>n</b>		
<b>frequency</b>	4	20	39	67	53	3.77	1.08	183		
<b>%</b>	2.2	10.9	21.3	36.6	29					

e. ... I didn't learn anything new about the environment

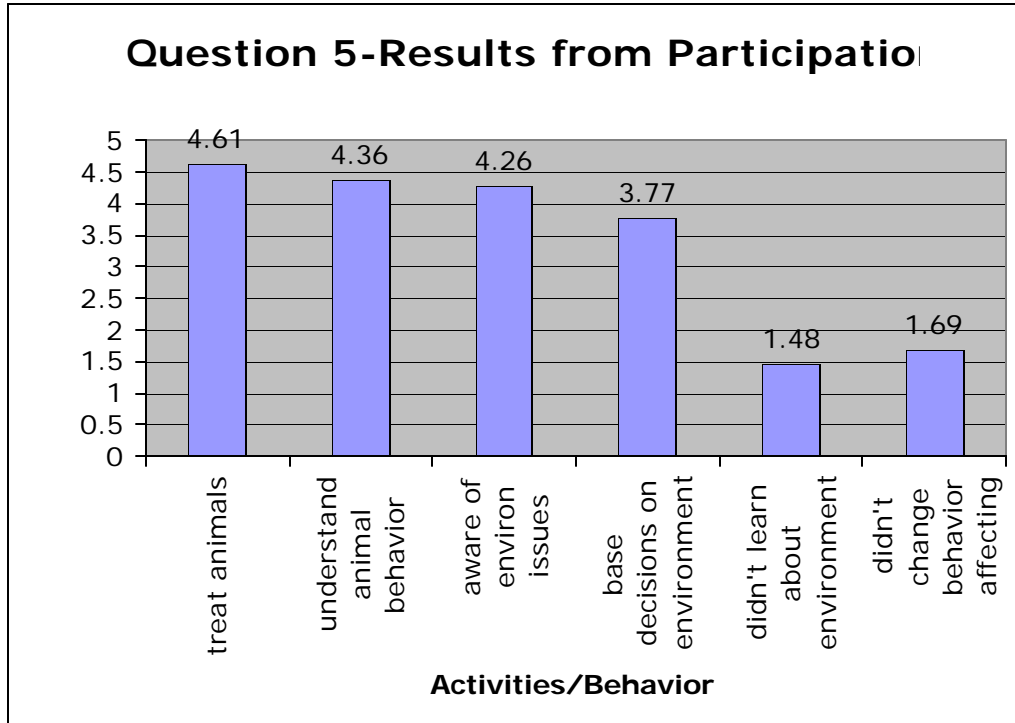
	<b>strongly disagree</b>					<b>strongly agree</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>mean</b>	<b>sd</b>	<b>n</b>		
<b>frequency</b>	138	29	8	4	8	1.48	.99	187		
<b>%</b>	73.8	15.5	4.3	2.1	4.3					

f. ... I didn't change any behaviors affecting the environment

	<b>strongly disagree</b>					<b>strongly agree</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>mean</b>	<b>sd</b>	<b>n</b>		
<b>frequency</b>	121	29	19	7	10	1.69	1.14	186		
<b>%</b>	65.1	15.6	10.2	3.8	5.4					

Index score for resulting attitudes and behavior from participation

min.	mean	med.	max	sd	n
1.33	4.30	4.50	5.0	.77	182



*Activities related to environmentalism and volunteerism*

6. To what extent do you currently engage in the following activities?

a. Recycle at home

	rarely					almost always		
	1	2	3	4	5	mean	sd	n
frequency	1	3	9	23	153	4.71	.68	189
%	.5	1.6	4.8	12.2	81.0			

b. Buy recycled products

	rarely					almost always		
	1	2	3	4	5	mean	sd	n
frequency	3	11	47	71	57	3.89	.96	189
%	1.6	5.8	24.9	37.6	30.2			

c. Buy organic produce and groceries

	rarely					almost always		
	1	2	3	4	5	mean	sd	n
frequency	13	21	62	48	44	3.47	1.17	188
%	6.9	11.0	32.5	25.1	23.0			

d. Compost

	rarely					almost always		
	1	2	3	4	5	mean	sd	n
Frequency	61	21	24	30	52	2.95	1.64	188
%	32.4	11.2	12.8	16.0	27.7			

e. Take public transportation

	rarely					almost always		
	1	2	3	4	5	mean	sd	n
frequency	43	22	43	33	46	3.1	1.48	187
%	23.0	11.8	23.0	17.6	24.6			

f. Conserve energy

	rarely					almost always		
	1	2	3	4	5	mean	sd	n
frequency	3	6	30	80	66	4.08	.89	185
%	1.6	3.2	16.2	43.2	35.7			

g. Participate in an environmental club

	rarely					almost always		
	1	2	3	4	5	mean	sd	n
frequency	92	29	27	17	23	2.20	1.44	188
%	48.9	15.4	14.4	9.0	12.2			

h. Help with habitat restoration

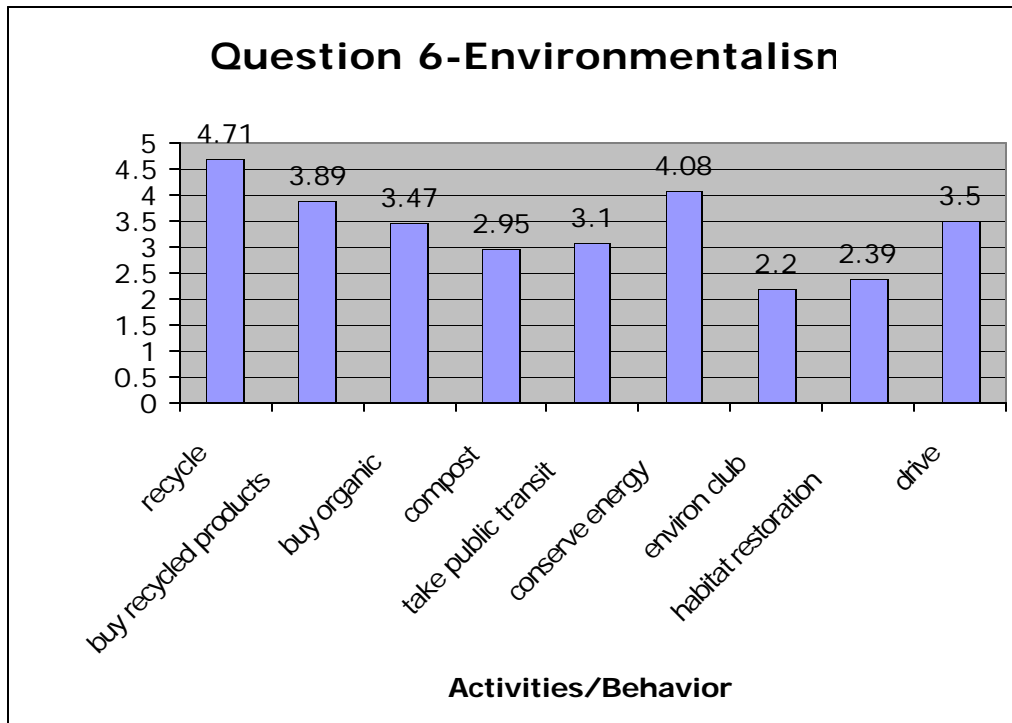
	rarely					almost always		
	1	2	3	4	5	mean	sd	n
frequency	68	40	37	22	20	2.39	1.36	187
%	36.4	21.4	19.8	11.8	10.7			

i. Drive a car

	rarely					almost always		
	1	2	3	4	5	mean	sd	n
frequency	38	12	22	45	71	3.5	1.55	189
%	20.1	6.3	11.6	23.8	37.6			

Index score for environmentalism

min.	mean	med.	max	sd	n
1.67	3.25	3.22	4.89	.72	179



7. On average, how often do you currently volunteer in community activities and events?

<b>response</b>	<b>freq.</b>	<b>%</b>	<b>N</b>
Never	3	1.8	164
1 to 6 times per year	101	61.6	
7 to 12 times per year	16	9.8	
More than 12 times per year	43	26.2	

8. Do you currently volunteer for the following types of organizations on a regular basis?

<b>response</b>	<b>freq.</b>	<b>%</b>	<b>N</b>
a. Animal related organizations	52	30.4	171
b. Environmental organizations	40	23.7	169
c. Youth related organizations	66	38.6	171
d. Homeless shelter or food bank	20	12.3	163
e. other	27	46.6	58

Responses for other volunteer activities

<b>type</b>	<b>frequency</b>	<b>% frequency</b>
art	4	16%
education	2	8%
health	6	24%
misc.	7	28%
religious	6	24%

9. Please mark your level of agreement with the following statement. The Nature Trail experience inspired me to volunteer later in my life.

	<b>strongly disagree</b>		<b>strongly agree</b>			<b>mean</b>	<b>sd</b>	<b>n</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>			
<b>frequency</b>	3	15	45	42	83	3.99	1.07	188
<b>%</b>	1.6	8.0	23.9	22.3	44.1			

10. Please list your education after participating in the Nature Trail program:

High school degree

<b>Yes</b>	<b>No</b>	<b>n</b>
175	13	188

<b>High School</b>	<b>frequency</b>	<b>%</b>
Lowell	23	15%
Lincoln	8	5%
Sacred Heart	8	5%
St. Ignatius	8	5%
Mercy	7	4%
Westmoor	7	4%
Thurgood Marshall	6	4%
Aragon	4	3%
Burton	4	3%
Lick Wilmerding	4	3%
School of the Arts	4	3%
Tamalpais	4	3%
Terra Nova	4	3%
Washington	4	3%
Balboa	3	2%
El Camino	4	3%
International	3	2%
McAteer	3	2%
Oceana	3	2%
Riordan	3	2%
Branson	2	1%
Convent of the Sacred Heart	2	1%
Half Moon Bay	2	1%
Homestead	2	1%
John O'Connell	2	1%
Notre Dame	3	2%
Bishop O'Dowd	1	1%
Bredford	1	1%
Campolindo	1	1%
Capuchino	1	1%
Cathedral	1	1%
Drew	1	1%
Dunn	1	1%
Fremont	1	1%
Hillsdale	1	1%
ISA	1	1%
Jefferson	1	1%
Junipero Serra	1	1%
Las Lomas	1	1%

<b>High School</b>	<b>frequency</b>	<b>% frequency</b>
Leadership	1	1%
Menlo School	1	1%
Mills	1	1%
Oakland Technical	1	1%
Oliver Ames	1	1%
Petaluma	1	1%
Pinole Valley	1	1%
Plantation Christian	1	1%
Presentation	1	1%
Redwood	1	1%
San Mateo	1	1%
Sequoia	1	1%
Serra	1	1%
SJND	1	1%
SLVHS	1	1%
University	1	1%
Urban	1	1%
US Airforce	1	1%
Wallenberg	1	1%

<b>College</b>	<b>frequency</b>	<b>% frequency</b>
SF State	40	16%
UC Davis	31	13%
City College of SF	23	9%
UC Berkeley	10	4%
UC Santa Cruz	9	4%
HSU	8	3%
Foothill	5	2%
San Jose State	4	2%
Skyline	4	2%
Sonoma State	4	2%
UC Los Angeles	4	2%
UC Santa Barbara	4	2%
College of San Mateo	3	1%
CSU East Bay	3	1%
De Anza	3	1%
UC Irvine	3	1%
Canada College	2	1%
Concordia University	2	1%
Cornell	2	1%

<b>College</b>	<b>frequency</b>	<b>% frequency</b>
Oberlin	2	1%
Occidental	2	1%
Santa Clara	2	1%
UC San Diego	2	1%
Academy of Art College	1	0%
AIU	1	0%
Alpha Beta Kappa	1	0%
American Univ	1	0%
Aurora University	1	0%
BGSU Ohio	1	0%
Boston University	1	0%
Brandeis Univ	1	0%
Bryman College	1	0%
Cabrillo College	1	0%
Cal Poly San Luis Obispo	1	0%
Cal State Hayward	1	0%
COA	1	0%
Col of Marin	1	0%
Connecticut College	1	0%
CSM	1	0%
Dartmouth College	1	0%
Deloux	1	0%
DePaul University	1	0%
Devry	1	0%
Diablo Valley College	1	0%
Dominican	1	0%
George Washington Univ	1	0%
Grossmont	1	0%
Harvard	1	0%
Las Positas College	1	0%
LBSU	1	0%
Loyola New Orleans	1	0%
Middlebury College	1	0%
Mills	1	0%
Moorpark College	1	0%
MSU	1	0%
NDNU	1	0%
New York Univ	1	0%
Northern University	1	0%
Northland College	1	0%

<b>College</b>	<b>frequency</b>	<b>% frequency</b>
Oregon State	1	0%
Pacific Lutheran	1	0%
Pacific University	1	0%
Ryerson U	1	0%
Saint Mary's	1	0%
San Bruno Jr. College	1	0%
San Diego State Univ	1	0%
San Joaquin Delta	1	0%
San Mateo	1	0%
Santa Rosa Jr College	1	0%
SF Conservatory	1	0%
SRJC	1	0%
St Mary's	1	0%
Tante Marie's	1	0%
Transword	1	0%
tufts university	1	0%
U of Arizona	1	0%
U of IL	1	0%
U of Massachusetts	1	0%
U of Vermont	1	0%
U Washington	1	0%
UC Merced	1	0%
UC San Francisco	1	0%
UN Univ for Peace	1	0%
Univ of San Francisco	1	0%
University Nice	1	0%
University of North Dakota	1	0%
University of Oregon	1	0%
University of Washington	1	0%
UPENN	1	0%
USC	1	0%
Victoria Univ	1	0%
West Valley Community	1	0%
Western Career College	1	0%
Whitman College	1	0%

Highest level of education

	<b>Pending</b>					
	<b>AA</b>	<b>BA/BS</b>	<b>BA/BS</b>	<b>MA/MS</b>	<b>PhD</b>	<b>n</b>
<b>frequency</b>	10	37	77	16	0	140
<b>%</b>	7.1	26.4	55.0	11.4	0	

11. Please mark your level of agreement with the following statements.  
Participating in the Nature Trail program ...

a. ...helped me do better in school

	<b>strongly disagree</b>					<b>strongly agree</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>mean</b>	<b>sd</b>	<b>n</b>		
<b>frequency</b>	7	26	52	57	44	3.56	1.11	186		
<b>%</b>	3.8	14.0	27.2	30.6	23.7					

b. ...increased my interest in science

	<b>strongly disagree</b>					<b>strongly agree</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>mean</b>	<b>sd</b>	<b>n</b>		
<b>frequency</b>	4	9	35	57	82	4.09	1.00	187		
<b>%</b>	2.1	4.8	18.7	30.5	43.9					

c. ...encouraged me to finish high school

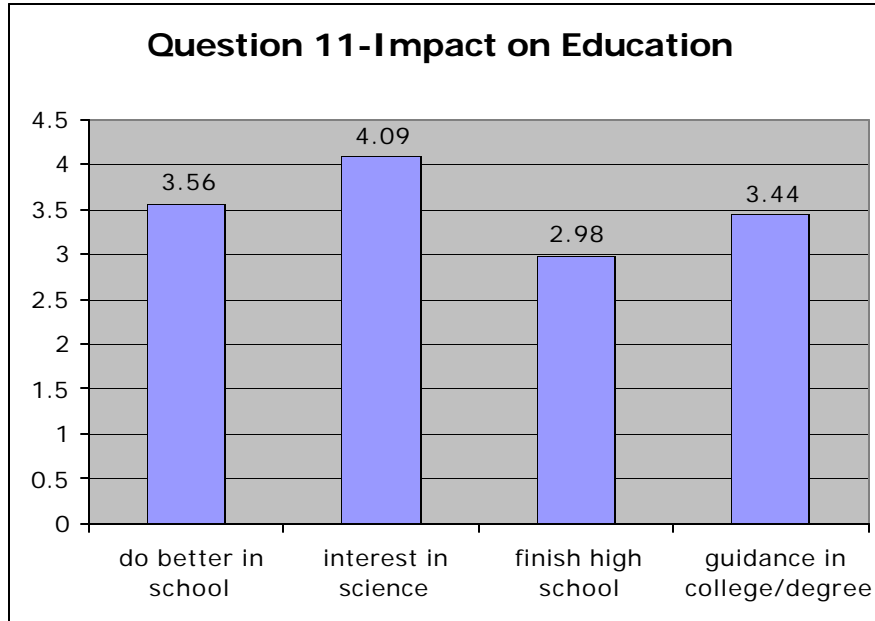
	<b>strongly disagree</b>					<b>strongly agree</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>mean</b>	<b>sd</b>	<b>n</b>		
<b>frequency</b>	43	27	47	21	44	2.98	1.48	182		
<b>%</b>	23.6	14.8	25.8	11.5	24.2					

d. ...gave me guidance in seeking a college/specialized degree

	<b>strongly disagree</b>					<b>strongly agree</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>mean</b>	<b>sd</b>	<b>n</b>		
<b>frequency</b>	27	29	33	27	69	3.44	1.48	185		
<b>%</b>	14.6	15.7	17.8	14.6	37.3					

Index score for impact on education

	<b>min.</b>	<b>mean</b>	<b>med.</b>	<b>max</b>	<b>sd</b>	<b>n</b>
1	3.51	3.5	5	1.08	179	



12. Please list your employment after participating in the Nature Trail program:

<b>position</b>	<b>frequency</b>	<b>% frequency</b>
misc	67	22%
teacher/educator	43	14%
animal keeper	31	10%
retail	26	9%
vet related	25	8%
youth development/activities	24	8%
finance	17	6%
admin	12	4%
science related	11	4%
research assistant	11	4%
environ related	11	4%
community/social services	9	3%
food service	8	3%
arts related	8	3%

13. Have any of the positions in your employment history been related to animals or natural sciences?

	<b>yes</b>	<b>no</b>	<b>n</b>
<b>frequency</b>	95	80	175
<b>%</b>	54.3	45.7	

14. Please mark your level of agreement with the following statements.  
Participating in the Nature Trail experience...

a. ... gave me information about possible career choices

	<b>strongly disagree</b>				<b>strongly agree</b>	<b>mean</b>	<b>sd</b>	<b>n</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>			
<b>frequency</b>	9	19	36	50	72	3.84	1.19	186
<b>%</b>	4.8	10.2	19.4	26.9	38.7			

b. ... affected my career choice

	<b>strongly disagree</b>				<b>strongly agree</b>	<b>mean</b>	<b>sd</b>	<b>n</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>			
<b>frequency</b>	27	32	41	29	57	3.31	1.43	186
<b>%</b>	14.5	17.2	22.0	15.6	30.6			

c. ... gave me a head start on a career in science

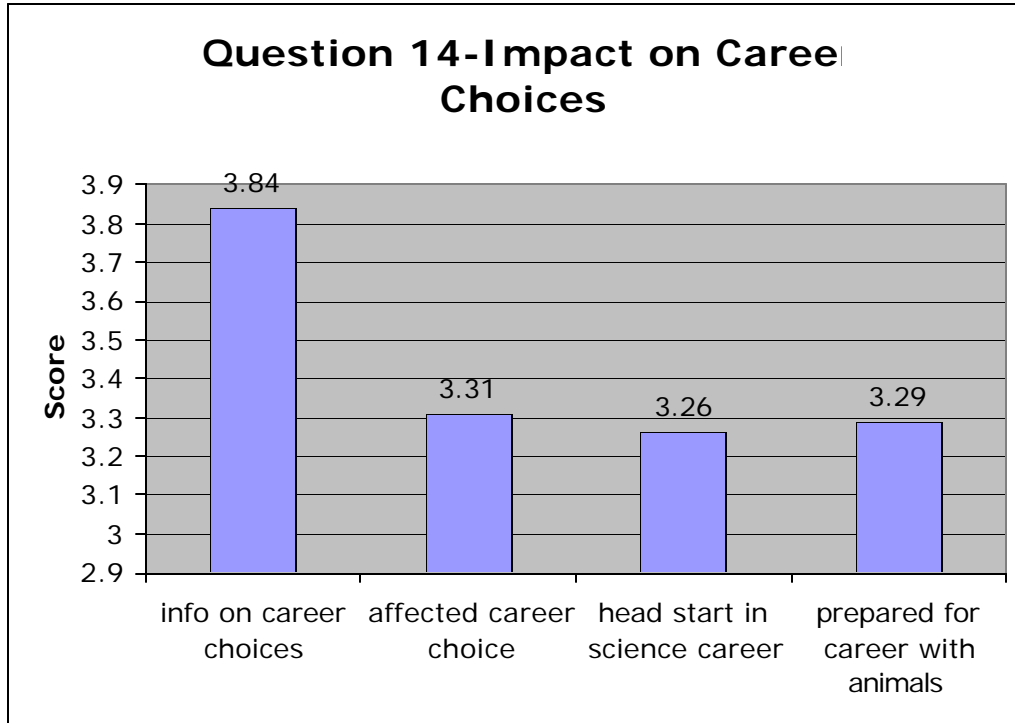
	<b>strongly disagree</b>				<b>strongly agree</b>	<b>mean</b>	<b>sd</b>	<b>n</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>			
<b>frequency</b>	35	31	29	28	61	3.26	1.53	184
<b>%</b>	19.0	16.8	15.8	15.2	33.2			

d. ... helped prepare me for a career in working with animals

	<b>strongly disagree</b>				<b>strongly agree</b>	<b>mean</b>	<b>sd</b>	<b>n</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>			
<b>frequency</b>	39	21	37	21	66	3.29	1.56	185
<b>%</b>	21.2	11.4	20.1	11.4	35.9			

Index score for impact on career

min.	mean	med.	max	sd	n
1	3.58	3.5	5	2.09	183



15. How often does your current job involve the following activities?

a. Public speaking

	rarely					Almost always		
	1	2	3	4	5	mean	sd	n
frequency	24	15	22	35	81	3.76	1.45	177
%	13.6	8.5	12.4	19.8	45.8			

b. Teaching

	rarely					Almost always		
	1	2	3	4	5	mean	sd	n
frequency	19	13	26	44	75	3.8	1.34	177
%	10.7	7.3	14.7	24.9	42.4			

c. Working with youth

	rarely					Almost always		
	1	2	3	4	5	mean	sd	n
frequency	38	18	33	21	66	3.34	1.58	176
%	21.6	10.2	18.8	11.9	37.5			

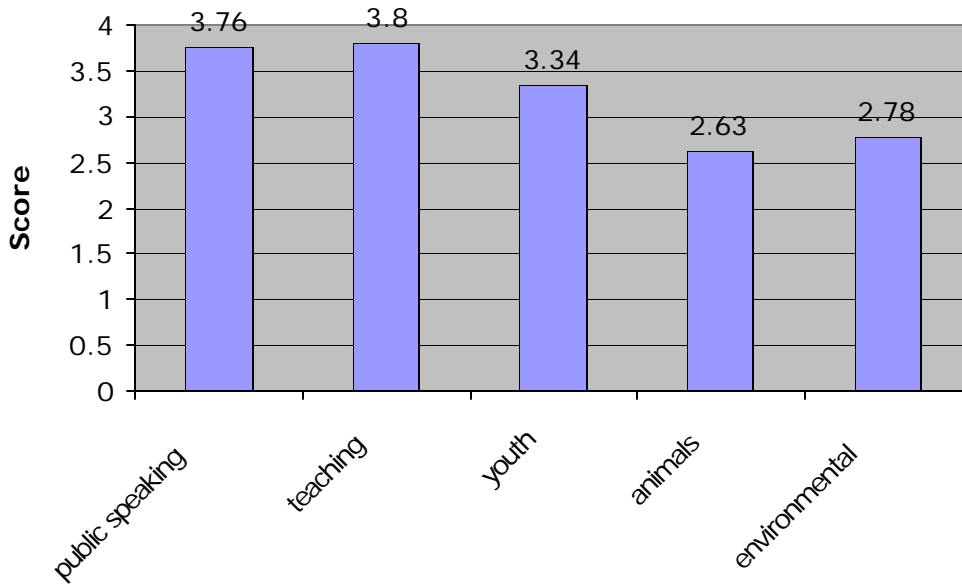
d. Care or advocacy for animals

	rarely					Almost always		
	1	2	3	4	5	mean	sd	n
frequency	76	20	19	18	44	2.63	1.67	177
%	42.9	11.3	10.7	10.2	24.9			

e. Environmental advocacy or stewardship

	rarely					Almost always		
	1	2	3	4	5	mean	sd	n
frequency	62	23	23	27	41	2.78	1.61	176
%	35.2	13.1	13.1	15.3	23.3			

### Question 15-Current Job Trait



16. Please mark your level of agreement with the following statements.  
Participating in the Nature Trail program ...

a. ... improved my public speaking skills

	<b>strongly disagree</b>					<b>strongly agree</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>mean</b>	<b>sd</b>	<b>n</b>		
<b>frequency</b>	1	3	19	40	121	4.5	.79	184		
<b>%</b>	.5	1.6	10.3	21.7	65.8					

b. ... improved my interpersonal skills

	<b>strongly disagree</b>					<b>strongly agree</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>mean</b>	<b>sd</b>	<b>n</b>		
<b>frequency</b>	1	2	21	58	105	4.41	.77	187		
<b>%</b>	.5	1.1	11.2	31.0	56.1					

c. ... improved my ability to work as a member of a team

	<b>strongly disagree</b>					<b>strongly agree</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>mean</b>	<b>sd</b>	<b>n</b>		
<b>frequency</b>	2	5	19	52	109	4.39	.86	187		
<b>%</b>	1.1	2.7	10.2	27.8	58.3					

d. ... made me feel I was doing something important

	<b>strongly disagree</b>					<b>strongly agree</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>mean</b>	<b>sd</b>	<b>n</b>		
<b>frequency</b>	2	3	12	45	125	4.54	.78	187		
<b>%</b>	1.1	1.6	6.4	24.1	66.8					

e. ... gave me a sense of responsibility

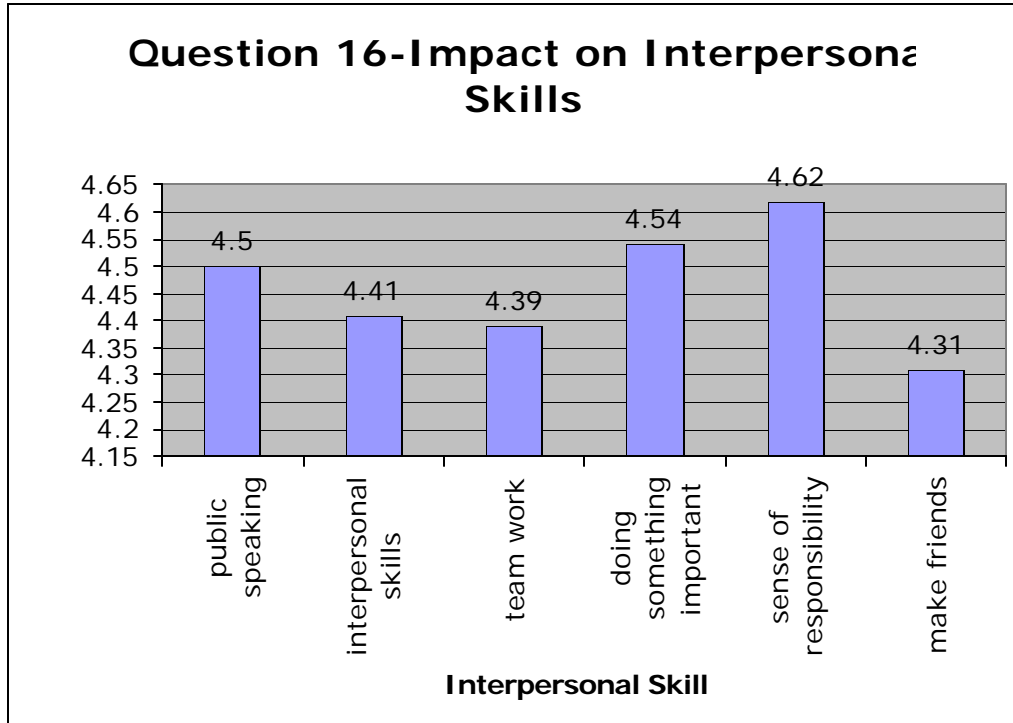
	<b>strongly disagree</b>					<b>strongly agree</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>mean</b>	<b>sd</b>	<b>n</b>		
<b>frequency</b>	2	1	10	40	134	4.62	.71	187		
<b>%</b>	1.1	0.5	5.3	21.4	71.7					

f. ... helped me make new friends

	<b>strongly disagree</b>					<b>strongly agree</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>mean</b>	<b>sd</b>	<b>n</b>		
<b>frequency</b>	5	13	17	35	115	4.31	1.07	185		
<b>%</b>	2.7	7.0	9.2	18.9	62.2					

Index score for impact on career

min.	mean	med.	max	sd	n
1	4.46	4.67	5	.69	184



17. Please mark your level of agreement with the following statement.

a. I would (have) encourage(d) my child(ren) to participate in the Nature Trail program

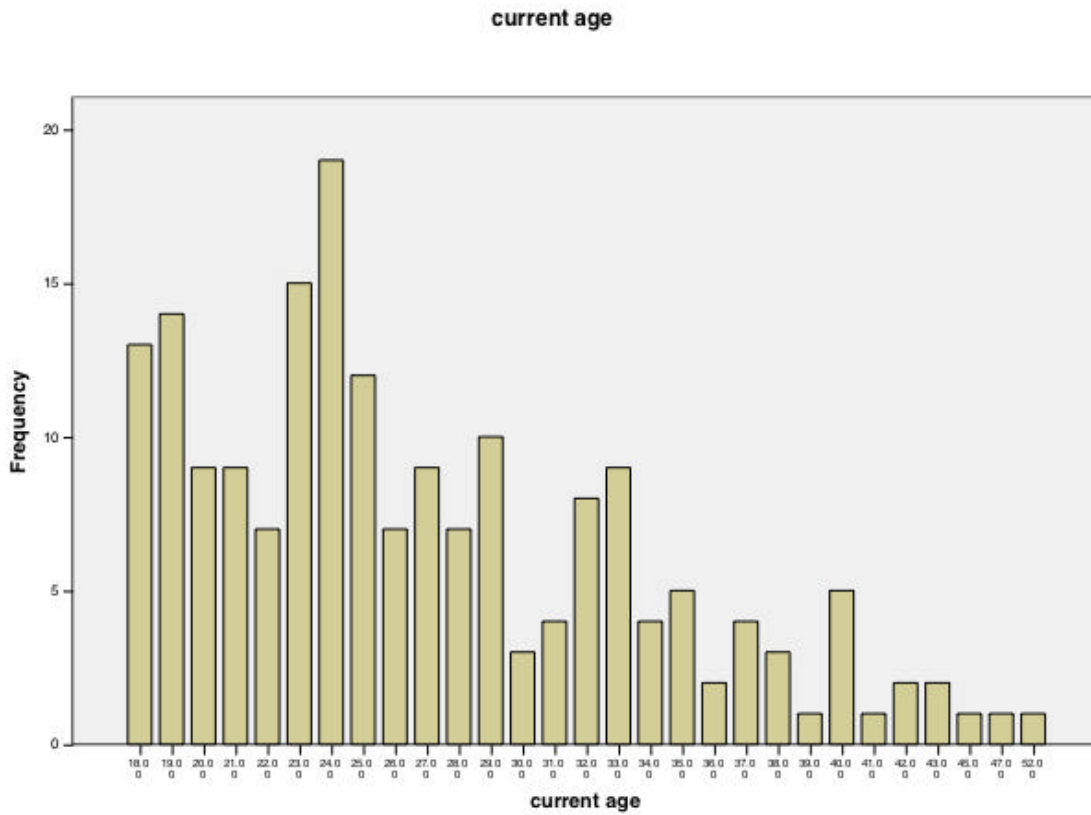
	<b>strongly disagree</b>		<b>strongly agree</b>			<b>Not applicable</b>	<b>mean</b>	<b>sd</b>	<b>n</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>				
<b>frequency</b>	3	0	1	15	117	49	4.79	.67	136
<b>%</b>	2.2	0.0	.7	11.0	86.0				

b. I am glad that I participated in the Nature Trail program.

	<b>strongly disagree</b>		<b>strongly agree</b>			<b>mean</b>	<b>sd</b>	<b>n</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>			
<b>frequency</b>	3	0	2	9	171	4.86	.58	185
<b>%</b>	1.6	0.0	1.1	4.9	92.4			

21. What is your current age?

min.	mean	med.	max	sd	n
18	26.96	25	52	6.95	187

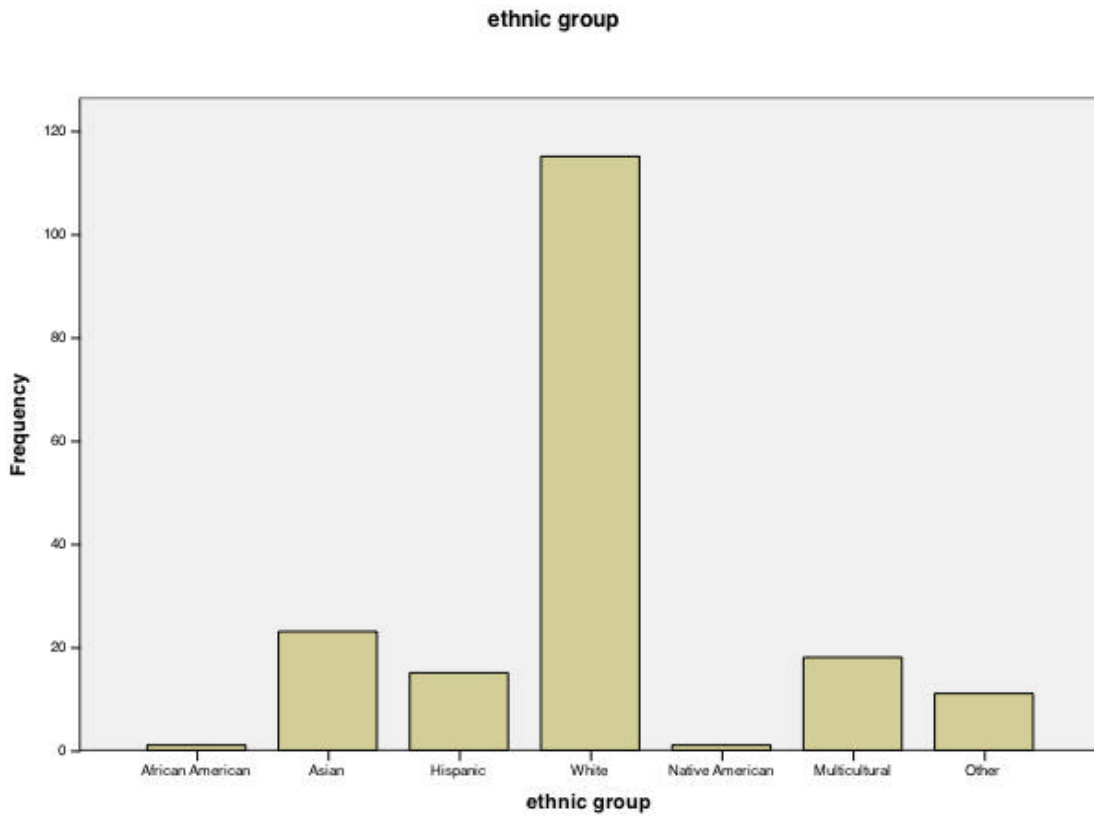


22. What is your gender?

	Male	Female	n
frequency	61	126	187
%	32.6	67.4	

23. Which ethnic group do you most identify with?

	African American	Asian	Hispanic	White	Native American	Multi-cultural	Other	<b>n</b>
<b>frequency</b>	1	23	15	115	1	18	11	184
<b>%</b>	.05	12.5	8.2	62.5	.05	9.8	6.0	



## Appendix C: Responses to Open-Ended Questions

Responses to open-ended questions 18-20 are recorded below, and categorized under major themes. The responses are verbatim, except for obvious spelling mistakes, which were corrected for ease of reading.

18. What was the most important thing you learned or accomplished In the Nature Trail program?

response category	freq.	%	n*
Instilled Animal Education/Advocacy/Protection Values	52	26.8	194
Increased Public Speaking/Communication Ability	38	19.6	
Other/Multiple Comments	37	19.1	
Personal Development	30	15.5	
Encouraged Team- work/Social/Relational Skills	26	13.4	
Promoted Interest in the Sciences/Career in Related Field	11	5.7	

\*Sum exceeds total number of participants surveyed because respondents could write more than one response.

18. What was the most important thing you learned or accomplished in the Nature Trail Program?

***Instilled Animal Advocacy/Protection Values:***

- I was able to inform people of how to not only treat these animals be there but how to help habits and animals from becoming endangered
- How to persuade people to care about and conserve animals and the environment
- Animal care and handling - not to be afraid of animals, but to be smart with them
- I learned how to work with animals and learned move about the environment
- Animals depend on us, respect animals
- Learning how to care for (wild) animals and learning a lot about them
- The importance that animals have in our society
- Animal husbandry
- How to educate people about animals
- Most importantly, the need for environmental activism!
- I gained experience working with wild animals. It helped me get into the wildlife volunteer program for the San Mateo Peninsula Humane Society.
- Confidence and respect for animals, communication/presentation skills
- How I learned about animals
- Lifelong love of Nature and animals in general
- Life is fragile, wild animals are not pets

18. What was the most important thing you learned or accomplished in the Nature Trail Program?

- A love for animals
- The proper way to handle animals
- About all of the wildlife
- Learning how to work with animals and how to deal with people i.e. public speaking
- Gained an even deeper sense of respect for animals and their habitats
- Habitat distraction. How I can help the environment
- Animal husbandry and stewardship
- Different animals; their environment and how they act
- Learning about animals and their habitats!
- Animal care and conservation
- Animal care
- Teaching public about animals and environment as well as animal handling/caring and understand behavior of animals. The Nature Trail Program gave me a great opportunity to experience animals
- The importance of the animals. We really do make a difference for them
- Teaching city children about nature and the importance of habitat health not only to wild areas but to themselves as well
- Love and understanding animals and helping care for them - making a difference
- How to handle various animals, etc. Seeing how interested young children are in how to take care of animals, and in touching things
- Developed a passion for birds
- To respect and admire wildlife while becoming confident in my public speaking skills. To this day, I have NO problems speaking in front of a crowd. I love telling people fun stories about my experiences on Nature Trail
- Endless knowledge about animals and being able to clearly and easily enrich people's lives by teaching
- To treat the animals with respect and make them feel loved
- Animal and environment conservation through education
- Introduced me to animals!
- Respect and understanding for the various animal species.
- To help general public to respect all creatures

***Increased Public Speaking Ability:***

- Public speaking for a teaching career
- I learned to improve my public speaking and I also lost some shyness
- How to speak in public
- Public speaking. Coming out of my shell and talking to strangers
- I learned how to speak to a large group
- Talk to the public
- Public speaking and confidence

18. What was the most important thing you learned or accomplished in the Nature Trail Program?

- One of the most important things that I took away from the NT program was how to interact with the public. I gained valuable speaking skills, as well as the confidence to carry myself in front of them
- Public speaking
- How to talk to large groups of people
- I overcame my shyness in speaking to people. It brought out the teacher in me!
- Gained a better skill level in public speaking and interacting with others
- I learned how to talk to people and present information. Public speaking skills and teamwork skills
- Talking to people
- Ease of speaking in public
- I learned how to speak with others and, in turn, I made lots of friends at the zoo
- Overcoming fear of public speaking
- Public speaking skills. I was so shy when I started the program!
- Teaching effectively means discussing things that are interesting to your audience
- Public speaking in front of all age groups
- Public communication, dealing with obnoxious Public; being confident when I talk to the public about animals
- Self confidence in public speaking. I am much more confident speaking in groups or on stage, or voicing my opinion because of Nature Trail. All that talking made me immune to feeling uncomfortable or self-conscious by public gaze
- The most important skill I gained by working on the Nature Trail was the ability to speak publicly without getting embarrassed or shy. Similarly, the Nature Trail affected my choice of major when I entered college
- A better understanding of public speaking and wildlife preservation

***Other/Multiple Comments:***

- There is not one most important thing. Animal handling, and husbandry skills, ability to work well with a diverse group of people, public speaking skills and a sense of responsibility/social consciousness are the most important things I learned
- The two-kingdom taxonomical system
- Handling animals, public speaking
- Public speaking, environmental conservation, how to call for animals, be part of a team
- Conservation, public speaking
- Public speaking skills, animal knowledge, social skills
- Improved my self-esteem, social skills, and environmental awareness
- Having the opportunity to work with a wide variety of animals not just mammals.
- Public speaking. Environmental advocacy
- Everything so much fun
- I learned that SCAT comes out of Animals you and me

18. What was the most important thing you learned or accomplished in the Nature Trail Program?

- Learning about animals and public speaking
- Public speaking. Apathy towards animals
- Self confidence understand how to care for animals, how to manage others, circle of life
- Learned the behaviors of ferrets. Do not feed processed food to bird of prey.
- Making friends, learning how to properly care for animals, love for animals, great overall experience, public speaking, self-confidence
- Bleach cleans everything! :)
- Responsibility, speaking and animals
- I learned that informal education is very important
- Structure
- It is just a great program. Not only for participants but for visitors
- Learned not to panic when the freezer breaks and its full of meat. Become a vegetarian
- I learned a lot about the care of animals and it was a good experience to talk to the public and educate them
- Working with animals and public speaking skills
- That I can do anything!
- How to care for lots of different animals, dealing with the public and massive amounts of animal trivia
- Team work, public speaking skills, community service and friendship
- Public speaking skills, responsibility and teamwork
- I would say overall it is impressive how this program demonstrates that teenagers can be a positive and powerful source in our community
- I learned work ethics, public speaking skills and significant knowledge of animals: the environment and more
- Experience. I actually learned that I enjoyed working and inter? With visitors more than I enjoyed working with animals, thought that too was fun. It was a rewarding experience in and of itself. But moreover, helped me to decide against becoming a vet. Now I'm in medical school without?
- How to think on my feet and react quickly in unexpected situations
- Besides gaining lifelong friends and valuable speaking skills, I learned immense amounts of information about various species of animals. (Such information stays with me until this day)
- The most important thing I learned was how to teach people and work with animals
- Public speaking, animal advocacy and proper animal care
- It is amazingly difficult to get rid of ferret perfume
- I felt very honored to be "working" at such a historical institution in S.F. I have also enjoyed keeping in touch and attending the 20<sup>th</sup> and 30<sup>th</sup> reunions. I am very happy this program has continued

18. What was the most important thing you learned or accomplished in the Nature Trail Program?

***Personal Development:***

- Gain self-esteem
- To say "I do not know"" when you do not have the answer - helps in every aspect of my life
- It made me feel confident enough to try new experiences in my life my self-esteem increased tremendously while being here
- Being organized, value of hard work and commitment, customer service, valuable tools
- How to be a good employee, how to talk to strangers
- Work ethic and responsibility
- Everything about who I am and how to translate my passion into a career
- Good work ethic and public speaking skills
- Gave me a sense of responsibility in having to be accountable to others; learned about animals and their care
- Strong sense of responsibility
- Confidence in my abilities increased my interpersonal skills
- The number of things I have learned while in the Nature Trail program are legion; however, the most important was a sense of responsibility. From the very first days of my volunteer time, I was entrusted with duties which far outstripped anything I had been asked to do before. Granted, in the grand scheme of life they seem minor, but asking a volunteer to study a large amount of information, then express that information to strangers in a public setting - this was heady stuff. And I found then, As I have throughout the rest of my life, that simply being given that trust was enough to motivate me to do my best. I can still recall much of the information I was asked to learn for Nature trail - and I use the skills I gained from my presentations everyday
- The following things I could recall learning is: Responsibility
- Work ethics and to work hard

***Encouraged Team-work Values and/or Social Skills:***

- Working together
- Became much less shy, discovered a love for teaching
- Being a family
- Working with people. Planning the hawk talk exhibit
- How to speak to people of all ages
- Giving myself confidence in communicating with others
- Overcame my shyness & teamwork
- How to make the best of friends
- I made friends I've kept for a decade
- Meeting my good friends
- 1) How to work with people of all ages and communication styles. As well as

18. What was the most important thing you learned or accomplished in the Nature Trail Program?

communicating the comfort level of working with many cultures and lifestyles here in SF. 2) Working with new animals

- I think the best thing was getting to know people I wouldn't have been exposed to otherwise...great people. Also, I learned a lot and more importantly - how to teach others - I still do that today!
- Working with others. Respecting their beliefs
- How to work with coworkers who were not at all interested in their jobs
- How to work with other people, how to manage a job
- I made new friends outside of my own
- Made new friends

***Promoted Interest in the Sciences/Career in Related Field:***

- Environmental and animal welfare human impacts direction in career/study
- That my true calling was working with animals and that zoo people are the coolest
- Improved my public speaking skills and made me realize that I want a career working with animals
- Nature trail gave me confidence, let me gain knowledge of animals and made me realize that I want to go to vet school and have a career in animals
- A head-start and experience for future career, close bond to animals and the environment
- NT gave me a foot in the door w/respect to the animal business. It gave me valuable experience caring for animals, public speaking, and relating to guests as an advocate for nature
- I learned more about the environment as well as working with animals on a personal and frequent level. It also made me think more about becoming a zoologist rather than a vet
- I learned a great deal about animal husbandry and presenting information to crowds - both things that proved valuable in my following jobs

19. Do you have a special or favorite memory to share about Nature Trail that can go into the Zoo's ARCives?

response category	freq.	%	n
Relational Anecdotes	38	19.6	94
Animal Anecdotes	30	15.5	
Other	11	5.7	

19. Do you have a special or favorite memory to share about Nature Trail that can go into the Zoo's ARCives?

***Relational Anecdotes:***

- When Kurt Knuepfel smashed a stale Cheeto in my face 10 years ago. He is yet to be forgiven
- Playing cards in the morning before trail started
- Watching Ishi catch a hummingbird! Listening to Jose say "Did you sweep the gutters and lock the cages" for the 100th time :). Love you Joe - you are the best!
- Locking Meredith inside cages
- All my friends whom I've stayed in contact with hosting Wildlife Theater shows
- Met really good people
- One of my friends licked the toad and had a great day
- Friends I've met. Working with eagles
- I fell into the aquatic turtle pond in the dark on night tour. Everyone forgot about me and I had to carry all the turtles back to the ARC by myself cold, wet and in the dark
- I loved doing the animal shows and \_\_\_ making the announcements for the show. Bored with my California voice I would talk like and Australian, British Irish or Southern accent. I also loved to be in the ARC when it was raining and listening to the different animal sounds especially the wolf pups who would howl on occasion
- Maya throwing up on me
- I have made so many friends here
- Hanging out with all my friends
- As a NT'er, I remember admiring the JZ's. I would love it when they stopped to talk to us
- One of my first days of volunteering Joe came out to the picnic benches in the morning with an axe and asked for a volunteer. I volunteered, and although it seemed a little ominous, I followed him and held a fence post while he nailed it back into the ground
- One day I was especially tired, following a long afternoon on the Nature Trail and was on my way to the exit, when a small girl who had visited the trail that morning pointed me out to her father and called out, "look, daddy! It's the hedgehog lady!" It made my day
- The Nature Trail Olympics and graduation where we played games and had relay races and ate a lot of food. And working on night tours.

19. Do you have a special or favorite memory to share about Nature Trail that can go into the Zoo's ARCives?

- The event I remember the most was when the old Arc was torn down and we moved into the new Arc. It was so much bigger and new! I loved it
- So many, one that stands out was that Joe Fitting (Director of the Arc) told me one day out on trail when it was cold misting rain, no one was around, he told me "Jen even though its not taught out here right now. Perseverance pays off, you're a good kid, hang in there, animals like you" I knew then I truly belonged with the Arc, and I'm still there volunteering, great people, great animals, great cause.
- Morning before Nature Trail. Being with friends
- I met a lot of great people during my time at the Zoo. Working with the public was one of my most gratifying achievements
- The people I met were the best memory
- I loved working the Nature Trail and am thankful to my mom who signed me up at age 12 And stayed and worked at the Zoo until 18, many favorite memories
- There is no one specific memory, but I will never forget the faces of awe on both children and adults as they got to see, touch, and learn about animals such as opossums, chinchillas, and ferrets. It felt so great to be able to provide such an experience to the visitors of the Nature Trail
- I remember one day a lady called and said there was a pelican laying in the road close to the zoo and me and the old bird intern went to get it, it was the closest I've been to a truly wild animal. Definitely one of the coolest experiences in my life
- There are so many, feeling the alligator's tail slapping my side as I carried him. Dealing with a skunk under the deck at Aquatic Turtles. Wood-chipping the ferret run. Building the rabbit cages. Helping with the dissection of an elephant. Wearing the "Gumby" suit during my summer as Nature Trail Intern. Best of all, though, are my memories of lunches spent out in the bird yard, getting to know the rest of the volunteers and staff. The intense personal interactions and bonding which occurred are my fondest memory of Nature Trail

***Animal Anecdotes:***

- I was working with our alligator and aquatic turtles exhibit (mound hill) when (I believe the alligator name was Grendel) decided she needed to leave I was the only one at the exhibit and she needed to leave. I was the only one at the exhibit and she begins to walk out of the pool and into the bushes. I was able to grab onto her tail and tried helplessly to her from leaving. I screamed for others to get Joe and when I did that she turned and opened wide and kissed. Joe came flying up the stairs and saved the day. That was a hair raising but fun experience
- Ferret station, snakes
- I remember my favorite tortoise was Bump'n'run. He'd move faster than anything else nearby and pausing, reflecting and going full speed toward the next obstacle
- Working with birds. Learning bird info
- When fancy pants (speech owl first came to the arc, and flies would lay eggs in her mouth. Sad, but kinda funny

19. Do you have a special or favorite memory to share about Nature Trail that can go into the Zoo's ARCives?

- All the times at the crow station when I would talk and talk and talk about Jewel. The crow only to turn around and see Jewel hanging prong? And upside down by her tethers. Always embarrassing
- How we obtained Francas Petrol
- "Making friends with "see see" cockatoo handling the Camens
- I remember hunting for the missing box turtle for hours 2-3+ only for it to be found in it's cage inside the ARC
- Fighting to get the spot with the ferrets
- Taking King Richard to Romper Room along with Rufus the Bob Cat. Working with the Orangutans in the nursery
- The first time I got to feed "Jewel" the Common Crow
- Building the Raptor program. Getting marching orders from Joe. Birthday parties in the ARC. Making friends that I still have today.
- Animals charisma
- Being in the ferret bin. Reno too and Tahoe also snakes - spending time with them
- I will never forget the first time I was pooped on. :)
- Too many. The maggot (football games \_\_\_) feeding pepperoni and sausage to wretched? No wonder he liked me the best! Having Uri come to me when I called when he got loose
- Getting rid of the rat problem in the original ARC in 78-79? Getting my first job in concessions which was the start of my working career at age 14
- Sunning or walking Pugsbe? The Savana Monitor. When he died, I was crushed
- Ferret Bueller and Cuddles
- The Nature Trail made me look forward to the weekends! Also, I had a special relationship with the ferret."
- \_\_\_ holding small alligators
- When displaying a red eared pond slider, standing in the middle of the pond on the hill, I slipped and soaked all of my clothes. This would have been ok, but it was zoo night and I signed up for it. (All the other turtles and the Alligator were fine)So Jessey was very understanding green jump suit while my clothes were washed
- Always having to bring the Burmese out by myself during Nature Theater. It usually entailed getting constricted half to death
- Watching a friend working with me on the rabbit station while he was voraciously devouring meal worm chocolate chip cookies (it was insect zoo cooking demo day)
- One time the Wallaby got loose and the ARC interns had to chase it around to catch it. It was hilarious
- Taking care of the Chin-Chila. They were fun to take care of cause they were soft. The faces adults and children gave when they walked the snake or porcupine. The Nature Trail book that provided info
- Benji is the best, But, I spent a new years eve @ the hospital w/Razor the

19. Do you have a special or favorite memory to share about Nature Trail that can go into the Zoo's ARCives?

Raccoon, while they were trying to blast kidney stones w/a laser so he could pass them - also giving Razor baths when he was in failing health

- I still tell people about chinchilla coats. It takes hundreds or thousands to make one fur coat because they are just one square inch from the very softest part, the bib of the neck. I also have found myself petting animals with just two fingers
- I remember a particularly interesting show one summer where Apollo nearly ate an alligator clip attached to a bit of Rabbit, and Toulouse flew onto the stage so I had to go onstage and hold him while Jessie finished talking and trying to keep a straight face as he twisted blood blisters into my arm
- Somehow ending up with drooly, cataract eyed, smelly poo manufacturing opossums for about 5 weeks straight before forcing my beyond-insecure self to speak up :)
- I was so excited the first time I was assigned to the ferrets and when I took her, Fiona, out of the care - she pooped on my hand. I flicked it into the bushes (meaning the poop of course) so fast it would make your head spin!
- There are so many! There was an appreciation dinner in the Lion house for ARC interns. Getting trained on the alligator was another big accomplishment I was proud of. I do remember the ferrets sleeping in my sweatshirt pouch on cold S.F. days
- Oh yes. I was assigned to take care of the alligator and a skunk came by. I was so scared that it would spray me so I called a Junior Zoologist
- I remember the box turtles having sex all the time. That was awkward to explain to the public!
- I remember on one occasion, I was sitting at "Big Bird Station" (that used to be by the old entrance) with Gwenevere the red tailed hawk, and some zoo visitor came up to me and told me that he'd heard me talk about environmental conservation a few weeks ago, and was now a vegetarian
- All my memories are special!

***Other***

- When I worked with "The Mujeres Unidas y Activas" immigrant rights group. For me, it was a milestone in my life
- Feel special when caring/holding animals for public education
- Night tours were great!
- I will never forget feeding the rapture and reptiles their mice! I loved working with King Richard
- No
- Freezing in heavy fog in summer!
- So many great memories
- No
- Fun! Fun! Fun! All of it
- Working summer 2005 as NT Intern

19. Do you have a special or favorite memory to share about Nature Trail that can go into the Zoo's ARCives?

- Summer 2005!
- Way too many
- No
- I just loved working with all the animals and making new friends
- The people, the animals
- Too many to list!
- They were all great!
- Everyday was special
- There were too many
- Nope
- No too many to choose from
- Coming back to visit the new C2 in the lat couple years and seeing birds that I used to work with when I was volunteering (Toulouse, for example)
- My year on NT went by so quickly (and it was such a long time ago) that I'm afraid that I can't really think of anything in particular
- My family still teases me when I try explain the day. They say, "first I had, second I had, third I had." Every day I left the zoo it would always be the same sentence but different animals, funny!

20. What suggestions do you have for improving the Nature Trail Program?

<b>response category</b>	<b>freq.</b>	<b>%</b>	<b>n</b>
Other	38	42.7	89
Nature Trail Volunteer Conduct	14	15.7	
Structure/Organization of Physical Nature Trail	11	12.4	
Structure/Organization of Nature Trail Program	7	7.9	
Nature Trail Education/Curriculum/Activities	5	5.6	
Applicant Selection	4	4.5	
Program Expansion	3	3.4	
Nature Trail Uniforms	3	3.4	
Marketing	2	2.2	
Staff Leadership/Conduct	2	2.2	

20. What suggestions do you have for improving the Nature Trail program?

**Other:**

- None
- It has changed so much - I don't know
- The improvements that have been made are the best. The people that work here are the brightest and most aware of our world and everything in it.
- Keep up the good work
- None at all! - Or, maybe let adults be nature frontiers
- None
- Its perfect
- Joe, you have done a fabulous job
- Great job - I love the new building!
- It's a good program, not much change needed
- None
- It's great as it is!
- None
- Keep it going!
- Keep doing it!
- None
- None! :)
- NOTHING IT'S AWESOME!
- It's great!
- You doing fine
- Keep up the good work
- Nothing now. ARC and Zoo looks better than ever
- Don't know
- None, its great as it is
- None! It's great!

20. What suggestions do you have for improving the Nature Trail program?

- Nothing!
- None
- You are doing a great job
- None. It was a great experience for me
- Continue to offer the Koret Scholarship or even expand it. I would not have been able to participate w/o it
- None, give - Joe Jessie, and Tracy all raises, they deserve them!"
- The reunion event. I would like to recommend that they provide nametags for people during a reunion event. Even if we just write our first names on a sticker. It would be so helpful!
- Keep up the great work!
- Since the Nature Trail program has instilled such strong positive impression in myself and my friends, it would be nice to keep us "ex-nature trailers" in the loop about the current programs. Also, the Nature Trail network of past and present volunteers could be used as a valuable contact database."
- It's fine the way it is!
- Not really - I think it was great when I started and it seems to have only gotten better as I've been here :)
- I think its great the way it is mmm maybe have a parrot in display
- I have not been back in a long time
- Also, equally important - Nature Trail gave me and incredible sense of self-confidence and self-worth as a teenager. How cool to be handling wild animals! Nature Trail provides all the action, adventure, social opportunities, learning that a teenager craves

***Nature Trail Volunteer Conduct:***

- Have volunteers "volunteer" info about the animals (like we used to do) instead of just sitting there and waiting for someone to ask a question
- Encourage them to stress conversation with public aside from just animal facts
- The volunteers should learn their stuff! No one could answer any of the questions
- The volunteers don't eagerly speak about the animals I think they should share their knowledge of the animals without having to be asked
- Encourage NT's to talk more and be more enthusiastic
- Current NT's seem less friendly, knowledgeable and outgoing
- Make the volunteers interact more with the public
- Have volunteers "volunteer" info about the animals (like we used to do) instead of just sitting there and waiting for someone to ask a question
- Today the youth on the trail seemed distracted or bored. I understand with a big day but I wonder if they know how they come off when not on task
- Encourage current participants to engage and talk to the public more
- What bothered me 20 years ago is what bothers me today- some of the kids just don't take it seriously, don't interact appropriately with the public, and seem to take it as a joke. I think there should be explicit training and expectations on how

20. What suggestions do you have for improving the Nature Trail program?

to greet and talk to the public about expectations on how to greet and talk to the public about the animals. I would be happy to volunteer for this task!

- Recently when I've walked the Nature Trail, the kids have not been speaking to the public. Maybe more practice public speaking or making sure they learn the info in their binders so they can actually teach people something
- Instilling a sense of pride in current staff they represent the Zoo at all times. I have been to the zoo several times and am shocked at the fowl mouths and bad attitudes of some of the Nature Trail docents walking about. This shouldn't be tolerated since there are another not able to enter the program

***Structure/Organization of Physical Nature Trail:***

- More animals less of the skill exhibit
- By getting more different kinds of animals
- Move back to a pony barn
- Continue expanding your animals line on the trail
- Larger enclosures. Make sure Nature trailers know their stuff!
- Bring back aquatic hill!
- More interesting layout?, more diversity of species
- More species of animals!
- Getting some more exotic animals to hold or different animals
- Nature trail is perfect the way it is (or do something with the old aquatic station)
- Try to "jazz up" skull's station and have a 2-3lb weight for owls station to show exactly how weary Queen Richard is
- Complete elimination of "skull station"
- Fix the logs in place and bring back old aquatic if possible which I know isn't

***Structure/Organization of Nature Trail Program:***

- Longer hours
- It would be nice if you could have disabled kids be a part of a station or two with a disabled volunteer. Example a physically disabled child who can talk about the animal while the disabled volunteer holds the animal There are some very able Downe's kids who could do it all. It would be a very specialized position, not just anyone
- Letting older people who used to volunteer come back like me. I would really love to come back
- Perhaps making it a year round program because its only 2x a week during the summer. I remember that at the end of the summer I had wished it was longer
- More free lunch options, otherwise nothing
- Moving participants up as time goes on. Don't leave them doing the same thing every year
- Part of the reason I stopped volunteering as a J.Z. was because it conflicted with high school study time. However, I also quit because I didn't want to wait 5 yrs before being allowed to handle some of the larger animals (raptors). I think while

20. What suggestions do you have for improving the Nature Trail program?

age obviously plays into certain levels of maturity, the merit program should be based more on the individual (regardless of their time served)

***Nature Trail Education/Curriculum/Activities:***

- Quiz those trailers - they need to know their info
- do more team building activities within nature trail volunteers
- Ongoing education and training for all volunteers to make sure all info is consistent
- More prep before actual volunteering. I was freaked out the first day of NT
- Come up with activities for the minds of Nature Trailers on slow days. They can look so bored when there's no one about
- Assign projects to volunteers to maybe present something they learn on their own in small groups. Encouraging research is an excellent way of harnessing existing interest in young adults while supporting life/work skills in a safe environment. Also, if possible, further support team work/integration of volunteers. I remember it being a bit cliquy and therefore difficult to meet and hang out with others

***Application Selection:***

- Singling out the kids who truly want to be there for the animals. Not the kids who don't have anything else to do during the summer and just doing it for service hours
- Making sure kids are serious about the program. Tell them to do the best. Want perfection
- Improve the quality of volunteers. I know there are external demands which won't allow some measures, but seriously. Granted, I was motivated and dedicated to the job when I was working at the zoo, and the volunteers today are likely to be so over-scheduled that Nature Trail is just one of the many activities they engage in. And those volunteers have a place in the program. But preference should be given to those volunteers who are able to devote the time and effort to the program it deserves. Waving the Trail both during the reunion and the Sunday before, I was dismayed to see that there was no effort on the part of the volunteers to engage people walking though, let alone present a full profile of the station they had been entrusted with. A thorough grounding in presentation skills will not only help the volunteers educate the public, but will be a boon to them for the rest of their lives. I would like to congratulate the Zoo and all of the ARC staff for 30 great years. The five plus years I spent working at the Zoo during the summer and during the year are some of my most cherished. During a time of social upheaval and uncertainties (aka high school), the Nature Trail program provided a safe haven for expression and learning
- Screen candidates more closely to distinguish ones from those who are just there to be baby-sat for the summer. Also inept/dangerous Nature Trailers should not be promoted to the JZ level

20. What suggestions do you have for improving the Nature Trail program?

***Program Expansion:***

- Besides bringing back those chic blue sweatshirts? I'd suggest finding a way to open up the program to more people
- Make it bigger!
- More stations to more people could join. And more free stuff

***Nature Trail Uniforms:***

- Warmer uniforms because we froze out there all summer, but that was 1997, so maybe they've changed since then
- I remember having to spend a lot of money, sweatshirts, patches, books etc. Trying to cut back on costs
- Allow volunteers to wear jackets - it gets cold out there! Rotate stations a little more frequently. Staff should not embarrass volunteers in front of the public if they do something wrong

***Marketing:***

- Make sure the word gets out about this opportunity
- Advertise it more the public. Get elementary, Junior High School and High School to visit Zoo, (especially the trail) more often

***Staff Leadership/Conduct:***

- Give constant reinforcement and acknowledgement to the volunteers. I likely would have stayed another year had my hard-work been recognized
- When I needed to leave early for one reason or another or just couldn't come in the staff used to make me feel really guilty. I didn't understand I was like HELLO, I volunteer here and do have a life. Sometimes shit happens don't get angry with me
- I sometimes felt unappreciated; it would be beneficial to do a pizza lunch or cookie snack - something once a month to make them feel recognized. After all it is free labor whether you want to view it that way or not

## Appendix D: Results of Select Multivariate Analyses

We conducted a variety of multivariate analyses to test the relationships between participation in the Nature Trail program and long-term outcomes. Highlights of these analyses are included in the body of the report. On the following pages are the statistical outputs of select, relevant analyses.

**Highest program served (Nature Trail, Junior Zoologist, or ARC Intern) vs. Volunteer frequency (question 7), volunteering with animal related organizations (question 8a), volunteering with environmental organizations (question 8b), volunteering with youth related organizations (question 8c), Highest educational degree earned (question 10), Employment related to animals or natural sciences (question 13)**

**Volunteer frequency (q7)\* highest program served**

Crosstab

			highest program served			Total
			Nature Trail	Jr Zoologist	ARC intern	
recoded q7 volunteer frequency	0-6 times/year	Count	38	32	31	101
		Expected Count	36.4	34.5	30.1	101.0
	7-12 times/year	Count	6	5	5	16
		Expected Count	5.8	5.5	4.8	16.0
	more than 12 times/year	Count	14	18	12	44
		Expected Count	15.9	15.0	13.1	44.0
Total	Count	58	55	48	161	
	Expected Count	58.0	55.0	48.0	161.0	

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.238 <sup>a</sup>	4	.872
Likelihood Ratio	1.218	4	.875
Linear-by-Linear Association	.026	1	.872
N of Valid Cases	161		

<sup>a</sup>. 1 cells (11.1%) have expected count less than 5. The minimum expected count is 4.77.

**Currently volunteer (q8a)- animal related \* highest program served**

**Crosstab**

		highest program served			Total	
		Nature Trail	Jr Zoologist	ARC intern		
currently volunteer- animal related	no	Count	49	40	29	118
		Expected Count	43.7	39.6	34.7	118.0
	yes	Count	14	17	21	52
		Expected Count	19.3	17.4	15.3	52.0
Total	Count	63	57	50	170	
	Expected Count	63.0	57.0	50.0	170.0	

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.159 <sup>a</sup>	2	.076
Likelihood Ratio	5.120	2	.077
Linear-by-Linear Association	5.037	1	.025
N of Valid Cases	170		

<sup>a</sup>. 0 cells (.0%) have expected count less than 5. The minimum expected count is 15.29.

**Currently volunteer- environmental (q8b) \* highest program served**

**Crosstab**

			highest program served			Total
			Nature Trail	Jr Zoologist	ARC intern	
currently volunteer- environmental	no	Count	49	46	34	129
		Expected Count	47.3	42.0	39.7	129.0
	yes	Count	13	9	18	40
		Expected Count	14.7	13.0	12.3	40.0
Total	Count	62	55	52	169	
	Expected Count	62.0	55.0	52.0	169.0	

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.324 <sup>a</sup>	2	.070
Likelihood Ratio	5.181	2	.075
Linear-by-Linear Association	2.633	1	.105
N of Valid Cases	169		

<sup>a</sup>. 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.31.

**Currently volunteer- youth (q8c) \* highest program served**

**Crosstab**

			highest program served			Total
			Nature Trail	Jr Zoologist	ARC intern	
currently volunteer- youth	no	Count	38	35	31	104
		Expected Count	38.9	34.7	30.4	104.0
	yes	Count	26	22	19	67
		Expected Count	25.1	22.3	19.6	67.0
Total	Count	64	57	50	171	
	Expected Count	64.0	57.0	50.0	171.0	

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.093 <sup>a</sup>	2	.954
Likelihood Ratio	.093	2	.954
Linear-by-Linear Association	.085	1	.771
N of Valid Cases	171		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 19.59.

## Highest degree earned \* highest program served

Crosstab

			highest program served			Total
			Nature Trail	Jr Zoologist	ARC intern	
recoded highest degree earned	none	Count	18	18	9	45
		Expected Count	16.1	15.1	13.9	45.0
	AA	Count	10	23	14	47
		Expected Count	16.8	15.8	14.5	47.0
	BA or higher	Count	38	21	34	93
		Expected Count	33.2	31.2	28.7	93.0
Total	Count	66	62	57	185	
	Expected Count	66.0	62.0	57.0	185.0	

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.606 <sup>a</sup>	4	.009
Likelihood Ratio	14.202	4	.007
Linear-by-Linear Association	.643	1	.422
N of Valid Cases	185		

<sup>a</sup>. 0 cells (.0%) have expected count less than 5. The minimum expected count is 13.86.

**Have any of the positions been related to animals or natural sciences (q13) \* highest program served**

**Crosstab**

		highest program served			Total	
		Nature Trail	Ir Zoologist	ARC intern		
Have any of the positions been related to animals or natural sciences	no	Count	41	30	11	82
		Expected Count	29.5	26.3	26.3	82.0
	yes	Count	23	27	45	95
		Expected Count	34.2	30.4	30.4	95.0
	98.00	Count	0	0	1	1
		Expected Count	.4	.3	.3	1.0
Total	Count	64	57	57	178	
	Expected Count	64.0	57.0	57.0	178.0	

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	27.037 <sup>a</sup>	4	.000
Likelihood Ratio	28.770	4	.000
Linear-by-Linear Association	2.515	1	.113
N of Valid Cases	178		

<sup>a</sup>. 3 cells (33.3%) have expected count less than 5. The minimum expected count is .32.

**Total years served in all three Nature Trail programs v. index scores for animal and environmental impacts (question 5), environmentalism (question 6), education (question 11), career (question 14), life skills development (question 16); impact on volunteering later in life (question 9); overall feelings about participation (question 17)**

**Pearson's correlation coefficients**

**Correlations**

		total years served in programs	index score result of animal/environmental impacts	index score-environmentalism	index score-impact on education	index score-impact on career	index score-soft skills	Nature Trail inspired me to volunteer later in life	I would encourage my child to participate in the Nature Trail	I am glad that I participated in the Nature Trail program
total years served in programs	Pearson Correlation	1	.081	.102	.318	.271	.311	.218	.143	.194
	Sig. (2-tailed)		.278	.174	.000	.000	.000	.003	.097	.008
	N	191	182	179	179	183	184	188	136	185
index score- result of animal/environmental results	Pearson Correlation	.081	1	.219	.418	.224	.482	.428	.237	.256
	Sig. (2-tailed)	.278		.004	.000	.003	.000	.000	.006	.001
	N	182	182	173	174	178	178	182	133	180
index score-environmentalism	Pearson Correlation	.102	.219	1	.377	.140	.231	.285	-.015	.060
	Sig. (2-tailed)	.174	.004		.000	.065	.002	.000	.863	.431
	N	179	173	179	172	175	175	179	129	176
index score- impact on education	Pearson Correlation	.318	.418	.377	1	.369	.538	.503	.178	.199
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.044	.008
	N	179	174	172	179	175	175	179	128	177
index score- impact on career	Pearson Correlation	.271	.224	.140	.369	1	.248	.326	.186	.149
	Sig. (2-tailed)	.000	.003	.065	.000		.001	.000	.039	.045
	N	183	178	175	175	183	180	183	132	182
index score- soft skills	Pearson Correlation	.311	.482	.231	.538	.248	1	.523	.429	.448
	Sig. (2-tailed)	.000	.000	.002	.000	.001		.000	.000	.000
	N	184	178	175	175	180	184	184	133	182
Nature Trail inspired me to volunteer later in life	Pearson Correlation	.218	.428	.285	.503	.326	.523	1	.212	.241
	Sig. (2-tailed)	.003	.000	.000	.000	.000	.000		.013	.001
	N	188	182	179	179	183	184	188	136	185
I would encourage my child to participate in the Nature Trail	Pearson Correlation	.143	.237	-.015	.178	.186	.429	.212	1	.919
	Sig. (2-tailed)	.097	.006	.863	.044	.039	.000	.013		.000
	N	136	133	129	128	132	133	136	136	135
I am glad that I participated in the Nature Trail program	Pearson Correlation	.194	.256	.060	.199	.149	.448	.241	.919	1
	Sig. (2-tailed)	.008	.001	.431	.008	.045	.000	.001	.000	
	N	185	180	176	177	182	182	185	135	185

\*\*Correlation is significant at the 0.01 level (2-tailed).

\*Correlation is significant at the 0.05 level (2-tailed).

**Highest program served (Nature Trail, Junior Zoologist, or ARC Intern) v. index scores for animal and environmental impacts (question 5), environmentalism (question 6), education (question 11), career (question 14), and life skills development (question 16**

**Oneway ANOVA**

**ANOVA**

		Sum of Squares	df	Mean Square	F	Sig.
index score- result of animal/environ results	Between Groups	3.178	2	1.589	2.734	.068
	Within Groups	104.056	179	.581		
	Total	107.235	181			
index score-environmentalism	Between Groups	1.094	2	.547	1.051	.352
	Within Groups	91.624	176	.521		
	Total	92.718	178			
index score- impact on education	Between Groups	20.956	2	10.478	9.919	.000
	Within Groups	185.913	176	1.056		
	Total	206.869	178			
index score- impact on career	Between Groups	64.598	2	32.299	7.943	.000
	Within Groups	731.931	180	4.066		
	Total	796.529	182			
index score- soft skills	Between Groups	13.562	2	6.781	16.902	.000
	Within Groups	72.616	181	.401		
	Total	86.178	183			

**Multiple Comparisons**

LSD

Dependent Variable	(I) highest program served	(J) highest program served	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
index score- result of animal/environ results	Nature Trail	Jr Zoologist	-.11172	.13485	.408	-.3778	.1544
		ARC intern	-.32464 *	.13990	.021	-.6007	-.0486
	Jr Zoologist	Nature Trail	.11172	.13485	.408	-.1544	.3778
		ARC intern	-.21291	.14192	.135	-.4930	.0671
	ARC intern	Nature Trail	.32464 *	.13990	.021	.0486	.6007
		Jr Zoologist	.21291	.14192	.135	-.0671	.4930
index score-environmentalism	Nature Trail	Jr Zoologist	-.11944	.12966	.358	-.3753	.1364
		ARC intern	-.18864	.13266	.157	-.4505	.0732
	Jr Zoologist	Nature Trail	.11944	.12966	.358	-.1364	.3753
		ARC intern	-.06919	.13469	.608	-.3350	.1966
	ARC intern	Nature Trail	.18864	.13266	.157	-.0732	.4505
		Jr Zoologist	.06919	.13469	.608	-.1966	.3350
index score- impact on education	Nature Trail	Jr Zoologist	-.52938 *	.18386	.004	-.8922	-.1665
		ARC intern	-.83135 *	.19060	.000	-1.2075	-.4552
	Jr Zoologist	Nature Trail	.52938 *	.18386	.004	.1665	.8922
		ARC intern	-.30197	.19131	.116	-.6795	.0756
	ARC intern	Nature Trail	.83135 *	.19060	.000	.4552	1.2075
		Jr Zoologist	.30197	.19131	.116	-.0756	.6795
index score- impact on career	Nature Trail	Jr Zoologist	-1.2401 *	.35664	.001	-1.9438	-.5364
		ARC intern	-1.2341 *	.36816	.001	-1.9606	-.5076
	Jr Zoologist	Nature Trail	1.24010 *	.35664	.001	.5364	1.9438
		ARC intern	.00601	.37352	.987	-.7310	.7431
	ARC intern	Nature Trail	1.23409 *	.36816	.001	.5076	1.9606
		Jr Zoologist	-.00601	.37352	.987	-.7431	.7310
index score- soft skills	Nature Trail	Jr Zoologist	-.52426 *	.11198	.000	-.7452	-.3033
		ARC intern	-.60792 *	.11548	.000	-.8358	-.3801
	Jr Zoologist	Nature Trail	.52426 *	.11198	.000	.3033	.7452
		ARC intern	-.08366	.11633	.473	-.3132	.1459
	ARC intern	Nature Trail	.60792 *	.11548	.000	.3801	.8358
		Jr Zoologist	.08366	.11633	.473	-.1459	.3132

\*. The mean difference is significant at the .05 level.

**Highest program served (Nature Trail, Junior Zoologist, or ARC Intern) v. overall feelings about participation (question 17)**

**Oneway ANOVA**

**ANOVA**

		Sum of Squares	df	Mean Square	F	Sig.
I would encourage my child to participate in the Nature Trail	Between Groups	.211	2	.105	.231	.794
	Within Groups	60.605	133	.456		
	Total	60.816	135			
I am glad that I participated in the Nature Trail program	Between Groups	1.642	2	.821	2.492	.086
	Within Groups	59.979	182	.330		
	Total	61.622	184			

**Multiple Comparisons**

**LSD**

Dependent Variable	(I) highest program served	(J) highest program served	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
I would encourage my child to participate in the Nature Trail	Nature Trail	Jr Zoologist	-.09665	.14240	.498	-.3783	.1850
		ARC intern	-.04524	.13741	.742	-.3170	.2266
	Jr Zoologist	Nature Trail	.09665	.14240	.498	-.1850	.3783
		ARC intern	.05141	.15030	.733	-.2459	.3487
	ARC intern	Nature Trail	.04524	.13741	.742	-.2266	.3170
		Jr Zoologist	-.05141	.15030	.733	-.3487	.2459
I am glad that I participated in the Nature Trail program	Nature Trail	Jr Zoologist	-.22147 *	.10116	.030	-.4211	-.0219
		ARC intern	-.14659	.10394	.160	-.3517	.0585
	Jr Zoologist	Nature Trail	.22147 *	.10116	.030	.0219	.4211
		ARC intern	.07488	.10583	.480	-.1339	.2837
	ARC intern	Nature Trail	.14659	.10394	.160	-.0585	.3517
		Jr Zoologist	-.07488	.10583	.480	-.2837	.1339

\*. The mean difference is significant at the .05 level.

**Total years served in all three Nature Trail programs v. volunteer frequency (question 7) and highest degree earned (question 10)**

**Oneway ANOVA**

**ANOVA**

total years served in 3 programs

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	39.275	3	13.092	2.196	.091
Within Groups	953.836	160	5.961		
Total	993.111	163			

**Multiple Comparisons**

Dependent Variable: total years served in 3 programs

LSD

(I) How often do you volunteer	(J) How often do you volunteer	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
never	1 to 6 times per year	-.68564	1.43045	.632	-3.5106	2.1394
	7 to 12 times per year	-.95313	1.53615	.536	-3.9869	2.0806
	more than 12 times per year	-1.7727	1.45693	.225	-4.6500	1.1046
1 to 6 times per year	never	.68564	1.43045	.632	-2.1394	3.5106
	7 to 12 times per year	-.26748	.65698	.684	-1.5649	1.0300
	more than 12 times per year	-1.0871 *	.44104	.015	-1.9581	-.2161
7 to 12 times per year	never	.95313	1.53615	.536	-2.0806	3.9869
	1 to 6 times per year	.26748	.65698	.684	-1.0300	1.5649
	more than 12 times per year	-.81960	.71280	.252	-2.2273	.5881
more than 12 times per year	never	1.77273	1.45693	.225	-1.1046	4.6500
	1 to 6 times per year	1.08708 *	.44104	.015	.2161	1.9581
	7 to 12 times per year	.81960	.71280	.252	-.5881	2.2273

\*. The mean difference is significant at the .05 level.

**ANOVA**

total years served in 3 programs

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	40.917	4	10.229	1.753	.140
Within Groups	1050.04	180	5.834		
Total	1090.96	184			

**Multiple Comparisons**

Dependent Variable: total years served in 3 programs

LSD

(I) highest degree earned	(J) highest degree earned	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
none	AA	-.34444	.84439	.684	-2.0106	1.3217
	BA/BS	.04192	.45321	.926	-.8524	.9362
	MA/MS	1.06181	.70302	.133	-.3254	2.4490
	pending BA/BS	-.77688	.53600	.149	-1.8345	.2808
AA	none	.34444	.84439	.684	-1.3217	2.0106
	BA/BS	.38636	.81186	.635	-1.2156	1.9884
	MA/MS	1.40625	.97363	.150	-.5149	3.3274
	pending BA/BS	-.43243	.86083	.616	-2.1310	1.2662
BA/BS	none	-.04192	.45321	.926	-.9362	.8524
	AA	-.38636	.81186	.635	-1.9884	1.2156
	MA/MS	1.01989	.66360	.126	-.2895	2.3293
	pending BA/BS	-.81880	.48314	.092	-1.7721	.1346
MA/MS	none	-1.0618	.70302	.133	-2.4490	.3254
	AA	-1.4063	.97363	.150	-3.3274	.5149
	BA/BS	-1.0199	.66360	.126	-2.3293	.2895
	pending BA/BS	-1.8387 *	.72268	.012	-3.2647	-.4127
pending BA/BS	none	.77688	.53600	.149	-.2808	1.8345
	AA	.43243	.86083	.616	-1.2662	2.1310
	BA/BS	.81880	.48314	.092	-.1346	1.7721
	MA/MS	1.83868 *	.72268	.012	.4127	3.2647

\*. The mean difference is significant at the .05 level.

**Total years served in all three Nature Trail programs v. high school diploma (question 10)**

**Independent samples t-test**

**Group Statistics**

high school diploma		N	Mean	Std. Deviation	Std. Error Mean
total years served in 3 programs	no	13	2.8846	2.50128	.69373
	yes	175	3.9543	2.43597	.18414

**Independent Samples Test**

		Levene's Test for Equality of Variance		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
total years served in 3 programs	Equal variances assumed	.080	.777	-1.525	186	.129	-1.06967	.70149	-2.4536	.31423
	Equal variances not assumed			-1.490	13.746	.159	-1.06967	.71775	-2.6118	.47243

**Total years served in all three Nature Trail programs v. employment related to animals or natural science (question 13)**

**Independent samples t-test**

**Group Statistics**

Have any of the positions been		N	Mean	Std. Deviation	Std. Error Mean
total years served in 3 programs	no	80	3.1375	1.94216	.21714
	yes	95	4.5868	2.66896	.27383

**Independent Samples Test**

		Levene's Test for Equality of Variance		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
total years served in 3 programs	Equal variances assumed	13.574	.000	-4.039	173	.000	-1.44934	.35887	-2.1577	-.74102
	Equal variances not assumed			-4.147	169.594	.000	-1.44934	.34947	-2.1392	-.75946

**Total years served in all three Nature Trail programs v. volunteerism with animal, environmental, and youth organizations (question 8)**

**Independent samples t-test**

**Group Statistics**

	currently volunteer- animal related	N	Mean	Std. Deviation	Std. Error Mean
total years served in 3 programs	no	118	3.7097	2.39724	.22068
	yes	52	4.3990	2.33067	.32321

**Independent Samples Test**

		Levene's Test for Equality of Variance		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
total years served in 3 programs	Equal variances assumed	.001	.981	-1.742	168	.083	-.68929	.39569	-1.4705	.09187
	Equal variances not assumed			-1.761	100.150	.081	-.68929	.39136	-1.4657	.08714

**Group Statistics**

	currently volunteer- environmental	N	Mean	Std. Deviation	Std. Error Mean
total years served in 3 programs	no	129	3.8295	2.48373	.21868
	yes	40	4.4625	2.10429	.33272

**Independent Samples Test**

		Levene's Test for Equality of Variance		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
total years served in 3 programs	Equal variances assumed	2.132	.146	-1.457	167	.147	-.63304	.43443	-1.4907	.22464
	Equal variances not assumed			-1.590	75.670	.116	-.63304	.39815	-1.4261	.15999

**Group Statistics**

	currently volunteer- youth	N	Mean	Std. Deviation	Std. Error Mean
total years served in 3 programs	no	104	3.8966	2.50718	.24585
	yes	66	3.7083	2.32113	.28571

**Independent Samples Test**

		Levene's Test for Equality of Variance		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
total years served in 3 programs	Equal variances assumed	.656	.419	.491	168	.624	.18830	.38350	-.56881	.94541
	Equal variances not assumed			.500	146.281	.618	.18830	.37693	-.55662	.93322

**Total years served in all three Nature Trail programs v. gender (question 22)**

**Independent samples t-test**

**Group Statistics**

	gender	N	Mean	Std. Deviation	Std. Error Mean
total years served in 3 programs	male	61	4.0000	2.25093	.28820
	female	126	3.9405	2.51186	.22377

**Independent Samples Test**

		Levene's Test for Equality of Variance		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
total years served in 3 programs	Equal variances assumed	3.955	.048	.157	185	.875	.05952	.37908	-.68835	.80740
	Equal variances not assumed			.163	131.254	.871	.05952	.36488	-.66228	.78132

## Highest program served v. gender (question 22)

### Chi square test of independence

highest program served \* gender Crosstabulation

			gender		Total
			male	female	
highest program served	Nature Trail	Count	22	45	67
		Expected Count	21.9	45.1	67.0
	Jr Zoologist	Count	20	43	63
		Expected Count	20.6	42.4	63.0
	ARC intern	Count	19	38	57
		Expected Count	18.6	38.4	57.0
Total	Count	61	126	187	
	Expected Count	61.0	126.0	187.0	

### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.037 <sup>a</sup>	2	.982
Likelihood Ratio	.037	2	.982
Linear-by-Linear Association	.003	1	.960
N of Valid Cases	187		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 18.59.

**Highest program served v. ethnicity (question 23)**

**Chi square test of independence**

**highest program served \* recoded ethnicity Crosstabulation**

Count		recoded ethnicity					Total
		2.00	3.00	4.00	6.00	7.00	
highest program served	Nature Trail	9	6	45	2	4	66
	Jr Zoologist	12	6	26	12	7	63
	ARC intern	2	3	44	4	2	55
Total		23	15	115	18	13	184

**Total years served in all three Nature Trail programs v. ethnicity (question 23)**

**Oneway ANOVA**

**ANOVA**

total years served in 3 programs					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	48.064	4	12.016	2.098	.083
Within Groups	1025.05	179	5.727		
Total	1073.11	183			

**Multiple Comparisons**

Dependent Variable: total years served in 3 programs

**LSD**

(I) recoded ethnicity	(J) recoded ethnicity	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Asian	Hispanic	1.04928	.79420	.188	-.5179	2.6165
	White	-.18913	.54660	.730	-1.2677	.8895
	Multicultural	-1.2313	.75307	.104	-2.7173	.2548
	Other	-.79431	.83035	.340	-2.4328	.8442
Hispanic	Asian	-1.0493	.79420	.188	-2.6165	.5179
	White	-1.2384	.65694	.061	-2.5347	.0579
	Multicultural	-2.2806 *	.83661	.007	-3.9314	-.6297
	Other	-1.8436 *	.90679	.044	-3.6330	-.0542
White	Asian	.18913	.54660	.730	-.8895	1.2677
	Hispanic	1.23841	.65694	.061	-.0579	2.5347
	Multicultural	-1.0421	.60658	.088	-2.2391	.1548
	Other	-.60518	.70021	.389	-1.9869	.7766
Multicultural	Asian	1.23128	.75307	.104	-.2548	2.7173
	Hispanic	2.28056 *	.83661	.007	.6297	3.9314
	White	1.04215	.60658	.088	-.1548	2.2391
	Other	.43697	.87100	.617	-1.2818	2.1557
Other	Asian	.79431	.83035	.340	-.8442	2.4328
	Hispanic	1.84359 *	.90679	.044	.0542	3.6330
	White	.60518	.70021	.389	-.7766	1.9869
	Multicultural	-.43697	.87100	.617	-2.1557	1.2818

\*. The mean difference is significant at the .05 level.

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