4-H Wildlife Stewards

A Master Science Educators Program

National Science Foundation

FINAL EVALUATION REPORT

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Chapter One
Introduction and Background

Introduction

As teachers respond to the demands of educational reform and strive to meet increasing pressures of educational benchmarks and standards, there is less and less time to utilize innovative teaching techniques. Education reform expectations, coupled with increasing class size and shrinking budgets has significantly impacted the way that science education is delivered in schools. *4-H Wildlife Stewards, a Master Science Educator's Program* was developed in response to these emerging concerns in science education. The program is based on the premise that trained volunteer Master Science Educators, referred to in the program, and in the remainder of this report, as 4-H Wildlife Stewards, can play a role in science education by providing science learning opportunities that teachers are unable to do in the current educational climate. 4-H Wildlife Stewards are trained parent and community volunteers who:

- Work with teachers, students, parents, and other volunteers to develop a habitat or other natural science projects on school grounds. The habitat is then used as an outdoor science laboratory.
- Assist in helping youth develop and evaluate research projects in the habitat.
- Assist teachers in science education by providing materials, curricula and science expertise.
- Teach and lead science inquiry lessons in the habitat.

The 4-H Wildlife Stewards Master Science Educators program began in 1996 in the Portland, Oregon area. The program was an immediate hit and quickly grew, with significant demonstrated impact on students, schools, and communities. The current grant from the National Science Foundation was secured to expand the program beyond the Portland Metro area to other areas across Oregon

Project Plan

The purpose of this project during the first three years of the project was to expand and enhance the 4-H Wildlife Stewards Master Science Educators program to other areas of the state. Expansion efforts included:

- Developing a standard 24 hours training program and curriculum that can easily be replicated
- Providing trainings in new areas
- Establishing a statewide training team
- Providing salary buy-out for members of the training team to develop programs in their local areas.

Enhancement efforts included:

- Developing a website for the program
- Developing a group of trained "Virtual Volunteers" who complete a web-based Master Science Educators course
- Developing a Master Science Educators Trainer's Guide
- Developing a Master Science Educators Volunteer Handbook
- Developing a Master Science Educators Member Site Leader Guide
- Developing a Master Science Educators Promotional Video
- Developing a Master Science Educators Training Video
- Developing education kits to match the curriculum

All of the program expansion efforts were accomplished during the 3 year funding period. A statewide training team, consisting of 9 Oregon State University faculty members was established in the fall of 2001. The team was highly committed to the project and remained remarkably stable throughout the 3 year period. Only three changes to the team were made. One team member dropped out after the first year due to the need to focus his time in other areas. This member was replaced by another faculty member from the same geographic area, and she remained with the team. A second team member dropped out at the end of the second year due to an out of state relocation. The team elected to cover her areas of the training for the third year rather than bring on someone new so late in the project. A third member received a re-

assignment of job responsibilities at the end of the second year. She was replaced with a wildlife specialist from the same academic department.

A total of 23 trainings were held in various regions of the state. Five of these trainings were offered as an option as an on-line course. The trainings were interactive, fun, and well received by the participants. The evaluator attended and observed several of the trainings, and it was clear that the training team was well-prepared, and knowledgeable and capable teachers. The team spread enthusiasm about the project through their teaching; it was truly a fine team effort. A detailed presentation of the training evaluation is presented in Chapter Three.

Additional Funding was requested and awarded for years 4 and 5 to:

- continue outcomes research and evaluation at the community sites, measuring the relative strength of each program component and its ultimate impact on student science attitudes, knowledge and interest; and
- advance development of the Master Science Educators program to prepare for sustainability of the model on a national level.

The Master Science Educators program continued development of the program from the first three years of the grant, with an emphasis on developing advanced curriculum and other educational process materials. Supplemental funding supported the development of:

- Training modules and tools for preparing Master Science Volunteers to create sustainable informal science education programs in their local communities.
- Enhancing the number and quality of partners committed to support the program (e.g. after-school organizations and agencies, state departments of education and other state and local agencies) to increase the scope and capacity for reaching wider audiences.
- A youth page and student journal on the Master Science Educators website as a place for students to post results from their science inquiry research projects.

Further program development at the selected community sites helped ensure the longevity and sustainability of school habitat sites for continued use as outdoor science classrooms by providing continuing resources and opportunities for using the habitats.

The enhancement efforts were somewhat unevenly developed in the first three years, and the project director applied for a no-cost extension of the grant to complete work on the deliverables. As of August 2006, the promotional and educational videos, the volunteer handbook, youth website, project sustainability handbook, virtual volunteer on-line course, and youth journals are completed. The trainer's guide is in the final stages of editing and is intended to be printed by winter 2006. The program awarded mini-grants to member schools to purchase materials for their own educational kits, rather than developing rotating kits.

Contents of the Report

This document reports the findings of the summative evaluation of the 4-H Wildlife Stewards Master Science Educators program sponsored by the National Science Foundation. The report includes information on data collection, sources, and methods; an evaluation of the volunteer trainings; program impact evaluations from volunteers and teachers; a snapshot of the impact of the program on student science interest and skills; an exploration of the ingredients needed for the program to be most effective; and a summary of national dissemination efforts to date. The report concludes with the evaluator's summary, commendations and recommendations.

Chapter Two
Data Sources: Collection, Participants and Methods

The evaluation of this project involved data collection from a number of different sources. Data sources are outlined below.

End of Training Data Collection
End-of-session surveys were given to participants at each of the 11 trainings from 2001-2004. Time was set aside at the end of the training for participants to complete the survey. The surveys gathered information about the quality and effectiveness of the training, and measured participant's pre and post knowledge levels in specific content areas. Of the 184 participants in the trainings, 177 provided end-of-session evaluation data. Complete demographic information about the training participants can be found in Chapter Three.

Volunteer Summative Follow-up Evaluation
Surveys were mailed to 55 volunteers identified as currently active by the 4-H Wildlife Stewards program staff during the spring of 2004 (the end of year 3). Surveys were returned by 41 volunteers for a response rate of 75%. Of the 41 returned surveys, 6 were dropped from the study because they were not completed. In some cases the volunteer indicated why he or she did not complete the survey (e. g. their habitat never got "off the ground") in other cases the survey was returned blank without comment. Eighty percent of the respondents were female; 20% were male. Table 2.1 shows the length of time the volunteers have served as 4-H Wildlife Stewards.

Table 2.1 Length of Time as a Volunteer 4-H Wildlife Steward

	N	Percent
Less than six months	5	14.5%
Six months to one year	7	20%
One to two years	14	40%
Two to three years	4	11%
More than three years	5	14.5%

Teacher Summative Follow-up Evaluation
Surveys were mailed to 77 teachers identified as active by the 4-H Wildlife Stewards program staff during the spring of 2004 (the end of year 3). Surveys were returned by 39 of the teachers, for a response rate of 51%. Of the 39 respondents, 14 had gone through the 4-H Wildlife Stewards training, 25 had not. All analyses on these data were screened for differences between the groups of teachers who had been through the training and those who had not. There were no significant differences between the groups with one important exception: teachers who had been through the training were significantly more interested in using the habitat to teach science. Table 2.2 shows the percentages of teachers by grades taught.

Table 2.2 : Current Grade Level Taught

	N	Percent
Kindergarten	1	3%
First through third grades	18	46%
Fourth and sixth grades	15	38%
Seventh and eight grades	3	8%
Ninth and tenth grades	2	5%

Student Classroom Assessment

During the spring of 2004 classroom assessment data were gathered from 172 students in the second through fifth grades from 8 classrooms at 5 different schools. Collection of these data was done through a convenience sample of classroom teachers who were able to get school and district permission to participate, and were willing to follow the informed consent/parental permission process approved by the Institutional Review Board at Oregon State University. Table 2.3 shows the frequencies of student respondents by grade and gender. Table 2.4 shows the frequencies of students by school. Analysis of Variance (ANOVA) run on these data revealed no significant difference between group's base on grade, school, classroom, or gender.

Table 2.3 Student Respondent Demographics

Grade	Female	Male	Total
Second	4	4	8
Third	33	34	67
Fourth	15	19	34
Fifth	29	34	63
Total	80	91	172

Table 2.4

School Demographics

School	Town	Classrooms	Respondents
Jefferson Elementary	Corvallis	3	63
Foster Elementary	Foster	1	24
Seth Lewelling Environmental School	Milwaukee	1	23
Inavale School	Corvallis	2	46
Imlay School	Hillsboro	1	16
			172

2004 4-H Wildlife Stewards Summit Evaluation

During the spring of 2004 two "4-H Wildlife Stewards Summits" were held, one in the Portland Metro area at Seth Lewelling Environmental School, and the other in Corvallis at Jefferson Elementary School. While the summit in the Corvallis area has been held for a few years, this was the first year multiple summits were held. The summits are educational and celebratory, with classes from other 4-H Wildlife Stewards schools also taking part. During the day-long summit the students hear guest speakers, engage in hands-on science learning, and study science in the school's habitat. The highlight of the day is the presentations that each classroom team gives to a panel of judges. Each team researches a science-based habitat issue and prepares a poster demonstration that is then presented to the judges. One hundred six students participating in the summits were invited to fill out a questionnaire at the end of the day. The questionnaire asked the students about the effect of participating in the 4-H Wildlife Stewards program on his or her interest and skill in science. Table 2.5 shows the number of participants by school for each summit site.

Table 2.5 4-H Wildlife Stewards Summit Student Respondents

		Summit	
School	Region	Corvallis	Portland Metro
Jefferson	Willamette Valley	26	
Inavale	Willamette Valley	14	
Mountain View	Willamette Valley	9	
Foster	Willamette Valley	18	
Lincoln	Willamette Valley	1	
Clover Ridge	Willamette Valley	2	
Seth Lewelling	Portland Metro		22
Looking Glass	Southern Oregon		5
Winston	Southern Oregon		1
Warrenton	North Coast		4
Deep Creek	Portland Metro		4
		70	36
Total			106

Project Sustainability Evaluation

Data on community sites and volunteers was collected and compiled all 5 years of the project. Information on 106 community sites was collected. Data collected on the inactive sites included when they became inactive and why they became inactive. Likewise data on the 343 volunteers trained during this same time period was collected and included when they became inactive and their reasons for dropping out of the program.

Advanced Leader End of Training Evaluations

Active Master Science Educators were invited to participate in one of the two Advanced Training opportunities. Due to a low response rate, only a single Advanced Training event was held. Volunteers received additional training on methods for establishing collaborative partnerships, media relations, creating an on-site science committee, grant writing, community resources, and project sustainability.

A total of twenty-three participants attended the Advanced Training. At the conclusion of the Advanced Training, participants were asked to respond to a survey evaluating the overall quality of the training and indicating their level of competence on several issues prior to the training and after the training. Sixteen volunteers returned their evaluation forms.

Volunteer Focus Groups on Project Sustainability

Twenty-five out of approximately 130 active WS volunteers participated in a state WS conference. During the first day of the conference the volunteers were divided into 3 small focus groups of 8-9 per group. Each of these groups represented a mix of volunteers who had been involved in the program for long-term (3-5 years), short-term (1-2 years) and less than one year. Unlike the one-way flow of information in a one-on-one interview, these focus groups generated data through the give and take of group discussion. Listening as people share and compare their different points of view provided a wealth of information—not just about what they think, but why they think the way they do. Unlike most focus groups, however, these volunteers were self-selected in that they chose to participate in this conference and in these focus groups.

The first part of the focus group was a discussion board writing exercise. Following the discussion board exercise, each of the three focus groups were asked to discuss three topics – project sustainability, keys to success, and roadblocks. Three questions for each theme were introduced. Table 2.6 shows the number of participants by years of service

Table 2.6 Numbers of Volunteers in Focus groups by Years of Service

Years of Service	Number
Less than 1 year	7
1-2 years	11
2-3 years	4
More than 3 years	3
TOTAL	25

Virtual Volunteers On-Line Course Evaluation

Training participants completed end of session evaluations at all trainings. Fifteen out of the 21 participants who completed the first four courses submitted evaluations (The Summer 2006 training course is still in session at the time of this writing). Participants were asked to evaluate as a result of this course how much their current level of skills and knowledge changed. Table 2.7 shows the on-line course participation rates

Table 2.7: On-line Course Participation Rates

Term	Enrolled	Completed	Incomplete	Dropped
Spring 2005	8	4	2	2
Fall 2005*	13	10	3	0
Winter 2006	5	3	1	1
Spring 2006	5	4	0	1
TOTAL	42	25	11	4

*= course was offered as a one day on-site training and the rest was completed on-line
** = this course at the time of this report has not ended and students are still finishing the course; this course is also offered as a combination one day on-site and the rest on-line

Collaborative Partnerships to Reach New Audiences Focus Groups

Focus groups are...in-depth, qualitative interviews with a small number of carefully selected people brought together to discuss a particular topic. As described earlier in this report, unlike the one-way flow of information in a one-on-one interview, focus groups generate data through the give and take of group discussion. Listening as people share and compare their different points of view provides a wealth of information—not just about what they think, but why they think the way they do. The focus groups were organized and conducted as described by the American Statistical Association (1997): http://www.amstat.org/sections/srms/brochures/focusgroups.pdf

The initial plan was to have two focus groups with representatives from several minority communities present at each focus group. Extensive and repeated efforts were made to recruit participants to the focus groups. However, because of scheduling difficulties this was not possible; instead focus groups were held with each of four minority groups separately. Four focus groups with representatives from the Asian American, Latin American, African American, and Native American communities were held separately in the spring of 2006.

The purpose of the focus groups was to hear the views of these participants about development opportunities, function, and successes of the WS program in the Portland metropolitan area. Only two to four participants actually attended each of the focus group sessions.

Youth Focus Groups to Measure Long-term Impacts

Focus groups were held spring 2005 to hear the views of 4th - 6th grade students who had been involved with 4-H WS for more than 2 years. School principals, teachers, and parents supplied names and gave permission for inclusion of the project. Five to seven students participated at six different schools in four counties.

The same moderator was used for each school. Children's responses were recorded on audio and video tape, and with a human note-taker. We learned that two video/audio cameras are essential to ensure complete information when there are technology failures! Each child was encouraged to participate as fully as he or she wanted and to tell us his or her opinions on each question.

Table 2.8 School group Communities for Student Focus Groups

School	Community
Seth Lewelling Elementary School	Clackamas
Eccles Elementary School	Clackamas
Clover Ridge Elementary School	Albany
Imlay Elementary School	Hillsboro
Inavale Elementary School	Corvallis
Jefferson Elementary School	Corvallis

Youth Website Evaluations

Information provided for the evaluation of this component is based on an evaluation conducted in the spring of 2005 and 2006 with 54 students, 32 in Australia and 22 in the United States. There were 25 girls and 29 boys who participated in the evaluation, ranging in age from eight to 19.

2006 Wildlife Stewards Youth Summit Evaluations

A total of 167 students from 6 Member schools participated in the 2006 Annual 4-H Wildlife Stewards Youth Summit that was held at Inavale K-8 School in Corvallis, Oregon on April 27, 2006. A total of 73 youth worked in teams or as individuals and prepared a poster and oral presentation to a judge. In addition there were 94 students participated in the 4-h Wildlife Stewards Summit as a member of the planning committee, habitat tour guide or student expert, student ambassador, greeter or activity leader.

Evaluations were mailed to teachers following the Summit along with ribbons and judges score sheets for student presentations. Students and teachers were asked to complete the evaluation and return to the Benton County OSU Extension Service office. A total of 73 evaluations were distributed to those students who presented their projects to a judge and of those 42 completed and returned the evaluation.

Chapter Three
Evaluation of 4-H Wildlife Stewards Trainings

The goal of the Master Science Educators training program is to provide a fun and effective program designed to prepare adult volunteers to work with local schools to plan and establish wildlife habitats on school grounds. In turn, these habitats are used as outdoor laboratories for informal science learning that is guided by the volunteer.

Participants attend 24 hours of training. The training covers scientific inquiry, experiential learning, teaching and presentation skills, learning styles, and the developmental stages of children. Also covered are specific content areas such as the principles of wildlife management, birds, reptiles, amphibians, and native plants. In addition the training covers content specific to the 4-H Wildlife Stewards program, including working with schools and school districts, creating student journals, lesson plans, public relations, vandalism prevention, and summer maintenance.

Training Summary

Eleven Trainings were held between October 2001 and May 2004. Participants included 107 adult volunteer, 62 classroom teachers, and 15 Oregon State University Staff members, including most of the training team, for a total of 184 people trained. Table 3.1 shows the frequencies of volunteers, teachers, and Extension staff trained by year. Of the 107 volunteers trained, 85 were females and 22 were males.

Table 3.1

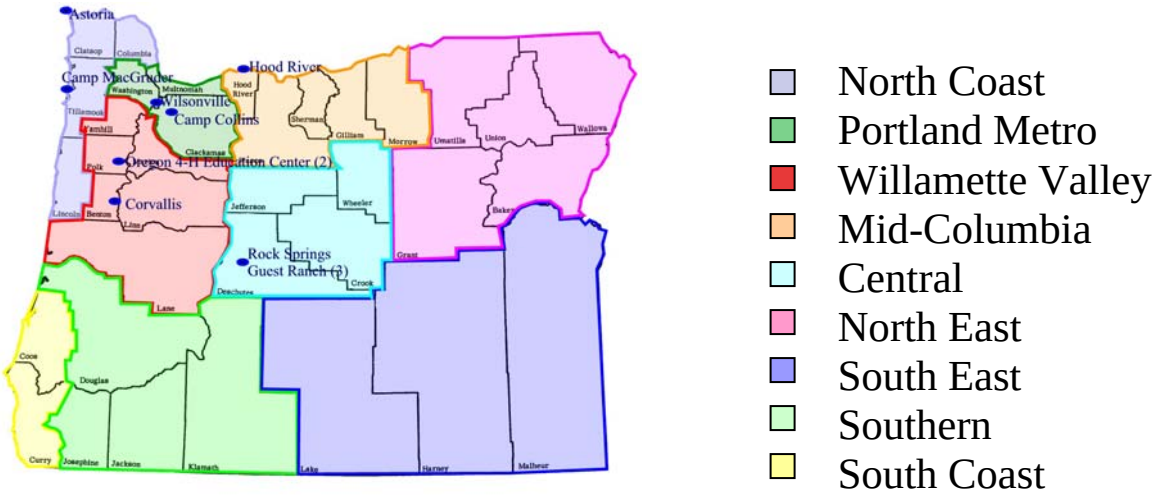
Training Participants by Year

	Year			
Role	Year One	Year Two	Year Three	Total
Volunteers	36	32	39	107
Teachers	11	31	20	62
Staff	11	1	3	15
TOTAL	58	64	52	184

The trainings were held at 8 different locations across the state. Trainings were held 3 times at Rock Springs Guest Ranch in Bend, and twice at the Oregon 4-H Education Center in Salem. Both of these sites are particularly suited for the training, with on-site lodging and abundant natural areas. One of the goals of the project was to conduct trainings at a variety of locations around the state, and to a certain extent this goal was reached, in that trainings were held in 5 of the nine regions. In addition, people attended the trainings from 2 of the remaining 4 regions. Three major factors played a role in determining training sites: 1) the availability of a large enough training site with nearby affordable lodging; 2) the availability of training sites with opportunities for outdoor exploration and science activities; and 3) support from local 4-H Extension faculty in the local area. Eastern, northeastern, and the south coast regions of Oregon are sparsely populated, with few large centrally populated areas and many miles between towns. Although the team tried to include training in a new regional area each year, these factors limited the success of providing trainings in each region.

Figure 3.1 shows the 9 regions of the state of Oregon and the location of the 11 trainings.

Figure 3.1 Training Sites



Figures 3.2 through 3.4 show the number of volunteers trained in each region each year of the project. The numbers shown for years 2 and 3 are cumulative.

Figure 3.2 Volunteers Trained Year One

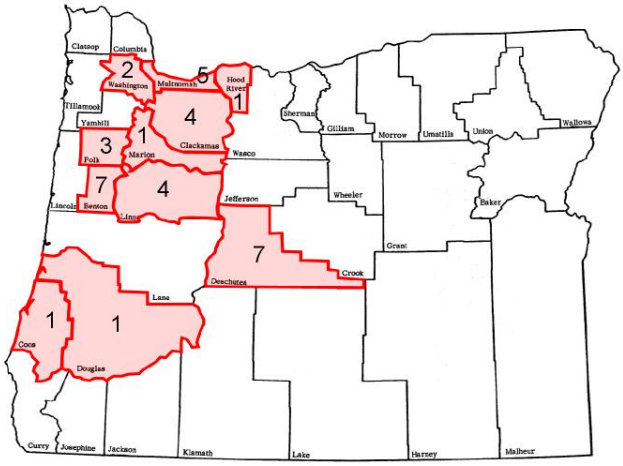


Figure 3.3 Volunteers Trained Year Two (Cumulative)

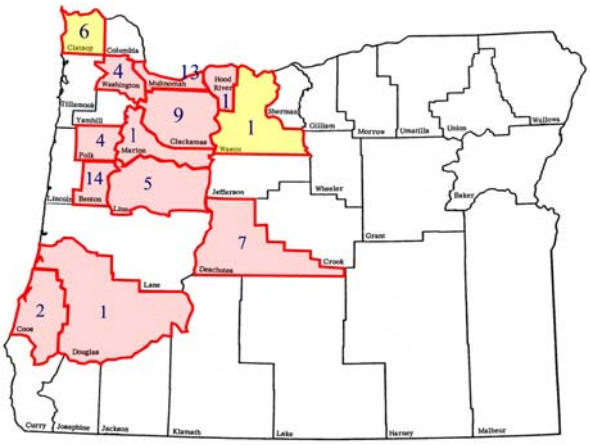
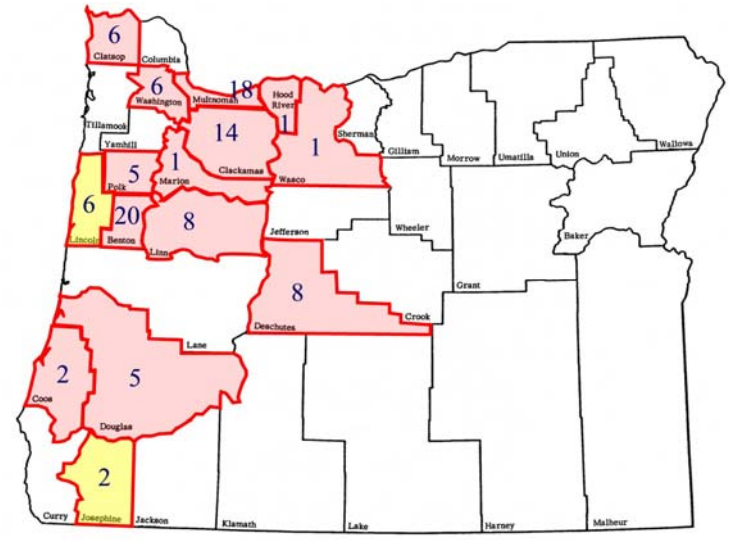
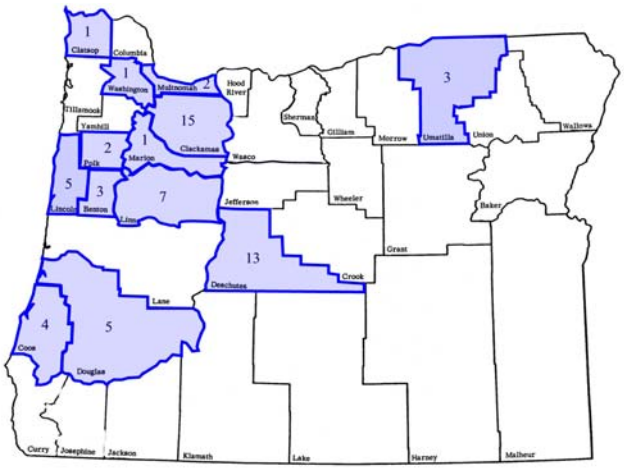


Figure 3.4 Volunteers Trained Year Three (Cumulative)



Although the training program is intended for volunteers, 62 classroom teachers participated in the training as well. The increase in the number of teachers participating in the training posed an interesting situation for the training staff. There are content areas included in the training in which teachers are already trained (e.g. developmental stages, working with schools). The teachers appeared to come to the training for 2 main reasons. First, some teachers came in partnership with a parent volunteer. In many ways, this was seen as an ideal situation as the teacher and volunteer learned about the project together. It also meant that the volunteer had "built-in" support for the project from a teacher, and did not have to go back to the school and gain teacher support. Second, teachers or groups of teachers from the same school attended the trainings without a volunteer. These teachers had heard about the program and were interested in learning how to set it up at their school to enhance their science education programs. The increase in teacher participation occurred most profoundly in year two, and while the program was not intended to meet the needs of teachers, the training staff began to offer 2 tracks at the training. During the time the training covered content that teachers would already have, advance sessions on science inquiry, process and skills were offered for the teachers. Table 3.5 shows the number of teachers trained by region.

Figure 3.5 Total Number of Teachers Trained



End of Training Evaluation

Training participants completed end-of-session evaluations at all 11 trainings. Participants were asked to rate the effectiveness of the training team on a 1-5 scale, with a "1" indicating "extremely poor" and a 5 indicating "excellent." Table 3.2 shows range, means and standard deviations for the evaluation of the training team.

Table 3.2

Participant Rating of Training Team

	N	Min.	Max.	Mean	SD
Overall teaching ability	172	3	5	4.54	.596
Organization and presentation	170	1	5	4.58	.631
Knowledge level	171	3	5	4.58	.583

Training participants were asked how well the training prepared them to step into their role as a 4-H Wildlife Steward. Respondents were asked to rate their sense of preparedness on a 1 to 5 scale with a "1" indicating "not prepared at all" and "5" indicating "really prepared." Table 3.3 shows range, means and standard deviations for the participants' ratings of preparedness.

Table 3.3

Preparation of Participants

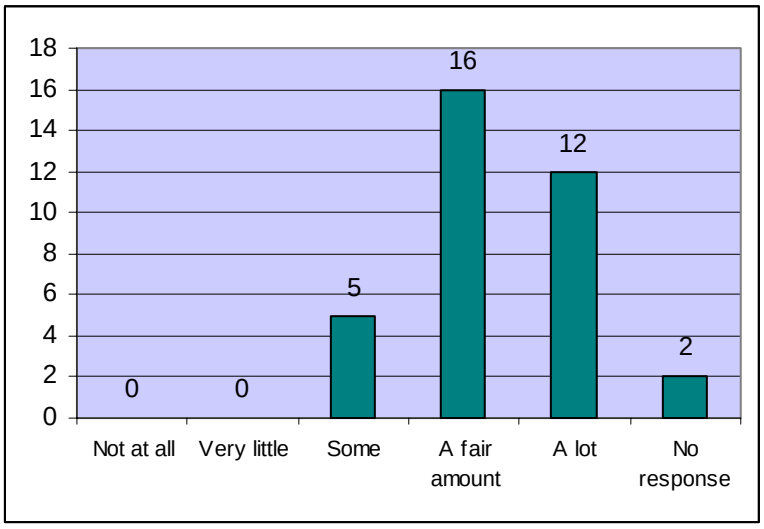
	N	Min.	Max.	Mean	SD
To be a 4-H Wildlife Steward	170	2	5	3.86	.716
To teach science informally	170	2	5	4.06	.837
To teach natural resource concepts	170	2	5	4.04	.821
Whom to ask for assistance	171	2	5	4.47	.653
How to locate resources	171	2	5	4.42	.658
How to develop school habitat	172	2	5	4.17	.773

Degree of participant preparation was also measured through a follow-up survey during Year 3. Follow-up surveys were sent to 55 trained volunteers who were identified as currently active 4-H Wildlife Stewards by the volunteer coordinator. Surveys were returned by 35 volunteers for a return rate of 64%. Respondents were asked how well the training prepared them to be a 4-H Wildlife Steward in schools. On a 1-5 scale, respondents reported a minimum rating of 3 and a maximum of 5, for a mean rating of 4.21. Figure 3.6 shows the frequencies of responses.

Figure 3.6

Follow-up Report of Participant Preparation

How well did the training prepare you to be a 4-H Wildlife Steward volunteer in schools?



During the first two years of the project the end of session evaluation included a pre/post self-report assessment of knowledge gained by participants. After two years, it was clear that participants consistently reported significant changes in knowledge. For this reason, the pre/post knowledge assessment was dropped for year three. Results of the paired T test analysis for self-reported changes in knowledge for Years 1 and 2 are presented in Table 3.4.

Table 3.4: Self-reported Change in Knowledge (Years 1 and 2)

	N	Mean Score Pre	Mean Score Post	Mean Diff.	SD	SME	t	df	Sig.
Teaching science informally	113	3.18	4.17	-0.99	0.95	0.09	-11.10	112	0.00
Science benchmarks	111	2.90	3.60	-0.70	0.93	0.09	-7.96	110	0.00
Creating a successful habitat site	61*	1.95	4.11	-2.16	1.00	0.13	-16.85	60	0.00
Teaching and presentation skills	113	3.53	4.08	-0.55	0.77	0.07	-7.60	112	0.00
Developmental stages	110	3.68	4.10	-0.42	0.71	0.07	-6.19	109	0.00
Scientific inquiry	110	3.71	4.20	-0.49	0.83	0.08	-6.19	109	0.00
Project-based learning	107	3.11	3.79	-0.68	0.80	0.08	-8.86	106	0.00
Available curriculum	114	1.66	4.38	-2.72	1.09	0.10	-26.56	113	0.00
School district considerations	114	1.85	4.03	-2.18	1.08	0.10	-21.45	113	0.00
Grant writing	113	2.17	3.83	-1.66	1.07	0.10	-16.59	112	0.00
Native plants	113	2.97	4.34	-1.36	1.24	0.12	-11.69	112	0.00
How to do a site inventory	114	2.03	4.11	-2.09	1.04	0.10	-21.35	113	0.00
Principles of wildlife management	63*	2.59	3.92	-1.33	1.12	0.14	-9.44	62	0.00

* There are fewer respondents for these questions because these questions were added during year two

Training Evaluation Summary

Overall, the project appears to have met its objectives for providing effective training. There are a few items that need to be discussed however. First, the project agreed to conduct 12 trainings during the 3 years of funding. This evaluation was conducted on 11 trainings, beginning in October 2001. A 12th training was conducted in July 2001, but was not included in this report as grant funding was not finalized until after that training was conducted.

Second, as noted above, the project was not completely successful in conducting trainings in all regions of the state. The most probable reasons are geographic in nature as outlined above. Conversations with the project director and program staff indicate that attempts were made to conduct trainings in the Eastern, Southern, and South Coast regions. A lack of adequate training facilities was one of the primary reasons trainings were not held in those areas. It is important to note that there were training participants from the Southern and South Coast regions who traveled to be trained at other training sites. The program continues to find ways to provide trainings in the remaining regions and hopes to do so in the next two years. A training has been scheduled in Southern Oregon in November 2004.

One of the unanswered questions is whether there are additional regional differences, beyond geographic location, that would prohibit the successful dissemination of the program into more rural and less populated areas. One of the concerns raised about the program was whether it could be perceived as an "environmental' program. Politically, Oregon is divided on issues of natural resource management (particularly in forestry, farming, ranching, and fishing). In many cases these differences can be matched with the geographic divide between the east and west sides of the Cascade Mountains that divide the state from north to south. While the program staff is clear that the program is about training volunteers to work with schools to develop Habitat Education Site to be used for informal science learning, each site has its own local flavor, and in some cases could be interpreted as promoting one side of the political agenda more than another. The National Board for the program recognized this potential problem and worked for 2 years to consider a new name for the program that would better indicate the program's purpose. In the end, the board decided that the name "4-H Wildlife Stewards" was really very effective, the need to continually educate constituents on the program's purpose notwithstanding.

Chapter Four
Teacher and Volunteer Program Evaluation

The summative evaluation sought input from teachers and volunteers to assess the program in several key areas: 1) the use of the habitat to teach science; 2) the experience of the 4-H Wildlife Steward; and 3) the support the project has received at the local school level.

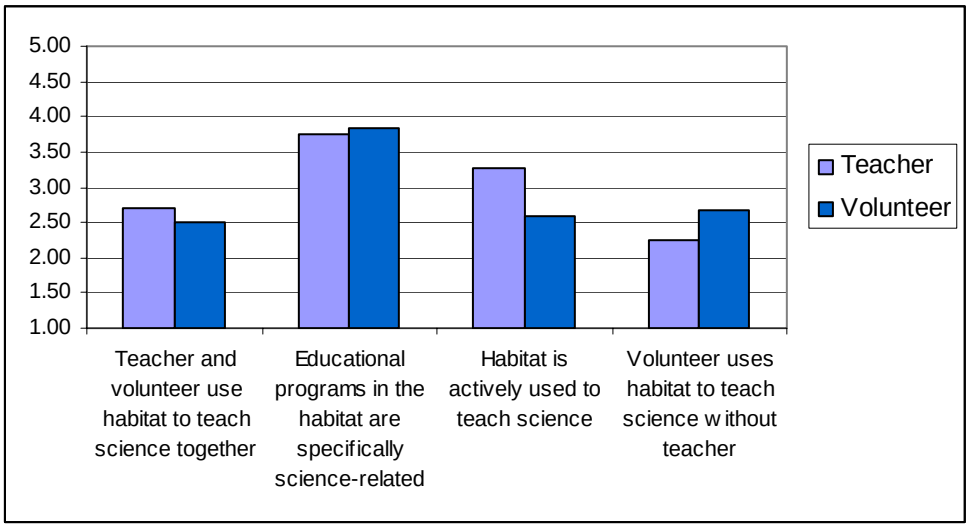
Use of Habitat to Teach Science

First, both groups were asked to provide feedback on how the habitat is used to teach science. We were interested in knowing a) whether the habitat is used to teach science, and how much the volunteer used the habitat to teach science without a teacher present. Respondents were asked to rate on a 1 to 5 scale how much each of the items took place. A rating of "1" indicated "not at all" and a rating of "5" indicated "a lot!" Mean ratings are presented for both groups in Table 4.1, and presented graphically in Figure 4.1.

Table 4.1: Volunteer and Teacher Ratings of Habitat Use

	Teachers		Volunteers	
	N	Mean	N	Mean
Use habitat to teach science together	38	2.71	32	2.50
Educational programs are science-related	38	3.76	32	3.84
Habitat is actively used to teach science	39	3.26	31	2.58
Volunteer teaches science without teacher	34	2.24	31	2.68

Figure 4.1 Volunteer and Teacher Ratings of Habitat Use

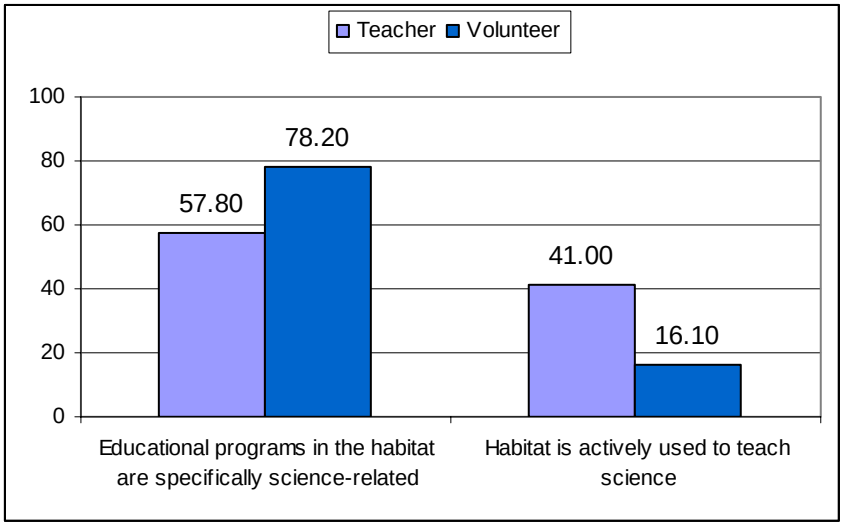


When considering the responses on habitat use it is important to note that the teacher and volunteer respondents are not matched by school. That is, there are volunteer respondents from schools from which we did not receive a teacher response and vice versa. Analysis of variance (ANOVA) conducted on these data revealed that there are no significant differences in mean ratings between groups.

The results show that the educational programs taught in the habitat are science-related. For both groups, however, the mean falls in the range between a rating of "some" and "a fair amount." Ratings of the habitat being used to actively teach science are a little lower, with the mean range falling between "very little" and "some." These mean ratings are not a strong as one would hope, given the premise of the program. However, it is important to note that responses to these items fell within the entire range and

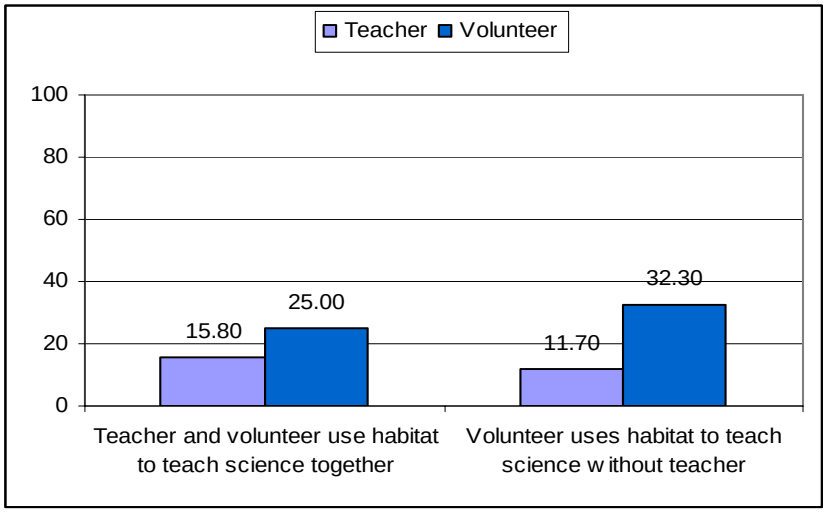
the picture changes somewhat when considering the frequency. Figure 4.2 shows the percentage of respondents who gave rating of 4 (a fair amount) or 5 (a lot). Over half of the respondents in both groups said that the educational programs in the habitat were specifically science related. Forty-one percent of the teachers gave high ratings to the active use of the habitat to teach science, but only 16% of the volunteers gave a high rating for this question. Because the ANOVA revealed no significant differences between groups on the mean ratings for these questions, the frequency analysis needs to be used for descriptive purposes only.

Figure 4.2 Percentage of Respondents Rating Item a 4 or 5



Likewise, the responses for how much the teacher and volunteer use the habitat to teach science together and how much the volunteer uses the habitat to teach science alone ranged from 1 to 5. Figure 4.3 shows the percentage of respondents who gave ratings of 4 (a fair amount) or 5 (a lot). For these items, both the mean ratings and the frequency of high ratings are low. Given that the premise of the 4-H Wildlife Stewards Master Science Educators Program is to train volunteers to teach science in the habitat, one would expect higher ratings of this type of activity.

Figure 4.3 Percentage of Respondents Rating Item a 4 or 5



In fairness to the program, however, there are three important items that need to be considered when interpreting these results. First, it is clear to the evaluator that the development of a habitat that is used for science education takes considerable time. Many of the volunteers spend 1 to 2 years in the planning and developing phase, and it may be 2 to 3 years before a habitat is actually completed. The variation in the length of time before a habitat is ready for educational use appears to be dependent on many factors.

One factor is the way in which students and teachers are involved in science learning *while* the habitat is under development. Granted, there needs to be some initial organizational time spent prior to the development of the habitat, but once development is underway students can be involved in mapping, site inventorying, soil testing, and site preparation, all of which lend significant opportunity for engaging students in science. These opportunities for science learning are emphasized in the training.

Using regression analysis, we attempted to uncover some of the factors using the data that were collected for the evaluation (e.g. length of time since training, the science and teaching experience that a volunteer had prior to the training, whether a teacher in the school had also been trained, and the level of development at the school) but could detect no systematic variation that would predict use of the habitat to teach science. A more detailed examination of the variance in project development and its impact on science education would be a worthy pursuit at some point in the future.

A second item that needs to be considered, and that will be more fully explored in Chapter Six, is the change in program theory that occurred over the course of the project. The initial program theory was rather simple: if a trained volunteer is placed successfully in a school with the intention of assisting students and teachers to develop and use a habitat to teach science, then student science learning will be positively impacted. In reality, it became clear to the program staff and the evaluator that this program theory was too simple, and that the success of any given project is dependent on many factors. It does appear, however, that the amount of time that a trained volunteer actually teaches science in the habitat is not as large as expected given the initial premise. The standard training model that emerged toward the end of the project, and continues to be used, reflects a more realistic role of the volunteer as a science "broker." As a science "broker" the volunteer is more actively involved in gathering resources for the project, documenting the work of the students, and working with other educators to deliver science curriculum, building partnerships, and recruiting other parents and community members to assist with the project.

Finally, there are large scale variances that were not addressed in this evaluation that would be worthy to explore in the future. One is the demographics of the schools, especially family income. We noted that schools in low-income areas tended to struggle to successfully implement and maintain the project. It would also be interesting to assess the relationship between project success and the over all "performance" of a school academically. Our observation is that lower performing schools overall also struggle with program success.

Experience of 4-H Wildlife Stewards Volunteers

The summative evaluation also asked volunteers to respond to questions about their experience as a 4-H Wildlife Stewards volunteer. Specifically, we were interested in the level of support that the volunteers felt they received, how well the program was received at their school, and the level of involvement of other parents and community members. Respondents were asked to rate each item on a 1 to 5 scale. A rating of "1" indicated "not at all" and a rating of "5" indicated "a lot!" Mean ratings for the items related to support are presented in Table 4.2 .

Table 4.2: Volunteer Ratings of Level of Program Support

	N	Min	Max	Mean	SD
Support of local 4-H staff	35	1	5	3.71	1.25
Support of state Wildlife Stewards staff	34	2	5	3.41	0.99
Did not feel left alone to figure out program	34	2	5	3.35	1.07
Felt prepared to be a 4-H Wildlife Steward	33	3	5	4.21	0.70
Materials provided in the training adequate to support role	33	3	5	3.94	0.66

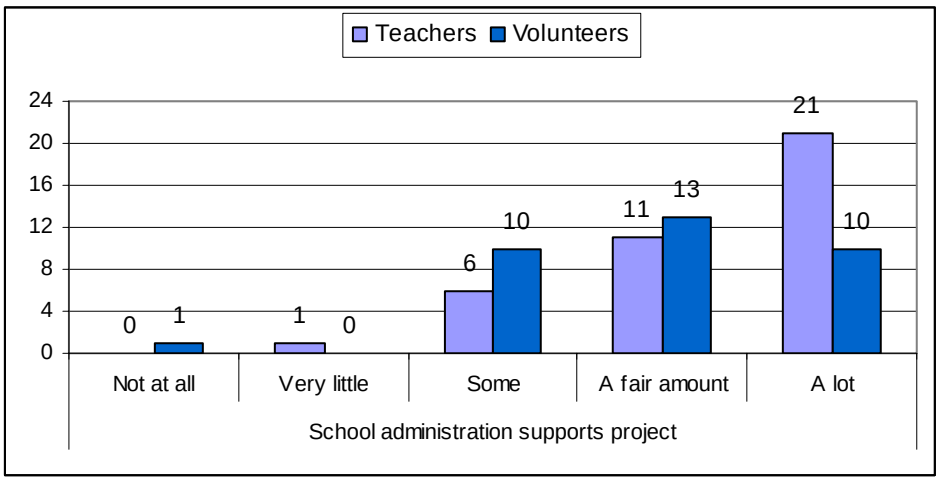
Ratings for two items (felt prepared and received adequate materials) ranged from 3 to 5, with high mean ratings. Eighty-five percent of respondents rated the level of their preparedness as a 4 or 5; 76% rated the adequacy of materials as a 4 or 5. These results indicate that the volunteers continued to feel the training and materials they received enabled them to fulfill their role as a 4-H Wildlife Steward.

Respondents also gave fairly high ratings to the level of support they received from program staff. Sixty-three percent of respondents rated the level of support they received from the local program staff as a 4 or 5; 47% rated the support they received from the state level staff as a 4 or 5. These results indicate that volunteers generally feel the level of program support is adequate for them to fulfill their roles. Given that the programs happen very much on the local level, and most often operate independently of the presence of program staff, it is not surprising that the mean ratings for staff support are where they are. Because volunteers feel adequately trained, and have the materials they need, it could very well be that staff support is not needed on a day to day basis, but rather only when special situations or events arise.

Support for the Project

Both volunteers and teachers were asked about the amount of involvement and support they received for the project from parents, families, and school staff, including teachers and administration. Respondents were asked to rate the level of support they received from school administrators, which in most cases refers to the school principal. A rating of 1 indicated "not at all";" and a rating of 5 indicated "a lot!" Figure 4.4 shows the frequency of respondent ratings. It is clear from the responses that both teachers and volunteers that school administration supports the project. It is interesting to note that 32 teachers (79%) rated the level of school administration support as a 4 or 5.

Figure 4.4 Respondent Ratings of Support from School Administrators



One of the goals of the 4-H Wildlife Stewards program is to increase the level of parent, family, and community involvement in the school as a result of the project. Teachers and volunteers were asked to rate the level of increase in involvement on a 1 to 5 scale. A rating of 1 indicated "not at all";" and a rating of 5 indicated "a lot!" Sixty-four percent of teachers, and 68% of volunteers rated the increase in parent involvement a 3 or higher. Sixty-four percent of teachers and 63% of volunteers rated the increase in family involvement a 3 or higher. Lastly, 74% of teachers and 70% of volunteers rated the increase in community involvement as a 3 or higher. Figures 4.5 through 4.6 show the frequencies of responses for both groups.

Figure 4.5 Respondent Ratings of Increase in Parent Involvement

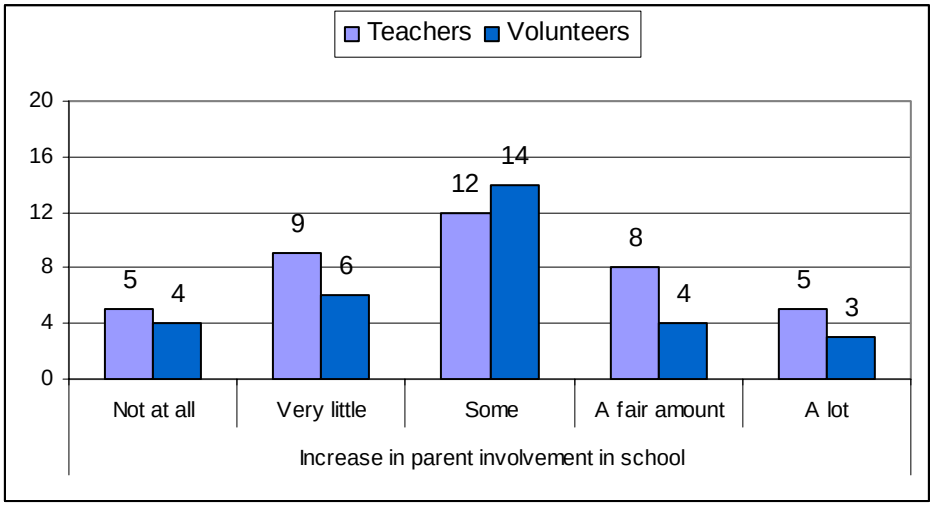


Figure 4.6 Respondent Ratings of Increase in Family Involvement

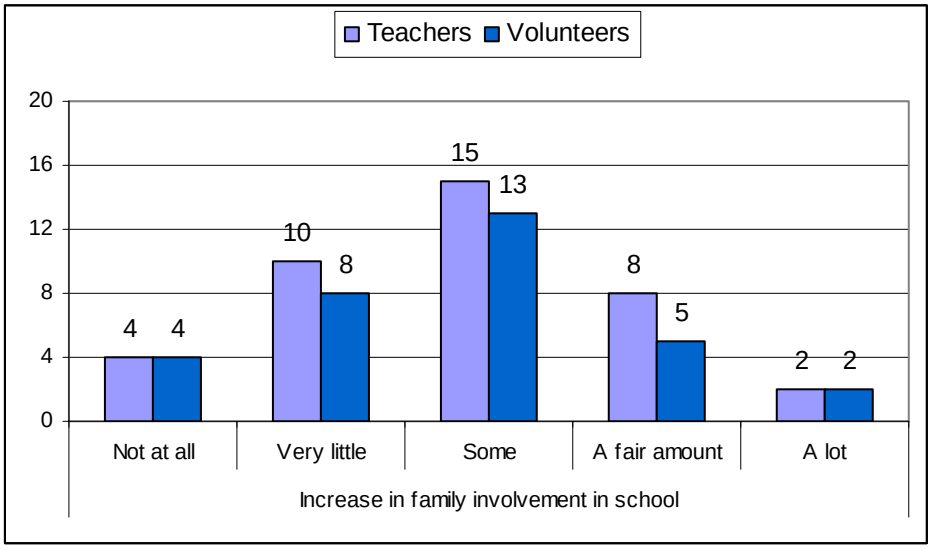
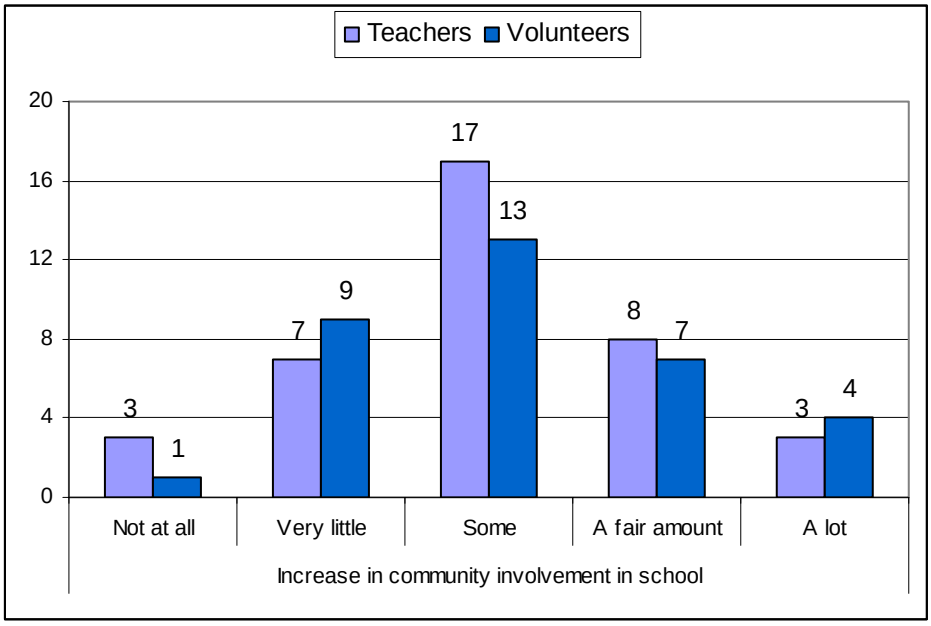


Figure 4.7 Respondent Ratings of Increase in Community Involvement



In addition to the summative questionnaire sent to teachers and volunteers, data regarding financial support for school projects were gathered via the 4-H Wildlife Stewards annual report to the project director. In 2004, 35 of 41 schools completed the report. Of these schools:

- Twenty–four schools reported securing grant funds to support their school habitat for a total of $48,172.
- Ten schools reported raising funds to support the project for a total of $8,585.
- Fifteen schools reported receiving in-kind support for their project, for a total value of $12,510.
- Eight schools reported cash donations for a total of $11,750.

Results of the evaluation indicate that there is considerable support for the 4-H Wildlife Stewards project. This is clearly evident in the amount of support volunteers and teachers feel that school administration gives to the project. In addition, both groups report that parent, family, and community involvement in the school has increased as a direct result of the program at their school. Finally, there has been a considerable investment in the program at local schools through grants, and cash and in-kind donations.

Chapter Five
Impact on Student Science Learning

The ultimate goal of the 4-H Wildlife Stewards program is that students demonstrate science interest and skills. The program theory predicts that if trained Master Science Educators form successful partnerships with local schools, teachers, and parents to create a Habitat Education Site for science education, there will be a corresponding impact on student science interest and skill. The impact of the program on student science learning was measured in 3 ways. First through classroom assessments with 7 participating classrooms at 5 active schools; second, through an end of program evaluation given to student participants at each of two 4-H Wildlife Stewards Summits held in the spring of 2004; and third through the reports of 4-H Wildlife Stewards and teachers.

Classroom Assessments

In the spring of 2004, teachers with 3rd to 5th grade classrooms in active 4-H Wildlife Stewards schools were invited to have their students participate in a brief in-class questionnaire. The questionnaire was designed to gather self-report data from the students about the impact of the 4-H Wildlife Stewards Program on their science interest and skill. In all, 173 students completed the in-class questionnaire. The ability to gather more classroom participation was hindered by the need to secure school, principal and parental permission for the evaluation to take place. Teachers in general seem to have a great deal on their plates, and the added need to secure permission caused some interested teachers to decline to participate.

Students were asked to rate the following questions on a scale of 1 to 4, with a 1 indicating the statement is "not true!" and a 4 indicating that the statement is "true!"

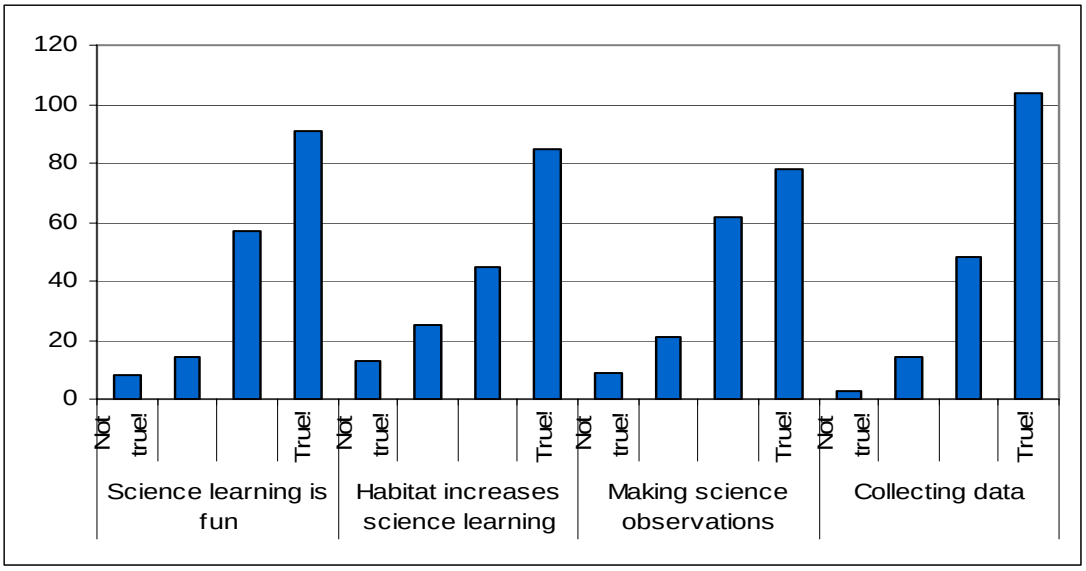
- 4-H Wildlife Stewards has made learning science fun!
- Having a habitat at school helps me learn science better
- I know how to make scientific observations
- I know how to collect data

The student ratings of these questions are presented in Table 5.1; Figure 5.1 provides a graphic portrayal of the student responses.

Table 5.1: Student Ratings of Impact on Science

	N	Min.	Max.	M	SD
Science learning is fun	170	1	4	3.36	.825
Habitat increases science learning	168	1	4	3.20	.964
Making scientific observations	170	1	4	3.23	.864
Collecting data	169	1	4	3.50	.725

Figure 5.1 Student Ratings of Program Impact on Science Learning



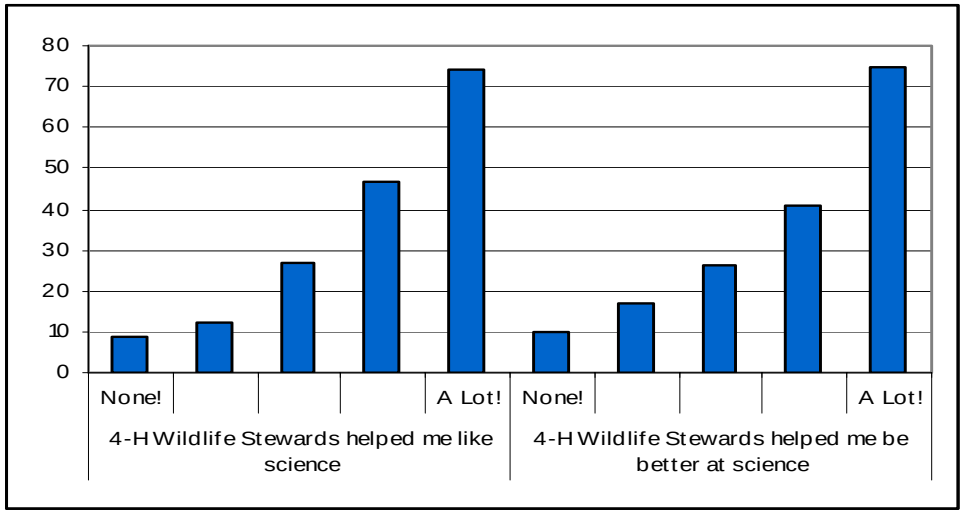
Students were also asked how much the 4-H Wildlife Stewards program helped them to like science and to get better at science. Students rated these questions on a 1-5 scale with 1 indicating "none!" and 5 indicating "a lot."

The student ratings of these questions are presented in Table 5.2; Figure 5.2 provides a graphic portrayal of the student responses.

Table 5.2: Impact of the 4-H Wildlife Stewards Program on Student Science

	N	Min.	Max.	M	SD
Student liking science	169	1	5	3.98	1.17
Student better at science	169	1	5	3.91	1.24

Figure 5.2 Student Ratings of Impact of Program on Science Learning



4-H Wildlife Stewards Summits

Two 4-H Wildlife Stewards Summits were held in the spring of 2004, one in the Portland Metro area, and one in the Willamette Valley area. The first 4-H Wildlife Stewards Summit was held in 2002, and since then interest in the event has grown. The summits are day-long events held at a "host" 4-H Wildlife Member school. Students from other area member schools are invited to send teams of students to participate. At the summits students hear guest speakers, meet and greet parents and community supporters, engage in hands-on science exploration, explore habitats and learn more about wildlife habitat, and make a presentation to a team of judges about their own 4-H Wildlife Stewards project. The day is filled with excitement and fun for all the students, and the host school students take particular pride in being the hosts for the event and showing off their own school habitat. The enthusiasm of the students and the pride that they take in sharing their habitat projects is certainly a statement about the impact of the program on student interest in science.

A total of 94 students, in grades 3 through 6, from 9 schools took part in the evaluation at the 2 summits. Table 5.3 shows the number of students by grade and school.

Table 5.3: 4-H Wildlife Stewards Summit Evaluation Participation by Grade by School

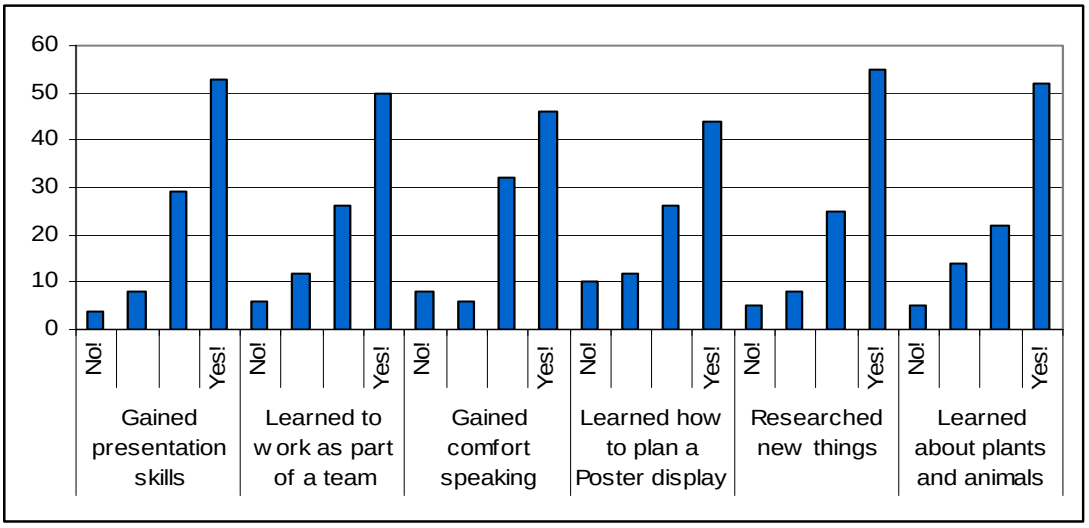
Grade	3rd	4th	5th	6th	Total
Jefferson	7	6	6	0	19
Inavale	0	12	0	2	14
Mountain View	0	3	2	0	5
Foster	7	11	0	0	18
Seth Lewelling	5	5	6	6	22
Lookingglass	0	0	1	4	5
Warrenton	0	0	0	4	4
Deep Creek	0	4	0	0	4
Missing					3
Total					94

At the summit students were invited to complete a brief questionnaire about participating in the 4-H Wildlife Stewards Summit. The questionnaire asked students about how participating in the 4-H Wildlife Stewards Summit impacted their skill level in several areas. The students answered each question on a 1-4 scale, with a 1 indicating "No!" and a 4 indicating "Yes!" The students' ratings of these questions can be found in Table 5.4. Figure 5.3 presents the student responses graphically.

Table 5.4 : Student Ratings of Impact on Science and Other Skills

	N	Min.	Max.	M	SD
Gained presentation skills	94	1	4	3.39	.819
Learned to work as a team	94	1	4	3.28	.921
Gained skill speaking before others	92	1	4	3.26	.924
Learned to plan a poster display	92	1	4	3.13	1.02
Researched new topics	93	1	4	3.30	.918
Learned about plants and animals	93	1	4	3.30	.918
Program helped me to like science	92	1	5	4.07	1.17
Program helped me do science better	92	1	5	3.87	1.33

Figure 5.3 Student Ratings of Skills Gained through Summit Participation



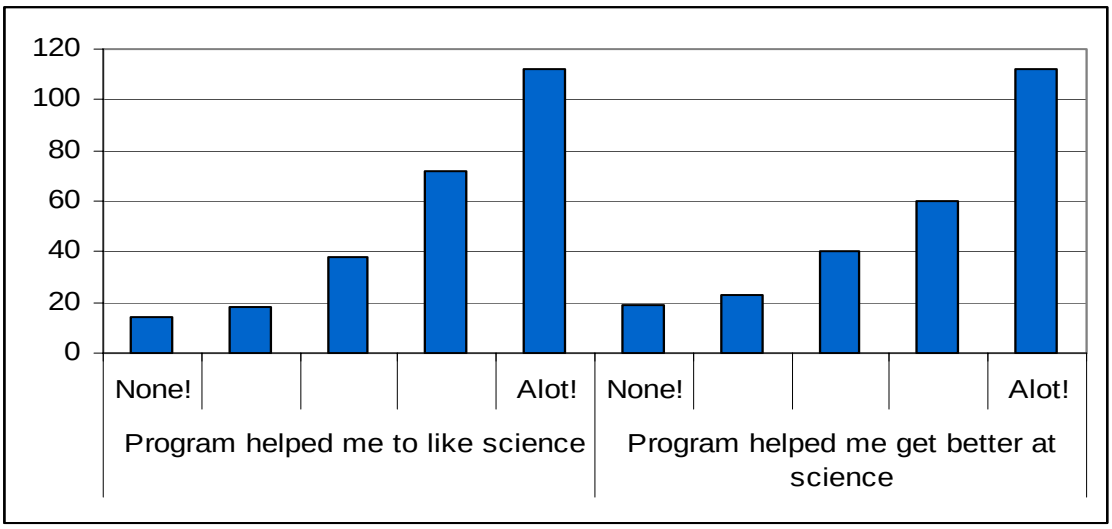
The end-of-summit questionnaire contained 2 of the same questions that were also on the classroom assessment. Since none of the students participating in the summits were from classrooms that participated in the classroom assessments, the data for these 2 questions were combined for a total of 254 respondents. The combined responses are presented in Table 5.5; Figure 5.4 provides a graphic portrayal of the student responses.

Table 5.5

Impact of the 4-H Wildlife Stewards Program on Student Science
Combined Classroom and Summit Respondents

	N	Min.	Max.	M	SD
Student liking science	254	1	5	3.98	1.17
Student better at science	254	1	5	3.88	1.28

Figure 5.4 Impact of Program on Student Science Learning (Combined)



Volunteer and Teacher Assessments

As part of the summative evaluation, follow-up questionnaires sent to all active volunteers and teachers in the spring of 2004. Respondents were asked to assess the impact of the 4-H Wildlife Stewards Program on student science interest and skills on a scale of 1 to 5. A rating of 1 indicated "not at all" and a rating of 5 indicated "a lot!" Tables 5.6 and 5.7 show the volunteer and teacher ratings of the impact of the program on student science activity, interest, and learning. Figures 5.5 and 5.6 graphically portray the ratings.

Table 5.6

Volunteer Ratings of Impact on Student Science Interest

	N	Min.	Max.	M	SD
Increase in student science interest	31	1	5	3.35	.985

Table 5.7

Teacher Ratings of Impact on Student Science Learning

	N	Min.	Max.	M	SD
Increase in student science interest	39	2	5	3.62	.847
Increase in student inquiry skills	38	2	5	3.26	.921
Teaches science differently now	35	1	5	3.09	1.12

Figure 5.5 Volunteer Ratings of Student Interest in Science

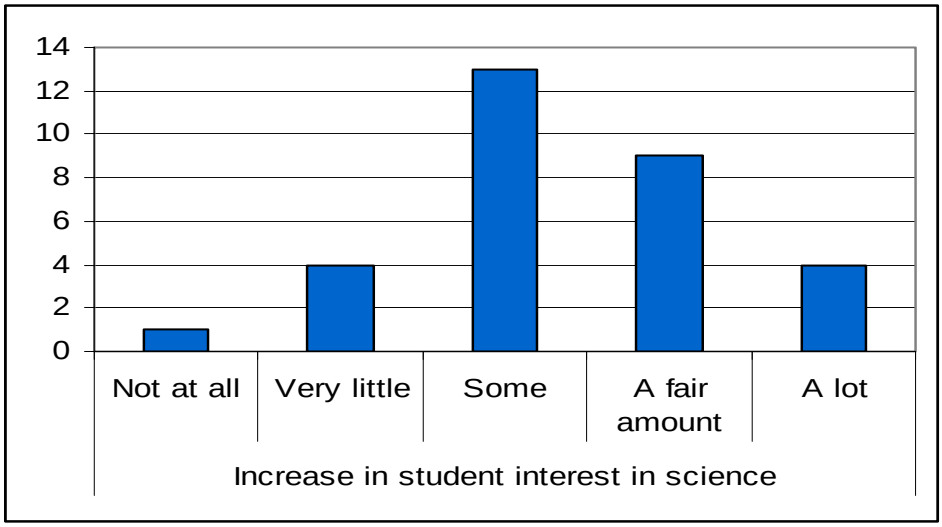
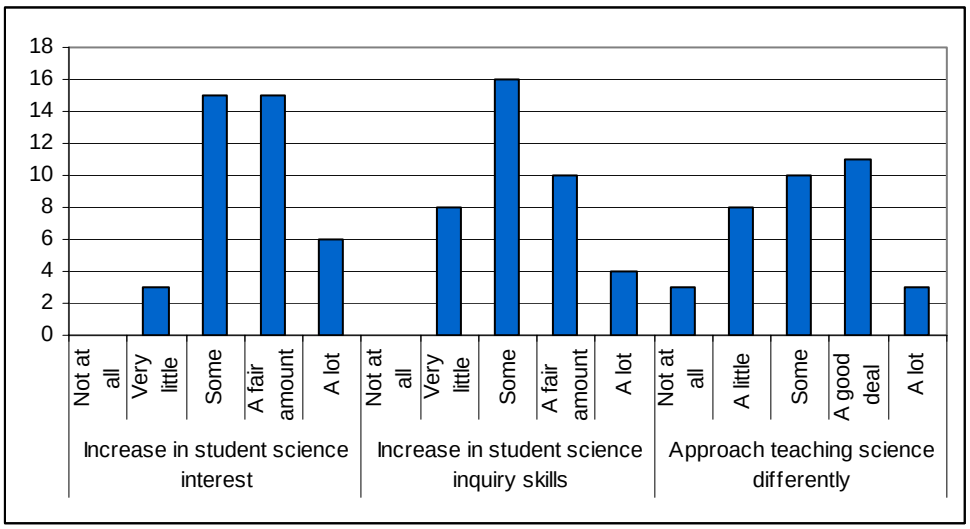


Figure 5.6 Teacher Ratings of Student Science Interest, Skills, and Teaching



4-H Wildlife Stewards volunteers and teachers were invited to provide narrative insight into the impact of the program on science education. The teachers were overwhelmingly positive in their response to the program. The teachers' applauded the program for:

- The new resources/ activities/ lessons/ideas that the 4-H Wildlife Stewards brought to their classrooms.
- The opportunity to teach science in real life and hands-on situations. Doing so meant teaching less from "kits."
- The opportunity to do natural observation and inquiry-based fieldwork.
- Other science opportunities that grew out of the habitat (e.g. school recycling efforts and worm composting bins).
- The enthusiasm for science the program brings, and the pride and responsibility the students show for the habitat/outdoor learning lab.

While the teachers had few negative things to say about the program, there was a unified recognition that their ability to use the habitat to enhance science education is highly dependent on the presence of a

trained volunteer. One teacher, who had a volunteer a few years ago, but has been without one since then reported that "not having a volunteer for a few years has significantly hurt my science program."

The volunteers identified several areas where the program impacted science education, including the opportunity for students to experience hands-on science, and providing materials that the students would not otherwise have. In addition, volunteers felt the students' understanding of the natural world and living systems is greatly enhanced by the program. The volunteers also emphasized that a lot of ground work has to be done in planning and developing the habitat before the teachers and students are able to use the habitat for science education.

Volunteers also noted that the use of the habitat for science education is highly dependent on whether the teacher wants to be involved or not. Volunteers reported that teachers often express interest in using the habitat, but then seem overwhelmed by time and budget restraints, the need to teach science curricula that is not easily adapted to the habitat, and the need to focus on making sure students are prepared for statewide science testing. These concerns were voiced by a number of volunteer respondents, but it is important to note that none of the teachers mentioned these concerns.

Summary

Self-report data from students, volunteers and teachers all indicate that the 4-H Wildlife Stewards program has a worthy impact on student interest and skill in science. It is clear that the Habitat Education Site makes science learning fun for the students, and that they feel skilled at making observations and collecting data using the habitat. In addition, many of the students reported that the program helped them to like science and to do science better. These findings are supported by the responses of the students who participated in the 4-H Wildlife Stewards Summits. Site visits made by the evaluator to several participating schools confirmed the enthusiasm the students have for using the habitat to learn science while observing and exploring the natural world.

Teachers gave fairly high ratings of the program's impact on student science interest, and to a slightly lesser degree, the impact of the program on student science skill. In addition, teachers revealed that the 4-H Wildlife Stewards program had helped them to teach science differently, primarily through providing resources and opportunities for hands-on science learning.

Although still fairly high, the volunteers gave the lowest rating of the impact of the program on student science learning. This makes sense insofar that the volunteers are not as involved with the students' overall educational progress as the teachers and students themselves are. In addition, the volunteers spend a lot of their time involved in ways that assist the project, such as garnering support and doing the physical work of designing and developing the habitat.

Chapter Six
Project Sustainability Evaluation

Volunteer and Community Sites Overview
Since July 2001 there have been 106 community sites enrolled in the program (See Table 6.1). Three hundred and twenty-two volunteers and 19 OSU employees have completed the training (see Table 6.2). There was an additional 10 volunteers who were trained prior to 2001 but are still active in the program today (Table 6.3).

Table 6.1 Detail Listing of Community Sites By Year

				2002	2003	2004	2005	2006
	Site Name	**County**	**Joined**					
1	Ainsworth Elementary	Multnomah	1997	active	active	active	active	inactive
6	Beach Elementary	Multnomah	1997	active	inactive	inactive	inactive	inactive
7	Binnsmead Middle School	Multnomah	1997	active	active	inactive	inactive	inactive
8	Deep Creek Elementary	Clackamas	1997	active	active	active	active	Active
9	Deer Creek Elementary	Washington	1997	active	active	active	active	Active
10	Highland Elementary	Multnomah	1997	active	inactive	inactive	inactive	inactive
11	Kellogg Middle School	Multnomah	1997	active	active	active	active	Active
12	Lewis Elementary	Multnomah	1997	active	active	active	active	Active
13	Llewellyn Elementary	Multnomah	1997	active	inactive	inactive	inactive	inactive
14	Woodland Elementary	Multnomah	1997	active	active	active	active	Active
15	Banks Elementary	Washington	1998	active	active	active	inactive	inactive
16	Findley Elementary	Washington	1998	active	inactive	inactive	inactive	inactive
17	George Middle School	Multnomah	1998	active	inactive	inactive	inactive	inactive
18	Mary Woodward Elementary	Washington	1998	active	active	active	active	Active
19	Ocean Crest Elementary	Coos	1998	active	active	active	active	Active
20	Parkrose High School	Multnomah	1998	active	inactive	inactive	inactive	inactive
21	Sitton Elementary	Multnomah	1998	active	inactive	inactive	inactive	inactive
22	Sunnyside Environmental School	Multnomah	1998	active	active	active	active	Active
23	Eagle Creek Elementary	Clackamas	1999	active	active	inactive	inactive	inactive
24	Fairplay Elementary School	Benton	1999	active	inactive	inactive	inactive	inactive
25	Franklin K-8	Benton	1999	active	active	active	active	inactive
26	Highland View Middle School	Benton	1999	active	inactive	inactive	inactive	inactive
27	Howard Eccles Elementary	Clackamas	1999	active	active	active	active	Active
28	Lincoln Elementary	Benton	1999	active	active	active	active	Active
29	Meek Elementary	Multnomah	1999	active	inactive	inactive	inactive	inactive
30	Park Place Elementary	Clackamas	1999	active	inactive	inactive	inactive	inactive
31	Rose City Park Elementary	Multnomah	1999	active	active	active	active	Active
32	Stephenson Elementary	Multnomah	1999	inactive	inactive	inactive	inactive	inactive
33	Sunrise Middle School	Clackamas	1999	inactive	inactive	inactive	inactive	inactive
34	Wilcox Elementary	Multnomah	1999	inactive	inactive	inactive	inactive	inactive
35	Arleta Elementary	Multnomah	2000	active	Active	Inactive	inactive	inactive
36	Inavale K-8 School	Benton	2000	active	active	active	active	Active
37	Seth Lewelling School	Clackamas	2000	active	active	active	active	Active
38	Atkinson Elementary	Multnomah	2001	active	active	active	active	active
39	Candy Lane Elementary	Clackamas	2001	active	inactive	inactive	inactive	inactive
40	Cascade Middle School	Deschutes	2001	active	inactive	inactive	inactive	inactive

41	Centennial Middle School	Multnomah	2001	active	inactive	inactive	inactive	inactive
42	Edwards Elementary	Multnomah	2001	active	active	inactive	inactive	inactive
43	Gaffney Elementary	Clackamas	2001	active	inactive	inactive	inactive	inactive
44	Harding Elementary	Benton	2001	active	inactive	inactive	inactive	inactive
45	Jennings Lodge Elementary	Clackamas	2001	active	inactive	inactive	inactive	inactive
46	Mt. Scott Center For Learning	Multnomah	2001	active	active	inactive	inactive	inactive
47	Orenco Elementary	Washington	2001	active	inactive	inactive	inactive	inactive
48	Palisades Elementary	Clackamas	2001	active	inactive	inactive	inactive	inactive
49	Riverside Elementary	Clackamas	2001	active	inactive	inactive	inactive	inactive
50	Butternut Creek Elementary	Washington	2002	active	active	active	active	inactive
51	Clover Ridge Elementary	Linn	2002	active	active	active	active	Active
52	Foster Elementary	Linn	2002	active	active	active	active	Active
53	Glencoe Elementary	Multnomah	2002	active	active	active	active	Active
54	Jacob Wismer Elementary	Washington	2002	active	inactive	inactive	inactive	inactive
55	Jefferson Elementary School	Benton	2002	active	active	active	active	Active
56	John Tuck Elementary	Deschutes	2002	active	active	active	active	Active
57	Lacomb K-8	Linn	2002	active	active	active	active	Active
58	Mt View Elementary	Benton	2002	active	active	active	active	inactive
59	Oak Heights Elementary	Linn	2002	active	active	active	active	Active
60	Parkside Elementary School	Josephine	2002	active	inactive	inactive	inactive	inactive
61	Peter Boscow Elementary	Washington	2002	active	active	active	active	Active
62	Pilot Butte Middle School	Deschutes	2002	active	inactive	inactive	inactive	inactive
63	Sisters High School	Deschutes	2002	active	active	inactive	inactive	inactive
64	South Bend Early Learning Center	Coos	2002	active	active	inactive	inactive	inactive
65	Waverly	Linn	2002	NA	NA	NA	NA	Pending
66	Youth Investment Program	Deschutes	2002	active	inactive	inactive	inactive	inactive
67	Astor Elementary	Clatsop	2003	inactive	active	active	active	inactive
68	Imlay Elementary	Washington	2003	inactive	active	active	active	Active
69	Lewis &Clark Elementary	Clatsop	2003	inactive	active	active	active	inactive
70	Lookingglass School	Douglas	2003	inactive	active	active	active	Active
71	Sandy Grade School	Clackamas	2003	inactive	active	active	inactive	inactive
72	Seven Oak Middle School	Linn	2003	inactive	active	active	active	Active
73	Tangent Elementary	Linn	2003	inactive	active	active	active	active
74	Tenmile Elementary	Douglas	2003	inactive	active	active	inactive	inactive
75	Warrenton Grade School	Clatsop	2003	inactive	inactive	active	active	Active
76	Brookwood Elementary	Washington	2005	inactive	inactive	inactive	active	Active
77	Dorena School	Lane	2005	inactive	inactive	inactive	active	Active
78	Gearhart Elementary	Clatsop	2005	inactive	inactive	inactive	active	inactive
79	Hoover Elementary	Benton	2005	inactive	inactive	inactive	active	Active
80	Hopkins Elementary	Washington	2005	inactive	inactive	inactive	active	Active
81	Kings Valley Charter School	Benton	2005	inactive	inactive	inactive	active	inactive
82	Mt. View	Benton	2005	inactive	inactive	inactive	active	Active
83	Obsidian Middle School	Deschutes	2005	inactive	inactive	inactive	active	Active
84	Prescott Elementary	Multnomah	2005	inactive	inactive	inactive	active	Active
85	Raleigh Hills School	Washington	2005	inactive	inactive	inactive	active	Active
86	River Road Elementary	Lane	2005	inactive	inactive	inactive	active	Active
87	YMCA	Josephine	2005	inactive	inactive	inactive	active	Active
88	Cesar Chavez School	Lane	2006	inactive	inactive	inactive	inactive	Active

89	East Linn Christian Academy	Linn	2006	inactive	inactive	inactive	active	Active
90	Family School	Lane	2006	inactive	inactive	inactive	inactive	active
91	Ferndale	Umatilla	2006	Inactive	Inactive	Inactive	inactive	Pending
92	Hall Elementary	Multnomah	2006	inactive	inactive	inactive	inactive	Active
93	Village School	Lane	2006	inactive	inactive	inactive	inactive	Active
94	Cedar Ridge Middle School	Clackamas	2004	inactive	inactive	active	active	inactive
95	Eddyville Charter	Lincoln	2004	inactive	inactive	active	inactive	inactive
96	Kelso Elementary	Clackamas	2004	inactive	inactive	active	inactive	inactive
97	North Clackamas Christian School	Clackamas	2004	inactive	inactive	active	active	Active
98	Waldport Elementary School	Lincoln	2004	inactive	inactive	active	active	inactive
99	Washington Elementary	Umatilla	2004	inactive	inactive	active	active	Active
100	Edward Byrom Elementary	Washington	pending	NA	NA	NA	NA	inactive
101	Firwood Elementary	Clackamas	pending	NA	NA	NA	NA	inactive
102	MITCH Charter School	Washington	pending	NA	NA	NA	NA	Pending
103	Mt. Pleasant	Clackamas	pending	NA	NA	NA	NA	Pending
104	Ridgeline Montessori Charter	Lane	pending	NA	NA	NA	NA	Pending
105	Sams Valley Elementary School	Jackson	2006	Inactive	Inactive	Inactive	inactive	active
106	The Delphian School	Yamhill	pending	NA	NA	NA	NA	inactive

Table 6.2: Detailed List of Active and Inactive Volunteers (names have been masked to protect volunteer privacy)

	First	Last	City	Training	Community Site	Level	Active
1			Eugene	Nov-04	Ridgeline Montessori Charter	Charter	yes
2			Eugene	Nov-04	Ridgeline Montessori Charter	Charter	yes
3			Hubbard	Jan-06	Mt Hood Community College	College	yes
4			Pendleton	Apr-03	Washington Elementary	Elem	yes
5			Sandy	Apr-03	Sandy Grade School	Elem	yes
6			Bandon	Apr-03	Ocean Crest Elementary School	Elem	yes
7			Troutdale	Apr-04	Seth Lewelling Environmental	Elem	yes
8			Grants Pass	Apr-04	Parkside	Elem	yes
9			Astoria	Apr-04	Lewis & Clark	Elem	yes
10			Portland	Apr-04	Rose City Park	Elem	yes
11			Tualatin	Dec-05	Hopkins Elementary	Elem.	yes
12			Corvallis	Dec-05	Hoover Elementary	Elem.	yes
13			Eugene	Dec-05	River Road Elementary	Elem.	yes
14			Corvallis	Dec-05	Hoover Elementary	Elem.	yes
15			Corvallis	Dec-05	Hoover Elementary	Elem.	yes
16			Corvallis	Dec-05	Jefferson	Elem.	yes
17			Milton-Free.	Dec-05	Ferndale	Elem.	yes
18			Powell Butte	Feb-03	John Tuck Elementary School	Elem.	yes
19			Redmond	Feb-03	John Tuck Elementary School	Elem.	yes
20			Portland	Feb-03	Atkinson Elementary	Elem.	yes
21			Portland	Feb-03	Atkinson Elementary	Elem.	yes
22			Corvallis	Feb-03	Clover Ridge Elementary	Elem.	yes
23			Redmond	Feb-03	John Tuck Elementary School	Elem.	yes
24			Albany	Feb-03	Clover Ridge Elementary	Elem.	yes
25			Pendleton	Feb-04	Washington ES	Elem.	yes
26			Portland	Incomplete	Raleigh Hills Elementary	Elem.	yes

27			Estacada	Jan-05	Prescott Elementary	Elem.	yes
28			Beaverton	Jan-05	Raleigh Hills Elementary	Elem.	yes
29			Eugene	Jan-05	River Road Elementary	Elem.	yes
30			Portland	Jan-05	Prescott Elementary	Elem.	yes
31			Portland	Jan-05	Prescott Elementary	Elem.	yes
32			Fairview	Jan-05	Woodland Elementary	Elem.	yes
33			Albany	Jan-05	Washington Elementary	Elem.	yes
34			Fairview	Jan-05	Woodland Elementary	Elem.	yes
35			Portland	Jan-05	Prescott Elementary	Elem.	yes
36			Hillsboro	Jan-05	Brookwood Elementary	Elem.	yes
37			Lake Oswego	Jan-06	MITCH Charter School	Elem.	yes
38			Albany	Jan-06	Clover Ridge	Elem.	yes
39			Hillsboro	Jan-06	Peter Boscow	Elem.	yes
40			Coos Bay	Jan-06	Madison	Elem.	yes
41			Pendleton	Jan-06	Washington School	Elem.	yes
42			Gresham	Jan-06	MITCH Charter School	Elem.	yes
43			Milwaukie	Jan-06	Seth Lewelling	Elem.	yes
44			Canby	Jan-06	Eccles	Elem.	yes
45			Canby	Jan-06	Eccles	Elem.	yes
46			Albany	Jan-06	Clover Ridge	Elem.	yes
47			Gresham	Jan-06	Hall Elementary	Elem.	yes
48			Sweet Home	Jul-01	Oak Heights	Elem.	yes
49			Corvallis	Jul-01	Foster	Elem.	yes
50			Milwaukie	May-02	Seth Lewelling	Elem.	yes
51			Astoria	Nov-02	Lewis and Clark Elementary	Elem.	yes
52			Warrenton	Nov-02	Warrenton Grade School	Elem.	yes
53			Seaside	Nov-03	Seaside Elementary	Elem.	yes
54			Roseburg	Nov-03	Lookingglass Elementary	Elem.	yes
55			Roseburg	Nov-03	Lookingglass Elementary	Elem.	yes
56			Milwaukie	Nov-03	Seth Lewelling	Elem.	yes
57			Portland	Nov-03	Glencoe Elementary	Elem.	yes
58			Tigard	Nov-03	Mt. Pleasant	Elem.	yes
59			Canby	Nov-04	Howard Eccles	Elem.	yes
60			Portland	Oct-02	Lewis Elementary	Elem.	yes
61			Hillsboro	Oct-02	Peter Boscow Elementary	Elem.	yes
62			Corvallis	Oct-02	Jefferson	Elem.	yes
63			Philomath	Oct-02	Inavale	Elem.	yes
64			Hillsboro	Oct-02	Peter Boscow	Elem.	yes
65			Oregon City	Oct-03	Deep Creek Elementary	Elem.	yes
66			Boring	Oct-03	Deep Creek Elementary	Elem.	yes
67			Winston	Oct-03	Tenmile Elementary	Elem.	yes
68			Sutherlin	Oct-03	Lookingglass Elementary	Elem.	yes
69			Roseburg	Oct-03	Lookingglass School	Elem.	yes
70			Winston	Oct-03	Tenmile Elementary	Elem.	yes
71			Winston	Oct-03	Tenmile Elementary	Elem.	yes
72			Beaverton	Oct-04	Raleigh Hills Elementary	Elem.	yes
73			Bandon	Jun-06	Ocean Crest Elementary	Elem.	yes
74			Lebanon	Jun-06	East Linn Christian Academy	Elem.	yes

75			Corvallis	Jun-06	Inavale	Elem.	yes
76			Lakeview	Jun-06	Fremont Elementary	Elem.	yes
77			Lebanon	Jun-06	East Linn Christian Academy	Elem.	yes
78			White City	Jun-06	Sams Valley Elementary School	Elem.	yes
79			Eugene	Sep-05	Evergreen Elementary	Elem.	yes
80			Ashland	May-06	Sams Valley Elementary School	Elem.	yes
81			Central Point	May-06	Sams Valley Elementary School	Elem.	yes
82			Central Point	May-06	Sams Valley Elementary School	Elem.	yes
83			Medford	May-06	Sams Valley Elementary School	Elem.	yes
84			Central Point	May-06	Sams Valley Elementary School	Elem.	yes
85			Medford	May-06	Sams Valley Elementary School	Elem.	yes
86			Warrenton	Apr-04	Warrenton Grade School -	Elem.	yes
87			Eugene	Jan-05	Cesar Chavez School	Elem.	yes
88			Cottage Grove	Jan-05	Dorena	Elem.	yes
89			Salem	Jan-05	Rosedale Elmentary	Elem.	yes
90			Corvallis	Oct-01	Lincoln	Elem.	yes
91			Eugene	Oct-04	Caesar Chavez Family School	Elem.	yes
92			Cottage Grove	Oct-04	Dorena School	Elem.	yes
93			Lake Oswego	Jun-06	Three Rivers Land Conservancy	HS	yes
94			Oregon City	Apr-04	North Clackamas Christian School	K-12	yes
95			Corvallis	Feb-03	Inavale	K-8	yes
96			Portland	Feb-04	North Clackamas Christian School	K-8	yes
97			Corvallis	Jan-02	Inavale	K-8	yes
98			Lebanon	Oct-02	7 Oaks Middle School	Middle	yes
99			Bend	Sep-05	Obsidian Middle School	Middle	yes
100			Bend	Sep-05	Obsidian Middle School	Middle	yes
101			White City	May-06	White Mountain Middle School	Middle	yes
102			White City	May-06	White Mountain Middle School	Middle	yes
103			Redmond	Jan-05	Obsidian Middle School	Middle	yes
104			Redmond	Jan-05	Obsidian MS	Middle	yes
105			Bend	Jan-05	Obsidian MS	Middle	yes
106			Redmond	Jan-05	Obsidian Middle School	Middle	yes
107			Corvallis	Dec-05	OSU Employee	N/A	yes
108			Tillamook	Dec-05	OSU Employee	N/A	yes
109			Monmouth	Dec-05	OSU Employee	N/A	yes
110			Central Point	Feb-04	OSU Employee	N/A	yes
111			Hillsboro	Feb-04	4-H WS Summer Camp	N/A	yes
112			Hillsboro	Incomplete	Community Volunteer	N/A	yes
113			Corvallis	Jan-02	OSU Employee	N/A	yes
114			Corvallis	Jan-05	Community Volunteer	N/A	yes
115			Clackamas	Jan-06	Washington State	N/A	yes
116			Vancouver	Jan-06	Washington State	N/A	yes
117			Albany	Jan-06	Community Volunteer	N/A	yes
118			Vancouver	Jan-06	Washington State	N/A	yes
119			Portland	Jan-06	Community Volunteer	N/A	yes
120			Portland	Jan-06	Asian Community	N/A	yes
121			Portland	Jan-06	Asian Community	N/A	yes
122			Corvallis	Jan-06	Community Volunteer	N/A	yes

123			Oregon City	Jul-01	Community Volunteer	N/A	yes
124			Shedd	May-02	Community Volunteer	N/A	yes
125			Dallas	May-02	OSU Employee	N/A	yes
126			Grants Pass	Oct-04	OSU Employee	N/A	yes
127			Corvallis	Oct-01	OSU Employee	N/A	yes
128			Redmond	Oct-01	OSU Employee	N/A	yes
129			Albany	Oct-03	Community Volunteer	N/A	yes
130			Newport	Oct-03	OSU Employee	N/A	yes
131			Eugene	Oct-04	OSU Employee	N/A	yes
132			Toledo	Sep-05	Community Volunteer	N/A	yes
133			Grants Pass	May-06	Three Rivers School District	N/A	yes
134			Independence	Oct-04	Kings Valley Charter	Charter	no
135			Philomath	Oct-04	Kings Valley Charter	Charter	no
136			Monmouth	Oct-04	Kings Valley Charter	Charter	no
137			Philomath	Oct-04	Kings Valley Charter	Charter	no
138			Crawfordsville	Jan-02	Crawfordsville	Elem.	no
139			Hayden Lake	May-02	Hawthorne Elementary	Elem.	no
140			Oregon City	Apr-03	Park Place Elementary	Elem.	no
141			Bandon	Apr-03	Ocean Crest Elementary School	Elem.	no
142			Oregon City	Apr-03	Park Place Elementary	Elem.	no
143			Bandon	Apr-03	Ocean Crest Elementary School	Elem.	no
144			Portland	Apr-03	Edwards Elementary	Elem.	no
145			Bandon	Apr-03	Ocean Crest Elementary School	Elem.	no
146			Sandy	Apr-04	Firwood	Elem.	no
147			Astoria	Apr-04	Lewis & Clark/Astor	Elem.	no
148			Grants Pass	Apr-04	Parkside	Elem.	no
149			Albany	Apr-04	Takena	Elem.	no
150			Portland	Dec-02	Teen	Elem.	no
151			Portland	Dec-02	Teen	Elem.	no
152			Portland	Dec-02	Teen	Elem.	no
153			Portland	Dec-02	Teen	Elem.	no
154			Porltand	Dec-02	Teen	Elem.	no
155			Portland	Dec-02	Teen	Elem.	no
156			Portland	Dec-02	Vocational Village	Elem.	no
157			Portland	Dec-02	Teen	Elem.	no
158			Portland	Dec-02	Teen	Elem.	no
159			Portland	Dec-02	Teen	Elem.	no
160			Portland	Dec-02	Teen	Elem.	no
161			Portland	Dec-02	Teen	Elem.	no
162			Lebanon	Dec-05	Sandridge Charter School	Elem.	no
163			Tangent	Dec-05	Sandridge Charter School	Elem.	no
164			Monmouth	Feb-03	Lyle Elementary School	Elem.	no
165			Albany	Feb-03	Clover Ridge Elementary	Elem.	no
166			Redmond	Feb-03	John Tuck Elementary School	Elem.	no
167			Sandy	Feb-03	Sandy Grade School	Elem.	no
168			Bend	Feb-03	John Tuck Elementary School	Elem.	no
169			Bend	Feb-03	John Tuck Elementary School	Elem.	no
170			Monmouth	Feb-03	Lyle Elementary School	Elem.	no

171			Corvallis	Feb-03	Mountain View	Elem.	no
172			Sandy	Feb-03	Sandy Grade School	Elem.	no
173			Corvallis	Feb-03	Mountain View	Elem.	no
174			Albany	Feb-03	Tangent Elementary	Elem.	no
175			Albany	Feb-03	Tangent Elementary	Elem.	no
176			Pendleton	Feb-04	Washington ES	Elem.	no
177			Albany	Feb-04	Tangent ES	Elem.	no
178			Albany	Feb-04	Tangent ES	Elem.	no
179			Bend	Jan-02	Sams Valley Elementary School	Elem.	no
180			Bend	Jan-02	Highland	Elem.	no
181			Sisters	Jan-02	John Tuck ES	Elem.	no
182			Albany	Jan-02	Calapooia	Elem.	no
183			Bend	Jan-02	Sisters	Elem.	no
184			Lebanon	Jan-02	Lacomb	Elem.	no
185			Portland	Jan-02	North Gresham	Elem.	no
186			Portland	Jan-05	Raleigh Hills Elementary	Elem.	no
187			Eugene	Jan-05	Cesar Chavez	Elem.	no
188			Albany	Jan-05	Waverly Elementary	Elem.	no
189			Troutdale	Jan-05	Woodland Elementary	Elem.	no
190			Portland	Jan-05	Raleigh Hills	Elem.	no
191			Ridgefield	Jan-05	Prescott Elementary	Elem.	no
192			Toledo	Jan-05	Arcadia Elementary	Elem.	no
193			Eugene	Jan-06	Eugene Family School	Elem.	no
194			Portland	Jul-01	Jacob Wismer	Elem.	no
195			Portland	Jul-01	Park Place	Elem.	no
196			Milwaukie	Jul-01	Jennings Lodge/Candy Lane	Elem.	no
197			Beavercreek	Jul-01	Park Place	Elem.	no
198			Oregon City	Jul-01	teen	Elem.	no
199			Sweet Home	Jul-01	Oak Heights	Elem.	no
200			Oregon City	Jul-01	Oregon City	Elem.	no
201			Milwaukie	Jul-01	Candy Lane	Elem.	no
202			Tualatin	Jul-01	Oregon City	Elem.	no
203			Portland	May-02	Park Place	Elem.	no
204			Portland	May-02	Buckman ES (not a member school)	Elem.	no
205			Corvallis	May-02	Inavale	Elem.	no
206			Canby	May-02	Eccles ES	Elem.	no
207			Hubbard	May-02	Ninety-one	Elem.	no
208			Portland	May-02	Rose City Park	Elem.	no
209			Tigard	May-02	Deer Creek	Elem.	no
210			Astoria	Nov-02	Lewis and Clark	Elem.	no
211			Ilwaco	Nov-02	South Bend Early Learning Center	Elem.	no
212			Astoria	Nov-02	Astor Elementary	Elem.	no
213			Astoria	Nov-02	Hilda Lahfi - Knappa	Elem.	no
214			North Bend	Nov-02	Bangor Elementary	Elem.	no
215			Lebanon	Nov-02	Lacomb Elementary	Elem.	no
216			Astoria	Nov-02	Lewis and Clark Elementary	Elem.	no
217			Astoria	Nov-03	Astor/Lewis and Clark Elementary	Elem.	no
218			Siletz	Nov-03	Eddyville Charter	Elem.	no

219			Yachats	Nov-03	Eddyville Charter	Elem.	no
220			South Beach	Nov-03	Eddyville Charter	Elem.	no
221			Roseburg	Nov-03	Lookingglass Elementary	Elem.	no
222			Covallis	Nov-03	Eddyville Charter	Elem.	no
223			Philomath	Nov-03	Eddyville Charter	Elem.	no
224			Lincoln City	Oct-04	Taft Elementary	Elem.	no
225			Albany	Oct-04	Waverly Elementary	Elem.	no
226			Corvallis	Oct-04	Santiam Christian School	Elem.	no
227			Eugene	Oct-04	Caesar Chavez School	Elem.	no
228			Albany	Oct-04	Oak Grove Elementary	Elem.	no
229			Otis	Oct-04	Taft Elementary	Elem.	no
230			Portland	Oct-01	Glencoe	Elem.	no
231			Portland	Oct-01	Glencoe	Elem.	no
232			Corvallis	Oct-01	Mountain View	Elem.	no
233			Eugene	Oct-01	Sweet Home	Elem.	no
234			Lebanon	Oct-01	Cascade	Elem.	no
235			Portland	Oct-02	Meek	Elem.	no
236			Corvallis	Oct-02	Mountain View Elementary	Elem.	no
237			Corvallis	Oct-02	Mountain View	Elem.	no
238			Canby	Oct-02	Howard Eccles	Elem.	no
239			Canby	Oct-02	Ninety-one	Elem.	no
240			Portland	Oct-02	Lewis Elementary	Elem.	no
241			Sandy	Oct-03	Oregon Trail School District	Elem.	no
242			Corvallis	Oct-03	Jefferson Elementary	Elem.	no
243			Seal Rock	Oct-03	Waldport Elementary	Elem.	no
244			Corvallis	Oct-03	Jefferson Elementary	Elem.	no
245			Seal Rock	Oct-03	Waldport Elementary	Elem.	no
246			Corvallis	Oct-03	Jefferson Elementary	Elem.	no
247			Corvallis	Oct-03	Lincoln Elementary	Elem.	no
248			Corvallis	Oct-03	Mtn View	Elem.	no
249			Oregon City	Oct-03	Byrom Elementary	Elem.	no
250			Winston	Oct-03	Tenmile Elementary	Elem.	no
251			Seal Rock	Oct-03	Waldport Elementary	Elem.	no
252			Lincoln City	Feb-04	Taft ES	Elem.	no
253			Gold Beach	Jan-05	Riley Creek	Elem.	no
254			Gold Beach	Jan-05	Riley Creek	Elem.	no
255			Eugene	Jan-05	Eugene Family School	Elem.	no
256			Hillsboro	Jan-05	Sandy Elementary	Elem.	no
257			Hubbard	May-02	Ninety-one	Elem.	no
258			Hood River	May-02	Westside Elementary	Elem.	no
259			South Beach	Nov-03	Siletz Valley	Elem.	no
260			Corvallis	Nov-03	Eddyville Charter	Elem.	no
261			Medford	Nov-04	St. Mary's School	Elem.	no
262			Eugene	Oct-04	Ceasar Chavez School	Elem.	no
263			Eugene	Oct-04	Caesar Chavez School	Elem.	no
264			Siletz	Oct-04	Siletz Valley School	Elem.	no
265			Aloha	Oct-01	Butternut Creek	Elem.	no
266			Eugene,	Oct-01	Willayillespie	Elem.	no

267			Independence	Oct-03	Indepence Elmentary	Elem.	no
268			Sisters	Jan-02	Sisters High School	HS	no
269			Portland	Jul-01	Sage - Teen	HS	no
270			Oregon City	Jul-01	Sage - Teen	HS	no
271			Oregon City	Jul-01	LaSalle	HS	no
272			Portland	Jul-01	Sage - Teen	HS	no
273			Oregon City	Jul-01	sage	HS	no
274			Portland	Jul-01	OCHS/Sage - Teen	HS	no
275			Oregon City	Jul-01	Sage/OC	HS	no
276			Bend	May-02	Juvenile Justice Center	HS	no
277			Otis	Oct-04	Taft High School	HS	no
278			Otis	Oct-04	Taft High School	HS	no
279			Otis	Oct-04	Taft High School	HS	no
280			Lincoln City	Oct-04	Taft High School	HS	no
281			Philomath	Oct-01	Philomath	HS	no
282			Sheridan	Apr-04	The Delphian School	K-12	no
283			Oregon City	Apr-04	North Clackamas Christian School	K-12	no
284			Portland	Apr-04	Sunnyside Environmental	K-8	no
285			Portland	Dec-05	Sunnyside Environmental School	K-8	no
286			Portland	Jan-05	Sunnyside Environmental School	K-8	no
287			Corvallis	May-02	Calapooia	K-8	no
288			Portland	Apr-04	George	Middle	no
289			Portland	Apr-04	Environmental Middle School	Middle	no
290			Portland	Apr-04	Environmental Middle School	Middle	no
291			Portland	Apr-04	Environmental Middle School	Middle	no
292			Portland	Feb-03	Clear Creek Middle School	Middle	no
293			Boring	Feb-03	Dexter McCarty Middle School	Middle	no
294			Portland	Feb-03	Dexter McCarty Middle School	Middle	no
295			Portland	Feb-03	West Orient Middle School	Middle	no
296			Troutdale	Feb-03	West Orient Middle School	Middle	no
297			Bend	Feb-03	Pilot Butte Middle School	Middle	no
298			Portland	Feb-03	Environmental Middle School	Middle	no
299			Estacada	Feb-03	Clear Creek Middle School	Middle	no
300			Portland	Feb-03	Environmental Middle School	Middle	no
301			Troutdale	Feb-03	Environmental Middle School	Middle	no
302			Bend	Feb-04	Pilot Butte MS	Middle	no
303			Bend	Jan-02	Pilot Butte	Middle	no
304			Portland	Jul-01	George	Middle	no
305			Portland	Jul-01	Centennial	Middle	no
306			Bend	May-02	Rim Rock / Pilot Butte	Middle	no
307			Bend	May-02	Rim Rock / Pilot Butte	Middle	no
308			Monmouth	May-02	Ash Creek Intermediate School	Middle	no
309			Conover	May-02	Rim Rock / Pilot Butte	Middle	no
310			Monmouth	May-02	Ash Creek Intermediate School	Middle	no
311			Albany	May-02	Lebanon's Seven Oak School	Middle	no
312			Sandy	Apr-03	Cedar Ridge Middle School	Middle	no
313			Bend	Feb-03	Pilot Butte Middle School	Middle	no
314			Albany	Jan-05	Clover Ridge MS	Middle	no

315			Lakebay	Apr-03	WSU Extension	N/A	no
316			Tillamook	Dec-05	OSU Employee	N/A	no
317			Dallas	Feb-04	OSU Employee	N/A	no
318			Salem	Incomplete	Community Volunteer	N/A	no
319			Terrebonne	Jan-02	Community Volunteer	N/A	no
320			Coos Bay	Jan-02	Pacific Child Center	N/A	no
321			Eugene	Jan-05	Not Assigned	N/A	no
322			Elkton	May-02	Elkton Education Center	N/A	no
323			Portland	May-02	Not Assigned	N/A	no
324			Portland	May-02	Did Not Enroll as A Leader	N/A	no
325			Astoria	May-02	OSU Employee	N/A	no
326			Portland	May-02	Not Assigned	N/A	no
327			Astoria	May-02	OSU Employee	N/A	no
328			Toledo	Nov-03	Community Volunteer	N/A	no
329			Eugene	Nov-04	Community Volunteer	N/A	no
330			Newport	Nov-04	Community Volunteer	N/A	no
331			Eugene	Nov-04	Community Volunteer	N/A	no
332			Lincoln City	Nov-04	Community Volunteer	N/A	no
333			Eugene	Oct-04	Not Assigned	N/A	no
334			Hillsboro	Oct-04	Not Assigned	N/A	no
335			Coquille	Oct-01	OSU Employee	N/A	no
336			Heppner	Oct-01	OSU Employee	N/A	no
337			Tigard	Oct-01	OSU Ext Staff Americorps	N/A	no
338			Monmouth	Oct-01	OSU Employee	N/A	no
339			Newport	Oct-01	OSU Employee	N/A	no
340			The Dalles	Oct-02	Not Assigned	N/A	no
341			Hillsboro	Oct-03	Community Volunteer	N/A	no
342			Bend	Jan-02	Youth Investment Program	Other	no
343			Bend	Jan-02	Youth Investment Program	Other	no

Table 6.3: Active Volunteers from Trainings Prior to 2001 (names have been masked to protect volunteer privacy)

	First	Last	City	Training	Site	Level
1			Portland	Jan-01	Atkinson	Elem
2			Philomath	Jan-01	community volunteer	Elem
3			Portland	Jan-01	Atkinson Elementary	Elem
4			Oak Grove	Jan-01	Kellogg	Middle
5			Hillsboro	Jan-01	Imlay	Elem
6			Corvallis	Jan-01	community volunteer	Elem
7			Harrisburg	Jan-01	Harrisburg	Elem
8			Jefferson	Oct-97	Fairplay Elementary	Elem
9			Sherwood	Oct-97	Hopkins Elementary	Elem
10			Milwaukie	Oct-00	Seth Lewelling	Elem

While the research on the Master Science Educators Model in the first 3 years of the National Science Foundation funded project demonstrated that science learning is enhanced through the presence of adult volunteers who have received specialized training in working with educators, schools, and youth to construct wildlife habitats on school grounds that are used for informal science inquiry, it was unclear

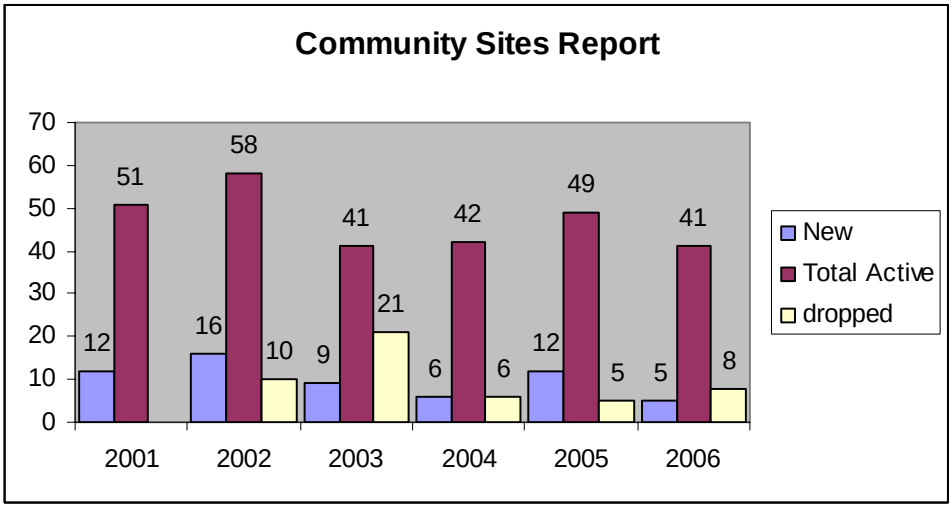
whether these programs could be sustained. In light of these early successes more research was needed to understand how this project builds the scope and capacity for informal science education at community sites over time and whether or not this momentum can be sustained. This supplementary research project sought to document how effective training and tools for Master Science Educators increases collaborations within the community and significantly broadens the project impact by creating informal science education programs that are institutionalized within the community.

Community Sites Data

Understanding what makes a community site successful and continue to grow and thrive while other sites may struggle and eventually drop out is important to understand if these programs are going to make a long and sustained impact on youth science learning. While not all the data that was collected on the community sites can fully explain what makes a project successful and what makes other programs struggle, it does help to explain some of variables.

The Master Science Educators Program (also known as 4-H Wildlife Stewards) had initially begun in 2001 after a successful pilot of this project was developed in 1998. In 2001 there were 51 active community school sites. Twelve of these schools were new sites. Over the course of the next five years, 48 new sites and 6 pending sites were added to the total project. During this same time frame, 2002-2006, however, 50 community sites became inactive (Figure 6.1).

Figure 6.1: Active and Inactive Community Sites

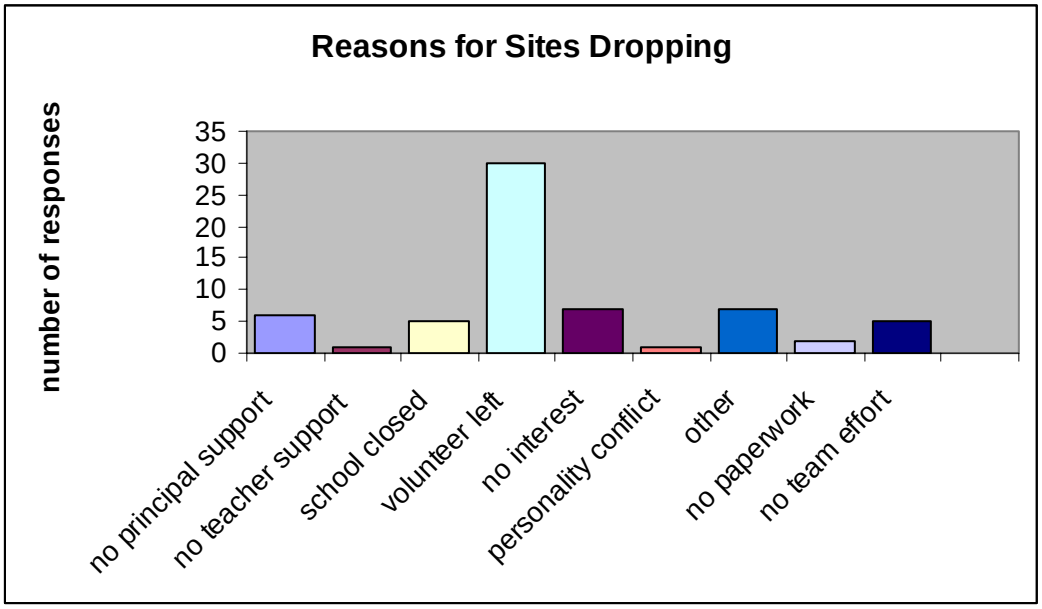


The primary reason most sites became inactive was that the trained volunteer placed at that community site left and no one stepped forward to replace them. Volunteers site several reasons why they left. For many, their son or daughter graduated from the community site and they no longer had a connection to the school. Others sited personal reasons such as a change in job status, moved to another city, or health reasons. However, a significant number of the volunteers who left had no personal connection to that community site. Many of these volunteers were also AmeriCorps volunteers or Master Gardener volunteers who were giving their required volunteer service back to a community. While they may have had an interest and willingness to serve their assigned community they had no personal connection with that community. When they completed their required service they terminated their volunteer service to this community and the WS project. (Figure 2)

The second most mentioned reason why community sites became inactive is that the volunteers felt unsupported by school staff, school administrators and/or the local community. WS programs are informal science education programs that support and enhance the school curriculum. WS volunteers

work with teachers, youth and community partners to create, use and sustain habitat education sites on school grounds for science learning. Since these programs require the buy-in of the school staff and administrators to create these sites and to utilize these sites during non-school hours, it is important that the volunteers work in partnership with school staff. For many of the volunteers who worked at schools that became inactive, they described that teachers and school administrators are preoccupied with helping students reach state education standards and have little time or interest in informal science education programs that, in their opinion, might detract from this focus. It was difficult to get them interested in supporting the program or being a part of the team effort to make this project succeed.

Figure 6.2: Reasons for community sites dropping out



Project Sustainability Certification

After a large number of schools in 2003 became inactive, supplemental funding was sought to develop tools and resources that would help ensure more community sites could be sustained over time. A project certification curriculum and trainings were developed based on what was learned from the volunteers and community site staff. By **sustainable**, we mean programs that will endure over time. The 4-H Wildlife Stewards Project Certification program supports 4-H Wildlife Stewards volunteers, teachers, students, and community members to create community-based, enduring science education programs. The certification program also helps ensure that the wildlife habitat site is a site that can be maintained and supported for many years to come.

A school Habitat Education Site can be a small, 5- by 5-foot butterfly garden or a complex urban wildlife habitat with ponds, nest boxes, interpretive trails, and bird gardens. (The larger the project, the wider the base of support needed to sustain it over time.) Developing "ownership" by as many people as possible is the key to creating long-term support for the project, no matter what the size. Successful projects also have a vision and a detailed plan for involving students in all aspects of developing, promoting, and sharing the project and celebrating success.

Through the certification process, the 4-H Wildlife Stewards Habitat Education Site becomes a place for students to observe, study, and take action to protect their environment. By following the guidelines of the Project Certification program, a project is more likely to endure, and can provide a profound educational experience that will enrich youths' lives.

The Project Certification Program was designed to help volunteers and community site staff build a sustainable program by:

- Helping community sites understand the expectations and requirements for creating and sustaining a Habitat Education Site on school grounds
- Rewarding and recognizing community sites, partners, teachers, students (Junior 4-H Wildlife Stewards), and 4-H Wildlife Steward volunteers for working to make their school Habitat Education Site project sustainable
- To promote sound educational, social, environmental, and economic practices while creating a habitat for wildlife on school grounds

Community sites complete a series of four project levels of certification. At each level, OSU Extension 4-H provides training, support, and recognition for school-wide efforts.

- Level One: Planning stage
- Level Two: Creating stage
- Level Three: Sharing and Involving stage
- Level Four: Civic Action stage

Community sites must meet minimum requirements at each level in order to complete certification. The requirements have a point value; a school must earn a minimum number of points to attain each level of certification. Community sites may work on requirements at more than one level at a time; however, certification must be completed in order by level.

At each level of certification, 4-H Wildlife Stewards Member Schools must demonstrate accomplishments in each of the following categories:

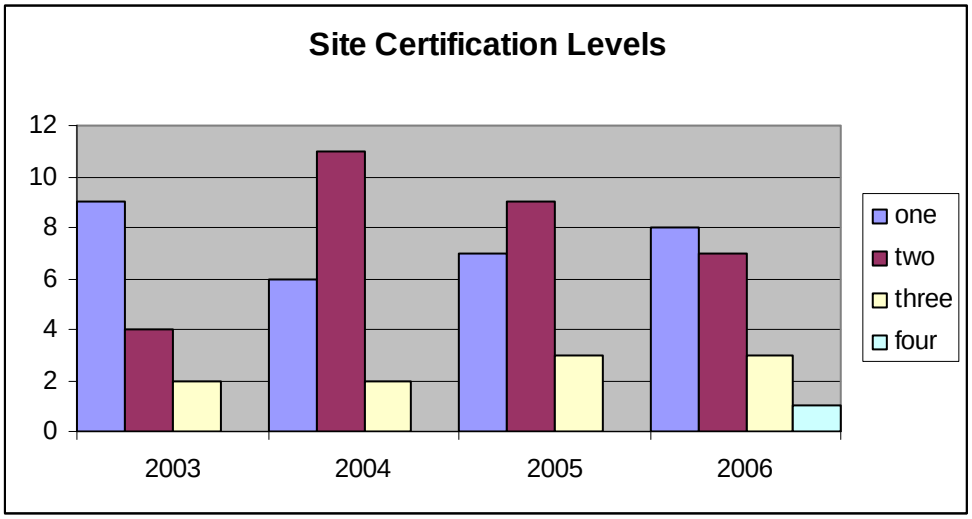
- Site development
- Student projects and participation
- Annual timeline and goals
- Habitat Team and partnerships
- Record keeping
- Budget and fundraising
- Celebrating success
- Education Enrichment opportunities

The Project Certification program involves four steps.

1. Community sites complete an application for certification for each level.
2. A 4-H Certification Team comprised of 4-H staff, educators, biologists and horticulturists reviews the application.
3. The Certification Team visits the school and tours the Habitat Education Site guided by a group of students. The certification team submits a report summarizing the accomplishments and areas of weakness. The team also submits a summary of recommendations to the community site for future sustainability.
4. Schools who meet the minimum requirements at each level are rewarded and recognized.

Since the Project Sustainability Certification program was implemented in fall of 2003 (Figure 6.3), the number of schools who became inactive has dropped. Though the entire reason why there are fewer schools who have become inactive cannot be entirely attributed to the Project Certification Project, there is strong evidence that those schools who do participate in the certification project are more likely to remain active. Nineteen schools have become inactive since fall 2003. Only 5 of the 21 schools who participated in the project certification program became inactive during this same time frame.

Figure 6.3: Community Site Certification Levels



Chapter Seven
Advanced Trainings

Active Master Science Educators were invited to participate in one of the two Advanced Training opportunities. Due to a low response rate, only a single Advanced Training event was held. Volunteers received additional training on methods for establishing collaborative partnerships, media relations, creating an on-site science committee, grant writing, community resources, and project sustainability.

A total of twenty-three participants attended the Advanced Training. At the conclusion of the Advanced Training, participants were asked to respond to a survey evaluating the overall quality of the training and indicating their level of competence on several issues prior to the training and after the training. Participants were asked to rate the quality of the Advanced Training on a 1 to 5 scale with "1" being "extremely poor" and "5" being "excellent". Participants were also asked to respond to their level of competence on a 1 to 5 scale, with "1" indicating "not competent" and "5" indicating "very competent" before attending the training session and after completing the training session. Unfortunately, due to a miscommunication with the leaders of the Advanced Training not all the participants completed the survey. A copy of the instrument is in appendix 5. Below is a summary of the evaluation of the Advanced Training.

Table 6.1: Ratings of the Overall Quality of the Advanced Training

	N	Min	Max	Mean	SD
Team teaching ability	14	4	5	4.79	0.43
Team presentation style	15	4	5	4.73	0.46
Team knowledge	14	4	5	4.86	0.36
Overall training quality	16	3	5	3.63	0.62
Were expectations met?	16	3	5	3.69	0.60

Table 6.2: Competence Level of the Participants Before and After Advanced Training (*Paired T Tests)*

	N	Before	After	Mean Diff	SD	SEM	t	df	Sig. (2-tailed)
Preparing grants	7	2.29	3.57	-1.29	1.11	0.42	-3.06	6	0.02
Financial management	6	3.50	3.50	0.00					
Identifying funding	8	2.88	3.88	-1.00	0.93	0.33	-3.06	7	0.02
Marketing and promoting	8	3.63	4.13	-0.50	0.53	0.19	-2.65	7	0.03
Developing partnerships	8	3.50	4.38	-0.88	0.83	0.30	-2.97	7	0.02
Recruiting new volunteers	9	3.22	3.44	-0.22	0.67	0.22	-1.00	8	0.35
Volunteer leadership training	8	3.25	3.75	-0.50	1.07	0.38	-1.32	7	0.23
Science curriculum alignment	9	3.89	4.22	-0.33	0.50	0.17	-2.00	8	0.08
Teacher support	9	3.00	3.56	-0.56	0.73	0.24	-2.29	8	0.05
Teacher coordination	8	3.00	3.38	-0.38	0.52	0.18	-2.05	7	0.08
Recruiting teachers	8	2.88	3.38	-0.50	0.76	0.27	-1.87	7	0.10
Principal support	7	3.71	4.00	-0.29	0.49	0.18	-1.55	6	0.17
Leadership changes	8	2.50	2.88	-0.38	0.52	0.18	-2.05	7	0.08
Peer system	8	2.75	3.63	-0.88	0.83	0.30	-2.97	7	0.02
Additional science knowledge	8	4.00	4.38	-0.38	0.74	0.26	-1.43	7	0.20
Monitoring program	8	3.25	4.00	-0.75	0.71	0.25	-3.00	7	0.02

Note: Significant changes are highlighted in yellow. Due to the small number of respondees one should be very cautious in interpreting the validity of these results.

Chapter Eight
Volunteer Focus Groups on Project Sustainability

Another goal of the supplemental year project was to conduct additional research on what makes these informal science education projects successful, what are the roadblocks for volunteers and what are some important strategies that make these community-based projects sustainable. To address this goal, WS volunteers from across the state were invited to participate in a three day state conference in Salem, Oregon. Focus groups established to explore these sustainable issues were a part of the 3-day conference. Twenty-five out of approximately 130 active WS volunteers participated in the conference. During the first day of the conference the volunteers were divided into 3 small focus groups of 8-9 per group. Each of these groups represented a mix of volunteers who had been involved in the program for long-term (3-5 years), short-term (1-2 years) and less than one year. Unlike the one-way flow of information in a one-on-one interview, these focus groups generated data through the give and take of group discussion. Listening as people share and compare their different points of view provided a wealth of information—not just about what they think, but why they think the way they do. Unlike most focus groups, however, these volunteers were self-selected in that they chose to participate in this conference and in these focus groups.

Discussion Board Methodology

The first part of the focus group was a discussion board writing exercise. Each focus group was seated in chairs in a large circle. Each volunteer was asked to write down on an 11x17 paper the three most important things they learned as a WS volunteer. They were then asked to write down one question they would like to ask other WS volunteers and to record this question ½ ways down their paper. After writing their 3 most important lessons learned and their one question they were instructed to pass their paper to the person to their right. The person to their right was asked to read the responses and comment on the 3 important lessons. They were also asked to try to answer the question posed by the WS volunteer on the left and if they chose to they could write a new question. Once the second volunteer had completed their writing, they were asked to pass this paper to the next person – the person on the right. This would repeat until the first volunteer received their paper back with comments and answers from the other 7 volunteers in their focus group. These discussion board writing exercises were collected and the data was compiled (appendix 6). The purpose of the focus groups was to learn the views of these participants about what they learned about being a volunteer in this project and what issues or concerns they have experienced as a result of being a volunteer. This instrument provided a variety of information.

Discussion Board Findings

There were 7 broad themes that came out of this discussion board writing exercise. Overwhelmingly the top three primary lessons learned had to do with working with others.

- **Gaining the support and buy-in of school administration and teachers is critical for success. Get school staff to see how this program enhances what is being taught in the classroom is vital.**

Eleven volunteers noted that one of the most important things they learned was that if their project was going to be successful, it was necessary to have the buy-in of the school principal and the teachers. Volunteers also reported that school principals are often the gatekeeper and can stop or hinder these informal science education projects from succeeding. Volunteers cite pressures to meet education standards as a primary obstacle. They also stated that many school staff do not always see the benefit of these programs and how this program can support school efforts to increase math and science literacy. It should be noted that while some volunteers struggled with this issue while others found great success enlisting school administration and staff support.

- **No single volunteer can deliver this project alone. Teamwork and getting others involved is important.**

This theme was the theme most mentioned during the discussion board exercise (14 responses). Volunteers who cited this important lesson recognized that it was important to get other parents, volunteers, community members and community partners on board if their project was going to succeed.

Most volunteers cited that in general it is easy to get people on board and there are many people willing to support science education programs. Establishing a good communication plan and a clear outline of expectations for other volunteers and partners were mentioned as necessary first steps for involving others. A few volunteers noted, however, that most parent volunteers at their school site were already volunteering a large amount of time to their school and they were not willing to get involved in this project.

- **Engaging children through hands-on experiences and giving them ownership in the project is a key to success.**

Ten volunteers cited that the lessons they learned on how to keep kids engaged and excited about learning as one of their most important lessons learned. Conducting the program after-school or in a 4-H club setting, was one way to get youth involved since youth participants had much more flexibility and input into their learning. Volunteers mention that role-modeling joy for learning and enthusiasm for science were instrumental for keeping youth engaged.

- **Securing funding for these informal science education projects was easier than expected**

Developing a good budget and then enlisting the financial support from others through grants and donations were essential ingredients to success. Getting support from others through donations and grants proved to be much easier than expected. Volunteers all report that the amount of financial and material resources that community partners and organizations are willing to give to these informal science education programs was quite strong and they all experienced success.

- **Developing a plan and then implementing the plan through delegation and team work brings success**

Creating, using and sustaining Habitat Education Sites on school grounds for science learning requires continual energy and focus. Establishing a good plan with big dreams, but starting small, will reap the strongest results. Some volunteers learned the hard way that they started out too big and should have taken smaller steps in creating the project.

- **The project is more likely to be successful if it enhances curriculum and what teachers are teaching in the classroom.**

Three volunteers report that understanding education standards and how these projects can support and enhance what teachers are teaching in the classroom helped shape their informal science education project. By aligning their educational goals with the state education standards, volunteers report that their project was then better able to market and sell their project to others and get more people involved.

- **A basic understanding of the core subject matter is important**

Six volunteers reported that a basic understanding of the core themes of the subject matter was important. Volunteers cited understanding the importance of native plants, how plants thrive, local wildlife habitat requirements, and water issues were core subject matter knowledge that a volunteer should have to be successful.

The questions volunteers asked one another followed similar themes. However, one additional theme that came up was the issue of working with culturally and socio-economically diverse communities:

- ❑ How do you work with competing programs at the school?
- ❑ How do you spark the interest of teachers in your school?
- ❑ How do you draw in more parents? (4 responses)
- ❑ How do you create an equal playing field between parents involved in the alternative school and their neighborhood school with little parent involvement?

- How do you involve low socio-economic families/kids in the program?
- How to you best insure the continuation of a project after maintenance people graduate from the school?
- How do I sustain programs after my first year is up?
- How do you sign up a community group?
- How do you find the time?
- How do you incorporate lots of community partners to help?
- How do you get teachers and school administration interested in the program when they are all busy on preparing students for standardized tests?
- How do you sustain and continue the program for years to come?
- How have you handled student project notebooks?
- How do you get teachers to build on what we present to their class?

Group Discussion Methodology

Following the discussion board exercise, each of the three focus groups was asked to discuss three topics – project sustainability, keys to success, and roadblocks. Three questions for each theme were introduced.

Project Sustainability

- How will you know when your project is sustainable?
- What are the tools needed to create project sustainability?
- What tools provided by OSU Extension 4-H are the most beneficial?

Keys to Success

- What are the skills needed to be a successful 4-H Wildlife Steward?
- Which skills are most important?
- How will you know when you are successful?

Roadblocks

- What are some of the roadblocks that prevent you from achieving success?
- What are some of the environmental influences that may affect success?
- What prevents you from using your time in the most ideal or productive way?

One OSU Staff 4-H Team member facilitated each focus group and recorded the group responses (see appendix).

Group Discussion Findings

Project Sustainability

Volunteers report that these informal science education projects will be sustainable when there is sustained volunteer leadership, students are actively engaged with the project, and community partners, neighbors and school staff are all part of the on-going team involved in implementing these projects.

The tools volunteers reported in their group discussions that are the ones most needed to help ensure project sustainability, again, primarily revolved around human capital. Some of the common themes associated with tools needed for project sustainability were:

- Web-based resources such as on-line discussion and bulletin boards
- Education for neighbors and school staff
- On-site training for staff
- Resources and curriculum to support education benchmarks
- Community partnerships

The tools sited that were currently available and most helpful were the volunteer training, website, volunteer handbook, DVD videos, newsletter, and affiliation with Oregon State University Extension 4-H.

Keys to Success
Volunteers identified many keys to success in their discussion groups. Many of these keys to success fell into one of several themes:

- Support and expand the volunteer base
- Stay flexible, enthusiastic and patient
- Partner with other groups, businesses and resources
- Support and enhance what teachers are teaching in the classrooms
- Keep the project manageable- start small
- Engage children through hands-on experiences and encourage ownership
- Communication is essential

Roadblocks
The roadblocks to success that volunteers identified were many of the same reasons why some community sites became inactive in the program. Overwhelmingly, if a volunteer felt that they did not get support from other parents, school staff or school principal, these were seen as major roadblocks. Volunteers felt strongly that if left to implement this project alone, that this was a major roadblock to success. Teachers and school staff who are preoccupied with state education standards allowed little time for providing support to these informal science education programs. Many of these same teachers also placed science education as secondary to reading and math or were simply not comfortable with science. Funding was seen as a roadblock for some programs.

Only in a few cases were the logistics of creating a Habitat Education Site on school grounds cited as a roadblock. Logistical roadblocks included vandalism, school security issues, and access to water.

Chapter Nine
Virtual Volunteers On-Line Web Course Evaluation

Beginning in spring 2005 volunteers were offered the option of taking the WS leader training online. The training was offered with the optional OSU graduate professional credits. Each course participant was required to complete the 4-H leader application and screening process prior to starting the course. Each course was offered for an 11-12 week period and followed the Oregon State University course schedule. Volunteers were expected to complete their course during the course period. Volunteers who did not complete the course were required to ask the course instructor for an extension of time. Course participants could move through their course at their own pace.

The on-line course covered the same content and topics as the on-site training. The course was broken into 7 units. Each unit had 2-3 modules for a total of 20 modules. Each training module required that the course participant complete assigned readings. They would also sometimes be required to view a chapter in the training video series or view a PowerPoint presentation. At the conclusion of each module the participant was required to complete an on-line quiz. In order to pass the module, the participant needed to score 80% correct or better. If they were not successful in passing the quiz, they were required to repeat the module. Each module was designed to be completed in 30-60 minutes. At the end of each unit each participant was required to complete an assignment which required local research at their site. Some of the assignments included: developing an agenda and 1 year goals for their habitat team, creating a science inquiry lesson, or writing a press release. Each student was required to post their assignment on the course discussion board. They were also instructed that they had to give feedback to at least one other student for each of the 7 assignments. The course instructor provided feedback as well. At the conclusion of the course, successful participants received their certificate of completion and their volunteer name badge.

On-line Course (Virtual Volunteers) Training Summary

Initially, the course was designed for 1) new volunteers from rural or remote areas where traveling to attend 3-day training in Western Oregon would be a hardship; 2) volunteers outside of Oregon; and 3) those volunteers who were committed to joining the program and completing training but for various reasons had schedule conflicts for the specified dates. While these three scenarios certainly proved to be valid reasons why some participants opted to take the on-line course, another group of participants became interested in the on-line course because it offered a new alternative to people's busy schedule (Table 6). Over half of the volunteers who completed the course on-line also completed a portion of their course on-site. In some cases the volunteers could attend only one or two days of the 3-day training but could not attend all three days. In the past, we informed potential volunteers that if they could not attend all 3 days of the training then they would not be allowed to participate. By completing some of the training modules on-line and some on-site, then more volunteers who in the past would have been turned away were able to participate in this program. This on-line course also had the unexpected benefit of reducing the time and travel costs of the training team. Two of the five WS trainings offered in 2005-06 school year were only offered as a combination on-site/on-line training. Volunteers attended a one-day mandatory training on site but then were required to complete their course on-line (Table 10.1). This saved the training team considerable time and travel since they only had to attend one day of training.

Table 10.1 On-line Course Participation Rates

Term	Enrolled	Completed	Incomplete	Dropped
Spring 2005	8	4	2	2
Fall 2005*	13	10	3	0
Winter 2006	5	3	1	1
Spring 2006	5	4	0	1
Summer 2006**	11	4	7	0
TOTAL	42	25	13	4

*= course was offered as a one day on-site training and the rest was completed on-line
** = this course at the time of this report has not ended and students are still finishing the course; this course is also offered as a combination one day on-site and the rest on-line

Table 10.2: Method of Course Participation

Term	Combined On-line and on-site training	On-line only
Spring 2005	8	0
Fall 2005*	10	6
Winter 2006	0	5
Spring 2006	0	5
Summer 2006**	11	0
TOTAL	29	16

Out of the total 45 participants enrolled in this course, 23 were from communities more than 150 miles from Portland or Salem, OR where the regular on-site trainings were conducted. This included the 11 participants from Southern Oregon. Due to time and travel constraints for the training team to conduct training in Southern Oregon, a one–day training with 2 training team members was conducted. Participants in this training course are expected to complete the rest of their training on-line in September 2006.

End of Training Evaluation

The goal of the WS on-line training program is to provide an informative and effective program designed to prepare adult volunteers to work with local schools to plan and establish wildlife habitats on the school grounds. In turn, these habitats are used as outdoor laboratories for informal science learning that is guided by the volunteer. Training participants completed end of session evaluations at all trainings. Participants were asked to rate the effectiveness of the course on a scale of 1-5, with a "1" indicating extremely poor" and a 5 indicating "excellent". Fifteen out of the 21 participants who completed the first four courses submitted evaluations (The Summer 2006 training course is still in session at the time of this writing). Participants were asked to evaluate this course on how much their current level of skills and knowledge changed. Table 10.3 shows the means for the evaluation of the course.

Table 10.3: Participants self-reported change in knowledge and skills

	Mean
Teaching science in an informal setting?	3.3
Your rights and responsibilities when working with youth?	2.8
Teaching and presentation skills?	3.1
The development stages of children in grades K-8?	3.3
The scientific method of inquiry?	3.1
Wildlife Habitat Requirements?	3.6
Project based learning?	3.4
School District Guidelines	3.9
Writing grants to support your project?	3.4
The benefits of using native plants in wildlife habitats?	3.5
The things to include in your site inventory?	4.2
Ways to celebrate and promote the success of your project?	3.8

Project sustainability	4.4
The Oregon Education Benchmarks?	2.6
How to work with others to build project support?	3.6
To teach natural resource concepts to youth?	3.5
Working in a school setting	4.0
Locate resources	3.8

Participants at the end of the training were then asked to evaluate their level of preparedness

Table 10.4: Preparation of Participants

	Mean
To teach science informally	3.3
To be a 4-H Wildlife Steward	3.1
To teach natural resource concepts	3.1
To locate resources	3.8
To work as a team in a school setting	3.5

When comparing all three methods of delivery – online only, combination on-site and online and onsite only, however, there were differences in how much knowledge and level of preparedness the participants felt. Tables 10.5 and 10.6 show these differences.

Table 10.5: Comparison of Delivery modes for self-reported change in knowledge and skills

	Online	Combination	On-site
*Teaching science in an informal setting	3.5	3.0	4.2
*Your rights and responsibilities when working with youth	2.9	2.6	NA
Teaching and presentation skills	3.3	2.8	4.1
*The development stages of children in grades K-8	3.4	3.0	4.1
*The scientific method of inquiry	3.2	3.0	4.2
Wildlife Habitat Requirements	3.6	3.6	3.9
*Project based learning	3.7	3.0	3.8
School District Guidelines	4.0	3.8	4.0
Writing grants to support your project	3.1	4.0	3.8
The benefits of using native plants in wildlife habitats	3.3	3.8	4.3
*The things to include in your site inventory	4.0	4.6	4.1
Ways to celebrate and promote the success of your project	3.3	4.5	NA
Project sustainability	4.3	4.6	NA
The Oregon Education Benchmarks	2.3	3.1	3.6
How to work with others to build project support	3.8	3.4	NA
To teach natural resource concepts to youth	3.3	3.8	NA

Working in a school setting	3.8	4.3	NA
Locate resources	3.6	4.2	NA

* indicates that this module was taught on-site in the combined method

Table 10.6: Comparison of Participants from On-line trainings, combination trainings and On-site trainings

	Online Mean	Combination Mean	On-site Mean
To teach science informally	3.4	3.5	4.1
To be a 4-H Wildlife Steward	3.2	3.0	3.7
To teach natural resource concepts	3.1	3.5	4.0
To locate resources	3.3	4.3	4.4
To work as a team in a school setting	3.6	4.2	NA

Based on the small number of participants who participated in the evaluation of the course taught entirely online (8 participants) and the number of participants who participated in the evaluation of the course when it was taught as both an on-line course and on-site (9 participants) it would be difficult to make any definitive conclusions. It does, however, appear that in almost every category that courses delivered entirely on-site were more effective in helping participants feel prepared than those courses that are taught on-line. Several volunteers who completed the on-line course indicated that they missed the face-to-face interaction with other students and would have preferred to take the course on-site or to have at least some contact with other students and the instructor face-to-face.

When asked if they to evaluate the course overall, generally the participants on average rate the quality the same whether they took the course entirely on-line, in combination of on-line and on-site, or entirely on site. On a scale of 1-5 with 5 being "excellent" the mean scores were as follows:

Table 10.7: Participants evaluation of training quality

Method	Mean
On-Line Only	3.3
Combination	3.0

When asked if they would recommend this course to others the mean scores were as follows:

Table 10.8: Participants willingness to recommend this course to others

Method	Mean
On-Line Only	4.8
Combination	4.3

As the popularity of using the internet and on-line courses has grown throughout the country and the world, this new method of delivering education and training needs to be given careful thought. Further research on this topic, based on the preliminary results of the 4-H WS on-line training course would be very beneficial to the field. There are a number of variables that need to be analyzed before the impacts of on-line science education can be understood. Some of these variables include:

- The science background of the participants prior to the course
- The education background of the participants prior to the course
- The content of the individual modules
- The quality and quantity of the education materials
- Prior experience and comfort with technology

Chapter Ten
Collaborative Partnerships to Reach New Audiences – Focus Groups

Overview
One of the goals of the supplemental year project was to conduct additional research on the impact of additional ("advanced") training and support related to WS projects sustainability, especially inner-city and high minority communities. To address this goal, "advanced" training sessions were held and a series of focus groups was scheduled with representatives of inner-city, minority communities in Portland, Oregon.

Focus groups are...in-depth, qualitative interviews with a small number of carefully selected people brought together to discuss a particular topic. Unlike the one-way flow of information in a one-on-one interview, focus groups generate data through the give and take of group discussion. Listening as people share and compare their different points of view provides a wealth of information—not just about what they think, but why they think the way they do. The focus groups were organized and conducted as described by the American Statistical Association (1997):
http://www.amstat.org/sections/srms/brochures/focusgroups.pdf

The initial plan was to have two focus groups with representatives from several minority communities present at each focus group. Extensive and repeated efforts were made to recruit participants to the focus groups. However, because of scheduling difficulties this was not possible; instead focus groups were held with each of four minority groups separately. Four focus groups with representatives from the Asian American, Latin American, African American, and Native American communities were held separately in the spring of 2006. Meals were provided to the participants.

The purpose of the focus groups was to hear the views of these participants about development opportunities, function, and successes of the WS program in the Portland metropolitan area. Only two or three participants actually attended each of the focus group sessions.

A small, uniform set of semi-structured questions were used to guide the focus group discussion. See Appendix for a description of the protocol and the interview questions.

Findings
Engaging minority students, their families, and the broader minority community is certainly possible for programs like the WS program but one needs to be cognizant of several historical and cultural issues.

- **There are no "quick fixes" and one must adopt a long-term, mutually beneficial, consistent strategy, and be patient; small victories are still victories.**

Some of the possible strategies could be starting with small (tiny) projects, develop credibility and grow over time. It is important to be thoughtful, sensitive, and strategic in building the WS program. Other possibilities are starting with very young children (pre-school/headstart) and develop additional programs or involve other schools as these children get older. These children could be followed through the education system.

- **When attempting to enlist the involvement of minority families, one needs to understand that the families may be structured differently and that building personal relationship must come first with program opportunities following.**

Family structures and responsibilities in minority and immigrant communities are not the same as in white, middle class communities. This dramatically impacts the opportunities for volunteering in schools. Some minority families may be extended families with more than one generation and/or more than one family group living together. Issues related to who represents the family, gender role expectation, and culture norms are important to understand. There will likely be differences between minority groups in how to interact with these issues. In some minority families, a grandparent, an uncle or aunt, cousins, or other relatives may be serving as parents because one or more of the biological parents may not be

present. One should not make too many assumptions; try to develop personal relationships FIRST. Don't forget the elderly. They may want to be involved and can have great influence in the family and the community. Once personal relationships, credibility, and trust are developed, then one can begin to explore programmatic opportunities. These programmatic opportunities can then be mutually developed. Approaching minority communities with a predetermined solution to their problem(s) is a prescription for failure.

- **Print and video materials must be culturally and linguistically relevant**

Promotional materials such as brochures, fliers, and videos need to have minority faces in them. It is important for everyone to literally see themselves in the WS program. This means that one may need to develop several parallel sets of print or include being as diverse as possible if only a single set of materials (videos) will be developed. How one presents the purpose and content of WS program is important too and needs to be presented in a culturally relevant way. Developing personal relationships with key members of various minorities in the school and community are important. Over time, they can become supporters, advocates, and spokespersons for the WS program.

- **Some ethnic groups are wary of government agencies and schools.**

Some minorities and recent immigrants have difficult and negative experiences with government agencies and schools (sometimes in their home country and/or here in the USA). Therefore, programs like Wildlife Stewards sponsored by what appear to be government agencies and/or schools are often met with skepticism and distrust. As a result, students, parents, and community members are unlikely to participate.

- **Partner with existing community groups, agencies, and advocacy groups.**

Because of the wariness of some minorities and recent immigrants, having the WS program create community partnerships and be less school-centered may be a viable alternative in some communities. However, one needs to be aware that these community groups receive many requests and themselves struggle for adequate resources and sustainability. These community groups receive many requests for services and partnerships. As such, the WS program needs to approach these agencies with a win-win strategy. Approaching these community agencies with requests for help without giving them something in return will not likely be successful.

- **Image of 4-H programs in urban, minority communities.**

In many minority communities in Portland, the image of 4-H programs is "getting animals ready for the state fair". It is viewed as a "rural program" not an "urban program". There is not a correct understanding of the new role, new programs, and new mission of 4-H in the many of the minority communities.

- **The "Wildlife Stewards" as a brand name and a different way of viewing science.**

The name "Wildlife Stewards" may depict a specific way of thinking about science, habitats, and environmental issues in the minds of some people. In some urban (minority) communities, they may not associate themselves closely with this orientation. They might think about flower gardens or vegetable gardens in their yards but this is a different way of thinking about, describing, and acting on these issues than they expect from "Wildlife Stewards". The term "Wildlife" is not something that is necessarily associated with an urban environment or an urban neighborhood.

In addition, Native Americans often think about science and natural resource issues in a different way too. Native Americans may equate "Wildlife Stewards" with a "short-term, managed" way of thinking about issues such as natural parks, forest management, ecological issues, farming, and other related issues. This view equates WS with "managing" habitats and natural resources and a view of using science to "manipulate" the environment. Native Americans often think about themselves interacting with nature,

being a part of nature, and respecting nature (sometimes religiously so). This orientation tends to view the natural ebb and flow of natures cycles as the natural (best, only) way of understanding these issues. One does not “manage” nature; one is not a “Wildlife Steward”; one is a part of or perhaps one is subservient to nature.

Chapter Eleven
Long Term Impacts on Student Science Learning

A third and final goal of the supplemental project was to continue the outcomes research and evaluation at the community sites, measuring the relative strength of each program component and its ultimate impact on student science attitudes, knowledge and interest.

4-H Wildlife Stewards Student Focus Group Summary
Focus groups of 4-H Wildlife Stewards (WS) students were held in the spring of 2005 in order to hear the views of these participants about the functioning and success of the program in their respective schools. (Focus group techniques are described in the final section of this report). Groups of 5-7 students participated in focus groups at six different sites. Students saw the 4-H Wildlife Stewards program as a positive and attractive educational experience that greatly enriched their school science program. Specific activities, payoffs, and outcomes were described as strong in every setting, but they varied in specificity by site. There was unexpected support from the students for standardized achievement testing programs (e.g., state benchmark tests) in some, but not all, sites. Participants could name and describe science concept attainment that was uniquely fostered by 4-H Wildlife Stewards. Students said that their attitudes toward science, school, and each other were improved as a result of their 4-H Wildlife Stewards experience. The relationship between science in the outdoor habitat and classroom science varied a great deal by site and teacher. Volunteers were essential, successful components; their specific participation varied by site. Outdoor habitat science activities connected with other science enrichment programs. There were very few complaints, unconnected to each other and not directly related to 4-H Wildlife Stewards. There is a need to investigate in what ways many teachers were able to successfully use 4-H Wildlife Stewards to enlarge and enrich their classroom science programs and in what ways some sites were able to fully exploit the volunteer resources.

- **Students saw the 4-H Wildlife Stewards (WS) program as a positive and attractive educational experience that greatly enriched their school science program.**

WS enabled students to: get outside; do hands-on science; get involved in their neighborhoods; do work which helped the environment and school, adopt individual plants, and learn about nature. They had fun, and saw other students in a new and positive setting. They learned about plants, animals, nature, natural cycles, environmental pollution and restoration, and gardening by doing WS activities. They took it personally: “working in dirt can relax you.” One site made up songs and skits for Earth Day. Some students became tour guides; others made interpretive trails and gave presentations at county fairs and answered questions of judges. All wrote, recorded, and mapped their activities. Students learned how to do science, and found that it was interesting, fun, and not as difficult as they previously thought. They studied things they cared about. Some said that WS activities would help them now, at home, and later in life.

Students reported that they learned about such things as: food chains; life cycles; habitat interaction; animal and plant life; human effects on the environment; composting; and causes and remedies for pollution and littering. They learned about native and nonnative plants and animals, and how to attract native animals. One site said that adults should become aware of how chemicals can enter water systems. Other topics included differences between native and invasive living things, and how to attract native animals by nurturing native plants. WS increased student pride in their schools. Several sites repaired creeks or ponds. They took care of habitat areas and became more aware of the appearance of the outdoor parts of their schools, and how other people saw them. One site repaired vandalism. Students had very few, scattered complaints. These problems were not directly connected with WS. When challenged that outdoor learning was not as important as school science, the students disagreed. They pointed to increased learning because of the reality they encountered. They said that classroom learning was enhanced by the WS activities.

- **Specific activities, payoffs, and outcomes were described as strong in every setting examined, but they varied in specificity by site.**

Each site reported specific, memorable, thematic activities: a pond habitat; adoption of individual plants and trees, green house, a bioswale habitat, a community garden, stream rehabilitation, bat study, butterflies and butterfly garden, pond or stream study, or cataloging trees and plants. Sometimes students were very active and other times they used the natural areas to sit and watch. The specific activities and learnings varied by site—but each had a clear focus that the students described. Specific habitats, neighborhood resources, school histories, volunteer interests, and teacher emphasis were well exploited for program development at each site.

- **Participants could name and describe science concept attainment that was uniquely fostered by 4-H Wildlife Stewards.**

Participants described concepts and specific learnings tied to the local activities and settings. Almost all sites mentioned concepts about life cycles, interdependence of plants and animals, nutrient cycles, the personal nature of scientific inquiry, adaptation, and the role of ecology in neighborhood life. Some related soil science ideas: both the geology (strata, origins) and the biology of abundant life in soils. They linked bird identification, habitat, and bird feeder preparation. They were able to give advice about garden locations and plant needs. Some distinguished between invasive and native plants and animals.

- **There was unexpected support for separate standardized achievement testing programs (e.g., state benchmark tests) in some, but not all, sites.**

In some sites students were virtually unanimous in reporting positive effects on their standardized (and class) achievement testing as a result of WS experience. This finding was unexpected because it was not known that any site had the specific goal of using WS to *directly* support improved standardized or classroom testing scores. Students in these sites said that their testing was improved because they (a) recognized major concepts such as nutrient cycling, plant or animal life cycles, food chains, or environmental interaction, (b) recognized specific vocabulary, (c) were less alienated from science and science activities, or (d) felt more confident in their own ability to know and do science. Apparently this site variation was a result of how teachers worked locally. This is a topic that needs follow up from participating teachers: how can teachers link WS and achievement test gains?

- **Students said that their attitudes toward science, school, and each other were improved as a result of WS experience.**

A common theme was that, as a result of WS, students saw science to be LESS distant, unlikable, fearful, difficult, boring, and inaccessible. Some students said that you don't need to create fun games that simulate science, but that science itself is fun. In some sites, students also reported that WS made them successful in school, and with classmates, in ways that were different from conventional classroom activity. They had a chance to talk with each other as they worked. One site played together in leaf piles that they had made. Participants frequently described values for habitat restoration, attention to the benefits of healthy vegetation and animal life for neighborhoods, recycling, and attention to natural resources. One site described how their plans worked out even better than they had hoped: "pretty good job for 4th and 5th graders!" Others remarked that they now could answer adult questions; some without specific study but rather directly from their experience.

- **The relation between WS science and classroom science varied a great deal by site and teacher.**

Some teachers used WS as an integral part of their classroom science program, while others used it as an adjunct. In a very few cases it was the only science students experienced. Some teachers taught research skills through the hands on WS, then extended the book/internet information gathering with the interests generated by the outdoor activities. One classroom combined out of door activities with in class stream tables. Another site dissected sharks using WS observation skills. Squirrel studies and bird feeder projects began outside, and then moved into classroom science time. Several sites said that WS replaces what students called "chapters in books" or kits. Students could think of even more connections that could be made with classrooms, for example one site suggested that writing assignments could be done out of

doors in the habitats. WS contributed to entire schools. One site mentioned two assemblies designed around habitat learning and materials. Again, site variation appears to be a result of how teachers worked locally. This is a topic that needs follow up from participating teachers: how can teachers link WS and classroom science?

- **Volunteer participation was essential. However, it varied in format by site.**

Some volunteers were described as being available and supportive. Several were described as the main source of ideas and materials for the school WS program. One was called "the big cheese." Others brought plants, tools, wheelbarrows. One initiated a mural and county fair presentation preparation. Some volunteers were active only in outdoor activities. A few classrooms reported that volunteers continued their contributions into the classroom.

- **WS activities connected with other science enrichment programs**

Students described how WS connected to other science enrichment programs such as fossil study, electricity, MAD science, and forestry. OMSI science camp, Dept. of Forestry, 4-H, WS Summit, youth engineering development, and county fairs all were mentioned as supported by local WS experiences.

- **Unanswered questions for further inquiry.**

How did various teachers use WS, volunteers, and assessment? (A teacher focus group series would be helpful).

4-H Wildlife Stewards Focus Group Responses

- **They liked WS, thought it was a valuable experience.**
  - Getting out into nature a plus.
  - We made friends, got to know other kids, out in nature.
  - It's fun. Science is fun.
  - Not just reading it, doing it. Now hands on rather than "talks" about science.
  - Used to find science boring, didn't understand what it was. Used to hate science. Now, nature is science. Science was complicated, too technical, now easy.
  - Working in dirt can relax you.
  - Volunteers helped a lot. They taught us things.
  - Good for the school. WS makes a statement that this is a good school. Increases school pride. Some schools would give up on vandalism; we don't give up.
  - Attracts wildlife.
  - See plants grow; improve the environment. Planting trees thanks the earth.
  - More aware of where we walk. When you step on soil you are stepping on living things.
  - Research (outdoor observation, indoor books & internet) cycle was fun and easier.
  - Can go off original topic; get to something immediate to learn.
  - Playing in the leaf piles, after making them. Running and jumping.
  - 4-H Wildlife Stewards Summit a good experience for showing off what they had learned and for visiting other habitats.
  - Painted a school mural. Took posters to county and state fairs. Judges asked unexpected questions that made us think.
  - Taking people on tours of our habitat.
  - Songs and skits for earth day.
  - Adopted plants.

- **Can think of little not to like, to change (scattered, infrequently mentioned)**
  - Don't like bugs that bother me while working in habitat areas.
  - Don't like vandals.
  - A few instances of too many outside volunteers at once.
  - Getting too dirty; cold.

- **What was learned (varied by location)**
  - There are a lot more [kinds] of plants than I knew before.
  - How animals adapt, live in nature.
  - Trees have growing layers.
  - What happens if the food chain is broken or disturbed by humans?
  - Names of plants.
  - Roots have structures and functions; roots differ greatly by plant
  - Animal and plant life cycles. (Frogs, salmon, butterflies, plants).
  - Different sciences interrelate (soils and animals, weather and habitats).
  - How few of the young animals and seeds survive.
  - Non-native plants, weed control.
  - Composting.
  - Bugs and spiders have a place in the habitat; killing them is a serious disturbance.
  - Pond fish life habits and cycles.
  - Mushrooms change soil; they can be identified. Some can be dangerous. You may want to know about them for camping.
  - Many animals live in soil. Soil has texture, color, depth, strata.
  - Gardening techniques.
  - Bulbs have distinct growth directionality.
  - Gas cycles (O2 and CO2).
  - Observation skills.
  - Nutrients in the environment, habitat.
  - How readily non-native plants and animals can invade.
  - More observant of habitat, plants, animals; especially children living on farms.
  - Improved pet care.
  - Mapping skills.
  - We know more science; we are better at science.
  - Not all vocabulary retained. Few spectacular examples: angiosperms and gymnosperms. Now we know things without looking in a book.
  - Role of bioswale in habitat.
  - Adults should watch out for the chemicals that they run into streams.

- **Attitude changes**
  - Really into science now. Even when it already was a favorite; now more so. I finally get the point of science. Science is more than just the technical stuff.
  - Science not seen as difficult, as boring now.
  - Glad to do a bunch to help nature out. When I visited in summer, plants needed water so I gave them some. If called upon to tend to plants in summer I would go.
  - New perspectives about pollution when seen in habitat areas.
  - Having WS in a school for more than several years enables history, memories, and links of older grades with younger grades doing the same activities/areas.

- **Supported testing**
  - Students agreed that WS supported their state testing. Several said “quite a bit.”
  - Supported testing in two ways: 1) some content covered (e.g., life cycles, energy in the environment, environmental interactions, plant and animal life, the planet Earth), 2) attitude change: science not hard, boring.
  - Better able to write and read about science as a result of WS.
  - The state tests included different types of content and questions but when it included questions related to topics they had studied in the habitat, the state tests “were very easy.” “When they were similar, the habitat study definitely helped.”
  - Recognized some words found in tests.

- **Friendships built in WS**
  - Outdoor setting and tasks quite different from regular school. Gave kids a chance to learn more about each other, and like each other in new ways, become friends.
  - Can see kids in a different light. Someone you don't like in class can have good qualities outside.
  - True even for kids in same class; this new setting allows new roles and competencies to be appreciated.
  - New friendships interact with new learning.

- **Future use, learning**
  - If you're going to be a forester or a scientist.
  - We'll do similar things in our own communities.
  - More likely to garden at home, future. Potatoes, garlic.
  - Know where to plant because of sun exposure.
  - We'll plant in our own yard at home.
  - Work here, learn here, and help at home.
  - Can see whole yard at home as a habitat.

- **Aided growth in academic skills**
  - Outside (real) research better than computer research.
  - Habitat study improved reading and writing in science.

- **Varied connections with classroom science**
  - Much variation. Some teachers integrate well (e.g., observation outside to topics identified then brought inside). Some had not much classroom science other than
  - WS. Volunteer gave us the ingredients; she was the big cheese in this project.
  - Some volunteers helped in classroom, also.
  - Instance of direct link between classroom and wetlands/habitats. Another of habitat within a bottle.
  - Classroom study of ecosystems helped by habitat experience.
  - There are a few connections with current science, geology, especially plate tectonics, electricity; dissections (clear direct connection not as common as general).
  - Few recollections of connections between WS and classroom science. Includes activities, ideas, attitudes, or people.
  - Teacher, volunteer turnover can be a problem.
  - Students don't like science sitting in one place, only with books. Class science not as much fun.
  - Increased the amount of class science; up from once per week.
  - Not sure; don't know about this.

Focus Group Methodology

The focus group methodology as described by the American Statistical Association (1997): http://www.amstat.org/sections/srms/brochures/focusgroups.pdf was used. Focus groups are...in-depth, qualitative interviews with a small number of carefully selected people brought together to discuss.... Unlike the one-way flow of information in a one-on-one interview, focus groups generate data through the give and take of group discussion. Listening as people share and compare their different points of view provides a wealth of information—not just about what they think, but why they think the way they do.

Science Achievement Tests

The Oregon Department of Education (ODE) periodically assesses student achievement in science (and other subject areas) on a rotating schedule in selected grades (i.e. 5, 8, and 10). The ODE science achievement data was obtained for the schools participating in the Student Focus Groups described above. The data includes each of these schools' science achievement scores (the percentage of students meeting or exceeding the performance standards) and the overall statewide scores.

Table 12.1: Oregon Science Assessment Results

Percentage of Students Meeting or Exceeding Science Standards
5th Grade, 2002 - 2005

School	2001-02	2002-03	2003-04	2004-05
Seth Lewelling Elementary School	68%	n/a	67%	72%
Eccles Elementary School	81%	n/a	67%	86%
Clover Ridge Elementary School	60%	n/a	88%	64%
Imlay Elementary School	n/a	n/a	80%	84%
Inavale Elementary School	93%	n/a	95%	95%
Jefferson Elementary School	86%	n/a	84%	87%
Oregon Average	74%	n/a	84%	86%

Youth Website

The NSF funded 4-H Corroborree website is an innovative international 4-H science program started in 2004 for 4-H science clubs using outdoor classrooms either in school or after school. The 4-H science clubs deliver place based authentic science education where students practice inquiry science process skills. Since the program began students in Australia and the United States have been learning about native frog habitats and about each other. At the same time building skills and interest in science.

The Corroboree- 4-H Across the Seas website is designed to support students and teachers in the USA and Australia as they learn about science inquiry and each other, by participating in a shared habitat data collection project. Students in 4-H Corroboree learn about local wetland habitats, focusing on frog habitats in particular. Through the use of the 4-H Corroboree website, students can share what they learn with each other, even though they live on opposite sides of the Earth! Information provided for the evaluation of this component is based on an evaluation conducted in the spring of 2005 and 2006 with 54 students, 32 in Australia and 22 in the United States. There were 25 girls and 29 boys who participated in the evaluation, ranging in age from eight to 19.

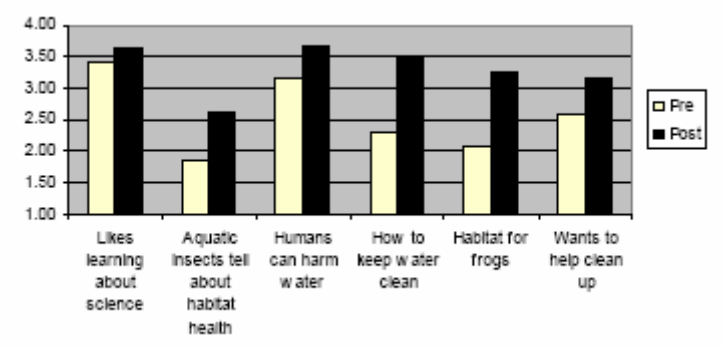
Students Liked

- Working with other students
- Writing to other kids on the internet
- Checking the streams
- Going to the wetlands

The 4-H Corroboree program uses the interactive website, complete with "Frog Blogs," to engage students in learning. Through the website, students can create a home page for their classroom, enter data, share results with students in other schools and countries, and connect to resources to support their science projects. http://www.4hcorroboree.org/ Teachers use the website as well, accessing curriculum materials, and other educational support for the project.

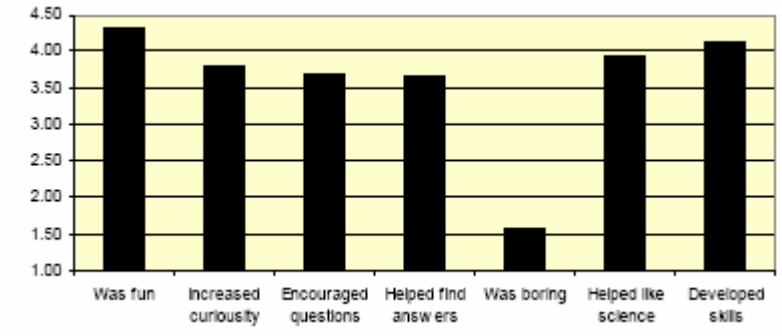
Here is what students knew and felt before and after participating in this internet exchange.

Figure 12.1: Impact of website on science knowledge



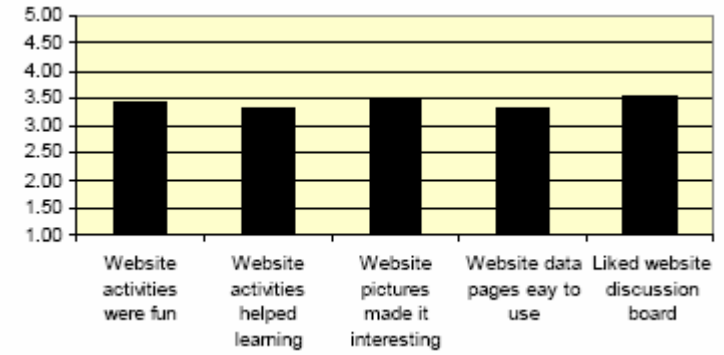
Students gave high marks to the impact of the program on their curiosity and science skills. In addition, they reported that Corroboree was not boring, but a lot of fun! Corroboree uses a winning combination of hands-on science and an emphasis on science processing and computer skills to engage students in learning that is fun and interactive.

Figure 12.2: Impact of website on their curiosity for science and science skills



On a 1-5 scale, students rated the quality and effectiveness of the website favorably

Figure 12.3: Effectiveness of website



Youth Summits

A total of 167 students from 6 Member schools participated in the 2006 Annual 4-H Wildlife Stewards Youth Summit that was held at Inavale K-8 School in Corvallis, Oregon on April 27, 2006. A total of 73 youth worked in teams or as individuals and prepared a poster and oral presentation to a judge. In addition there were 94 students participated in the 4-h Wildlife Stewards Summit as a member of the planning committee, habitat tour guide or student expert, student ambassador, greeter or activity leader.

Evaluations were mailed to teachers following the Summit along with ribbons and judges score sheets for student presentations. Students and teachers were asked to complete the evaluation and return to the Benton County OSU Extension Service office. A total of 73 evaluations were distributed to those students who presented their projects to a judge and of those 42 completed and returned the evaluation.

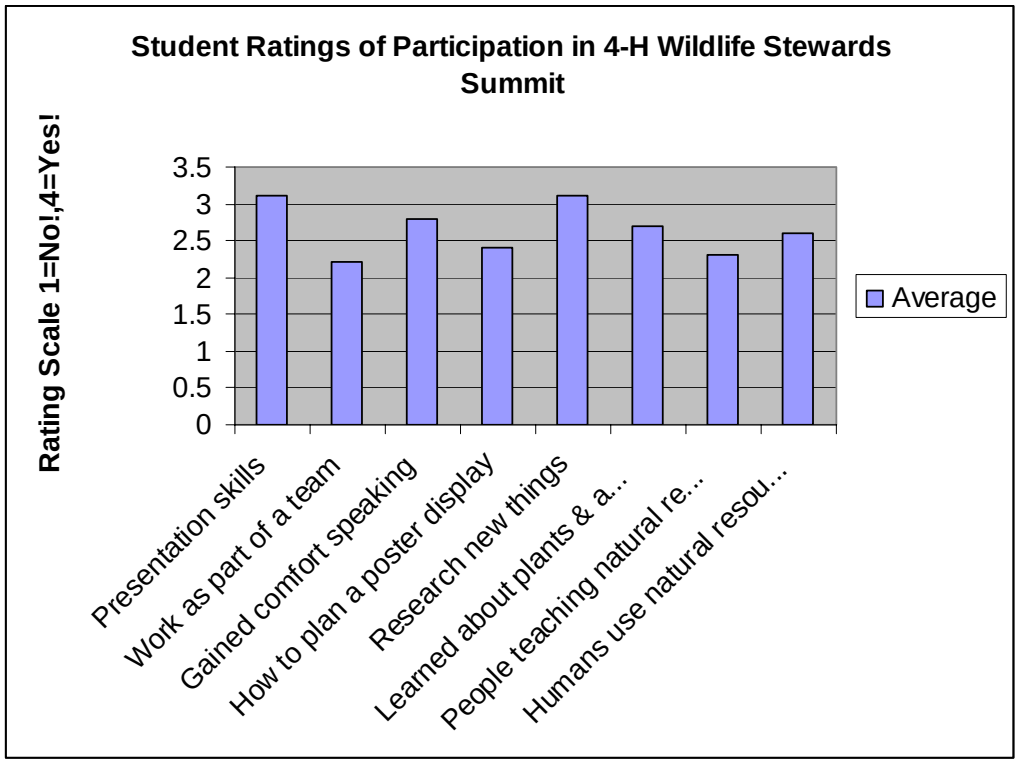
The evaluation asked students several questions in regards to how participating in the summit affected their skill level in several areas. They answered the questions on a 1-4 scale with 1 = "No!" and 4 = "Yes"! Table 1 represents the results of students rating of these questions. Figure 1 represents the responses graphically.

Table 12.2: Student Ratings of Impact on Science and other Skills from the 4-H Wildlife Stewards Youth Summit, Corvallis, Oregon.

Student Ratings of Impact on Science and other Skills

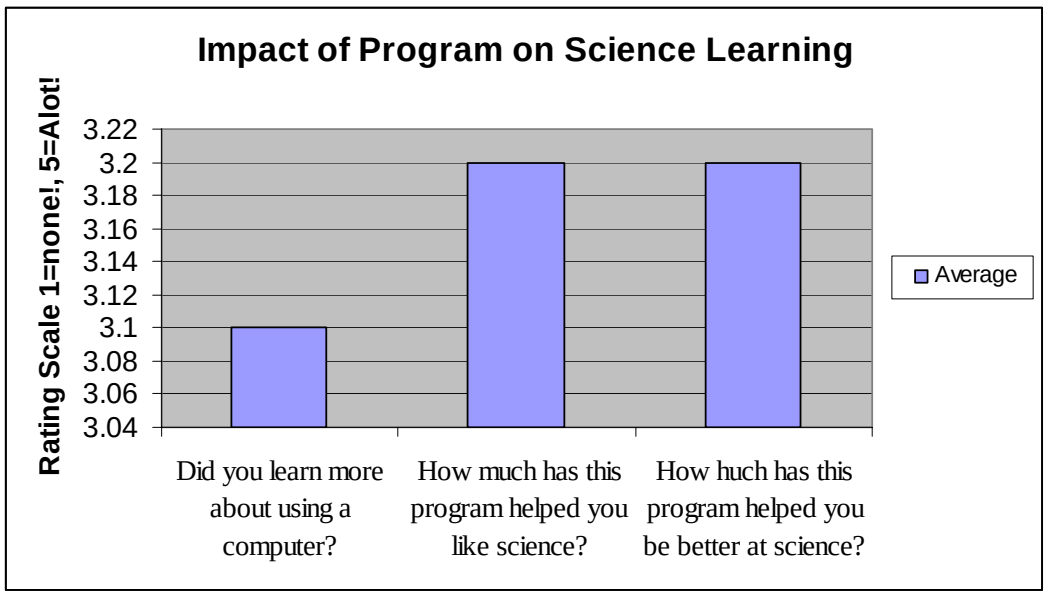
	Number	Min.	Max.	Mean
Gained presentation skills	42	1	4	3.1
Learned to work as a team	41	1	4	2.2
Gained skill speaking before others	42	1	4	2.8
Learned to plan a poster display	40	1	4	2.4
Researched new topics	42	1	4	3.1
Learned about plants and animals	41	1	4	2.7
Learned about people teaching natural resources	42	1	4	3.1
Learned that humans use natural resources everyday	42	1	4	2.6
Did you learn more about using a computer	33	1	4	3.1
Program helped me to like science	41	1	5	3.2
Program helped me do science better	41	1	5	3.2

Figure 12.4: Student Ratings of Participation in 4-H Wildlife Stewards Youth Summit, Corvallis, Oregon



Students were also asked questions on how the 4-H Wildlife Steward program affected their abilities in science and if this program helped them to like science better as a result. They answered these questions on a 1-5 scale with 1="none!" to 5="a lot!" Figure 2 shows the responses graphically.

Figure 12.5: Impact of 4-H Wildlife Stewards program on science learning



In addition students were asked if they had given their presentations to others. This might include at home, classroom or community presentation. Out of 40 respondents, 14 had given a presentation to others.

In the qualitative section of the evaluation students were asked to list their favorite activity and why. Responses included the activity presented by the Inavale Student Bee Club and the Reptile Room as the top choices among participants followed by the salmon dissection, leading or taking the habitat tours and presenting to the judges.

Students were asked to list the three important things they learned at the summit. Comments included: "Bees have dramatic lives", "newts are amphibians", "how to speak to a group better", "that the rain soaks into the dirt ", I learned that wildlife is important", "that the way you know the age is by counting the rings", "to speak loud and clear".

Teacher Assessments of Youth Summit

Teachers were asked to answer questions pertaining to students participating in the summit. Four teachers completed a survey. Comments on positive learning/growing experiences included:

- My students benefited from producing for a "larger" audience and getting feedback from more than just their teacher.
- Self confidence, self directed learning. Patience in working for a long time on a big project.
- All students grew as a result of having a long term project to present. The deadline of judging looming in the future made the project seem more "real". It was also great to give the students a chance at public speaking.
- They all had a great time and sure do enjoy getting those ribbons.

Teachers and volunteers were asked about any comments or concerns they had about the presentation/poster process. Comments included:

- Well organized. Expectations were clearly stated. The check in process was very smooth and it was very clear where we were to set up their projects.
- There seemed to be some variation between judges on what was required for presentation.
- I think there should be stricter guidelines for citation process for posters. I think students should not be able to take pictures from the internet without permission.

Their students 3 favorite activities:

1. Participation in presentations
2. Snakes
3. Fish dissection/salmon exhibit

What did we do well?

- The Summit provided a variety of experiences and science concepts were reinforced with presentations.
- Excellent and detailed feedback (both written and verbal) on the displays
- Excellent organization - things flowed well

What could have been done better?

- Presenters could have had 2 presentations – one for older students; one for younger (just modified one way or the other)
- Not having been a part of this event in the past my students and I was unsure of the format. We did not know that there were scheduled activities. This was difficult for my special needs student who has trouble adjusting to change. He only wanted to show his display and look at others, not

tour the grounds, etc. It would have been helpful in our case to have the format (with activates) specifically outlined.

- It might be nice to have a recess scheduled after lunch to let them run a bit before going back to the activities.

Chapter Twelve
Project Dissemination Efforts

National Board and National Dissemination Team Findings

One of the goals of the project was to explore the potential of the program for national dissemination. Recognizing that a successful program in Oregon may not work nationally, a National Advisory Board was assembled in Year One to critically evaluate the project's potential for national dissemination. The National Board consisted of the project director and evaluator, the Oregon State 4-H Program leader, representatives from the National Research Council, The World Forestry Center, the National Association of Environmental Educators, the National 4-H Council, and four 4-H professionals, 1 from each region of the country.

The National Board met at the end of Years One and Two (with an interim meeting held for members who could not make the first meeting). The first meeting was dedicated to becoming familiar with the project and included site visits and a formative evaluation report presented by the project evaluator. After considering the national potential of the project, the Board affirmed the importance of developing a Dissemination Team of 4-H professionals from across the country, and inviting them to attend a training in Year Two.

4-H professionals from across the country were invited to apply to be part of the National Dissemination Team, which was formed in Year Two. The application focused on the applicant's interest in the project, support from his or her state 4-H leader/administrator, and the applicant's background in science and environmental education. Twelve individuals were selected from a total of 29 applicants, and invited to attend the February 2003 training in Bend, Oregon. Team members were from Maryland, Georgia, Michigan, Minnesota, Pennsylvania, Kentucky, North Carolina, Alabama, Iowa, New York, California, and Washington. The goal was to invite each team member to attend a the training, and have them return home and explore the possibility of becoming a regional training and dissemination site, with at least one site in each of the 4 regions of the country.

The 12 dissemination team members attended the training in February 2003, and at the end of the training, were asked to rate on a scale of 1 to 5 how likely they were to replicate the program in their own state. The results of the end of training questionnaire are presented in Table 13.1

Table 13.1: Dissemination Team Ratings

	N	Min.	Max.	Mean	SD
How likely to replicate in own state	10	2	5	3.4	.843
How likely is Extension funding	10	2	5	3.60	.843
Likely to success w/o state funding	10	1	3	2.30	.823
Confidence in getting program going	10	2	5	3.40	1.075
Capacity of home state to implement	10	1	5	3.40	1.075
Competition from other programs	10	2	5	3.10	.994
Potential for creating partnerships	10	3	5	3.90	.568
Level of excitement about the program	10	3	5	4.20	.789

In addition, team members participated in a focus group at the end of each training day. The purpose of the focus group was to gather narrative information about the potential for the program to be successfully implemented in each member's home state. Overall, the team was very enthusiastic about the project, and affirmed it's potential. When asked about the possibility of implementing the project in their home states, the team identified the following barriers:

- There are already many similar program (e.g. outdoor classroom programs, National Wildlife Federation's Backyard Habitats, other volunteer-based environmental education programs) to compete with
- A need for curricula to match the geographic location of their area
- Lack of funding and support for the project by colleagues and supervisors
- Lack of buy-in from county-based educators
- Lack of human resources to staff the project

The team also offered the following as important things to consider for successful National dissemination:

- The curriculum should meet the criteria for, and be approved by the National 4-H Jury
- The resource materials should be developed for each region to match local wildlife and flora
- The curriculum should be more science-inquiry focused
- The project needs to be flexible to meet local implementation needs. Especially the need to use parts of the program and not others.

Following the training, Dissemination Team members were asked to return to their home states with a charge to gather specific information about the potential for adopting the project and serving as a regional training site, should further funding for dissemination be secured. Team members were to gather the information and report back to the project director through written reports and a one-hour telephone conference. Follow-up reports were received from each of the 12 team members, and generally indicated support and interest in the project in their home states. A subsequent program expansion preliminary grant proposal was submitted to NSF in August 2003, but was not encouraged for development into a full grant proposal. The project director continues to be in contact with members of the Dissemination Team to further explore options for national dissemination.

At the invitation of the National Dissemination Team member from Alabama, two members of the Oregon team conducted a training for 21 4-H agents in Alabama in July 2003. The training was conducted in partnership with the Alabama Department of Conservation and Natural Resources, Alabama Wildlife Federation, and Alabama 4-H. The training was enthusiastically received, and in January 2004, 4-H staff in Alabama successfully completed their own training for 15 people. Although small in scope, these efforts support the possibility of a successful national dissemination of the program.

Dissemination through Conferences and Journals

Dissemination for Wildlife Stewards to this point has consisted of 3 international, 7 national, 6 Pacific Northwest regional conferences, and 6 state peer-reviewed presentations. Program findings have been reported in 6 journal publications. The program has also been disseminated through numerous state, regional, national and international abstracts including:

- Emerging Urban-Rural Interfaces: Linking Science and Society Conference. Abstract: Emerging Issues Along Urban-Rural Interfaces: Linking Science and Society, pp 113-119.

- North American Association for Environmental Educators National Conference. Abstract: Thinking Globally while Acting Culturally NAAEE 32nd Annual Conference Proceedings, pp. 238-246.

- USDA-CSREES 2005 National Water Quality Conference: Research, Extension, and Education for Clean Water Conference Proceedings. Published online at www.idea.iastate.edu/waterconf.

- Engineering Green: National Urban Forest Conference. Abstract: Engineering Green: 2003 National Urban Forest Conference Proceedings, pp. 104-106.

- Unleashing the Force and Vitality of Volunteers. Galaxy II Conference for Extension Professionals. Abstract: Galaxy II Conference Abstract Proceedings CD, ID #147.

- 4-H Wildlife Stewards- Bringing Science and Nature Together One School at a Time. Abstract: 54th Annual Conference Proceedings of the National Association of Extension 4-H Agents Conference. p. 94.

- School Enrichment Made Easier. Abstract: 54th Annual Conference Proceedings of the National Association of Extension 4-H Agents Conference. p. 43.

- Urban Ecosystem Research Consortium. Abstract: Proceedings for the Inaugural Urban Ecosystem Research Consortium. p. 17.

- Joint Society for Ecological Restoration Northwest Chapter and Society for Wildlife Conference. Abstract: The Restoration Toolbox. p. 63

- The Society for Wildlife Management Annual Conference. Abstract: Continued Excellence in Wildlife Stewardship for the 21st Century. p.63.

- OSU Extension Annual Conference. Abstract: OSUEA Search for Excellence 1997. p.1.

- National 4-H Headquarters and the Cooperative State Research, Education, and Extension Service (CSREES) 4-H Program of Distinction. 4-H Wildlife Stewards. (online at the National 4-H website)

- National 4-H Council. Lessons Learned in 4-H Environmental Programming. NRCS Youth Environmental Awards Program. 4-H Wildlife Stewards was one of three featured programs in this publication.

- USDA Cooperative Extension Service Natural Resources and Environmental Management 2002 National Flagship Programs. 4-H Wildlife Stewards.
- National 4-H Youth Development Programs of Excellence 2000. U.S. Department of Agriculture 4-H. 4-H Wildlife Stewards Program.

These publications emphasized methods of data gathering, as well as findings about participant satisfaction.

Three Wildlife Stewards Train the Trainer Workshops or Orientations for 4-H Staff interested in developing this program in their state have been conducted with 22 Alabama staff (3-day training), 5 Washington 4-H Staff and partners (2 hour orientation) and 9 Idaho 4-H staff (90 minute orientation). Discussions with these three states continue.

Future Dissemination
Dissemination will continue with presentations at the 2006 National 4-H Agents Association conference in October 2006 and additional publications in National Journals.

Perhaps the most important strategy for disseminating this program, however, is the development of a Business Plan for national dissemination. A $15,832 grant from Oregon State University Extension Innovative grant program was awarded to the 4-H Wildlife Stewards Program to fund the development and implementation of a business plan to market, fund and disseminate this program nationally. This plan includes:

- Working closely with the OSU College of Business to develop a marketing plan
- Trade marking the 4-H Wildlife Stewards name and copywriting the publications
- Developing an online e-commerce site for the online web course, publications and resources
- Developing local, regional and national sponsors to support and fund the program
- Establishing fees for service such as a small community site annual fee

- Establishing contracts with other state 4-H offices to expand this program and provide support to 4-H staff.
- Revise the website for a national audience

Some of the key components of the program that are of particular interest to other staff, community sites, and partners outside of Oregon are:

- The WS website (currently under revision)
- The on-line course (currently under revision)
- The WS volunteer handbook
- The WS Project Certification Handbook
- The Jr. WS Student Journal
- The WS Trainers Guide
- The WS Training Video Series
- The WS marketing materials (with revisions for a national audience)

Plans are currently underway in the development and implementation of this business plan.

Follow Up Study
Preliminary plans are being discussed for a follow up study to be conducted in four years. This study will attempt to connect with participants to estimate retention, perspectives of learning, lessons learned, and program revival.

Chapter Thirteen
Summary, Commendations and Recommendations

Lessons Learned

The lessons learned from delivering informal science education in a systematic way that ultimately helps young people develop and improve their skills; knowledge and interest in science have been crucial to the incremental success of this program and will largely affect the future success of this program. It is also hoped that the lessons learned from the Master Science Educators program will provide insight for other informal science educators hoping to develop and implement similar models.

At the heart of the Master Science Educators (also known as 4-H Wildlife Stewards) is the belief that local citizens trained and supported to work in cooperation with formal educators, community partners, and parents to deliver hands-on science education for children will ultimately provide a more relevant and sustainable science education program. Experiments in participation have demonstrated time and again how much force and vitality people can unleash when they feel they have a stake in the direction of their lives.

The original proposal for this project asked the following questions:

1. Can upper elementary and middle school students develop science skills, make informed decisions and formulate reasonable hypotheses with regard to environmental issues such as water quality?
2. If so, how might we integrate appropriate learning environments and instructional materials in partnership with schools, parents, and community members?
3. Will such activities delivered informally improve science education as currently measured?
4. Can we demonstrate that recent emphasis in educational research on constructivist approaches is more than enthusiastic chatter?
5. Are parent and community-trained volunteers the critical missing link to make this all happen?
6. What are the learning conditional and pedagogical approaches likely to promote understanding of science information and the critical need to provide trained volunteers to help deliver programs?

The program was successful in many ways but there were also areas where the program struggled. The keys to the successes as well as some of the roadblocks to the project successes are outlined in the previous chapters of this report. Findings from the research activities supports the conclusion that the answers to questions 1, 3, 4 and 5 is yes. Beyond the evaluation data here are some important lessons learned from the observations of the Principal Investigator that answers the last question:

- **Lesson One: The program is only as effective as the people leading the project. Support people at every level.**

The 4-H Wildlife Stewards (WS Project) is based on a new ecological model that includes 4-H staff, volunteers, teachers, community partners, parents and school administration working together to support science education for youth. 4-H staff train and support volunteers to assist teachers and students create, use, and sustain wildlife habitats on school grounds for science learning. It became clear in this project that for volunteers to be successful they needed support not only from 4-H staff in the form of training, information, on-site consultations, and resources, but they also needed support from the teachers that they worked with, school administration and other parents. Considerable effort was made to assist volunteers to develop and sustain these networks of support. 4-H field staff provided resources and ongoing support to develop these networks. When volunteers felt supported by 4-H staff as well as their local communities, they were more likely to stay engaged in the program and build sustainable informal science education programs. This lesson learned is evidenced through the volunteer evaluations and focus groups described in the Project Findings report.

Another equally important lesson learned is that 4-H field staff also need to be supported by the project team leaders and their state and county Extension staff if they in turn will be able to support the volunteer leaders. An emerging concept from the literature is that an intermediary organization or individual that serves as a bridge builder between schools, families, and the community is important. These intermediaries literally sit between policymakers and those who implement the programs to increase the human, social, and fiscal capital for implementation. They can also be instrumental in facilitating the ongoing functioning of connections in ways that clarify purposes and reinforce constructive practices. More research on this subject- the role and impact of intermediaries and how to effectively support these intermediaries would be worthwhile and beneficial for the field.

A total of twenty-one 4-H field staff were active in this program. They either served on the state design team or participated and completed the 24-hour training so that they could in turn support their local community sites and volunteers. The 7 field staff who were part of the state design team received a portion of their time bought out with funds from NSF. Their role as part of the training and design team was to assist in revising and delivering the volunteer trainings and developing the tools and resources for this new program model. The other 14 field staff who were not a part of the state design team provided on-site support to local community sites and volunteers. The non design team staff received no compensation for their efforts but were simply motivated by the interest from their community and/or their own personal commitment to environmental science education.

The field staff who received no compensation from NSF funds for their efforts had success in recruiting and supporting new community school sites and volunteers as those who were more actively engaged in the program as part of the state design team and who received compensation. Three of these 4-H field staff were working with 4 or more community sites and 15-20 volunteers. The other non design team field staff worked in rural Oregon Counties and supported 1-2 community sites and 4-5 volunteers. These numbers of volunteers and community sites supported were not significantly different from those counties where the design team 4-H field staff received compensation for their time spent on this project. What became clear from informal conversations, however, is that 4-H field staff as much as volunteers or students need ongoing support, resources and recognition for their efforts. 4-H field faculty have demanding jobs that requires them to juggle many different projects, club programs, and special initiatives. Not unlike teachers, the degree to which they are willing to take on a new project like the WS program is dependent on how comfortable they are with the subject matter, their personal interest and commitment to the project, and their balance of other work priorities. Without ongoing support from the project team the motivation to keep supporting this program tended to wane.

4-H field staff who received compensation for their efforts significantly reduced their commitment to supporting this program at the local level once funding from NSF ended. Financial compensation was important for this group of staff. While they continue to support the program and support the volunteers and community sites at their local level, they were not willing to invest as much time, energy or resources into the program.

- **Lesson Two: Resources should serve a catalytic function**

If the project is going to succeed, thrive and remain sustainable, resources should serve as a catalytic function, not welfare function encouraging further dependency. Volunteers identified in focus groups that some of the most beneficial resources were provided to them were the trainings, the volunteer handbooks, the videos and the website. No group mentioned the science supplies or mini grants to purchase science supplies. How to write grants and gather community support for their local science program is included in the 24-hour leader training. These training sessions were highly rated and many volunteers reported that these training sessions were very beneficial. Few if any volunteers reported that it was difficult to receive grants or in-kind support for their program if they asked. Many volunteers report that in fact they were surprised at the level of support their community gave their project and this support exceeded their expectations. It also became clear that resources followed success. The more a community site achieved success, even small success, resources in the way of community partnerships, grants, and in-kind support followed.

At least 3 community sites report that since they incorporated the Habitat Education sites at their school, these sites are now used as one of the primary marketing and sales tools for recruiting new students and families to their school. Two of these schools are Portland schools where every Portland students can apply to attend any school in the district and are not limited to schools in their own neighborhood.

- **A significant percentage of the specified group must participate in and control as many elements of project initiation, design, operation and evaluation as is possible**

Outdoor school gardens or learning labs are a popular and growing trend in many parts of Oregon and the country. Community sites that do not involve the youth in the project initiation, design, operation and design may find the project more difficult to sustain. Building outdoor learning labs or school gardens is an intensive process that requires considerable time, resources and human capital to complete. Including youth in many of these elements of the project may double or even triple the time, resources and human capital. It is tempting, for example, for adult leaders to map, measure, and design a school garden rather than to take the time to teach students how to map, taking them outside to map, and then going through the long process of teaching students how to design a site. Likewise, a youth initiated design may not work or may be very different from what adult leaders and teachers have envisioned. In the long run, however, programs that include youth in participating and controlling many elements of the project have a high level of ownership and in the end more sustainability. These programs also report a higher level of community support and youth who are excited about learning. When youth feel they have a stake in the direction of their learning they are more likely to become engaged and in the long run learn more. Many of the school sites that thrived the most are those sites where youth are actively participating in the project initiation, design and operation. The project sustainability certification program was designed for promoting and rewarding those schools who incorporated this important lesson. Preliminary results of the project sustainability certification demonstrates that those sites who work toward more actively involving youth are more sustainable.

- **Incorporate the Essential Elements of youth development**

There are four essential and eight critical elements of positive youth development programs. The evaluation results of the student focus groups supports what research says is important for positive youth development. If youth are going to apply their new science knowledge and skills and become self-contributing and productive members of society then the following critical elements of positive youth development must be included:

Belonging
- A positive relationship with a caring adult
- An emotionally and physically safe environment
- An inclusive environment

Mastery
- Opportunities for mastery
- Opportunities to experience engagement in learning

Independence
- Opportunities to see oneself as an active participant in the future
- Opportunities for self-determination

Generosity
- Opportunities to value and practice serve to others

Several youth groups besides the 4-H Youth Education program were actively involved in using these Habitat Education sites for their own learning and as a way to promote positive youth development. Several schools report that Eagle Scout members fulfilled their Scout requirements by designing, organizing and implementing their Eagle project at these school habitat sites. They built seating areas for the outdoor classroom, made trails or creating a recycling center for a site. Girl scouts used the sites for art projects and building bird boxes. YMCA after-school programs used the sites to conduct hands-on education projects.

- **Design programs that are relevant and based upon lifelong learning**

Likewise, programs that build life skills building particularly in the areas of teamwork, leadership, critical thinking, problem solving, cooperation and community participation enhance and support youth and their development as productive and contributing members of society. Many youth found this project meaningful for them not because of the science they learned but because they learned how to work in teams, develop their leadership skills and give back to their community. Or as in the words of one youth participant "Once you learned something you get into it. . . then you want to know more and more and more!" Developing a love for learning and then how to continue that learning is a vital skill for success in life.

- **Recognition should be appropriate to the child, volunteer or community site and the situation**

All people need recognition for their contributions and recognition is a strong motivator for continued participation. It is important though that recognition is appropriate to the youth, adult, community and situation. Some of the successful strategies for recognition include recognition for participation (community site signage, name badges, t-shirts, certificates), recognition for progress toward goals (plaques, press releases), recognition for achieving standards of excellence (plaques, press releases, financial incentives, certificates) , and recognition for cooperation (public announcements at assemblies and events, press releases, certificates, etc).

- **Technological and organizational aspects of the program must be culturally feasible**

If the children we are trying to outreach to are underrepresented groups from rural communities and ethnically diverse communities, it is counterproductive to train only Caucasian leaders from urban communities. The program will only be able to make a long and sustainable impact on youth science learning for ethnically and geographically diverse youth when the volunteer leaders reflect these communities. While this program was successful in effectively outreaching to rural communities, the program failed to effectively recruit volunteer leaders from culturally diverse backgrounds. Focus group meetings with African American, Native American, Hispanic and Asian American youth leaders identified new strategies for recruiting minority leaders. The information gathered from these focus groups is found in Chapter 10 of this report.

- **Build programs slowly and build on success**

One of the first lessons taught to new volunteers joining the program and a lesson learned from experienced volunteers is to dream big but start small. Programs that are too ambitious in the early stages of the program run the risk of failure. It is important to build a base of support for the program first so that as changes occur the program can more quickly adapt. Starting the program small and building in small successes brings more support which in the end builds a more sustainable program.

The same lesson learned from community sites can be applied to the overall project. Building more support at every level, including 4-H field staff in this case, and expanding the program slowly can ensure greater sustainability and eventually success.

- **The project design must include supporting and enhancing self directed learning: intellectual dependency saps creativity and productivity**

WS volunteers are expected to complete the 24 hour training program in order to become a WS volunteer and represent OSU Extension in their local community. It is important to emphasize to volunteer leaders at the beginning of the training and at the conclusion of their training that their training is only the

beginning of their learning process. Much of what they will learn as a WS volunteer will take place after they complete the initial training. Encouraging and supporting WS volunteers to continue to pursue self-directed learning through workshops, readings, and hands-on experience is critical to their success as a leader and ultimately the success of the project. What must underlie any successful education programs, in the end, is a bedrock belief that change is possible, that people can radically transform their beliefs or behaviors given the right kind of impetus. Information, motivations, and resources strategically and carefully placed can significantly improve a program.

- **Target your Program to multiple age levels to ensure sustainability**

Targeting a program to a specific age level or group is important for achieving specific and measurable outcomes. The WS program, for example, was primarily targeted to upper elementary school students. However, if they program is going to sustain over time and build systematic support then multiple age groups should be included. Younger youth (K-2 students in the case of WS) who are introduced to the program are more ready to learn and more prepared to fully participate. They know what is expected of them and they have built in some ownership to the program. Also programs that rely on parent volunteers need to engage youth early in their school years in order to more effectively recruit parents. Parents of younger students are more likely to get involved in science education programs before they have made commitments to other programs if they are asked while their child is still young. They then are more likely to stay with the program for 3-4 years as long as their child is still interested and engaged.

Youth participants also need to feel that there are continued opportunities for them to learn and grow after they have completed the program. Incorporating an older youth leadership program is one way to allow youth who have "graduated" from the program can continue to stay involved. At the 2006 WS Summer Camp, the fourth year of the camp, there were 22 middle school youth in the camp leadership program and 61 3rd-6th grade campers. These 22 middle school youth started out as campers and now aspire to become teen counselors. Several WS volunteers report that students who graduated from their elementary school WS program often come back to visit and find out what is happening in the habitat site they helped create.

Contributions

- **Contributions within Discipline**

Research has demonstrated that children learn best when they experience it hands-on. Habitat Education Sites become outdoor learning laboratories and provide opportunities to reinforce the lessons that are part of the regular school curriculum. The program offers a diverse collection of informative and inspirational educational resources and curriculum to begin making positive and exciting changes on outdoor science learning sites.

4-H Wildlife Stewards Curriculum is unique from other 4-H curriculum programs in many ways. The program is not only a curriculum that can be used in the classroom with teachers and students, but it is primarily a comprehensive and new 4-H delivery model for providing and sustaining youth development. This new model is in line with emerging research on school and community connections. Creating and supporting strong school and community connections is a critical component of building capacity for positive youth development. Studies have found that connections between a student's primary environments—school, community, and family—are key elements of this developmental approach.

Adoption/Adaptation Nationally:

- The program has been fully adopted in Alabama and the Alabama Cooperative Extension 4-H Program has committed 4-H staff time to implement this program statewide. In July 2003 Maureen Hosty and Joan Engeldinger conducted a 3-day "train the trainers" workshop for 22 4-H Extension staff in Alabama. Alabama 4-H Staff in cooperation with local partners now conduct regional 4-H Wildlife Stewards trainings and support multiple 4-H Wildlife Stewards volunteers and member schools in their state.

- Currently over 60 4-H, Extension, and Environmental Educators from 40 states, Jamaica, and Belize have requested copies of the curriculum and materials of the 4-H Wildlife Stewards Program.
- The 4-H Wildlife Stewards website averages 1402 different visitors a month from 20 countries. (software tracking system keeps statistics on visitor use of our website)

• Contributions to Other Disciplines:

The Wildlife Habitat Education Sites are not only great outdoor science learning labs but teachers also use them for working with the youth in literature, math, arts, history, music, and teaching them to work together in groups.

- Art and Music: Art and music teachers were active in using the Habitat education sites to teach lessons. Several school secured Artist in Residence grants to work side by side with the WS volunteer to design and incorporate youth art into the projects.
- Nutrition Education: Many community sites chose to incorporate vegetable and organic gardening into their projects. They followed up with health and nutrition lessons and hosted cooking classes
- Cultural Awareness: Several community sites incorporated Native American gardens and multicultural gardens into their sites to teach lessons about diversity. These gardens were also used to attract more parent involvement from the largely underserved culturally diverse populations.
- Energy and Sustainable Building: A new and growing trend among several schools is education in energy and sustainability living. A number of schools have worked with community partners to build outdoor classrooms and structures within their habitat education sites with sustainable materials. Youth worked closely with community partners, volunteers and parents to build cob (mud, clay and straw) structures or to salvage recyclable building materials to build benches, tables and other structures. One community site received a $5000 National Geographic grant and $100,000 in in-kind services, to build an outdoor classroom made of cob and recycled materials. These projects provide many opportunities for cultural lessons. Many parents at this urban multicultural school who came from Africa and Southeast Asia got excited about the project since this type of building was used in their home country and as a result they felt more connected to the school.
- Vocational and Technical Education: At least three high school shop classes used this project as a way to provide students taking wood shop or metal shop classes a real world experience by designing and creating a metal fence, wood benches, and several other structures for the outdoor classrooms at some of the community sites. High school students were charged with meeting with teachers and youth at the selected community sites to assess the project needs for a fence, bench or other structure; developing a budget; designing the project and then creating and installing the structure.
- Business and Finance: In some schools youth participants learned how to create a business by selling plants they grew in their Habitat education site by marketing the products and then selling the products to the local community.

• Contributions to Education and Human Resources:

A critical part of this project is the development of volunteers as Master Science Educators. The key is developing a group of volunteer educators with the knowledge and confidence to teach science informally to children in natural settings. As a result, this project is contributing to the development of human resources and volunteers have the ability able to teach science informally to children.

Participants report a significantly greater level of knowledge in important content areas. In addition, training participants report readiness to teach science informally in a school setting. Volunteers and teachers report higher levels of confidence and self-satisfaction after completing the training. In general, they feel confident in approaching their principal with the professional tools that the program provided them for planning and executing the Habitat Education Site.

Volunteers report that teachers familiar with the program are more willing to provide class-time to education lessons in the habitat. Volunteers also report that 'community bonding' is apparent in areas where neighborhood groups are invited to join in 'planting parties' or celebratory programs at the school site. Volunteers also enjoy being part of the 'network' system that keeps them connected to additional educational opportunities.

By training both teachers and volunteers to make wildlife habitats on school grounds they are learning to teach science in an informal setting that appeals to the children, especially those who have trouble with traditional classroom learning situations. New curriculum and handouts have been created for use in training the teachers and volunteers who will in turn work directly with the students.

The 4-H Master Science Educator Program gives youth an opportunity to experience hands-on science learning outside the classroom walls. Currently, there is no other program that provides outdoor science learning and youth development on school grounds in many parts of the state and the nation. The financial crisis that many school districts are facing has resulted in cutting money for transporting youth to outdoor education.

By training adults to work with youth in developing outdoor wildlife Habitat Education Sites, youth and adult volunteers gain life skills in cooperation, leadership, planning, teamwork and management. Youth gain skills in oral delivery, record keeping and goal setting. Youth also gain skills in following the scientific method for learning, as well as skills in observation, recording, identification of local flora and fauna, and measurement.

The 4-H Master Science Educator Program provides youth with an opportunity to increase their environmental stewardship and informal science learning. Youth are also sharing this learning with parents and community members.

The program provides college students the opportunity to work as interns in an informal science education setting.

The project provides an opportunity for the graduate research assistant to gain practical skill in program evaluation, project management, and reporting.

- **Contributions to Resources for Research and Education**

Partnering with schools and community organizations provides more opportunities to reach the youth in a familiar territory where they are comfortable and have easy access to learn about science. Youth have attended workshops that are offered for area educators.

Youth have prepared and delivered presentations on their science inquiry projects and made recommendations for improving the environmental health of their community to other students at other community sites as well as neighborhood and community agency meetings and most importantly, at the Youth Summits.

This project has also offered a new model for delivering science education to youth. Teachers and community staff alone cannot effectively deliver science education to a significant number of youth. Hands-on science inquiry projects with youth is time and staff intensive. By training and supporting parent and community volunteers to work side by side with formal educators and community staff, these formal educators and community staff can reach more youth and are more likely to deliver science education programs. Teachers and formal educators report that they would not likely deliver these engaging experiential based science programs if it were not for the Master Science Educators who supported them.

The important role of intermediary organizations as a bridge builder between schools, family and the community became clearly evident in this project. Those projects that had strong 4-H Faculty support

who served in the role of the bridge builder had significantly higher success than those with only limited 4-H staff support.

- **Contributions beyond Science and Engineering:**

Master Science Educators in 44 local community sites are assisting students and teachers to develop, use and sustain wildlife habitats on school grounds. Master Science Educators create sustainable wildlife habitat sites, promote stewardship among youth, and improve science learning by inspiring, educating and connecting communities, schools, natural resource agencies and organizations.

Some of the benefits of this program beyond science and engineering is the contributions it makes to the youth development field. Specifically, youth have the opportunity to develop their personal leadership skills through their participation in this project. Some of the benefits and contributions of this project beyond science and engineering include:

- Community service projects for youth
- Training youth to extend 'Stewardship' to all aspects of life
- Positive alternative activities for 'at-risk' youth
- Partnerships formed between local youth outreach organizations
- Parent/community involvement in local schools
- Awareness and appreciation for diverse habitats
- Building school communities

Summary, Commendations and Recommendations from the Project Evaluators

During the five years of this project, two project evaluators worked on this project. Dr. Mary Arnold served as the project evaluator from July 2001 to August 2004 and Dr. Michael Dalton served as the project Evaluator from September 2004-September 2006. The following summary, commendations and recommendations have been submitted by each evaluator.

2001-04 – Dr. Mary Arnold

Summary, Commendations and Recommendations 2001-04

Over the course of the project, the evaluator visited informally with students at several habitat sites. On one occasion the evaluator asked a young boy about the recent plants that he had helped plant in the habitat at his school. “Those plants,” the boy pointed out, “have berries on them, but we won’t eat the berries.” “Why?” inquired the evaluator. “Well, we can eat them, we just don’t because we want them to be there for the birds” he replied. “So...” said the evaluator, “you leave the berries on the bushes so that the birds come to the habitat?” “YES!” was the student’s empathic answer, followed by an amazed “don’t you know that!?” Similar demonstrations of excitement, pride and knowledge of living systems were found at all the sites visited by the evaluator. This first-hand witness to the power of the program to develop in students an excitement and love for learning and science is a powerful testimony to the success of the 4-H Wildlife Stewards program. Overall, the program evaluation showed that the program is a success, and it has made a difference in the lives of students, schools, and communities.

Commendations and Recommendations

Commendations

1. The training program upon which the program is built appears to be quite effective. Participants reported feeling well prepared to be a 4-H Wildlife Steward, and the end of program assessments showed that the participants gained the knowledge and skills needed to effectively implement the program at their local school. Participants consistently rated the training team as effective and knowledgeable.

2. The trainings were held at sites conducive to teaching about science and nature, often in a retreat or camp-like setting. These natural settings contributed to the atmosphere of the trainings, which was relaxed and enjoyable. There is a great deal of material covered in the 3 day training, and participants appear to benefit from changes of venue for different topics, experiencing natural science lessons in natural settings, and "down" time in a retreat atmosphere. It is highly unlikely that the same effect could be attained in a more traditional meeting setting.

3. The quality and amount of program material and resources, although at times rated by participants as "overwhelming" appears to meet the needs to the participants as they fulfill their role as a 4-H Wildlife Steward.

4. Volunteers and teachers leave the training with what they need to set up the program at their school. This is evidenced by the number of school sites developed or maintained during the course of the project.

5. Considerable local support has been leveraged by the program to enhance the project at the local school level.

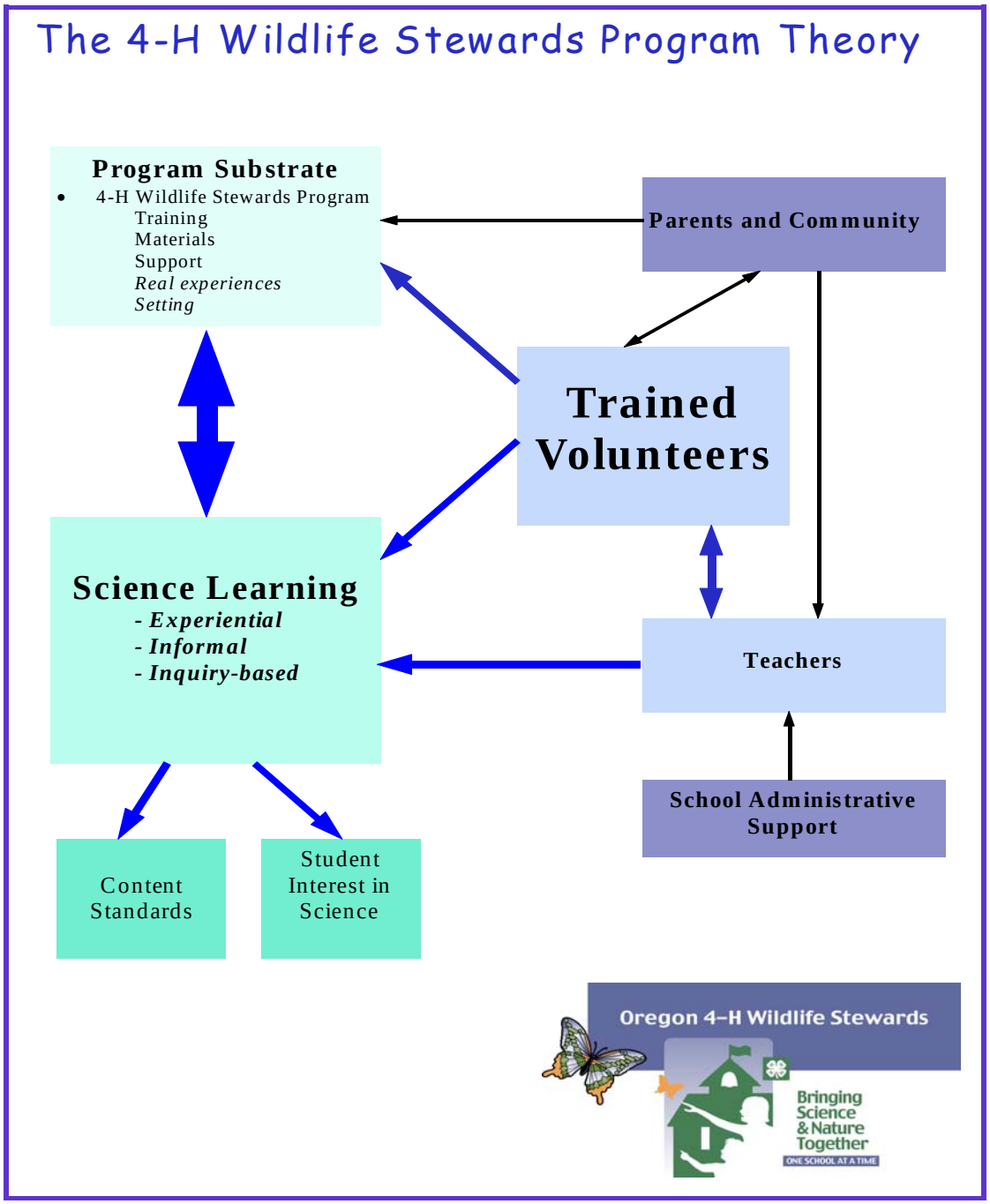
6. The 4-H Wildlife Stewards Summit programs are a clear demonstration of the impact of the program. The excitement, enthusiasm, and pride that the students show when showcasing their habitats and what they have learned while using them for science education is truly astonishing. The Summits allow schools and students to come together to share and the sharing are infectious.

The largest recommendations for this program come under the training section. One of the biggest concerns the evaluator had was the amount of time in the training dedicated to teaching participants about science process, skills, and pedagogy. During the course of the project the Project Director continued to increase the amount of time in the training devoted to science education. Even with this increase, the program would be hard pressed to say that participants left the training with a level of expertise in science education. Nonetheless, participants did leave with the skills and knowledge needed to partner with schools and assist teachers and students in creating successful Habitat Education Sites, which in turn are clearly impacting student science interest and learning.

With that said, and in fairness to the fact that the evaluation results show that the program does have an impact on student science learning, it is important to note that the program may not be operating as it was first theoretically envisaged. The original premise of the 4-H Wildlife Stewards program was that science education could be enhanced if a trained volunteer (Master Science Educator) was placed in a school setting. To a large extent, this premise has remained true, insofar that students involved in the 4-H Wildlife Stewards program report enthusiasm for, and skill in, science and science inquiry. There is little doubt that the 4-H Wildlife Stewards program is impacting science education in schools in positive and exciting ways.

One of the things that emerged during the course of this project, however, is the understanding that the 4-H Wildlife Steward does not operate in a vacuum, but rather within an ecological system that includes the volunteer, students, teachers, school administration, program support, and involvement of parents and community members. As such, as year two of the project drew to a close, a new working program model began to emerge. This model, presented in Figure 6.1, provides a better ecological description of how the program works. Where in the beginning the program assumed it was enough to train and send forth a volunteer science educator, we now see that there are a number of ecological factors that play important roles in the success of the program.

Figure 7.1 The 4-H Wildlife Stewards Program Theory



Key elements of the program model include:

The 4-H Program Substrate
The 4-H Program Substrate is the program staff with the Oregon State University Extension 4-H Program. The staff provides volunteer training, materials, and program support, including support for schools and volunteers. The program substrate is the base upon which the program is built. One

of the most frequent comments offered by teachers was that the program materials and support gave them new ideas and ways to teach science.

Trained 4-H Wildlife Stewards
At the center of the program model are the trained volunteer 4-H Wildlife Stewards (Master Science Educators) who make the program happen. Upon receiving training, volunteers are required to give back at least 50 hours to the program, most often through work at a school. There is a tremendous amount of groundwork that the volunteer must do to facilitate the development of a Habitat Education Site before it can be used for science education. This is especially true when a volunteer is starting the program at a school that has not participated in the program before. It is clear that the training program needs to include a great deal of information on the nuts and bolts necessary to make the program a success, in addition to modules on science inquiry and science education. The nuts and bolts information includes how to work with schools, understanding school district guidelines, securing support and funding for the project, developing the habitat education site, including sustainability and maintenance issues, mapping out a site, and determining what type of habitat is best for the site. While the emerging program model still places the trained volunteer at the center, it is clear that the volunteer does not operate in a vacuum, but rather in an ecological web of relationships surrounding the project.

Teachers
An important key to program success is the level of teacher interest and involvement in the program. In some cases the teachers are only minimally interested in the habitat, and in others, the teachers are actively involved with the habitat development, some even use the development process as an opportunity for student science projects. Sixty-two teachers went through the volunteer training in past 3 years, lending an interesting twist to the program model. The training was developed for volunteers, and yet more and more teachers began to attend. In some cases, a teacher and volunteer went through the training together. It became clear that teachers play an important role in the success of the program. It is necessary to note, however, that an ANOVA run on the data provided in the teacher summative questionnaire revealed no significant differences in responses between teachers who had gone through the training and teachers who had not.

School Administrative Support
Another key component of the program model is the level of support provided by the school administration, primarily the school principal. Like teacher involvement, principal support varies widely from a basic awareness of the program to active involvement in the project. While project success is clearly not dependent on the active involvement of school administration, the schools with projects that are thriving often have principals who are actively involved in the program.

Parents and Community
Project success is also enhanced by the involvement of parents (who are not trained volunteers) and community members. Parents often provide additional support when the students are learning in the habitat, and community partners play a key role by providing resources and financial and material support for the project.

Student Science Learning
All of the program component models play a role in enhancing science education, through the development of habitat that provides a place for students to engage in hands-on, real world science exploration and learning.

With this developing program model in mind, the following recommendations are made:

<u>Recommendations</u>

1. Consider revising the program theory that volunteers can be trained to be Master Science Educators who work independently to teach science informally. It is clear from the evaluation that the key role the volunteer plays is in the implementation of the project at a

local school site. In some cases, the volunteer may actually teach science, but the evaluation indicates that this is not typical, and not the main ingredient to program success.

2. Given the number of teachers who are interested in the training, and who also indicate that even with their training they need a volunteer to make the project happen at their school, consider offering a training or training track specifically for teachers that focuses on science education and not habitat development. This teacher track could focus primarily on developing science pedagogy, knowledge, and skills as well as how to use the project to enhance science education in their classrooms. This could be particularly effective at the elementary level where teachers often lack specific training in science education.

3. Consider a "partnered" approach to training, where a teacher and parent volunteer attend the training together. Both would receive basic information about the project specifically about how it works to enhance science education, and what is need to make the project successful After that, the training would break into two tracks, with the teachers focusing on science education and the volunteers focusing on habitat development.

4. Consider seeking additional funding to explore the emerging program model. It is clear from site visits that something magical happens in student learning when the elements of the model come together. At this point, the model is at best a descriptive tool, useful in conceptualizing the program. With additional funding for applied research, the model could be tested for predictive ability, leading to new knowledge of best practices in science education.

Report Submitted
October 1, 2004
Mary E. Arnold, Ph.D.
Project Evaluator

2004-06 – Dr. Michael Dalton

Summary and Recommendations

The 4-H Wildlife Stewards (WS) program began with 14 trained volunteers and 6 schools in the Portland metropolitan area. In August 2001, a multi-year National Science Foundation grant was obtained to develop WS into a national model and document the educational and scientific impacts of this project on students, teachers, and communities. The evaluation indicates that the WS program not only reaches more students, teachers and communities but it also helps bridge the urban/rural divide among citizens on how best to manage our natural resources. Students, teachers, and WS working together to create wildlife habitats on school grounds and using research based management practices will help bring greater understanding and appreciation for science learning through stewardship of our natural resources.

Today, the program brings new wildlife to local communities and has community leaders excited. Parents and teachers feel rejuvenated. Furthermore, through WS, parents and community neighbors who traditionally have a hard time connecting with their school or community have joined in the excitement. Entire communities have been mobilized and new WS have been recruited when a WS wildlife habitat project begins. School vandalism has also decreased. When kids put sweat equity into their school it gives them a sense of ownership of their school.

WS have assisted over 100 schools in transforming their school grounds into outdoor classrooms and habitat areas. Participating elementary and secondary schools have completed courtyard ponds and plantings; woodland, butterfly, and vegetable gardens; bird and wildflower habitats; and on-site school nurseries. Students have also created interpretive signs, murals, garden banners, and compost

bins. Mosaic pathways and paving stones, birdhouses, tool sheds and pagodas were built with assistance from WS.

Not only are students engaged in activities, there is evidence that there is achievement of the Oregon science content standards too. For example in the student focus group interviews, the students indicated that they viewed the WS program as a positive educational experience that greatly enriched their school science program. Students could name and describe science concept attainment that was uniquely fostered by the WS program. Students also said that their attitudes toward science, school, and each other were improved as a result of WS experience. In addition, the performance of the students in the WS program, as measured by the required Oregon 5th grade science tests, also indicated that the students were learning important science concepts.

The dedicated and inspirational work completed by the WS in partnership with schools has resulted in a number of state, regional and national awards. Among these many awards are:

- Oregon State University Extension Service Search for Excellence State Award (1997)
- Presidents Points of Light Service National Citation Award (1998)
- National Association of 4-H Extension Agents Natural Resources Environmental Stewardship state, regional and national winner (1998)
- National 4-H Youth Development Program of Excellence (2000)
- Natural Resources and Environmental Management National Flagship Award of the Cooperative Extension Services (2002)
- National Association of Extension 4-H Agents Communicator Award. National award winner for Individual Educational Package (2002)
- National Association of 4-H Extension Agents National Communicator Award for Published Photo by Joan Engeldinger (2003)
- Association of Natural Resources Extension Professionals. National Silver Award Winner for Educational Package (4-H Wildlife Stewards brochure and newsletter) (2003)
- Association of Natural Resources Extension Professionals. National Gold Award Winner for Video (4-H Wildlife Stewards Habitat Education Site Tool kit). (2005)
- National Wildlife Society Group Achievement Award (2005)
- Natural Resources Conservation Services Youth Environmental Award (2005)
- National 4-H Program of Distinction (2005)
- National 4-H Urban Program Award (2006)

Conclusions

The WS program is making an impact on three major issues in science education: 1) the need for parent and community involvement in schools; 2) overworked teachers and underutilized teacher training and 3) the need to increase the use of situated learning education methodology where science learning opportunities are provided in the context of authentic and realistic problems and situations.

- The "regular" on-going WS training program appears to be quite effective.
    - The quality and amount of program material and resources appears to meet the needs to the participants as they fulfill their role as a WS.
    - The participants left the training with the knowledge and skills to set up the program

at their school.

- The "advanced" WS training program also appears to be quite effective too.
    - The participants left the "advanced training" with significantly more knowledge related to preparing grant applications and identifying sources of funds, marketing and promotion activities, developing partnerships with community leaders and organizations, obtaining support from teachers, developing a peer support system, and monitoring and evaluating their program.
- Considerable local support has been leveraged by the WS program and the trainees to implement the WS program in their school.
- There is a clear evidence of the positive impact of the WS program on student engagement and achievement of important science content standards. The excitement of the students and their ability to articulate science concepts when talking about the WS program and when demonstrating projects at local and state science fairs (summits) is remarkable.
- Outreach activities to ethnic/racial minority communities have been only modestly successful and continue to be a challenge for the WS program.
- Continuation and sustainability of the WS program has been successful in many schools but has been a challenge in a few others. These challenges often relate to the "hand-off" of the leadership and WS program activities to the "next generation" of WS leaders/volunteers. For example, as students move through the school system, their parents (WS leaders) will focus their energies at the specific grade level or school level activities that their child is attending at that time. This may lead to a leadership vacuum as the WS parents/volunteers energies follow their students' advancement through the education system from year-to-year.

Finally, the WS program does not operate in a vacuum, but rather within a community ecological system that includes the volunteer, students, teachers, school administration, program support, and involvement of parents and community members. The dynamics of the system vary from community to community; however, a general WS program model emerged during the first few years of the program. The WS program model is outlined in diagram above.

Recommendations

- Consider revising the program theory that volunteers can be trained to be WS who work independently to teach science. In some cases, the volunteer may actually teach science, but the evaluation indicates that this is not typical, and not the main ingredient to program success.
- Consider offering a training program specifically for teachers that focuses on science education and not habitat development. This training program could focus primarily on developing science pedagogy, knowledge, and skills as well as how to use the project to enhance science education in their classrooms. This could be particularly effective at the elementary level where teachers often lack specific training in science education.
- Consider a "partnered" approach to training, where a teacher and parent volunteer attend the WS training together. Both would receive basic information about the project specifically about how it works to enhance science education, and what is needed to make the project successful. The second part of the training could break into two tracks, with the teachers focusing on science education and the volunteers focusing on habitat development.
- Consider a "partnered" approach to the training, where two or more WS volunteers attend the training together. One of the WS volunteers could be an "experienced" WS volunteer and the other volunteer could be a "new" volunteer. This could assist in sustaining the WS program and having successful transitions as parents and students leave the WS program and progress through the education system to higher grade levels.

- Consider providing additional "advanced" training that includes topics such as preparing grant applications and identifying sources of funds, marketing and promotion activities, developing partnerships with community leaders and organizations, obtaining support from teachers, developing a peer support system, and monitoring and evaluating their program. This could assist in sustaining the WS program in the schools.
- Consider developing additional informational print materials and videos targeting urban and minority communities.
- Consider developing a slightly different program model designed for urban communities, with a slightly different program focus that builds partnerships with groups such as community agencies, advocacy groups, churches, and other similar groups that targets community partnerships in addition to partnerships with public schools.

_____

Report Submitted
October 1, 2006
Michael Dalton, PhD
Project Evaluator

Appendix

PROPRIETARY MATERIAL

Thanks for Your Input!

Appendix #2

4-H Wildlife Stewards Program
Teacher Follow-Up Survey

PROPRIETARY MATERIAL

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

PROPRIETARY MATERIAL

Appendix #4

4-H WILDLIFE STEWARDS ANNUAL ENROLLMENT

4-H Wildlife Stewards Program

3421 SE Salmon
Portland, Oregon 97214-4268
Phone: (503)-916-6074
Fax: (503)-916-2676
www.wildlifestewards.4h.oregonstate.edu

Designated Contact: _____ □ Teacher □ Other School Staff □ Parent □ Community Volunteer

Have you ever been a Member and/or Leader in the 4-H Program? □ Yes □ No Year(s) and Place _____

School Name: _____ Principal Name: _____

Address: _____ Zip: _____

Designated Contact E-mail: _____ School Web Site: _____

School Residence (check one): □Towns/Rural non-farm □ City 10,000-50,000 □ Suburb over 50,000 □ Central City

4-H Wildlife Stewards Program (check one): □ In School □ After School
Note: Two separate forms are needed if both "In School" and "After School" apply.

STAFF (S) PROFILE (indicate the participating staff in the appropriate boxes)

STAFF NAME	**GENDER** (M/F)	**ETHNICITY**				
		Caucasian	African American	Hispanic	Asian	Native American

INFORMATION ON YOUTH: The following section on classroom information must be filled out completely in order for literature to be provided. This information is needed for statistical reporting in compliance with Federal Funding Requirements. Racial data is required by Affirmative Action Policy. All information is kept confidential.

Grade Level Composition		Grade												
		K	1	2	3	4	5	6	7	8	9	10	11	12
Caucasian	Female													
	Male													
African American	Female													
	Male													
Hispanic	Female													
	Male													
American/Alaskan Native	Female													
	Male													
Asian Pacific Islander	Female													
	Male													
TOTALS														

4-H WILDLIFE STEWARDS ANNUAL HABITAT EDUCATION SITE REVIEW

4-H Wildlife Stewards Program

3421 SE Salmon
Portland, Oregon 97214-4268
Phone: (503)-916-6074
Fax: (503)-916-2676

Site Name: _____

Habitat Education Site

Site features completed or in progress (Please check all that apply):

□ Bird Garden
□ Historical Garden
□ Native American Garden
□ Dry Stream Bed
□ Greenhouse
□ Amphitheater
□ Wheelchair Accessible
□ Butterfly Garden
□ Woodlands
□ Garden Pond
□ Stream Restoration
□ Worm Composting
□ Learning Shelter
□ Vegetable Garden
□ Wetlands
□ Bioswales
□ School Nursery
□ Nest Boxes
□ Learning Shelter

Project Highlights

Tell others about your project and what you are learning. Please limit your response to 250 words.

Share your thoughts: How is your project helping students improve their science skills. Please limit your response to 250 words.

Would you be interested in a secure on-line internet exchange with other groups? □Yes □No

LEVEL OF PARTICIPATION

Indicate the average number of hours per month your average students participate in hands-on projects in the Habitat Education Site:

□ 1-2 hours □ 3-6 hours □ 7-15 hours □ more than 15 hours

Number of Participating Volunteer Parents who volunteer with the Habitat Education Site: _____

FUNDING SOURCES

Estimate the amount of funds you generated this year:

In-Kind Donations **$**_____
Grants **$**_____
Sales/Fundraisers **$**_____
Cash Donations **$**_____
TOTAL **$**_____

PARTNERS

Please list key organizations and group partners who assist with this project such as community clubs, neighborhood associations, community agencies, garden shops, etc..

Square Feet of Wildlife Habitat Created and/or Maintained This Year: _____

PROPRIETARY MATERIAL

Appendix #6

4-H Wildlife Stewards Discussion Board
February 2005

Name 3 things you learned from the 4-H Wildlife Stewards and list one question you would like some feedback

Volunteer #1

Sustainability: Project continues with least amount of effort. What worked for me is to get to know the teachers and principal and see how I can contribute to their classrooms' program. I've continually shared how the WSL program could benefit their school. I started WLS after-school program which is part of their promise club for 2 years.

- ❑ I have one too; its our biggest success so far.
  - Principal support-essential!!!
    - Very much a blessing. Say "thanks" often
      - o I agree. Our principal has been helpful. Parent club and Master Gardeners have provided some support and adult help and supervisors at times. We already started a parent club

How to work with competing programs at the school (i.e. WLS School Garden Project, etc. Issues about sharing space.

- ❑ *Meet with different programs and come up with common goals and compromise plans*
  - o *Agree with the above. It sounds complicated!*
    - *??something to think about*

Volunteer #2

3 things I've learned: 1) It is difficult at times to work with so many folks with so many ideas

- ❑ Write down all ideas then only choose a couple
  - o Good idea
    - Yes, people are quite different and communication is often the key

2) We need to get a budget to carry out our plans

- ❑ Find someone who likes working with numbers
  - o Money helps

3) That not everyone in our building is as caring about utilizing our habitat areas

- ❑ Yes – but the students usually care and if they are on board the adults often follow
  - o True
    - Might address this at a staff meeting
      - Not everyone will be, work with the ones who are interested and it will help to bring others in, but not everybody will be involved.

How do you spark the interest of teachers in your school?

- ❑ *Good question!*
  - o *Our teachers are very interested, but its finding ways to incorporate the habitat without taking away from their curriculum*
    - *Try a SOLV project –small one day*
      - *Find an ally and start with a small group – use local WLS volunteers to fill it out*
        - o *Make it relative to them.*
          - *Americorps: any to go to classes or staff meeting to talk; PT0; have a WS workshop*
            - *Grade by grade – institutionalize in curriculum (i.e. 2nd grade bats, 4th grade birds)*
              - o *Getting somebody to model lessons using the area so teachers can see how it might fit into the curriculum.*

Volunteer #3

3 things I've learned:

1. Money helps
- But many groups are ready to donate for the good of kids!
    - Always – in-kind donations are good too.
        - And access to the money can prove difficult if "purchase orders" are required.
            - Oh.

2. Lots of people are interested and willing to help.
- Especially if it is good for kids education.
    - Holding those interested can be challenging.
        - Idea: Draw in more parents or hold onto parents by keeping them involved with classroom science projects or making classroom presentation to keep students involved.

3. Curriculum comfort with environmental ed. Teaching is essential to getting classroom involvement.
- Being a "kid at heart" helps.

How to draw in more parents?
- *Have students do open house/tour/presentations. Parents will come to see their own child "perform", then hook 'em in.*

How do you create an "equal playing field" between parent involved alternative school and neighborhood school with little parent involvement? (Within the same building)
- *Very difficult. Neighborhood school often relies on just a few parents who sustain the project. Idea: draw on community and faculty.*
    - *Lots of people out there!*

Volunteer #4

3 things I've learned:

1. I've learned that it will be best to cooperate with many different groups and individuals to make the WLS program work at our school.
- I agree
    - True, true...
        - Does majority vote always win?

2. I learned to delegate and be flexible/open minded.
- ☺
- Always help to share the load.

3. I learned that presentations to classrooms work best to explain the program to kids.
- Would be good to have older kids explain to younger.
    - Lots of pictures
        - Great idea! Great idea!

How do you sign up all the students to be in the program?
- Different groups doing different projects.

How do you involve low socio-economic families/kids in the program?
- *Have transportation available if it's an after school program*
    - *Volunteer time for planting/upkeep in classroom experiments.*
        - *Host an open house to visit garden.*

Volunteer #5

3 things I've learned:

1. Grant writing techniques
- And sources?!
    - Yes!
        - The web is great!

2. The HUGE amount of grant funding that is available.

- Again, sources!

3. Some grants require LOTS of work, some don't.
- Find the easiest ones.
    - I like the latter one.

How to best insure the continuation of a project after maintenance people graduate from the school?
- *Kids or adults?*
    - *Idea: have students in upper grades go through training about the program & continue to pass that on to younger students. Recruit parent or community volunteers yearly.*
        - *Great idea!*
            - *Get the community involved – gardening clubs, etc.*
                - *Have older students do presentations to younger classes about the program and do mentoring – cross age mentoring is a big thing these days.*
                    - *Keep good records!*
                        - *Project book with pictures, especially before and after.*
                            - *Teachers, what would make it easier for you to use the site?*

Volunteer #6

3 things I've learned:

1. Working with kids in school easier than after school.
- Yes, need to find a "fun" way to engage them after school.

2. Kids are more excited if you are excited.
- ☺

3. Some principals are very supportive, other hinder work.
- Try to get to know the principal and how the program can work for them.
    - If the principal is truly a hindrance, the reality is that the program just may not work at that location. They need to find a different school to work with.

How do I sustain programs after my 1 year is up?
- *Try to get a community member/teacher involved.*
    - *Need several people to help carry the load and so there is continuity. Not everybody leaving at once.*
        - *One possibility is to have a classroom curriculum (tied into state benchmarks) that can easily be repeated each year. At my school I am hoping "interpretive trail" will provide that.*
            - *It's definitely a great idea to work with the program with classroom teachers and tie the curriculum to benchmark, then it becomes an important science element.*
                - *Try to find a teacher or tow to become Wildlife Stewards – once they attend the training, they'll be hooked.*

Volunteer #7

3 things I've learned:

1. It's harder to sell without seeing it.
2. The possibilities for this program are limited only by your imagination.
    - Very true
3. 3-5 year commitments scare people
    - Break things down into 1 year goals or semester goals to make it more manageable.
        - It's important not to try to do it all at once. – a long range plan is good and then breaking it down into doable chunks. When the long range plan is in place each chunk becomes recognizable progress towards your goal.

How to sign up a community group – not school.
- *Not sure – can gather community members together through newsletter, ads, etc.*
    - *Target a group and ask by sending information or a request. Many groups are just waiting to be asked.*

- *Find a key person at City Office, public works, Parks and Rec., Native Plant Society, Soil & Water Conservation Group. I have them send out a "call for volunteers" on their email list or just an information email about your project and need for volunteers...*
    - *Great idea!!*
        - *Yes!*

Volunteer #8

1. Lots of resources available.
    - Just start passing the work and some come to you.
        - Try to focus on using a subset of the resources.
            - Too many resources can sometime also be overwhelming – trying to use them all sometimes it's hard to focus on a small piece so it becomes something you can accomplish without getting stressed out.
2. Extension service has lots to offer.
    - In many different areas.
3. You can do this on any scale.
    - Start small; work your way to large.
        - Yep!

How do you find the time?
- *By setting aside a contained block each week/month*
    - *Put it in your planner in pen, not pencil!*
        - *Have partners that you can talk things over with.*
            - *Start a team of helpers and spread out the jobs.*
                - *Prioritize- how important is this activity compared to all the stuff on your plate. If one is passionate about sharing nature with youth, one finds the time and often other stuff gets neglected.*

Volunteer #9

3 things learned about being a 4-H Wildlife Steward:

1. It is really important to let the kids guide the program and not to control it.
    - How to ensure kid control, enthusiasm?
        - Cross age mentoring is good.
            - The adults in our school want to do it all.
                - Yes!

2. Volunteers in all areas of education (sports, after school, etc) are maxed out.
    - As are classroom teachers!
        - And lots of parents...life in the new millennium, but it's more fun to be learning outside!

3. Needs to be seen as a contributing part of curriculum.
    - Yes, so many of our teachers don't have time for this.
        - !!

How do you incorporate lots of community partners to help?
- *Think about organizations that are working/have an interest in environmental education to talk to them.*
    - *Ask!*
        - *Asking is <u>key,</u> in my experience community partners...agencies, stores, etc are very willing. I've found a good key work is HANDS-ON learning. Invite hopeful partners to a school function. Have requests for partners clear written and don't be afraid to ask.*
            - *Publicity can bring them to you...*

Volunteer #10

1. The importance of planting native species.
    - Natives can bring in an array of insects, birds, etc. that really excite the kids – cause & effect relationship.
        - Some native species act like weeds and take over.

- Be careful, many non-natives are much more invasive than most natives.
  - Master Gardeners are a good resource.
    - Perhaps adding a layer to importance of planting native plants by re-marketing the idea of benefits to all.

2. How excited and motivated students are working on a 4-H project.
- Children love to plant plants and get in the dirt. They really care about the birds and butterflies.
  - Providing.

3. Learned how to integrate hands-on out activities into state benchmark requirements.
- Would love to see more 4H curriculum that is tied to state benchmarks.
  - A friendly relationship with the janitor is invaluable!
    - Bringing teachers on board isn't always easy either. They don't want to take on 1 more thing.
      - I am looking for literacy in the habitat lessons – our school focus is "over the top" with literacy.

Volunteer #11
Three things I've learned:

1. Kids have diverse ways of learning.
- Yes and isn't it great to get them outside for hands-on learning.
  - The after school kids are there because they want to be so no discipline problems and they love to work.

2. Wildlife gardens need continual inputs of energy and focus.
- New volunteers are always great for renewed energy.
  - Everything takes time – slow down and smell the roses – if you have roses planted!
    - One summer/winter at a time.
      - Give yourself credit for what you have achieved.
        - It will take time for a habitat to mature. Try to involve different classes each year for continuity.

3. Volunteers are hard to find.
- Yes they are, I could use some volunteers! I don't have any...
  - Contact a large local company. They have service clubs. Intel is great!
    - Work with other volunteers groups/community groups.
      - What about tying into middle school or high school kids – many have to do service projects.
        - Master Gardeners usually have people willing to help.

Volunteer #12

1. Children need to be assigned projects they can be successful at.
- We just did the balloon activity with 3rd grades and kinders. We modified the task to each group. The kinders wanted faces drawn on their balloons.

2. It is important to have available water for animals in your habitat.
- True
  - And that can be difficult...also water is needed to water new plants.

3. Try to use native plants when designing habitat.
- When planting natives check ahead to see if the habitat supports your native plants.
  - Good idea.
    - Communication with the school during the summer is very important. Our school water was turned off for a month while they put in new toilets. No one mentioned it before.
      - This happened to us too.
        - Sometimes Parks & Rec. can help out. Our school is adjacent to a city park.
          - Have families volunteer to watch the garden for 1 week at a time – give them a contact for water needs, etc in case of a problem.
            - Principals could be roadblocks sometimes.

        - Information should be summarized and well presented so that principals are able to see it deal quickly (?)...And then present it to the teacher.
    - Have a long-term sustainability plan before you approach principal.

Volunteer #13

1. The importance of considering personality types and working with people with different aptitudes on a habitat planning committee.

- Developing ownership within the committee for long term commitment.
    - Ownership and commitment to the project are very important, but how do you get a committee in the first place?
        - Some teachers have kids in a 4-H or some are gardeners. If you don't ask too much of them they will help when they can.

2. The importance of "getting all of your ducks in a row" before starting a project – including a long term plan and budget considerations.

- Learning where to get funding is important to start a habitat program.
    - Getting commitments from partners, school district support.
        - The 4-H helped me get a grant for our forest habitat and garden.

3. Being in the paper helped us get a grant. The people came to me!

- Talk about your project wherever you go – you never know where you will make the next connection or where your help may come from.

Volunteer #14

1. It's important to involve parents. Don't try and do it alone.

- How to involve and motivate teachers for parent led project?
    - Not only parents, but also community.
        - They are <u>so</u> busy.

2. Keep the project manageable. Break it down and don't give up when you reach a roadblock.

- Realize your project will have ups and downs.
    - Great idea to break project into small manageable unity and let those units evolve to fit your students needs to desires.
        - Start small, stay small.
            - Grow as large as your communities' involvement.
                - Giving up may need to be reworded to try a different approach.

3. Donations are everywhere. Ask and you shall receive.

- Don't be afraid to <u>dream big!</u>
    - With a little bit of sweat I started my projects with donated conifer trees (seedlings).
        - Would be great to have a 4H Wildlife Steward web-based "bulletin board."
            - People love to give plants. Some native plant nurseries will donate for a tax deduction. We use our PTA's tax ID #.

Parent/habitat reps. to work with interested classroom teachers.
21st Century grant to fund after school program – American Volunteer!

Master Gardeners:

- Composting demonstration
- Front of school, design and plant garden.
- Kids recruit and plan, measure success through the kids eyes.
- Show teachers ways to use the habitats.

Volunteer #15

I learned:
1. It's difficult to avoid introducing pollution into habitats.

- Master Gardener's are a good source for plants that help reduce pollution.
    - The local garden club helped with plant donations.

        - Demand=success

2. Re-learned how rich our wildlife habitats are.
    - Important to sue native plants.

3. Re-acquainted my self with joy of learning more about the world around us...
    - Great to watch the kids get more tuned in to the natural work as the year(s) progress.
        - Yes, that's really great!

4. Importance for kids to connect with nature...especially in an urban environment.
    - Yes!
        - Try to get kids to involve their parents.
            - Very important for children to understand the needs of our own native animals by building a garden and allowing them to come.
                - We also involved our kids in the county fair. A great experience!
                    - The training to become a master gardener available in many communities is also a valuable tool in helping kids in a garden habitat.

Volunteer #16

1. Secure birdhouse doors so predators can't open them.
    - Also know where to put them and each bird has different house needs.

2. People like to help (volunteer) if only for a short time. Not a long commitment.
    - If people feel like they are appreciated and their work is important they will stay with a program longer.
        - It also helps to build in a reward system and appreciation days outside of school activities.
            - I took pictures of kids with their parent/grandparent helping in the garden. I sent that with a thank you note. I think they really enjoyed getting the photo.
                - Parents as volunteers – in a perfect world there will not be a roadblock-obstacle for commitment to volunteer. With a little bit of passion in our teaching, people may remember and become part of other people's attitudes.
                    - Many parents are so busy trying to support their families; they don't have much time or energy to volunteer.

3. Be flexible about where to plant certain natives, i.e., the week before we planted our shade garden, the neighbors cut down the shade trees.
    - Also may need to change things around as time goes on – a habitat evolves.
        - Flexibility is important. Parent volunteer recognition and thanks is important to keep them.
            - I definitely appreciate.
                - Parent volunteer recognition – some teachers are better than others at recognition.

How to get teachers and school to sign up to the program when they are all busy on preparing students for standardized test?

- *Find out what is studied in what grade and when and offer lessons and experiences that fit that topic. Be polite but persistent, e.g. contact them every 2-3 months.*
    - *Stay in contact with the teachers and offer to help with activities that contribute to their learning objectives.*
        - *Show them the W.S. DVD – very compelling and interesting. I think visual aids make a huge difference and this DVD is well done! Are there other adults in the community who are interested?*
            - *We have involved people from the community with like interests, birders, proponents of river habitat and master gardeners.*
                - *Would be nice to have some mini workshop type thing to educate the teachers about what we can offer to their class programs.*
                    - *This would also interest the kids if done during their class time – kids could bring info home to parents, get more parent volunteers?*

How to get parent volunteers?

- *I have that problem/question too.*
    - *Have classes do a little WLS newsletter, discuss at PTO meeting???*
        - *Go to the PTA meetings*

Volunteer #17
Keys to success:

1. Teacher involvement
    - Build on previous lessons
2. Co-ordination with school district on use of school grounds.
3. Outside expertise involved – parents, other volunteers.

What is the best way to co-ordinate use of habitat across all teachers and grades?

- *I've come at lunch recess and got children involved in the garden and compost pile (all ages). We have an after school WLS Club with 2nd – 5th graders.*

How to sustain and continue the program from years to years?

- *Find out what is taught in each grade and when and offer or develop lessons that fit into that topic. E.g. K and 3rd grade studies trees in fall and again in spring. 3rd grades studies geology and how settlers changes the land, etc.*
    - *Use the habitat in lessons and maintain it.*

Volunteer #18
Kids are very content to dig and explore given time and tools. Our site is too big for one person to maintain. Teachers need lots of lead time, reminders and flexibility.
How have you handled student project notebooks?

- *Haven't started that yet.*
    - *Give them responsibility for their own work.*
        - *We made our own nature journals out of recycled materials. We started with clipboards and charts and keep track of what we are doing in the garden, compost pile and worm bin. We have an after school program with a small group of students.*
            - *Each teacher handles it differently, age dependent ability. Take pictures, draw pictures, map sites.*
                - *We have been taking photos as we work and have a photo album and bulletin board. Small after school group in doing research for butterfly gardens. Will keep info in folders.*
                    - *Taking photo helps with journaling and keeping track of progress. The kids seem to have a hard time with note taking (1st and 2nd graders).*
                        - *Or younger grades could present what they learned other ways, i.e. art project, a wildlife habitat bulletin board is a great idea because all students can see what each other is doing.*
                            - *A time line with photos and notes.*

Volunteer #19
Key – I may be the one getting the program started but I have to have a team to ensure the sustainability of the program.

- !!Yes!!
    - Essential

If my sessions are during class time how do I get 50 kids all working in the garden at the same time without getting filthy for the rest of the day?

- *Break the children up into smaller groups (no more that 4-6 at a time if possible). Have them brain storm what to do, planning, research.*
    - *I didn't start the program but the other 2 women who work with me will be gone in 2 years; need to get at least <u>someone</u> on board. Tricky.*
        - *Filthy children – inevitable. Purchase gloves, boots?*
            - *Ours ahs been an after school program mostly, but classrooms have taken on a flower bed to plant. With gloves and working in raised beds, the dirt was not a problem, but ours is a dry climate.*
                - *Gardening in raised beds would help prevent some of the getting dirty problems.*
                    - *Schedule work time at the end of the school day.*
                        - *Having involved teachers who will (hopefully) be around awhile will also help sustain project.*

- *Tell kids and parents to get dressed to get dirty and for the weather. Model by wearing grubby clothes on a regular basis (probably won't work if you're an employee).*

Volunteer #20

1. Even more patience! Can't project a particular outcome when working with kids. Won't look the way I envisioned.
2. Be careful about how much I take on – don't assume the teachers won't get to it.
    - Starting small, with room for growth may help to build success on success so we and kids don't get discouraged.
        - Need more time in classroom with kids.

How to get teachers to build on what we present to their class?

- *Encourage 1 or more teachers to do wildlife steward training so yes can work with them.*
    - *Have the big picture of the habitat and have the kids plan the details.*
        - *Have your big goals in writing. Then your process to get there in steps – mostly baby-sized. Celebrate each one! BE patient (this one's hard for me too). Leave lots of space for the plan/process to change.*
            - *Actually it's the kids project – if you try to get them to do it for your vision you're guaranteeing that it won't happen – S/B Great Expectations.*
                - *Have some activities that they need to do to use the info you have taught.*

Volunteer #21

We have involved an Eagle Scout to do his project by building raised beds for us. We were able to get a grant form the Ed. Foundation of Pendleton. We got some businesses involved who donated labor, advice or plants. As our garden expands we have need for more water. The raised beds have a drip system, but our new beds no water sources. Water?

- *Maybe collect rain water run off – what liability issues are there about putting pond or water features on school grounds?*
    - *Focus on drought tolerant plants.*
        - *Mulch, mulch, mulch. Ditto on the right plants – natives.*
            - *I agree – need to have plant area that is representative of your area. High sustainability – native herbs.*
                - *I agree, plant drought tolerant plants. Lavender would be good.*
                    - *Rain barrels? Native plants. Create "dry" stream bed with rocks. If it's dry – raised beds aren't a good idea – they dry out quicker.*

Volunteer #22

1. Open communication is necessary.
2. Teachers need better understanding of what we can offer.
    - Small presentation in classrooms about 4H Wildlife Stewards or meet with teacher during staff meetings (or email?)

How to get more parent involvement?

- *Display plan during school's open house and ask for volunteer.*
    - *Include articles in the school newsletter – ask for volunteers. Use examples of how kids learn through the 4H Wildlife Steward projects.*
        - *Our PTA has an "interest finder" that parents sign up on at the beginning of the school year. Be sure your project has several categories like "maintenance, after school club, bulleting board, and newsletter", etc.*
            - *Show and tell – parent day to see what's going on – have WLS staff down for day.*
                - *We have a WLS after school club which changes each term. I have found interested parents who come to see what the children are learning. I have a parent who is now a WLS.*
                    - *At open house have a check list for different ways parents can get involved and have WS spot on check list. We have stations at our open houses and you visit each one (i.e. gym, classroom, etc.) and the parent info table is one of the station with the check list.*

Appendix #7

4-H Wildlife Stewards Focus Groups
Group Discussion Notes
February 2005

When is the Project Sustainable?
- ❑ When children are gaining from site through own eyes.
- ❑ Transfer of knowledge and excitement from kids to parents.
- ❑ Partnering with local industry/business.
- ❑ Specific lesson for this month relates to what is taught in classroom. (tie into multiple subjects).
- ❑ Project continues (close to) effortlessly.
- ❑ Range of different ages and parents.
- ❑ Student pride.
- ❑ Project is integral part of school.
- ❑ Strong parent support.
- ❑ Seamless leadership transition.
- ❑ PTA/PTO integral part of project.
- ❑ Not tied to one person.
- ❑ Builds into on-going curriculum.

Tools Needed for Project Sustainability
- ❑ Bulletin board via website – key word search information you are looking for only.
- ❑ Knowing plant species (education or resources to identify native/non-native plants) – correct plants for site.
- ❑ Donations – native nurseries – make donations easy to do (i.e. PTA tax#).
- ❑ Combining science with literacy.
- ❑ Grade specific focus.
- ❑ Features of habitat sustainability: native plants (knowledge of ecology), low maintenance.
- ❑ Resources – Web, books.
- ❑ Patience.
- ❑ Tools in place, accessible.
- ❑ Neighborhood watch.
- ❑ Education of neighbors/school.
- ❑ Summer volunteers.
- ❑ Lobby with legislators to include environmental education.
- ❑ Need community partners.
- ❑ School staff orientation and training.
- ❑ Sensitive to community attitudes. Community receptive to project (ex. Sweet Home – environmental term).
- ❑ Tie units to state benchmarks.
- ❑ Video clips on web showing success (ex. summit, camp, corroboree, school projects).
- ❑ Staff coming to school to do training on in-service day (Clover Ridge).

Most helpful Tools for Sustainability:
- ❑ 4-H WS training
- ❑ Handbook is useful. All teachers use it and are passionate about it.
- ❑ Website is useful.
- ❑ Start small
- ❑ DVD documentation
- ❑ Attached to OSU Extension 4-H
- ❑ Environmental affiliation helps draw resources in Portland
- ❑ Farm Bureau
- ❑ Newsletter

Keys to Success

Volunteers identified many keys to success in their discussion groups. Many of these keys to success fell into one of several themes:

- ❑ Support and expand the volunteer base
- ❑ Stay flexible, enthusiastic and patient
- ❑ Partner with other groups, businesses and resources
- ❑ Support and enhance what teachers are teaching in the classrooms

- ❑ Keep the project manageable- start small
- ❑ Engage children through hands-on program and build in ownership
- ❑ Keep communication lines open
- ❑ Grow parent volunteer group – habitat reps, multicultural garden.
- ❑ Volunteer coordinator – volunteer service credit.
- ❑ Social marketing – small key success (measure success through children's eyes).
- ❑ Make links to other programs.
- ❑ Cause and effect – project-based.
- ❑ Making a connection to real life (ex. painted lady butterfly).
- ❑ Establish a demand – shows success (ex. native plants).
- ❑ Native gardens need to be attractive to show success.
- ❑ Stay enthusiastic.
- ❑ Connect with teachers in the summer.
- ❑ Ask teacher what they are already doing in classroom.
- ❑ Be flexible with teacher schedules.
- ❑ Conduct surveys/staff meetings to assess needs.
- ❑ Money is very important – find it first.
- ❑ Ability to bring resources to teachers.
- ❑ The school knows 4-H WS program exists.
- ❑ Start with a small grant and project.
- ❑ Must have passion and energy.
- ❑ Good at networking.
- ❑ Works will with kids.
- ❑ Good communication.
- ❑ Student participation – different ages have different jobs (journals, planting, and mapping).
- ❑ Lessons, curriculum.
- ❑ Resources – info/ideas for getting materials, community business partners.
- ❑ Patience.
- ❑ Written plan that makes sense.
- ❑ Education of project.
- ❑ Sense of ownership.
- ❑ Teachers/Principal involved.
- ❑ Teaching style (whisper).
- ❑ Use the habitat – human involvement (as well as wildlife!).
- ❑ Good people skills.
- ❑ Kid involvement – parent/volunteer as guides (less adult work).
- ❑ Utilizing free advice – websites.
- ❑ Get donations and make easy to do so. Tax deduction for plants.
- ❑ Communication with Principal/School secretary/District/Grounds keeper.
- ❑ Communication with all potentially involved.
- ❑ Know communication chain of command.
- ❑ Parents joined school of habitat site
- ❑ Spanish immersion
- ❑ Students, who have never had opportunity, get a chance.
- ❑ Children learn responsibility and life skills.
- ❑ Seeing kids taking pride in project, enjoying work and being excited.
- ❑ Excitement over healthy foods, nutrition.
- ❑ Design is smart and vandal-proof.
- ❑ Fix vandalism right away.
- ❑ Having an organized plan, where kids are a part of the step (while being flexible with teachers, principal and staff).
- ❑ Master Gardener hours, gardening club, intergenerational, Native Plant Society.

Roadblocks

- ❑ Reluctant principals.
- ❑ Propagate plants to offset cost.
- ❑ Getting volunteers.
- ❑ Keep volunteers excited.
- ❑ Too many things for teachers to do
- ❑ It's Just Me!!
- ❑ No or little emphasis on environmental education.

- ❑ Languages/ESL – not enough time for science.
- ❑ State standards dictate student time.
- ❑ Student skills low – little time for other education.
- ❑ Can't get teachers to take training.
- ❑ Project sustainability levels do not fit our school.
- ❑ Budget constraints – school closures.
- ❑ Too many ideas – too many agendas.
- ❑ Teachers are overwhelmed – science is secondary.
- ❑ Needs instant gratification.
- ❑ Some teachers are not comfortable with subject.
- ❑ Too much adult ownership and not enough kids.
- ❑ Some teachers only want to be involved when project is completed.
- ❑ Not a garden or for landscaping – not perfect.
- ❑ Communication with teachers.
- ❑ Lack of funding in the beginning.
- ❑ Lack of funding from school.
- ❑ District expectations for in-class time.
- ❑ Lack of creativity in classroom.
- ❑ Short class time blocks – lose teaching moment.
- ❑ Not enough stewards (volunteers) time or help controlling kids.
- ❑ Need parents to maintain area.
- ❑ After school mindset (does not mean babysitting!) – want physical activity, not a lecture.
- ❑ Vandalism
- ❑ Access to water.
- ❑ School security – school locked.
- ❑ Lack of patience.
- ❑ Teacher's ideas are different from stewards.

Appendix #8

Minority Group Focus Group
EVALUATION PROTOCOL

Directions and Introduction

"You have just seen a short video of the 4-H Wildlife Stewards Program and were given some promotional material about this program. Today I would like to get some information from you about your involvement and the possible involvement of others in the community with the 4-H Wildlife Stewards program. I will ask you some questions about your knowledge and experiences with 4-H Wildlife Stewards, possible incentives to recruit adult volunteers into 4-H Wildlife Stewards, and about potential barriers and overcoming these barriers for adults to participate in 4-H Wildlife Stewards.

Information gathered through the focus group will be used to describe and document the ways in which the 4-H Wildlife Stewards expanded and improved. We will be recording the conversation but only to help us accurately document your answers. We will only look at group trends. Your answers will not be singled out and will remain totally confidential. Your answers will NOT be shared with anyone.

It's important to tell you that you don't have to participate in the focus group conversation if you don't want to. You may choose not to answer any question or only to answer the ones you want to. We do hope that everyone has a chance to talk and to fully contribute to the conversation.

Is that OK with everyone? Does anyone have any questions before we start?"

Questions

1. Tell me a little bit about how you heard about this focus group meeting and were invited to attend.

Probes

- What got you interested enough to attend?
- What do you hope to get out of the meeting?

2. Tell me a little bit about what you know about 4-H programs in your community

Probes

- Are there any 4-H programs at your neighborhood school?
- Are there any in this community?
- Have you ever participated in any 4-H programs?
- What is the stereotype image of 4-H programs?
- Is the stereotype image of 4-H programs an incentive for minority students to be involved or a disincentive for minority students to be involved in 4-H? Why?

3. What if anything do you know about 4-H Wildlife Stewards before this focus group?

Probes

- What is the purpose and goals of the Wildlife Stewards program?
- What grade levels and content areas are involved in the Wildlife Stewards program?
- How did you learn about the Wildlife Stewards program?
- Does the subject area of this program, environmental education, influence positively or adversely our ability to reach out to new audiences?

4. Tell me a little bit about the most effective practices for recruiting potential new leaders for the Wildlife Stewards Leadership program from your community.

Probes

- How would you get them involved? How would you promote it?
- Were incentives important to your participation in this focus group?
- What kinds of incentives would be most effective in your community? Why?

- Are you aware that $1000 incentives are available to participate in the Leadership training and to begin working with a school? Would this be an important incentive to others in your community?
- Are certain scheduling issues important to consider? What are they?
- Are there specific cultural issues that are important to consider? What are they? Why are they important?
- What are some of the best media and locations for recruitment? (e. g. churches, schools, radio, TV, community centers, mailings, fliers, etc.)

5. What were some of the most effective recruiting tools you have found for getting adult leaders interested in this program**?**

6. Tell me a little bit about the barriers and challenges to recruiting leaders for the Wildlife Stewards Leadership program from your community.

- What are they? Why are they barrier and challenges?
- Is language a barrier?
- What are some strategies for overcoming the barriers and challenges?
- Are they generic barriers and challenges or are some unique to this community?

7. Tell me a little bit about successful adult volunteers programs in (name ethnic community)

- What tools or practices make this program successful for recruiting adult volunteers? What can OSU Extension learn from this success model and apply.
- What recommendations would you give 4-H program staff to more effectively reach adult leaders in your community?

Appendix #9

PROPRIETARY MATERIAL

Appendix #10

Annual 4-H Wildlife Stewards Summit

April 22, 2004
Teacher Evaluation

Please share any positive learning/ growing experience your students may have had as a result of participating in the 4-H Wildlife Stewards Summit.

List any comments/concerns about the presentation/poster process.

List your students' three favorite experiences from the Summit.

1.

2.

3.

What did we do well?

What could have been done better?

Appendix #11

PROPRIETARY MATERIAL

Fill in the circle that matches your answer
Like this: ● Not like this: ⊘ or this ✓

PROPRIETARY MATERIAL

Appendix #12

Post-Course Survey

PROPRIETARY MATERIAL

m.	1 2 3 4 5
n.	1 2 3 4 5
o.	1 2 3 4 5
p.	1 2 3 4 5
q.	1 2 3 4 5
r.	1 2 3 4 5

Appendix #13

Project Team and Partners

Principal Investigator: Maureen E. Hosty ; *Oregon State University*

Project Team

Project Evaluators(s) :

- Mary Arnold, PhD
- Michael Dalton, PhD
- Ken Peterson, PhD (outside Evaluator)

State Design Team : Virginia Bourdeau; Engeldinger Joan; David White; Maggie Livesay; Robin Galloway; Amy Herron; Nancy Allen; Aimee Van Vleck; Jessica Fisher; Einerson Jody; Melissa Casteel; Megan Kleibacker, Daniel Edge; Bill Broderick

Graduate student(s) : Jana L Meinhold and Helen Pease

Technician, programmer(s) : Susan Wieske; Sally Yackley

Partner Organizations:

AmeriCorps/Northwest Service Academy: *Financial Support; In-kind Support; Personnel Exchanges*

Americorps is a partner and sends several volunteers each year to the Master Science Educators training.

Local School Districts: *In-kind Support; Facilities*

Local school districts are partners and assist to develop guidelines for informal science projects at schools, arrange for sharing information about the project to students and staff, work collaboratively with teachers to develop science curriculum for students and provide sites for 4-H Master Science Volunteers to deliver informal hands on science.

Benton Soil and Water Conservation District: *Financial Support, In-kind Support; Collaborative Research*

The Soil and Water Conservation District provides funding for Benton County volunteers to attend the Wildlife Stewards training course and provides native plants to schools. The educators from the SWC district assist Master Science Educators with on site planting instruction.

Juvenile Justice: *Facilities; Collaborative Research*

The Juvenile Justice partnered with OSU Extension to develop guidelines for youth science projects at a juvenile detention center and arrange for sharing information about the project to youth participants and staff. Juvenile Justice provides a site for 4-H Master Science volunteers to deliver informal hands on science to incarcerated youth.

Metro Regional Government: *Financial Support; Collaborative Research*

John Innskeep Learning Center: *In-kind Support; Facilities; Collaborative Research*

At 21st Century School sites John Innskeep staff work in partnership with OSU Extension to develop and deliver informal science education in after-school youth programs.

Parent Teacher Associations: *Financial Support; Collaborative Research*

Local Parent Teacher Associations are partners and provide volunteers and funds for development of habitats to be used as science 'living laboratories' at schools.

National Wildlife Federation: *In-kind Support; Collaborative Research*
National Wildlife Federation staff co-delivered some curriculum lessons to students, teachers and school staff.

CYC Chandler Center: *Financial Support; In-kind Support; Personnel Exchanges*

Campfire USA: *Financial Support; In-kind Support; Collaborative Research; Personnel Exchanges*
Campfire USA staff, Melissa Thiel, is contracted by this project to help identify and recruit Hispanic volunteers as Master Science Educators. Melissa will also assist the Design team to develop 'best practices' for identifying, recruiting and supporting Hispanic Leaders.

Fowlweather Housing: *In-kind Support*
Fowlweather Housing is a non-profit organization that helps create bird houses out of recyled materials. The bird houses are then donated to schools and education groups to use in their outdoor learning laboratories.

Pacific Center for Children and Families: *Facilities*
The Pacific Center for Children and Families is a local Intensive Services day treatment program for children in Coos, Curry and Douglas counties. The center provides a day treatment where children receive individual, group and family therapy and are also involved in school for part of the day. The Center provides facilities for Master Science Educator's programs.

Multnomah Education Service District: *In-kind Support; Facilities; Personnel Exchanges*
The OSU Master Science Educators Program partners with the Multnomah Education Service District Outdoor School Program. In return for office space for the 4-H Master Science Educators 3 program staff in 2004, computer support and phones, 4-H staff and Outdoor School staff work collaboratively on staff training and program research.

Kiwanis Clubs: *Financial Support*
Local Kiwanis Clubs supported community sites with small grants.

Starker Forest: *In-kind Support; Facilities*
Staff from Starker Forest provided in-kind support by providing training and resources for Master Science Educators and youth participants.

Oregon 4-H Education Center: *In-kind Support*
Provides no-cost use of meeting room for Project Design Team monthly team meetings.

Department of Environmental Equality: *In-kind Support; Collaborative Research*
Department of Environmental Equality, Ivan Camacho, is contracted by this project to help identify and recruit Hispanic volunteers as Master Science Educators. Ivan will also assist the Design team to develop 'best practices' for identifying, recruiting and supporting Hispanic Leaders.

Portland Public Schools: *In-Kind Support; Collaborative Research*
Portland Public Schools Sunnyside Environmental School provided free office space and use of copy machine and fax machine for the Principal Investigator and two 4-H staff.

Sunnyside Environmental School PTA: *Financial Support*
Sunnyside Environmental School PTA provided $7500 to hire a full-time 4-H Intern for Sunnyside School to assist with education programs for youth related to this project.

Native American Youth Association (NAYA)

NAYA staff, Ryan Pinkerton is contracted by this project to help identify and recruit native American volunteers as Master Science Educators. Ryan also assists the Design team to develop 'best practices' for identifying, recruiting and supporting Native American Leaders.

Asian Youth Family Center

Asian Youth Family center staff, Colleen Kim is contracted by this project to help identify and recruit Asian volunteers as Master Science Educators. Ryan also assists the Design team to develop 'best practices' for identifying, recruiting and supporting Asian American Leaders.

Oregon County Commissioners: *Financial Support*

Oregon County Commissioners in Josephine County, Lane County, Coos County, Benton County, Linn County, Tillamook County, Clackamas County, Curry County, Polk County and Umatilla County provided financial support under Title III Federal Forestry dollars to hire Extension 4-H staff with responsibly to recruit and support volunteers and community sites for this project.

National 4-H Council: *Financial Support*

National 4-H Council provided $7500 for the further development of the project website and on-line volunteer course.

O'Loughlin Trade Shows: *In-kind Support*

O'Loughlin Trade Shows provided meeting room space, booth space and facility equipment for the 6-hour Youth Summit at the Oregon Home and Garden Show in 2006.

Other Collaborators

Non-formal collaborations with scientists, educators

- **Wetlands Specialist, Loverna Wilson:** Collaborates on projects and teaches wetland plant unit of Jackson Frazier Wetland Walks offered by the Benton County 4-H Master Science Educators.
- **Oregon Department of Fish and Wildlife:** Teaches workshops and are a source for technical support and information to 4-H Master Science Educators.
- **Audubon Society:** Shares bird slides and bird skins for science kits used in schools.
- **Portland State University Education Department:** Ken Peterson, Education Professor provides consultation and advice on project evaluation design.
- **Forest Service:** Staff provides training and curriculum support on trees and forests.
- **Wild Birds Unlimited:** Staff provides training and curriculum support on local birds.
- **Insecta-Amy Dreves (entomologist):** Authorized use of already created materials for teaching entomology both to students and during the training. Family and community members help in collecting insects for displays.
- **Berry Botanic Garden and Bureau of Land Management:** Funded co-produced with OSU Extension staff the "Gardening with Native Plant" flashcards for youth participants at the community sites.
- **Champoeg Nursery:** Assisted community sites with conducting native plant sale fundraisers to support their site programs. They provided plants at wholesale and technical support.

Collaborations within OSU (interdepartmental)

- **County Extension Offices in Oregon:** Promote the project to potential schools, volunteers, students and parents and assist in establishing local partners.

- **Human Development and Family Sciences:** Assist with hiring graduate students interested in program evaluation to assist with evaluation planning, data collection, data entry and data analysis.

- **Oregon Forestry Education Program, Project Learning Tree:** Provide workshops, training and support to project.

- **Department of Fisheries and Wildlife:** Assist in the development of information resources for Master Science Educators.

- **Benton County OSU Extension Service Agents:** Forestry, Small Farms and Home Horticulture assist with training and technical support for volunteers.

- **OSU Extension Horticulture Department:** Provided volunteers, technical support and curriculum support in the horticulture science area.

- **OSU Extension Department of Agriculture:** Provided research information, technical and training support to the state training team and volunteers.

- **OSU Extension Service Master Gardener Program:** Provides speakers for educational workshops for volunteers. Master Gardeners help out at many community sites. They offer advice, give workshops, and assist with instruction on plantings and maintenance.

- **OSU Entomology Department:** OSU associate professor, Sujaya Rao provides youth entomology curriculum to all community sites and volunteers. She also assists with trainings, outreach to rural schools, and conducts entomology classes for the summer resident camp program.

Appendix #14

Publications and Materials

Journal Publications

- Virginia Bourdeau, "4-H Experiential Education- A Model for 4-H Science as Inquiry", *Journal of Extension*, vol. 42, (2004), Published
- Hosty, M. (2005, winter). If you Build It They Will Come. Clearing Magazine. pp. 33-34.
- Hosty, M. (2005). "4-H Wildlife Stewards: A New Delivery Model for 4-H." *Journal of Extension*, October 2005, Volume 43, Number 5. Published
- Galloway, R., Dalton, M. and Peterson, K. "Student Focus Groups Reveals Impacts of 4-H Program," *Journal of Extension*, vol. 44 (August 2006), Published.
- Arnold, M. E., Bourdeau, V. D., and Hosty, M. (2006). The 4-H Wildlife Stewards Program: Bringing science and nature together, one school at a time. In R. E. Yager & S. Enger (Eds.), Exemplary Science in Grades K-4: Standards-Based Success Stories. Arlington, VA: National Science Teachers Association. Published.

Book(s) of other one-time publications(s):

- Maureen Hosty, Joan Engeldinger, Nancy Allen, Maggie Livesay, David White, Jessica Fisher, Robin Galloway, Amy Herron, and Lisa Albert, "4-H Wildlife Stewards Project Handbook" , *Volunteer Handbook*
- Virginia Bourdeau, "What Can We Learn at the Habitat Area Pond - A 4-H Model for Science Inquiry", (2003). *Classroom curriculum*
- Nancy Allen Stephanie Lamb Sommer Chambers Douglas Cates Eric Henning Jasmine Kelly Kristin Kyles John Olson, "The Wildlife Garden", (2002). *Education Bulletins* Published of Collection: Oregon State University Extension
- Nancy Allen Sandra Headley Sarah Sells Laura Schumacher Mindy Grunberg Tara Norris Jenelle Jones Zack Turnbull, "Youth Wildlife Garden Bulletins", (2002). *Education Bulletins* Published of Collection: Oregon State University Extension
- Maureen Hosty Maggie Livesay Susan Wieske Nancy Allen, "Project Certification Handbook", (2005). *Handbook*
- Maureen Hosty Maggie Livesay Susan Wieske. "Junior 4-H Wildlife Stewards Student Journal", (2005). *Handbook*
- Maureen Hosty ,Maggie Livesay, Robin Galloway, and Susan Wieske, "4-H Wildlife Stewards Trainers Guide" (in press). *Volunteer Handbook*

Other Specific Products:

Videos
A 95-minute 4-H Wildlife Stewards video training series was developed on DVD and VHS format. The series includes 11 chapters and compliments the 4-H WS training. Each video chapter is 5-18 minutes long. The chapters include:

- Program Overview
- Sample Habitat Education Site Projects
- 4-H Junior Wildlife Stewards Camp
- Teaching Science through Experiential Learning
- Mapping Your Site and Site Inventory
- Principles of Wildlife Management
- Keys to Success
- Growing Your Program
- Project Sustainability Certification
- Vandalism Prevention
- Summer Maintenance

Education Bulletins
Nine university students produced curricular bulletins for the Master Science Educators Program. There are 18 individual wildlife species bulletins and one group bulletin on monitoring your wildlife habitat. Publication for the first 16 bulletins are published. This product is distributed to teachers and Master Science Educators to use with their students as research tools in the outdoor science programs.

On-Line Training course
A twelve week online volunteer training course with 20 modules is available to informal and formal educators. This online training course follows the training sessions for the on-site course. Two graduate professional credits are available through Oregon State University.

PowerPoint Teaching Modules
The State Training Team collectively created a series of PowerPoint presentations that are used in teaching the basic training course for Master Science Educators. These teaching modules include: school district guidelines, native plants of Oregon, small mammals of Oregon, Reptiles and Amphibians of Oregon, Birds of Oregon, Science Inquiry Model, Principles of Wildlife Management, Developing Your Project Notebook and Program Guidelines.

These presentations will be copied and distributed to other state Extension staff who are establishing Master Science Educator Programs in their state. They will be able to revise these presentations based on their own regional needs.

Lending Libraries
Three extensive lending libraries have been further developed in different parts of the state. These libraries are open to all Master Science Educators and include resource books, curriculum, videotapes, and field guides. Books, resources, and videos can be checked out for up to two weeks at a time. These libraries are available to all active 4-H Master Science Educators who would like to borrow a book or resource to use in their classroom. Though community sites are encouraged to establish their own resource libraries, these lending libraries are more extensive.

Education Kits
A series of education kits have been developed for teachers and Master Science Educators. These kits include curriculum and science supplies for teaching a specific subject. The kits can be checked out by teachers and Master Science Educators to use with students. These kits include: Habitat Mapping, Animal Tracks, Animal Adaptations, Forest Ecology, Habitat Mapping, Plant Identification, Water Quality, Macro Invertebrates, Oregon Mammals, and Tree Identification. These kits are available for check out to teachers and Master Science Educators to use in or outside the classroom with students. Each kit can be checked out for two weeks at a time.

Teaching aids

Ecology Field Cards and Educator's Guide for Oak Savannah Habitats of the Willamette Valley, Oregon, Livesay, M. Einerson, J. and Zahler, D., 2005.

> These visually rich, laminated, field ready identification cards focus on 50 of the most common flora, fauna and fungus of an Oak Savannah Forest habitat located in the Willamette Valley, Oregon. A 40-page educator's guide includes information on how to use the cards, lessons, locations for use, and additional information on forest succession, plant identification and glossary of terms.

Ecology Field Cards and Educator's Guide for Douglas Fir Habitats of the Willamette Valley, Oregon, Livesay, M. Einerson, J. and Zahler, D., 2005.

> These visually rich, laminated, field ready identification cards focus on 50 of the most common flora, fauna and fungus of a Douglas Fir Forest habitat located in the Willamette Valley, Oregon. A 40-page educator's guide includes information on how to use the cards, lessons, locations for use, and additional information on forest succession, plant identification and glossary of terms.

Iternet Dissemination:

www.wildlifestewards.4h.oregonstate.edu

The 4-H Wildlife Stewards Program is a Master Science Educators Program. This web site is designed for Master Science Educators and teachers. It provides them with information and updates for their school science projects. The site also includes information for other schools, parents, and communities on how to get involved. An added feature this year is the 7 week distance education course. Funds provided through a Natural Resources Conservation Services Award is being used to update and revise the website.