Salmon Camp Research Team Renewal
2009 EVALUATION REPORT

Prepared for

OMSI
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by

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EXECUTIVE SUMMARY

The Salmon Camp Research Team (SCRT) project was created to address the under-representation of Native Americans in information technology (IT) and IT-intensive professions in science, technology, engineering, and mathematics (STEM).

The Oregon Museum of Science and Industry (OMSI) is partnering with the Native American Youth and Family Association (NAYA) under the renewed National Science Foundation (NSF) funding to strengthen community involvement and work directly with students year round. An SCRT program website is under development with program information and a social networking page (URL: http://www.salmoncamp.org/).

The 2007–2008 evaluation of the project found evidence of effective implementation and data on important student attitudes and dispositions to support students in STEM coursework and as they consider postsecondary options in STEM.

Implementation

The Fall 2007 Family Event was the first activity under the renewal funding and focused on inclusion of families in the project. Registration documents showed 61 youth and adults attended the event. The event was valued by those who attended and provided a collaborative environment for launching the grant renewal.

The SCRT Renewal provided multiple opportunities to involve youth in STEM activities and exposure to IT careers. The centerpiece of SCRTs (Salmon Camp and Salmon Club, collectively) has been immersion of Native American middle and high school students in engaging and personally relevant experiences in the field.

Expanding field experiences in an after-school setting through

NAYA is central to the renewal vision. Participants in both branches of the project have Native American community affiliations and are interested in advancing their learning to pursue technologically rich careers or areas of study.

Eighty students participated in the various field-based "Salmon Camp" sessions. Seventeen different high school students were involved in the four summer research teams. Twenty-two middle school students participated in the session at Camp Magruder, and thirteen joined the field-based San Juan Islands team.

A new component of the renewal funding is an after-school program for 5th through 9th grade students. Partnering with NAYA, the after-school format is providing a club-style experience by building from NAYA's existing after-school program. The "Salmon Club" after-school sessions were offered at the NAYA Family Center two evenings per week in a spring and fall nine-week session cycle. In both the spring and fall sessions combined, 35 different students participated in Salmon Club. Eighteen of those students also attended a summer Salmon Camp session.

Progress toward Impacts

Findings from the full spectrum of evaluation strategies suggest that the project is making progress toward achieving intended impacts

through collaborative efforts between OMSI and NAYA and implementation of the SCRTs.

Impact 1: Spark and Sustain the Interest of Native American Youth in STEM and IT Careers

Data from the annual student survey, in-camp interviews, and end-of-session feedback suggest the Salmon Camp field sessions are positively influencing most participants' interest and knowledge of STEM careers. For high school students, exposure to various colleges and universities has been important to their thinking about postsecondary aspirations.

Impact 2: Develop Participants' Abilities to Use Information Technologies to Collect, Analyze, and Interpret Data and Solve Real-World Problems

Participants in the field SCRT sessions reported fairly high levels of learning with regards to using technological tools to collect, analyze, and interpret data in authentic, "real world" situations. Across students, areas of strength were reported in e-mail and related applications. Students also reported high levels of interest in learning more about how technology is used in science and resource management. Lower ratings were assigned to advanced IT skills such as the use of databases.

Most Salmon Camp participants clearly believed that the program is making them more aware of how computers and technology are used in science/resource management by providing hands-on experience and exposure to authentic research being conducted in the field.

Overall feedback from the field sessions suggests that nearly all students increased their science knowledge and skills in using technology in science research.

The use of technology tools has not been an emphasis in the after-school program and did not emerge as a theme students mentioned in any of the data collection strategies used.

Impact 3: Promote Participants' Understanding of, and Appreciation for, the Complementary Relationship between Cultural Knowledge and Western Science

Students in field sessions of Salmon Camp reported learning about ecological relationships and ecosystems, cultural traditions of various tribes, and ways in which tribes are using Western science.

Salmon Club students effectively demonstrated their learning about ethnobotany through the Trading Knowledge event, an evening open house in which students shared projects through a poster session for other students, parents, and interested stakeholders.

Looking Forward

A major challenge for the project in the coming year will be in supporting the new project Co-PI who will need to build relationships with the many partners involved in the grant.

Much remains to be accomplished in the coming grant period, if the project is to achieve targeted impacts and objectives. Increased attention to infusing cultural components and opportunities for families will be important. Continued enhancements of the Salmon Club curriculum and project website should also draw attention. Additionally, development of the Toolkit for dissemination of the SCRT story will require thoughtful time and collaboration from the entire team.

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~~~Phyllis Campbell Ault

INTRODUCTION

The Salmon Camp Research Team (SCRT) project was created to address the under-representation of Native Americans in information technology (IT) and IT-intensive professions in science, technology, engineering, and mathematics (STEM). A logic model of the two-year Salmon Camp Renewal under National Science Foundation (NSF) funding, may be found in Appendix A.

Project Impacts and SCRT Renewal Strategies

Primary program impacts under renewal funding are:

- **Impact 1:** Spark and sustain the interest of Native American youth in STEM and IT careers
- **Impact 2:** Develop participants' abilities to use information technologies to collect, analyze, and interpret data and solve real-world problems
- **Impact 3:** Promote participants' understanding of, and appreciation for, the complementary relationship between cultural knowledge and Western science

The Oregon Museum of Science and Industry (OMSI) is partnering with the Native American Youth and Family Association (NAYA) under the renewed funding to strengthen community involvement and work directly with students year round. An SCRT program website is under development with program information and a social networking page. Family take-home activities and links to resources are also planned. The renewal also includes the broad dissemination of the SCRT program model through the publication of an SCRT Toolkit—envisioned as a program development guide for educators and community leaders working with Native American youth. The project team plans to use the renewal to strengthen SCRT participants' interest in, and access to, IT and STEM careers by:

(1) Advancing the level of IT content by offering students more experience with data analysis and interpretation

(2) Increasing opportunity for parental involvement

(3) Providing more direct assistance with internship placements and college preparation

(4) Partnering with NAYA to broaden Native American community involvement and to develop an after-school component

The project intends to continue using strategies that apply situated cognition and culturally responsive learning, including:

- Engaging participating students in authentic, IT-intensive research projects
- Working closely with members of the academic community and STEM professionals who expose students to opportunities available through higher education and IT careers
- Placing IT and STEM learning in a cultural context by partnering with

professional scientists of Native American ancestry, emphasizing research focused on issues of importance to the Native American community, and including activities which teach traditional knowledge and skills

- Involving students in a year-round program that uses a progression of IT skills, STEM learning, and enrichment activities to maintain student engagement and deliver a comprehensive experience

EVALUATION METHODS

To evaluate the project's progress in achieving anticipated impacts, a mixed methods approach was used to gather input from participants and stakeholders. In the first one and a half years of the renewal, the evaluation included quantitative and qualitative measures that facilitated triangulation of findings.

Instruments

Annual student surveys, end-of-session feedback forms, in-camp interviews, and field journals were used to measure the influence of participation in field research teams (referred to as Salmon Camps).

Six different instruments were used to gather data from the first Family Event. "Instruments" were designed to be engaging and interactive activities, which evoked data of interest. At the dining tables, participants found paper s*wimming salmon* and paper *roe* for the *Dream Hatchery*, each with prompts to which guests were invited to respond. In addition, mock t-shirts were available on the tables for a design-a-t-shirt activity. One wall of the café was covered with a large format "river" (the *Dream Hatchery*) for posting the *swimming salmon* and *roe*. Another wall held an enormous graph for recording years in which guests were involved with Salmon Camp, and a *Graffiti Board* for posting impressions of Salmon Camp.

Development of the project and student outcomes of involvement in the Native American Youth and Family Association (NAYA) after school program (Salmon Club) were measured through student field journals, projects presented at an end-of-session event, three-step interviews conducted at the close of each nine-week session, and end-of-session feedback forms. Copies of the instruments may be found in Appendix B.

Data Collection

At the beginning of each high school camp session, students completed a survey using laptops in the field. The Salmon Camp Research Team (SCRT) Student Survey was developed by Northwest Regional Educational Laboratory (NWREL) in collaboration with the OMSI evaluator and Salmon Camp coordinator in 2004 and slightly modified each year. (See Appendix B-1 for a paper copy of the 2008 SCRT Student Survey form.) The survey will be used each year during the summer camp sessions as a repeated-measures design to show changes over time. Content of the survey includes items on attitudes toward science, technology skills, technology skills aligned with the National Education Technology Standards (NETS), experience with science, as well as workplace and basic academic skills derived from Secretary's Commission on Achieving Necessary Skills (SCANS). The middle school student survey was modified in 2005 to be more age appropriate. It was completed by students on laptops at the conclusion of their 2008 session.

During the high school camp sessions, an in-camp interview was conducted with each student by the coordinator, a senior counselor, or evaluator. The in-camp interview guides were created to learn more about the participants' interests in science careers, computers and technology, job skills, and the relationship of SCRT to success in school. The interviews contained a series of questions that were common across interviews (see sample in Appendix B-2).

An evaluator attended the culminating Salmon Bake for two of the 2008 high school summer sessions, and the final evening meal for the middle school summer session. This

provided an informal opportunity to discuss Salmon Camp with counselors, Native American adults who were involved in the program, or tribal members preparing the Salmon Bake. The culminating Salmon Bake also provided an opportunity to conduct informal interviews with students and hear final project presentations using PowerPoint (one session only).

Field journals were used in the high school, middle school, and NAYA sessions to gain insight into students' understanding and interpretation of material. The conclusion of each of the SCRT sessions included an end-of-session feedback form, which contains closed-response Likert-style ratings on implementation and impact as well as open-response items to provide data on the most successful or effective aspects of the sessions. (See Appendix B-3.)

Regular monthly meetings and communications between NWREL and project leaders at NAYA and OMSI kept SCRT planners and evaluators informed of ongoing activities. The variety of evaluation strategies provided documentation of activities and data to measure project impact.

FALL 2007 REUNION FAMILY EVENT

Family Involvement in SCRT

Expansion of parent involvement is an aim of the renewal funding. The project proposed to expand ways in which parents support their children in Salmon Camp Research Teams (SCRTs) through a variety of activities and formats. The SCRT renewal proposed to include (per year):

- Family day capstone event, held at the end of the summer at Oregon Museum of Science and Industry (OMSI) or Native American Youth and Family Association (NAYA) (1)
- Family weekend held at the end of the fall at a location convenient to parents not from the Portland area, with transportation from Portland and lodging provided by OMSI (1)
- Take-home activities, including background information for parents, which can be completed at a time and location that is convenient to families (6)
- Opportunities for parents to participate in SCRT programs as chaperones and helpers
- Opportunities for parents with science backgrounds or relevant careers to share their expertise and knowledge with SCRT groups
- Annual OMSI memberships provided to families of SCRT participants and an organizational membership provided to NAYA

The Fall 2007 Family Event was the first activity under the renewal funding and focused on inclusion of families in the project. Participants were recruited through e-mail and personal invitations to the broad Salmon Camp community. (See Appendix C-1 for a copy of the invitation.)

Reunion Implementation

The Fall 2007 Family Event or *Reunion* was held Friday evening November 9, 2007, at OMSI. Key purposes for the session were (1) community building, (2) communicating the status of Salmon Camp funding, and (3) envisioning a future for Salmon Camp. Guests were welcomed near the lobby and ushered to a registration desk that contained sign-in sheets and consent forms. The main event was held in the café, which was transformed into an inviting space complete with tablecloths and candlelight. Information, activity tables, and appetizers were set up in the café hallway and entrance. Partners and collaborators with Salmon Camp set up tables with displays and information about their organizations.

The event began with informal time to explore the adjacent special exhibit, *Ends of the Earth: From Polar Bears to Penguins* and check out the display tables. Attendees gradually filtered into the café, engaged in activities on the tables, and found a seat.

The "formal" program began with a welcoming from the Co-Principal Investigators and a representative from NAYA. Images of students and activities from previous Salmon Camp Research Teams were projected on a large screen at the front of the room. Dinner, a presentation by NAYA students of

traditional dances, and presentations by past SCRT participants rounded out the evening. Embedded throughout the event were engaging data collection strategies.

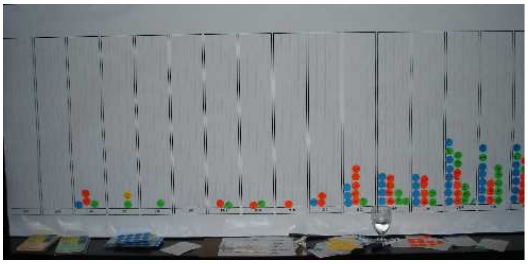
Figure 1

Buffet Line at SCRT Reunion Family Event

Data Collection

Descriptive data were collected through the sign-in and consent forms at the registration desk. (See Appendix C-2.) Additional feedback and data collection activities were infused into activities for the evening, using a number of participatory approaches.

Figure 2



Past Participation Graph Display

Instruments

Sample data collection tools may be found in Appendix C and are outlined in Table 1.

Table 1
Reunion Event Instruments

Activity	Data of Interest
Past Participation Graph	Participation rates and roles by year as represented at reunion event
Design a T-Shirt	• Take-away messages from Salmon Camp involvement • Perceptions of key components as integral to Salmon Camp
Swimming Salmon	Connections between previous involvement and current positions
Dream Hatchery	• Sustainability strategies • Envisioned futures for Salmon Camp
Graffiti Board	Perceived impact of Salmon Camp

Findings

Responses from the various data collection strategies employed indicate that participants enjoyed the Reunion Family Event, valued their participation in Salmon Camp, and were committed to sustaining Salmon Camp in the future.

Participants

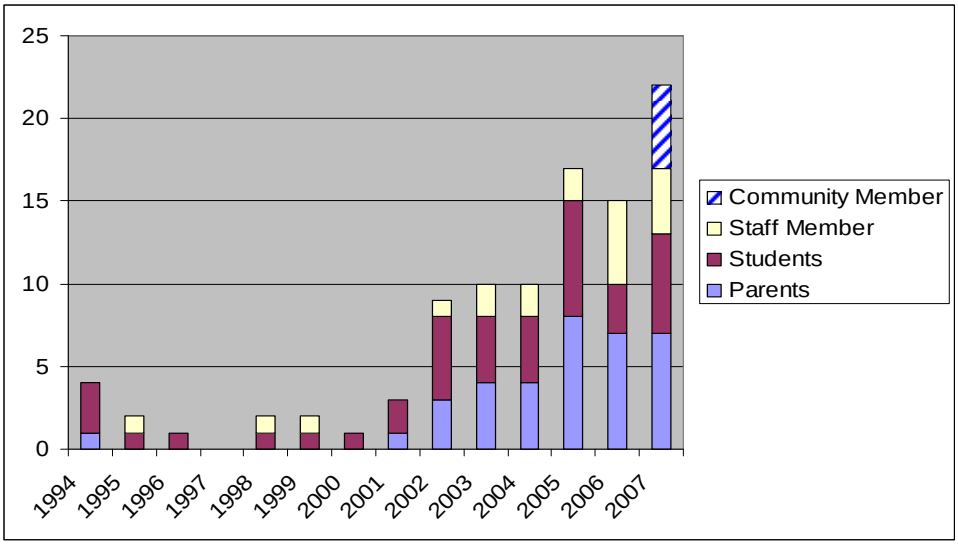
Attendees at the event were predominately former or current students, with a strong representation of parents of former or current students. Several community members were present as well. Registration documents showed 61 youth and adults attended the event.

The graphing activity prompted attendees to mark years in which they participated and the capacity in which they participated. Data from the graph shows strong representation from recent years of Salmon Camp as well as some former participants from the very first years of Salmon Camp (see Figure 3).

Figure 4

Dream Hatchery Display

Figure 3



Reunion Participants by Year of Participation

NOTE: Respondents may have participated in multiple years and/or in multiple roles.

Perceptions

The *swimming salmon* placed at dining tables asked participants to note their current occupation, Salmon Camp role(s) and years involved, and perceptions of how Salmon Camp influenced them. (See Appendix D.)

Posted responses by parents, foster parents, caregivers, and/or other family members were:

- Brings me enjoyment what they are doing for the kids. And enjoying it this evening.
- Great experience for granddaughter.
- Hearing about youths' experience.
- I am learning about Salmon Camp for the 1st time!
- Promoted intelligent conversation.
- When I first came to PDX and enrolled my children in Title VII, they were just coming home from a Salmon Camp adventure and I was impressed that this program was available to encourage and expose my child to this type of opportunity and education around conservation and sustainability culture. That was in 2004.
- Salmon Camp has served students well.
- Helped my … boys identify with native kids and culture as well as science.
- It has connected my son to his culture and encouraged him to do well in school.
- Enhanced my children's curiosity then in science.
- Inspired and encouraged me.
- Helped shape my career as an educator.
- Broaden family and friends.

Staff members noted:

- [Provided opportunity to share] traditional uses of nature plants for food, medicine, ceremony.
- It has brought me joy to have these opportunities for our youth.
- Made me a better person.
- Great opportunity for students to experience culture in different ways.
- Get to see a great program and how it works.

Students commented on changes in their knowledge of native culture or heritage, understanding of science, and influence on postsecondary choices. They wrote:

- Became more a part of native community.
- Taught me about my native culture and about salmon. Good experience overall!
- It has given me more knowledge on my heritage.
- It's helped me learn native heritage.
- I learned to understand to keep our water systems clean for marine life.
- Being able to participate in the trip to Vancouver Island.
- Science.
- Showed me a lot about science.
- It has enabled me to graduate early.
- College.
- Broaden my future.
- I'm taking fisheries technology in college! It helped a lot.
- Salmon Camp has given me lots of stories.

Salmon Camp Wishes and Dreams

Masses of salmon eggs are known as *roe* and served as imagery for the growth of Salmon Camp in the future. Paper cutout roe were placed at tables with a prompt asking: "What are your wishes and dreams for Salmon Camp?" Respondents' wishes and dreams were posted in the gravel riverbed depicted in the large-format *Dream Hatchery*. A content analysis of the responses shows wishes and dreams clustered around ideas of sustainability, community connections,

ecological restoration, building leadership skills for Native American youth, and specific suggestions for program enhancement. A complete list of responses may be found in Appendix E. The following sections show responses within common themes.

Sustainability

Nearly half of the comments (48%) pertained to sustaining Salmon Camp, including wishes that the program continue to provide positive experiences for Native American youth and to expand or grow. Comments included:

- Keep it going.
- I wish Salmon Camp could be expanded to include more students.
- That it would be a wonderful experience for [my] granddaughter.
- I wish everyone has a good time.
- I wish for Salmon Camp to continue to provide youth with enriching experiences.
- To continue ongoing forever.
- Get more people involved, have camp more often.
- That it continues.
- Salmon Camp continues for many years to come…I want my 2 year old to have this dream.
- To grow and stay alive for years to come.
- I want Salmon Camp to continue
- I wish Salmon Camp continues to grow.
- I want it to continue forever and EVER.

Community

Several comments also clustered around ideas of connecting with communities of people, in particular partnerships with tribes, as well as connections between communities and salmon. Statements under this common theme include:

- Openness to many people and places in salmon nation…calling us all to come home.
- Connect people with salmon.
- I wish Salmon Camp could be funded by Oregon and Washington's casino TRIBES.
- My wish for Salmon Camp is an increased partnership with the tribes of Oregon.
- I hope that Salmon Camp can reach many different communities and educate youth, as well as give them an understanding of the importance about salmon.
- For it to build a strong community in and around the Pacific NW.

Ecological Restoration/Salmon Knowledge

A third theme apparent in responses addressed visions of healthier environments and youth who are knowledgeable about watersheds and aquatic life. They responded:

- Restore watersheds.
- Regenerate biospheric and ethnospheric connection.
- To restore Riparian Habitat.
- My dreams are for the kids to learn more about marine life and the water systems and keeping rivers clean.
- Learn more about the life of salmon.

Additional themes were mentioned by at least a few participants in their wishes and dreams. These include youth leadership development and specific ideas to enhance programming, highlighted below.

Increased Leadership Skills/Career Opportunities for Salmon Campers

- Have returning youth take on more roles in the camp.
- To address the role Salmon Camp can have in fostering leaders in Natural

Resources who can work closely with tribes and help [illegible].

- I would love to see career opportunities evolve from the youth who attend. Leadership skills and teaching abilities nurtured.

Specific Program Suggestions

- To have small numbers of students on HS trips.
- Snorkeling [opportunities].
- Some camps "day camps" for younger youth.

Graffiti Board

The Graffiti Board was used to draw out key messages or encapsulated perceptions of Salmon Camp impact. While relatively few attendees (about 18 of the 61 attendees) posted graffiti, those who did, provide a portrait of impressions. In true graffiti style, there were several "tags" (signatures), as well as several comments which were cryptic or sarcastic. The text of other postings included:

- Knowledge and understanding.
- Opportunity.
- Lifelong friends.
- A great way to learn.
- An amazing program.
- Salmon Camp was fun in '94.
- A great experience.
- Super.
- Fun.

Overall Feedback on Event

A short exit survey was available for participants to provide feedback on the reunion event. The form prompted participants with three questions:

1. What was your favorite part of the Salmon Camp Reunion?
2. What would you have done differently?
3. Is there anything else you want us to know?

Sixteen attendees (26%) completed the short survey. Responses were analyzed for common themes, which are summarized, by question, in the following section. (Verbatim responses may be found in Appendix F.)

1. Favorite Parts of the Reunion

Dance. The traditional Native American dance portion of the evening, presented by a NAYA dance group, was identified by nearly half (7) of the 16 respondents as their favorite part of the event. One emblematic comment was, "The performance (NAYA dancers) was awesome…."

Activities. Several participants noted that they enjoyed various activities available during the evening. The participant graph enabled one family to appreciate their long involvement in Salmon Camp, writing: "My kids were the oldest participants ('94)—an unexpected surprise. My brother was a mentor in '95." Others commented:

- Seeing the pictures and the activities helped everyone to feel a part.
- Slide show [was my favorite part].
- Walking around the OMSI exhibit. I wish I could see more of the exhibit. It would be nice to see real marine life here.
- The energy and enthusiasm the OMSI staff brought to the event was admirable. The event was a great experience and it was very nice to see what OMSI does for so many youth.
- Getting to see the exhibit with the penguins and bears.
- Seeing the stuff in a social setting instead of a parking lot.
- Listening to the Salmon Campers' stories.

Socializing. Five comments pointed to appreciation for an opportunity to see old friends and meet new people associated with Salmon Camp. These responses read:

- Seeing friends.
- Seeing old frenz [sic].
- Seeing some friends hadn't seen in a long time.
- Seeing familiar faces.
- …meeting new people.

Food. The dinner was also appreciated specifically by three attendees who noted their favorite part of the evening as:

- The food.
- Dessert!
- Cake. Yum yum.

2. What Could Be Done Differently

Relatively few people could think of significant ways they would have changed the evening. About one-third either could think of nothing they would have done differently or expressed appreciation for the event. Nearly as many respondents offered various suggestions. Responses are summarized in the following paragraphs.

Kudos. Under the question asking participants, "What would you have done differently?," five (31%) responded with kudos or approval, noting:

- Nothing (3).
- It was great, it was awesome (2).

Suggestions. Several responses (6) offered suggestions or comments such as:

- Looked around some more.
- Create an alumni club—bring back.
- Former participants to help plan reunions.
- I'm not sure—maybe more mixers.
- Have smoked salmon appetizers.
- More fun stuff.
- Live drummers—not a CD.
- The dance floor was kinda cramped.

Music/Sound System. The music that accompanied the dancers and use of audio equipment prompted three responses:

- Sound system—practice first...and play from an iPOD. :)
- Instruct students how to use microphone.
- Music "situation."

More Information. Two respondents would have liked to have additional information available. They wrote:

- More information on future Salmon Camps.
- Be a little more specific about "activities" on the e-mail. We'd 'a been here earlier [if we had known what would be available].

3. Additional Comments

The final question asked if there was anything else which participants wanted to convey. The majority of comments (9 out of 11) simply offered words of thanks or appreciation, including:

- Thank you (4).
- Thank you for having Salmon Camp.
- I liked the event and I'm excited that my [relative] is leaving on the trip to Vancouver Island tomorrow.
- Excellent catering. Thank the grant writer.
- We love you.
- You're awesome.

Two respondents offered suggestions of:

- Make more activities.
- Maybe info for [prospective] Salmon Campers to take with them.

Family Reunion Event Summary

By all accounts, the Family Reunion Event appears to have succeeded in bringing together, for the first time, the often isolated players in the Salmon Camp Research Team (SCRT) project. It was the first gathering of parents; family members; past, present, and prospective participants; community members; staff members; and volunteers who comprise the broader Salmon Camp "family," as well as a first step toward expanding the circle to include Native American Youth and Family Association (NAYA). The Reunion was successfully implemented and drew a good turnout. The event seems to have laid the groundwork for strengthening community and parent involvement.

Reunion participants appreciated the Native American dance performance by the NAYA students, the activities available during the evening, socializing, and the food. Some people would have arrived earlier and spent more time at the event had they known the extent of opportunities that would be available. Others would have liked even more activities. The sound system for the dancers was the only significant problem raised. The recorded music was indeed not ideal, but ultimately functioned adequately, and the dancers were very well received in spite of any shortfalls in the audio equipment.

Across the various instruments used to gather feedback, hallmarks of Salmon Camp emerged as: increased knowledge of Native American culture, exposure to careers, and understanding of science. Participants envisioned a future for Salmon Camp that continues to provide positive experiences for youth and grows over time. Hopes for stronger community connections were noted by some participants, including increased partnerships with tribes. The need for habitat restoration and Native American youth who are knowledgeable about water systems and aquatic life also surfaced as attendees thought about the future of the program. Related to these visions was interest in developing Native American leaders among Salmon Camp participants who are well versed and experienced in working with natural resources.

The event was valued by those who attended and provided a collaborative environment for launching the grant renewal.

FIELD EXPERIENCES

The centerpiece of Salmon Camp Research Teams (SCRTs) has been immersion of middle and high school students in engaging and personally relevant experiences in the field. Expanding field experiences in an after-school setting through Native American Youth and Family Association (NAYA) is central to the renewal vision. Participants in both branches of the project have Native American community affiliations and are interested in advancing their learning to pursue STEM careers or areas of study.

Under renewal funding, intensive SCRTs were conducted in the field through high school camping sessions and residential camp experiences for middle school students. During 2008 sessions were held over spring break, summer, a fall weeklong enrichment session, and a weekend enrichment session.

During 2007–2008, activities included curriculum development and planning for spring, summer, and fall 2008 camps. Students were exposed to advanced technologies used in salmon recovery and habitat restoration such as Global Positioning System (GPS) units and Geographic Information Systems (GIS), as well as task-specific technologies for habitat monitoring.

Four summer sessions for high school aged students were offered, each exploring a different ecological region: one each in Idaho, Oregon, California, and Washington. The summer high school research teams participated in an intensive experience over a twelve-day camp period. The groups spent their days exploring local ecosystems, learning traditional Native American knowledge, or working with researchers. The students and counselors either tent camped or stayed at research stations as they traveled to various study sites.

A residential camp experience for middle school students was offered at Camp Magruder, located at the Oregon coast. A second session designed for middle school students was also offered, with travel to the San Juan Islands and Olympic Peninsula, Washington. The fall enrichment sessions included a weekend trip to Eagle Creek and a weeklong trip which engaged students with First Nations members and university researchers on Vancouver Island in British Columbia, Canada.

Figure 5

Salmon Camp Participants Setting a Net

Eighty students participated in the various field-based sessions. Seventeen different high school students were involved in the summer research teams. While a cadre of enthusiastic Salmon Campers attended multiple sessions, two of the sessions only served four students—far short of the targeted number of 10 to 12 per session. Table 2 shows the number of students who attended one and

Table 2
High School Participation across Sessions (N=17)

Sessions Attended	Students # (Percentage)
1	11 (65%)
2	4 (24%)
3	1 (6%)

Teasing out the cause of the relatively low enrollments for some sessions is difficult and,

to some extent, challenging to avoid as some students who were initially enrolled in the sessions failed to show up and others returned home after a couple of days.

On the other hand, middle school sessions met with robust enrollments, and included students drawn primarily from NAYA connections. Twenty-two middle school students participated in the session at Camp Magruder, and thirteen joined the field-based San Juan Islands team.

As a strategy to minimize frustrations of designing and arranging for enrichment sessions and then have students fail to show up due to conflicts with transportation, high school sports, and personal commitments, the fall enrichment built on a model used the previous year in which the session was held for a full week in November (the week prior to Thanksgiving). Eleven, mostly high school students, attended the session.

In previous years, summer camp high school students selected a related topic of interest to study and report on through an oral presentation with a supporting PowerPoint slideshow. Students presented their research topics during the culminating Salmon Bake at the end of the high school summer sessions, with an audience of fellow campers and invited elders, parents, and researchers. Unfortunately the condensed time frame of the renewal funding made completion of these projects quite difficult. With a week less time in the field, the individual projects as previously developed were just not possible to complete.

Students in one of the smaller enrollment sessions did manage to complete projects and present them. However, the presentations did not demonstrate the level of expertise or knowledge conveyed by participants on their topics in previous years.

NAYA AFTER SCHOOL PROGRAM

A new component of the renewal funding is an after-school program for 5th through 9th grade students designed to "provide students with strong, year-round experiences with IT and IT careers, prepare students for summer and spring break intensives, and create a closer connection between the Salmon Camp Research Team (SCRT) program and participants' formal education experience."

Partnering with Native American Youth and Family Association (NAYA), the after-school format is providing a club-style experience by building from NAYA's existing after-school program. The "Salmon Club" after-school sessions were offered at the NAYA Family Center two evenings per week in a spring and fall nine-week session cycle. Two dedicated tutors (instructors) worked with students on Salmon Club content and projects.

Most students took a bus from one of many Portland area schools to NAYA and have been involved in other activities through the after-school program. Salmon Club involved 24 different students in activities through the first nine-week session, held spring 2008. Eight students, who were active participants, were given stipends and/or family memberships to Oregon Museum of Science and Industry (OMSI) to celebrate their involvement. The spring 2008 Salmon Club was viewed as a pilot session in which curriculum developers from OMSI and NAYA tutors collaborated closely to develop units of study, implement them, assess their effectiveness, and revise accordingly. The fall 2008 cycle was the first round of implementation with the revised materials. The fall session included seven students from the spring returning to continue their involvement, as well as 11 newcomers for a total of 18 students involved in the fall Salmon Club. In both the spring and fall sessions combined, 35 different students participated in Salmon Club.

Eighteen students also attended a summer Salmon Camp session.

The curriculum for Salmon Club engages students in a series of studies and experiential activities focused on water quality issues and culturally-relevant science topics. Most of the activities for Salmon Club were adapted from pre-existing material. Some were created specifically for Salmon Club and integrate activities and ideas from other sources. All the units are available through the non-public portion of the project website (http://www.salmoncamp.org/activities.htm). Each document includes teacher/tutor guidelines on time and supplies required for the activity, necessary advanced preparation or setup, science background information, and a description of the actual investigation or activity. Student pages to record observations, data, questions, or responses are also included. Journal pages are provided and tailored to each topic. Units to date include:

- Making a Journal
- Community Heroes
- Watersheds
- Salmon Map
- Dissolved Oxygen
- pH
- Macroinvertebrates
- Water Filtration
- Dichotomous Key with Native Plants
- Water Quality Digital Lab
- Ethnobotany
- Building a Community from the Ground Up
    - Part 1: The Natural Environment and First People
    - Part 2: Pioneers and Early Settlers
    - Part 3: Early Town
    - Part 4: Modern Town
    - Part 5: Modern City

The units provided opportunities for students to conduct explorations of topics (many with outdoor field components), interact with other

Native American adults through interviews, and begin developing skills using various techniques, laboratory tools. or protocols.

Figure 6

Salmon Club Students Testing pH.

Stakeholder Feedback

In November 2008 focused discussions were held with NAYA staff members who were directly involved in the spring pilot session and fall implementation of Salmon Club. In addition, evaluators met with NAYA's Youth Services team including the director, academic specialists, cultural arts staff members, middle school advocates, and prevention specialists. At the time of the discussions, the fall Salmon Club session was in full operation and students had been able to participate in an assortment of experiences including the spring Salmon Club pilot, as well as Salmon Camps at spring break, during the summer, and the weeklong enrichment session to Vancouver Island.

Instructional Team Perspectives

The "closeness of friendships" fostered through Salmon Club was an unexpected student outcome described by the team of instructors who worked with students through the spring and fall clubs. Although participants formed an eclectic community of students from a wide range of schools and academic backgrounds, the group established strong personal connections after nine weeks (or more) of seeing each other, learning together, and working together in a variety of Salmon Club settings. Students reportedly looked forward to seeing each other and noticed when a club member was absent. The instructional team also agreed that student leaders were beginning to emerge from those who also participated in SCRT experiences. One instructor described this process with the comment: "Those who go on weeklong trips step-up their game." Instructors noted that students who attended the weeklong trip returned "talking and talking" about everything they did and learned. Their experiences seem to be positioning them to share their knowledge and experience with other students as knowledgeable leaders.

Instructors noted that the summer Salmon Camp session at Camp Magruder was "an amazing experience" for students in which many "had the time of their lives." They found that the social connections initiated in the summer continued through the school year and strengthened in some cases. In addition, instructors saw that students' understanding of science, anchored in experiences from the summer session, has "stuck with them," providing scaffolding for additional learning in Salmon Club and more broadly in science.

Activities or units with cultural relevance were viewed by instructors as more successful than others, and the team felt that as they find more ways of making units culturally significant, the program is getting better. The team was very appreciative of the collegial relationships developed between NAYA and OMSI staff members working on curriculum development. Through their collaboration, instructors are growing more comfortable teaching the units and modifying lessons to "work out the bugs."

Salmon Club was viewed by the instructors as boosting participants' confidence in themselves as students and as science learners. Student confidence is further bolstered by learning more about their own tribe or other tribes and how cultural knowledge "connects to science." The

hands-on nature of the activities was seen as "more exciting" than much of the science work students do in their classrooms because "kids get to do science themselves." Instructors see involvement in Salmon Club as fostering interest in learning more science. The safe and welcoming atmosphere of Salmon Club has enabled all students to actively participate regardless of personality, academic or technical skills, or social standing. As a result, Salmon Club is known as one of the "most attractive and interesting after-school opportunities" at NAYA.

The team of instructors and managers who have been involved in Salmon Club are anxious to expand the program to enable other students both at NAYA and other schools to benefit from involvement. They also hope to communicate more closely with OMSI staff members to enable more Salmon Club participants to attend SCRTs in the future.

Youth Services Team Perspectives

The Youth Services staff members provided perspective from those who have not been directly involved with the development and implementation of Salmon Club. Yet, members of the Youth Services team agreed with the Salmon Club instructors, that the program is "one of the best clubs" among the after-school offerings. The Youth Services team sees and hears students outside of the club in a variety of different settings. The team recognized the importance of the relationships established between Salmon Club instructors and students and attributed much of the smooth implementation to the skilled and committed instructors. The Youth Services team unanimously agreed that students have been excited about Salmon Club, as evidenced by "tons of enthusiasm" over activities and experiences. They see students excited about their projects, communicating with peers and staff members, and increased interest in the Columbia River Slough (located adjacent to NAYA) where students have engaged in water quality activities. Students were regularly talking about Salmon Club outside of their club time, which has spurred interest among other students. There is growing interest among family members as well. Parents have commented to staff members, "What is Salmon Club? My [child] talks about it so much!"

Youth Services staff members had heard students talking about their final ethnobotany projects and noticed students' anticipation for teaching others about their research. Staff members looked forward to attending the open house event, "Trading Knowledge," themselves as well. The stipends and OMSI family memberships were viewed as effective incentives in combination with the opportunity for students to display their work and discuss it.

With a waiting list growing for the winter Salmon Club session, the Youth Services team agreed it was appropriate to open participation to those who have not been in Salmon Club. However, the group was concerned about how to sustain interest and enthusiasm among the core group of past participants. Staff members suggested exploring ways to differentiate units with extension activities to allow students to learn concepts at a deeper level, a Salmon Club II option, or mentoring possibilities. The Youth Services staff members also suggested increased use of elders and members of the Native community in Salmon Club activities.

Student Feedback

3-Way Interviews. At the end of the Salmon Club pilot and fall sessions, evaluators conducted 3-way interviews with Salmon Club participants. Using this strategy triads of students rotated through roles of interviewee, respondent, and note taker. A discussion of themes across groups was then held, allowing students to voice their own views as well as hear common thoughts across the group.
In both sessions students agreed that positive aspects of Salmon Club included the projects, games, ethnobotany, poster making, and water quality testing. Interaction with peers was also

important to participants who valued working with friends, meeting new people, and introducing other people to Salmon Club. To improve upon the program, students suggested more outdoor activities and field trips as well as maintaining an atmosphere where students are "nice" to each other.

Student End-of-Session Feedback. A small subset of fall Salmon Club students (7 out of the 18 participants) completed the end-of-session feedback forms. The feedback was gathered over a month after the last activities of the fall, with winter break in between. Although the low number of responses and delay in reporting time make generalizations impossible, a limited portrait of student responses may be gleaned from the data. All students thought they had fun in Salmon club, and nearly all reported learning about ecological relationships and ecosystems (80%) as well as gaining technology skills (67%). Based on their experience, all student respondents thought they would recommend Salmon Club to others. Table 3 shows responses to key questions. A full set of responses may be found in Appendix G.

Table 3
Fall Salmon Club
End-of-Session Feedback Data (N=7)

Question	No Way!		Not really		I think so		YES!		Mean (S.D.)	
	Percentage	n	Percentage	n	Percentage	n	Percentage	n	Mean	S.D.
Did Salmon Club meet your expectations?	—	(0)	14%	(1)	71%	(5)	14%	(1)	3.0	(.6)
Has this program made you more curious about science?	—	(0)	29%	(2)	71%	(5)	—	(0)	2.7	(.5)
Did you learn about ecological relationships and ecosystems?	—	(0)	20%	(1)	20%	(1)	60%	(3)	3.4	(.9)
Did you increase your science knowledge?	—	(0)	33%	(2)	50%	(3)	17%	(1)	2.8	(.8)
Did you gain skills in using technology in science research?	17%	(1)	17%	(1)	0%	(0)	67%	(4)	3.2	(1.3)

Salmon Club Summary

Within the first year of renewal funding, the project has created an after-school component that was well-received by stakeholders from instructors to students to NAYA and OMSI staff members. A curriculum cycle has been developed and units continue to be refined in response to feedback from instructors and students. It appears that a synergy is emerging between the after-school program and field immersion experiences through Salmon Camp. Students who participated in both branches of the project are perceived as more confident and knowledgeable, readily becoming leaders.

As the project moves into the second year, staff members may want to work on ways of expanding learning opportunities for students who have gone through a cycle of Salmon Club activities. A critical issue is how to sustain and build upon the interest of core enthusiastic participants so they will continue to grow in their learning. Continuing to find ways to make topics culturally relevant and infusing tribal elders/community members into activities will also be important as the after-school program evolves.

PROGRESS TOWARD IMPACTS

Achievement of targeted impacts under the Salmon Camp Research Team (SCRT) Renewal funding requires progress on the multiple fronts upon which the project is working. This chapter summarizes data from the suite of evaluation instruments used to draw a composite picture of current progress toward achieving impacts.

Impact 1: Spark and Sustain the Interest of Native American Youth in STEM and IT Careers.

The SCRT Renewal provided multiple opportunities to involve youth in STEM activities and exposure to IT careers through the intensive field experiences and Salmon Club activities. Evidence drawn from annual laptop surveys, in-camp interviews, and end-of-session feedback forms, reveal ways in which the project is making progress in this area.

Annual Student Survey

The annual survey completed by students in field-based SCRT sessions includes numerous items related to career interests. Self-efficacy as a science learner is an important component of students' postsecondary educational and career aspirations. A full set of self-efficacy questions were used with the high school students, a shorter version was used with the middle school students. Questions on confidence as a student in science and resource management as well as preparation for careers in those fields were also included. Students' perceptions of their basic skills in reading, writing, mathematics, speaking, and listening were also probed, as foundational to academic work. Subscales were developed from items within each of these areas. The baseline surveys showed participating students saw themselves as quite capable and skilled across subscales as shown in Table 4. A full set of data tables with survey results may be found in Appendix H.

Table 4
SCRT Student Survey Subscales Relevant to Post-Secondary Aspirations

Subscale Items (*Number of Items in Subscale*)	Mean* (1–5 Scale)	Standard Deviation	Valid N
Middle School Science Self-efficacy *Items 1–7 (7 Items)*	3.3	(.3)	33
High School Science Self-efficacy *Items 1–12 (12 Items)*	3.8	(.7)	13
STEM Career Preparation *(Items 39–44 (6 Items)*	3.9	(.5)	13
Basic Skills *Items 51–56 (6 Items)*	3.8	(.6)	46

*NOTE: For calculating subscale data, negatively worded items were reversed to generate means that consistently report higher ratings as

The related subscales show fairly high levels of self-efficacy in high school science, technology, engineering, and mathematics (STEM) career preparation and basic skills. Middle school students reported somewhat lower levels of self-efficacy in science.

Student In-Camp Interview Findings

The in-camp interviews were conducted by counselors with all 17 high school students at the end of summer sessions. Interviews provided dedicated time for counselors to talk with individual students and learn more about their interests and perspectives. Responses, recorded by counselors, were analyzed and summarized by evaluators at Oregon Museum of Science and Industry (OMSI) to provide insight into ways in which the project was influencing participants. A full report of findings may be found in Appendix I.

Several interview questions probed how Salmon Camp participation sparked interest in STEM and IT careers. All of the numbers and the percentages below are based on the 17 interviews conducted with students.

Science career interests

- Three-quarters of participants (76%) can see themselves working in a science career some day, and marine biology/fisheries continues to be the science career interest mentioned most by participants.
- Most participants (82%) think Salmon Camp is helping them explore their career interests. When asked how, participants responded that Salmon Camp has expanded their thinking about career options (47%) and provided them with in-the-field experience (35%).
- When asked how Salmon Camp could help participants explore their interests further, most responses focused on improved connections with people already in the field (29%) or increased activities related to careers (29%).

Future plans

- All of the participants (100%) planned on attending future SCRT camps because they found the camps to be both educational and fun. Almost all of the participants mentioned the educational experiences at SCRT as a reason to return (e.g., helps me learn, learning hands on).
- When asked about their plans after high school graduation, all but one participant said they wanted to go on to college (94%) and some mentioned pursuing specific programs or careers (e.g., wildlife, biology, ecology, oceanography, business). The one participant who did not mention college was unsure of his plans after high school.
- When asked if they would be interested in helping Salmon Camp as a camp counselor, all of the participants expressed interest. Most explained their interest in serving as a counselor as a way to give back to the camp and help teach future campers.

The interviews highlighted the extent to which students see Salmon Camp as providing valuable experiences which support and encourage their interest in STEM careers. Notably absent in the discussions were internships or placements with mentors in the sciences and resource management. Although students viewed Salmon Club counselors as mentors, they really did not seem to have other adult mentors in STEM or IT fields.

Student End-of-Session Feedback

Several items on the end-of-session feedback forms from summer field sessions provide evidence of how involvement in Salmon Camp influenced students' postsecondary educational

or career interests. Two items focus directly on this impact area.

An open-response item explicitly asks, "How has Salmon Camp affected your interest in a science/technology career?" Eighty-six percent of the 80 responses (74 responses) described effects on interests in this area. Students described a number of ways in which Salmon Camp influenced their career interests. Responses were analyzed and clustered into common emergent themes of:

- Increased/sustained interest in a science/technology career (26 responses)
- Gained general knowledge or exposure to various jobs (18 responses)
- Increased interest in science (7 responses)
- Learned science/technology/work/skills (6 responses)
- Exposed to reality of science/technology jobs (4 responses)
- Has other plans that do not currently involve a science/technology career (3 responses)

While a strong majority of students attributed new interests, knowledge, or exposure to Salmon Camp participation, about 13 percent (10 students) reported no/little effect on their interest in a science/technology career.

Verbatim responses may be found in the End-of-Session Feedback Summary from Field Sessions in Appendix G.

A second open-response item asks students to note what they learned about going to college or a university. High school students reported learning more in this area than the middle school students, although some middle school students reported valuable lessons. Most responses fell into clusters of learning about:

- Different science programs offered at universities
- Available scholarships and financial aid
- University support systems for Native American students
- Necessary coursework and preparation in high school for competitive admissions
- "How college classes work."

Summary of Progress on Impact I

Data from the annual student survey, in-camp interviews, and end-of-session feedback suggest the Salmon Camp field sessions are positively influencing most participants' interest and knowledge of STEM careers. For high school students, exposure to various colleges and universities has been important to their thinking about postsecondary aspirations.

Impact 2: Develop Participants' Abilities to Use Information Technologies to Collect, Analyze, and Interpret Data and Solve Real-World Problems

Annual Student Survey

A substantial portion of the student survey probes students' skills and proficiency with digital tools. Students reported fairly high estimations of their ability in these areas. Lower ratings were assigned to advanced IT skills such as the use of databases. Table 5 shows subscales for related items. Data tables with item level findings may be found in Appendix H.

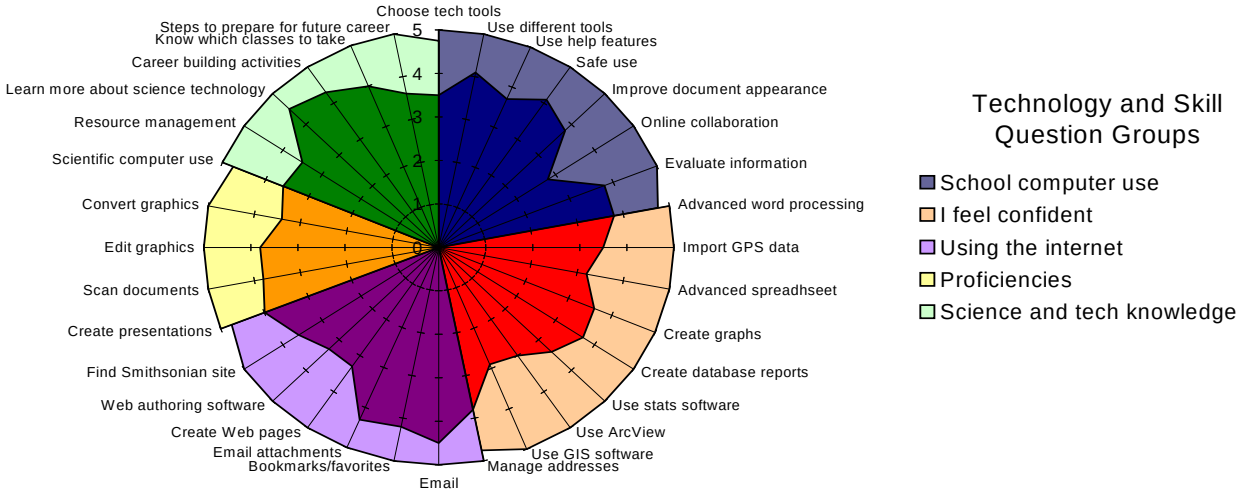
Table 5
SCRT Student Survey Subscales

Subscale Items (*Number of Items in Subscale*)	Mean* (1–5 Scale)	Standard Deviation	Valid N
Proficiency with Basic Technology Tools *Items 13–19 (7 Items)*	3.7	(.4)	13
Proficiency with Advanced Technology Tools *Items 20–27 (8 Items)*	3.4	(.6)	13
Internet Proficiency *Items 28–34 (7 Items)*	3.8	(.8)	13
Graphics Technology Skills *Items 35–38 (4 Items)*	3.7	(.8)	13
SCANS Skills *Items 45–50 (6 Items)*	3.6	(.6)	46

NOTE: For calculating subscale data, negatively worded items were reversed to generate means that consistently report higher ratings as more positive.

Students complete the annual survey on laptops in the field. Immediately upon completing the survey, students can check their own personal rose graph of technology skills, generated from their responses. Across students, areas of strength were reported in e-mail and related applications. Students also reported high levels of interest in learning more about how technology is used in science and resource management. Figure 7 shows a comparable graph based on average student responses.

Figure 7



Annual Student Survey Average Responses on Technology Items

High School Student Field Journal Responses

Throughout each field session high school and middle school students kept field journals to record work they were doing in the field, researchers with whom they worked, instruments/technology used, interesting information learned, and how the activities fit into the "big picture" of salmon restoration/ecology. Abstracts of journals from the summer sessions may be found in Appendix J. Field journal entries show ways in which students were gaining experience using information technology tools to gather data on authentic resource management issues. A few selected examples follow.

Idaho: Students used turbidity sensors, flow meters, pH kits, and bacteria sensors to review river health. They learned that "it's important to keep our rivers and oceans clean" because "salmon depend heavily on stream health and that stream ecosystems are exceedingly fragile."

They also counted trees and measured tree growth with calipers and measuring tape on a tree farm near Craig Mountain. They learned to "measure slope and compass direction of trees" and "learned how to tell how old a tree was

without drilling a hole." This helped them understand "that it is possible to restore ecosystems." Students noted, "counting and planting trees (especially Ponderosa Pine) keeps forests and the carbon cycle going," and "the planted trees help filter the water for the fishes."

Oregon: Students learned "how to track salmon with tags" using radio telemetry. Students mapped river and beaver dams in the beaver survey using GPS units. They learned that beavers "help the river" and "can't live in dirty water."

Students learned to "electro fish" at the Oregon State hatchery research center, learning to identify fish and insects. They learned "what are the fish eating and how they grow is a big part of the big picture with restoring salmon."

California: Participants learned how to tag fish and its importance and understand why dams and fishing have depleted fish populations. They understood that "there's not many fish left in the lake because of fishing done in the 1800s and 1900s," and that "salmon need good habitat to live and to spawn."

Student In-Camp Interview Findings

A section of the in-camp interview protocol provided an opportunity for discussion of whether (or not) Salmon Camp increased students' awareness of how computers and technology are used in science and resource management. The following section summarizes responses.

Computers and Technology

- Salmon Camp is making participants more aware of how computers and technology are used in science/resource management. Almost all participants (94%) were able to name a specific example of a technology they had used during the camp. GPS technology was the most frequently mentioned example (five participants), as it has been during previous programs. Participants also mentioned specific types of wildlife or water monitoring technology, software such as PowerPoint, and GIS.
- When asked how Salmon Camp could help them gain more experience with computers and technology, participants were interested in having additional or newer types of technology taught during the camp (53%) or additional time and opportunities for hands-on use of computers and different technological tools (41%).

An important aspect of being able to authentically use information technology for problem solving is work-related experiences and connections to school academics. Experience in these areas set students up for internships and placements with mentors in the field. A summary of interview responses in these areas showed some connections in these areas with potential for much more.

Work Experience and Skills

- The work experience and skills participants said they gained during the camp were related to teamwork (41%), social skills (35%), communication (35%), and leadership (18%). Participants think SCRT is helping them develop these skills by having participants work as groups and in teams.
- When participants were asked how Salmon Camp could further help them with work experience and skills, five participants suggested that the camp could provide more of the types of experiences already provided (e.g., more opportunities to see job skills in action). Four participants suggested new things the camp could do, including more opportunities to work on public speaking skills.

Connections to School

- Most participants (76%) say that Salmon Camp is helping/will help them in school, and also that it will help them develop the knowledge and skills to take advanced math or science classes (76%).
- Just over half of participants received, or thought it was possible to receive, school credit for attending Salmon Camp (59%). Of those that did not, one participant plans on trying to get credit, and three did not know how they might arrange for school credit. SCRT staff may want to consider further supporting participants in getting school credit for their attendance.
- When asked if they would be interested in a mentor, almost all participants expressed interest in having a mentor (82%). Some participants already have mentors or people who fulfill that role. Many of the participants noted that they would like to have one of the SCRT instructors as a mentor. When asked what they would like to see happen with a mentor, most mentioned help with school (41%) or help with their future plans or college preparation (35%).
- When asked if they would be interested in having an internship, similarly almost all of the participants expressed interest (88%). Five of those participants who expressed interest in an internship listed a specific type of place they would like to intern (e.g., hatchery, vet clinic) and the rest listed an area of work in which they would like an internship (e.g., marine biology, astronomy). Participants from the 2008 Salmon Camp summer sessions were less specific about intern interests than in previous years (with responses such as, "something in math").
- Salmon Camp instructors may want to provide additional opportunities for participants to learn about specific internship opportunities or ways to find out about these opportunities. SCRT staff could consider ways to help participants find relevant internships in science and technology.
- Just fewer than three-quarters of participants reported attending some sort of extracurricular activity (71%) with slightly less than half attending the Native American Youth and Family Center (47%). The rest of the extracurricular activities mentioned by participants were science or math related (e.g., Math Engineering Science Achievement).

Student End-of-Session Feedback

Overall feedback from the field sessions suggests that nearly all students increased their science knowledge and skills in using technology in science research. The end-of-session exit data show that 91 percent of participants thought participation in Salmon Camp increased their science knowledge. Eighty percent reported gaining skills with technology tools used in science research. Table 6 shows responses to these items. A full set of responses may be found in Appendix H.

Table 6
Salmon Camp Research Team
End-of-Session Feedback Data (N=80)

Question	No Way!		Not really		I think so		YES!		Mean (S.D.)	
	Percentage	n	Percentage	n	Percentage	n	Percentage	n	Mean	S.D.
Did you increase your science knowledge?	—	(0)	9%	(7)	21%	(17)	70%	(56)	3.6	(.6)
Did you gain skills in using technology in science research?	3%	(2)	18%	(14)	39%	(31)	41%	(33)	3.2	(.8)

Summary of Progress on Impact 2

Participants in the field Salmon Camp Research Team sessions reported fairly high levels of learning with regards to using technological tools to collect, analyze, and interpret data in authentic, "real world" situations. Across students, areas of strength were reported in e-mail and related applications. Students also reported high levels of interest in learning more about how technology is used in science and resource management. Lower ratings were assigned to advanced IT skills such as the use of databases.

Most Salmon Camp participants clearly believed that the program is making them more aware of how computers and technology are used in science/resource management by providing hands-on experience and exposure to authentic research being conducted in the field.

Overall feedback from the field sessions suggests that nearly all students increased their science knowledge and skills in using technology in science research.

The use of technology tools has not been an emphasis in the after-school program and did not emerge as a theme students mentioned in any of the data collection strategies used.

Impact 3: Promote Participants' Understanding of, and Appreciation for, the Complementary Relationship between Cultural Knowledge and Western Science

"Traditional Native knowledge" or "cultural knowledge" is used to identify indigenous knowledge "acquired through direct experience in the natural world" (Barnhardt & Kawagley 2005, p. 11). Traditional Native knowledge is understood as an integral component of traditional Native peoples' lived experiences. The anticipated impact of the project in this area encompasses both a deeper understanding of Traditional Native knowledge and how those ways of knowing interact with Western science ways of knowing.

Student In-Camp Interview Findings

One question in the interview asked students, *"What have you learned about the integration of traditional Native American knowledge and modern science?"* This question was added to the interview guide during the summer of 2005 to examine this significant aspect of the project. Terminology of "modern science" and "Western science" were used interchangeably.

Table 7
SCRT High School Participants' Views of the Integration of Traditional Native American Knowledge and Western Science

Category	Total	Responses
Traditional Integrated with Western Science	6	• A lot of modern science is derived from traditional knowledge • A lot of tribes have to learn science to fight for their rights • GPS units to restore land back to traditional habitats • Buildings carried over to white world • Use modern science to keep lands • You must have science to gain back tribal rights
Specific Traditional Methods	4	• Biodiversity—controlled burns • How to build a canoe • Protect their rivers, tribal rights • Tribes—habitat restoration

A little over half (nine) of the interview participants were able to give specific responses about what they had learned and these are listed in Table 7. These are grouped into two categories: 1) traditional knowledge integrated with modern science and 2) specific traditional methods. Of the remaining eight participants, six answered that they were not sure or did not know if they had learned anything about the integration of traditional Native American knowledge and modern science, one answered that he hadn't learned anything about the integration of the two, and one participant answered that he had learned a lot, but couldn't give a specific example. Interestingly, three participants gave responses related to the use of traditional knowledge or modern science to "fight for" tribal rights or "keep" tribal lands.

Blending Traditional Native Knowledge and Western Science

Based on previous in-camp interviews, it was suggested that if SCRT staff intended to stress that traditional knowledge and Western science are integrated, then they might consider more intentionally communicating that message. When compared to previous years' data, it appears that SCRT staff members have successfully increased the number of participants that learn about how traditional Native American knowledge can be integrated with Western science.

When participants were asked what they had learned about the integration of traditional Native American knowledge and modern science, over half of the participants could give an example of what they had learned. Four participants gave responses about specific traditional methods while six participants gave responses related to the integration of traditional knowledge with modern science

High School Student Field Journal Responses

Throughout the field journal entries are comments infusing tribal culture, modern issues for tribes, and Western science. Students most frequently noted the importance of ecosystems to the very identity of tribal people. Selected comments from the journal abstracts follow. The full abstract reports may be found in Appendix J.

- After working in the field during the day, students "learned how to make fry bread." They learned the fun and dangers involved in rafting and learned the importance of serving "elders first." They understood that

"we want to keep salmon, because they're culturally and environmentally important."

- Students learned that "estuaries are vital for salmon survival" and understood "that city development has taken 80 percent of estuary habitat and dikes block another 10 percent, but work of activists and Native Americans are gaining some back."
- Students attended a powwow at the Lapwai Community Center on the Nez Perce Reservation. They "learned about how the culture and business of a powwow are connected," and "how interconnected Nez Perce culture is to the environment."
- Participants learned from the Yuroks that "their waters are sacred and we need to respect the land," and that "keeping rivers healthy is an important part of keeping salmon alive."

Student End-of-Session Feedback

At the heart of the Salmon Camp approach is exposing students to Native American (and non-Native) scientists, researchers, and natural resource personnel working on issues that are of importance to Native peoples and tribal sovereignty. Fostering students' understanding or appreciation for the complementary relationship between different knowledge systems, goes hand-in-hand with stoking students' curiosity about science and their understanding of ecosystems from different perspectives.

The end-of-session feedback forms asked students about the extent to which Salmon Camp made them more curious about science and whether they thought they learned about ecological relationships or ecosystems. A large majority of students reported gains in both areas. Nearly 70 percent thought their Salmon Camp experience made them more curious about science. This is a difficult question to analyze since students self select to participate in large part because they already have a degree of interest in science. However, considering their predisposition toward science, the reported gains appear quite high. Nearly all students (94%) reported learning about ecological relationships and ecosystems, a remarkably high level. Table 8 shows these data. As mentioned earlier, the full set of data tables may be found in Appendix G.

An open-response item specifically asked students, "How has Salmon Camp impacted your awareness of Native American culture?" Students described impacts ranging from a deeper appreciation for different tribes to complex understanding of how Western science is used to study and document natural resource conditions. Representative comments follow, with the full set of responses available in Appendix G.

Table 8
Salmon Camp Research Team
End-of-Session Feedback Data (N=80)

Question	No Way!		Not really		I think so		YES!		Mean (S.D.)	
	Percentage	n	Percentage	n	Percentage	n	Percentage	n	Mean	S.D.
Has this program made you more curious about science?	3%	(2)	19%	(15)	23%	(18)	56%	(45)	3.3	(.9)
Did you learn about ecological relationships and ecosystems?	1%	(1)	5%	(4)	34%	(27)	60%	(48)	3.5	(.7)

Understanding Native Culture

- I learned about different tribes
- Showed me different types of Native cultures and what's important to them
- It helped me have more pride in Native culture
- We need to keep it alive because it's not just a culture, it's a way of life
- That the culture is strong everywhere
- It helped me see a better side of Native culture
- By bringing us straight to it, i.e., Yurok Reservation
- How much the White people are interfering with their culture
- It's taught me a lot about how to fish and what we can do to save [fish]
- It's nice to be surrounded by other Natives and see how the culture has changed
- That there are tons of ways to stay a part of Native culture
- That we need to preserve [cultural knowledge] and try to restore what we can of it

Understanding How Western Science is Used by Tribes

- It has shown me how science has taken a big part in how tribes deal with river health and how to conserve natural resources. Also how salmon take a large interest in being restored and conserved by the tribes.
- It showed me just how committed they are to restoring natural resources for the future.
- It has helped me realize that IF I become a marine biologist that I could work for my tribe and help it become a better rez.
- I've seen how science has a big impact on Native American culture and that they fit hand in hand together.

NAYA Salmon Club Projects and Trading Knowledge

Salmon Club participants presented a capstone project at an evening open house for family and community members, called "Trading Knowledge." The focus of the project at the end of the fall session was primarily on ethnobotany. Students shared their knowledge about edible plants, sacred/ceremonial plants, poisonous plants, and watersheds. Students developed posters and manned tables with their posters and related plant samples. Knowledgeable Salmon Club participants responded to questions on their topics or engaged interested attendees through discovery activities during the evening event. Poster topics included:

- Edible Plants
- Medicinal Plants
- Plants Used with Salmon
- Sacred/Ceremonial Plants

The Trading Knowledge session was very well attended, with 50–60 people joining in to "trade knowledge." The event exemplified a blending of traditional cultural knowledge and Western science through topics of significance to Northwest tribes. The projects and evening provided an opportunity for students to demonstrate their understanding and appreciation for the complementary relationship between cultural knowledge and Western science.

Figure 8

Trading Knowledge about Edible Plants

Summary of Progress on Impact 3

Promoting understanding of, and appreciation for, the complementary relationship between cultural knowledge and Western science is a lifelong endeavor. Related changes in student thinking attributable to Salmon Camp will in all likelihood be steps along a pathway toward a more complex understanding of how the two world views might blend, intersect, or complement each other. However, students did report ways in which the project influenced their thinking.

Salmon Camp and Salmon Club students primarily live in urban settings. Some have had little exposure to their own tribal backgrounds or the cultural traditions of others. Many have heritages with multiple tribal affiliations. Therefore opportunities to learn more about various tribes were welcome and appreciated by students. Learning from and with tribal members was consistently influential on students' understanding.

Students in field sessions of Salmon Camp reported learning about ecological relationships and ecosystems, cultural traditions of different tribes, and ways in which tribes are using Western science in habitat/species monitoring, restoration, and preservation.

Salmon Club students effectively demonstrated their learning about ethnobotany through the Trading Knowledge event. This opportunity to interact with peers, family members, Western scientists, and tribal members provided an authentic setting to share knowledge of plants and learn from others.

Figure 9

Trading Knowledge about Medicinal Plants

Figure 10

Trading Knowledge about Plants Used to Prepare Salmon

Figure 11

Trading Knowledge about Ceremonial Plants

SUMMARY AND CONSIDERATIONS

Summary

The Native American Youth and Family Center and Oregon Museum of Science and Industry (OMSI) are building a collaborative relationship to accomplish National Science Foundation (NSF) grant impacts. The team has successfully created an after-school component to the project that is continuously improving to become increasingly more effective and meaningful for students. The immersion experiences in Salmon Camp continued to be successful even with a shorter time in the field for high school students. There are some suggestions that students who participate in both Salmon Club and Salmon Camp activities find their experiences reinforce each other and strengthen their understanding as well as technology/field protocol skills.

Relationships

Relationships between students and teachers are woven through culturally responsive practice and promote retention of Native American students in school as well as out-of-school programs (Alaska Native Knowledge Network 1998; Tharp 2006). For Salmon Camp students, relationships with counselors and the project Co-PI, who coordinated all field experiences, have been particularly significant. A level of trust between the Co-PI, students, and parents was built over four and a half years of crafting and implementing Salmon Camp field experiences. Additionally, the Co-PI nurtured relationships with contacts in the field such as, university scientists, field researchers, tribal fisheries personnel, tribal members, and elders.

In November 2008, OMSI dismissed the Co-PI as part of a staff cutback precipitated by economic pressures. The unexpected decision was made, without adequate communication with Salmon Camp colleagues, collaborators, or partners. The unanticipated decision raised questions about OMSI's long-term commitment to students from an already vulnerable population. The position is to be assumed by a current OMSI employee who already had a full-time job, with assistance from another camp programs staff member and counselors in the field.

A major challenge for the project in the coming year will be in supporting the new project Co-PI as well as the Salmon Camp community as the leadership transition occurs. Institutionally it will be costly as the new Co-PI will need to establish his credibility and forge new relationships with students, families, professionals, and tribal members—while developing the procedural knowledge held by his predecessor. This challenge is of particular concern in light of the low numbers enrolled in two of the high school summer sessions in 2008. Recruiting students will be essential to serve the number of participants which the project could be serving.

Considerations

Much remains to be accomplished in the coming grant period if the project is to achieve targeted impacts and objectives. Increased attention to infusing cultural components and opportunities for families will be important. Continued enhancements of the Salmon Club curriculum and project website should also draw attention. Additionally, development of the Toolkit for dissemination of the Salmon Camp Research Team (SCRT) story will require thoughtful time and collaboration from the entire team. As project leaders move forward, findings from the evaluation suggest several specific points that should be considered.

- Throughout SCRT (both Salmon Camp and Salmon Club) career exposure and introduction to internship opportunities

for high school students were envisioned. These areas are of interest to students and could be strengthened to have the level of impact originally anticipated.

- Cultural connections are also important to Native students' understanding and interest. Opportunities to make all aspects of SCRTs more culturally relevant should be sought out and pursued.
- Salmon Club leaders will want to continue finding ways for enthusiastic former participants to continue to learn through, and be involved with, Salmon Club.
- The high school Salmon Camp projects may need to be reinvented in a format which is feasible within the two-week schedule.
- Increased attention to family connections will be necessary to accomplish strategies of:
    - A family weekend at a location convenient to parents not from the Portland area, with transportation from Portland and lodging provided by OMSI.
    - Take-home activities, including background information for parents, which can be completed at a time and location that is convenient to families. The website may be a conduit for offering these.
    - Opportunities for parents to participate in SCRT programs as chaperones and helpers.
    - Opportunities for parents with science backgrounds or relevant careers to share their expertise and knowledge with SCRT groups.

Discussion

Several interesting findings emerged through the evaluation to date. Feedback from participants and staff members provides insight into the perceived influence of Salmon Camp. Our aim is for these data and voices to be useful to project leaders and to foster continuous improvement for the project. Data are not generalizable to other programs or audiences. However, they suggest the potential for locally adapted, contextually relevant initiatives to support Native American students in STEM.

Success

The project leaders are to be congratulated on the many successes under the renewal funding. Activities continue to have a positive influence on students—in fact, a profound influence on some. Many students are deeply appreciative and recognize how important their involvement has been. Comments such as the following are sprinkled throughout the data:

- "I liked meeting all the different and interesting people. They opened my eyes to different career fields and helped me to understand the restoration project. Plus, I experienced many things I would never have been able to without Salmon Camp."
- "Salmon Camp was a great experience and the people who go and help out the camp are really awesome and I hope this program keeps going."
- [The work we did today was important because it was] to have fun and learn about our sea life because someday I could help the environment.

References

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Barnhardt, R., & Kawagley, A.O. (2005). Indigenous knowledge systems and Alaska Native ways of knowing. *Anthropology and Education Quarterly, 36*(1), 8–23.

Tharp, R.G. (2006). Four hundred years of evidence: Culture, pedagogy, and Native America. *Journal of American Indian Education, 45*(2), 6–25.

APPENDICES

Appendix A
OMSI/NAYA Salmon Camp ITEST Renewal Grant Logic Model

<table>
<tr><th>Inputs
(SCRT model, pedagogical approach, ITEST requests)</th><th>Short-Term Objectives</th><th>Long-Term Objectives</th><th>Measures</th><th>Impacts</th></tr>
<tr><td rowspan="3">Program strategies:
• Engaging participating students in authentic, IT-intensive research projects
• Working closely with academic community and STEM professionals as mentors
• Exposing students to opportunities available through higher education and in the world of IT careers
• Placing IT and STEM learning in a cultural context
• Involving students in a year-round program of IT skills, STEM learning, and enrichment activities

Educational strategies:
▪ Successful learning strategies based on the theory of situated cognition
▪ Best practices from research on culturally responsive learning models

Barriers for NA youth transitioning into IT careers (1):
▪ Lack of computer resources in Native American communities
▪ Tension between traditional culture and academic culture of STEM programs
▪ STEM programs are not presented as a viable career path to Native Americans
▪ Lack of family experience with STEM careers

Strategies for transitioning NA youth to adulthood (2):
▪ Increasing youth involvement in spirituality and traditional activities
▪ Increasing contact between youth and parents, elders, and other community members
▪ Increasing employment opportunities (particularly on the reservation, so that young people can stay to work with their community)
▪ Giving youth a real and important role in the community
▪ Making sure research done in NA communities is participatory

Needs and interests of Native American youth and Native American community
Needs and interests of SCRT participants and participants' parents
IT educational strategies (e.g., from Being Fluent with Information Technology)</td><td>High School—Summer:
• (4) two-week, field-based experiences (OMSI)

High School—Spring break:
• (1) one-week residential program (OMSI)</td><td rowspan="2">Improved academic achievement associated with SCRT involvement
Increased student understanding of:
• Courses and preparation required for college
• Required steps for college admissions
• Pathways to STEM careers
• Postsecondary opportunities
Improved preparation for college
Improved preparation for STEM careers
Alumni attribute current positive interest and access to STEM and IT careers in part to Salmon Camp involvement
Alumni attribute current positive interest and access to IT in part to Salmon Camp involvement</td><td rowspan="2">• Student laptop surveys
• In-camp interviews
• Field journals
• 3-way interviews with NAYA participants
• Alumni interviews</td><td rowspan="3">Impact 1:
Spark and sustain the interest of AI/AN youth in STEM and IT careers</td></tr>
<tr><td>Middle School—Summer:
• (1) five-week day program (NAYA)
• (2) one-week field-based experiences (OMSI)</td></tr>
<tr><td>MS & HS—School Year:
• (2) six-week after school sessions fall/spring (NAYA)
• (2) weekend enrichment experiences (fall/spring) (OMSI)
• (2) dedicated staffers to offer year-round tutoring support for NAYA participants</td><td>Stronger connections developed between Salmon Camp and formal academics
Extended reach of program to other students
Expanded relationships with Salmon Camp and Native American community</td><td>• Participation rate documents for NAYA after-school program
• Feedback forms
• Constituent interviews</td></tr>
</table>

<table>
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• Involving students in a year-round program of IT skills, STEM learning, and enrichment activities

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▪ Successful learning strategies based on the theory of situated cognition
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Barriers for NA youth transitioning into IT careers (1):
▪ Lack of computer resources in Native American communities
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▪ STEM programs are not presented as a viable career path to Native Americans
▪ Lack of family experience with STEM careers

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▪ Increasing contact between youth and parents, elders, and other community members
▪ Increasing employment opportunities (particularly on the reservation, so that young people can stay to work with their community)
▪ Giving youth a real and important role in the community
▪ Making sure research done in NA communities is participatory

Needs and interests of Native American youth and Native American community
Needs and interests of SCRT participants and participants' parents
IT educational strategies (e.g., from Being Fluent with Information Technology)</td>
<td>Infuse hands-on experience with data analysis and interpretation into field and after-school sessions</td>
<td>Increased confidence and skills with general IT literacy
Increased confidence and skills with selected technologies including advanced technologies
Extent and ways in which participants meet the "performance indicators" relevant to selected National Educational Technology Standards
Greater confidence with selected SCANS skills
Deepen understanding of one "big idea" of the program: Information technology is a tool that can be used to solve real-world problems</td>
<td rowspan="3">• Student laptop surveys
• In-camp interviews
• Review of student products (e.g., PowerPoint presentations)
• Embedded assessments using technology tools
• Parent and student feedback forms
• Alumni interviews</td>
<td rowspan="3">Impact 2: Develop participants' abilities to use information technologies to collect, analyze, and interpret data and solve real-world problems</td>
</tr>
<tr>
<td>Opportunities for parental involvement</td>
<td>Expand circles of involvement for parents</td>
</tr>
<tr>
<td>Provide more direct assistance with internship placement</td>
<td>Increased number of internships</td>
</tr>
</table>

<table>
<tr><th>Inputs
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• Exposing students to opportunities available through higher education and in the world of IT careers
• Placing IT and STEM learning in a cultural context.
• Involving students in a year-round program of IT skills, STEM learning, and enrichment activities.

Educational strategies:
▪ Successful learning strategies based on the theory of situated cognition
▪ Best practices from research on culturally responsive learning models

Barriers for NA youth transitioning into IT careers (1):
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▪ Increasing employment opportunities (particularly on the reservation, so that young people can stay to work with their community)
▪ Giving youth a real and important role in the community
▪ Making sure research done in NA communities is participatory

Needs and interests of Native American youth and Native American community
Needs and interests of SCRT participants and participants' parents
IT educational strategies (e.g., from Being Fluent with Information Technology)</td><td>Develop and publish an SCRT "case study" to facilitate the dissemination of the SCRT program model</td><td>Document the SCRT approach to building IT skills and knowledge in a culturally responsive context</td><td>Document development and dissemination of the SCRT publications on program model</td><td rowspan="3">Impact 3:
Promote participants' understanding of and appreciation for the complementary relationship between cultural knowledge and Western science</td></tr>
<tr><td>Website to stimulate interest/expand reach</td><td>Sustainability of SCRT approach</td><td rowspan="2">• Website review
• In-camp interviews
• Field journals
• Review of student products (e.g., PowerPoint presentations)
• 3-way interviews
• Parent and student feedback forms
• Feedback on internships</td></tr>
<tr><td>Explore relationships between traditional ecological knowledge and Western science</td><td>Deepen understanding of the one "big idea" of the program: Cultural knowledge and Western science can have a complementary relationship such as in enhancing the understanding of watersheds</td></tr>
</table>

Appendix B
SCRT Instruments

B-1: Sample High School SCRT Annual Survey

B-2: SCRT In-camp Interview Protocol

B-3: End-of-Session Feedback Form

B-4: Sample Field Journal

Appendix B-1
Sample High School SCRT Annual Survey

Welcome to Salmon Camp!

Part I. We are excited you are here and hope you learn a lot and laugh a lot in the next few weeks. As a way of getting to know you, please fill out this survey about YOU! There are no wrong answers. We want to know what you really think about each question. Thank you in advance, for giving these questions your careful consideration.

Your Name:
Date:

What is your gender?

Male Female

What grade are you currently in (Fall 2007)?

Science classes you took (or are taking) this year (2007-2008):

What is your ethnicity? (place an 'x' next to each that applies)

- Alaskan Native/Native American
- Black/African American
- White/Caucasian
- Asian/Pacific Islander
- Latino/Hispanic
- Other (please specify below)

Part II. Below are statements concerning science. Please indicate "how you really feel" by selecting the response which shows your level of agreement with each question.

1. **Understanding science will help me be a better community member.**

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

2. **Science is hard for me.**

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

3. **Science teachers have made me feel I have the ability to go on in science.**

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

4. **I am sure of myself when I do science.**

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

5. **Doing well in science is not important for my future.**

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

6. **My teachers think advanced science will be a waste of time for me.**

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

7. **I would choose to take an elective science class.**

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

8. **I think I could handle more difficult science.**

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

9. **It's hard to get science teachers to respect me.**

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

10. **Most subjects I can handle OK, but I just can't do a good job in science.**

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

11. **My teachers have been interested in my progress in science.**

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

12. **I'll need a good understanding of science for my future work.**

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

Part III. Please complete the section below by selecting one of the choices (indicating your best estimate of your skill or knowledge level).

I could describe how to:

13. **Choose an appropriate technology tool to use for a specific purpose**

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

14. **Use PowerPoint, Excel, Word processing, and graphics for a project**

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

15. **Online help features**

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

16. **Safely use technology tools**

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

17. **Improve the appearance of documents with formatting, graphics, etc.**

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

18. **Use a listserv or discussion group to collaborate**

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

19. **Evaluate Internet information for accuracy, bias, appropriateness**

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

I feel confident that I could:

20. **Use advanced features of a word processor (tables, headers and footers, macros, table of contents, columns, etc.)**

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

21. **Import data from a Global Positioning System (GPS) to a database**

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

22. **Use formulas and/or functions in a spreadsheet (Excel, SPSS, etc.)**

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

23. **Create and populate a database**

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

24. **Create a graph from spreadsheet data**

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

25. **Use statistical software for data analysis**

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

26. **Use ArcView to make maps**

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

27. **Use GIS software to analyze data**

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

Using the Internet, I can proficiently:

28. **Manage names and groups in an address book**

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

29. **Reply to and forward email messages**

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

30. **Create and use bookmarks/favorites**

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

31. **Send, receive and open email attachments**

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

32. **Create a Web page**

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

33. **Maintain/edit a Web site**

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

34. **Search for and find the Smithsonian Institution Web site.**

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

I can proficiently:

35. **Create an electronic presentation (PowerPoint)**

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

36. **Scan a document**

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

37. **Reduce, enlarge, or crop a graphic**

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

38. **Convert graphics from one file format to another**

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

Science and Resource Management

39. **I can explain how computer applications are used in science**

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

40. **I can explain how resource managers use technology to analyze data**

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

41. **I want to learn more about using technology in science or resource management**

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

42. **I have been involved in activities that help me think about science/resource management career options**

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

43. **I know which classes I should take to help me succeed in a science career**

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

44. **I know of steps I can take to prepare for a career in science/resource management**

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

Part IV: Rate yourself on these skills

45. **I plan my time, money, materials, and space to get things done.**

I'm Great	Quite Good	OK	Not bad, could be better	Bad News
5	4	3	2	1

46. **I work well on teams, teach others, and work well with people from culturally diverse backgrounds.**

I'm Great	Quite Good	OK	Not bad, could be better	Bad News
5	4	3	2	1

47. **I think creatively to imagine new ideas.**

I'm Great	Quite Good	OK	Not bad, could be better	Bad News
5	4	3	2	1

48. **I use logical reasoning to make decisions.**

I'm Great	Quite Good	OK	Not bad, could be better	Bad News
5	4	3	2	1

49. **I take careful steps when I am trying to solve problems.**

I'm Great	Quite Good	OK	Not bad, could be better	Bad News
5	4	3	2	1

50. **I can draw conclusions from reliable evidence.**

I'm Great	Quite Good	OK	Not bad, could be better	Bad News
5	4	3	2	1

51. **Basic Skills: Overall**

I'm Great	Quite Good	OK	Not bad, could be better	Bad News
5	4	3	2	1

52. **Reading**

I'm Great	Quite Good	OK	Not bad, could be better	Bad News
5	4	3	2	1

53. **Writing**

I'm Great	Quite Good	OK	Not bad, could be better	Bad News
5	4	3	2	1

54. **Mathematics**

I'm Great	Quite Good	OK	Not bad, could be better	Bad News
5	4	3	2	1

55. **Speaking**

I'm Great	Quite Good	OK	Not bad, could be better	Bad News
5	4	3	2	1

56. **Listening**

I'm Great	Quite Good	OK	Not bad, could be better	Bad News
5	4	3	2	1

Part V: During Salmon Camp activities we work on all of the following areas. Please mark TWO that you really want to focus on with an 'x' …Why?

Choose TWO

	Information Technology
WHY?	
	Science
WHY?	
	Ecological Relationships and Ecosystems
WHY?	
	Interpersonal Skills
WHY?	
	Critical Thinking
WHY?	

Part VI: In the next section, rate the importance of what motivated you to come to Salmon Camp.

	Very Important	Important	Somewhat Important	Not Important
57. Working with scientists	4	3	2	1
58. Camping--being outdoors	4	3	2	1
59. Location	4	3	2	1
60. The Native American connections	4	3	2	1
61. Being with friends/making new friends	4	3	2	1
62. Reimbursement (getting paid)	4	3	2	1
63. Learning more science	4	3	2	1
64. Using science in the real world	4	3	2	1
65. OTHER (write in)				

You're Finished! Woohoo! Thank you for your time and patience with completing the survey.

Appendix B-2
SCRT In-camp Interview Protocol

Meeting guide to update participant's interests and impressions

Participant: _____ Camp: _____

Meeting date: _____

Staff member leading meeting and recording information: _____

Introduction

During this meeting I would like to discuss your interests with respect to careers, technology, job skills, and school. I want to learn more about how Salmon Camp supports your interests, so I hope you will tell me your ideas as best you can.

You may have answered some of these questions before at other Salmon Camp programs, but I am interested in your interests and ideas now that you have been here this summer.

I'd like to write down your ideas so that I have a record I can refer back to as I make plans for future events -- none of the other campers will see what you tell me. Would you be willing to talk these things over with me now?

Career interests

Ok, first I'd like to talk about your interests in science careers.

Can you see yourself working in a science career some day? YES MAYBE NO NOT SURE

Such as?

Has this camp helped you explore your career interests? YES SORT OF NO NOT SURE

How has it helped?

How could it help more?

What have you learned about the integration of traditional Native American knowledge and modern science?

Computer and technology interests

Ok, next I'd like to talk about your interests in computers and technology.

Has this camp made you more aware of how computers and technology are used in science/resource management?
YES SORT OF NO NOT SURE

Can you give an example from this camp of how computers and technology are used in science/resource management?

How can Salmon Camp help you learn more about computers and technology?

Job skill interests

Ok, now I would like to discuss job skills.

Has this camp helped you build skills you might use in a job later on? YES SORT OF NO NOT SURE

Such as?

How has it helped you develop these (go through each mentioned)?

What could Salmon Camp provide to help you build job skills further?

Connections to school

New participants only:

Do you think your participation in Salmon Camp will help you succeed in school? YES SORT OF NO NOT SURE

Why or why not?

Do you think Salmon Camp is helping you develop the knowledge and skills to take advanced math or science classes?

YES NO NOT SURE

Why or why not?

Do you know how to find out if you can get school credit for participating in this camp?

Are you interested in having an active mentor this year? YES NO NOT SURE

Why or why not?

Who would you want as a mentor and what would you like to see happen?

Are you interested in an internship this year? YES NO NOT SURE

Why or why not?

What internship might you want?

Are you involved in out of school/extracurricular activities related to science, math, or the environment? (e. g.; ecology/science club, Matheletes, science fair, ivy pulls/other volunteer restoration activities)

Returning participants only:

Has your participation in Salmon Camp helped you succeed in school this year? YES SORT OF NO NOT SURE

Why or why not?

Do you think Salmon Camp is helping you develop the knowledge and skills to take advanced math or science classes?

YES NO NOT SURE

Why or why not?

Have you gotten school credit for your participation? YES NO MAYBE

If not: Do you know how to find out if you can get school credit for participating in this camp?

Are you interested in having an active mentor this year? YES NO NOT SURE

Why or why not?

Who would you want as a mentor and what would you like to see happen?

Are you interested in an internship this year? YES NO NOT SURE

Why or why not?

What internship might you want?

Are you involved in out of school/extracurricular activities related to science, math, or the environment? (e. g.; ecology/science club, Matheletes, science fair, ivy pulls/other volunteer restoration activities)

Future plans

Would you be interested in attending future Salmon Camp programs? YES NO NOT SURE

Why or why not?

What are your plans after high school?

Would you be interested in helping Salmon Camp as a [counselor, instructor]? YES NO NOT SURE

Why or why not?

Well –those are my questions for now about your interests in careers, technology, job skills, and school. I would like to keep the Salmon Camp experience in line with what campers want to gain from it and your responses will help me with that.

Would you like to share any other suggestions or comments? Do you have any questions?

Appendix B-3
End-of-Session Feedback Form

End of Camp Feedback—Session: Magruder 2008

Please rate and/or respond to each item to help us make Salmon Camp a great experience for more campers!

Your gender? **Male** ☐ **Female** ☐

Tribal Affiliation_____

(Name of tribe/tribes to which you are affiliated)

The grade you are in: **5** **6** **7** **8** **9** **10** **11** **12** **Other:** _____

	☹	😕	☺	☺
1. Did Salmon Camp meet your expectations?	No way!	Not really	I think so	YES!
2. Has this program made you more curious about science?	No way!	Not really	I think so	YES!
3. Did you learn about ecological relationships and ecosystems?	No way!	Not really	I think so	YES!
4. Did you increase your science knowledge?	No way!	Not really	I think so	YES!
5. Did you gain skills in using technology in science research?	No way!	Not really	I think so	YES!
6. Did you have fun?	No way!	Not really	I think so	YES!

7. **How has Salmon Camp affected your interest in a science/technology career?**

8. **What part of Salmon Camp surprised you the most?**

9. **Would you recommend this program to others?**

☹	😐	☺	☺
No way!	Not really	I think so	YES!

Why, or why not?

10. **What did you learn about going to college or a university?**

11. **How has Salmon Camp impacted your awareness of Native American culture?**

~~~~~~~~~~~~~~~~~~~~~~~~~~~**Thanks so much for your input.** ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

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Instrument developed for OMSI by NWREL Evaluation Program (101 S.W. Main St., Ste 500, Portland, OR. 97204) under NSF funding 2003-2009.

Appendix B-4
Sample Field Journal

Salmon Camp Research Team
2008
Field Journal

Author:

(Your Name)

Day1

Date:_____
Location: *(Where were you today? —forest, river, camp, reservation, watershed, nearest city and state)*

Activity:

Researchers you worked with today:
(and their role—biologist, botanist, student, etc.)

Researcher	*Role*

Appendix C
Family Reunion Event Instruments

C-1: Family Reunion Invitation

C-2: Family Reunion Consent Form

C-3: Design a T-shirt Activity

C-4: Dream Hatchery Activity

C-5: "Swimming Salmon" Activity

C-6: Past Participant Graphing Activity

C-7: Salmon Camp Family Reunion Event Feedback Form

Appendix C-1
Family Reunion Invitation

Past participant? Past staff? Involved with Salmon Camp in <u>any</u> way?
Just want to learn more?

OMSI and NAYA invite you to the

Salmon Camp Reunion !

Learn about the NSF funding renewal, NAYA's role, and upcoming programs.
Please Join Us ! Share your stories.

Friday, November 9th, 2007

OMSI, 1945 SE Water Ave.

Doors open at 5:00 pm. Activities begin at 6:00 pm. Dinner at 7:00 pm

Let us know if you can make it: salmon@omsi.edu (503) 797 4627
If you would like to share a poster of your involvement or organization, let us know.

Appendix C-2
Family Reunion Consent Form (Space Condensed Version)

CONSENT TO PARTICIPATE To improve Salmon Camp, we will ask you to participate in some activities tonight. I understand that my child will have the option to withdraw from any particular evaluation activity if he or she chooses without penalty and/or that I may withdraw my child or myself, from said activities without penalty. We may ask for your name and your opinions about Salmon Camp. However, your name, or your child's name will not be associated with any information in evaluation reports or publications. Original copies of data collected will be kept in a secure location at OMSI and only designated project staff will have access to the information. Participation in evaluation activities is voluntary. The risk to participants is minimal; participants may feel uncomfortable sharing opinions, or feel that their experience was compromised by the occurrence of evaluation during the program. The benefits of participation in evaluation activities include documentation that SCRT is successful in addressing students' confidence/fluency with science and information technology, preparing students for careers/internships and workplace skills, and overall success in school, and offering feedback that continually improves the programming. **If you agree to participate in these activities, please sign and date below.** If you do not agree to participate, leave this section blank.

First and Last Name	Address	Phone number	Email	Signature	Date	Are you 18 or older? (Y/N)	If under 18, have your parent/ legal guardian sign this column. *"I am the parent/legal guardian of this minor and I consent to his/her participation."*

Appendix C-3
Design a T-shirt Activity

For use during the Salmon Camp Reunion event.

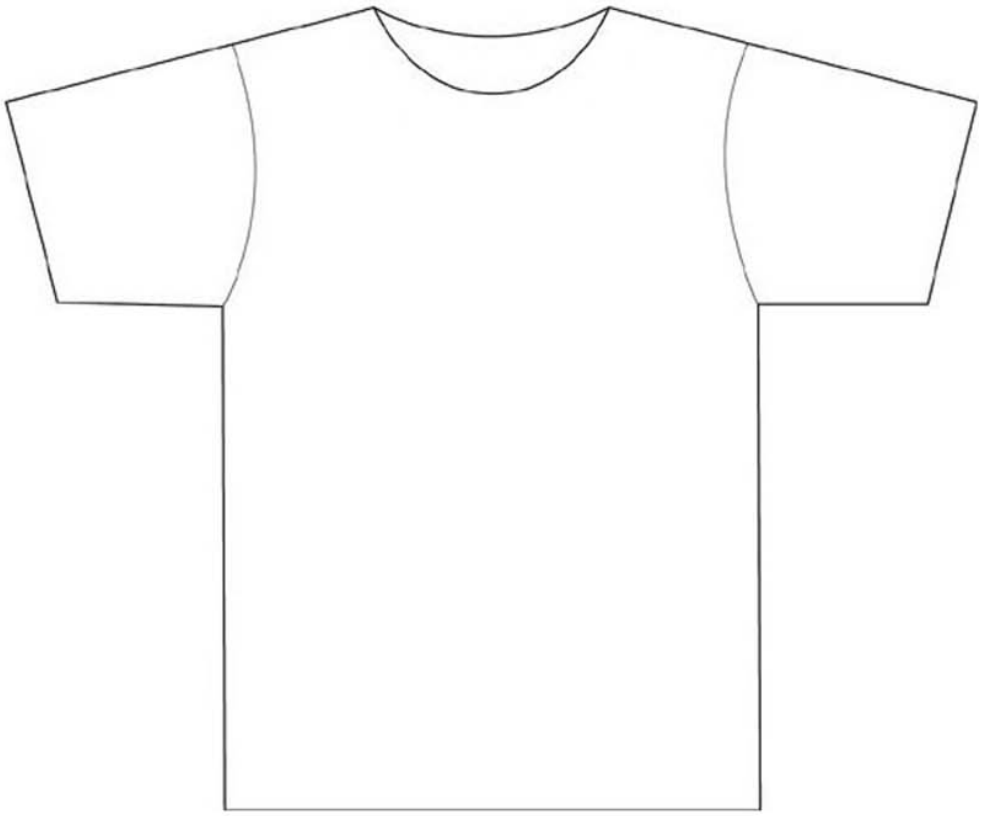
Data of Interest:
Take-away messages from Salmon Camp involvement
Perceptions of key components as integral to Salmon Camp

Focus Question:
What makes Salmon Camp unique?

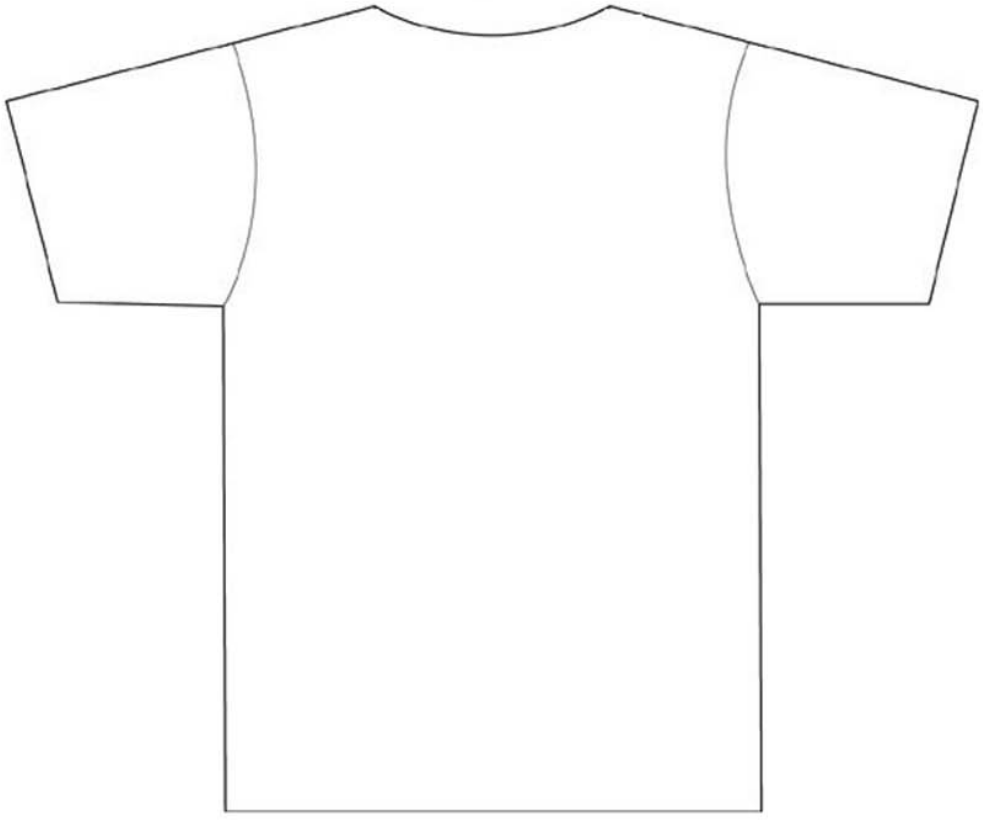
Instructions:
Participants will have the opportunity to express what they think makes Salmon Camp unique through the use of images/messages by designing a t-shirt. The designs will be displayed in an area where the larger group can see them. The t-shirt designs will be entered into a competition in which the Salmon Camp advisory board will choose a design that will be the Salmon Camp t-shirt for that year. (This will occur after the event.) This information can be anonymous; however, if an individual wishes to enter into the competition, his/her name will need to accompany the design.

See sample t-shirt on the following page. (The t-shirts will be printed front-to-back on an 11''x 14'' piece of paper.)

F



B



Appendix C-4
Dream Hatchery Activity

For use during the Salmon Camp Reunion event.

Data of Interest:
Sustainability strategies
Envisioned futures for Salmon Camp

Focus Question:
What are your wishes and dreams for Salmon Camp?

Instructions:
Participants will have the opportunity to write down their wishes and dreams for Salmon Camp on cards that will be collected. This information will be anonymous.

Salmon Camp Graffiti Board Activity

For use during the Salmon Camp Reunion event.

Data of Interest:
Perceived impact of Salmon Camp

Focus Question:
Salmon Camp is...

Instructions:
Participants will have the opportunity to write about what they think Salmon Camp is using graffiti. A large "graffiti board" (i.e. a large sheet of paper with markers) will be provided with a header that reads "Salmon Camp is..." This information will be anonymous.

Sample of Activity:

Appendix C-5
"Swimming Salmon" Activity

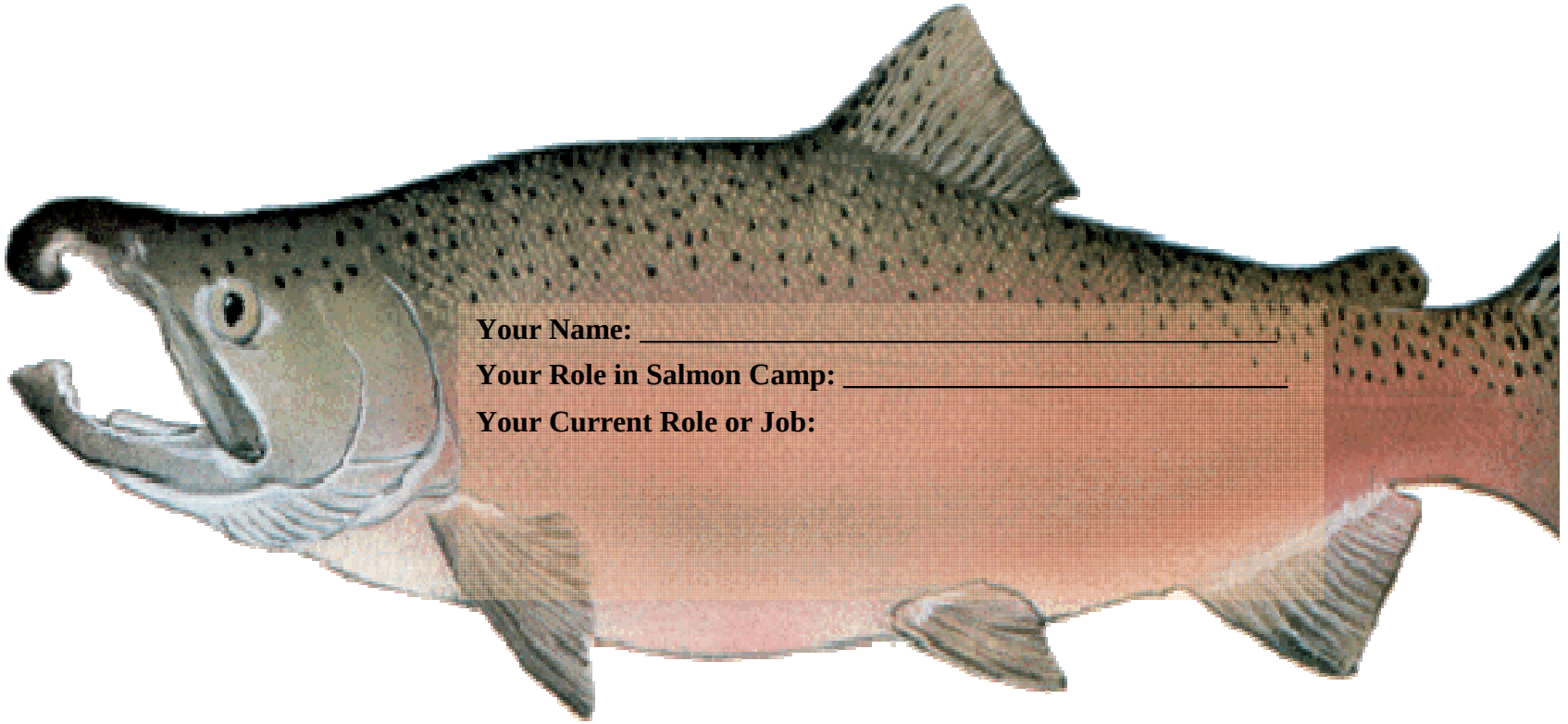
For use during the Salmon Camp Reunion event.

Data of Interest:
Connections between previous Salmon Camp involvement and current positions.

Focus Questions:
Your name
Your past role(s) in Salmon Camp
Your current role or job

Instructions:
Participants will be given different types of salmon on which they will have the opportunity to record their name, information about how they were previously involved in Salmon Camp, and information about what they are doing now. Then, participants will be able to hang their salmon in the meeting space so that others can see what their relationship is to Salmon Camp. This information is not anonymous.

See sample salmon on the following page. (The salmon will be printed in color on 8 ½''x11'' paper and cut out along the outline of the salmon.)


Your Name: _____
Your Role in Salmon Camp: _____
Your Current Role or Job:

Appendix C-6
Past Participant Graphing Activity

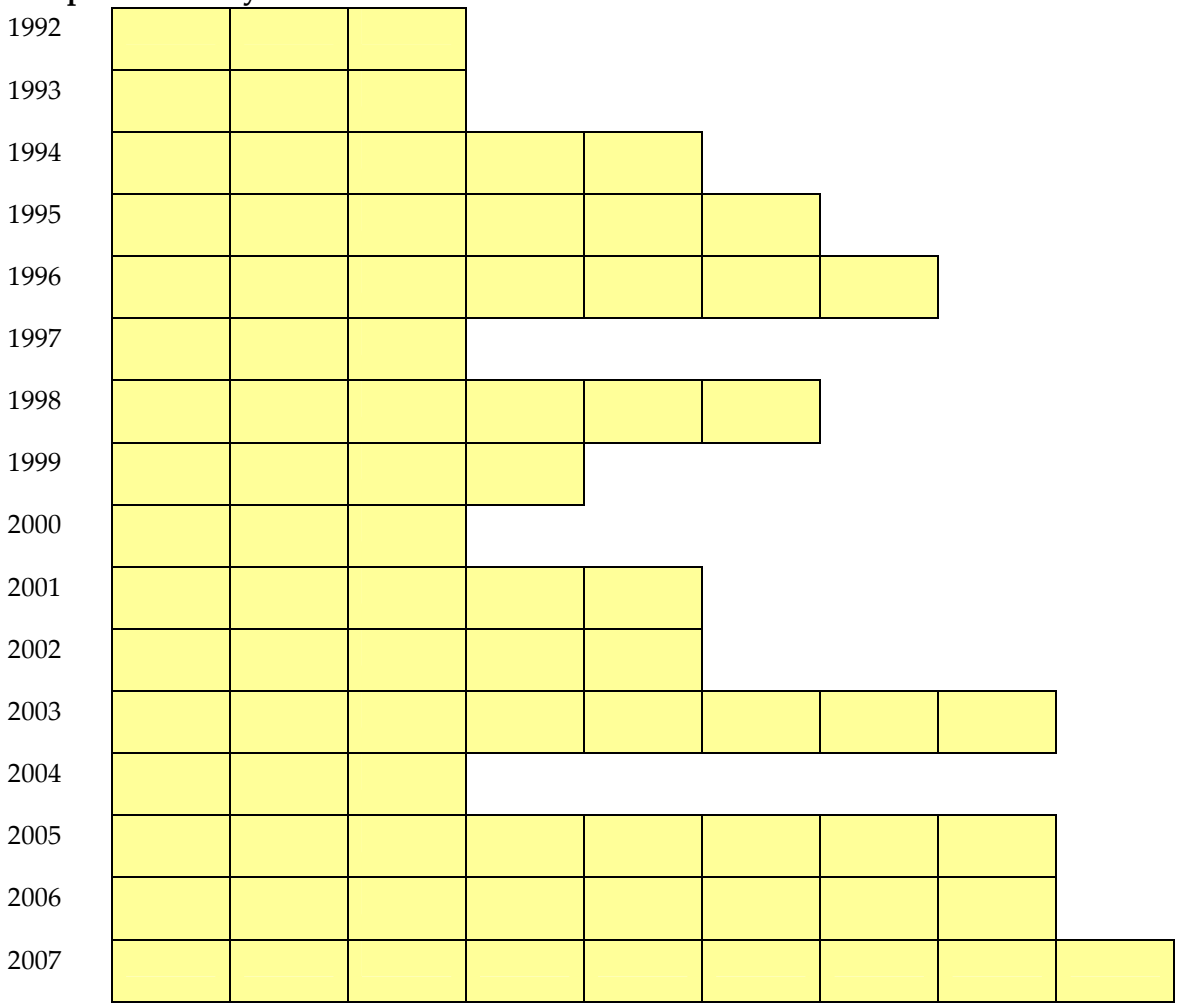
For use during the Salmon Camp Reunion event.

Data of Interest:
Participation rates by year as represented at reunion event.

Focus Question:
In which year(s) did you participate in Salmon Camp?

Instructions:
Participants will have the opportunity to indicate their past participation in Salmon Camp using post-it notes on a chart-paper graph. The graph will be marked with years in a bar-graph-style format. Individuals will be able to create a visual by adding a post-it note by each year in which they have participated in the Salmon Camp program. This information is anonymous.

Sample of Activity:



Appendix C-7
Salmon Camp Reunion Event Feedback Form

For use during the Salmon Camp Reunion event.

Data of Interest:
Extent to which the event accomplished purposes of:
- Community building
- Communicating the state of Salmon Camp
- Envisioning a future for Salmon Camp

Focus Questions:
What was your favorite part of the Salmon Camp Reunion?
What would you have done differently?
Is there anything else you want us to know?

Instructions:
At the end of the event, participants will have the opportunity to complete a feedback form and place it into a common receptacle. This information is anonymous.

Sample of Activity: (Printed on a ½ page 8 ½''x11'' piece of paper.)

Salmon Camp Reunion Feedback

What was your favorite part of the Salmon Camp Reunion?

What would you have done differently?

Is there anything else you want us to know?

Appendix D
Swimming Salmon Responses

ID	Current Occupation	Salmon Camp Role(s) and Year(s) Involved	How has Salmon Camp influenced you?
3	Foster Care Support Specialist	Signing up kids/outreach	Hearing about youths' experience.
4	Student Cashiering	Long long long long time ago	I learned to understand to keep our water systems clean for marine life.
5	Occupational Therapist	I am learning about Salmon Camp for the 1st time! My husband works at NAYA and I'm very excited to learn about it!	
6	Legal Instruments Examiner	Parent 1994 Parent 1995	Enhanced my childrens' curiosity then in science.
9	Student	Camper, Counselor, Mentor 2003–4 years	I'm taking fisheries technology in college! It helped a lot.
10	School		Some new but interesting.
11	Social Worker	2003, 2007 Counselor, Support Staff	Great opportunity for students to experience culture in different ways.
13	NAYA Academy Student	Salmon Camper—first year	Science
14	Student (Grad.)	Mentor 1995	
15	Realtor	2007	Great experience for granddaughter.
17	High School Student	2007	Being able to participate on the trip to Vancouver Island.
18	Preschool Teacher		
19	Student	Camper/Counselor/Mentor 2004–Present	It has enabled me to graduate early.
20	College Student	Around 4 years as a participant.	Taught me about my native culture and about salmon. Good experience overall!
21	Schooling	"Recipient of knowledge"—5 years.	It has given me more knowledge on my heritage.
23	Manager, Indian Ed.	Parent of camper 1997	Inspired and encouraged me.
24	Gardener	Instructor, Parent, Mentor 1994, 1995, 1996, 2005	Helped shape my career as an educator.
25	Student	Camper, Counselor 8 or 9	It's helped me learn native heritage.
28	OMSI Salmon Camp Staff	Evaluator, Staff 2006, 2007	Get to see a great program and how it works.

ID	Current Occupation	Salmon Camp Role(s) and Year(s) Involved	How has Salmon Camp influenced you?
29	NAYA Administration	Partner/Comm. Member/Parent (3)	When I first came to PDX and enrolled my children at Title VII. They were just coming home from a Salmon Camp adventure and I was impressed that this program was available to encourage and expose my child to this type of opportunity and education around conservation and sustainability culture. That was in 2004.
31	Student at PCC	Participant 1995	Showed me a lot about science.
33	None	Camper 3 years	Became more a part of native community.
34	Student	Mentor, Camper, Counselor, Advisor since year 2001	Broaden my future.
36	Native American Youth and Family Center	2003 & 2007 Partnership with OMSI for NAYA youth	It has brought me joy to have these opportunities for our youth.
37	Student	Student—1 year	
38	NAYA Family Center Sustainability Office	As a [SCRT parent] since 2001–2002	Helped my twin boys identify with native kids and culture as well as science.
39	Business Owner	Salmon Camp Parent Since 2001	Broaden family and friends
40	Science Educator	Instructor 1998 & 1999	Made me a better person.

Appendix E
SCRT Reunion Family Event Dream Hatchery Responses

ID	Q. What are your wishes and dreams for Salmon Camp?
1	I wish salmon camp could be expanded to include more students.
2	Get more people involved, have camp more often.
3	To continue ongoing forever. To have small numbers of students on HS trips.
4	Restore watersheds.
5	Regenerate biospheric and ethnospheric connection.
6	I wish Salmon Camp could be funded by Oregon and Washington's casino TRIBES.
7	Snorkeling.
8	Openness to many people and places in salmon nation…calling us all to come home.
9	For more youth to have this wonderful opportunity.
10	Have returning youth take on more roles in the camp.
11	Other kids may have same experiences!
12	That it would be a wonderful experience for grand daughter …
13	Some camps "day camps" for younger youth.
14	That it continues!
15	To address the role Salmon Camp can have in fostering leaders in Natural Resources who can work closely with tribes and help [illeg.].
16	I wish for Salmon Camp to continue to provide youth with enriching experiences.
17	Connect people with salmon.
18	Keep it going!!!
19	I would love to see career opportunities to evolve from the youth who attend. Leadership skills and teach abilities nurtured.
20	Salmon Camp continues for many years to come…I want my 2 year old to have this dream.
21	I hope that Salmon Camp can reach many different communities and educate youth as well as give them an understanding of the importance about salmon.
22	Learn more about the life of salmon.
23	My dreams are for the kids to learn more about marine life and the water systems and keeping rivers clean.
24	To grow and stay alive for years to come.
25	I want Salmon Camp to continue!
26	To restore Riparian Habitat.
27	For it to build a strong community in and around the Pacific NW.
28	I wish everyone has a good time.
29	My wish for Salmon Camp is an increased partnership with the tribes of Oregon.
30	I wish Salmon Camp continues to grow!
31	I want it to continue forever and EVER!

Appendix F
Reunion Exit Survey Responses

ID	What was your favorite part of the Salmon Camp Reunion?	What would you have done differently?	Is there anything else you want us to know?
1	Walking around the OMSI exhibit. I wish I could see more of the exhibit. It would be nice to see real marine life here.	Looked around some more.	Make more activities.
2	My kids were the oldest participants ('94) - an unexpected surprise. My brother was a mentor in '95.	Create an alumni club - bring back former participants to help plan reunions.	I liked the event and I'm excited that my niece is leaving on the trip to Vancouver Island tomorrow.
3	The dancing, the food, and meeting new people.	I'm not sure - maybe more mixers.	Thank you for having Salmon Camp!
4	Dancers	Nothing.	N/A
5	Dancing [sic] - Dessert!	Have smoked salmon appetizers.	N/A
6	Seeing friends!	Nothing.	Thank you!
7	The energy and enthusiasm the OMSI staff brought to the event was admirable. The event was a great experience and it was a very nice to see what OMSI does for so many youth.	Nothing, it was great.	No, thank you.
8	Getting to see the exhibit with the penguins and bears.	More fun stuff.	No.
9	Seeing the pictures and the activities helped everyone to feel a part. Great dancers.	Live drummers - not a CD.	Maybe info for perspective [prospective] Salmon Campers to take with them.
10	Cake. Yum yum. The performance (NAYA dancers) was awesome, too, but the dance floor was kinda cramped.	Sound system - practice first...and play from an iPOD. :)	Thanks!
11	Seeing old frenz!	It was awesome!	We love you!!
12	Slide show, dancing presentation.	Instruct students how to use microphone.	N/A
13	The NAYA dancers and listening to the Salmon Campers' stories.	It was great!	N/A
14	Seeing the stuff in a social setting instead of a parking lot.	Be a little more specific about "activities" on the e-mail. We'd 'a been here earlier.	Excellent catering. Thank the grant writer!
15	See some friends hadn't seen in a long time.	Music "situation."	You're awesome.
16	Seeing familiar faces.	More information on future Salmon Camps.	No thank you.

Appendix G
End of Session Feedback Summary from Field Sessions, 2008 (N=80)

Tribal Affiliations Reported

Apache	Modoc
Aztec	Navajo
Blackfoot	Sac & Fox
Cherokee	Shoshoni
Chinook	Sioux
Chippewa	Sioux Arikara
Colville	Tlingit
Confederated Tribes of the Siletz	Turtle Mountain Chippewa
Cowlitz/Cree	Umatilla
Hopi	Warm Springs
Iowa	Wasco
Klamath	Wasco of the Confederated Tribes of Warm Springs

Grades Represented

Grade	Frequency	Valid Percent
5	1	1
6	9	11
7	12	15
8	16	20
9	12	15
10	9	11
11	15	19
12	5	6
Missing	1	1
Total	80	100

Gender Breakdown

	Frequency	Valid Percent
Male	46	58
Female	34	42

Question	No Way!		Not really		I think so		YES!		Mean (S.D.)	
	Percentage	n	Percentage	n	Percentage	n	Percentage	n	Mean 4=Yes!	Standard Deviation
1. Did Salmon Camp meet your expectations?	—	(0)	9%	(7)	29%	(23)	63%	(50)	3.5	(.7)
2. Has this program made you more curious about science?	3%	(2)	19%	(15)	23%	(18)	56%	(45)	3.3	(.9)
3. Did you learn about ecological relationships and ecosystems?	1%	(1)	5%	(4)	34%	(27)	60%	(48)	3.5	(.7)
4. Did you increase your science knowledge?	—	(0)	9%	(7)	21%	(17)	70%	(56)	3.6	(.6)
5. Did you gain skills in using technology in science research?	3%	(2)	18%	(14)	39%	(31)	41%	(33)	3.2	(.8)
6. Did you have fun?	—	(0)	1%	(1)	9%	(7)	90%	(72)	3.9	(.4)

7. How has Salmon Camp affected your interest in a science/technology career? (74 Responses, 86% described affects on interest, clustered in the following categories.)

Increased/sustained interest in a science/technology career (26)

- Yes, it has. (2)
- Because I think that it would be fun and you will get paid
- Before I never thought of one but this camp has gotten me thinking about one.
- By giving me experience in the science field and showing me multiple jobs I could go for that would help the ecosystems.
- By showing me what it's like.
- I have been thinking about it has not really affected it.
- I still want to be a marine biologist
- I want to study about stars and how to actually know how it is formed.
- I'm thinking about working in fish hatcheries.
- It has affected my interests in a science/technology career because it makes science and technology fun which makes me want to do something that has to do with that.
- It has helped me learn more to be better prepared for school and has got me to want to be a Biologist or in the environmental science field.
- It has helped me to choose a career in science and to become a marine biologist.
- It has made me more interested
- It has made me more interested and has made me want to have a career in environmental science.
- It helped me find fisheries.
- It makes me think twice about my major and what I wanna do in life.
- It makes me want to base my future on science and ecology.
- It's helped me get interested in a career in science and helped me pursue the knowledge I need for that job.
- It’s made me want to pursue my dream of being a science teacher
- Salmon Camp has increased my interest in habitat conservation by showing the connections between ecology, economy, and tribal affiliation.
- Yeah it has but I'm still trying to figure out what occupation I want to go out into, but for sure.
- Salmon Camp has opened a lot of doors, so I can see all the science jobs out there, and careers.
- This camp has showed me science is way more interesting than I thought it was. Someday I want to be an animal biologist or a photographer and I think the more science you know the better chance you’ll have.
- Um, I think it could be fun working with water.

- I think so.
- I guess a little bit.

Gained general knowledge or exposure to various jobs (18)

- Because I learned that you can use science every day.
- I thought the whales were really interesting… I kind of what to study them.
- ‘ helped me learn and know stuff I didn't.
- It has given me a clearer vision of what a career in science is.
- It has given me opportunities to explore and experience these jobs first hand.
- It has offered me opportunities to learn about different jobs in the environment.
- It has opened many regions of science as possible career pathways, and has shown just how many fields of science there are.
- It has opened me to different field areas.
- It has opened my mind to all the jobs the science career offers.
- It helped me by learning new things I did not know.
- It showed me what field of science is really interesting.
- It taught me a lot of things I didn't know or were aware of.
- It’s helped me explore job interests.
- It’s honed my choices down and helped me understand them.
- Salmon Camp has really given me a good view of the science careers.
- Salmon Camp has given me lots of opportunities to study and to learn cool new experiences. It's showed me lots of great jobs that help out the environment.
- Salmon Camp has introduced me to many different and interesting types of job opportunities that have to do with science/ technology.
- Yes, because Salmon Camp has made me curious to explore the different science careers.

Increased interest in science (7)

- All of the different things we do increases my interest in science, it opens me up to a lot of different jobs also.
- All the experience really helps increase my interest in science and boost my curiosity.
- I never liked science because I never understood it. Now that I've been to salmon camp my new outlook on science is incredible!
- I used Salmon Camp to help me become more interested in science so I can do better in school.
- I used to not like science and I thought it was boring but I am more interested in it now.
- I wasn't into science and I am thinking of taking a class in college.
- Yes it has ‘cause I love science.

Learned science/technology/work/skills (6)

- Because I learned a lot about science.
- It showed how to do hands-on projects and to make it fun.
- It affected a lot and now I know more.
- It has taught me more about ecosystems and how log jams really affect salmon.
- It hasn't, but I do want a somewhat technology career (paramedic) and Salmon Camp helps with some technology activities that we do.
- It's taught me work ethic, leadership, and adapting to the environment.

Exposed to reality of science/technology jobs (4)

- I really love animals so this taught me that if you want to do something with things you love, you even have to do the nasty work.
- I used to think science was just a class but now realize that you could really help the environment and the world.
- It didn't help much but I need to have science for my future job.
- Fishing and I just want to help the fish.

Has other plans that do not currently involve a science/technology career (3)

- I already have plans to join the Army.
- Umm… I don't really like science, but if I got a job in the science field, I'd definitely do something with the ecosystems.
- I don't really want to be a scientist.

No/little affect on interest in a science/technology career (10)

- No/Not much/ It has not. (6)
- I don't know. (2)
- Well, I just need the points for college, I don't know.
- Not really because I don't like science.

8. What part of Salmon Camp surprised you the most?

2008 Spring Break Session

- What surprised me the most was how much I learn every Salmon Camp.
- Having to camp outside.
- How EXTREME it was!!!
- How many research related things there are.

- When we got to witness the utter magnificence's of the gigantic stellar sea lions right off of starboard bow.
- Setting the boards to catch animals and record data.
- Whale watching
- Going sailing, it was also my favorite part.

2008 High School Session, ID

- The hike of death! The hardest thing I've done in my life.
- The variety of careers we covered this time.
- How full circle the camp was in showing all the levels of salmon conservation.
- POW WOW
- That we all made it up the 5 mile hike without anyone going to the hospital.
- The big hill we had to walk up.
- When we got fish.
- How much I learned.
- The wide spread of people and the jobs.

2008 High School Session, OR

- The amount of travel.
- How we learned a lot about the colleges in Oregon and how we got an amazing tour.
- I don't really know…all of it.
- Wildlife experience.

2008 High School Session, CA

- Snorkeling (2).
- All of it.
- The rapids on the rafts.
- The rafting surprised me the most. I've never done anything like that in salmon camp.
- The things and obstacles of everyday.
- How much I learned and had fun.
- The fish counting at the Smith River was the biggest surprise.

2008 High School Session, WA

- Backpacking/The hike./How fun the hike was! (3)
- Traveling, but traveling is very cool.

Summer 2008 Middle School Session, Magruder

- The tide pooling. (2) The tide pools that disappeared in high tide. (1)
- It surprised me most when we went tide pooling because I always wanted to go.
- What we did and the movie.
- Because if I ever get a job that's involved in science I will know a lot about science because I went to school and this camp name Salmon Camp.
- Hiking.
- Going to the cheese factory.
- How much creatures and organisms can live in such a small area. Its amazing!
- Going boating.
- The lake.
- The fact that we got to go swimming.
- Cabins did because I never slept in a cabin in my life.
- The ocean the waves in the ocean the beach.
- When I went on the big swing.
- When [one of the counselors] told us about a plant that can give you cancer.
- Where it was.
- Nothing. (2)

Summer 2008 San Juan Islands

- Seeing the whales
- The tents
- The part where we had fun, LOL
- That we got to go to a bunch of cool things
- Canoeing, I thought we were bound to tip in the water, but we didn't
- There were a lot of activities
- All the knowledge
- All of the people
- Going tide pooling
- Nothing (2)

2008 High School/Middle School Fall Session, British Columbia, CAN

- Nothing really. (3)
- Going to the hot springs.(2)
- Hmmmm…..the drive.
- The amount of cooperation from scientists.
- The fun.
- The nasty process that the employees or volunteers have to go through.
- The part of Salmon Camp that surprised me the most was hiking up to the hot springs and seeing how warm the water was and how it keeps heated.
- Hatchery work.

Question	No Way!		Not really		I think so		YES!		Mean (S.D.)	
	Percentage	n	Percentage	n	Percentage	n	Percentage	n	Mean	Standard Deviation
9. Would you recommend this program to others?	1%	1	1%	1	10%	8	87%	68	3.8	(.5)

Why or why not recommend Salmon Camp to others?

2008 Spring Break Session

- I would recommend them to others because Salmon Camp is a great way to build career skills such as communication and teamwork, but also social skills. In general, it is just a really fun experience I'd suggest to many.
- Because it's a great program and you get a lot of great experiences here.
- Because it's a good way to get out of the everyday life style. It's nice the places we go.
- You get to travel around to learn about different environments and see a large variety of animals, plus you get to meet other native students.
- Because some people couldn't handle having to try to compete with me, at anything we do in camp. But yes! Because they are some still educated youth in America who enjoy science and the outdoors.
- It's a great learning experience and give you a behind–the–scenes look at science.
- Cus it's a fun thing to do.
- Good hands on science, always leave with stories/memories, beautiful places!

2008 High School Session, ID

- Because I already have and it's a great experience.
- It is fun and you can get job experience.
- Because it is a great experience and really gives a lot of information pertaining to science.
- Cuz it's bomb.
- It is fun and educational all at once.
- I heard that it was really fun.
- It's a great experience.
- I would recommend it to anyone who has thought about a career in science.
- Because this is a great experience for people interested in science.

2008 High School Session, OR

- Because it's fun.
- This is a great camp to learn about science and the environment.
- It's FUN!
- Maybe but I would make sure they know what they're getting into.

2008 High School Session, CA

- Because it is really fun and you can meet new people.
- I would because it is an awesome experience and you make friends.
- It helps a lot in school.
- It's a great program and it teaches us how to keep the environment clean.
- Because it is really fun.
- Because it's fun and educational.
- Because it's a great opportunity.
- It's a great experience and it is a great camp to meet new people.

2008 High School Session, WA

- Because it helps in school and it's so fun.
- Because it is I unique in how it approaches teaching science.
- Because I don't know any camp where you get paid to have fun and everything is a new challenge.
- It's a good program and they need commercials and go to schools to reach the youth.

Summer 2008 Middle School Session, Magruder

- Because it was fun (4)
- Because it is totally awesome and fun.
- I would because it fun and you learn.
- Because I had a ton of fun.
- Because it was fun and cool.
- Because you have fun and you learn too.
- It was fun I liked it a lot.
- It's a lot of fun and made me learn a lot and refresh a lot of stuff in science.
- I would because I think its good to learn and have fun at the same time.
- Because it's the bombbomb and its fun.
- Because it is really a great camp.
- Because it can help your skills in science.
- Because I think this is cool.
- Yes so they could learn more.
- Because this camp is awesome.
- Because it's a nice program.

Summer 2008 Middle School San Juan Islands Session

- Yes, because it was fun. (4)
- Yes, because its fun and knowledge about science.
- Yes, because it was a good and fun program.
- Yes, because I am cool.
- Yes, I think other kids should get this chance.
- Yes, It was really awesome.
- Because it is a nice salmon camp to go to without violence.
- I don't know.
- No, it sucked.
- No, cause this week was a waste of time to tell you the truth.

2008 High School/Middle School Fall Session, British Columbia, CAN

- Because it's fun and interesting.
- Because it is really fun.
- Yes because it's a fun program to learn in.

- It was fun and we learned stuff.
- Yes, because it widens your meaning of what science can be.
- Cause it's a great experience to learn and travel and have fun.
- It's a great experience, and you learn more about the nature.
- This program is a great way to learn about science and meet new people.
- Because this can get you a good education out of it.
- It's too great not to.
- So people can get the experience I get/had.
- I would because not only is it a great experience, but an awesome way to learn and open up endless possibilities in careers.

10. What did you learn about going to college or a university?

2008 Spring Break Session

- I learned I want to go to a college that provides a great science program.
- That there are a lot of things you have to do or have done to get in or even apply. I learned that you have to do lots of little things.
- They can be expensive, but there are scholarships you can get for being Native and majoring in the science field.
- To go to it.
- That Salmon Camp can help get me into a good college.
- That because I am Native, I get a lot of opportunities.
- I learned there are lots of scholarships for Native Americans.
- We didn't really talk about any college or university while on this trip, but it did remind me of University of Victoria. Just because how close we were to Victoria.

2008 High School Session, ID

- That you can't go and half ass it there. It's a lot different than high school.
- There are scholarships that if you do all the paperwork [you can] at least get something.
- I learned a lot about the different science programs at ISU and how education is important in how far you get in a science career. Also, I found out how financial aid helps with education.
- That you can have fun doing it.
- There is a lot of financial aid out there! You just have to find it.
- I learned about scholarships, classes I need to take, where to go if I need help.
- When we visited it, it was cool and I learned a lot about them.
- U. of I. is a great school for a science department.

2008 High School Session, OR

- A lot of useful things that will help me get to college.
- That it's really good to take as many classes you can in high school so make your college application look really good.
- It's easy to get loans and stuff for it.
- That if you don't have family members that went to an Ivy league [school], you only have a 7% chance of getting in.

2008 High School Session, CA

- That it's a great experience and that you meet a lot of people and it's something I'd like to do.
- It costs a lot.
- There is something called undergrads and grad students.
- I learned about the average college living lifestyle/experience.
- You have to work 100%, 100% of the time.
- HSU is an awesome college for fish/wildlife and a great school for Native American students.
- I don't know.
- I don't see it.

2008 High School Session, WA

- Its not as hard as they make it seem.
- That the University of Washington has an established tribal community and many scholarships are important.
- That it's not all about college academics. They look at other things.
- If you live out of state, college funds cost way more. Even the $100.00 scholarships make a difference.

Summer 2008 Middle School Session, Magruder

- Nothing (9)
- I don't know./ I don't really know anything quite yet (3)
- I think we did.
- You sleep on the couch.
- That I would like to go to San Diego State or University of Hawaii.
- I don't go to a college or a university.
- It could be different.
- That it would be easy.
- It can be scary.
- I am going to college and getting a good or great degree.

Summer 2008 Middle School San Juan Islands Session

- I don't know. (5)
- Nothing/ We didn't really talk about it./ "middle schooler" (4)
- I am in middle school. (2)
- We didn't talk about it. I am just here for the points. I'm in middle school.
- That this will go on our permanent record.

2008 High School/Middle School Fall Session, British Columbia, CAN

- I learned that you can make your own schedule in college.
- That you get to pick your schedule and that they are big.
- It's super expensive, but worth it definitely.
- A possible way to get into programs and other things at UVIC.
- That many have tribal programs to help.
- That there are many choices.
- That there are several paths that you can go and go down the path that you want to go down not because someone told you to.
- I learned that come colleges aren't all about sports, that some are just for academics.
- I learned how college classes work and how to get around campus.
- You need to have your classes picked out and ready. And you get to pick your own time.
- That there are many different ways to get a scholarship or to just get accepted and that internships are sometimes rewarded.
- I can't remember.

11. How has Salmon Camp impacted your awareness of Native American culture?

2008 Spring Break Session (not an item for this session)

2008 High School Session, ID

- It's helped me by putting me with people from the rez and working on the rez itself.
- I have learned a lot that I never would have normally been able to get.
- It has shown me how science has taken a big part in how tribes deal with river health and how to conserve natural resources. Also how salmon take a large interest in being restored and conserved by the tribes.
- It helped me have more pride in Native culture.
- It showed me just how committed they are to restoring natural resources for the future.
- There is a lot of affairs between different tribes.

- Showed me different types of Native cultures and what's important to them.
- We need to keep it alive because it's not just a culture, it's a way of life.
- That the culture is strong everywhere.

2008 High School Session, OR

- It has helped me realize that IF I become a marine biologist that I could work for my tribe and help it become a better rez.
- It has made me aware of how many people used to live.
- That Native culture should be spread out more. We need more Natives with power.
- It really didn't.

2008 High School Session, CA

- Yes.
- That we need to preserve it and try to restore what we can of it.
- It helped me see a better side of Native culture.
- It's taught me a lot about how to fish and what we can to save them.
- None. I already [knew] all the things we learned.
- By bringing us straight to it i.e., Yurok Reservation.
- How much the White people are interfering with their culture.
- No.

2008 High School Session, WA

- It showed me how we survived.
- Much of what I know is because of Salmon Camp.
- It has opened my eyes to what needs to be done. It shows me that I need to step up.
- We are not a minority, just a political minority. That's going to change though.

Summer 2008 Middle School Session, Magruder

- Yes/Very well/Great/A lot (5)
- Stories about our life.
- Stories other people tribes and they take native kids to a bad school and sometimes kill them.
- By learning uses of plants that by elders used.
- It hasn't really. It’s mostly the other way around. I started salmon camp in *illegible*
- It taught me more about what my family would use a long time ago.
- They show me how Natives used to make fire.
- They invented lots of tools, clothes and weavings.
- A lot because I didn't know how they survived in the coast.

- Well, I think we should try and keep our culture going as long as we can.
- It taught me how they survived and what they ate.
- I learned about other Native American tribes and how they lived.
- A little.
- I don't know/I really don't know right now. (2)
- Not a lot/Not really (2)

Summer 2008 Middle School San Juan Islands Session

- Nothing./Not much./It didn't. (4)
- I don't know. (3)
- Yes, I think so./Learned more. (2)
- I learned about different tribes. /I learned different tribes I never knew! (3)
- It showed me how many there are.

2008 High School/Middle School Fall Session, British Columbia, CAN

- I think so.
- It made me realize that most Native Americans get treated unfairly.
- It has impacted my awareness of Native American culture by telling me and showing me some of the things they do or did.
- It's made me see how we lived a long time ago and how we have changed so much.
- It has shown me how modern yet culturally active they've become.
- It's just refreshed my mind about it.
- It has taught me to take in my surroundings and appreciate them, and to be patient and better understand nature.
- I've seen how science has a big impact on Native American culture and that they fit hand in hand together.
- It's nice to be surrounded by other Natives and see how the culture has changed.
- That there are tons of ways to stay a part of Native culture.
- Not sure.
- This trip hasn't really.

Salmon Club
End of Session Feedback Summary—Fall NAYA Program, 2008
(N=7)

Tribal Affiliation

Tribe	Frequency
Klamath Paiute	1
Modoc, Cherokee, and Klamath	1
Sioux	1
Sioux, Cheyenne, Arapaho	1
Turtle Mountain Chippewa	1

Grades Represented

Grade	Frequency	Valid Percent
5	2	29
6	2	29
7	2	29
8	1	14
Total	7	100.0

Gender Breakdown

Gender	Frequency
Male	6
Female	1

Question	No Way!		Not really		I think so		YES!		Mean (S.D.)	
	Percentage	n	Percentage	n	Percentage	n	Percentage	n	Mean	Standard Deviation
1. Did Salmon Club meet your expectations?	.0%	(0)	14%	(1)	71%	(5)	14%	(1)	3.0	(.6)
2. Has this program made you more curious about science?	.0%	(0)	29%	(2)	71%	(5)	0%	(0)	2.7	(.5)
3. Did you learn about ecological relationships and ecosystems?	.0%	(0)	20%	(1)	20%	(1)	60%	(3)	3.4	(.9)
4. Did you increase your science knowledge?	.0%	(0)	33%	(2)	50%	(3)	17%	(1)	2.8	(.8)
5. Did you gain skills in using technology in science research?	17%	(1)	17%	(1)	0%	(0)	67%	(4)	3.2	(1.3)
6. Did you have fun?	.0%	(0)	0%	(0)	20%	(1)	80%	(4)	3.8	(.4)

7. How has Salmon Club affected your interest in a science/technology career?

- I don't know (3)
- I wanna be a marine biologist!
- A little bit.
- I already knew most of the things, but I have always liked science.

8. What part of Salmon Club surprised you the most?

- Everything (2)
- The last day.
- How much we did on the computer. I thought it was going to be more hands on.
- The presentation.

Question	No Way!		Not really		I think so		YES!		Mean (S.D.)	
	Percentage	n	Percentage	n	Percentage	n	Percentage	n	Mean	Standard Deviation
9a. Would you recommend this program to others?	.0%	(0)	.0%	(0)	40%	(2)	60%	(3)	3.5	(.5)

9b. Why or why not recommend Salmon Club to others?

- I do, it is fun.
- Fun
- You get to be with friends and learn more!
- I don't know. (2)

10. What did you learn about going to college or a university?

[No relevant responses. Clearly was not viewed as an aspect of Salmon Club.]

11. How has Salmon Club impacted your awareness of Native American culture?

- The things the government does affect Native American traditions. (2)
- Learning the plants.
- Not much

Appendix H
Annual Student Survey Responses

Table 1
Middle and High School Self-Efficacy in Science (N=45)

Attitudes toward Science	Strongly Disagree (1)		Disagree		Undecided (3)		Agree (4)		Strongly Agree (5)		Total (1–5 Scale)	
	Percentage	#	Percentage	#	Percentage	#	Percentage	#	Percentage	#	Mean	Standard Deviation
1. Understanding science will help me be a better community member.	2%	(1)	0%	(0)	20%	(9)	56%	(25)	22%	(10)	4.0	(.8)
2. Science is hard for me.	22%	(10)	41%	(19)	24%	(11)	13%	(6)	0%	(0)	2.3	(1.0)
3. Science teachers have made me feel I have the ability to go on in science.	11%	(5)	11%	(5)	27%	(12)	40%	(18)	11%	(5)	3.3	(1.2)
4. I am sure of myself when I do science.	2%	(1)	9%	(4)	28%	(13)	46%	(21)	15%	(7)	3.6	(.9)
5. Doing well in science is not important for my future.	15%	(7)	11%	(5)	26%	(12)	28%	(13)	20%	(9)	3.3	(1.3)
6. My teachers think advanced science will be a waste of time for me.	9%	(4)	30%	(14)	30%	(14)	22%	(10)	9%	(4)	2.9	(1.1)
7. I would choose to take an elective science class.	4%	(2)	9%	(4)	22%	(10)	41%	(19)	24%	(11)	3.7	(1.1)

Table 2
Additional High School Self-Efficacy in Science Items (N=13)

Attitudes toward Science	Strongly Disagree (1)		Disagree		Undecided (3)		Agree (4)		Strongly Agree (5)		Total (1–5 Scale)	
	Percentage	#	Percentage	#	Percentage	#	Percentage	#	Percentage	#	Mean	Standard Deviation
8. I think I could handle more difficult science.	0%	(0)	15%	(2)	38%	(5)	38%	(5)	8%	(1)	3.4	(.9)
9. It's hard to get science teachers to respect me.	31%	(4)	31%	(4)	0%	(0)	31%	(4)	8%	(1)	2.5	(1.5)
10. Most subjects I can handle OK, but I just can't do a good job in science.	15%	(2)	62%	(8)	15%	(2)	0%	(0)	8%	(1)	2.2	(1.0)
11. My teachers have been interested in my progress in science.	15%	(2)	8%	(1)	15%	(2)	62%	(8)	0%	(0)	3.2	(1.2)
12. I'll need a good understanding of science for my future work.	0%	(0)	0%	(0)	31%	(4)	38%	(5)	31%	(4)	4.0	(.8)

Table 3
High School Proficiency with Basic Technology Tools (N=13)

I could describe how to…	Strongly Disagree (1)		Disagree		Undecided (3)		Agree (4)		Strongly Agree (5)		Total (1–5 Scale)	
	Percentage	#	Percentage	#	Percentage	#	Percentage	#	Percentage	#	Mean	Standard Deviation
13. Choose an appropriate technology tool to use for a specific purpose	0%	(0)	15%	(2)	31%	(4)	46%	(6)	8%	(1)	3.5	(.9)
14. Use PowerPoint, Excel, word processing, and graphics for a project	8%	(1)	0%	(0)	0%	(0)	62%	(8)	31%	(4)	4.1	(1.0)
15. Online help features	0%	(0)	0%	(0)	31%	(4)	69%	(9)	0%	(0)	3.7	(.5)
16. Safely use technology tools	0%	(0)	8%	(1)	8%	(1)	54%	(7)	31%	(4)	4.1	(.9)
17. Improve the appearance of documents with formatting, graphics, etc.	0%	(0)	8%	(1)	15%	(2)	69%	(9)	8%	(1)	3.8	(.7)
18. Use a listserv or discussion group to collaborate	15%	(2)	23%	(3)	31%	(4)	31%	(4)	0%	(0)	2.8	(1.1)
19. Evaluate Internet information for accuracy, bias, appropriateness	8%	(1)	0%	(0)	23%	(3)	46%	(6)	23%	(3)	3.8	(1.1)

Table 4
High School Proficiency with Advanced Technology Tools (N=13)

I feel confident that I could….	Strongly Disagree (1)		Disagree		Undecided (3)		Agree (4)		Strongly Agree (5)		Total (1–5 Scale)	
	Percentage	#	Percentage	#	Percentage	#	Percentage	#	Percentage	#	Mean	Standard Deviation
20. Use advanced features of a word processor (tables, headers and footers, macros, table of contents, columns, etc.)	0%	(0)	8%	(1)	15%	(2)	62%	(8)	15%	(2)	3.8	(.8)
21. Import data from a Global Positioning System (GPS) to a database	8%	(1)	8%	(1)	31%	(4)	38%	(5)	15%	(2)	3.5	(1.1)
22. Use formulas and/or functions in a spreadsheet (Excel, SPSS, etc.)	8%	(1)	8%	(1)	46%	(6)	38%	(5)	0%	(0)	3.2	(.9)
23. Create and populate a database	8%	(1)	8%	(1)	8%	(1)	69%	(9)	8%	(1)	3.6	(1.0)
24. Create a graph from spreadsheet data	0%	(0)	15%	(2)	15%	(2)	54%	(7)	15%	(2)	3.7	(.9)
25. Use statistical software for data analysis	0%	(0)	8%	(1)	54%	(7)	31%	(4)	8%	(1)	3.4	(.8)
26. Use ArcView to make maps	0%	(0)	38%	(5)	23%	(3)	38%	(5)	0%	(0)	3.0	(.9)
27. Use GIS software to analyze data	0%	(0)	31%	(4)	46%	(6)	23%	(3)	0%	(0)	2.9	(.8)

Table 5
High School Internet Proficiency (N=13)

Using the Internet, I can proficiently….	Strongly Disagree (1)		Disagree		Undecided (3)		Agree (4)		Strongly Agree (5)		Total (1–5 Scale)	
	Percentage	#	Percentage	#	Percentage	#	Percentage	#	Percentage	#	Mean	Standard Deviation
28. Manage names and groups in an address book	8%	(1)	8%	(1)	8%	(1)	54%	(7)	23%	(3)	3.8	(1.2)
29. Reply to and forward e-mail messages	0%	(0)	8%	(1)	0%	(0)	31%	(4)	62%	(8)	4.5	(.9)
30. Create and use bookmarks/favorites	0%	(0)	15%	(2)	0%	(0)	38%	(5)	46%	(6)	4.2	(1.1)
31. Send, receive, and open e-mail attachments	0%	(0)	8%	(1)	8%	(1)	31%	(4)	54%	(7)	4.3	(.9)
32. Create a Web page	8%	(1)	15%	(2)	23%	(3)	46%	(6)	8%	(1)	3.3	(1.1)
33. Maintain/edit a website	8%	(1)	0%	(0)	46%	(6)	46%	(6)	0%	(0)	3.3	(.9)
34. Search for and find the Smithsonian Institution website.	8%	(1)	8%	(1)	23%	(3)	38%	(5)	23%	(3)	3.6	(1.2)

Table 6
High School Graphics Skills (N=13)

I can proficiently….	Strongly Disagree (1)		Disagree		Undecided (3)		Agree (4)		Strongly Agree (5)		Total (1–5 Scale)	
	Percentage	#	Percentage	#	Percentage	#	Percentage	#	Percentage	#	Mean	Standard Deviation
35. Create an electronic presentation (PowerPoint)	0%	(0)	8%	(1)	15%	(2)	46%	(6)	31%	(4)	4.0	(.9)
36. Scan a document	8%	(1)	0%	(0)	23%	(3)	46%	(6)	23%	(3)	3.8	(1.1)
37. Reduce, enlarge, or crop a graphic	0%	(0)	15%	(2)	0%	(0)	77%	(10)	8%	(1)	3.8	(.8)
38. Convert graphics from one file format to another	0%	(0)	31%	(4)	15%	(2)	38%	(5)	15%	(2)	3.4	(1.1)

Table 7
High School Science and Resource Management Career Preparation (N=13)

Skill/Knowledge	Strongly Disagree (1)		Disagree (2)		Undecided (3)		Agree (4)		Strongly Agree (5)		Total (1–5 Scale)	
	Percentage	#	Percentage	#	Percentage	#	Percentage	#	Percentage	#	Mean	Standard Deviation
39. I can explain how computer applications are used in science	0%	(0)	8%	(1)	31%	(4)	54%	(7)	8%	(1)	3.6	(.8)
40. I can explain how resource managers use technology to analyze data	0%	(0)	8%	(1)	31%	(4)	62%	(8)	0%	(0)	3.5	(.7)
41. I want to learn more about using technology in science or resource management	0%	(0)	0%	(0)	0%	(0)	54%	(7)	46%	(6)	4.5	(.5)
42. I have been involved in activities that help me think about science/resource management career options	0%	(0)	0%	(0)	8%	(1)	54%	(7)	38%	(5)	4.3	(.6)
43. I know which classes I should take to help me succeed in a science career	0%	(0)	15%	(2)	8%	(1)	38%	(5)	38%	(5)	4.0	(1.1)
44. I know of steps I can take to prepare for a career in science/resource management	0%	(0)	15%	(2)	31%	(4)	31%	(4)	23%	(3)	3.6	(1.0)

Table 8
Middle and High School Proficiency with SCANS Skills (N=46)

Skill	Bad News (1)		Not Bad, Could Be Better (2)		OK (3)		Quite Good (4)		I'm Great (5)		Total (1–5 Scale)	
	Percentage	#	Percentage	#	Percentage	#	Percentage	#	Percentage	#	Mean	Standard Deviation
45. I plan my time, money, materials, and space to get things done.	2%	(1)	17%	(8)	41%	(19)	28%	(13)	11%	(5)	3.3	(1.0)
46. I work well on teams, teach others, and work well with people from culturally diverse backgrounds.	0%	(0)	2%	(1)	37%	(17)	35%	(16)	26%	(12)	3.8	(.8)
47. I think creatively to imagine new ideas.	0%	(0)	11%	(5)	15%	(7)	39%	(18)	35%	(16)	4.0	(1.0)
48. I use logical reasoning to make decisions.	2%	(1)	7%	(3)	43%	(20)	30%	(14)	17%	(8)	3.5	(.9)
49. I take careful steps when I am trying to solve problems.	4%	(2)	11%	(5)	30%	(14)	37%	(17)	17%	(8)	3.5	(1.0)
50. I can draw conclusions from reliable evidence. (H.S. only, N=13)	0%	(0)	15%	(2)	31%	(4)	31%	(4)	23%	(3)	3.6	(1.0)

Table 9
Middle and High School Proficiency with Basic Academic Skills (N=46)

Skill	Bad News (1)		Not Bad, Could Be Better (2)		OK (3)		Quite Good (4)		I'm Great (5)		Total (1–5 Scale)	
	Percentage	#	Percentage	#	Percentage	#	Percentage	#	Percentage	#	Mean	Standard Deviation
51. Overall Basic Skills (H.S. only, N=11)	0%	(0)	9%	(1)	45%	(5)	27%	(3)	18%	(2)	3.5	(.9)
52. Reading	2%	(1)	2%	(1)	35%	(16)	20%	(9)	41%	(19)	4.0	(1.0)
53. Writing	4%	(2)	9%	(4)	33%	(15)	24%	(11)	30%	(14)	3.7	(1.1)
54. Mathematics	7%	(3)	4%	(2)	20%	(9)	24%	(11)	46%	(21)	4.0	(1.2)
55. Speaking	17%	(8)	9%	(4)	28%	(13)	20%	(9)	26%	(12)	3.3	(1.4)
56. Listening	0%	(0)	9%	(4)	15%	(7)	48%	(22)	28%	(13)	4.0	(.9)

Table 10
High School Motivators for Attending Salmon Camp (N=13)

Motivator	Not Important (1)		Somewhat Important (2)		Important (3)		Very Important (4)		Total (1–4 Scale)	
	Percentage	#	Percentage	#	Percentage	#	Percentage	#	Mean	Standard Deviation
57. Working with Scientists	8%	(1)	23%	(3)	31%	(4)	38%	(5)	3.0	(1.0)
58. Camping/Being Outdoors	8%	(1)	31%	(4)	38%	(5)	23%	(3)	2.8	(.9)
59. Location	23%	(3)	0%	(0)	31%	(4)	46%	(6)	3.0	(1.2)
60. The Native American Connections	8%	(1)	8%	(1)	31%	(4)	54%	(7)	3.3	(.9)
61. Being with Friends/ 62. Making New Friends	0%	(0)	46%	(6)	15%	(2)	38%	(5)	2.9	(1.0)
63. Reimbursement (Getting Paid)	31%	(4)	38%	(5)	15%	(2)	15%	(2)	2.2	(1.1)
64. Learning More Science	8%	(1)	15%	(2)	54%	(7)	23%	(3)	2.9	(.9)
65. Using Science in the Real World	15%	(2)	8%	(1)	38%	(5)	38%	(5)	3.0	(1.1)

Table 11
SCRT Student Survey Subscales

Subscale Items (*Number of Items in Subscale*)	**Mean* (1–5 Scale)**	**Standard Deviation**	**Valid N**
Middle School Science Self-efficacy *Items 1–7 (7 Items)*	3.3	(.3)	33
High School Science Self-efficacy *Items 1–12 (12 Items)*	3.8	(.7)	13
Proficiency with Basic Technology Tools *Items 13–19 (7 Items)*	3.7	(.4)	13
Proficiency with Advanced Technology Tools *Items 20–27 (8 Items)*	3.4	(.6)	13
Internet Proficiency *Items 28–34 (7 Items)*	3.8	(.8)	13
Graphics Technology Skills *Items 35–38 (4 Items)*	3.7	(.8)	13
STEM Career Preparation *(Items 39–44 (6 Items)*	3.9	(.5)	13
SCANS Skills *Items 45–50 (6 Items)*	3.6	(.6)	46
Basic Skills *Items 51–56 (6 Items)*	3.8	(.6)	46

*NOTE: For calculating subscale data, negatively worded items were reversed to generate means that consistently report higher ratings as more positive.

Table 12
Science Classes taken by High School Students during the School Year Previous to Summer Session (N=13)

Class	2007–2008
General/Integrated	
7th Grade Science	
General Science	
Advanced Science	
Integrated Science	1
Science Inquiry	
9th Grade Science	1
Life Sciences	
Agricultural Science	
Anatomy	
Biology	5
Advanced Placement Biology	2
Honors Biology	
Field Biology	1
Life Science	1
Horticulture	
Oceanography/Marine Biology	
Zoology	
Chemistry	1
Chemistry-Food Science	1
Introduction to Chemistry	
Earth Science	
Ecology	2
Environmental Science	1
Environmental Conservation	1
Health	
Health Occupations	
Physical Science	2
Physics	2
Physics (AP Calculus-Based)	
Science and Sustainability	1
Salmon Camp	1
Did not remember	
None	1

Areas Students Wanted to Focus on in Salmon Camp (students chose two areas)

Focus Area (Number of Middle or High School Students)	Percentage of Students Who Chose Area (Number of Students)
Information Technology (N=46: MS and HS)	26% (12)
Science (N=46: MS and HS)	63% (29)
Ecological Relationships and Ecosystems (N=13: HS)	38% (5)
Interpersonal Skills/Getting along with Other People (N=46: MS and HS)	54% (25)
Critical Thinking/Problem Solving (N=46: MS and HS)	59% (27)

Rationale for Choosing Information Technology as Focus Area N=12

Why are you interested in information technology?

I can learn fast and want to learn more about using it so I can use it to collect and present data faster.
Because in my future I will be working with technology its basically going to take over someday anyway.
Because I like to play with and use new technology that is interesting and different.
I like technology
You kinda need that in the world. We use them a lot and probably are going to use them even more in the future so I better learn now.
I like technology
Because it will help me in the future.
Because it will help me make decisions and in jobs I may want.
I'm not good at technology.
This could help me further my tech skills.
Yeah I think it is really cool…and interesting
Because I pay attention.
Just did.

Rationale for Choosing Science as Focus Area
N=29

Why are you interested in science?

I would like to know about overall science and facts…
Science is one of my favorite subjects and I want to be a wildlife veterinarian - so I'll have to use science in the future.
Because I came to learn more about science, and I feel that science is the further.
I feel like I can never get enough information on science sometimes I need to hear things twice to remember them.
Science will help me in the future and I think that it is very interesting and exciting to know and learn.
Because science is fun to me so I would like to learn more about it.
I like to help the environment and I think science help us get an better understanding of what we are doing and keep organized in things we are pursuing.
Because science is all around us and impacts everything.
I would like to learn more about science because in the future I would like to have a career in science in either biology or geology
It's ok.
I think I'm good at science and learned more about science coming to camp.
I love all kinds of science; When I'm older I want to be a marine biologist.
I'm good at science I like science.
I want to become a veterinarian because I like animals of ALL kinds so I need to know as much science as possible to make that possible…
I go to salmon camp to learn science.. I don't usually remember stuff I learn in school so it's a good refresher.
The experiments.
Because it will help me throughout my life.
I choose science because I think that's one of my skills.
I'm not good at science.
I'm interested in science because there are things that I'm not aware of. I want to learn new things that I don't know. I want to learn new things about the earth, nature, etc.
I love science and experiments.
Science, because when I go back to school I will feel more comfortable when I do tests.
Because this camp could help me further my science skills.
I enjoy science so much its really fun.
Just it did.
To learn more stuff.
I love the nature and how things happen. I think I could learn more and help the world and ecosystem.
I WANT TO LEARN.
Uhh, because I like science.. Yeah.

Rationale for Choosing Ecological Relationships and Ecosystems as Focus Area (High School Only) N=5

Why are you interested in ecological relationships and ecosystems?

I would like to know more about the environment.
I'm going to have a science major and it probably will be in the environmental science.
I worked on all of the ecosystems and I think that I need to work on it a lot more than I should have.
I think it would be a good thing to learn about this.
In a science career I'll most likely deal with relations between different organisms.

Rationale for Choosing Interpersonal Skills as Focus Area (High School Only) N=2

Why are you interested in interpersonal skills?

I'm not really sure but I like helping people. I like helping people with their relations and their personal problems, it gives me a state of mind knowing I can do a lot just by explaining things or just giving advice.
I think I would probably need this to run a coffee shop.

Rationale for Choosing "Getting Along with Other People" as Focus Area (Middle School Only) N=23

Why are you interested in getting along with other people as a focus area?

I'm good with getting along with other kids because I like to get to know other kids.*
I am really good at talking to people!!!!!*
I'm good at it.
I need to work on this because I have to learn how to control my anger.*
Because I'm funny and I like to help people in need….and I love friends!*
It's all right.
Because it will help get a better job.
I feel that I've got along with people really good.*
Most of the time I get along with other people most of the time.*
I like to meet new people a lot of the time.*
I believe that everyone should be friends with everyone, and I try to be as nice as I can.*
I get along with others because I am friendly.*
Cause I don't get into fights that much.*
I'm with other people.*
I'm pretty good at it.
Definitely, getting along with others is very important to me.*
Because I meet new people.*
I always think people can learn more about other people and their feelings. If Salmon Camp can help me with that then I'll come.*
I'm great with getting along with other people as long as they have no problems with me.*
I am really good at getting along with other people.*
So I can meet new people.*
I love meeting new people and getting to know them. I like making new friends and getting along with other people.*
Because I like meeting new people!*

Rationale for Choosing Critical Thinking as Focus Area (High School Only) N=7

Why are you interested in critical thinking?

I like having to think hard to figure out hard problems…
Critical thinking is important when you are trying to solve a problem-so it would be important to learn more about it.
I think it is really cool when or group leader "Joseph" went into detail about any of the topics the people in our group brought up, for example we talked for about a half an hour just about seaweed.
Because I'm not all that great in this subject.
I need to understand way more of the concepts than I usually can.
Because you gotta be able to think and conclude things. If you don't you're almost kinda useless.
I think I could use this a lot in the future and now even.

Rationale for Choosing Problem Solving as Focus Area (Middle School Only) N=20

Why are you interested in problem solving?

I like to solve problems mostly my friends problems and I think I'm really good at it.
I'm good with solving problems because I take my time on the questions and I go threw the problems 3 times.
I can solve a lot of problems!!!!!
I'm good at it.
I need to work on this because sometimes I make the wrong choices and I need to get better at learning what is wrong and what is right.
I'm so bad.
I love problem solving, I think I'm good at thinking on my feet, and solving riddles.
I love problem solving a lot and I am really good at it.
Because I can solve it in my head and solve the problem.
I like to be friends with everyone and if I have a problem with someone I try to solve it quick so that we can be friends again.
Break up fights.
I'm interested in problem solving because I want to learn how to deal with conflicts.
I'm very good at it.
I can work on it a little bit more.
It's fun for me, and I'm good at it.
Problem solving is very important, if not you might hold an grudge forever.
It's important for people to learn how to solve their own problems in life because you won't always be a child. Learning how to solve problems by yourself can help you in the future.
I'm actually really, really good in math so I am seriously good with problem solving.
I am really good at problem solving because I can solve problems easy.
I LIKE TO SOLVE PROBLEMS.

Anticipated Gains from Salmon Camps
(Middle School Only) N=27

What do you hope to gain from Salmon Camp?

Knowledge (4)
I expect to gain knowledge from the things they do here.
I want to learn more about the environment than I know and what they don't teach me in school and what will help me in the future years of my school.
Science…I need lots more animal science and I would like to have fun in the process! Lol :) ……I hope to gain some more social skills too.
I want to learn the basics I think everyone should know and the stuff I am interested in. I love the beach and I got 2 go to it. I learned a lot while I was here.
Respect
The knowledge of the types of plants.
I think I will gain hope in camping and being stuck in the wilderness.
I hope to get smarter at things and get better at using computers and technology.
A lot of new stuff that I could learn and it will help me in school.
Well I do not know at this point. I also expect a lot from salmon camp.
Friends of course. I want to learn more about science and to learn more about the earth we live on.
To find some new things that I don't know.
I gain form salmon camp outdoor skills and get along with everyone here.
I hope to gain more awareness of our earth and nature. I also hope to gain some knowledge about trees, plants, what to eat and what not to eat when I'm ever lost, etc.
To keep in touch with people I met here.
If I get stuck in the woods I'll know what to eat and what I can't eat.
Responsibility and life lessons.
I hope to learn about science, I hope to get more involved with the ecology, I wanna be able to get along with everyone, and have fun!
What I hope to learn from Salmon Camp is to get a better understanding of science, people, animals, etc. It never hurts to know information.
I really don't know what to gain from salmon camp.
Get smarter.
I hope to get better at using computers.
How to learn how to do stuff I never knew.
I want to learn more about the earth and nature. I hope to come every year until I graduate high school. I know it puts good experience on your college application.
LEARNING
I hope to learn new things and make a few good memories :D

Appendix I
Results from Summer 2008 In-Camp Interviews on Salmon Camp Research Team (SCRT) Participants' Interests in Careers and Job Skills

Introduction

This document contains results from in-camp interviews conducted with OMSI's Salmon Camp Research Team (SCRT) summer 2008 high school age participants. These results are to be considered along with results from other methods (e.g., pre-post annual assessments, end-of-session feedback, and other logistical documents). The results are intended to help guide camp improvements with respect to the Salmon Camp objectives.

Four SCRT high school camps were held in the summer of 2008 during the months of June through August. The camps were held in four different geographical locations—Idaho, Oregon, California, and Washington. Each camp was two weeks long and all shared common curriculum goals related to technology and natural resource management, although the exact itineraries and activities were different between locations. That is, despite the unique geographical regions, they were not intended to have a unique focus on any particular area of technology or science.

The in-camp interviews were conducted with participants near the end of the camp experience. They were intended to yield data related to Salmon Camp Renewal impacts. Results from the interviews should help staff members better understand participants' interests in careers and job skills and how to adapt the camp to serve those interests.

In-Camp Interview Method

There were a total of 25 SCRT high school participants (18 male and 7 female) across all of the four camps. This number represents a duplicate count since some participants attended more than one camp. There were nine participants in the Idaho camp, four participants in the Oregon camp, eight participants in the California camp, and four participants in the Washington camp (Table 1). One participant attended all four of the high school camps; one participant attended three of the camps; and three participants attended two of the camps. All of these participants completed an interview at each camp. This resulted in a total of 17 unique Salmon Camp participants (13 male and 4 female), 12 of which attended only one camp, and five that attended more than one camp. For the purposes of this report these five participants' most recent interview was used for the data analysis. While some of their responses to the interview questions differed between the camps, no major differences were documented, and some participants' answers clearly showed a more defined progression from camp to camp (e.g., the most common progression was in the science careers question—for one participant "biology or geology" for the first camp he went to and only "biology" for the last camp he went to).

Table 1. Participation in summer 2008 camps and in-camp interviews.

Location	Female	Male	Total	Total Used
Idaho camp participants	3	6	9	5
Oregon camp participants	2	2	4	2
California camp participants	1	7	8	6
Washington camp participants	1	3	4	4
Total camp participants	**7**	**18**	**25**	**17**

Over half of the participants had attended other SCRT camps or programs during the 2007–2008 academic year. Of these, a total of three participants attended a weekend enrichment program, seven attended a fall break program, and six attended a spring break program.

The in-camp interview guides were created to learn more about the participants' interests in science careers, computers and technology, work experience and skills, the relationship of SCRT to success in school, and future plans. The in-camp interview guides were based on the instruments used for the 2008 spring break program interviews, which have been used for the past three years (Appendix B-2).

In-camp interview procedure

The in-camp interviews were conducted near the end of the camps so that participants could share their interests after exposure to SCRT. An SCRT staff member conducted the interviews using pen and paper to take down notes as she talked with the participants. For consistency, the same SCRT staff member conducted all of the in-camp interviews.

In-Camp Interview Results

Each section of the interview guide contained both categorical and open-ended questions. The responses are totaled for the categorical questions for each section. The open-ended responses are totaled and grouped by any meaningful groupings. Totals may not add up to 17 because not all participants answered every question and in some cases participants gave multiple responses for the same question.

Camp participants were asked if they could see themselves working in a science career some day. The majority of the participants (13 of the 17) said yes, two said no, and two said maybe (Table 2). It is important to keep in mind that only applicants that were interested in careers related to science and resource management were invited to participate in the camp.

Table 2. Responses when asked if participants could see themselves working in a science career some day.

Response	Total
Yes	13
No	2
Maybe	2

Next, participants were asked to name the science career they could see themselves working in one day. The most frequent answer was marine biology/fisheries (five of the participants). Interestingly, marine biology and/or fisheries have consistently been the most commonly reported response from all of the previous SCRT programs. Careers related to biology were the second most frequent response; additionally, many of the other careers listed had a more natural resource trend (e.g., environmental sciences, forest management, and wildlife vet). See Table 3 for all of the responses.

Table 3. Science careers participants could see themselves working in one day.

Category of response	Total
Marine biology or fisheries	5
Biology/Botany	3
Not sure	2
Army Corp of Engineers Astronomy Environmental sciences Forest management Medical Wildlife vet	1 each

In order to gain insight into how participants' science and career interests are served by SCRT, participants were asked if Salmon Camp helped them explore their career interest and, if so, how. Almost all participants (14) said that Salmon Camp had helped them explore their area of interest, while two said sort of, and one said he was not sure if it helped (Table 4). None of the participants definitively reported that Salmon Camp did not help them explore their career interests.

Table 4. Responses when asked if Salmon Camp had helped participants explore their career interests.

Response	Total
Yes	14
Sort of	2
Not sure	1
No	0

When asked *how* Salmon Camp has helped them explore their area of interest, the responses fell into four categories: 1) expanded thinking on career options, 2) gave experience in the field, 3) met real scientists and made connections, and 4) helped gain knowledge. See Table 5 for all responses by grouping.

Table 5. Responses when asked how Salmon Camp helped participants explore their area of interest.

Category of response	Total	Responses
Expanded thinking on career options	8	• Because my interest has increased in fish • Broadening my view of careers • Career exploration (x2) • Exploration of careers (x2) • Increased options • Interested in the careers/animals
Gave experience in the field	6	• Attendance of hatchery • Hands on learning, what to expect while on the job • Opportunity to see job first hand • The activities at the hatchery • Visit fish hatcheries • Visit to hatcheries and fisheries
Met real scientists	2	• Introduction to people and careers • Make connections with professionals
Helped gain knowledge	1	• Increased knowledge in plants

Next, participants were asked if they had suggestions on how Salmon Camp could help them explore their career interest more. Just over one-third of the participants (7) did not have suggestions or were satisfied with how Salmon Camp was helping them explore their career interests. Several participants made suggestions to offer additional or extended activities or offer additional information about specific careers or opportunities for internships. Interestingly, most of the suggestions dealt with making better connections with people already in the field, such as through internship opportunities. The suggestions and comments from the participants are listed in Table 6.

Table 6. Suggestions for how Salmon Camp could help participants explore their interests more.

Category	Total	Suggestions
Careers	5	• Get to know workers better—more career connections • Internships • Look at more careers/opportunities • Seeing more careers in science • Work alongside them (internships)
Activities and increased knowledge	5	• Gain knowledge about the fish • Longer trips • More hands on • More variety of ecosystems we travel to • Stay at fish study areas longer

The final question in this section was *"What have you learned about the integration of traditional Native American knowledge and modern science?"* This question was added to the interview guide during the summer of 2005 and has not been asked at all previous camps or programs. A little over half (9) of the participants were able to give specific responses about what they had learned and these are listed in Table 7. These are grouped into two categories: 1) traditional knowledge integrated with modern science and 2) specific traditional methods. Of the remaining eight participants, six answered that they were not sure or did not know if they had learned anything about the integration of traditional Native American knowledge and modern science, one answered that he hadn't learned anything about the integration of the two, and one participant answered that he had learned a lot, but couldn't give a specific example.

Based on previous in-camp interviews, it was suggested that if SCRT staff had intended to stress that traditional knowledge and modern science are integrated, then they might consider how to increase the likelihood that all of the participants take away that message. When compared to previous years' data, it appears that SCRT staff has successfully increased the number of participants that take away the message that traditional Native American knowledge can be integrated with modern science.

Table 7. What participants learned about the integration of traditional Native American knowledge and modern science.

Category	Total	Responses
Traditional integrated with modern	6	• A lot of modern science is derived from traditional knowledge • A lot of tribes have to learn science to fight for their rights • GPS units to restore land back to traditional habitats • Buildings carried over to white world • Use modern science to keep lands • You must have science to gain back tribal rights
Specific traditional methods	4	• Biodiversity—controlled burns • How to build a canoe • Protect their rivers, tribal rights • Tribes—habitat restoration

Computer and technology interests

The next section of the interview explored the computer and technology interests of the participants. First they were asked if they thought that Salmon Camp had made them more aware of how computers and technology are used in science/resource management. Almost all of the participants answered yes (15), one said sort of, and only one said no (Table 8).

Table 8. Responses when asked if Salmon Camp had made them more aware of how computers and technology are used in science/resource management.

Response	Total
Yes	15
Sort of	1
No	1

As a follow-up question, the participants were asked if they could give an example from the camp of how computers and technology are used in science/resource management. Almost all (14) of the

participants were able to give at least one specific example of technology they used during the camp. Of the remaining three participants, two were not sure of a specific example of the use of technology in science/resource management. The most frequent technology mentioned was GPS, which was also the technology most frequently mentioned during all of the previous SCRT program interviews. Compared to previous years, participants seemed to be spread more evenly across all of the technologies they mention using, including: fish tagging, the FishXing software package, GIS, and presentation software. See Table 9 for the responses.

Table 9. Participant's examples of how computers and technology are used in science/resource management.

Category of response	Total	Sample responses
GPS	5	• GPS (x2) • GPS mapping • PDA's-data collection • Working with GPS
Fish tagging (California camp)	4	• Electro fishing • Fish tags • Radio tagging/tracking • Pit tagging in fish
FishXing software (California camp)	3	• FishXing (x3)
GIS	3	• GIS—managing of forests • GIS mapping • GIS—show restoration projects
Presentation software	2	• PowerPoints • PowerPoint presentations
General	5	• Culvert survey • Forest management • Gather information • Microscope with computer • River quality

Participants were also asked how Salmon Camp could help them learn more about computers and technology. Of the 14 participants who answered this question, nine responded that they would like to use more or newer types of technology and seven would like the opportunity to use the technology more throughout the program; three participants did not have suggestions. Compared to previous years, 2008 participants mentioned that SCRT should display newer technologies that haven't already been explored by the camp. All of these participants have experienced previous SCRT programs and would like to see newer technology related programs. SCRT staff may consider updating the technologies they present or present more advanced techniques related to these technologies when they know returning participants will be involved. See Table 10 for the complete list of responses.

Table 10. Responses when asked how Salmon Camp can help participants learn more about computers and technology.

Category of response	Total	Responses
Use more/newer types of technology	9	• Knowledge of satellite operations • New technology (x3), computers • Show how to make a map • Show more advancements in technology • Teach Microsoft programs (Excel, etc.) • Usage of technology • Use more variety
Use technology more	7	• Encompass the programs • Learn more about Trimbles • More activities with computers and technology • More GPS projects • More time • More work with technology • Use technology longer

Work experience and skills

The work experience and skills section of the interview started by asking participants if Salmon Camp has helped them build skills they might be able to use at a job later on. All of the participants (17) said that Salmon Camp did help them build job skills. Next the participants were asked to name the skills Salmon Camp has helped them build. Participants' responses tended to group into four main categories (teamwork, social skills, communication, and leadership) and one more general category. The responses are grouped by experience or skill in Table 11.

Table 11. Skills participants might use in a future job.

Category of response	Total	Reponses
Teamwork	7	• Teamwork (6) • Work with others
Social skills	6	• Compromising • Involvement • Patience • Respect • Self control • Social skills
Communication	6	• Communication (4) • Communication skills • Communication with others
Leadership	3	• Leadership • Leadership skills (2)
General	6	• Appreciation/love of nature • Count fish • Learning how to use GPS and data collection • Perseverance • Problem solving • Technology skills; water quality, ability to be a fish technician

Participants were next asked about how the camp has helped them develop these skills. Every participant gave an answer to this question. Almost two-thirds of participants (11) mentioned that the group setting or working as a team helped develop job skills. Just over half (9) mentioned a specific job skill or activity that Salmon Camp helped them develop. The responses are listed in Table 12.

Table 12. Participants' responses to how the camp had helped them develop job skills.

Category of response	Total	Reponses
Group setting	11	• Being in a group • Being with peers • Being with peers and helping • Step up in groups, getting along • Talk with others, close groups • Talking with others • Working as a team • Working in a group for long periods of time • Working in groups • Working together, talking • Working with others
Skill example	7	• Aid of projects • Getting up the hill—hiking • Problem solving • Shown me how to resolve issues without conflict • Tasks asked to do • Temper control • Working out problems with others
Activity example	2	• Fish surveys on the Smith River, CA • Teachings through work with biologists

For the final question in this section, participants were asked what Salmon Camp could provide to help them build job skills further. Just under half of the participants (8) did not have a suggestion or didn't know what Salmon Camp could provide. The rest of the participants could be split into two categories of responses: 1) four participants suggested new things Salmon Camp could do, and 2) the other five participants suggested that Salmon Camp do more of what they are already doing. One participant even suggested that the best way to build job skills was to keep Salmon Camp going. The responses are listed in Table 13.

Table 13. Suggestions for what Salmon Camp could provide to help participants further develop job skills.

Category of response	Total	Reponses
New suggestions	4	• Diverse jobs • Do your own research projects • Internships • Work on increasing public speaking skills
More of the same	5	• Keep the camp going • More adventure • More opportunities to see job skills in action • Work out issues • Working in bigger groups

Connections to school

The connections to school section had two slightly different sets of questions, one for participants who had attended a Salmon Camp program before, and one for new participants. Just over one-third of participants (6) were new to the Salmon Camp program. As mentioned earlier, five participants attended more than one Salmon Camp program during the summer of 2008. While most of these participants (4 of 5) had attended another Salmon Camp program prior to the summer of 2008, one participant was new to the program and is counted in the above number. While the questions were worded slightly different depending on whether the participant was new to the SCRT program or not, the responses are combined in this report because there was no difference in how each group answered the questions. See Appendix B-2 for both versions in the *Connections to School* section.

Participants were asked several questions related to Salmon Camp and its connections to success in school. Participants were also asked if they were receiving school credit for their participation, if they were interested in having mentors and internships, and whether or not they were involved with extracurricular activities.

First, participants were asked if their participation in Salmon Camp helped/will help them succeed in school. Over three-quarters of participants (13) answered yes, one said sort of, and three said they were not sure (although two of these three gave specific examples of why it helped them succeed in school). As a follow-up, the participants were asked why or why not (Table 14). Participants' responses fell into either general school skills or science related skills. One participant even claimed that everything he learns about during school, he has already learned about through Salmon Camp.

Table 14. Responses to how Salmon Camp had helped participants succeed in school and why.

Response	Total	Why
Yes	13	**General school skills:** o All the things I know from school I have already learned at camp o Build on skills gained o Involvement in educational activities o Knowledge gained at camp can be used in school o Learning better outside of a classroom o More involvement o Work ethic increased **Science skills:** o Confidence in science increased o Increase in interest in science o Increase science knowledge o Science information learned before the class taken o Teamwork and science skills
Sort of	1	• Knowledge increase
Not sure	3	• First summer • It has taught me more advanced skills • Learning different things

Participants were asked if they thought that Salmon Camp was helping them develop the knowledge and skills to take advanced math or science classes. Again, just over three-quarters of participants (13) thought it was, two said they were not sure, and two said no (one of the two who said no has already been placed in advanced classes). When asked why, most of the participants mentioned how the skills and knowledge learned at camp could be used in advanced classes. Interestingly, one participant even mentioned how "not sticking with the curriculum" helped him develop skills not learned in class. Also, another participant mentioned that Salmon Camp teaches him about math without even realizing it. All of the responses can be found in Table 15.

Table 15. Responses when asked if participants thought Salmon Camp was helping them develop the knowledge and skills to take advanced math or science classes.

Response	Total	Sample reasons why
Yes	13	• Ability to do science at camp = ability to do science at school • Doing things you wouldn't do in a class; not sticking with the curriculum • Interest increases • It will help in biology being taken this year • Knowledge gained from camps used in school • Learn skills to aid in advanced classes • Learning things I didn't know • More of an advantage than public school kids • Pushing me to learn more • Teaches math when I don't realize it • Technology on computers • Worked on math skills
Not sure	2	• If I participate in more camps—go toward advanced science
No	2	• Already placed ahead • In school—theoretical, Salmon Camp—real life

Participants were asked if they have received school credit for their participation in Salmon Camp and, if not, did they know how to find out if they could get credit. Just under half of participants are already receiving credit (8), two think they might be receiving credit, one is planning on receiving credit in the fall semester, three did not receive credit but know how to, and three participants did not receive credit or know how (Table 16). When compared to previous years, a much higher percentage of participants from the 2008 summer camp are receiving credit (or might be) for their SCRT experience. This may be attributed to staff helping participants find out how to receive credit, or that the SCRT program is becoming more widely known as an educational outreach program.

Table 16. Responses when asked if they have received or know how to receive school credit for participation in Salmon Camp.

Response	Total
Yes	8
Maybe receiving credit	2
Plan on credit in fall term	1
Did not receive credit but know how to	3
Did not receive credit or know how	3

Next participants were asked about mentors and internships. When asked if they were interested in having an active mentor this year, eleven said yes, three said they were not sure, and three said no. Participants were also asked why they did or did not want a mentor in the coming year; most thought it would be most useful to have a mentor to keep them on track or in general to help them out (see Table 17). The percentage of participants that would like a mentor has steadily increased over the years in SCRT programs, with almost two-thirds of 2008 summer camp participants interested in a mentor.

Table 17. Whether participants would like a mentor and why they want or don't want a mentor.

Response	Total	Sample reasons why or why not
Yes	11	• Check in to stay on track • Difficult to manage skills for the future • Help keep me on track • Help me with my work • Help stay on track • Help with what I need • Improve my schooling • Keep on track for graduate • More skills gained, responsibility • Ready for college preparation • To get ahead
Not sure	3	• Benefits to schooling • Help me, some help needed (reading) • Never had one, but sounds interesting
No	3	• Doesn't think he needs one • Don't understand it • Learn on my own

Participants that said they would want a mentor or were not sure if they wanted a mentor were also asked who they would want as a mentor. Six of the 14 gave a specific name of someone they would want as a mentor, all of which were SCRT instructors. Three participants could name a general category of who they would want as a mentor (e.g., school counselor), and five participants were nonspecific (e.g., someone who can…) or were not sure of whom they would want (Table 18).

Table 18. Participants' choices of who they want to mentor them.

Response category	Total	Sample examples of mentors
Specific name	6	• Cara and Glen Lamont • Cara, get to college • Cara Holem • Cara or Josh • Josh Mclaughlin (x2)
General category	6	• Anyone that would motivate me • Native relative • People at her church • Someone in same interest of careers and get along well • Someone who can stay focused • School counselor
Not sure	2	• Not sure (x2)

When asked what they would like to see happen throughout their mentorship, participants gave two responses: either that they would like help in school, or that they want their mentor to help them with their future career and college options (Table 19).

Table 19. Participants' choices of what they would like to see happen.

Response category	Total	What they would like to happen
Help with school	7	• Benefits to schooling • Help me with my work • Help with school • Improve my schooling • Look at classes to take • Staying on track to graduate • Tutoring
Help with future plans or college	6	• Aid in college decisions • Get to college • Job experience • Help with college—future • Career exploration • Exploration of science and careers
Not sure	2	• Not sure (x2)

When the participants were asked if they would be interested in an internship this year, three-quarters of participants (13) said yes, they were interested. Two participants said they were not sure, and two said no, they would not be interested in an internship. Of the participants who said no or that they were not sure, two said they were not quite old enough, one said he was not sure how to get one, and the other participant said he already knew what he wanted to do as a career. When asked why they would be interested in an internship, responses included building their resume, job experience, and future plans (Table 20).

Table 20. Participants' interest in an internship and explanation of why or why not.

Response	Total	Sample reasons why or why not
Yes	13	• Build my resume • Get ahead • Getting ahead • Goals for the future in my career • Help build job skills • Job experience (x3) • Looks good on resume (x2) • Money and job experience • Stay active, help for the future • Work while I get paid to learn = cool
Not sure	2	• Not now, but as a junior or senior in high school • Not sure how to get into an internship
No	2	• Already knows what he wants to do as a career • Not old enough

Participants who were interested in an internship were also asked to list what type of internship they would be interested in pursuing (Table 21). While some of the participants listed specific areas of interest (e.g., marine biology, astronomy), participants seemed less defined than previous years. Their

responses tended to be much more general (e.g., something in…) and many mention more than one field (e.g., pilot or farming).

Table 21. Total responses for participants interested in internships this year and the kinds of internships that interest them.

Response	Total	Types of internships mentioned
Yes	13	• Architecture • Astronomy • Intern at the Oregon Research Hatchery Center • Marine biology • Math or science related • Mechanics—cars • Oregon Research Hatchery Center • Pilot, farming • Something in math or environmental science • Something in natural resources or art • Work at hatchery or something in forestry • Working at a vet clinic
Not sure	2	• Marine biology, oceanography—study sharks • Something in architecture

The connections to school section ended with the question, *Are you involved in out of school/extracurricular activities related to science, math, or the environment? (e.g,. ecology/science club, Matheletes, science fair, ivy pulls/other volunteer restoration activities).* Twelve participants are currently involved with extracurricular activities while five are not (Table 22). Just under half of the participants (8) are involved with the Native American Youth and Family Center (NAYA). Most of the other extracurricular activities listed had some math or science theme.

Table 22. Participants' extracurricular activities.

Responses (12)
• Cleanup/removal of English ivy
• FBIA
• Matheletes
• MESA—Math Engineering Science Achievement (x3)
• NAYA (x8)
• Science fair (x2)
• Read math books to get ahead
• Science and Math (SAM)
• SOLV

Future plans

The final section of the interview focused on participants' future plans. Participants were asked if they planned on attending future Salmon Camp programs and why they would or wouldn't attend future programs. All of the participants said they plan on attending future Salmon Camp programs. Almost all of the participants (15) said they planned on attending future Salmon Camp programs due to the educational experience they had during SCRT programs or the educational value of the program. Just over one-third of participants (6) said their interest in attending future Salmon Camp programs is

because Salmon Camp is fun. Compared to previous years, a higher percent of participants during the 2008 summer camp listed a learning experience as a reason to come back. All of the responses for why participants planned on attending future Salmon Camp programs are listed in Table 23.

Table 23. Reasons why participants plan on attending future programs.

Responses (17)
• Broaden what I want to go into biology
• Fun to learn!
• Gain knowledge
• Get out of my "norm"
• Good past time, have a great time, learn a lot
• Hands on learning
• Helping to further my education, helping to keep me out of trouble
• Helps me learn
• Increase science knowledge
• It's fun, learning hands on
• It's really fun
• Learn more!
• Learn more, gain more experience
• Nice to meet people, learning environment
• Really good experience and learning
• "They're extreme!"
• They're fun and I learn a lot of things

Next, participants were asked about their plans after high school. All but one participant plan on going to college; the one participant who did not mention college was unsure of his plans after high school. Some mentioned attending particular colleges or pursuing specific programs (e.g., wildlife biology, architecture, business). Others also mentioned traveling or getting a job before they attended college. Table 24 lists their responses.

Table 24. Participants' plans after high school.

Responses (17)
• Attend college, undergraduate in wildlife; continue education to vet school
• College, four year degree; athletics
• College, travel
• College; science or math degree
• Four year college
• Four year college at least; Oregon State or Univ. of Oregon
• Four year college, biology/ecology
• Four year college, then go on to get my doctorate
• Four year college; architecture and Native American studies
• Four year college; business and ceramics or fishers and wildlife
• Four year college; business or oceanography
• Go to college—four year degree in mechanical engineering
• Job, four year college
• Leave the country, college, fly an airplane for a living
• Oregon State University, marine biology

• Travel for a year then college • Not sure

The final interview question asked if participants were interested in serving as a Salmon Camp counselor. All of the participants said they would like to help Salmon Camp by returning as a counselor. Most of the participants said it was because they could give back to the camp or future campers and that they could teach other kids. Other participants stated how it would be a skill building experience outside of what Salmon Camp has offered them as a participant. See Table 25 for responses.

Table 25. Response when asked if interested in helping Salmon Camp as a counselor and why.

Responses (17)
• Deal with kids and teach science
• Different view of Salmon Camp
• Explore different places
• Feel like I would work well with campers
• Gain experience from different point of view
• Gain leadership skills
• Give other campers a good experience at camps
• Give same opportunity to younger generation
• Help future campers
• Help give back to the youth
• Help with jobs, future
• It's a great job, work with cool people, good on resume, keep me out of trouble
• Like the camp and staff, want to help contribute
• More trips
• Nice to teach others what I have learned
• Responsibility
• The kids will like me

At the end of the interview, participants were asked if they had any other suggestions, comments, or questions. Seven participants responded, and only two gave suggestions. The most common comment given was that the interviewer/counselor was "amazing." The suggestions included a request for better food, better tents, and a suggestion to stay at the research facilities longer. Table 26 lists all of the comments and suggestions given.

Table 26. Comments and suggestions.

Responses (7)
• Better food
• Better tents! Stay at research facilities longer
• Cara is amazing (x3)
• I hope this camp keeps going
• I love Salmon Camp!

Summary of participants' interests

The results presented in this report can help OMSI staff better understand and describe the participants in the SCRT high school camp. Although this report does not contain specific recommendations, it is expected that this general information might benefit staff as they make decisions about curriculum, extracurricular support, and educational techniques. In addition, the information can be used to describe the SCRT participants to future candidates, guest speakers, and camp partners. This report may also bring up questions that can be explored through future interviews or other evaluation techniques. The results of the 2008 SCRT summer camp interviews are very similar to the results from the previous interviews conducted during the SCRT summer camps and spring break programs.

Note: All 17 high school summer camp participants were interviewed. All of the numbers and the percentages below are out of 17.

Science career interests

- Three-quarters of participants (76%) can see themselves working in a science career some day, and marine biology/fisheries continues to be the science career interest mentioned most by participants (five participants).
- Most participants (82%) think Salmon Camp is helping them explore their career interests. When asked how, participants responded that Salmon Camp has expanded their thinking about career options (47%) and provided them with in-the-field experience (35%).
- When asked how Salmon Camp could help participants explore their interests further, most responses focused on making better or increased connections with people already in the field (29%) or increased activities related to careers (29%).

Blending traditional Native knowledge and Western science

When participants were asked what they had learned about the integration of traditional Native American knowledge and modern science, over half of the participants could give an example what they had learned. Four participants gave responses about specific traditional methods while six participants gave responses related to the integration of traditional knowledge with modern science. Interestingly, three participants gave responses related to the use of traditional knowledge or modern science to "fight for" tribal rights or "keep" tribal lands. Compared to previous years, more participants mentioned the integration of traditional knowledge with modern science. SCRT staff members have done a good job of increasing this number but may want to continue searching for ways to help all of the participants explore how the two approaches can be integrated.

Computers and technology

- Salmon Camp is making participants more aware of how computers and technology are used in science/resource management. Almost all participants (94%) were able to name a specific example of a technology they had used during the camp. GPS technology was the most frequently mentioned example (five participants), as it has been during previous programs. Participants also mentioned specific types of wildlife or water monitoring technology, software such as PowerPoint, and GIS.
- When asked how Salmon Camp could help them gain more experience with computers and technology, participants were interested in having additional or newer types of technology taught during the camp (53%) or additional time and opportunities for hands-on use of computers and different technological tools (41%).

Work experience and skills

- The work experience and skills participants said they gained during the camp were related to teamwork (41%), social skills (35%), communication (35%), and leadership (18%). Participants think SCRT is helping them develop these skills by having participants work as groups and in teams.
- When participants were asked how Salmon Camp could further help them with work experience and skills, five participants suggested that the camp could provide more of the types of experiences already provided (e.g., more opportunities to see job skills in action). Four participants suggested new things the camp could do, including more opportunities to work on public speaking skills.

Connections to school

- Most participants (76%) say that Salmon Camp is helping/will help them in school, and also that it will help them develop the knowledge and skills to take advanced math or science classes (76%).
- Just over half of participants received, or thought it was possible to receive, school credit for attending Salmon Camp (59%). Of those that did not, one participant plans on trying to get credit, and three did not know how they might arrange for school credit. SCRT staff may want to consider further supporting participants in getting school credit for their attendance.
- When asked if they would be interested in a mentor, almost all participants expressed interest in having a mentor (82%). Some participants already have mentors or people who fulfill that role. Many of the participants noted that they would like to have one of the SCRT instructors as a mentor. When asked what they would like to see happen with a mentor, most mentioned help with school (41%) or help with their future plans or college preparation (35%).
- When asked if they would be interested in having an internship, similarly almost all of the participants expressed interest (88%). Five of those participants who expressed interest in an internship listed a specific type of place they would like to intern (e.g., hatchery, vet clinic) and the rest listed an area of work in which they would like an internship (e.g., marine biology, astronomy). Participants from the 2008 Salmon Camp summer sessions were less specific about intern interests than in previous years (with responses such as, “something in math”).
- Salmon Camp instructors may want to provide additional opportunities for participants to learn about specific internship opportunities or ways to find out about these opportunities. SCRT staff could consider ways to help participants find relevant internships in science and technology.
- Just fewer than three-quarters of participants reported attending some sort of extracurricular activity (71%) with slightly less than half attending the Native American Youth and Family Center (47%). The rest of the extracurricular activities mentioned by participants were science or math related (e.g., Math Engineering Science Achievement).

Future plans

- All of the participants (100%) plan on attending future SCRT camps because they found the camps to be both educational and fun. Almost all of the participants mentioned the educational experiences at SCRT as a reason to return (e.g., helps me learn, learning hands on).
- When asked about their plans after high school graduation, all but one participant said they wanted to go on to college (94%) and some mentioned pursuing specific programs or careers (e.g., wildlife, biology, ecology, oceanography, business). The one participant who did not mention college was unsure of his plans after high school.

- When asked if they would be interested in helping Salmon Camp as a camp counselor, all of the participants expressed interest. Most explained their interest in serving as a counselor as a way to give back to the camp and help teach future campers.

Appendix J
Field Journal Abstracts

High School Idaho Session
June 15–June 26, 2008

Day 1 (June 15, 2008)
Campers drove with Dan, Josh, and Cara from Portland, OR to the University of Idaho in Moscow, ID. They "enjoyed a scenic drive, testing college dorms, test college food, exercised, rested while getting to destination."

Day 2 (June 16, 2008)
Students took a tour of the U of I campus and the Nez Perce Landmark Museum. They attended lectures, met Native students and teachers, learned about college. They met with Michael Whiteman, the CNR Associate Dean, and reported that the "U of I is a great school for science learning", and learned about financial aid and scholarships. One student felt that "to be able to ever help in salmon and ecology, a good education is needed to make a difference."

Day 3 (June 17, 2008)
Traveled to Cotton Tree Creek; they tested the pH, oxygen and nitrogen levels of the water and planted trees along the river with Ben and Jennifer. They also collected macro-invertebrates, and learned that "certain bugs tell you how clear the water is." They discussed stream restoration and understood "how one farmer can endanger an entire ecosystem and how to fix it."

Day 4 (June 18, 2008)
Traveled to Winchester Field Park. Learned about Goss Hawks and gathered tree data to help Marcie Carter with hawk research. Conducted a bird survey and listened to forestry and wildlife presentations. Students learned to "measure without having to count every single tree individually." They understood that "habitats are really important," and that "mountains are an intricate part in stream health."

Day 5 (June 19, 2008)
Students hiked 2½ miles in the Nez Perce reservation by the Snake River to build a bench and plant mile markers. Students learned the importance of packing water before a hike, and about the fragility of the grassland; "every cow has a deep impact on ecosystems."

Day 6 (June 20, 2008)
Students went to the wetlands of the Nez Perce reservation, identified plants and wetlands, did soil samples and looked at bird nests. They later listed to lectures on wetland and forestry management, learning that "wet lands hold the most life in it than any other system."

Day 7 (June 21, 2008)
Students observed and collected data from wetlands birdhouses. They also attended a Pow Wow at the Lapwai Community Center on the Nez Perce Reservation. Students learned that "wetlands are the single best area for biodiversity. They must be restored or other areas will suffer." The Pow Wow was a "cultural learning experience", and helped them "understand the original caretakers of the land."

Day 8 (June 22, 2008)
Students attended a Pow Wow at the Lapwai Community Center on the Nez Perce Reservation. They "learned about how the culture and business of a powwow are connected," and "how interconnected Nez Perce culture is to the environment." They also seemed to have learned a great deal about doing laundry in an energy efficient manner; "There are six different cycles for washing machine. Using different cycles could decrease amount of water used to help the salmon."

Day 9 (June 23, 2008)
Students attended a Pow Wow at the Lapwai Community Center on the Nez Perce Reservation. They also counted trees and measured tree growth with calipers and measuring tape on a tree farm near Craig Mountain. They learned to "measure slope and compass direction of trees" and "learned how to tell how old a tree was without drilling a hole". This helped them understand "that it is possible to restore ecosystems." Because "counting and planting trees (especially Ponderosa Pine) keeps forests and carbon cycle going," and "the planted trees help filter the water for the fishes."

Day 10 (June 24, 2008)
Campers learned different kinds of water testing, on Cotton Wood River, Clear Creek, and Little Cannon Creek. They used turbidity sensors, flow meters, pH kits, and bacteria sensors to review river health. They learned that "it's important to keep our rivers and oceans clean" because "salmon depend heavily on stream health and that stream ecosystems are exceedingly fragile." Also, that "that loopholes in law are increasingly detrimental to stream health" and how to test water without using special instruments.

Day 11 (June 25, 2008)
Fishing and salmon bake on the Nez Perce Reservation. Students watched traditional and dipnet salmon fishing, heard oral history fishing for salmon. They learned how difficult it was to catch fish with a net, and "that salmon are a key part in traditional Nez Perce life." They learned that "it is ok to eat salmon but not to over fish", and how the salmon "sustains life both for the people and nature."

Day 12 (June 26, 2008)
Last day at Salmon camp; campers packed up and returned by van to OMSI.

A few final thoughts:
"The most interesting thing during the camp was watching members of the Nez Perce harvest their fish."

"How easily one man can decimate an entire ecosystem and how much a part salmon are in Native culture."

"I liked meeting all the different and interesting people. They opened my eyes to different career fields and helped me to understand the restoration project. Plus, I experienced many things I would never have been able to without Salmon Camp."

High School Oregon Session
July 6–July 17, 2008

Day 1 (July 6, 2008)
Students drove from OMSI to the hatchery resource center in Alsea, Oregon

Day 2 (July 7, 2008)
Students toured the hatchery research center, looking at the artificial stream, conducted fish tank cleaning, and dissected salmon. "The simulated streams I think were the best part of helping me learn about salmon restoration/ecology."

Day 3 (July 8, 2008)
Students learned to "electro fish" at the hatchery research center, learning to identify fish and insects. They learned "what are the fish eating and how they grow is a big part of the big picture with restoring salmon."

Day 4 (July 9, 2008)
Students returned to the OSU Campus in Alsea and learned "how to track salmon with tags" using radio telemetry.

Day 5 (July 10, 2008)
Students took a campus tour of the OSU, and caught bullfrogs with fishnets and poles. They learned that "bullfrogs are invasive to the Pacific Northwest" and are "bad for [Salmon] habitat."

Day 6 (July 11, 2008)
Campers conducted an interview and explored the John Day Fossil Beds.

Day 7 (July 12, 2008)
Students mapped river and beaver dams in the Beaver survey using GPS units. They learned that beavers "help the river" and "can't live in dirty water."

Day 8 (July 13, 2008)
Continuation of river mapping and beaver survey in the Painted Hills.

Day 9 (July 14, 2008)
Students travel and clean van.

Day 10 (July 15, 2008)
Students travel to Warm Springs Reservation and Trout Creek Ranch to learn about river management and tour a dam. They learned that "most of Portland electricity comes from dams" and that "fish ladders help salmon pass the dam".

Day 11 (July 16, 2008)
At Trout Creek Ranch students participate in a stream survey using survey equipment with PGE, examining learning about habitat restoration and monitoring. Afterwards they have a salmon bake.

Day 12 (July, 2008)
Return to Portland by van.

High School California
High School Journal Summer Session
July 20–July 31, 2008

Day 1 (July 20, 2008)
Students traveled by van from OMSI in Portland, OR to Humboldt State University in Arcata, CA. During the drive with Josh and Kara, they discussed the travels of salmon and what they were going to do over the 12 days of camp. The students also reported that they listed to music and learned about Redwood forests.

Day 2 (July 21, 2008)
Students had a tour of HSU and the HSU Marine Laboratory in Trinidad, CA with Josh and Kara, went sea kayaking and traveled to Agate Town. Students learned "how to sea kayak and about extinct animals like birds." They also learned about Native American history, agriculture and influence, the importance of Salmon hatcheries and the threat of bird extinctions.

Day 3 (July 22, 2008)
Today's activities consisted of touring and researching fish culverts, and tide pooling. Students worked with Josh, Kara, Dan (lead instructor), David (engineer) and Johnny. They learned that "salmon go through a whole bunch of culverts to get their spawning area" and "culverts are very important for salmon." They also saw a tide pool and learned how they function.

Day 4 (July 23, 2008)
Students were based on the Yurok Reservation today. With Dan, Josh and Kara they learned about the history of the river and Yuroks, and met with people from the Yurok tribe. They discussed the culvert restoration project with Antonia Llamos, an engineer, and went on jet boats. They learned from the Yuroks that "their waters are sacred and we need to respect the land", and that "keeping rivers healthy is an important part of keeping salmon alive."

Day 5 (July 24, 2008)
Students camped and took a 5-mile hike around the Yurok Reservation and Klamath River, they spoke with a biologist and participated in fish tagging. They learned how tag fish, and its importance, and understood why dams and fishing have depleted fish populations. They understood that "there's not many fish left in the lake because of fishing done in the 1800s and 1900s." and that "salmon need good habitat to live and to spawn."

Day 6 (July 25, 2008)
Students trained to count and identify fish on the Smith River in Rock Creek Ranch. They learned how to snorkel with Thomas and identify fish. They understood that sometimes rivers are overfished.

Day 7 (July 26, 2008)
Students conducted a fish count with Rachel, Taylor, Dan and Josh along Smith River in Rock Creek Ranch using snorkel, fish counters, and wetsuits. They learned "good spots to look for Fish when they come in to spawn" and understood that "it's important to have this fish count to see if there's anything wrong with the fish's habitat."

Day 8 (July 27, 2008)
Campers continued yesterday's activities of snorkeling and fish counting on the Smith River with Dan and Josh. They finished the day with a salmon bake which was a "great experience" and tasted "awesome". They learned more about "the types of places that fish like to hide" and understood "that restoring the environment is a hard task that more kids should start to get involved in."

Day 9 (July 28, 2008)
Students used a GPS and rafted along the Deschutes River with Dan, Josh, and Cara. Afterwards they cooked and "learned how to make fry bread". They learned the fun and dangers involved in rafting, and learned the importance of serving "elders first." They understood that "we want to keep salmon, because they're culturally and environmentally important."

Day 10 (July 29, 2008)
More rafting and camping on the Deschutes River with Dan, Josh, and Cara. Students learned the importance of sunscreen, and that while "rafting is a good way of transportation" it is also very dangerous.

Day 11 (July 30, 2008)
More rafting on the Deschutes River with Dan, Josh, and Cara. They learned "how the oceanic layer and volcanic layer formed" and understood that "salmon are not the only fish that need help. Other fish that share the river need help too." One student wrote that "Salmon Camp was a great experience and the people who go and help out the camp are really awesome and I hope this program keeps going."

Day 12 (July 31, 2008)
Last day of rafting on the Deschutes River with Dan, Kara, Josh, and Alena. Afterwards students drove back to Portland. They understood that "salmon are everywhere and we still need to help them and their habitat."

Washington
High School Journal Summer Session
August 8–August 14, 2008

Day 1 (August 3, 2008)
Location: OMSI to Pack Forest
Activity: Drove, started projects, and get things rolling for camp
Researchers worked with today: Josh and Kara

Day 2 (August 4, 2008)
Location: Pack Forest - Washington
Activity: Presentation, toured Pack Forest to two waterfalls, campout, and GIS technology
Researchers worked with today: Tom and Dwayne (Forest maintenance and manager)
Students learned that "you have to wait 12 years before you can deforest an area next to an empty area," understanding that "GIS technology helps in managing forests which affect salmon."

Day 3 (August 5, 2008)
Location: Pack Forest, Nisqually Marsh, Brackett Estuary
Activity: Counting D/L ratio of plants
Researchers worked with today: Don Perry
Students learned that "estuaries are vital for salmon survival" and understood "that city development has taken 80% of estuary habitat and dikes block another 10% but work of activists and Native Americans are gaining some back"

Day 4 (August 6, 2008)
Location: Mashel River, University of Washington, Smallwood Park
Activity: Engineered log jams, snorkeling, fish count
Researchers worked with today: Don Perry, Florian
Students learned that "log jams are a main area of salmon habitat and provide bank protection" and that "fish need log jams to survive."

Day 5 (**August 7, 2008)**
Location: UW, Ferry, Elwha National Park
Activity: Lectures, campus tour, UW fish collection facility, spoke with Native recruiter
Learned that "a lot of research can be done at universities", "community helps us through college" and "must go to college to be successful in life."

Day 6 (August 8, 2008)
Location: Lower Elwa Dams, hatchery, and reservations, Elwha national Park
Activity: Learned about the history of the dams, presentation of the Elwha tribe
Researchers worked with today: Keith, Ben, Latrisha

Students learned that the "Elwha people want the dams taken out" and "that it takes years and years for a dam removal to be effective". They learned that "dams are killing many salmon" and "how hard it is to restore a habitat to its original state after it's been dammed".

Day 7 (August 9, 2008)
Location: Elwha Museum of Neah Bay
Activity: Tour of museum, educated about whaling and whaling rights
Researchers worked with today: Kirk, Keith Johnson, Arnie (whale hunters) Dan, Josh, Cara
Students learned "how many rules and regulations stand in the way of whaling when it's a treaty right." They understood the importance of learning about the past.

Day 8 (August 10, 2008)
Location: Camp to Shi Shi Trail
Activity: Hiking and Backpacking
Researchers worked with today: Dan, Josh, Cara
Students learned "how and what to pack hiking" and that "salmon had to know what to do on their journeys or else they would get killed or eaten."

Day 9 (August 11, 2008)
Location: Shi Shi beach to Lake Ozzete
Activity: Hiking and Backpacking
Researchers worked with today: Dan, Josh, Cara
Students learned that "the environment is always changing. We have to adapt."

Day 10 (August 12, 2008)
Location: Lake Ozzete, Hoh Rain Forest, Hoh ranger station
Activity: Hiking and Backpacking
Researchers worked with today: Dan, Josh, Cara
Students appreciated the difficulty of walking m ore than 7 miles a day. They also learned how "scientists have to go to unaffected land to study whale/salmon."

Day 11 (August 13, 2008)
Location: Hoh Rainforest, Millersylvania State Park
Activity: Hiking, salmon bake, learned about rainforests

Day 12 (August 14, 2008)
Location: Park - Portland
Activity: Pack up camp and head home

Middle School, Camp Magruder
Journal Summer Session
August 18–August 22, 2008

Day 1 (August 18, 2008)

Students met one another, staff, and counselors.

What was interesting?
Students found the Tillamook Forestry Center (6), tide pooling (4), and the animals they found (particularly the newts) interesting.

> *It was interesting when we were at the Forestry Center and the firemen were showing us how they can use natural resources to power a miniature water tank. (student)*

What was fun?
Most students were very enthusiastic about the time they spent at the beach (14). They also enjoyed being at the Tillamook Forestry Center (3) and sleeping in the Cabins (2). Students also thought that "everything" (5) was fun

> *One fun thing I did was go to the beach when we first got here. I got really wet. It was sooo fun and dressing up was really fun too. (student)*

Day 2 (August 19, 2008)

Where were you today?
Students were at Camp Magruder, near Tillamook.

Who did you work with today?
Dan, Melody, Melissa, Josh (Scientists)
Cara (Counselor)

What did you do?

> *We went to the tide pools and I touched and also picked up animals like crabs, seastars, sea anemones, and more. After the tide pool, we went on a hike all the way back to Camp Magruder.*

> *We all went tide pooling near Tillamook. We looked for crabs, seastars, etc. We watched a movie instead of a campfire because of the rain. I saw a lot of news, crabs, fish, and sand flees.*

Why is this work important?
Most students felt the work was important to study different animals/wildlife/habitants that they didn't know about (17). A smaller number mentioned the importance of conservation (5) and for future knowledge (3).

It was important to me because it showed all the creatures that live on the rocks when low tide is going.

Because it will help us know all the things we need to know about sea creatures and how to keep them safe.

To learn more about the wild and all the littler critters from low tide. Conservation is a big part that's important like if one part dies, sooner or later all of it will die.

Day 3 (August 20, 2008)

Where were you today?
Students went to the Tillamook Cheese Factory and on a hike to Smith Lake and Hidden Lake to test for dissolved oxygen in the water.

Who did you work with today?
Dan, Melody, Josh, Cara, Clarissa, Lizzette, Letecia, William, David, Dominique (Scientists)

What did you do?

Tested dissolved oxygen in the Smith and Hidden Lake. We hiked to Hidden Lake and we found many many newts.

We went to the Tillamook Cheese Factory. We looked at the displays, we tasted samples of cheese, and we ate ice cream. We took a long hike and talked about trees and plants and we played games.

Why is this work important?
Student thought today's work was important because they learned about the forests, plants, and animals (6), because learned how cheese is made (4), learned how to test water (3), or "learned about how healthy the water was for fish and other animals" (2).

To see if the water is good for fish to swim in and if we should try to change the way we treat our earth.

Because we learned about some plants on the way, and what kind of plants they were. Like evergreen plants, those are the kind that have a protected lifestyle.

To understand how food is processed and where it comes from.

Day 4 (August 21, 2008)

Where were you today?
Students went boating and kayaking at the Ocean and Smith Lake

Who did you work with today?
Cara, Josh, Melissa, Lucy, Melody, JT

What did you do?

> *We critter catched. We used green nets and put the macro invertebrates in a green bucket (we caught whirlibugs, waterboatmans, and fish).*
>
> *We went critter catching in the wetland and then we went kayaking and then we took a hike.*
>
> *We went boating on the lake. We also learned about navigation systems. We caught critters.*

Why is this work important?
Students thought today's work was important because it taught them boating skills (5), about pond and lake environments (4), about ecology and conservation (4) and how to work with a GPS device (2).

> *To know how to kayak and for fun!!! I saw fist and crawdads and Lilly pads and got to catch things and we got to catch newts.*
>
> *To learn about pond/lake environments and boat safety.*
>
> *To see all the creatures that can live in a wetland. Learning about ecology and conservation.*

<u>Day 5</u> (August 22, 2008)

Who did you work with today?
Melissa, Lucy, Micah, Jeremy (NAYA staff)
Melody, Josh (Scientist)

What did you do?
Students cleaned their cabins and went to the beach.

Why is this work important?

> *It is to have fun and learn about our sea life because someday I could help the environment.*