

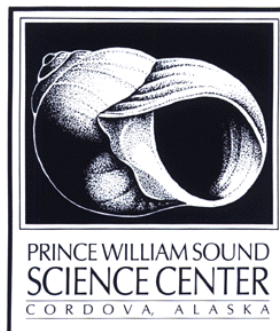
FOREST TO THE SEA SUMMER SCIENCE CAMP

Annual Report 2005 – 2006



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Kate Alexander, Lindsay Butters and H. River Gates
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EXECUTIVE SUMMARY

The Forest to the Sea summer camp outreaches to youth of all ages and adults through environmental education internship positions, summer science camp program, community events and the Youth Environmental Leadership Program.

Science Center educators coordinated three *From the Forest to the Sea* summer science programs with the US Forest Service, Cordova Ranger District. These programs included a day camp, a week-long overnight camp and a week of youth workshops. Two college-educated interns were hired to help implement the summer science camp. A total of thirty-six students participated in the summer camp programs.

The Youth Environmental Leadership Program is a ten day adventure education program for high school students that expose them to variety of local environmental scientists and leaders. Science Center educators collaborated with staff from the US Forest Service, Prince William Sound Science Center, Copper River Watershed Project and other local organizations to educate participants about the scientific method, local research projects and a variety of careers in the sciences. Students engaged in a dynamic program exploring the Copper River Watershed via kayak, canoe and river raft. Guided by local scientists, students learned about current and on-going research projects. A total of six participants joined the Science Center educators for the 2006 Youth Environmental Leadership Program.

Twenty-four community members including five children participated in the Community Kayak Day paddle to Humpback Creek.

PROJECT OBJECTIVES

The current programs of the *Forest to the Sea- Summer Science Camp* project include one week- long overnight programs for participants aged 10-14, a week-long day camp for youth aged 8-14, and a Youth Environmental Leadership Program (YELP) for high school students. In addition, Science Center educators facilitated a community kayak trip. The project's goals and objectives are listed in Table 1 with correlating specific tasks. Organizations, agencies and institutions participating in Forest to the Sea Summer Science camp programs are listed in Appendix 1.

Table 1: List of the *Forest to the Sea* project goals and specific tasks.

<i>Goals</i>	<i>Complete?</i>
Improve program development skills for environmental education program summer interns	YES
Increase summer camp program partnerships from one to five	YES
Provide positive learning experiences in the outdoors for 80% of all program participants	YES
Increase contact time with Youth Environmental Leadership Program (YELP) participants by 100%.	YES
<i>Specific tasks</i>	
Perform monthly written and verbal evaluations of interns	YES
Contact and develop new relationships with education partners.	YES
Refine, distribute, summarize participant evaluations at the end of each program.	YES
Increase staff time for YELP development and implementation	YES

PROJECT ELEMENTS

Environmental Education Internship Program

Each summer the Science Center hires summer interns to assist education staff during the busy summer season. These summer-long internships are designed for college students and recent college graduates to gain more experience in environmental and science education while learning about the ecosystems

surrounding Cordova. This summer, one college graduate and one current student worked with the summer education programs in a variety of capacities to implement the Forest to the Sea summer camps. Interns gained valuable program development and teaching experience as well as interpersonal communication, problem solving and team building skills (Figure 1).

Interns were asked to participate in an entry interview to discuss and establish measurable goals for their internship. Interns were subsequently evaluated mid-summer with an informal verbal evaluation where they were given constructive criticism and offered feedback to their supervisor. At the end of the internship, interns were evaluated in a formal written and verbal exit interview. These written evaluations are archived at the education office.

From the Forest to the Sea Summer Science Camp

The Science Center coordinated three *From the Forest to the Sea* summer science programs with the Cordova Ranger District, US Forest Service. These programs included a day camp (17 participants), a week-long overnight camp (8 participants) and a week of youth workshops (total of 11 participants) (Figure 2). A total of thirty-six students participated in the summer camp programs. These programs engage participants in outdoor adventures such as kayaking, hiking, canoeing and river rafting while teaching them about the natural history of their surroundings. Educators recruit local scientists from the US Forest Service, Prince William Sound Science Center, Copper River Watershed Project and other local organizations to educate participants about the scientific method, local research projects and a variety of careers in the sciences.



Figure1: PWSSC Education intern Katie Froning working with a summer day camper. Photo by K.Alexander.



Figure 2: USFS Interpretive Specialist teaches students how Native Alaskans used special tools, called atl atls to hunt big game, such as mammoths and Grizzly Bears. Photo by K. Froning.

Youth Environment Leadership Program (YELP)

The Youth Environmental Leadership Program is a ten day adventure education program for high school students that expose them to variety of local environmental scientists and leaders. Students engaged in a dynamic program exploring the Copper River Watershed via kayak, canoe and river raft guided by local scientist while learning about current and on-going projects. A total of six participants joined the Science Center educators for the 2006 Youth Environmental Leadership Program. Four of the participants were from Cordova, one from Juneau and one from Sutton, Alaska.

The goals of YELP are as follows:

- To prepare students to use scientific knowledge to address environmental issues in their own communities by involving them in a case study of the Copper River Watershed
- To introduce students to a variety of careers in science and the environment
- To create educational materials to inform residents and visitors in Cordova about the Copper River Watershed

YELP Participant Recruitment

The program was advertised thorough several venues for five months prior to the start of the program. YELP was listed in our summer program brochure that was distributed to over two hundred thirty five families on our summer camp mailing list. In addition, an email was distributed to teachers and schools throughout the Prince William Sound and Copper River area. Flyers were hung throughout Cordova, Valdez and the communities of the Copper River Basin. Education Specialist Kate Alexander also discussed the Youth Leadership Program on the local FM radio station.

Program Highlights

Students maintained a busy schedule of events through the 10 day program. The participants spent the first three days in town meeting with various environmental leaders and scientists for presentations, demonstrations and outdoor activities (Table 2). Participants were led on a canoe trip by Becky Clausen, FishWatch Coordinator for the Copper River Watershed Project (CRWP). She discussed the need for baseline data on the streams salmon use for rearing and spawning in the Copper River Watershed. Participants were trained in the use of water monitoring equipment and collected water quality data including concentrations of dissolved oxygen, nitrates and phosphates,

temperature and pH. Participants also collected and identified benthic macro invertebrates and learned how quantity and species present are indicators of stream health.

Table 2: List of speakers, organizational affiliation and activity during Youth Environmental Leadership Program 2006

<i>Name</i>	<i>Affiliation</i>	<i>Activity</i>
Dune Lankard	Eyak Preservation Council	Environmental Leadership and Community Action presentation
Becky Clausen	Copper River Watershed Project	Canoe trip, water quality monitoring, value of salmon discussion group
Brian Neilson	US Forest Service	Fish monitoring methods, radio telemetry
Dirk Lang	US Forest Service	Kayak trip and salmon ecology presentation
LaRue Barnes, Kanisha Tiedeman	Ilanka Cultural Center	Native culture museum tour
Erika Empey	Native Village of Eyak	Fisheries presentation
Robin Irving	Alaska River Expeditions	Geology presentation, natural and cultural history interpretation
Jen Ann Kirchmeier	Self employed artist	Assist in display design and preparation
Steve Hampton	Alyeska Pipeline Service Company	Interpretive overview of oil pipeline facilities



Figure 3: Brian Neilson, USFS Fisheries Technician, training the students in the use of radio tracking equipment. Photo by L. Butters.

U.S. Forest Service Fisheries Technician Brian Neilson taught the students about methods used to monitor fish populations and movements, such as counting at weirs and the insertion of radio tags (Figure 3). The students

compared different types of tags and used the tracking equipment to find hidden tags.

Participants embarked on a morning kayak tour to a pink salmon spawning stream with U.S. Forest Service Fisheries Biologist Dirk Lang. Dirk gave a presentation about the life histories of the five species of pacific salmon and how each use freshwater stream habitat during their life cycle. Following the field trip, the students met again with Becky Clausen to discuss the intrinsic and economic values of salmon and the various user groups of salmon including commercial, subsistence, personal use and sport fishers.

Participants spent two days in town during unfavorable weather working to develop a watershed exhibit as the capstone project for the program. The group then traveled to Valdez and received an overview of the oil terminal facilities, oil tankers and tugs by Kate Alexander. Participants were introduced to Steve Hampton, Coordinator of Oil Spill Response and Prevention for the Alyeska Pipeline Service Company at Trans-Alaska Pipeline Pump Station 12. Participants learned how Alyeska monitors, maintains and repairs the pipeline to prevent oil spills and how extensively the employees are trained to respond to spills in order to reduce their environmental impact.

Participants, staff and guides from Alaska River Expeditions rafted down the Copper River for four days as a culminating experience for the program (Figure 4). Participants received natural and cultural history interpretative presentations, developed team building and practical low- impact camping skills.

On the final day, the students made finishing touches to their, the watershed exhibit titled “A Journey Through the Copper River Watershed”(Figure 5). They added information and pictures from the river trip and demonstrated an understanding of human activities, culture, geology, salmon, plants and wildlife in the watershed. The exhibit was unveiled during a well-attended open house at the Copper River Watershed Project. This event gave the participants the opportunity to share their watershed knowledge and their experience on the river with the community.

Figure 4: YELP participants and Science Center educators Kate Alexander and Lindsay Butters during their rafting trip down the Copper River. Photo by M. Irving.



In the days following the program, participant Leif Stavig

composed a press release about the group's experience which was published in the Cordova Times and the newsletters of the Prince William Sound Science Center and the Copper River Watershed Project.

Roadblocks

Two roadblocks to recruitment include the cost of enrollment and the timing of the program. To address these issues, the Science Center offered a scholarship through the Carol Treadwell Scholarship Fund awarding \$500 to five of the six participants. It was also suggested to offer the program earlier in the summer to avoid conflicting with the pre-season fall sports schedule.

Program Evaluation

Evaluation tools were developed and implemented by Science Center Educator Kate Alexander, who holds a continuing education certificate from University of Wisconsin-Stevens Point for Applied Environmental Education Program Evaluation.

Pre/post test

Two assessment activities were built into the beginning and end of programming to get a measure of knowledge gained by participants throughout the program. The week started with a "Butcher Paper Watershed" activity where the students were given a blank sheet of butcher paper and asked to brainstorm their current knowledge of the Copper River Watershed and illustrate it on paper. At the end of the program, students were required to put together an educational display on what they knew about the watershed.



Figure 5: "A Journey through the Copper River Watershed" capstone project created by the YELP participants. Photo by B. Clausen.

Their final project demonstrates a dramatic increase of what they now associate with the Copper River Watershed. The display goes into great detail about the plants, geology, cultural history, salmon, wildlife and human use of the region. Each student focused on a specific topic and shared with the rest of the team what they learned through their research, meetings and experiences.

The final display includes a food web of over twenty resident organisms and explains how salmon are a keystone species to the ecosystem. Another student collected, pressed and identified eight different plants found in the watershed and wrote up traditional and medicinal uses of each of them. Another highlight of the final project is a series of photographs from the river trip that show the geology and unique landforms of the region that one student labeled and defined.

Program and parent evaluation

At the end of the program, participants filled out evaluations to provide feedback on the program, what they learned, and to rate their overall experience. On a scale of one to ten, all participants rated the program a ten.

A parent evaluation form was sent to the parents of the program participants, asking for their thoughts and feedback. Two of the 6 families returned evaluation forms.

"The program, staff and activities are great for the community's youth. The benefits from the exchange of ideas and friendships between quality people involved in the program, coupled with the ed[ucation] aspect makes this a winner for all involved. I hope this opportunity will always be available for many years to come. The ladies that put this all together are also a great asset to the community of Cordova. They are top notch."

"Keep up the outstanding work. My daughter is more knowledgeable, more confident and more inquisitive because of your program. You have definitely helped to encourage her to become this capable young woman"

Observation

Students were observed interacting with community members during the unveiling of the Copper River Watershed display. A comment book was also set up next to the display and visitors were encouraged to provide their feedback on the program and outreach materials.

A total of forty two people attended the open house including our hosts at the Copper River Watershed Project. All of the youth participants were able to share both personal experiences and the interesting things they learned. Community members also had specific questions about the watershed. For example, a local mother and Girl Scout troop leader said her kids frequently ask why pink salmon get humps on their backs when they spawn. Three participants quickly

responded about the mate selection and competition strategies they learned from USFS Fisheries Biologist Dirk Lang.

Comment book

The sign-in and comment book continues to sit with the educational display at the Copper River Watershed Project office and asks for feedback and comments from individuals who read and learned from the display. This book will be reviewed on a monthly basis to see if further clarification or display components are needed and local students will be recruited to help update and maintain the educational display as requested.

Since the open house, there have been nine more entries in the comment book, and numerous other people who have stopped by to look at it according to the staff at the Copper River Watershed Project. Summarized below are some entries:

Nice work on portraying the beauty and importance of the Copper River.

Alaska Pacific University student

We were impressed with the educational program responsible for this, the final project is creative and has a lot of information about a big area.

Anonymous, Teachers from Colorado

Community Kayak Day

On Saturday, June 3 2006 Science Center educators in partnership with Cordova Coastal Outfitters (CCO) organized a Community Kayak Day. Outreach for the event commenced a week before the event, including the distribution of flyers hung around town, radio announcements on the local AM and FM stations and the GCI cable scanner.

Twenty-four community members including five children participated in the event and several community members donated their personal equipment for use (Figure 6). CCO guide Paula Payne gave an overview of paddling techniques and safety procedures. The original destination was to be Observation Island, but due to windy weather, leaders decided to paddle along the more-protected coastline to Humpback Creek. Participant Karl Becker led a group on an exploration of the hydro power station located on the creek. Science Center educator Lindsay Butters led the remaining participants in an intertidal exploration and discussion of edible seaweeds that were present on the beach.



Figure 6: Community members enjoy a guided educational kayak day on Prince William Sound. Photo by K. Becker.

CONCLUSION

The *Forest to the Sea* program enjoyed another year of successful programs. We successfully trained interns in skills related to implementing a dynamic summer environmental and science education program. Interns offered constructive feedback and generated new ideas for summer programs. Although enrollment numbers were low for the summer science camp, Science Center educators adapted one week long overnight camp program into a week long day camp and subsequently filled the program.

In particular, this year the Youth Environmental Leadership Program was an important success. The Program brought together four local non- profits, the Native Village of Eyak, a land management agency, a local artist, cultural preservationists and businesses to create an interdisciplinary adventure based program. Through pre and post test evaluations, participants demonstrated marked improvement in their synthesis of ecological concepts and applications to real world problem solving.

ACKNOWLEDGEMENTS

The Forest to the Sea Summer Science Program is greatly enhanced by the diligent and cooperative work of many organizations. Special thanks to our program partners including the Copper River Watershed Project, US Forest Service, Cordova Ranger District, and Alaska River Expeditions. Education Interns Katie Froning and Eric Herrera provided new ideas and enthusiasm to the summer camp programs. Financial support was contributed by ConocoPhillips Alaska, Inc., the Prince William Sound Oil Spill Recovery Institute, the Mountaineers Foundation, US. Forest Service, Cordova Ranger District and contributors to the Carol Treadwell Scholarship Fund. Community members Andy Morse, Kate Alexander, Brad Reynolds, Kathy Kelly, and Steve Ranney generously provided their personal equipment for the Community Kayak Day. Dana Smyke volunteered his time and use of his boat to transport day campers to Observation Island. Tim Joyce, Bob Beherends, Andy Morse, James Thorne, Jonah Dart-McLean, Brian Neilson, Mike Truax donated their time to the overnight summer camp program.

Appendix 1: List of organizations, agencies and institutions participating in Forest to the Sea Summer Science camp programs.

Agencies:

US Forest Service, Cordova Ranger District

[US Forest Service Cordova Ranger District](#)

Non profit organizations

Eyak Preservation Council

[Eyak Preservation Council](#)

Copper River Watershed Project

[Copper River Watershed Project](#)

Wrangell Institute of Science and the Environment (WISE)

[WISE](#)

Native Council

Native Village of Eyak

[Native Village of Eyak](#)

Local Museums

Ilanka Cultural Center and Museum

907-424-7903

Cordova Historical Museum

[Cordova Historical Museum](#)

Alaska businesses

Alaska River Expeditions

[Alaska River Expeditions](#)

Alyeska Pipeline Service Company

[Alyeska Pipeline Service Company](#)

Cordova Coastal Outfitters

[Cordova Coastal Outfitters](#)

Orca Adventure Lodge

[Orca Adventure Lodge](#)