

## Final Report

### Project: Prince William Sound Science Center, *Science of the Sound*, 2004-2005

#### *Overview*

The 2004-2005 season for the Prince William Sound Science Center's education programs, *Science of the Sound*, was a success. Every student in the local Cordova elementary school attended 8 Discovery Room programs that covered a wide range of topics related to salmon. Each month up to ten 4-6 graders participated in a water and habitat monitoring project, collecting data that was included in Discovery Room activities as well as shared with local research organizations. Science Center educators were able to take one Outreach Discovery trip to both Chenega Bay and Tatitlek. Educators adapted Discovery Room lessons and worked with the entire student bodies in both village schools to study salmon and collect water quality data. Science Center educators significantly increased their involvement with Cordova high school students. High school activities included leading field trips, organizing class presentations, coaching a team for the regional National Ocean Science Bowl tournament, and helping to plan and organize a science festival for the whole community. A total of 32 community programs were held that covered a wide variety of topics, including presentations by local researchers and lectures on the local ecosystems of Cordova. Finally, the Science Center educators completed a great summer of "From the Forest to the Sea" summer science camp programs. A total of 11 programs were held that reached almost 170 participants.

The following were the goals of *Science of the Sound* for the 2004-2005 season:

- Develop Outdoor Coastal Curriculum for use in Discovery Room, Outreach Discovery, and high school programming. This will engage students in outdoor explorations right in their own backyard.
- Continue to diversify the types of community programs offered. This will include signing up more high school students as presenters.
- Develop a Youth Environmental Leadership program for "From the Forest to the Sea" summer science camp, open to participants aged 14-18.

During the school year, each elementary class in Cordova, attends a series of science lessons in the *Discovery Room* that relate to a common theme. This past school year the overall theme was "salmon," and each month the students learned about a specific topic related to salmon, including their life cycle, anatomy, habitat, and management. When appropriate, local scientists from the Science Center, the US Forest Service/Cordova Ranger District, the Alaska Department of Fish and Game, and the Native Village of Eyak were invited to share the work they do to study and manage salmon populations. As one teacher stated in an end of the year evaluation, "I like the kids to see scientists in the community, not just 'guys in lab coats'."



*USFS Biologist Ken Hodges works with a fourth grade class in the Discovery Room.*

The 4-6 grade students participated in monthly field trips to an adopted salmon habitat site where they collected water quality data, including temperature, pH, nitrates, phosphates and dissolved oxygen, and surveyed for benthic macroinvertebrates. Digital photos were taken each month to allow all students to see how the habitat changed throughout the seasons. The water sampling method followed the protocol established by the local Copper River Watershed Project Fishwatch program, a community-science program that recruits volunteers to monitor salmon habitat in the entire Copper River Watershed. The data will be incorporated into their annual report as well as utilized by the US Forest Service Fish Crew for a future habitat restoration project. The data were also incorporated into Discovery Room activities, including monthly discussions of findings and graphing activities.



*Field trip participants help Science Center educator Lindsay Butters look for benthic macroinvertebrates at Eyak River Boat Ramp.*



*A student in Tatitlek checks the nets for benthic macroinvertebrates.*

This year Science Center educators took one ***Outreach Discovery*** trip to each of the villages and shared Discovery Room lessons on salmon with students. These activities supplemented a salmon raising project that was occurring in the Tatitlek School and provided more in-depth information than was easily available to teachers in the village setting. Discovery Room educators also implemented water quality monitoring in the villages and loaned teachers equipment to continue collecting data throughout the school year. The students were also able to explore anthropogenic affects on aquatic ecosystems in their own communities and learn other ways humans impact aquatic habitats beyond what they see in their own communities.

It was another great season working with the ***Cordova High School*** students as well. Science Center educators helped to organize a variety of field trips, classroom presentations, and special guest lectures for the high school science teachers. The National Ocean Science Bowl team that was coached by a Science Center educator finished third overall out of a field of 14 teams. Most of the team members were students in the dual credit Oceanography class at the Prince William Sound Community College taught by Dr. Carl Schoch, Science Director of the Oil Spill Recovery Institute, and Kate Alexander, Education Specialist and coach of the Science Bowl team. The team successfully completed a research paper and presentation on “The Effects of Climate Change on Cordova, Alaska on the Prince William Sound” as well as participated in a quiz-bowl competition. The Cordova team won the Seward Mayor’s trophy for scoring the highest amount of points in a single round.



*Members of the Cordova National Ocean Science Bowl team discuss and answer during the quiz bowl competition.*

The Second Annual Science Festival held the first weekend of February attracted a majority of the Cordova community to celebrate science. It included science fair projects, presentations, and demonstrations by all students in grades 7-12 as well as a festival program presented by the Imaginarium. There was also a debut of the National

Ocean Science Bowl quiz bowl, and the local Cordova High School team defeated a team made up of scientists from the Science Center, Alaska Department of Fish and Game, the Native Village of Eyak, and the Alaska Sea Grant office.

The ***Community Education Program*** continued to have great overall attendance in the fall of 2004 and spring of 2005. A total of 656 people attended 32 programs including 89 children and 76 high school students. There was an increase of 180 people attending programs this season with an increase of 5 additional programs from last year.

Some of this year's more popular programs included Volcanoes, Aurora Borealis, Tsunamis-their cause and effects, Alaska's Cetaceans, Avalanche Safety and The Geology of Denali Park.

Scientists from the Science Center as well as other agencies throughout the community including the U.S. Forest Service, Alaska Dept. of F&G, Copper River Watershed Project, and Native Village of Eyak, presented programs on their current research projects or ongoing studies. Visiting scientists were also able to give presentations on geology and glaciology. Having a more diversified group of presenters enabled us to attract a more varied audience.



*Science Center researcher Dr. Mary Anne Bishop shares her research during a community program.*

Last year saw an increase in middle and high school student attendance of the Community Education programs. Every Friday, students were notified during morning school announcements of the upcoming weekend science program. The two science teachers in the middle school and high school also used Science Center programs to supplement their classroom curriculum. Students received extra credit for attending a community program and writing a paper on the topic. Eleven high school students gave presentations for the community weekend programs. Students shared the papers they authored and projects they designed and built for science fairs, geology projects and the National Ocean Science Bowl competition to audiences of their parents, peers and community members.

During the summer of 2005 "***From the Forest to the Sea***" ***Summer Camp*** provided educational opportunities for almost 170 participants. Two afternoon programs were organized for visiting groups in Cordova. A Science Center educator took 14 Outward Bound participants on a field trip to the mudflats to explore intertidal life while two other camp staff organized an afternoon program on bugs for 25 7-8 year old children attending the local Hawaiian Music Camp.

A total of three overnight science camp programs were held for students aged 9-14. These programs engage participants in outdoor adventures such as kayaking, hiking, and canoeing while teaching them about the natural history of their surroundings. A day camp was held that followed the same programming format, but since we were not limited by sleeping space at our overnight camp, we were able to enroll 17 participants. There was also a single night mini-camp program on bugs for youth aged 8-9.



*YELP participants work with Kristin Smith of the Copper River Watershed Project to compost salmon waste.*

We were pleased to complete a week-long Youth Environmental Leadership Program for participants aged 14-18. This program not only introduced participants to the local science, but helped them identify environmental issues affecting the local region and participate in a service project to address the issues. Participants studied pacific salmon and the role they play in the natural ecosystem and the economy of Cordova. Participants worked with scientists at the Science Center to identify the effects of salmon waste from canneries on the natural ecosystem. At the end of the week, they participated in a salmon composting project that turns environmentally harmful surplus salmon waste into a usable resource (soil!).

An adult weekend workshop was organized that focused on the wetland ecology of the Copper River Delta. The workshop was taught by Erin Cooper, USFS biologist from Cordova, and Dean Davidson, USFS Soil Scientist from Anchorage. Seventeen participants started on Friday with a lecture introducing wetland ecology. Saturday consisted of a field trip on the Copper River Delta with stops at 4 different types of wetlands where plant and soil samples were collected. These samples were taken to the high school lab on Sunday in order to use dissecting scopes to identify and learn about the different plant types. The feedback received from participants was very positive and the Science Center is looking forward to coordinating more weekend workshops in the future.



*Two workshop participants collect plant samples from a pond on the Copper River Delta.*

Two Community Days were hosted as well for participants of all ages. These were a kayaking trip to explore intertidal ecosystems and a canoe trip to learn about the importance of wetlands. We had 25 participants on the kayak day and 27 attended the canoe day.

Overall, Science Center educators are pleased with the progress of the education programs of the Prince William Sound Science Center. Many ideas are already in place to improve and build on these programs for the 2005-2006 school year.