



*The Prince William Sound Science Center building located at the entrance of the harbor in Cordova, Alaska.*



*Education Specialist Allen Marquette teaches students in the Discovery Room about the adaptations of aquatic plants.*

## **Final Report**

**Project: Prince William Sound Science Center, *Science of the Sound*, 2005-2006**

### ***Overview***

The 2005-2006 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 6 Discovery Room programs that covered a wide range topics related to plants. Each month up to ten 4-6 graders participated in a Rainforest Tree-mendous Trees field trip where they practiced various methods used to study trees and collected data that was included in Discovery Room activities and class field trips. Science Center educators were able to take one Outreach Discovery trip to both Chenega Bay and Tatitlek. Educators adapted Discovery Room lessons and Marine Science Education Kits developed in partnership with Anchorage's Imaginarium and worked with the entire student bodies in both village schools to study plants and the local marine environment. 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, helping to plan and organize a science festival for the whole community, and a Lingering Oil Education Project. A total of 40 community programs with a total attendance of 988 participants 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 education programs and events. Education staff participated in 12 programs, including community festivals, adult weekend education programs and youth education programs, which reached almost 6,730 participants from throughout Alaska, the lower 48, and even the world!

### ***Goals for Science of the Sound, 2005-2006 season:***

- Develop a comprehensive elementary science program on plants, exploring their biology, ecology and sociological significance both on a local and global scale. It will include a field trip component that will engage students in outdoor explorations right in their own backyard.
- Continue to diversify the types of community outreach programs offered. This will include increasing outreach through various media such as radio and newspapers.
- Develop and promote programs for high school students that involve students in local science and environmental topics. These types of programs include Science Club, National Ocean Science Bowl, Youth Area Watch, and a summer Youth Environmental Leadership Program.
- Continue to diversify our program partners and the types of summer education programs offered. This includes working with the Alaska Natural History Institutes, Copper River Watershed Project, Alaska River Expeditions, US Forest Service, City of Cordova, Cordova Arts and Pageants to coordinate youth education programs, adult weekend workshops, and community events.

### ***Program Descriptions***

The Discovery Room is a cooperative program between the Prince William Sound Science Center, Prince William Sound Community College and the U.S. Forest Service in Cordova. Each month students from Mt. Eccles Elementary School come to the Discovery Room for 1.5 to 2 hours of small group, hands-on science instruction.

According to the comments received from elementary school students, teachers and parents, the Discovery Room Program was a big success again this year. The theme this year was "Plants." The programs offered each month to students included:

- Plant Anatomy and Identification
- Soils and Composting
- Plant Ecology and Biomes
- Human and Plant Interactions
- Traditional and Medicinal Plants
- Local Plant Biomes and Identification

#### Shorebird Fieldtrip

Besides the usual hands on activities, crafts and projects in the Discovery Room, Science Center educators developed a monitoring project for students to study and compare two forest plots in a rainforest near Eyak Lake. Each month, students took measurements and photographs of the two forest plots where they learned about forest management and how plant growth is affected by soil, light and space conditions within the forest. Students learned procedures and methods foresters use to predict forest size and health and got to test their math and algebra skills extensively in this monitoring project.



*Brad Reynolds, PWSSC, works with students during the Youth Area Watch Program.*

A wrap-up interview/response session was arranged at the end of the school year to have teachers evaluate the Discovery Room program and to give feedback for next year. In conclusion, there were new small changes and additions made to the Discovery Room this year with excellent results. Both students and staff found the programs and activities rewarding and educational.

This year Science Center educators took one *Outreach Discovery* trip to the Alaskan native villages of Tatitlek and Chenega Bay and worked with the entire student body in both schools (approx. 40 students total). The educators shared Discovery Room lessons on plants with students and incorporated hands-on activities from the Marine Science Education kits developed in partnership with the Imaginarium to encourage the students to look closely at the marine environment surrounding them.

It was another great year working with the *Cordova High School* students. Science Center educators helped high school teachers to organize a variety of field trips, classroom presentations, science club events and coordinate the community Science Festival.



*A youngster works hard to build a bird feeder during a Community Education Program.*

The National Ocean Science Bowl team that was coached by a Science Center educator was challenged by harsh winter conditions and avalanches when trying to get to the quiz bowl competition in Seward, AK. They were unable to compete in the quiz bowl but still won first place for their research paper and presentation, a part of the competition that is unique to the state of Alaska. After petitioning with the coordinators of the National Competition, the Cordova Flatfish were able to attend and present their research presentation at the national competition in Monterey, CA. The team was also featured in the Alaska Tsunami Bowl promotional video.

An educator also coordinated the fall workshop for the Chugach School District Youth Area Watch Program. This program involves students from the communities of Cordova, Homer, Tatitlek, Chenega Bay, Whittier, Valdez and the Copper Basin and “is designed to involve students in working with scientists while making a meaningful contribution to research and long-term monitoring projects in oil spill affected Prince William Sound and Cook Inlet communities.<sup>1</sup>” The workshop involved local scientists from the Copper River Watershed Project, Prince William Sound Science Center and Alaska Department of Fish and Game who share the work they do to monitor fish populations and habitat in the Copper River Watershed.

<sup>1</sup>YAW website. Accessed Aug. 23, 06 < [http://www.chugachschoools.com/youth\\_area\\_watch/index.html](http://www.chugachschoools.com/youth_area_watch/index.html)>



Artist Pat McGuire teaches techniques of fish printing at the Copper River Wild! Salmon Festival.



Kids have fun while learning about the salmon life cycle on a human-size game board.

The *Community Education Program* is a weekly science-based education program available to all members of the community. The programs focus is primarily on the science of the local rainforest, Prince William Sound and the Copper River Delta with connections on a global scale. This year, two new partnerships were forged with the Alaska Sea Grant Marine Advisory Program and the Prince William Sound chapter of the Audubon Society that provided new contacts for presentations and variety in the weekly programming.

The Community Education Program continued to have great overall attendance with a total of 988 people attending 40 programs, including 148 elementary aged children and 225 high school students. There was an increase of 332 people attending programs and an increase of 1 additional program from the 2004-05 season. Each program was attended by 24 people on, an increase of 30% from last year. Favorite of the season include “*The Natural History of Black Tail Deer*” by Dave Crowley of the AK. Dept. of F&G, *Lakes of Fire*” by Katey Walter of the PWSSC and two field trips to the Cordova Airport to learn the role Cordova plays in tracking satellites and rockets launched from the Kodiak launch complex.

There were also two monitoring projects that were incorporated into the Community Education Program series and involved citizens in collecting important, local scientific data. One project was a baseline amphibian study for the Copper River Delta and Prince William Sound. After being trained in the project and methods, volunteers were organized and given mapped regions and areas to monitor on a weekly basis for the 2005 spring and summer months. Public announcements were placed on the radio, TV and in newspapers for acquiring volunteers and encouraging the reporting of local frog and toad sightings. Afterward, a detailed report was submitted to AD F&G for use in their baseline study<sup>2</sup>.

A Science Center Educator partnered with the PWS Regional Citizens Advisory Council on an invasive European Green Crab survey. The survey was an effort to monitor various parts of PWS for the intrusion of the European Green Crab, an aggressive predator species that has had devastating effects on crab populations and other species wherever they have taken up residence. This project involved a community program to introduce invasive species and the project, followed by field trips with several community members and high school students to help place and monitor the traps.

Overall, there was an increase in middle and high school student attendance over previous years. Every Monday, students were notified during the school announcements of the upcoming Tuesday evening science program. The science teachers offered their students extra credit to attend these programs and write a one page paper or give an oral presentation on the topic to the class. This engaged the students in a variety of unique science lessons and exposure to scientific careers that are not as common in a classroom setting.

Science Center education programs hit the air every Sunday afternoon and Thursday evenings on a new outreach program known as “*Field Notes*”. It is aired over the PBS radio station, KCHU, in Valdez and offers the Science Center an excellent opportunity to reach a wider range of people, including radio listeners from Cordova, Valdez, Tatitlek, Chenega Bay and Whittier, outlying areas in the upper Copper River Basin. To date, 42 programs have been written and aired.

<sup>2</sup>For details on the survey, see the following link  
<http://aknhp.uaa.alaska.edu/zoology/ALASKA%20WOOD%20FROG%20Results%202005.htm>



*Science Campers examine an iceberg while rafting on Sheridan Lake with Alaska River Expeditions.*



*A Youth Environmental Leadership Program participant explains the watershed education display to a community member.*

The Science Center and KCHU have both received emails and phone calls asking questions about the programs or requesting additional information pertaining to these programs. On 3 occasions, teachers from the upper Copper River Basin requested information from the radio programs for use in their classrooms or in home school activities. These programs are also written up and included in the local Cordova Times Newspaper when space allows.

Most community education programs will soon be available on line through the Science Center webpage. All PowerPoint programs used in the Community Education programs (with permission of the author) are in the process of being converted to PDF files and will be placed on the PWSSC web page under the education program heading. Each converted file has a brief description of the program contents and has separate files for links, animations and short mpegs pertaining to the program. The Field Notes series will also be posted to the Science Center's web site as MP3 files for people to listen to as streaming audio files. These individual 3 to 5 minute programs will include descriptive titles.

The 2006 **Summer Education Programs** included a variety of events for participants of all ages. These events included community festivals, adult weekend education programs and youth education programs, and reached almost 6,730 participants from throughout Alaska, the lower 48, and even the world.

Science Center educators participated in two different festival events, the Alaska Oceans Festival in Anchorage, AK and the Copper River Wild! Salmon Festival in Cordova. An estimated 6,000 people attended the AK Oceans Festival, where the Science Center representatives had the opportunity to share information about Science Center research and education programs, as well as participate in youth activities that instructed participants about the Prince William Sound and the Copper River Delta.

A Science Center educator took the lead on coordinating the Copper River Wild! Salmon Festival, a community event that celebrates wild Alaskan salmon through art, music, and education. Science Center educators coordinated an afternoon of education events that included workshops by Alaskan artists Ray Troll and Pat McGuire, the Alaska Department of Fish and Game Mobile Aquatic Fish Lab, and hands-on activities and informational displays developed by individuals from the Science Center, ADF&G, US Forest Service, Native Village of Eyak, Cordova District Fisherman United and the Copper River Watershed Project. The displays and the Aquatic Fish Lab were available to participants throughout the entire weekend festival. An estimated 550 participated in the events, with over 150 attending the educational events alone!

A total of three *adult weekend workshops* were coordinated by Science Center educators, an increase from one that was held last year. The summer started with an edible seaweed workshop taught by Dolly Garza from the Ketchikan office of the Marine Advisory Program. Thirty-seven people attended a Friday evening slide show, 26 joined Dolly for an identification field trip, and 12 participants feasted on an edible seaweed luncheon after the field trip.

In July, a 3-day Barrier Island Ecology Workshop was held that included a Friday evening lecture (12 participants) and a Saturday camping trip to Egg Island, a barrier island of the Copper River (10 participants). Biologists from the USFS and the PWSSC led in-depth field explorations related to the plant and bird communities of the Barrier Island. Three participants took the course for a continuing education credit that was offered through the University of Alaska Anchorage.

At the end of July, the Science Center coordinated with two professors from the St. Elias Erosion and Tectonic Project occurring on the coast of the Gulf of Alaska, just



Summer intern Katie  
Froning kayaks with a  
Science Camper on  
Ocean Day.

south of Cordova. They presented a Friday evening lecture (17 participants) and led a Saturday field trip (6 participants) that compared natural disasters on the Copper River and Mississippi Deltas.

Science Center educators participated in six different youth programs with a variety of partners. They started the summer by running three science workshops for the City of Cordova Summer Recreation Day Camp that instructed participants (average of 20) about the principles of Leave No Trace, the wonders of water, and different ways to observe nature. A morning activity on Pacific salmon was put on for the 4-H Hawaiian Music Camp (17 participants).

The Science Center coordinated three “From the Forest to the Sea” summer science programs with the 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). All of 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 also strive to involve 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.

A teacher workshop was created in partnership with the US Forest Service and Alaska Natural History Institutes and was scheduled to take place at the beginning of the summer, but due to slow enrollment it had to be cancelled. A solid foundation for the program has been established that will allow the program to be advertised earlier for next summer, and brainstorming and discussions are taking place to expand the program to attract not only teachers, but other resource educators throughout the state.

A 10-day Youth Environmental Leadership Program (YELP) was held that taught high school students how to identify environmental problems in their communities and how to address these problems through personal education and public outreach. The 2006 program achieved this through a case-study of the ecologically fragile Copper River Watershed (CRW) that involved canoeing, kayaking and river rafting. Programming focused on watershed dynamics and various human impacts that can damage the health of the CRW, from every day human activities to large scale events such as an oil spill from a breach in the Trans-Alaska Pipeline.

Participants learned about these issues by meeting with scientists and community members that work and/or live in the CRW at organizations like the US Forest Service, Prince William Sound Science Center, Copper River Watershed Project, Native Village of Eyak, Alaska River Expeditions and other community organizations. Upon completion of their adventure through the watershed, the students completed a community outreach project that included a press release, an educational display in the Copper River Watershed Project, and an open house to meet with members of the community about their experiences and what they learned. The students left the program having learned their responsibilities as residents of a watershed and with increased knowledge of environmental sciences and community leadership.

**Education Internships** are offered throughout the year for college students and recent college graduates to gain more experience in environmental and science education as well as to learn more about the ecosystems surrounding Cordova. This past year we had two interns who worked with the summer education programs. They gained valuable program development and teaching experience as well as communication and problem solving skills that come from working in a team setting.

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.