

Exxon Valdez Oil Spill
Restoration Project Annual Report

Youth Area Watch Program

Restoration Project 00210
Annual Report

This annual report has been prepared for peer review as part of the *Exxon Valdez* Oil Spill Trustee Council subsistence program for the purpose of assessing project progress. Peer review comments have not been addressed in this annual report.

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April 2001

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Study History: The project effort was initiated as part of a detailed study plan in 1996 and is in its fifth year. The objective of the project is to involve the youth of Prince William Sound, Kenai Fjords and Lower Cook Inlet in research funded by *Exxon Valdez* Oil Spill Trustee Council.

Abstract: The project involved students from the Chugach School District in current research and restoration projects funded by the *Exxon Valdez* Oil Spill Trustee Council in Prince William Sound and Resurrection Bay. The restoration projects that students were involved with included: (1) 99195: Pristane Monitoring in Mussels, (2) 99245: Community-Based Harbor Seal Management and Biosampling, (3) 99012A-BAA: Comprehensive Killer Whale Investigation in Prince William Sound, (4) 99273: Surf Scoter Life History and Ecology. Student involvement was from Cordova, Chenega Bay, Nanwalek, Port Graham, Seward, Tatitlek, Valdez and Whittier. The project coordinator responsibilities were divided into two half-time positions to better meet diverse needs. The coordinators supervised students and coordinated activities between scientists and students. The projects increased the awareness of youth regarding the effects of the oil spill and encouraged their involvement in subsistence, research and the initial restoration processes. The guiding principle of this project is that the success of long-term effective restoration is dependent on youth involvement. The leadership of today's youth will be integral to restoration and subsistence for the future. The support of students within Prince William Sound and other spill impacted areas is needed to insure that adequate subsistence and restoration are continued in the future.

Key Words: Alaska SeaLife Center, blue mussel, Chenega Bay, Cordova, *Exxon Valdez* oil spill, harbor seal biosampling,, meteorology, Nanwalek, oceanography, Port Graham, Prince William Sound, pristane hydrocarbon, restoration, Resurrection Bay, scoter, Seldovia, Seward, subsistence, Tatitlek, Valdez, Whittier.

Project Data: (Will be addressed in final report.)

Citation:

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EXECUTIVE SUMMARY

The Chugach School District involved community youth with local (especially site specific) research, subsistence, and restoration. They provided the youth with the scientific skills and knowledge necessary to conduct individual and community research. The students participated in various research projects associated with, and funded by, *Exxon Valdez* Oil Spill Trustee Council. This included cooperative work with various research agencies and principal investigators. Students were given the opportunity to participate in all projects identified within this report. The coordinators facilitated training and communication for involved youth. The coordinators also served as day-to-day liaisons between the scientists that served on the bigger projects and the students that provided, or helped provide, information and data to those larger projects. The students took the skills that were learned through their involvement with these projects and incorporated them into restoration activities for their school, community and region.

INTRODUCTION

The program entitled "Youth Area Watch" is comprised of school enrolled youth (grades 7-12) of the Prince William Sound, Kenai Fjords and lower Cook Inlet region. Through the Trustee Council's efforts and funding, these students have gained an increased knowledge and responsibility for the North Gulf Ecosystem. The Seward SeaLife Center, has provided increased local involvement in these and related projects. The students in Youth Area Watch have been given the opportunity by the Trustee Council to become more involved with scientific research in their communities. These experiences will help prepare them for assuming more active roles in subsistence and the restoration effort.

The Prince William Sound Science Center, the Alaska Native Harbor Seal Commission, the North Gulf Oceanic Society, Alaska Department of Fish and Game, Alaska SeaLife Center, and the Auke Bay Laboratories conducted by NOAA in Juneau, have been involved with the Chugach School District to insure continued successful implementation of the Youth Area Watch program. These agencies incorporated student contributions from Cordova, Chenega Bay, Nanwalek, Port Graham, Seward, Tatitlek, Valdez and Whittier as part of their current research projects.

The students have continued to develop awareness, during the 1999/00 school year, of many of the research projects in the oil impacted region of Prince William Sound, Resurrection Bay and Lower Cook Inlet. They also have had the opportunity to work in conjunction with the principal investigators of the above mentioned agencies on research projects dealing with identified injured or endangered resources.

OBJECTIVES

Twenty four students and eight site coordinators were chosen from the Chugach School District, Cordova, Nanwalek, Port Graham, Seward and Valdez. They participated in training and the subsequent research that was identified by the grant and is listed below. Each of the sites involved had students help collect data that was used by the on-going research projects. This data was also used to provide a base of understanding that allowed students to draw their own conclusions on the information that was gathered. The involvement was limited to the projects that are summarized as follows:

1. **Pristane Monitoring in Mussels, Project Number 00195.** This project was conducted by the Prince William Sound Pristane-Mussel Monitoring Program at the Alaska Fisheries Science Center, Auke Bay Laboratory, 11305 Glacier Highway, Juneau, AK 99801-8626. The principal investigators were Jeff Short and Pat Harris, both from the Auke Bay Laboratory.

Blue mussels were collected by Pat Harris and the Youth Area Watch students throughout the Sound, Lower Cook Inlet and Resurrection Bay to measure their pristane concentration levels. Pristane is a hydrocarbon made by *Neocalanus* and *Calanus* copepods. It is thought that the copepods use pristane to help maintain their buoyancy in seawater. When these copepods are abundant in the spring, many fish and birds feed on them. The pristane in the copepods transfers to the predators when the copepods are eaten. Pristane is also released in feces of predators into the water. Mussels may then ingest the pristane in these feces as they filter water during feeding. It is Jeff Short's hypothesis that monitoring the pristane content of local mussels during hatchery releases of pink salmon fry will lead to the ability to make reliable predictions of pink salmon returns. High concentrations of pristane coincidental with the release of the fry would indicate a high numbers of copepods upon which the fry can feed. The abundant food supply would lead to a high rate growth and survival for the fry and a large return of adult fish two years later.

The scientists are also trying to understand the transfer of energy in the food web through the Prince William Sound ecosystem. The copepods are near the bottom of the food web. A plentiful zooplankton supply helps insure healthy populations on the higher trophic levels. More copepods mean more energy available for fish, birds and mammals. Hatcheries monitor plankton abundance to help decide when to release fry, and knowing the pristane levels in mussels can help that effort.

The only biological sources of pristane in Prince William Sound are the *Neocalanus* and *Calanus* copepods. Since pristane is a chemically stable compound that concentrates in fat deposits, it is easily transferred through all of the levels of the food web. Therefore, pristane can be used as a "tracer" of energy from the copepods through the ecosystem. The ultimate goal of this research is to understand some of the natural factors that control the fish, mammal and bird populations in Prince William Sound by studying the energy

flow through the ecosystem. Analyses of pristane in mussels is a way to see how much of this energy flows through the lower levels of the food web.

Students collected mussels along a 20 meter transect once or twice per month (depending on a schedule established by Pat Harris). Twenty mussels were collected during each collection and were placed in a Ziplok bag. They were then labeled, frozen, and stored until picked-up or shipped. The students were provided Ziplok bags and labeling tags.

2. Community-Based Harbor Seal Management and Biosampling, Project Number 00245. This project was conducted by the Alaska Native Harbor Seal Commission, and the Alaska Department of Fish and Game. The principal investigators were Vicki Vanek (Alaska Department of Fish and Game) and Monica Riedel (Executive Director of the Alaska Native Harbor Seal Commission).

Seals in certain geographic areas of Alaska appear to be healthy, and their numbers are stable or growing. But in several areas of Alaska, especially the Prince William Sound and Kodiak regions, there are far fewer harbor seals now than there were 20 years ago. The principal investigators are making an attempt to determine the cause of the declines and possible methods for promoting recovery. They are collecting data to determine factors contributing to the decline. Possible factors include disease, inadequate or inappropriate food supply, high pup mortality rate, and low birth rates. Comparison of seals in different areas gives a better understanding and offers possible conclusions to the hypotheses set forth.

Seal hunters from various communities in the Aleutians, Bristol Bay, Kodiak area, Prince William Sound, and the Southeast were working with researchers to answer questions about the health of Alaska's harbor seals. They collected measurements and samples from subsistence harvested harbor seals so that researchers (from National Marine Fisheries, Alaska Fish & Game, and the University of Alaska) working together could study and compare the health of harbor seals around the state.

Samples from different parts of the seal were collected for different reasons. The skin was used for genetic studies to determine stock identity and to understand how closely related harbor seals are in different parts of the state. The blubber was used for fat analysis. This helps to learn about a seal's diet and the health of their energy stores. Also, testing was done to determine if certain contaminants were present. The teeth were used to learn exact age. The whiskers were used for stable isotope studies. This provides information about large scale changes in the diet. The stomach contents were sampled to determine recent diet. The skull was used for morphometric studies. The liver, heart, and kidney were used to determine the health of the seal and certain contaminant levels. The measurements and weights were used to study growth and body condition.

Hunters and the respective students from each village or sampling site had one set of spring scales, data forms, small bag labels, magic markers, measuring tape, Ziplok bags,

rulers, and a very sharp knife. Sampling generally occurred about once a month if subsistence hunting was taking place in the community.

3. Surf scoter Life History and Ecology, Project Number 00273. This project is conducted by Dan Rosenberg of Alaska Department of Fish and Game. This project was designed to study the life history and ecology of surf scoters that overwinter in Prince William Sound. This was accomplished by capturing birds in the spring and implanting them with light-weight radio transmitters. These transmitters allowed the birds to be tracked by satellite for up to one year. A larger number of birds received transmitters this year (approximately 25). Only the largest and healthiest specimens from the capture activities were selected for surgery. The rest were measured, banded and released. During each of the active capture days, 20-30 birds were processed. Another aspect of this project was the gathering of traditional ecological knowledge about surf scoters and other sea ducks. Youth Area Watch students took an active role in this part of the project by interviewing community members. Students assisted in the capture, care and release of the birds. Field activities were based aboard the MV Discovery in the region of St. Mathew's Bay in Port Gravina and Orca Inlet near Cordova.

In response to lack of success (mortality issues) with performing surgery in the field, this year's surgeries were performed during a two week captivity at the Sea Life Center. During this time, the birds were housed in one of the large outdoor pools at the Seward facility. Half of the captive birds underwent surgery and the other half were kept as a control for the captivity.

4. Comprehensive Killer Whale Investigation in Prince William Sound, Project Number 00012A-BAA. This project is conducted by Craig Matkin and Eva Saulitas. Craig and Eva spend approximately 100 days per year collecting data on individual killer whales in Prince William Sound and the Kenai Fjords area. Each whale is photographed and cataloged based on identifying markings and family relationships. Through many years of study, all the whales that frequent the northern Gulf of Alaska have been identified and cataloged. Genetics studies have been very helpful in determining breeding habits and familial relationships within groups.

Youth Area Watch students were trained by Craig and Eva to identify and photograph killer whales. Through this process they were able to gain a wealth of current information about the local population and killer whales in general. Students also worked with Craig and Eva during three days of field identification and tracking in the Kenai Fjords area. This field experience allowed the students to put what they learned to good use as they assisted the scientists aboard the observation vessel.

METHODS

The project coordinators were Jennifer Childress and Joshua Hall. The coordinators developed a protocol in conjunction with the research project scientists: Pat Harris, Jeff

Short, Monica Riedel, Vicki Vanek, Craig Matkin, Eva Saulitas and Dan Rosenberg. The protocol established data collection, analysis and sampling techniques, cruise schedules, training sessions and lab visitations.

An application process determined which twenty-four students from Prince William Sound, Seward and lower Cook Inlet would be selected to participate in the program. The selected students participated in the complete year, which was the fifth year for the Youth Area Watch project. There were two students selected from Tatitlek, two from Chenega Bay, three from Whittier, five from Valdez, three from Cordova, five from Seward, two from Nanwalek and two from Port Graham. Detailed training was provided to develop and satisfy the protocol which was necessary for the research involved in each project, both onshore and offshore. The onshore data collection was conducted near the respective community sites of Tatitlek, Chenega Bay, Whittier, Seward, Port Graham, Nanwalek, Cordova, and Valdez. Onshore data collection occurred throughout the year. Offshore research was undertaken during strategic times of the 1999/00 school year based on schedules of times and locations of the principal investigators.

The Youth Area Watch project assisted the students in developing sound research and analytical skills. To insure the proper training, the students were given guidance throughout the project period. Intensive training periods were provided by the Alaska Harbor Seal Commission; Alaska Department of Fish and Game; Alaska SeaLife Center; the North Gulf Oceanic Society, and The Auke Bay Laboratory (NOAA).

The student participants were involved in a multi-day training session at the Alaska SeaLife Center as part of an overall ecosystem research training session. Students also participated in four days of offshore research cruises in cooperation with the Killer Whale Identification and Tracking project. Small boats or skiffs from local communities were utilized for local restoration projects throughout the year.

The original memorandum of understanding was continued between each research principal investigator and the Chugach School District. The MOUs served as the work plan and as an agreement of expectations between the investigators and the students, with the roles and responsibilities of each.

The Chugach School District coordinated the efforts of the students with that of the science research centers mentioned above to provide an intensive training period during which the students, the coordinator, and the teachers became familiar with the data collection protocols specified by the principal investigators. The Youth Area Watch students compiled their data into a spreadsheet or database format. The scientists and coordinators involved with Youth Area Watch reviewed the data and conclusions filed by the students at the end of the collecting period. At that time, the student's work was analyzed, and feedback was given to reinforce potential findings and explanations. Students were also required to use the knowledge and skills gained from working with the project scientists to design and initiate local research/restoration projects.

Written reports of the results of local restoration projects were submitted by each site group upon completion of their projects. The reports were generated in standardized format to facilitate comparison.

RESULTS AND DISCUSSION

Students and site coordinators were selected during the third week of September, 1999. They received protocol training during two sessions held at the Alaska SeaLife Center the first and second weeks of October. Training also occurred at different times during the school year, based on need and time allotted, to correspond with the principle investigators' agendas. All sites participated in daily or weekly data collections.

The *Misty*, *Maria*, and *Sound Access* were the vessels chartered by Project 00210 funding. These vessels were used for protocol training of students and coordinators as well as site restoration activities.

Aircraft were chartered from Fishing & Flying out of Cordova for the training received from Pat Harris for the blue mussel collection. This was designed as an introduction into mussel collection techniques for those Youth Area Watch students who were not part of the program the previous year. Pat Harris made every attempt from that training session forward to include any student(s) from all sites that were on her collection route during the months of March through May. The students and coordinators then attended one of two laboratory sessions at Auke Bay Laboratories in Juneau. These sessions took place March 2-4 and April 24-26. The 8-hour session at the lab included instruction in gas chromatography and qualitative and quantitative analysis of the hydrocarbon pristane. (from the blue mussels they had collected) The students also had the opportunity to hear about some of the latest work utilizing ROVs to observe and track underwater ecosystems. The lab experiences equaled or went beyond what the students would have experienced in many of the better universities. Presentations were also made by Jeff Short and Pat Harris (the principal investigators) on their hypotheses regarding pristane levels and their ability to indicate pink salmon fry survivability.

Blue mussels were also collected at all sites, frozen, and stored until shipment to the Auke Bay Laboratories. The sampling did not start until mid-February, 2000, and students collected at their sites for the remainder of the school year. Several students collected throughout the summer to assure meaningful data for the principal investigators.

Weather records (barometric pressure, maximum and minimum temperatures, wind speed, and precipitation) were maintained daily during the school days. These records were distributed to the project coordinators and posted on the Youth Area Watch web site.

Students and coordinators from Chenega Bay, Tatitlek, Valdez, Cordova, Nanwalek, Port Graham and Whittier attended one of three harbor seal biosampling trainings occurring in

Cordova, Port Graham and Anchorage. The training in Cordova took place on November 16, 1999, the training in Port Graham took place on December 8-9 1999 and the training in Anchorage took place on January 30, 2000. The objectives of the project and the biosampling procedures were presented by Vicki Vanek (Alaska Department of Fish and Game) and Monica Riedel (Alaska Native Harbor Seal Commission). Tatitlek, Cordova, Chenega Bay, Nanwalek, Port Graham and Valdez had hunters to provide seals for biosampling at different times throughout the year. Students in Seward were unable to locate a hunter who was able to provide them with samples. The results of the data are being compiled by Vicki Vanek.

Dan Rosenberg (Alaska Department of Fish and Game) presented the scope and sequence of his surf scoter project to the students in Tatitlek. Students interviewed elders in the community to ascertain traditional ecological knowledge about scoters and other sea ducks. Five students were able to participate in a cruise in April with Dan Rosenberg during the week of April 16. These students spent a day on board the charter vessel *Discovery* working with Dan Rosenberg and his team to capture and process surf, black and white wing scoters. They assisted in mist net deployment and monitoring, taking and recording size and weight measurements and caring for birds during their captivity.

Students from Chenega Bay, Cordova, Nanwalek, Seward, Tatitlek, Valdez and Whittier designed and implemented a local research or restoration project. These projects were chosen based on their alignment with Trustee Council goals and student interest. The projects varied from site to site.

Students in Chenega Bay worked with a local activist to build and hang nest boxes to attempt to improve the local habitat for migratory swallows. The houses were hung by late April in hopes of habitation during the summer of 2000.

The Cordova YAW group decided that they would create a retrievable marine habitat for use by the many marine research groups in the community. The Cordova team has close ties to the high school marine biology class and the Prince William Sound Science Center. Both groups do a lot of research on the benthic organisms of the local harbor. The YAW students designed a structure that would rest on the harbor bottom and provide habitat for a wide variety of species that exist there. They constructed the habitat in such a way that the entire apparatus could be easily raised to the surface for collections or surveys. The retrievable habitat is now available for use by request.

The Nanwalek students enlisted the help of their entire jr./sr. high school to start an aluminum recycling program. They noticed an abundance of recyclable aluminum in their landfill and decided that they could devise a more appropriate end for the aluminum cans that come into their village. They began the project by putting up bulletins and flyers around the village to raise awareness and enlist the support of community members. The students then made regular can collections throughout the spring. The cans were collected, crushed and stored for transportation out of the village. After researching the alternatives, (planes and boats) the students decided that the most cost

effective way to remove the cans to the road system was to take them all out once a year on a boat.

Seward students began work on a multi-year project to create an informational video about the natural history of the Resurrection Bay area. They plan to leverage resources from the Kenai Fjords tour company with the skills and equipment of the school's AV department to produce a high quality informational video to be displayed in the Kenai Fjords Tours office. They are also involved with an effort to construct pigeon guillemot nesting boxes with a group headed by George Divoky at the Alaska SeaLife Center.

Tatitlek students undertook a follow-up survey of the small pond that they cleaned up during the 97/98 school year. They were most interested in researching whether or not frogs had returned to the pond, but they also cataloged as many other species as possible. They discovered that there were still no frogs in the pond, but the overall number of species utilizing the habitat had increased since the original cleanup.

Valdez students initiated a project in conjunction with the Valdez Visitor Information Center. Their goal was to construct a large sign to be placed in a prominent spot in town. The sign would be designed to be a visually appealing way to answer some of the most commonly asked questions that summer tourists have about the city of Valdez. The students also undertook the construction and publishing of a pamphlet outlining the goals and accomplishments of the Valdez YAW groups and YAW as a whole. Those pamphlets would be distributed by the VVIC. The sign was completed in Early May and the Pamphlets were ready for distribution by the first of June.

Students in Whittier continued a long-term project monitoring the black-legged kittiwake colony on Passage Canal. These students made weekly trips to the colony aboard the *Sound Access* to record the numbers of birds at the colony during April and May. The students plan to continue this project in future years. Additional funding in the form of an ASTF grant has been secured in order to further support this specific student initiated project within the larger YAW program.

CONCLUSIONS

The identified agencies: The Chugach School District, the Alaska Department of Fish and Game, the University of Alaska, Fairbanks, the NOAA Auke Bay Laboratories, the Prince William Sound Science Center, the Alaska SeaLife Center, the Alaska Native Harbor Seal Commission, Chugachmiut and the Chugach Regional Resources Commission will continue to take an active role in the continuation of this project. They have shown commitment to the future of Prince William Sound through the education of local youth. Without the participation of all parties, this project, as a whole, would not have been the success it was.

Youth Area Watch has involved students with current scientific research and acquainted them with chief scientists in Alaska. Involvement with these projects and individuals has allowed youth in oil impacted communities to become an important link between community elders and the scientific community. Youth Area Watch has emphasized the need for meaningful involvement by oil impacted community youth in the research and restoration occurring as a result of the *Exxon Valdez* oil spill.

It has been the intent through this project to combine and leverage current research funds with the aforementioned participating organizations' resources. With the Chugach School District administering the Youth Area Watch Program through a contract with the Alaska Department of Fish and Game, the program will continue to sustain itself in subsequent years through the assistance of alternative funding sources.

As we near the end of the scheduled EVOS funding for Youth Area Watch, the project is beginning to transition to a more long term and sustainable footing. The entire research community will be undergoing a change from the large scale efforts of the past 10 years to the proposed GEM program. In order to remain sustainable and viable, YAW will be changing and adapting to function in this new research climate. We anticipate a multi-year transition period and we are making preparations to enter this transition. Future proposals and reports will reflect this transition.

