

Exxon Valdez Oil Spill
Restoration Project Annual Report

Youth Area Watch Program

Restoration Project 01210
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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Youth Area Watch Program

Restoration Project 01210 Annual Report

Study History: The project effort was initiated by Chugach School District in 1996 and is in its sixth 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 as well as other locally based monitoring, restoration and research.

Abstract: The project involved students from Chenega Bay, Cordova, Nanwalek, Seward, Tatitlek, Valdez and Whittier 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) Restoration Project 99195: Pristine Monitoring in Mussels, (2) Restoration Project 99245: Community-Based Harbor Seal Management and Biosampling, (3) Restoration Project 99012A-BAA Comprehensive Killer Whale Investigation in Prince William Sound. They also collect local meteorologic and oceanographic data. The program is coordinated through Chugach School District. The above-mentioned 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, Seldovia, Seward, scoter, subsistence, Tatitlek, Valdez, Whittier.

Project Data: Will be addressed in final report.

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YAW Student Application(9/2000) designed by Joshua Hall and Jennifer Childress,
Seward's Restoration Brochure,

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 Alaska 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 Chenega Bay, Cordova, Nanwalek, Port Graham, Seldovia, Seward, Tatitlek, Valdez and Whittier as part of their current research projects.

The students have continued to develop awareness, during the 2000/2001 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

Students are chosen from Chenega Bay, Cordova, Nanwalek, Port Graham, Seldovia, Seward, Tatitlek, Valdez and Whittier participate by an application process developed by the coordinators at Chugach School District. Each community that chooses to participate also has a local site coordinator. They participated in research and restoration activities set out by Alaska Department of Fish and Game principal investigators, NOAA staff, University of Alaska, Fairbanks biologists and other project principal investigators working with Youth Area Watch. As part of an area watch project that works with existing research and restoration projects, students collect samples and data that is then provided to the respective projects.

Youth Area Watch objectives include:

1. Research project principal investigators interacting with students.
2. Identifying all research and data collection activities.
3. Updating memoranda of agreement with school districts.
4. Completing site teacher orientation.
5. Conducting school orientations for students on Youth Area Watch.
6. Selecting students to participate in Youth Area Watch.
7. Conducting site teacher training on project activity protocol.
8. Completing the student project orientation and training.
9. Conducting oceanographic data collection.
10. Assisting local hunters/technicians collecting harbor seal biological samples.

11. Conducting a local research/restoration project.
12. Maintaining a Youth Area Watch web site.
13. Collecting blue mussels for pristane/mussel analysis.
14. Facilitating project follow-up training for site teachers.
15. Conducting killer whale monitoring

Below is a brief discription of the three *Exxon Valdez* Oil Spill Trusty Council funded projects in which we participated.

1. Pristane Monitoring in Mussels, Project Number 01195. 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. 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, RESULTS and DISCUSSION

Randy Fleharty of Chugach School District is the lead project coordinator for YAW. Shoo Salasky and Joshua Hall assisted in the scheduling, training sessions and lab visitations. The coordinators developed a protocol in conjunction with the research project scientists: Pat Harris, Jeff Short, Monica Riedel, Vicki Vanek, Craig Matkin and Eva Saulitas. The protocol established data collection, analysis and sampling techniques, cruise schedules, training sessions and lab visitations.

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

During the third week of September, 2000 the lead coordinator made contact and visited all nine communities(Chenega Bay, Cordova, Nanwalek, Port Graham, Seldovia, Seward, Tatitlek, Valdez and Whittier) to determine student and community interest in participating in YAW. Seldovia and Port Graham elected to not participate this year. Seldovia had all new teachers in the science area and felt they needed to spend their energy towards preparing for their required courses. Port Graham lost a teacher due to a drop in attendance and the older students(9-12) were enrolled at the state boarding school in Sitka(Mt. Edgecomb).

During the visits to each site the coordinator conducted the YAW orientation and gave applications to the interested students. 28 students were selected out of the 73 that applied. There were two students selected from Tatitlek, two from Chenega Bay, four from Whittier, four from Valdez, six from Cordova, six from Seward and four from Nanwalek. Site coordinators were also selected and began preparing for the initial training. The lead coordinator also received Blue Mussels that were collected over the summer in three sites Nanwalek, Port Graham and Chenega Bay. Those were forwarded to Pat Harris in Juneau.

In the third week of October the student participants and site coordinators were split into two groups and were involved in two multi-day training sessions at the Alaska SeaLife Center. They received protocol training, conducted ecosystem research and explored the ASLC. Detailed training in the protocols for seawater sampling for temperature and salinity and meteorology were conducted during this time as well as introductory work on each communities local restoration project. Onshore data collection was scheduled by the local site coordinators to fit into their science programs.

Students and site coordinators from Tatitlek, Cordova and Nanwalek attended one of two harbor seal biosampling trainings occurring in Cordova and Anchorage. Both training sessions were well attended by hunters, so there was a limited amount of space available for students. The training in Cordova took place on November 8, 2000 and the training in Anchorage took place on December 2, 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, Nanwalek 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.

Students from Cordova, Nanwalek, Seward, Valdez and Whittier designed and implemented a local research or restoration project. These project were based on community and student interest. The projects varied from site to site.

The Cordova YAW group decided that they would work in conjunction with Eyak Corporation and the Prince William Sound Science Center to help reconstruct an Orca that was stranded on the beach in Hartney Bay. They had one good session of boiling and cleaning the bones, but the next step of the process was to bleach and soak the bones in one of a couple toxic solutions. Since the students were involved they decided to wait for the next step of reconstruction.

The Nanwalek students put together a hide tanning program for the entire community that used both traditional and modern methods. After the hides were tanned they used them for a variety of local art projects

Seward students created a tourist brochure that will be printed and distributed in the Spring of 2001. It includes local pictures and information on the trails, beaches and lakes in the area. See appendix.

Valdez students have worked each year to try to get out with a SERVS escort vessel. This was finally the year. The site coordinator and four students rode out to Hinchbrook Entrance as the Spill Response vessel Nanuq escorted M/V Polar Texas. The student went through several hours of training and witnessed all exercises performed aboard the vessel.

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 *Klondike Express* 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.

The students and coordinators then attended one of two laboratory sessions at Auke Bay Laboratories in Juneau. These sessions took place March. 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.

Aircraft were chartered out of Cordova for the training received from Pat Harris for the blue mussel collection. Only one student from Cordova was able to make the trip this year due scheduling conflicts. This was designed as an introduction into mussel collection techniques. 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.

Students also participated in four days of offshore research cruises in cooperation with the Killer Whale Identification and Tracking project with Craig Matkin and Eva Saulitus of the North Gulf Oceanic Society. The coordinator set up four day long charters in May with Kenai Fjords Tours to find, identify, listen to and possibly gather skin and blubber sample for contaminant and DNA testing. This trip has turned into the highlight trip for our students and coordinators.

Preliminary data shows that a several former YAW students have pursued a college career in the sciences. From Seward alone three students are currently enrolled in a college marine science or biology program. Chugach School District, Valdez and Cordova each has one

former YAW student enrolled in a college science program. We have several other students that are still enrolled in High School that are working in the marine science field. There are two that work as eco-tour guides for Kenai Fjords Tours and Princess Cruises out of Seward, one at the ASLC, and a student from Nanwalek was selected to represent Alaska at a Native American Environmental symposium in South Dakota.

CONCLUSIONS

YAW plays a very unique role in attempting to bring together students from nine different schools and four different school districts. The diversity of the area we cover, Prince William Sound, Kenai Fjords and Lower Cook Inlet, is immense. The communities alone range from the highest to some of the lowest economic levels in the state. That diversity along with the differences between the rural and urban lifestyles creates the need for each community to personalize their YAW experience. We provide the opportunity to enhance their science and environmental curriculum in a way that matches their desires, needs and values.

Even though our program format and structure hasn't changed over the years the individual students have. Approximately 143 students have been involved with Youth Area Watch over the last six years. They have worked with other students, hunters, elders, scientists and companies indirectly involving countless students and community members. In the smaller communities where teachers have multi-graded classrooms the YAW program is integrated into the coursework so that hundreds of students have been exposed to Youth Area Watch. Considering the size of our communities that is a huge impact. Our goals have not changed and we continue to search for new sources of funding and projects for our students to participate in.

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.



Students at ASLC doing Salinity testing



Seal Training with Vicki Vanek



Seal Training with Vicki Vanek



Auke Bay NOAA Laboratory



Auke Bay NOAA Laboratory



Valdez Students aboard *M/V Nanuq*

2000-2001

Youth Area Watch Application

Please use blue or black ink to fill out this form. Feel free to use additional paper if needed.
Student's Name: _____

Last

First

Middle

Age: (Please circle) 12 13 14 15 16 17 18

Grade: (Please circle) 6 7 8 9 10 11 12

School: _____

Parent/Guardian Name: _____ Telephone: _____

Please respond to the following questions without the help or assistance of any adult, classmate, or friend.

List any computer applications or programs that you can use.

List the extra curricular activities, clubs, organizations, and special events you participated in last year. For example: basketball team, school newspaper, NYO, Boy/Girl Scouts, etc.

Extra Curricular:

Clubs/Organizations:

Special Events

What is your favorite subject or class in school? Why?

Have you ever participated in the Youth Area Watch Program? Yes No Year _____
Why do you want to be a Youth Area Watch participant?

What do you hope to gain or learn from the program?

Youth Area Watch students must demonstrate responsibility and maturity on a regular basis. Students are required to reliably collect data throughout the year. Describe a situation where you showed that you were responsible, reliable and mature. _____

Describe one long-term goal (2-5 years) that you are working toward.

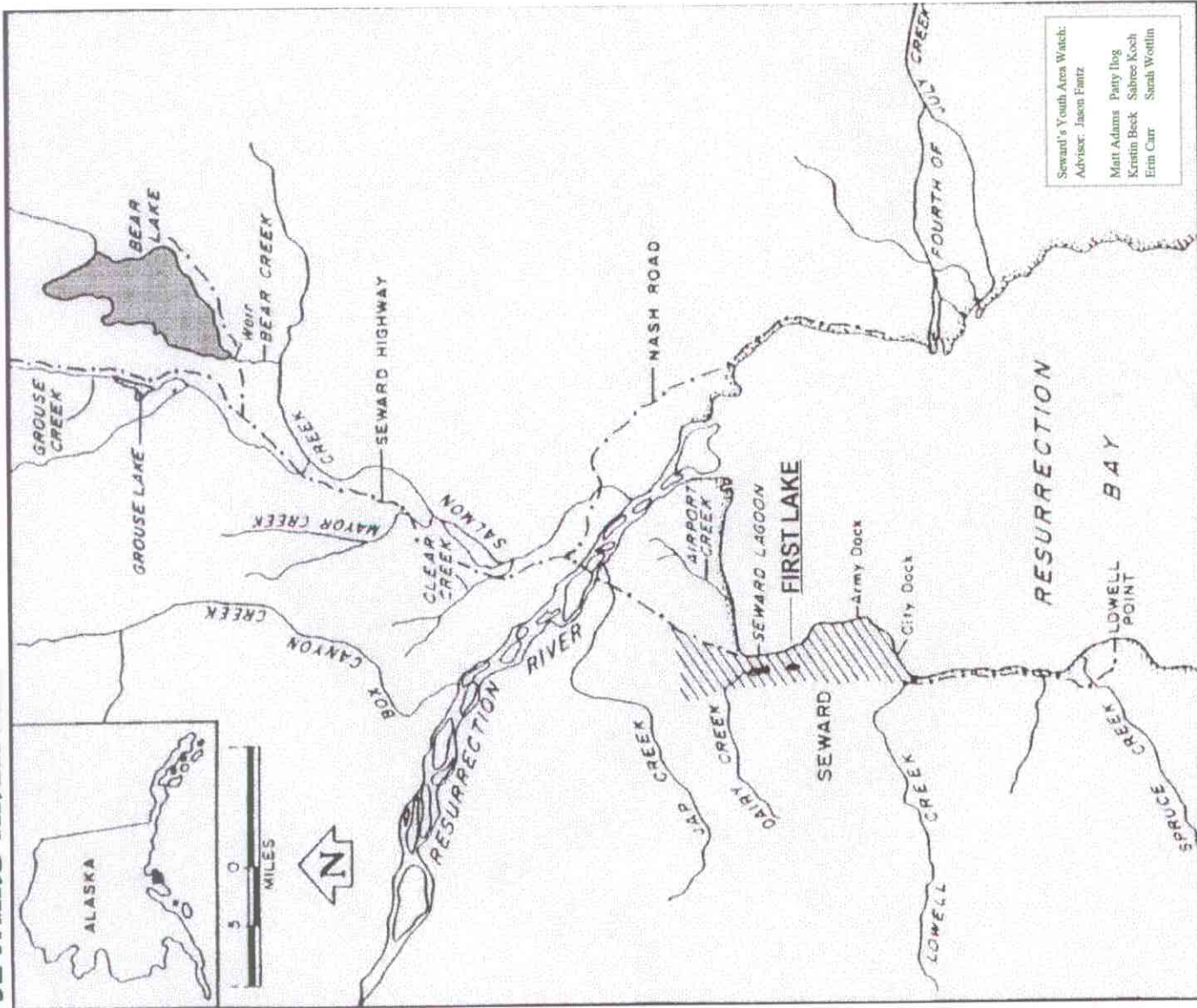
Describe one short-term goal (less than a year) that you are working toward.

Please included a letter of recomendation from a teacher at your school.

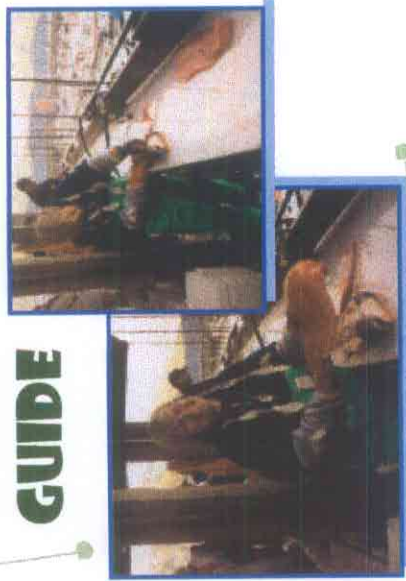
Selection to participate in this program will be based on this application and teacher/administrator recommendations.

DEADLINE: Applications must be completed and returned by: October 3rd.

SEWARD AREA MAP



SEWARD'S OUTDOOR GUIDE



- TRAILS
- FISHING
- CAMPING
- BOAT LAUNCHES
- EXIT GLACIER
- LAKES
- CABINS



FISHING

Alaska sport fishing license is required for anglers 16 years and older.

Saltwater

Red Salmon: June

Silver Salmon: Mid

July—August

Pink Salmon: August

King Salmon: May—June

Halibut: February—December

Rock Fish: open year round



Charters are available! Ask at area businesses

All tributaries to Resurrection Bay are closed to salmon fishing!

LAUNCHES

Harbor Master

Fee: \$5.00

Where to Launch:

North & South launching terminals

Fourth of July

Fee: free

Where to Launch: the beach

Miller's Landing (Lowell Point)

Visitors:

Fee (do it yourself): \$10

Fee (they do it): \$15

Campers

Fee (do it yourself): \$10

Fee (they do it): \$15

Where to Launch: the beach

CAMPING

Forest Service

Primrose: Milepost 17, located on Kenai Lake

Ptarmigan Creek: Milepost 23.1

Trail River: Milepost 24.2, located on Kenai Lake



City

Forest Acres

Waterfront

4th of July Creek:

across the bay, end

of Nash Road

Private

Fjords RV: Exit Glacier Road

Gary's Bear Lake: Milepost 7

Kenai Fjords RV Park: 3rd Ave.

Miller's Landing: Lowell Point- South Seward, past waterfall

Seward RV & Campground: Milepost 1,

CABINS

Forest Service Cabins

Aspen Russian Lake: \$35/night

Barber: \$45/night

Clemens: \$45/night

Crescent Lake: \$45/night

Lower Paradise Lake: \$45/night

Resurrection River: \$35/night

Upper Paradise Lake: \$45/night

Upper Russian Lake: \$35/night

Park Service

Exit Glacier Cabin is only available in the winter when the road is closed to vehicles. \$35/night

Cabin reservations are made through the National Recreation Reservation Center: 1-877-444-6777

GLACIER

Exit Glacier located three miles North of Seward is accessible by car and a short walk. Visitors are asked to stay behind the roped areas. The glacier is always moving and calving, so be smart and stay back a respectable distance.



TRAILS

Golden Fin Lake:

Milepost 12

Graying Lake: Milepost 13

Lost Lake : Milepost 5

Mt. Marathon: Jefferson Street

Primrose: Milepost 17

Ptarmigan Creek: Milepost 23

Resurrection River: Milepost 3.7

Victor Creek: Milepost 20

Tonsina/Caines Head: Lowell Point

LAKES

Lakes	Fish	Fishing Success
Goldenfin Lake	Dolly Varden	Good
Meridian Lake	Rainbow Trout	Fair
Graying Lake	Graying	Good
Lost Lake	Rainbow Trout	Fair/Good
Lower Paradise Lake	Graying	Excellent
Upper Paradise Lake	Graying	Excellent
Crescent Lake	Graying	Good/Excellent
Carter Lake	Rainbow Trout	Good/Excellent