

*Exxon Valdez* Oil Spill  
Restoration Project Annual Report

Kametolook River Coho Salmon Subsistence Project

Restoration Project 98247  
Annual Report

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

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# Kametolook River Coho Salmon Subsistence Project

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## **Study History:**

The legislature of the State of Alaska awarded the Department of Community and Regional Affairs (DCRA) \$5 million to fund restoration projects requested by villages in the area impacted by the *Exxon Valdez* Oil Spill. Perryville's top priority was restoration of the Kametolook River coho salmon run because of its importance to their subsistence way of life. The project began in 1996 with DCRA funding which was used to evaluate restoration alternatives. The second and third year of the project (Federal Fiscal Years 97 and 98) were funded by the *Exxon Valdez* Oil Spill Trustee Council. National Environmental Policy Act (NEPA) compliance was obtained on May 30, 1997.

## **Abstract:**

Subsistence users from the remote Alaska Peninsula Native Village of Perryville have noted significant declines in the coho salmon run in the nearby Kametolook River since the *Exxon Valdez* oil spill (EVOS) in 1989. The Trustee Council began funding a project in Federal Fiscal Year 1997 with the intent of restoring this coho salmon run. This project is a continuation of an evaluative phase of the project funded through the EVOS criminal settlement (Grant Agreement Number 2168588). The criminal settlement funded the project for an assessment team from ADF&G and local assistants from the Native Village of Perryville. The assessment period determined the preferred method to restore the Kametolook River's coho salmon run to historic levels. This phase ended with the approval of an Environmental Assessment (EA) and a Finding of No Significant Impact (FONSI) by the U.S. Fish and Wildlife Service in May 1997. The EA and project review supported instream incubation boxes as the preferred alternative. Community involvement and use of local traditional ecological knowledge by the villagers of Perryville is an integral part of restoring Kametolook River coho salmon as a subsistence resource. This project will request funding through FY 2002.

**Key Words:** Alaska Peninsula, coho salmon, community involvement, *Exxon Valdez* oil spill, holding pens, instream incubation boxes, Kametolook River, Perryville, subsistence, traditional knowledge.

**Project Data:** Kametolook River coho age-class data as well as genetic and pathological samples have been obtained. Thermograph data have also been collected. For further information not provided in this report regarding data contact Jim McCullough, ADF&G, 211 Mission Road, Kodiak, Alaska. 99518. Phone: (907) 486-1813. E-mail: jim\_mccullough@fishgame.state.ak.us; or Lisa Scarbrough, ADF&G, 333 Raspberry Road, Anchorage, Alaska. 99518. Phone (907) 243-4975. E-mail: lisa\_scarbrough@fishgame.state.ak.us.

**Citation:**

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## EXECUTIVE SUMMARY

Subsistence users from the remote South Alaska Peninsula Native Village of Perryville have noted declines in the coho salmon (*Oncorhynchus kisutch*) run in the nearby Kametook River since the *Exxon Valdez* oil spill (EVOS). The Trustee Council began funding this project in Federal Fiscal Year 1997 with the intent of restoring the coho salmon run to historic levels. This project is a continuation of an evaluative phase of the project funded through the EVOS criminal settlement (Grant Agreement Number 2168588). Although limnological, juvenile and adult fisheries data were not available or severely limited before the salmon decline, it was determined through the evaluation phase that instream incubation boxes in conjunction with self imposed harvest limits by subsistence users were the preferred alternatives for restoration of this salmon run. In 1997, the Alaska Department of Fish and Game, Habitat and Restoration Division, aided the project by providing an Environmental Assessment (EA). In May of 1997, a Finding of No Significant Impact (FONSI) was signed for National Environmental Policy Act (NEPA) compliance.

Community involvement and use of traditional and ecological knowledge from the villagers of Perryville is an integral part of restoring the Kametook River coho as a subsistence resource. Presently, no regulations prohibit subsistence fishing in the Kametook River; however, starting in 1997 the Perryville Village Council voluntarily closed the upper half of the Kametook River to subsistence salmon fishing in order to not interfere with spawning. In addition, the Perryville Village Council has hired local assistants who helped ADF&G with identifying critical habitat areas for spawning and historic run timing and escapement information. They also received training to assist ADF&G with other fieldwork including: genetic and pathological sampling, incubation box installation, egg takes and incubation techniques, and year-round monitoring of the environment. Also, an aquarium has been set up in the village school where students actively participate in incubating coho salmon from egg to fry stage and releasing the fry into the Kametook River. In May 1997 and 1998, about 125 fry annually from the school aquarium project were released into the Kametook River.

In the fall of 1997, two production type instream incubation boxes were installed in the upper reach of the Kametook River. These boxes replaced a small test incubation box that had successfully incubated eggs in 1996. In 1997, the Kametook River coho escapement was an estimated 724 salmon, nearly four times the estimated escapement during 1996. The increased escapement from 1996 is partially attributed to the self imposed closure of the upper river by the villagers and a commercial fishing closure in marine waters during nearly the entire coho salmon run. All facets of this project should provide sufficient escapement within two coho life cycles for subsistence and spawning requirements. In November, 1997 only two fully ripe female coho salmon and five partially spent female coho salmon were caught. Eggs from these seven salmon were fertilized and placed into the egg incubation boxes. More salmon were desired, but there were difficulties capturing ripe coho salmon, most were green or spent. As a result of not having sufficient parents represented in the egg take (genetic diversity), the permit only



allowed surviving fry to be released in two landlocked lakes near Perryville, Sandy and Sicken Lakes. From April 29 through May 18, an estimated 1,600 fry were removed from the instream incubation boxes and released into the lakes.

In October and November of 1998, adult salmon holding pens will be used to make the recovery of ripe salmon more efficient. Fry produced in future years will be released into the Kametolook River, if sufficient spawning parents can be harvested to comply with the Fish Transport Permit genetic requirements. Survivors should return as adults two and three years after they are released as fry into the Kametolook River.

## INTRODUCTION

*This report summarizes the EVOS Kametlook River Coho Salmon Subsistence Restoration Project from May 1, 1996 through September 30, 1998. Please refer to Annual Report 97247 for references to Plates 1-26 and Appendices A-D; H-J; L; N-U (Scarborough and McCullough 1998).*

The remote Native village of Perryville is located approximately 500 air miles southwest of Anchorage on the Pacific side of the Alaska Peninsula (Figure 1). Veniaminof Volcano overlooks the village that is situated directly along the Pacific Ocean coastline with beaches of volcanic black sand (Plate 1). The Kametlook River is located four miles northeast of Perryville, and is easily accessible from the community via ATV, foot, or boat (Plate 5, Fig.2).

Kametlook River coho salmon have long been a major subsistence food source for the people of Perryville (Fall et al 1995, Hutchinson-Scarborough and Fall 1996, Morris 1987, Owen and Sarafin 1997, 1998 and 1999). This stock of coho salmon has been in decline for a number of years and needs to be restored to a level that will be self-sustaining and capable of supporting subsistence needs as it has in the past. Members of the village of Perryville requested the EVOS Trustee Council to fund a restoration project and they asked ADF&G to assist with this project. The cause of the decline in salmon numbers is unknown. A restoration project cannot be successful unless the cause of the decline is understood and the project is "fixing" the "right problem." An appropriate salmon restoration project will hopefully increase Kametlook River coho salmon relied on for subsistence by Perryville people back to historic levels. If more fish are available for subsistence, it will not only provide people with more coho salmon, but it will also take pressure off of other subsistence resources that were hurt by the spill, such as other salmon species, clams, seals and sea lions, as well as recent declines of local caribou.

This subsistence project is designed to restore coho salmon subsistence opportunities in the Alaska Peninsula village of Perryville. The project was initiated during community workshops held by the Subsistence Restoration Planning Team (Fall 1995). Workshops in Perryville took place in September 1994 and May 1995. The project was subsequently endorsed by the Perryville Village Council (Appendix A). The project was also discussed and endorsed by the Chignik Regional Planning Team in the spring of 1995 and again in December 1996 (Appendix B). Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Westward Region staff and the Subsistence Division, have been involved in the planning and development of the project (Appendix C). In addition, an ADF&G biologist in the Norton Sound Region provided technical expertise regarding the use of both instream incubator boxes and recirculating water incubators, which have been successful in the Norton Sound Region. Alaska Department of Fish and Game, Division of Habitat and Restoration staff have also been involved with the project, especially with the development of an Environmental Assessment and field work. Kodiak Pillar Creek Hatchery in Kodiak provided on the job training for Perryville Village assistants in September 1997 at the hatchery. In addition, starting in the fall of 1998, one staff person from the hatchery will travel to Perryville with an ADF&G biologist to provide follow-up training for village assistants in egg harvesting, fertilization and biological sampling.

In 1996, funding for the evaluation phase of the project was provided through a grant to the Native Village of Perryville by the Alaska Department of Community and Regional Affairs, using EVOS criminal settlement funds. During consultation about this grant, the State members of the Trustee Council requested that a proposal to the full Trustee Council be prepared to support the implementation of the project in subsequent years. This was accomplished and the Trustee Council began funding this project in Federal Fiscal Year 1997, to ADF&G with a cooperative agreement to the Perryville Village Council (Appendix D). This cooperative agreement will be amended annually through the life of the project (Appendices V-X). Comments by peer reviewers of the FFY 97 Detailed Project Description were addressed on November 1, 1996 (Appendices E&F). Comments by the reviewer for the 97247 annual report are addressed in this report (Appendices Y, Z). The Environmental Assessment was approved and the resulting FONSI for this project was received by the Trustee Council in May, 1997 (Appendix G).

Although limnological, habitat, juvenile and adult fisheries data were not available or severely limited before the salmon decline, it was determined through the evaluation phase that instream incubation boxes (Figure 3) in conjunction with self imposed harvest limits by subsistence users were the preferred alternative for restoration of this salmon run. In addition, since 1997 commercial salmon fisheries in the Western and Perryville Districts of Chignik have been closed on about 20 August in an attempt to rebuild this coho salmon stock. All facets of this project should provide sufficient escapement within two coho life cycles for subsistence and spawning requirements.

Necessary permits (fish transport permits and general habitat/ waterway permit) have been acquired for this project which are good through 2003 (Appendices H & I). Samples of adult coho salmon will continue to be collected for genetic and pathology data until sufficient numbers are obtained (Appendices J & K). The assessment team will work with the Principal Geneticist, Principal Pathologist and Area Management Biologist to have the most safe and satisfactory project possible to help restore coho salmon in the Kametlook River to historic levels.

Community involvement and use of traditional and ecological knowledge from the villagers of Perryville is an integral part of restoring the Kametlook River coho salmon stock as a subsistence resource. The Perryville Village Council has hired local assistants who help ADF&G with identifying critical habitat areas for spawning and historic run timing and escapement information. The assistants have received training to assist ADF&G with fieldwork including genetic and pathological sampling, incubation box installation, egg takes and incubation techniques, and year-round monitoring of the environment. In the spring of 1998, an estimated 1,600 coho salmon fry were produced from the incubation box project. Also, an aquarium has been set up in the village school where students actively participate in incubating coho salmon from egg to fry stage and releasing the fry into the Kametlook River. In May 1997 and 1998, about 125 fry annually from the school aquarium project were released.

All facets of this project should provide sufficient escapement and historic subsistence harvest levels within two coho salmon life cycles (once fry are released in the Kametlook River).

## OBJECTIVES

The primary objectives of the project are to increase the coho salmon runs to the Kametook River and provide local subsistence salmon opportunities; and to include the people of Perryville through involvement in the project and education. The species of interest for this project is coho salmon. Phase 1 (1996-1997) of the project included a complete assessment of the creek and river habitat in proximity to Perryville and interviews to determine salmon run strength, run timing and physical changes to local drainages. Phase 2 (1996) included installation and testing of a streamside incubation box, continuation of the classroom aquarium and education programs for adults and high school students, and writing an Environmental Assessment. Phase 3 (starting in October, 1997) included the installation of two large capacity streamside incubation boxes and continuation of the school aquarium and education programs. Annually (through 2002), egg takes for the incubation boxes and the school aquarium, continued education, and habitat and harvest monitoring will occur.

## METHODS

The method(s) used to accomplish project objectives were determined in 1996 and 1997 by a team of ADF&G specialists, and local Perryville residents. Funding for the first portion of the project was provided through a grant to the Native Village of Perryville from criminal settlement funds. Beginning in Federal Fiscal Year 1997 funding has been provided by the Trustee Council. Personnel involved with the project have determined that the most appropriate rehabilitation method is through the use of instream incubation boxes. The team has acquired all the necessary permits. The Environmental Assessment and a Finding of No Significant Impact by the US Fish and Wildlife Service was approved in May of 1997 (ADF&G 1997). This project has the potential to make restoration of coho salmon in the Kametook River possible. Similar projects in other regions of Alaska have proven to be successful.

In addition to school and village meetings where salmon life cycle processes were described (Plate 2), instream incubation boxes have been determined to be the preferred restoration method. In 1996, a test incubation box was positioned in a head water tributary of the Kametook River to use the natural flow from the stream to incubate coho salmon eggs (Plates 10-13; Figures 2 & 3). This portion of the project was successful; swimup fry were produced during April, 1997 (Plate 22). In 1997, the test box was removed and two large production incubation boxes were installed in the same location take (Plates 28, 31). Fry from these boxes were produced from the fall egg. In the production phase of this project, genetic integrity of the Kametook River coho salmon will be assured under the guidance of ADF&G's Principal Geneticist. The potential incubation site has water temperatures consistent with natural spawning sites to insure that fry development and emergence occur at the same time as naturally occurring fry (McCullough 1999, Figures 4-6). The small scope of this project is not expected to noticeably add any coho salmon to other common property harvest groups (i.e. commercial fisheries).

From similar projects in Norton Sound, it has been found that improved returns were noticeable in about five years. If the number of coho salmon spawners is sufficient to allow an egg take,

instream incubators will be employed. (Fish Transport Permits will require a minimum of 60 naturally spawning pairs before an egg take can occur, and 50% of the escapement above the 60 spawning pairs is available for an egg take and a minimum of 60 spawning pairs are used during an annual egg take.) In the fall of 1998 and beyond, salmon holding pens will be used to make the recovery of ripe salmon easier. The incubators are expected to operate annually from 1997 through 2002, or longer if additional financial support can be obtained.

Other restoration methods evaluated included a recirculating water incubation facility in the village, potential habitat manipulation to create or provide access to better spawning and rearing habitats, and a remote incubation facility. All of these alternative methods were rejected in favor of the instream incubators.

The Trustee Council's goal of achieving community involvement and traditional and ecological knowledge in the restoration process is addressed in that Perryville is a partner with ADF&G in this project. This project has been discussed and endorsed by the Chignik Regional Planning Team and the Perryville Village Council. Through project funds, the Perryville Village Council is responsible for hiring local assistants, and providing necessary logistical support for the operation of this project. The community has also contributed much in terms of local knowledge of the environment, including: historic to contemporary salmon run timing and numbers, subsistence harvest levels over time, identifying physical changes to the Kametlook River over time, helping ADF&G identify spawning and rearing areas, and identify potential characteristics of the river, such as where winter freeze over or spring and fall flooding might occur.

Several residents of Perryville have worked with ADF&G during the assessment and implementation phases of the project. In addition, local assistants will continue to monitor the project throughout the year, when ADF&G personnel are not present. Local assistants through hands-on involvement have been trained by ADF&G personnel to monitor temperature and water level stations, to monitor the egg incubation boxes, participate in egg takes for seeding the incubation boxes, transporting eggs to the classroom incubator, and will transport fry to nearby lakes or adjacent rivers (depending on the Fish Transport Permits estimated natural production and modeled lake stocking levels; Plates 2,3,4,6, 9, 10, 13, 14, 18-23). In addition, in September 1997, two Perryville assistants traveled to a Kodiak hatchery as part of this project to learn about large scale egg harvesting, incubation and rearing techniques.

Perryville residents have been kept informed about the progress of the project through local assistants, the Village Council, and at village meetings (Plate 2; Appendix L). During these meetings residents have been informed about salmon run strengths, harvest levels, and rearing and habitat issues. The community has been encouraged to develop ways that they can contribute toward restoring the coho run. Presently, no regulations prohibit fishing in the Kametlook River; however, starting in 1997 the Perryville Village Council voluntarily closed the upper half of the Kametlook River to subsistence salmon fishing in order to not interfere with spawning (Appendix M).

School children have had opportunities to learn, understand and appreciate the complexities of the growth cycle of salmon through the use of a classroom aquarium that is raising coho salmon

from egg to fry stages. The fish resource permits (1997 and 1998) allowed these fry to be released into the Kametolook River (Appendix N, AA). In addition, when allowed by the teachers and parents, older school children have accompanied ADF&G personnel to the Kametolook River and nearby lakes to assist with minnow trapping and biological and habitat sampling. This portion of the project has been in operation for two winters now, and is expected to continue through 2002 and possibly beyond if the school continues to support the program. (Plates 16-21, 27).

## RESULTS

### *Project Perryville 96-01 (May 96 through September 96)*

This phase of the project (and portions of field work through May of 1997) were funded through the EVOS Criminal Settlement.

#### *May 1996:*

Three ADF&G personnel; Bill Hauser, Jim McCullough and Pete Velsko traveled to Perryville May 17-22, to assess coho salmon habitat conditions in the Kametolook River Drainage. They toured the non-glacial portion of the drainage and installed a small test instream incubator and three habitat monitoring sites with the assistance of Ignatius Kosbruk, Jerry Yagie, Gerald Kosbruk and Harry W. Kosbruk. In addition, discussions between ADF&G and Perryville residents were initiated to refine restoration options and to define project goals through questions and answers about local fish runs and the habitat. (See Appendix O for a detailed field trip report; Plates 3,7,10-12).

#### *August 1996:*

Jim McCullough (ADF&G) traveled to Nome July 29-August 2, to assess methods used to determine potential incubation box sites and to learn suitable instream incubation box project egg take techniques. These methods will be applied to the Kametolook River coho project. ADF&G Pete Velsko provided the training. (See Appendix P-1 for a detailed field trip report.)

#### *October 1996:*

Three ADF&G assessment team members; Bill Hauser, Lisa Scarbrough and Jim McCullough traveled to Perryville and joined with local assistants; Gerald Kosbruk and Jerry Yagie to expand the habitat surveys of drainages adjacent to Perryville, to place fertilized eggs in the experimental stream side incubation box and to initiate a cooperative educational program in the Perryville school. Local guides showed us much of the historic and potentially productive reaches of the Kametolook, Three Star and Long Beach Rivers. Long Beach River, although historically productive, presently had no quality spawning or rearing habitat. Three Star River, smallest of the three drainages, had some stable reaches but about half of the discharge had changed course and currently flows into Long Beach River. Some potential rearing habitat is present while spawning habitat appeared to be limited. Kametolook River currently showed the most salmon spawning and rearing potential. However; this system is dynamic and habitat quantity and quality may change annually. (Plates 4-6, 8, 9).

Minnow trapping was conducted in all three drainages (Tables 1-4). Rearing and spawning habitat in Long Beach River appeared to be negligible. Three Star River had limited high quality slough habitat and supported juvenile coho salmon and Dolly Varden; spawning habitat appeared to be limited to several short stream reaches. Rearing habitat for juvenile coho salmon in the Kametolook River appeared to be quite abundant while upper stream reaches seemed able to support relatively good numbers of spawning salmon. Several high school students assisted with coho fingerling data collection efforts (Plates 18-20).

**Table 1. TRAP CATCHES AND AGE-CLASS OF JUVENILE COHO SALMON**

<u>Location</u>	<u>Site</u>	<u>No. Traps</u>	<u>Catch per Trap-Hour</u>		
			<u>Trap Hr.</u>	<u>Coho</u>	<u>Dolly Varden</u>
Kametolook	Candlefish Slough	4	2.50	36.1	150.5
Kametolook	Fingerling Slough	5	5.40	44.6	10.5
Kametolook	Cross Creek	4	2.16	19.9	34.0
Kametolook	Average			33.4	58.9
Three Star	“Lake”	2	9.09	5.2	16.1
Long Beach	pond	1	0.50	8.0	

**Table 2. FINGERLING COHO SALMON AGE-CLASSES FROM THE KAMETOLOOK RIVER COMBINED**

	<u>Number</u>	<u>Percent</u>
Age 1.0:	45	45.0
Age 2.0:	55	55.0
Total Samples:	100	100.0

**Table 3. AGE-CLASS DISTRIBUTION OF ADULT COHO SALMON FROM THE KAMETOLOOK RIVER**

	<u>Number</u>	<u>Percent</u>
Age 1.1:	9	28.1
Age 2.1:	18	56.3
Age 3.1:	2	6.3
Unknown:	3	9.4
Total Samples:	32	100.0

**Table 4. ADULT COHO SAMPLES FROM THE KAMETOLOOK RIVER, SEXED FROM INTERNAL OBSERVATION**

	<u>Male</u>	<u>Female</u>	<u>Unknown</u>	<u>Total</u>
Number	15	16	1	32

A total of 32 adult coho salmon were collected from the Kametlook River during this trip. Few other adult salmon were seen. Genetic and kidney samples, otoliths and scales were taken from each salmon (Plate 9). All observed coho salmon appeared to be recent arrivals to the river and were not ripe; seeding fertilized coho eggs into the incubation box was not possible.

High school students, in addition to assisting with fingerling sampling, also explained the field trip experience to their fellow students. Each presented some aspect of the field studies and the ADF&G team participated by asking questions and explaining details. ADF&G personnel also demonstrated scale reading techniques and presented representative samples of all species collected from the minnow traps. Plans were developed with the science teacher to install and permit a classroom aquarium incubator for coho salmon eggs. (See Appendix Q for detailed field trip report.)

*Project 97247 (October 1997 - September 1998)*

*November - December 1996:*

Two ADF&G assessment team members; Jim McCullough and Joe Sullivan traveled to Perryville and joined with local assistants, Gerald Kosbruk and Jerry Yagie to capture and spawn one pair of coho salmon for the incubation box in the Kametlook River. Gillnetting captured about 20 salmon including 4 sockeye, 13 male coho and 3 female coho salmon. Following standard delayed fertilization techniques, the eggs were fertilized and seeded into the incubation box (Plate 13). A thermograph was deployed in the substrate near the largest group of spawning coho salmon. Although only a one time event, a survey to enumerate spawning coho was conducted. About 75% of all observed coho were located within 1 mile downstream of the incubation box; the remaining 25% were scattered in small groups throughout the remainder of the drainage. The total observed coho escapement was about 100 salmon and no ocean bright salmon were observed. The subsistence harvest continued after the escapement count, so the observed escapement was possibly higher than the actual spawning escapement. At the high school the ADF&G team assembled the aquarium incubator. When the eggs reach the eyed stage, about 250 eggs from the stream side incubator will be transferred to the classroom incubator. (See Appendix R for a detailed field trip report.)

*January - February, 1997:*

Two ADF&G team members; Jim McCullough and Lisa Scarbrough traveled to Perryville. While waiting in King Salmon for the flight to Perryville they met with the Alaska Peninsula/Becharof National Wildlife Refuge staff to discuss the Kametlook project and review the draft Environmental Assessment. In Perryville, they joined local assistants, Gerald Kosbruk and Jerry Yagie and checked the thermograph and staff gauge sites, shocked the incubating eggs, discarding dead eggs, and sorted out about 250 eggs which were transported to the school aquarium (Plates 15-17). An approved Fish Resource Permit allowed 250 eggs to be raised in the school aquarium and their release into the Kametlook River. With the assistance of five high school students, the science teacher, Don Preston; and village assistants Jerry Yagie and Gerald Kosbruk, the team measured physical characteristics of two landlocked lakes as potential coho fry or rainbow trout release sites and collected gravel for alevin habitat in the aquarium



(Plate 21). A slide show of the restoration project and discussion of the life cycle of salmon was presented to all Perryville students.

McCullough and Scarbrough also attended a meeting sponsored by the Village Council where they presented a similar slide show. At the village meeting the restoration project and the school aquarium were discussed as well as the life cycle of coho salmon, the 1996 coho salmon escapement, and potential production from the escapement (Plate 2). (See Appendix S for a detailed field trip report.)

*March - May 1997:*

In early April local Perryville assistant, Gerald Kosbruk closed the test incubation project for brood year 1996 progeny. All live alevins (348 fish) were preserved and sent into Kodiak for analysis. From this incubation test no eggs or fish were released, all were sacrificed (Plate 22).

*Environmental Assessment/ Other Permits:*

ADF&G personnel, Joe Sullivan drafted an Environmental Assessment of the Kametolook River Coho Salmon Restoration Project. A FONSI was developed and in May was signed for NEPA compliance. A Habitat Permit was reviewed and accepted which allows the instream production size incubation boxes to be deployed. Fish Transport Permits were drafted for review and approved to insure that management, genetic, and pathology concerns are addressed. Approximately 125 coho salmon fry were released into the river of origin (Kametolook) from the school aquarium project (Appendix T).

*June - August 1997:*

The appropriate Fish Transport Permits were received from ADF&G for harvesting salmon eggs and releasing fry from incubation box and school aquarium for FFY 98. Staff purchased materials and constructed two incubation boxes (Plates 24-26). They met with the Chignik Regional Planning Team, Chignik Regional Aquaculture Association and public to development a Western and Perryville Districts coho salmon management plan (Owen and Sarafin 1997). Incubation boxes were shipped to Chignik Bay (ADF&G M/V Resolution) and local Perryville resident transported them to Perryville via fishing boat.

*September 1997:*

Two Perryville personnel; Dennis Shangin and Jerry Yagie were trained (2 weeks) at Pillar Creek Hatchery (Kodiak) in spawning and incubator maintenance techniques. Two ADF&G staff; Jim McCullough and Rita Miraglia attempted to travel to Perryville to install the two incubation boxes in Kametolook River, sample salmon and trout for age, length and abundance data, however weather prevented them from traveling beyond Chignik Lake. (See Appendix U for a detailed field trip report.) In late September, two Perryville assistants, Jerry Yagie and Gerald Kosbruk transported two incubation boxes and other necessary project equipment up the Kametolook River.

Project 98247 (October 1997 - September 1998)

*October-November 1997:*

The Perryville Village Council voluntarily closed the spawning areas of the Kametolook River to fishing (October 3) (Appendices M, BB).

Jim McCullough (ADF&G) traveled to Perryville on October 31 through November 6, 1997 (Appendix CC). On November 3 and 4, Jim along with the assistance of Perryville residents Jerry Yagie, Dennis Shangin and Austin Shangin, installed two production type salmon incubation boxes in the same location as the test incubation box (Plate 28,31). The water intake box from the test box was preserved in the river to serve one of the production boxes and an additional water intake box was also installed, along with the connecting plumbing and new incubation boxes.

The Kametolook River was then surveyed for the presence of adult coho salmon. Two coho salmon were observed in a tributary of the Kametolook River near the project site; 75 coho and 5 sockeye salmon about 1/4 mile below the project site and an additional 104 coho and 5 sockeye salmon in the remainder of the river. This provided an index count of 181 adult coho and 10 sockeye salmon. These counts were considered minimal; the estimated total coho salmon escapement was expanded to 724 coho salmon. The estimated total is 4 times the indexed count. An expansion factor of 4 was used to compensate for poor survey conditions encountered (high turbid water conditions only allowed the team to survey about 1/4 of the total river). Jim did not attempt to expand the indexed sockeye salmon count into an estimated total count. Jerry and Jim also discussed site deployment of remote thermographs that will be mailed to him in mid November. Jerry and Jim also surveyed Three Star River and observed 2 salmon that they were unable to identify to the species level due to poor survey conditions; but assumed the fish were coho salmon.

Jim and Jerry attempted a coho salmon egg take for the incubator boxes and the school aquarium but only two ripe salmon were caught and added to one of the egg incubation boxes (Plates 28-31). Samples of the fish used for the egg take were collected for genetic and pathology data (Appendix M; Plate 32). Because of the lack of success in finding ripe salmon, it was decided that four local Perryville assistants would attempt additional egg takes through November.

On this trip Jim also prepared the school aquarium for incubation of coho salmon from egg to fry stages and met with the teachers and upper class members and instructed them on classroom salmon incubation techniques.

Local Perryville assistants took 10 additional trips at different stream locations and several sets per day to capture ripe coho for the incubation boxes. These trips were not very successful, only an additional 5 partially-spent-ripe female salmon were captured. Their eggs were fertilized and added to the incubation boxes (Appendix DD). The problem was not in catching coho salmon, but in catching ripe fish. Samples were taken for pathology and genetic testing from all males and females harvested for the project (Appendix K). They reinstalled and deployed thermographs at designated sites.

In 1998, the school aquarium project produced approximately 125 more swim-up fry that were released in the Kametlook River in May River (Fish Resource Permit P-98-007; Appendix AA).

This project can continue every school year as long as there is interest from the school teachers and students and annual fish resource permits are obtained.

Community Involvement:

Community involvement and the use of traditional and ecological knowledge from the local community of Perryville has proven to be an important component of the projects attempt to restore the Kametlook River coho salmon stock. The community has provided expertise in regards to historic and contemporary use of salmon in the region, escapement estimates prior to the start of the project, and historical and contemporary environmental and habitat changes. In addition, the community has imposed their own closure to the subsistence taking of coho salmon in the spawning reaches of the River as well as encouraging people to not fish the entire Kametlook River for any coho salmon until the river is rehabilitated. Instead, several residents are providing transportation to other nearby river systems for those that do not have the necessary equipment (skiff, boat or 4-wheeler) to get there themselves to harvest coho salmon. The project also continues to provide on the job training of village assistants in genetic and pathological sampling, incubation box installation, egg takes and incubation techniques, and year-round monitoring of the environment.

ADF&G and Commercial Fishermen:

Since 1997, commercial salmon fisheries in the Western and Perryville Districts of Chignik have been closed on about 20 August in an attempt to buildup this coho salmon stock. The Chignik Aquaculture Association, Chignik Seiners Association and the Regional Planning Team continue to endorse the project and have agreed to this commercial fishery closure.

Measurable Project Tasks for FFY 99 (October 1998 - September 1999)

*October 1998:*

ADF&G staff will travel to Perryville for stream surveys and to capture adult coho salmon. Salmon will be held in pens and segregated by sex until they ripen. Perryville assistant, Jerry Yagie will monitor their condition and report to Jim McCullough when they are ready for spawning.

*November 1998:*

ADF&G biologist and a hatchery specialist with Kodiak's Pillar Creek Hatchery will return to Perryville when the salmon become ripe. They will remove the salmon from the holding pens, fertilize the eggs and place them in the incubation boxes (some of these will be placed in the school aquarium). Additional samples will also be collected for genetic and pathological testing.

*December 1998 – May 1999:*

Local assistants from Perryville will continue to monitor the egg boxes. High school students will monitor the school aquarium.

*January 1999:*

ADF&G staff will attend Alaska Board of Fisheries meetings, the Regional Planning Team meeting and any Chignik Seiners Association meetings where the agenda includes the Kametolook restoration project.

*April 1999:*

Staff prepare poster for EVOS 10<sup>th</sup> year conference in Anchorage and attend the conference (Plate 33). Write Kametolook DPD for FFY-00, and annual report for FFY-98.

*May 1999:*

ADF&G staff will travel to Perryville to meet with the community to learn more about the current and historic use of coho salmon and discuss the project progress with them. Check for swimup fry in the incubation boxes and assist the school with the release of the fry reared in the school aquarium. Fry from instream boxes and school aquarium will be released into the Kametolook River.

*June 1999:*

ADF&G staff will travel to Chignik Lake (Regional Planning Team meeting) and Chignik Bay (Chignik Seiners meeting) to meet with the communities and update them on the restoration project.

*August or September 1999:*

ADF&G staff will travel to Perryville to meet with the community to learn how the to-date-1999 subsistence harvest has been in preparation for an Alaska Board of Fisheries meeting in October.

*Other Future Project Goals:*

Annually, through the duration of the project (through 2002): One day every month, one or two trained Perryville researchers will monitor the river and egg incubation boxes and thermographs. They will be responsible for reporting their findings to the ADF&G team. ADF&G will continue to supervise the project and continue to take trips to assist with the project. As Perryville assistants continue to gain additional knowledge about the project, they will take on more project responsibility. Some of their duties will continue to include: conducting escapement surveys, netting salmon for ripening in the holding pens, harvesting and fertilizing eggs and transporting to egg boxes, taking samples of harvested salmon for genetic and pathology tests, assisting school children with obtaining eggs for the school aquarium project, releasing fry in spring, and repairing equipment. This is necessary because budget constraints preventing ADF&G from being present at all critical times of this remote project; as well as being a major component to the community involvement portion of the project.

In addition, ADF&G staff will evaluate the Kametolook coho runs annually through subsistence harvest reports, evaluate incubator performance and stocking levels, perform egg takes, stocking,

update project plan, review Fish Transport Permits (FTP) and Fish Resource Permits (FRP), provide annual peer review and write annual reports. ADF&G biologists will determine any significant changes to the coho salmon spawning and rearing habitat of the rivers to determine appropriate stocking levels. ADF&G will also evaluate the use of Kametolook River coho salmon as brood stock and the release of fry back into the Kametolook, Three Star, and Long Beach Rivers and other potential stocking sites include Sandy and Sicken Lakes.

## **CONCLUSIONS**

The ADF&G team as well as the Perryville Village Council expects the stream side incubation boxes, in conjunction with some commercial and subsistence fishing restraints, should provide sufficient coho salmon to rehabilitate the run within two to three salmon life cycles. In addition to the Kametolook River, coho fry from the incubation boxes and the school aquarium could also be stocked in local landlocked lakes (Sandy and Sicken), as well as nearby Three Star and Long Beach Rivers (approved by ADF&G FTP reviewers) to help provide additional salmon to other systems for subsistence users.

Perryville community involvement is also essential to help rehabilitate the coho salmon run in the Perryville area through education of villagers to gain a better understanding of the life cycles and conservation of salmon. The ADF&G team will continue to assist with an educational process that focuses on teaching the community through the both the school children and adults. Results from all samples will continue to be shared with the school and community. In addition, the use of local traditional ecological knowledge has been and will continue to be an important source of information especially considering the lack of scientific data available regarding salmon escapements in the Kametolook River.

## **ACKNOWLEDGMENTS**

The authors would like to gratefully acknowledge, the Perryville Village Council and assistants in the project, particularly, Jerry Yagie, the “Project Community Leader” and Gerald Kosbruk and Dennis Shangin, “Community Project Assistants” for assisting ADF&G with the project including: providing information regarding local knowledge of the Kametolook River and habitat, guiding and transportation, installing egg incubation boxes, capturing salmon and harvesting eggs, monitoring thermograph stations, and other year around maintenance of the project. In addition, thank you to all the many Perryville residents that also assisted with many of the duties just mentioned as well as providing ADF&G staff while working in Perryville on the project with delicious meals of local subsistence foods. Some people that come to mind are: Boris Kosbruk, Frieda Kosbruk, Gerald Kosbruk, Harry W. Kosbruk, Ignatius Kosbruk, Ivan Kosbruk, Moses Kosbruk, Tim Kosbruk, Bruce Phillips, Andy Shangin, Austin Shangin, Effie Shangin, Dennis Shangin, Cecilia Yagie and Polly Yagie. Thanks to the Perryville School, particularly teachers, Don Preston and Mike Browning, and the high school students for their participation in the project and providing housing for ADF&G staff. Cecilia Yagie also deserves special recognition for administering Perryville’s cooperative agreement with ADF&G.

Pete Velsko, retired ADF&G, for his expertise from work in Norton Sound with instream incubation boxes provided the staff with lots of extremely helpful suggestions giving the project a good kick start. Joe Sullivan, and Bill Hauser with ADF&G, Division of Habitat and Restoration deserve a special thanks for providing their expertise to the project including: project planning, preparation, field work and helping keep the project on track. Joe gets an extra pat on the back for preparing the Environmental Assessment for NEPA compliance. Had this not been done the continuation of the project would have not been possible. Jim Seeb and other ADF&G Genetics and Pathology staff deserve recognition for their guidance and lab work for the project. Thanks to Dave Owen, Chignik management area commercial fisheries biologist for providing ADF&G harvest and escapement data.

We also would like to acknowledge Jim Fall, Division of Subsistence Regional Program Manager, for his editorial comments for the DPD/budget and this report, as well as his time spent on establishing the cooperative agreement between ADF&G and Perryville. Also thanks to administrative personnel, Ana Lewis in Subsistence, Melanie Bosch in Habitat and Restoration and Deborah Boyd (retired) and Tom Taylor in Administration for their assistance with the cooperative agreement and project budget. Thanks to Rita Miraglia, Subsistence Division oil spill coordinator, for her guidance.

We are grateful to the crew on the ADF&G MV Resolution for transporting the egg incubation boxes to Chignik with no charge to the project; and to Andy Shangin for using his boat to then move them to Perryville. Also thanks to the staff in Kodiak at the Pillar Creek Hatchery for training Perryville assistants, Jerry and Dennis in spawning and incubator maintenance techniques.

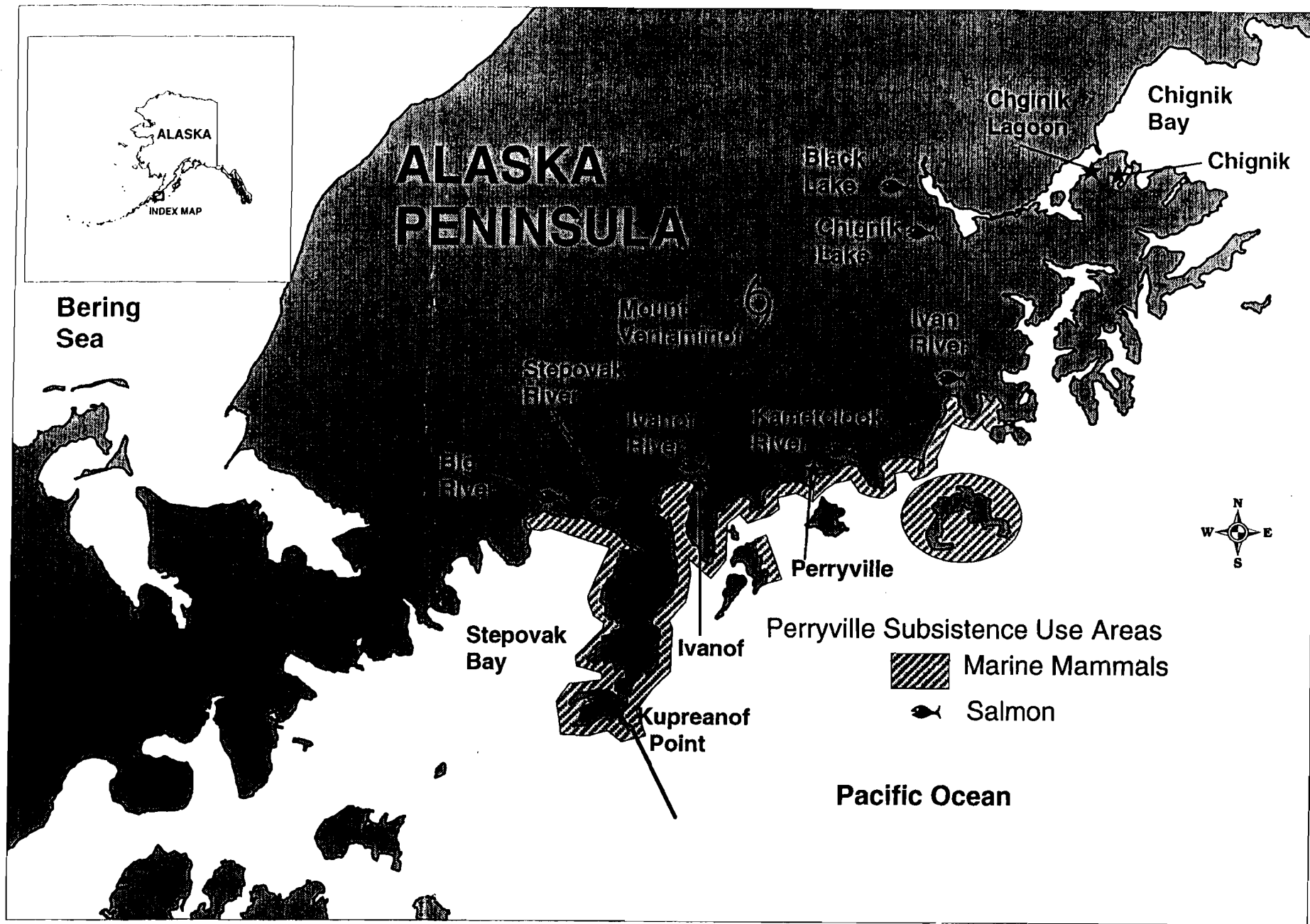
In addition, thanks to Jeff Adams, Ron Hood, Jim Larson, and Orville Lind of the Alaska Peninsula/Becharof National Wildlife Refuge in King Salmon for their comments and cooperation in preparation of the EA; and to the Chignik Regional Planning Team for their endorsement and continual support of the project. John Gliva with DCRA, needs to be recognized for all of his help administering the project when it was originally funded under EVOS Criminal Settlement money; and last but not least thanks to the EVOS Trustee Council for their support by providing funding to continue with the project.

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Owen, David L. and David R. Sarafin. 1999. Chignik Management Area Annual Finfish Report, 1996. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 4K99-33. Kodiak, AK.





Map of the Alaska Peninsula from Chignik Bay to Stepovak Bay. Figure 1

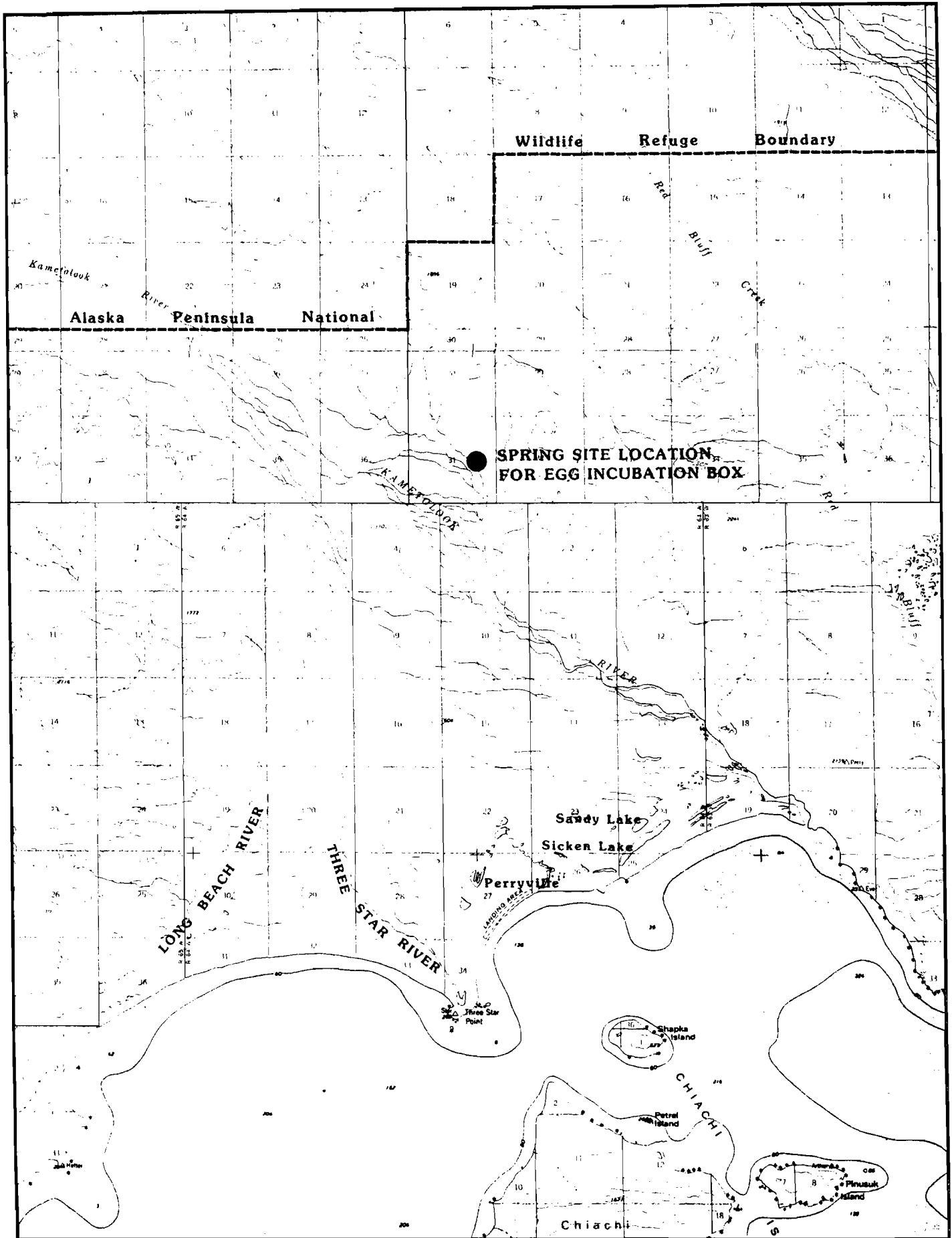


Figure 2 Perryville/Kametolook River Coho Salmon Restoration Project Site

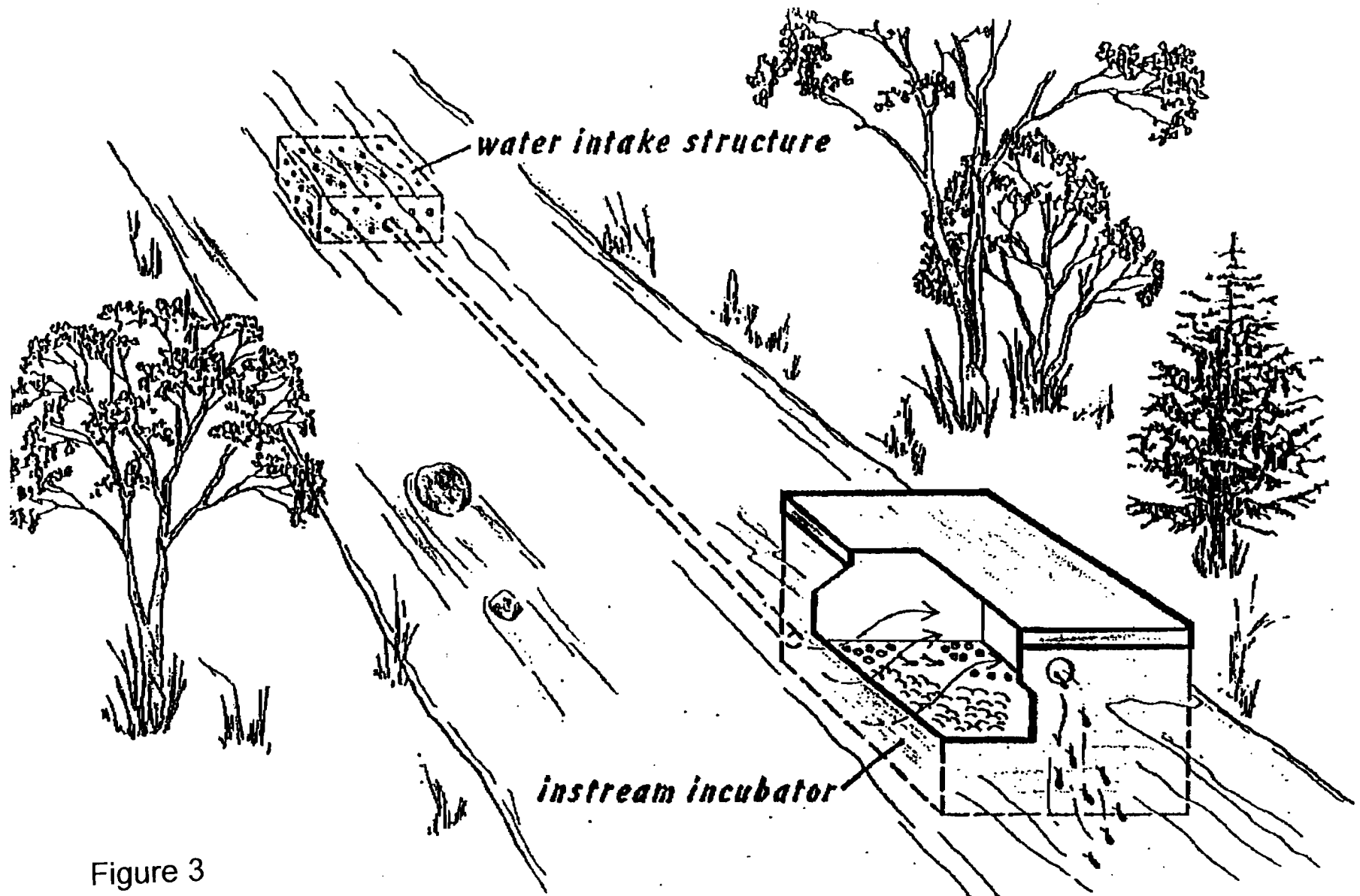


Figure 3

The **INSTREAM INCUBATOR** (streamside incubator or hatch box) is an incubator designed to incubate salmon eggs and alevins (small fish) under conditions similar to those in natural spawning beds. The incubators are usually positioned in the stream or on the stream bank. Water is directed downstream through a pipeline which supplies the eggs with a continuous flow of oxygen-enriched water. Once fertilized eggs have been placed in the incubator, little maintenance is required. The eggs develop through the winter in a protective environment. In spring the young fry migrate out of the incubator to begin their long migration out to sea before returning as adults.

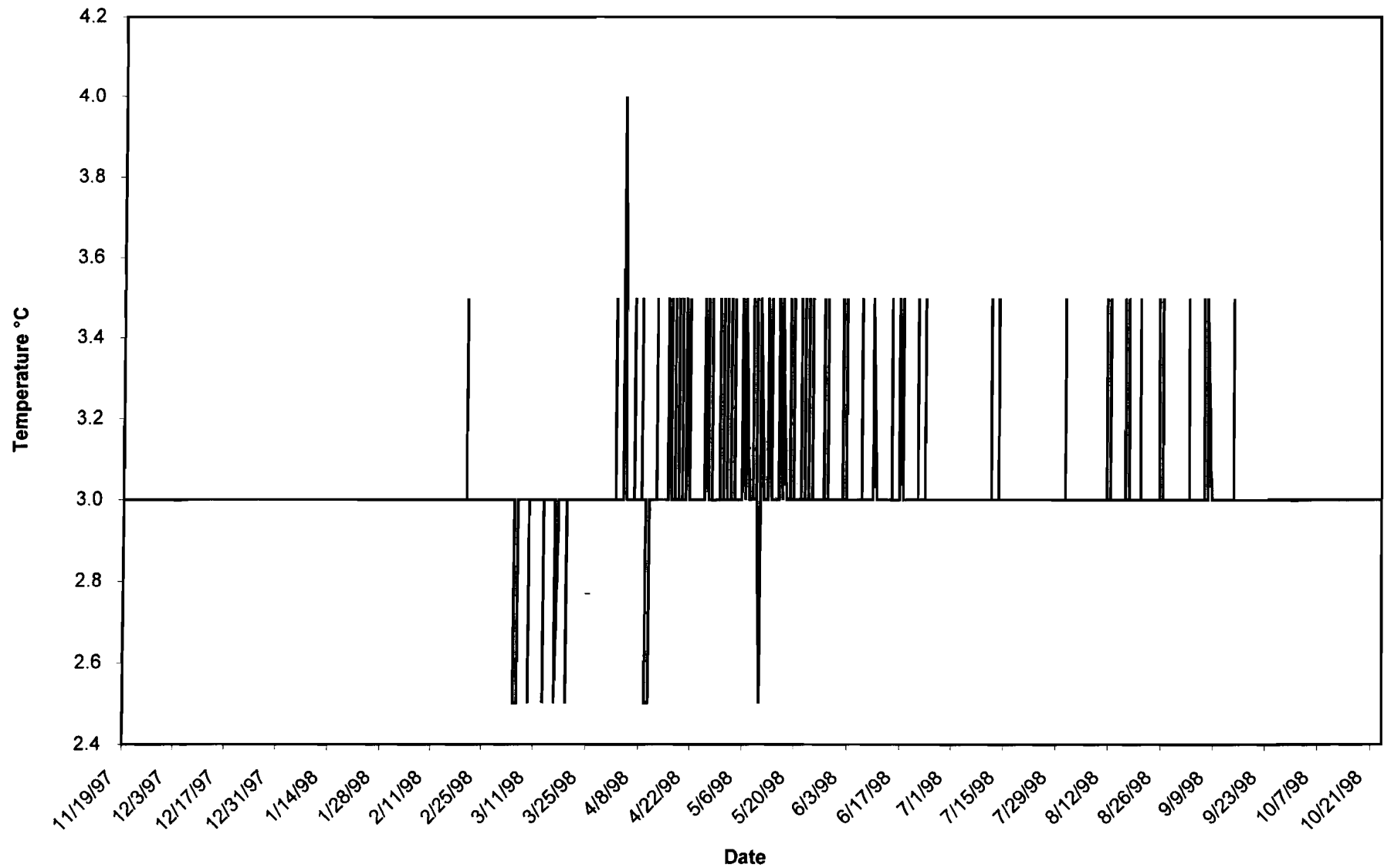


Figure 4. Kametolook River, Chignik Area, incubator box water temperature, (°C) 1997-1998.

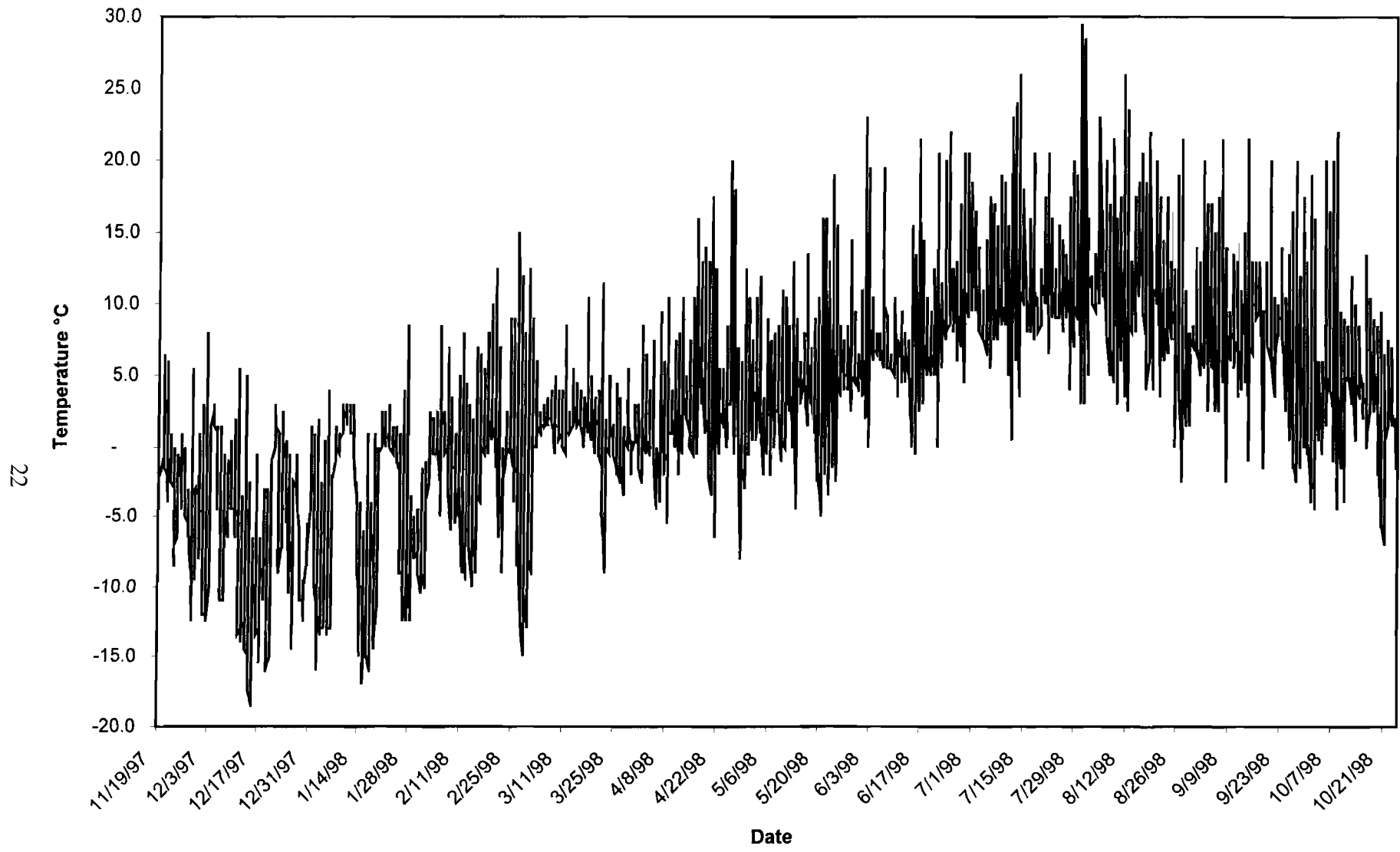


Figure 5. Kametolook, Chignik Area, air temperature (located near incubation box, °C) 1997-1998.

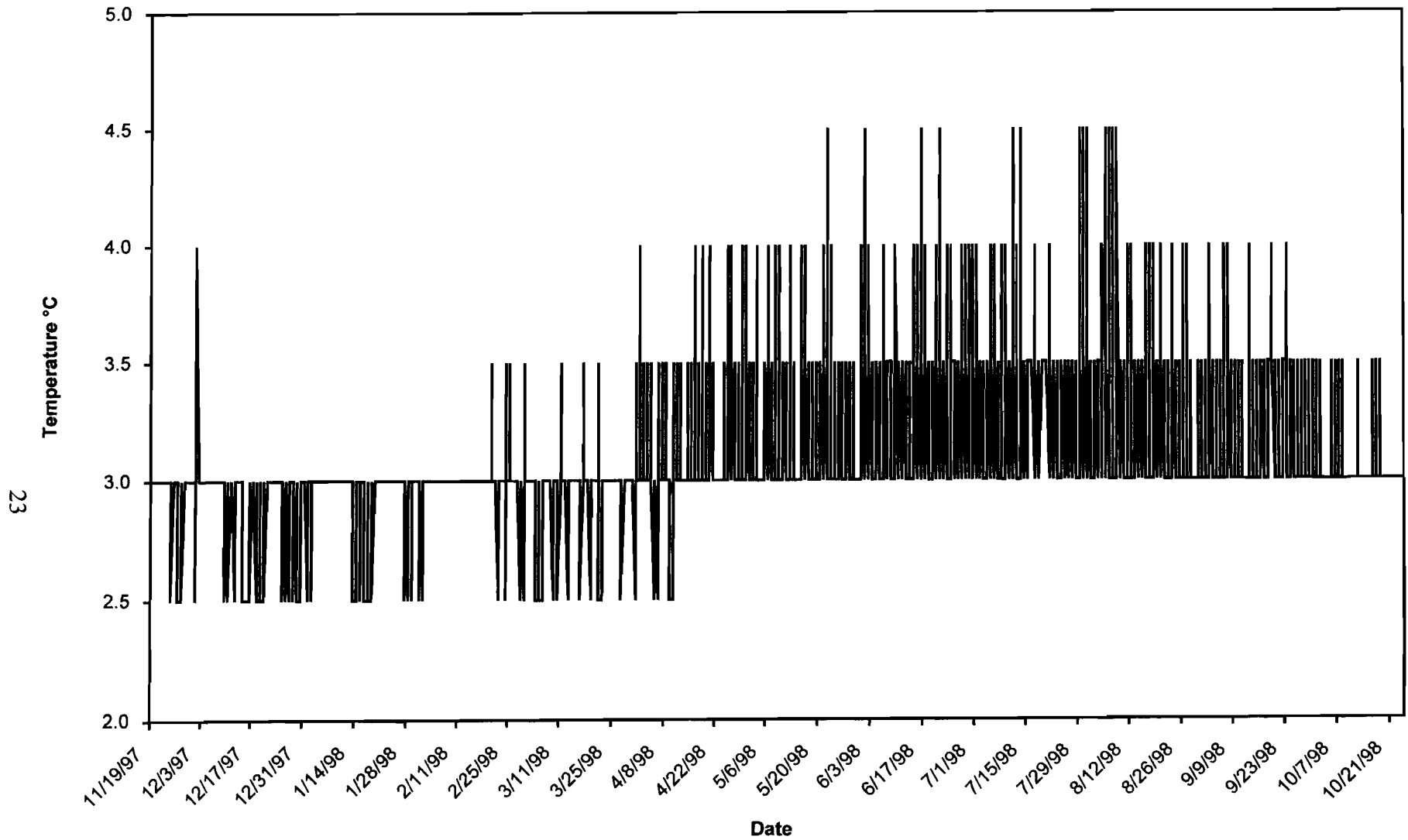


Figure 6. Kametlook River, Chignik Area, stream substrate and water interface temperature taken at coho salmon spawning location (°C), 1997-1998.



**PLATE 27 FERTILIZED EGGS ARE ADDED TO THE SCHOOL AQUARIUM**



**PLATE 28 SITE LOCATION AND TWO INSTREAM EGG INCUBATION BOXES**



**PLATE 30 MIXING MILT WITH EGGS**

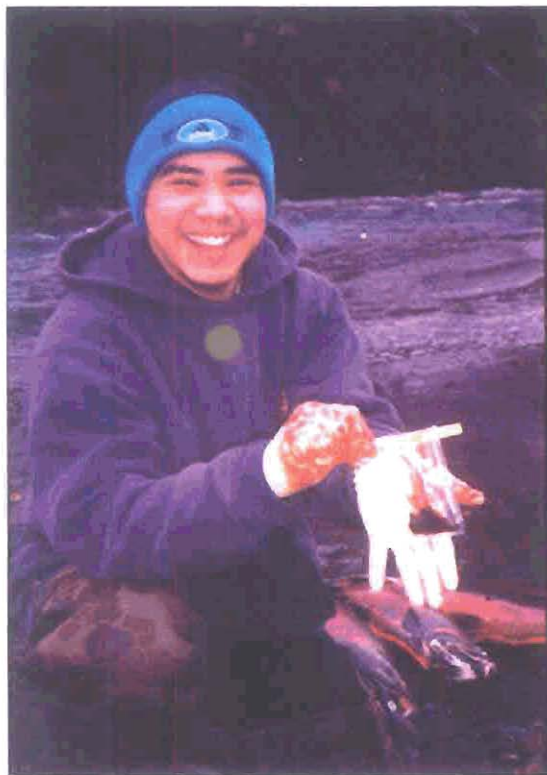


**PLATE 29 HARVESTING COHO EGGS**



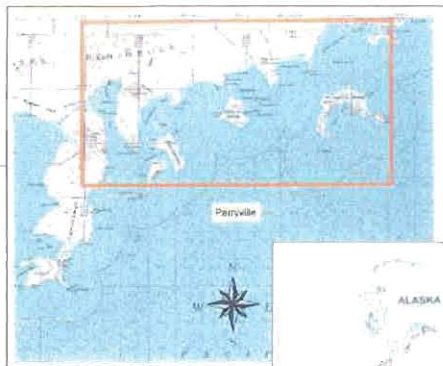


**PLATE 31 FERTILIZED COHO EGGS ARE ADDED TO ONE OF THE  
INSTREAM INCUBATION BOXES**



**PLATE 32 BIOLOGICAL SAMPLES OF ADULT COHO USED FOR THE PROJECT  
ARE COLLECTED FOR GENETIC AND PATHOLOGICAL TESTING**

# Kametlook River Coho Salmon Subsistence Restoration Project (98-247)



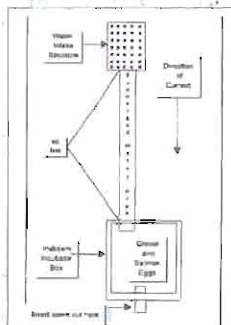
**Principal Investigators:**  
Lisa Harjoto, Scarborough, Alaska Department of Fish and Game, Subsistence Division, 333 Raspberry Road, Anchorage, AK 99510; (907) 267-2326, lisa@fishgame.state.ak.us

Tamara McCullough, Alaska Department of Fish and Game, Commercial Fisheries Division, 211 Mission Road, Kodiak, AK 99615; (907) 496-3813, james\_mccullough@fishgame.state.ak.us

**Cooperative Agreement Contractor:**  
Native Village of Perryville, Alaska, P.O. Box 101, Perryville, AK 99648; (907) 853-2203, Jerry Yagie, Lead Assistant

## Project History:

Subsistence users from the remote Alaska Peninsula Native Village of Perryville noted significant declines in the coho salmon run in the Kametlook River after the Exxon Valdez oil spill (EVOS) in 1989. The Trustee Council began funding a project in Federal Fiscal Year 1997 with the intent of restoring this coho salmon run. This project is a continuation of an evaluative phase of the project funded through the EVOS criminal settlement (Grant Agreement Number 2168588). The criminal settlement funded the project for an assessment team from ADF&G and local assistants from the Native Village of Perryville. The assessment period determined the preferred method to restore the Kametlook River's coho salmon run to historic levels. This phase ended with the approval of an Environmental Assessment (EA) and a Finding of No Significant Impact by the US Fish and Wildlife Service in May 1997. The EA and project review supported instream incubation boxes as the preferred alternative for this restoration project. Community involvement and use of traditional knowledge by the villagers of Perryville are an integral part of restoring Kametlook River coho salmon as a subsistence resource.



THE INSTREAM INCUBATOR (streamside incubator or hatch box) is an incubator designed to incubate salmon eggs and alevins (small fish) under conditions similar to those in natural spawning beds. The incubators are usually positioned in the stream or on the stream bank. Water is directed downstream through a pipeline which supplies the eggs with a continuous flow of oxygen-enriched water. Once fertilized eggs have been placed in the incubator, little maintenance is required. The eggs develop through the water in a protective environment. In spring the young fry migrate out to sea before returning as adults.



Plate A - Jim McCullough, ADF&G biologist adds fertilized eggs to Perryville School aquarium while head science teacher Don Preston observes.



Plate M - Kametlook River water intake boxes are installed upstream approximately 50 feet from the egg boxes.



Plate L - Austin Shagin adds fertilized eggs to one of the egg incubation boxes.



Plate K - Austin Shagin, Jerry Yagie and Melvin Chye mix the milk and eggs for fertilization.



Plate J - Jerry Yagie, Perryville assistant and Melvin Chye collect eggs from fertile female coho salmon. The milk from the males was also obtained just prior to collecting the eggs. The salmon are then taken to Perryville for subsistence use.





Plate B - Jim McCullough, ADF&G Biologist shows eyed egg from the school aquarium to Perryville elementary school students



Plate C - Perryville High School students learn from ADF&G biologists about salmon habitat and setting minnow traps



Plate D - Community involvement is an integral part of this project. Pictured, ADF&G personnel and Perryville residents meet to discuss the progress of the Kametlook coho subsistence project.



Plate E - Native village of Perryville



Plate O - Subsistence coho salmon drying on a fish rack in Perryville.



Plate N - Perryville assistant Harry W. Kadinski stands next to Kametlook River salmon egg incubation boxes.



Plate I - Perryville assistant Anatin Shungu holds coho kidney sample to be collected. Pathological, ovarian and genetic samples are collected for analysis by ADF&G and USF&WS



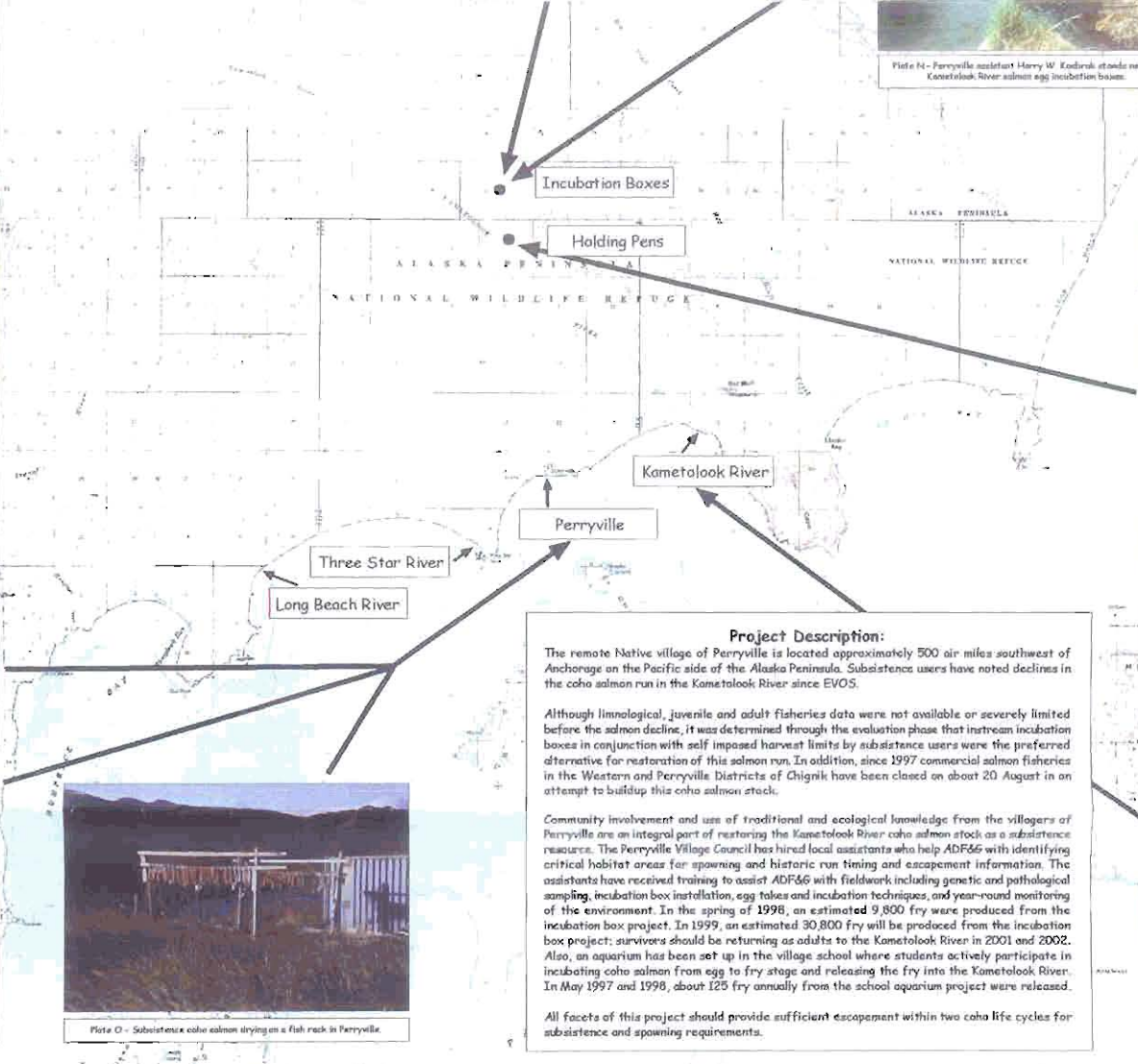
Plate H - Two net pens are used to hold and separate female and male coho salmon until they are ripe.



Plate G - Coho salmon used for the project are caught using gill nets.



Plate F - The Kametlook River, downstream from the incubation box site. Bears also compete with subsistence users for salmon on the Kametlook River.



**Project Description:**  
 The remote Native village of Perryville is located approximately 500 air miles southwest of Anchorage on the Pacific side of the Alaska Peninsula. Subsistence users have noted declines in the coho salmon run in the Kametlook River since EVOS.

Although limnological, juvenile and adult fisheries data were not available or severely limited before the salmon decline, it was determined through the evaluation phase that instream incubation boxes in conjunction with self imposed harvest limits by subsistence users were the preferred alternative for restoration of this salmon run. In addition, since 1997 commercial salmon fisheries in the Western and Perryville Districts of Chignik have been closed on about 20 August in an attempt to buildup this coho salmon stock.

Community involvement and use of traditional and ecological knowledge from the villagers of Perryville are an integral part of restoring the Kametlook River coho salmon stock as a subsistence resource. The Perryville Village Council has hired local assistants who help ADF&G with identifying critical habitat areas for spawning and historic run timing and escapement information. The assistants have received training to assist ADF&G with fieldwork including genetic and pathological sampling, incubation box installation, egg takes and incubation techniques, and year-round monitoring of the environment. In the spring of 1998, an estimated 9,800 fry were produced from the incubation box project. In 1999, an estimated 30,800 fry will be produced from the incubation box project; survivors should be returning as adults to the Kametlook River in 2001 and 2002. Also, an aquarium has been set up in the village school where students actively participate in incubating coho salmon from egg to fry stage and releasing the fry into the Kametlook River. In May 1997 and 1998, about 125 fry annually from the school aquarium project were released.

All facets of this project should provide sufficient escapement within two coho life cycles for subsistence and spawning requirements.

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APPLIED MARINE SCIENCES

510 373 7834 P.02/04

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S C I E N C E S

April 1, 1996

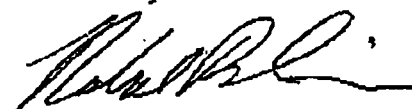
Molly McCammon  
Executive Director  
Exxon Valdez Oil Spill Trustee Council  
645 G Street, Suite 401  
Anchorage, Alaska 99501

Dear Molly,

At your request I sent the proposed subsistence project "Kametook River Coho salmon subsistence project" to one of our reviewers. My understanding is that this project is being considered for funding through the criminal fines resulting from the *Exxon Valdez* oil spill. I am providing the attached comments as a preliminary indication of how this proposal might be evaluated if it were to be submitted to the trustees of the civil settlement.

Although these comments should be considered preliminary, my impression at this time is that the proposal might be eligible under the civil settlement if concerns about the proposed supplementation of natural runs of Coho salmon are more fully addressed. In particular, the reviewer discusses the potential alteration of the genetic composition of the stock if the take of eggs for the egg boxes is not balanced to reflect the proportional composition of the natural stock with respect to run timing and other possible adaptive characteristics. As the reviewer states, there are no fatal flaws in the proposal; more planning to minimize the genetic consequences of the supplementation could make this a good proposal. Please do not hesitate to call me if you have any further questions.

Sincerely,



Robert B. Spies  
Chief Scientist

CC: S. Senner  
S. Schubert



**R25141: Revised Kametlook River Coho Subsistence Project**

Statement of qualifications of the reviewer: PhD in fisheries with twenty two years of applicable professional experience. Core education in mathematics and population biology with special emphasis on aquatic ecology and ichthyology. Experienced in evaluation of technologies and analytical methods applied to fisheries stock assessment and identification including hydroacoustics, genetics, morphometrics and tagging. Additional expertise in evaluation of fish passage methods for hydroelectric projects and evaluation of methods for the recovery of endangered salmon populations. Recognized authority on management of Pacific salmon fisheries.

**Perryville 96-1: Kametlook River Coho Subsistence Revised Project Proposal**

The original proposal left open questions concerning the risks involved in applying the proposed enhancement technology. The specific points of those concerns are provided in the review of March 29, 1996, below. I am satisfied that these risks have been recognized by the proposers, and that appropriate steps to minimize their potential impacts on the outcome of the project have been taken. In so stating, I am partially relying on the genetic expertise of Dr. Jim Seeb, as provided to the project leader, Mr. Jim McCullough. Mr. McCullough has confirmed he intends to implement the advice given by Dr. Seeb in a memorandum he wrote to Dr. Seeb dated November 18, 1996, which was copied to Wayne Donaldson, Bill Hauser, and Joe Sullivan, all of ADF&G.

REVIEW DATED MARCH 29, 1996

Within the areas of my expertise, I see no fatal technical problems which would preclude funding this project. There are, however, substantial risks of negative outcomes which need to be understood by the funding entity as part of its deliberation.

The project would apply a salmon enhancement technology, egg incubation boxes, which has been apparently successful at increasing the survival of eggs to the fry stage in other localities. Increased rates of fry production could be expected to translate into increased rates of adult production, assuming that the stream has the rearing capacity for the juveniles prior to emigration. Increasing adult production is the desired outcome, and there is no doubt that increased production of adult coho would benefit the people of Perryville. Technical assistance has been identified and solicited from the Alaska Department of Fish and Game.

Since present natural production of coho salmon is depressed relative to historic levels, it is not unreasonable to assume that sufficient freshwater rearing capacity is available in the Kametlook River. Given lack of knowledge on the extent to which the currently depressed status of the coho population is dependent factors controlling marine survivals, as opposed to factors controlling freshwater survivals, the likelihood of success in producing adult returns is impossible to estimate. Put another way, if increased fry production does not result in increased adult production, there won't be any way to know why.

On the other hand, if increased fry production is followed by increased adult production, there won't be any way to know whether the egg boxes had anything to do with it, as the proposal is now written. Some fraction of the production from the egg boxes should be marked, perhaps by adipose fin clipping, so that the success of the project at producing adults can be determined. The success of the project should not be measured solely in terms of fry production. If the fry produced from the egg boxes happened to have been selected from the "wrong" spawners, as explained below, relatively few would survive to adults, and even fewer would be successful spawners. Unless the egg box fish can be marked in some fashion, the ultimate success of this project could never be determined. The

reviewer is well aware of the rare occurrence of naturally atrophied adipose fins in coho salmon, however if the project is actually successful at producing results, and the fraction clipped is high enough, this should not be a problem.

Even though local brood stock will be used, there is a risk of altering the frequencies of physical traits of adaptive significance in the coho populations, at least in the short term. The spawners selected should be extremely successful at placing their offspring among the spawners of the next generation, thereby putting the offspring of all the other coho spawners at a selective disadvantage (see Ryman and Laikre, about 1991, 1992, I don't have the exact reference handy). If the individual coho for the egg box program are not selected to randomize heritable characters of adaptive significance such as run timing and size at age, then most of the coho in the stream will have the physical characters of those individuals selected for the egg box program after five years. Since the populations are at low levels any way, the risks of enhancing the "wrong" phenotypes are maximized. The wrong phenotypes in this case would be those at a selective disadvantage relative to other members of the population. For example, spawners with late run timing may be at a selective disadvantage relative to earlier spawners, because they are less likely to be able to spawn in water temperatures which promote gamete motility and viability.

And even though samples for evaluating genetic characters are proposed to be taken, these are not likely to provide much information on how the egg box program may be changing the frequencies of those physical characters of the coho population's individuals which permit it to do well in the Kametlook River. Lack of change in the frequencies of a limited number of polymorphic loci does not mean no deleterious changes have occurred in the population. It only means that no changes occurred in the genetic characters measured, and those characters are probably not subject to natural selection, in any event. Also it is my impression that coho are generally less genetically variable than other salmon species. Consequently the low number of polymorphic loci available for analysis would lower the chances of detecting changes in the population by genetic means.

All of this is not to preclude implementing this project, but rather to make sure the Trustee Council and the people of Perryville go into this with their eyes wide open. I assume the State of Alaska permitting process for this egg take would cause the risks to be identified and addressed prior to implementation. I was not successful in my attempts to reach any of the individuals from ADF&G identified in the proposal with questions during the preparation of this review. I have included a few references which should be consulted in preparing a proposal on any project of this nature, at a minimum.

## References

- Allendorf, F. W. 1986. Genetic drift and the loss of alleles versus heterozygosity. *Zoo Biology* 5:181-190.
- Allendorf, F.W. and N. Ryman. 1986. Genetic management of hatchery stocks. Pages 141-159 in N. Ryman and F. Utter, editors. *Population genetics and fishery management*. University of Washington Press, Seattle, Washington.
- Altukhov, Y. and E.A. Salmenkova. 1985. Stock transfer relative to natural organization, management, and conservation of fish populations. Pages 333-344 in N. Ryman and F. Utter, editors. *Population genetics and fishery management*. University of Washington Press, Seattle, Washington.

**R25141: Revised Kametolook River Coho Subsistence Project**

Page 3

Bams, R.A. 1976. Survival and propensity for homing as affected by presence or absence of locally adapted paternal genes in two transplanted populations of pink salmon (*Oncorhynchus gorbuscha*). Journal of the Fisheries Research Board of Canada 33:2716-2725.

Cuenca, M.L., T.W.H. Beckman, and P.R. Mundy. 1993. The use of supplementation to aid in natural stock restoration. Pages 269 - 293 in Cloud, J.G. and G.H. Thorgaard, editors. Genetic Conservation of Salmonid Fishes. Plenum Press, New York.

End of review

D:\AMS\1996\R25141.AMS

E - 4

## A. Responses to comments by Reviewers:

1. Stream Rearing Capacity. As indicted by the reviewer, it is a reasonable assumption that there is adequate rearing capacity in the Kametlook River drainage to support a larger population of adult coho salmon because the system was reported to support more during previous years. Although quantification of freshwater rearing habitat for coho salmon is very difficult and expensive to measure, all of the population characteristics that have been measured indicate that there is nothing abnormal about the population structure or the habitat quality (Sanderdock 1991, *in* Groot and Margolis 1991). There are an estimated — stream miles of suitable habitat available for juvenile coho salmon.

2. Evaluation. Marking and evaluation plans are being developed and evaluated. These include: estimating the numbers of fish that will be required to be marked and recovered, methodology and feasibility of marking the fry under these conditions and mark recovery strategy. It is expected that any marking and recovery program will include the local subsistence users; in part, to elicit their direct involvement, but also, to incorporate an educational opportunity for the people as well.

3. Potential Genetic Alteration. ADF&G is highly sensitive to the importance of this concern and the investigators are aware that a Fish Transfer Permit (FTP) will not be issued unless this concern is addressed. The investigators have been working closely with both the ADF&G Principal Geneticist, Dr. Jim Seeb, and the Pathology Section to obtain tissue samples from the population for genetic and fish disease analyses. The investigators have a continuing dialog with Dr. Seeb to assure that his egg take guidelines and release strategies will be incorporated into plans for this project.

## B. Comments about "Supplementation Criteria".

1. Benefits of Supplementation. Successful supplementation of the Kametlook River will be of particular benefit directly to the subsistence users of Perryville. This wild stock population will also benefit directly from the action. The cost of this technology is very reasonable.

2. Genetic Risk. The investigators have continuing dialog with Dr. Seeb to assure that his egg take guidelines and release strategies will be incorporated into plans for this project. (See item 3, above.)

3. Mixed-Stock Fisheries. a) There is no local commercial fishery that targets this stock. There is an unknown, but apparently negligible, likelihood of interception of this stock by commercial fisheries that operate 50 - 100 miles away. b.) The production goal for this project is not commercially significant.

4. Monitoring and Evaluation. An evaluation program is being developed. (See item 2, above.)

5. Economic Criteria. This project is intended to benefit the subsistence users of Perryville, therefore, an economic analysis is not pertinent. As the subsistence harvest of coho salmon continues to diminish, however, the users are relying more heavily on other resources, such as Dolly Varden. An alternative goal of this project is to provide other fish (coho salmon and/or rainbow trout) for growth and harvest as a means to divert some harvest effort away from the



anadromous coho salmon. In addition, as part of this project, the investigators are assisting with a low-key community information and education program.

6. Procedural Criteria. The Regional Planning Team has endorsed this project. The project will not proceed without National Environmental Protection Act (NEPA) compliance and an ADF&G Fish Transport Permit (FTP) - that requires concurrence by ADF&G fishery management divisions, the Principal Geneticist and the Principal Fish Pathologist.

UNITED STATES FISH AND WILDLIFE SERVICE

ENVIRONMENTAL ACTION MEMORANDUM

Within the spirit and intent of the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act and other statutes, orders, and policies that protect fish and wildlife resources, I have established the following administrative record and have determined that the action of restoring the Kametolook River coho salmon stock near Perryville, Alaska:

\_\_\_\_\_ is a categorical exclusion as provided by 516 DM 6 Appendix 1. No further documentation will be made.

X \_\_\_\_\_ is found not to have any significant environmental effects as determined by the attached Environmental Assessment and Finding of No Significant Impact.

\_\_\_\_\_ is found to have special environmental conditions as described in the attached Environmental Assessment. The attached Finding of No Significant Impact will not be final nor any actions taken pending a 30-day period for public review. (40 CFR 1501.4(c)(2)).

\_\_\_\_\_ is found to have significant effects, and therefore a "Notice of Intent" will be published in the Federal Register to prepare an Environmental Impact Statement before the project is considered further.

\_\_\_\_\_ is denied because of environmental damage, service policy, or mandate.

\_\_\_\_\_ is an emergency situation. Only those actions necessary to control the immediate impacts of the emergency will be taken. Other related actions remain subject to NEPA review.

Other supporting documents:

1. Environmental Assessment for the Kametolook River Coho Restoration Project.
2. Amendment #1 to the Kametolook River Coho Restoration Project.
3. Comments received from the US Fish and Wildlife Service.

**Acting** Robert Thom 5/30/97  
Regional Director Date

Joseph R. Sullivan 5/27/97  
Initiator Date

Janet E. Hahn 5/30/97  
Assistant Regional Director Date

May Lynn Nativ 5-30-97  
Regional Environ. Coordinator Date

ALASKA DEPARTMENT OF FISH AND GAME  
FISH PATHOLOGY SECTION, CFM&D DIVISION  
333 RASPBERRY ROAD, ANCHORAGE, AK 99518-1599

REPORT OF LABORATORY EXAMINATION

LOT (YEAR, STOCK, SPECIES): Kametoolik River coho salmon, Oncorhynchus kisutch  
FACILITY: ADFG – Kodiak  
CONTACT PERSON/ADDRESS: Jim McCullough, ADFG-CFMD, 211 Mission Road, Kodiak AK  
99615  
SAMPLE DATE: 11/5/97 – 11/12/97 DATE SAMPLE RECEIVED: 11/7/97 – 11/18/97  
SPECIMEN TYPE: Kidney tissues/ovarian fluids LIFE STAGE: Adult STATE: Unfrozen, refrigerated  
NUMBER IN SAMPLE: 17 kidneys, 8 ovarian fluids WILD: Yes  
REASON FOR SUBMISSION: Update disease history  
FINAL REPORT DATE: 1/23/98

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CLINICAL FINDINGS:

FAT: 0/17 positive for Aeromonas salmonicida  
0/17 positive for Yersinia ruckeri Type I  
0/17 positive for Yersinia ruckeri Type II

ELISA: 0/17 positive for Renibacterium salmoninarum (Rs). Mean optical density values  $\geq 0.068$  were considered positive for the Rs antigen.

VIROLOGY: 0/8 (4 X 2 ovarian fluid pools) positive for virus. Ovarian fluids processed by quantal assay on EPC and CHSE-214 cell lines at 15°C for 14 days and blindpassaged for an additional 14 days. Minimum level of detection = 5 infectious particles/ml of pooled sample. Cells pretreated with PEG to enhance viral infectivity.

COMMENTS/RECOMMENDATIONS: No viral or bacterial pathogens were detected in the samples submitted. Please submit 52 ovarian fluids and 43 kidneys to complete the updated disease history for this fish stock.

FISH HEALTH INVESTIGATOR(s): Burton, Geesin, Follett, Meyers

TECHNICAL ASSISTANCE: Starkey, Short, Van Houten

COPIES TO: FY98, Misc., Meyers, Simpson, Lisa Scarbrough (Subsistence – Anchorage)

Oceanside Corporation  
c/o 4015 Northstar St.  
Anchorage, AK 99503

September 26, 1997

Native Village of Perryville  
P.O. Box 101  
Perryville, AK 99648

This notice gives permission to the village of Perryville to post signs on Oceanside land at or around the Kametlook River system. These signs are to prevent fishing in the spawning ground and ensure future populations of fish native to this river system. This is as requested verbally by Gerald Kosbruk, president, Native Village of Perryville, on this date.



Mary Fajen  
president

# STATE OF ALASKA

## DEPARTMENT OF FISH AND GAME

### DIVISION OF SUBSISTENCE

TONY KNOWLES, GOVERNOR

333 Raspberry Road  
ANCHORAGE, AK 99518-1599  
PHONE: (907) 267-2353  
FAX: (907) 267-2450

September 23, 1997

Ms Cecilia Yagie  
Administrator  
Native Village of Perryville  
PO Box 101  
Perryville, AK 99648

Dear Cecilia:

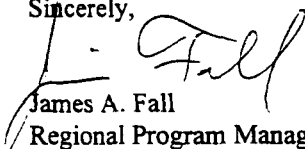
Enclosed are three copies of the amendment to the cooperative agreement for the Kametlook River coho salmon restoration project. This amendment extends the agreement for the 1998 federal fiscal year, which runs from October 1, 1997 through September 30, 1998. Please have Gerald Kosbruk or his designee sign all three and send all three originals to:

Deborah Boyd  
Division of Administration  
Alaska Department of Fish and Game  
1255 W. 8<sup>th</sup> Street  
PO Box 25526  
Juneau, Alaska 99802-5526

She will obtain the authorizing signatures from ADF&G, and then send an original back to you.

Please call me at 267-2359 or Lisa Scarbrough at 267-2396 if you have questions.

Sincerely,

  
James A. Fall  
Regional Program Manager

Cc: Lisa Scarbrough ✓

**AMENDMENT 1**  
**to a**  
**Cooperative Agreement**  
**between the Alaska Department of Fish and Game**  
**and the Native Village of Perryville**

This agreement is being amended pursuant to Article II and Attachment 1, Item 12 of the original Agreement, dated August 26, 1997.

I. Background

The Exxon Valdez Oil Spill (EVOS) Trustee Council has approved this project and funding for Federal Fiscal Year (FFY) 98. The FFY 98 Detailed Project Description (DPD) has been approved by the Chief Scientist and Trustee Council, and NEPA requirements have been satisfied by a Finding of No Significant Impact by the US Fish and Wildlife Service in May, 1997. The DPD is attached and made a part of this amendment. The following reflect the changes to this agreement for the FFY98 DPD.

II. Period of Performance

The period of performance for work performed on the FFY 98 DPD is October 1, 1997 through September 30, 1998. Contingent upon project and funding approval from the EVOS Trustee Council and subject to authorized appropriation, this agreement may be amended for four additional one year periods. Any additional work will be authorized by written amendments signed by both parties.

III. Covenants of the Native Village of Perryville

Delete Item 6. This item described an activity that took place in FFY 97 (training for project assistants at the Pillar Creek hatchery) which will not be repeated in FFY 98.

IV. Covenants of the Alaska Department of Fish and Game, Division of Commercial Fisheries Management and Development

Delete Item 5. Orientation and instruction in egg take techniques at the Pillar Creek hatchery will not take place in FFY 98.

V. Budget

For FFY 98, as approved by the EVOS Trustee Council, funds in the amount of \$4,700.00 have been allocated to support the activities of the Native Village of Perryville as reflected in the budget in the detailed project description.

VII. Financial Arrangements

For work performed on the FFY 98 DPD, the Native Village of Perryville will be paid an amount not to exceed \$4,700.00.

Invoices shall be submitted separately for work performed on the FFY 97 and FFY 98 DPD's.

All other terms and conditions of the original agreement remain in effect.

This amendment is affirmed by the parties shown below.

For the Native Village of Perryville

Gerald Kosbruk  
Gerald Kosbruk, Vice President

Oct 1, 1997  
Date

For the Alaska Department of Fish and Game

Elizabeth Andrews  
for Mary C. Pete, Director  
Division of Subsistence

10-13-97  
Date

Robert Clasby  
Robert Clasby, Director  
Division of Commercial Fisheries Management  
and Development

10/8/97  
Date

Kevin Brooks  
Kevin Brooks, Director  
Division of Administration

10.15.97  
Date

OK  
10/15/97

**AMENDMENT 2**  
to a  
**Cooperative Agreement**  
**between the Alaska Department of Fish and Game**  
**and the Native Village of Perryville**

This agreement is being amended pursuant to Article II and Attachment 1, Item 12 of the original Agreement, dated August 26, 1997.

I. Background

The Exxon Valdez Oil Spill (EVOS) Trustee Council has approved this project and funding for Federal Fiscal Year (FFY) 98. The FFY 98 Detailed Project Description (DPD) has been approved by the Chief Scientist and Trustee Council, and NEPA requirements have been satisfied by a Finding of No Significant Impact by the US Fish and Wildlife Service in May, 1997. The DPD is attached and made a part of this amendment. The following reflect the changes to this agreement for the FFY98 DPD.

II. Period of Performance

The period of performance for work performed on the FFY 98 DPD is October 1, 1997 through September 30, 1998. Contingent upon project and funding approval from the EVOS Trustee Council and subject to authorized appropriation, this agreement may be amended for four additional one year periods. Any additional work will be authorized by written amendments signed by both parties.

III. Covenants of the Native Village of Perryville

Delete Item 6. This item described an activity that took place in FFY 97 (training for project assistants at the Pillar Creek hatchery) which will not be repeated in FFY 98.

IV. Covenants of the Alaska Department of Fish and Game, Division of Commercial Fisheries Management and Development

Delete Item 5. Orientation and instruction in egg take techniques at the Pillar Creek hatchery will not take place in FFY 98.

V. Budget

For FFY 98, as approved by the EVOS Trustee Council, funds in the amount of \$5,315.00 have been allocated to support the activities of the Native Village of Perryville as reflected in the budget in the detailed project description.

VII. Financial Arrangements

For work performed on the FFY 98 DPD, the Native Village of Perryville will be paid an amount not to exceed \$5,315.00.

Invoices shall be submitted separately for work performed on the FFY 97 and FFY 98 DPD's.

All other terms and conditions of the original agreement remain in effect.



COOP-97-083

Restoration Project 98247

This amendment is affirmed by the parties shown below.

For the Native Village of Perryville

For the Alaska Department of Fish and Game

Gerald Kosbruk  
Gerald Kosbruk, President

Mary C. Peter  
Mary C. Peter, Director  
Division of Subsistence

Jan 14, 1999  
Date

2/1/99  
Date

*OK  
Robert  
2/1/99*

Robert Clasby  
Robert Clasby, Director  
Division of Commercial Fisheries Management  
and Development

2/8/99  
Date

Kevin Brooks  
Kevin Brooks, Director  
Division of Administration

2-9-99  
Date

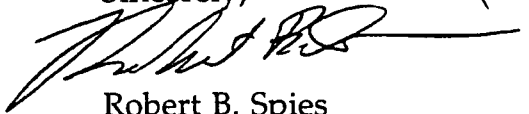
November 2, 1998

Ms. Celia Rozen  
Alaska Department of Fish and Game  
Restoration Section  
333 Raspberry Road  
Anchorage, Alaska 99518-1599

Dear Celia,

Thank you for the submission of the annual report "Kametook River Coho Salmon Subsistence Project" (97247). The reviewer was very impressed with the report. The report is acceptable. I thank the authors, the residents of Perryville, and all those who participated in this project for their efforts.

Sincerely,



Robert B. Spies  
Chief Scientist

cc: S. Senner  
S. Schubert  
J. Sullivan  
L. Hutchinson-Scarborough



**Report:** Hutchinson-Scarborough, Lisa and James McCullough. 1997. Kametolook River Coho Salmon Subsistence Project, *Exxon Valdez Oil* spill Restoration Project Annual Report (Restoration Project 97247), Alaska Department of Fish and Game, Division of Subsistence, Anchorage, Alaska, and Commercial Fisheries Management and Development Division, Kodiak, Alaska.

### **Recommendation**

Accept as written.

### **General comments**

The report provides a clear narrative and very thorough documentation of the history and status of this community based project. The report is well organized, professionally prepared and exceptionally free of typographical errors. Extensive use of Appendices provides a complete background on the large amount of work that was necessary to give this project a proper foundation.

Overall this appears to be a text book example of how to conduct a community-based salmon restoration program. Interactions between the community and the agency representatives have been thorough and productive. Cooperation within the agencies has also been extensive and productive. It is significant that the acknowledgements take a full page.

The project has laid a firm foundation for the restoration activities that are to come. Monitoring of results are essential to validate the project, and to insure that adverse or unintended outcomes have not resulted from this action.

### **Reviewer's summary of findings and objectives**

1. Extensive and effective community involvement in the implementation of the project has been secured.
2. Habitat surveys, monitoring of water temperatures, and a trial egg box study have all confirmed the feasibility of the project.
3. Appropriate state and federal processes have been observed and permits obtained, as necessary.
4. Management of biological risks and evaluation of results have been addressed.

### **Specific comments**

Page 6 November-December 1996, fifth line from end. Missing thought after "The subsistence harvest continued, ..." "indicating continued entry of salmon into the system"

Appendix E omits a page of the Chief Scientist's comments, between pages E-2 and E-3.

# STATE OF ALASKA

TONY KNOWLES, GOVERNOR

## DEPARTMENT OF FISH AND GAME

### COMMERCIAL FISHERIES MANAGEMENT AND DEVELOPMENT DIVISION

P.O. BOX 25526  
JUNEAU, ALASKA 99802-5526  
PHONE: (907) 465-4210

Phone: (907) 465-4210  
Fax: (907) 465-4210  
Internet: [JFM@alaska.gov](mailto:JFM@alaska.gov)

January 12, 1998

Mr. Don Preston  
Perryville School  
Lake-Peninsula School Dist.  
1100 School Road  
Perryville, AK 99648

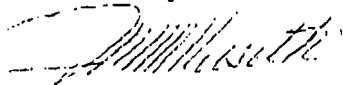
Dear Mr. Preston:

Enclosed is an approved fish resource permit (FRP) which allows you to conduct a classroom incubation project during calendar year 1997. You may obtain up to 250 coho salmon eggs from the Kametlook River egg take. The resultant fry may be released back Kametlook River or sacrificed. The school is responsible for making arrangements for the transport and meeting expenses. A copy of this permit must accompany the fish or egg transport.

We are very interested in these projects and require the teachers to do miscellaneous reporting. The report must be submitted by the classroom teacher so the department can determine if there are problems they can help solve. A copy of the incubation log and the enclosed forms may be used for this purpose. We welcome pictures of the activities and work done by students which may be used for our headquarters display board. Also, see the enclosed information about a cyberspace display.

If you have questions about the permit or the permitting process, please contact me.

Sincerely,



Jeri Museth  
Natural Resource Technician  
Planning, Development & Permitting

Enclosures

cc: Jim McCullough  
Len Schwarz  
Fish and Wildlife Protection



STATE OF ALASKA  
DEPARTMENT OF FISH AND GAME  
JUNEAU, ALASKA

Permit No. P-98-007

Expires 12/31/98

**FISH RESOURCE PERMIT**

This permit authorizes Don Preston, Perryville School, Lake-Peninsula School District  
(person, agency or organization)  
of 1100 School Road, Perryville, AK 99648 to conduct the following activities from January 1 to December 31, 1998 in accordance with AS 16.05.930

To obtain and incubate up to 250 coho salmon eggs for the purpose of a classroom incubation. The eggs will be obtained from an egg take conducted by ADF&G on the Kametolook River. The resultant fry may be released back into the Kametolook River at the egg take site or sacrificed.

**PURPOSE:** To provide students the opportunity to learn, understand and appreciate the complexities of the growth cycle of salmon.

**FINAL DISPOSITION:** The resultant fry may be released back into the Kametolook River at the egg take site or sacrificed.

**AUTHORIZED PERSONNEL:** Mike Browning, Gerald Kosbruk, Jerry Yagie, Mary Lukens, and students. ADF&G personnel may assist with this project.

**PERMIT CONDITIONS:**

The following ADF&G employees at the Kodiak office must be notified prior to initiation of activities: Jim McCullough, CFMD Division (486-1813) or Len Schwarz, Division of Sport Fish (486-1800).

(Continued on the next page)

**REPORT DUE January 31, 1999.** The report shall include species; numbers; dates and locations of collection and disposition; sex, age and breeding condition; lengths and weights of fish; what was achieved; other information as required.

GENERAL CONDITIONS, EXCEPTIONS AND RESTRICTIONS

1. This permit must be carried by the person(s) specified during approved activities who shall show it on request to persons authorized to enforce Alaska's fish and game laws. This permit is nontransferable and will be revoked or renewal denied by the Commissioner of Fish and Game if the permittee violates any of its conditions, exceptions or restrictions. No redelegation of authority may be allowed under this permit unless specifically noted.
2. Specimens taken under authority hereof may not be sold or bartered. Subpermittees shall not retain possession of live animals or specimens.
3. The permittee shall keep records of all activities conducted under authority of this permit, available for inspection at all reasonable hours upon request of any authorized state enforcement officer.
4. Permits will not be renewed until detailed reports, as specified above, have been received by the Department.
5. UNLESS SPECIFICALLY STATED HEREIN THIS PERMIT DOES NOT AUTHORIZE the exportation of specimens; or the taking of specimens in areas otherwise closed to fishing without appropriate licenses required by State regulations; or during closed seasons; or in any manner, by any means, at any time not permitted by those regulations.

Steven Gillies 1/5/98  
Commercial Fisheries Management & Development Division

[Signature] 1-6-97  
Commissioner  
Alaska Department of Fish and Game

[Signature] 1/6/98  
Division of Sport Fish

**NOTE:**

This permit will fulfill the requirements of 5 AAC 41.005 - 41.060 pertaining to fish transport permits (FTPs). Progeny from less than or equal to 500 eggs or one spawning pair may be destroyed or released ONLY at place of origin or in a departmentally approved landlocked lake. The effluent release will be either disinfected or discharged into a sewage treatment facility.

**A copy of this FRP must accompany the fish or egg transport and be available if a Department of Fish and Game or Department of Public Safety employee wishes to examine it.**

A collection report will be required upon the expiration date of December 31 which should include the amount of eggs collected and incubated as of that date.

The following additional data collection is required to be furnished the ADF&G, CFM&D Division/Planning and Development Program, headquarters office (P.O. Box 25526, Juneau, AK 99802) when the project is completed:

1. Measure and record daily water temperatures.
2. Keep cumulative log of temperature unit development.
3. Note on temperature unit log when the eggs are eyed, when hatching begins and ends, and when fry begin to "swim up" in the tank.
4. Note the date the fry are released or sacrificed.

## **Scarborough, Lisa**

---

**From:** McCullough, James  
**Sent:** Monday, October 06, 1997 1:34 PM  
**To:** Scarborough, Lisa; Sullivan, Joe  
**Cc:** Owen, Dave; Donaldson, Wayne K.  
**Subject:** Kametolook Eggtake

Hi,

Spoke with Jerry Yagie today, new phone number 853-2388. Three Star has about 30 coho ripening, they are in the side pond we trapped and found a relatively good count of fingerling coho and dolly varden.

Jerry took some of the stuff upcountry this morning. He only saw 10 coho in the Kametolook and most of them were not up in the spawning/rearing area. The Kametolook is running high with a lot of glacial melt water.

During Friday nights village meeting it was decided to close the upper portion of the river to subsistence and sport fishing.

I'll call Jerry again early next week.

They will teleconference with Chignik Lagoon next week? to go over the proposals for the Peninsula Board of Fish meeting in January.

Jim Mc

# MEMORANDUM

# State of Alaska

## DEPARTMENT OF FISH & GAME

**TO:** Lisa Scarbrough  
Subsistence Division  
ADF&G  
Anchorage

**DATE:** November 7, 1997

**FILE NO.:** lisa007.doc

**TELEPHONE NO.:** 486-1813

**FROM:** Jim McCullough  
Commercial Fisheries Management & Development Division  
ADF&G  
Kodiak

**SUBJECT:** Field Trip  
Perryville, 31 October -  
6 November, 1997

Jim McCullough participated in a field trip on 31 October through 6 November, 1997, to Perryville, Alaska. The purpose of the trip included: 1) to install production type salmon incubation boxes in the Kametolook River, 2) set up the school aquarium for incubation of coho salmon from egg to fry stages, 3) estimate the total coho salmon escapement to the Kametolook and Three Star Rivers, 4) if coho escapement was of sufficient strength then with the aid of local villagers, to participate in a coho salmon eggtake for the incubator boxes and the school aquarium, 5) to meet with the teachers and this years upper class members to instruct them on classroom salmon incubation techniques, 6) to sample adult coho salmon for genetic and pathology data, and 7) discuss with the local assistants the placement of thermographs for the fall/winter/spring period of 1997-1998.

On Friday, 31 October 31 through Saturday, 1 November, I traveled to Perryville.

On Sunday, 2 November, weather prevented traveling to the incubation box site. I cleaned, disinfected and filled the school aquarium with fresh water. I also started the chiller and aerator systems to ready the aquarium for the arrival of coho salmon eggs.

On Monday and Tuesday, 3 - 4 November, with the assistance of Jerry Yagie, Dennis Shangin and Austin Shangin we installed the production type salmon incubation boxes. On 3 November, Jerry and I also surveyed the Kametolook River for adult coho salmon. We observed 2 coho in a tributary of the Kametolook River near our project site, 75 coho and 5 sockeye salmon about 1/4 mile below our project site and an additional 104 coho and 5 sockeye salmon in the remainder of the river, for a indexed count of 181 adult coho and 10 sockeye salmon. I consider these as minimal counts; the estimated total coho salmon escapement is 724 coho salmon. The estimated total is 4 times the indexed count. I used an expansion factor of 4 to compensate for poor survey conditions encountered (high turbid water conditions only allowed us to survey about 1/4 of the total river). I did not attempt to expand the indexed sockeye salmon count into an estimated total count. Jerry and I also discussed the sampling locations of remote thermographs that will be mailed to him in mid November. On 4 November, Jerry and I also surveyed Three Star River and observed 2 salmon that we were unable to identify to the species level due to poor survey conditions; they were probably coho salmon.



On Wednesday, 5 November, with the assistance of Jerry, Dennis and Austin we attempted an eggtake in the river reach just below the project site. We caught about 50 coho and 1 sockeye salmon. Most were males, of the 12 females caught only 2 were ripe, no spawn outs were caught. We took samples of the kidney, ovarian fluid, and fin clips of the two ripe females. Using delayed fertilization techniques, we fertilized each female with two ripe males at the project site, rinsed the eggs and placed them in one of the incubation boxes. Because only two ripe and no spawned out fish were caught, we decided that Jerry, Dennis, Austin and another villager would attempt an eggtake on Tuesday, 11 November. Kidney, ovarian fluid and fin clips will also be collected during subsequent eggtakes.

On Thursday, 6 November, I met with the 10 through 12 grade class and instructed them on the use and care of the school aquarium. They will receive about 300 eggs from the Kametolook River production eggtake during the week of 10 - 14 November to incubate in the aquarium. Although the weather was marginal I was able to travel from Perryville to Kodiak arriving home about 11:00 p.m.

## **Scarborough, Lisa**

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**From:** McCullough, James  
**Sent:** Wednesday, November 12, 1997 10:27 AM  
**To:** Scarborough, Lisa  
**Subject:** Kametolook

Lisa,

I don't know when you might read this but I'll send you a Good Morning anyway!

I spoke with Jerry today. They went upcountry for an eggtake on Mon or Tue and found only 3 ripe females. They spawned them out and added em to the incubation box. They will try again today further downstream and may try one of the upper lakes to see how the fish hold in these locations are doing. Austin and Bruce Phillips are accompanying Jerry today. It was 24°F this morning in Perryville, clear and cold.

Cecilia will be in Anchorage Friday and will have samples from the 3 fish as well as any they collect today. I gave her your office and home number while I was out their way.

Wayne Donaldson was wondering about the possibility of making an addition to the Kametolook TC budget to include personnel for foot surveys of the local rivers? Wayne was thinking about sending Holmes or myself or anyone on staff that might have time.

Jim Mc

## **Scarborough, Lisa**

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**From:** McCullough, James  
**Sent:** Wednesday, November 12, 1997 4:54 PM  
**To:** Scarborough, Lisa  
**Subject:** Kametolook Eggtake

Lisa,

Jerry called this afternoon with todays eggtake results. Only three ripe females were caught (two partial spawnouts and the other was full), out of 15 total fish and 4 total females. They also sampled fish from the mid reach of the river, these fish were spawnouts. Due to the cold weather the small lakes attached to the river have now iced over making an eggtake there impossible.

Lets see what the final catch amounts to. We may need to speak with Jim Seeb to see if there is any way we can release these to the Kametolook River or if they can only go in the landlocked lakes.

Although I am reluctant to use holding pens due to the large number of bears in the area, we may want to consider this option next year. If we do go with holding pens, extra money for materials and freight, not a lot but may be a few thousand dollars, will be needed.

Jim Mc

## **Scarborough, Lisa**

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**From:** McCullough, James  
**Sent:** Thursday, May 21, 1998 3:03 PM  
**To:** Scarborough, Lisa; Hauser, Bill; Sullivan, Joe; \_Chignik Weir (Seasonal); Probasco, Pete; Donaldson, Wayne K.  
**Subject:** Kametolook incubation box fry

I spoke with Jerry Yagie today. He indicated that the fry migration from the incubation box was complete and he sent me the following data:

Date Fry Stocking Number and Location

April 29 ~90 Sicken Lake  
May 1 ~300 Sicken Lake and ~200 Sandy Lake  
May 6 ~ 500 Sicken Lake and ~300 Three Star River  
May 11 ~100 Sandy Lake  
May 14 ~60 Sandy Lake  
May 18 ~20 Kametolook River

Total ~1,570

Jerry removed the fry capture box from the incubation box outfall pipe on May 18. He will remove the saddles from the incubation box on May 22 and clean and store them for use this fall.

A total of 6 or 7 female coho were used in the egg take. Jerry indicated that at least 2 fish had already mostly spawned naturally and only a few eggs were collected from them. Survival still could have been better. One problem that might have lead to low survival was that eggs from the partially spawned fish were added to the eggs from the initial egg take (two week time gap). In 1998, with the use of holding pens to ripen the salmon all the eggs for an incubation box will be collected at one time.

Jim Mc