

Exxon Valdez Oil Spill
Restoration Project Annual Report

Kametolook River Coho Salmon Subsistence Project

Restoration Project 99247
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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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 through fourth years of the project (federal fiscal years 97, 98 and 99) 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 in 1989. The Trustee Council began funding a project in 1997 with the intent of restoring this coho salmon run. This project is a continuation of a project funded through the EVOS criminal settlement which provided for an assessment team from ADF&G with 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. Annually, since November 1997, coho salmon eggs have been placed in two Kametolook River instream incubation boxes. Since 1997, the Kametolook River coho escapement has shown some improvement. The increased escapement is believed to be partially attributed to self-imposed in-river harvest restrictions by the villagers and commercial fishing restrictions in marine waters. Community involvement and use of local traditional ecological knowledge by the villagers of Perryville is also an integral part of restoring Kametolook River coho salmon as a subsistence resource. All facets of this project should provide sufficient escapement within two coho life cycles for subsistence and spawning requirements.

Key Words: Alaska Department of Fish and Game, Alaska Peninsula, coho salmon, community involvement, environmental assessment, *Exxon Valdez* oil spill, holding pens, instream incubation boxes, Kametolook River, Perryville, school aquarium, subsistence, traditional and ecological 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:

Hutchinson-Scarborough, L., and J. McCullough. 2000. Kametolook River coho salmon subsistence project, *Exxon Valdez* Oil Spill Restoration Project Annual Report (Restoration Project 99247), Alaska Department of Fish and Game, Division of Subsistence, Anchorage, Alaska, and Division of Commercial Fisheries, Kodiak, Alaska.

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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. 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 were installed and used to make the recovery of ripe salmon more efficient. This improved the egg harvest and in the fall of 1998 with 7 males were used to fertilize 11 females and the fertilized eggs were placed into the incubation boxes. Approximately 25,000 fry were produced and released into the Kametlook River in May 1999.

Because of the success of using the holding pens to increase egg harvest, they will continue to be used in subsequent years of the project to aid in capturing adult salmon for the egg harvest. Fry produced in future years will continue to be released into the Kametlook 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 Kametlook River. All facets of this project should provide sufficient escapement within two coho life cycles for subsistence and spawning requirements.

INTRODUCTION

This report summarizes the EVOS Kametlook River Coho Salmon Subsistence Restoration Project from May 1, 1996 through September 30, 2000, and contains only Tables 1-5, and Appendices FF-LL. Please refer to Annual Report 97247 to view Figures 1-3; Plates 1-26 and Appendices A-U (Scarborough and McCullough: 1998). Figures 4-6; Plates 27-33, and Appendices V-Z, AA-EE are located in Annual Report 98247 (Scarborough and McCullough: 1999).

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; Owen and Pappas: forthcoming). 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 1996, the first year of the project, 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 since the beginning, 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, in the fall of 1998, one staff person from the hatchery traveled to Perryville with an ADF&G biologist and provided 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. This grant money was given to ADF&G with a cooperative agreement to the Perryville Village Council (Appendix D). This cooperative agreement continues to be amended annually through the life of the project (Appendices V-X, FF). 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 were addressed in the 1998 annual report for this project (Hutchinson-Scarborough and McCullough: 1999) (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, in 1997, 1998 and 1999 commercial salmon fisheries in the Western and Perryville Districts of Chignik have been closed annually on about 20 August in an attempt to rebuild this coho salmon stock (Owen and Sarafin: 1997 and 1998; Owen and Pappas: Forthcoming).

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, GG). 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 Kametolook 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 Kametolook 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. Starting the summer of 1998 and continuing in 1999, Perryville Village Council closed the upper reaches of the Kametolook River to subsistence fishing in hopes of helping to speed the recovery of the river's

coho runs. In the spring of 1998 an estimated 1,600 coho salmon fry was produced from the incubation box project but fish permits did not allow the fry to be released into the Kametolook River due to the low harvest of adult salmon in the fall, but instead were released into one of the local land locked lakes. But in 1999, permits allowed for the coho fry produced from the boxes to be released into the Kametolook River. Approximately 25,000 coho fry were voluntarily released from the boxes at the swim up fry stage during late April and May 1999. 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 Kametolook River. In May 1997, 1998 and 1999, about 125 to 400 fry annually from the school aquarium project were released into the Kametolook River. (Table 5).

On March 19, 1999 the Perryville Subsistence Salmon Workgroup was formed. This work group was formed as a request by the State Board of Fisheries in January 1999, after a resident of Perryville reported on shortages of subsistence salmon, and especially coho salmon in his community. The workgroup consists of representatives of the village of Perryville (subsistence users), Chignik commercial fisherman (including the Chignik Regional Aquaculture Association) and ADF&G (staff as advisors) to identify the issues related to Perryville subsistence salmon and develop solutions. The workgroup held meetings and identified objectives to address the salmon subsistence needs of Perryville. In part response to these objectives, the Division of Subsistence and Commercial Fisheries Staff conducted interviews with households in Perryville in May 1999. The interviews were directed primarily at obtaining more information about the historic and contemporary use of salmon and other subsistence resources by residents of Perryville. A progress report was presented by the Division of Subsistence to the State Board of Fisheries work session October, 1999 in Fairbanks, Alaska (Hutchinson-Scarborough, Fall: 1999).

In July 1999 as another response to the Perryville subsistence salmon work group, two commercial fishing boats from Chignik made two deliveries of approximately 1,000 coho salmon to residents of Perryville for home use (Chuck McCallum, personal communication: 1999). These deliveries reduced fishing pressure in the Kametolook River in 1999. Informal interviews by ADF&G Commercial Fisheries Staff and post season interviews by the ADF&G Division of Subsistence with some residents of Perryville in 1999 showed that no one from Perryville fished for coho salmon in the Kametolook River in 1999 (Owen and Pappas: Forthcoming; Appendix HH).

All facets of this project should provide sufficient escapement and historic subsistence harvest levels within two coho salmon life cycles (once fry were first released in the Kametolook River starting spring of 1999).

OBJECTIVES

The primary objectives of the project are to increase the coho salmon runs to the Kametolook 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. In 1998, in order to increase the egg take, two salmon holding pens were installed near the coho salmon spawning region of the Kametolook and used to make the recovery of ripe salmon more efficient. These pens were used again in 1999 and will continue to be used each fall through the end of the project (2002). Annually (through 2002), egg takes for the incubation boxes and the school aquarium, continued education, and habitat and harvest monitoring will continue to 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 Kametolook 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 Kametolook 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 (Plates 28, 31). Fry from these boxes were produced from the fall egg harvest. In the production phase of this project, genetic integrity of the Kametolook 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 have been and will continue to be used in the fall 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. And in the fall of 1998, Hatchery Assistant, Melvin Chya provided further training to Perryville project assistants when he traveled to Perryville to assist Jim McCullough and three village assistants with the egg take.

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 and continuing in 1998 and 1999 the Perryville Village Council voluntarily has 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, 1998 and 1999) allowed these fry to be released into the Kametlook River (Appendix N, AA, II). 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 1996 through September 1996)

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

Location	Site	No. Traps	Total Catch per Trap-Hour		
			Trap Hr.	Coho	Dolly Varden
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

	Number	Percent
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

	Number	Percent
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

	Male	Female	Unknown	Total
Number	15	16	1	32

A total of 32 adult coho salmon were collected from the Kametolook 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 1996 - September 1997)

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 develop 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. 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. (Please see Appendix CC for a detailed trip report).

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.

December 1997:

The assessment team decided to install fish holding pens in 1998 to aid in ripening salmon for the project. Perryville assistants traveled to the egg incubation boxes and removed approximately 300 eyed eggs which were placed in the school aquarium (Plate 27).

January - March 1998:

Jerry Yagie accompanied by other village assistants took monthly monitoring trips to Kametolook River to check thermograph sites and egg boxes. Approval to release fry in the Kametolook River was denied by ADF&G Genetics Staff due to the low number of salmon harvested; however, approval was granted to release them in local landlocked Sicken and Sandy Lakes upon emergence in late April or May. The Perryville teacher, Mike Browning, communicated with ADF&G regarding the status of egg development in the school aquarium. Mike and several students will transport surviving fry from the school aquarium to the Kametolook River for release in April or May. Two net holding pens were acquired, and prepared for transport to Perryville in May. Jim McCullough and Lisa Scarbrough (ADF&G) attended the Alaska Board of Fisheries meeting and presented a staff report regarding the project. They also attended a Chignik Regional Planning Team (RPT) meeting and provided a project status report. The RPT continued to support the project. A fish transport permit request for the school aquarium was submitted to ADF&G for review.

April - May 1998:

Jim McCullough and Lisa Scarbrough met to evaluate the project. They drafted the Detailed Project Description and budget for FFY-99 and submitted it to the EVOS Trustee Council. They also prepared the annual project report for FFY-97.

Village assistant, Jerry Yagie checked the egg boxes on April 29, May 1, May 6, May 11, May 14 and May 18. Each time he checked the box, he removed any swim-up fry (approximately 1,600) and transported them for release into Sandy and Sicken Lakes (landlocked lakes near Perryville). Approximately 20 were accidentally released in the Kametolook River. (Appendix EE).

Also in May, several Perryville high school students accompanied by Jerry Yagie and the science teacher, Mike Browning, released approximately 250 fry from the school aquarium into the Kametolook River.

Net holding pens were acquired and transported to Perryville. These will be installed in October, 1998.

June - September 1998:

Perryville assistants continued to monitor thermograph and incubation boxes monthly and conducted stream surveys. The temperature data from the three thermograph stations from November 1997 through October 1998 are shown in Figures 4-6 (McCullough 1999).

Project 99247 (October 1998-September 1999)

October 1998:

Jim McCullough participated in a field trip on 21 through 27 October 1998, to Perryville, Alaska. The purpose of the trip included: 1) to install temporary ripening pens for coho salmon, 2) to conduct a foot survey of salmon in the Kametolook River, 3) to capture and place in holding pens adult coho salmon, 4) to clean the instream incubation boxes, 5) clean the school salmon egg incubation aquarium, and 5) to collect and down load remote thermographs. (See Appendix KK for a detailed trip report).

October 23, 1998:

Jim McCullough along with the assistance of Jerry Yagie and Bruce Phillips installed holding pens for ripening coho salmon in a side pond of the Kametolook River. The Kametolook River was also surveyed for adult salmon. Approximately 70 coho and 25 sockeye salmon were observed in the main upriver spawning area located about ¼ mile below the incubation boxes. An additional 4 coho salmon were counted in the main stem of the river below the main spawning site and an additional 15 sockeye salmon counted in Candlefish Slough. The indexed escapement count for the Kametolook River is 148 coho salmon and 40 sockeye salmon. The indexed count for coho is twice the observed count (the sockeye estimate was not expanded). Although the river was somewhat turbid below the main spawning area, it was also obvious that there were few salmon present.

October 24, 1998:

Sixteen female and 15 male coho salmon were caught and placed in the holding pens to ripen. The instream incubator boxes and water head collector boxes were cleaned and disinfected. The Three Star River was also visited where 5 adult coho salmon were spotted. Jim McCullough met with the new science teacher, Patsy Chapple, and discussed report requirements and the permit process for running the school aquarium. They also cleaned, disinfected, and filled the aquarium with fresh water, and turned on the chiller.

October and November 1998:

Jerry Yagie (Perryville village assistant) conducted weekly stream surveys of the Kametolook for the presence of coho.

November 1998:

Jim McCullough and Melvin Chya participated in a field trip on November 9 through 13, 1998, to Perryville, Alaska. The purpose of the trip included: 1) a foot survey of salmon in the Kametolook River, 2) remove spawn from adult coho salmon that were ripening in holding pens, 3) fertilized and place coho salmon eggs in the Kametolook River incubation boxes, and 4) fertilize and place coho salmon eggs in the school aquarium. Melvin Chya works at the Pillar Creek Hatchery in Kodiak, Alaska. (See Appendix KK for a detailed trip report).

November 10, 1998:

Jim, Melvin and Jerry Yagie checked the Kametolook River incubation boxes to insure they were operating properly for the planned next day egg take. The holding pens were checked for adult

ripening coho salmon and it was noticed that while the adult male salmon had escaped, the female salmon were still captive in their pen. The Kametolook River was surveyed again for adult salmon with approximately 20 coho and 10 sockeye salmon in the main upriver spawning area located about ¼ mile below the incubation boxes observed. None of these salmon appeared fresh and were likely counted during the 23 October salmon survey. The indexed escapement count for the Kametolook River should remain at 148 coho salmon and 40 sockeye salmon, the survey count from 23 October.

November 11, 1998:

Jim, Jerry, Melvin, Austin Shangin caught 7 male coho salmon from the Kametolook River and used them to fertilize the 11 ripe female coho salmon from the holding pen. Standard salmon delayed fertilization techniques were used and the fertilized eggs were immediately rinsed and placed in the instream incubators. All but about 300 unfertilized eggs which were held back for the school aquarium were distributed between the two instream incubator boxes. Fin and kidney samples were collected from each salmon for genetic analysis and disease screening, and ovarian samples were collected from each female salmon for disease screening.

November 12, 1998:

Jim and Melvin showed all the Perryville students from kindergarten through the sixth grade how to fertilize salmon eggs. After fertilizing the eggs, they were placed in the school aquarium where the students were then able to watch their development through the swim up fry stage and their release into the Kametolook River in the spring of 1999.

November 13, 1998:

Genetic samples were delivered to U.S. Fish and Wildlife laboratory in Anchorage and kidney and ovarian samples taken to the Anchorage Alaska Department of Fish and Game laboratory for testing.

November 1998 through April 1999:

Jerry Yagie continued to conduct BI-monthly trips to the instream incubation boxes to check their condition. He provided reports to the ADF&G staff.

January 1999:

Jim McCullough attended the State Board of Fisheries meeting and gave a status report of this project.

March 17-19, 1999:

Jim McCullough and Lisa Scarbrough attended Chignik RPT and CRAA meetings and provided project status report. A Perryville Subsistence Workgroup was created consisting of representatives from Perryville, Chignik commercial fisherman and ADF&G staff members to look into identifying ways (in addition to the incubation boxes) to assist with the recovery of coho salmon in the Kametolook River.

March 23-26, 1999:

Jim McCullough and Lisa Scarbrough constructed a project poster for the 1999, 10th annual EVOS conference "Legacy of an Oil Spill 10 Years After Exxon Valdez". They attended the conference and presented the poster during the scheduled poster session (Plate 33).

April 9, 1999:

Jim McCullough and Lisa Scarbrough participated in a teleconference with the Perryville Subsistence Workgroup. The Kametook River project was discussed.

April 29- May 4, 1999:

Lisa Scarbrough traveled to Perryville with Jim McCullough to issue subsistence salmon permits and conduct key respondent interviews. The interviews were designed to further investigate the subsistence salmon fishery in Perryville as requested by the Perryville Subsistence Workgroup. Topics discussed in the interviews were directed at trying to learn how each salmon stock contributes toward meeting the salmon needs of Perryville, and alternative subsistence resources available. Life histories were also gathered for several respondents to document stocks used over time, locations of harvests, and ways each species is processed and cooked. Jim McCullough and local assistants attempted to travel to the incubation boxes on the Kametook River, but heavy wet snow halted the trip. (See Appendix LL for a detailed trip report).

May 20, 1999:

Jerry Yagie traveled to the egg incubation box site to check the boxes. All coho fry (an estimated 25,000) had already voluntarily swam out of the incubation boxes into the Kametook River during the swim up fry stage in April and May (Table 5).

DISCUSSION

Egg Incubation Box:

On about April 5, 1997, 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. From this incubation test no eggs or fish were released. All were sacrificed. From yolk sac observations, it is believed that had they lived, they would have developed into swimup fry in another two to three weeks and voluntarily released about 21-30 April. The team felt that the test project was successful in that it produced alevins. Mortality of eggs in this test was high, and the team would expect lower mortality in a production phase where the eggs were not confined to prevent a fry release. By confining the eggs the water flow was restricted and materials used in confining the eggs, galvanized iron, likely contributed to the high mortality.

In October 1997, two large instream incubation boxes were installed. When Jim McCullough was on site, he and village assistants attempted several egg takes. Only two ripe female coho salmon were caught. Ten subsequent trips made by local Perryville assistants at different stream locations and involving several sets per day were also generally unsuccessful; only 5 additional partially spent females were captured. Their eggs were fertilized and added to the incubation boxes (Appendix DD). The problem was not in catching fish, but in catching ripe ones. Samples were

taken for pathology and genetic testing from all coho salmon harvested for the project (Appendix M). They reinstalled and deployed thermographs at designated sites (McCullough 1999; Figures 4-6). In the spring of 1998, the boxes were checked and approximately 1,600 fry were recovered and released in the two land locked lakes (Appendix EE). Due to the low number of spawning pairs acquired in the fall egg take, the Fish Transport Permit required the fry be released in landlocked lakes rather than the Kametook River.

In order to make the project successful, two adult salmon holding pens were installed and utilized in November of 1998 and again in 1999. This way, adult salmon can be caught using a small mesh gill net (in order not to kill them), the catch can be sorted, with females placed in one pen and males in the second, and the fish can be held till they ripen. If additional fish are needed for the project, subsequent fishing trips can be made. Then ADF&G biologists and village assistants can conduct the egg take at one time using the ripe salmon. This technique has provided a more efficient egg take and has increased the number of eggs that were collected and placed in the incubation boxes which has improved the survival fry production too. Fry (estimated 25,000) were first voluntarily released from the egg boxes into the Kametook River in the spring of 1999

The necessary escapement of coho for subsistence and spawning requirements should be obtained within two coho life cycles (starting in the spring of 1999 when fry were first released in the Kametook River).

Perryville School Aquarium:

As part of the project, ADF&G and The Perryville School Teachers have operated a school aquarium in 1996/1997, 1997/1998 and 1998/1999. Coho eggs and milt were collected for the students at the same time the Kametook egg take takes place, and put into the school aquarium. Permits are obtained by ADF&G and annual reports sent into ADF&G by the responsible teacher.

In the spring of 1997, Don Preston, a Perryville teacher noted that the school aquarium had swimup fry on about 15 April, 1997. They had increased the water temperature above normal Kametook River temperatures to insure the swimup fry stage would occur prior to other end-of-the-year school activities. The teacher thought the aquarium fry had about 600 temperature units (TU's). From the 200 eyed eggs that were placed in the school aquarium, about 125 survived to swimup fry stage. The fry were held and fed until May 22 when they were released into the Kametook. The teacher felt that the project provided a good education aid.

In 1997/1998 and 1998/1999, the school aquarium project continued and produced (approximately 150 in 1998 and 400 in 1989) swim-up fry that were released in the Kametook River each May. Patricia Shoemaker was the teacher in charge of the project in 1998 and 1999).

This project can continue every school year indefinitely 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. In July 1999, two deliveries totaling approximately 1000 coho salmon were made to Perryville residents by two Chignik Area commercial fishing boats that caught the non-local fish by Mitrofanina Island. This delivery was a voluntary effort organized by Chuck McCallum, Chairman of the Chignik Regional Aquaculture Association and the Perryville Subsistence Salmon Workgroup. This workgroup consists of representatives of Perryville subsistence users, Chignik commercial fisherman and ADF&G (as advisors) and was formed in 1999 to identify the subsistence concerns of the people of the village of Perryville and to try address the concerns with solutions (in addition to this incubation box project). The ADF&G Divisions of Subsistence and Commercial Fisheries conducted a research project in the winter of 1999 in Perryville. Household interviews were conducted to learn more about the historic and contemporary use of all species of salmon by Perryville residents. A report will be presented to the State Board of Fisheries in October, 1999 (Hutchinson-Scarborough and Fall: 1999).

Measurable Project Tasks for FFY 2000 (October 1999 - September 2000)

September-October 1999:

Local Assistant, Jerry Yagie will conduct stream surveys, counting coho in upper reaches of Kametlook River. Reports information to ADF&G's Jim McCullough.

October 1999:

Teleconference with ADF&G and the Perryville Subsistence Workgroup. The Kametlook Coho Restoration project will be discussed.

October 28, 1999:

Jim McCullough or Lisa Scarbrough (ADF&G) will attend the Alaska State Board of Fisheries meeting in Fairbanks and give a status report of the Perryville Subsistence workgroup including the Kametolook project.

Late October/ Early November 1999:

Jim McCullough will travel to Perryville, Alaska to: 1) with assistance from Jerry Yagie, survey Kametolook River's salmon escapement, 2) set up holding pens for ripening adult coho salmon in the Kametolook River, 3) capture and place in holding pens adult coho salmon, 4) clean and set up the coho salmon school aquarium project and 5) meet with villagers to determine how the 1999 salmon subsistence fishery is proceeding.

November 1999:

Jerry Yagie and another person will capture additional salmon as needed and place into holding pens. Check holding pens to determine how ripe salmon are. Relay information to ADF&G Jim McCullough.

November 10, 1999:

Jim McCullough will present a paper on the Kametolook project at the annual meetings of the American Fisheries Society in Anchorage.

Mid to late November 1999:

Jim McCullough and Pillar Creek (Kodiak) Hatchery personnel Melvin Chya will travel to Perryville when the salmon in the holding pens are ripe. When there they will: 1) conduct coho salmon egg take from the Kametolook River's salmon stock (assisted by 2-3 local residents), 2) collect biological samples from the salmon used in the egg take, 3) winterize the holding pens and other equipment and 4) place fertilized eggs in the incubation boxes and in the school aquarium.

November 1999 through May 2000:

Jerry Yagie and another village assistant will continue to conduct BI-monthly trips to the instream incubation boxes to check their condition. He will provide telephone reports to Jim McCullough (ADF&G).

January 2000:

Jim McCullough and Lisa Scarbrough will present a paper at Annual EVOS Restoration Workshop in Anchorage summarizing the Kametolook project.

February, March or April, 2000:

Jim McCullough will attend Chignik RPT and CRAA meeting and provide Kametolook project status report.

April 2000:

Jim McCullough and Lisa Scarbrough (PI's) will meet to discuss the progress of the project and identify measurable tasks for FFY-2001. Prepare project DPD for 2001 funding and write FFY 2000 annual report.

May 2000:

Fry from egg boxes will be voluntarily released from boxes at swim up fry stage during late April or May, and school aquarium expected to be released into the Kametlook River in early to mid May. Instream incubation boxes will be removed from the Kametlook River and cleaned by local assistants after fry have left the boxes (April or May). ADF&G personnel will travel to assist with the project and meet with Perryville Village to evaluate the project, and discuss community involvement activities.

June 2000:

Chignik Regional Planning Team will meet in Chignik. A status report of the Kametlook Project and Perryville Subsistence Workgroup will be given.

Other Future Project Goals:

Annually, through the duration of the project (through 2002): One day every month, one or two trained Perryville researchers will continue to monitor the river and egg incubation boxes and thermographs. They will continue to 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 cleaning and repairing equipment. Their involvement 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 continue to evaluate the Kametlook 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 Kametlook River coho salmon as brood stock and the release of fry back into the Kametlook, Three Star, and Long Beach Rivers and other potential stocking sites include Sandy and Sicken Lakes.

Project leaders from this project will continue to work closely with the Perryville Subsistence Salmon Workgroup (consisting of representatives of Perryville, Chignik Commercial Fisherman, The Chignik Regional Aquaculture Association and ADF&G staff). The workgroup was formed

in 1999 to identify the issues related to Perryville subsistence salmon and develop solutions toward improving runs and helping Perryville residents fulfill their subsistence needs. This incubator box project has been defined by the workgroup as the primary tool to assist with this problem. However, other solutions will continue to be discussed and implemented throughout future years until Perryville's subsistence salmon needs are satisfied.

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 (starting in the spring of 1999 when coho fry were first released into the Kametlook River). In the future, 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 if needed.

Perryville community involvement is 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 Kametlook River. Village assistants have and continue to be trained and work closely with the ADF&G team to facilitate the success of the project.

Not funded by this project but working directly with the project is the Perryville Subsistence Workgroup which formed in 1999 as recommended by the State Board of Fisheries in response to testimony from a Perryville resident concerned about declining salmon stocks available to his community for subsistence. The purpose of the workgroup is to identify the issues related to Perryville subsistence salmon and develop solutions toward improving runs and or assisting the community with fulfilling their subsistence salmon needs. The workgroup consists of representatives of the village of Perryville (subsistence users), Chignik commercial fisherman (including the Chignik Regional Aquaculture Association) and ADF&G (staff as advisors) to identify the issues related to Perryville subsistence salmon and develop solutions. The workgroup holds meetings and teleconferences and to date has identified objectives to address the salmon subsistence needs of Perryville.

As a partial response to these objectives, the Division of Subsistence and Commercial Fisheries Staff conducted interviews with households in Perryville in May 1999. The interviews were directed primarily at obtaining more information about the historic and contemporary use of salmon and other subsistence resources by residents of Perryville. A progress report was presented by the Division of Subsistence to the State Board of Fisheries October, 1999 in

Fairbanks, AK (Hutchinson-Scarborough, Fall: 1999). In July 1999 as another response to the working group, two commercial fishing boats from Chignik made two deliveries of approximately 1,000 coho salmon to residents of Perryville for home use (McCallum, personal communication 1999). These deliveries apparently helped take pressure off of fishing in the Kametook River in 1999. Informal subsistence interviews and subsistence surveys showed that no one from Perryville fished for coho salmon in the Kametook in 1999 (Owen and Pappas: Forthcoming). This workgroup will continue to meet and report to the State Board of Fisheries until Perryville's subsistence needs for salmon are addressed.

All facets of this project should provide sufficient escapement and historic subsistence harvest levels within two coho salmon life cycles (once fry were first released in the Kametook River starting spring of 1999). If additional funding can be obtained after 2002, it is recommended at this time that the project continue for an additional coho salmon life cycle.

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 Kametook 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. Also thanks to Chuck McCallum and the Chignik Regional Aquaculture Association for their continued interest and support in the project and their assistance with helping to find solutions to Perryville's coho subsistence salmon needs.

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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TABLES AND APPENDICIES

This report contains Tables 1-5, and Appendices FF-LL. Please refer to Annual Report 97247 to view Figures 1-3; Plates 1-26 and Appendices A-U (Scarborough and McCullough: 1998). Figures 4-6; Plates 27-33, and Appendices V-Z, AA-EE are located in Annual Report 98247 (Scarborough and McCullough: 1999).

Table 5. Kametlook River coho salmon egg takes, 1997-2000.

Brood Year ^a	Year Released	School Aquarium		Incubation Boxes			Estimated Escapement
		Eggs	Fry Released	Adults ^b	Eggs	Fry Release	
1996	1997	250	125	2	3,000	1,600 ^c	200
1997	1998	300	150	14 ^d	10,000	1,600	724
1998	1999	500	400	22	33,000	24,750 ^e	148
1999	2000	250	0	12	18,000	13,500 ^e	No Estimate

^a Eggs from brood year 1996 would be released as fry in 1997 and so forth

^b A 50:50 ratio of female to male adult fish were used in the egg takes.

^c Fry were released into two landlocked lakes near Perryville.

^d Two full females and 5 partially spent females were used for the egg take.

^e Number of eggs was estimated from the actual number of females used and assuming that each contained 3,000 eggs. The fry release was estimated by assuming that the survival from egg to swim up fry was 75%.

AMENDMENT 3
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 the continuation of this project and funding which started in Federal Fiscal Year 97 (FFY 97), for FFY 99. The FFY 99 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 FFY 99 DPD.

II. Period of Performance

The period of performance for work performed on the FFY 99 DPD is October 1, 1998 through September 30, 1999. Contingent upon project and funding approval from the EVOS Trustee Council and subject to authorized appropriation, this agreement may be amended for three 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 99.

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 99.

V. Budget

For FFY 99, as approved by the EVOS Trustee Council, funds in the amount of \$9,800.00 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 99 DPD, the Native Village of Perryville will be paid an amount not to exceed \$9,800.00.

Invoices shall be submitted separately for work performed on the FFY 98 and FFY 99 DPD's. Invoices shall be submitted at quarterly intervals with the final invoices received by ADF&G no later than November 30, 1999.

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

For the Alaska Department of Fish and Game

Gerald Kosbruk
Gerald Kosbruk, President

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

Jan 14, 1999
Date

2/1/99
Date

*Mark
Monte
2/4/99*

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

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES - FISH PATHOLOGY SECTION
333 RASPBERRY ROAD, ANCHORAGE, AK 99518-1599 - Phone (907)267-2244/fax 267-2462

REPORT OF LABORATORY EXAMINATION

LOT (YEAR, STOCK, SPECIES): Kametolook River coho salmon, Oncorhynchus kisutch

FACILITY: ADFG Kodiak

CONTACT PERSON/ADDRESS: Jim McCullough, ADFG, 211 Mission Road, Kodiak, Alaska 99615

SAMPLE DATE: 11/11/98

DATE SAMPLE RECEIVED: 11/13/98

SPECIMEN TYPE: Ovarian fluids & kidneys LIFE STAGE: Adult STATE: Unfrozen/refrigerated

NUMBER IN SAMPLE: 11 ovarians, 18 kidneys

WILD: Yes

REASON FOR SUBMISSION: Disease History Development.

FINAL REPORT DATE: 1/20/99

CLINICAL FINDINGS

FAT: 0/18 positive for Aeromonas salmonicida
0/18 positive for Yersinia ruckeri Type I
0/18 positive for Yersinia ruckeri Type II

ELISA: 2/18 kidneys positive for Renibacterium salmoninarum (Rs). Mean optical density values of ≥ 0.068 were considered positive for the Rs antigen. See attached data.

VIROLOGY: 0/11 (3x3, 1x2 fish/pool) 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: A low prevalence of Rs antigen was detected in the samples submitted. No other bacterial or viral pathogens were detected. Submit another 49 ovarian fluids and 10 kidneys to complete the disease history on this stock.

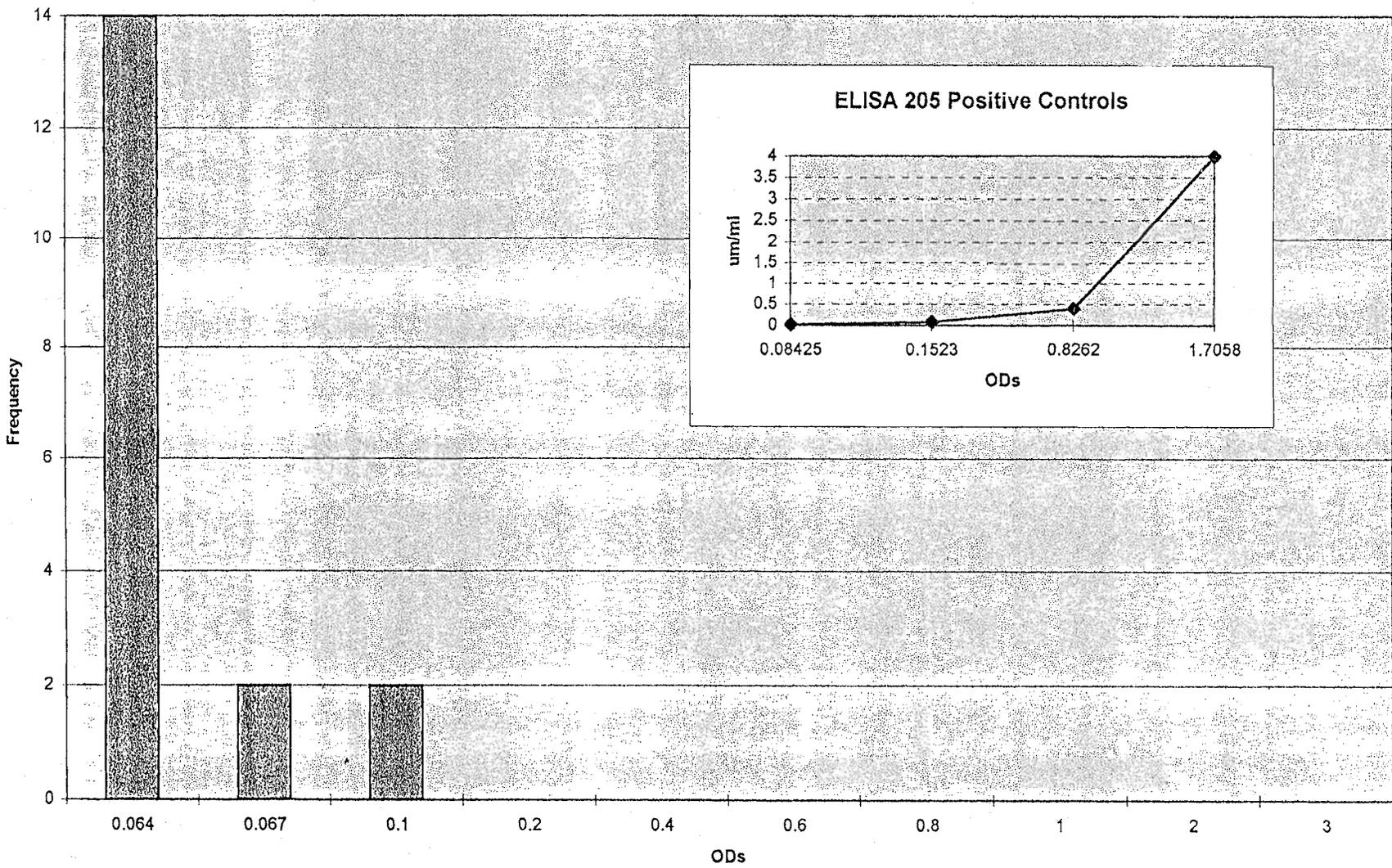
FISH HEALTH INVESTIGATOR(s): ^{ms} Burton, ^{JA} Follett, Meyers

TECHNICAL ASSISTANCE: Starkey, Lipson

COPIES TO: FY99, Misc., Meyers, Scarbrough, Simpson

Kametolook coho BKD

GG-2



STATE OF ALASKA

TONY KNOWLES, GOVERNOR

DEPARTMENT OF FISH AND GAME

DIVISION OF COMMERCIAL FISHERIES

211 Mission Road
KODIAK, AK 99615
PHONE: (907) 486-1825
FAX: (907) 486-1841

To: Rod Campbell
Regional Salmon Biologist
Kodiak, AK

April 11, 2000

From: George Pappas,
Acting Chignik Area Salmon Biologist,
Kodiak, AK

Subject: Perryville and Ivanof Bay Coho Subsistence Update for 1999.

Rod, I have put together all accumulated data regarding the 1999 late summer/fall coho runs for the Perryville and Ivanoff Bay communities.

Data was collected from :

- Aerial surveys
- In person interviews
- Informal telephonic interviews.

Coho salmon were first identified during late season aerial surveys of Western/Perryville districts on 9/7/99. The low numbers of coho enumerated during the aerial surveys indicated the local coho runs were weak or the runs had just started. The streams in the immediate vicinity of Perryville contained few or no coho salmon on 9/7/99. The streams in the immediate vicinity of Ivanoff Bay contained small to moderate numbers of coho in the saltwater off of the stream mouths. A few key stream were surveyed on 9/15/99 by ADF&G pilot Scott Moyer which indicated the local coho runs were just beginning to build up in the mouths of the streams near Perryville. No coho salmon were seen in the Kametolook river surveys.

Personal interviews were conducted on site in Perryville on two occasions. The information collected indicated the coho runs in the local systems had not yet started. One personal communiqué of interest recorded the sport catch of one coho salmon off the beach in front of the Perryville village during late August. On approximately the same day, a few jumping coho were sighted in the mouth of the Kametolook by Perryville residents.

An ongoing series of weekly telephonic interviews of several Perryville and Ivanof residents began on 10/1/99. The telephonic interviews were informal in nature though identical questions were asked during each conversation. Interviewed residents of Perryville have indicated little or no sign of coho in or around the Kametolook river through 10/12/99. Some residents indicated they tried to catch coho with subsistence nets and/or sport fish gear from Anchor Bay and Humpback Bay. An unofficial total of less than 150 coho have been harvested for subsistence purposes from these systems through

10/12/99. The results of the telephonic interviews preliminarily indicate that Perryville residents have not fully pursued the take of coho for the purpose of subsistence through 10/12/99. It appears the low level of effort is in part due to lack of interest, some residents of Perryville have been out of town on vacation or business, or individuals have not started subsistence fishing for coho plan to soon.

Telephonic interviews of several Ivanof Bay residents produced mixed results. Some residents have indicated the Wasco's Creek 1999 coho run is about average. Some residents have taken advantage of this opportunity to take subsistence coho from this creek. Locals indicated that the "Main Creek" contains low numbers of coho but subsistence and sport fish harvest have taken place. Interviews conducted through 10/12/99 indicate the unofficial total of subsistence and sport fish take of coho salmon from the Ivanof Bay area to be less than 150 coho salmon total.

Through 10/12/99, it appears from the above collected datum that the coho salmon runs in the immediate vicinity of Perryville and Ivanof Bay are either late or overall below average in strength. Informal telephonic interviews will continue to monitor the subsistence efforts of the two communities.

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

DIVISION OF COMMERCIAL FISHERIES

TONY KNOWLES, GOVERNOR

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

Phone: (907) 465-6149
Fax: (907) 465-4168
e-mail: jeri_museth@fishgame.state.ak.us

October 12, 1999

Ms. Patricia Garris-Shoemaker
Perryville School
Lake & Peninsula School District
P.O. Box 103
Perryville, AK 99648

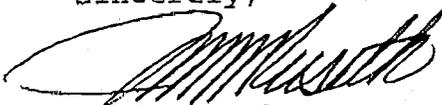
Dear Ms. Garris-Shoemaker:

Enclosed is an approved fish resource permit that allows you to conduct a classroom incubation project. The eggs will be supplied from an egg take on the Kametalook River. Please review the permit and enclosures carefully. The permit will expire December 31.

We are very interested in these projects and require the teacher 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

Enclosure

cc: Jim McCullough
Len Schwarz
Fish and Wildlife Protection



STATE OF ALASKA
DEPARTMENT OF FISH AND GAME
JUNEAU, ALASKA

Permit No. P-99-137

Expires 12/31/99

FISH RESOURCE PERMIT

This permit authorizes Patricia Garris-Shoemaker, Perryville School, Lake & Peninsula School District
(person, agency or organization)
of P. Box 103, Perryville, AK 99648 to conduct the following activities from October 7, to December 31, 1999 in
accordance with AS 16.05.930

To obtain and incubate up to 500 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 Kametalook River. The resultant fry may be released back into the Kametalook River at the egg take site or sacrificed.

PURPOSE: Students will learn the life cycles of fish, environmental hazards, weather and chemical problems and how they effect the fish.

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

AUTHORIZED PERSONNEL: Patricia Garris-Shoemaker, Michael Shangin, Boris Kosbruk, Jackie Kosbruk, Vanessa Phillips, Carcy Yagie, Alic Phillips, Harold Kosbruk, Jr., Miranda Shangin, Polly Jane Yagie, Larissa Shangin, Aamanda Phillips and Sarah Kosbruk. 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, (486-1813) Division of Commercial Fisheries; or Len Schwarz, Division of Sport Fisheries (486-1800).
(Continued on the next page)

REPORT DUE January 31, 2000. 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.

Shawn G. McEee
Division of Commercial Fisheries

Kevin C. Ouellet
Deputy Director, Division of Commercial Fisheries
Alaska Department of Fish and Game

Alan Stevens
Division of Sport Fisheries

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.



STATE OF ALASKA DEPARTMENT OF FISH AND GAME

CLASSROOM INCUBATION PROJECT

PROPAGATION APPLICATION for

FISH RESOURCE PERMIT for scientific or educational purposes to take, transport, possess, hold alive, FISH AND THEIR EGGS (except gold fish and decorative tropical fish) for a CLASSROOM INCUBATION PROJECT. The amount that can be held is less than or equal to 500 eggs or one spawning pair.

Patricia Harris-Shoemaker Pearyville School
(Name of Instructor) (Organization or School)

P.O. Box 103 Pearyville, AK 99143
(Mailing Address) (City, State, Zip Code)

e-mail pharris@pearyville.ak.us

Telephone: (907)853-2210 (work) (907)853-2267 (fax) (907)853-2218 (home)

School District: Lake & Peninsula SD

A WRITTEN OPERATIONAL OR STUDY PLAN IDENTIFYING THE PURPOSE AND THE NEED FOR THE CLASSROOM INCUBATION PROJECT, RESEARCH OBJECTIVES, PROCEDURES, AND AN EXPLANATION OF BENEFITS THAT MAY ACCRUE TO THE STUDENTS MUST BE ATTACHED.

I would like to conduct a classroom incubation project using the following:
(check the appropriate box)

chum (dog) salmon pink (humpy) salmon
coho (silver) salmon

I would like to incubate/rear a total of 500 (amount requested). The maximum amounts for this permit are less than or equal to 500 eggs or one spawning pair.

Life stage requested: (check appropriate box)

- Spawning adult (maximum one spawning pair)
- Green eggs (newly fertilized--later summer through late fall)
- Eyed eggs (eyes visible in egg--available early winter through mid winter)
- Alevin (newly hatched yolk-sac fry--generally not transportable)
- Emergent fry (early free swimming juvenile salmonid--available spring)

I wish to obtain the above by means of: (check appropriate box)

Directly from hatchery. Name of hatchery: _____
Approximate date of transport: _____ to _____, 19____
 production egg-take incubator

Remote location. Name of stream, river, or lake: Kumatahook River
Approximate date of transport: Sept to October, 19____
Method: (check appropriate box)

beach seine gillnet dipnet rod and reel
 other technique (please explain the procedures planned for the egg take):

Isolation measures planned to control disease during transport, including description of container, water source, and method and plan for transport: _____

Sterile 5 gallon bucket w/ eggs & sperm, into isolation tank to be maintained @ 3°C (if ready for return to environment).

The eggs and fish will be reared in:

- recirculating aquarium
- flow-through aquarium
- Other (describe incubation and rearing system)

Source of water for rearing and proposed effluent discharge location: _____

non-chlorinated water from faucet

Final disposition: (check appropriate box) and approximate date of disposition: _____

April to May 15, 1999

- destroyed as a result of experimentation
- destroyed at termination of project
- released at egg take site
- released into ADF&G approved landlocked lake. Name: _____

Release should be times as nearly as possible to the natural timing of the donor stock, the plankton bloom, or at a time appropriate to maximize the survival rates. The project is for educational purposes only and any adult returns from this project may not be claimed as exclusive property of the project.

The following persons will participate in the project under terms of the permit being requested:

<u>Patricia Garms-Shoemaker</u>	<u>Doreen...</u>	<u>Larissa Shangu</u>
<u>Michael Sinner</u>	<u>Alan Phillips</u>	<u>Amanda Phil</u>
<u>Karl Kosbruk</u>	<u>Harold Kosbruk, Jr.</u>	<u>Sarah Kosbruk</u>
<u>Tadric Kosbruk</u>	<u>Miranda Shangu</u>	
<u>Vanessa Phillips</u>	<u>Billy Jane Yagie</u>	

I certify that all statements entered on this application are true, that I will abide by all conditions and restrictions of a permit if issued, and promise to submit a report of activities carried out under terms of such permit within 30 days of its expiration date.

Patricia Garms-Shoemaker
(signature)

4-20-99
(date)

The completed application must be submitted to the Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, FNP Program, P.O. Box 25526, Juneau, AK 99802.



RECEIVED MAR 6 1999

STATE OF ALASKA DEPARTMENT OF FISH AND GAME CLASSROOM INCUBATION PROJECT

Report #1 Due December 31

Patricia Garris-Shoemaker Pearville School
(Name of Instructor) (Organization or School)
P.O. Box 103 / Pearville School Pearville, AK 99648
(Mailing Address) (City, State, Zip Code)

Telephone: (907) 853-2010 (work) (907) 853-2278 (home) E-mail pschoemaker@psd.com

Species: coho [] chum [] pink [] other _____

Eggs Received: 400 Stage Received: green* [] eyed

Current Stage: [] green [] eyed [] hatch
[] alevin fry

Mortality to Date: 30 Estimate % Survival (Live eggs/total received) 92.5%

Water Exchange Intervals: weekly [] monthly
[] <1 x/week [] <1 x/month

Accumulated Thermal Units to Date: _____

What educational activities have you done in regards to your incubation project? Explain:
Research data, discuss incubation periodically, reports.

Note: student reports, art, etc., are appreciated.

Problems experienced during your project to date: I received the project without any knowledge of how to proceed, when the other teacher had had a great book about the science stuff/projects

Assistance available from local biologist or other teachers incubating eggs? [] yes No

I certify that the statements made in this report are true and that I have followed the guidelines as originally specified in my approved permit.

Patricia Garris-Shoemaker 3/21/99
Signature Date

*NOTE: If you did your own eggtake, please describe the procedure on the back of this form. Include information about the date, place, equipment used, participants, success, and other pertinent information.



RECEIVED MAR 6 1999

STATE OF ALASKA DEPARTMENT OF FISH AND GAME CLASSROOM INCUBATION PROJECT

Report #2 (Due end of school year)

Patricia A. Conneris-Shoemaker Perryville School
(Name of Instructor) (Organization or School)
P.O. Box 1031 Perryville School Perryville, AK 99648
(Mailing Address) (City, State, Zip Code)

Telephone: (907)853-2210 (work) (907)853-2279 (home) E-Mail PShoemaker@

Species: coho [] chum [] pink [] other _____

Eggs Received: 400 Estimate % Survival (Live eggs/total received) 400

Water Exchange Intervals: weekly [] monthly
[] <1 x/week [] <1 x/month

Accumulated Thermal Units to Critical: _____

Eyed: _____ Alevin (hatch): _____ Emergence (fry): X

Fish were: [] Destroyed at end of project
[] Sacrificed for experimentation
[] Released into a landlocked lake
Name of lake: _____
Date released: _____
 Released into drainage of origin
Name of stream/river: Kaimatalook
Date released: April 6, 1999

Problems experienced during your project: Took over project on March 15 because
Patsy Chapelle resigned from her position at the end of February. Fish became
useless with transport and I didn't know what the fish spent in change areas. Plus,
I didn't know how to proceed w/out help.

What educational activities have you done in conjunction with your incubation project since the last reporting period? Explain: research, discussion, project paper deliver ~~egg~~ to river

I certify that the statements made in this report are true and that I have followed the guidelines as originally specified in my approved permit.

Patricia Conneris-Shoemaker
Signature

4/21/99
Date



ALASKA DEPARTMENT OF FISH AND GAME

DIVISION OF COMMERCIAL FISHERIES

MEMORANDUM

TO: Lisa Scarbrough
Subsistence Resource Specialist II
Subsistence Division
Anchorage

DATE: October 29, 1998

PHONE: (907) 486-1813
FAX: (907) 486-1841

FROM: Jim McCullough
Regional Finfish Research Biologist
Commercial Fisheries Division
Region IV - Kodiak

SUBJECT: Perryville Field Trip
21-27 October, 1998

Jim McCullough participated in a field trip on 21 through 27 October 1998, to Perryville, Alaska. The purpose of the trip included: 1) to install temporary ripening pens for coho salmon, 2) foot survey of salmon in the Kametlook River, 3) capture and place in hold pens adult coho salmon, 4) clean the instream incubation boxes, 5) clean the school salmon egg incubation aquarium, and 5) collect and down load remote thermographs.

On Wednesday, 21 October through Thursday 22 October I traveled to Perryville.

On Friday, 23 October, with the assistance of Jerry Yagie and Bruce Phillips we installed holding pens for ripening coho salmon in a side pond of the Kametlook River. We also surveyed the Kametlook River for adult salmon. We observed approximately 70 coho and 25 sockeye salmon in the main upriver spawning area located about $\frac{1}{4}$ mile below the incubation boxes. We observed an additional 4 coho salmon in the main stem of the river below the main spawning site and an additional 15 sockeye salmon in Candlefish Slough. The indexed escapement count for the Kametlook River is 148 coho salmon and 40 sockeye salmon. The indexed count for coho is twice the observed count; I did not expand the sockeye salmon count. Although the river was somewhat turbid below the main spawning area, it was also obvious that there were few salmon present.

On Saturday, 24 October Jerry, Bruce and I caught 16 female and 15 male coho salmon and placed them in the holding pens to ripen. We cleaned and disinfected both instream incubator boxes and water head collector boxes. Our departure route took us along Three Star River where I observed 5 adult coho salmon. Upon returning to Perryville I cleaned and disinfected the school

aquarium, filled it with fresh water and got the aerator and chiller working. It should be in equilibrium, ready for salmon eggs, when I return on 9 November to Perryville. I also discussed the aquarium project, report requirements, and permit process with the new science teacher, Patsy Chapple.

On Sunday, 25 October I departed Perryville, snowstorms only allowed me to get as far as Port Heiden. The pilots, another passenger and I stayed at the Port Heiden Pen Air agent, Jens Christensen, house. His wife was kind enough to feed us and they provided us with a warm and dry place to stay for the night.

On Monday, 26 October I was able to return home to Kodiak.

On Wednesday, 28 October I downloaded and reprogrammed the remote temperature loggers.

I intend to return to Perryville with Melvin Chya on 9 November for an egg take for the incubation boxes and the school aquarium.

Cc: Donaldson Lloyd Owen Sarafin Perez Fall



ALASKA DEPARTMENT OF FISH AND GAME

DIVISION OF COMMERCIAL FISHERIES

MEMORANDUM

TO: Lisa Scarbrough
Subsistence Resource Specialist II
Subsistence Division
Anchorage

DATE: November 17, 1998

PHONE: (907) 486-1813
FAX: (907) 486-1841

FROM: Jim McCullough
Regional Finfish Research Biologist
Commercial Fisheries Division
Region IV - Kodiak

SUBJECT: Perryville Field Trip
9-13 November, 1998

Jim McCullough and Melvin Chya participated in a field trip on 9 through 13 November 1998, to Perryville, Alaska. The purpose of the trip included: 1) foot survey of salmon in the Kametlook River, 2) spawn adult coho salmon that were ripening in holding pens, 3) fertilized and place coho salmon eggs in the Kametlook River incubation boxes, and 4) fertilize and place coho salmon eggs in the school aquarium. Melvin Chya works at the Pillar Creek Hatchery in Kodiak, Alaska.

On Monday, 9 November through Tuesday 10 November, we traveled to Perryville.

On Tuesday afternoon, 10 November, Jerry Yagie, Melvin and I checked the Kametlook River incubation boxes to insure they were operating properly for the next days-planned egg take. We then checked the pens where adult ripening coho salmon were being held and noticed that the adult male salmon had escaped, the female salmon were still captive in their pen. We also surveyed the Kametlook River for adult salmon. We observed approximately 20 coho and 10 sockeye salmon in the main upriver spawning area located about $\frac{1}{4}$ mile below the incubation boxes. None of these salmon appeared fresh and were likely counted during the 23 October salmon survey. The indexed escapement count for the Kametlook River should remain at 148 coho salmon and 40 sockeye salmon, the survey count from 23 October.

On Wednesday, 11 November, Jerry, Melvin, Austin Shangin and I caught 7 male coho salmon from the Kametlook River and used them to fertilize the 11 ripe female coho salmon from the holding pen. Standard salmon delayed fertilization techniques were used and the fertilized eggs were allowed to develop for one hour before placing them in the instream incubators. All but

about 300 unfertilized eggs which were held back for the school aquarium, were evenly distributed between the two instream incubator boxes. Fin and kidney samples were collected from each salmon for genetic analysis and disease screening, and ovarian samples were collected from each female salmon for disease screening.

On Thursday, 12 November, Melvin and I showed all the Perryville students from kindergarten through the sixth grade how to fertilize salmon eggs. After fertilizing the eggs we placed them in the school aquarium where the students will be able to watch their development through the swim up fry stage and their release into the Kametook River in the spring of 1999. In the evening Melvin and I departed Perryville for Anchorage. Melvin continued traveling to Kodiak while I stayed in Anchorage.

On Friday, 13 November, Lisa Scarbrough and I gave the Anchorage U.S. Fish and Wildlife laboratory the genetic samples. We made plans for developing a poster on the Kametook project to be presented at the *Exxon Valdez* Oil Spill Trustee Council symposium in Anchorage on March 23-26, 1999. Lisa took the kidney and ovarian samples to the Anchorage Alaska Department of Fish and Game laboratory while I returned to Kodiak.

cc: Donaldson Lloyd Owen Sarafin Perez Fall



ALASKA DEPARTMENT OF FISH AND GAME

DIVISION OF COMMERCIAL FISHERIES

MEMORANDUM

TO: Jim Fall
Regional Program Manager
Division of Subsistence
Anchorage

DATE: May 18, 1999

PHONE: (907) 486-1813

FAX: (907) 486-1841

AND: Denby Lloyd
Regional Finfish Supervisor
Commercial Fisheries Division
Region IV - Kodiak

FROM: Jim McCullough
Regional Finfish Research Biologist
Commercial Fisheries Division
Region IV - Kodiak

AND: Lisa Scarbrough
Subsistence Resource Specialist II
Subsistence Division
Anchorage

SUBJECT: Perryville Field Trip
28 April - 4 May, 1999

Jim McCullough and Lisa Scarbrough participated in a field trip on 28 April through 4 May 1999, to Perryville, Alaska. The purpose of the trip included: 1) checking the development of fry in the incubation boxes in the Kametolook River, 2) checking on the coho salmon school aquarium project 3) issuing 1999 salmon subsistence permits, 4) aiding villagers with Tier II caribou permit applications and 5) conducting household interviews (some in-depth and others brief) to better understand the customary and traditional use of coho and other species of salmon by Perryville residents. The purpose of these interviews is to satisfy part of a collaborative effort by the Perryville Subsistence Salmon Task Force that was recently organized to address the subsistence salmon concerns of the Village of Perryville. The Division of Subsistence was asked by the Task Force to collect additional information from Perryville to better understand the variety of uses of each salmon species and the importance of coho to the community. A report will be presented to the Alaska Board of Fisheries in October.

While in Perryville we also assisted with sending a wounded eagle into the Bird Learning and Treatment Center in Anchorage (it died enroute when left in a warehouse for 24+ hours in King Salmon) and surveyed a proposed bridge site across the village slough for vehicle access to the tsunami center.

On Wednesday evening, 28 April Jim McCullough traveled from Kodiak and stayed overnight in Anchorage to catch the flight the next morning to King Salmon.

On Thursday, 29 April Lisa Scarbrough and Jim traveled from Anchorage to Perryville via King Salmon, Chignik Bay and Chignik Lake. We arrived in the evening and stayed at the village school.

On Friday, 30 April Jim McCullough and two high school students, Boris Kosbruk Jr., and Mike Shangin attempted to check on the Kametolook River incubation boxes to observe development of the fry from last falls' egg take. Deep, wet snow (2-3 feet) in the upper Kametolook valley prevent us from reaching the boxes. The wet snow did provide a lot of exercise for us as we tried to find a suitable 4-wheeler trail to the boxes. Lisa Scarbrough began the in-depth interviews as well as issuing salmon subsistence permits and applications for Tier II caribou permits. We met with Pat Shoemaker, school teacher, whose duties included the final rearing and release of coho salmon fry from the school aquarium.

On Saturday and Sunday, 1-2 May Lisa Scarbrough continued in-depth interviews while Jim McCullough obtained short interviews from every household. Both Lisa and Jim continued issuing salmon subsistence permits and applications for Tier II caribou permits. We also surveyed the site of a proposed bridge crossing that would allow easier access from the new housing project to the village tsunami center. Steven Phillips found an injured adult eagle. The bird was in bad shape but we did manage to get the bird to take food and water. We held it overnight, borrowed a dog kennel from Pat Shoemaker and got it on a plane for the Anchorage Bird Learning and Treatment Center. Unfortunately, once it arrived in King Salmon, it was not put on the next flight to Anchorage and instead held in King Salmon overnight without food and water and died in transit to Anchorage.

On Monday, 3 May we concluded interviews, subsistence permits and caribou applications and departed for Anchorage arriving about 9:40 p.m. Jim just missed the last flight to Kodiak and overnighed in Anchorage arriving in Kodiak the following day, 4 May.

Trip Achievements:

1. Issued 38 Subsistence Salmon Permits
2. Performed 8 in-depth subsistence household interviews
3. Performed 16 other subsistence household interviews
4. Aided with 21 Tier II caribou subsistence permits
5. Surveyed proposed bridge site
6. Concluded requirements for the school coho salmon aquarium project
7. Tried to save a wounded bald eagle