

**Cannery Creek Steeppass
Progress Report
2004**

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This year's operation of the Cannery Creek Steeppass Project was made possible through enhancement taxes paid by the commercial fishermen in Area H, Cook Inlet and associated waters and by grants from the U.S. Fish and Wildlife Service and the Alaska Department of Fish and Game Sport Fish Division.

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DISCLAIMER

The Cook Inlet Aquaculture Association conducts salmon enhancement and restoration projects in area H, Cook Inlet and associated waters. As an integral part of these projects a variety of monitoring and evaluation studies are conducted. The following progress report is a synopsis of the monitoring and evaluation studies conducted for the Cannery Creek Steeppass project.

The purpose of the progress report is to provide a vehicle to distribute the information produced by the monitoring and evaluation studies and to provide the basis for continuing operations in 2005. Data collected each year are presented with a summary of the information previously collected for comparative purposes. These reports are intended to provide a general description of project activity and are not an exhaustive evaluation of any restoration or enhancement project. The information presented in this report has not undergone an extensive review. As reviews are completed, the information may be updated and presented in later progress reports.

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ACKNOWLEDGEMENTS

Many individuals and agencies contributed to the success of the Cannery Creek Steeppass in 2004. Appreciation is extended to Cook Inlet Aquaculture Association field assistants, Alger Aleck, Sean McGroarty, and Travis Speicher; and all full time staff who endured many long hours in the field. Special thanks go to Cook Inlet Pipeline, the crew at the Drift River Terminal and to Drew Sparlin, Sr. and his crew for their assistance and efforts during the project. Additional thanks are extended to The Cook Inlet Aquaculture Association Board of Directors and for the support they have provided to the Cannery Creek Steeppass project. Finally, thank you to the U.S Fish and Wildlife Service and the Alaska Department of Fish and Game Sport Fish Division for providing the funding that allowed CIAA to maintain this important salmon resource.

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ABSTRACT

The terminus of Cannery Creek is located approximately 50.8 km west of Kenai, Alaska. The creek runs parallel to the Drift River and divides into 4 smaller channels. Near the terminus of each channel is a water fall. After the falls, each channel flows into a larger common channel and then to Cook Inlet. The project area was located at the water fall furthest west from the Drift River Terminal, which lies approximately 2.8 km to the east. The Cook Inlet Aquaculture Association (CIAA) has completed all the field activities, which were funded by the United States Fish and Wildlife Service (USF&WS) and the Alaska Department of Fish and Game Sport Fish Division (ADF&GSFD)

The initial stages of installation of the steppass began on 14 August, 2004. Several modifications were made and the steppass became operation on 21 August 2004

Adult sockeye salmon escapement was monitored from 21 August to 4 September. During this time, 766 adult coho salmon were estimated to have passed through the steppass.

Additional funds are requested to continue the project in 2005 for operations (\$10,502.80) and for extending the steppass (\$2,184.90).

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INTRODUCTION AND PURPOSE

Mt. Redoubt erupted in 1989 filling Cannery Creek with large amounts of mud and ash, and forcing it out of its established stream channel. A series of actively eroding water falls have since developed, recently preventing upstream access by anadromous fish.

CIAA first became aware of this problem in 1994. In 1996, CIAA responded to a report by a local fisherman that the falls may be impeding the migration of anadromous fish into Cannery Creek; CIAA then conducted an aerial survey of the area. However, individuals familiar with the area claimed fish could pass the falls at tides greater than 21 feet, so no remedial action was taken.

In 2003, the Cook Inlet Pipeline Company contacted CIAA with information that the waterfalls had eroded further upstream and the future of the resident coho salmon population was threatened. With the assistance of the Cook Inlet Pipeline Company, CIAA conducted a ground and aerial survey in August 2003.

By 2003, the creek had braided into several channels and each channel now had an approximately 10 foot high falls. Water flow below the falls is confined to a channel; however, flows above the falls are not confined. As a result the stream depth above the falls is only 12 to 16 inches. The stream flows over a vegetated peat layer and the falls are constantly cutting back. As they have moved further away from Cook Inlet, the falls have become less influenced by tides and are now too high for fish to pass - *even at high tides*.

Through the joint collaboration of CIAA, Cook Inlet Pipeline, the USF&WS, and the ADF&GSFD a portable Alaska Steeppass was designed, constructed, and set into the creek to allow the passage of coho salmon past the falls.

2004 was the first year the project took place.

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PROJECT AREA

The terminus of Cannery Creek is located approximately 50.8 km west of Kenai, Alaska. The creek runs parallel to the Drift River and divides into 4 smaller channels. Near the terminus of each channel is a water fall. After the falls, each channel flows into a larger common channel and then to Cook Inlet. The project area was located at the water fall furthest west from the Drift River Terminal, which lies approximately 2.8 km to the east (Figure 1).

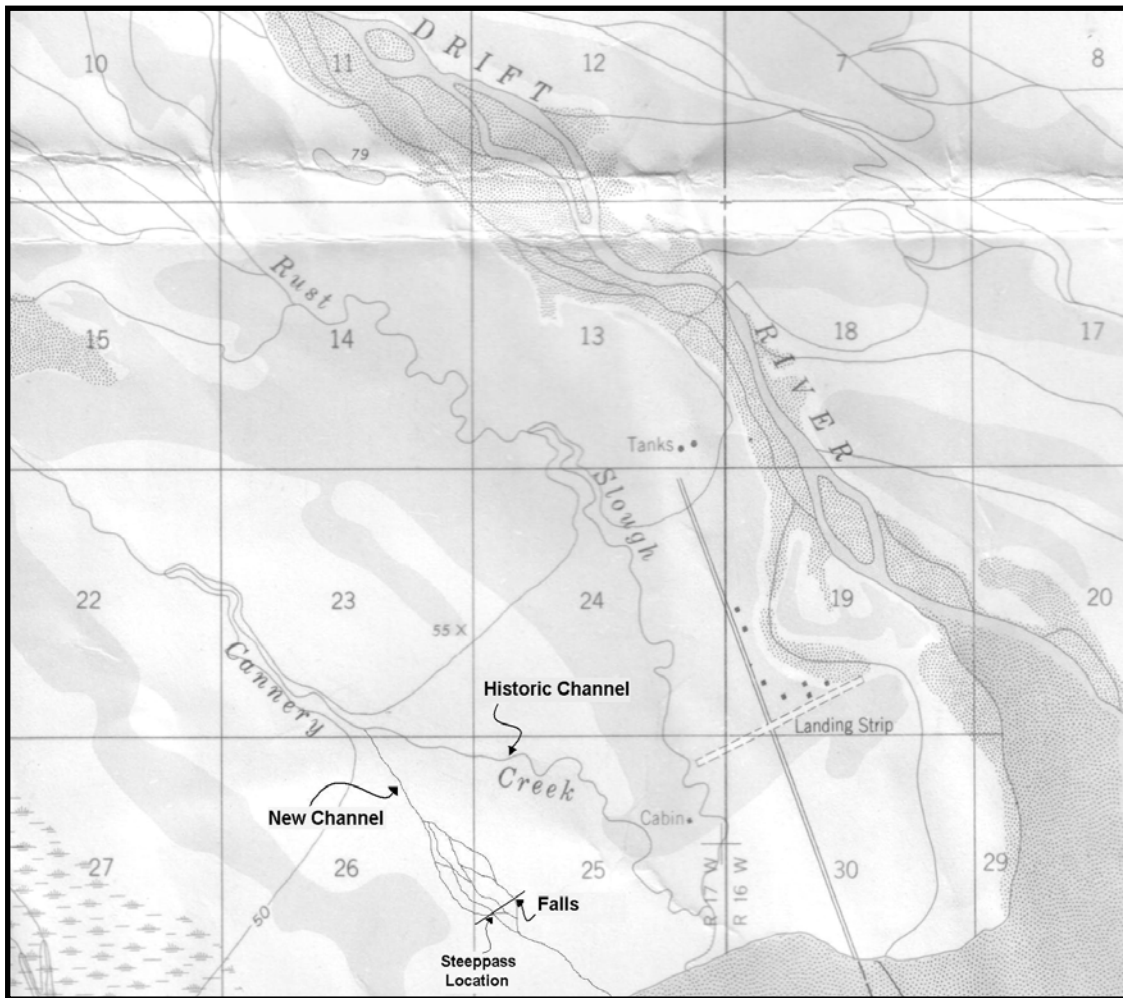


Figure 1. Excerpt from U.S. Geological Survey Kenai (C-6) Quadrangle showing Cannery Creek historic channel, new channel, falls, and Alaska Steep Pass locations.

Fish historically observed in the Cannery Creek watershed include coho salmon (*O. kisutch*), sockeye salmon (*O. nerka*), pink salmon, (*O. gorbuscha*), and Dolly Varden char (*Salvelinus malma*).

METHODS

Funding/Financial

Direct funning for the project was provided by the USF&WS and the ADF&GSFD to CIAA. CIAA provided the design of the project as well and the staff to work the project. Cook Inlet Pipeline provided ground and air support during transportation of materials and crew. Drew Sparlin, Sr. provided the *Miss Lee* and crew, for transporting the steeppass across Cook Inlet. A breakdown of cost accrued to the cooperating agencies is as shown in Table 1.

Table 1. Summary of in-kind and funding sources for steeppass project - 2004.

Cook Inlet Aquaculture Association (In-kind)	Cost
Executive Director (labor)	\$ 4,900.00
Administrative Assistant (labor)	\$ 300.00
Permitting Costs	\$ 1,350.00
Performance bond	\$ (1,000.00)
	\$ 5,550.00
Drift River Terminal (CIP) (In-kind)	
Crew Lodging	\$ 1,300.00
Air Support (helicopter)	\$ 1,750.00
	\$ 3,050.00
ADF&GSport Fish Grant	
CIAA Biologist (labor)	\$ 1,334.43
CIAA Project Technician (labor)	\$ 1,433.79
CIAA Field Crew (labor)	\$ 5,420.73
Air Charter Service	\$ 2,520.00
Supplies/Provisions	\$ 1,291.40
	\$ 12,000.35
U.S. Fish and Wildlife Grant	
Aleckson Fabrication	\$ 6,999.55
Steeppass Supplies	\$ 1,363.85
Transporation/Shipping	\$ 921.50
	\$ 9,284.90

In addition to the in kind costs, CIAA provided all field camp equipment, data recording supplies, and other support equipment.

Alaska Steeppass Design, Materials, and Deployment

The Alaska Steeppass was designed from plans provided by Zeimer 1962. The steeppass measured 20ft in length and was divided into two 8ft sections and one 4ft section (Figure 2). The sections were transported from Kenai, Alaska to Cannery Creek on a fishing vessel. A helicopter, provided by Cook Inlet Pipeline transferred the steeppass sections, along with field camp gear, to the project site.

The steeppass was assembled by CIAA field crew, put on wheels and pushed into position over the falls. A cable system was installed and the steeppass was lowered into place. Once the steeppass was secured, sand bags were placed along the upstream opening to divert the required amount of water.

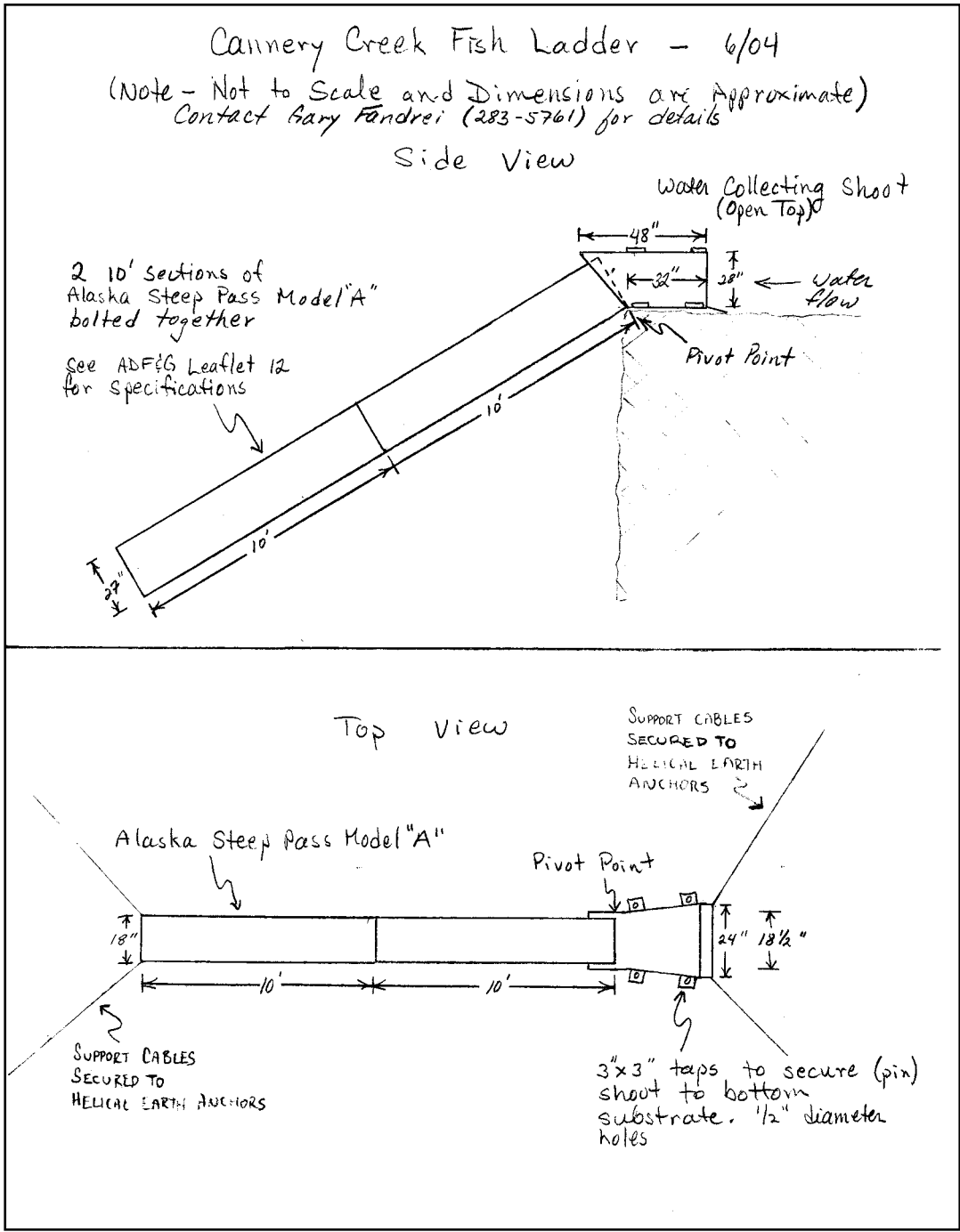


Figure 2. Sketch of Alaska Steeppass used at Cannery Creek. Note that the plans were changed from two 10ft sections to two 8ft sections and one 4ft section.

Environmental Conditions

Percent cloud cover was estimated, precipitation measured to the nearest millimeter and Cannery Creek water and air temperatures were recorded at 5:00 PM each day by CIAA as part of the coho salmon passage activities. Standard CIAA procedures were followed for collecting these measurements.

Adult Escapement

Adult coho salmon were enumerated once the steepass was completed and operational. Enumeration from 23 August to 29 August consisted of nine, one hour long random events through each 24 hour period. Each period began at 5:00 am and continued until 5:00 am the next day. Additionally, each 24 hour period was divided into three 8 hour sub periods. Three random enumeration events occurred within the 8 hour sub periods.

From 30 August to 4 September, enumeration was attempted during high tide events. Nine, one hour long nonrandom counts were conducted on 30 and 31 August. Five, hour long enumeration events were conducted from 1September to 4 September.

The average number of fish observed within a one hour period was calculated using the data obtained from the enumeration. Once each hour of the day had a value assigned to it, the hours were added up to yield a daily migration. The estimated total was calculated from every day the steepass was operating, 21 August to 4 September.

Aerial Surveys were conducted on 23 May, 18 August, 27 August, and 5 September 2004. During the latter two surveys 75 coho salmon were observed each day at the junction of the historic spawning channel and Cannery Creek.

RESULTS AND DISCUSSION

Environmental Conditions

Environmental conditions during the Cannery Creek coho migration were monitored from 19 August to 1 September 2004. Stream stage was not measured. During the period of migration, stream temperatures averaged 11.4°C and ranged from 9.0 to 13.0°C. Air temperatures averaged 17.6°C and ranged from 12.0 to 25.0°C. Twenty one percent of the days were clear, 36% partly cloudy, and 43% were completely overcast. A total of 77 mm of rain fell during this period (Appendix 1).

Adult Escapement

Adult coho salmon were first observed moving up the steppass on 21 August 2004 counts were conducted until 4 September. During this time period an estimated 766 coho salmon traveled up the steppass and up stream (Appendix 2). No fish were observed traveling back downstream and over the falls. On 27 August and 5 September aerial surveys were completed and 75 coho salmon were observed each day several miles up stream at the junction of the historical spawning channel and Cannery Creek.

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CANNERY CREEK PROJECT 2005

CIAA requests that the Cannery Creek Steeppass project continue in 2005. In order to conduct the project in 2005, further funding is required. Once again, funding for support staff and camp supplies will be needed. Additionally, funds to construct and an additional 8ft section of steeppass are required. A proposed budget for 2005 is shown in Table 2.

Table 2. 2005 Project Budget Proposal.

<u>OPERATIONS</u>				
Labor - Temporary	2 people x	100 \$/day	21 days	\$ 4,200.00
Labor - Biologist				\$ 1,400.00
Labor - Project Tech.				\$ 1,400.00
Supplies				
Groceries	2 people x	14 \$/day	21 days	\$ 588.00
Fuels				\$ 100.00
Tools & Small Equip.				\$ 250.00
Misc.				\$ 250.00
Charter				
Kenai Aviation	4 trips x	340 \$/trip		\$ 1,360.00
Contingency (10%)				<u>\$ 954.80</u>
Subtotal				<u>\$ 10,502.80</u>
 <u>STEEPPASS</u>				
8ft Extension				\$ 2,900.00
Carry-over from 2004				<u>\$ (715.10)</u>
				<u>\$ 2,184.90</u>
 Total				 <u><u>\$ 12,687.70</u></u>

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RECOMMENDATIONS

There are no indications that the conditions at Cannery Creek will improve in 2005. It is recommended that the operations of the steppass continue in 2005. An extension of 8ft should be added to the steppass in 2005. The additional length will allow the steppass to operate at an optimal angle and assist fish passage at all tide levels. In addition, the steppass installation, salmon enumeration, and specific data recording techniques should be written into a manual.

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LITERATURE CITED

Ziener, G.L. 1962. *Steppass Fishway Development*. Alaska Department of Fish and Game. Informational Leaflet 12. Juneau, AK. 34 Pages.

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APPENDICES

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Appendix 1. Cannery Creek 2004 – Environmental Conditions.

Date	Sky	Precip. (mm)	Staff Gage (ft)	Water Temp. (C)	Air Temp. (C)
18-Aug					
19-Aug	4	12	ND	12.0	19.0
20-Aug	4	20	ND	12.0	21.0
21-Aug	2	0	ND	12.0	23.0
22-Aug	3	0	ND	12.0	22.0
23-Aug	3	0	ND	12.0	21.0
24-Aug	1	0	ND	13.0	25.0
25-Aug	4	0	ND	11.0	16.0
26-Aug	3	4	ND	9.0	13.0
27-Aug	4	10	ND	10.0	12.0
28-Aug	3	29	ND	11.0	15.0
29-Aug	1	0	ND	13.0	18.0
30-Aug	1	0	ND	12.0	16.0
31-Aug	4	0	ND	10.0	12.0
1-Sep	4	2	ND	11.0	14.0
	14	77			

Sky Legend

- 1 = Clear
- 2 = Cloud Cover <50%
- 3 = Cloud Cover >50%
- 4 = Overcast
- 5 = Rain

	Precip.	Staff Gage	Water Temp.	Air Temp.
Ave	6	ND	11.4	17.6
Max	29	ND	13.0	25.0
Min	0	ND	9.0	12.0

Cloud Cover - No. of Days

Meas.	<100%	<50%	>0%	Clear
Rain	100%	>50%	>0%	Clear
6	6	4	1	3
	43%	29%	7%	21%

Appendix 2. Cannery Creek 2004 – Coho Migration.

Date	Count	Estimated
	Total	Total
14-Aug	Steeppass Installed	
15-Aug		
16-Aug		
17-Aug		
18-Aug		
19-Aug		
20-Aug	Lift Sytem Installed	
21-Aug	44	44
22-Aug	21	21
23-Aug	3	51
24-Aug	65	82
25-Aug	29	43
26-Aug	4	46
27-Aug	3	29
28-Aug	12	38
29-Aug	84	110
30-Aug	89	90
31-Aug	9	9
01-Sep	13	39
02-Sep		54
03-Sep	10	58
04-Sep		54
Total	386	766