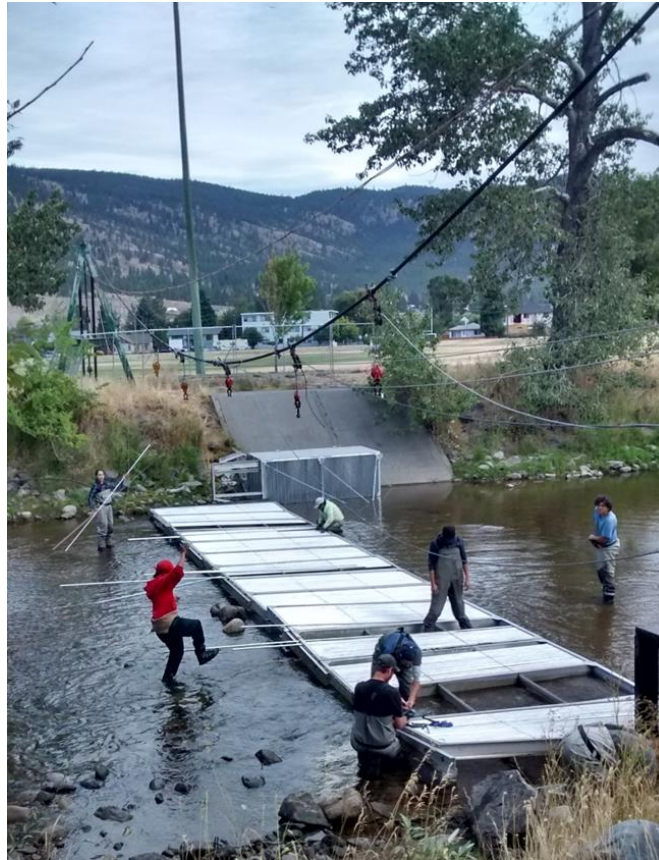


COLDWATER RIVER ADULT COHO ENUMERATION

2017 PROJECT SUMMARY REPORT



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INTRODUCTION

In 2016 the Nicola Tribal Association (NTA) received funding from the Pacific Salmon Commission's Southern Fund (SF) to work with Fisheries and Oceans Canada (DFO) to improve the precision of the Interior Fraser River Coho (IFC) Enumeration Program on the Coldwater River. In 2017 the NTA again received funding from the SF for the second year of a two-year pilot project.

Improvement of the precision of the IFC exploitation rate (ER) will provide an alternate source of ER information to augment and ground truth the Fisheries Regulation Assessment Model (FRAM) outputs and assist the joint CAN/US pre-season planning process as directed in Chapter 5 of the Pacific Salmon Treaty. This work falls under Southern Panel Priority: "Improvements to the effectiveness of the Coho CWT program; Management Unit representation; and, monitoring program coverage".

With increasing pressure to ease fisheries restraints on IFC, a new emphasis must be placed on better ER estimates. There is limited hatchery capacity for coho coded wire tag (CWT) smolt production in the Interior Fraser River area and that capacity is currently split between two systems in the Thompson River complex whereby the Coldwater and Eagle Rivers both receive approximately 60,000 CWT smolts per year. This work will strengthen the current Coldwater CWT indicator stream assessment.

The Coldwater River Coho Program has been an indicator for IFC coho since 1987 and benefits from the NTA's Aboriginal Fisheries Strategy (AFS) enumeration activities. The 2017 implementation of the project was the same as the 2016 approach and built on the successes and learning from the challenges during the inaugural year (2016). The current Coldwater River Coho Program involves a system escapement estimate using both a fish fence and trap component and DIDSON technology. The trap component is used to determine adipose fin clip (AFC) fish and sex ratios, with a secondary seining component to be utilized during DIDSON operations to further determine AFC fish and sex ratios. Funding provided by the SF will enhance the existing program to obtain greater certainty around both the escapement estimate and AFC ratios of IFC in the Coldwater River thereby providing greater certainty around the CWT ER of IFC.

Three specific outcomes are expected from this project:

1. Increase both precision and accuracy of the total escapement estimate.
2. Increase accuracy of estimating the proportion of AFC fish in the escapement.
3. Increase recoveries of AFC for CWT decoding.

SITE LOCATION

The project site (50 06 35.47 N / 120 48 06.75 W) is located approximately 0.90km upstream of the confluence of the Coldwater and Nicola Rivers (Figure 1) in Merritt, BC.

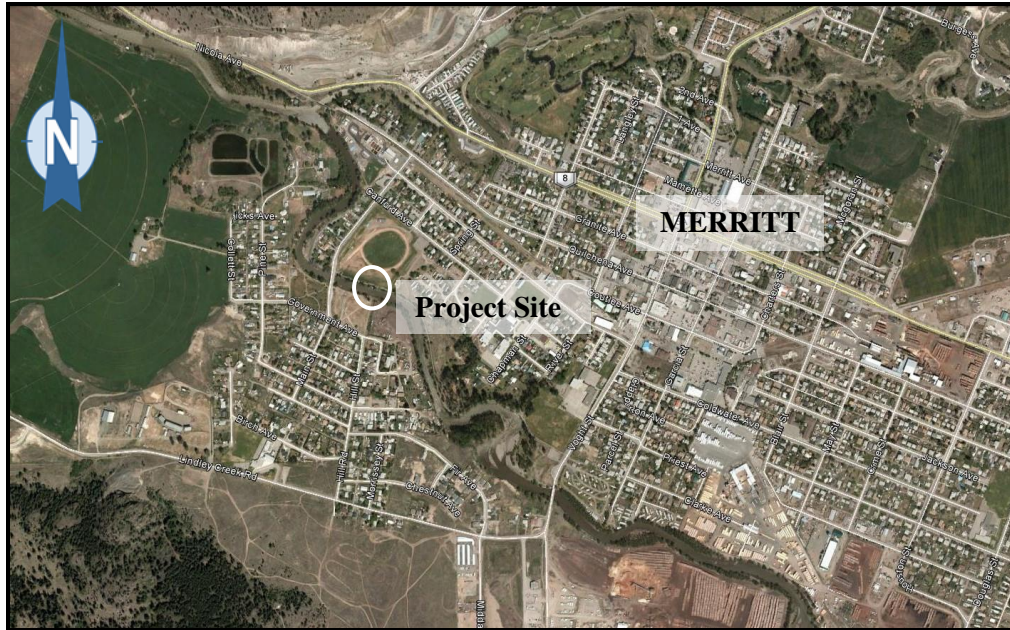


Figure 1. Google Earth image identifying project site location.

METHODOLOGY

FISH FENCE/TRAP AND DIDSON OPERATIONS

In late August 2017 installation of the first stage of fence components was completed; fence panel frames were anchored into position in the river, on the concrete fence sill. The frames were left resting on the river bottom. Both the left bank trap box (used exclusively for housing the DIDSON) and right bank trap box (active fish sampling trap box, new to 2017) were installed using a truck with hyab. Flows were so low in the Coldwater River during this time that the fence components in place made the project site impassable to migrating IFC. In early September the final stage of fence components were installed; the pipes were installed into the fence panels and the panels were connected to overhead pulley system. Weather was monitored closely for a rain event that would increase flows and initiate the start of the IFC migration.

The fence and right trap box (fence/trap) were utilized as the primary enumeration tool during the early period of IFC migration/project implementation, as well as during low flows/low numbers of migrating IFC. On October 6, 2017 fence/trap operations began, casually. The trap was opened, and crews checked each morning and afternoon for holding IFC, which would be sampled and released. The fence was also cleaned as needed. Scheduled overnight shifts (1600 hr. – 0000 hr. shift and 0000 hr. – 0800 hr. shift), for full operations of the fence/trap, occurred from October 18 – November 22, 2017.

In 2017 the DIDSON was utilized primarily as a backup enumeration tool. By operating continuously IFC could be enumerated in all conditions and prevent the potential for IFC to move through the project site without being enumerated should something happen to the fence. It was also the primary enumeration tool during periods of high flows and/or large numbers of migrating IFC. Safe operation of the DIDSON requires the unit to be fully submerged. Ahead of a significant change in the weather, the DIDSON was installed into the left bank trap box on October 17, 2017 and was operated continuously October 18 – November 23, 2017. The DIDSON was set to ensonify the entire wetted width of the Coldwater River. Crews were required to complete an entry in the site logbook each time that the fence was lowered/opened, to include date, time of fence lowering/opening, and time of fence raising/closing. This allowed for the reviewers of the DIDSON files to focus on files that would likely contain migrating IFC.

At the start of each shift crews would check the trap and close the lead to sample any IFC caught in the trap, as per the 2017 Coldwater Coho Fence data form and detailed sampling procedures (Appendix 1). Every non-AFC (wild) fish was marked with an operculum punch (male and female: 1 Left) and was released upstream. All AFC (CWT present) fish, to a maximum of 100 pieces, were to be harvested to recover CWTs. After biological sampling was completed, harvested fish were to be cleaned and packaged to donate to the NTA community member “food bank” program. Once all IFC were sampled and released (or harvested), the crew then opened the trap and cleaned the fence. Once finished, the crew would return to the field office for approximately 1 hour to allow for more IFC to move upstream and enter the trap. This process was rotated through each fence/trap shift.

The DIDSON was removed on November 24, 2017. The left bank trap box was removed on December 4, 2017, and the fence was removed December 4-6, 2017. The right bank trap was lost during the high water event on November 23, 2017.

DIDSON files were recorded in 20-minute segments. Files were downloaded every morning onto an external hard drive. Any required maintenance and adjustments were made to the DIDSON at this time, also.

NTA fisheries staff reviewed DIDSON files as required through the duration of the project. Most files were reviewed from December 2017 – February 2018. Files that coincided with noted times the fence was lowered (portions or all of the fence) and during times when the fence was opened were the only files that were required to be reviewed. Staff tallied upstream moving fish and downstream moving fish. Downstream moving fish were tallied as either head first or tail first. A calculation was completed to give a net upstream count for each file. Files recorded during October 18 – 25, 2017 had both head first and tail first downstream moving fish subtracted from the upstream count. Files recorded from October 26, 2017 and on had only head first downstream moving fish subtracted from the upstream count.

Table 1 gives a complete schedule of operations through the duration of the project.

UPSTREAM CAPTURE/SAMPLING OPERATIONS

During times when upstream migration was being monitored/counted by the DIDSON, those IFC migrants would represent a portion of the population with unknown AFC/wild ratios, and male/female ratios. An additional sampling component of the project was designed to capture and sample the DIDSON counted IFC to obtain AFC/wild ratios. Sampling, through beach seine, was to occur upstream from the fence throughout the duration of most of the in-migration period, i.e. late September to mid-November as river conditions allowed. In early September 2017 a suitable beach seining site (riffle/glide/pool reach with cover/holding habitat) was located. The location was far enough upstream (3+ km) from the DIDSON site to prevent drift-back and multiple counts of the same fish. A portable double fence system, consisting of aluminum tripods, stringers, and pipe, was utilized to conduct the upstream sampling procedures. The primary upstream, or ‘stop fence’ of the double fence system was installed by September 26, 2017 making the site impassible to migrating IFC. The secondary fence was then installed, approx. 8-10m downstream of the primary fence, shortly thereafter. The secondary downstream fence had openings to allow IFC to move through and then have their passage blocked by the primary fence. When the seining crew arrived on site they would quickly close the openings in the secondary fence and proceed to capture any IFC trapped in the compound between the two fences.

Fish sampling procedures were to be carried out per the 2017 Coldwater Coho Seine data form and detailed sampling procedures (Appendix 2). Non-AFC (wild) fish were to be marked with an operculum punch (male & female: 1 Right) and released upstream; and AFC (CWT present) fish were to be harvested to recover CWTs, (maximum of 100 pieces) and donated to the NTA community member “food bank” program.

The downstream section of the portable fence was damaged by the high water event on October 19, 2017. The upstream section of the portable fence was removed by NTA fisheries staff on November 3, 2017.

NTA fisheries staff worked closely with DFO staff during the pre-season planning process to ensure sampling procedures for the various components of the project were well understood. Any issue/necessary operational changes that arose in-season were communicated between the two organizations. All data was provided to DFO for analysis according to the schedule in the AFS funding agreement.

Table 1. List of 2017 fence/trap and DIDSON operations, by day, through the duration of the project.

Date	Count Method
10/6/2017	fence/trap
10/7/2017	fence/trap
10/8/2017	fence/trap
10/9/2017	fence/trap
10/10/2017	fence/trap
10/11/2017	fence/trap
10/12/2017	fence/trap
10/13/2017	fence/trap
10/14/2017	fence/trap
10/15/2017	fence/trap
10/16/2017	fence/trap
10/17/2017	fence/trap
10/18/2017	fence/trap / DIDSON
10/19/2017	fence/trap / DIDSON
10/20/2017	fence/trap / DIDSON
10/21/2017	fence/trap
10/22/2017	fence/trap / DIDSON
10/23/2017	fence/trap / DIDSON
10/24/2017	fence/trap
10/25/2017	fence/trap / DIDSON
10/26/2017	fence/trap / DIDSON
10/27/2017	fence/trap
10/28/2017	fence/trap
10/29/2017	fence/trap / DIDSON
10/30/2017	fence/trap
10/31/2017	fence/trap / DIDSON
11/1/2017	fence/trap
11/2/2017	fence/trap
11/3/2017	fence/trap / DIDSON
11/4/2017	fence/trap / DIDSON
11/5/2017	fence/trap / DIDSON
11/6/2017	fence/trap / DIDSON
11/7/2017	fence/trap / DIDSON
11/8/2017	fence/trap / DIDSON
11/9/2017	fence/trap / DIDSON
11/10/2017	fence/trap / DIDSON
11/11/2017	fence/trap / DIDSON
11/12/2017	fence/trap / DIDSON
11/13/2017	fence/trap / DIDSON
11/14/2017	fence/trap
11/15/2017	fence/trap
11/16/2017	fence/trap
11/17/2017	fence/trap / DIDSON
11/18/2017	DIDSON
11/19/2017	fence/trap / DIDSON
11/20/2017	fence/trap
11/21/2017	fence/trap
11/22/2017	fence/trap / DIDSON
11/23/2017	fence/trap / DIDSON

RESULTS

FENCE/TRAP AND DIDSON OPERATIONS

In 2017 IFC were enumerated from October 6 – November 23, 2017. A total net upstream count of 1,956 IFC were enumerated through the fence/trap and DIDSON operations (Table 2).

A total of 54 AFC fish were biologically sampled and heads were collected for CWT decoding, through fence/trap operations. These fish were suitable to clean for the NTA community member “food bank” program.

A total of 10 non-AFC fish (6 male, 4 female) were captured, held and collected by the Spius Creek Hatchery for brood stock.

A total of 10 carcasses were recovered through stream walks conducted during the last week of November 2017, once fence/trap operations had ceased. None of the carcasses had a left operculum punch. Four of the carcasses were AFC fish and were biologically sampled and heads were collected for CWT decoding.

Of the total of 636 IFC encountered through fence/trap operations, 144 were AFC fish, or 23%.

All told, a total of 58 AFC fish heads were collected for CWT decoding during the 2017 Coldwater River Adult Coho Enumeration Program.

All data is forwarded to DFO for analysis, and to assist with determining an annual escapement for the IFC population in the Coldwater River. The final escapement estimate for 2017 Coldwater is 1,956.

UPSTREAM CAPTURE/SAMPLING OPERATIONS

The upstream capture/sampling component of the program did not fully materialize in 2017. (See “Discussion”).

Table 2. Enumeration of IFC, by method and day.

Note: on days where DIDSON is not identified as the count method through the period it was operational (October 18 – November 23, 2017) it was recording but was not utilized to enumerate IFC.

Date	Count Method	Count	Daily Accrual
10/6/2017	fence/trap	0	0
10/7/2017	fence/trap	0	0
10/8/2017	fence/trap	1	1
10/9/2017	fence/trap	0	1
10/10/2017	fence/trap	0	1
10/11/2017	fence/trap	2	3
10/12/2017	fence/trap	8	11
10/13/2017	fence/trap	10	21
10/14/2017	fence/trap	5	26
10/15/2017	fence/trap	5	31
10/16/2017	fence/trap	8	39
10/17/2017	fence/trap	109	148
10/18/2017	fence/trap / DIDSON	526	674
10/19/2017	fence/trap / DIDSON	152	826
10/20/2017	fence/trap / DIDSON	405	1231
10/21/2017	fence/trap	52	1283
10/22/2017	fence/trap / DIDSON	223	1506
10/23/2017	fence/trap / DIDSON	226	1732
10/24/2017	fence/trap	36	1768
10/25/2017	fence/trap / DIDSON	46	1814
10/26/2017	fence/trap / DIDSON	4	1818
10/27/2017	fence/trap	11	1829
10/28/2017	fence/trap	2	1831
10/29/2017	fence/trap / DIDSON	3	1834
10/30/2017	fence/trap	0	1834
10/31/2017	fence/trap / DIDSON	4	1838
11/1/2017	fence/trap	1	1839
11/2/2017	fence/trap	4	1843
11/3/2017	fence/trap / DIDSON	5	1848
11/4/2017	fence/trap / DIDSON	0	1848
11/5/2017	fence/trap / DIDSON	0	1848
11/6/2017	fence/trap / DIDSON	0	1848
11/7/2017	fence/trap / DIDSON	2	1850
11/8/2017	fence/trap / DIDSON	19	1869
11/9/2017	fence/trap / DIDSON	6	1875
11/10/2017	fence/trap / DIDSON	3	1878
11/11/2017	fence/trap / DIDSON	0	1878
11/12/2017	fence/trap / DIDSON	6	1884
11/13/2017	fence/trap / DIDSON	4	1888
11/14/2017	fence/trap	5	1893
11/15/2017	fence/trap	10	1903
11/16/2017	fence/trap	0	1903
11/17/2017	fence/trap / DIDSON	3	1906
11/18/2017	DIDSON	6	1912
11/19/2017	fence/trap / DIDSON	15	1927
11/20/2017	fence/trap	6	1933
11/21/2017	fence/trap	9	1942
11/22/2017	fence/trap / DIDSON	14	1956
11/23/2017	fence/trap / DIDSON	0	1956

DISCUSSION

FENCE/TRAP AND DIDSON OPERATIONS

Historically IFC have been observed in the upper reaches of the Coldwater River in late September. To increase the precision and accuracy of the total escapement estimate, it was necessary to capture the front end of the migration. By increasing the length of the project to cover the front end of the migration, IFC moving upstream during the earliest portion of the migration would be enumerated. In past years enumeration of the IFC migration did not commence until mid-October; the timing and number of the earliest IFC migrants into the Coldwater River were not fully known. In 2017 the fence and both the left bank trap box and right bank trap were installed and fully engaged for operation by the second week of September. With the low flows observed through the site during this time there was no movement of IFC; flows were less than 1m³/sec well into October. NTA staff monitored weather and river conditions daily. With a change in the weather, and a slight increase in flows the trap was opened on October 6, and the first IFC were captured in the trap on the overnight of October 7-8.

Changes made to fence/trap and DIDSON operations in 2017 addressed lessons learned from previous years and enhanced the success of the project. The most notable change in 2017 was the installation of a second trap box on the right bank. Knowledge and experience gained in 2016 supported the decision to focus trap operations on the right bank, based on the natural migration behavior of IFC through the project site. Over many years of operating the DIDSON and previous fence/trap projects NTA staff have observed the natural migration behavior of IFC through this reach of the Coldwater River. As fish move upstream through the project site they follow the natural thalweg of the river, that is they swim along the left bank crossing through the middle of the channel as they move over the fence sill, and over to the right bank.

In 2016 fence/trap operations occurred along the left bank and proved to be less successful. The location of the left bank trap box was determined by the need for DIDSON logistics. The power source and location of the field office (where all DIDSON associated electronics are housed) are located on the left bank. In 2016, IFC were very reluctant to move into the left bank trap box as was hoped, despite strong numbers of many fish actively searching for a way through/past the fence. In 2017 IFC readily entered the right bank trap, as was hoped. The ability to sample and pass more IFC through the right bank trap supported greater achievement of the project objectives in 2017.

With fence/trap operations occurring in the right bank trap there was an opportunity for the DIDSON to be permanently operational in 2017. The left bank trap box was able to be utilized exclusively to house the DIDSON. This allowed for fence/trap operations and DIDSON operations to occur simultaneously, rather than as a one off, as occurred in 2016. This was valuable in ensuring all IFC migrating through the project site would be enumerated should something happen to the fence (high water, ice events, etc.).

There were two notable high water events that occurred during the 2017 fence/trap operations. With staff's religious monitoring of weather/river conditions and having the DIDSON recording 24/7, both high water events were expected, crews were able to prepare the site prior for each event, ensuring that any IFC migrating through these conditions would be enumerated. Preparation of the site involved removal of all equipment that could float away, closing the right bank trap to prevent fish from entering and becoming trapped, and lowering the fence panels below the water surface to allow large debris to flow uninhibited through the site. Some debris did collect on the cables that connect the panels to the overhead pulleys; it was able to be removed once the flows dropped to a level that made it safe for crews to enter the river and do so.

The October 2017 high water event saw a peak discharge of 17.1 m³/sec on October 19, 2017. The fence was lowered from 0030hr (Oct 19) to 1800hr (Oct 20). A total of 492 IFC were enumerated by the DIDSON during this period.

The November 2017 high water event saw a peak discharge of 128 m³/sec on November 23, 2017. The fence was lowered at 0000hr on November 22. The DIDSON enumerated 9 IFC on November 22, and zero to 1600hr on November 23.

As water levels continued to rise on November 23, and staff became aware of the magnitude of the high water event that was occurring, the DIDSON was powered off (1600hr) to prevent any damages to the unit. By the third week of November (annually) very few IFC have been observed moving through the site, during favourable flows, so it was not a concern that many IFC would be uncounted. The DIDSON remained in the left bank trap box until November 24, 2017 when crews could safely remove it from the river. Flows of this magnitude (128m³/s) have not been previously observed in the Coldwater River. As a result, the right bank trap was lost during the flood event. All fencing and the left bank trap box were recovered safely once flows allowed.

The successes of dealing with the 2017 high water events were a direct result of lessons learned from 2016, when two high water events hit the site unexpectedly, resulting in minor damages to the equipment and the likelihood that IFC migrated upstream undetected.

UPSTREAM CAPTURE/SAMPLING OPERATIONS

No sampling was successfully conducted at the upstream seine site in 2017.

In 2017 an excellent seine site was located, and the portable double fence system was installed making the river 'fish proof' prior to any DIDSON operations at the main fence. Environmental conditions, i.e., very low discharges (less than 1 m³/s), observed from late August into mid-October were favourable with regards to the portable fence installation but they were not favourable for IFC migration. With water levels remaining so low IFC were not migrating into the Coldwater River.

The first fish were not captured in the main fence/trap until October 8, 2017. One week later, On October 16, 2017, after IFC had been slowly beginning to migrate into the Coldwater River (39 IFC had been captured and released through the fence/trap by this point) the seine crew attended the upstream sampling site to check for IFC in the fence compound and complete a mock seining operation if none were observed. Crews gained valuable experience and were able to work through issues without the pressure of having to capture and sample IFC.

Unfortunately, no IFC were captured in the upstream sampling site prior to an increase in river discharge. The increase materialized as a quick and significant rise, on October 19, 2017. Staff were monitoring weather and river conditions and had been expecting the high water event. Crews had removed fence pipes from both the primary and secondary fences, but the increase in discharge along with major debris loading washed out the secondary fence. The river discharge remained too high to allow re-installation, and with the long-delayed arrival of returning IFC at the main fence, fence/trap operations were implemented, and sampling took place there for the duration of the migration.

The lack of capturing and sampling at the upstream site in 2017 was not for lack of trying. Valuable experience was gained and will be used in 2018.

RECOMMENDATIONS

Recommendations for the 2018 Coldwater River Adult Coho Enumeration Program are:

1. To implement the upstream capture program as was done in 2017.
2. To install a second fish trap, located on the right bank, for sampling of migrating IFC, as was done in 2017.
3. To deploy the DIDSON, utilizing the left bank trap for housing the DIDSON, and have it record continuously to ensure that if the fence goes down, migrating IFC will be detected and enumerated.

APPENDICES

Appendix 1: 2017 Coldwater Coho Fence data form and Detailed Sampling Procedures

Appendix 2: 2017 Coldwater Coho Seine data form and Detailed Sampling Procedures

APPENDIX 1: 2017 Coldwater Coho Fence data form and Detailed Sampling Procedures

2017 Coldwater Coho												Page ___ of ___	
FENCE													
		Record length to nearest decimal e.g. 67.3		Apply operc punch on LEFT side of fish. If fish has a punch already, record in the appropriate column.		Adipose Fin Present or Absent?		Collect 10 scales per fish & record Row # as: 1, 2, 3, 4 or 5					
Examine & Record this Info for EVERY Coho in the Trap Box. Apply punch to those being RELEASED u/s.						Collect & Record this Info for ALL Adipose ABSENT Coho REMOVED from the Trap Box				Please provide details regarding: 1. Unusual observations regarding the fish; 2. Clarification of the data recorded; 3. Reasons for missing data.			
Crew	Date (yyyy-mm-dd)	Sex (M or F)	Nose to Fork Length (cm)	Operc Punch Applied 1L fish being released	Operc Punch Already Present? (1L or 2L; 1R or 2R)	Adipose (P or A)	Scale Book #	Row #	Head Code	# of Eyes	Was this fish Harvested? (Y or N)	Was this fish taken for Brood? (Y or N)	Comments
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

Coldwater River Fence/Trap Fish Sampling Procedures

1. Close trap lead to prevent fish loss.
 2. Open trap lids and check for fish (coho).
 3. Bring all sampling equipment to trap.
 4. Set up measuring board.
 5. Net one fish and place, in net, into measuring board nose to the left (0 cm).
 6. Record data, as per data form.
 7. All fish being RELEASED will be operculum punched 1L. Release out of trap.
 8. If fish is adipose ABSENT, and is being harvested DO NOT operculum punch. All harvested fish will be sampled once up at sampling table on left bank.
 - a. Harvested fish will have head collected and scale samples taken, as per regular sampling procedures. Record head code and scale book info on data form.
 - b. Fish will be cleaned and placed in plastic fish bag and placed in cooler.
 - c. Guts will be placed in garbage bag to be disposed of away from fence site, at the end of the shift.
 - d. Cooler with fish will be brought to NTA office after every morning shift to place in freezer.
 9. Once all fish are sampled: remove sampling equipment, close lids and open trap lead.
 10. Go back to field office for approx. 45 mins to 1 hour (length of time can be adjusted based on numbers of coho moving through the site) to allow more fish to enter the trap.
- * If adipose ABSENT fish appear to be getting too far gone and are not fit for harvesting, they will still have the head taken. At the end of the shift the carcass will be bagged and taken to a location well away from fence site and returned to river.

SPILLING FISH

During periods of large numbers of migrating coho, we can minimize the impacts of the fence to these fish by “spilling” some of them. These spilled fish will not be sampled through the trap but will be enumerated by the DIDSON. Once the trap lead had been closed:

1. The section of fence marked with flagging tape can be opened.

Coldwater River Fence/Trap Fish Sampling Procedures

2. Record the time the fence is opened, on data form.
3. Sample all fish in the trap.
4. Close the marked section of the fence.
5. Record the time the fence is closed, on data form.
6. Open the lead of the trap.
7. Go back to field office for approx. 45 mins to 1 hour (length of time can be adjusted based on numbers of coho moving through the site) to allow more fish to enter the trap.
8. Record fence open and closed times in the log book.

This procedure should be followed until numbers of migrating coho decrease to where they can be handled by trap operations alone.

APPENDIX 2: 2017 Coldwater Coho Seine data form and Detailed Sampling Procedures

2017 Coldwater Coho													Page ___ of ___
SEINE													
		Record length to nearest decimal e.g. 67.3		Apply operc punch on RIGHT side of fish. If fish has a punch already,		Adipose Fin Present or		Collect 10 scales per fish & record Row # as: 1, 2, 3, 4 or 5					
Examine & Record this Info for EVERY Coho in the Seine net. Apply punch to those being RELEASED u/s.						Collect & Record this Info for ALL Adipose ABSENT Coho REMOVED from the Seine						Please provide details regarding: 1. Unusual observations regarding the fish; 2. Clarification of the data recorded; 3. Reasons for missing data.	
Crew	Date (yyyy-mm-dd)	Sex (M or F)	Nose to Fork Length (cm)	Operc Punch Applied 1R (LOWER)	Operc Punch Already Present 1L or 1R	Adipose (P or A)	Scale Book #	Row #	Head Code	# of Eyes	Was this fish Harvested? (Y or N)	Was this fish taken for Brood? (Y or N)	Comments
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

Coldwater River Seine Sampling Procedures

1. Approach the fence compound with caution to avoid spooking fish.
2. Close the openings in the downstream fence to prevent fish loss.
3. Check the fence compound for fish.
4. Carefully take the seine net to the inside of the downstream fence.
 - a. One person will be at each end of the net, and one/two person at the middle of the net, all standing on the DOWNSTREAM side.
 - b. Pull the net along the inside of the downstream net keeping a foot on the lead line at all times to keep it snug to the bottom, preventing fish loss. Hold the cork line in your hands.
 - c. As the person at the 'front' of the net slowly moves along the downstream fence they should have a stick and poke into any hiding spots to spook fish out into the fence compound, and out a head of the net.
 - d. Once the front person reaches the far bank they must keep the net snug to the bank to prevent fish loss.
5. Slowly move the net upstream along the far bank to the upstream fence, keeping it snug to the bottom, with your foot on the lead line at all times.
 - a. The person at the back end of the net (still on the near bank) can start to move upstream also, but not all the way to the upstream fence.
 - b. The person at the front of the net will go right along the inside of the upstream net, poking into hiding places to spook fish as they go.
 - c. As they move closer to the near bank a "corral" will be creating with the net trapping fish.
 - d. Make the corral smaller by slowly bringing in EACH END OF THE LEAD LINE.
 - e. The middle one/two person will remain on the outside of the corral ensuring the lead line stays snug to the bottom, preventing fish loss, while moving it toward the shore.
 - f. You should end up with a bag – the lead line will be at the edge of the water and the cork line brought in toward shore, but not all the way.
 - g. Securely anchor all ends before going into the bag to sample fish.

Coldwater River Seine Sampling Procedures

* All fish handling must be done within the corral incase a fish gets dropped. If a fish gets dropped before sampling is complete that line of data on the data form will be crossed out.

FISH SAMPLING

1. Fill in all data for each fish as per data form (same as fence/trap sampling).
2. All fish being RELEASED will be operculum punched **1R**. Once data is collected fish can be released from corral.
3. If fish is adipose ABSENT, and is being harvested DO NOT operculum punch. All harvested fish will be sampled on beach, once all live fish are sampled and released.
 - a. Harvested fish will have head collected and scale samples taken, as per regular sampling procedures. Record head code and scale book info on data form.
 - b. Fish will be cleaned and placed in plastic fish bag and placed in cooler.
 - c. Guts will be placed in garbage bag to be disposed of away from seine site, at the end of the shift.
 - d. Cooler with fish will be brought to NTA office after every shift to place in fish in freezer.

* If adipose ABSENT fish appear to be getting too far gone and are not fit for harvesting, they will still have the head taken. At the end of the shift the carcass will be bagged and taken to a location well away from fence site and returned to river.