ANNUAL REPORT FOR TOBOGGAN CREEK HATCHERY OPERATIONS IN 2007/2008

Prepared for : **Fisheries and Oceans Canada**

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Introduction

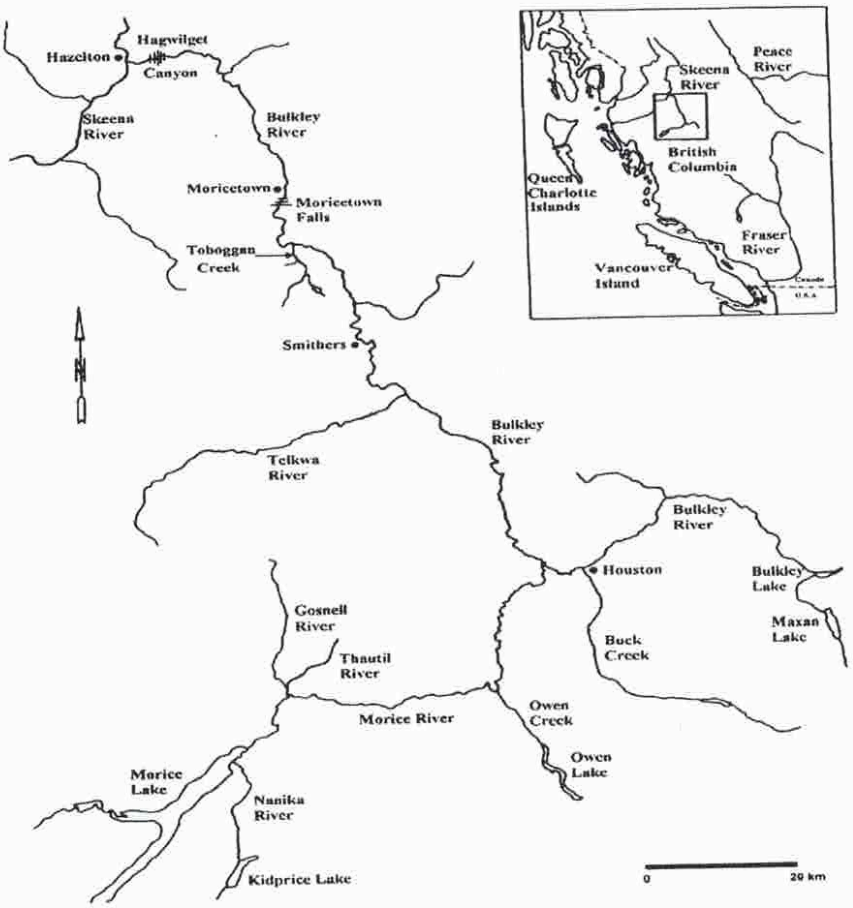
The Toboggan Creek Salmon Hatchery, under the direction of the Toboggan Creek Salmon and Steelhead Enhancement Society, has just completed its twenty-third year of successful operations. The Toboggan Creek Hatchery facility is located thirteen kilometers north-northwest of Smithers, British Columbia, on Highway 16 West (Fig. 1). The facility is located on C.N.R. right-of-way, which was purchased by the Society from C.N.R. in 1997. Funding for the hatchery contract is provided yearly by the Department of Fisheries and Oceans under the Community Involvement Division, and the Habitat and Enhancement Branch, of the Salmonid Enhancement Program.

Over the past three or four decades, and in particular during the mid 1990's, stocks of Coho salmon native to the upper Skeena River tributaries were severely impacted by Alaskan and Canadian ocean fisheries. The situation became even more of an issue with Coho due to very poor ocean survivals in the 1997 return year. During the same period, Chinook stocks were showing increasing escapements. In more recent years however, since 2001, we have observed greatly improved Coho escapements and a decreasing trend for Chinook stocks. The upper Bulkley Chinook stock, a genetically unique population, had seen only 150 to 200 wild spawners in the mid 1980's. With enhancement this stock improved steadily until 2001, when 5,600 spawners escaped to the system. This stock has historically been impacted by in-river net fisheries, a gaff fishery at Moricetown Falls, and by angling pressure. It also suffers from severely degraded freshwater habitat conditions.

The Toboggan Creek facility, constructed during 1984/85, has been attempting to preserve and enhance stocks of both of the aforementioned salmon species. During the 2007/08 contract period our Society reared and released some 54,000 Chinook and 30,000 Coho salmon smolts from the 2005 brood year. Successful rearing of another 44,000 Chinook and 37,000 Coho from the 2006 brood continues, with these salmon being reared through to smolt for release in the spring of 2008.

Egg takes for the 2007 brood Chinook from the upper Bulkley River were difficult due to extremely high river conditions during the spawning period, and at present we have just 8,000 Chinook alevins incubating at the hatchery. Chinook spawning escapements to the upper Bulkley were poorly assessed this year due to the conditions, but an aerial count conducted on August 28, 2007 indicated a minimum of 270 adult Chinook spawners present. Recent low escapements continue to be a concern, and last year's total return was likely less than 800 adults.

Figure 1. Location of the Toboggan Creek Hatchery, situated on Toboggan Creek, 13 kilometers Northwest of Smithers, British Columbia.



Coho returns to the upper Skeena tributaries in 2007 were only fair. The Toboggan Creek escapement in 2007 was 2,630 Coho, representing our tenth consecutive return surpassing 2,400 spawners. Escapements to the upper Bulkley River system were not recorded this past year, although some CWT sampling at Moricetown by Wet'suwet'en Fisheries during the fall period indicated a strong showing for Bulkley Coho of hatchery origin. Our target of 35,000 Toboggan Creek Coho eggs was attained from broodstock collected at the counting fence. Enhancement of the Upper Bulkley Coho stock was discontinued in 2005 due to a lack of funding.

The Toboggan Creek Hatchery has the capacity to rear 155,000 Coho and Chinook salmon smolts from the Bulkley River system on a yearly basis. Initial incubation is accomplished using moist incubators and eggs are transferred to Heath stacks at the eyed stage, egg to fry survivals are usually over 93.0 %. Ponding and initial rearing is done in Capilano troughs and the fingerlings are transferred to an earthen rearing channel prior to the winter period to make way for the ponding of fry from the following brood year. Smolt releases occur in April and May to coincide with the peak migration of wild smolts to the ocean. Ponding to release survivals usually exceed 95.0 %, over a period of 12 months. Two full-time personnel are required to operate the facility and extra manpower is hired during the summer and fall periods as needed.

The Coho counting fence panels were installed on August 2nd this year. This enabled an accurate assessment of our nineteenth major return of hatchery-produced Coho to Toboggan Creek. The fence data indicated hatchery returns of 312 coded-wire tagged (CWT) Toboggan Coho in 2007 and from a release of 32,640 smolts this is slightly under a 1.0% return, representing our fifth poorest CWT Coho return to date. The 2007 return is also the seventh worst overall escapement (wild and hatchery) on record, surpassing only those years from 1992 through to 1997 when the returns averaged just over 1,600 spawners. This illustrates a trend back towards poor ocean productivity combined with increased levels of exploitation. The data indicate a total adult recruitment of 711 Coho from the release, and at a 2.2% survival rate this is well below average. The rate of exploitation on the Toboggan CWT's was approximately 56% in 2007, with the Alaskan commercial catch and the Saltwater sport catch accounting for over three quarters of the landed mortalities. Previous exploitation rates, prior to 1998, had ranged from 55% to well over 70%. In the nine years since 1998 the average exploitation rate was 35%. This year's estimate represents a noticeable increase, especially considering the obvious decline in ocean productivity.

Around 12% of Toboggan Coho handled in 2007 were adipose-clipped salmon, and we estimate the makeup of the total spawning stock was approximately the same. As well, no CWT Coho kelts sampled upstream of the fence were identified as stray hatchery Coho from other stocks.

The Toboggan Creek Hatchery facility is frequented by 2,000 to 3,000 visitors on a yearly basis and our Society encourages the public to learn more about the salmonid resource in British Columbia. Our community appreciates the opportunity to be involved in these continued efforts.

Objectives

i) enhance stocks of anadromous fish species in the Bulkley-Morice drainage which are identified as being below historic levels.

ii) provide coded - wire tagged groups of salmon from Bulkley - Morice stocks to aid in identifying the movements, timing and exploitation of these fish through the various ocean and river fisheries.

iii) assess returns of both wild and hatchery-produced salmon to the stream of origin to determine escapement of adult spawners, and therefore aid in identifying smolt to adult survivals and total exploitation rates on these stocks.

iv) maintain a high public profile of the facility to inform the local population of the benefits and goals of both the Community Involvement Program and Salmonid Enhancement Program of Fisheries and Oceans Canada.

v) provide employment and training for local school students in the Bulkley Valley area.

vi) develop a core of qualified local people that can be depended upon to accomplish the various goals and objectives with respect to progressive fish culture and stock assessment in the upper Bulkley - Morice drainages.

Water Supplies (2007/08)

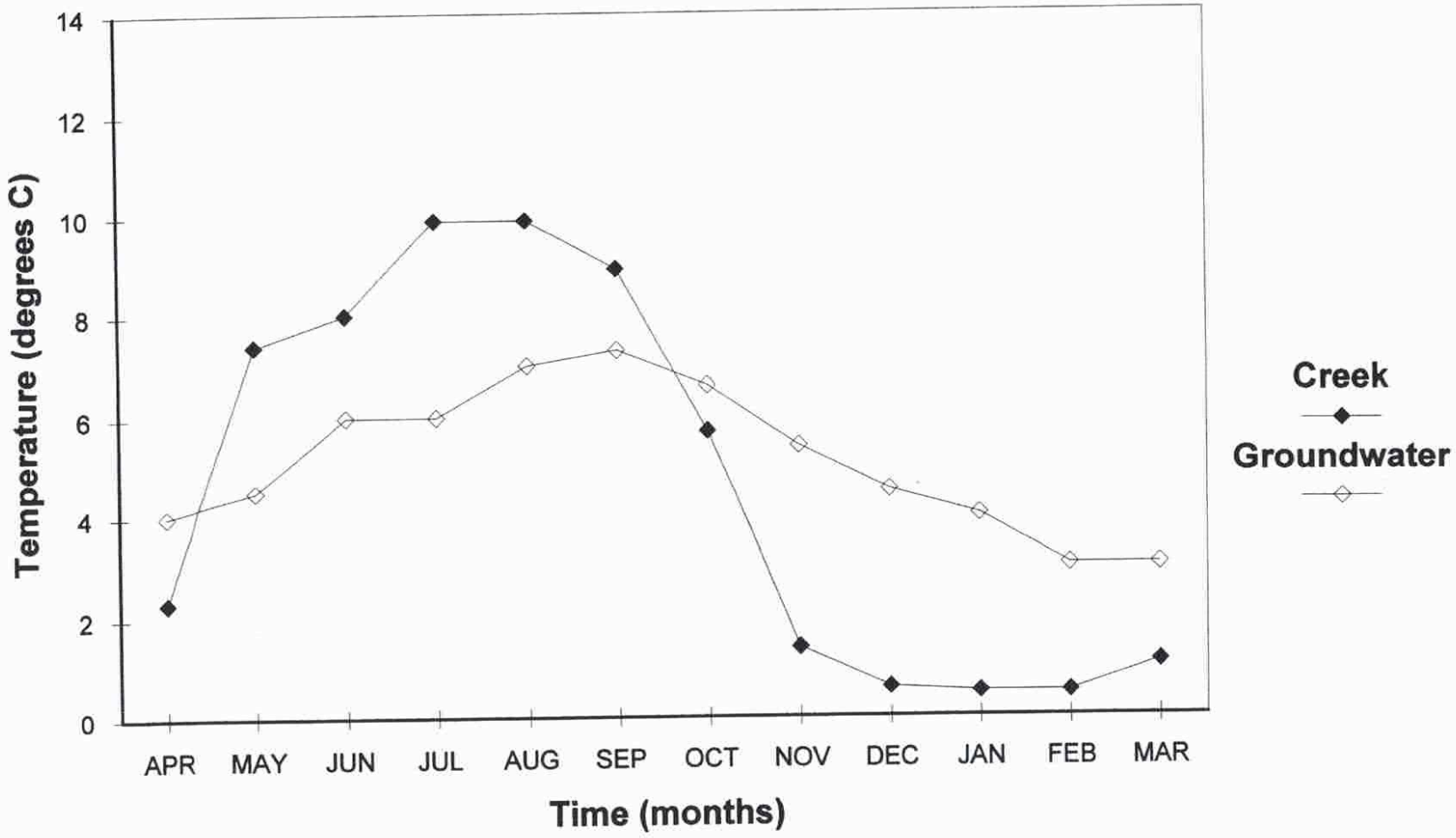
As for the previous years, the average daily temperatures of the three hatchery water sources were recorded and average weekly temperatures have been calculated. We depend on two of the water sources for egg incubation and fish rearing, ground water from an underground collection system and surface water from Toboggan Creek. The third water supply, surface water of Brandt Brook, has been used increasingly more often in recent years due to water quality concerns for the creek supply. The three water supplies have proven to be very dependable during the years and we have never experienced a fish loss due to an interruption of water flows.

The creek water supply is used for year-round rearing and has a maximum flow of approximately 4,500 liters per minute, the normal operating flow is 1,600 to 1,800 liters per minute. In most cases the creek supply is also used for egg incubation, the exception being during periods of silty runoff flow when the ground water supply is utilized. In cases where we would like to manipulate egg development the ground water supply is used, as it is warmer in the winter period and colder during the spring and summer. The ground water supply has a maximum flow of 100 to 150 liters per minute and is used solely for incubation purposes and initial Chinook ponding.

Average water temperature patterns in 2007/08 were similar to those of recent years. The creek temperatures were very cool in April but increased rapidly during May this year, followed by cooling in June and then stabilizing during the summer months. Temperatures during the summer period were lower than in most other years, but peak temperatures occurred in August as usual (Fig. 2). The fall period stayed somewhat warmer than in the previous year. On average, the creek supply fluctuates in between 0.5 and 15.0 degrees and the ground supply from 3.0 to 8.0 degrees Celsius on a yearly cycle.

Water levels and flows were relatively stable during the spring of 2007, but the summer period saw a prolonged stretch of high water due to the high snow pack in the mountains. The levels stayed high through most of the fall period as well, before dropping substantially prior to winter. The flows through the winter period were somewhat lower than normal and dewatering of Coho salmon redds may well have been a factor in 2007/08. Coho fry production should still be relatively good as a result of extensive spawning throughout the watershed, as was the case in 2006. Flows during the steelhead spawning period, early May through early June, were quite stable in 2007 which would have improved survival from the egg to fry stage of this species. Many steelhead adults and fry were observed in Toboggan Creek this past spring, summer and fall. Freshwater production of steelhead juveniles in 2007/08 should have been excellent.

Fig. 2 Temperatures at Toboggan Creek Hatchery (2007/08)



TOBOGGAN CREEK HATCHERY - SALMON BROOD YEAR SUMMARIES

Bulkley River Chinook (2005 brood)

Releases of the 2005 brood Chinook smolts commenced April 25th and were completed on April 27th, 2007. A total of 53,480 Chinook smolts were taken in batches of up to 10,000 fish to the upper Bulkley River, near Houston, B.C. These smolts averaged 10.6 grams in weight. As release conditions were good throughout the spring we spread these Chinook smolts between three sites; the groundwater site along Highway 16 West, the mainstem site near Topley, and another site at McQuarrie Creek. All of the smolts released were coded-wire tagged.

Locations and numbers of the smolt releases this spring are as follows:

Topley road crossing	25,500
McQuarrie Creek confluence	10,380
Groundwater site	17,600
Total released	53,480

Releases took three work-days to complete this year, and we had just one crew and vehicle working. The releases took 6 individual trips to complete, everything went very well during all these releases and we observed very little mortality in total. We have had good success using the 1,500 litre transport tank for releases, and we vary the amount of smolts taken on each trip depending on water temperatures and the length of the individual trip. Green egg to release survivals of this stock were 95.7 % over a 20 month period from late August of 2005 to late April of 2007. This group of smolts looked to be very healthy at the time of release.

This stock was enumerated prior to release by using standard sub-sampling techniques. Results of this enumeration verified that our book estimates were accurate and indicated predation was again not a factor in the outdoor channel this past year.

Bulkley River Chinook (2006 brood)

Ponding of the 2006 brood Bulkley River Chinook fry commenced on March 27th and was completed by April 5th, 2007. These 0.40 gram fry were ponded in one Capilano trough and feeding was initiated with #0 Skretting starter. The Chinook got on the starter feed quickly and were split into two troughs in late April. A total of 44,738 salmon fry were ponded and initial survivals were excellent. Green egg to ponding survivals were over 94%.

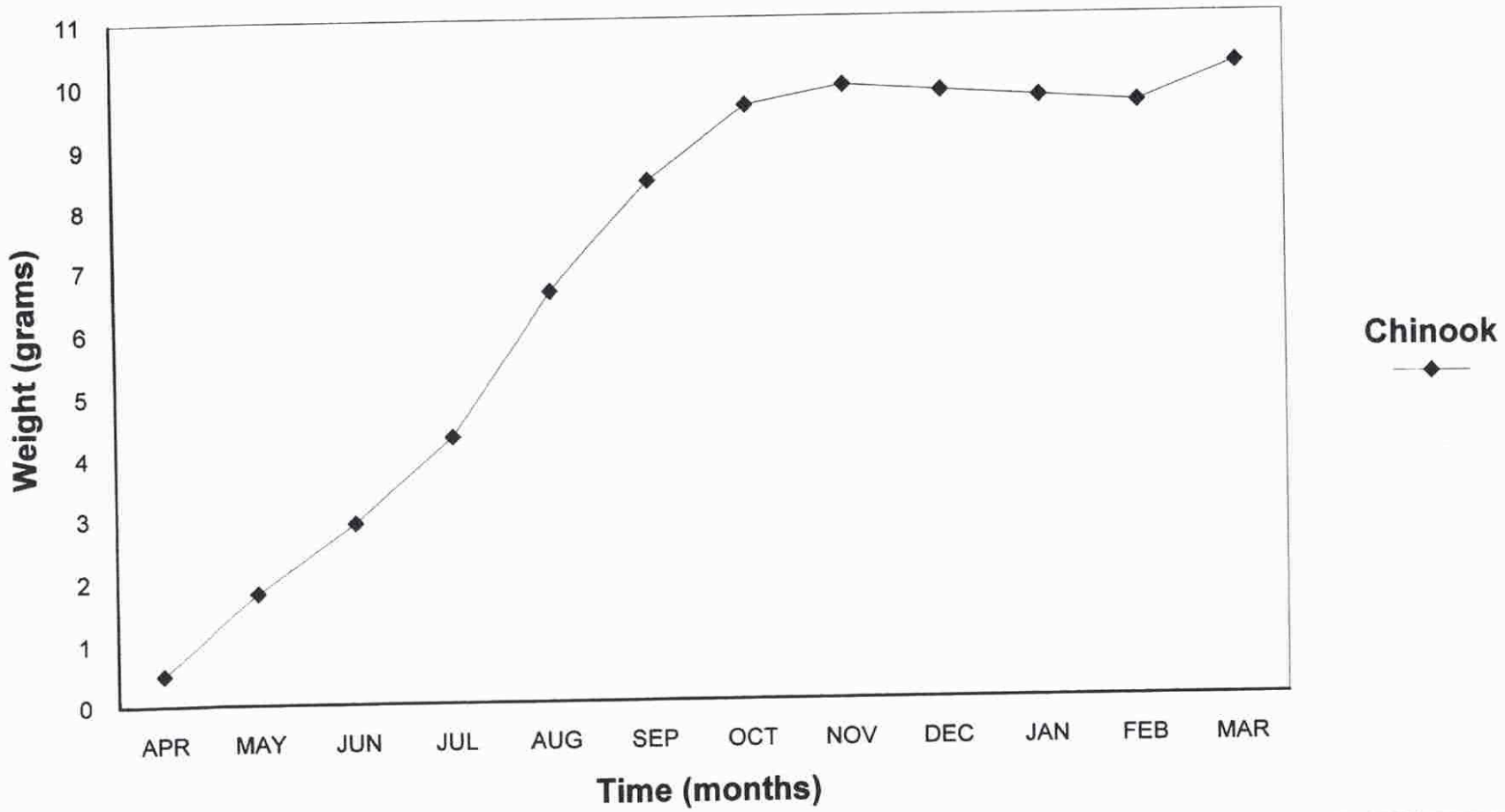
Growth of the 2006 brood Bulkley River Chinook fry increased rapidly, commencing in mid May, in conjunction with warming water temperatures and these fish continued to grow at a healthy pace through the summer period (Fig. 3). The rate of growth in 2007/08 was similar to past years and dropped off dramatically during the winter period as a result of prolonged cold temperatures and ice cover on the outdoor channel, which prevented feeding for over 4 months. At the present time these Bulkley River Chinook smolts average 10.7 grams in weight, and we hope to have them at 11.0 grams or larger prior to release in late April of 2008.

These Chinook fry were split into 3 Capilano troughs in late May and their densities were reduced again in late June, when they were transferred to the two large indoor troughs. We did not experience any serious problems during the initial indoor rearing of the 2006 brood Chinook.

Due to a chronic lack of funds, and interest in seeing these Chinook coded-wire tagged and adipose-clipped, this brood year of smolts went unmarked. Despite our strong concerns on the issue this is the first time in 20 years of operation that this Chinook group was not marked.

Survivals since ponding have been excellent and presently are over 98%. Green egg to release survivals may exceed 93% and we presently have over 44,200 Bulkley River Chinook remaining.

Fig. 3 Growth of 2006 Brood Chinook Salmon in 2007/08.



Bulkley River Chinook (2007 brood)

Broodstock collection of the 2007 brood Bulkley Chinook began in mid August, and concluded in early September, but we were unable to attain our target of 40,000 eggs. Extremely high flows throughout the spawning period made it all but impossible to locate and capture broodstock, and by the time the river dropped and cleared the spawn was over. We managed to collect eggs from only 2 female Chinook and sperm from just 9 males. Eggs were transported unfertilized back to the hatchery and each female's eggs were then fertilized using sperm from the males captured that day. Prior to incubation all eggs were rinsed, water hardened, disinfected and screened.

Chinook assessment was attempted, in conjunction with these egg takes, including a helicopter count of salmon spawners on August 28th, 2007. A total of 270 chinook were observed between the Morice River junction and the Bulkley Falls, with over 53% occupying the section of river from Perow downstream to Knockholt. Very few spawners were found in the Richfield Creek section this year, which is usually a major area of consistent use, but some spawners were observed right up to the falls. A few fish were also observed and captured upstream of the falls, near Bulkley Lake. Only 26 live Chinook were captured in 2007 (15 females and 11 males), with 13 of the females and 2 of the males being spawned-out kelts. Adipose clipped fish made up 30% of the Chinook sampled.

Results of the helicopter count were as follows:

	Aug. 28th
Above Bulkley Falls	22 Chinook
Meanwhile Creek	44 Chinook
Topley	17 Chinook
Richfield Creek	4 Chinook
Perow Station	26 Chinook
McQuarrie Creek	1 Chinook
Below McQuarrie Creek	117 Chinook
Below Knockholt	1 Chinook
Houston	13 Chinook
in Buck Creek	25 Chinook
Total observed / flight	270 Chinook

Visibility during the assessment flight was very poor. Chinook were difficult to count in the pools, as well as on the spawning riffles, due to the high and colored water conditions. We did not do a comparative ground count this year as it was very difficult to locate any spawners from the ground. It is clear that the majority of Chinook were missed in this year's flight, but is likely that the entire escapement to the upper Bulkley River in 2007 was less than 800 adult spawners.

Shocking and picking of the 2007 brood Bulkley River Chinook eggs was completed in mid October at 280.0 accumulated thermal units (A.T.U.'s). All of the surviving Chinook eggs were moved to heath trays after this event, and prior to the beginning of the hatch. Overall survivals to eyed stage were excellent and averaged 98.8 % in 2006 (Table I). Volume estimates done at eyed stage verified our spawning estimate of approximately 8,200 eggs collected from the Bulkley River Chinook stock. Hatching of these eggs peaked at 600.0 A.T.U.'s this year, and survivals since hatch have been very good. Presently we have 8,000 Chinook alevins still incubating.

Development of the 2007 brood Chinook eggs was slowed down in the incubators to aim at a later ponding date, as has been done in previous years. This was done in an effort to reduce the stress from ponding in cold water.

Table I. Shocking and Picking Summary for the 2007 Brood Bulkley River Chinook Eggs Incubating at the Toboggan Creek Salmon Hatchery.

Tray #	Females	Pre-Shock	Post-Shock	50 ml Sample	Volume (mls)	Survival(%)
M1-5	1	6	32	148(2.96)	1,090	3,192(98.8)
M1-6	1	11	45	131(2.62)	1,870	4,854(98.9)
Totals	2	17(0.2%)	77(1.0%)	138(2.76)	2,960	8,046(98.8)

Toboggan Creek Coho (2005 brood)

Survivals were excellent during April and May of 2007, prior to this stock's release. A total of 30,482 coded-wire tagged smolts were released during the spring of 2007, the screens were pulled on May 9th and all of these 12 gram smolts had migrated out by June 8th. Growth of these Coho was excellent from April 1st, 2007 until release, increasing from 8.9 grams to 11.8 grams.

Observations of smolts leaving the channel outflow in the evenings indicated peak movements during the last week of May. These Coho were in very good condition at time of release and were showing visible signs of smolting prior to the peak migration. Fry surplus to this group were released at a size of 5.5 grams on August 24th, 2006 into Canyon Creek as part of a fed fry study. All 5,167 of these Coho fry were adipose clipped and coded-wire tagged.

Bulkley River Coho (2005 brood)

Egg takes from the upper Bulkley River Coho stocks were discontinued in 2005.

Toboggan Creek Coho (2006 Brood)

Ponding of the 2006 brood Toboggan Coho was completed by May 16th, 2007. Growth of these Coho started slowly in the spring period but increased rapidly in the summer and fall of 2007, from 1.1 grams near the end of June up to 8.6 grams by the end of October (Fig. 4). This growth dropped right off during the winter period, from November through March. As the ice has now melted off of the outdoor channel we are able to feed again, and we expect growth to accelerate.

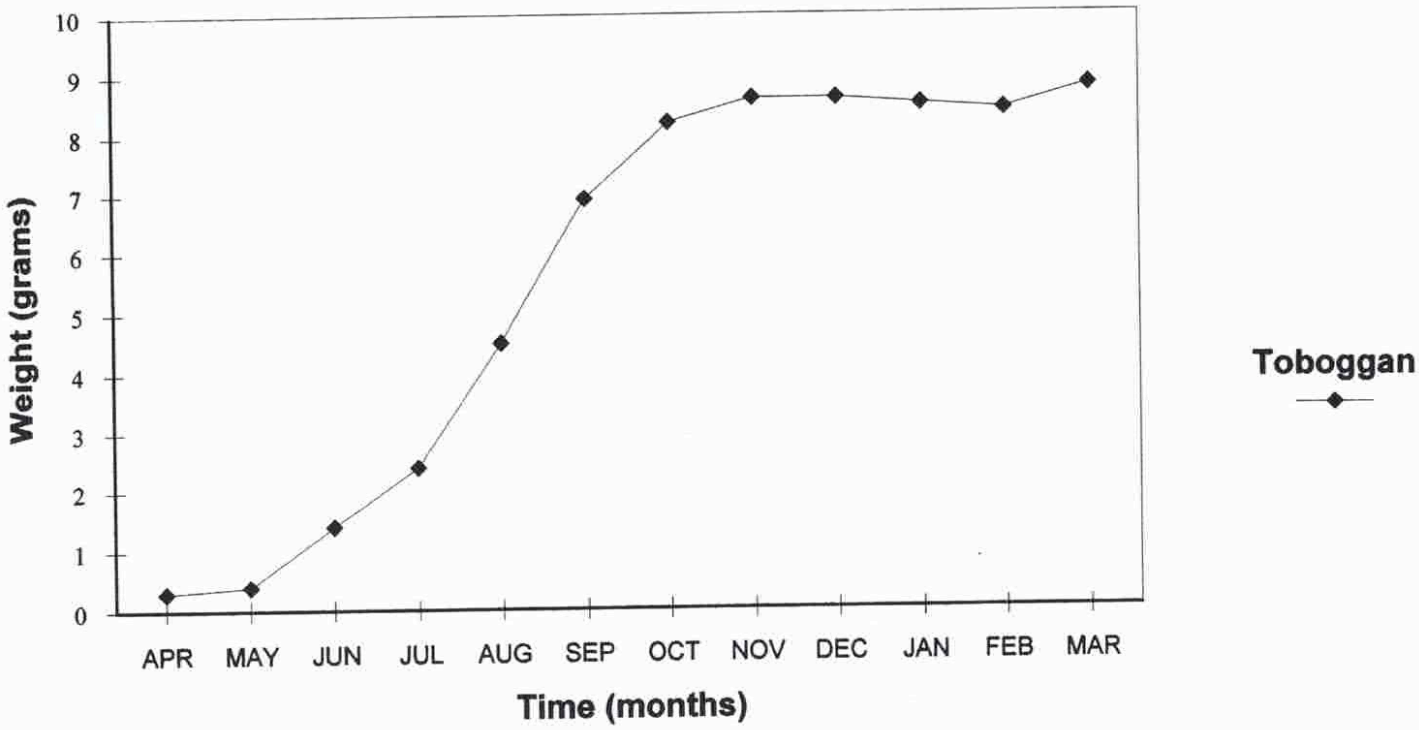
These Coho fry were split into two Capilano troughs in mid June, and split again into three troughs in July. We divided this stock into four troughs in August, and were able to keep these fry indoors until the tagging crew arrived. Overall health of this stock was excellent throughout the rearing cycle, and survivals from fry ponding in May, 2007 to smolt size in late March, 2008 were over 98 %. These are excellent survival rates for this Coho stock.

Coded-wire tagging of this stock was completed on August 14th and 15th, 2007. A total of 37,469 Coho salmon fry were tagged and adipose clipped for our smolt release group.

Tag Code	# Tagged
18-48-06	27,354
08-15-07	5,610
08-03-49	2,324
08-03-56	2,181
Total Tagged	37,469

Survivals of the smolt group were excellent after tagging and through the winter period and we expect to release well over 37,000 Toboggan Creek Coho smolts in the spring. We plan on pulling the channel screens in early to mid May of 2008. These smolts will then be able to migrate out on their own timing.

Fig. 4 Growth of 2006 Brood Coho Salmon in 2007/08.



Toboggan Creek Coho (2007 brood)

Most of the 2007 brood Coho eggs collected from Toboggan Creek this fall were taken from adult Coho intercepted at our fence operation. A total of 80 adult Coho spawners were collected and transported back to the hatchery for egg-take purposes. We conducted three egg takes; one on September 29th, one on October 6th and one on October 13th, and all females surplus to our egg-take needs were released back into the stream. All of the eggs were disinfected with an iodine solution after fertilization, and prior to being placed in the moist incubators.

Eggs were taken from a total of 14 ripe female Coho and sperm was taken from 56 males. Each female's eggs were fertilized by using at least 6 different males and all eggs were water hardened for one hour prior to initial incubation in the moist incubators. Kidney samples were taken from the female broodstock and sent to the Pacific Biological Station for analysis, and all but one of these samples tested negative for BKD. The eggs from the positive female were destroyed prior to eyed stage. Scales, weights and lengths were also taken from all of the brood females. Average weight was 3.9 kilograms, while overall the average length was 520 mm. A total of 50 random scale samples were collected from both female and male Coho, as requested by DFO's Stock Assessment Division. Of 46 readable scale samples, taken only from wild Coho spawners, 34 (74%) were three-year olds and 12 (26%) were four-year olds. This was very similar to the age classes observed in 2006, when 70% were three-year olds and 30% were aged at four.

Shocking and picking of the 2007 brood Toboggan Creek Coho eggs began on November 12th, 2007 and was completed on November 21st. The Coho egg survivals to this stage were excellent (95.6%), and a total of 34,577 eggs survived (Table II). Fecundity of the Toboggan Coho averaged 2,800 eggs per female in 2007, as compared to 3,200 the year previous.

The 2007 brood Coho eggs began hatching at 410.0 A.T.U.'s and peak hatch occurred at 450.0 thermal units. The survivals during hatch were excellent, and ponding of this stock will likely occur in mid May of 2008.

Coho from these egg takes will be reared at the hatchery to a size of 12.0 to 14.0 grams and released as smolts in May of 2009. Up to 30,000 of these fish will be released into Toboggan Creek, as coded-wire tagged Coho smolts, and any remaining surplus Coho fry may be transplanted into the Kathlyn Creek drainage after tagging is completed. The CWT tagging crew is scheduled to show up in early August to tag and clip the 2007 brood Coho stocks on hand.

Survivals of our Toboggan Coho since hatch have been excellent and they continue to appear very healthy. We presently have over 34,200 Coho alevins from this stock still incubating.

Table II. Shocking and Picking Summary for the 2007 Brood Toboggan Creek Coho Eggs Incubating at the Toboggan Creek Salmon Hatchery.

Tray #	Females	Pre-Shock	Post-Shock	50 ml Sample	Volume (mls)	Survival(%)
M2-3	3	6	143	189(3.78)	2,070	7,682(98.1)
M2-4	2	38	136	162(3.24)	1,670	5,275(96.8)
M2-5	4	192	886	172(3.44)	3,060	9,640(89.9)
M2-6	4	54	127	184(3.68)	3,290	11,980(98.5)
Totals	13	290(0.8%)	1,292(3.6%)	178(3.56)	10,090	34,577(95.6)

Assessment of Coho Escapement in 2007

Toboggan Creek Fence

The Toboggan Creek Coho counting fence commenced operation on August 2nd, 2007. The fence was monitored a least twice daily from this date through to October 23rd, at which time the aluminum panels were removed due to freezing conditions.

A total of 2,481 Coho were passed through the fence in 2007, with the first Coho captured on August 17th and with the spawning migration into the creek peaking from October 6th and 7th. In addition to our normal sampling, we floy tagged and operculum punched a large number of Coho. A total of 250 Coho were tagged at the fence in 2007, approximately one out of every ten Coho captured. This was done to allow for an accurate estimate in case the fence needed to be laid down, which did not happen. The complete Toboggan Creek escapement estimate in 2007 was 2,630 Coho; including natural spawners above the fence, broodstock and coded-wire tag samples removed at the fence by hatchery personnel, and salmon spawning downstream of the counting fence.

Approximately 12% of the salmon handled at the fence were estimated to be coded-wire tagged hatchery returns from the 2004 brood Toboggan Creek smolt release group. This represents a total of 312 spawners returning from a release of 32,640 smolts, and a 1.0 % survival to spawn.

Bulkley River Fence

The Bulkley River counting fence did not operate in the fall of 2007 due to a lack of funding, as well as the cancellation of the Bulkley River Coho enhancement program. Random sampling of adipose-clipped Coho at Moricetown Canyon in 2007 indicated a substantial return of Bulkley River CWT's however. Bulkley Coho were twice as abundant as Toboggan Coho in the sample, indicating over 600 hatchery returns to the Upper Bulkley River last fall.

Coho Hatchery Returns (2004 brood)

All of the upper Skeena waters were closed to the harvest of Coho at the beginning of the 2007 season due to conservative management by DFO. When projections from Alaska in July indicated a strong return of Toboggan Creek coded-wire tags, based on good in-season catches in their commercial fisheries, the DFO managers opened up various areas of the mid and upper Skeena River, the Bulkley and the Morice Rivers to the retention of hatchery and wild Coho.

No creel surveys were conducted last fall but, based on head depot returns of coded-wire tagged Coho in 2007, a catch estimate was developed. There were a total of 5 CWT-pinned heads turned in by anglers last fall, from Coho captured in the Bulkley-Morice watershed, with three carrying pins that indicated they were from the Toboggan Creek stock. We estimated a participation rate of 35% (lower than some previous years due to the wider expanse of the area open to harvest) indicating a total harvest of 9 CWT's and 66 unmarked wild Toboggan Coho in 2007. The total harvest as a direct result of the in-river angling opportunity this season accounted for less than 3% of the total available Toboggan Creek Coho stock.

As a result of sampling done at the fence and on the spawning grounds we were able to collect 20 Coho heads from marked adult spawners in Toboggan Creek during 2007, and of these 19 carried pins (95%). The proportions of the Toboggan Creek smolt group in the sampling, by tag code, were as follows:

# of Coho	Tag Code
7	08-11-11
7	08-13-10
5	08-13-04

Of these 19 pinned heads, all were from 2004 brood Coho salmon reared and released at the Toboggan Creek Hatchery site. No stray upper Bulkley River CWT's were found in 2007.

Exploitation of Toboggan Coho in 2007

With groups of coded-wire tagged Coho returning to Toboggan Creek yearly, and having a fence installed on this stream, we are able to arrive at an accurate assessment of Coho escapement during each year. As well, the coded-wire tag sampling of the B.C. commercial catch, Alaskan commercial catch, and B.C. sport catch give an indication of exploitation rates by each group. The Native food fish catch has also been studied to some extent and gives insight in this regard.

Coho catch and escapement estimates have been provided and/or corroborated by the following agencies and groups:

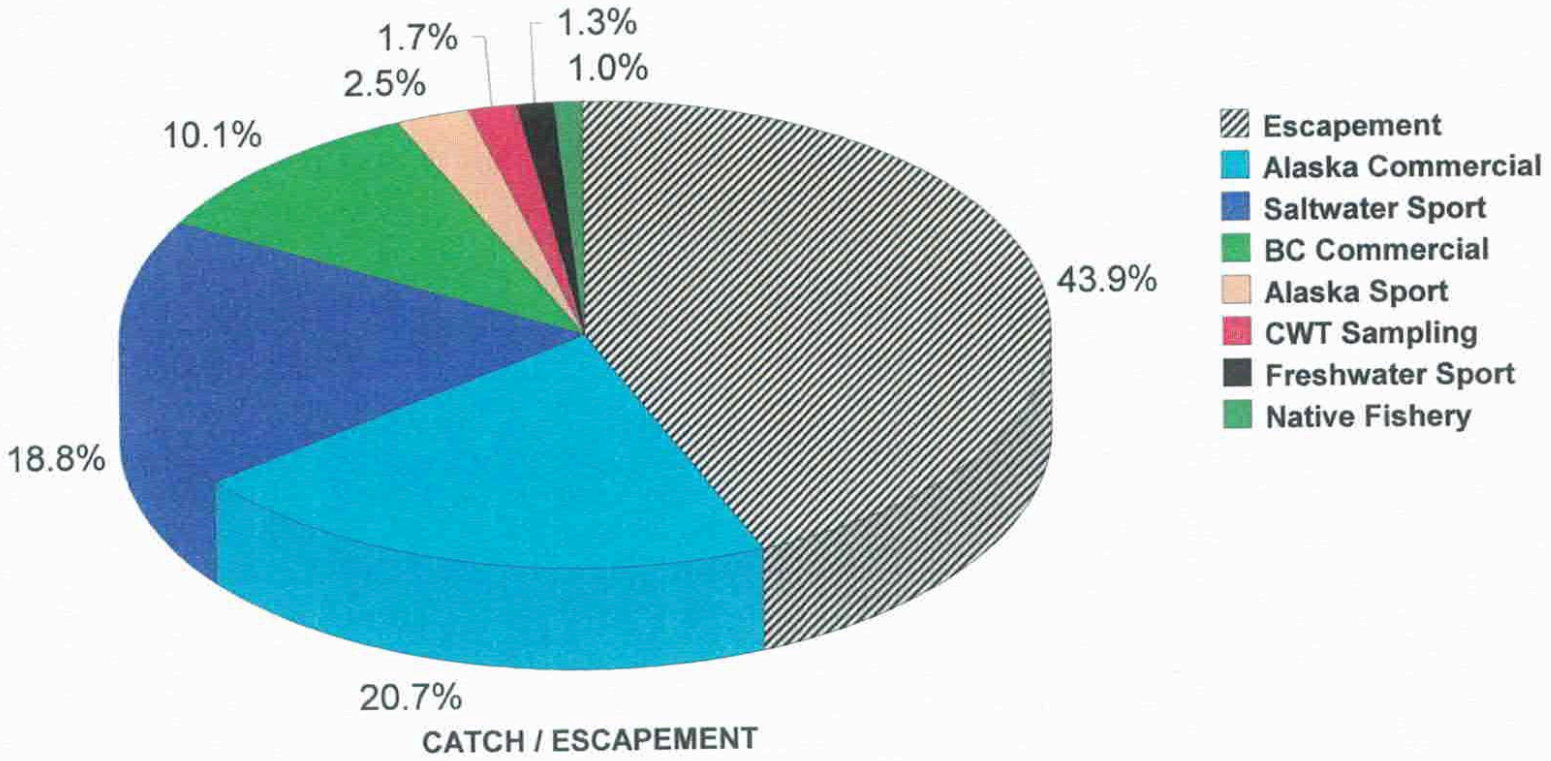
Escapement	-	Toboggan Creek Hatchery
B.C. Commercial	-	Fisheries & Oceans Canada / Toboggan Hatchery
Alaskan Commercial	-	Alaska Department of Fish and Game
B.C. Sport	-	Fisheries & Oceans Canada / Toboggan Hatchery
Alaskan Sport	-	Alaska Department of Fish and Game
Native Food	-	Wet'suwet'en Fisheries / Toboggan Hatchery

Exploitation rates indicated by the data suggest that coded-wire tagged Coho from the Toboggan Creek stock were harvested at a rate of approximately 56% in 2007 (Fig.5). Of this total catch of approximately 400 Toboggan Creek Coho in 2007 it is estimated that Alaskan commercial vessels harvested 37%, BC saltwater anglers took 34%, in-river Native food fisheries accounted for 2%, BC commercial fishermen were responsible for 18% of the catch, BC freshwater anglers took 2%, and Alaskan anglers took 4%. As well, a coded-wire-tag sampling program at Moricetown Canyon removed 3% of the stock as part of a DFO assessment initiative. This result in 2007 is the highest exploitation rate seen over the past ten years. The Toboggan Creek coded-wire tagged spawning escapement, estimated at 312 Coho in 2007, represented less than 44% of the total adult stock produced from our 2004 brood smolt releases.

Alaskan commercial fishermen harvested more Coho in 2007 than the estimated mortalities as a result of B.C. commercial fisheries, and we saw a much less intensive net fishery targeting Skeena sockeye in Area 4 during July and August. The Area 4 commercial net fisheries were allowed to land their catch in 2007, unlike 2006 when non-retention was mandatory. This facilitated sampling of the CWT catch in B.C. waters as Coho were processed at the canneries in Prince Rupert. These data indicate that Canadian interests were responsible for close to 60% of the ocean-based mortalities in 2007, including the catch from the commercial and sport fisheries.

Survivals of hatchery-produced Coho smolts from this facility were below average in 2007. Assuming the catch rates are accurate we saw smolt to adult survivals of just under 2.2% for the 2004 brood, with about 710 adult Coho produced from a release of 32,640 Toboggan Creek smolts. These Coho survivals are the fifth lowest we have seen in the last eighteen years of sampling, and indicate a decrease in ocean productivity. The only four years lower than 2007, from 1995 through 1998, averaged less than 1.6% survival from smolt to ocean adult. The worst year was in 1997 when we identified Coho smolt to adult survivals of only 0.5%.

Fig. 5 Catch of Toboggan CWT Coho (2007)



Administration Report

This section covers hours spent from April 1st, 2007 to March 31, 2008.

The following table is a breakdown of hours spent carrying out the contract last year:

Activity	Man-hours
Project Management	502.0
Facility Operations	3,672
Broodstock Collection	234.0
Assessment	40.0
Coho Fence	410.0
Statutory Holidays	192.0
Total Hours in 2006/07	5,050.0

It is becoming more and more difficult to carry out the contract each year due to a lack of adequate funding, as we have not seen a reasonable increase in funds for over sixteen years. In 2007/08 our hours of work spent were similar in most categories except broodstock collection, where they were down substantially from last year. This is due to the fact that our egg targets have been lowered to accommodate the inadequate funding levels. Volunteer hours also contributed to our operations last year, but should not be depended on to function properly.

Total employment generated by the hatchery in 2007/2008 added up to 143 full work-weeks, employing 8 different people for varying lengths of time during the twelve-month period. These last figures include separate contracts we have undertaken via the federally-funded Stock Assessment Division of DFO, as well as the bilaterally-funded Pacific Salmon Commission.

Labor costs were more than what was budgeted for in the contract period, as they were in the previous four contracts as well. Our Society has been in a deficit position for the same period. The base contract deficits are due to the fact that the hatchery program has been subsidized by other contracts taken on by the Toboggan Creek Enhancement Society in the past. Without taking on extra contracts such as Coho smolt surveys and the Morice Chinook CWT group over the past few years we would be consistently running a larger deficit. While labor, overhead and supply costs have risen dramatically over the past 16 years our direct DFO contract funding has remained unchanged.

The following is a summary of expenditures made in carrying out the 2007/2008 contract :

Category	Expenditures	Contract
Direct Labor	97,552.00	92,000.00
Overhead Costs	24,388.00	23,000.00
Capital Equipment	0.00	0.00
Operations	33,360.00	40,300.00
Totals	155,300.00	155,300.00

The labor and overhead portions of this table only include activities directly attributable to the main C.E.D.P. contract. They do not include time spent collecting additional broodstock and rearing Morice River Chinook for smolt planting, assessment of wild and hatchery juvenile Coho migration, and expanded assessment of adult Coho returns to Toboggan Creek.

A lack of adequate contract funding will eventually cause the entire Salmonid Enhancement Program to fail, in a time when salmon stocks are in broad decline on the Pacific Coast.

Development and Maintenance of the Facility

In addition to general maintenance carried out as part of the contract requirement we were involved in the following activities as well:

i) The outdoor rearing channel was again vacuumed out using one large sludge pump. The accumulation of fish waste and silt is difficult to move out of the channels and this appears to be the best way to address the problem. The channel abutments are in poor condition, and need to be replaced. This has been an action item for a few years now.

ii) The settling pond was flushed again to spread out the sand that accumulates at the end of the inflow pipe. This has become an annual maintenance procedure and we try to remove the buildup before it becomes a problem.

iii) The dam below the creek intake required substantial maintenance as a result of flooding. Thanks to help from Barry Finnegan and Don Hjorth of DFO this was quickly repaired. The intake structure is over 24 years old, and in need of replacement.

iv) During ten consecutive years previous, 1993 through 2002, we have operated the Toboggan Creek counting fence for steelhead enumeration. In 1993 we estimated an escapement of 435 steelhead spawners, and in 1994 there were 237 steelhead spawners identified. No funding was provided for the 1993 assessment, while funding came from M.O.E. via the Habitat Conservation fund for the 1994 count. In 1995 we identified 330 steelhead above our counting fence, that was done with H.C.F. funding to cover labour costs. In 1996 funding came from Skeena Green Plan for the count, which identified 120 steelhead above the fence with many hundreds spawning below the fence. In 1997 we were unable to obtain funding but operated the fence again, 543 steelhead were estimated. The 1998 count was funded by the Habitat Conservation Fund and an estimated 381 fish spawned above the fence and many more spawned below. In 1999, we identified an escapement of 357 steelhead upstream of the fence, and in the year 2000 an estimated 286 steelhead spawned above the fence. In 2001, the fence operations indicated 414 spawning steelhead in the area upstream of the counting fence and in 2002 the estimate for the same area was 356 steelhead spawners. The funding for this came from Fisheries Renewal BC for all of the last four steelhead counts. Due to a lack of support by provincial steelhead bureaucrats this program has been discontinued, although the data generated has been referred to as the best and most consistent for the Skeena River watershed and its summer-run steelhead stocks. We have looked at reviving this program in future years but a continued lack of desire by the Province, to gain accurate numbers with regard to steelhead, prevails.

Operating Plan for 2008/2009

As in previous years we will begin releasing our salmon smolts in April. The 2006 brood Bulkley River Chinook will be the first to go in late April, followed by the Toboggan Creek Coho in mid to late May. As in past years we will enumerate the salmon smolts while they are being loaded into the transport tanks. We will be taking close to 44,200 Chinook smolts to the Bulkley River and more than 37,400 Coho smolts will go into the Toboggan Creek system.

Our upper Bulkley River Chinook target has been reduced to 20,000 eggs for next year, and there is no plan to mark any of these releases in the future. We plan to continue with assessment of Chinook returns until 2010, when CWT returns will cease. This year will be our seventeenth year of assessment of coded-wire tagged and total Chinook returns to the upper Bulkley River.

Coho egg targets have been reduced as well, and between 35,000-40,000 Toboggan Creek Coho eggs will be targeted in 2008. The Bulkley River Coho program was cancelled in 2005/06 due to a lack of adequate funding from DFO. As usual, the 2008 brood Coho will be reared to smolt size, at 12.0 to 15.0 grams, and released in the spring of 2010.

We will continue with our assessment activities with the Coho counting fence on Toboggan Creek and we will install the fence panels in early August this year, in an attempt to get a total count on Coho salmon. We will do a mark and recapture study to back up fence counts for Coho.

We had intended on continuing with enumeration of steelhead trout spawners into Toboggan Creek two years ago, in the spring of 2007. Unfortunately a collection permit could not be acquired from the Ministry of Environment to do so. The spring of 2002 was our tenth consecutive year of assessing the steelhead return to Toboggan Creek, and there seems to be little interest from the provincial Fisheries Branch to continue documenting the large escapements indicated by locally initiated studies such as this. Steelhead tagged at Moricetown in recent years have also indicated very large runs of steelhead present in the Bulkley-Morice escapement.

As usual, we will attempt to keep the public in this area well informed of our activities, goals and accomplishments in the area of fish culture and assessment on the Bulkley/Morice system. We are open to public tours year round and encourage people to come out and view the facility, see the successes of the Society, and learn more about the salmon resource in the Bulkley Valley.

Recommendations

We have had a successful year, as in previous years, despite a lack of adequate funding for basic operations and repair of core structures. There are some areas where we believe changes can be made that will be beneficial to our operation, the public and the salmon resource:

i) The outdoor rearing channel is in desperate need of repair and upgrading. The treated wood abutments are rotting and heaving and need to be replaced. As well, the earthen channel is very hard to clean and disinfect after the smolts are released, and prior to the new fry being transferred in. Bacteria carryover is a large concern.

ii) Assessment of returning coded-wire tagged Chinook would be greatly improved if we could get more accurate data from the in-river First Nation's and licensed angling food fisheries in the summer season. Each year thousands of Chinook are landed by participants involved in both of these fisheries on the lower Skeena and Bulkley Rivers. While local angler participation in the Coho fishery has been good, we are seeing less participation in the Chinook head recovery program. The data realized from this program are very relevant and provide information on stock timing and survival. We have noticed in the food fishery that the people in the communities have taken a real interest in learning more about salmon escapements.

iii) We will be raising over 55,000 Morice Chinook smolts per year with funding from the Pacific Salmon Commission. DFO has supported this initiative by allowing the use of half of our hatchery space for this initiative. Hopefully this will continue.

iv) Measures were taken in the past few years to reduce Coho exploitation and allow more spawners to reach the freshwater tributaries. Coho returns to many tributaries have shown up much stronger beginning in 1999 and carrying on through 2006, averaging close to 5,000 spawners in Toboggan Creek over the period. Each year more opportunities have been given for Coho harvest, especially in the ocean where large numbers of Coho were harvested in the saltwater sport fishery in 2007. Despite this, few CWT heads have been turned in by anglers and lodges participating in this ocean-based fishery. As well, losses of Coho through catch and release mortalities in all saltwater fisheries do not seem to be accounted for. In 2007 we saw the poorest Coho return to Toboggan Creek since 1998, at 2,630 spawners. Ocean productivity seems to be dropping while exploitation in saltwater is increasing. Meanwhile the recovery of CWT's remains very low in the ocean fishery and the net fishery will be regulated by a non-retention regulation in 2008, which will result in Coho mortalities being thrown overboard. This scenario does not bode well for understanding the limiting factors affecting Coho returns in the future. It would be of great benefit to improve the head recovery program for sport-caught salmon on the North Coast for 2008 and onward, as well as encouraging retention of badly damaged fish caught by anglers and commercial fishermen. Otherwise, these salmon will not show up in either the catch or the escapement.

These recommendations are very similar to past years. They are still the most important things that affect our long-term success, and will provide benefits to the resource and our communities.

Since this facility was constructed, and since the Toboggan Creek Salmon and Steelhead Enhancement Society took on the task of operating the hatchery, we have successfully reared and released 4,365,000 salmon and steelhead smolts and fry. Although exploitation has increased in recent years we continue to see reasonable returns of wild and hatchery-produced salmon to the Bulkley River and Toboggan Creek systems. The Coho counting fence, which we operate on Toboggan Creek, is allowing for a better understanding of Coho smolt to spawning survivals on interior systems in Northwestern B.C. As a result of the previous coded-wire tag recoveries from commercial operations from B.C. and Alaska, in the early to mid 1990's, it may now be evident what the targeted rate of exploitation should be. Catch reductions were initiated in the late 1990's, as a result of documentation of very high exploitation rates, and may need to be implemented again in the near future if ocean productivity continues to decline.

Our Society is very appreciative for the opportunity to be part of the Salmon Enhancement Program in northwestern B.C. We also appreciate the support we receive on a yearly basis from various people from the Community Involvement Division, the Resource Restoration Unit, and especially the Stock Assessment Division of the Department of Fisheries and Oceans. Also, financial support from DFO, and other various initiatives, has allowed us to continue with some of our salmon enhancement and assessment operations in recent years. Funding levels are a large concern for our Society, having had no increase in our base contract for over 16 years, and this issue will need to be positively addressed in the near future.

Our greatest support still comes from the general public. We continue to receive encouragement from the many people that stop by the hatchery to learn about the salmon resource, and we in turn attempt to raise awareness of the resource during the many tours we give each year. Going into our twenty-fourth season of operation we continue to get a wide range of students, both past and present, who express a sincere gratitude for the SEP and CEDP initiatives. They have been exposed to the needs and requirements of salmon stocks, and are now strong advocates for conservation, habitat protection and enhancement. This is a very rewarding aspect of SEP.

We continue to look forward to our involvement with the program in the future.