

2018 ANNUAL MANAGEMENT PLAN

CRYSTAL LAKE HATCHERY

Southern Southeast Regional Aquaculture Association

This plan remains in effect until superseded by the next year's annual management plan (AMP). The AMP serves as an instruction manual for hatchery operations and adult return management; it is incumbent upon Alaska Department of Fish and Game (ADF&G) and hatchery staff to share information with each other regularly for successful adherence to this plan. Anticipated departures from the plan should be communicated as soon as possible in the event an amendment is necessary. Unintended and unexpected changes should be disclosed immediately. The ADF&G private nonprofit (PNP) coordinator will advise as to whether an amendment, exception report, or other action is warranted.

1.0 Executive Summary

1.1 Introduction

Crystal Lake Hatchery (CLH) is operated by Southern Southeast Regional Aquaculture Association (SSRAA) under contract with ADF&G, Division of Sport Fish. The CLH is located 17.5 miles south of Petersburg, just off Mitkof Highway near the City of Petersburg's hydroelectric power plant. Crystal Lake, at an altitude of 1,300 feet, supplies water to the power plant. The water then passes to the hatchery before flowing into lower Crystal Creek. The City of Petersburg is responsible for reliably supplying the hatchery with water flows as described in their FERC license to operate.

The CLH has five king salmon projects:

Crystal Creek king salmon: This program provides adult king salmon returns to local sport and commercial fisheries in the Petersburg area, as well as providing Andrew Creek broodstock for the Crystal Creek, City Creek and Anita Bay king salmon programs. The production goal for this program is the release of 600,000 Andrew Creek stock king salmon smolt at Crystal Creek.

Anita Bay king salmon: This program provides adult king salmon returns to local sport and commercial fisheries in the Wrangell area. The production goal of this program is the release of 450,000 Andrew Creek stock king salmon smolt at Anita Bay.

Neets Bay king salmon: This program provides adult king salmon returns to local sport and commercial fisheries in the Ketchikan area, as well as a cost recovery opportunity for SSRAA in the Neets Bay terminal harvest area (THA). The production goal of this program is the release of 300,000 Chickamin River stock king salmon smolt at Neets Bay.

Port Saint Nicholas king salmon: This program provides adult king salmon returns to local sport and commercial fisheries in the Craig area, as well as a cost recovery opportunity for SSRAA in the Port Saint Nicholas terminal harvest area (THA). The production goal is to release 200,000 Chickamin River stock king salmon smolt at Port Saint Nicholas.

City Creek king salmon: This program will provide adult king salmon to the local sport and commercial fisheries in the Petersburg area. The production goal of this program is to release 200,000 Andrew Creek stock king salmon smolt.

The CLH also has a coho salmon program. The hatchery releases up to 200,000 coho salmon smolt annually into Crystal Creek.

1.2 *New this year (production, harvest management, culture techniques, etc.)*

In 2018, a king salmon release at Port Saint Nicholas will be initiated.

1.3 *New permits or permit amendments*

Fish transport permit (FTP) 18J-1004 was issued to Port Saint Nicholas Hatchery to allow Chickamin River stock king salmon transport from Crystal Lake Hatchery to Port Saint Nicholas for release.

1.4 *Expected Returns*

Species, Run	Release Location	Total Return	Common Property Harvest	Return to Hatchery	Broodstock Needed	Available for Cost Recovery
Coho salmon	Crystal Creek	6,260	5,300	960	150	810
King salmon	Crystal Creek	3,300	1,650	1,650	1,000	650
King salmon	Anita Bay	15,400	15,400	0	0	0
King salmon	Neets Bay	18,100	5,400	12,700	0	12,0

1.5 *Production Summary*

Program Name	Brood Year	Planned Release Date	Number to Release	Life Stage	Type of Mark, % Marked
Crystal Creek coho salmon	2016	5/2018	80,000	Smolt	CWT, 12.5%
Crystal Creek king salmon	2016	5/2018	600,000	Smolt	CWT, 10%
Anita Bay king salmon	2016	5/2018	450,000	Smolt	CWT, 10%
Neets Bay king salmon	2016	5/2018	300,000	Smolt	CWT, 10%
City Creek king salmon	2016	5/2018	110,000	Smolt	CWT, 20%
Port Saint Nicholas	2016	5/2018	220,000	Smolt	CWT, 10%

In 2018, CLH plans to take 200,000 coho salmon eggs and 2.5 million king salmon eggs. The CLH is a backup egg source of Andrew Creek stock king salmon eggs for both Northern Southeast Regional Aquaculture Association (NSRAA) and Douglas Island Pink and Chum, Inc. (DIPAC).

1.6 *Current Permitting*

CLH is operated by SSRAA under contract with ADF&G and not subject to a private non-profit hatchery permit. The *Statewide Stocking Policy for Recreational Fisheries* outlines the CLH program objectives and release numbers and locations. The current CLH operating plan capacity is 250,000 coho salmon eggs and four million king salmon eggs.

2.0 Fall Coho Salmon Production

2.1 *Program details*

The program was established to mitigate losses to Crystal Creek spawning habitat associated with operations of the Blind Slough Hydroelectric project, run by the City of Petersburg. In addition, this program provides adult coho salmon returns to local sport, personal use, and commercial fisheries in the Petersburg area. The releases also ensure a sustainable broodstock for future hatchery releases.

Eggs are collected from coho salmon adults returning to CLH each fall. Up to 200,000 yearling coho salmon smolt produced from the collected eggs are released each May into Crystal Creek.

The smolt are marked with a coded wire tag (CWT) and a clipped adipose fin at a rate of at least 10%. Tags are recovered at the rack and through port sampling performed by ADF&G.

2.2 *Egg Takes*

Program Name	Ancestral Stock	Egg Take Site	Primary or Alternate Source?	Current Year Egg Goal	Permitted Maximum
Crystal Creek coho salmon	Crystal Creek	CLH	Primary	200,000	250,000
Totals				200,000	250,000

2.3 *Broodstock capture method*

Coho salmon returning to CLH are hatchery-produced fish from Crystal Creek stock. Adult returns to CLH enter adult holding ponds through a fish ladder.

2.4 *Spawning*

Adult fish are dispatched with a blow to the head. Females are incision spawned into a bucket. Milt from two males is added to each bucket of eggs. An activator/extender solution is added to aid in fertilization. The buckets are then transported to the hatchery building and placed in incubator trays.

2.5 *Egg-take Schedule*

Egg takes occur in mid-October through early-December.

2.6 *Carcasses*

The number of carcasses generated from egg takes can be limited by the number of fish allowed into the holding pond. Carcasses will be given away to commercial fishermen for bait or transported to a local processor for disposal.

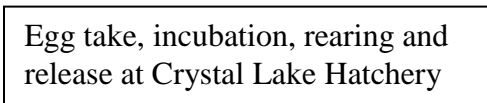
2.7 *Planned releases this calendar year of previous brood year's production*

Program Name	Brood Year	Release Date	Number to Release	Life Stage	Type of Mark, % Marked
Crystal Lake coho salmon	2016	5/18	80,000	smolt	CWT 12.5%

2.8 *Previous brood years that will remain in culture during the entire calendar year*

Program Name	Brood Year	Number Live (Jan. 1)	Life Stage	Type of Mark, % to Mark	Number to Release, Date
Crystal Lake coho salmon	2017	130,000	Eyed eggs	CWT @ 25%	120,000 5/2019

2.9 *Operational diagram*



2.10 *Fish transport permits*

FTP #	Egg take, transport, or release?	Transport From → To	Maximal #, Life Stage	Expires
08J-1013	Egg take & release	CLH	250,000 eggs 200,000 smolt	8/31/28

3.0 **King salmon**

3.1 *Program details*

CLH has five king salmon programs.

Crystal Creek king salmon: This program provides adult king salmon returns to local sport and commercial fisheries in the Petersburg area. The Crystal Creek release of Andrew Creek stock king salmon provides sustainable returns for production at CLH and Anita Bay. The annual production goal of 600,000 king salmon smolt is released into Crystal Creek at a target

weight of 20 grams. Smolt are marked with CWTs at a rate of 10%. Tags are recovered at the rack and through ADF&G port sampling efforts.

Anita Bay king salmon: This program provides adult king salmon returns to local sport and commercial fisheries in the Wrangell area. Each spring, 450,000 Andrew Creek stock king salmon smolt are transported to saltwater net pens in Anita Bay for short-term rearing and release. When extremely cold water at CLH is anticipated to limit growth, king salmon fry are transferred to NBH in October for interim freshwater rearing. NBH does not experience the same extreme cold-water conditions that CLH sometimes experiences, therefore warmer rearing water at NBH allows for better growth than would be possible at CLH in years of extremely cold water. The following spring, smolt are transported from NBH to net pens in Anita Bay for rearing and release. The saltwater net pens are positioned so the freshwater influence of several creeks at the upper end of the bay ensures proper imprinting. Smolt are marked with CWTs at a rate of 10%. Tags are recovered through ADF&G port sampling efforts.

Neets Bay king salmon: This program provides adult king salmon returns to local sport and commercial fisheries in the Ketchikan area and provides a cost recovery opportunity for SSRAA in the Neets Bay THA. Eggs are collected from hatchery-produced Chickamin River stock king salmon returning to Whitman Lake Hatchery (WLH). Approximately, 520,000 eyed eggs are shipped to CLH for incubation and freshwater rearing. In October, approximately 300,000 king salmon are transported to Neets Bay Hatchery (NBH) for over-winter freshwater rearing, short term saltwater rearing and release. Smolt are marked with CWT at a rate of 10%. Tags are recovered at the rack and through ADF&G port sampling efforts.

Port Saint Nicholas king salmon: This program provides adult king salmon returns to local sport and commercial fisheries in the Craig area, as well as a cost recovery opportunity for SSRAA in the Port Saint Nicholas terminal harvest area (THA). In April 200,000 smolt are transported to Port Saint Nicholas for short term saltwater rearing and release. Smolt are marked with CWT at a rate of 10%. Tags are recovered through ADF&G port sampling efforts.

City Creek king salmon: This program will provide adult king salmon to the sport and commercial fisheries in the Petersburg area. The intent of the program is to provide diversification to the areas sport harvest opportunities and to evaluate survival rates from a saltwater netpen release. It is expected that smolt released from a saltwater netpen will survive at a much higher rate than the fish released directly from CLH which suffers from extended regimes of cold water. In April, up to 200,000 smolt will be transported from CLH to the City Creek net pen site for rearing, imprinting and release in late May. Smolt will be marked with CWTs at a minimum rate of 20% or 30,000 smolt. Tags will be recovered through ADF&G port sampling efforts.

3.2 *Egg Takes*

Program Name	Ancestral Stock	Egg Take Site	Primary or Alternate Source?	Current Year Egg Goal	Permitted Maximum
Crystal Creek king salmon	Andrew Creek	CLH	Primary	1,000,000	3,000,000
Anita Bay king salmon	Andrew Creek	CLH	Primary	600,000	3,000,000
City Creek king salmon	Andrew Creek	CLH	Primary	150,000	3,000,000
Crystal Creek, Anita Bay, and City Creek	Andrew Creek	Macaulay Salmon Hatchery	Alternate	0	1,400,000
Crystal Creek, Anita Bay, and City Creek	Andrew Creek	Medvejie Creek Hatchery	Alternate	0	1,000,000
Crystal Creek, Anita Bay, and City Creek	Andrew Creek	Hidden Falls Hatchery	Alternate	0	1,000,000
Neets Bay king salmon	Chickamin River	WLH	Primary	550,000	1,000,000
Port Saint Nicholas king salmon	Chickamin River	WLH	Primary	250,000	250,000
Totals				2,500,000	4,000,000

3.3 *Broodstock capture method*

Broodstock for the Crystal Creek, City Creek, and Anita Bay king salmon programs are collected at CLH. King salmon returning to CLH are Andrew Creek stock. Adult returns enter holding ponds through a fish ladder.

Broodstock for the Neets Bay and Port St. Nicholas king salmon project are collected at WLH. King salmon returning to WLH are an enhanced run of Chickamin River stock. Adults enter holding ponds through a fish ladder.

3.4 *Spawning*

Eggs for the Crystal Creek and Anita Bay king salmon programs are collected at CLH. Adult fish are dispatched with a blow to the head. Females are incision spawned into a bucket. Milt from two males is added to each bucket of eggs. An activator/extender solution is added to aid in fertilization. The buckets

of eggs are immediately transported to the hatchery building and placed in incubator trays. Eggs are disinfected with iodophor. Family tracking is used to control bacterial kidney disease.

Eggs for the Neets Bay and Port Saint Nicholas king salmon projects are collected at WLH. The WLH uses a dry method of spawning where male and female gametes are mixed in a bucket. Eggs are rinsed and then water hardened for one hour in an iodophor bath. Family tracking is used to control bacterial kidney disease.

3.5 *Egg-take schedule*

King salmon egg takes at CLH and WLH occur from early-August to early-September.

3.6 *Carcass disposal*

The number of carcasses generated from egg takes can be limited by the number of fish allowed into the holding pond. Carcasses will be given away to commercial fishermen for bait or transported to a local processor for disposal.

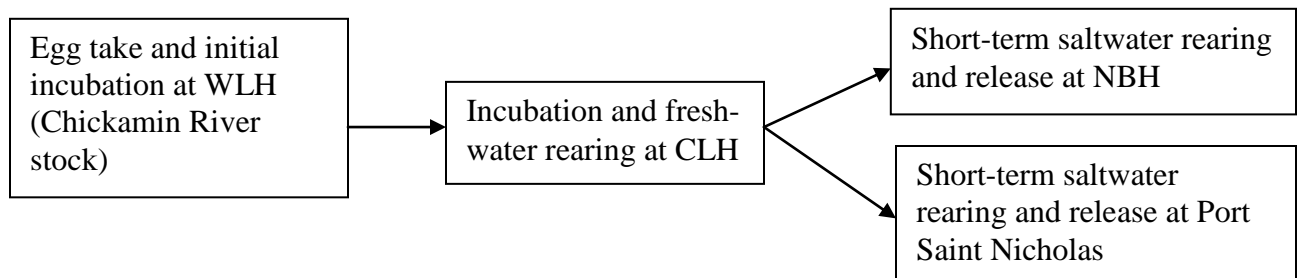
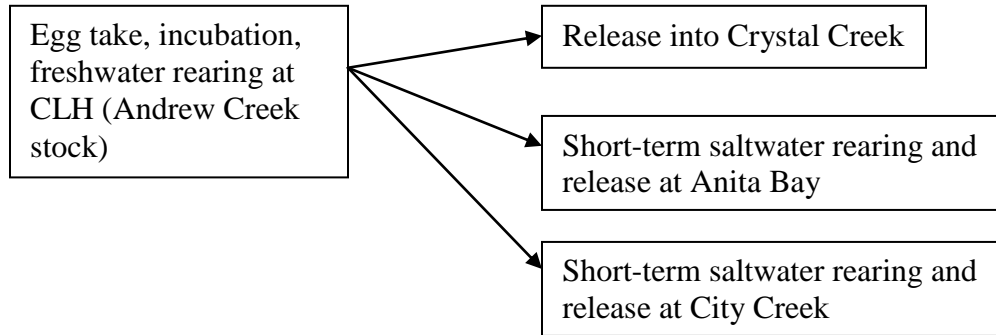
3.7 *Planned releases this calendar year of previous brood year's production*

Program Name	Brood Year	Planned Release Date	Number to Release	Life Stage	Type of Mark, Percent Marked
Crystal Creek king salmon	2016	5/2018	600,000	Smolt	CWT, 10%
Anita Bay king salmon	2016	5/2018	450,000	Smolt	CWT, 10%
Neets Bay king salmon	2016	5/2018	300,000	Smolt	CWT, 10%
Port Saint Nicholas	2016	5/2018	220,000	smolt	CWT, 10%
City Creek king salmon	2016	5/2018	110,000	smolt	CWT, 20%

3.8 *Previous brood years that will remain in culture during the entire calendar year*

Program Name	Brood Year	Number Live (January 1)	Life Stage	Type of Mark, Percent to Mark	Number to Release, Date
Crystal Creek king salmon	2017	650,000	Sac fry	CWT, 10%	600,000,5/2019
Anita Bay king salmon	2017	500,000	Sac fry	CWT, 10%	450,000,5/2019
Neets Bay king salmon	2017	310,000	Sac fry	CWT, 10%	300,000,5/2019
Port Saint Nicholas king salmon	2017	210,000	Sac fry	CWT, 10%	200,000,5/2019
City Creek king salmon	2017	130,000	Sac fry	CWT, 20%	110,000,5/2019

3.9 *Operational diagram*



3.10 *Fish transport permits*

Andrew Creek stock.

FTP Number	Egg take, transport, or release?	Transfer From To	Maximal Number, Life Stage	Expires
03J-1006	Egg take, release	CLH to Crystal Creek	3,000,000 eggs	6/30/27
08J-1021	Egg take, transport	Macaulay to CLH	1,400,000 eggs	12/31/23
01J-1007	Egg take, transport	Medveje to CLH	1,000,000 eggs	12/31/21
01J-1002	Transport, release	CLH to Anita Bay	500,000 presmolt	5/31/28
08J-1018	Transport, release	CLH to NBH to Anita Bay	500,000 presmolt, 450,000 smolt release	12/31/22
12J-1020	Egg take, transport	Hidden Falls to CLH	1,000,000 eggs	8/14/22
13J-1003	Transport, release	CLH to City Creek	200,000 smolt	2/28/28
14J-1026	Transport	CLH to WLH to CLH	1,500,000 eggs	8/30/24

Chickamin River stock

FTP Number	Egg take, transport, or release?	Transfer From To	Maximal Number, Life Stage	Expires
14J-1015	Transport, release	WLH to CLH to Neets Bay	520,000 fry	4/30/24
15J-1021 ¹	Egg take, transport, release	WLH to CLH to NBH	1,000,000 eggs	6/30/25
18J-1004 ²	Transport, release	CLH to PSN	250,000 smolt	12/31/20

¹ Whitman Lake Hatchery fish transport permit.

² Port Saint Nicholas Hatchery fish transport permit.

4.0 Harvest Management

4.1 *Harvest Areas*

Terminal Harvest Areas

5 AAC 33.370. District 1: Neets Bay Hatchery Salmon Management Plan.

5 AAC 33.381. District 6: Wrangell Narrow-Blind Slough Terminal Harvest Area Management Plan.

5 AAC 33.383. District 7: Anita Bay Terminal Harvest Area Management Plan

Special Harvest Areas

5 AAC 40.043. Neets Bay Special Harvest Area - Behm Canal.

4.2 *Projected return this year*

Species, Run	Release Location	Total Return	Common Property Harvest	Return to Hatchery	Broodstock Needed	Available for Cost Recovery
Coho salmon	Crystal Creek	9,300	8,700		150	400
King salmon	Crystal Creek	3,600	1,800	1,800	1,000	800
King salmon	Anita Bay	16,500	16,500	0	0	0
King salmon	Neets Bay	17,500	5,250	12,500	0	12,500

4.3 *Common property fisheries management*

Commercial Fisheries

Coho salmon

Coho salmon returning to CLH are harvested by the commercial troll fishery during the spring and summer seasons after June 1st as well as the commercial drift gillnet fishery in Central Southeast Alaska waters. Terminal commercial gillnet fisheries have not occurred since 1996 and are not expected to occur unless the return is very large.

King salmon

5 AAC 33.381. DISTRICT 6: WRANGELL NARROW-BLIND SLOUGH TERMINAL HARVEST AREA MANAGEMENT PLAN.

5 AAC 33.383. District 7: ANITA BAY TERMINAL HARVEST AREA MANAGEMENT PLAN provides the frame work for establishing common property seine, gillnet and troll fisheries within the THA. The fishing ratio between seine and gillnet fleets and fishing start dates are determined by the Alaska Board of Fisheries. SSRAA, in conjunction with ADF&G, produces a fishing schedule every spring.

Personal Use Fishery

A personal use coho salmon fishery occurs annually within the Wrangell Narrows-Blind Slough THA. The fishery generally starts mid-August, is restricted to fishing on Fridays, and is open for four to five consecutive Fridays. The possession and annual limit is 25 coho salmon per household. Personal use fishermen must obtain a permit and must have a valid sport fishing license.

Sport fisheries

Coho salmon

The sport bag and possession limits for coho salmon will be the same as the Southeast Alaska regional limits, 6 coho salmon per day, and 12 in possession. Snagging of coho salmon is not permitted during the summer in Blind Slough.

King salmon

During 2018, the retention of king salmon is prohibited in most of marine waters within the Petersburg/Wrangell area from April 1 through June 14, 2018. On June 1, 2018 the sport bag and possession limits for king salmon in the Wrangell-Blind Slough THA will be established by emergency order (EO) for fish 28 inches or greater, and fish less than 28 inches, through July 31,

2018 in accordance with the Blind Slough/Wrangell Narrows King Salmon Management Plan. After this period, king salmon regulations for the THA will reflect the most current regional king salmon regulations. The freshwaters of Blind Slough will remain open to king salmon harvest year-round, as described in regulation, unless more restrictive action is necessary to achieve broodstock goals.

On June 1, 2018 the sport bag and possession limits for king salmon in the Anita Bay THA will be established by EO through July 31, 2018. After this period, king salmon regulations for the THA will reflect the most current regional king salmon regulations.

On June 1, 2018 the sport bag and possession limit for king salmon in vicinity of the City Creek release site will be established by EO through July 31, 2018. After this period, king salmon regulations for the THA will reflect the most current regional king salmon regulations.

Around May 1, 2018 the sport bag and possession limits for king salmon in the Neets Bay THA will be established by EO through July 31, 2018. After this period, king salmon regulations will reflect the most current regional king salmon regulations.

4.4 *Cost-recovery harvest management*

SSRAA's long-term goal is to have 75% of all fish produced harvested in common property fisheries, with the remaining 25% harvested by SSRAA to cover operating expenses. We have exceeded this goal for the past several years, in large part because of better than average survival to adult of SSRAA chum releases and perhaps even more importantly the increased value of salmon in the marketplace. Though this remains our goal, we annually adjust our cost-recovery goal related to operational and capital expenses even if it exceeds this goal, or if it falls short.

APPROVAL

Recommendation for Approval: Crystal Lake Hatchery Annual Management Plan, 2018

Approved via email, 5/30/2018

David Landis, SSRAA

Approved via email, 5/25/2018

Patrick Fowler, Area Management Biologist, Division of Sport Fish

Approved via email, 5/16/2018

Try Thynes, Area Management Biologist, Division of Commercial Fisheries

Approved via email, 5/24/2018

Judy Lum, Regional Supervisor, Division of Sport Fish

Approved via email, 5/30/2018

Lowell Fair, Regional Supervisor, Division of Commercial Fisheries

Approved via email, 5/24/2018

Flip Pryor, Regional Resource Development Biologist, Division of Commercial Fisheries

Approved via email, 5/31/2018

Lorraine Vercessi, PNP Hatchery Program Coordinator, Division of Commercial Fisheries

Approval:

The 2018 Crystal Lake Hatchery Annual Management Plan is hereby approved:

Approved via email, 6/5/2018

Tom Taube, Deputy Director, Division of Sport Fish

Approved via email, 6/5/2018

Peter Bangs, Deputy Director, Division of Commercial Fisheries