

**2021 Annual Management Plan**  
**Sheldon Jackson Hatchery**  
Sitka Sound Science Center

This Annual Management Plan (AMP) plan is prepared to fulfill the requirements of 5 AAC 40.840. This plan must organize and guide the hatchery's operations, for each calendar year, regarding production goals, broodstock development, and harvest management of hatchery returns. Egg take through release details are included in planning for succeeding calendar years. Inseason assessments and project alterations by Sitka Sound Science Center (SSSC) or Alaska Department of Fish and Game (ADF&G) may result in changes to this AMP in order to reach or maintain program objectives. SSSC will notify the ADF&G private nonprofit (PNP) hatchery program coordinator in a timely manner of any departure from the AMP. The ADF&G PNP coordinator will advise as to whether an amendment, exception report, or other action is warranted. No variation or deviation will be implemented until an AMP amendment has been approved or waived by both the department and SSSC. This policy applies to all hatchery operations covered under the AMP.

## **1.0 EXECUTIVE SUMMARY**

### *1.1 Background*

Sheldon Jackson Hatchery (SJH) is located at the Sitka Sound Science Center (SSSC), 834 Lincoln Street, Sitka, Alaska. The hatchery was an integral part of the Environmental Science Program at Sheldon Jackson College (SJC) until academic programs abruptly ceased in July 2007. Between 2007 and 2010, SSSC continued hatchery programs under an agreement with the SJC Trustees. SSSC is a 501(c)(3) nonprofit corporation established by former SJC faculty. In April 2011, SSSC was issued PNP Hatchery Permit #45, replacing the SJC PNP Hatchery Permit #3.

The intent of SSSC is to maintain fish culture operations at SJH to provide other institutions, such as University of Alaska Fairbanks, University of Alaska–Sitka, and secondary schools, with a venue for training students in fisheries and hatchery science, while at the same time contributing salmon to common property fisheries of Sitka Sound and Southeast Alaska. Additionally, SJH will also serve as a platform for fisheries and mariculture research, as well as community and visitor outreach and education. SSSC, under an agreement with Northern Southeast Regional Aquaculture Association (NSRAA), is providing on-the-job training for seasonal hatchery technicians.

Sheldon Jackson Hatchery uses Indian River as its freshwater source and Crescent Bay as the special harvest area (SHA) for cost-recovery harvest of returning salmon (Figure 1). Projected returns for the 2021 season are listed in Table 1. Historical production for Chinook, coho, chum, and pink salmon are presented in tables 2 through 5.

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

1. SSSC will continue to improve site infrastructure, water quality, fish culture quality, and adult harvesting equipment.
2. Rear half of the 2.9 million chum to 4.0 gram release size.

1.3 *New permits or permit amendments needed this year*

SSSC needs to renew all existing SJH fish transport permits which are expiring 12/31/2021.

1.4 *Expected returns*

Species	Return Site	Total return	Common Property Harvest	Return to Release Site	Broodstock	Available Cost Recovery
Pink salmon <sup>1</sup>	SJH	185,250	83,362	101,888	5,000	96,888
Chum salmon <sup>1</sup>	SJH	49,495	19,498	29,997	3,600	26,397
Chum salmon <sup>2</sup>	Deep Inlet	76,463	60,827	15,636	0	15,636
Coho salmon <sup>1</sup>	SJH	10,065	2,013	8,052	150	7,902
Chinook salmon <sup>3</sup>	SJH	2,400	1,400	1,000	0	1,000

<sup>1</sup> SJ Hatchery, Crescent Bay

<sup>2</sup> Deep Inlet remote releases reared by NSRAA

<sup>3</sup> Releases by NSRAA, Medvejie Hatchery.

1.5 *Production summary (releases this calendar year)*

Program Name	Brood Year	Release Date	Number to Release	Type of Mark % Marked
Pink salmon	2020	May 1, 2021	2,901,782 Crescent Bay	100% otolith mark
Chum salmon	2020	May 1, 2021	2,978,000,000 Crescent Bay	100% otolith mark
Chum salmon	2020	May 1, 2021	8,200,000,000 Deep Inlet	100% otolith mark
Coho salmon	2019	May 15, 2021	235,413 Crescent Bay	10% CWT /100% otolith mark

1.6 *Egg takes*

Species	Permitted Maximum	Egg-take goal	Females needed
Pink salmon <sup>1</sup>	3,000,000	3,000,000	2,250
Chum salmon (SJ Hatchery) <sup>2</sup>	3,000,000	3,000,000	1,565
Chum salmon (Deep Inlet) <sup>2,3</sup>	9,000,000	9,000,000	4,696
Coho salmon <sup>1</sup>	250,000	250,000	90

<sup>1</sup> Pink and coho salmon brood may be supplemented from Indian River.

<sup>2</sup> In the event hatchery returns are not adequate to meet broodstock needs, chum salmon brood may be supplemented from Medveje Creek Hatchery returns, if available.

<sup>3</sup> Broodstock and eggs may be collected and held at MCH before transport to Deep Inlet.

1.7 *Current permitting*

The SJH permit allows 12 million chum salmon green eggs (with a cooperative agreement with NSRAA), 3 million pink salmon green eggs, and 250,000 coho salmon green eggs.

**2.0 SUMMER PINK SALMON**

2.1 *Egg takes*

Program Name	Ancestral Stock	Egg-take Site Statistical Area	Primary or Alternative Source?	Current Year Goal	Permitted Maximum
SJH pink salmon	Indian River	113-36	Primary	3 Million	3 Million
SJH pink salmon	Indian River	Indian River	Alternative	0	3 Million
Total				3 Million	3 Million

2.2 *Broodstock capture method*

Pink salmon returning to SJH Special Harvest Area (SHA) (statistical area 113-36) are hatchery-produced from Indian River ancestral stock. Pink salmon will be captured at the hatchery weir, held in concrete raceways for maturation, and spawned in the adjacent building.

### 2.3 *Spawning*

Fish are spawned by a routine dry-spawning method with a 0.7% saline solution for activation. The spawning ratio will be 5 females to 5 males per bucket. Buckets of fertilized eggs are rinsed prior to being loaded into R-30 upwelling incubators.

### 2.4 *Egg-take schedule*

Pink salmon eggs are usually taken after the third week of August through the last week of September. Fish are spawned as they ripen.

### 2.5 *Carcass disposal*

Carcasses are either sold as cost recovery or donated as bait. Since 2011, all carcasses and surplus fish have sold.

### 2.6 *Planned releases this calendar year of previous brood years' production*

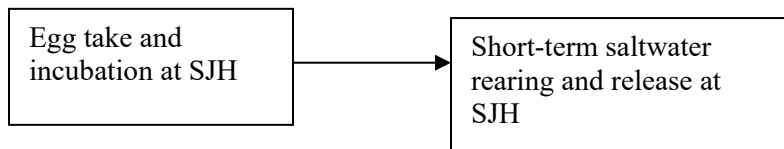
Pink salmon will be ponded directly into net pens for 60 to 80 days of saltwater rearing prior to release in late April or early May. Target release weight is 2.0 grams.

<b>Program Name</b>	<b>Brood Year</b>	<b>Release Date</b>	<b>Number to Release</b>	<b>Type of Mark % Marked</b>
SJH pink salmon	2020	May 2021	2,800,000	Otolith mark, 100%

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

None.

### 2.8 *Operational diagram*



### 2.9 *Program details*

All the pink salmon released from SJH are otolith dry marked. Evaluation of survival and fishery contribution are estimated based on total cost-recovery harvest of pink salmon within the SJH SHA, total escapement to the hatchery, and an estimate of interception in the common property fisheries in Eastern Channel.

The production goal is to achieve 90% or greater freshwater survival. Target release weight is 2.0 grams minimum.

2.10 *Fish transport permits*

Species	FTP #	Egg take, transfer, or release	From/to	Maximum #	Expires
Pink salmon	11J-1007	Egg take/release	SJH–SJH	3,000,000 eggs	12/31/21
Pink salmon	11J-1013	Egg take/release	Indian River–SJH	3,000,000 eggs	12/31/21

**3.0 CHUM SALMON**

3.1 *Egg takes*

Program Name	Ancestral Stock	Egg-take Site Stat Area	Primary or Alternate Source?	Current Year Goal	Permitted Maximum
SJH chum salmon	Nakwasina R	113-36	Primary	3 Million	3 Million
MCH chum salmon	Nakwasina R	113-35	Primary	9 Million	9 Million
Total				12 Million	12 Million

3.2 *Broodstock capture method*

Chum salmon will be captured at SJH. Chum salmon returning to SJH are hatchery-produced fish. Sheldon Jackson Hatchery staff and volunteers will take as many as 3 million eggs at SJH. In the event SJH returns are not adequate to meet broodstock needs, chum salmon brood may be supplemented from MCH returns, if available. The SJH manager will keep the MCH manager informed of the status of broodstock collection and achieving egg-take goals. Both SJH and MCH act as a backup chum salmon egg source for each other.

3.3 *Spawning*

Fish are spawned as they ripen by a routine dry-spawning method. If broodstock are not available at SJH, staff and volunteers will assist the staff of MCH to take a maximum of 12 million chum salmon eggs for SJH. Up to 3 million of these eggs may be transported as gametes, fertilized, incubated, and reared at SJH. The remaining eggs, a maximum of 9 million, will be incubated at MCH and then transported to Deep Inlet as fry for saltwater rearing and release.

3.4 *Egg-take schedule*

Chum salmon eggs may not be collected until August 21. This date is necessary to prevent propagation of the Hidden Falls Hatchery ancestral stock chum salmon on western Baranof Island.

3.5 *Carcass disposal*

Carcasses are either sold as cost recovery or donated as bait.

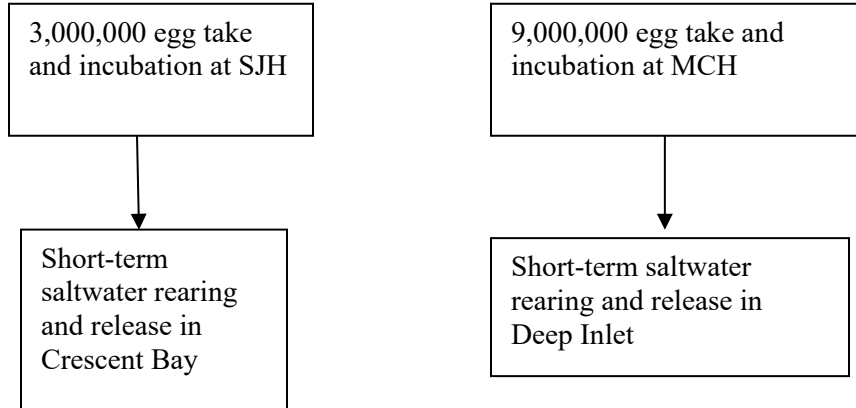
### 3.6 *Planned releases*

<b>Program Name</b>	<b>Brood Year</b>	<b>Release Date</b>	<b>Number to Release/Location of Release</b>	<b>Type of Mark/% Marked</b>
SJH chum salmon	2020	April 2021	2,900,000 Crescent Bay	Otolith mark 100%
MCIF chum salmon	2020	April 2021	8,200,000 Deep Inlet	Otolith mark 100%
Total			11,100,000	

### 3.7 *Previous brood years that will remain in culture*

None.

### 3.8 *Operational diagram for chum salmon*



### 3.9 *Program Details*

Beginning with brood year 2005 (BY05), all SJH chum salmon eggs have been thermal/dry otolith-marked. Evaluation of total adult return will be based on the harvest of chum salmon in the SJH SHA, enumeration of returns to the hatchery, and an estimate of common property harvest in fisheries conducted in the Eastern Channel area that season. The production goal is freshwater survival of 90% or higher.

Chum salmon incubated at SJH will be ponded directly to marine net pens for short-term rearing and release at Crescent Bay, in late-April to early-May, with a target release size of 2.0 for half of the population and 4.0 grams release size for the remaining half. Chum salmon incubated at MCH are transported, reared, and released at Deep Inlet, in May, with a target release size of 2 grams.

### 3.10 Fish transport permits

Species	FTP #	Egg take, transfer, or release	From/to	Maximum #	Expires
Chum salmon	11J-1008 <sup>a</sup>	Egg take/release	SJH–Crescent Bay	3,000,000 eggs	12/31/21
Chum salmon	11J-1009 <sup>b</sup>	Transfer, release	MCH–Deep Inlet	Resultant fry from 9,000,000 eggs	12/31/21
Chum salmon	11J-1010 <sup>b</sup>	Egg take/transfer/release	MCH–SJH-Crescent Bay	3,000,000 eggs	12/31/21
Chum salmon	11J-1011 <sup>b</sup>	Egg take	MCH	9,000,000 eggs	12/31/21
Chum salmon	11J-1012 <sup>b</sup>	Egg take/transfer/release	SJH–Deep Inlet	9,000,000 eggs	12/31/21
Chum salmon	11J-1016 <sup>b,c</sup>	Egg take/transfer	SJH–MCH	9,000,000 eggs	12/31/21

<sup>a</sup> Indian River ancestral stock.

<sup>b</sup> Nakwasina River ancestral stock.

<sup>c</sup> Medvejie Creek Hatchery FTP.

## 4.0 FALL COHO SALMON

### 4.1 Egg takes

Program Name	Ancestral Stock(s)	Egg-take Site Stat Area	Primary or Alternative Source?	Current Year Goal	Permitted Maximum
SJH coho salmon	Indian River	113-36	Primary	250,000	250,000
SJH coho salmon	Indian River	Indian River	Alternative	0	250,000
Total				250,000	250,000

It is expected that SJH coho salmon returns to the weir will meet broodstock needs. If additional broodstock is required, SJH personnel will work with ADF&G staff under conditions of FTP 11J-1015 to supplement coho salmon broodstock from Indian River using the sliding-scale listed below:

#### Coho Salmon Egg-take Sliding-Scale

There is no formal escapement goal for Indian River. The desired target escapement is 830 fish, with a minimum target of 208 fish. No coho salmon will be removed from Indian River if 50 or fewer adult coho salmon are counted. No more than half the number of adult coho salmon, in excess of 50, may be taken for broodstock at any time, with a maximum removal of 125 coho salmon. For example, if the instream count is 110 coho salmon, the hatchery may remove  $(110-50)/2 = 30$  coho salmon. Coho salmon adults may be captured by gillnet or beach seine. Adult escapement counts will be reported to the Sitka area sport fish management biologist prior to removal for the hatchery.

Broodstock will be screened for bacterial kidney disease (BKD) in cooperation with ADF&G Fish

Pathology Laboratory. BKD-positive fish will be discarded.

#### 4.2 *Broodstock capture method*

Coho salmon returning to SJH are hatchery-produced Indian River stock. Coho salmon will be captured at the hatchery weir, held in adult raceways for maturation, and spawned in the adjacent building.

#### 4.3 *Spawning*

Fish are spawned by a routine dry-spawning method utilizing a 0.7% saline solution for activation. The spawning ratio is one female to one male per spawning tray. Family tracking for BKD will take place for all female coho salmon spawned.

#### 4.4 *Egg-take schedule*

Coho salmon eggs are usually taken after the third week of October until the last week of November.

#### 4.5 *Carcass disposal*

Carcasses are either sold as cost recovery or donated as bait. In recent years, processors have been shut down and carcasses have been donated to Fortress of the Bears, the raptor center, and local gardeners.

#### 4.6 *Planned releases this calendar year of previous brood years' production*

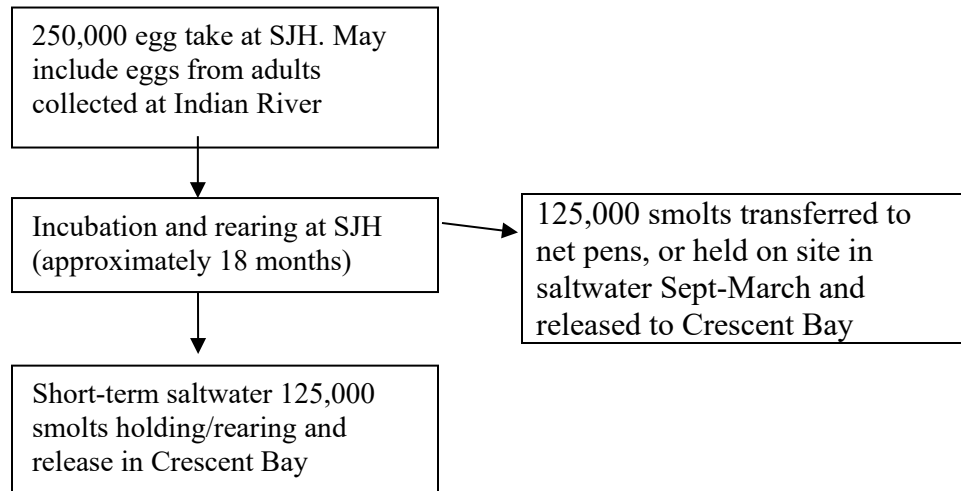
SJH coho salmon will be short-term reared in saltwater net pens or on site in tanks for approximately 21 days. Approximately **117,000** BY19 coho salmon smolt, averaging 15 grams, will be released in Crescent Bay in mid-March, and the remaining **118,000** BY18 coho will be released in Crescent Bay in May at 18 grams.

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

Approximately **170,000** BY19 coho salmon fry are currently being incubated in fresh water and will be released in May 2022.



4.8 *Operational diagram for coho salmon*



4.9 *Program details*

Coho salmon are ponded in April or May into small start-tanks or troughs, and then transferred to 13’ diameter fiberglass tanks for rearing.

In December, SJH staff will coded wire tag (CWT) a minimum of 10% of the coho salmon smolt. Target size for tagging is 10 to 12 grams. Tags will be recovered from commercial and sport fisheries through the ADF&G port sampling and creel survey programs.

Target release weight is a minimum of 18 grams in mid to late May of the following year.

4.10 *Fish transport permits*

Species	FTP #	Egg take, transfer, or release	From/to	Maximum #	Expires
Coho salmon	11J-1014	Egg take/release	SJH–Crescent Bay	250,000 eggs	12/31/21
Coho salmon	11J-1015	Egg take/transfer/release	Indian River–SJH–Crescent Bay	250,000 eggs	12/31/21

## 5.0 HARVEST MANAGEMENT

### Projected return this year

Species	Return Site	Total return	Common Property Harvest	Return to Hatchery	Broodstock	Available Cost Recovery
Pink salmon <sup>1</sup>	SJH	185,250	83,362	101,888	5,000	96,888
Chum salmon <sup>1</sup>	SJH	49,495	19,498	29,997	3,600	26,397
Chum salmon <sup>2</sup>	Deep Inlet	76,463	60,827	15,636	0	15,636
Coho salmon <sup>1</sup>	SJH	10,065	2,013	8,052	150	7,902
Chinook salmon <sup>3</sup>	SJH	2,400	1,400	1,000	0	1,000

<sup>1</sup> SJ Hatchery, Crescent Bay

<sup>2</sup> Deep Inlet remote releases reared by NSRAA

<sup>3</sup> Releases by NSRAA, Medvejie Hatchery.

### 5.1 *SJH SHAs*

The SJH SHA for pink, chum, and king salmon is defined in 5 AAC 40.030 as all waters of Crescent Bay and Eastern Anchorage, enclosed by a line beginning from the northernmost end of the John O'Connell Bridge to the southernmost end of the bridge to the northeastern most tips of Aleutski Island, Turning Island, Kutkan Island, Morne Island, to the Twin Islands Light, to a point on the Baranof Island shore at 57°02.68'N lat, 135°18.90'W long. In 2009, the Alaska Board of Fisheries modified the SHA for pink, chum, coho, and king salmon to remove the area around the mouth of Indian River (113-41-0190) to protect escapements of wild fish returning to the river.

The SJH SHA for coho salmon is defined as all waters enclosed by a line from the southeast corner of the Crescent Harbor breakwater (57°02'58"N lat, 135°19'16"W long) to a point on the beach approximately 150 yards southeast of the hatchery stream outlet (57°02'58"N lat, 135°19'16"W long). These areas are both shown in Figure 1.

There has been an increased number coho that have escaped common property fisheries, in 2019 and 2020 especially, while still contributing to common property seine, gillnet, troll, sport and personal use fisheries (see table below). It will benefit SSSC to use a gillnet, which is legal gear per 5AAC 40.030(c), for cost recovery because the fish caught at sea are less blushed than fish in the raceway, resulting in higher price per pound. However, the SJH SHA for coho 5 AAC 40.030(2) is too small for a gillnet. In case large numbers of coho escape common property fisheries and return to SJH again this year, SSSC would like to seek expansion of the coho SHA by EO, per 5 AAC 40.005(e), to allow for harvest of these hatchery stocks. SJH would not seek to expand the coho SHA beyond the SHA for pink, chum, and Chinook, defined in 5 AAC 40.030(1), which was modified in 2009 to protect escapements of wild fish returning to Indian River.

SJH coho salmon contribution to common property and cost recovery fisheries and number of brood during 2010-2020.

Return year	Common Property (CP)						Cost recovery (CR)	Brood	Total	Percent CR
	Seine	Gillnet	Troll	Sport	Personal use	Total CP				
2010	0	0	425	27	0	452	2	94	548	0.4%
2011	0	0	183	26	0	209	0	389	598	0
2013	72	15	496	42	0	625	0	148	773	0
2014	192	37	8,458	276	125	9,088	222	512	9,822	2.3%
2016	27	14	727	0	0	768	1	56	825	0.1%
2017	35	101	1,404	145	400	2,085	39	175	2,299	1.7%
2018	0	1,352	544	263	0	2,159	26	151	2,336	1.1%
2019	138	163	6,569	354	86	7,310	1,074	519	8,903	12.1%
2020	190	175	847	270	112	1,594	1,796	199	3,589	50.0%

## 5.2 Cost-Recovery Harvest Management

Pink salmon cost-recovery harvest is planned based on projected SJH returns. Approximately 5,000 pink salmon broodstock are needed to meet the egg-take goal of 3 million eggs. The 10-year average escapement index for pink salmon returning to Indian River is 115,600 fish. SJH did not conduct cost-recovery harvests during 2002–2005 but did conduct a cost-recovery harvest of surplus pink and chum salmon during 2006–2010. In 2005, this trend caused the department to reevaluate the SHA boundaries to allow common property harvest of surplus Indian River pink salmon, while protecting SJH broodstock and cost-recovery harvesting opportunity.

Projected chum salmon returns from SJH releases are based on recent marine survival rates. SJH chum salmon returning to Deep Inlet Terminal Harvest Area (THA) are based upon NSRAA chum salmon forecasts. Of the chum salmon returning to SJH, approximately 65% will likely be intercepted in common property fisheries in the Sitka Sound area. The egg-take goal of 3 million chum salmon eggs requires approximately 3,000 adult chum salmon for broodstock. The remaining chum salmon will be harvested for cost recovery. Surplus hatchery chum salmon will be harvested to avoid the straying of hatchery-produced chum salmon into natural river systems.

In 2021, SJH is expecting around 7,000 retuning adult coho salmon to the hatchery. The egg-take goal of 250,000 requires approximately 150 adults for broodstock. It is anticipated that returns to the hatchery will be sufficient to provide broodstock.

In 2021, SJH is expecting 2,400 Andrew Creek stock Chinook from Medvejie Hatchery to return to the hatchery. If fish do return, they will be utilized for cost-recovery harvest. Harvest will occur either during the initial pink salmon cost recovery seine fishery in mid-July or from the adult raceways at SJH.

Silver Bay Seafoods and SSSC have a long-term agreement for purchase of SJH adult returns, which includes harvest vessels. SJH plans to conduct aggressive cost-recovery harvests within the SHA using purse seiners provided by Silver Bay Seafoods. The barrier net that has been used in

recent years which ran perpendicular to the beach to assist with cost recovery harvest will not be used this year as the department believes its use inhibits the movement of wild stock pink salmon between the hatchery and the river. Cost-recovery harvest will occur from the adult raceway complex following the purse seine harvest.

SSSC will be working closely with ADF&G Commercial Fisheries area management biologists to effectively manage cost recovery fisheries within the SHA. However, in the event that the facility cannot conduct cost recovery fishing and a surplus to escapement and broodstock occurs, the department may open portions of the SHA for common property harvest of surplus pink and chum salmon. The department will advise hatchery staff of aerial survey counts in season when they are available and will coordinate any openings to allow the hatchery opportunity to obtain necessary broodstock and carry out planned cost recovery within the SHA.

### 5.3 *Common Property Fisheries Management*

SJH coho and chum salmon returns are subject to offshore and terminal area commercial troll and sport fisheries during the spring and summer seasons. SJH pink and chum salmon returns are subject to harvest in the Sitka Sound purse seine fishery from mid-July through August. SJH returns are harvested in the Deep Inlet THA troll, gillnet and seine fisheries, in NSRAA cost-recovery fisheries in Eastern Channel and Deep Inlet, and in terminal area sport fisheries. Common property fisheries can be expected to harvest around 45% of SJH-produced salmon.

The department may open waters adjacent to the SJH SHA to common property purse seining to harvest surplus Indian River pink salmon returns. SJH will consult with the department manager if broodstock needs are not going to be met. Depending on circumstances the department may modify wild stock openings to limit harvest of hatchery-produced fish.

Sport fisheries will be managed as described in regional codified regulations for those waters described under the SJH SHAs. The department may use emergency order authority to address issues inseason.

In consultation with the local Division of Sport Fish area management biologist, a small area directly off the hatchery, at the bottom of the earthen fish ladder, may be closed to sport fishing to protect broodstock, if necessary. This area will be posted with signs specifying a “broodstock protection zone.”

## **6.0 HATCHERY STRAY MONITORING OF INDIAN RIVER**

SJH uses Indian River stock pink and coho salmon. Pink salmon production began in 1979 and coho salmon production began in 1975. Due to the close proximity of SJH and Indian River and the fact that SJH uses Indian River as a water source, there is likely intermingling between Indian River and hatchery returns.

*Pink Salmon* – In 2020, approximately 2.8 million BY19 pink salmon were released from SJH with the otolith mark 4,1H. In 2021, SJH will be sampling chum salmon otoliths from carcasses in Indian River and will collect at least 100 heads at the rack and as many from pink and chum salmon off the tender during cost recovery if time allows.

*Coho salmon* –If fish are taken out of Indian River for broodstock, heads will be collected from fin clipped fish and be provided to the Mark, Tag and Age lab for evaluation. Otoliths will also be collected from those unmarked fish taken as broodstock to determine origin. Since BY15, SJH coho salmon have been otolith marked, which will improve sampling efforts. Genetic samples will also be collected from spawned coho salmon that are used for broodstock.

*Chinook Salmon* - SJH will be monitoring Indian River for Chinook salmon as a request from NSRAA to determine straying rate from returning Chinook, short-termed reared at SJH. Return timing of Chinook salmon is the same as the pink salmon timing and SJH expects to minimize any straying impacts during our cost recovery efforts for pink salmon. Stream walks will be conducted throughout the run to determine how many Chinook are in the river as well as how many are caught in cost recovery efforts at SJH.

## 7.0 APPROVAL

### **Recommendation for Approval: Sheldon Jackson Hatchery Annual Management Plan, 2021**

Bill Coltharp, Sitka Sound Science Center, Inc. 6/1/2021

Troy Tydingco, Area Management Biologist, Division of Sport Fish 6/1/2021

Aaron Dupuis, Area Management Biologist, Division of Commercial Fisheries 6/1/2021

Judy Lum, Regional Supervisor, Division of Sport Fish 6/1/2021

Lowell Fair, Regional Supervisor, Division of Commercial Fisheries 6/1/2021

Lorraine Vercessi, PNP Hatchery Program Coordinator, Division of Comm. Fisheries 6/2/2021

#### **Approval:**

**The 2021 Sheldon Jackson Hatchery Annual Management Plan is hereby approved:**

Tom Taube, Deputy Director, Division of Sport Fish 6/8/2021

Peter Bangs, Assistant Director, Division of Commercial Fisheries 6/7/2021

Table 1. Projected Returns to Sheldon Jackson Hatchery by Species and Location

<b>Species</b>	<b>Brood Year</b>	<b>Release Site</b>	<b>Total number Of fish expected</b>	<b>Minimum</b>	<b>Maximum</b>
Pink	2019	Crescent Bay	140,959	84,575	197,343
Chum	2015-2018	Deep Inlet	171,000	90,000	253,000
Chum	2015-2018	Crescent Bay	26,397	13,198	79,192
Coho	2018	Crescent Bay	7,902	5,644	11,288
Chinook	2017-2018	Crescent Bay	2,400	1,200	3,600

Table 2. Pink salmon egg-take, release, and survival data for Sheldon Jackson Hatchery, 1975-2021.

Brood Year	Egg Source	Egg Take	Number Released	Size (g)	Date	Freshwater Survival %	Ocean Survival %
1975	Indian river 91%						
	Katlian River 9%	1,747,935	1,653,666	.28	3/24-5/22	95	7.9
1976	Starrigavin 97%						
	Indian River 3%	1,949,664	1,593,184	.32	3/4-4/15	81.72	0.40
1977	Hatchery	10,226,500	7,147,974	.29	2/7-5/8	69.90	1.00
1978	Hatchery	2,477,472	2,376,944	.28	3/17-5/15	95.94	0.20
1979	Hatchery	9,551,000	7,883,250	.27	3/1-4/30	82.54	2.60
1980	Hatchery	2,248,968	2,062,139	.29	4/1-4/24	91.69	2.00
1981	Hatchery	13,697,711	10,689,600	.29	4/19-5/17	78.04	1.60
1982	Hatchery	13,774,600	9,993,123	.26	3/29-4/21	72.55	1.80
1983	Hatchery	15,117,000	14,536,624	.24	3/19-5/8	96.16	2.30
1984	Hatchery	12,102,000	11,070,423	.28	4/19-5/4	91.48	0.50
1985	Hatchery	11,340,010	10,050,822	.25	4/4-5/17	88.63	0.60
1986	Hatchery	15,015,110	14,200,000	.25	4/2-5/1	94.57	0.06
1987	Hatchery	14,783,715	14,250,000	.39	5/1	96.39	0.07
1988	Hatchery	3,264,000	2,950,000	.55	5/12	90.38	0.25
1989	Hatchery	5,846,000	5,400,000	.53	4/2-5/8	92.37	0.30
1990	Hatchery	2,940,000	2,700,000	.58	5/10	91.84	0.63
1991	Hatchery	9,517,109	9,146,735	.47	4/19-28	96.11	0.04
1992	Hatchery	7,236,522	6,954,339	.24	5/3	96.10	4.38
1993	Hatchery	916,619	348,000	.68	4/27	79.43	6.80
1994	Hatchery	10,800,604	7,134,674	.96	4/19	66.00	5.40
1995	Hatchery	8,911,063	8,067,280	.35	4/23	89.00	5.54
1996	Hatchery	12,518,798	10,000,000	.89	4/18	86.87	3.62
1997	Hatchery	5,651,192	4,500,000	.48	5/7	79.76	2.8
1998	Hatchery	10,182,193	3,779,737	.36	4/27	37.00	4.82
1999	Hatchery	6,778,092	1,650,234	.54	5/25	26.43	4.0
2000	Hatchery	5,888,519	5,327,708	.8	5/31	90.00	4.0
2001	Hatchery	900,000	861,422	.9	5/24	96.00	.4
2002	Hatchery	2,345,661	2,300,000	1.19	4/21	98.00	4.0
2003	Hatchery	803,200	37,000	.71	5/25	4.60	4.0
2004	Hatchery	1,891,790	1,749,500	1.85	5/18	92.5	4.0
2005	Hatchery	1,526,081	1,155,000	2.38	5/9	94.2	8.9
2006	Hatchery	1,171,848	1,154,284	2.99	5/9	94.2	9.7
2007	Hatchery	1,064,909	1,016,500	1.51	5/27	95.5	3.2
2008	Hatchery	1,131,859	1,079,283	1.63	5/29	95.4	1.8
2009	Hatchery	1,040,102	994,000	1.1	5/8	95.6	5.2
2010	Hatchery	1,075,427	704,856	1.50	5/25	66.5	2.4
2011	Hatchery	3,239,267	2,625,000	1.45	5/30	81.0	7.5
2012	Hatchery	3,238,857	2,600,080	1.16	5/12	80.3	3.9
2013	Hatchery	3,431,387	2,971,630	1.82	5/5-12	86.6	4.1
2014	Hatchery	3,300,000	2,902,360	2.1	4/24, 4/28	85.4	6.6
2015	Hatchery	2,627,737	2,437,062	2.0	4/29	92.7	2.8
2016	Hatchery	2,552,197	2,303,969	1.7	5/1/17	90.3	5.5
2017	Hatchery	2,555,105	2,526,914	1.62	4/30	94.9	9.8
2018	Hatchery	2,961,562	2,724,676	1.84	4/30	91.2	9.8
2019	Hatchery	2,861,159	2,819,195	2.01	5/11	92.1	
2020	Hatchery	2,901,782					



Table 3. Chum salmon egg-take, release, and return data for the Sheldon Jackson Hatchery, 1975–2020.

Brood Year	Stock	Number Eggs	Number Released	Date	Size (g)	% Return (1)	Comments
1975	Katlian	75,185	70,000	6/28/76	.77	0	Fed
1976	Nakwasina	206,821	176,887	4/19–5/13/77	.44-.68	0.12	Half fry fed 25% adults to hatchery/75% I.R.
1977	No egg take						
1978	Nakwasina	691,340	646,852	4/9/79	.41	0.04	Unfed
1979	Sandy Bay	56,127	53,174	5/23/80	.66	0.43	Unfed
1980	Nakwasina Hatchery	118,000	84,072	5/15/81	.61	0.53	Fed 69.7% N&H
1981	Hatchery Sandy Cove	50761	34,671	5/18–6/5/82			Fed 0–3 Weeks
		83,107	50,299	4/22–5/10/82	.53	0.6	Fed 0–3 Weeks
1982	Hatchery	80,236	69,144	5/29/83 4/3–	.60		
	Sandy Cove	118,000	75,070	5/29/83 5/23–	.60		
	Nakwasina	980,740	791,403	5/29/83	.60	0.40	Stocks Marked
1983	Hatchery	155,147	114,551	3/26–5/17/84	.4		
	Sandy Cove	31,246	27,315	4/11–5/7/84	.90		Most fed Stocks
	Nakwasina	587,427	486,854	5/7–5/29/84	.50	1.00	Marked
1984	Hatchery	275,000	244,867	4/28–5/21/85	.44		
	Sandy Cove	1,492,352	1,386,657	4/5–5/21/85	.68		
	Nakwasina	1,000,000	683,089	4/28–6/3/85	.51	0.03	Stocks Marked
1985	Hatchery	363,011	301,708	4/4–5/17/86	.40		
	Sandy Cove	1,930,468	1,610,002	4/4–5/2/86	.40		
	Nakwasina	466,923	332,845	4/4–5/1/86	.40	0.06	Not marked Not fed
1986	Hatchery	1,884,662	1,600,000	4/3–5/1/87	.50	0.04	
1987	Hatchery	691,840	450,000	5/1/88	.69	0.02	Marine net pens
1988	Hatchery	939,517	827,000	5/12/89	.90	0.02	Marine net pens
1989	Hatchery	386,000	270,000	5/8/90	1.13	0.02	Marine net pens
1990	Hatchery	348,000	280,000	5/10/91	1.23	0.02	Marine net pens
1992	Hatchery	95,064	88,000	5/3/93	1.80	0.56	Marine net pens
1993	Hatchery	298,765	201,000	4/27/94	1.40	0.01	Marine net pens
1994	Hatchery	217,672	182,000	4/19/95	1.05		Marine net pens
1995	Hatchery	84,642	80,000				
	Medvejie	3,542,655	3,540,000	4/23/96	.73	0.4	Marine net pens
1996	Hatchery	20,794					
	Medvejie	3,434,455	3,400,000	4/18/97	1.50	0.4	Marine net pens
1997	Hatchery	263,521					
	Medvejie	1,460,875	1,670,00	5/1/98	1.14	0.4	Marine net pens
1998	Hatchery	295,488					
	Medvejie	1,400,000	167,760	4/27/99	.68	0.4	Marine net pens
1999	Hatchery	3,258,500					
	Medvejie	1,200,000	3,379,480	5/25/00	1.02	0.4	Marine net pens
2000	Hatchery	4,292,727					
	Medvejie	0	3,861,739	5/31/01	2.48	0.4	Marine net pens

Table 3–Page 2 of 2.

Brood Year	Stock	Number Eggs	Number Released	Date	Size (g)	Comments
2001	Hatchery Medvejie	719,000 3,000,000	954,387 SJH	5/24/02	unknown	Marine net pens
2002	Hatchery Medvejie	427,500 0	182,225 SJH	4/21/03	2.27	Marine net pens
2003	Hatchery Medvejie	23,783 5,100,000	1,023,358 SJH 3,257,000 DI	5/12/04, 4/26/04	2.12 2.2	Marine net pens
2004	Hatchery Medvejie	1,232,409 4,185,317	1,081,718 SJH 3,249,000 DI	5/11/05 4/21/05	2.41 2.02	Marine net pens
2005	Hatchery Medvejie	1,206,402 5,100,000	1,066,200 SJH 5,098,000 DI	5/30/06 4/26/06	2.81 2.08	Marine net pens
2006	Hatchery Medvejie	1,349,498 9,201,936	1,095,094 SJH 8,818,000 DI	5/27/07 4/29–5/20	2.32 2.07	Marine net pens Marine net pens
2007	Hatchery Medvejie	986,069 8,443,311	939,800 SJH 8,083,000 DI	5/21, 5/15–5/25	1.64 2.03	Marine net pens Marine net pens
2008	Hatchery Medvejie	1,143,049 7,123,437	1,075,190 SJH 7,393,000 DI	5/29, 5/17–6/1	2.18 2.25	Marine net pens Marine net pens
2009	Hatchery Medvejie	1,184,400 8,703,999	1,080,000 SJH 8,358,000 DI	5/8, 4/29, 5/6	1.90 2.06	Marine net pens Marine net pens
2010	Hatchery Medvejie	1,149,000 8,992,203	728,489 SJH 8,536,000 DI	5/25 5/9 - 12	2.02 2.19	Marine net pens Marine net pens
2011	Hatchery Medvejie	542,571 8,254,667	430,436 SJH 7630000 DI	5/25 5/8-5/13	1.71 1.55	Marine net pens Marine net pens
2012	Hatchery Medvejie	1,191,263 9,044,210	810,000 SJH 7,676,000 DI	5/12 5/11,23,24	2.0 1.6	Marine net pens Marine net pens
2013	Hatchery Medvejie	3,285,000 9,296,000	2,946,059 SJH 8,765,000 DI	5/12 4/29	1.85 2.0	Marine net pens Marine net pens
2014	SJ Hatchery Medvejie	2,927,949 9,075,988	2,902,360 8,174,000	4/26 4/30	2.1 2.02	Marine net pens Marine net pens
2015	SJ Hatchery Medvejie	3,054,199 9,018,198	2,795,979 7,065,000	4/29 4/10,11,21, ,25	1.83 2.47	Marine net pens Marine net pens
2016	SJ Hatchery Medvejie	3,232,863 9,092,112	2,293,105 5,507,000	5/1/17 4/30-5/24/17	1.86/2.63	Marine net pens
2017	SJ Hatchery Medvejie	3,096,745 9,003,480	2,743,086 7,780,000	5/3/2018 5/9/2018	2.21 1.72	Marine Net pens
2018	SJ Hatchery Medvejie	2,987,634 9,000,000	2,726,796 7,522,000	4/30/2019 5/3/2019	2.26 4.06	Marine Net pens
2019	SJ Hatchery Medvejie	2,966,004 8,366,856	2,917,289 7,607,000	5/11/2020 4/16/2020	2.45 2.01	Marine Net Pens
2020	SJ Hatchery Medvejie	2,901,782 8,200,000				

Table 4. Coho salmon egg-take, release and return data for Sheldon Jackson Hatchery, 1975–2020.

Brood Year	Females	Eggs	Released	Date	Size (g)	% CWT	% Return to CPF	% Marine Survival
1975	6	12,622	8,000	7/31/76	1.1	None	Unknown	Unknown
1976	7	24,150						
1977	3	10,500	2,723	6/5/79	11.3	100.0		0.57
1978	10	33,430	12,045	6/30/80	11.6	34.1		2.38
1979	1	3,000	2,523	5/15/81	10.5	100.0		1.50
1980	13	32,983	8,769	6/6/82	10.5	100.0		0.40
1981	21	687,529	2,930	6/1/83	15.1	100.0		5.30
1982	22	72,935	54,695	5/25/84	15.0	96.3		5.70
1983	7	21,000	6,623	5/30/85	15.3	98.3		5.00
1984	27	103,519	86,366	5/20/86	13.6	31.6	29.0	1.30
1985	50	176,165	111,213	5/15/87	15.6	44.5	45.0	2.10
1986	54	184,165	97,942	5/18/88	15.8	39.1	43.0	2.50
1987	41	131,000	81,248	5/22/89	17.1	51.4	57.0	1.50
1988	44	141,000	43,863	5/21/90	17.7	37.1	60.0	4.00
1989	36	115,000	49,787	5/14/91	12.9	39.9	83.0	3.49
1990	34	105,400	70,669	6/8/92	16.3	28.7	65.0	1.02
1991	35	127,649	01,071	6/8/93	16.9	31.6	57.2	2.50
1992	39	142,499	96,134	6/1/94	19.1	10.9	38.4	3.20
1993	35	125,548	70,398	5/2/95	18.2	15.7	73.0	1.70
1994	38	92,607	46,468	6/11/96	18.9	16.8	26.0	0.40
1995	55	181,764	74,000	6/5/97	11.3	13.9	30.7	0.03
1996	38	131,000	50,355	5/21/98	14.9	34.4	2.3	0.5
1997	1	2,856	19,690	6/10/99	20.89	50.0	1.1	0.5
1998	38	263,521	84,000	5/25/00	16.98	0	unknown	unknown
1999	28	84,000	43,540	5/31/01	28.27	10	unknown	unknown
2000	36	87,476	560	7/22/02	17		unknown	unknown
2001 <sup>1</sup>	0	0	0	0	0	0	unknown	unknown
2002	38	150,000	940	6/4/04	23.2	0	unknown	unknown
2003	24	77,043	67,329	5/25/05	16.34	0	unknown	unknown
2004 <sup>2</sup>	16	52,141	69,569	6/9/06	22.5	0	unknown	unknown
2005	31	74,400	121,222	5/16–6/5	21.3	15.8	unknown	4.5
2006	50	150,000	141,460	5/14–5/24	16.88	13.8	unknown	unknown
2007	59	153,400	147,502	5/23–5/27	14.9	13.4	tbd <sup>3</sup>	tbd <sup>3</sup>
2008	60	180,000	126,549	5/7	16.9		tbd <sup>3</sup>	tbd <sup>3</sup>
2009	40	104,000	0				tbd <sup>3</sup>	tbd <sup>3</sup>
2010	12	23,000	19,560	6/1	23.5	57.8	77	0.43
2011	104	270,000	210,000	6/5	21.0	10.5	89.9	4.6
2012 <sup>1</sup>	1	2,785	1,320	5/19	17.4	100	unknown	0.53
2013	35	90,119	40,444	5/20	30.1	23	93	2.0

<sup>1</sup>Minimal return of broodstock.

<sup>2</sup>Egg take at Medvejie Creek Hatchery, November 11, 2004. No broodstock were available at SJC.

<sup>3</sup> Yet to be determined from historical data.

Table 4. –Page 2 of 2.

<b>Brood Year</b>	<b>Females</b>	<b>Eggs</b>	<b>Released</b>	<b>Date</b>	<b>Size (g)</b>	<b>% CWT</b>	<b>% Return to CPF</b>	<b>% Marine Survival</b>
2014	93	276,000	190,596	5/29	32.2	10.7	61.9	1.7
2015	11	36,597	29,449	5/19/17	26.44	10.7	73.3	10.1
2016	50	170,000	157,554	5/25/18	30.60	10.2	21.1	5.9
2017	74	251,600	212,776	5/15/2019	21.97	10.1	43.2	1.7
2018	65	240,000	225,775	3/18,4/20	16.5	10.0		
2019	80	255,500	235,400	3/19,4/28	17.4	10.9		
2020	43	175,000						

Table 5. King salmon egg-take, release, and return data for the Sheldon Jackson Hatchery, 1984–2010.

Brood Year	Eggs or Fry	Released	Date	Size (gm)	% CWT	Return 4	At 5	Age 6	Total Return	% Marine Survival	% Return to CPF
1984	72,472	54,200	5/20/86	12.0	54.5	15	31	21	67	0.12	7.0
1985	62,712	46,650	5/15/87	18.0	59.9	101	15	37	292	0.63	25.0
1986	48,753	332,280	5/18/88	28.0	96.7	176	13	45	358	1.11	26.0
1987	101,20	96,692	5/22/89	20.0	22.2	129	12	398	654	0.68	55.0
1988	125,25	100,482	5/21/90	21.0	9.9	29	35	148	212	0.21	45.0
1989	58,173	50,555	5/3/91	22.0	40.0	126	43	112	668	1.332	59.0
1990	155,00	94,092	5/26/92	18.0	21.5	1,220	51	110	742	0.79	78.0
1991	129,69	89,443	5/26/93	15.0	11.1	295	38	64	744	0.83	45.0
1992	130,91	103	5/17/94	18.0	10.1	219	38	12	614	0.4	38.2
1993	128,00	78,358	5/2/95	14.7	12.4	191	34	53	585	0.71	45.0
1994	113,86	57,792	6/11/96	18.6	21.7	128	29	47	467	0.80	45.0
1995	127,65	79,070	5/16/97	16.3	12.1	189	34	17	547	0.42	45.0
1996	100,00	41,323	5/21/98	15.4	22.0	98	23	31	359	0.78	45.0
1997	34,014	13,048	6/10/99	25.5	100.0	20	16				
1998	199,24	88,124	5/25/00	17.2	0	360					
1999	100,63	53,170	5/24/00	25.7	10.0						
2000	38,987	28,320	7/19/02	17.2	0						
2001	42,300	0									
2002	75,200	0									
2003	10,000	7,545	5/18/05	58.5	0						
2004	10,000	8,875	5/23/06	64.7	0						
2005	74,181	37,288	5/7–5/14	20.2	53.1						
2006	71,193	45,427	5/5–5/9	18.0	46.3						
2007	103,60	45,940	5/21–22	16.7	46.6						
2008	140,18	90,926	5/21	18.9	24.1						
2009	174,05	8,257	5/18	22.5	99.8						
2010 <sup>1</sup>	112,39	87,200	5/29	21.2	20.5						

<sup>1</sup>Final Chinook salmon release.

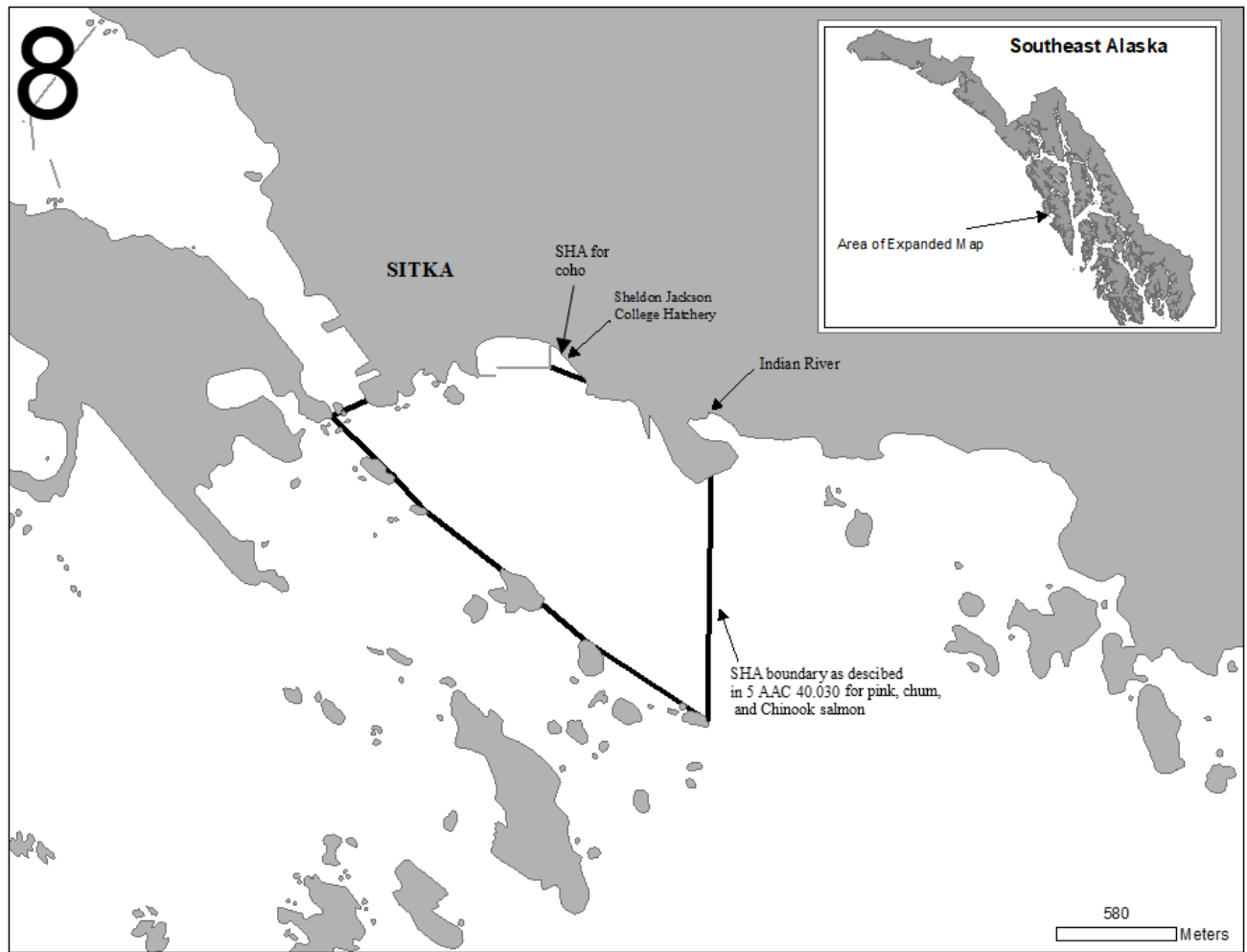


Figure 1.—Sheldon Jackson Hatchery (Crescent Bay) SHAs.

PRODUCTION SUMMARY SHELDON JACKSON HATCHERY 2021											
2020			2021				2022				
J	F	M	A	M	J	J	A	S	O	N	D
SPECIES <b>PINK SALMON</b>			Release								
<b>BY 2020</b>			<b>BY 2021</b>								
E 3 M SJ			R 2.9 M SJ				R 2.9 M SJ				
● Thermal Marking			● Thermal Marking								
SPECIES <b>CHUM SALMON</b>			Release								
<b>BY 2020</b>			<b>BY 2021</b>								
E 3.0 M SJ			R 2.9 M SJ				R 2.9 M SJ				
● Thermal Marking			● Thermal Marking								
Deep Inlet			Release								
E 9 M Med			R 8.2 M DI				R 8.2 M DI				
●			●								
SPECIES <b>COHO SALMON</b>			Release 240 K Age 1 smolt								
<b>BY 2019</b>			<b>BY 2020</b>				<b>BY 2021</b>				
R 240 K SJC			R 230 K				E 250 K SJ				
●			●				●				
<b>BY 2020</b>			Tag 23 K				Release 225 K Age 1 smolt				
SJ 250 K			●				●				

E= EGG TAKE  
 I = INCUBATION  
 R = REARING  
 T = TAGGING  
 R = RELEASE

DI=Deep Inlet  
 SJ = Sheldon Jackson  
 Med=Medvejie

Figure 2. –Sheldon Jackson Hatchery production summary, 2021.

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