

2016 Annual Management Plan
Sheldon Jackson Hatchery
Sitka Sound Science Center

This plan remains in effect until superseded by the next year's annual management plan (AMP).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 the local 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 AMP 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) hatchery program coordinator will advise as to whether an amendment, exception report, or other action is warranted.

1.0 EXECUTIVE SUMMARY

1.1 *Background*

Sheldon Jackson Hatchery (SJH) is located at the Sitka Sound Science Center (SSSC), 834 Lincoln St., on Crescent Bay, 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 the SSSC is to maintain fish culture operations 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 2016 season are listed in Table 1. Historical production for king, coho, chum, and pink salmon are presented in tables 2 through 5.

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

1. No increase or decrease in permitted production of any species will occur in 2016.
2. Work continues in developing improved water quality, fish culture, and adult harvesting equipment.
3. Spat collection will occur for a potential grow out operation for educational purposes.

1.3 *New permits or permit amendments needed this year*

1. Fish resource permit for shellfish spat collection CF-16-066

1.4 *Expected returns*

Species	Return Site	Total return	Common Property Harvest	Return to Hatchery	Broodstock	Available Cost Recovery
Pink salmon ¹	SJH	66,000	41,000	25,000	5,000	20,000
Chum salmon ¹	SJH	28,000	17,000	11,000	3,600	7,400
Chum salmon ²	Deep Inlet	217,000	130,000	87,000	0	87,000
King salmon ¹	SJH	44	20	24	0	24
Coho salmon ¹	SJH	3,400	2,000	1,400	200	1,200

¹ Crescent Bay

² Deep Inlet remote releases reared by NSRAA

1.5 *Production summary (releases this calendar year)*

Program Name	Brood Year	Release Date	Number to Release	Type of Mark % Marked
Pink salmon	2015	April-15	2,400,000	100% thermal mark
Chum salmon	2015	May-15	2,750,000Crescent Bay	100% thermal mark
Chum salmon	2015	May-15	8,225,500/Deep Inlet	100% thermal mark
Coho salmon	2014	April 15 and May-15	190,000	10% CWT

1.6 *Egg takes*

Species	Egg-take limits	Egg-take goals	Females needed
Pink salmon ¹	3,000,000	3,000,000	2,250
Chum salmon (SJ Hatchery) ²	3,000,000	3,000,000	1,565
Chum salmon (Deep Inlet) ^{2,3}	9,000,000	9,000,000	4,696
Coho salmon ¹	250,000	250,000	90

¹ Pink and coho salmon brood may be supplemented from Indian River.

² In the event hatchery returns are not adequate to meet broodstock needs, chum salmon brood may be supplemented from Medveje Creek Hatchery (MCH) returns, if available.

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

1.7 *Current permitting*

The SJH permit allows a maximum permitted capacity of 12 million green chum salmon eggs (with a cooperative agreement with NSRAA), three million pink salmon eggs, and 250,000 green coho salmon eggs. Sheldon Jackson Hatchery anticipates it will take time to achieve full production of coho salmon.

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
Totals				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. The spawning ratio will be 5 females to 5 males per bucket. Buckets of fertilized eggs are rinsed prior to being loaded into NOPAD 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 were sold for cost-recovery revenue.

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

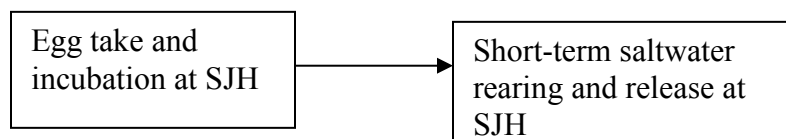
Pink salmon will be ponded directly into net pens for 60 to 80 days of saltwater rearing prior to release in May. Target release weight is 1.5 grams.

Program Name	Brood Year	Release Date	Number to Release	Type of Mark % Marked
SJH pink salmon	2015	April 2016	2,400,000	(Otolith thermal 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 thermal otolith 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 weight for fry release is 1.5 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	2021
Pink salmon	11J-1013	Egg take/release	Indian River–SJH	3,000,000 eggs	2021

3.0 **SUMMER 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	MCH	113-36	Primary	3 Million	3 Million
MCH chum salmon	MCH	113-35	Primary	9 Million	9 Million
Totals				12 Million	12 Million

3.2 *Broodstock capture method*

Chum salmon will be captured at SJH and Medvejie Creek Hatchery (MCH). Chum salmon returning to SJH and MCH are hatchery-produced fish. Staff and volunteers will take as many as 3 million eggs at SJH. In the event hatchery returns are not adequate to meet broodstock needs, chum salmon brood may be supplemented from MCH returns, if available. The hatchery manager at SJH will keep the hatchery manager of MCH informed as to the progress of adult collections and egg takes. 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 taken until August 21. This date is necessary to prevent propagation of the Hidden Falls Hatchery ancestral stock chum salmon.

3.5 *Carcass disposal*

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

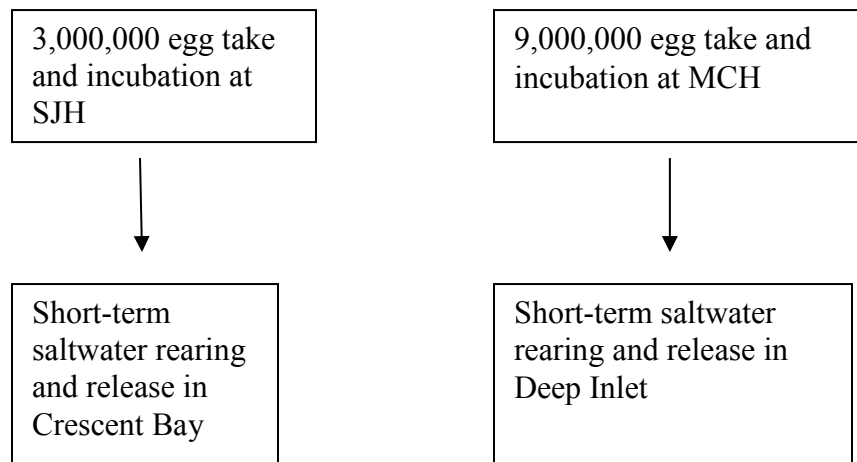
3.6 *Planned releases*

Program Name	Brood Year	Release Date	Number to Release/Location of Release	Type of Mark/% Marked
SJH chum salmon	2015	April 2016	2,750,000 Crescent Bay	Otolith thermal mark 100%
SJH chum salmon	2015	April 2016	8,225,000 Deep Inlet	Otolith thermal mark 100%
Totals			10,975,500	

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 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 prior to release into Crescent Bay in mid-May. Target release size is 2.0 grams. Chum salmon incubated at MCH will be transported to, and reared in, Deep Inlet until release in May. The

target release size in Deep Inlet is 2.0 grams.

3.10 *Fish transport permits*

Species	FTP #	Egg take, transfer, or release	From/to	Maximum #	Expires
Chum salmon	11J-1008	Egg take/release	SJH–SJH	3,000,000 eggs	2021
Chum salmon	11J-1009	Transfer/release	MCH–DI	Resultant fry from 9,000,000 eggs	2021
Chum salmon	11J-1010	Egg take/transfer/release	MCH–SJH	3,000,000 eggs	2021
Chum salmon	11J-1011	Egg take ¹	MCH	9,000,000 eggs	2021
Chum salmon	11J-1012	Egg take/transfer/release	SJH–DI	9,000,000 eggs	2021
Chum salmon	11J-1016	Egg take/transfer	SJH–MCH	9,000,000 eggs	2021

¹ Eggs destined for Deep Inlet under 11J-1009

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
Totals				250,000	250,000

It is expected that broodstock needs will not be met with returning hatchery fish captured at the hatchery weir. Under conditions of FTP 11J-1015, SJH personnel will work with ADF&G staff and supplement the coho salmon egg take by securing 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 as they ripen by a routine dry-spawning method with a 0.7% saline solution; 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 September until the last week of November.

4.5 Carcass disposal

Carcasses are either sold as cost recovery or donated as bait. Since 2011, all carcasses and surplus fish were sold for cost-recovery revenue.

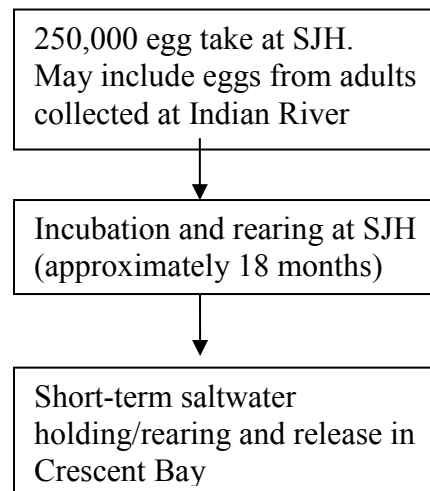
4.6 Planned releases this calendar year of previous brood years' production

SJH coho salmon will be short-term reared in saltwater net pens for approximately 21 days. Approximately **190,000** BY14 coho salmon smolt, averaging 20 grams or larger, will be released in Crescent Bay.

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

Approximately **30,000** BY15 coho fry will be cultured in freshwater for the next 12 months. Release for that broodyear will be May 2017.

4.8 *Operational diagram for coho salmon*



4.9 *Program details*

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

Coho salmon at SJH will be ponded in April or May into small start-tanks or troughs, and then transferred to 13' diameter fiberglass tanks for rearing. Target release weight is a minimum of 20 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-SJH	250,000 eggs	2021
Coho salmon	11J-1015	Egg take/transfer	Indian River-SJH	250,000 eggs	2021

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 ¹	SJH	66,000	41,000	25,000	5,000	20,000
Chum salmon ¹	SJH	28,000	17,000	11,000	3,600	7,400
Chum salmon ²	Deep Inlet	217,000	130,000	87,000	0	87,000
King salmon ¹	SJH	44	20	14	0	14
Coho salmon ¹	SJH	3,200	2,000	1,200	200	1,000

¹ SJ Hatchery, Crescent Bay

² Deep Inlet remote releases reared by NSRAA

5.1 *SJH SHA*

The SJH SHA for king, coho, chum and pink 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 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.

5.2 *Cost-Recovery Harvest Management*

In 2016, a cost-recovery harvest is planned based on projected returns of SJH-produced pink salmon. 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 130,000 fish. SJH did not conduct cost-recovery harvests during 2002–2005. 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. Cost recovery of surplus pink and chum salmon occurred in 2006-2010.

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) should be 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. This leaves fish expected to return to the SJH SHA. Three million chum salmon eggs are expected to be taken at the facility in 2016, which will require 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 2016, SJH is expecting around 1,400 adult returning coho to SJH. This should be enough fish to cover broodstock goals, but in the case that we fall short, some may be collected from Indian River. About 200 fish are needed for broodstock to meet the egg-take goal of 250,000 eggs.

In 2016, SJH is expecting about 44 king salmon to return to the hatchery. This is based on the projected returns of BY09 and BY10 king salmon produced at the hatchery. All king salmon 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 the SJ Hatchery.

SJH plans to conduct aggressive cost-recovery harvests within the SHA using purse seiners provided by Silver Bay Seafoods. A long-term agreement for purchase of SJH adult returns is in force with Silver Bay Seafoods and includes the purse seiners necessary to conduct the harvest. Additional barrier nets will be utilized in 2016 as they were in 2015 to ensure timely and effective harvests of pink and chum salmon returning to the SHA. Significant cost-recovery harvests can and will occur from the adult raceway complex.

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 very unlikely 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 inseason 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 king, 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. To a lesser extent, SJH returns may be harvested in the Deep Inlet THA 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 king and coho salmon.

The department may open waters adjacent to the SJH SHA to common property purse seining to harvest surplus Indian River pink salmon returns. The department will consult with the SJH manager prior to such openings to ensure that hatchery cost-recovery and broodstock needs are not compromised.

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 in-season.

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 ESCAPEMENT 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. There is likely to be some level of straying, both into Indian River and into the hatchery, due to the close proximity of the hatchery to the river. Results from sampling in 2011 through 2015 are provided below. The National Park Service, in some years, has sampled pink salmon carcasses from Indian River, within the Sitka Historic Park boundary, which supplements the SJH pink salmon sampling.

Thermal mark recovery surveys for SJH pink salmon

Return Year	Brood Year	Source	Sample Site	Otoliths Received	Otoliths Read	Otoliths Marked	Percent Marked
2011	2009	Rack	SJH	96	94	8	9%
		Escapement	Indian River	96	81	2	2%
2012	2010	Rack	SJH	96	94	17	18%
		Escapement	Indian River	150	144	7	5%
2013	2011	Rack	SJH	96	94	22	23%
		Escapement	Indian River	96	95	14	15%
2013	2011	Escapement ¹	Indian River	296	282	33	12%
2014	2012	Rack	SJH	96	92	53	58%
		Escapement	Indian River	192	190	21	11%
2014	2012	Escapement ²	Indian River	200	198	48	24%
2015	2013	Rack	SJH	96	88	22	25%
		Escapement	Indian River	164	152	37	24%
2015	2013	Escapement ³	Indian River	300	293	99	34%

¹ National Park Service surveys occurred during statistical week 35 and 39.

² National Park Service surveys occurred during statistical week 36 and 38.

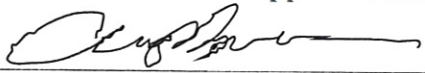
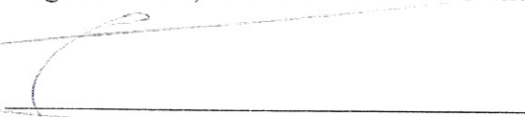
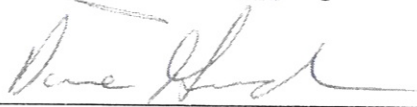
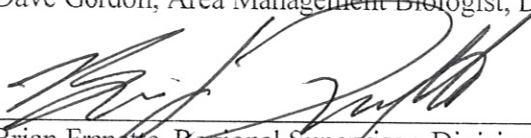

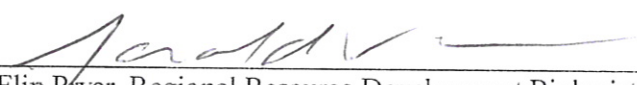

³ National Park Service surveys occurred during statistical week 35, 38 and 40.

Pink salmon – In 2015, approximately 1,492,000 BY14 pink salmon were released from SJH with the otolith thermal mark 4,1H. In 2016, SJH will not be sampling pink salmon otoliths.

Coho salmon – In 2015, SJH released approximately 40,444 coho salmon smolt. Given the low number of returning fish, escapement surveys for adipose fin clipped fish may not be warranted. If fish are taken out of Indian River for broodstock, heads will be collected from fin clipped fish and marked differently from those collected in the rack. Any heads collected from adipose-fin clipped fish will be provided to the Division of Sport Fish Sitka area management biologist as soon as sampling is completed. All BY15 fish have been otolith marked, enabling coho escapement monitoring in the future.

7.0 APPROVAL

Recommendation for Approval: Sheldon Jackson Hatchery Annual Management Plan, 2016

 _____ Angela Bowers, Sitka Sound Science Center, Inc.	<u>5/11/16</u> Date
 _____ Troy Tydingco, Area Management Biologist, Division of Sport Fish	<u>5/5/16</u> Date
 _____ Dave Gordon, Area Management Biologist, Division of Commercial Fisheries	<u>5-9-16</u> Date
 _____ Brian Frenette, Regional Supervisor, Division of Sport Fish	<u>5.16.16</u> Date
 _____ Lowell Fair, Regional Supervisor, Division of Commercial Fisheries	<u>5/16/16</u> Date
 _____ Flip Pryor, Regional Resource Development Biologist, Division of Commercial Fisheries	<u>5/16/16</u> Date
 _____ Lorraine Vercessi, PNP Hatchery Program Coordinator, Division of Commercial Fisheries	<u>5/17/2016</u> Date

Approval:

The 2016 Sheldon Jackson Hatchery Annual Management Plan is hereby approved:


 _____ Tom Taube, Deputy Director, Division of Sport Fish	<u>5/18/2016</u> Date
 _____ Peter Bangs, Assistant Director, Division of Commercial Fisheries	<u>5/20/2016</u> Date

Table 1a. 2016 Projected Returns to SJ Hatchery by Species and Location

Species	Location	Brood Year	Fry/Smolt Released	Est. Pcnt Survival	Age	Percent at Age	Estimated Return
Chinook	SJ Hatchery	2009	8,750	0.05%	7	0.1%	0
Chinook	SJ Hatchery	2010	87,200	0.50%	6	10.0%	44
					TOTAL		44
Chum	SJ Hatchery	2010	728,489	1.3%	6	1.2%	112
Chum	SJ Hatchery	2011	430,436	2.9%	5	14.7%	1,836
Chum	SJ Hatchery	2012	809,016	2.6%	4	65.8%	13,841
Chum	SJ Hatchery	2013	2,946,059	2.3%	3	18.3%	12,403
					TOTAL		28,000
Chum	Deep Inlet	2010	8,536,000	1.3%	6	1.2%	1,310
Chum	Deep Inlet	2011	7,630,000	2.9%	5	14.7%	32,208
Chum	Deep Inlet	2012	8,516,000	2.6%	4	65.8%	146,812
Chum	Deep Inlet	2013	8,765,000	2.3%	3	18.3%	36,258
					TOTAL		217,000
Pink	SJ Hatchery	2014	2,902,360	2.3%	2	100%	66,750
Coho	SJ Hatchery	2013	40,444	8.0%	3	100%	3,200
					TOTAL		3,200

Table 2. Pink salmon egg-take, release, and survival data for Sheldon Jackson Hatchery, 1975-2016.

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	3.65
2012	Hatchery	3,238,857	2,600,080	1.16	5/12	80.3	1.94
2013	Hatchery	3,431,387	2,971,630	1.82	5/5–12	86.6	2.87
2014	Hatchery	3,300,000	2,902,360	2.10	4/24–4/28	85.4	na

Table 3. Chum salmon egg-take, release, and return data for the Sheldon Jackson Hatchery, 1975–2012.

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 83,107	34,671 50,299	5/18–6/5/82 4/22–5/10/82	.53	0.6	Fed 0–3 Weeks Fed 0–3 Weeks
1982	Hatchery Sandy Cove Nakwasina	80,236 118,000 980,740	69,144 75,070 791,403	5/29/83 4/3– 5/29/83 5/23– 5/29/83	.60 .60 .60	0.40	Stocks Marked
1983	Hatchery Sandy Cove Nakwasina	155,147 31,246 587,427	114,551 27,315 486,854	3/26–5/17/84 4/11–5/7/84 5/7–5/29/84	.4 .90 .50	1.00	Most fed Stocks Marked
1984	Hatchery Sandy Cove Nakwasina	275,000 1,492,352 1,000,000	244,867 1,386,657 683,089	4/28–5/21/85 4/5–5/21/85 4/28–6/3/85	.44 .68 .51	0.03	Stocks Marked
1985	Hatchery Sandy Cove Nakwasina	363,011 1,930,468 466,923	301,708 1,610,002 332,845	4/4–5/17/86 4/4–5/2/86 4/4–5/1/86	.40 .40 .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 Medvejie	84,642 3,542,655	80,000 3,540,000	4/23/96	.73	0.4	Marine net pens
1996	Hatchery Medvejie	20,794 3,434,455	3,400,000	4/18/97	1.50	0.4	Marine net pens
1997	Hatchery Medvejie	263,521 1,460,875	1,670,00	5/1/98	1.14	0.4	Marine net pens
1998	Hatchery Medvejie	295,488 1,400,000	167,760	4/27/99	.68	0.4	Marine net pens
1999	Hatchery Medvejie	3,258,500 1,200,000	3,379,480	5/25/00	1.02	0.4	Marine net pens
2000	Hatchery Medvejie	4,292,727 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)	% Return (1)	Comments
2001	Hatchery Medvejie	719,000 3,000,000	954,387 SJH	5/24/02	unknown	0.4	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	Hatchery Medvejie	915,329 2,012,620	2,333,519 SJH 8,174,000 DI	4/24/15 4/17-4/24	2.3 2		

Table 4. Coho salmon egg-take, release and return data for Sheldon Jackson Hatchery, 1975–2015.

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 ¹	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 ²	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 ³	tbd ³
2008	60	180,000	126,549	5/7	16.9		tbd ³	tbd ³
2009	40	104,000	0				tbd ³	tbd ³
2010	12	23,000	19,560	6/1	23.5	57.8	tbd ³	tbd ³
2011	104	270,000	210,000	6/5	21.0	10.5	tbd ³	tbd ³
2012 ¹	1	2,785	1,320	5/19	17.4	100	tbd ³	tbd ³
2013	35	90,119	40,444	5/20/15	30.1	23.4	tbd ³	tbd ³

¹Minimal return of broodstock.²Egg take at Medvejie Creek Hatchery, November 11, 2004. No broodstock were available at SJC.³Yet to be determined from historical data.

Table 4(cont.) Coho salmon egg-take, release and return data for Sheldon Jackson Hatchery, 2014-2015.

[illegible]

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 ¹	112,39	87,200	5/29	21.2	20.5						

¹Final king salmon release.

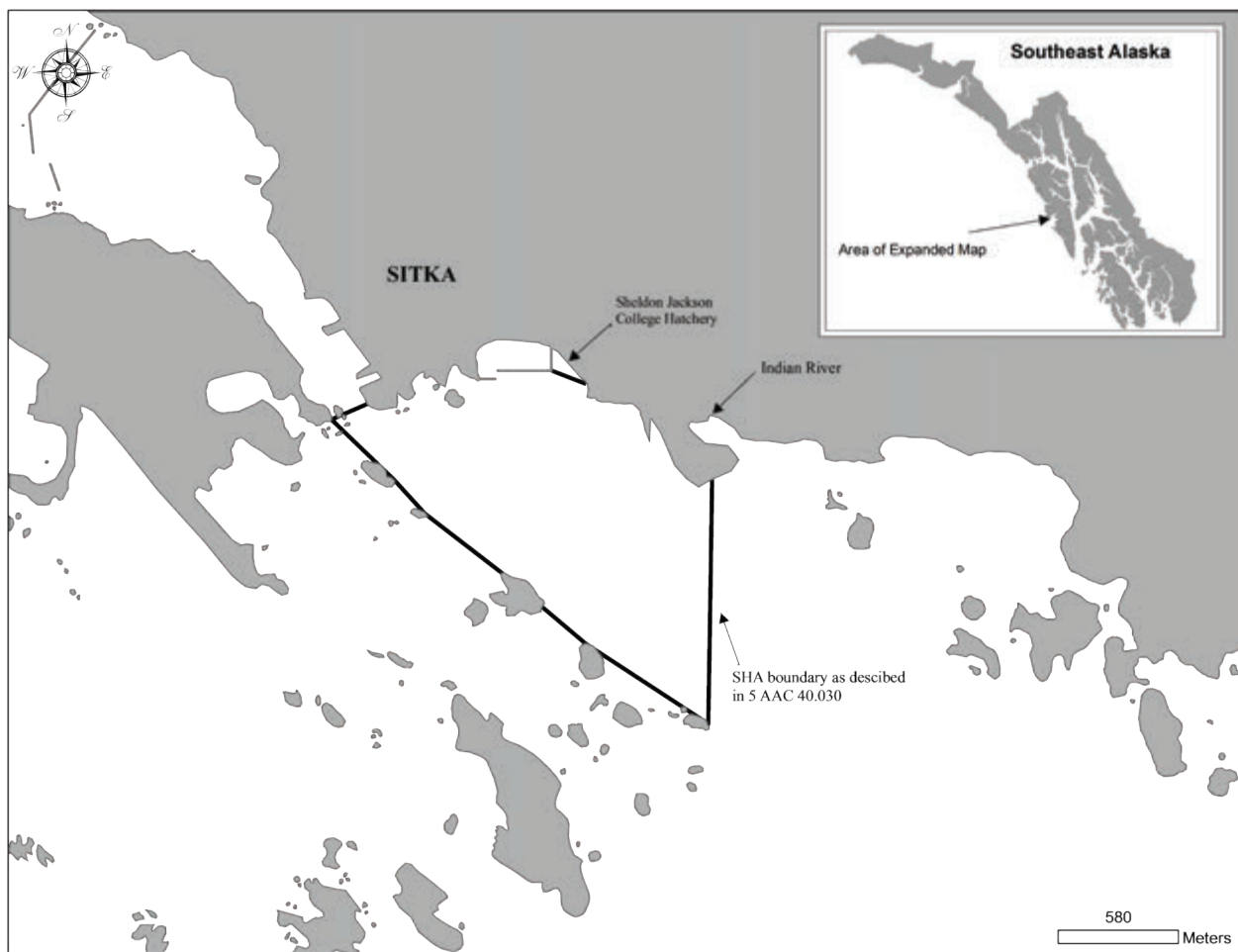


Figure 1.—Sheldon Jackson Hatchery (Crescent Bay) SHA.

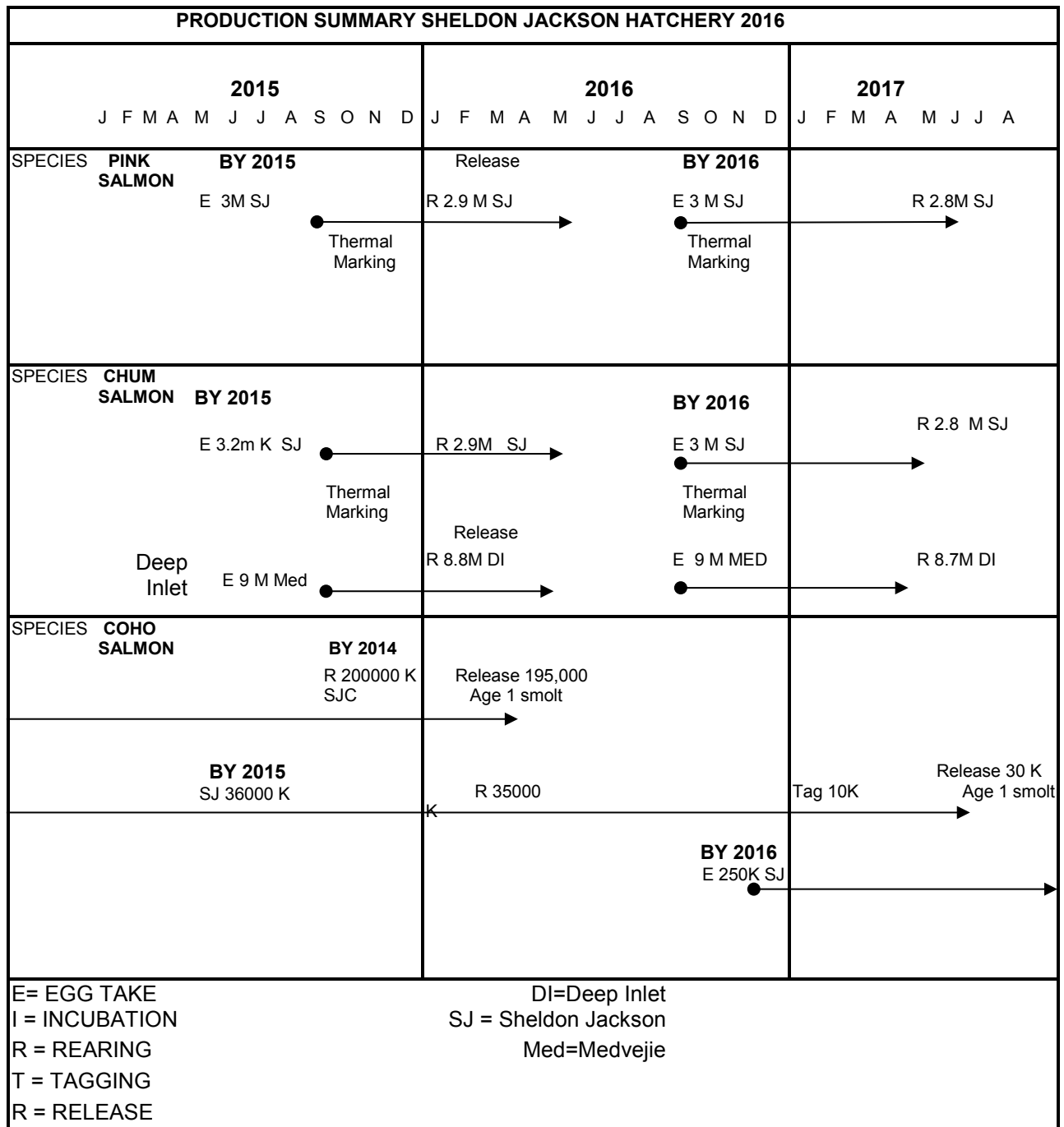


Figure 2.—Sheldon Jackson Hatchery production summary, 2016.

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