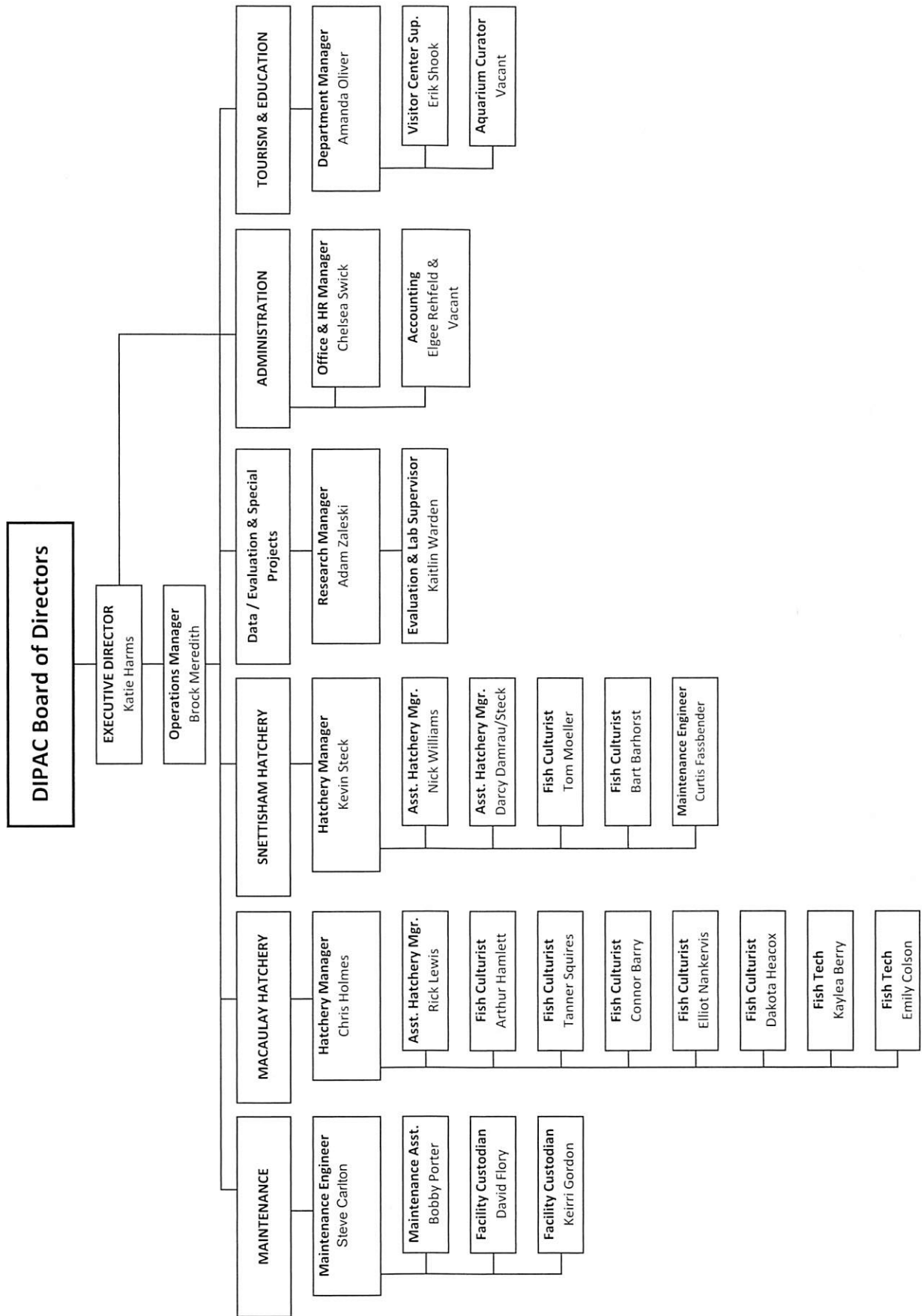


Manager Reports

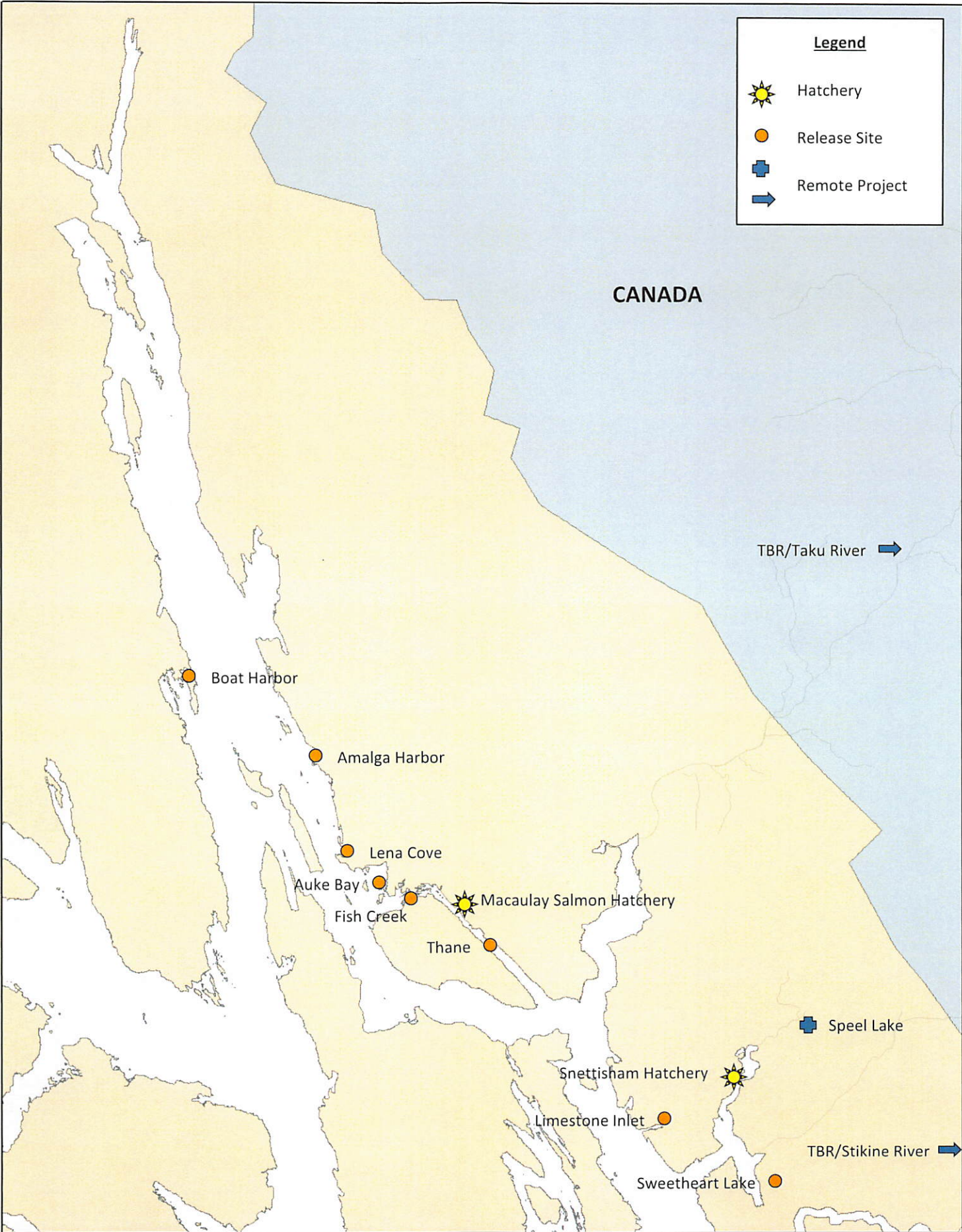
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Douglas Island Pink and Chum, Inc.

Organizational Chart Fall 2021



DIPAC Hatcheries & Release Sites - 2021



Macaulay Salmon Hatchery Operations & Maintenance Report December 2021

Chris Holmes – Hatchery Manager

Overview

After overcoming the multitude of issues presented by the 2020 pipeline failure, 2021 marked a return to normalcy at the Macaulay Salmon Hatchery with full flow from the reservoir being restored on February 23, 2021. Water temperatures for the year cooled down significantly from the previous two seasons which resulted in ponding commencing on February 24th, a starting date more in line with the historical average timeframe for chum outmigration. While not as large as BY18 and BY19 due to a shorter rearing season, the BY20 chum still managed to meet or surpass size goals at all sites with the exception of the late releases at Boat Harbor and MSH. Although these particular releases fell short of the preseason goals, fish quality and health was excellent at the time of release.

The District 111 adult return, while not robust enough to allow for cost recovery fishing in the channel, did provide more than enough fish to meet broodstock requirements. A total of 132,500,000 green chum eggs were collected. Eyed egg survival saw an improvement over last year coming in at a respectable 95.8% and resulting in 126,948,000 eyed chum eggs, a number that exceeds the 2017 record by 2.5 million. With the current inventory standing at 125,800,000, BY21 chum releases are expected to be historically large.

Similar to last summer, 2021 saw a move away from the exceptionally warm water temperatures witnessed in 2018 and 2019. 2021 temperatures peaked out at 9.7 degrees in early September and are currently on track to closely mirror those seen last winter. Though positive in many ways, the cooler water temperatures have been a limiting factor for growth in the king and coho programs. While healthy, both species are currently below the historical average in terms of size. More information regarding water temperatures and trends will be provided at the Board of Directors meeting.

2021 Spring Releases

Chum Salmon

Chum ponding began on February 24th and lasted for about a month, concluding on March 31st. The ponding process and the fish transports went exceptionally well in 2021 due in large part to the utilization of a new dewatering tower for the tanker truck and a portable dewatering device used on the transport boat. Total transport mortality for 2021 was a mere 18% of that seen in 2020 and 10.4% of that seen in 2019. As no other significant changes were made to the ponding/transport protocols, this dramatic increase in survival can certainly be attributed to

the dewatering in addition to the cooler water temperatures experienced in the winter/spring. The equipment not only decreased the amount of stress on the fish during transports, but also minimized the level of anxiety of the staff who tended to the chum fry. Given the clean, oxygen rich water that the dewaterer facilitated within the transport vessels, fish behavior and oxygen consumption on transport trips became much more predictable and successful results became consistent and repeatable.

In contrast to the 2020 rearing season which had an average of 101 rearing days across all sites, the later ponding dates of 2021 only allowed for an average of 81 days for the season. This, coupled with saltwater temperatures that did not reach 6 degrees until early May, led to steady but relatively modest growth. Fry losses at the rearing sites were minimal with overall saltwater rearing survival ending up at 97.3%. To compensate for the later start, the fish were held longer into May and June than what occurred in 2020. The first releases were on May 24th at Amalga while the final releases happened on June 11 at Thane. Across the rearing sites, the early release average size was 2.48 grams while the late release average size was 3.59 grams. As previously mentioned, the staff was very satisfied with the health and quality of the fish at release. See Table 1 for a summary of rearing releases and their respective numbers, dates, size at release, and overall survivals.

Chinook & Coho Salmon

The BY19 coho salmon release was on May 19th. The fish, which were released from the MSH saltwater site, totaled 298,400 smolts at an average size of 22.02 grams. Saltwater survivals were 99.9%. **A total of 1,111,200 BY19 Chinook at an approximate average of 12.5 grams had to be released on December 2, 2021 due to the pipeline failure and resultant emergency. 465,600 BY19 coho or 61% of the population at an approximate average of 11.2 grams were released that same afternoon. Few of these fish are expected to survive to adulthood since they were months away from becoming tolerant to the marine environment.*

2021 Egg-takes and Incubation

Chum Salmon

Hatchery staff took a total of 132,530,000 green eggs this year, with approximately 180,000 adult chum being processed for egg-take. Staff was once again very focused on improving eyed egg survival after seeing several years of disappointing results in recent history. Having sufficient numbers of returning adults at the hatchery was complimentary to this objective in that it allowed the spawners to be more discriminating when taking eggs. This selectiveness ensured that only the highest quality gametes were sent to the incubation room. The strategy, coupled with the cooler summer water temperatures, paid off and a 95.8% eyed egg survival rate (the best since BY2014) was achieved.

At this point in the year, all indications point to a similar ponding timeframe and rearing scenario as last year. Outmigration should begin by mid to late February of 2022 and feed orders and operational planning are already underway to enable another successful season. To date, the incubation room is looking pristine, with minimal mortality observed in the incubators.

Chinook Salmon

MSH saw a shortfall of adult Chinook return to the hatchery. Despite receiving 203,000 eggs from NSRAA, the program goal of 1.1 million Chinook eggs could not be reached. A total of 897,000 eggs ended up being collected/obtained. At eyed egg inventory, MSH staff saw an unusually poor survival rate of 91.4%. This anomaly exacerbated the inventory shortage which currently stands at 820,000.

Coho Salmon

Coho eggtakes were very successful and our collection goal was easily met. The current green egg estimate is 1,581,000 eggs. Exact enumeration of these eggs will take place in a few weeks following BKD culling and eyed egg processing. In an effort to maximize rearing capacity and to compensate for the shortage of king salmon eggs, staff plans to retain more coho than usual. This will ensure that all rearing units are utilized and that a full complement of BY21 smolt are produced.

Freshwater Rearing

Due to the cooler water temperatures, our BY20 Chinook and coho have grown at a slower pace than what has been average historically. Our current inventory is approximately 1,023,000 Chinook and 224,000 coho*. These pre-smolts will stay on a maintenance diet until spring. Approximately 20% of Chinook and 7% of the coho have been tagged. The tagging was accomplished with the help of the new tagging trailer (AutoFish system) that significantly reduced both the time and the staffing needed to complete the project.

**The unusually low current population of BY20 coho can be attributed to the residual effects of the pipeline failure. When water was restored to the hatchery on 2/23/21, the newly hatched coho were subjected to dirty water coming through the line. The timing was unfortunate in that it coincided with a particularly vulnerable period in their life cycle and the result was a complete loss of lot 1 (501,000 fish) and a 69% mortality rate in lot 2. The good news is that the remaining 224,000 coho are healthy and stable at this point and that the population is sufficient to ensure future coho broodstock needs. The BY20 Chinook were unaffected by the event due to the fact that they were on the recirculation system at the time.*

Hatchery Staff

The current hatchery personnel organization is as follows:

Chris Holmes	Hatchery Manager
Rick Lewis	Assistant Manager
Connor Barry	Fish Culturist
Arthur Hamlett	Fish Culturist
Tanner Squires	Fish Culturist
Elliott Nankervis	Fish Culturist
Dakota Heacox	Fish Culturist
Kaylea Berry	Permanent Technician
Emily Colson	Permanent Technician

Maintenance Staff

Steve Carlton	Maintenance Engineer
Bobby Porter	Maintenance Assistant
David Flory	Custodian
Kierri Gordon	Custodian

Table 1. 2021 MSH RELEASES

Program Brood Year/Stock	Release Site	Release Date	Number Released	Average Size at Release (g)	Spring Rearing Survival
Chum					
BY20	MSH	25-May	3,783,000	2.6 g	95.7%
		8-Jun	7,891,000	3.0 g	
			11,674,000		
	Thane	20-May	2,485,000	2.6 g	92.7%
		28-May	7,610,000	2.9 g	
		11-Jun	11,165,000	4.3 g	
			21,260,000		
	Amalga Harbor	24-May	23,419,000	2.6 g	98.8%
		10-Jun	22,875,000	4.0 g	
			46,294,000		
	Boat Harbor	1-Jun	3,059,000	2.0 g	99.40%
		4-Jun	8,689,000	2.3 g	
		8-Jun	11,731,000	2.9 g	
			23,479,000		
	Limestone Inlet	26-May	4,632,000	2.5 g	99.8%
		8-Jun	7,186,000	3.8 g	
			11,818,000		
Total Regular Release			53,677,000		
Total Large Release			60,848,000		Green Egg to Release Survival
Total BY20 Chum Released			114,525,000		89.9%

Table 1. 2021 MSH RELEASES (continued)

Program Brood Year/Stock	Release Site	Release Date	Number Released	Average Size at Release (g)	Spring Rearing Survival
Coho BY19	MSH	19-May	298,400	22.0 g	99.9%
All Coho			Green Egg to Release Survival 37.6%		
			<i>*number reflects forced release of 61% of coho due to pipeline failure</i>		
Total Smolt and Catchables Released:			298,400		

Table 2. MSH 2021 EGGTAKES

Species	Eggs Taken/Shipped	Eyed Eggs	Green to Eye		Current Inventory	Survival to Date
			Survival	BKD / Culled		
Chum	132,530,000	126,948,000	95.8%	0	125,728,000	94.9%
Chinook						
MSH	694,000	634,500	91.4%	5,800	632,900	
NSRAA ¹	<u>203,000</u>	<u>185,500</u>	<u>91.4%</u>	<u>46,700</u>	<u>185,100</u>	
	897,000	820,000	91.4%	52,500	818,000	91.2%
Coho	1,581,000				1,581,000	N/A
Total	135,008,000	127,768,000			128,127,000	
1) Received as separate gametes, fertilized upon arrival at MSH on 9/2/21						

**Snettisham Hatchery Winter Report
DIPAC Board of Directors
December 2021**

Kevin Steck – Hatchery Manager

Overview

Now that Covid19 vaccinations are widely available, the Snettisham Hatchery has returned to hiring temporary labor from “outside”. By late June, staff had fulfilled requirements for the Trans-Boundary River Program (TBR) and Sweetheart Lake Program by transporting 2.4 million fry back to their respective lakes. In addition, and occurring near the same time as the fry transports, staff also completed the final release of 9.0 million BY19 smolt for the Snettisham Smolt Release Program. The hatchery is currently rearing a full complement of BY20 Snettisham stock pre-smolt in raceways and are on track for releases in spring of 2022. The 2021 Speel Lake weir operations remained unchanged from pre-pandemic operations and followed parameters as per the agreement between DIPAC and ADF&G. The eggtake goals for the Snettisham stock smolt and Sweetheart Lake programs remained unchanged with 11.9 million eggs collected in total. Eggtake crews located at Tahltan, Tatsamenie and Trapper Lake delivered a combined estimated 5.5 million eggs allocated for the TBR Program. In regards to hatchery water temperatures, this past year the hatchery has observed a cooling trend where incubation and rearing water temperatures are now on the cooler side of the historical 10-year average.

**Trans-boundary River & Sweetheart Fry Transports
Brood Year 2020**

Despite the outmigration season beginning a bit later than in recent years, the 2021 TBR transport season started much like any other year, with the first of the BY20 fry transported on May 27. In total 2.4 million fry were transported back to Tahltan, Tatsamenie, Trapper and Sweetheart Lakes. The final transport occurred on June 8. Similar to last year, there were some initial logistical delays due to Covid19 restrictions. See Table 1 for a summary of BY21 fry transports.

**Snettisham Smolt Releases
Brood Year 2019**

On par with the projected total that was reported at the spring 2020 Board of Directors meeting, a total of 9.0 million BY19 Snettisham stock smolt were released from the hatchery using two release strategies (Direct Saltwater & Port Snettisham Entrance). The releases occurred between May 24 and June 7. See Table 2 for a summary of BY19 smolt releases.

Snettisham Smolt Rearing Program Brood Year 2020

Transfer of 9.1 million fry from start tank to raceways for final grow-out occurred late July into August. The release of an anticipated 9 million 10g smolt is scheduled to occur in the spring of 2022. IHNV losses in this brood year has been limited to the confirmation and destruction of one start tank containing 225,000 fry. Since the culling of this start tank in early spring, there are no further issues or concerns to report at this time.

Speel Lake Weir - Adult Sockeye Enumeration

The 2021 season saw back to normal weir and camp operations after last year, where we operated in a reduced capacity due to Covid19 precautions and concerns. Weir operations occurred between July 13 and September 22. Between these dates, staff passed 8,643 sockeye adults through the weir and into the lake. ADF&G received in-season data from weir counts and creek surveys as it has been in the past.

Snettisham & Trans-boundary River Program Eggtakes Brood Year 2021

Snettisham Stock

In total 11.9 million eggs were collected for the Snettisham programs. 11.4 million of this production are allocated for the onsite smolt release program and 530,000 for the Sweetheart Lake fry program, remaining unchanged from that of recent years. The eggtake season began on September 24 and ended October 21. This being on par with historical start and ending eggtake dates. See table 3 for a summary of BY21 Snettisham stock eggtakes.

Trans-boundary Rivers Stocks

In total, 1.5 million Tahltan Lake eggs were received at the hatchery in three eggtakes or “lots”. Eggtakes occurred on September 11 through September 17. Poor weather conditions delayed delivery of only one lot out of the three total lots delivered to the hatchery.

An estimated 3.0 million Tatsamenie Lake eggs were delivered to the hatchery in six lots. Eggtakes occurred between September 15 and October 5. Poor weather conditions delayed delivery of three out of the six total lots delivered to the hatchery.

A total of 1.0 million Trapper Lake eggs were delivered to the hatchery in three lots. The eggtakes occurred on September 1, 5 and 8. Poor weather conditions delayed delivery of two out of the three total lots delivered to the hatchery. See table 3 for a summary of BY21 Trans-Boundary River stock eggtakes.

Snettisham Hatchery Maintenance Summary

Curt Fassbender, the sole maintenance department employee, spent most of his days this past spring and summer working on existing equipment and improving site drainage. The latter of these will ultimately help in extending the lifespan of hatchery structures and staff housing by diverting water away from foundations. This took most of the summer to accomplish with many loads of fill hauled from the nearby on-site sandpit.

Staffing

There are no staff changes to report.

Kevin Steck - Hatchery Manager
 Darcy Damrau Steck - Assistant Hatchery Manager
 Nicholas Williams – Assistant Hatchery Manager
 Tom Moeller – Fish Culturist
 Bart Barhorst – Fish Culturist
 Curtis Fassbender – Maintenance Engineer

Table 1

Snettisham Hatchery Fry Transports Brood Year 2020							
Brood Stock	System Stocked	Green Eggs	Eyed Eggs	Green to Eyed Survival	Green to Transport Survival	Number of Trips	Number of Fry Transported
Tahltn L.	Tahltn L.	446,000	377,800	84.7%	73.9%	1	329,700
Tatsamenie L.	Tatsamenie L.	1,715,300	1,427,000	83.2%	74.7%	4	1,281,000
Trapper L.	Trapper L.	467,300	357,400	76.5%	68.4%	1	319,400
Snettisham	Sweetheart L.	<u>476,600</u>	<u>458,700</u>	<u>96.2%</u>	<u>89.0%</u>	<u>1</u>	<u>424,000</u>
	AVE./TOTALS	3,105,200	2,620,900	89.8%	75.8%	6	2,354,100

Table 2

Snettisham Hatchery Smolt Releases Brood Year 2019			
Release Date	Release Location	Number Released	Release Size (g)
6/2 - 6/7/21	Port Snettisham Entrance	2,567,000	10.5
5/25 - 5/28/21	Direct Saltwater	<u>6,408,000</u>	<u>10.8</u>
	AVE./TOTALS	8,975,000	10.7

Table 3

Snettisham Hatchery Eggtakes - All Projects Brood Year 2021			
Eggtake Site	Fecundity	Total Green Eggs	% Survival to Date
Snettisham Stock / Smolt Program	3,346	11,376,000	95.2%
Snettisham Stock / Sweetheart Lake Release	3,400	<u>530,400</u>	n/a
		11,906,400	
Tahltn Lake Stock	2,639	1,520,000	83.7%
Tatsamenie Lake Stock	3,573	2,984,000	80.4%
Trapper Lake Stock	3,125	<u>1,003,000</u>	41.9%
		5,507,000	
	TOTAL EGGS	17,413,400	

DIPAC 2021 HARVEST REPORT and 2022 FORECAST

Adam Zaleski
December 2021

SUMMARY

The 2021 return from DIPAC salmon enhancement programs produced 1.4 M chum at 132% of forecast, Chinook returned at 160% of the forecast, sockeye returned at 35% of the forecast, and coho returned at 97% of forecast.

This year's chum return totaled 1,402,000 fish, which was comfortably above the preseason forecast of 1.1 million (M) and nearing the high-end estimate of 1.6 M. The common property fisheries harvested approximately 1.2 M DIPAC chum.

The return of 44,200 DIPAC sockeye (age-4/5) was below the preseason forecast of 106,100. The common property contribution totaled 25,500 fish, gillnet openings in Speel Arm harvested approximately 2,600 sockeye.

Large adult Chinook (age 5 – 7) totaled 3,700 fish, achieving 160% of the preseason forecast. However, the forecast was on the conservative side with only 2,300 large adults estimated; the average return over the prior 10 years (including 2021) is 4,000 Chinook.

An estimated 42,800 DIPAC adult coho returned in 2021 for a marine survival of 4.3%, allowing for a productive and manageable cost recovery effort at the rack and ample sport opportunity for shore-side anglers.

The ex-vessel value of this year's commercial harvest of DIPAC salmon totaled an estimated \$5 M, bringing the cumulative ex-vessel total to \$199 M and the cumulative salmon enhancement tax (S.E.T.) total to \$5.9 M.

2022 **Preliminary** Forecasts: 2 M chum, 60,900 sockeye, 11,800 coho, and 3,900 Chinook.

CHUM

The return of 1.4 M DIPAC chum salmon in 2021 was 132% of the mid-point forecast (Table 1). All returning age classes, except age 6 chum, were above forecasted values. The composition of the run was 3.8% age-3, 90.3% age-4, 5.9% age-5, and 0.03% age-6. Prior to the irregular returns starting in 2018 the typical 10-year average run composition was: 1.9% age-3, 65.2% age-4, 31.6% age-5, and 1.3% age-6. Despite the overall return coming in above forecast it is still well below the 15-year average (2006 – 2020) of 3.1 M chum and, although the age composition came near the forecasted proportions, it was particularly concerning for age-5 chum which should make up 31.6% of the return rather than the 5.9%, as in 2021. Commercial gillnetters, seiners, and trollers collectively harvested 707,200 DIPAC chums this year (Table 2).

The statewide chum return in 2021 was 75% of forecast (11.5 M harvest), compared to 38% in 2020 (7.5 M harvest) (<https://www.alaskaseafood.org/resources/harvesting-updates/>). The DIPAC chum return was also a marked improvement compared to last year, which was the worst in DIPAC's history since 1994. Unfortunately, this year was also the 3rd consecutive year with no seine openings in Amalga Harbor, as well as falling short on in-season cost recovery needs despite achieving the forecasted goals and a stronger than expected \$/lb.

Table 1. Estimated return of DIPAC chum salmon in 2021 by district and age.

	Age-3	Age-4	Age-5	Age-6	Total
Taku/Stephens	9,100	420,500	32,900	320	462,800
Lynn Canal/Amalga	44,200	845,600	49,200	120	939,200
Actual Total	53,200	1,266,000	82,200	440	1,402,000
Projected	82,300	908,700	66,100	5,900	1,063,000
% of Projection	65%	139%	124%	8%	132%

Table 2. Total contribution and harvest shares of DIPAC chum salmon in 2021.

	CP Harvest	DIPAC Contribution	% DIPAC Contribution	Cost Recovery	Total Harvest	% CP Share	% DIPAC Share
Lynn Canal Gillnet	522,400	507,000	97%	458,077	965,000	53%	47%
Taku/Stephens Gillnet	185,300	182,100	98%	40,300	222,400	82%	18%
Homeshore Troll	4,200	3,300	79%	0	3,300	100%	0%
Amalga-CP Seine	0	0	0%	0	0	0%	0%
Other Seine	25,400	10,800	43%	0	10,800	100%	0%
Misc. SEAK	4,000	4,000	100%	0	4,000	100%	0%
Sport	0	1,000		0	1,000	100%	0%
Brood & Esc	0	0		0	195,400		0%
Total	741,400	708,200		498,400	1,402,000	59%	41%

Gillnetters caught the majority of DIPAC chum, 689,400, representing 98% of the total common property harvest of DIPAC chums followed by seine at 2% and < 1% troll harvest. There were no seine openers this year at Amalga Harbor due to the low return. Despite over performance on the forecast and good \$/lb, the lower than average return still resulted in falling short of our cost recovery goal. If the return of age-5 chum had been at or near average that would have bolstered the overall return by nearly 1 M fish, which would have closed the gap on cost recovery needs. A total of 498,400 chum totaling 3.1 M lbs were harvested in cost recovery fisheries, 92% of which came from Amalga Harbor and the remaining were harvested at MSH – 40,300 (not including broodstock).

Cumulatively, 1.4 M DIPAC chums, totaling 6.2 M pounds returned this year. With 708,200 chums being harvested in common property fisheries and 498,400 in cost recovery, the harvest shares for 2021 were 59% and 41%, respectively (not including broodstock) (Figure 1).

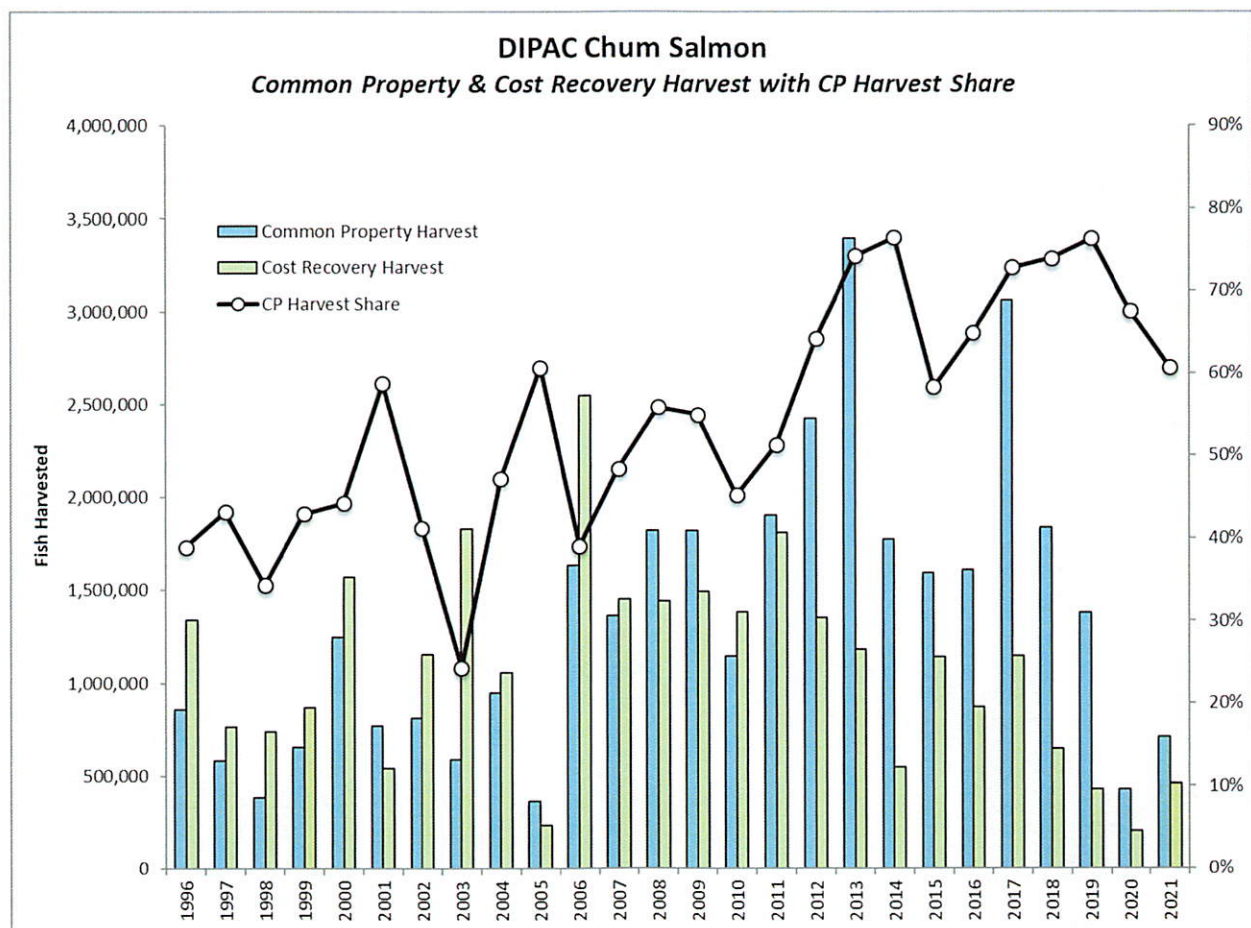


Figure 1. CR and CP harvest and harvest shares of DIPAC chum.

SOCKEYE

The 2021 return of 44,200 DIPAC sockeye (age-4/5) came in at 42% of the forecast (106,100). Common property harvest totaled 25,500 DIPAC sockeye, 34% of which were caught in the district 111 gillnet fishery (8,800). Snettisham cost recovery harvested 11,600 adult sockeye. This represents 45% of the total 2021 harvest. See Table 3 for a complete summary of this year's adult sockeye return. In regards to personal use harvest of Sweetheart Lake sockeye, 2020 was a very productive year with 5,700 sockeye harvested, and the 2021 personal use harvest for this program has sounded like another productive year. The release group from Port Snettisham Entrance made up 35% of the total return this year, although that wasn't many sockeye (8,000) it was a positive signal for a release group that has been one of the worst performing strategies. If the Port Snettisham Entrance strategy continues to show signs of improvement, then more smolt may be released with that method.

Table 3. Total harvest and contribution of DIPAC sockeye in 2021 (includes Sweetheart).

	CP Harvest	Total CP Contribution	Cost Recovery	Total Harvest	% CP Share	% DIPAC Share
District 11 Gillnet	47,700	8,800	11,600	20,400		
Other Gillnet	91,700	7,600	0	7,600		
Seine	26,700	5,100	0	5,100		
Sport/Personal Use	4,000	4,000	0	4,000		
Total	170,100	25,500	11,600	44,200	69%	31%

CHINOOK

Approximately 2,300 (age 3 – 4) and 3,700 large (age 5 – 7) Chinook salmon returned from DIPAC's Juneau enhancement projects in 2021, which was 160% of forecast for ages 5 – 7, 577% of forecast for ages 3 – 4, and 221% of forecast for all ages. In common property fisheries Fish Creek had the strongest returns with a total estimated harvest of 820 kings and an estimated shore-side catch of 1,200 (all age groups).

Anglers in the Juneau area harvested an estimated 2,500 DIPAC Chinook, 580 in the marine boat fisheries and 1,900 in shoreline and freshwater areas. Commercial fleets harvested another 720 fish (Table 4).

COHO

The 2021 return of approximately 42,800 DIPAC coho was 97% of the preseason forecast of 44,000. There were 17,300 adult coho landed in commercial fisheries, an estimated 1,300 caught in marine boat harvest, and a shore-side sport catch estimate of 8,000. MSH had 16,200 coho to the rack of which 15,100 went towards cost recovery (Table 4). The coho return this year was somewhat slow to start but fish were solidly present in the system through the middle part of September allowing for productive cost recovery days. It seemed like shore-side daily limits

weren't as easily caught as previous years but angler effort appeared to be consistently high and spread throughout the channel with lots of coho being landed August through September.

EX-VESSEL VALUE

The total ex-vessel value of DIPAC salmon harvested in commercial fisheries this year was \$5 M, bringing the cumulative total to \$199 M. The ex-vessel chum revenues this year were approximately \$4.5 M. The remainder was made up of sockeye (\$229,200), coho (\$250,500) and Chinook (\$79,100) (Figure 2).

All commercially harvested salmon (wild and enhanced) landed in Southeast Alaska are subject to the 3% Salmon Enhancement Tax (S.E.T.). This tax revenue does not go to DIPAC since it is a non-regional corporation. The revenue generated from this tax is used to help fund enhancement programs in the region. The estimated S.E.T. revenue generated from the harvest and sale of DIPAC salmon in 2021 is \$151,000, with a to-date cumulative total of \$6 M (Figure 3 a & b).

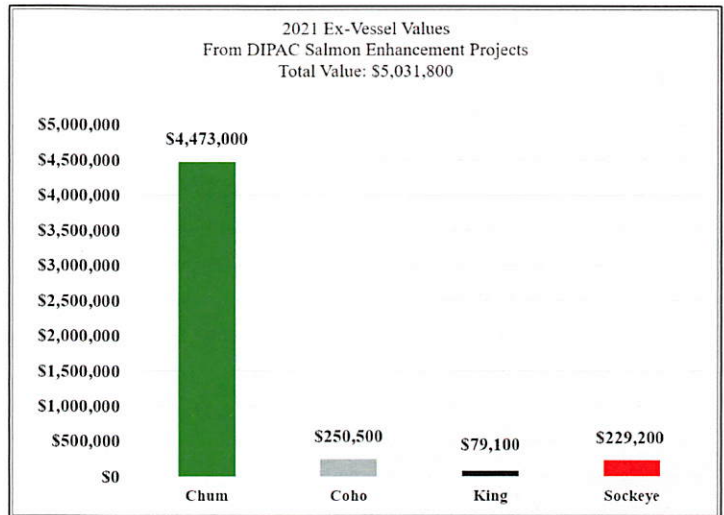
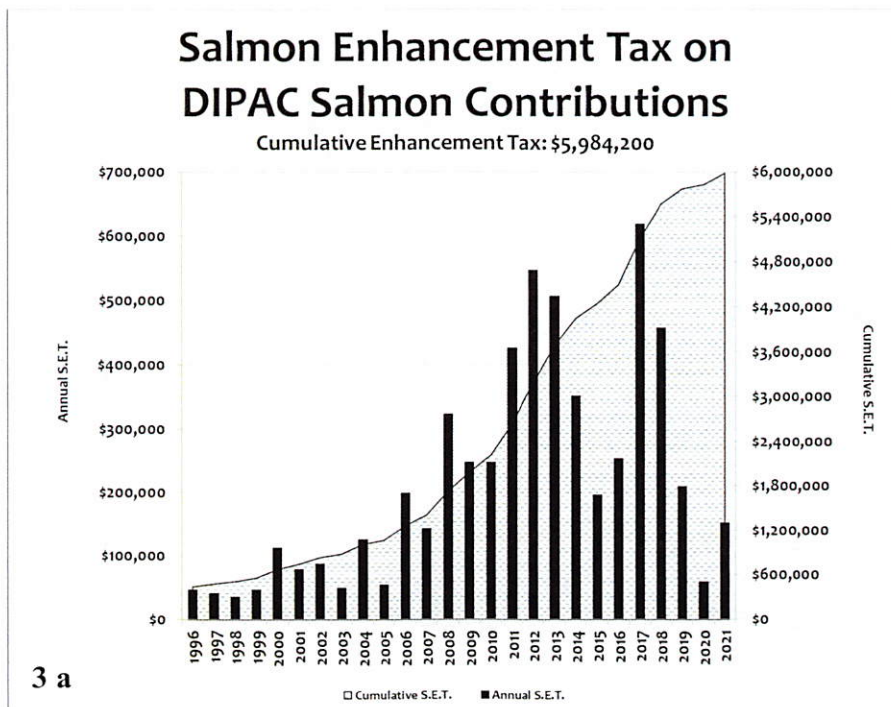


Figure 2. Estimated ex-vessel value of DIPAC salmon.



3 a

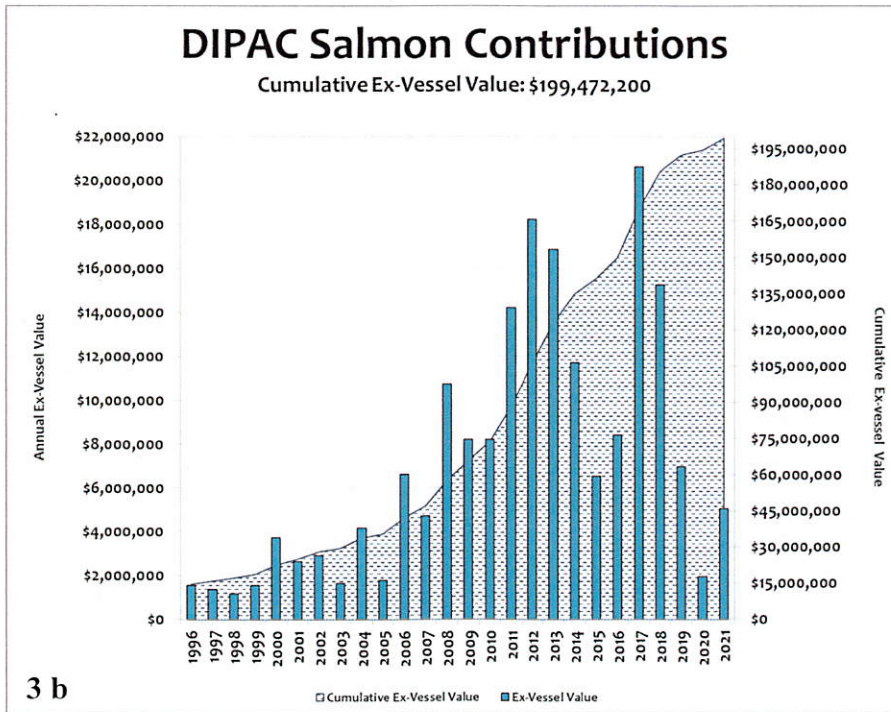


Figure 3. Annual and cumulative ex-vessel value (a) and S.E.T. (b) of DIPAC contributions.

2022 PRELIMINARY FORECAST

Chum Salmon

The preliminary projected return of DIPAC chum salmon in 2022 is 2 M. The average return since 2006 is 3.1 M chum (Figure 4). With a preliminary midpoint forecast of 2 M, there would still be some concern for making cost recovery if \$/lb were to be weak; however, it does cause less stress over broodstock needs at the hatchery as there was excess brood availability in 2021 with a forecast that was 800,000 fish less. A 2 M chum forecast may allow some cost recovery harvest in the Channel, which we haven't been able to meaningfully accomplish since 2019.

Something that's become commonplace in recent years is abandoning all traditional chum forecast methods and adopting a blend of quantitative approaches to produce reasonable return estimates. This predictive conundrum started in 2018 with an unprecedented return of age-3 chums, which has introduced a very high level of variance in the standard predictive models making those estimates unreliable. The very preliminary 2022 forecast was estimated using a blend of both sibling regressions and cumulative marine survivals, more work is still needed to finalize the 2022 chum forecast.

2022 Forecast Table.

	Age 3	Age 4	Age 5	Age 6	Total
Lynn Canal	63,200	1,014,000	374,600	23,500	1,475,000
Taku-Stephens	31,300	302,700	178,000	12,000	524,000
					1,999,000
Total Less Broodstock					1,809,000

The preliminary 2022 chum forecast is composed of: 5% age-3, 66% age-4, 28% age-5, and 2% age-6. These age compositions are closer to our historic averages. Prior to 2018 the run was typically: 4% age-3, 64% age-4, 30% age-5, and 1% age-5. The average from 2018 to 2020 is: 13% age-3, 61% age-4, 25% age-5, and 1% age-6. Recent data and observations indicate that ocean conditions have started shifting back to a cooler more productive regime as well as the onset of a La Niña year; this should favor increased survival rates and better returns for all DIPAC salmon.

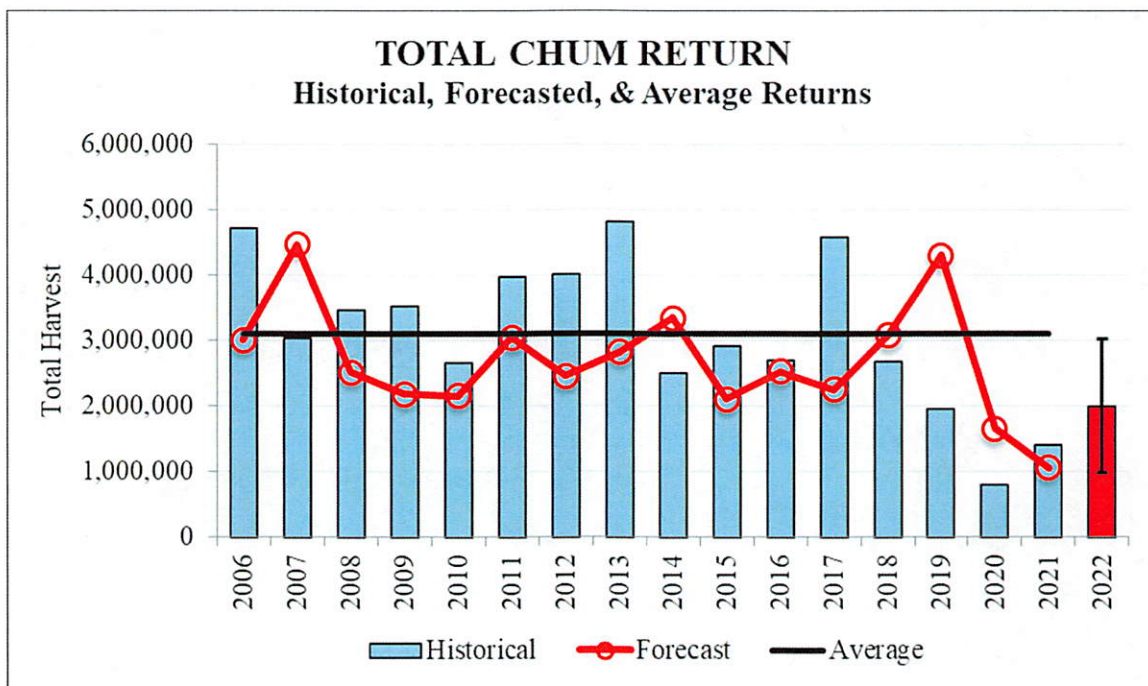


Figure 4. Historical and forecasted DIPAC chum salmon returns.

Sockeye Salmon

The projected return of DIPAC sockeye in 2022 is 60,900 fish (age-4 and age-5) with an estimated range of 31,200 – 190,600 (Figure 5). The sockeye forecast is based on the relationship of cumulative marine survival rates between age classes. The composition of the 2022 return is for 13,000 age-5 and 48,900 age-4 sockeye. The overall survival rate for the 2022 forecast is approximately 0.64% compared to the historical average of 1.9% (1996 – 2015). Broodyear 2017 had severe losses due to an IHN outbreak and only 646,000 smolt were released, of which approximately 8,200 age-4 sockeye returned in 2021. On average age-4 sockeye account for 53% of the return and 108,000 fish. The age-5 component of the run typically makes up nearly 40% of the return and those returning in 2022 from broodyear 2017 will not likely bolster the overall return with an average marine survival of 1.1%.

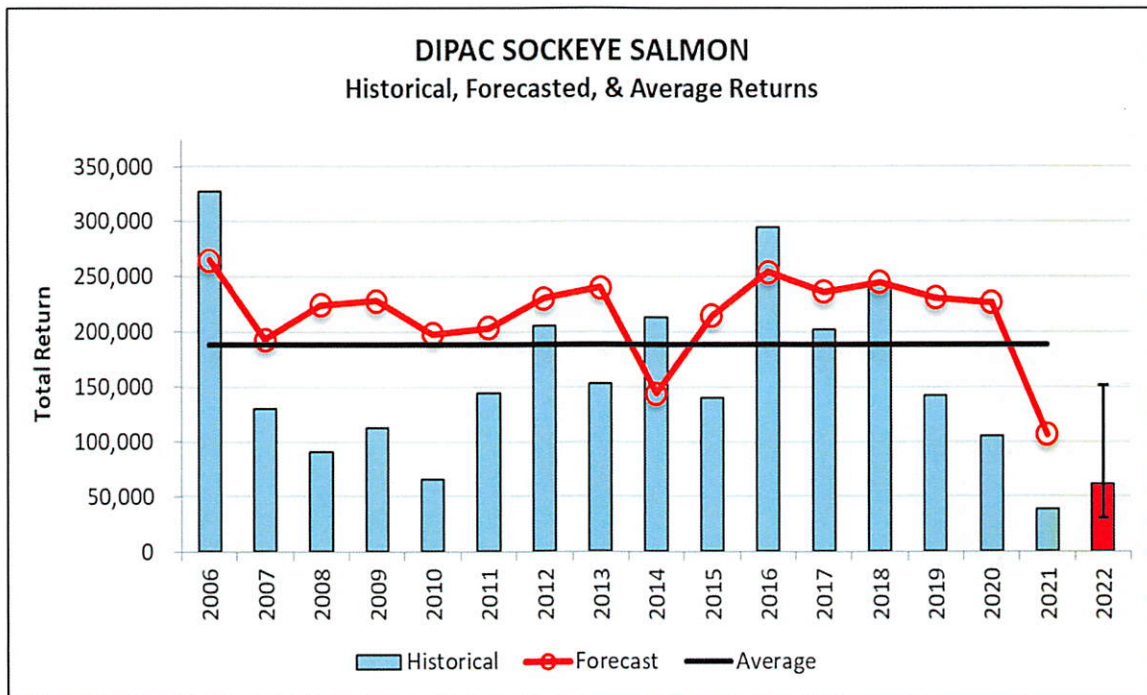


Figure 5. Historical and forecasted DIPAC sockeye returns.

Chinook Salmon

The projected return of DIPAC produced Chinook salmon in 2022 is for 3,900 large adults (ages 5 – 7). The forecast is based on cumulative returns, marine survival, and average age composition specific to each release site. This year’s large adult return came in at 160% of the preseason forecast (Figure 6). The 2022 forecast estimates large adults to make up 94% of the return. There will be a missing age-6 and age-4 component from returns next year in that there were no releases at Lena Cove and Thane for broodyear 2016 and 2018 and no Auke Bay releases for broodyear 2018. The age-6/4 Chinook on average each makeup approximately 20% of the run, however, Chinook were still released as normal from Fish Creek and Macaulay during those years. The overall marine survival from all broodyears returning this year was 0.2% and the 2022 estimates the overall marine survival at 0.1%. The percentage of the overall 2021 large adult return contribution from each site was: Auke Bay – 14%, Fish Creek – 35%, Lena Cove – 9%, MSH – 34%, and Thane – 7%.

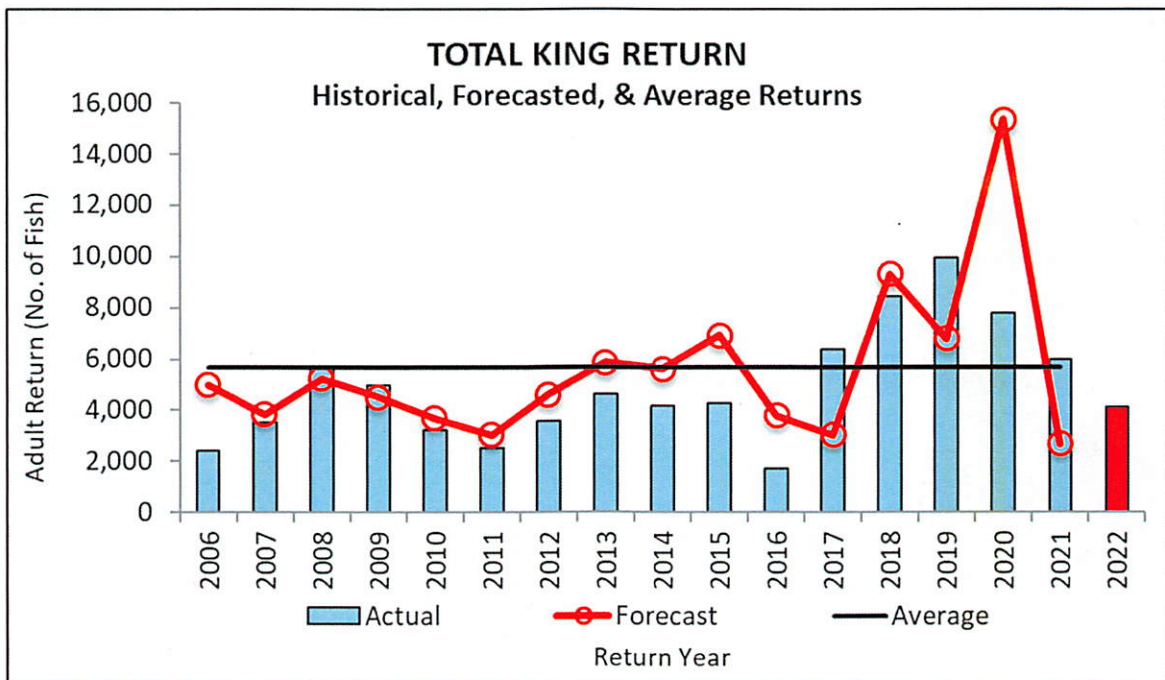


Figure 6. Historical and forecasted DIPAC king returns.

Coho Salmon

The 2022 forecast was estimated using the 3-year average of marine survival to produce a forecast estimate of 11,800 DIPAC coho (3.9% marine survival) with a range from 8,100 – 15,400 coho. The reason for the low forecast is due to the emergency early release of the majority of that broodyear during the pipeline disaster in December 2020; less than 300,000 smolt were released from broodyear 2019. Figure 7 shows the coho program performance starting with the first returns from the Fish Creek stock.

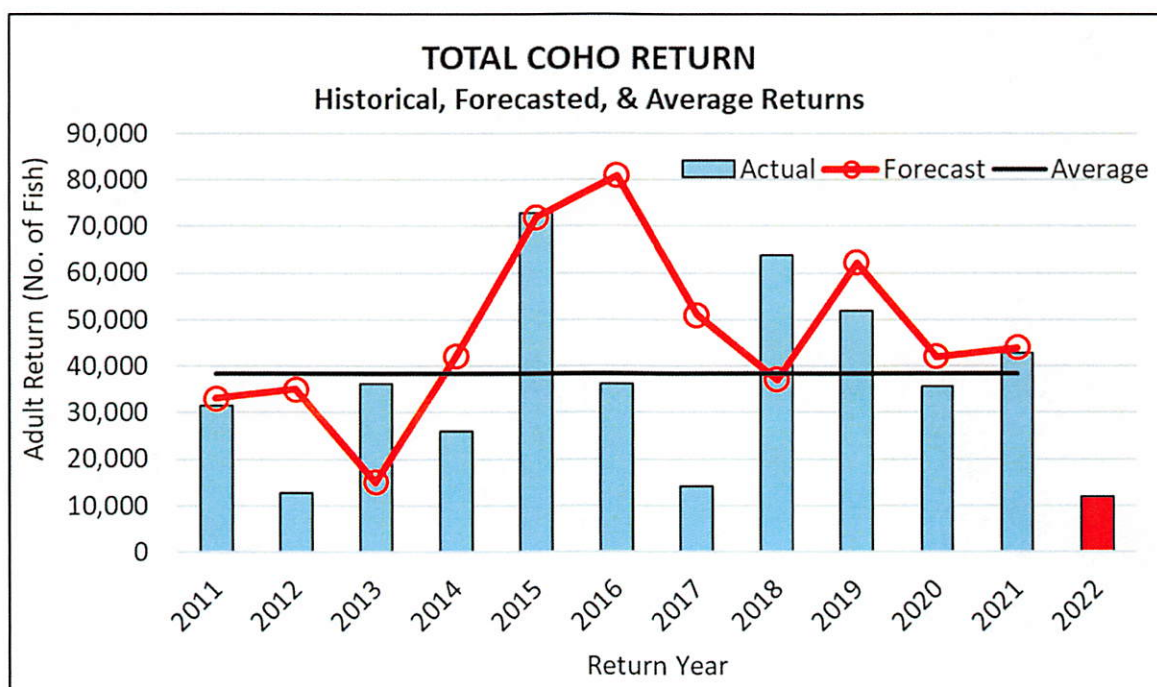


Figure 7. Historical and forecasted DIPAC coho returns.

Table 4: Total returns, hatchery returns and fishery contributions from DIPAC salmon enhancement programs in 2021.

Species	Fishery	Common Property Contribution		Hatchery Returns			Total Return ¹
		Commercial	Sport	Cost Recovery	Broodstock	Other	Fish
Chum	Taku/Stephens Gillnet	507,000		458,100			
	Lynn Canal Gillnet	182,100		40,300			
	Homeshore Troll	3,300					
	Amalga CP-Seine	-					
	Other Seine	10,800					
	Miscellaneous SEAK ⁶	4,000					
	Shoreside Sport		1,000				
	Hatchery Returns				179,900 ²	15,500 ³	
	Total Chum	707,000	1,000	498,400	179,900	15,500	1,402,000
Estimated Value	\$4,473,000						
Chinook	Southeast Troll	420					
	Southeast GN & SN	950					
	Marine Sport		950				
	Shoreside Sport		2,700				
	Donations						
	Hatchery Returns			-	800 ⁴		
	Total Chinook	1,370	3,700	-	800	-	5,900
Estimated Value	\$79,100						
Coho	Southeast Troll	5,500					
	Southeast Gillnet	11,700					
	Southeast Seine	200					
	Marine Sport		1,300				
	Shoreside Sport		8,000				
	Donations			120			
	Hatchery Returns			15,100	700	240 ⁵	
	Total Coho	17,400	9,300	15,220	700	240	42,900
Estimated Value	\$250,500						
Sockeye	District 11 Gillnet	8,800					
	Other Gillnet & Seine	12,800					
	Personal Use		4,000				
	Hatchery Returns			11,600	6,800	210 ⁵	
	Total Sockeye	21,600	4,000	11,600	6,800	210	44,200
Estimated Value	\$229,200						
Grand Totals	747,400	18,000	525,200	188,200	16,000	1,495,000	
Total Estimated Value	\$5,031,800						

- 1) Totals may not match other report sums due to rounding.
- 2) Includes spawned fish, carcass sales and donations.
- 3) Represents uncounted mortality & escapement into local streams.
Incidental harvest during chum cost recovery.
- 4) Includes MSH brood, donations, & CR
- 5) End-of-run unmarketable fish.
- 6) DIPAC chum harvested in NSRAA & SSRAA fisheries

Tourism & Education Department Report

Fall 2021

Amanda Oliver

Overview

The Visitor Center (VC) has remained closed to the public due to the COVID-19 pandemic since March of 2020. Due to increasing case transmission in the community we were unable to reopen for in person field trips this fall. We are planning to reopen in the spring for education programs and tourism.

Education and Community Outreach

This summer, the ramp way and deck were open for guests to explore the outside areas of the hatchery, and we had many visitors throughout the summer. We continued our online presence by highlighting hatchery operations throughout the year on our website and Facebook page.

The Tourism and Education Department was able to participate in a handful of outdoor educational outreaches this summer including summer camps and the Juneau Maritime Festival. When school resumed this fall, high school and university students participated in virtual presentations. This summer and fall, DIPAC staff interacted with over 300 community members and students combined. Looking ahead, we are hopeful that we will be able to welcome students in-person to participate in the Spring Sea Week programs.

Tourism Outlook

We are planning to reopen the VC for the 2022 summer season while following CDC and CBJ guidelines to protect hatchery staff and visitors alike. Preliminary forecasts estimate that Southeast Alaska could expect over 1.5 million passengers. However, this forecast is based on ships sailing at full capacity. COVID restrictions that limit ships sailing at full capacity may still be in place next summer.

I have met with local large tour operators to go over policies that may be in place next summer. This year, all cruise ships that came to Juneau operated with either all, or a majority, of their crews and guests vaccinated against COVID-19, and masking was required. We expect this to be the case for next summer as well. Unlike last year, DIPAC can announce a closure at any time, and there will be no penalties to our tourism and education programs in doing so. An update as to our predications for tourism and education programs in 2022 will be given at the spring board meeting, but we are hopeful to get back to in-person education soon.

