

FISH RAP

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Highlighting releases, returns, policy and legislation affecting the Southeast Alaska salmon fisheries

Vol. 38 No.2
December 2020

*The Cloud Nine
fishes for chum
during the
Crawfish Inlet
cost recovery
harvest.*



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A Tough Year: Dismal Salmon Value in 2020

It's challenging to make a living as a salmon fisherman during years like this, when returns come in dramatically below forecasts. It's also challenging for organizations like NSRAA to fund future projects when returns are so unpredictable.

"Going into the season, I was cautiously optimistic," says Scott Wagner, NSRAA General Manager.

Despite all the uncertainty brought about by the pandemic, the economic impact of the spring shutdown, and the resulting state mandates for the upcoming fishing season, the first few weeks of the season looked okay. The folks at NSRAA evaluate returns based on sex ratio. Early on, those appeared to be normal.

"Things appeared to be tracking below forecast, but not too alarming," Scott says. But then it all changed. "It was clear that Hidden Falls was not going to come in at forecast. The way the fish returned was unusual as well. They weren't showing at the surface. They were staying deep, offshore. All the normal things we would use to indicate the strength of a run wasn't occurring."

Few of NSRAA's projects came near or above forecast this season. Most of those involved small overall numbers of fish, such as the chinook at Medveje and the chum return to Gunnuk Creek. Only Crawfish Inlet's chum return saw large numbers – 1.5 million and just short of the forecasted return.

"Most of our sites for chum came in at 40 to 50 percent of forecast," says NSRAA Data Analyst, Chip Blair.

Overall, it was a very poor year for chum – both regionwide and statewide.

"Statewide, we had the poorest chum return since the early 1990s," Chip explains. "The commercial harvest was about 5 million fish, which is 40 percent of the 10 year average. You'd have to go back to 1990 for a lower harvest, back to the levels before we had any hatchery production at all. Everything was way down, with some areas harder hit than others. For some reason, Crawfish Inlet outperformed other areas. We can't say why, necessarily. It may be just the luck of the draw, or maybe the fish hit a sweet spot in the Gulf of Alaska."

To say it was a disheartening season would be an understatement.

"It lowers my confidence even further on depending upon forecasting to make predictions or decisions about the upcoming year," Scott says. "We used to utilize those predictions to set up a management plan, the harvest strategy for various areas. We'd use them to decide where to

do cost recovery (harvest used to fund the budget for NSRAA's next fiscal year). Using forecasts as tools is severely hindered when you can't rely on the fish coming in anywhere close to predictions."

In addition to its cost recovery harvest, NSRAA (and similar organizations) depend on the 3 percent Salmon Enhancement Tax (SET) that is collected each year from commercial fleets. NSRAA's portion of the SET has averaged more than \$2.25 million annually over the past ten years. For 2020's SET, the organization will only receive an estimated \$790,000.

"That's the lowest SET revenue since 2006," Scott says. "We're going to have to do a lot more cost recovery to make up that difference."

Those cost recovery closures will result in fewer opportunities for fishermen next year.

"The morale among fishermen is low," Scott says. "Even the trollers, who had an okay year, it was still below their historical average. Their year just wasn't as bad as everybody else's. Throw on top of that all the COVID issues and state mandates that fishermen had to follow, and it was a tough year, financially and mentally."

"My hope is that by next spring, the COVID case count will have dropped and there will be sufficient vaccine to get us back to some sort of normalcy," he says. "That's going to benefit everybody in the economy by stabilizing marketplaces."

Chip hopes for a turnaround in the marine survival of NSRAA's salmon. Most of NSRAA's recent chum returns have averaged near 1 percent survival. That's unusually low.

"Most of our long-term chum models are closer to 2.5 to 3 percent," he explains.

The salmon that returned this year and in recent years were released into the ocean around the time of the Blob. It's highly possible their marine survival was negatively impacted by those warmer temperatures and whatever changes that resulted from those temperatures among predator and prey.

"It's got to be the ocean conditions that are causing the declines," Chip theorizes, adding that recent data indicates cooling water temperatures in the Pacific. "Hopefully, we can get back more toward an equilibrium. If we got back to a more normal situation, we'd probably have two and a half times as many fish."

"It depends how things bounce back in the ocean," Chip continues, "hopefully, we're at the bottom of a cycle and we'll see a turnaround soon."

New Broodstock Collection Process at Medvejie

This year wasn't the first time Medvejie Hatchery struggled to collect enough broodstock to meet its eggtake goals. Meager broodstock returns to the hatchery forced staff to look to its nearby remote release site, Deep Inlet, to compensate for the shortage, but in the process, staff found a new method to collect eggs that increased fertilization.

"The old way was to go there and have a seiner catch them and we would spawn them on the back of the boat, or on the beach, and bring the eggs back here," explains Cain DePriest, Medvejie Manager.

General Manager's Notes



What a year! Thankfully, the new year will be upon us by the time you read this. Like a lot of you, I am ready for 2021 and a new start. While I am very thankful that fishermen and NSRAA were able to conduct a fishery this year, there was not much else for which to be thankful. Worst salmon return in decades, poor prices due to COVID-19, broodstock shortages for chum, dreariest summer in years, and in the past month at NSRAA, we have battled near ca-

tastrophes at two of our facilities. I try to not dwell on the negatives, but it has been a tough year.

On the salmon front, it was the overall worst salmon return for Alaska in many years. Specifically, for Southeast, it was the worst overall value in dollars since 2002, adjusted for inflation worst since 1976. By the numbers, the pink salmon return was the lowest since the 70s and for chum since the early 90s. This created hardship for you, the fishermen, and challenges for us at our facilities trying to secure enough brood to collect eggs for future generations of salmon.

While I am happy to report that we were able to meet our eggtake goals for Chinook and coho, we struggled to collect enough eggs for our chum programs. This resulted in commercial opening closures at both Southeast Cove and Deep Inlet, creating yet further hardship for the fleets. With some ingenuity and hard work, we were able to obtain 93 percent of our overall chum goal by moving fish by tender, from the remote release sites to the facilities. We moved approximately 18,000 adults from Southeast Cove, and an impressive 50,000 adult chum from Deep Inlet. That represents nearly half of the chum broodstock needs for Medvejie.

On the positive side for the association, we were able to get through the summer and fall without a COVID outbreak. This was the result of lots of preparation, protocols and testing. My big fear, going into the season, was either an outbreak impacting our ability to complete eggtakes, or cost recovery harvest. Fortunately, both were a success, and, as an association, we came out of the salmon season in as good as shape as possible.

As 2020 was coming to a close, we were thrown two more challenges. In mid-November, a leak was discovered in the City of Sitka bulk water line, which supplies our Sawmill Creek Hatchery. NSRAA staff, in cooperation with the City, was able to make emergency repairs, and get the facility back up and running with only minor interruption of water and no fish loss. Three weeks later, during the record rain event that hit Southeast Alaska, flooding in Medvejie Creek nearly breached our stream barriers. The flood blew out an intake, damaged another, carried away a significant portion of our rock armoring, and deposited thousands of yards of material impacting our weir and net pen locations. As with the emergency at Sawmill, we were fortunate in not losing any fish.

Without a dedicated board and staff, the outcomes in 2020 would have been grim. NSRAA is fortunate to have both. I am looking forward to putting a global pandemic, a disastrous salmon season, and 2020 behind me. I, for one, will be ringing in the new year with the hope that 2021 doesn't look anything like 2020.

Scott Wagner

This year, Medvejie still enlisted the help of seiners to catch the fish, but then instead of killing the fish and collecting the eggs remotely before returning to the hatchery, the live fish were loaded into a tender and transported back to Medvejie. There, the fish were pumped into a holding net and staff used a transvac (a large vacuum that can suck the fish from the water through a 10-inch tube) to move them directly to the raceway. From there, it was business as usual, as staff euthanized the fish and collected and fertilized the eggs like any other year.

"If you take the eggs remotely, it's really rough on the fish and you don't get as good fertilization," Cain explains.

Remote eggtakes usually result in less than 90 percent fertilization success. While the live transport seems like it would also be stressful on the fish, the loss during transport was minimal and the fertilization success more than made up for it.

"We have a lot better quality control here at the hatchery than on a random beach or on the back deck of a seiner," Cain says. "Overall, I'd say it was much more efficient to get the adults on the boat, bring them here, get them to the raceway and have a better fertilization here."

The new process wasn't without its trials – Cain is new to the manager position this year and much of his crew is also new to their positions – but ultimately, it was a success.

"It was a learning experience for us, for sure," he says. "It was a challenging year. We only have so much time to make decisions. Every decision we made when we chose to shut down Deep Inlet for brood, we're taking away from the commercial fleet. We had to be as fast and efficient as we could, so we could open the fisheries back up. It was difficult, but we needed to do it to ensure we have eggs for the future. The whole process was new for everyone here, but I feel like we did pretty good and were successful. We utilized those fish and got our eggtake goals."

Northern Southeast Regional Aquaculture Association FISH RAP Vol. 38 No. 2 December 2020

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For a change of address notify: Commercial Fisheries Entry Commission
8800-109 Glacier Highway
Juneau, Alaska 99801

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Sawmill Creek Initiates Chinook Program

The year 2020 was far from the best year on record, but it marks an exciting beginning at Sawmill Creek Hatchery, where NSRAA began a new Chinook rearing program.

“We have 776,000 Chinook hatched and incubating at Sawmill for the first time ever,” says Rebecca Olson, Hatchery Manager.

NSRAA is scheduled to receive \$650,000 in federal mitigation funds this year toward its hatchery-produced Chinook programs. The funds are intended to help lessen the impacts to commercial fishermen after Alaska’s Chinook fishery suffered additional cuts during recent Pacific Salmon Treaty (PST) negotiations. NSRAA intends to seek additional PST mitigation grants over the next several years to complete the expansion of its Chinook program.

The organization obtained a permit to raise 2 million Chinook at Sawmill Creek in anticipation of its upcoming building expansion at Sawmill Creek, but the rearing potential there is limited due to lack of space until the expansion is complete. (Expansion plans are still in the works.)

Still, the hatchery staff was able to shift its coho fry in order to make enough room to begin a zero-check Chinook program this year. The Chinook will be released at Crawfish Inlet this spring, adding to the chinook that are transferred there each spring from NSRAA’s Medvejie Hatchery.

“By raising the coho densities just a little bit, we were able to leave one raceway free this winter to rear the zero-check Chinook,” Rebecca explains. (Zero-check Chinook are released in late June to mid-July in their first rearing year, whereas most chinook are raised an additional year before release.)

Hatcheries often use photoperiod manipulation and heat the rearing water to give Chinook the best chance for growth before their release to saltwater.

“We won’t have all those tools here until the new building is finished, so we’re not sure how these chinook will do,” Rebecca explains.

“Pending the success of the first year of Chinook rearing at Sawmill Creek Hatchery, NSRAA will continue to utilize the production capacity to maximize the release of chinook from Crawfish Inlet,” explains Adam Olson, NSRAA Operations Manager.

“Hopefully they’ll do well and it will be a little more fish in the ocean for fishermen to catch,” Rebecca says.



Matt Golden brailing Chinook during spawning at Medvejie Hatchery.



Haley Miller collects otoliths from local chum fishery sampling.

Gunnuk Creek: First Return Exceeds Predictions

While most salmon returns in Southeast Alaska fell far below predictions this season, NSRAA’s Gunnuk Creek hatchery enjoyed a return that far exceeded forecasts.

It’s been two years since NSRAA first released approximately 8.4 million chum fry into the ocean from its newly renovated facility. The first generation of fish were due to return this summer as 3-year-olds. Typically, 3-year-olds represent only a small portion of the fish to return, compared with 4-year-olds and older. The forecast was for a modest 3,000 chum to return to Gunnuk Creek this year, so NSRAA staff was surprised when nearly 6,400 chum – more than double predictions – returned.

“It is a reason to be hopeful that our marine survival is decent and we can expect a stronger 4-year-old return, combined with a strong 3-year-old return in the next batch,” says Ryan Schuman, Hatchery Manager.

Using the standard prediction formula, the return for Gunnuk Creek next spring was close to 95,000, but NSRAA Data Analyst, Chip Blair, erred on the conservative side to account for the recent gap between predictions and returns.

“We have a prediction that stands right now at 77,000,” Ryan says. “We’re hoping that’s pretty close to accurate.”

Normally, 4-year-olds represent the largest age group for returning fish, however, those numbers have been changing around Southeast Alaska lately. Not only are the fish returning in higher proportions as 3-year-olds, but those 3-year-olds return with a higher ratio of males to females, which creates challenges when it’s time to collect and fertilize eggs.

“Ideally, we’re looking for more females,” Ryan explains.

The staff at NSRAA’s Hidden Falls Hatchery struggled to collect its allocated number of eggs this summer. When it became apparent it would fall short of its goal, NSRAA hired seiners to help collect the fish that had returned to Gunnuk Creek and put them in a tender to be transferred to Hidden Falls, where they then eventually made their way from the freshwater lagoon and up the fish ladders. The windfall at Gunnuk Creek added nearly 5 million eggs to make up for the shortfall at Hidden Falls.

In the end, with help from both Gunnuk Creek and Medvejie hatcheries, NSRAA’s shortfall at Hidden Falls fell from 20 percent of its allocation, or 37 million, to just under 19 million eggs. Once fertilized, and eyed, 10 million of those eggs were returned to Gunnuk Creek for incubation, in preparation for their release as fry next spring.

2021 Forecast Gives Hope

After this year, it would be understandable not to put much hope in the salmon forecasts for next season. Almost 4.2 million salmon are projected to return to NSRAA’s various hatcheries and projects in 2021. That’s higher than the forecast for 2020 – and reason to hope.

Nearly 2 million chum are forecasted to return to Crawfish Inlet and approximately 1.6 million between Medvejie and Deep Inlet, for the bulk of the chum return. Chinook are forecasted at nearly 22,000 and coho at 189,000.

“Overall, it’s encouraging to see our forecast for next year higher than our forecast for last season,” says NSRAA General Manager, Scott Wagner. “But, of course, our 2020 return did not come in anywhere near forecast.”

have a great return next year or does that mean there’s another age shift and more came back as 3-year-olds and not 4-year-olds?” says Scott. “In theory, at some point, whatever is causing this trend is going to shift and we’ll go back to a more historical ratio of age at return. But you don’t know until they come back.”

“This year, we had very poor 4-year-old returns from brood year 2016,” Chip explains. “The 3-year-olds were stronger at every site except Southeast Cove, where they were quite weak.”

Chip, too, is hopeful the greater-than-expected ratio of 3-year-olds, as well as recent poor marine survivals, is just temporary. He points to data that indicates the “Blob” – a large mass of warm ocean water in the northern Pacific that was first detected in 2013 and continued to spread for several years – likely affected the salmon survivals in recent years.

“I don’t know how far back they have data, but I don’t recall anything that significant and lasting that long,” he says. “I think the makeup of the plankton in the Gulf of Alaska and the makeup of the prey species were totally different than normal. It just wasn’t a good environment for salmon.”

New data indicates water temperatures may be experiencing a cooling trend now. Chip is hopeful that marine survivals will soon begin an upward trend.

“I think there’s more hope to be optimistic at this point,” he says. Meanwhile, chinook returns to NSRAA seem to be improving.

“Our Chinook returns came in over forecast by 1,000 fish,” Scott says. “That may not be a lot, but it’s trending in the right direction. Next year’s forecast is 5,000 over 2020, so it’s trending in a positive.”

And the number of coho jacks (coho that return the same year they were released) was up this year, as well.

“It’s not a real strong predictor of future returns, so we can’t really hang our hats on it, but it gives us some hope,” Chip says.

In the end, it’s better to be hopeful.

2021 Chum Forecast			
Early Runs		Late Runs	
Hidden Falls	286,000	Deep Inlet (Medvejie stock)	1,219,000
Southeast Cove	158,000	Crawfish Inlet	1,920,000
Gunnuk Creek	77,000		
Thomas Bay	132,000		
Deep Inlet (Hidden Falls stock)	389,000		
Early Run Total	1,042,000	Late Run Total	3,139,000
Grand Total 4,181,000			

NSRAA has not been alone in its struggle to accurately forecast returns lately. Douglas Island Pink and Chum (DIPAC) and Southern Southeast Regional Aquaculture Association (SSRAA) have also had similar problems with their forecasts.

For chum, a recent shift in the age of returning fish has thrown off forecasts.

Historically, 3-year-olds represent only a small ratio of the various age groups that will return to their natal waters. For decades, forecasters, including NSRAA’s Data Analyst, Chip Blair, have used the strength of the 3-year-old return to determine marine survival for a particular brood year. In general, a strong return of 3-year-olds one season would translate into an even greater number of 4-year-olds the next.

“Usually, the 3-year-olds are the main predictor for the 4-year-old return, and the 4-year-olds make up the bulk of the return,” Chip explains. But in the past few years, there has been an age shift, with, in some cases, 3-year-olds now representing the largest age group of returning chum.

“In the last three to four years, there’s been a trend to a higher percentage of salmon returning as 3-year-olds,” Scott says. “So we can’t use our historical trend of ratio of 3-year-olds to expand for future years. It’s not consistent and it’s no longer a good predictor.”

The age shift to a higher proportion of 3-year-olds is recent enough ‘however, that salmon experts are hopeful it’s temporary, and that this season’s 3-year-old return may indicate a larger portion of 4-year-olds in 2021. At Crawfish Inlet, for example, where chum returns came in at 97 percent of forecast, more 3-year-olds returned than forecasted.

“So, the million dollar question is: Does that mean we’re going to



The Christina Dawn makes another set. Coho cost recovery fishing in Mist Cove.

NSRAA Contribution to Southeast Alaska Commercial Fisheries								
Number of Fish : 2019 - 2020								
	Gillnet		Seine		Troll		All Gear	
	2019	2020	2019	2020	2019	2020	2019	2020
Chinook	4,055	3,653	3,109	2,338	3,426	3,003	10,590	8,994
Chum	430,477	221,680	2,830,491	1,623,581	222,977	72,679	3,483,944	1,917,940
Coho	10,149	2,806	13,438	6,145	47,539	47,520	71,126	56,471
All	445,000	228,000	2,847,000	1,632,000	274,000	123,000	3,566,000	1,983,000

NSRAA Mitigates Broodstock Shortage



Live broodstock collection with the Debbie Sue and Legacy near Deep Inlet.

At NSRAA, poor returns result in more than diminished commercial contributions. It also means hatchery staff must scramble to collect sufficient eggs to release enough fish for future harvests.

This year's returns would have made it a challenging year to reach eggtake goals as it was, but add COVID restrictions in the mix, and NSRAA staff was forced to find creative, new strategies to fill the gaps.

"Fortunately, we were able to foresee the shortages early enough to take steps to mitigate them," says Adam Olson, NSRAA Operations Manager. "It could have been much worse."

"Early on at Hidden Falls, it was clear that the fish were not coming in as forecasted," explains NSRAA General Manager, Scott Wagner. "We started making alternative plans to acquire surplus broodstock from other projects, so we closed down fishing at Southeast Cove at what appeared to be the latter two thirds of the return. Unfortunately, the return cut off much quicker and sharply than we expected, and we did not get enough."

In a normal year, a shortfall in eggs could be collected from another site. If Hidden Falls fell short of its eggtake goals, for example, NSRAA staff would send staff to Southeast Cove to catch and kill the fish, and collect the eggs remotely, but with COVID restrictions, NSRAA staff was not allowed to get onto any fishing boats, which meant the organization needed to come up with new solutions.

So, NSRAA enlisted a few fishermen to help catch the fish and move them by tender. It took four trips to move approximately 18,000 fish from

Southeast Cove to Hidden Falls. Unfortunately, there was a higher ratio of three-year-olds than expected. Three-year-olds tend to return with higher male to female ratios, which compounded the shortfall of eggs and Hidden Falls still remained short, nearly 20 million.

When the fish returning to Gunnuk Creek Hatchery exceeded forecasts – the return came in at nearly 6,500, more than twice the predictions – NSRAA was able to use those fish to help mitigate the broodstock shortage at Hidden Falls.

"So, when we started doing live broodstock transfers, we did them from both Southeast Cove and Gunnuk Creek," Adam explains.

Chum broodstock shortfalls at Medvejie also led to some fishery closures, but after moving fish and eggs between sites (and adjusting numbers between summer and fall stocks), NSRAA was able to narrow the gap at all its sites. In the end, Hidden Falls chum eggtake fell just 12 percent short, summer chum at Medvejie about the same (aided by the first summer chum eggtake at Medvejie) and fall chum at Medvejie ended up about 5 percent short.

It's difficult to know if or how those shortfalls might impact next spring's release or those eventual returns.

"That's all so contingent on marine survival," explains Adam, who is hopeful that NSRAA's staff was able to spin the shortfall into an advantage to offset the smaller release numbers. "When you come up short, you end up with more rearing space, so we're able to increase our 4.0 proportion (fish that are reared longer and released at twice the size of normal) to try to offset some of that potential loss as adults. The 4.0 fish typically survive better, and we can do more of those now with the extra space."

Previously, NSRAA reared 50 percent of its chum using the traditional 2.0 program, where the fry are reared to a release weight of 2.0 grams, and the other 50 percent using the 4.0 program, where fish are reared for a longer time and released at 4.0 grams. (While more costly to raise, experts believe the fry released at the higher weight may have a greater chance of marine survival.)

This year, NSRAA will use the extra space created by the eggtake shortfall to increase the number of fry reared to 4.0 grams, raising the portion of fish for its 4.0 program to 70 percent for Southeast Cove and 100 percent for Thomas Bay.

"Best case scenario, maybe we'll get the same number of adults as we would have without the shortfall in eggs," says Adam, who remains hopeful despite the disappointing season. "I know other organizations that are in tougher situations. I don't know if there's any organization that reached its cost recovery goals besides us, so I think we fared exceptionally well, considering everything."



Filling an incubator at Medvejie.

Chum eggtake numbers fell short at Hidden Falls, with 166 million eggs collected, which was 87% of the 190 million goal.

At Medvejie, the 92 million egg chum goal was reached. Another 4 million eggs were taken to make up for some of the Hidden Falls shortfall.



Pumping Deep Inlet chum to Medvejie raceways during live transfers.

Board Member Profile: Brian Massey



Brian Massey, shown with his children, Walter and Allison, holds the Sports seat on the NSRAA board.

Brian Massey may not fish for a living, but he's easily as passionate and knowledgeable about fishing as those who do.

"I love to fish," says Brian, who was born in Sitka when it was still the Territory of Alaska, and has been fishing the waters around Baranof Island for more than 50 years.

Brian's resume is filled with fishing experience, including nearly a decade working on troller boats (he started working on his dad's boat when he was seven), another ten years or so in processing, and several decades in fish politics (Brian was part of the ADFG Advisory Committee in charge of writing the award-winning Redoubt Lake Sockeye Fisheries Management Plan), but if he ever entertained the possibility of a life as a commercial fisherman, he scrapped the idea as a teenager after one long, hardscrabble summer when he made only \$500.

"It was a terrible fish year," Brian remembers. "I think working all those hours and not making any money kind of soured me on that route."

Brian began working at Sitka Sound Seafood instead, before it expanded its operations to include fish processing.

"It was still a family business," he says. "It was a lot of fun to work there."

Brian vividly remembers the excitement when the black cod industry was Americanized and when halibut went derby style. Brian continued to work in processing while he earned his degree at Arizona State University and for several years afterwards, as he travelled the West in his camper van as a ski bum each winter.

Eventually, Brian returned to Sitka full-time, married and had a family. He recently retired from a career in behavioral health and public housing administration, but has always been an avid sport fisherman.

Many of Brian's earliest memories involve time on the boat. In fact, his family was living on a boat when he was born. As the family story goes, his parents' boat was docked in the marina during a storm, all the boats banging together in the wind, and Brian – just a baby still – was dropped, or maybe almost dropped, between two boats. Once Brian was safely back in his parents' arms, his mother turned to his father and demanded he build them a house. Brian's father built the family an A-frame at Harbor Mountain.

Many of Brian's fondest memories, also, involve time on the boat. First, being out on the boat with his father, and when they'd tie up with his father's friends, "the old school guys," and later, when his children would join him on the boat each year for Father's Day.

"That's one of my favorite memories, being on the boat together, fishing, laughing and having fun," he says.

Brian credits his time on the boat – and the life lessons he's gained in that time – for the person he has become.

"Fishing has taught me to enjoy the process in anything," he says. "Sometimes you go fishing and you don't catch anything. You can be all twisted up and upset, or you can just enjoy the fact that you were out on the boat and hope to do better next time. It's taught me, in different venues of life, to enjoy the process of going from A to B, and not be so goal-oriented all the time."

"And then learning how to read the ocean is helpful in life, I think," Brian pauses and then chuckles. "That might be too deep for my shallowness, but, I mean, you learn to see some signs (the wind, the direction of the swells, where the fish are biting), and to not give up, just keep trying."

Though fishing can be a very solitary sport, Brian enjoys the social aspect of it, whether that means time on the boat with family or friends, or sharing the wealth of his catch with seniors in town.

"Part of the joy of fishing, for me, is giving it away and sharing the wealth," he says. "I like to think it's the Alaska way. Growing up before the pipeline... when people had an abundance of anything, they shared it with their neighbors."

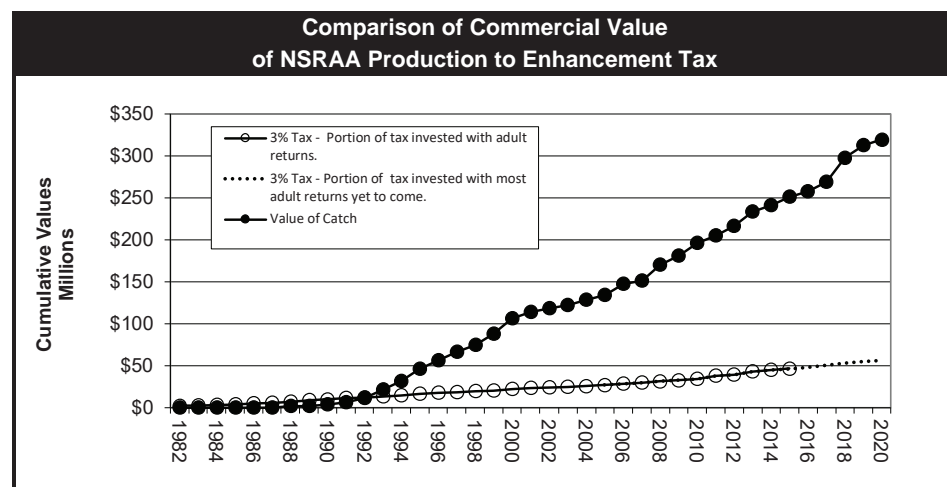
Despite his time on the ADFG Advisory Committee, City of Sitka Fisheries Commission, and on the board for the state king salmon allocation, Brian didn't know a lot about NSRAA when he was asked to join the board as the sole sport fish representative. An avid history fan who has spent years studying the history of fisheries around the globe, Brian immediately began to research NSRAA, its history, accomplishments and mission.

"I took a close look at what they were doing and I was amazed to learn what a positive difference they made, not only in Sitka, but fisheries around the Southeast," he says. "I had no idea they raised as much fish as they did or that they were responsible for such a large percentage of fish that were caught. I saw an organization that was doing a lot of good for a lot of people, and I couldn't wait to get on board."

Brian has lost count of how many years it's been since he joined the board (has it been nine years, or maybe 12?), but his passion and admiration for the organization's mission and staff has not waned over time.

"I believe NSRAA is important because of the supplementing of the natural fish runs," he explains. "It helps even out the (ups and downs of the wild runs) for the commercial guys. I think it's also important because it puts fish in the water which are caught and sold locally. It keeps fish money in Sitka and the Southeast. Sitka is known as a small boat port and each one of those small boats is a family business. I like the fact that we support fishing families. Not just fishing businesses, but fishing families."

"I've had lots of employees over the years," Brian adds. "The people that work at NSRAA go above and beyond. They aren't just punching a clock, they believe in what they do."



This chart compares enhancement tax received by NSRAA and commercial value of NSRAA production. NSRAA has received \$56 million in tax; ex-vessel value of commercial catch is \$319 million.

A Year Like No Other

The year 2020 will be remembered for many things, including a year of major employee shifts at NSRAA.

In March, former General Manager, Steve Reifensstuhl, retired, after 40 years with the organization. He had announced his plans for retirement to the board several years ago to ensure a seamless transition when Scott Wagner, longtime employee and then Operations Manager, would move into the General Manager position in his wake.

No one could foresee that mere days after Scott took over as General Manager, the world would begin to shut down in response to a pandemic, and the year would be filled with one unforeseen challenge after another – from COVID restrictions, to economic uncertainties and poor salmon returns, and even two flooding emergencies in late November, which threatened operations at Medvejie and Sawmill Creek hatcheries.

“It was like all the potential negative forces coming together at the same time,” says Scott.

Adam Olson moved to Operations Manager. Formerly the Medvejie Manager, Adam was able to train NSRAA fish culturists, Cain DePriest and Jared Nelson, for the Hatchery Manager and Assistant Manager positions, respectively, before he moved into his new position at the Sitka office. Much of the crew at Medvejie were new to their positions this year.

NSRAA welcomed new employees and promoted others at nearly all its sites this year, from Medvejie to Hidden Falls to Gunnuk Creek and Deer Lake. The number of changes would make any year challenging, but this year, especially.

“It has been a challenging year at all facilities and Medvejie was no exception,” Adam explains. “Both Cain and Jared have done a great job moving into their new roles and have helped guide the facility through not only the COVID pandemic but also challenging returns and eggtakes.”

“Considering how we could have been impacted by COVID or not had enough fish for broodstock or cost recovery or all those potential issues, we managed to get through,” Scott says. “It comes down to our work ethic and the Marine Corps. motto: ‘improvise, adapt, overcome.’ We do that every year, but the extent to which we had to do it this year was the most challenging.”



Bryan Joseph tags Chinook at Medvejie.



Pumpkin carving at Hidden Falls.



Green Lake dam at flood stage after December's high rain events.

New Hires and Promotions

Administration/Management

- Scott Wagner from NSRAA Operations Manager to General Manager
- Adam Olson from Medvejie Hatchery Manager to NSRAA Operations Manager

Hidden Falls

- Nicole King promoted from technician to culturist
- Ashley Eder promoted from technician to culturist
- Kevin Connell came from Prince William Sound Aquaculture Corporation to join NSRAA as Hidden Falls Assistant Hatchery Manager
- William West joined NSRAA as a maintenance engineer and was then promoted to maintenance supervisor at Hidden Falls
- Jake Adkins promoted to maintenance engineer

Medvejie

- Robert Houston promoted from technician to fish culturist
- Taylor Scott, who previously worked at Hidden Falls, returned to NSRAA as fish culturist after time working at Little Port Walter and in Washington
- Jerry Matthews joined NSRAA from the commercial fishing industry as Sitka's maintenance engineer

Gunnuk Creek

- Blaze Smith came from Armstrong Keta Inc. to NSRAA's Gunnuk Creek Hatchery as fish culturist

Deer Lake

- Schuyler Mace promoted from technician to Project Leader
- Riley Jorgenson promoted from technician to Assistant Project Leader

Crawfish Chum Project Saves the Season

It's been several years since the record-breaking chum return at NSRAA's Crawfish Inlet project, yet the project's numbers continue to remain strong as other projects suffer from surprisingly poor returns.

"In 2020, Crawfish saved NSRAA's bacon," says Scott Wagner, NSRAA General Manager.

More than 1.5 million chum returned to Crawfish Inlet this year. At 97 percent of forecast, not only was it the largest return of the season in Southeast Alaska, it comprised 28 percent of the total value to commercial fleets. It also allowed NSRAA to reach its cost recovery goals, without which the organization would have been forced to take out loans to cover operation costs for the following fiscal year.

"On the one hand, it shows how fortunate NSRAA is for having started this project," Scott says. "On the other hand, it is also very concerning of where we would be without it. In 2020, to get the same value of fish (for cost recovery) from Deep Inlet that we got from Crawfish this year, it would have taken the entire return. There would have been no common property fishing at Deep Inlet."

It's anyone's guess as to why the hatchery-raised chum returning to Crawfish are faring better than those returning elsewhere.

"There appears to be an additional survival component they are benefiting from – it could be the new project location, it could be a geographic location, it could be where the fish decide to spend their time in the ocean – who knows all the contributing factors that result in the high marine survival," Scott says. "This year, for 2020, the poor marine survival affected the entire state of Alaska. Whatever is happening is large-scale, out in the Bering Sea and the Gulf of Alaska."

Forecasting is a difficult job, especially when the data one uses varies dramatically. When NSRAA Data Analyst, Chip Blair, forecasts returns, he uses historical data in hopes it will paint a realistic picture of the fish to return each season. But the returns in recent years have been so far from normal, it makes forecasting all the more difficult.

That's why Scott and Chip are among a group of salmon experts that have been looking with interest at the results from the recent salmon trawl surveys in the Gulf of Alaska. Until now, the Gulf of Alaska has been a black hole, so to speak, when it comes to an understanding of what factors influence salmon and their survival during their time at sea.

The goal of the International Gulf of Alaska Expedition is to collect samples of salmon, identify their rearing areas, examine their stomach

contents, and determine the condition and abundance of salmon. The first expedition surveyed waters in the spring of 2019. Of the hatchery chum salmon collected from that expedition that were from Southeast Alaska, the greatest portion were from NSRAA's Crawfish Inlet project.

"The fish that came back as 3-year-olds to Crawfish this year made up something like 60 percent of those sampled" says Scott. "If you look at the returns of what came back this year, it pans out. There was indication that Crawfish 3-year-olds were having good survival and it held true."

A second expedition surveyed the Gulf of Alaska waters this spring, before the COVID shutdown, though detailed data has yet to be released.

The data collected from these surveys could help tremendously with forecasting, if there is sufficient funding to continue the expeditions each year. Chip compares it to the Southeast Alaska Coastal Monitoring out of the National Oceanic and Atmospheric Administration out of Auke Bay, a project which performs annual surveys on juvenile salmon in the marine waters of Northern Chatham and Icy Straits. The annual surveys collect data on relative abundance of salmon, water temperatures and other factors that may affect marine survival.

"It's turned the forecasting for pink salmon from being a shot in the dark to something they can be fairly confident in," Chip says. "They're finding that the relative abundance and water temperatures are critical factors to predicting what's going to come back the next year. It'd be similar to that, but it's out in the Gulf, which has been a big unknown. But now, these surveys are giving us glimpses of what's going on out there. It couldn't help but improve forecasting."

At more than 1.9 million, the 2021 forecasts for Crawfish Inlet are significantly higher than those for 2020. Though there's no telling if the fish will return near those forecasts or at a mere 50 percent of predictions, Scott and Chip remain hopeful the project will continue to benefit from strong marine survival and return near forecasts.

The returns to Crawfish Inlet this year – the sheer numbers, as well as the value to commercial fleets and toward NSRAA's budget – illustrates how critical diversity, both by species and location, is among NSRAA's projects.

"That diversity helps limit NSRAA's and the fleets vulnerability to survival fluctuations, because, as this year's Crawfish return shows, survivals aren't always consistent across all projects," Scott says.



Challenging Times

A leak in the main water line near the Sawmill Creek Hatchery water tap threatened the hatchery water supply in November. NSRAA responded quickly; at right Cain Depriest and Kenny Gray weld the HDPE pipe.

In early December, a major flood occurred in Medvejie Creek. Work is ongoing to stabilize the stream banks after floodwaters put Medvejie's water supply and other infrastructure in jeopardy. Pictured counterclockwise from upper left: drone view of the creek above the hatchery, flooding below the Green Lake road bridge, downed trees in Medvejie Creek.

