

FISH RAP

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

Change Service Requested

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*From Egg to Adult:
Emily Pearce (left)
places fertilized eggs in
an incubator at Hidden
Falls; Duncan Coltharp
(right) shows off an
adult coho at Salmon
Lake.*



Inside

<i>Hatchery Reports</i>	2
<i>General Manager Notes</i>	2
<i>Market Report</i>	4
<i>Thomas Bay Update</i>	5
<i>Board Member Profile</i>	6
<i>New Logo</i>	6
<i>Sawmill Creek</i>	7
<i>Deer Lake</i>	7
<i>Medvejie Permit</i>	8

The 2016 Fishing Season: A Difficult Year

NSRAA's return of 2.22 million salmon this year fell considerably short of the 3.86 million forecasted – another disappointing season for staff and fishermen alike.

“The last few years have been quite a struggle,” says Chip Blair, NSRAA Data Analyst. “You have to expect years like this, I guess. Not every year is going to be great. We're weathering a low period, but we're hoping it will turn around sooner than later.”

NSRAA has experienced significantly lower than expected returns the past few years, particularly at Hidden Falls, where it is believed a large portion of the fry is lost to predation upon release.

“The real challenge is to figure out what is going on at Hidden Falls,” Chip says. “It seems to be something in Chatham Strait or the inside waters. When we look at wild species there, it really seems to be a widespread situation, not just something that NSRAA is doing.”

This year's salmon return represented the organization's lowest commercial value since 2007 – an estimated \$6.04 million and a mere 52 percent of the five-year average (which includes three years since 2000 above \$18 million).

Though dismal survival rates at Hidden Falls have been the main contributor to the low returns in recent years, ocean survival fell below expectations for all species at NSRAA this season. Chinook returns were less than 50 percent of those forecasted.

“Normally we generate about a million dollars between coho and Chi-

nook harvests at Medvejie, Hidden Falls and Mist Cove,” says Steve Reif-
enstuh, NSRAA General Manager. “This year we made about \$300,000.”

As disappointing as a season like this is to the staff at NSRAA, it is even harder on fishermen, Steve says.

“It's important to remember these programs are paid for by and designed to benefit fishermen, so a year like this is tough on them,” he explains. “To add insult to injury, because Hidden Falls failed, there was little surplus for cost recovery to pay for the program. We were going to be short by \$800,000 due to the poor return at Hidden Falls, therefore, I had to put an additional burden on fishermen by increasing cost recovery at Deep Inlet to make up for the shortfall.”

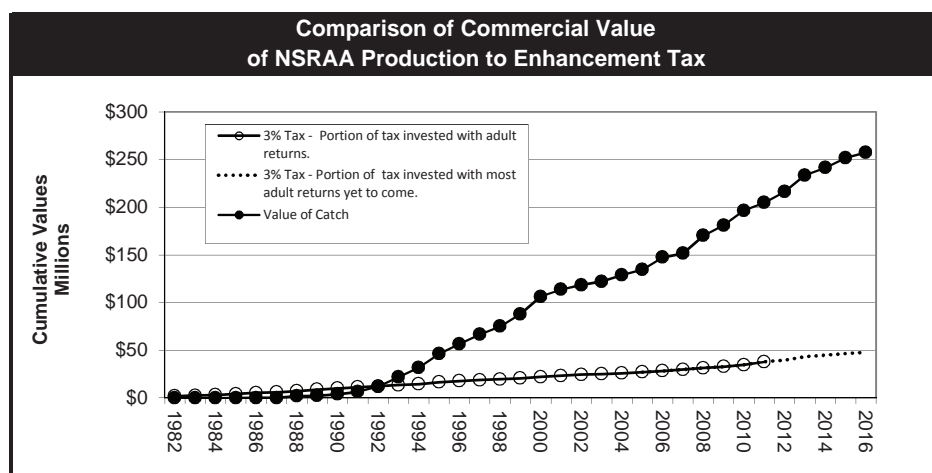
The dismal showing prompted board members to ask staff to review and present potential options to cut the budget by \$500,000-600,000. The easiest way to cut costs is to reduce feed costs and release numbers in the hatchery's more expensive smolt programs, Chinook and coho.

In the end, the board decided against cuts because reducing costs in those particular programs would primarily impact the troll fleet, which is already below its targeted share. Instead, NSRAA will cut back slightly on coho production at Hidden Falls to make room for the Chinook there to overwinter in freshwater and – ideally – increase their chances for ocean survival.

Despite the disappointing returns, there were some positives to this season, says Chip, pointing to the chum returns at Deep Inlet and Southeast Cove. The ocean survival of the 4.0 chum programs also seems to be paying off.

“Another silver lining that somewhat eased the pain this season were very strong chum salmon bid prices, which allowed us to minimize the number of fish needed for harvest,” Steve adds.

NSRAA has focused much of its energy, manpower and resources in recent years to expand its chum programs. The addition of the Southeast Cove and Crawfish Inlet projects to NSRAA's résumé will increase the annual release of chum fry from approximately 150 million to 240 million. The fish from these ramped up efforts have already begun to return to Southeast Cove, but returning chum numbers – and corresponding commercial values – should increase significantly beginning in 2018.



Cont. on back page

Hatchery Reports



Aluminum raceway extensions provide more holding capacity for chum spawning at Medvejie. This improvement should allow staff to process more fish each day and increase the efficiency of egg-takes.

Medvejie Experiments with Broodstock

Always willing to experiment and try new strategies in all facets of fish rearing, the staff at NSRAA learned this season that it's possible to perform a Hidden Falls eggtake at Medvejie Hatchery.

The staff didn't set out with the intent to test the feasibility of an egg-take this year. Medvejie releases 24 million Hidden Falls chum annually from Deep Inlet. Because the chum are the same stock used for Hidden Falls, Medvejie was available for backup when it appeared Hidden Falls would not have the chum returns necessary for broodstock.

Medvejie had about 4,000 chum in net pens for Hidden Falls when there were reports of chum in Chatham Strait. Ultimately, Hidden Falls was able to collect the broodstock it needed for eggtake and no longer needed the chum Medvejie had collected. The Medvejie crew considered what to do with the fish already caught.

"We could have let them swim out or taken them for cost recovery, but since we had already gone through the effort, we decided this would be a good time for an experiment," explains Adam Olson, Medvejie Hatchery Manager.

Adam and his staff towed the net pens from Deep Inlet, where the fish were reared and released as fry four years ago, to Medvejie. They held the fish in net pens for several days to acclimatize to the new location. Once the fish were acclimated, they rolled them into the broodstock holding area by Medvejie's fish ladder.

"This is something we've never done before with this stock," Adam

Medvejie Report - Continued on page 3

General Manager's Notes

Welcome, Petersburg! The proposal to release up to 40 million Hidden Falls stock chum from Thomas Bay was passed unanimously at the Regional Planning Team (RPT) meeting on November 30; it is expected to be signed by the Commissioner's office before Christmas. I don't need to tell Petersburg fishermen that it has been a long time coming.

When I thought I was still young, over twenty years ago, I conducted the initial investigation of Thomas Bay for chum salmon rearing suitability and potential streamside incubation on the Patterson River. At the time, NSRAA was taking up to six million eggs at Port Camden, Kuiu Island, the closest NSRAA project to Petersburg, although the funding was pulled in the late 90's. NSRAA is returning and almost in your backyard.



In February 2017, NSRAA will transport about 25 million Hidden Falls stock fry to Thomas Bay, rearing half the fry to 2 grams and the other half to 4 grams. We do not know where Thomas Bay will fall on the continuum of poor to excellent marine survival, but it has to be better than current survivals at Takatz and Kasnyku Bays. There will continue to be about 70 million fry released at or near Hidden Falls Hatchery. Modified release strategies will be employed in 2017 for 35 million of these remaining chum fry.

We all realize that the best thing that could happen is for marine survivals to go back to 3% at Hidden Falls and have runs of two million adults or more. I also realize that is not the hand we have been dealt and, therefore, need to look at multiple solutions. On behalf of Petersburg fishermen and all Southeast permit holders, I still have stones to turn in this difficult saga.

Finally, I would like to thank all the fishermen, fishermen advocacy groups, and processors for turning out by the hundreds to support the Thomas Bay project.

Thank you, Petersburg!

Have a warm and Merry Christmas, Happy Holidays and New Year.

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Medvejie Report (continued)

says. “We weren’t sure, since they weren’t raised at Medvejie, if they would go up the ladder fed by Medvejie water or if they would just turn around and swim back to Deep Inlet.”

The chum did in fact swim up the ladder to Medvejie where fish culturists collected the gametes (eggs and sperm separately) and brought them to Sawmill Creek for fertilization and incubation.

Why is this significant?

“We wanted to know, if Hidden Falls had a broodstock shortfall in the future, could we do this on a larger scale – go to Deep Inlet and collect, say, 50,000 adults and bring those back to the hatchery and take the eggs,” he explained.

All in all, the experiment was successful.

The gametes were fertilized upon arrival at Sawmill Creek, are being incubated in freshwater at Medvejie this winter, and will be released from Deep Inlet in the spring. The process of towing the net pens from Deep Inlet resulted in about 15 percent stress-induced mortality. Transporting the gametes, which are more vulnerable than fertilized eggs, to Sawmill Creek also resulted in some losses, reducing the fertilization success by 5 – 8 percent.

Though perhaps not ideal, NSRAA now knows it is possible to transport fish for eggtake in a broodstock emergency.

“This was a challenging but successful trial,” Adam says. “It provides us with another tool to address run failures and ensure the eggtake goals of all NSRAA’s facilities and projects are reached every year.”

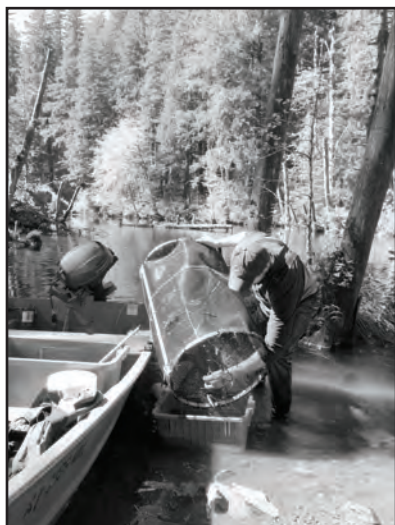


Clockwise from above:

Hidden Falls in winter.

Ben Adam empties a smolt trap at Salmon Lake while coded-wire-tagging wild coho.

Feeding chum fry at Crawfish Inlet.



Coho spawning at Hidden Falls.

Hidden Falls Works to Improve Survival

Maximizing fish survival is always the goal at NSRAA, but at the Hidden Falls Hatchery, where salmon returns have plummeted to all-time lows in the past three years, the staff is ever cognizant of the health of the fish.

For the past three years, returns to Hidden Falls have come in far below conservative expectations and it’s been six years since the facility’s chum have met or exceeded forecasts. The past three year’s poor returns have brought the five-year average down to 36 percent of forecasts and the three year average to a mere 13 percent. This year, Hidden Falls’ Chinook return was less than 50 percent of the forecast and coho were also well below expectations.

The staff believes a large portion of the losses is due to predators. Over the years, fish culturists have tried a variety of techniques, such as towing net pens outside of the bay for release, in hopes of mitigating those losses but, to date, there hasn’t been a sign of success.

This year, Hidden Falls is implementing two new strategies to help fish survivals. The staff will overwinter the Chinook in freshwater instead of saltwater, and gather data on coho and chum.

“In the wild, they would be in freshwater,” explains Jon Pearce, Hidden Falls’ Hatchery Manager. “They’d be in the river for over a year before moving to saltwater.”

To date, Hidden Falls has overwintered its Chinook in saltwater due to facility space constraints. The time in saltwater hasn’t seemed to negatively impact fish health, but the fish have accumulated losses to predators even before being released from the net pens.

“Right now, in saltwater, we’re getting roughly ten deaths per day in each pen – that’s a loss of 50 fish a day, just due to predation from otters and seals,” Jon says. “The fish are in saltwater net pens for six months, so that adds up to a substantial amount of fish. These are fish that weren’t going to die because they were unhealthy or weak, either.”

Hidden Falls will reduce its freshwater overwinter group of coho to make room for the Chinook. The hatchery will continue its coho overwintering program at its current numbers, so there will continue to be coho overwintering in both fresh and saltwater.

This year, Hidden Falls staff will begin coded-wire-tagging coho to identify the method of release. The coded-wire-tagging will allow NSRAA to collect data to measure the success (or failure) of different release strategies, such as towing net pens to deeper waters.

“For example, if we’re moving the fish out there, is it worth the time and effort? Did the towing help? Is it worse? We’ve done it on and off, but we’ve never been able to test it.”

Similarly, NSRAA plans to otolith mark chum according to release methods to gather data to help improve ocean survival and increase returns.

“The big picture is that we’re consistently trying to make changes and improvements to the program to get healthier, better fish and more fish returning for commercial fishermen,” says Jon.

Sustainable Seafood Certification in the Salmon Market

Sustainable seafood certification has changed the marketing of Alaska salmon.

With Alaska as the main producer of domestic wild salmon during an era when the production of farmed salmon has increased dramatically, the Alaska Seafood Marketing Institute (ASMI) has focused much of its marketing efforts over the years to what sets Alaska apart from its competitors: taste, quality and sustainability, says Susan Marks, ASMI Sustainability Director.

The concept of sustainable seafood certification came about in the 1990s, in response to growing concern about the impact of overfishing on the marine environment and seafood supplies, especially after the 1992 collapse of Canada's Grand Banks cod fishery. The London-based Marine Stewardship Council (MSC) was formed to offer an independent, third-party gatekeeper to evaluate the sustainability of fisheries and the effectiveness of their management systems.

Alaska was the first major customer in the seafood industry to undergo MSC's certification process in 2000.

"Alaska salmon was the first species that received certification by the very newly formed MSC," explains Laine Welch, fish journalist. "We certainly have to be credited for creating this whole awareness of using purchasing power to help protect fish species."

With Alaska as its client, the MSC began to add others to its list. In 2006, MSC convinced Wal-Mart executives to pledge to sell only MSC-certified seafood by 2012. Other chain stores followed suit.

"There were a lot of eyebrows raised over this time period at the cost, the length of time... and perhaps some different standards that were being applied... that tarnished the relationship" between Alaska salmon and MSC, Laine explains.

"There were multiple concerns with MSC," says Julie Decker, Executive Director of Alaska Fisheries Development Foundation (AFDF). "It's a huge bureaucracy; it was impeding access to the market; at times, the MSC label was superseding the Alaska brand; and as other fisheries were certified, like Russian pollock, Alaska products were forced to compete with low-cost producers."

Yet the growing market demand for sustainability required that Alaska be certified.

"The Alaska seafood industry didn't have a choice, and they thought the lack of choice was a dangerous thing... so they made a strategic decision to create an alternative Alaska program: Responsible Fisheries Management (RFM)," Julie says.

"Several processors and fishermen had the wisdom, several years back, to recognize the potential monopoly developing," says Steve Reifstahl, NSRAA General Manager. "We have them to thank for their vision."

"MSC is a dominant global force for certification in wild capture fisheries," Susan says. "They've spent millions of dollars to have consumers and businesses look for and ask for their blue eco-label."

From a fisheries and sustainability standpoint, nothing had changed for Alaskan salmon now certified under RFM instead of MSC. Since statehood, Alaska salmon has always been sustainable, so many believed the new certification would allow Alaska to proceed with business as usual. But had they underestimated the worldwide recognition MSC had built over the years?

"There were certain European retailers, in Germany and in the UK, who insisted on MSC as a precondition," explains John Sackton, editor of Seafoodnews.com. "For some markets, and for some retailers in some countries, it's a prerequisite. That was one of the reasons why the Alaska industry went back to doing both (MSC and RFM) certifications."

"Keeping MSC has always been about keeping the European market wide open," agrees Andy Wink, Seafood Analyst with the McDowell Group, an Alaskan research and consulting firm.

In response, ASMI has placed a greater focus to make sure the RFM certification program has evolved to be a robust and credible program, accepted globally, Susan says.

Meanwhile, the market has become inundated with various sustainable seafood certifications, causing confusion among consumers, producers and retailers. This prompted the development of the Global Sustainable Seafood Initiative (GSSI), which offers an objective, noncompetitive global benchmark tool to measure sustainable seafood certification schemes.

Alaska's RFM certification program was the first to be recognized by GSSI earlier this year.

"Having a recognition of that magnitude certainly gives our certification program additional credibility," says Susan. "Whether that translates to certain marketplaces opening up their procurement policies to accept other certifications besides MSC, time will tell."

John believes it's already making a difference. The German retailer, Metro – one of the largest supermarket chains in the world – committed to go with GSSI, he says. "So any seafood product that is part of a certification that meets the GSSI benchmark, Metro is happy to purchase."

The GSSI recognition may no longer seem necessary, now that Alaska is being certified by both RFM and MSC, but Julie believes the parallel certifications play an important part in Alaska salmon sales.

"Certification has become extremely important in the marketplace," she explains. "It's not necessarily utilized in the way most people might think – as a logo on product packaging for the end-users. Most often, sustainability certification is used in business-to-business transactions. For example, a buyer from Wal-Mart may request to see (certification). Without the certification, you don't have access to sell to that company."

"It has become part of doing business, especially and most importantly in Europe, for salmon and seafood in general," Laine says.

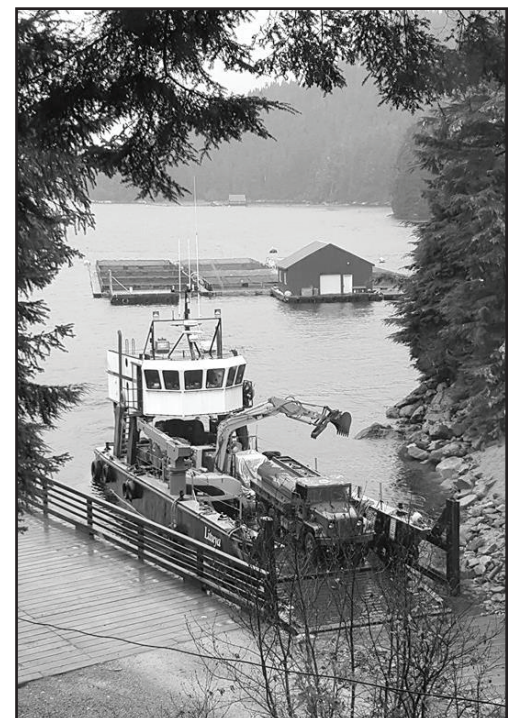
"Most markets, whether domestic or international, require some sort of independent, third-party certification," Susan agrees.

At the surface, Alaska's parallel certifications (MSC and RFM) may seem redundant, but it offers fisheries choice, flexibility and continued access to markets if – like Prince William Sound – there were a time where they were not MSC-certified.

"Hopefully we won't have those kinds of things in the future, but you don't know," Julie says. For example, MSC is considering adding a list of social criteria to its certification process, including labor standards, minimum age and work hours. "Maybe Alaska will choose not to participate, or maybe we fail because we can't meet the new social standards. At least we have an option with RFM in place."

"I don't think anyone can say where seafood sustainability certification is going to be in 20 years," Julie continues. "That book has not been written yet. We're living it one chapter at a time and the (current) chapter is Alaska using two types of certification. We'll see where that leads."

"I think the long-term significance of having both RFM and MSC (MSC will soon get benchmarked by GSSI as well) is it will give the Alaskan producers a competitive market to drive down the cost of certification," John says. "If the retailers are accepting GSSI benchmark, then whichever group that achieves the GSSI benchmark and can do it in the most efficient, most cost-effective way is most likely to get the business."



The M/V Lituya delivers supplies to Hidden Falls.

NSRAA Prepares for Thomas Bay Releases

This fall, NSRAA received a recommendation for approval from the Northern Southeast Regional Planning Team (NSERPT) to begin releasing chum in Thomas Bay, near Petersburg. The new release site is one of two permit alterations the organization has proposed in hopes of mitigating the dramatic losses it has seen among its salmon returns on the east side of Baranof Island.

As its largest hatchery, Hidden Falls has the potential to produce approximately half of NSRAA's commercial catch, but the fish released from this hatchery aren't coming back in near the numbers they have historically. Marine survival for Hidden Falls chum is less than 0.5 percent. In the past few years, in fact, returns there have plummeted far below 2.5 percent, the facility's long-term average for chum marine survival. Four of its lowest marine survivals have occurred in the last five years.

NSRAA staff and board are working hard to determine the cause of and mitigate the losses.

No one knows exactly what is causing the dismal returns, says Chip Blair, NSRAA Data Analyst, but it's believed the problem reaches beyond Hidden Falls. Port Armstrong, a hatchery at the southeastern tip of Baranof Island, has reported similar disappointing returns over the past few years and these returns mirror wild populations to some extent.

The leading theory is that salmon fry are being lost to predators – humpbacks, pollock, cod – upon release into Chatham Strait, Chip explains. It could also be the result of warmer waters.

NSRAA releases approximately 80 million chum annually from Hidden Falls and nearby Takatz Bay. With a conservative marine survival of 2.5 percent, that should translate to about 2 million adults returning for the fleets. But after three years of dismal returns, the five-year average has dropped to an annual return of 730,000 fish and the three-year average to a mere 265,000 fish.

Over the years, the staff at Hidden Falls has implemented a variety of new release strategies in hopes of evading predators. While it's still possible those efforts may lead to improved returns, NSRAA wants to ensure it does everything possible to increase salmon numbers. The association has submitted two permit alteration requests; one, to release 25 million and up to 40 million fry from Thomas Bay, near Petersburg, that were previously released at Takatz Bay; and to release 20 million of Hidden Falls chum stock from NSRAA's Medvejie Hatchery, on the west side of Baranof Island, where returns have been a reasonable 2.5 to 3 percent in recent years.

NSRAA initially submitted the permit alteration request (PAR) to release chum from Thomas Bay to the Alaska Department of Fish & Game (ADF&G) in December 2015. The (NSERPT) reviewed the proposal at its April meeting but would not approve it without further information. The ADF&G proposed a baseline investigation to determine how a hatchery release might affect wild stocks (primarily Chinook) returning to Thomas Bay.

This summer, NSRAA worked with ADF&G to design and conduct a study to gather data. As part of the investigation, NSRAA hired a seine vessel to conduct purse seine sets at eight designated locations within Thomas Bay.

ADF&G biologists onboard the seine recorded the catch and collected samples. Fish were sampled for tissues, otoliths and coded-wire-tags to determine their stock of origin. In total, 37 salmon were caught (no coho or Chinook) and a small number of non-target species, including flounder and pollock. Chum otolith samples were sent to NSRAA for an initial reading, to DIPAC for a second reading and to ADF&G for a third reading.

"Most of the fish caught were unidentified wild stock or hatchery fish, but the numbers were very, very low," explains Steve Reifentuhl, NSRAA General Manager. "The study demonstrated that during the late June and July period when there will be a fishery in Thomas Bay, there is not likely to be significant interception of wild salmon."

Still, there was some opposition when NSRAA resubmitted the PAR and the NSERPT deliberated in November. Those opposed voiced concern for the potential impact on Chinook, but there was also widespread support for the proposal from groups including the various fleets and Petersburg's Chamber of Commerce and Department of Economic Development.

"Their support shows the economic importance of this program," says Steve. "But more importantly, NSRAA was able to address biological concerns."

After reviewing the data collected this summer, the NSERPT recommended ADF&G Commissioner Cotten approve the proposed permit alteration request.

"ADF&G evaluates a project like this based on biological criteria," he explains. "We got approval on all those elements and, because of that, we got approval of the permit with no votes against it."

In an effort to be mindful of the recreational halibut and dungee crab fishing in Thomas Bay, NSRAA plans to exclude areas of potential conflict from the harvest area.

Though the Thomas Bay alteration request does not increase the number of fry released, the new location should offer those fry a better chance of survival.

"It's not a change in production numbers," Steve explains. "We're just moving fish from one place to another. We expect to get higher marine survival at Thomas Bay because we don't think the predators have built up there. The change of location will create other opportunities, and maybe greater opportunities, just by the fact that the marine survival should increase."



Sean Allen takes a break from feeding fish at Crawfish Inlet during the spring chum fry rearing season.

NSRAA Contribution to Southeast Alaska Commercial Fisheries Number of Fish : 2015 - 2016

	Gillnet		Seine		Troll		All Gear	
	2015	2016	2015	2016	2015	2016	2015	2016
Chinook	3,370	2,490	4,254	1,440	10,368	5,180	17,992	9,110
Chum	707,553	458,545	1,447,435	669,506	231,116	28,272	2,386,104	1,156,323
Coho	849	1,349	5,005	2,722	95,029	38,496	100,883	42,567
All	712,000	462,000	1,457,000	674,000	337,000	72,000	2,505,000	1,208,000

Board Member Dan Pardee: At-Large Gillnet



Dan Pardee and wife, Marta, and their three children. Dan holds an At-Large Gillnet seat on NSRAA's board.

Board meetings aren't known for being fun. Some are boring, others interesting, but for Dan Pardee, NSRAA board meetings are a reunion of sorts. And, yeah, maybe even fun.

Born and raised in Haines, Dan began fishing at age 9. By the time he graduated high school, he'd bought a gillnetting boat and a permit. He went to Adams State College in Alamosa, Colorado, on a track scholarship, but came back to fish every summer.

After college, Dan returned to Haines, married his high school sweetheart, Marta, and began commercial fishing full-time. The newlyweds moved to Juneau so Marta could finish her teaching degree at University of Alaska Southeast.

That first salmon season after college was a rough one; weak salmon returns and poor prices led Dan to look for a winter job while Marta returned to school. He began working in Taku Fisheries' payroll department and quickly worked his way up. What started as a winter job turned into

year-round employment and, 14 years later, Dan now oversees Taku's finance and payroll departments.

Fortunately, Dan is able to work a flexible schedule in the summer so he can continue commercial fishing. He'll fish Saturday through Tuesday, returning home Tuesday night to work in the office Wednesday through Friday (maybe again on Saturday) before heading back out in his boat.

Marta teaches kindergarten and the couple is raising three young children.

When Dan was first appointed to NSRAA's board, he was excited to help his fleet. After six years on the board, he's come to realize that it's not so much about his fleet as it is the "primary responsibility of a board member to make good, sound decisions for the aquaculture association so that NSRAA can stay in business and produce fish for all commercial fishermen."

Now 38, Dan is among a new wave of board members, ranging from late 20s to early 40s, who are stepping in as the older generation of board members step down. He is clearly enthusiastic about his role on NSRAA's board – so much so that one might wonder if he actually enjoys these long board meetings.

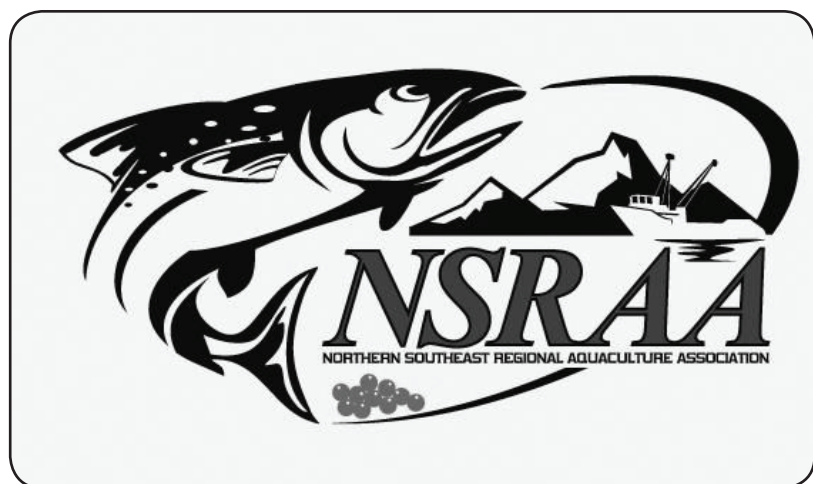
"Allocation discussions within the three gear groups have been fairly productive and positive," he says. "I've heard how contentious these meetings have been in the past, but it's certainly not that way now."

"The coolest thing I've learned on the NSRAA board is how we (NSRAA) produce fish and all the challenges the staff faces," Dan continues. "Some of the stuff they overcome is absolutely mind-boggling and truly amazing. I've been really impressed with the overall staff at NSRAA and the leadership there. We've faced some pretty tremendous challenges in the past couple years and they have continued to think outside the box."

It turns out that some of the newer board members are guys Dan grew up with, guys he knows from junior high, guys he competed with in high school basketball and track.

"We've all known each other for years and now we're sitting on these boards within various hatchery organizations and our gear group associations and we're constantly negotiating back and forth in a friendly, positive manner," he says. "It has been really, really exciting to see and to interact with guys that I've known for so many, many years. That's been a lot of fun."

NSRAA's New Logo



We've designed a new logo at NSRAA! We'll be replacing our old logo in the new year.



Medvejie's crew takes advantage of a beautiful day to set up Green Lake net pens. Chinook rear in the pens from July to October each year.

Sawmill Closer to Maximum Production

Sawmill Creek continues to work its way toward releasing 2 million coho annually, albeit slower than anticipated.

NSRAA's newest hatchery, Sawmill Creek, has had a number of setbacks over the years since it was first scheduled to open in 2007 – from a search for and approval of new stock, to a forced closure in 2014 during construction on the nearby Blue Lake dam and hydro system. Despite these disappointments, the staff continues to work toward maximum production.

At this point, Sawmill Creek has been operational for five years. An incubation and freshwater rearing facility only (no fish are released directly from the hatchery), Sawmill Creek is charged with fertilizing, incubating and raising coho for release from Deep Inlet and chum for release from NSRAA's newest project, Crawfish Inlet.

The facility's chum programs have been rolling along smoothly. Currently just under 27 million chum are being incubated for release at Crawfish Inlet next spring. This includes about equal numbers of chum in the 2.0 program (released at a target weight of 2 grams) and the 4.0 program (released at a target weight of 4 grams). This spring will be the third year of chum releases from Crawfish Inlet and the second year for 2.0s.

"NSRAA's other 4.0 chum programs have experienced significantly better marine survival, so we hope the trend will continue with the Crawfish Inlet chum", says Rebecca Olson, Sawmill Creek Hatchery Manager.

Meanwhile, the staff has struggled to get sufficient coho broodstock to meet its release goals. This year, NSRAA collected approximately 1.65 million eggs under the Sawmill coho permit. By December, the eggs were still too delicate to handle or to count, but Rebecca estimated the facility would be about 575,000 short of its permitted 1.8 million.

"This is the closest we've been," she says. "All of our broodstock comes from Medvejie. We're still working with a smaller amount of fish returning there. We're still building broodstock."

This summer, NSRAA was able to release 200,000 fry for broodstock from Medvejie. Though the crew was unable to collect the maximum number of permitted eggs, this year's eggtake for Sawmill Creek coho was the largest eggtake to date and the staff expects the numbers of returning broodstock to increase next year.

"We still have hopes to get that number," Rebecca says, optimistically.

Meanwhile, the staff turns its focus to raising healthy fish for release in the spring.



Manager Rebecca Olson tends her coho at Sawmill Creek Hatchery. NSRAA will release about 900,000 coho at Deep Inlet this spring.



Woody Cyr, project leader at Deer Lake, installs weir panels this past spring. The weir funnels emigrating smolts into a pipeline which transports them to saltwater net pens, bypassing the lake's 300 foot waterfall.

New Employee Housing at Deer Lake

At the time of purchase, it would have been hard to say which was worse: the dilapidated float house NSRAA bought from Gunnuk Creek Hatchery or the plywood shack it was to replace as staff living quarters in Mist Cove, but after a complete gutting and renovation, the float house is a pretty sweet place for NSRAA's Deer Lake crew to call home away from home.

There were two living quarters for staff at NSRAA's remote Deer Lake project site: a cabin by the lake and a small plywood shack in Mist Cove. The crew rotates one at a time in Mist Cove, on the southeast side of Baranof Island, from late spring through the middle of October. Aptly named, Mist Cove is wet and as the days grow short, the sun is increasingly elusive.

"In the fall, you get about 30 minutes of sun on half of the float in the afternoon," explains Project Leader Woody Cyr. "It's chilly and wet."

Until this summer, staff living at Mist Cove took refuge in a small, 12'x12' plywood shack with a canvas roof when not outside working. Without insulation, the primitive shack was cold and damp. The Gunnuk Creek float house offered larger living quarters and additional warehouse space than the shack offered, but not without a major renovation.

NSRAA hired a tender to tow the barge from Gunnuk Creek to Hidden Falls, where Woody and staff began the task of renovation, tearing out most of what comprised the living quarters and thoroughly cleaning it. They waited until the barge was in place at Mist Cove before they could begin refurbishing it.

"Until we had it in location, we weren't sure how we were going to incorporate it into our existing system of floats and how we would run power and water to it," he says. The current in Mist Cove can be strong when there is high water runoff from the Fawn Lake outlet. "With all the anchor lines, it can be a challenge to keep the complex in a good location instead of drifting and swinging all over the place."

Once the staff determined where to add the new barge, it redid the anchor system for the entire barge complex. The timing coincided with a high spring current from Fawn Creek, which made the work challenging, but also allowed the staff to be sure that its anchor system would function well in high currents.

With the anchor system updated, Woody and the staff focused its efforts on renovating the interior of the living quarters. They repainted the floor, built a new kitchen and desk, cut out a cubby bunk to maximize usable space and added a large, efficient woodstove.

"It's waaaaay nicer," he says. "It's a pleasant place to live instead of cold and damp and half-rotted (like the shack)." The shack is now being used for storage instead.

NSRAA Hopes to Update Medvejie Permit

As NSRAA moves forward with plans to begin releasing chum from its newly approved release site, Thomas Bay, near Petersburg, it is finalizing a second permit alteration request; this one for its Medvejie Hatchery.

This is the second part of NSRAA's efforts to disperse the chum fry released from Hidden Falls and Takatz Bay on the east side of Baranof Island where salmon have suffered from extremely poor ocean survival the past few years. NSRAA's permit alteration request for Medvejie will be an action item at the Northern Southeast Regional Planning Team (NSRPT) meeting this spring.

Though the cause of the poor returns on Chatham Strait is not known, it is believed predators, primarily humpback whales, are responsible for a large portion of the losses. NSRAA is permitted to release 101 million chum between the Hidden Falls and Takatz Bay locations. This fall, the NSRPT recommended approval of NSRAA's request to relocate the 25 million chum previously released at Takatz to Thomas Bay.

If the permit alteration request for Medvejie is approved this spring, NSRAA would move the incubation, rearing and release of 20 million chum from Hidden Falls to Medvejie, on the west side of Baranof, for release at Bear Cove.

"We continue to have terrible survival at Hidden Falls," explains NSRAA Operations Manager, Scott Wagner. "We want to move some of that production to the other side of the island where we currently have better survival of that stock."

In the past, only three hatcheries were permitted to have the same stock. The concept was that the hatcheries could provide backup for each other if one or another experienced a shortage for broodstock. Port Armstrong and Gunnuk Creek were permitted to release the same chum stock as Hidden Falls, but now that Gunnuk Creek has closed its doors (2017 will be the last year of returns from that facility) and Port Armstrong is suffering similar poor survival rates, neither Hidden Falls nor Port Arm-

Crawfish Inlet chum alevin at Sawmill Creek. When fry hatch they live off of their yolk sac for a period of time prior to ponding.



strong is able to help the other with broodstock. Broodstock collection is increasingly a challenge at Hidden Falls.

Returns were down across the board this season at NSRAA, but salmon returning to Medvejie and Deep Inlet continue to fare better than those in Chatham Strait, Scott explains. The hope is that moving a portion of Hidden Falls' chum to the west side of Baranof will improve the ocean survival rates and, ultimately, the returns and commercial catch.

If approved, the change will require some jostling and reorganization between Medvejie and Sawmill Creek Hatchery, he says. There is not incubation room at Medvejie for the additional 20 million fish without first moving 20 million fall stock chum from Medvejie to Sawmill Creek. The additional 20 million Medvejie fall stock chum will continue to be released in Deep Inlet.

As with Thomas Bay, the Medvejie permit alteration request would not increase production numbers, says Scott, but NSRAA expects returns to increase with the change in location.

2016: A Difficult Year

(Cont. from front page)

At the board's request, Chip reviewed potential revenue for the upcoming five years. With the exception of one scenario, a worst-case scenario in which all sites experience extremely poor returns, all scenarios predict commercial values climbing back to levels that match or surpass the organization's best years of \$18 million or more.

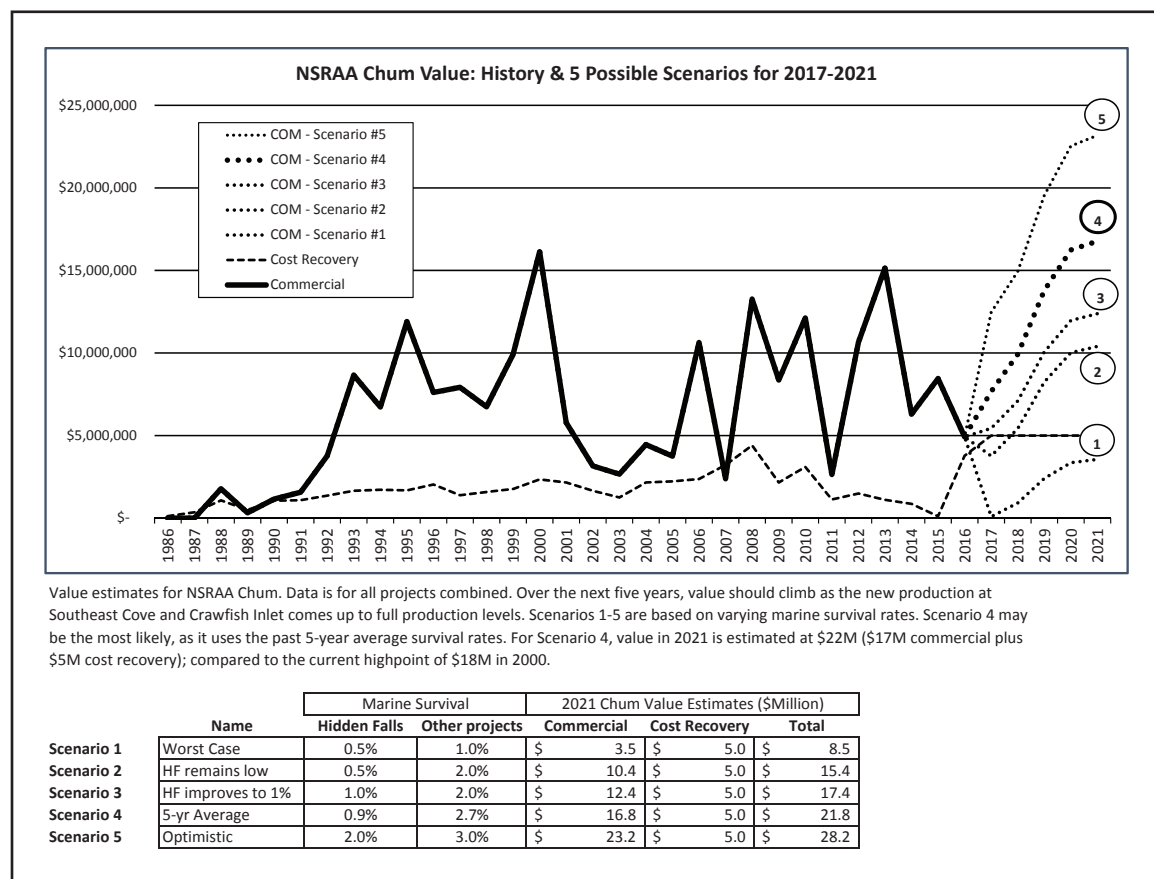
Chip points to one scenario as an example. "This scenario uses the Hidden Falls' chum five-year-average marine survival rate of 0.9 percent for Hidden Falls and Deep Inlet's rate of 2.7 percent for all other sites," he says. "By 2021, harvestable chum numbers would climb to 4.6 million fish, worth an estimated \$17 million in commercial value plus another \$5 million for cost recovery."

Even as a conservative forecast, it bodes well for the future.

"The challenge is to bridge a couple of potentially lean years until the new projects come up to full adult production and the larger returns begin," he says.

Already, next year is off to a better start, Steve says. "For one thing, Douglas Island Pink and Chum (DIPAC) announced it will transfer \$1.145 million in excess funds to NSRAA." These monies will displace an equal amount of cost recovery at Deep Inlet, allowing the fisheries to remain open longer and, essentially, adding an equal amount to NSRAA's total commercial value. This year, DIPAC's contribution was \$700,000.

"And maybe salmon survivals will be up across the board," Steve adds, hopefully.



Value estimates in the above graphic are based on commercial chum price of \$0.60 and a cost recovery price of \$0.75, with an average weight of 7.5 pounds.