NORTHERN SOUTHEAST REGIONAL AQUACULTURE ASSOCIATION

FISH RAP

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

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Retiring NSRAA board president and longtime director Dennis Eames presents John Littlefield, outgoing subsistence representative with a gift from the NSRAA board at last springs' meeting. Both men will be missed for their dedication and commitment to NSRAA's continued success.

Inside

Alaska Salmon Industry: Challenges and Options for Change

Twenty-Five Years of Alaska Salmon Enhancement - A Good Investment

On Wall Street, when the stock market slumps, financial professionals remind investors to hang in there and take the long view.

The long view shows a steady increase in stock values over time, regardless of the dips and corrections that at the moment seem of crisis proportions.

NSRAA general manager Pete Esquiro thinks there are enlightening comparisons to be made between the stock market and salmon enhancement programs like NSRAA's.

In this region, the [fishermen] have paid in about $22 million from 1977 through 2001, with a return of $122 million in harvests..."

Many Alaska fishermen have been taxing themselves a percentage of their gross salmon revenue since 1977 (3 percent for NSRAA), and investing that money into salmon enhancement programs. These programs didn't really begin to pay off until the late 1980s and early 1990s.

In this region, they paid in about 22 million dollars from 1977 through 2001, with a return of 122 million dollars in harvests, not including the value of NSRAA's cost recovery harvests.

Was it a smart investment? Yes, although it maybe didn't seem like it in the early years. Those figures show a benefit:cost ratio of better than five to one over the long run.

"There are probably not too many stocks in the past fifty years that have performed equivalent to that. Over the past twenty years it comes out to a 25 percent annual return," Esquiro said. "Compared to a lot of other investments, even in the heyday of the stock market, it would be hard to find one to match it."

"Fishermen had a lot of patience and foresight to initiate this program, back when returns were very low," agrees NSRAA operations manager Steve Reifenstuhl.

Dennis Eames, just retired board president and one of the founders of NSRAA twenty-five years ago, noted that "in the mid 70's fishing was just poor, and about fifteen guys sitting around said we need to do something about this. Patience, yes. Good investment, beyond our dreams."

The money put into NSRAA and returned five-fold in salmon harvests is only part of a statewide picture of investment into enhancement programs that began in the mid 1970s.

"Really it was in 1974 and 1975 that the legislative part was put through, and then the aquaculture associations formed around 1976 and 1977," Reifenstuhl said.

Prince William Sound started their aquaculture program first, and in 1977 NSRAA and SSRAA (Southern Southeast Regional Aquaculture Association) formed.

The State of Alaska also set up the FRED (Fisheries Rehabilitation, Enhancement, and Development) Division of the Department of Fish and Game (ADF&G), and spent somewhere around 85 million dollars instituting its own enhancement programs and building facilities such as Hidden Falls, Crystal Lake, and Snettisham hatcheries.

"There was a lot of state oil money in the late 70s and early 80s that allowed that to happen," Reifenstuhl said. "The state also loaned out about 118 million dollars statewide for the private non-profit programs (PNPs) like NSRAA."

Declining oil revenues led to the demise of the FRED division in the mid 1990s. The transfer of state-owned facilities to operation by private non-profits began several years earlier.

The state's investment into enhancement has also shown a healthy return. The 118 million dollars it loaned to private non-profit aquaculture associations is in the process of being repaid with interest. NSRAA is one organization whose debt has been paid in full.

Probably more important is that the state's 118 million dollars in loans statewide has had a return of around a billion dollars worth of enhanced fish harvested.

"In rough numbers, including the cost recovery, it's a ten to one return," Reifenstuhl said. "Simplistic to look at it that way, I know, but still, it's ten to one."

Local communities benefit from the raw fish tax generated from that billion dollars worth of fish.

"There is a 4 percent tax, of which half goes to the state general fund, and half goes back to the principalities where the fish were landed, so there is money coming into Sitka, Cordova, Petersburg, Haines, and elsewhere," Reifenstuhl explained. "That's to say nothing of the wild salmon which has the same tax on it."

"Over the past twenty years it comes out to a 25% annual return," Esquiro states.

During the period from 1977 to 2001, the taxes fishermen have levied on themselves to support aquaculture added up to about 100 million dollars statewide. This money is in addition to the raw fish tax.

Steve McGee, of the Department of Fish and Game's Commercial Fish Division, has done some calculations that subtract cost recovery revenues statewide, showing a 5:1 return on the state's portion of the investment.

"Lately, I've been relating estimated ex-vessel value of the hatchery-produced, commercial and cost recovery fisheries over the last 20 years to the amount of PNP loans taken out over approximately the same time period," McGee said.

"The commercial value now totals over $750 million and the cost recovery value totals over $250 million. So together, the value is now in excess of $ 1 billion, based on an investment in PNP loans of $118 million. To make the comparison more accurate, it probably would be fair to also add in the state's investment of approximately $85 million to construct its hatcheries, many of which are now operated as PNPs. So, the ratio of benefits to investments would be about $1 billion to $200 million, or five to one."

McGee and Reifenstuhl both point to the McDowell Group study of NSRAA's economic impact, completed in March of 2001, as a bearer of good news.

"From the recent economic analyses that the McDowell Group has done, I suspect you already have a pretty good idea of the magnitude of benefits the hatchery program has provided to fishermen and communities in Southeast Alaska," McGee said.

"One of the most incredible facts in there is that commercial fishermen in Southeast harvested 59 million pounds of salmon and earned 21 million dollars in ex-vessel value during the 2000 season," Reifenstuhl said. "That was a year salmon fishermen paid about $1 million in Enhancement Tax."

The McDowell Group report summarizes the most dramatic

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General Manager's Notes:

With the completion of the 2002 salmon season, there is a little time to reflect on everything that's happened. The doom and gloom that I hear from various segments of the industry seems to be at an all time high. I am hoping that much of the energy presently going into doom and gloom, will eventually be re-channeled to correcting the problems hampering our industry.

Alaska salmon fishermen have faced very serious problems in the past, and I am absolutely sure that you will rise to the challenge of revitalizing the salmon fisheries of Alaska.

Here in Alaska we are blessed with wild and hatchery stocks which are generally very healthy (from the reproductive point of view). This is not to say that there aren't some areas of the State where there are some biological concerns. For the most part, steps are being taken to address those shortcomings.

The real problem facing the salmon industry in Alaska has to do with our need to re-claim the market for our wonderful wild salmon resource. I believe that we

Pete Esquiro, General Manager

will reclaim our market share by producing consistent quality products which conform to the product specifications demanded by the consumer.

If we can convert our already superior wild salmon to product forms desired by the consumer, at a price acceptable and affordable to the consumer, we will win back our markets.

It will not be enough to simply market wild over other readily available salmon products. I think that changes need to be made in all sectors of the industry. Successful revitalization of our industry will come about because we will pull together as a team.

Board Member Profile

Bill Paden

Bill Paden is on his second term as a troll representative.

Recently he decided to run for Sitka Assembly, and was elected to a 3 year term in October.

"I decided to run because my wife and I really care for this community. We've got two grown children and grandchildren here," Paden said. "I've been involved in fish politics, and was chairman of the Fish and Game Advisory Committee and of the Ports and Harbors Commission for years. It was just time for me to do it," Paden said.

Paden described a group of fishermen sitting around one evening at his place, deciding that, "you know, we really need a fisherman on the assembly."

Paden hopes to solicit support from the Assembly whenever state programs are proposed that might benefit local fishermen. He says he also "wrangled" his way into being the Assembly liaison to the Ports and Harbors Commission.

Paden is also liaison to the Fisheries Economic Advisory Committee.

Paden tries to fulfill two missions as a NSRAA board member: first and foremost, maintaining the viability of the organization as a whole, and also representing his gear group.

"I'm torn, but I really try to keep focused," Paden said.

He said that board president Dennis Eames' retirement from the board was on everyone's minds during the meeting.

"That was one of the most dramatic issues. I'm not sure if it's the reason or not, but the board meetings were very cordial this time around," Paden said. "When it came to the part that could have been most contentious, the proposals that are being put before the Board of Fish (BOF) by the different gear groups, everyone just unanimously agreed to let the proposals stand on their own merit."

One proposal Paden hopes the BOF will support allows trollers access to the Medvejie chinook that return in the spring.

"It has treaty implications, it's in the middle of the biggest charter salmon fishery in the state, but if the Board of Fish wants to put their money where their mouth is, they'll let us have a chance," Paden said. "If we could get on to those kings it would pretty much fast track us into our harvest guideline level."

For the first time in Paden's memory, the board specifically requested that NSRAA general manager Pete Esquiro convey their thanks to the staff for a job well done in 2002.

"They went above and beyond again. The flood damage out at Medvejie, they just worked non-stop," Paden said. "The whole staff has this mindset that no matter what, nothing is going to hurt those eggs or those fry," Paden said.

Paden has compliments for the board, too.

"We've got a great bunch. Of all the boards I've been on NSRAA is not one of the boring ones, but that's just the nature of fishermen, we're so competitive. We're really lucky too in the non-gear group people we've got. They are very dedicated to making sure that NSRAA remains healthy," Paden said.

Paden, originally from Seaside Oregon, came to Sitka in 1966 after his discharge from the Army, to work in the pulp mill. He immediately started handlining for halibut out of a skiff, and later got a troller with which he trolled for

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What's A Salmon Loving Landlubber to Do?

Your Fish Rap writer left Sitka for drier pastures just over a year ago, relocating to Moscow, Idaho, in the heart of the Inland Pacific Northwest.

It's not easy to find good salmon to eat in these parts, but with a toddler who loves salmon above all other sources of protein, even peanut butter, and with your writer's instinctual revulsion for farmed Atlantic salmon which is the usual grocery store offering, something had to give.

Thank goodness for "The Fish Folks."

Husband and wife team Dale Young and Victoria Dickinson bring a large fridge/freezer truck to the parking lot of the Moscow Food Co-op every Friday. They set up about 11 a.m. and close up shop around 6:30 p.m., just as the hordes arrive for Co-op pizza by the slice night.

The Fish Folks sell halibut, Alaskan and Oregon troll-caught kings, shellfish, rockfish, tuna and other seafood products. They handpick their product from the warehouse floor at Ocean Beauty Seafoods in Spokane, setting up shop in Coeur d'Alene on Thursdays and Moscow on Fridays.

Sitka folks who visit the Chelan Produce truck when it arrives know just how festive and social this kind of set-up can be. Not to mention lucrative.

"We're successful because we only sell two days a week, we hand select our fish, we don't sell or even give away anything slightly second rate. We try always to have fresh wild salmon. We do a lot of consumer education, and we've shown people the difference, so they're willing to pay more," said Dale.

Dale said they sell several hundred pounds of salmon each week and 200 pounds of halibut each week in the summer, and they could sell as much salmon in the winter if they could just get some.

"We try always to have fresh wild salmon but of course right now there's not much," Dale said.

Dale noted that even though his customers are willing to pay more, salmon still commands a higher price in Seattle than here.

"I don't get the best ones, they stay on the I-5 corridor. Actually we're lucky to get any at all," Dale said. He attributes a good relationship with the folks at Ocean Beauty as key to their business.

"Sure, the middleman is making money but he's essential, he's got the facilities to handle the product," Dale said.

Dale knows his Alaska fish, having lived in Kodiak for 15 years and crab fished. Now he's a stone sculptor, and wife Victoria is a massage therapist, the rest of the week.

The Fish Folks bought the operation four years ago but the previous owner had been going for twenty years. Dale offered their email address and phone number to fishermen who might want to talk business: fishfolks2@cs.com, (208) 667-5702.

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The Hatchery Report

Remenants of the weir on Medvejie Creek lie buried in debris after an August storm just days prior to chum broodstock returning to Medvejie this year.

Medvejie

This past season the Medvejie Hatchery released record numbers of healthy chum salmon fry, along with production-level releases of chinook, coho, and pink salmon, reported hatchery manager Jim Seeland in his recent report to the NSRAA board of directors.

"The environment dealt us a few blows with below average freshwater temperatures and a flash flood in August that made some 'major modifications' to the facility and the road leading into it," Seeland said.

Spring seawater temperatures, however, were very good for chum fry growth and Green Lake rearing temperatures were ideal for the summer rearing of chinook.

Chum

"The hatchery experienced little or no fish culture problems with chums this year," Seeland said.

Staff did have to order supplemental feed for Deep Inlet as the fry exceeded growth expectations, but the fry converted the feed into body mass so well that the feed budget wasn't overspent.

"Approximately 40.8 million fry were released from Deep Inlet this year, the largest release ever. Scott Wagner heads up this project and is responsible for much of its success," Seeland said.

At both Bear Cove and Deep Inlet, the releases were delayed a few days longer than normal due to lower than desirable plankton levels and "a general sense that spring was a bit late in coming this year," Seeland reported.

Broodstock returns to the hatchery were adequate to meet the original production goal of 30 million eggs. However, due to a shortfall of eggs at Hidden Falls, the production goal was increased by 15 million eggs, to 45 million.

"Unfortunately, Bear Cove did not get enough adults back to meet this increased goal," Seeland said. "The hatchery did manage to take around 35 million eggs."

With the help of Grant Miller and the F/V Heron, NSRAA staff made several attempts to seine broodstock at Deep Inlet, but there were not enough fish to make much of a dent in the eggtake goal.

Hidden Falls sent over 12 million eggs in October to meet the rest of Medvejie's egg needs, and hatchery staff expect to pond about 45 million fry next spring if all goes well this winter.

Chinook

"The hatchery had another very good rearing season with chinook smolts, as fish culture at both Medvejie and Green Lake went without many problems and target weights were reached at specified times.

"Transfers from Green Lake to the Bear Cove saltwater pens went well, as did the transition from Medvejie freshwater raceways to saltwater pens," Seeland said.

An accounting error last fall resulted in a shortfall of the desired number of Green Lake smolts for release.

"While disappointing, we seemed to have learned from our mistake and some new procedures put into effect this year resulted in greatly increased accuracy," Seeland said.

Bacterial kidney disease (BKD) also put in an appearance in two of the net pens containing Green Lake-reared fish. These pens were treated with an antibiotic and the fish released early.

"This happened in the first year of the program too and we found that the early-released fish did quite well, so we hope this group will react similarly," Seeland said.

Seeland pointed out that BKD is endemic to the Green Lake system so it will continue to show itself from time to time. Staff will try some alternative feeding strategies based on the latest scientific research relating the stress of feeding with outbreaks of BKD.

Over 6000 chinook made it back to the hatchery for broodstock this year, yielding plenty of eggs for the Medvejie, Green Lake, and "zero check" experimental programs.

"A full production lot of broodyear 2001 fish are in their saltwater pens for the winter and they look very good," Seeland said.

Coho

Broodyear 2000 coho smolt releases were uneventful this year, Seeland reported.

"After a one year hiatus from releases at Shamrock Bay due to broodstock shortages, we got back on track this spring with a 350,000 fish release. At Medvejie, we released our maximum allowable 10,000 smolts, and we also transferred 10,000 smolts to the Sheldon Jackson College hatchery to help out their program," Seeland said.

Cool summer water temperatures have left the 250,000 broodyear 2001 coho on the small side, but healthy. These fish will be released at Shamrock Bay and Bear Cove next spring.

No Coho Lake Rearing (CLR) fish were released this year as planned. The hatchery will receive 2.5 million eggs from Hidden Falls this winter for the CLR program.

"This fall we will be taking our first eggs for the new Plotnikof summer run coho project," Seeland said. "We will attempt to obtain about 70 pairs of adults for this project." (See related story, page ?)

Medvejie staff will take the usual 250,000 coho eggs or so, and they are working with the Forest Service and Department of Fish and Game to take 50,000 Kadashan coho eggs for fry stocking next spring.

Infrastructure and Tourism

A massive flood in August this year caused lots of problems for the hatchery but it could have been worse.

"The torrent of water, rocks, and trees that came down Medvejie Creek did quite a bit of damage and altered the terrain. The pilings that support the weir on the north fork of the creek were damaged, and massive amounts of rock were deposited in the lower stretches of the stream that had to be removed. The road got washed out in several places and we witnessed the birth of a new canyon that was created by a mudslide down Bear Mountain," Seeland said.

"With a lot of effort from Steve, Lon, and other staff, the pilings were repaired on the north fork in time to keep the chums out. As it was, we were between chinook and chum runs and for that we are grateful. Everything is back together now, but the volatility of the stream system during that short period of time was humbling," Seeland said.

Plans are in the works for a new 1600 square foot hatchery building to be built next year. Two of the existing buildings will get much needed upgrades.

"When complete, the Medvejie facility will have a lot of very nice improvements that will not only make it more functional, but will extend the life of the facility. This will be an excellent use of Southeast Sustainable Salmon Fund (SSSF) money," Seeland said.

Over 6000 visitors toured the hatchery this summer, from the Allen Marine Tours operation. Naturalists that accompany the tours have developed a system for informing the visitors about the salmon resource in southeast Alaska, NSRAA's role, and general information about salmon life cycles and the environment.

"The tours have been quite non-intrusive and are a good source of entertainment at times for the staff," Seeland said. "Having these people visit the site from all over the country and the world is a tremendous benefit to the Association in that many misconceptions about salmon, salmon products, and the state of the resource are straightened out."

Seeland has some ideas about how to further the cause of marketing Alaska salmon, such as creating a small handout on shopping for and cooking Alaska salmon at home, and letting visitors taste some fresh cooked salmon on site, should the board decide to support it.

"I sincerely believe that the association these visitors make with the crystal clear water of Sitka Sound, seeing the fleet actively fishing, and being informed consumers, will be some of the best advertising dollars ever spent," Seeland said.

Hidden Falls

Despite record low lake levels and frigid early chum rearing in March, drought-like conditions in July, and major changes in personnel, Hidden Falls Hatchery staff worked through these difficulties to keep the success record of the facility on track, reported hatchery manager Jack Christiansen in his recent report to the NSRAA board of directors.

cont. pg 4

Steve Reifenstuhl collects a few eggs a Deep Inlet after coming up a bit short at Medvejie this year.

hidden falls - cont. from pg 3

Christiansen joined NSRAA in April of this year.

Chum

36.5 million Hidden Falls chum fry and 36.3 million Takatz chum fry were released this spring.

"The good overall condition of the fish released on a year with so many uncontrollable variables speaks very highly of the dedication of Hidden Falls staff," Christiansen said.

The variables that caused some challenges at the hatchery included incubator silt problems which caused higher than normal mortality among the Takatz batch, higher than normal ponding mortality due to the frigid water temperatures, and size variations among the ponding fish which demanded some creative feeding solutions.

"We shifted to split feedings with smaller portions midway through the rearing, significantly reducing mortality," Christiansen said.

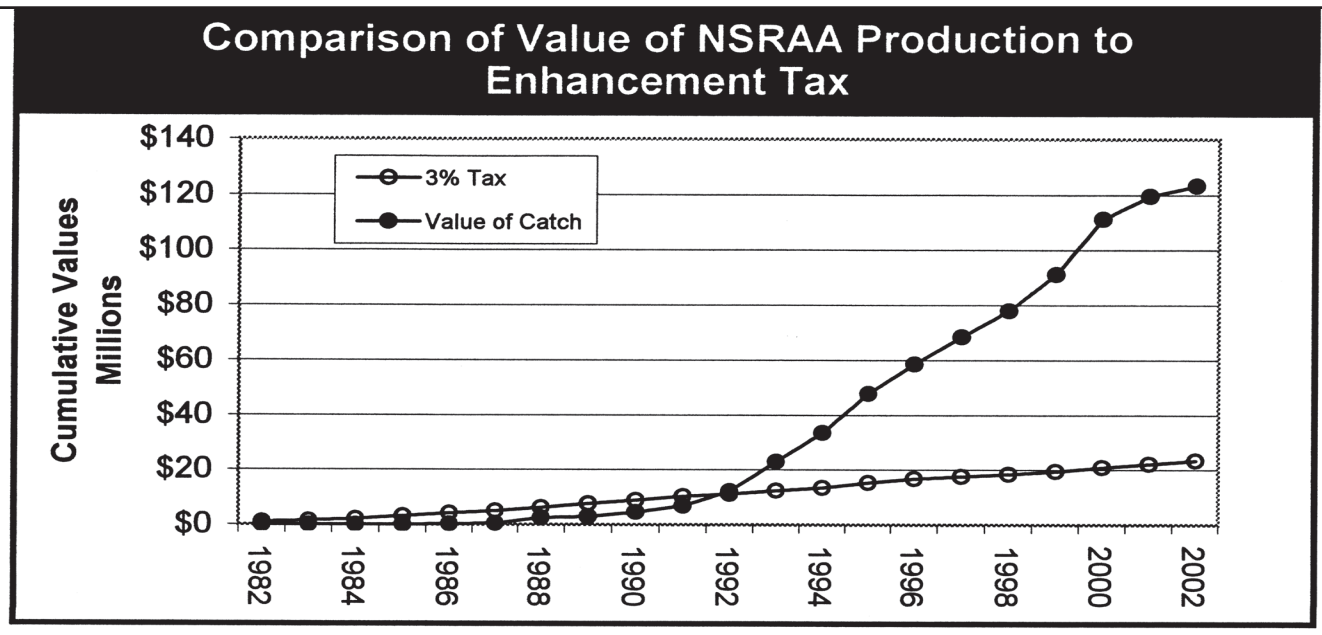
"Although labor intensive, the more regimented split-feeding schedule will be incorporated at Hidden Falls for the coming year. The positive results obtained at Hidden Falls this year during a very extreme weather rearing period should prove even more successful in an 'average' weather season," Christiansen said.

Christiansen said that in the future all the hydro lines will be flushed before opening them for incubation use, which should take care of the silting problem they experienced this year.

The infrastructure improvements completed this past season at Hidden Falls proved invaluable during spawning season, as lagoon improvements kept adult fish healthy, reduced mortality and escapement, and allowed staff to collect the maximum number of eggs possible during a drought season.

"An estimated 108,500 chum broodstock were collected for Hidden Falls as mandated for program requirements this year," Christiansen said. "This was the number estimated to provide 45.5 million egg take for both Takatz and Hidden Falls, and a 24 million egg take for Deep Inlet."

The Hidden Falls Lake waterfall quit spilling just a few days after spawning commenced and didn't resume spilling until the end of the third week of August. This period of time was also the bottom of the tide cycle.



"As a result, to pass fish into the lagoon there was only a brief window of time on the highest tide of the day," Christiansen said.

Some chum focused on the hatchery effluent pipe flow instead, where an estimated 15,000 died.

Despite this, 97,393 chums managed to enter the lagoon and the raceways. Raceway mortality was just over 300 fish, and lagoon mortality was estimated at 800-1000 fish, which is lower than normal.

"The use of aerators in the lagoon, pre-season lagoon repairs, and going through the fish in the raceways as soon as they were ripe" contributed to lower mortalities, Christiansen said.

Egg quality looks good, Christiansen noted, and the addition of an extra staff person to perform egg quality control monitoring will prevent eggs from being wasted.

The availability of SSSF money for improvements to Hidden Falls will allow shortcomings in the physical plant to be corrected, and increase the efficiency of hatchery operations.

Christiansen noted several projects under design: sealing the dam leaks permanently and improving the lagoon effluent to enhance fish passage; widening the raceway ladder from 4' to 8' to allow adequate fish passage to support daily egg takes averaging 5 million; redirecting hatchery effluent water to concentrate broodstock on the lagoon outfall during drought periods.

Chinook

"Aggressive finish-feeding combined with quality rearing conditions and excellent environmental conditions at the release of the broodyear 2000 chinook should provide a healthy return," Christiansen said.

1.1 million healthy chinook were released at an average weight of slightly over 42.7 grams.

Christiansen noted that, thankfully, the new Wavemaster pens improved the rearing environment and survived the spring storm that broke up the chum net pen setup just prior to chum ponding.

"Had the Wavemasters not been purchased, adequate back-up rearing for the chum would not have been available," Christiansen said.

Staff optimized the rearing space and as a result were able to rear an additional 150,000 broodyear 2001 chinook.

Higher than normal snowpack and heavy rains resulted in nitrogen super-saturation in the lake. Staff mixed water from both shallow and deep lines to keep the fish healthy.

"While the resultant water temperature was lowered, intensified fish culture practices kept fish growth at an excellent pace and fin quality high," Christiansen said.

"With proper scheduling and staffing, post SSSF expansion numbers of chinook reared with additional ponds could approach 2 million," Christiansen said.

Chinook eggtakes for broodyear 2002 stock went quickly and easily, and egg quality was very high.

"Broodyear 2002 chinook have just finished hatching, and quality is high," Christiansen said.

Coho

1.9 million broodyear 2000 coho were released from Hidden Falls at their target release weight of 22 grams.

"The overall condition of these fish at salt-water entry and release was high. This was evident by another strong showing of coho jacks this fall, indicating good marine conditions at-and-after release," Christiansen said.

Broodyear 2001 will be closely following the same rearing schedule of the previous two years, as it seems to be working quite well.

Slightly over 2 million BY01 coho are on hand at Hidden Falls. Christiansen believes that there is space for an additional 200,000 under current conditions.

"An extremely strong return of broodyear 99 ensured a successful egg take," Christiansen said. "Broodstock quality was high, and their numbers will provide enough eggs to expand coho rearing by an additional 200,000 fish.

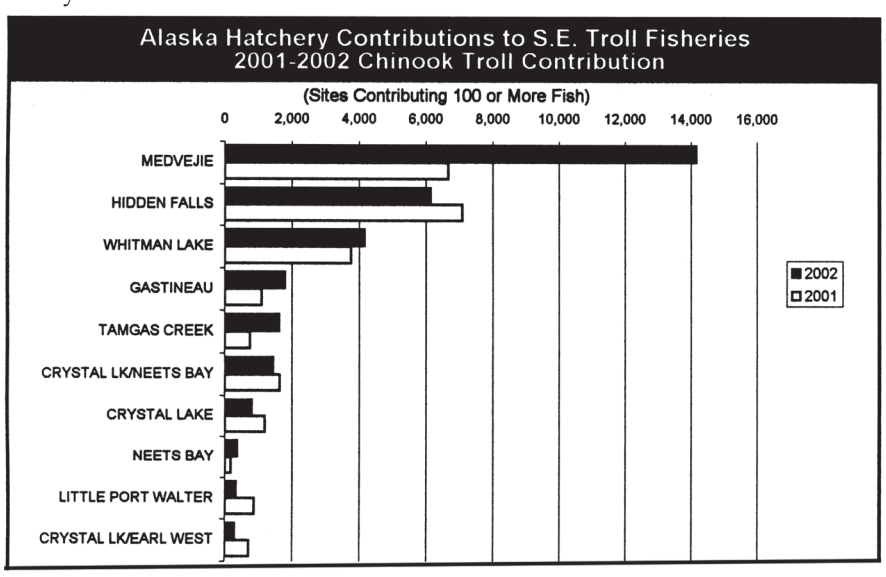
Infrastructure

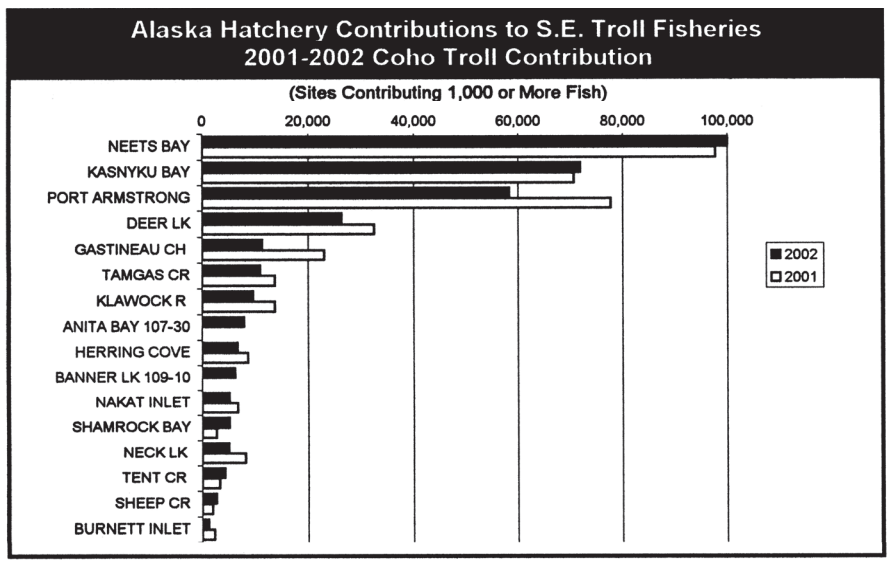
"All staff members were utilized as time permitted for a major preventive/corrective maintenance and organizational effort," Christiansen said.

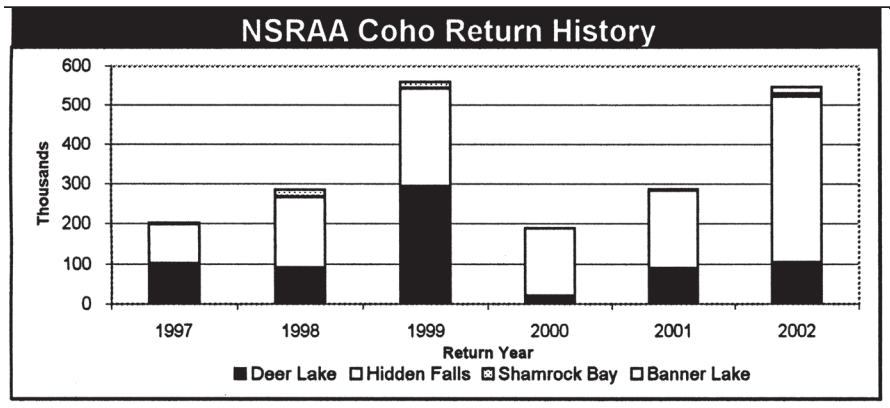
Work included lots of exterior painting, collection and removal of garbage/scrap metal from the site, dock/float repairs, and housing repairs.

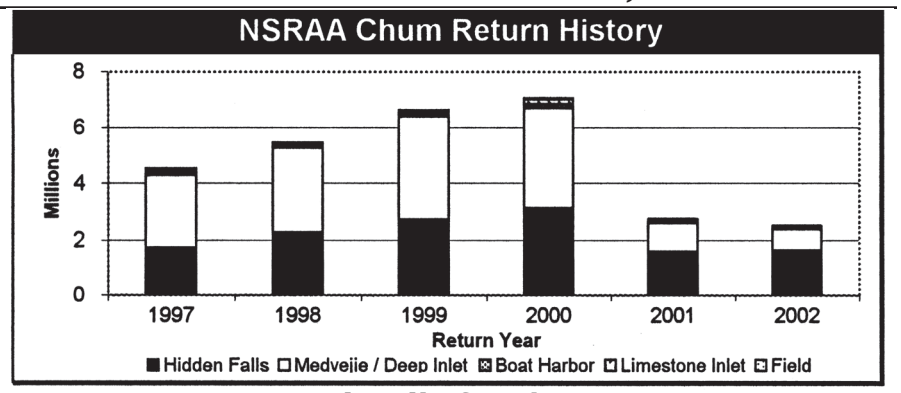
"Review of hatchery operations, capacities, and overall condition after the last rearing season has unveiled numerous opportunities for expansion and improvements," Christiansen said.

Christiansen is hopeful that the creation of some new positions such as a full-time Maintenance Assistant and a 10-month Fish Culturist will ensure quality and help increase production numbers.









Early Projections For 2003 And Market Outlook

Chum

NSRAA data analyst Chip Blair said they're expecting at least a doubling of 2002 chum numbers for the 2003 season.

"The last two seasons have seen chum numbers drop to what we consider slightly below average to average levels, with returns totaling about 2.5 million fish per year for all projects," Blair said.

Current projections are for 5.2 million NSRAA chum to return next season.

NSRAA's hatchery programs will account for the bulk of the fish, with the Hidden Falls' and Medvejie/Deep Inlet returns projected at 3.45 and 1.45 million fish, respectively.

Returns to Boat Harbor and Limestone Inlet remote release sites are also expected to be strong. These sites are operated cooperatively with DIPAC (Douglas Island Pink and Chum), whose staff prepares the forecast.

DIPAC's forecast calls for more than doubling the 2002 returns, with 177,000 fish expected at Boat Harbor, and 280,000 at Limestone Inlet.

Enhanced chum returns to the Haines area should add an additional 15,000 fish to the total.

Chinook

"Medvejie enjoyed a record chinook return this season with a total return of over 42,000 fish. Next year's return should be quite large as well," said Blair.

Over 38,000 chinook are expected.

"We are finally at the point in the Green Lake program where adult returns reflect the full impact of the increased smolt production," Blair said.

Adults from Green Lake production will return for all major age classes in 2003.

Blair said we can expect an increase in Hidden Falls chinook returns in 2003.

After a relatively low return of about 20,700 fish in 2002, numbers are expected to climb to about 27,000 chinook next season.

"Poor survival for brood year 1997 has caused a reduction in return numbers the last two seasons. Returns of brood year 1998 two-ocean chinook in 2002 indicate a higher survival rate for this brood year, which is the major contributor to the 2003 return," Blair explained.

Coho

Coho return projections are based on an assumed average marine survival rate of 8 percent, since there is no earlier year class on which to base predictions.

Based on this assumption and smolt release levels, NSRAA expects 156,000 coho at Hidden Falls, 76,000 at Deer Lake, 28,000 at Shamrock Bay, 1300 for Banner Lake, and 800 at Medvejie.

The total for all projects is 262,000 coho.

"Our coho projects often outperform the forecast, with much higher marine survival rates and higher adult returns," Blair said. "This is especially true for Deer Lake and Hidden Falls."

The 2002 coho return is a good example, with a total return of 548,000 fish in a year that only 205,000 were forecast.

"Survival rates were a phenomenal 30 percent at Deer Lake and 24 percent at Hidden Falls," Blair said.

Numbers of jacks returning can give a clue to survival in some years.

"Hidden Falls had good numbers of jacks again this fall. Deer Lake had very few, but we think this is a function of smaller smolt size rather than an indication of poor survival," Blair said.

Sockeye

No enhanced sockeye will return in 2003. The next year NSRAA will see enhanced sockeye from Chilkat Lake is 2005.

NSRAA general manager Pete Esquiro was reluctant to speculate about next year's market outlook, as the 2003 season is still a long way off.

"I think we're all going to have to be a little more imaginative about what we do. I think we may have to consider doing some things to maximize the value of the fish, and I'm hoping that some of the processors will come through with some proposals that will be reflective of the need to do something a little different with the fish," Esquiro commented. "Outside of that I don't have a feel for what the markets will be like next year, it's just too early to say."

Plotnikof Coho Program

For several years NSRAA has been researching the feasibility of developing a "summer run" coho stock, an alternative to the current Medvejie coho which has not performed as well as was hoped.

A "summer run" would return earlier in the season than the wild Indian River coho and Salmon Lake coho. This difference in timing may eventually allow more fish to be released at Medvejie and coho smolts t be released once again at Deep Inlet.

This will provide for more fishing effort and focus on the earlier summer run, and alleviate concerns about over-fishing the local wild stocks.

Jim Seeland and Brad Price collect Plotnikof Lake coho eggs.

Coho returning to Port Banks and Plotnikof Lake are a "summer run." They return in late June through July.

NSRAA received regional planning team approval and secured all necessary permits to implement a program using coho from Plotnikof Lake as broodstock, beginning in the fall of 2002. NSRAA can collect up to 220,000 green eggs.

Project manager Lon Garrison said they were a bit short of collecting their full amount of eggs this fall.

"I had anticipated needing to capture and spawn 70 pair of coho adults," Garrison said. "Unfortunately we were only able to get 49 pair this first year."

Weather delayed the team's arrival at the lake and beach seining turned out to be not very effective.

"The hook and line method was the most productive, and gill nets were moderately successful. Next year I envision getting on site a week to 10 days earlier and going prepared with several different depth gill nets and a smaller beach seine," Garrison said.

Eggtakes went smoothly though the fish were small and some were partially spawned. Garrison noted that many of the adults had very poor looking kidneys, due to this stock suffering from a high incidence of bacterial kidney disease (BKD).

"I expect to lose up to half of the eggs we collected this year to BKD but this should still give us enough for our 10,000 for Medvejie plus a few extra for Deep Inlet," Garrison said.

Salmon Lake Assessment

For the second year in a row, the Salmon Lake stock assessment provided reassuring figures for anyone worried about the impact of NSRAA's programs on wild salmon escapement into Salmon Lake.

"We got good news again from the work that Sitka Tribe of Alaska, the Department of Fish and Game, the Forest Service, and NSRAA are conducting at the lake," NSRAA operations manager Steve Reifenstuhl said.

Approximately 755 adult sockeye and 176 jack sockeye made it back into the lake to spawn, along with 1150 coho.

There were also 45,000 pink salmon which escaped back into the lake. "This is probably considered overescapement for the pinks by the Department of Fish and Game, but nevertheless it will be a lot of nutrients going into that system which will benefit rearing coho and sockeye," Reifenstuhl commented.

The numbers are larger than even Reifenstuhl expected, and he considers himself an optimist.

"Two years of healthy escapement demonstrates to me that we've got a healthy coho and sockeye stock at the lake, despite the very intense fishery out front," Reifenstuhl said.

The study's long term objective is to determine the lake's rearing capacity for coho and sockeye. In seven or eight years a "stock recruit model," can determine a biological escapement goal for both species at the lake.

"My guess is, if we're able to conduct the study that long, we'll come up with biological escapement goals which are actually less than the escapement we saw this year," Reifenstuhl said.

Next year fish and Game employees will be stationed in Deep Inlet to board some of the gillnet boats to sample their catch for coho.

NSRAA's major involvement in the study is tagging coho in the lake.

2003 marks the third year of the study, and is also when its current funding runs out. NSRAA will make a proposal to the federal subsistence regional advisory council for further funding.

NSRAA Contribution to Southeast Alaska Commercial Fisheries
Number of Fish : 2001 - 2002

	Gillnet		Seine		Troll		All Gear	
	2002	2001	2002	2001	2002	2001	2002	2001
Chinook	2,252	307	7,401	7,448	20,287	13,795	29,940	21,550
Chum	314,722	392,235	1,511,572	1,502,308	85,501	267,386	1,911,795	2,161,929
Coho	1,189	656	44,730	19,033	109,609	104,322	155,528	124,011
Sockeye	5,065	5,418	-	-	-	-	5,065	5,418
All	323,228	398,616	1,563,703	1,528,789	215,397	385,503	2,102,328	2,312,908

THE FIELD PROJECTS

Haines Projects

Chilkat Valley

'The majority of the year 2002 sockeye harvest in district 115 was Chilkat rather than Chilkoot sockeye," reported Haines biologist Todd Buxton.

Eleven percent of the harvested fish were enhanced fish from Chilkat Lake.

Haines Biologist Todd Buxton (left) and seasonal biologist Jodi Neil collect length & sex information from adult sockeye at Chilkat Lake weir.

Once again no eggtakes occurred at Chilkat Lake this fall.

"Of the three criteria required for sockeye eggtakes to occur, smolt size and zooplankton thresholds were reached, but the smolt biomass criteria was not met," Buxton said.

Buxton noted that Chilkat Lake zooplankton populations were depressed through the summer but rebounded in late August. A high number of pregnant zooplankton in September was also observed. Both these factors indicate that the lake's peak production time may be shifting to later in the summer.

Just under 2.7 million thermally marked fry reared at Snettisham were released in Chilkat Lake in 2001. Of these, 0.07 percent, or 1803 fish, emigrated from the lake as age 1 smolt this year.

"The smolt outmigration was bleak, but at least they were seemingly well fed," Buxton said. "This is strange considering the low zooplankton populations the last few years, and the huge number of stickleback in the lake these days."

Adult escapement to the lake this year was right on target, meeting the 60,000 escapement goal.

Buxton reported "we were only able to collect 1/3 the number of eggs (430,000) we are permitted to take annually."

Escapement to the Herman Creek channel was 785 fish, only slightly better than last year's escapement of 567 chum.

"Overall, chum escapement to the Klehini River was extremely low for a second consecutive year," Buxton said.

Future management of Herman spawning channel will prevent all the fish from spawning only in the channel and prevent them from superimposing egg nests on top of one another.

Due to low flow conditions, even fewer ripe females, about 709, escaped to 24-Mile channel, where only 197,500 eggs were collected this year.

"We are researching ways to improve escapement to this channel during low flow years like this one," Buxton said.

Between the number of eggs taken at 24-Mile and Herman Channel, and the number of females that spawned in these channels, year 2002 brood year production is expected to be 7297 fish.

Chilkoot Lake

The year 2002 Chilkoot Lake sockeye return was about the same as last year, but the harvest of 24,276 adults was only 23 percent of the five year average. As a result both the early and late runs surpassed their escapement goals.

NSRAA has worked with the Department of Fish and Game to estimate the numbers of smolt emigrating from the lake. Staff operated two traps this year to provide a reliable population estimate of 584,000 1 year olds and 155,000 2 year olds, for a total outmigration of 739,000 from the lake for 2002, compared to 453,000 smolts estimated in 2001.

The sockeye smolts were somewhat smaller this year than last averaging 2.28 grams versus 3.76 grams for age 1 and age 2 smolts combined.

Zooplankton production, however, while not quite as abundant as in 2001, was still well above the historical average and bodes well for the lake's current health and recovery trend.

Boat Harbor/Limestone Inlet

Field projects manager Lon Garrison faced big weather challenges in the spring of 2002, trying to transport chum fry to lower Lynn Canal and Stephens Passage for the Boat Harbor and Limestone Inlet projects.

Even after completion of the difficult transports, poor weather conditions hampered rearing.

"The extremely cold, clear, windy weather that lasted for nearly two months was unprecedented," Garrison said. "Overall, this was the worst rearing season ever experienced."

During the transports, constant high winds caused long delays and rough rides for the young fish.

The Boat Harbor and Limestone Inlet chum rearing and release programs are cooperatively operated between NSRAA and Douglas Island Pink and Chum (DIPAC) since 1988. Each project has a total release goal of 15 million fry.

DIPAC ponded some 15.18 million .38 gram fry at the Macaulay Hatchery raceways, which NSRAA eventually transported in five trips on the F/V Antares to Boat Harbor.

Transport mortality was much higher than normal, averaging 355,000 fry per trip.

A total of 15.16 million fry were moved to Limestone Inlet between March 22 and March 26. Transport mortality totaled 366,000 fry, or 2.4 percent.

"Once in the pens, a lot of benthic debris and phytoplankton generated by the unusual amount of wind and sunshine led to conditions that were detrimental to the young fish's gills," Garrison said. "This and the very cold water temperatures, which can create a shortage of zooplankton, created stress on the fry which led to higher mortalities than ever seen before."

A cold water form of the disease Vibrio caused most of the mortalities. Once this condition was diagnosed, three of the five netpens were released immediately on May 11, two weeks earlier than normal, in hopes of salvaging the remaining fry.

"Chris Crowe at Boat Harbor did an excellent job just keeping what we had alive," Garrison commented.

By May 21, just 11,609,457 chum fry averaging .66 grams were released from Boat Harbor. This size is at least 50 percent smaller than the yearly average and overall mortality from transport to release was a whopping 23.7 percent.

On May 23, 14.62 million .99 gram chum fry were released from Limestone Inlet. These fry, while doing substantially better than any of the other release sites, were still 30 percent smaller than the release goal of 1.5 grams.

"Both crews did all they could given the circumstances. I hope we never see another spring like this," Garrison said. "I'm afraid wild fish may also have suffered, coming out late and entering an environment with very little in the way of groceries."

Boat Harbor's production goal is 90,000 adult chum salmon, which was met easily this season. The Boat Harbor adult return for 2002 was projected to be 120,000 fish but the actual gillnet catch of 143,912 chum exceeded this prediction by 19 percent.

Limestone Inlet's annual production goal of 150,000 adult chum was not met this year. The gillnet catch for 2002 was estimated to be only 79,975 chum. This is the second year of poor returns to this release site.

DIPAC took 109,000,000 chum eggs during July and August of this year, which is about 12 million short of a full complement of chum eggs for their facility. DIPAC has said it may reduce its fry release at Amalga Harbor in order to fully stock Boat Harbor and Limestone Inlet next year.

Deer Lake

Deer Lake saw an unexpectedly large return of adult coho in 2002, and their marine survival rate set a new record for NSRAA salmon programs.

"Just over 30 percent of the 350,000 coho smolts that left Deer Lake in 2001 survived to become the adult return of 2002," reports project leader Dick Crone. "This is the highest rate of return seen at Deer Lake or for an NSRAA coho program so far."

The adult return exceeded 107,000, the seventh highest count on record.

The contribution of this return to the common property fishery was disappointing, however, at less than 30 percent of the total return.

Crone feels that the low coho prices in the early season, large abundance of coho stocks all through Southeast, and low seine interception during pink salmon fisheries in district 9A contributed to the poor common property percentage.

Nearly 1 million smolts migrated from Deer Lake this spring, with around half a million holding over in the lake for another year.

"No fry were stocked this past June due to the large holdover population," Crone said. "But fertilizer applications were continued for the fifteenth consecutive year."

The lake's zooplankton populations were abundant throughout the growing season and Crone expects all the holdovers to emigrate next spring as age 2 coho.

Mortality during the 2002 smolt exodus amounted to less than 1 percent of the emigrants, which is outstanding considering these smolts pass through an inclined-screen trap, a dewatering box, and down a 3/4 mile pipeline.

"Heroic efforts by the field crew

cont. on page 8

salmon industry - cont from pg 1

economic impacts of NSRAA in its executive summary, at the start of the 30 page document.

The study can be seen in full by following the link to "What's New" on the NSRAA website at www.nsraa.org.

Enhanced salmon comprise around 20 to 25 percent of the total salmon return to Alaska but has been as high as 34 percent. Pink and chum are the dominant species.

NSRAA doesn't need to be modest when discussing its own contribution to the total salmon catch.

"If you talk about NSRAA, we have one of the most successful salmon programs in the state. This year for instance our chinook program contributed about 65 percent of the Alaska hatchery chinook to trollers or 6.5 percent of the total Alaskan chinook catch, wild and enhanced," Reifenstuhl said.

Several years of low prices have led to some grumbling in the industry.

"Some people may say that enhancement programs take too many cost recovery fish," Reifenstuhl said. "Most places, because of the loans they have to pay back, have to take more cost recovery than we do."

"For fishermen involved in enhancement organizations, sit on the board, or maybe read the Fish Rap, they know what the benefit has been, they recognize that one in four fish that they catch on average is from an aquaculture association," Reifenstuhl said. "In times of low prices that extra fish becomes very important."

"Support for NSRAA in particular is really strong in the fishing community, so I'm not worried about that. There is still criticism from outside the area that is more troubling to me."

Steve Lepes (left) and Luke Bastian take a break along the trail to Deer Lake this past spring while establishing the field camp, an annual event.

Chum Research

Sitka Sound Adult Chum Tagging

Chum salmon returning to Deep Inlet and Silver Bay take their own sweet time heading to their final destination, according to the chum tagging and tracking project begun this past summer by NSRAA field projects manager Lon Garrison.

"I wasn't sure what to expect from this project, but it worked wonderfully in helping us understand the behavior and migration patterns of chum as they return to Sitka Sound," Garrison said.

Two trollers were chartered during the month of August for a morning or afternoon of fishing: Eric Jordan and the "I Gotta" and Andrew Friske with the "Shelly J."

"These trollers were terrific help, and fun to go out with," Garrison said.

The scarcity of chum and their condition upon capture made it difficult to get the numbers of fish they needed, but in the end Garrison accomplished his goal of surgically inserting acoustic tags into 23 adult chum salmon (11 female and 12 male), and releasing them.

"One interesting thing I observed was that even though we were using barbless hooks and checked the gear frequently, only about a quarter of what we caught were in good enough shape to be tagged. Many fish were bleeding from the gills or around the eyes far more than I anticipated," Garrison noted.

Sonobuoy receivers placed strategically throughout the sound tracked the tagged chums' movements, revealing that in general, most of these chum are exposed to the fishery for a very long time.

"I think we were all amazed to see how long and extensive the migrations within Sitka Sound can be," Garrison said. "Some fish were captured right away, but a couple of the earlier tagged fish were in the sound for 17 and 18 days and made several trips into Deep Inlet, Silver Bay, and back out front near Makhnati Rock and Liars Rock."

Garrison believes this early data supports the idea that fishery restrictions of either time or area may be justified at times to preserve broodstock.

He was also pleased that 13 of the 23 tags were returned to NSRAA, which will save on the budget for next year's study.

Next year Garrison hopes to put tags in twice as many chum, and to deploy a few more receivers throughout the sound, in order to get a more complete picture of chum migrations in the area.

"We may even try to apply this to returning Medvejie chinook in order to help target the troll fleet on these underutilized fish," Garrison said.

Deep Inlet Chum Fry Monitoring

Garrison is also in charge of the Deep Inlet Chum Fry Monitoring study initiated this past spring.

In 2002 NSRAA reared and released 42 million chum salmon fry at Deep Inlet and 7 million at Medvejie Hatchery in Silver Bay, an increase of 10 million fry from previous years.

Concerns regarding the impact this increase may have on surrounding resources, especially herring and other wild salmonids, have spurred the need for monitoring the fry. NSRAA also hopes to learn about post-release factors that may affect future returns, such as growth statistics and migration patterns.

"I'm pretty pleased with the information we were able to collect," Garrison said. "We were able to discover some timing and size issues, such as when and at what size the young chum leave the immediate shoreline area. In addition, using the two-boat trawling system we were

Biologist Lon Garrison, implants a sonar tag in an adult chum salmon this past summer in Sitka Sound.

successful in capturing large numbers of chum smolts in the pelagic (what does pelagic mean??) zone and seemed to have found when they depart Sitka Sound, which seems to be the first week of July."

Garrison also noted that the hatchery chums were two or three times the size of the wild chums, probably due to the wild fish emerging very late due to the cold spring.

Garrison had planned to do some beach seining to sample the fry but discovered that the young fish much preferred the rocky steep shoreline versus the flatter, cobble and sand beaches.

"Next year I think we will try some large minnow-type traps. I am worried that we artificially bias our sampling because of our gear selectivity," Garrison said.

The night-time, pelagic, two-boat trawling worked better, although because it requires very calm weather conditions, Garrison and his crew of Sheldon Jackson students were only able to use the technique three nights in June.

"We captured large numbers of chum smolts as well as many coho and chinook smolts," Garrison said. The smolts were weighed and measured, and the contents of their stomach analyzed.

The smolts were eating mostly copepods, various small crustaceans, and mollusk larvae.

The water temperature, zooplankton abundance, and composition were also monitored in Sitka Sound from March through June.

"The plankton and water quality data that we began collecting is necessary baseline information that can help explain early marine survival rates to some extent. For instance, this year, with the very cold spring, we had good phytoplankton production from all the sunlight but very poor zooplankton production to utilitize that food resource. Water temperatures were too cold for copepods to reproduce well," Garrison said.

Garrison is busy making plans for continuing the study next year.

"I'm excited about refining our sampling techniques and doing more trawling. It's a great opportunity to involve SJC students from the Aquatic Resources curriculum and they are a big help in pulling this project off," Garrison said.

New Haines Biologist

Todd Buxton has replaced Lee Close as NSRAA's Haines biologist, after Lee decided in August to pursue some well deserved time off. Currently Close is dividing his time between Whitehorse, Yukon, and Haines.

Todd brings a strong scientific background to his work, having earned a Bachelors degree in Natural Resources "Watershed Analysis and Restoration" in 1995 from Humboldt State University in Arcata, California, and spent lots of time out in the field.

He is now working on completing his Masters degree in Natural Resources, Watershed Management, also at Humboldt State.

"The focus of my scientific practice has been on how physical processes in rivers form and maintain habitat diversities that cumulatively determine the structure and function of the river corridor's ecology," Buxton said.

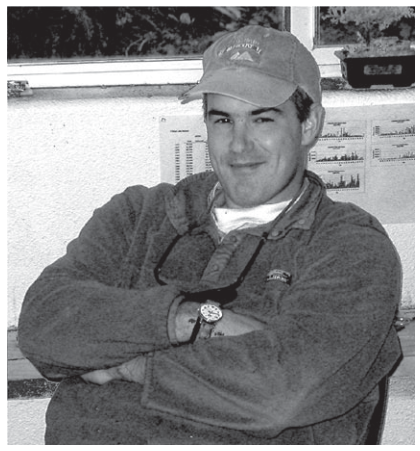
For non-scientists, that means Buxton has focused on the freshwater habitat requirements for producing enhanced and wild salmonids.

Buxton has worked in various locations.

In Costa Rica he worked to determine the probable downstream effects of a proposed hydroelectric plant. In Wyoming he helped design and restore stream channels that provide habitat for cutthroat trout.

He has monitored longfin smelt populations in the Cedar River near Seattle, and also worked on several other projects in Oregon and Idaho.

"For the Truckee River in Nevada, I wrote a conservation management plan that focused on



New Haines biologist Todd Buxton.

restoring instream habitats for the endangered cui-ui sucker and threatened Lahonton cutthroat trout," Buxton said.

In Haines Buxton will continue to work on the Chilkoot and Chilkat Lakes sockeye projects, and also the Herman Creek chum spawning channel and 31-Mile Creek and 17-Mile chum egg incubation sites.

Buxton is not a newcomer to Southeast Alaska, having spent two of his four years in the coast guard based on a cutter in Petersburg. The other two years he was based at the air station in Arcata, California.

Buxton grew up in Port Townsend, Washington, and graduated from high school in 1987.

He enjoys getting out hiking, river kayaking, hunting, and fishing. Indoors he spends a lot of time reading, and for company keeps an eleven year old cockatiel named Scooby.

Padden - cont. from pg 2

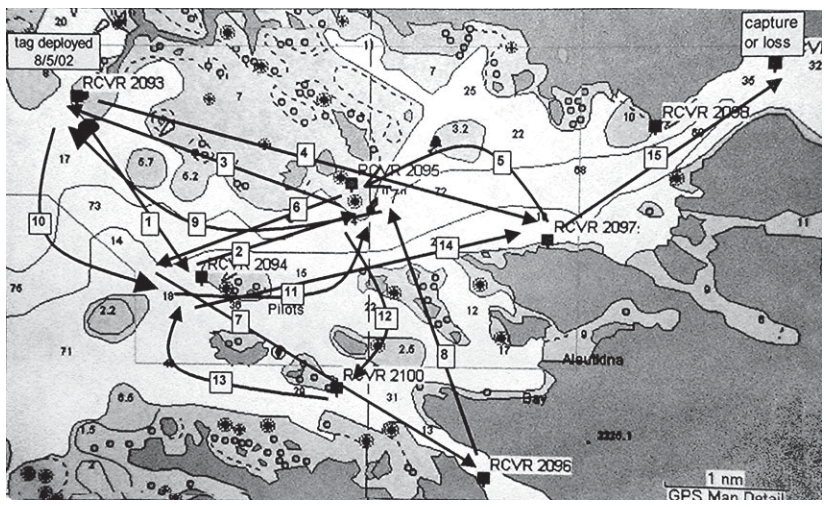
salmon and longlined for halibut.

He also soon met and married a local Tlingit native, Frenchie Pelayo. Bill fished part-time and in 1969 started working for Alaska Airlines as a "duck" driver.

"We didn't have a bridge, so we had an old World War II amphibious craft we'd drive around, picking up the baggage and the mail, and then chug across the channel to the airport," Paden said. He retired from Alaska Airlines in 1989.

In 1986 they bought the troller F/V Karemar.

"I still fish, but I don't troll quite as much as I used to because I'm busy doing other things. I promised my wife that eventually I wouldn't be in meetings six days out of seven but she's not too sure," Paden said.



An example of the sometimes complex migrations of adult chum salmon in Sitka Sound.

Managing The Deep Inlet Fishery

Four years out of the past five have seen NSRAA staff struggling to get enough chum broodstock.

Two years out of the past four, staff have done remote eggtakes because too few fish made it through the fleet's gauntlet in Sitka Sound and Eastern Channel to return to Silver Bay and fulfill their genetic destiny.

In one sense that difficulty highlights how well NSRAA has accomplished its primary mission: getting as many fish to the fishermen as possible.

But it also reveals NSRAA's vulnerability: adequate broodstock must be obtained or the entire hatchery program is in jeopardy.

Brood stock is the smallest portion of the return; even for chum it is only one or two percent of the total.

"But if we don't get that, then that will affect fishermen in the future, and the future of the program," said Steve Reifenstuhl, NSRAA operations manager.

All the fishing is over by the time broodstock has made its way back to the hatchery for eggtakes, so people tend not to think about this all important component of hatchery operations.

"But it is foremost in staffs' minds," Reifenstuhl said. "And of course we also have to consider cost recovery, and our primary duty to the fishermen."

The combination of interests makes for a complex fisheries management scenario.

NSRAA forecasts the returns for a given year, and based on the size of the return, predicts the magnitude of the return by weeks.

A larger return may begin coming in a bit earlier than normal, Reifenstuhl explained, and this can mean an earlier opening or early cost recovery opportunities.

Everyone wants to think early fish means a big return, but in some cases early

doesn't mean a large return, it might be warm ocean conditions or cold ocean conditions or some other unexplainable environmental variable.

Regardless of how the run pans out, NSRAA has to pay its bills.

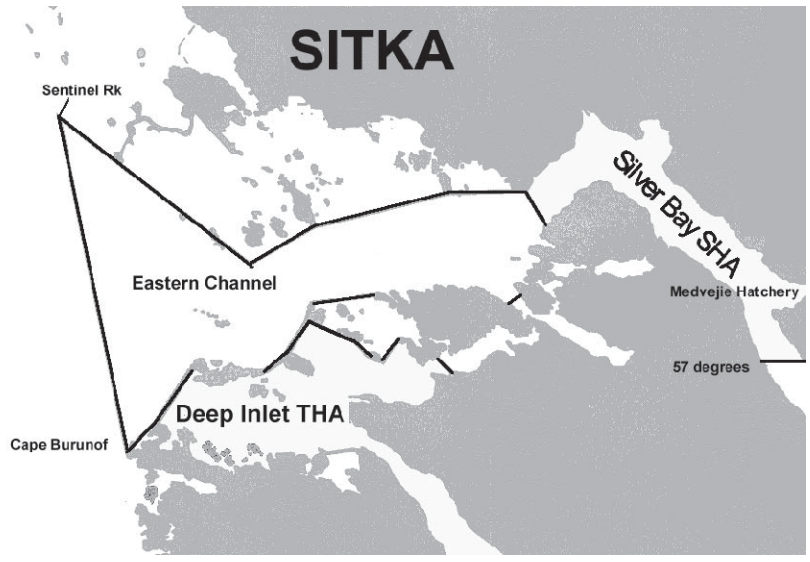
"We have predetermined cost recovery goals, and we have to set up a schedule on how we'll meet that goal, while still getting at least 80 percent of the run to the fishermen," Reifenstuhl said.

"We try to set up a scenario that will allow this to unfold in a logical, orderly, and safe manner," he said. "But this is the only time it looks orderly, because as soon as the fish start returning things get complicated and interesting."

Once the fish start returning, NSRAA staff starts comparing the run to historical averages, trying to match what is going on currently with how the fishery unfolded in the past.

"With some we can look at twenty year averages, to try to better predict what will happen the next day or the next week. That helps us determine when to have openings or if we shouldn't have an opening because cost recovery would be at risk," Reifenstuhl explained.

One key piece of information in the early weeks of the run is the age structure and the male-female ratio.



An example of the Sitka Sound and Deep Inlet Special Harvest Area (SHA) and Terminal Harvest Area (THA)

For chum, for example, staff expect to see a high proportion of 5 year olds early in the run, because their component normally returns first in the largest proportion. If instead there are 80 percent 4 year olds in the first week, staff knows that something must have happened to the 5 year olds, and adjustments need to be made accordingly.

"If we're not staying on target with cost recovery and we don't see the 5 year old component developing as expected, we would then feel that we have to close down the fishery or eliminate a fishing rotation. From our perspective it makes perfect sense, but from the fishermen's perspective they say, 'Hey, what's going on?' and that's where some of the controversy starts," Reifenstuhl said.

NSRAA attempts to communicate all their decision making factors to the public.

"We put the information on the website every day. We realize that the better job we do with communicating with the various media we have, the more likely it is that the fishermen will understand why we're doing what we do," Reifenstuhl said.

The Deep Inlet chum fishery is the most complex fishery NSRAA manages.

"We can control Deep Inlet and the area in front of Medvejie hatchery, but there are fisheries out in front of that area. There is an active troll fishery in Eastern Channel and Sitka Sound that targets chum, and there is a pink salmon directed seine fishery in Sitka Sound that also targets chum because they're higher value than pinks," Reifenstuhl said.

So there has been tremendous effort on returning NSRAA chum salmon. Add to that a rotational fishery with three gear groups and NSRAA's cost recovery, and the picture gets tricky indeed.

"Again, the most important component of the return is still brood stock getting to Medvejie," Reifenstuhl said. "Even with the remote eggtake in Deep Inlet we still fell short of the total number of eggs needed this year."

This past season a new management technique was instituted in Deep Inlet, whereby a corridor was created through Eastern Channel to facilitate the passage of broodstock through the area.

The change started halfway through the August seine fishery, so it didn't begin in time to solve the broodstock shortage. But it was effective enough to show great promise as a management tool in the future.

"We worked with Bill Davidson at Fish and Game to modify the line of the pink salmon seine fishery so they would stay off the chum salmon. Once that was done we started getting chums back to Medvejie," Reifenstuhl said.

"The other thing we did was created a corridor during part of the troll fishery in Eastern Channel."

These changes were implemented through a Department of Fish and Game emergency order. NSRAA intends to continue working with the Department to determine what time and area restrictions should be imposed when hatchery cost recovery and broodstock is at risk.

Deer Lake cont. from pg 6

kept the mortality rate from being much higher during the extreme flood conditions," Crone said.

"The crew had to work in shifts through several days and nights in order to keep debris swept off the smolt trap's perforated panels."

The crew was also kept busy improving the trail from Mist Cove to the lake, as mandated by the Forest Service, and working on new living quarters and work areas.

"An experienced and dedicated crew contributed to a successful season," Crone said. "Craig Chisam and Luke Bastian had lots of experience already and were able to take the lead on weir installation and removal, as well as all lake work. Josh Homer, a recent Sheldon Jackson graduate, worked on the project for the entire field season this year and brought lots of outdoor knowledge, building and mechanical skills to the mix. And Brian Knoth and Mike McKinney had worked several full field seasons here before and filled in nicely on several occasions."

Deep Inlet and Hidden Falls Predicted to Double in 2003

Hatchery chum returns next year are expected to bounce back to levels seen through most of the 1990s, says NSRAA data analyst Chip Blair.

3.45 million chum are expected at Hidden Falls, and 1.45 million at Deep Inlet, for a total of nearly 5 million.

If the expected return materializes, it will be double the 2002 return for each project.

NSRAA's hatchery chum programs experienced "unprecedented success" from 1993 through 2000, Blair said. Marine survivals averaged 4.5 percent at Hidden Falls and Medvejie/Deep Inlet at 7.6 percent.

In the wake of these highs, the 2001 and 2002 seasons, considered "normal," seemed much worse, with marine survival rates in the 1.5 to 2 percent range, and a combined average for both hatcheries of just 2.5 million fish per year.

Blair feels confident in his estimates.

"'Are you seeing a lot of threes?' is a question I'm often asked by fishermen throughout the season, as they've learned that the number of threes in a year is a good indicator of next year's run strength," Blair explained.

"In 2002, over 118,000 3 year olds returned to Hidden Falls, the second highest number we've ever seen."

The highest 3 year old return ever was for brood year 1992, when 148,000 3 year olds returned to Hidden Falls in 1995.

The following year saw 3.1 million 4 year olds return, which added to the huge return in 1996, and the overall brood year survival rate was 7.4 percent, the highest on record for Hidden Falls.

Blair said that the number of 3 year olds this season at Deep Inlet was the sixth highest on record.

Blair noted that conditions for brood year 1999 chum seem to have been good over a large area, as larger chum returns are expected throughout Southeast and Prince William Sound.

"Forecasting isn't an exact science," Blair said. "There are so many variables out in the ocean that we have no control over. But we've been fairly accurate over the years in our predictions and I'm fairly confident that we'll see a doubling of the return for both projects, and there is certainly the potential of a much larger return, even approaching the returns of 1996 or 2000."