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Ketchikan, AK 99901  
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## SURVIVAL OF A FEW Salmon fry succumb to ocean perils

By **JOHN BURKE**  
SSRAA General Manager

**A**MONG THE FLEETS, SITUATIONS and expectations change as the value of enhanced salmon increases. More attention comes to the enhancement programs, and more questions. The questions are often the same questions we asked when these programs began, and some have not been answered.

Hatcheries programs haven't proven to be like factories, where specific materials going into the

process produce a consistent set of end products—although this is relatively true at the point when fry are released. Once the net is lowered, fry swim into an extremely hostile environment. Perhaps it is easier to understand how few survive by considering how many do not.

In the best pink and chum enhancement situations, 96 or 97 of every hundred fry released dies before they become adults—most of them in the first month of life after release. While abundance of feed, water temperature and disease influence survival, the direct cause of death is almost always predation.

Consider: In order to sustain a population of wild fish, every spawning pair must only replace themselves. Of the 2,000 eggs spawned by a female chum salmon, only two must survive to the adult stage. In the worst case, a run can be sustained when 1,998 of those eggs/fry die before returning to spawn. In a natural situation, eggs must first be successfully fertilized, and many are not. Those that are fertilized may confront natural perils: overly warm summer water temperatures, streams that go dry and freeze in severe winter cold, or stream-scouring storms.

SALMON EGGS FERTILIZED DURING egg-taking procedures and placed in incubators in a hatchery building with a controlled water supply survive the first stages of life in significantly greater numbers than naturally produced eggs and fry. But for a wild fish emerging from the gravel in a stream or a fed fry swimming away from a net pen, there is one common overriding issue: avoiding predators.

It is not easy to study the dynamics of predation precisely enough that some level of statistics can

be applied, and it is very likely that if you could model predation effects the situation would change enough from year to year that generalization would be difficult. There have been a few recent studies of this sort in Southeast Alaska (Molly Sturdevant, Alex Wertheimer, and Frank Thrower of NMFS, as well as others). Acknowledging

the limitations of this kind of work, some generalization helps in understanding the magnitude of this issue.

Mortality is highest right after emergence of wild fish or release of enhanced fish and declines rapidly after that. One of

the studies estimated a daily mortality rate of 8.1 percent for the first 21 days after the release of unfed fry from a hatchery or the emergence of wild fry from the gravel in a stream. The estimated mortality rate decreased to 3.9 percent a day for a 32-day period after those first 21 days had passed. That same 3.9 percent rate was experienced by fed fry released from net pens after 21 days of rearing. After 32 days, 54 total days after emergence, the daily mortality dramatically lowered to less than 0.6 percent for each group.

IN NUMBERS OF FISH, IF THERE WERE 1,000 unfed fry at emergence or release, after the first 21 free-swimming days there would be only 156 fry left alive. At that point

the 1,000 fed fry are released from a net pen. After the next 32 days—at day 54 after emergence—42 of the unfed fry and 291 of the fed fish would still be alive.

At this point the fish have grown and moved “offshore” out of inshore waters, where the density of predators is far less and the fish are large enough to avoid most predation—reflected in a mortality rate of less than 0.6 percent a day.

Some of the common predators of juvenile salmon in Southeast Alaska are sculpins; black cod; dogfish; juvenile pollock and cod; sea birds; seals; sharks; whales; and even large salmon. In some years relatively exotic predators such as mackerel or squid move to Southeast with warm sea water temperatures. From year to year the relative abundance of predators varies significantly, but in general they are always denser and the fry far more vulnerable in near-shore waters backed by a shoreline

See 'Ocean survival' on page 3

*Hatcheries programs haven't proven to be like factories, where specific materials going into the process produce a consistent set of end products. ... Perhaps it is easier to understand how few survive by considering how many do not.*

To find out what NSRAA has learned about whale predation on hatchery fry, see the sidebar 'Hatcheries study rearing variables' on page 3

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# ssraa PEOPLE

## Bookkeeper embarking on sophomore year in Alaska and in SSRAA's accounts

**A**imee Thompson celebrated her first anniversary of Alaska life amid soggy January snows, half a year removed from a summer that her Alaskan friends told her was "the worst ever."

And still: "I love it here."

Thompson took over bookkeeping for SSRAA in January 2011. She had come to Ketchikan with her husband the month before, visiting the community where he was a candidate for a job. She read the classified ads in the Ketchikan Daily News and found SSRAA's ad soliciting a successor for Ludmila Marecek at the bookkeeping desk.

"I dropped off a resumé and had an interview and it worked out," Thompson said. Her husband hired on at Peace-Health Ketchikan Medical Center as director of materials and she took over accounting for the salmon ranch.

Thompson is a native of Oregon. She has an associate's degree in accounting from Umpqua Community College, followed by additional accounting studies at Southern Oregon State University. She worked for about a decade at accounting firms in Ashland and Roseburg.

**Not all of that time** was spent counting other people's money. Thompson and her husband, Joe, founded a business in Roseburg handling medical linens for the hospital and medical clinics; the owners handled tasks from wash to delivery until the enterprise grew and they hired two people. Thompson said the six years in that business gave her "a good appreciation" for entrepreneurship. The couple sold the business to friends before moving to Ketchikan.

Thompson said she grew up in Oregon enjoying the outdoors—lake fishing, hiking, hunting—but salt water and salmon were entirely new to her when she landed in Ketchikan with her husband and teen-age son.

"I knew absolutely nothing about what SSRAA did, but they were great as I got started," she said. "They made sure I saw it. I went to Whitman Lake. They sent me to Neets Bay and Kendrick—and I'd never been in a floatplane before. I saw what the association does so I know what it's all about when I pay for massive amounts of fish feed."

**Thompson and her husband** didn't let soggy summer 2011 dissuade them from the outdoors. They hiked with other SSRAA staff and summited Deer Mountain. When her aunt visited Ketchikan over the monsoon-ridden Independence Day holiday, Thompson was able to assure her relative that it isn't *always* like that here.

Thompson's son, a junior at Ketchikan High School this year, is on the football and track teams. Thompson said the family—accustomed to Oregon's numerous and nearby high schools connected by highways—was surprised and pleased that Ketchikan has interscholastic sports, despite the difficulties of distance and cost. Thompson saw some of that distance last fall when she went to Sitka to see Kayhi's football team play their regional rivals.

In Thompson's tour of SSRAA's extensive ranch, the only places she hasn't seen are Burnett Inlet and the Crystal Lake Hatchery.



Aimee Thompson

*They made sure ... I saw what the association does so I know what it's all about when I pay for massive amounts of fish feed.*

**Aimee Thompson**

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The 21-member SSRAA board includes 13 commercial fishers along with representatives of interest groups and the public.

## SSRAA Staff

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Susan Doherty  
Michelle Leitz  
Alan Murray  
Aimee Thompson  
Cindy Walters

General Manager  
Production Manager  
Assistant General Manager  
Research & Evaluation Manager  
Research & Evaluation Assistant Manager  
Technician III  
Bookkeeper  
Administrative Assistant

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Mike Blanchard  
Mark Tollfeldt  
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Maintenance Manager  
Assistant Hatchery Manager  
Technician III  
Technician III

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Chris Lundeen  
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Cody Pederson  
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Assistant Hatchery Manager  
Assistant Hatchery Manager Maintenance & Constr.  
Technician II  
Technician II  
Technician II

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Steve Reid

Hatchery Manager  
Assistant Hatchery Manager

### CRYSTAL LAKE HATCHERY

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Kevin Chase  
Don Franklin

Hatchery Manager  
Assistant Hatchery Manager  
Technician III

SSRAA Spawning News is published by the Southern Southeast Regional Aquaculture Association, a private, non-profit aquaculture corporation based in Ketchikan, Alaska. Our web site is [www.ssraa.org](http://www.ssraa.org).

This publication is mailed free to all limited-entry salmon permit holders for purse seine, drift gillnet, power troll and hand troll in Alaska Districts 1-8. It is also mailed free to any person interested in SSRAA.

To receive Spawning News, send a request with your name, your organization's name and your address to: Spawning News / 14 Borch St. / Ketchikan, AK 99901.

For changes of address for permit holders, notify: Commercial Fisheries Entry Commission / 8800-109 Glacier Highway / Juneau, AK 99801. The CFEC fax number is 907-789-6170.

SSRAA uses mailing labels from the CFEC. If your address is wrong, please contact CFEC; SSRAA cannot correct your address for CFEC.

## NSRAA chum salmon survival trends and release protocols

# Hatcheries study release variables to thwart whales

It is no surprise to anyone who fishes chum salmon that marine survivals at NSRAA's Hidden Falls and Medvejie programs aren't what they were in the mid-1990s. As a hatchery program ramps up production, these large releases of biomass likely overwhelm the near-shore predators. As the predators—primarily other fish and birds—adjust to the new opportunity, mortality of the hatchery fry increases. In the case of Hidden Falls and Medvejie, something more dramatic is going on, especially *vis a vis* DIPAC and SSRAA programs, which are faring much better in the survival game.

NSRAA has been aware of increasing numbers of humpback whales for the past five or six years at Hidden Falls, and to a lesser degree at Medvejie/Deep Inlet. Four years ago the whales were brazen and fed on the fry at release, directly under and around the net pens. It may be feasible to overwhelm fish predators but not a predator as large and smart as a humpback whale. In 2009, we began towing the pens out of Kasnyku Bay into Chatham Strait when whales were present in the bay. We also initiated a trickle release from the pens over a period of 10 days to two weeks so as not to attract the whales. The trickle strategy drops a single net corner to allow a slow and volitional release.

In 2010, we conducted a cooperative study with the University of Alaska Southeast to observe whale presence and behavior, and to identify individuals. The results suggested a few whales learned a specific feeding behavior. I had observed the behavior numerous times from my boat: The whale would sub-

merge just below the surface and skim along the dense kelp, using the rocky shore as a backstop to concentrate the fry as it scooped all in its path. This feeding behavior would continue for weeks until the fry were consumed or until the fry reached a threshold size of 3.5 to 4 grams and moved to deeper waters where they were not as vulnerable to predation.

There are limitations to the trickle release and towing the pens offshore; chum fry have evolved to feed near shore where there is more cover and abundant small prey to consume, so the fry return to the shallow waters quickly regardless of where released. Therefore a third strategy was implemented in 2011, what we call the 4.0 program, named for the size of the fish in grams at release. This strategy is slightly different than the late-large program in that we accelerate incubation to get the fry out a little earlier so they reach the 4 gram size about the same time the regular 2 gram fish are ready for release. This is done to avoid the warmer waters in late spring when vibrio sp. is more prevalent and virulent.

The NSRAA board at its November meeting supported the recommendation to put about 20 percent of our chum production into the 4.0 program. If successful we will likely shift a larger portion of the production to this strategy. Last, we are working on permitting a new release site 10 miles south of Takatz Bay with the idea of testing whether the whales can be fooled by a simple shell game. Like everyone else, I hope we have seen the bottom and are on our way up.

We once felt that the abundance of feed,

phytoplankton and zooplankton blooms, during release was the single best indicator for survival. In retrospect, while this is important, very few fish ever starve to death. But, when they grow slowly they are more vulnerable to predators for a longer time; or perhaps better said, it takes them too long to reach the size at which they swim offshore. When they grow more quickly they move offshore more quickly. Offshore equates to open ocean waters; away from the inside waters of SE Alaska. Young fry can also be affected by a number of fish diseases, but away from net pens and raceways they rarely die from disease as any debilitated fish is quickly eaten by a larger fish.

Can we do things to help a chum fry avoid being eaten in those first weeks after release? Considering the vulnerability of a salmon fry swimming out of the gravel or away from a net pen, it is hard to imagine any large number of these fish survive...even more difficult to imagine any consistency from year to year in fry surviving to adult. One of the values of thermally tagging all the chum salmon produced is that you can accurately determine the total run size and compare the survival rates of the fish released by site and strategy. In that sense each of our programs is a production scale experiment with ongoing evaluation. By conducting the programs and assessing returns, we are generating long-term survival data from different release sites.

— Steve Reifentuhl, General Manager  
Northern Southeast Regional  
Aquaculture Association

## Ocean survival CONTINUED FROM 1

against which the fry can be trapped.

I suspect predation is suddenly of more general interest because of the recent situation at Hidden Falls, where whale predation has been implicated in poor returns of chum salmon. (Sidebar above.)

LOOKING AT THE RESULTS OF REARING and release strategies that were used across 30-plus years of work, some by design and even some by accident, it appears that there are things we can do to help a fry survive.

Early in the spring, before inshore waters warm, predators are not as active (hungry) and some of them don't come to inside waters at all until the water warms. Also, the larger we can make a fry before release, the more quickly that fry will swim offshore away from intense predation—as noted in Steve Reifentuhl's article. Of course, it is not always easy to do.

There are real differences between rearing/release sites. Salmon are cold-blooded animals; their metabolism and growth are dependent on the temperature of the water. Some sites have cooler waters, where fry will not grow as quickly and cannot be made as large by the optimal time of release. Other sites are closer to outside waters, so that a fish from that site may be exposed to less predation before it moves offshore. At some sites, the time the fry is released is as important as the size of the fish, while at others survival is almost totally related to the fish meeting a minimum threshold size (1.5 to 2.5 grams) prior to release.

THERE ARE TWO GENERAL RELEASE STRATEGIES: release as early as possible at or above the threshold size (1.5 to 2.5 grams); or hold the fish longer, rearing them to a size where they may be able to move offshore almost immediately. The bulk of production is released with the first strategy while some experi-

mental lots are being reared and released at 4-6 grams in the second strategy, sometimes called "late-large."

WHY NOT REAR ALL THE FISH with the late-large strategy?

The jury is still out on late-large smolts. Although sometimes it makes a dramatic difference, this is not always the case. There are additional drawbacks, if you consider rearing densities: a late-large fish is generally three times as large as a fish at threshold size, meaning you can rear only one-third as many fish in the same net pen. In some years, holding the fish longer increases the risk of disease (*Vibrio sp.*). While producing a late-large smolt

is relatively easy at our outside sites (Kendrick and Nakat), where there is warmer water early in the spring, it is not nearly as easy in a site such as Anita Bay, where the water is much cooler in the spring. Before proposing a larger program of late-large smolts, it would have to be clear that this strategy makes a consistently significant difference in survival. Though we

are optimistic, that is not yet clear. There are other things we have considered, such as rotating net pens between two sites from year to year to discourage a consistent buildup of predators at either site. We will start this at Kendrick and McLean Arm next summer. We also wonder whether there is a threshold number of fish at any site below which you will not attract large numbers of predators and above which the predators may come, particularly marine mammals.

MOST SALMON ARE EATEN by predators in the first two months after they emerge, or in the first month after they are released from a net pen. Regardless of what we do, only a few fry will survive to return as adults. At the same time, each year's release is a production-scaled experiment that could help to determine a strategy that allows a few additional fish per female spawner to survive. Even a few would make a dramatic difference.

***Each year's release is a production-scaled experiment that could help to determine a strategy that allows a few additional fish per female spawner to survive. Even a few would make a dramatic difference.***

# \$ FINANCES

## Southern Southeast Regional Aquaculture Association

### FINANCIAL STATEMENT

For years ending June 30,  
2011, and June 30, 2010



#### ASSETS

STATEMENTS OF FINANCIAL POSITION		
	2011	2010
<b>ASSETS</b>		
<b>CURRENT ASSETS</b>		
Cash and cash equivalents		
Investments	\$ 2,491,199	\$ 736,862
Prepaid expenses	619,731	587,526
Accounts receivable, less allowance for doubtful accounts of \$-0- and \$-0-, respectively	95,047	100,321
State contracts receivable	221,389	
Inventory	174,325	180,279
Interest receivable	59,075	174,325
Refundable deposits	1,518	272,958
	-	2,835
<b>TOTAL CURRENT ASSETS</b>	<b>3,662,284</b>	<b>2,055,106</b>
<b>PROPERTY AND EQUIPMENT, NET</b>	<b>7,573,736</b>	<b>2,285,641</b>
<b>OTHER ASSETS</b>	<b>9,012</b>	<b>9,485</b>
Loan fees - net of amortization		
<b>TOTAL ASSETS</b>	<b>\$ 11,245,032</b>	<b>\$ 9,350,232</b>
<b>LIABILITIES AND NET ASSETS</b>		
<b>CURRENT LIABILITIES</b>		
Deferred interest payable	\$ 245,590	\$ 245,590
Accounts payable	332,657	190,154
Accrued vacation payable	121,157	135,558
Payroll and payroll taxes payable	35,209	34,886
Accrued pension payable	34,198	34,252
Deferred revenue	-	19,997
	768,811	660,437
<b>TOTAL CURRENT LIABILITIES</b>	<b>768,811</b>	<b>660,437</b>
<b>LONG TERM LIABILITIES</b>		
Deferred interest payable	3,192,494	3,438,084
Long term debt	700,000	2,147,744
<b>TOTAL LONG TERM LIABILITIES</b>	<b>3,892,494</b>	<b>5,585,828</b>
<b>TOTAL LIABILITIES</b>	<b>4,661,305</b>	<b>6,246,265</b>
<b>NET ASSETS</b>		
Unrestricted, undesignated	1,462,814	1,224,147
Unrestricted, designated by the Board	4,734,936	1,584,320
Unrestricted, designated for the State of Alaska	385,977	355,423
<b>TOTAL NET ASSETS</b>	<b>6,583,727</b>	<b>3,163,890</b>



#### REVENUES

For more information,  
visit or write to SSRAA at 14 Borch St.,  
Ketchikan, AK 99901, or call 907-225-9605.



#### CASH FLOWS

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OPERATING ACTIVITIES  
Cash received from  
Cash received from  
Cash paid to employ  
Interest received

INVESTING ACTIVITIES  
Purchase of investmen  
Purchase of capital eq

FINANCING ACTIVITIES  
Principal payments on  
Deferred interest payme

NET INCR

CASH AND CASH EQUIVAL

RECONCILIATION OF CHAN  
CASH PROVIDED BY OF  
Change in net assets

Adjustments to reconcile c  
provided by operating acti  
Depreciation and amorti  
(Increase) decrease in:  
Accounts receivable, ne  
State contracts receivab  
Interest receivable  
Inventory  
Prepaid expenses  
Refundable deposits  
Increase (decrease) in:  
Accounts payable  
Payroll and payroll taxes  
Accrued vacation payable  
Accrued pension payable  
Deferred revenue

NET

STATEMENTS OF REVENUES, EXPENSES AND CHANGES IN NET ASSETS

	2011	2010
REVENUES	\$ 11,222,293	\$ 6,969,560
Direct fish marketing		
Grants, awards, and agreements:		
Restrictions satisfied through expenditures	1,311,652	1,222,403
Enhancement tax proceeds	395,925	377,300
Crystal Lake - operations	200,000	200,000
Chinook enhancement	-	53,813
Bakewell Lake	19,997	28,043
McDonald Lake	-	10,481
Crystal Lake - maintenance and improvements	116,352	138,260
Tours	10,540	17,512
Interest	43,891	50,113
Other	13,320,649	9,067,485
<b>TOTAL REVENUES</b>	<b>13,320,649</b>	<b>9,067,485</b>
EXPENSES	4,141,022	3,529,071
Harvest and marketing	2,610,282	2,495,995
Hatcheries and rearing facilities	1,609,537	1,561,759
General and administrative	595,300	607,052
Rearing, release, and transport	567,946	477,948
Maintenance and improvements	215,589	184,169
Tagging and otolith laboratory	161,137	147,178
Research	9,900,813	9,003,172
<b>TOTAL EXPENSES</b>	<b>9,900,813</b>	<b>9,003,172</b>
<b>INCREASE (DECREASE) IN NET ASSETS</b>	<b>3,419,837</b>	<b>64,313</b>
<b>NET ASSETS AT BEGINNING OF YEAR</b>	<b>3,163,890</b>	<b>3,099,577</b>
<b>NET ASSETS AT END OF YEAR</b>	<b>\$ 6,583,727</b>	<b>\$ 3,163,890</b>

STATEMENTS OF CASH FLOWS

	2011	2010
CASH	\$ 11,341,426	\$ 7,291,872
Fish marketing, contracts, tours and other sources	1,721,092	1,926,813
Enhancement taxes, agreements and agreements	(8,696,776)	(8,092,432)
Debt and vendors	11,857	22,509
<b>NET CASH PROVIDED FROM OPERATING ACTIVITIES</b>	<b>1,721,091</b>	<b>1,148,762</b>
Equipment, net	(403,986)	(32,205)
Equipment and improvements	(765,864)	(37,046)
<b>NET CASH USED FOR INVESTING ACTIVITIES</b>	<b>(1,169,850)</b>	<b>(594,449)</b>
Long-term debt	(1,447,744)	(691,987)
Interest	(245,590)	(245,590)
<b>NET CASH USED FOR FINANCING ACTIVITIES</b>	<b>(1,693,334)</b>	<b>(937,577)</b>
<b>INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS</b>	<b>1,754,337</b>	<b>(420,310)</b>
<b>CASH AND CASH EQUIVALENTS AT BEGINNING OF YEAR</b>	<b>\$ 736,862</b>	<b>\$ 1,157,172</b>
<b>CASH AND CASH EQUIVALENTS AT END OF YEAR</b>	<b>\$ 841,494</b>	<b>\$ 736,862</b>
<b>CHANGE IN NET ASSETS TO NET OPERATING ACTIVITIES</b>	<b>\$ 326,443</b>	<b>\$ 64,313</b>
Change in net assets to net cash	843,887	868,271
Activities	(5,670)	(41,110)
Capitalization	146,331	133,939
Debt	5,002	19,816
Equipment	1,317	4,997
Interest	213,883	(63,071)
Marketing	5,274	11,057
Other	(89,517)	5,000
Payable	29,221	84,645
Research	(329)	323
Taxes	142,503	2,136
Travel	323	(14,401)
Wages	(14,401)	6,629
Other	(54)	1,073
<b>CASH PROVIDED FROM OPERATING ACTIVITIES</b>	<b>\$ 1,255,367</b>	<b>\$ 9,957</b>
<b>NET CASH PROVIDED FROM OPERATING ACTIVITIES</b>	<b>\$ 1,255,367</b>	<b>\$ 1,148,762</b>

# PRODUCTION UPDATE

## Bakewell project uses an invented pen to sew up a doubling of coho capacity

ONE MORNING last August, Rod Neterer, Mark Tollfeldt, Bill Gass and Mike Round, with help from ProMech's dock crew, stuffed three 350-pound bags of netting into a DeHavilland Otter and headed to Bakewell Lake in Misty Fjords National Monument.

The goal was to put together three sections of net for one large net 50 by 130 feet and 30 feet deep to replace net pens in place at Bakewell. This large-net solution double rearing capacity to 1 million coho smolts without the need to bring in floating pen arrays by helicopter.

The plan, devised by Tollfeldt in collaboration with Gass of Whitman Lake Hatchery, was to sew sections together on the feed float. This fabricated net would slip under existing nets and encompass the area of the three pens. The circumference of the new net would be fastened to existing perimeter floats with large nylon tie straps and existing nets would be removed.

AFTER THREE HOURS of making half hitches in seine twine, the crew pulled the new net through the water toward the first corner of the array. In about an hour, the large net pen was hung in place on the perimeter walkway.

Two U.S. Forest Service employees arrived by skiff from Bakewell cabin and helped to haul back the three smaller pens, releasing coho fry into the new net compound. The old nets were heavy with inches of fish and food waste. A gas-driven water pump was used to clean netting a couple of feet at a time.

When ProMech arrived in the late afternoon, one net was clean and the other two were on the walkway for later cleaning by Forest Service staff.

SSRAA's sewing session appeared to be successful and no escaped coho fry appeared on the wrong side of the new net. The fry will be fed at the site, safe from hungry trout, until winter, then be set free to over-winter in the lake and out-migrate in the spring. The lake's winter water should be cold enough to keep predatory fish fairly dormant.

THE WHITMAN CREW in November constructed an A frame and hydraulic equipment to retrieve the large net for its flight back to Ketchikan for future projects. Since the Forest Service will not continue this restoration/enhancement project, SSRAA's last operation at Bakewell will be to remove the big net and floating array from this wilderness lake in spring/summer of 2012.



Aimee Thompson repaints drab walls at HQ and Susan Doherty re-hangs SSRAA photos.

## Staff conduct a makeover at HQ

SSRAA's first floor got a facelift last summer as Cindy Walters, Aimee Thompson and Susan Doherty committed decorative talents and renovation skills to a new look. Paint and new wood trim brightened the HQ and pictures on the "wall of shame" were sorted and re-hung. It is a vast improvement on the stark institutional look that SSRAA inherited when the association took over the building years ago.

## RISKY BUSINESS IS OVERCOME AT CRYSTAL LAKE

## Exchanger challenges crew with piping puzzles

By ROD NETERER

SSRAA Production Manager

THE HEAT EXCHANGER installation at the Crystal Lake Hatchery is complete. The project turned out to be a bit more complex than anticipated, and took longer, but it was completed under budget.

One of the difficulties with installation came to light when we were trying to figure out how to tap into the plumbing for the installation of isolation valves to direct hatchery supply water to the heat exchanger. Underground plumbing has been modified several times since the hatchery was built in the early 1970s. Unfortunately, a lot of the yard piping is not accurately depicted in as-built drawings, nor have many of the changes over the years been accurately recorded. This underground piping was the biggest headache during construction.

In summer months, temperatures are warmer and the fish are being fed at maximum rates to get as much growth as possible before winter sets in. To install new valves and plumbing, we needed to shut off the main 18-inch hatchery supply line and a smaller 12-inch line that would feed water to the heat exchanger and raceways. Isolating a main supply line is not a big deal at typical hatcheries, as most of them have valves in key locations for turning water off when repairs

are needed. Somehow this little feature was overlooked when the hatchery was designed.

TO DO THE work, we would have to shut off all the water to the entire hatchery during the peak of the summer rearing season. That is RISKY BUSINESS.

Mike Blanchard, SSRAA's maintenance manager, looked at the problem from all angles and came up with a couple of solutions. The first entailed installing a saddle onto each



The heat exchanger at Crystal Lake, before completion of the building that protects it.



Guy Sparks from Seattle "hot-tapped" water pipes—the least risky method of retrofitting the system.

“Being a fiscal conservative and responsible for the project budget, I really liked this option; besides, what do I care how wet Mike gets?”

pipe and cutting a 6-inch hole to T off the lines for valves and service to the heat exchanger and raceways. Since it wasn't possible to shut down the line, we'd have to cut into each pipe while it was full of water and flowing. Mike said we would likely get

wet—very wet—cutting the hole and installing the valves, but it was a reasonably inexpensive solution. Being a fiscal conservative and responsible for the project budget, I really liked this option; besides, what do I care how wet Mike gets?

I think he could sense this wasn't going his

way, so he explained the downside of attempting to thread saddle and flange bolts under several feet of rising water. Mike's a diver; I know he has a mask and snorkel ... but as he continued his explanation, it became apparent that the inexpensive option was RISKY BUSINESS as well.

THE SECOND OPTION was to perform what is known as a "hot tap." Hot-tapping a pipeline makes it possible to install a saddle and valve on a live line without interrupting the flow. The saddle and valve are installed prior to penetrating the pipe with a hole saw. There is no need for a mask and snorkel, so Mike liked this option. Because we had two lines to tap, we hired a contractor from Seattle with the specialized equipment and the experience we needed for the work. Although it was expensive, tapping both lines was accomplished in a normal workday without risk to any of the smolts rearing at the hatchery.

## Alaska Board of Fish to meet in Ketchikan in late February

The Alaska Board of Fish will meet in Ketchikan Feb. 24 to March 4 at the Ted Ferry Civic Center. Comments will be received by the Department of Fish & Game until 5 p.m. Feb. 9. The address and fax number are printed below.

These proposals are of special interest to SSRAA.

No.	Topic	Submitter
308	Allow 6 lines when targeting enhanced salmon	Ed Hansen
315	Extend time and area in Behm Canal to troll coho fishing	SSRAA
316	Defining area 1-E so troll area is continuous to Nose Pt.	ADF&G
317	Extend time in 1-E and set closure date to Sept. 30	ATA
323	Remove PNPs from the Enhanced Fish Allocation Plan	USAG
324	Regional association direct gear-group allocations	USAG
327	Define open fishing periods for SHAs without EO	ADF&G
331	Needs Bay Management Plan – Board Directed Allocation	SSRAA
332	Seine – Modify Needs Bay Management Plan	SEAS
333	Gillnet – Modify Needs Bay Management Plan	USAG
337	Establish a new Herring Cove THA management Plan	ADF&G
338	Expand the Kendrick Bay THA to include McLean Arm	SSRAA
340	Modify the open area in Anita Bay THA for quality fish	Wrangell Adv. Bd.

Send written comments to —

ATTN: BOF Comments  
Boards Support Section  
Alaska Department of Fish and Game  
P.O. Box 115526  
Juneau, AK 99811-5526

Fax comments to — 907-465-6094

## SSRAA 2011 production | Harvest value

Species	Gillnet	Seine	Troll	Total	% of Value
Coho	\$675,500	\$77,900	\$744,800	\$1,498,200	7.7%
Chinook	\$447,500	\$440,000	\$712,700	\$1,600,200	8.3%
Summer Chum	\$4,610,000	\$6,987,900	\$2,434,900	\$14,032,800	72.6%
Fall Chum	\$931,400	\$576,000	\$640,500	\$2,147,900	11.1%
Sockeye	\$49,900	\$3,700		\$53,600	0.3%
Totals	\$6,714,300	\$8,085,500	\$4,532,900	\$19,332,700	100.0%
% of Value	34.7%	41.8%	23.4%	100.0%	

In addition to the values posted above, the Metlakatla Indian Community harvest of SSRAA-produced chum and coho salmon in 2011 had an estimated value of \$1,363,000.

# MAKING *FISH* IN THE WOODS



## We're taking the off-road less traveled: living 'remote' is a balance of amenities and wildness

By **MATTHEW ALLEN**  
Neets Bay Hatchery Manager

"Remote isn't as remote as remote used to be," a friend recently told me—and the statement is true even in my relatively short experience in a remote place.

As we continue exploring, colonizing and conquering the last remote places on this planet, change is inevitable. Neets Bay is no different. More than 30 years of progress at a large, remote production hatchery have changed the remote nature of the bay. Weekly freight flights, summer ProMech tours, harvest operations, commercial openings, sport fishermen, big game hunters, supply barges and more make excursions into the bay.

Those of us who call Neets Bay our year-round home generally welcome the visitors and activity—especially after a quiet stretch. At some other times, we just hope a visitor to the bay took a wrong turn.

Remote is still remote, however, and though we have many contemporary amenities (or necessities, as some people see them), we still lag behind the "real world" in many respects. In time we have realized a comfortable disassociation and balance with the civilized world while immersing ourselves in the remote wilderness.

For many of us, Alaska was a calling, a desire for adventure, a road less travelled and an opportunity. Of the seven permanent staff at Neets Bay, none is native to Alaska. We are all transplants—from as far away as Vermont and as close as Washington state. The origins



*LIVING AND WORKING REMOTE GETS ITS HOOKS INTO YOU AND LEAVES YOU WANTING MORE, DESPITE THE DISTRACTIONS OF THE OUTSIDE WORLD. ALL OF US WHO LEFT DISCOVERED THAT THERE IS NO SUBSTITUTE AND NOTHING CAN FILL THE VOID.*



of even our seasonal staff are widely dispersed across the country. Of the five permanent fish culturists, only one is in his first stint at a remote work site. The other four have all seen this rodeo before—but for other hatchery associations, such as PWSAC, DIPAC, PARM and NSRAA. All four have moved back to the Lower 48 for various reasons, only to haul themselves back to remote

Alaska at Neets Bay.

Living and working remote gets its hooks into you and leaves you wanting more, despite the distractions of the outside world. All of us who left discovered that there is no substitute and nothing can fill the void. We all realize that our remote experiences will not be forever—that there is a shelf life. Other wants, needs and opportunities will arise and will take us away.

There are other pieces to the puzzle, for though Alaska may hold you in thrall it is really the people and support networks that make it all possible. It's the friends you make along the way, your co-workers, local merchants, family and, yes, even our board members who enrich the experience.

Whether it's a friendly voice on the end of the line, a last-minute errand, a bit of advice from someone who has been there and done that, the local charter pilot with a load of freight on a Friday morning, board members who tour the site and let you know they like what they see, or the family you share your remote Alaskan experience with: They are the glue that holds it all together.

In the end, it is with a feeling of satisfaction and a sense of pride that we live and work remote. We are thankful for the opportunity for as long as we have it.

*Making Fish in the Woods features occasional first-person accounts by people affiliated with SSRAA.*

### SSRAA 2012 forecast | All species | All sites

Species	Site	5 YR	4 YR	3 YR	CP	Terminal	Total
S Chum	Neets	180,000	1,200,000	320,000	510,000	1,190,000	1,700,000
S Chum	Nakat	28,000	325,000	50,000	241,800	161,200	403,000
S Chum	Anita	27,000	343,000	71,000	220,500	220,500	441,000
S Chum	Kendrick	60,000	750,000	85,000	626,500	268,500	895,000
F Chum	Neets	150,000	210,000	30,000	97,500	292,500	390,000
F Chum	Nakat	13,000	64,000	8,700	36,000	49,700	85,700

Species	Site	6 YR	5 YR	4 YR	CP	Terminal	Total
Chinook	Whitman	1,000	10,000	7,000	5,400	12,600	18,000
Chinook	Neets	1,000	12,000	9,000	6,600	15,400	22,000
Chinook	Anita	1,500	4,500	4,000	3,000	7,000	10,000
Chinook	Crystal	1,000	700	0	850	850	1,700

Species	Site	CP	Terminal	Total
Coho	Whitman	17,000	7,000	24,000
Coho	Neets	162,000	53,000	215,000
Coho	Nakat	19,000	2,000	21,000
Coho	Anita	14,000	3,000	17,000
Coho	Neck	54,000	54,000	108,000
Coho	Burnett	12,000	9,000	21,000
Coho	Crystal	2,800	2,800	5,600
Coho	Bakewell	14,000	6,000	20,000

### Board veterans and new member elected

SSRAA voters returned incumbents to the board of directors in uncontested 2011 balloting for seine, gillnet and power troll seats. A newcomer was elected to the vacant hand troll seat. Ballots were certified by the board in December and three-year terms began in January.

#### GILLNET

[1 seat up for election]  
Rudy Franulovich 50  
Write-ins 1

#### SEINE

[2 seats up for election]  
John Peckham 66  
Bruce Wallace 65  
Write-ins 10

#### POWER TROLL

[1 seat up for election]  
Tom Sims 111  
Write-ins 2

#### HAND TROLL

[1 seat up for election]  
Craig Ring 45  
Write-ins 4



## SSRAA returns | Contribution estimates for 2011 | FINAL

COHO	COMMON PROPERTY				SPECIAL HARVEST AREA			SSRAA Brood	Cost Recovery	Other	Total
	Release Site	Gillnet	Seine	Troll	Sport	Gillnet	Seine				
BAKEWELL	980	625	6,840	285						660	9,390
BURNETT INLET	7,800	560	1,200	580				4,100	5,200	0	19,440
NECK LAKE	43,630	1,200	7,235	20,000					50,060	720	122,845
ANITA BAY	550		770		315	100	10				1,745
CRYSTAL LAKE	865	930	3,000	130				2,490			7,415
HERRING COVE	1,220	575	7,180	610			60	4,850	1,450	280	16,225
NAKAT	1,630	295	3,440	320	1,340						7,025
NEETS BAY	6,720	2,020	43,080	4,000	6,220	8,070	15	500	940	740	72,305
% By Group	25%	2%	28%	10%	3%	3%	0%	5%	22%	1%	100%
Total	63,395	6,205	72,745	25,925	7,875	8,170	85	11,940	57,650	2,400	256,390

CHINOOK	COMMON PROPERTY				SPECIAL HARVEST AREA			SSRAA Brood	Cost Recovery	Other	Total
	Release Site	Gillnet	Seine	Troll	Sport	Gillnet	Seine				
ANITA BAY	2,330	115	1,100	135	5,820	3,135	155				12,790
CRYSTAL LAKE	155	25	735	45				875			1,835
HERRING COVE	225	20	5,245	805			200	1,500	8,800		16,795
NEETS BAY	765	180	3,545	685	2,820	8,700	95		8,165		24,955
% By Group	6%	1%	19%	3%	15%	21%	1%	4%	30%	0%	100%
Total	3,475	340	10,625	1,670	8,640	11,835	450	2,375	16,965	0	56,375

SUM. CHUM	COMMON PROPERTY				SPECIAL HARVEST AREA			SSRAA Brood	Cost Recovery	Other	Total
	Release Site	Gillnet	Seine	Troll	Sport	Gillnet	Seine				
ANITA BAY	118,280	33,210	10,575		69,420	82,940	560		1,140		316,125
NAKAT	195,050	17,955			140,115						353,120
NEETS BAY	54,950	145,845	319,780		1,310	12,525	405	211,900	798,160		1,544,875
KENDRICK	24,040	474,465	3,250			205,830					707,585
% By Group	13%	23%	11%	0%	7%	10%	0%	7%	27%	0%	100%
Total	392,320	671,475	333,605	0	210,845	301,295	965	211,900	799,300	0	2,921,705

FALL CHUM	COMMON PROPERTY				SPECIAL HARVEST AREA			SSRAA Brood	Cost Recovery	Other	Total
	Release Site	Gillnet	Seine	Troll	Sport	Gillnet	Seine				
NEETS BAY	34,935	23,050	87,535		33,170	76,230	15	73,825	492,000		820,760
NAKAT	34,535	2,900	310		33,610						71,355
% By Group	8%	3%	10%	0%	7%	9%	0%	8%	55%	0%	100%
Total	69,470	25,950	87,845	0	66,780	76,230	15	73,825	492,000	0	892,115

SOCKEYE	COMMON PROPERTY				SPECIAL HARVEST AREA			SSRAA Brood	Cost Recovery	Other	Total
	Release Site	Gillnet	Seine	Troll	Sport	Gillnet	Seine				
BURNETT	3,935										3,935
McDONALD	1,180	440								5,070	6,690
% By Group	48%										48%
Total	5,115	440	0	0	0	0	0	0	0	5,070	10,625