DIPAC NETwork NEWS

Summer 2000

DIPAC Founder Ladd Macaulay Leaves a Legacy to Juneau

Ladd Macaulay, founder and driving force behind the creation of DIPAC, was tragically lost in a traffic accident on April 19, 2000. Also killed was Martin Richards, the Director of the Division of Investments for the State Department of Commerce.

Rather than dwell on the huge loss of this tragedy, we would like to use the following pictures to remember the very special and dynamic person Ladd Macaulay was and the legacy his efforts have left to Juneau.

A smiling Ladd Macaulay during a chum egg take in 1976.

Ladd and Mayor Dennis Egan talk with Peggy Garrison in 1994 about a pickled salmon entry in the salmon products contest held each year as part of Juneau Appreciation Day.

Ladd's careful scrutiny and attention to detail was essential to the construction of the Gastineau facility in 1989. In this picture he talks with Hugh Macaulay as the hatchery building is being framed in.

More photos on page 3

What's Inside

DIPAC DIRECTORY

Jon Carter, *Executive Director*
Rick Focht, *Operations Manager*
Eric Prestegard, *Remote Program Manager*
Sam Rabung, *Gastineau Hatchery Manager*
Steve Reid, *Snettisham Hatchery Manager*
Kelly Stevens, *Tourism Manager*

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Strong Returns Are Expected This Summer

Strong returns of salmon to northern Southeast Alaska are expected from Gastineau and Sheep Creek enhancement projects in 2000. Approximately 2.72 million chum, pink, chinook and coho salmon are projected to be harvested in common property fisheries, hatchery cost recovery and broodstock operations this year.

Chum Salmon

Approximately 2.5 million chum salmon are expected to return in 2000 from releases at Gastineau Channel, Amalga Harbor, Limestone Inlet and Boat Harbor. The broodstock requirement for next year's incubation needs is 146,000 fish, leaving a harvestable surplus of 2.4 million chums. Based on current management strategies and last year's experience, DIPAC projects approximately 986,000 chums to be harvested in the common property fisheries (primarily commercial gillnet fisheries), representing about 42 percent of the harvestable surplus. This percentage does not reflect released males or unreported harvest; if either or both were included, the percentage would increase appreciably. Fish that are not caught in the common property fisheries and return to Gastineau Channel and Amalga Harbor will be available for broodstock and cost recovery. If this year's harvest follows last year's pattern, the 2000 chum cost recovery projection is about 1.38 million fish, or 58 percent of the surplus.

The Pacific Belle hard at work in the Amalga Harbor cost recovery site.

Pink Salmon

Approximately 115,000 pink salmon are expected to return to Gastineau Hatchery this year from a release of 5.7 million fry and an average return rate of 2.1 percent. Assuming a 50 percent harvest rate, an equal number of pinks could also be harvested in the common property fisheries. The 2000 egg take goal of 1.5 million requires a broodstock escapement of approximately 2,200 fish, leaving over 113,000 surplus fish available for cost recovery.

Chinook Salmon

The projected chinook salmon return for 2000 is 6,000 fish. Approximately 1,900 and 2,700 chinook are expected to return from releases at Fish Creek and Auke Creek, respectively. Another 1,400 fish are expected to return to the Gastineau Hatchery terminal area. Because two stocks of chinook will be returning this year with no practical way of separating them, all chinook eggs will come from off-site sources. Although there is no directed cost recovery harvest for chinook salmon at Gastineau, every effort will be made to recover as much value from surplus fish as possible.

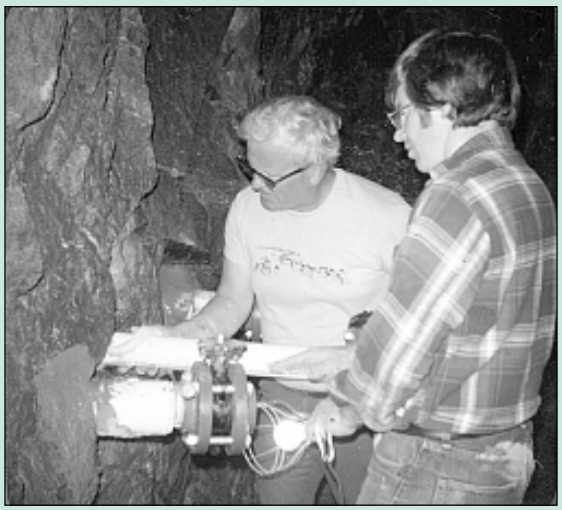
Coho Salmon

Approximately 78,000 DIPAC coho are expected to return this year, based on an assumed survival rate of 10 percent. An estimated 46,000 coho salmon are expected to be harvested in the common property fisheries with the remaining 32,000 returning to Gastineau Hatchery for cost recovery harvest and egg takes.

Projected Returns in 2000

Release Site	Species	Com. Prop.	DIPAC	Total
Amalga Harbor	chum	203,188	992,034	1,195,222
Boat Harbor	chum	139,427	-	139,427
Limestone Inlet	chum	202,633	-	202,633
Gastineau Channel	chum	440,667	538,593	979,260
Lynn Canal	chum	342,615	992,034	1,334,649
Taku Inlet/ Stephens Passage	chum	643,300	538,593	1,181,893
	total chum return	985,915	1,530,627	2,516,542
	less broodstock	-	(146,000)	(146,000)
	harvestable chum	985,915	1,384,627	2,370,542
Gastineau Channel	pink	115,200	115,200	230,400
	Less broodstock	-	(2,200)	(2,200)
	Harvestable pink	115,200	113,000	228,200
Gastineau Channel	chinook	820	547	1,367
Fish Creek	chinook	1,976	-	1,976
Auke Creek	chinook	2,673	-	2,673
	harvestable chinook	5,469	547	6,016
Gastineau Channel	coho	45,528	32,838	78,366
	less broodstock	-	(1,200)	(1,200)
	harvestable coho	45,528	31,638	77,166
Grand Total	**Harvestable Fish**	**1,152,112**	**1,529,812**	**2,681,924**

Macaulay, *continued*



Ladd and DIPAC board member Harold Zenger inspecting a waterline during the Kowee Creek site construction in 1978.

Ladd hard at work transferring fry from the Sheep Creek Hatchery to net pens in Gastineau Channel in 1985.

In 1997, after nine years of receiving 10 cents from each tourist, a happy Ladd takes delivery on the Wallen bronze bear sculpture, our showpiece at the Gastineau Hatchery.

Hatchery Wants Fishermen to Get Sixty Percent of the Harvest

Snettisham Returns on Track

This is the summer everyone's been waiting for. Area fishermen hope to reap the benefits of a substantial run of 4-year-old sockeye to the Snettisham Hatchery starting in July. A projected 225,000 sockeye are on their way back to the hatchery as a result of DIPAC's first large-scale hatchery release – 5.6 million smolts released into Port Snettisham in 1998.

"The average historic catch for sockeye in the Taku-Stephens Passage area is roughly 100,000. This is without a doubt going to change the fishery, " said Eric Prestegard, Snettisham Hatchery Program Manager.

DIPAC's goal is for fishermen to harvest 60 percent of the return, with the balance going for cost recovery. Achieving the 60-40 split will be complicated, Prestegard said. Many unknowns surround this year's sockeye return to the hatchery. One big unknown is the hatchery return's impact on wild sockeye salmon returning to the area – a conservation concern dictated by the Alaska Board of Fisheries. "We will find a way to make this work but it won't be easy and there may be some fits and starts before we get it dialed in," Prestegard said.

Protecting Wild Runs is a Priority

An important aspect of this fishery is that the hatchery must protect wild runs, especially wild stocks in Port Snettisham going into Crescent Lake and Speel Lake. The Department of Fish and Game and the Alaska Board of Fish stressed this issue at their February meeting in Sitka.

Andy McGregor, fish biologist with the Alaska Department of Fish and Game, said, "We intend to manage Stephens Passage by focusing on conservation of Snettisham wild runs, particularly during July. This summer we'll probably use gear restrictions for longer periods of time to allow the wild sockeye to get through, and allow the fishermen to target hatchery chum salmon."

McGregor said the department expects to relax some restrictions on the fishery as the season develops. "Port Snettisham has been closed in recent years and we plan to continue that through late July and perhaps early August. We may relax that restriction once we feel the wild escapement is developing adequately."

Managing around the wild stocks will be a challenge this summer given

Snettisham sockeye are loaded into a tender. This summer returning reds should average 4.5 pounds, and next year's 4- and 5-year-olds will likely show an average of 5.5 or 6 pounds.

Putting It In Perspective

Eric Prestegard, Snettisham Hatchery Program Manager said this summer's big sockeye return will provide perspective on wide-angle questions such as how returning salmon entry patterns differ when the number of fish is significantly higher.

DIPAC took over operation of the Snettisham Hatchery from the Alaska Department of Fish and Game in 1996. They have increased smolt release levels from under two million to over five million. The current release levels should result in approximately a half million fish in 2001.

Adding this number of fish to this area will require study on a regional level, Prestegard said. The hatchery will step up sampling across all fishing areas to learn about factors such as seine interceptions and also how this run may affect fleet patterns and processors.

He pointed out that the Snettisham run, which will probably be strongest from mid-July to mid-August, is expected to peak slightly later than the run in Taku Inlet, allowing fishermen to fish the Taku area first, and then move south into Stephens Passage to fish the return to the hatchery.

"This is the beginning of a very exciting time. I hope that ultimately it will support a Juneau home fleet that doesn't have to travel and I hope it promotes more local processing," Prestegard concluded.

its small number relative to the hatchery return, Prestegard explained. “We have no historical data on returns of this scale to go on. And we don’t know how many fishermen are going to be involved either. As the fish arrive, so will a great deal of information,” he said.

Snettisham hatchery has put its identification on 100 percent of its sockeye salmon using thermal marking – changing water temperature to mark the ear bones, or otoliths, of the fish. Samples can be taken during a fishing period early in the season, and the number of unmarked fish will yield information about the number of wild fish that are being intercepted.

Furthermore, hatchery staff will be monitoring wild returns at a fish weir in the outlet stream of Speel Lake and will report their data to the Alaska Department of Fish and Game and DIPAC on a daily basis. The escapement goal for Speel Lake is 5,000 wild sockeye salmon.

Speel Arm Designated for Cost Recovery

The upper portion of Speel Arm is designated as a Special Harvest Area where DIPAC can conduct cost recovery fishing. Achieving the hatchery’s cost recovery goal of 40 percent, or roughly 90,000 sockeye, is also going to require close management. “We’d like cost recovery efforts limited to an area close to the hatchery, particularly early in the run,” said McGregor. DIPAC and the department have agreed to a closed area near the mouth of Speel River to give the wild salmon a better chance for reaching escapement.

The Snettisham Hatchery budget, including operating and capital costs, is over $800,000. The hatchery also has a modest brood stock goal of 5,000 fish. Later in the season, once wild escapement is assured, and cost recovery and brood stock goals are on track, Speel Arm will be opened to common property fishing, Prestegard said. Reaching the escapement goal will open the door to fishing seven days a week in the special harvest area, hopefully allowing fishermen to reach the 60 percent harvest goal, he said.

Of course, everything really depends on the fish. “The forecast has big boundaries,” Prestegard said. “The returns could be half as much – or half *again* as much. We believe we can manage for this, but for the first few years there will be a steep learning curve.”

Snettisham Improvements Underway

Snettisham Hatchery’s major construction project is moving full speed ahead. The improvements are geared toward expanding capacity and increasing the hatchery’s ability to protect sockeye from the devastating IHN virus.

The construction is made possible by a $1.9 million U.S. Department of Commerce EDA grant, and EMPCO Inc., coming in with the lowest bid of $1,182,976, is doing the work.

“The construction includes important facility upgrades that were identified as necessary even before DIPAC took over operation of the hatchery in 1996,” said Eric Prestegard, Snettisham Hatchery Program Manager. The project includes building seven galvanized steel enclosures over 14 raceways to replace the temporary shelters erected three years ago. This will increase rearing capacity by 30 percent. The concrete raceways will be resurfaced with a pliable poly coating that seals the raceways against moisture migration and virus transmission and also smoothes the surface for easier cleaning.

Snettisham’s concrete raceways will be resurfaced and covered by steel enclosures this summer.

Physical separation and tight seals between units help prevent the spread of the IHN virus and will decrease the number of fish destroyed if there is an outbreak. The Alaska Department of Fish and Game requires destroying all fish in compartments where IHN has been detected. The hatchery construction plan calls for “blank” raceway areas between each enclosure to create greater physical separation between raceways.

“Sockeye are very susceptible to this virus,” Prestegard explained. “There is not a full understanding of the virus yet, but we do know ways to manage around it. We can do that by compartmentalizing the fish and disinfecting at every turn.”

The upper end of the six blank raceways, which extends under the hatchery building, will also serve as incubation space. This doubles the hatchery’s early rearing capacity from 24 incubation tanks to 48 incubation tanks. “We are maximizing our existing potential for the smallest cost possible,” he said.

In addition, the new structures have been designed to reduce staff time behind a snow shovel, because the blank raceways between enclosures will allow space for the snow to shed off of the enclosures. Hatchery employees have recorded up to 350 inches of snow in one year, Prestegard said, and that has meant many hours of shoveling off roofs. “We have to build for a Valdez scenario down here. It will be a great relief to have these enclosures in place and it will be a great pleasure to watch all that snow slide off them,” he said.

EMPCO Inc., an Anchorage-based construction firm, was one of four firms to submit bids. “They have a good background in doing remote work, and the owner has worked on hatchery projects,” Prestegard said. The construction project should go until the end of summer, and there may be some follow up work done next year, depending on funding, he said.

Number of Fry Released Highest Ever

Just Add (Salt) Water

A hatchery employee feeds fry in one of twelve net pens at Amalga Harbor.

This year Gastineau Hatchery significantly improved the survival rate for its chum and pink salmon fry by adding a small amount of salt water to their incubation water.

Over the past nine years chum fry survival rates during ponding and transport have averaged 88.8 percent from green eggs, but this year projected survival from egg to released fry rose to approximately 94.1 percent. Pink salmon green egg to released fry survival is projected to be 93.7 percent.

"We've been plagued with chronic low-level mortality during incubation," explained Rick Focht, Juneau Operations Manager for DIPAC. "And it didn't make sense to us. Incubation is a benign time. We shouldn't have problems if we have adequate water flow, good quality water, basic sanitation and don't overload the incubators."

Hatchery staff began to wonder if the mineral content of Gastineau Hatchery's water had anything to do with it. "Even though our water quality is very good, it's also very soft," Focht said. Soft water has less mineral content and less buffering capacity against swings in pH value, he added.

In an experiment last year, the hatchery introduced a little bit of salt water to a select portion of chum eggs. It wasn't enough to change salinity, but it did increase the water's hardness. Those fish appeared to be hardier, and better withstood the stresses of the ponding and transport processes, Focht said.

The hatchery staff has since added the salt water to all the pink and chum incubators. "I'm delighted we were able to address this problem. The results are extremely rewarding," Focht said.

Strong Releases Expected

The significant improvement in survival translates to the highest number of chum fry ever produced at Gastineau Hatchery – nearly 105 million are being reared in net pens at four release sites this year. In addition, 1.6 million pink salmon fry were released at Gastineau Hatchery this spring.

DIPAC will also release approximately 450,000 chinook and 800,000 coho in the Juneau area this year. An additional 90,000 coho will be released by DIPAC at Sheep Creek under a University of Alaska contract, and 90,000 Tahini River chinook were transported to Skagway in early May for imprinting and release.

In addition to standard rearing practices, hatchery staff is testing an alternate rearing strategy with its chum at Amalga Harbor. Normally chum salmon are released mid-to-late May after approximately 10 weeks of rearing in the net pens. The hatchery kept roughly 9 million fry an additional two weeks to test the effects that later release and the resulting larger size have on ocean survival. It has been estimated that even a relatively moderate increase in average survival rate could translate into a significant increase in the number of fish available for fishermen to harvest. These fish – about one sixth the total – were marked with a unique thermal mark, which will be recovered from returning adults in future years.

Table of Gastineau and Sheep Creek Hatchery projected releases in 2000

Species	Facility	Release Site	Projected Release
Chum	Gastineau	Gastineau	27,688,367
		Amalga Hbr.	52,842,351
		Boat Hbr.	9,018,507
		Limestone Inl.	14,975,149
			104,524,374
Pink	Gastineau	Gastineau	1,665,160
Chinook	Gastineau	Gastineau	210,000
		Fish Creek	180,000
		Auke Creek	60,000
			450,000
		Skagway	90,000
		Twin Lakes	10,000
Coho	Gastineau	Gastineau	807,000
	Sheep Creek	Sheep Creek	90,000
			897,000
TOTAL			107,636,534

Board of Fish Holds on Proposal

The Alaska State Board of Fisheries tabled for one year Proposal 358 sponsored by the Bering Sea Fishermen's Association to limit hatchery production of chum salmon in Southeast Alaska and Prince William Sound. The board decided to gather more information after hearing testimony on the proposal at its meetings in February and March this year.

The Bering Sea Fisherman's Association wants to drastically cut hatchery production because of claims that hatchery programs drive down prices and cause Bering Sea fishermen to lose market share. Members of the board want a year to clarify several issues, including whether the board has the authority to make a cut in hatchery production. Another major question is whether a cut would raise prices, as suggested.

Such a cut in production by the board could have a crippling effect on hatcheries in Southeast, said Jon Carter, DIPAC's Executive Director. DIPAC does not receive any of the three percent fishermen tax money and depends on harvest of a percentage of the returning salmon for its funding operations and debt retirement. A cut in production as suggested in the proposal would hit DIPAC especially hard, and the fishermen who benefit from the hatchery's releases.

The board may ask for a statutory ruling on who has the authority to regulate production. Presently, the Board of Fisheries regulates the fishing of the returns, and the Alaska Department of Fish and Game regulates the releases.

Carter said DIPAC agrees that a statutory change would be required to give the Board authority to regulate hatchery production, but the hatchery does not agree to support such a change.

The Board of Fisheries also wants to gather information on market share and price influences. Hatchery chum production is a relatively small part of the world market picture. According to the April 2000 newsletter produced by the Alaska Seafood Marketing Institute, between 1993 and 1998 Japan produced three times more chum salmon than Alaska fisheries. Also, salmon prices throughout Alaska have been affected by increased production of farmed salmon. Factors such as these suggest the Bering Sea fishermen are impacted more by world market factors rather than hatchery chum production in Southeast Alaska.

Please turn to next page

Say Goodbye to Murky Aquarium Water

DIPAC's Visitor Center aquariums have a new circulation system, giving the marine life a more constant environment, and allowing visitors to see them through clearer water.

Visitors to the hatchery can watch Southeast sea life in thirteen 60-gallon aquariums and a centerpiece 5,000-gallon aquarium. These aquariums have been dependent on a flow-through stream of water drawn in by a pipe set in Gastineau Channel outside the hatchery building. After heavy rains the channel becomes flooded with fresh water, changing the salinity of the water, and its clarity.

Lower salinity is fatal to some species, especially those accustomed to deep water. For example, several king crabs have been lost due to increased freshwater runoff lowering the salinity in the channel – and thus in the aquarium.

"I'm relieved that we are doing this, and I think the creatures will be too," said Rich Mattson, Aquarium Manager.

"More than 1,700 individual specimens representing 124 species were collected last year," Mattson said. "Some are used to stock the aquarium and some serve as live feed for the creatures living in the aquarium."

Until recently, these sea creatures have been hard to see at times because the aquarium water, like the channel, turns murky after heavy rains. Under the old system filters were often overloaded with sand and as a result the water would lack clarity. With this improved water system visitors will see specimens clearly at all times.

The new system puts the water through a set of filters, circulates it through the aquariums, sends it back through filters to take out waste, re-circulates it and so on. The system continues to add in a little channel water, as some is lost through the process.

Another improvement in the water system involved the intake pipe, which until this winter was positioned below the salmon rearing pens outside the hatchery building. This winter the intake pipe was enlarged and moved from underneath the salmon pens to about 300 feet into Gastineau Channel. According to Mattson, this provides higher salinity since it is farther from the fresh water hatchery outfall and lessens any health issues since the intake is no longer close to rearing fish. "All in all it is a very positive change to the challenging task of maintaining the aquarium complex," he concluded.

The large aquarium at DIPAC's Visitor Center is a favorite among visitors and local residents alike.

Board Proposal, *continued*

Ocean-carrying capacity is another concern. The board wants to gather scientific data this year to study its relevance to hatchery production.

Carter said hatcheries would likely agree to a voluntary cap on chum production for the next three years while data is gathered. He supports study on ocean carrying capacity at the international level by an impartial body. In addition he supports biological assessment to find possible causes for the reduced wild runs to Alaska's western region river systems.

Two other proposals limiting hatchery cost recovery programs were presented, then withdrawn by the Bering Sea Fisherman's Association.

Proposal 358, should it be adopted after the board researches these issues, could cut DIPAC's production by more than half. Such a cut would put the hatchery out of business. In his testimony at the Fish Board meeting in March, Carter described what is at stake: "The most obvious loss to Southeast Alaska would be the enhanced fish grown by DIPAC and harvested by the commercial fleets. To date, the reported ex-vessel all species value of that catch is $22,411,331. This of course doesn't include the additional value of the processing jobs, ancillary service jobs or the resulting raw fish tax paid to local Northern Southeast communities."

Carter also pointed out the potential loss of sport fish production that is currently supported by chum cost recovery revenue. Nearly one-third of the king and coho salmon caught during Juneau's annual Salmon Derby are DIPAC fish. He added that many families live on the salmon they catch from DIPAC enhancement. Lost also would be the educational opportunities provided by the hatchery.

If the Board of Fish ultimately adopts Proposal 358, it would be the first time the Board allocates resources between regions, and would set a dangerous precedent, Carter said. "We support helping the AYK region but oppose any approach which penalizes other portions of the state. Particularly when the industry has strongly testified that this approach will not solve AYK problems."

DIPAC Has Contributed 12 Million Salmon and Over $22 Million in Revenues to the Area

It Really Adds Up

This winter a project to estimate the total contribution and ex-vessel value of DIPAC salmon over the years was completed. The results indicate that over 12 million DIPAC salmon from Juneau enhancement projects have been harvested in commercial and sport fisheries. This includes a total commercial catch of approximately 11.9 million fish worth over $22.4 million and a total sport catch of over 212,000 fish.

These numbers are based on annual data for chum and pink salmon since 1990, coho salmon since 1991, and chinook salmon since 1993. The best and most current harvest, coded-wire tag, otolith and pricing data were used to calculate these estimates.

Roughly one third of the total catch (4.6 million fish), accounting for half the total value ($11.7 million), is attributable to chums. Commercial fishermen also harvested 6.8 million DIPAC pinks worth $6.9 million, over 500,000 DIPAC coho worth approximately $3.7 million and 4,800 chinook worth over $91,000.

In addition to the commercial harvest, DIPAC projects have contributed approximately 104,000 coho, 64,000 pink, 35,000 chum and 9,000 chinook to the local sport fishery over the life of the programs.

For more information visit our web site at www.alaska.net/~dipac

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