



SMOLTS

Providing and Protecting Your Salmon Resource



Volume 24, Issue 1

The Newsletter for the Cook Inlet Aquaculture Association

Winter 2005

CIAA Joins MariCal Consortium

In an effort to further its enhancement efforts CIAA has partnered with Northern Southeast Regional Aquaculture Association (NSRAA), the Alaska SeaLife Center (ASLC) and MariCal, an aquatic life science company based in Portland, Maine.

MariCal has discovered that proteins called calcium sensing receptors (CaR's) are the controlling salinity sensors in fish. The efforts at MariCal have lead to the identification of CaR's in over 30 species of fish, including salmon. By utilizing their physiological discoveries, MariCal has developed a process dubbed

SeaReady™ that fully adapts salmon smolt to seawater while remaining in freshwater. The process is completely natural and does not use drugs, hormones or genetic engineering.

The consortium of CIAA, NRSAA, ASLC, and MariCal will evaluate the technical and economical merits of the SeaReady™ process for each organizations individual programs as well as general enhancement programs throughout Alaska.

The Cook Inlet Aquaculture Association will utilize the SeaReady™ process on coho and sockeye salmon smolts released at Bear Lake

Weir. Additionally, CIAA will test rearing sockeye salmon smolts in net pens in the Tutka Bay Lagoon. These smolts will be treated with the SeaReady™ process and transported to Tutka Bay Lagoon. After the treatment the smolts should be adapted to saltwater entry, thus reducing or eliminating mortality caused by imbalances in osmoregulation.

In order to initiate the research, each member of the consortium has invested \$25,000.00 if its own money. To further the project, the group is currently seeking funds from the State of Alaska.

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From the Executive Director

Kenai Office

Gary Fandrei - Executive Director
Carol Jones - Admin. Assistant
Trenten Dodson - Biologist
Cathy Cline - Lab Assistant
Bridget Dodson - Lab Assistant

Trail Lakes Hatchery

Robert Blankenship - Manager
Tom Prochazka - Assistant Mgr.
Mark Thomas - Assistant Mgr.
Ron Carlson - Project Technician

Tutka Bay Lagoon Hatchery

Travis Speicher - Caretaker
Joe Losee - Caretaker

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Last winter the U.S. 9th Circuit Court of Appeals determined the Tustumena Lake project was not compatible with the Tustumena Lake Wilderness and ordered a halt to enhancement activities. Last spring the CIAA Board of Directors made the difficult decision to suspend pink salmon enhancement operations at Tutka Bay Hatchery. Both decisions, based on economic considerations, ended 29 year enhancement programs and dramatically affected other CIAA programs. We are, however, committed to protecting and providing additional salmon resources and continue to adapt and improve our enhancement programs to meet your needs.

Over the last 3 years, Trail Lakes Hatchery fish releases have averaged 18.5 million, almost double the average over the previous 3 years. Hatchery incubated fish from this increased production will begin to return in 2005.

In 2003, to complement our long-term program of providing fish access to spawning areas by seasonally notching beaver dams, we began efforts to improve salmon habitat in small streams. These salmon production areas are important, but often ignored. To date we have completed habitat enhancement activities on Daniels Creek, Fish Creek and Cannery Creek. We have also worked in cooperation with other groups like the Kenai River Watershed Forum to restore fish access to Silver Salmon Creek. We

plan to continue this cooperative relationship to improve Slikok Creek and prioritize other small streams for future habitat work. While it is hard to estimate the number of additional fish these efforts will produce, we are confident they do result in greater adult returns.

To improve our existing projects and develop new opportunities, we have also begun to work cooperatively with other organizations such as the Port Graham Hatchery, the Alaska Sealife Center and MariCal. By working cooperatively, CIAA is able to maximize the resources available for salmon enhancement which leads to better enhancement programs for CIAA and the cooperating organizations.

As we work to continue our existing projects and improve all of our programs, we must keep everyone informed of the progress we are making. I am committed to improving this newsletter and our website at www.ciaa.net.org so that both remain a resource for the Association and others interested in our activities.



Executive Director Gary Fandrei notches a Beaver dam. The opening allows migrating salmon to move upstream to spawn.

Cannery Creek Project Gives Coho Salmon a Lift

When Mt. Redoubt erupted in 1989 large amounts of mud and ash forced Cannery Creek, located near the Drift River (see map on page 7), out of its established stream channel. A series of actively eroding water falls have since developed, recently preventing upstream access by anadromous fish.



The completed steppass provides a channel for coho salmon to swim up and over the impassable falls.

CIAA first became aware of this problem in 1994. In 1996, CIAA responded to a report by a local fisherman that the falls may be impeding the migration of anadromous fish into Cannery Creek; CIAA then conducted an aerial survey of the area. However, individuals familiar with the area claimed fish could pass the falls at tides greater than 21 feet, so no remedial action was taken.

In 2003, the Cook Inlet Pipeline Company contacted CIAA with information that the waterfalls had eroded further upstream and the future of the resident coho salmon population was threatened. With the assistance of the Cook Inlet Pipeline Company, CIAA conducted a ground and aerial survey in August 2003.

By 2003, the creek had braided into several channels and each channel now had an approximately 10 foot high falls. Water flow below the falls is confined to a channel; however, flows above the falls are not confined. As a result the stream depth above the falls is only 12 to 16 inches. The stream flows over a vegetated peat layer and the falls are constantly cutting back. As they have moved further away from Cook Inlet, the falls have become less influenced by tides and are now too high for fish to pass.



The baffle design of the steppass slows the velocity of the water to allow fish to swim easily up the incline.

Through the joint collaboration of CIAA, Cook Inlet Pipeline, the United States Fish and Wildlife Service, and the Alaska Department of Fish and Game a portable Alaska Steppass was designed, constructed, and set into the creek to allow the passage of coho salmon past the falls.

The steppass was set into place on August 14, 2004. Several modifications, including the installation of a cable lift system, were made and on August 21 the first salmon was observed swimming up the structure. The unique baffle design within the

steppass slows the downward flowing water enough to allow fish to easily swim upwards. The lift system enables the crew to adjust the angle of the steppass in concert with the changing water levels driven by the tides.



Project Technician, Ron Carlson, tightens the cables that help support the steppass.

During the 15 days of operation, an estimated 766 coho salmon swam up the steppass. At the end of the project the steppass was removed. Several salmon were later observed, during aerial surveys, upstream of the falls near the historic spawning area.



The crew at Cannery Creek uses sand bags to help divert water through the steppass.

The success of the project has prompted CIAA to request funds for operating the steppass in 2005.

CIAA Receives Awards for Habitat Work

In February, Executive Director Gay Fandrei received a presidential award for CIAA's contribution to the Silver Salmon Creek Restoration Project.

The project was joint effort involving several agencies (see list below) and was spearheaded by the Kenai Watershed Forum (KWF)

CIAA has committed to working with KWF again on a project involving Slikok Creek. Additionally, efforts to prioritizing future habitat work has begun with the Alaska Department of Natural Resources. For more information log on to www.kenaiwatershed.org.

In addition to the award for restoring Silver Salmon Creek, CIAA was awarded by the Department of the Interior for its work on Cannery Creek (see related article page 3).

Silver Salmon Creek Restoration Partners

Kenai Watershed Forum
 U.S. Fish and Wildlife Service
 The Nature Conservancy of Alaska
 The Kenai Peninsula Borough
 NOAA
 CIAA
 ADF&G
 Department of Natural Resources
 Community of Economic Development
 Youth Restoration Corps
 NC Machinery
 Moore's Landscaping
 Christopher Roach - Engineering

Source: Kenai Watershed Forum

2005 Projected Hatchery Release Trail Lakes Hatchery

Brood Year/Species	Release Site	Number of Salmon	Weight (g)
2004/Sockeye	Leisure Lake	2,000,000	0.3
2004/Sockeye	Hazel Lake	1,250,000	0.3
2004/Sockeye	Kirschner	250,000	0.3
2003/Sockeye	Bear Lake	400,000	10.0
2004/Sockeye (fall release)	Bear Lake	800,000	4.5
2004/Sockeye	Bear Lake	2,400,000	0.4
2004/Sockeye	Hidden Lake	560,000	0.1
2004/Sockeye	Big Lake	1,900,000	0.4
2004/Sockeye	Tutka Bay Lagoon	200,000	0.4
2004/Sockeye	Nanwalek	450,000	0.4
2004/Sockeye	Port Graham	450,000	0.4
2003/Coho	Bear Creek	250,000	12.0
2004/Coho	Bear Lake	405,000	1.0
2003/Coho	Resurrection Bay	200,000	12.0
2003/Coho	Homer Spit	100,000	12.0

2005 Projected Hatchery Returns

Facility	Species	Return Site	Number of Salmon*
Trail Lakes Hatchery	Sockeye	Leisure/Hazel	113,000
	Sockeye	Kirschner Lake	24,000
	Sockeye	Bear Lake	74,800
	Sockeye	Tustumena Lake	226,800
	Sockeye	Big Lake	No Data**
	Coho	Bear Lake	20,000
Tutka Bay Lagoon Hatchery	Pink	Tutka Bay	1,021,000

Returns are based on historical observed survival rates derived from data collected by CIAA and ADF&G.

*number reflects otolith marked fish only

**There has not been sufficient data collected by CIAA to make a sound prediction

Habitat Improvements at Big Lake

During the summer of 2004, the Cook Inlet Aquaculture funded, through a grant received from the United States Fish and Wildlife Service, a major habitat improvement to the dam structure that lies at the outlet of Big Lake; which is the head of Fish Creek. Several sockeye salmon spawn near the outlet and the resultant fry emerge and migrate upstream to the lake. Although previous attempts, including the installation of small fish ladders, were made to help the sockeye salmon fry enter the lake, the structure had proven to be quite an impediment.



The dam structure made migration of fry to the lake nearly impossible.

Although the dam was left in place, the crews built up the outlet substrate leading to the structure with natural materials such as gravel and boulders. These materials blend in with the natural make up of the outlet substrate. The subtle incline allowed small fish to move easily into the lake. Additionally, the placement of large boulders created small pools for fry to rest within as they made their way to the lake.



Construction crews used rock and gravel to create a natural channel.

The construction of the roughened channel still helps keep up the water level in the lake as well as creates a natural looking incline that assist fry during the upstream migration. Once in the lake the fry can feed on zooplankton and thus, increase their likelihood of survival to the smolt stage..



The finished roughened channel allows fish to move easily to the lake.

CIAA acknowledges the flowing agencies and business for their collaboration and contributions:
United States Fish and Wildlife Service
HDR Alaska, Inc.

Peninsula Construction

Alaska Department of Natural Resources

Alaska Department of Fish and Game

2004 Salmon Release and Return Summary

Cook Inlet Aquaculture Association projects span several areas of Cook Inlet and encompass many facets of enhancement activity. However, a many of the projects are still centered on releasing hatchery reared fish. The following summarizes the data collected during the 2004 field season.

TUSTUMENA LAKE

Though activities at Tustumena Lake have been suspended, CIAA was able to release 6.0 million fry from brood year 2003 into the lake in late May 2004. Additionally, CIAA estimates 6.3 million smolts (3.1 enhanced smolts) from brood year 2001 and 2002 emigrated from Tustumena Lake to Cook Inlet during May and June of 2004. Despite a large return to Tustumena in 2004, enhanced fish made up only a small portion of the return (>1%). In 2001 CIAA did not release fish at Tustumena Lake, thus the low return of enhanced fish to the system.



Executive Director Gary Fandrei and Seasonal Assistants, Alger Aleck and Matt Duguay collect otoliths from adult sockeye salmon at Hidden Lake.

HIDDEN LAKE

Because of good smolt survival at Hidden Lake, CIAA has taken steps

to decrease the number of fry released to the lake. In 2004, 645,000 fry were released. During the smolt enumeration on Hidden Creek, CIAA field staff counted 181,000 emigrating smolts. In July and August, 18,200 adult sockeye salmon returned to the Hidden Creek Weir. The Alaska Department of Fish and Game estimated that approximately 55,200 sockeye salmon of Hidden Lake origin returned to Cook Inlet in 2004. Roughly, 55% of these fish were harvested by commercial fishermen.

BEAR LAKE

Project development still continues at Bear Lake. During the 2004 enhancement activities at Bear Lake, 2.4 million sockeye fry, 603,000 sockeye presmolts, 406,000 coho fry, and 285,000 coho smolts were released. Additionally, 113,000 coho smolts of Bear Lake origin were released at the Homer Spit. The Alaska SeaLife Center in Seward purchased 192,000 coho smolts and released them into Resurrection Bay. Returns to the Bear Creek weir were a bit disappointing in 2004, but not unexpected. However, the expected return in 2005 is encouraging with 86,000 adult sockeye salmon returning to Resurrection Bay.

BIG LAKE

In its third year the smolt enumeration at Fish Creek (Big Lake) has continued to produce more questions about the enigmatic system. A total of 256,000 sockeye smolts emigrated from Big Lake in

2004; most of the smolts were from brood year 2002. Though this is the largest smolt migration enumerated during the study, based on the number of fish released in 2002, survival rates are much lower than expected. Despite the seemingly low survival rates, release activities at Big Lake have continued. In 2004, 5.0 million sockeye salmon fry were released.



Seasonal Assistants Dan Frisbie and Tyler Machamer count sockeye and coho salmon smolts at Fish Creek.

LOWER INLET LAKES

Returns to Leisure Lake, Hazel Lake and Kirschner Lake were considerably low in 2004. The low sockeye salmon returns were a direct result from a release of merely 89,000 fry in 2001. Returns of approximately 40,610 to Leisure/Hazel and 16,800 to Kirschner left only 21,700 for common property. The forecasts for 2005 show returns of 113,000 to Leisure/Hazel and 24,200 to Kirschner. These returns reflect the strong fry releases in 2002.

For more information concerning CIAA projects contact Trent Dodson.

phone: 907-283-5761

email: tdodson@ciaa.net



- | | |
|--------------------------------|--------------------------------------|
| 1) CIAA Headquarters | 11) Marten Lake |
| 2) Hidden Lake | 12) Tukta Bay Lagoon Hatchery |
| 3) Bear Creek (Tustumena Lake) | 13) Homer Spit |
| 4) Cannery Creek | 14) Leisure & Hazel Lakes |
| 5) Fish Creek | 15) Resurrection Bay |
| 6) Trial Lakes Hatchery | 16) Big Lake |
| 7) Bear Lake Weir | 17) Kirschner Lake |
| 8) Daniels Lake | 18) Paint Lake |
| 9) Shell Lake | 19) Packers Lake |
| 10) Kasilof River | 20) Eklutna Salmon Hatchery |

CIAA Bids Farewell to Board Members

The Cook Inlet Aquaculture Board of Directors and Staff would like to extend a sincere thanks Doug Blossom, Howard Davis, Buddy Harris and Drew Sparlin, Sr. for their effort and dedication while serving as members of the board. Doug

and Howard resigned from their seats in 2004, while Buddy and Drew opted not to run for their seat in the 2005 election. As a result, Rowland Maw and Wayne Wong are the newly seated Inlet Wide Commercial Fishermen Representatives and Teague

Vanek is the newly appointed Cook Inlet Fishermen's Fund representative. Brent Johnson will take Howard's Kenai Peninsula Fishermen's Association seat and the responsibilities as president of the Association.



Buddy Harris



Drew Sparlin, Sr.



*Howard Davis
Kenai Peninsula
Fishermen's Association*



*Doug Blossom
Cook Inlet Fishermen's
Fund*



Cool Inlet Aquaculture Association

40610 Kalifornsky Beach Road
Kenai, Alaska 99611
(907) 283-5761

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