

The Salmon Run



Visit our website at www.sacosalmon.org

A Publication of the Saco River Salmon Club, P.O. Box 115, Saco, Maine 04072, 207.282.6985

From the President's Corner *By Jack Parker*

Innovation has always intrigued me, particularly when it appears as breakthrough technology in a tradition bound field. Having started making a living at the dawn of digital data processing in the 1950's I was fortunate to participate in several breakthrough applications during the technology revolution of the ensuing decades. Upon retirement I thought life on the 'bleeding edge' was history until SRSC director Harvey Patry brought MariCal and their unique SuperSmolt process to our hatchery. Intrigue has returned!

This year MariCal and we, with partners Florida Power and Light, US Fish and Wildlife (USFW), and the Pine Tree Salmon Hatchery in Sanford, have embarked on a highly promising trial program to produce the most numerous and hardy salmon smolts in the Saco since the dams of the industrial revolution were built. The accompanying article by Tim Linley, senior scientist for MariCal, concisely introduces MariCal's SuperSmolt process and what benefits it may bear for the Saco restoration. This is the most ambitious step we've taken since constructing our fry hatchery in 1996 and could quite possibly be a key breakthrough for the long-term success of our mission.

Next year we'll be busier than ever with simultaneous fry and smolt programs. In February we'll receive eyed-out eggs from USFW Green Lake hatchery, most for our fry program and up to 50,000 to produce smolts. In March we'll start MariCal's SuperSmolt process on our 25,000 parr now in Sanford's Pine Tree hatchery. About May 1, we'll stock the sea-ready smolts close to Saco tidal waters. During the rest of May we'll stock our hatchery fry as usual.

Our expectations for returning adults salmon in the Saco are high. By 2007 we'll hope to realize marked improvement in their numbers. However, as well as we perform our roles, our influence ends when we put the fish in the water. The rest is up to the fortunes of the fish and the beneficence of nature.

We hope to see you at our final membership meeting of the year at the Trinity Church in Saco on Wednesday, December 8, at 6pm. Our best wishes to you all for serenity during the holidays and good fortune for 2005.

Membership Memos *By Jack Parker*

Recently our membership committee mailed a letter of acknowledgement to all members listed in our database as paid up for 2004. Each letter contained a current year membership card, a handsome leaping salmon decal produced by our Treasurer/Director, Tom DeBruin, and thanks for each member's dues support with a special note for those who made hatchery donations. If you have paid your 2004 dues and did not receive the letter, please email me at jparker@gwi.net or call me at (207) 490-6614. If you intended to pay your dues and didn't pull the trigger yet, we still need and would appreciate your support this year. We have membership cards and decals for all.

Although we are conscientiously frugal with funds donated by members and supporters, most expenses for salmon fry and smolt programs, plus our newsletter communications, are absolutely essential to our Saco salmon restoration. Still, emailed newsletters can significantly reduce our printing and mailing costs. Our database lists many members with email addresses who receive a mailed version. If snail mail were eliminated for all these, the savings would exceed \$1,000 annually. We are in the process of contacting our readers to see if an email version will do. Regular mail will still be optional if you wish.

Membership Meeting *By Jack Parker*

If you've guessed by now that our December 8 social meeting will be worth attending, you're absolutely right! At our April banquet, we awarded MariCal our Conservation Award in recognition of their matchless contributions toward restoring wild salmon populations. MariCal scientist, Steve Jury, will show us the how, when, and why of their process, a clear and compelling lesson in state of the art ichthyology. This is a must.

The doors of Trinity Episcopal Church in Saco (just south and across Route 1 from Thornton Academy) will be open at 6pm and a catered dinner served at 6:30. Suggested donations for the dinner are \$7 per adult, kids free!

A short membership meeting to vote on a \$5 across the board dues increase approved at the last directors' meeting will precede Steve's presentation. Please come and join us!

Super Smolt in the Saco? By Tim Linley

Restoring wild salmon to Maine's rivers is complicated by numerous factors, some of which are obvious, such as the loss of rearing habitat and dams that impede the migration of smolts and adults. Others, however, can be more subtle. Research has shown that one of the most important factors affecting salmon survival is the water chemistry of the rivers and streams that the fish depend on for spawning and rearing. The hydrogen ion concentration, or pH, and the concentration of ions such as calcium that fish need for growth and development, have a marked effect on the salmon productivity of a stream. Calcium, as a carbonate in the soil, neutralizes low pH (acidic) water. But in many watersheds acid rain from air pollution has stripped much of the calcium from the soil, allowing other abundant metals such as aluminum to leech out. Aluminum in low pH water is toxic to salmon smolts, impairing their ability to smell and adjust to changing salinity as they migrate to the ocean, resulting in reduced salmon production.

MariCal, Inc., a Portland based marine technology company, is developing solutions to this problem for Atlantic salmon restoration, while at the same time improving the market prospects for commercial salmon growers. At the center of MariCal's technology is its proprietary SuperSmolt® process, which pre-adapts Atlantic salmon smolt to seawater while they remain in fresh water. The process is based on MariCal's discovery that proteins called calcium receptors (CaRs) are salinity and nutrient sensors in Atlantic salmon and generate essential chemical signals responsible for the growth and survival of salmon as they transit between freshwater and seawater. Importantly, CaRs sense ratios rather than concentrations of ions such as calcium and sodium, which allows small amounts of these to be used in the SuperSmolt® process to convince the salmon it's in seawater and not freshwater. After six weeks of the process, SuperSmolt® treated salmon enter seawater without osmotic stress or mortality and begin feeding immediately and vigorously. In contrast, wild salmon smolt and smolt produced by salmon farmers, which are not acclimated to seawater, require a period of several days to several weeks to adjust to the high salinity in the ocean. The stress and time needed to acclimate to seawater acclimation reduces growth and increases the risk of disease or predation. Because wild and cultured salmon often utilize the same freshwater sources, exposure to low pH water with aluminum can further compromise their chances for survival. The SuperSmolt® process can help salmon cultured for restoration or commerce by mitigating these effects and improving survival in the ocean.

To date, commercial salmon growers have successfully produced nearly 25 million SuperSmolt® worldwide. Beginning in 2003, the NMFS and USFW initiated a trial to test the utility of the SuperSmolt® for increasing returns of Atlantic salmon smolt stocked into the Penobscot River. Preliminary evaluations from releases in 2003 and 2004 indicate that, compared to control fish, SuperSmolt® show enhanced seawater tolerance and more rapid downstream migration. Most importantly, however, of the 8 tagged groups of smolt released in 2003, the SuperSmolt®

treated group had the highest grilse return of all (19), which was more than double the control group (9). This trial is scheduled to be repeated in 2005. We also received funding from the National Fish and Wildlife Foundation to conduct a similar trial on 5500 smolts stocked in the Saco River in 2004. Parr that were surplus to smolt production at Green Lake National Fish Hatchery were brought to southern Maine and reared at the Pine Tree Trout Farm near Sanford until release in April 2004. Next spring, a release of about 25,000 SuperSmolt is planned for the Saco, and perhaps as many as 50,000 in 2006. Based on only historic rates of return, we're hoping that these releases could eventually produce upwards of 150-200 returning adult salmon, and more if the SuperSmolt® process succeeds as it has with commercially cultured salmon. The project involves collaboration by the Club, MariCal, USFW, and FPL. Stay tuned!

Temperature Loggers Help Locate Fry Habitat By Mark Woodruff

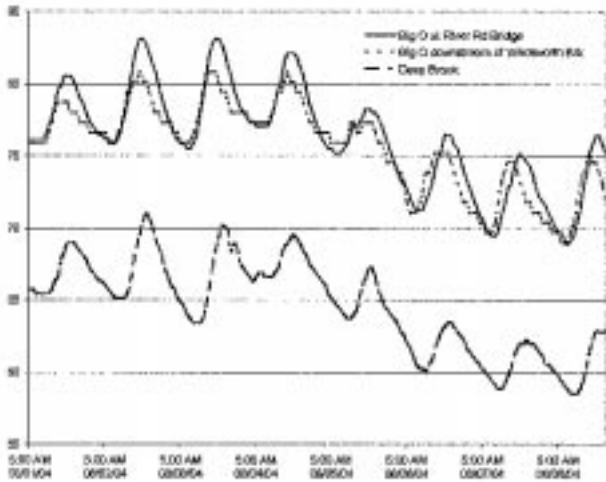
This past summer Club volunteers deployed six temperature loggers in tributaries of the Saco River. Thanks go to Steve Berry, Tom Knoblock, Bob Monroe, Nick Sibilis, and Emile and Rosanna Woodruff for helping put the loggers in streams we annually use for fry stocking. Thanks also to Matt LeBlanc of FPL Energy for loaning us an extra logger when one of ours was put on the disabled list. Steve and Nick placed loggers in Deep Brook, Saco and Thatcher Brook, Biddeford. Tom placed loggers in Berry Brook, Dayton and Stoney Brook, Hollis. Bob, Emile, Rosanna, and I placed loggers at two locations in the Big Ossipee River.

The Club has used the loggers successfully for the past four years. I'm guessing at the physics principle here, but I think each logger consists of a submersible "thermistor" that measures water temperature changes based on changes in electrical resistance. Each logger is programmed before being deployed to record hourly. Once retrieved, the data is downloaded to spreadsheet software.

To give you an idea of what the data looks like, here is a one week (July 1, 2004 to July 8, 2004) comparison of the water temperatures at two locations on the Big Ossipee and one on Deep Brook.

The top bold line on the graph represents water temperatures in the Big Ossipee River just upstream of the River Road Bridge in Cornish. You will notice that the river became quite warm reaching a maximum temperature of 83 degrees F. Each day the water reached its coolest temperature about 5:00 A.M. Mirroring those variations was the logger just downstream of Wadsworth Brook, a tributary to the Big Ossipee. Perhaps due to shade or the cooling effect of the brook, the logger recorded slightly cooler high temperatures than its downstream partner.

The bottom line of the graph represents temperatures in Deep Brook. The spring fed brook provided cool water during the week and remained in this range throughout the summer. These are excellent water temperatures for our maturing fry that fishery



biologists like to see. Also noteworthy, was the similar drop in temperature at all three streams. Go ahead take an educated guess: what did we have too much of this past summer?

This data will be sent to Paul Christman at the Maine Atlantic Salmon Commission. He uses it to determine which streams have desirable temperatures. Going a step further, the data helps to identify which tributaries are good candidates for stream habitat surveys. On only one or two streams has the Club ceased stocking because of lethal summer temperatures. Over the past four years of deploying loggers we have found most tributaries to have the cool water temperatures needed for fry survival.

Fishing Idaho's Steelhead By Harvey Patry

Victoria and I fished three days in North Central Idaho, located on the Lewis and Clark trail which winds through the Nez Perce and Clearwater National Forest. We stayed in the Kamiah Valley, home of the Flying B Ranch. We landed 12 steelhead, averaging ten pounds each. The Flying B Ranch is an Orvis endorsed wing-shooting and steelhead fishing lodge.



Saco River Salmon Club Membership Form

Name:
Address:
City: State: Zip:
Phone: ()
E-mail address

Dues are annual - January through December

Single \$15 Family \$25 Student \$5 Senior \$5 Life \$300
Donation to hatchery \$

I would like to volunteer in the following areas:

- | | |
|--|--------------------------------------|
| <input type="checkbox"/> Board of Directors | <input type="checkbox"/> Newsletter |
| <input type="checkbox"/> Hatchery Operations | <input type="checkbox"/> Stocking |
| <input type="checkbox"/> Hydropower Issues | <input type="checkbox"/> Legislation |
| <input type="checkbox"/> Public Relations | <input type="checkbox"/> Membership |

Submit your short article for "The Salmon Run."

General interest stories, recipes for fly tying or foods, comments and suggestions are welcomed. The editors reserve the right to edit all materials. Send to RJ Mere, 9 York St., Kennebunk, ME, 04043 or email to rjmere@gwi.net

Visit our website at www.sacosalmon.org

Editors: Dan Bonville and RJ Mere

