THE CONNECTICUT RIVER SALMON ASSOCIATION N·E·W·S·L·E·T·T·E·R

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Everything But Salmon

By Ted Williams, Conservation Editor, Fly Rod & Reel *magazine and Editor-at-Large,* Audubon
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The 407-mile-long Connecticut River dwarfed the continent's other Atlantic salmon streams. Each spring shoals of salmon, strung like stars across the vastness of the North Atlantic, moved from their rich feeding grounds off Greenland into Long Island Sound, then surged upstream. Through Connecticut, Massachusetts, Vermont and New Hampshire, they veered off into tributaries, climbing high into the Green Mountains and White Mountains, hurdling over falls, waiting out summer droughts, spawning under gaudy leaves, holding through winter, sweeping back to the sea on spring floods.

Then in 1798 the Upper Locks and Canal Company blocked this ancient migration with a 16-foot-high dam at Turners Falls, Massachusetts. Pollution and more dams followed, and within a few years Connecticut River salmon were extinct. Fish ladders and fry stocking in the 1870s and 1880s failed.

A second restoration attempt had just gotten underway in 1970, when I signed on as wildlife journalist with the Massachusetts Division of Fisheries and Wildlife. Quoting state and federal biologists, I assured the public that the Connecticut River system would sustain "thousands" of salmon within a decade. Today it sustains about seven million. Unfortunately, they're fry — stocked by the four states and the US Fish and Wildlife Service. Annual returns of adults in 2001 and 2002 were 40 and 44, respectively.

Something has gone dreadfully wrong with Atlantic salmon restoration, but not in the river. Juvenile salmon thrive in freshwater, then vanish at sea. It's happening not just to Connecticut

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CONNECTICUT RIVER SALMON ASSOCIATION

ANNUAL DINNER AND RAFFLE / AUCTION

Saturday, January 24, 2004

The Hawthorne Inn
2421 Wilbur Cross Highway, Berlin, CT
Social Hour and Raffle / Auction Review 5:00 - 6:30 PM
Dinner 6:30 PM

$35 per person

Guest Speaker
Stephen Sloan, author of
Fly Fishing Is Spoken Here and *Ocean Bankruptcy*

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- "Reasonable Length" Live Auction
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Ed Ruestow at (860) 521-1426 or Jim Carroll at (860) 236-5181

or download your reservation form at www.ctriversalmon.org

Annual Meeting To Precede Dinner

The annual meeting to elect directors and conduct other appropriate business of the membership is scheduled for 4:45 PM on January 24, 2004 at The Hawthorne Inn, Berlin, CT.

The meeting has been called by CRSA President Robert A. Jones and a Notice of the Meeting with a Proxy have been sent to all the members of record as of December 15 by CRSA Secretary, James J. Carroll. The meeting will be followed at 5 pm by an Auction Preview and Social Hour, and the Annual Dinner at 6:30 pm. ◆

A Small Measure of Success

Robert Jones, President, CRSA

As reported in the last issue of this newsletter, actual and anticipated budget reductions within the US Fish and Wildlife Service (USFWS) and state agencies have left, or will leave, important facilities associated with the Connecticut River Atlantic salmon restoration program short handed and in need of proper maintenance and upgrading.. State budget crises will affect the ability of the partners to address needed tasks. The Connecticut River Atlantic Salmon Commission (CRASC) had developed a request to Congress for funds to be added to the 2004 Interior Department budget to cover the existing shortfalls within the program. The add-on, $770,000 allocated to the USFWS and specifically to CRASC, was not included in the House version of the Interior budget. However the Senate Appropriations Committee version included $500,000 for this purpose. In conference, the final appropriation bill contained a provision for $250,000 for CRASC. Subsequently the bill was signed by the President. The fact that even $250,000 was allocated to the restoration program and thus this small success was due in large part to the efforts of members of this Association and to other citizens committed to the restoration effort.

Once it became clear that at least some funding was to be made available, CRASC commissioners had the task of allocating $250,000 to activities with a defined need for $770.000. In a CRASC news release announcing the receipt of the funds Commission Chairman Ed Parker noted that this is the first time the Commission has ever received direct funding from Congress. He said, "We currently have a remarkable opportunity to protect, maintain and improve the status of migratory fish and their habitat and these funds are critical to the ongoing effort in four states." Parker went on to say that the Commission has "assessed the overall program and made adjustments designed to make the best use of available funds."

Budget cuts in the State of Connecticut and insufficient new federal funds, caused the state, in consultation with the commission, to close the Whittemore Salmon Station. Although this facility serves an important role in managing fish health, holding wild adult Atlantic salmon for egg production, and protecting the genetic variability of the Connecticut River salmon stock, it was deemed it necessary to consolidate the salmon holding and production efforts at other fisheries facilities that are already part of the restoration program. The re-opening of the Whittemore Salmon Station will depend on funding levels, logistics, disease concerns, and increased salmon returns.

The new funds will allow the Commission to continue current efforts to maintain the anadromous fisheries restoration program including the management and marking of genetic brood stock and progeny to evaluate hatchery-released salmon and habitat. The production and release of Atlantic salmon juveniles in all four-basin states will continue. Improvements will be made to adult salmon handling and egg incubation capacity at other facilities, due to the closure of the Whittemore Salmon Station.

Discussions are currently underway on the best means to acquire the needed additional federal funds in the 2005 budget. Citizen involvement in the process will continue to be essential. ◆

Coming Soon … "Meet the Scientists"

Upcoming issues of this newsletter will feature a new column called "Meet the Scientists" in which we will profile the individual fisheries scientists and managers who constitute the Connecticut River Atlantic Salmon Commission Technical Committee. Members of the Technical Committee are assigned by their respective state and federal agencies that make up the Commission. The Committee's charge is to provide sound scientific and management advice to the Commission and to develop, update and implement a management plan for the restoration effort as approved by the Commission. Each member of the Technical Committee conducts his work on the Committee in addition to regular duties as assigned by his agency.

THE CONNECTICUT RIVER SALMON ASSOCIATION

The Connecticut River Salmon Association (CRSA) is a nonstock, nonprofit Connecticut corporation. Our mission is to support the effort to restore Atlantic salmon in the Connecticut River basin, a joint undertaking by the states of Vermont, New Hampshire, Massachusetts and Connecticut, together with the U.S. Fish and Wildlife Service of the National Marine Fisheries Service, pursuant to an act of Congress in 1983.

Funding for The Connecticut River Salmon Association is received from membership dues, donations, grants, and special events. Membership dues, comments, and letters to the editor may be mailed to:

CRSA
76 Deming Street
South Windsor, CT 06074
(860) 644-0159
email: info@ctriversalmon.org

www.ctriversalmon.org

Information on the Low Salmon Returns to the Rainbow Fishway in 2003

Steve Gephard, Supervising Fisheries Biologist, Connecticut Department of Environmental Protection

One adult salmon returned to the Rainbow Fishway on the Farmington River in 2003. This site usually collects dozens of fish. The low return for this primary capture site has prompted many inquiries. A review of the data has revealed the following points:

- Most salmon that returned to Rainbow in recent years were stocked as fry, spent two years in freshwater and two years in the ocean. Therefore, most adults that were expected back in 2003 were stocked as fry in 1999.

- In 1998, the Kensington State Salmon Hatchery suffered high pre-spawning mortality of its broodstock due to fungus and other factors. The 1998 egg take was low; the number of fry available from Kensington in 1999 was low.

- The Farmington River received over a quarter of a million fewer fry in 1999. .All of the unfed fry from the White River NFH that were stocked into the Farmington River (~400,000) were sea-run in origin and suffered extremely poor survival — in some cases 0%.

- The low fry survival was experienced only by White River NFH sea-run fry. While the causes have not been definitely determined, it is believed that the unique incubation temperature regime used for these fish due to their timing resulted in smaller-than-average fry .This continues to be a concern, but to a lesser extent than was observed in 1999.

- Electro fishing surveys in 1999 and 2000 confirm poor survival of Farmington River parr from the 1999 year class. These population assessments led to projections for a very low smolt run in 2001.

- During the beginning of 2001 smolt run, the Rainbow Dam developed a hole in its gatewells, leading to inefficient operation of the downstream fish bypass.

- During the peak of the 2001 smolt run (mid-May), the Farmington River Power Company drew the pond very low to repair the hole, de-watering the bypass and the Rainbow Fishway. This resulted in all river flow passing through the turbines — the worst possible situation at the worst possible time.

- In conclusion, conditions were at their absolute worst for the 1999 fry class — and a poor return of adults in 2003 was predictable.

On the bright side, all of the above factors improved in subsequent years. In fact, during the spring of 2002, the Rainbow downstream bypass performed, as designed, for the entire smolt run-for the first time in its brief history. This gives reason to be optimistic that adult returns to Rainbow will increase in 2004. ◆

CRASC *(continued from page 6)*

high but marine and/or estuarine survival continues to be much lower than previous years.

Four of the salmon captured at Holyoke were radio tagged and released. Three of the four eventually passed back downstream of Holyoke and were recaptured at lower fishways and retained for broodstock. One was captured at Rainbow on the Farmington, one was captured at the Decorative Specialties Inc. (DSI) dam on the Westfield and one was captured at Holyoke in the fall. The other salmon reached the Cabot area but passed back downstream and its current whereabouts is unknown.

A smolt mark-recapture estimate at Cabot and Holyoke resulted in a high estimate (80,000) of smolts passing Holyoke but the estimate had wide confidence intervals due to relatively low numbers of smolts marked and recaptured due to high flows. This is the second highest estimate in the time series but may not be truly higher. However the index station smolt data also showed high production in the habitat prior to migration.

Index site data collected this summer and fall have not been completely analyzed. MAFW was not able to do any index station assessments this year due to lack of seasonal help. It appears that densities of both young of the year and yearling parr are in the normal range throughout the basin and size/growth is above average due to the wet summer.

Shad Studies Workgroup

A total of 287,000 shad were counted at Holyoke, down about 100,000 from last year. As previously mentioned shad passage at Vernon and presumably at Turners Falls was very low. Shad counts also declined at DSI (2,800 to 1,700) and Rainbow (110 to 80) from last year. Blueback herring counts were very low again, only 1,400 passed Holyoke.

A total of 869 shad were trucked for spawning above Vernon, 1,000 were trucked to the Ashuelot and 850 shad were trucked to various rivers in Connecticut. Blueback herring were trucked to the Westfield (88) and Ashuelot (47) rivers. ◆

Current and archived issues of this newsletter are available on our website at

www.ctriversalmon.org

The CRSA School Program

2003-2004 Teacher Orientation Draws 'Largest Crowd Ever'

By Dick Bell, CRSA Vice President, Education Committee Chair

Our Orientation for new teachers in both old and new schools, and for veterans seeking a refresher, was held on Nov. 17, 2003 at the splendid corporate headquarters of CIGNA Insurance in Bloomfield. This was a new site for us, and a very welcomed one indeed. It is elegant, spacious, with more than adequate parking and we are given access to the very superior CIGNA staff cafeteria. All of this comes from the generosity of CIGNA and Mr. Woodie Wright, Vice President of Contributions and Civic Affairs at the company, for which we are most grateful. Just a few days ago, CRSA Sec. Jim Carroll passed on to me an invitation from our helpful contact, Barbara Steadman of Contributions and Civic Affairs, to return in the fall of 2004. It took us about 1.5 seconds to make that decision!

Barbara Steadman, of the Contributions and Civic Affairs Department for CIGNA, is flanked by CRSA president Bob Jones, left, and CRSA vice president Dick Bell on the right. CIGNA generously hosted the CRSA 2003-2004 Orientation at its corporate headquarters in Bloomfield. (Photo: J. Carroll)

We had the largest crowd ever — a total of 60 people at peak attendance. All of our new schools but one attended. The exception was Lyme Consolidated, which is "new" in one sense, but actually a veteran of several years of past experience. It had to drop out last year, only because of an extensive construction project at the school. Rebecca Pote is the lead teacher there, and is a CRSA graduate and an enthusiastic veteran. Many old schools sent new teachers. This is required of new teachers in old schools, if there is no CRSA trained person in place, just as it is required of all new schools. Many schools sent teams of teachers, and several veterans returned for a refresher. Our guest list included Janice Rowan of the US Fish and Wildlife Service, who operates as chief of staff to the Connecticut River Atlantic Salmon Commission, and Chris Dudley of the Rhode Island Department of Environmental Management.

We'll be taking our Orientation on the road again this year. Chris Dudley has invited us to Pawcatuck, RI, to participate in the indoctrination of a dozen teachers in a new school program organized around a restoration effort on the Pawcatuck River. This will be a very interesting liaison for us.

Feedback from the Orientation indicates the high value attendees placed on the presentations of veteran teachers. This year, Marjorie Drucker of North Haven M.S. and Doug Gagne of Catherine McGee M.S. in Berlin both spoke of their experiences — Marge, from the perspective of the person who was, in 95-96, our first and only teacher in the program. Doug spoke from the perspective of one who had been in the program for the very first year last year; his enthusiasm is illustrated by the fact that he will be managing four tanks in that school this year. Mary Pat Coburn of Smith M.S. in Glastonbury would have joined them were it not for a sudden and severe illness in her family. We are also grateful to Steve Gephard, Supervising Fisheries Biologist of the Connecticut Department of Environmental Protection, for his excellent participation.

Our Orientation program continues to grow in scope and scale; we're pleased to have been invited to Rhode Island, as we were to Vermont a couple of years ago. The spread of this program throughout western New England is a source of pride for us.

In a future newsletter article, I hope to explain to you the importance and excitement of the restoration programs carried out on the Merrimack River in Massachusetts and the Pawcatuck River in Rhode Island. ◆

We welcome articles or news from participating schools or teachers for this column. Please submit materials to:

The Bus Stops Here!

Elaine Holcombe, CRSA director
P.O. Box 627
Oquossoc, ME 04964-0627

School Program Update

By Dick Bell, Education Committee Chair

Students from Lyme Consolidated School take part in a stock out at Eight Mile River in May of 2003. (Photo: J. Carroll)

The CRSA School Program for 2003-04 will be its largest ever. We anticipate that 200 eyed salmon eggs will be delivered during the first two or three weeks of January, to each of 86 tanks in 62 schools across Connecticut. The exact delivery date will be ironed out by CRSA education committee volunteers shortly after mid-December, and all schools will be notified promptly. In the meantime, all schools — old and new — have been advised to have their tanks and chiller up and running before the Christmas vacation.

The excess tank number over schools comes about, of course, from the fact that some schools operate more than one tank, generally in multiple classrooms. The all-time champion for this is the famous Tyl M.S. in Oakdale, which operated 7 tanks in 7 classrooms in 2002-03, and will do the same this year.

Four old schools added tanks for this year: Carmen Arace M.S., Bloomfield, N.E. Challenge School, Brooklyn, and T. Wallace M.S., Newington, all added one additional tank. Catherine McGee M.S. of Berlin added three tanks.

New schools are as follows:

Andover Elem.	Andover	1 tank
Hebron Elem.	Hebron	1 tank
Kingswood-Oxford	W. Hartford	1 tank
Lake Garda Elem.	Burlington	1 tank
Lyme Consolidated	Lyme	1 tank
Moylan Elem.	Hartford	1 tank
New Fairfield M.S.	New Fairfield	1 tank
Rocky Hill H.S.	Rocky Hill	1 tank
Suffield AgriScience	Suffield	1 tank
Two Rivers Magnet	E. Hartford	2 tanks

The total of new schools, 10 of them with 11 tanks, brings our grand total to 62 schools with 86 tanks! Eighty-six tanks translates to 17,200 salmon eggs! We wil1 poll teachers for the exact number of students involved, but on the basis of last year's 3,000 plus figure, it could approach 5,000 this year. We look forward to a busy and exciting year! ◆

Rhode Island Launches "Salmon in School" Program

By James Carroll, CRSA Secretary

In September, Christine Dudley, Supervising Fisheries Biologist for Rhode Island Fish & Wildlife, and the state Aquatic Resource Education Supervisor, announced the start-up of a "Salmon in School" program. "RI Fish and Wildlife's Aquatic Education Program was very impressed with Connecticut's School Program and felt that this would fit in well with our federal aid program, which has a new aquaculture component. The excellent experiential based, mutli-disciplinary aspects for students as well as the support it will foster for our Atlantic Salmon Restoration Program makes it a winning combination for our state. We're pleased to become part of this impressive regional effort," she said.

A successful Atlantic salmon restoration effort has been operating in the Pawcatuck/Wood River Basin for a number of years with salmon fry and smolts being supplied from a Federal hatchery in Attleboro, MA. Returning adult salmon have been captured and sent to the Attleboro facility for new breeding stock. The long-term objective is to create a self-sustaining run of wild Atlantic salmon for angling in the Pawcatuck River system.

The school project began with an August visit by CRSA board members Jim Carroll and Bob Wolter to Rhode Island's Department of Environmental Management and then to Dudley's office. The CRSA School Program was presented and information about other school programs in the CT River Basin, Maine and Canada were offered.

RI Fish & Wildlife's Kimberly Sullivan was assigned the project and arranged a very successful November school recruitment meeting. A surprising thirteen schools have now signed up for the first year of the program and a Teachers Orientation is scheduled for early January as a first step. Through introductions from the CRSA Education Committee, Sullivan

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Annual Report of the CRASC Technical Committee

Prepared by Jay McMenemy, Vermont Department of Fish and Wildlife and CRASC Technical Committee Chair

Fish Culture Workgroup

Stocking/Spawning/Egg Production/ Egg Incubation

A total of 7 million fry was stocked last spring into habitat in the four basin states. This is about the same level as last year, but well short of our 10 million goal and the 9.6 million we stocked in 2001. Agency staffs were again assisted by hundreds of volunteers.

A total of 88,000 smolts were stocked from the Pittsford National Fish Hatchery (NFH) last spring into the Connecticut River mainstem and the Farmington River. This is the first smolt stocking since 2000. Pittsford NFH has about 100,000 smolts for stocking next spring.

The egg take for 2003 was projected to be about 10.8 million, about a million less than last year and short of our 15 million goal. Egg production is low due to reduced sea-run returns this year and reduced sea-run returns in previous years which have reduced kelt numbers. Also lack of staff and funding at White River NFH has reduced production of domestic eggs. Incubation of even this reduced number of eggs at White River will require funding of seasonal positions and assistance by cooperators due to continued vacancies at White River. Fry stocking next spring will probably be about the same as last year's reduced level.

New Hampshire Fish and Game Department's Warren State Fish Hatchery (SFH.) produced 144,000 fed fry last spring. Warren had not been used by our program in several years due to concerns about disease problems that have been largely addressed. Fry tested negative for disease prior to stocking. About 500,000 eggs were transferred to Warren from White River for incubation this winter.

Domestic broodstock which are surplus to program needs were allocated to the states for use in sport fisheries outside the Connecticut River.

Staffing and budgetary concerns continue to be a major problem at several program facilities. Connecticut Department of Environmental Protection is scheduled to close Whittemore Salmon Station and transfer staff to the trout program on December 31 if funding is not found. White River NFH continues to be short-staffed due to assistant manager and biologist vacancies. All federal facilities have inadequate operating funds.

Genetics Workgroup

Genetically-based broodstock management continued in cooperation with Conte Lab. Sea-runs were genetically typed and matings planned to avoid breeding closely related fish. Much of the egg production of domestic broodstock at White River NFH was genetically "marked" and the resulting fry stocked in ten "regions" made up of one or more tributaries. Smolts and adults produced from marked fry will be able to be identified to tributary of origin (or group of tributaries) by analyzing a small tissue sample (i.e. partial fin clip).

The 2003 year class of future broodstock at White River NFH were not tagged with Passive Integrated Transponder (PIT) tags for future identification due to lack of funds to purchase the tags. They have been maintained as separate regional groups and can be maintained separately for the remainder of their time as broodstock, although individual family information has already been lost. Due to space limitations, this can only be done for one year class; PIT tags must be applied to the 2004 brood stock or the genetic marking of domestic broodstock will not be possible for that year class.

Fish Passage Workgroup

Hydro Licensing

Implementation of improvements to upstream and downstream passage is underway at the Holyoke project as a result of the recent relicensing.

Upstream Passage

Continued evaluations of the Turners Falls fishways were done in 2003 to address the severe problems with shad passage. The Shad and Passage committees decided to abandon evaluation of further modifications at Cabot Station ladder and instead focus on the Gatehouse ladder. Plans are being developed for a new entrance at the Gatehouse ladder downstream of the current location to avoid turbulence. Discussions and designs of a new fish lift at Cabot were started but Northeast Utilities is reluctant to move forward on this issue without further discussions with CRASC.

Fishway monitoring at Turners Falls was done by video tape because Massachusetts Division of Fisheries and Wildlife (MAFW) could not hire seasonal positions. Tapes are being reviewed at several locations and a final count is not yet available. However, only 267 shad passed Vernon this year so passage at Turners was likely also to be very low. Fishways at Bellows Falls and Wilder were not operated this year because no salmon passed Vernon.

Downstream Passage

Pacific Gas and Electric (PGE) has responded to CRASC's request of last November for implementing downstream fish passage at Moore and Comerford Dams. PGE proposed to install a smolt sampler at Moore to collect data on seasonal and diurnal timing of migration to facilitate passage facility development. The Technical Committee approved their plan with modifications with the intention of having effective passage in place as soon as feasible.

Salmon Studies Workgroup

A total of 43 adult salmon was counted at fishways this year. All of the returns were from fry stocking as expected because of lack of smolt stocking the prior two years. Production of smolts from fry stocking as estimated from index station electro fishing surveys and the mark-recapture estimate at Cabot and Holyoke continues to be

(See CRASC, page 7)

Salmon *(continued from page 1)*

fish, but to the species throughout its range. Satellite imagery reveals drastic cooling of ocean habitat. One favored theory attributes it to runoff from the melting ice cap.

Among anglers, impatience has turned to pique. For example, the Lawrence (Massachusetts) Eagle-Tribune's respected outdoor columnist, Roger Aziz, charges that Atlantic salmon restoration "is perhaps second only to [Boston's] Big Dig in wasteful spending of other people's money." He suggests that funds go instead to more trout stocking, and he scolds managers for endangering upstream gamefish by letting parasitic sea lampreys through fish-passage facilities. Meanwhile, restoration is being defunded by the Bush administration to the point that some hatcheries and holding facilities don't have money to feed fish or even pump water.

But while New England waited for salmon, a whole ecosystem came quietly alive. In 1970 managers argued about whether to call the program "anadromous fish restoration" or "Atlantic salmon restoration." Hoping to capitalize on the mystique of *Salmo salar*, they opted for the latter. They used the program to leverage clean-water standards as well as upstream and downstream fish-passage at six mainstem dams and seven tributary dams.

Steve Gephard, Connecticut's anadromous-fish chief, keeps his boat moored on the river where he grew up, in Haddam, Connecticut. "The river reeked in the late 1970s," he recalls. "It would change color according to who was dumping what, and we'd have regular fish kills." Now there are no fish kills, and what he smells is the fragrance of salt marsh, tidal flat, and sun-baked driftwood. He can see his toes when he wades chest-deep to his boat.

With the 44 salmon in 2002 came 377,420 American shad, 3,054 gizzard shad, 77,430 sea lampreys, and 1,950 blueback herring. This was the smallest herring run since accurate records began in 1976, but apparently for a happy reason. In the reborn river below Holyoke herring are being swilled by an estimated 1.5 million striped bass. Other migratory fish such as white perch, alewives, sea-run brown trout, and American eels are thriving. Endangered shortnose sturgeon are on the rebound.

"…the rebirth of the river's ecosystem has given salmon restoration a chance it never had…"

The alewife floater mussel — which had been excluded by dams because its larvae attach themselves to alewives and related species — are reappearing in old haunts. So are yellow lamp mussels and tidewater muckets which infect white perch and probably striped bass. Mussels — particularly the thin-shelled alewife floater — are relished by raccoons, muskrats, and otters.

In sterile, glaciated woodland ponds and streams, the huge influx of nutrients from the sea — in the form of fish carcasses, feces, eggs, milt, and young — has restored a host of native insect fauna which, in turn, has nourished fish. Sea lampreys, native Yankees which limit no marine fish, go blind on their spawning run and can't feed. They make nests with their sucker mouths, clearing pebbles and shaking out sediments; then they all die. The clean bottom attracts spawning salmon. Lamprey carcasses feed caddisfly larvae, which are then eaten by trout and young salmon. If the whole is beautiful, no part can be ugly.

Resident fish such as shiners, chubs, dace, darters, bullheads, suckers, sunfish, yellow perch, smallmouth bass, and largemouth bass are surging back into newly clean, newly fertile habitat. With the explosion of fish has come stunning increases in ospreys, eagles, mergansers, kingfishers, and herons.

The program has paid for itself many times over. So prolific are largemouth bass in the formerly foul and fishless Hartford area that it's a favored site for bass tournaments, including two national championships. Connecticut River shad fishing is now so spectacular that John McPhee has written a book about it (*The Founding Fish*, Farrar, Straus and Giroux, 2002).

The restoration program has alerted the public to the fact that fish are more than quarry for anglers. Coached and partially funded by the Connecticut River Salmon Association, Trout Unlimited, the Vermont Institute of Natural Science, and the Southern Vermont Natural History Museum, more than 100 watershed schools are hatching salmon eggs, rearing fry, and stocking tributaries. At least 18,000 people a year visit salmon fishways in Massachusetts; at least 70,000 visit state and federal salmon hatcheries. The public contributes 8,000 hours of volunteer work, mostly stocking fry and monitoring fishways.

About the only thing missing from the Connecticut River system are healthy runs of Atlantic salmon. As discouraging as this may be, the rebirth of the river's ecosystem has given salmon restoration a chance it never had, provided marine habitat improves. The few salmon that are returning are generally distinct from their principal ancestors — fish from Maine's Penobscot River that were stocked in the 1970s. The difference could be the result of crossbreeding with introduced stock from other rivers. Or it could mean that in barely more than 30 years, nature, with human help, has created something Earth had lost: a race of Atlantic salmon precisely suited to the Connecticut River. If this latter theory is correct, and studies support it, managers at last have the spark to rekindle a dead fire.

The Connecticut River's Atlantic salmon may not be doomed. If the black hole they're falling into at sea turns out to be a temporary phenomenon, and if there's really a new race of salmon honed and polished by perhaps the fiercest natural selection the species has ever known, there's a good chance that salmon restoration will finally succeed. Now is the worst possible time to let the spark flicker out.◆

Rhode Island *(continued from page 5)*

attended the Vermont Institute of Natural Resource November teacher's orientation. She received curriculum material from the Atlantic Salmon Federation and their "Fish Friends" program, watershed curriculum from US Fish & Wildlife Service's "Adopt-A-Salmon Program" Guide plus gained from the experience Trout Unlimited and US F&WL have had in over 30 schools in Massachusetts. Dudley also attended the CRSA November Teachers Orientation in Bloomfield, CT.

Rhode Island Fish & Wildlife is supplying their schools with the tank installations, the salmon eggs from Attleboro and training and supervision drawn from the experience of all the partners in the various New England programs, which now have over 300 schools. "The breadth of the various school programs and the amount of cooperation we have been offered has been wonderful in getting us started," according to Dudley. ◆

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76 Deming Street
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