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

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Atlantic Salmon: A Question of Values

By Janice N. Rowan, Executive Assistant
Connecticut River Atlantic Salmon Commission

Connecticut River Atlantic Salmon Restoration enthusiasts are sometimes stumped and disheartened by Program critics who cite high cost and low returns as justification for eliminating the Program. Some call for an examination of the science behind the restoration because, among other things, at least one archaeologist says that salmon don't belong here. Even the endangered species aspect of salmon restoration in Maine is undergoing peer review. So how is anyone supposed to defend or assert the importance and practicality of reauthorizing the Connecticut River Basin Atlantic Salmon Compact, let alone justify an additional $9 million in funding, as Senator Bob Smith (NH-R) and Representative John Olver (MA-D) have proposed?

Representative Olver said it best: "If we are to serve as responsible stewards of our environment, we must return salmon to the river." And, he added, "If this effort is to be successful, we must give the state and federal agencies the resources they need."

Salmon returns are low this year and they have been disappointing for the last couple of years. However, it is important to realize that low returns are not unique to the Connecticut River Program. Salmon have disappeared from 15% of their known native rivers. They've been completely extirpated from Germany, Switzerland, the Netherlands, Belgium, the Czech Republic and are close to extinction in Estonia, Portugal, Poland, the United States and parts of Canada (WWF, 2001).

What's especially disappointing about low returns here is that they preclude the Connecticut River Atlantic Salmon Commission from meeting all of the Program needs. For example, though suitable salmon spawning habitat exists in the watershed, only 10% of the returning adults are released above Holyoke, MA. The remainder is captured for use in hatchery production programs. Even so, biologists expect few of the nine million juveniles released in the watershed annually to return safely as adults. This is because the original

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Reauthorization Update: Where We Are Now

During the winter of 2000-2001, the Connecticut River Atlantic Salmon Commission (CRASC) and the US Fish and Wildlife Service (USF&WS) developed a program describing the need for additional funding for the Connecticut River Anadromous Fisheries Restoration Program and for the reauthorization of the Connecticut River Compact legislation.

Members of CRASC, representatives of the USF&WS and representatives of interested non-governmental organizations, including the president, vice-president and secretary of the Connecticut River Salmon Association, traveled to Washington, DC, to present the program to the staffs of the Connecticut River basin Congressional delegation.

As a result of this initiative, Senator Bob Smith of New Hampshire filed Senate Bill 703 that reauthorized CRASC and authorized an appropriation of $9 million over five years. Representative John Olver of

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Connecticut River Atlantic Salmon Commission

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➥ ***Attendance, Donations Up for 2001 Dinner, see page 9***

Will Atlantic Salmon Ever Be Restored?

By Robert Jones, CRSA President

Earlier this year, editorials appeared in a number of local Massachusetts and Connecticut newspapers that were critical of the Connecticut River Atlantic salmon restoration project. The editorial writers took issue with the alleged "100 million dollars" spent on the effort to date, the return of only 41 adult salmon this year and the legislation, co-sponsored by the entire Connecticut River Basin Congressional delegation, to reauthorize the Connecticut River Atlantic Salmon Compact. Unfortunately, the writers did not avail themselves of all of the facts associated with the Connecticut River Fisheries Restoration Program.

The program, initiated in 1967 by the fisheries agencies of the four Connecticut River Basin states and their federal counterparts by the means of a "handshake" agreement, had as its primary goal the restoration of American shad to their historical spawning grounds. Resident species and other anadromous species including Atlantic salmon were also included for consideration. It was clear from the beginning that fish passage facilities at mainstem and tributary dams would be necessary to attain the goal of the program. It was believed that shad historically reached Bellows Falls, Vermont, whereas salmon were able to negotiate the river as far north as Beecher Falls in northern Vermont. By the provisions of the Federal Power Act and through negotiation with the relevant power companies, fishways were required at five mainstem dams: Holyoke, MA, Turners Falls, MA, Vernon, VT, Bellows Falls, VT and Wilder, VT. A significant portion of the funds expended to date on this program was expended by the power companies to construct the fishways required to pass American shad. With the completion of the fishway at Vernon Dam in 1981, the primary goal of the program was reached. Shad were returned to their historical spawning area and beyond.

As efforts associated with shad restoration neared completion, the public interest in the Atlantic salmon aspect of the program became more intense. In order to provide a more formal institutional arrangement for the program administration, legislation was drafted which, when enacted by all four basin states and ratified by the US Congress, created the interstate compact known as the Connecticut River Atlantic Salmon Commission. No funds have ever been appropriated by Congress specifically for the Commission. Work that has been done in this program since the beginning has been accomplished by the state and federal fisheries agencies with regular operating budget funds and, in the case of the states, with broad-based federal aid to anadromous fisheries restoration and federal aid to sportfish restoration funds. And herein lies a part of the problem: flat funding for many years, unfilled staff vacancies, and deteriorating infrastructure.

There is no question that the return of Atlantic salmon to the Connecticut River is a monumental undertaking. The Connecticut River salmon disappeared 200 years ago. Recreating this strain of fish may be without precedent and the fact that 41 salmon, introduced into the Basin streams as inch-long fry, migrated as six-inch juveniles as far north as the west coast of Greenland and then returned as eight pound adults must be considered a measure of success for the program. The Basin Congressmen who embraced the reauthorization of the Compact did so because they recognized that the program was good for the fish, good for the River and good for the residents of the Basin. Fisheries scientists, managers and administrators, conservationists, and knowledgeable citizens are satisfied that, with the proper attention, salmon can and will be restored. ◆

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:

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

www.ctriversalmon.org

CRSA Annual Meeting Set

The annual meeting to elect directors and conduct other appropriate business of the membership is scheduled for 4:45 PM on January 26, 2002 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.

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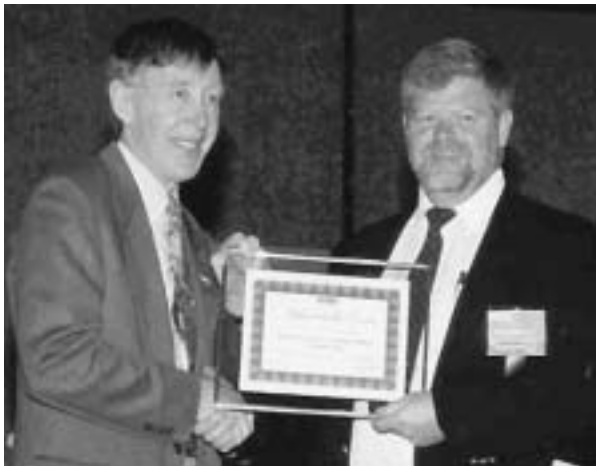
and address the causes for declining and depleted populations of migratory fish in the Connecticut River. Though there is no funding currently available for a review, a significant portion of the proposed increase in funding would address this issue and could even be directed toward a more comprehensive review.

Ultimately, restoring Atlantic salmon means restoring a river. Clean water and a healthy river will support biodiversity, and this in turn will lead to a more a more balanced ecosystem, which makes economic sense in a land where being penny wise can be pound foolish. Taking care of salmon is still the right thing to do. New Englanders, in the past, have affirmed both a tangible and an intrinsic value for salmon and other native fish and wildlife. It is up to these people, once informed, to determine whether the cost to restore an ecosystem to its balanced state is still worth the price. In the end, the decision to restore migratory fish, including salmon, to the Connecticut River is one that the public must make.

For more information, go to http://www.thomas.loc.gov and type bill numbers (S. 703 and H.R. 2062).



Commission Receives Award

Tom Menard (right), Massachusetts Public Representative on the Connecticut River Atlantic Salmon Commission, accepted the Ambassador for Science Award on behalf of the Commission this past April from the director of the US Geological Survey, Charles Groat (left) at a ceremony in Reston, Virginia. The award recognized the Commission's significant contributions toward research and the integration of new scientific knowledge in sound scientific decision-making. (Photo: US Geological Survey)

Reauthorization Update *(continued from page 1)*

Massachusetts introduced House Bill 2062 as a companion to Senator Smith's bill. These bills received the endorsement of the entire Connecticut Congressional delegation and most of the Congressmen from the Connecticut River Basin.

S 703 was referred to the Senate Judiciary Committee, where it passed without change and has recently been passed by the full Senate. HB 2062 was referred to the House Resources Committee where it passed but was amended to reduce the appropriation authorization from $9 million to $5 million. It was then referred to the House Judiciary Committee and to the Subcommittee on Commercial and Administrative Law. By rule the Committee had 30 days from Sept. 5 to act or the bill would be considered approved. But then came September 11, and the rules were changed, giving the Committee 90 days to act. Although an unnamed member of the subcommittee raised concern that the results to date did not warrant additional funding, it has been learned that the bill, as approved by the Resources Committee, has been sent to the House floor for a vote. If the House passes the bill, the difference between the Senate and House versions — $9 million versus $5 million — will be resolved in conference. ◆

Attendance and Donations Increase for 2001 Dinner

By Jim Carroll, CRSA Secretary

The Connecticut River Salmon Association's 26th Annual Meeting and Dinner was held January 20, 2001 at the Hawthorne Inn in Berlin, CT. The Annual Meeting, an auction preview and cocktail party preceded the dinner. The evening included a Silent Auction, a Bucket Raffle, a Live Auction and a Special Raffle.

The featured speaker was Edward Baum of Atlantic Salmon Unlimited. Mr. Baum recently retired after a distinguished career as a scientist and fish biologist for the State of Maine. He is very well known in the United States and internationally as an expert in wild Atlantic salmon. His interesting talk covered the status of wild Atlantic salmon in Maine, and events surrounding the "endangered species" declaration for wild Atlantic salmon in the seven downeast rivers.

CRSA Dinner Chairman Ed Ruestow said the dinner was a huge success. "The attendance has more than doubled in the last three years and we have more donors than any time in the last ten years," Ed said. "The CRSA School Program and the Association's commitment to the basin states has really helped us to grow…. There are now 52 communities in Connecticut which have maps, teachers' manuals and have had teachers' training at a cost of about $200 per school. Our dinner income goes back to dinner attendees' communities." ◆

Debbie Osborne won the grand prize, a $1,000 Orvis fly fishing outfit donated by the Vermont company, at the 2001 Dinner.

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Connecticut stock of salmon was lost almost 200 years ago. The current run is made up of fish that have been introduced from other rivers. These fish must adapt to this river and adaptation is a very slow, natural process that can be expected to yield results but only over many fish generations. In the mean time, only the strongest salmon, those that can best adapt to the river, will live to return.

Though salmon returns in North America and Europe have been greatly impacted in recent years by unfavorable ocean conditions over which we have little control, there are significant restoration improvements and opportunities in the freshwater environment. For example, there is a movement underway to retire and remove unused and unsafe dams. And science and technology have improved radically over the past half dozen years. Researchers have developed brand new tools to answer long-standing questions about genetics, habitat and other factors that affect salmon survival. The answers to these questions will help biologists better manage the salmon that are here.

It is also important to put the cost of salmon restoration into a proper perspective. There is no denying that agencies have spent millions of dollars to restore Atlantic salmon to the Connecticut River. The cost to restore an extirpated species and the environment that it requires to survive is high. When environmental concerns must compete for funds, the time, cost and results of resource management efforts are naturally an issue of great concern.

Yet, the agencies involved in the Connecticut River Atlantic Salmon Restoration Program have recently looked at the cost and results and concluded that the effort is worthwhile. For one thing, there has already been a huge investment by the agencies and the hydroelectric industry. The highest costs were incurred early in the Program and consisted of infrastructure improvements at hatcheries and dams, the latter mandated by the Federal Energy Regulatory Commission. Costs are limited now mainly to salaries and fish production. Moreover, the agencies have always seen the efforts of restoring salmon in a larger context. Money spent restoring Atlantic salmon is money well spent because everything else in the entire watershed benefits, including other native migratory fish, aquatic wildlife, and humans. Annual returns of salmon are indicative of a clean and healthy river. Even so, early agency efforts at fish passage were, in fact, designed to restore American shad, not salmon. So, while the bottom line has to consider the tangible number of salmon returns, it also must take into account the hundreds of thousands of other native and migratory fish in the river, including American shad and striped bass.

A cleaner, less fragmented river also supports additional benefits including recreation, wildlife viewing, swimming, boating and fishing. Anglers make nearly 10,000 trips per year to fish for brood stock Atlantic salmon in Connecticut's Naugatuck and Shetucket Rivers. Commercial fishers take 30,000-70,000 American shad each spring. Over 4,400 recreational anglers fish for shad annually in Massachusetts. Anglers spend 50,000 hours per year fishing for striped bass. Nearly 18,000 people visit the fish windows operated by Northeast Generation Services in Holyoke and Turners Falls, MA. Hatcheries attract 72,000 visitors annually; nearly half of the total of hatchery visitors tour two facilities in New Hampshire. Over 3,600 students in 70 schools are involved each year in cooperative environmental education programs (administered by groups including the Connecticut River Salmon Association and Trout Unlimited) that feature salmon and teach environmental stewardship. And, finally, volunteers donate over 8,000 hours of assistance each year to help restore migratory fish to streams in their communities.

There has been at least one call for an independent review of the Connecticut River Atlantic Salmon Restoration Program. A similar effort has already been initiated in Maine in response to the listing of populations of salmon in eight rivers as endangered. Senator Olympia Snowe (ME) provided $500,000 for a two-year peer review of that program. The National Academy of Science has convened a panel of 14 scientists, mostly academic, to define the issues, see whether the agencies are doing the right things to restore salmon and determine exactly what research is needed. Preliminary findings will be delivered by the end of this year with review completion expected a year after that.

The agencies involved in restoration are not likely to be opposed to an independent review of the caliber provided by the National Academy of Science. The frustration of working to restore fish, yet realizing returns inadequate to meet needs, is something that the agencies would love to fix, especially if it is the product of some sort of flawed science.

A Connecticut River Restoration Program review must not, however, be limited to salmon, because agency efforts on the river are not limited to a single species but are instead very inter-related. A proper review will address other migratory fish restoration efforts including those for American shad, striped bass, blueback herring, alewife, sea lamprey, American eels, and shortnose sturgeon. This is important because the relative success of one species can have a dramatic effect on the other fish species in the river. The tremendous increase in striped bass and its impact on herring is an example. Barring a special appropriation for such a review, the agencies in the Connecticut River basin will be looking carefully at the applicability of results from the Maine review. Moreover, the agencies have already recognized a need for improved research, monitoring and evaluation to better understand

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Anadromous Fish Restoration in Massachusetts

By Caleb Slater, Anadromous Fish Project Leader, MA Division of Fisheries and Wildlife

The Massachusetts Division of Fisheries and Wildlife ("the Division") aids anadromous fish through a number of programs, including the following:

SALMON FRY STOCKING. The focus of Atlantic salmon restoration in Massachusetts is our fry stocking program. Each spring we release two million unfed Atlantic salmon fry into tributaries of the Connecticut River. Approximately 700,000 are stocked into the Deerfield River Basin (in twenty-one tributaries), 700,000 into the Westfield River (in the mainstem and twenty-five tributaries), the remainder into the Fall River, Four Mile Brook, the Manhan River, Mill Brook (Northfield), the Mill River in Williamsburg, the Millers River, and the Sawmill River. The fry are produced from domestic salmon broodstock at the Roger Reed State Fish Hatchery in Palmer, MA and the White River National Salmon Hatchery in Bethel, VT. Fry stocking is supervised by Division personnel, but the majority of the actual work is performed by volunteers. This is a popular activity, and many volunteers return year after year.

Fry growth and survival and estimated smolt production is determined by electrofishing at selected index sites throughout Massachusetts each summer. Results of these surveys have demonstrated excellent salmon growth and survival in our stocked waters with tens of thousands of smolts produced annually.

FISH PASSAGE. To protect salmon smolts as they migrate toward the Atlantic, the Division, with the United States Fish and Wildlife Service (USFWS), has mandated downstream fish passage protection at all federally licensed hydroelectric projects on our salmon- stocked waters. The Division also supervises the operation of five fishways for upstream migration on the inland waters of the state. These include the first dam on the mainstem of the Connecticut River in Holyoke, MA. The fish lift at the Holyoke Dam is of major importance to the Atlantic salmon restoration effort as most of the sea run salmon that return to the Connecticut River are trapped at this facility for transport to the USFWS Richard Cronin National Salmon Station in Sunderland, MA, where they are held for spawning. The Holyoke fishway also passes hundreds of thousands of American shad, tens of thousands of sea lamprey and blueback herring in a typical season.

The next dam on the Connecticut River is in Turners Falls, MA. Here, the Division monitors fish passage through a system of three separate fish ladders that allow anadromous fish, mostly American shad and sea lamprey, to pass the hydroelectric project. Researchers at the United States Geological Survey (USGS) Conte Anadromous Fish Laboratory, located right on the power canal in Turners Falls, have been conducting extensive research on American shad behavior in the fishladders at the project. This research has already led to some fishladder modifications that are currently being tested, and shows promise for increasing the number of fish passing this project.

The Division has been very happy with the success of the newest fishladder in the Connecticut River Basin in Massachusetts. Five years ago, the Rexam-DSI paper mill, as a condition of their federal hydroelectric license, built a fishladder at their dam on the Westfield River in West Springfield, MA. This ladder reopened 14 miles of river habitat for anadromous and resident fish. Each spring thousands of white suckers (a resident species) migrate upstream through this project. They are followed by thousands of American shad and sea lamprey, and Atlantic salmon are trapped at this facility either for transport to upstream spawning areas or to the Richard Cronin National Salmon Station. In 1998, 47 salmon were captured at this project.

The Division also monitors fish passage at the fishlifts at the first two dams on the Merrimack River in Lawrence and Lowell, MA. The Merrimack River

Fry stocking in Western Massachusetts. (Photo courtesy: Trout Unlimited)

maintains substantial runs of American shad and blueback herring, and is also the focus of a multi-agency state/federal Altantic salmon restoration effort comparable to the Connecticut River program. Returning sea run salmon are captured at Lawrence and transported to a USFWS hatchery in Nashua, NH for spawning.

HABITAT PROTECTION. The Division is active in habitat restoration and protection. The Division protects thousands of acres of land each year by either purchasing land, or through conservation restrictions on land throughout the state. Division staff conduct environmental reviews of proposed development, and the Division works closely with the USFWS to protect fisheries habitat through federal hydroelectric plant licensing. The Division has launched the "River Restore" program — an effort to identify and remove dams that are unused, unsafe, or undesirable from a fisheries point of view. The program removed one dam last year, and many more are currently under consideration. With more than 3,000 dams in Massachusetts, and many no longer used, this program has the potential to open miles of river habitat to anadromous fish. ◆

This is the latest in a series of articles on anadromous fish restoration activities in the Connecticut River Basin states.

The CRSA School Program

A Survey of CRSA Participating Teachers

By Elaine Holcombe, Timothy Edwards Middle School Teacher and Member, CRSA Board of Directors

The following article by Timothy Edwards Middle School science teacher and CRSA board member Elaine Holcombe summarizes the results of a survey she conducted during the spring of 2001 of participating CRSA School Program teachers. One goal of the survey was to determine how CRSA could better serve the teachers in its School Program. As a result of the survey's findings, the teacher orientation materials were revised in a new, three-book format which included materials from the Fish Friends booklet.

Of the 54 schools participating in the salmon restoration program, 22 schools responded (40%). Thirteen schools had been in the program between one and three years, and eleven had been involved between four and six years. The results of teacher responses are listed according to the questions which were on the survey sheet.

1. Do you use the FISH FRIENDS booklet?

Fourteen used the booklet and seven did not. Of the "no" responses, half did not know a booklet existed, including a first-time participant and a veteran participant who probably did not have the benefit of the newer notebook, which includes the booklet. Non-users taught throughout elementary, middle school and high school levels.

2. Which lessons have proven the most meaningful or successful?

There was a lot of diversity in responses. Lesson 6 was most used, followed by lessons 2 and 5. Within the lesson chapters, the activity lessons have dots that represent the number used most within the framework of the larger lesson chapter.

3. If you have made adaptations to the lessons in the booklet, which lessons did you improve?

Timothy Edwards veteran CRSA schools program teacher and CRSA board member Elaine Holcombe, left, with students during a fry stocking trip last May. (Photo courtesy: Elaine Holcombe)

Adapted, modified, or extended lessons and/or activities included the following: hyperstudio projects, life cycle strips, birth announcements, postcards where students tell what they already know about fish, diamante poetry using fish forms and sponge painting. One response had visual aids of mounted salmon/trout fossils. Some used the activity sheets as worksheets. The FISH FRIENDS booklet was invaluable to one teacher who had students whose first language was not English. Even Travis the Trout in song was an added feature at the end of some lessons.

4. Have you noticed a growing student interest as the program continued or has it waned?

Program on the average continues to be high and motivating for students. Ten of those who responded said that interest was increasing, nine said that interest remained the same, and one said that interest was tending to remain the same or wane. Some schools experienced former student participants returning to check up on the new tank. Interest in becoming involved in the program tends to excite the new students entering a new grade level. Some have said that interest fluctuates because of the slow development of the salmon. Another teacher maintains his students' interest by assigning eggs to students so that they monitor the development of their particular eggs over the course of the months that follow. One veteran teacher said that student interest was high in watching the fish develop but that there was some loss of interest that had to do with producing projects for River to the Sea.

5. If you had to decide upon one improvement or change in the program, what would it be?

Some first year participants wanted a more defined orientation to the program and what it can offer teacher and students. Other suggestions came from a variety of total years in the program. Here are a few:

- ✔ Have a student symposium
- ✔ Find out what other schools do on release day
- ✔ See how to integrate the program into existing curriculum — make a natural fit
- ✔ Incorporate FISH FRIENDS, an acid rain unit, Project Wet, and Adopt A Salmon
- ✔ Have a resource person to bring slides and hands-on activities
- ✔ Make salmon hatcheries available so students can observe developmental changes
- ✔ Have more materials available that show the embryonic development of salmon

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- ✔ More contact by CRSA
- ✔ Some are happy with their contact with CRSA

6. Has the program helped to enhance the connection to other grades, teachers, parents, community?

Most agreed that the program helps to make connections with teachers, students, parents, as well as the community at large. It appears that veteran teachers have been more able to give positive as well as successful evidence of support in this area.

7. Would teacher networking be beneficial? How can this best be done?

Of those answering, most agreed that networking would be worthwhile. How to accomplish that task was another story. Here is a list of ideas:

- ✔ Dealing with schools in the same area
- ✔ Communicating within your own building
- ✔ Using the internet/directory
- ✔ Having regional meetings of interested teachers
- ✔ Having an annual meeting to share ideas, discuss problems
- ✔ Using the CRSA website
- ✔ Relying upon other teachers in the same school to help each other troubleshoot
- ✔ Visiting teachers in towns close by to compare notes on methods, techniques, and strategies
- ✔ Having in-service workshops

8. Have you used the CRSA website? In what capacity have you done this?

Five out of sixteen teachers said they had used the CRSA website (at www.ctriversalmon.org). Some did not know it existed. Those who did use it found it beneficial in that questions were posed and solved easily. Some teachers had downloaded materials and used them to expand the materials in FISH FRIENDS or to add dimension to a lesson. One said that the website helped in dealing with tank failure.

It is encouraging that all but one respondent indicated increasing or continued interest in the program, with most indicating an increasing interest. This is critical to the continuation of the program. The positive responses to Question 6 indicate that networking (building connections both within and outside the school community) should be continuously emphasized as well as improved.

Positive gains as well as appropriate changes to the program can only come from its dedicated school participants. The CRSA program, while keeping the core message intact, needs to be constantly improving and changing so as to keep the energy flowing in a positive direction as we maintain high student and teacher interest. ◆

CRSA Hosts 2001 Teacher Orientation

By Jim Carroll, CRSA Secretary

The 2001 Orientation for new CRSA School Program teachers was held on December 1, 2001 at the Marriott Hotel in Farmington, CT. This session, organized by Education Committee Chairman Dick Bell, is held for new teachers, CRSA volunteers, and others who contribute to Atlantic salmon education in the Connecticut River basin. It is conducted in partnership with the Connecticut Department of Environmental Protection (DEP), Inland Fisheries, and Stephen R. Gephard, DEP Senior Supervising Fishery Biologist.

This program is required for Connecticut teachers who wish to raise Atlantic salmon eggs as a teaching tool in their classrooms. The program included a history of the restoration effort, a presentation of the Atlantic salmon life cycle, a demonstration of the tank setup, a lecture on the critical temperature control regime as an incubation rate tool, and a first year teacher's perspective on how to use the program.

The lecturers included Dick Bell of the CRSA; Mary Pat Coburn, past president of the CT Science Teachers Association and a teacher at Smith Middle School in Glastonbury; Alan Concilio, the science coordinator and a teacher at Beecher Road Elementary School in Woodbridge; Steve Gephard of the state DEP; Elaine Holcombe, a science teacher at Timothy Edwards Middle School in South Windsor and CRSA board member; and Gerry Feinberg and Bob Jones of the CRSA. Gerry described the CRSA website and how to use it as a teaching and communication tool.

The new 2001-2002 schools are Smith Middle School in Glastonbury, Grasso Vo-Tech School in Groton, Lisbon Central Elementary School, Nathan Hale-Ray High School in Moodus, Alden Brook School in Stafford Springs, and Turn-of-the-River School in Stamford.

The US Fish & Wildlife Service White River Hatchery in Bethel, VT have generously made available six $600 chillers to the Vermont Institute of Natural Science (VINS) in Woodstock, Vermont, to expand school exposure to Atlantic salmon education in that state. Jenna Guarino of VINS and Lynn Murphy of Waits River School in East Corinth, VT, attended the session so they could bring training information to their six schools.

For the first time, the CRSA will facilitate the issuance of Continuing Education Units (CEU) to those attending the Orientation. Many of the teachers said this was "one of the most instructive and interesting training sessions I have ever attended." ◆

NASCO 2001

By Robert Jones, CRSA President and
US Commissioner, North Atlantic Salmon Conservation Organization

The Eighteenth Annual Meeting of the North Atlantic Salmon Conservation Organization (NASCO) was held in Mondariz, Galacia, Spain during June 4 - 8. The meeting location was of particular interest to those of us involved in the Connecticut River program in that the River Tea, one of the most southerly salmon rivers in Europe, flows through the village of Mondariz. This area of Spain is at the same latitude as the lower Connecticut River. Representatives from the United States, Canada, Iceland, Norway, Denmark (for Greenland and the Faroe Islands), the Russian Federation, and the European Union (the NASCO Council) met in this unique setting to continue their consideration of the management and conservation of Atlantic salmon. In the annual report from the International Council for the Exploration of the Sea (ICES) fisheries scientists once again reported that worldwide Atlantic salmon stocks were at extremely low levels.

Due to concern that increasing marine mortality is a major factor in low stock levels, the Council, at its Seventeenth Annual Meeting, established a Working Group to develop ideas for a research program to examine this problem. The Working Group was also asked to advise on how to organize such a program and on possible sources of funding. As a result of a report of this Working Group, the Council established an International Salmon Research Program. A Board was created to coordinate cooperative international research activities. The NASCO Secretariat was tasked with establishing mechanisms to accept funding for approved ocean research projects, and develop an administrative framework to provide funding for proposals designed to improve the understanding of the ocean distribution and migration of salmon.

The meeting of the West Greenland Commission (US, Canada, Denmark, in respect to Greenland, and the European Union) was highlighted by a new and relatively unique measure to manage the West Greenland fishery. The representative of Denmark (in respect of Greenland) described the 2000 fishery. The fishery opened on August 14 and closed 5 days later on the 18th when reported catches reached 18 metric tons. The final reported catch reached slightly over 20 metric tons. It was noted that the catch per unit of effort (CPUE) was greater in 2000 than in any previous year since 1987.

The representative from ICES reviewed the West Greenland fishery and provided an estimate of the status of the stocks at West Greenland. He pointed out that the 2001 prefishery abundance (PFA) estimate had increased somewhat from the 2000 estimate – 295,700 fish in 2001 vs. 225,700 in 2000. As during recent years, ICES again considers the stock found off West Greenland to be "outside safe biological limits" and urges "extreme caution regarding harvest conditions for 2001." Based on a 50% risk that the PFA is lower than the forecast, the Greenland quota would be 200 metric tons utilizing a previously agreed upon formula for the allocation of the stock.

The representative of Denmark (in respect of Greenland) pointed out that Greenland fishermen had accepted severe restrictions — no sale outside of Greenland and low quotas — during past years when stocks were low. He suggested that using the same formula as in previous years, the appropriate quota for West Greenland would be 200 tons. The representatives of the US, Canada and the European Union each commented on the uncertainty of the model, the risk associated with such a quota and advice from ICES that stocks were outside safe limits. After lengthy discussion and work by scientists from each delegation, an adaptive management program was developed which would base the quota at West Greenland on the availability of fish. All Parties agreed on the program and the proposal was adopted by consensus.

Under this new program, the season at West Greenland will be divided into three harvest periods separated by two-day closures. The first harvest period will last for seven days or until 28 tons of salmon are caught in the commercial fishery, whichever come first.

Information on the catch per license per day (Catch Per Unit of Effort or CPUE) will determine if the second harvest period will be opened and additional quota allocated. If during the first harvest period the CPUE is low (defined as 100 kilograms or less per license per day), the season will be closed. If the CPUE is medium (defined as between 100 and 135 kg per license per day) the second harvest period will open for 12 more days (after the two day closure) or until an additional 32 tons are taken, whichever come first. If the CPUE is found to be high (greater than 135 kg per license per day) the season will open for 12 days or until an additional 64 tons are taken. Similarly, the average CPUE for the first two periods combined will determine the quota for a third harvest period. If the average is high, the season will reopen for 26 more days or until an additional 108 tons are taken (whichever comes first). If the average is medium, an additional 26 day 54-ton fishery will be allowed. If the average is low, the season will close. The Greenland Home Rule Government has agreed to monitor the fishery and make the data available during and after the fishery.

The effect of this adaptive management program will be to relate the fishery more closely to the actual availability of fish. If the estimated prefishery abundance is relatively accurate and the catch per fisherman per day is high throughout the season, the harvest will be up to 200 metric tons. Conversely if the fish stock is not as estimated and

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A View of the 2001 Returns to the River

By Stephen R. Gephard, Senior Supervising Fishery Biologist, CT Department of Environmental Protection

The returns of Atlantic salmon to the Connecticut River in 2001 numbered 41. This continues the recent downward trend for this and other North American rivers. There have been no new discoveries, no new fisheries, and no new smoking guns discovered. The news is old news: the survival at sea of young salmon is poor. Fish go out to sea but don't come back. Why? The conventional wisdom is the same; it is due to colder-than-normal water temperatures between the Grand Banks and the Davis Straits where salmon feed and grow. It is probably affecting the abundance of their prey. Although the numbers for some other US rivers (e.g. the Merrimack and the Penobscot) were up slightly from 2000, these rivers still had another bad year, like the Connecticut. We are all in the same boat.

We have reason to be hopeful for coming years. There are strong year classes of parr currently residing in our streams and they will be emigrating to sea in the next couple of years. If the return rates begin to inch back up, these year classes can be the beginning of an upward trend. The first significant release of hatchery-reared smolts are due to return in 2002, which should bolster the numbers of adults. The hatchery program had been suspended after just one year due to an outbreak of furunculosis in the water system of the Pittsford National Fish Hatchery. The good news is that we have found funding to allow a group of young salmon at the White River National Fish Hatchery to be vaccinated against this disease this winter so that they may be sent to the Pittsford hatchery to complete their rearing as 2-year old smolts. The better news is that the federal government is locating money to install a disinfection gallery at the intake of the hatchery so that this type of infection cannot recur. Hopefully, the hatchery smolt program can resume uninterrupted.

With so few sea-return fish to spawn, it is absolutely critical to breed the broodstock in a manner to minimize inbreeding and loss of genetic variability. I have reported about our scheme to accomplish this in past newsletters, but it relies on crossing specific males with specific females. This has become challenging some years when the right male is not "ripe" at the same type as the right female. This year, the Connecticut River program became the first restoration program in the United States to successfully use hormone implants to synchronize the "ripening" of broodstock. The test run worked well and also induced some male kelt broodstock to produce milt whereas they have rarely done so in the past. The ability to get male kelts to spawn will be a valuable genetic tool for the future.

As we develop modern tools to drive a 21st century restoration program, we discover that costs go up. (For example, hormone implants cost $13 for each fish.) Of course, fixed costs, such as gasoline and electricity, also rise. We also find that the process is more labor-intensive — at a time when the federal government has not replaced retired personnel at key hatcheries due to budget cuts in Washington. If we are to move forward, we need a new infusion of funds. Program biologists such as myself are extremely grateful for the assistance the CRSA has provided in supporting bill 703 in the US Senate, which proposes to provide an additional $9 million to

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the average catch is low, the harvest will be 28 tons or less. The next annual meeting or the North Atlantic Salmon Conservation Organization will be in the Faroe Islands during June 3 to 7, 2002. ◆

Report of October 1 of the 2001 Fishery at West Greenland

The following is from the report of October 1 by the Greenland Home Rule Government on the 2001 fishery at West Greenland.

"The first 7-day harvest period was opened on Monday August 13, 2001 with a quota of 28 tonnes of salmon. The landing sites at the Nuka A/S fishing plants were open from Monday August 13, and were closed down for the weekend on Friday August 17. CPUE (catch per unit of effort) was calculated on Saturday August 18, 2001. The average CPUE was moderate during the first harvest period.

"The second 12-day harvest period was opened on Monday August 20, 2001 with an additional quota of 32 tonnes of salmon. The landing sites at the Nuka *A/S* fishing plants were open from Monday August 20, and were closed down again on Friday August 31. CPUE was calculated on Saturday September 1, 2001. The average CPUE was moderate during the first and. second harvest period.

"The third 26-day harvest period was opened on Monday September 3, 2001 with an additional quota of 54 tonnes salmon. The landing sites at the Nuka A/S fishing plants were open from Monday September 3, and were closed down again on Friday September 28, as the commercial fishery for salmon for 2001 definitively was closed.

"During the three harvest periods the total salmon landings for sale to Nuka A/S fishing plants was 34.5 tonnes. The number of landings was 280. This gives an average CPUE of 123 kilograms of salmon per landing for the three harvest periods, corresponding to a moderate CPUE average during the 2001 fishery."

It is noteworthy that, based on the resultant moderate CPUE, the pre-fishery abundance (PFA) was actually lower than estimated by ICES and the total catch was substantially lower than it might have been based on the estimated PFA.

Returns *(continued from page 7)*

the program. This will be spent to fill vacancies, install water treatment devices to combat furunculosis at Pittsford, and ensure that places like the Kensington State Salmon Hatchery and Whittemore Salmon Station are in compliance with new state and federal regulations and can continue to perform their roles. The passage of this bill is essential to the program if we are to reverse the downward trend. Please ask an officer of the Association how you can help to see that our elected officials support this bill. ◆

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