

**CRASC Technical Committee
Meeting Minutes
November 13, 2007**

1. Call to Order and Approval of Minutes from the Meeting on June 26, 2007

Chair Caleb Slater called the meeting to order at 10:10 a.m. and adjourned at 1:00 p.m.

Mr. Steve Gephart motioned to approve the Minutes from the previous meeting. The Chair seconded the motion and the Minutes were approved.

The agenda was adjusted to address genetics first and to include a Smolt Advisory Subcommittee update.

Mr. Gabe Gries introduced Mr. Matt Carpenter who has taken Mr. Jon Greenwood's job and will be representing NHHF on the Technical Committee for this program as well as the Merrimack program.

Mr. Ben Letcher introduced Mr. Scott Davidson, a post-doc, who will be doing some salmon modeling for the Maine program. This work is funded by the NFWF and may have implication for the Connecticut River program.

2. Genetics Subcommittee Update

Mr. Letcher provided the Technical Committee with a copy of a paper from Science entitled *Genetic Effects of Captive Breeding Cause a Rapid, Cumulative Fitness Decline in the Wild* by Hitoshi Araki, Becky Cooper, and Michael S. Blouin (Science 318, 100 (2007)). This research demonstrates a 40%/generation decline in reproductive fitness between wild and hatchery-reared steelhead trout. This research was based on stocked smolts and multiple generation captive broodstock rather than a fry-based program using sea runs, kelts and F1 domestics like we have in this program. Yet, despite the obvious program differences, there may be some fitness risk associated with F1 domestic broodstock. This may explain smolt performance but it does not adequately examine whether this results from a hatchery or genetic effect. Ms. Kitty Griswold noted that these results emphasize the importance of program evaluation and monitoring. Mr. Gephart agreed and said that this paper was only recently received and is worthy of additional review and discussion by the Genetics Subcommittee.

Mr. Letcher provided the Technical Committee with information on the status of the genetic broodstock management and marking program.

Broodstock Management The USGS has been genotyping sea-run Atlantic salmon since 1996. The CAFRC staff has assisted CRASC member agencies in determining the effective population size and recommending parr numbers for inclusion in the spawning program. The information is entered into a database that identifies potential matings that minimize loss of genetic variability. This research has gradually evolved into a management tool as well as the foundation for the marking program. The CAFRC staff has supported the Richard Cronin NSS staff during spawning. Because funding has been limited at the CAFRC, the USFWS Northeast Fishery Center has agreed to assume this task as an annual priority (assuming funding in FY08 does not preclude expansion of effort). The transition between agencies is likely to take a couple of years followed by a long-term relationship between the agencies since the monitoring research requires the broodstock screening data.

Discussion:

Mr. Gephart thought that the transition was a good idea. He noted that the Commission has valued this aspect of the program and wants it to continue. Mr. Bill Archambault thought that the estimated cost of this aspect of the program would not be a problem to support unless the budget is reduced from what is expected in FY08. The USFWS is currently operating under a continuing resolution. Mr. Archambault asserted that, if the USFWS decided to fund the effort in FY08, that it would continue the project in the

long-term.

Genetic Marking and Management In 1997, the USGS-CAFRC first used the information obtained from the genotyped sea runs to create families of salmon. The fry, with known family genetic marks, are stocked into the watershed in known locations. Two years later, some of the emigrating smolts are captured at bypass facilities in Turners Falls and/or Holyoke. Fins are clipped to provide samples for genetic assessment. The assessment/monitoring has the potential to inform management choices and priorities with respect to nursery habitat and stocking regimes. And, it has the potential to point out other landscape limiting factors that may provide opportunities for hatchery and habitat management. The CAFRC has been collecting samples and hopes to have results analyzed for the 2004 smolts by April 2008. Completion of monitoring, assessment and interpretation has been hampered by lack of dedicated funding. Total cost to complete the project with samples on hand is estimated at \$147,000 and would likely require 1-2 years.

Discussion:

Mr. Slater expressed frustration about the funding limitations and added his enthusiastic support for the research. Mr. Gephard suggested that sampling continues regardless of funding so that the data will not be lost. Potential funding sources were discussed including the National Fish Habitat Initiative and a potential regional project for State Wildlife Grants. These require a 50% non-federal match. It was agreed that this was an item that should be added to the CRASC meeting agenda.

Sea-Run Milt Cryopreservation Mr. Gephard reported that the Northeast Fishery Center had contracted with Cryogenetics, a Norwegian Company, which has large scale cryopreservation capability to provide a demonstration project at the White River NFH. Three Norwegians visited the hatchery for this purpose from November 6-8, 2007. They froze milt from 16 males on November 6. The following day, they thawed the milt and fertilized salmon eggs using non-frozen milt as a control with the same females. Eye-up will be used as a measure of success. If this works and is desired, the CRASC member agencies will have to consider purchase of license, needed equipment, and technology transfer/training to establish a cryo program here since the company has proprietary rights over the technology. This capability could be used to address chronic shortage of male sea-run salmon.

Broodstock Management Plan Mr. Gephard noted that issues like cryopreservation and kelt retention call for a plan to help guide decisions. Ms. Meredith Bartron provided Ms. Rowan with a copy of the Maine plan. This was used as a template to develop a rough outline with some completed details. The outline will be provided to the Genetics Subcommittee as a starting point for the document. The draft will then be provided to the Technical Committee for future consideration/action.

Kelt Retention and Reconditioning The Genetics Subcommittee has recognized that space limitations may require decisions about which kelts are retained in 2007. Mr. Gephard requested post-spawning information from both the North Attleboro NFH and the Richard Cronin NSS to include number of survivors by year class, conditions, capacity/space in use and available, production rate and quality peaks/declines in aging kelts, eye-up, and potential increased costs from changes in function or use.

Discussion

Ms. Griswold provided a framework for discussion that helps define the value and cost of various kelt crosses to assist in assigning priorities for retention. This can be folded into the development of the broodstock management plan. She suggested that some upper limit of years of contribution might be useful when space is limited. The advantage is that this would also minimize the risk of crossing kelts with their own offspring.

Mr. Gephard agreed to wait for requested information from the hatcheries until spawning is complete. Then a Genetics Subcommittee meeting will be convened, likely during the first couple of weeks in December, allowing for time to make kelt holding/transfer recommendations before the end of December.

3. Status of the Run & Stocking

Returns Ms. Janice Rowan noted that migratory fish run counts had not changed much since the last meeting with the exception of salmon and sturgeon numbers. There were six late returning Atlantic salmon: 1 male at Leesville on 8/2/2007; 1 female at Rainbow on 10/3/2007; 1 male at Holyoke on 10/15/2007; 2 females at Holyoke on 10/19/2007; and, 1 female at Holyoke on 10/22/2007. And there were two shortnose sturgeon caught at Holyoke. This left the counts as follows:

Atlantic salmon – 140 (11 released) vs. 214 last year
American shad – 163, 466 vs. 156,352 last year
Blueback herring – 74 vs. 21 last year
Sea lamprey – 42,434 vs. 19,117 last year
Striped bass – 241 vs. 144 last year
American eel – 286 vs. 2,228 last year
Gizzard shad – 67 vs. 134 last year
Shortnose sturgeon – 3 vs. 2 last year

The Maine Penobscot River count was 916 sea-run Atlantic salmon as of 11/6/2007; Kennebec-6; Dennys-3; Androscoggin-21; Narraguagus-10; and, Saco-24.

The Merrimack Program count is 75 salmon as of this date, including a number of fall returns.

Among the Connecticut River sea-run Atlantic salmon returns were 19 hatchery origin salmon (aged 2:2) (14%); 1 wild MSW (aged 2:3); (0.7%); and, 1 wild grilse (aged 1:1) (0.7%).

One hundred seven Atlantic salmon were captured at the Holyoke fishlift, seven salmon were captured at the Rainbow fishway on the Farmington River, four salmon were captured at the Leesville fishway on the Salmon River plus one more was seined in the river, and 21 salmon were captured at the West Springfield Project (DSI) on the Westfield River.

One salmon eluded capture and escaped the Holyoke fishlift while ten more salmon were radiotagged and released from the Holyoke fishlift - part of a TransCanada Northeast Hydro Region fish passage study on the Deerfield River.

One hundred twenty-nine sea runs were retained at the Richard Cronin NSS for spawning, including 100 females and 29 males. Five unvaccinated fish were kept isolated as controls (four have died (1 positive for furunculosis) and 1 grilse remains alive). Two vaccinated fish have died (1 in summer and 1 late return).

Stocking Nearly 6.5 million Atlantic salmon were stocked in 2007 (compared to 5.9M in 2006). The total includes 5.5 million unfed fry and over 855,000 fed fry. A total of 53,454 two-year smolts were stocked in the Farmington River and 44,505 smolts were stocked in the mainstem above Holyoke. As usual, hundreds of volunteers donated many hours of their time to stock fry throughout the basin.

4. Fish Culture Subcommittee Update

Egg Projection Mr. Mickey Novak reported that egg production is projected at 11.8 million eggs this year (well below incubation capacity) and includes a projection of 740,000 sea-run eggs, 960,000 kelt eggs, and 10.1 million domestic eggs. Spawning is completed at the Kensington SSH but is ongoing at the Roger Reed SFH, the Richard Cronin NSS, the North Attleboro NFH, and the White River NFH.

Sea Run Spawning Summary The MDFW collected 239 mature parr from Sawmill River for spawning with sea runs. Survivors were stocked back into the river in November.

The RCNSS was holding 57 male and 20 female 2005 and 2006 kelts in Pool 1. On October 5, 2007, staff

injected hormones in 10-2005 or 2006 year-class male kelts. Spawning took place on October 10 and October 15. On October 10, 14 male kelts provided milt, including five ripe kelts (without hormone implants) and nine kelts with hormone implants. Eventually, a total of 20 kelts gave milt and 8-10 female kelts (out of 20 in captivity) are expected to produce eggs.

The NANFH injected hormones in 10 male kelts on October 10, including 5 kelts from the 2004 year class and 5 kelts from the 2005 year class. Seven kelts gave milt on October 15. The milt was used to fertilize sea-run eggs at RCNSS on that date. Spawning is ongoing at the hatchery.

5. Smolt Advisory Subcommittee Update

Calcein Marking Study Mr. Gephard reported that 100,000 smolts are in production for release this spring including 10,000 smolts at the Berkshire NFH and 90,000 at the Pittsford NFH. They will be released in the Farmington River above and below the Rainbow dam, in the mainstem Connecticut River above the Holyoke dam, and in the Westfield River. All of the smolts have received two calcein marks (with a third mark scheduled this winter) in a study conducted by the Northeast Fishery Center. The object is to test longevity of the mark and homing fidelity (despite dams) among released smolts when they return as adults in or around the year 2010.

Mortality following administration of the first mark at the Pittsford NFH initially caused some concern but was later attributed to an outbreak of coldwater disease. The disease has left the fish fins in poor condition.

This is a one-time study. No additional work will be conducted until returns occur. If the marking persists, and the mark is considered valuable, then future consideration will be given to administration of the mark via feeding rather than immersions.

In the mean time, smolts at the Pittsford NFH have been vaccinated and clipped (week of October 16). Adipose clipping and fin evaluation will be scheduled at the Berkshire hatchery. Fin evaluations will be scheduled at the Pittsford NFH in February 2008. A final calcein mark will be applied and the smolts will be stocked in late March 2008. Additionally physiological sampling by Mr. Steve McCormick will be scheduled prior to release.

6. Salmon Studies Update

Deerfield River Passage Study Results Mr. Jay McMenemy reported that ten sea-run Atlantic salmon were captured at the Holyoke fishlift, radiotagged, and released above Holyoke by Normandeau Associates as part of the TransCanada Northeast Hydro Region fish passage study on the Deerfield River. One salmon made it to Turners Falls then turned around and went back downstream, final whereabouts unknown. Four salmon were counted in the Deerfield River. Five salmon passed the Vernon dam. Two salmon were trapped at Townshend and trucked upstream in the West River. Three salmon passed Bellows Falls with one documented in the White River and two in the Williams River. Mr. McMenemy noted that he would be checking for redds in the West and Williams Rivers.

Smolt Emigration The smolt mark and recapture emigration estimate for 2007 is 58,209 +/- 30,869 smolts. The error is explained by the fact that high flow occurred after marking had started at Cabot which reduced recaptures at Holyoke. Mr. Bob Stira requested help finding panjets, the dental tool used to mark the smolts is no longer easily purchased. Mr. McCormick offered use of a panjet from his office.

USASAC Mr. McMenemy noted that data is needed to address the U.S. Atlantic Salmon Assessment Committee reporting requirement. He offered to write the basin narrative and make the program presentation again this year.

Index Site Assessments In general, conditions were hot and flows were low this summer. Results from index site assessments tended to be highly variable. In Vermont, the young-of-year (YOY) salmon were smaller than usual and survival was poor for parr in the Williams River (usual source of

mature sea-run origin parr). Wild trout were very abundant in VT waters this year. Variable results were also reported in NH though good growth and survival was observed in the Minnewawa where survival last year had been poor. Variable results were reported in CT with large variation among mainstem Farmington River pre-smolts. Streams in MA that were stocked with fry from the Roger Reed SFH before treatments knocked down coldwater disease mortality showed zero survival for YOY.

PIT Tag Dataloggers Mr. Haro reported that the PIT dataloggers at Holyoke (fishwindow and bypass pipe), Turners Falls (Gatehouse window and Cabot bypass) and Vernon (fishway window and bypass) were aging and in need of replacement. They are used to capture upstream movement of PIT tagged adults. The USGS would help retrofit the equipment if funding is found elsewhere and if someone can take the lead on monitoring at Holyoke, Vernon and Bellows Falls.

Discussion:

Mr. Gephard noted that it would be nice to have such dataloggers elsewhere on the tributaries also as they are a good tool for evaluation. Mr. John Warner agreed and added that they would facilitate downstream eel passage monitoring.

7. Fish Passage Subcommittee Update

Mr. Warner provided a list of some fish passage highlights:

Holyoke – Connecticut River

- Fish Passage Season ran well
- Eel passage was run - over 4,000 at South Hadley side eelway – but only 200 at Spillway lift and 77 at Tailrace lift eelways
- Downstream passage investigations ongoing – shortnose sturgeon tagging/lab testing

Turners Falls – Connecticut River

- New Gatehouse entrance installed and ready to go for 2008
- Testing of flows/flow fields - Fall 2007
- Cabot Station fish - Initial designs being prepared – Installation targeted for 2009

Fifteen Mile Falls – Connecticut River

- Moore bypass sampler was monitored and acoustic tagging was employed to look at smolt movement/behavior at the dam/fish bypass entrance
- Preliminary results : 1,029 smolts were captured – lower than 2005 (1,404) and 2006 (2,274) Awaiting results report on acoustic tagging
- Further consultation with TransCanada needed on next steps

Fiske Mill - Ashuelot River

- Fish Lift under construction. Changed plans from a Denil to a lift -- To date, pilings and in-water section of the fishway are almost done
- Target for completion – Spring 2008
- Eelway completed – ready for 2008

The problem with this project is that it has delayed construction of permanent downstream passage at the Brockways Mills where temporary downstream passage is in place

Woronoco – Westfield River

- ***Smolt study in 2008 coincident with similar study at Westfield Paper Dam was planned but now that project delayed – Woronoco to proceed anyway in 2008
 - 3 Eelways have been installed
- *** This is an unquantified smolt need which may be met with the previously planned release of Berkshire smolts

Slack Dam – Black River

- Permanent downstream fishway finally installed – after years and various inadequate temporary facilities

West Swanzey/Homestead Woolen Mill Dam – Ashuelot River

- Still actively pursuing removal
- Final design details for removal with cross vane construction underway – a few other details relative to archeological study and bridge repair/dam removal project alignment in process
- Removal targeted for 2008

West Springfield Project – Westfield River

- One of the fish migration weirs will be repaired if the project is not already completed

Zemco Dam Removal – Eightmile River

- CTDEP, TNC, and American Rivers worked together to remove this dam upstream of two completed fishways

Raymond Brook Dam Removal – Salmon River tributary

- CTDEP, CRWC, and American Rivers worked together to remove this dam

Discussion:

Mr. Slater reported attending a meeting on the timing of white water releases in Vermont with the USA CoE and AMC Flow. AMC Flow is interested in more releases later in the spring which creates an unacceptable problem for smolt emigration.

Mr. Dave Perkins reported that the Fisheries Program has taken in three regional fish passage engineers as a result of budget deficits within the Budget and Administration Division. The Fisheries Program is now examining what types of work can be supported given available funding levels and sources. Funding for FERC related projects is limited and though it is a priority the funding limitations will limit FERC related work. However, funding is available to increase non-FERC related projects. Mr. Perkins stated that only one FTE of “FERC work” region-wide would be possible which compares to about two FTEs now. This is problematic since most FERC engineering projects are also critical to ongoing fish restoration efforts. This prospect generated considerable concern among Technical Committee members.

8. Shad Studies Subcommittee Update

Mr. Slater reported that there was nothing new to report except that Mr. Tom Savoy had completed assessment of the scales sampled from American shad at the Holyoke fishlift. That information will be forthcoming.

Mr. Gries noted that large numbers of juvenile shad were observed in the Vernon pool and at the base of the dam to a point ½ mile downstream. The VT Yankee Nuclear Power Plant also reported entraining juvenile shad this fall despite the low number of adults passing or trucked upstream.

9. *Didymosphenia Geminata*, “Didymo” or “Rock Snot”

Didymo is a large freshwater diatom that thrives in cold, low nutrient waters with stable flows. It is being treated as an aquatic nuisance species though it is not known if this diatom is native to the basin. It is known that blooms of this diatom have not previously been documented (prior to spring 2007). It is currently found in the White River near Bethel, VT (upstream of the White River NFH), in the mainstem Connecticut River from Stratford north to Canaan and Clarksville, NH and in the Batten Kill. It is not known to exist in MA or CT yet so there is concern about movement of this species into uninfested waters including tributaries throughout the basin. One potential vector is fry stocking because eggs incubated at the White River NFH are exposed to surface water from the White River during portions of incubation. The USFWS held a series of meetings (October 31, November 5, and November 6-7, 2007) to assess infrastructure risk and remediation at the White River hatchery, develop a plan of action, and initiate testing

for control measures.

The hatchery has an existing sand filter that has the capacity to filter particles up to 30 microns in size which will be useful if the diatoms are at a low density. Water will be exposed to UV disinfection which may kill the diatom. And, eggs will be treated with formalin which may kill the diatom. Each of these control points will require efficacy verification.

Testing for control measures required collection of Didymo samples from the wild. None could be found in the White River on November 6. Samples were collected on that date from the mainstem Connecticut River at the Stewartston/Pittsburg, NH town line off Route 3. Staff from the Northeast Fishery Center attempted to stain and kill the diatom with formalin. However, the sample was exhibiting signs of senescence precluding confidence that formalin is an effective control measure. By the same token, testing UV as a control measure is also precluded until a vigorous sample of the diatom can be obtained (maybe not until next spring).

In the mean time, the USFWS is exploring the cost and the potential to retrofit and install a previously procured rotary drum filter with 10 micron sieve size as an immediate second line of defense behind the existing sand filtration system. This solution may preclude the need for UV and/or formalin treatments as control measures for Didymo.

Discussion

Mr. Gephard observed that the USFWS response to the Didymo risk has been fantastic. He noted that CTDEP is confident that the diatom is not yet in Connecticut. He expressed concern that the upper Farmington and Salmon Rivers may be susceptible. And, he noted that educational materials are being distributed in Connecticut via their Angling Guide and the Website.

There was some discussion about field disinfection protocols. Mr. McMenemy offered to share the protocols currently in place in Vermont.

Ms. Griswold suggested a formal basin-wide risk assessment might prove helpful in identifying primary risks like angler transfers. An assessment of this kind might demonstrate that the hatchery vector is a much smaller concern.

The Technical Committee agreed that the Didymo issue should be brought forward to the attention of the Commissioners next week and offered to draft an informational paper to prepare the Commissioners in advance.

10. Other Business

Salmon-in-the-School-programs are underway. New Hampshire and Vermont teacher training was provided at the White River NFH on November 7, 2007 by the NHFG and USFS in cooperation with other partners. The Connecticut River Salmon Association trained new teachers also on November 8, 2007. And, Trout Unlimited will conduct its annual Atlantic Salmon Egg Rearing Program Orientation on January 10, 2008 at Greenfield Community College.

Attendance

Janice Rowan	USFWS
Caleb Slater	MADFW
Timothy Wildman	CTDEP
Jay McMenemy	VTFW
Bill Archambault	USFWS
Bob Stira	NE Energy Services, LLC
Larry Lofton	USFWS
Steve McCormick	USGS
Gabe Gries	NHFG
Mickey Novak	USFWS
Scott Davidson	USGS
Kitty Griswold	USGS
Dave Perkins	USFWS
Steve Garabedian	USGS
Jen Stone	Normandeau
Alex Haro	USGS
Steve Roy	USFS
Steve Leach	Normandeau Consultants
Matt Carpenter	NHFG
John Warner	USFWS