StreamTalk

The newsletter for stewards of salmonids and their habitat • Volume 18 • Number 2 • Fall 2011

After the deluge

Gathering fish stock data in the Atnarko/Bella Coola watershed

by Sandie MacLaurin

There was a major flood in the Atnarko/Bella Coola watershed in September of 2010 – estimated to be a one-in-two-hundred-year event. About 300 mm of rain fell in a 36-hour period, causing scouring and bedload movement that damaged all the tributaries and the mainstem of the Atnarko/Bella Coola River system. In addition, there were significant impacts to spawning grounds in the lower Bella Coola tributaries of Thorsen, Snootli and Nooklikonnik (feeds the Airport Side Channel) due to gravel removal and flood prevention projects that had to occur during the salmon egg incubation period for pink and chum. All this after a year when escapement was well below target for chum, pink, chinook and sockeye.

The Nuxalk First Nation asked for support from DFO to conduct a downstream trapping program to better qualify concerns over fry production, and I was glad to help out. The project was also supported by the Central Coast Fisherman's Protective Association and the Bella Coola Watershed Conservation Society. Together we gathered sufficient funds, equipment and staff to conduct a program during the normal peak of chum migration in the lower river and of pink migration in the Atnarko.

Croydon Lansdowne and a student from Sir Alexander Mackenzie High School identify a fry. Discouraging as the numbers were, the project was an important learning opportunity for local students. Photo: Sara Germain.

The downstream trapping program started on March 7 and ended on April 29.

There were five trap sites in the Bella Coola River and tributaries and one in the Atnarko River. Trap size, location and set duration were as similar as possible to those used in the past so comparisons could be made.

Set duration was approximately 24 hours. Daily catch was counted by species and where there was more than one brood year represented (as determined by relative size for coho, chinook and sockeye), this was also recorded. 2011 hatchery chum and chinook were recorded separately. Normally, the recorded catch would be hatchery and wild combined; however, the hatchery numbers overwhelmed the wild catch so much that they were kept separate so as not to skew the results. Information such as weather, time of day, water clarity, level and temperature was also collected.

The data from all traps indicated (as expected) that pink and chum fry production from the 2010 brood was extremely poor and the early catches of chinook in the Atnarko were well below normal. The difference in the average daily catch between 2011 (fry from 2010) and other years was dramatic and the project lead technician Croydon Lansdowne highlights this fact by noting that while an average daily pink catch for the Atnarko trap should be about 10,000, in 2011 the highest daily catch was 318. In two of the lower Bella Coola tributaries no pink were captured at all. Since pink and chum are an important food source in the spring for larger salmonids, other fish species, mammals and birds – not to mention the role returning adults would

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In this issue:

New nature centre is already winning awards

by Veronica Woodruff

Stewardship Pemberton began an ambitious endeavour in 2006 to develop the One Mile Lake Nature Centre after there was irreparable flood damage to the Birkenhead Hatchery. Our vision became a reality in 2010 with a significant grant from the Pacific Salmon Foundation. Partner funding was provided by the Village of Pemberton, BC Hydro, Whistler Blackcomb Foundation, North Shore Credit Union/Pemberton Supermarket, Mountain Glass and many others.

The Nature Centre is located at the trailhead to One Mile Lake Municipal Park. Every effort was made to maintain the natural setting, with limited vegetation removal, re-vegetation with native shrubs and integration into the existing trail system. The centre will house a small educational hatchery and aquarium, an indoor gathering place and a covered outdoor learning area.

The Village of Pemberton received a Community Excellence Award for the One Mile Lake Nature Centre at the Union of BC Municipalities Breakfast on September 27.

The award, for leadership and innovation, recognizes ideas that rise above challenges using vision, creativity and teamwork.

The building is completely off-grid, featuring solar power, composting toilets and rainwater catchment. Photo: Veronica Woodruff.

Although the nature centre will be our educational hub, we expect it to be only one component in our hands-on environmental programming, which will focus on the surrounding rivers, wetlands and lakes.

One Mile Lake and its associated stream and wetland complex are important habitat for coho and sockeye salmon as well as freshwater species such as cutthroat, lamprey, chub and other minnows. The park area provides awesome outdoor learning opportunities with easily accessible spawning beds as well as great birding and other wildlife viewing. There are several culturally significant sites located in and around the park, and Lil'wat Nation has been involved in the program from the early visioning sessions.

This is a timely development for Pemberton. There were significant trail and salmon habitat upgrades completed in the park in 2010 which has increased park users exponentially. We expect to expand on these upgrades for both trails and salmon habitat in 2011. Also in light of the large landslide in the upper Lillooet River valley, interest in our watershed has increased and we intend to harness this momentum by uniting stakeholders through a watershed planning process we are embarking on early this year.

We are looking forward to a successful inaugural year engaging people in all the wonders of our beautiful watershed.

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play – the implications for food web and ecosystem impacts are significant. Coho adults were in the Atnarko/Bella Coola during the flood but little or no spawning had occurred and stream walks later in the fall reported spawning success (saved by a different timing!). However, 2009 brood coho, trout and other rearing juveniles did suffer losses from displacement and stranding, the extent of which is impossible to quantify.

Thankfully, the DFO major facility Snootli Hatchery is located in the valley and had eggs from over 4.5 million chum, 2 million chinook and 65 thousand sockeye from the 2010 brood (the sockeye with help from Nuxalkmc Fisheries program) and this production will ensure there are adults returning to rebuild.

While the results from the trapping program were not good, they will serve a very positive purpose for fisheries management and watershed planning for 2012 (when pinks from the 2010 brood would be returning) and beyond. The project itself was an excellent opportunity for educational activities linked to the Salmonids in the Classroom program and science classes from the local schools came out to learn about fry identification and juvenile assessment techniques. The project also exemplified how a collaborative approach to design, funding and implementation can be essential to success.

Protecting an ecosystem piece by piece

by Barry Booth

Since 1999, The Land Conservancy (TLC) has been protecting valuable fish and wildlife habitat in the Horsefly River valley by acquiring and managing land along the middle sections of the river. Up to this point, we have purchased approximately 400 hectares of land, including some of the best spawning habitat for sockeye salmon in the entire Horsefly River system.

As a land trust, we are continuously looking for opportunities to further our work. We are most successful when we are able to acquire and manage a property that builds on previous efforts. Even more valuable from a conservation perspective is if that new acquisition becomes part of a larger conservation area. It's like doing a puzzle, but instead of placing individual pieces on a blank table, one exchanges unprotected pieces with protected ones, thereby building a picture that shows an ever-increasing area of high-value protected lands.

TLC's campaign to purchase a 22-hectare parcel in the Horsefly River valley is just this type of project. We are working to acquire the last piece of the old Kroener Ranch that is immediately adjacent to the Horsefly River Riparian Conservation Area (HRRCA). This new property of young mixed-wood forest, wetlands, and intact riparian habitat is of strategic value for wildlife and salmon conservation.

Bears and salmon need plenty of room to live out their lives and thrive. Every hectare helps. Photo: C. Iwan.

By buying this land, TLC eliminates the possible threat of future development along this section of the river. In addition, we improve the conservation value of the HRRCA by increasing its overall size, linking it to Crown land that has been designated as a key wetland for moose and to an Old-Growth Forest Management Area. In essence, the protected area of riparian habitat in the valley would effectively be extended by a further 2 km on the north side of the Horsefly River and by an additional 56 hectares.

This type of purchase is in many ways the most valuable type of acquisition. It is not a piece of land that is isolated from other conservation lands, but rather is directly connected to them. With this acquisition we are continuing to fill in the pieces of the conservation puzzle in the Horsefly River, one of B.C.'s most important wild salmon rivers. For more information about this project, please visit: http://blog.conservancy.bc.ca/get-involved-with-tlc/campaigns/horsefly-river-expansion-project/.

SEP Community Workshop 2011

What did you think? And who will host 2013?

If the photos Paul Cipywnyk has posted on Flickr are any indication, Campbell River's "Wetlands to Waves: Sustainability Through Stewardship" was a workshop to remember. We want to know how it was for you. What did you learn? Who inspired you? What would you change for next time? Which sessions would you recommend, and have you ideas for more? Please write to Joanne Day at Joanne.Day@dfo-mpo.gc.ca or at Fisheries and Oceans Canada, Suite 200, 401 Burrard Street, Vancouver, B.C. V6C 3S4.

Check out the photos at http://www.flickr.com/photos/82399097@N00/sets/72157626977955349/

NOW... is your group up for hosting the next one in May of 2013? If you think your part of B.C. or Yukon is the very best salmon-enhancing-habitat-restoring-hard-working-community-inspiring chunk of country there is, we challenge you to step up and prove it! Contact Joanne to find out what's involved.

Streamkeepers Update

Citizen science, a work in progress

by Zo Ann Morten

As I sit at my desk staring at a blank computer screen, the winds kick up. Without thinking I know it's cold out there. Quick deduction – it's November, there was frost on the truck this morning, I have a sweater on, and I'm inside. I remember reading about frozen guides on a fishing rod from a November post on *Fishing with Rod*; a coyote that came up out of our ravine last month with a thick beautiful coat; and the frantic activity of squirrels and birds over the past few weeks as they stockpile seeds and leftover corn from the garden. I think it will be a long cold winter.

***Citizen science* can mean anything from citizens observing natural events and characteristics to a genuine revolution in 'science' that democratizes the important social role of learning about the world around us. Citizen science can be seen as a way 'real scientists' leverage the labor of large numbers of people distributed widely, or a way to leverage the brains, experience, and insights of the world's people to advance understanding.**
(from the Citizen Science Toolkit Conference)

I think of citizen science and how the collection of data in a standardized format helps to inform others who can't get outside to see the wonders of nature first hand. It adds to their knowledge banks the tidbits of information that help connect the dots toward a bigger, clearer picture.

I love the curiosity gene we have, and it is common among Streamkeeper volunteers. "Why?" – a simple word stated often that sends people scrambling to the internet, scouring over reports, and talking to friends and neighbours until they are satisfied they have enough knowledge to ask another question on the subject.

Reviewing listserve traffic this fall I see that many ask the questions, "Why are our chum smaller? Why do they have fewer eggs in them? Will their offspring be smaller as well?" Spawner surveys are proving to be an invaluable bank of information about our salmon stocks. We are no longer satisfied with only an escapement number. We now are curious as to the size and condition of the fish, the egg counts, and the spawning success. It is this curiosity and concern for the waterways and the life within them that will assist scientists, developers and fellow Streamkeepers to keep our natural world in the news, inspiring others to be curious, to care, and to protect. Thank you to Curious George's "man in the yellow hat" who taught us all to be inquisitive creatures full of enthusiasm. And bundle up! It looks like it'll be a cold one (not based on science, just on connecting the dots).

Module Updates

The Pacific Streamkeepers Federation is working with DFO community advisors to update Streamkeeper Modules 9, 10 and 12 this year. The Streamkeepers program connects citizens to the natural world and collects data that highlights changes to our watersheds – changes that are instant and those that can only be seen over time. Many thanks to all who contribute to the success of the program, and to the wonderful volunteers across B.C.

Have a stewardship story to share?

by Joanne Day

DFO's Stream to Sea Education Program is proud to promote a partnership with Science World's BC Green Games, a program that encourages students in grades K to 12 to document and share their environmental action stories.

Why not enter your projects involving Salmonids in the Classroom, Storm Drain Marking, and Streamkeepers activities?

2011 winners include Salt Spring Elementary School, where in 2009 one class began a series of studies and activities around the salmon-bearing Ganges Creek. They learned and achieved so much about stream stewardship, and communicated their excitement so well, that in 2010 the whole school took on the theme of water and became Guardians of Ganges Creek.

Another winning school, Dover Bay Secondary in Nanaimo, concentrates on habitat restoration, including cleanup, monitoring, replacement of invasive plants with native plantings, and enhancement of a local coho population.

BC green GAMES

Visit the website at www.bcgreengames.ca to be inspired by the more than 350 previously submitted projects and find more information. Science World will award $24,000 to winning schools. Projects can be submitted as video or photo-essay, PowerPoint or a series of photos and text. Youth will enjoy the technological part of capturing and sharing the story. Registration begins now with project submission between February 1 and March 1, 2012.

This is a terrific opportunity for groups to submit information on their projects in order to share successes and challenges with other schools and to inspire others to take on a project to help the environment.

Streamkeepers and education coordinators may also be involved in BC Green Games by participating as judges. Contact Kate Henderson at kate@bcgreengames.ca for more information.

Chase River chum get a lift

by Harry Allen McLeod

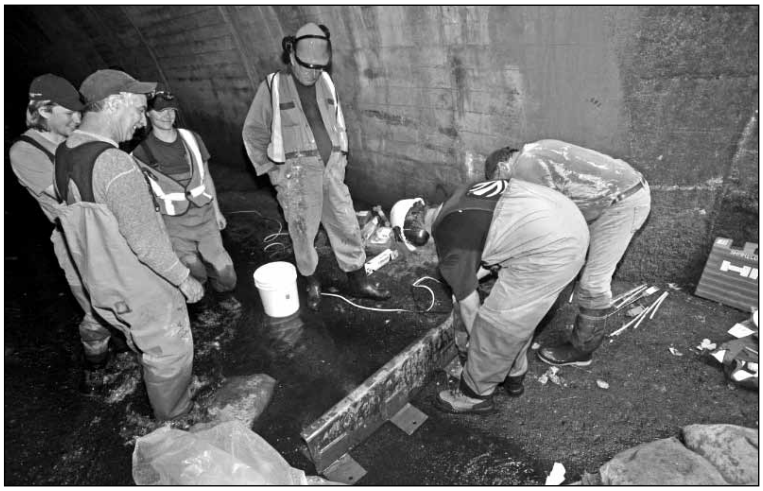
Chum salmon ascending the Chase River in southern Nanaimo this fall will have another seven kilometres of spawning grounds thanks to a recently completed SEP project. Up until now, they had gathered in a pool just below a 64.5-metre-long cement tunnel under a railway, but went no further. We think that this was because of high-speed seasonal water flows and a drop between the tunnel and the pool. Chum are not good jumpers.

To reduce the flow speed, 11 half-inch steel baffles were installed at regular intervals at right angles to the current on one side of the tunnel. Each baffle is about 1.5 m long, 0.3 m high, and extends from the middle of the tunnel to within 0.25 m of the cement wall. The gap will allow fish to get around the baffle. The baffles were installed on only one side of the tunnel to allow debris to slip by. Four bolts on each side held them in place, cemented in with epoxy resin.

The second phase involved raising the water level in the pool. Boulders were winched into a gap at the downstream end, creating a somewhat porous dam that we hope will elevate the pool when flows are greater and allow chum to make it into the tunnel without jumping. Holes were drilled into boulders and a short loop of cable was cemented in place overnight.

This SEP-funded project was made possible with the help of many. Planning, volunteer assistance and accounting were provided by Island Waters Fly Fishers. The Friends of the Millstone and Vancouver Island University provided additional volunteers. Engineering services were supplied by Northwest Hydraulic Consultants Ltd., logistics and installation by BC Conservation Foundation, and the local office of DFO brought all the organizations together. The Island Corridor Foundation, owners of the E&N Railway, gave us permission to work on their property and delivered the baffles to the site.

Now it's up to the salmon!



Baffle installation requires the correct ratio of workers to supervisors. Photo: Harry McLeod.

Didymo alert

Check, clean and dry your gear to stop Didymo's spread. Photo: Chris Williams.

Didymo (*Didymosphenia geminata*) is a large diatomateous algae now invading freshwater systems across North America. It has been identified in the Cowichan and Somass rivers on Vancouver Island; the Bulkley River in the Skeena River watershed; the Adams, Middle Shuswap and South Thompson rivers in the Southern Interior; and the Kettle, Columbia and Kootenay rivers in southeastern B.C.

Its dense mats may reduce habitat and food sources for young salmon and trout. It can negatively impact the invertebrates that fish eat, can irritate or clog fish gills, and may affect the flow of water and oxygen to eggs and fry in spawning gravel. During advanced blooms it also makes fishing difficult by catching on hooks with each cast.

The algae travel easily by attaching to hip waders, fishing gear and boats.

The following best-practice procedures should be followed when moving within and between infected and uninfected systems, and should be considered when moving between systems even when no detections have been made.

Ideally:

- Discontinue use of felt-soled waders.
- During the same day trip, use different field gear for different systems and work from upstream to downstream when at all possible.

If you can't change field gear:

- Remove all obvious clumps.

AND

- Submerge all gear in hot water (45C – uncomfortable to the touch) for at least 20 minutes, and scrub with soap. Not recommended for felts.
- **OR** freeze all gear until solid at lower than 2C (felts for at least five hours).
- **OR** place in a two per cent household bleach solution and soak for 15 minutes.
- **OR** dry all gear completely (felt soles can take up to five days to dry thoroughly).

Educate yourself about what Didymo looks like with Google images. If you observe a suspected Didymo infection, please scoop a small mass with some water into any sealed container, refrigerate it, and contact your nearest DFO office. Collected samples should in no circumstances be discarded back into any waterbody or waste system without first treating as above.

Cleanup at Lake Errock

by Lea Ricketts

Lake Errock is a small jewel located east of Mission on the north side of the Fraser River. October 1 marked the first of five watershed stewardship projects planned to clean up its shoreline. Folks gathered from the neighbourhood and met up at the north beach for an info session. Shelley Stefan talked about the value of salmon habitat, how to protect our streams and waterways, and showed us new signage from DFO.

Even the smallest piece of trash is unwelcome here. Photo: Lea Ricketts.

Elizabeth Pellizzari, a south Lake Errock resident, supplied burlap bags for the garbage so that we contributed less plastic to the landfill.

Why is this project important? The answer is simple. The Lake Errock watershed, consisting of the lake and its several in-fed and out-fed fish-bearing streams, both natural and channelized, is home to a breath-taking, strong, yet fragile aquatic ecosystem. Cutthroat trout, coho salmon, rainbow trout, steelhead, and the threatened freshwater mussel and red-legged frog live here.

This is also a vibrant habitat of the bald eagle, great blue heron, and several species of wetland birds. The watershed is a massive salmon spawning ground and community members and lake residents are in awe of this beautiful watershed and its impressive population of spawning salmon each year. Lake Errock is a very special place. In support of the mandate of Fisheries and Oceans Canada and the Salmonid Enhancement Program, Actively Creating an Exceptional Society (ACES) and this group of community volunteers want to do our part to protect, conserve, and restore this wild habitat.

Despite the grey clouds and drizzle, the team bundled up and walked the creeks, rivers and lakeside. We scoured the area, cleaning up pop cans, abandoned car tires, broken glass, plastic bags, old carpet, plastic cigar tips, summer sandals, chip bags, car air-fresheners and many, many cigarette butts. We all were amazed at how much garbage is strewn on the sides of the roads and even down beside pristine riverside trails. Thanks to Kurt Langmann for taking all the garbage to the dump.

A big thanks for this year-long project funded by the Community Salmon Program of the Pacific Salmon Foundation. Also thanks to ACES, whose mandate is "to protect with integrity the natural environment that sustains all life." Visit http://acessociety.com

Let's all grow and buy Salmon-Safe

A new eco-certification program that encourages B.C. ranchers, farmers and winemakers to adopt practices that protect salmon and their habitat launched in October.

Salmon require clean, cool rivers to thrive and spawn. Poorly managed farms can have a major impact on water quality and habitat. For example, silt from erosion and runoff affects spawning gravels. Chemicals cause pollution, and excessive irrigation can deplete streams and rivers. Lack of vegetation along the banks can increase stream temperature and deplete oxygen, affecting salmon eggs and fry as well as other fish and wildlife. Dams obstruct the movement of fish between freshwater and ocean.

Much of British Columbia's agricultural land is located in valley bottoms beside rivers, lakes, streams and wetlands that are essential fish habitats. Farmers and farmland have an important role in protecting and preserving fish and wildlife habitat.

The demand for Salmon-Safe in British Columbia came from B.C. farmers and volunteers who work on watershed conservation. Farmers and landowners who were already employing practices that protected Pacific salmon habitat needed a mechanism to differentiate their products in local food markets, as well as to encourage other farms to adopt positive agricultural practices.

Salmon-Safe was founded by the Oregon-based Pacific Rivers Council in 1997, and has since spun off as a separate non-profit organization that is active in Oregon, Washington, Northern California and now British Columbia.

Salmon-Safe piloting in British Columbia took place in 2010/11 with financial support from the RBC Blue Water initiative and Fraser Salmon and Watershed Program, a joint initiative of the Pacific Salmon Foundation and Fraser Basin Council. To date, 22 farms in B.C. have achieved Salmon-Safe certification.

Look for the symbol on local products. Visit www.salmonsafe.org to find out how to apply for certification, and for a list of Salmon-Safe certified farms in B.C.

Project Highlight

Celebration in Britannia Beach

At long last, the pinks are back!

by Rob Bell-Irving

Who would have thought that a special Rivers Day event would ever be staged here? Britannia Beach was once one of the most contaminated locations in North America. A gigantic copper mine opened in 1904, and over the decades its waste products, including sulphuric acid and dissolved heavy metals, effectively killed all life in Britannia Creek and adjacent areas of Howe Sound.

Rivers Day was appropriately wet, but that didn't stop plenty of supporters from coming out. Photo: Edith Tobe.

But this September, contagious excitement took over as numerous pink salmon returned unexpectedly to Britannia. This momentous return came after earlier verification that trout had begun to reside in both Britannia Creek and nearby Thistle Creek starting in 2009, and that natural marine productivity along the Britannia Beach shoreline and adjacent Minaty Bay is showing a massive increase.

This encouraging news follows on 30 years of environmental activism and lobbying, and 10 years of committed government- and industry-funded remediation work. In 2001, UBC engineers installed a plug in the mine to divert some of the acid runoff away from the creek, but it was still finding its way into the ocean. Government and industry then committed funds for a water treatment plant, which began operation in 2005. Its purpose is to collect all the waterfront surface water, including streams potentially entering Howe Sound, and treat it to remove heavy metals and other toxins.

With these measures in place, local stewardship groups could take on habitat restoration with renewed energy. Their efforts have been richly rewarded.

I think that to B.C. stewardship volunteers it sends a strong message: no watershed is hopeless. With properly funded, well-applied fieldwork, volunteers can make a measurable and positive difference when trying to restore even the most damaged habitats. The story of the remediation of Britannia Beach is just beginning. Salmon and trout have returned to the watersheds, and herring, killer whales, baleen whales, sea lions, otters, seals, dolphins, crabs, prawns and smelts are once again seen in Howe Sound. What we are talking about here is the restoration of an entire typical B.C. coastal ecosystem, complete with the salmon that provide building-block nutrients.

Britannia Creek's most welcome visitors. Photo: John Buchanan.

And when the Britannia Mine Museum, the Outdoor Recreation Council of BC and the Squamish River Watershed Society hosted a special BC Rivers Day celebration, pink salmon were there as well in the lower reaches of Britannia Creek for all to see and celebrate.

Mandatory Notification of Reportable Aquatic Animal Diseases

Effective January 19, 2011, the Canadian Food Inspection Agency has issued a directive to people who care for, control or possess live finfish, molluscs and crustaceans. In the event of suspicion or detection of a reportable aquatic animal disease, they must notify their nearest Veterinary Inspector in a Canadian Food Inspection Agency Animal Health Office. For example, Salmonid Enhancement Program hatchery staff, researchers and their technical staff, and veterinarians or aquatic animal health specialists who are analyzing animal specimens for disease, are required to comply with the directive.

Further details can be found at http://www.inspection.gc.ca/english/anima/aqua/aquae.shtml. If you have any specific questions, please contact Dr. Kim Klotins at 613-221-1398, or Kim.Klotins@inspection.gc.ca.

Salmon Site-ings

www.pac.dfo-mpo.gc.ca/habitat/index-eng.htm

Working Near Water in B.C. and Yukon is a new DFO web page with information for landowners, governments, industry, and consultants planning activities such as shoreline stabilization, channel modifications, building bridges or docks. It has interactive tools to help you find out:

- what you need to know and do when planning and conducting a project;
- how to get information on project environmental assessments, or report fish or fish habitat damage;
- how you can get involved in community projects.

If you are planning an activity in or near marine, intertidal or freshwater fish habitat, check here first!

Notes From the Field

Billy Johnson is working his pectoral muscles, lifting this handsome guy from the Wannock River. Photo: Heather Bettger.

Sandie MacLaurin, community advisor for the North Central Coast, writes,

"We finished the Wannock chinook eggtake just two days after the first spawning. On this one there were several big females (42, 44, 48 pounds) and the 44-pound girl had over 10 pounds of eggs! One and a half buckets and likely 10,000 eggs. We have an estimated 326,000 eggs on hand and the recirculation system is up and running – warming the water a couple of degrees to move up the ponding date and allow for additional rearing and bigger fish at release.

There certainly seemed to be lots of fish around and the regular brood crew figure the run is better than last year."

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