

The Intake

WDFW Hatcheries Division

December 2011
Volume 3, Issue 4

Hatchery Division Meeting in Yakima WA (Region 3)

Region 3 hosted the fall Hatcheries Division Meeting on August 10, 2011. A total of 39 staff met at the Yakima County District 12 West Valley Fire Station Training Center.

Cindy Colvin, WDFW's new Director of Human Resources (HR), spoke about restructuring the HR Division. **Tracy Wolfe** is the main contact person for Fish Program. **Margaret Gordon** is in charge of Fish Program Recruitment, while **Mollie Clinton** deals with Hatchery Division issues. **Diana McCutcheon** is in lead for hiring and separations for the Hatchery Division. Hours of operation are Monday through Friday, 8:00-4:30.

Cindy also discussed the new procedures for hiring Permanent and Non-Permanent staff. To streamline the hiring process (which was too complex and time-consuming), the Agency will be going with a new, statewide program called NEOGOV (currently used by Department of Personnel). This program will centralize the hiring process, and has search capabilities for both supervisors and applicants for finding jobs/applicants in specific fields, experience requirements, and geographic locations. HR hopes to have something online for WDFW by November/December.

One area that could really benefit the Hatcheries Division is the possibility of creating a pool for rehiring Non-Permanent technicians. This work pool will help the various programs find experienced technicians for their projects, reduce the redundancies in paperwork for both applicants and the Agency, and also reduce costs for Unemployment Compensations paid. Cindy also reminded us that Program AD **Jim Scott** is the only appointing authority for both

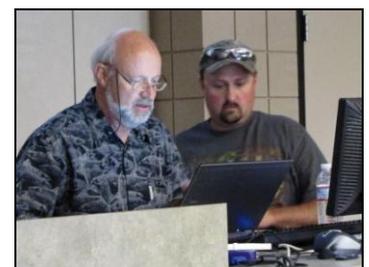
Permanent and Non-Permanent hires. Because a new hire many not legally (according to Federal mandate) begin work until HR has received all the necessary paperwork and issued the final approval, the Agency is looking into using electronic means to streamlining the hiring and approval process. This would greatly speed the approval process along and significantly reduce the Agency's paperwork footprint.

Brodie Cox, head of the **Biological Data Systems Unit** (Science Division) spoke about *Fishbooks* (see *Catie/ Kelly Corner* on pg 5). *Fishbooks* is a project 5-6 years in development, to revamp our paper-based data into a more streamlined, centralized, electronic data flow, which can be quickly (and accurately) disseminated throughout the Agency and to the public. *Fishbooks* would also feed into SCoRE, an intranet website (under development) that allows anyone in the Agency to log on and find interconnected data sets to re-create reports (see article in *The Intake: April 2011*).

After the break, **Ace Trump** (FHS4) gave a very interesting presentation that summarized and evaluated the different types fish feed used and **Spokane Hatchery**. Then **Richard French** (FHS3) discussed the intake rebuild and flow meter installation at **Ringold Hatchery**. He also outlined accounting and tracking water rights.

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Division Meeting (continued from page 1)

Just before lunch, Division Manager **Heather Bartlett** discussed the results of the Safety Survey. Hatcheries Division had a 25% response, and scored the highest approval rating among the Fish Program divisions. There was some area for improvement, however. These included making sure that “near-misses” are properly reported and dealt with. There was also some discussion about making Safety Training available through WebX, rather than making regional staff travel to a central training site, but overall, the Division is doing well.



Funding for the very popular *Salmon in the Classroom Program* was one of the agency activities cut from the current budget. School groups may continue to receive eggs through Cooperative Agreements, but WDFW will no longer service equipment, and is limited to just providing eggs; some non-profit groups such as Friends of Issaquah Hatchery (FISH) will take on maintaining the equipment and tracking information. The Cooperative Agreements have a reporting requirement (into the Future Brood Document), which is good for tracking purposes.



Hatchery Reform Coordinator, **Neil Turner** reported that the monthly maintenance schedule was at 50% completion. Maintenance money has been provided to begin a Preventative Maintenance Schedule for pumps, screens and generators. Important to identify things that need fixing at each facility so that we don't wait until something breaks before it is fixed: maintenance, not emergencies.



Cory Cuthbertson (FSH4) from **Cedar River Hatchery** spoke about the new Hatchery Division site on WDFW's Intranet page. **Tara Livingood** (formerly of HEAT) did a lot of the original design work, before she transferred to the **Puget Sound Salmon Management** unit (Fish Management Division). In addition, the Agency is developing a *SharePoint* site, which provides useful tools for planning meetings and sharing information among staff.



Hatchery Evaluations Manager **Mark Kimbel** discussed the new *Egg and Carcass Contract*. Our interest is to get the fish out of the facilities and properly distributed. WDFW met with shareholders to improve egg and carcass disposition/distribution, determine best utilization, and increase the apportionment of revenue to the Regional Fish Enhancement Groups (RFEGs). Carcasses are a finite resource that can be worth a lot of money (especially egg sales), but also provide valuable stream nutrients in the watershed and are an important source of protein to local food banks (see *The Intake: January 2011*). The new contract was put out to bid with significant changes, including



and a specific statement regarding how much revenue would be paid back to the RFEGs for “females-in-the-round” (egg-laden females) because of the high value of the roe. All good and low quality fish will be sold from state-funded facilities; good quality male salmon will be sold and processed for Northwest Harvest. Federally and locally-funded facilities will donate good-quality fish to the tribes, Northwest Harvest and local food banks. Low-quality carcasses from all facilities will be used for nutrient enhancement. The jack size cut-off is 49 cm, as smaller fish are not usable on the fillet line, however, jack designation is left up to the facility if they have two distinct size ranges..

John Easterbrooks, Region 3 Fish Program Manager, spoke about Inland Fish Stocking (see also article in *The Intake: April 2011*), which was originally developed by **Jim Uehara** (retired July 2011).

Region 6 will host the next Division Meeting, scheduled for March 7, 2012. **Region 1** will host the Division Meeting in the fall.

Elwha River Resistance Board Weir

By Mara Zimmerman, Fish Science/Wild Salmon Production Evaluation Unit

The Elwha Weir Project was initiated in summer 2010. Objectives of this project are to enumerate adult salmonids, collect biological samples from each species, and contribute to brood stock collection. The project is led by WDFW biologist **Kent Mayer** (Fish Science Division) and is an interagency collaboration with US Fish and Wildlife Service (USFWS), the US Geological Survey (USGS), the Lower Elwha Klallam Tribe (LEKT), the National Oceanic and Atmospheric Administration (NOAA), and the National Park Service (NPS).

The Elwha weir project contributes to adaptive management of the Elwha Fish Restoration Plan (EFRP). The EFRP, completed in 2008, assumed that suspended sediments resulting from the dam removals will be lethal to all salmonids for a period of several years. The EFRP therefore relies on hatchery programs to preserve salmon and steelhead stocks during dam removal (2011-2014) and to rebuild stocks for a 10-year period following dam removal. Adaptive management of the EFRP will require feedback on whether the natural stocks are rebuilding and how the supplementation strategies are contributing to that process. This feedback will be provided by results from the Elwha weir project combined with spawner surveys, smolt trap (LEKT), tagging studies (LEKT and NPS), and a Didson SONAR (NOAA).



Elwha weir at normal flows.

Photo by WSPE

The resistance board weir (RBW) is designed to function under variable flows that occur on large rivers. One of the advantages of a RBW over a rigid weir is its ability to withstand higher flows. Rigid weirs have a tendency to get blown-out when increased velocity and debris put excessive force against the weir; whereas RBWs have flexibility and can shed debris. The weir is located near river mile 3 on the Elwha River, just upstream from the WDFW Elwha Rearing Channel and two miles downstream from the Elwha Dam. The weir spans almost 200 feet, includes 53 floating panels, and is thought to be the largest floating weir on the West Coast. The upstream end of each panel is connected to a substrate rail comprised of 10-foot sections of 3-inch angle iron, which are bolted together and secured to the streambed using rebar stakes. The downstream end of each panel is lifted above the water surface by a resistance board that planes upward in flowing water. The angle can be

adjusted and is variable with fluctuating water levels and debris loading. The weir is virtually self-cleaning, or can be walked on and manually cleaned. With the substrate rail in place, the weir can be installed in approximately two days and removed in only a few hours. Live fish are captured after they voluntarily enter one of several live boxes. Carcasses are intercepted by the weir panels. After biological sampling, fish are either returned to the river or used as hatchery broodstock.

The weir fished for two seasons in 2011. In May, data collection focused on winter steelhead returns. In August through October, the project focused on Chinook and pink salmon; however, data was collected from all species including sockeye, coho, chum, bull trout, steelhead, and cutthroat. Fish collected in the summer/fall fishing season were provided for broodstock programs at the WDFW Elwha Rearing Channel (Chinook) and the LEKT hatchery (pink).

When implementing a new study such as the Elwha weir project in a river as large and complex as the Elwha, one learns to expect the unexpected. Among the less obvious results during the first two years of this project were the documentation of even-year pink salmon, spawned-out sockeye salmon, and Chinook salmon strays from the Wenatchee River. Results from the 2011 season should also improve understanding of the population structure of odd-year pink salmon population (one or two populations?) and the natural vs. hatchery composition of Chinook runs.



Elwha weir during high flow.

Photo by WSPE



Coho Sub-sampling *By Dan Thompson, CWT and Mass-Marking Management*

Each year, WDFW facilities release around 20-25 million hatchery coho. Of these, around 2.5 million are coded-wire tagged (CWT). Sub-sampling is a method by which a portion of CWT adults returning to hatcheries are examined and tags collected. This will provide managers with a data sample of sufficient numbers to accurately estimate escapement. With the expected high returns of adult coho to some hatcheries (in 2011, **Soos Creek Hatchery** expects 25,000 returning adults containing CWTs from a Double Index Tag (DIT) group), our goal is to reduce the labor required to sample for CWTs while still collecting data in accurately-representative samples.



Coded-wire tags are used for many reasons: estimating stock-specific exploitation rates; deriving allocation estimates for the Pacific Salmon Treaty; estimating the effectiveness of Mark-Selective fisheries; broodstock identification; and analyzing experimental groups (see also article in *The Intake: July 2011*). Due to different tagging and exploitation rates, sampling rates are based on the number of tagged fish released and estimate of total recoveries. For smaller tag groups, sufficient recoveries are needed in both fisheries and at the hatchery rack to provide the researcher with the ability to detect a difference between study groups.

We evaluate expected returns to each facility to determine if sub-sampling could be implemented. Three criteria were used for the analysis. Sampling rate should:

1. Not impair the ability to detect minor groups (age 2, 4, and strays) in the escapement;
2. Not require substantial increases in fishery sampling to meet precision goals of exploitation rate estimates;
3. Not impair the ability to detect an absolute

difference of 0.5% between proportion of unmarked and marked returns of DIT groups.

After analyzing the expected returns and CWT groups at all hatcheries, a handful of hatcheries were given permission to sub-sample.

Sub-sampling requires passing **all** fish through a CWT detector, then randomly sampling a portion of **all** tagged adults. Depending on the number of expected returns, a sub-sampling rate of 33% (Soos Creek) to 50% will be utilized. Most hatcheries must sample 100%.

WDFW does not allow sub-sampling of Chinook for a couple of reasons:

1. Chinook return rates are significantly lower than coho, making it difficult to detect minor groups;
2. Multiple age classes require obtaining every CWT to obtain the number of recoveries needed to determine levels of significance.



Continued on page 7 Core of coho snout containing CWT



Soos Creek Hatchery staff on spawning day.



Coho snouts in the CWT Lab, ready for tag retrieval.

Fish Health By John Kerwin, Science Division/Conservation Biology

In October, the news broke about a contagious marine virus detected in wild salmon in the Pacific Northwest, in British Columbia. What is Infectious Salmon Anemia?

Infectious Salmon Anemia Virus (ISAV) is a viral disease that causes mortality principally in marine net pen-reared Atlantic salmon (*Salmo salar*). The causative agent is a fish *orthomyxovirus* that has recently been assigned to the new genus *Isavirus* within the family *Orthomyxoviridae*. The causative agent of influenza is included in this family and virus species in this family are very mutagenic. The virus replicates (grows) throughout most Atlantic salmon tissues including the heart, kidney, spleen liver, intestine, gills, and muscle. The cumulative mortality rates from *ISAV* epidemics varies and is dependent on age and stress factors, but it can range from low to severe. Some of the published literature states that the highly virulent genetic strains of the virus will result in a cumulative mortality >90%.

Outbreaks of *ISA* have occurred primarily in marine net pen-reared Atlantic salmon. Wild Atlantic salmon are believed to be somewhat resistant. *ISAV* has also been detected from circumpolar fish species such as Arctic char, herring, in addition to Atlantic cod, brown trout and rainbow trout. There is one report of *ISAV* being linked to an epidemic in coho salmon (*Oncorhynchus kisutch*) in Chile. However, there were other fish pathogens associated with this epidemic so it was not clear which pathogen was responsible for the loss.

Research in the 1990s tested Chinook (*O. tshawytscha*), coho, chum (*O. keta*) and steelhead (*O. mykiss*) to identify their susceptibility to *ISAV* and found that it did not cause disease in those species.

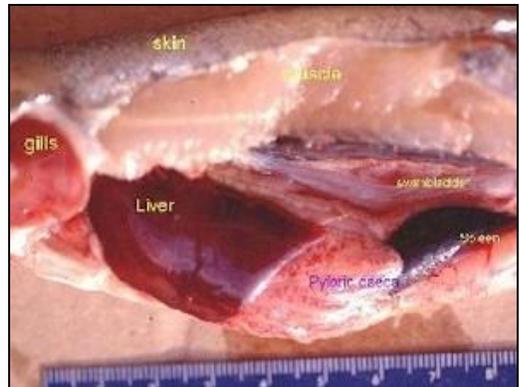
The reservoir hosts for *ISAV* are currently unknown. The virus is transmitted horizontally (fish to fish) and the literature states vertical transmission is unlikely. However, Chile only imported eggs from Norway, so some form of vertical transmission – likely egg surface-associated – exists. Attempts to isolate the virus from inside the egg have not been successful.

ISA was first reported in Atlantic salmon farms in Norway in 1983/84. Some scientists speculate that before that time, the virus was present in a different genetic strain and mutated to a pathogenic strain. *ISAV* has since been isolated from Atlantic salmon in marine net pens in Scotland, boundary waters between New Brunswick (Canada) and Maine (United States), Great Britain, Chile, and in the Faroe Islands. The virus has never previously been detected in any species on the West Coast of North America.

There is no known treatment for *ISAV* once a fish contracts the virus. Economically, the disease has had tremendous impacts on the Atlantic salmon industry where it causes extensive mortality in market-sized fish. Reports list the annual cost (US dollars) to Atlantic farmers during the 1999 epidemics in Canada were approximately \$14 million and in Norway they were \$11 million. The 1998-1999 epidemic in Scotland cost an estimated \$32 million.

The World Animal Health Organization lists the following methods as acceptable for the detection of *ISAV*: (1) Polymerase Chain Reaction (PCR) assay; (2) cell culture using a susceptible cell line (the preferred cell lines are ASK and SHK-1); and (3) indirect fluorescent antibody testing (IFAT). WDFW does not use either of those cell lines. However, we do use the CHSE-214 cells and it is reported to be susceptible for the pathogenic strains of *ISAV*.

WDFW Fish Health staff have authored an *ISAV* surveillance plan that is being evaluated by regional and national workgroups that include representatives from NOAA, USFWS, Northwest Indian Fish Commission (NWIFC), USGS and USDA-APHIS. We are also working with non-profits to seek their assistance. More recently, USDA-APHIS has also formed a workgroup that is evaluating the Canadian findings and the subsequent testing that Canadian researchers are conducting.



Internal organs of a salmon infected with *ISAV*.

Image by M. Opitz, University of Maine



Atlantic salmon with *ISAV*, showing lesions, dark liver, ascites and enlarged spleen. Photo from *Aquatic Animal Diseases Significant to Asia –Pacific Identification Field Guide*

Catie-Kelly Corner *By Catie Mains and Kelly Henderson, Science Division/BDS-Hatchery Data Section* Kelly: On the road with FishBooks

FishBooks is an on-line data collection system for WDFW Hatcheries and staff. The development of the *FishBooks* was intended to standardize data entry for all hatcheries, to create one set of numbers that can be viewed by both hatchery data enterers and data managers, and to reduce the amount of paper generated by printing reports, faxing and filing. *FishBooks* data is entered by hatchery staff, and can be viewed by managers, Fish Health, biologists, the CWT laboratory, and others within the Agency.

Kelly Henderson of the **Hatchery Data Section** has been on the road, travelling throughout the state since August, leading *FishBooks* training sessions for hatchery workers, regional staff, biologists, Fish Health, Fish Management, and the Hatchery Evaluation and Assessment Team (HEAT). She designed separate in-depth training sessions at each of the regional offices and the NRB for either hatchery users doing data entry or read-only users looking for data. Overall these sessions have been successful in training new users on the ins and outs of the system, and have been a great way to share some tips and tricks with seasoned users to help them streamline information entry. This has also provided an excellent forum for questions and suggestions on how *FishBooks* can better meet the needs those doing data entry and those doing data extraction.

The screenshot shows the FishBooks interface for GEORGE ADAMS HATCHERY. It includes a navigation menu with options like 'Hatcheries', 'Reporting', 'Adults In', 'Adults Out', 'Spawn', 'Carcass', 'Incubation', 'Rearing', and 'Container'. The main content area displays 'Hatchery Status for GEORGE ADAMS HATCHERY' with filters for 'Egg/Juvenile Brood Filter' and 'Adult Brood Filter'. Below this is a table of 'Recent Events' with columns for Event Date, Event Type, Container, Brood, Event Description, and Comments. A second table, 'Container Loadings', shows data for various containers including Raceway-5, Raceway-4, Raceway-3, Raceway-2, and Pond-7, with columns for Fish, FPP, Sampled, Flow, Fork Length, Pounds Fish, LBS / GPH, Capacity, Flow Idx, Density Idx, and Turnover Rate.

Even though almost all information previously collected by the Hatchery Data Section (adult reports, plant reports, and QC information) is now reported in *FishBooks*, there are still forms and information that is required to be sent in:

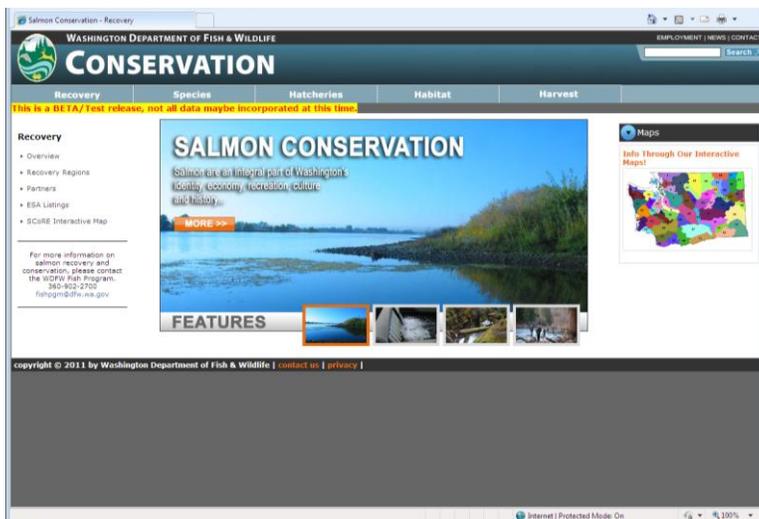
- 🐟 Weekly Hatchery Escapement Estimate
- 🐟 Form 3- Fish and Egg Disposition Tickets
- 🐟 Weekly Hatchery Catchable Report
- 🐟 Plants Sheets and Monthly Adult Reports for Cooperatives

The basis for all of the information entered into *FishBooks* comes from the Hatcheries themselves. During the busiest days of spawning or releasing, data may not be updated daily. But it is very important for *FishBooks* to be as up to date as possible at the nearest convenient time.

Please feel free to contact Kelly at 360-902-2684 or **Catie Mains** at 360-902-2503 for any questions, to sign up to become a user, or if you are experiencing any problems with the application.

What's the SCoRE?: Update

WDFW has developed its new *Salmon Conservation and Reporting Engine* (SCoRE) website to improve the Agency's data reporting and communication around salmon recovery. This website is currently in its beta-testing phase and has been quite some time in the making. We are excited about moving towards improved transparency and accountability in reporting and the opportunity it affords in strengthening its salmon recovery partnerships. This release of SCoRE is the first phase of a multi-phase reporting system that will be improved upon over time.



Hatchery Maintenance By Neil Turner, Hatchery Reform Capital Projects

The **Capital Asset Management Program (CAMP)** has hired **Travis Allgood**, a Maintenance Mechanic who will be dedicated to completing routine hatchery maintenance. His duties will include pump maintenance, generator maintenance (belts, hoses, fluids, etc.), screen maintenance, alarm troubleshooting, and other small hatchery repairs. In addition to the above duties he will also be taking pictures and identifying other larger projects that will need to be completed in the future.

Travis has been trained in pump maintenance, and will be trained in generator service within the next month. A maintenance schedule has been distributed, but, currently CAMP is behind by approximately one month. If generator servicing is required in the next couple of months, it should probably be completed by your usual vendor until Travis gets up to speed and back on schedule.

I hope that through a regular maintenance regime, Travis will catch problems sooner than later. Preventative maintenance should reduce the current “break-then-fix” mode we’ve been in. It will also help us get back on track with prioritizing our maintenance funds toward actual maintenance needs rather than the more expensive emergency fixes.



Sub-sampling (continued from page 4)

It is very important to the success of the CWT program and to future potential sub-sampling that this process be conducted and documented in a scientific manner. It is equally important for hatcheries to accurately sample for CWT groups to determine hatchery contribution rates.

We understand and appreciate the effort required to sample for CWTs. If you have any questions about sub-sampling please contact **Mark Kimbel** at: (360) 902-2406.



Tracey Scalici dissects the cores, to retrieve the tag, then reads the code in the CWT Lab in the NRB (Olympia).



Staff Happenings By Ami Hollingsworth, Hatcheries Division Admin Assistant

Please join me in wishing the following employees success in their new positions:

NRB - Olympia

Gary Marston, FB2, HEAT

Region 1

Michael True, FHS1, Ford Hatchery

Daniel Pounds, FHT, Lyons Ferry Hatchery

Region 2

Paula DeHart, FHT, Eastbank Hatchery

Region 5

Greg Haldy, FHS4, Washougal River Hatchery

Tim Holder, FHS3, relocated from Similkameen to Goldendale Hatchery

Marilyn Scott, FHS3, Klickitat Hatchery

Region 4

David Whitmer, FHS4, Arlington Hatchery/ White Horse Ponds

Josh Lewis, FHS3, Kendall Creek Hatchery

Michael Sedgwick, FHS3, relocated from Bogachiel Hatchery to Cedar River Hatchery

Bruce Ault, FHS2, relocated from Goldendale to Wallace River Hatchery

Region 6

Rick Grimsley, FHS2, relocated from Elwha to Hurd Creek Hatchery



Jeremy Jording, formerly of HEAT, accepted a position as a Fishery Biologist with NOAA/NMFS in their Salmon Recovery Division in Lacey.

What hatchery is this?



Simpson Hatchery (now Bingham Creek Hatchery)



Washington Department of Fish and Wildlife Hatcheries Division 600 Capitol Way N., Olympia, WA 98501

The Washington Department of Fish and Wildlife (WDFW) serves Washington's citizens by protecting, restoring and enhancing fish and wildlife and their habitats, while providing sustainable and wildlife-related recreational and commercial opportunities.

Comments are always welcome and much appreciated. This newsletter is for you; to keep us connected, share information, and motivate us to new levels of scientific exchange and hatchery management. Suggestions are being taken for future articles. Tell us what you want to read about!

– Contact: Lori Kishimoto

<mailto:fishpgm@dfw.wa.gov>
<http://wdfw.wa.gov/fish/management/hatcheries.html>

The Intake is also available on the [WDFW web page](http://wdfw.wa.gov/hatcheries/newsletter.html) at <http://wdfw.wa.gov/hatcheries/newsletter.html>