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Director's Greeting....

As we wind down towards the end of another fiscal year, I would like to thank the entire staff of AFTC for their dedication and commitment to aquatic resource conservation. Their ongoing efforts provide a significant contribution to the work of the Pacific Region's Fisheries Resources Program. As we move into a new fiscal year, we will continue to face significant challenges, but I know the staff will maintain their tradition of giving more than 100% to FWS' conservation activities.

Staff:

Administration/Facilities:

Judy Gordon, Center Director
 Patty Crandell, Deputy Center Director
 Vince Bocci, Administrative Officer
 Toni Scholder, Administrative Assistant
 Mark Hack, IT Specialist
 John Holmes, Fish Biologist
 Shawn Swartout, Biological Science Aide
 Scott Gronbach, Facilities Op Specialist
 Jeff Poole, Water Treatment Plant Operator
 Jim Lowell, Maintenance Worker

Nutrition:

Ann Gannam, Regional Nutritionist
 Ron Twibell, Fish Nutritionist
 Nathan Hyde, Biological Technician
 James Barron, Fish Biologist

Conservation Genetics:

Christian Smith, Acting Regional Geneticist
 Pat DeHaan, Conservation Geneticist
 Brice Adams, Fish Geneticist
 Matt Smith, Conservation Geneticist
 Jennifer Von Bargaen, Lab Geneticist
 Dan Bingham, Fish Geneticist

Ecological Physiology:

Chris Taylor, Regional Eco-Physiologist
 Kyle Hanson, Fish Physiologist
 Ben Kennedy, Fish Ecologist
 Richard Glenn, Microbiologist
 Will Simpson, Fish Ecologist
 Kurt Steinke, Electronics Engineer

Modeling and Management Decision Support:

Doug Peterson, Senior Scientist

Cub Scouts Visit AFTC



Cub Scouts visiting the hatchery.
USFWS:T.Scholder



Cub Scouts learning how salmon "Smell their way home".
USFWS:T.Scholder

Matt Smith and James Barron hosted a local Cub Scout troop at AFTC on August 18. The scouts enjoyed a tour of the hatchery and laboratory facilities. A discussion regarding salmon homing behavior was followed by the "Smell Your Way Home" game, where scouts used their sense of smell to pretend they were salmon returning to spawn in their natal tributaries.

Be sure to read Ann Gannam's article in the Spring 2013 issue of *Eddies* on Dr. John Halver, one of aquaculture's pioneers!

Program Highlights....

Nutrition

The Nutrition Program analyzed 33 feed samples for fish feed quality control in July and August. As part of the routine analyses, all feeds from the hatcheries were checked for rancidity. Ann Gannam wrote the feed memos and then contacted the feed mills when necessary.

Data from the diet trial at Makah NFH, where they have been testing the transfer diet, BioSupreme has been organized and analyzed. The fish from the study and feeds used in the study were analyzed for proximate and fatty acid composition and a report is forthcoming. The Ecological Physiology Program collaborated on this project.

The Nutrition Program started the lamprey ammocoetes feeding trial to examine density, feeding level and added nutrients. James Barron has the lead on this project. Tank preparation was done with the help of a volunteer, 16 year old Adam Duresky of Bellevue, NE. The fish were stocked and the study initiated July 24.



Ann Gannam and Ron Twibell counting lamprey ammocoetes.
USFWS

Nutrition cont....



James Barron and volunteer Adam Duresky cleaning sand to be used as substrate in the lamprey tanks.

USFWS: A. Gannam



Pacific lamprey ammocoetes.

USFWS

An altered feeding regime trial was begun in cooperation with Carson NFH to study the effect of the regime on the number of precocious spring Chinook produced. Nutrition Program staff sampled initial fish and feed before the trial began. Ecological Physiology staff also took an initial gill sample to look at ATPase activity. The study started July 28. Nathan Hyde analyzed the fish and feed samples for proximate composition. Ron Twibell will analyze them for fatty acid composition.

Program Highlights cont....

Nutrition cont....

One of AFTC's 10' tanks has been converted to a prototype tank with the capability of reproducing the flow dynamics of reuse tanks. A velocity meter on loan from the Freshwater Institute is providing flow information. These tanks will be used to study the effects of water velocity on composition, growth, condition and performance of juvenile Pacific salmon.



Converted tank for the juvenile Pacific salmon study.
USFWS: A. Gannam

The Nutrition Program has been assisting with Ecological Physiology's annual stream survey. Twice in July and August Nathan Hyde assisted in Abernathy Creek.

Ron Twibell met with a Masters degree student from WA State University, Vancouver to discuss his research concerning fatty acids in bull trout.

Three manuscripts were reviewed: two for the journal *Aquaculture* and one for the journal *Marine Pollution Bulletin*.

Conservation Genetics

Dan Bingham analyzed genetic data for Abernathy Creek steelhead as part of a Bonneville Power Administration (BPA) funded relative reproductive success study between hatchery and natural-origin fish in that system. By including the original fish captured to found the hatchery population, this analysis will provide novel insight into fitness comparisons between hatchery and natural-origin fish.

Christian Smith collaborated with geneticists at NOAA Fisheries, University of CA, Merced, and other FWS offices to complete a genetic analysis of the coho salmon population at Quilcene NFH. This work was conducted as part of a larger project to generate genetic profiles of all NFH broodstocks. The results from Quilcene NFH were notable in that they provided new insight into the role precocious males ("jacks") play in shaping populations of coho salmon.

Brice Adams conducted rapid response analysis of bull trout collected in the Lewis River, WA. This analysis was funded by PacificCorp under a collaboration between the utility and the FWS to improve our ability to conserve this species.

Jennifer VonBargen optimized RNA extraction and amplification of several gene expression assays developed under a collaboration with the University of Victoria, Canada. The markers provide unique insight into the smoltification process in steelhead, and are the first gene expression markers analyzed at AFTC.

Conservation Genetics cont....

Pat DeHaan and Jennifer VonBargen collected genetic samples from juvenile bull trout in the Clark Fork River, ID. Analysis of these samples will be funded by Avista Corp. as part of an ongoing collaboration between the utility company and the FWS to conserve the genetic resources of bull trout.



Juvenile bull trout in the Clark Fork River, ID
USFWS: P. DeHaan

Jennifer Von Bargen and Christian Smith completed the 2013 analysis of endangered Sacramento River winter run Chinook salmon with 3 events in July including 15 rapid-response samples and 111 non rapid samples. The 2013 totals for this project were 715 samples across 24 events. The results of this analysis were used to select broodstock for Livingston Stone NFH.

Dan Bingham assisted the Ecological Physiology program with electrofishing in Abernathy Creek four times per week.

Members of the Conservation Genetics Program and other AFTC and RO staff performed parentage-based tagging sampling of spring Chinook salmon at Carson NFH.

Ecological Physiology

Kurt Steinke and Chris Taylor helped WA Department of Fish and Wildlife install a PIT (passive integrated transponder) tag system to monitor Bull Trout in Rush Creek in the Gifford Pinchot National Forest. It uses a FS2001F-ISO reader powered by lead-acid batteries that are recharged from a micro hydropower generator.

Kurt Steinke diagnosed, repaired and calibrated the Nutrition Program's oscillating water bath. Its temperature controller had to be replaced, and its tuning was adjusted to decrease the time it takes to get to temperature.

Kurt Steinke built a 10 Amp-hour NiMH battery pack for the Smith-Root Electrofisher. It features D-size cells which can be replaced, twice the capacity of the stock lead-acid battery, and will not burst into flame or explode if exposed to water as Lithium batteries will. It will allow the electrofisher to be used all day without having to change the battery.

Ecological Physiology began late summer/fall electrofishing on Monday, August 12. A group of volunteers from regional colleges and universities is helping and gaining important and useful experience. The BPA funded project is investigating differences between hatchery and natural-origin steelhead. The work will be conducted Monday through Thursday each week into October or until rising waters prevent sampling. Once again, we are grateful for some wonderful volunteers from Portland State University (Chelsea Clawson) and Mount Hood Community College (Chris Taylor and Lindsay Helzer).

Ecological Physiology cont....

Richard Glenn finished running 2473 physiological assays (sodium and potassium ATPase) samples for Puget Sound Energy to assess the osmoregulatory capacity of juvenile sockeye salmon collected in floating surface collectors on Lake Shannon.

Ben Kennedy met with Bill Gale and Matt Cooper of Mid-Columbia River FRO and Chris Tataara and Barry Berejikian of NOAA Fisheries to discuss mark-recapture survival analysis of steelhead smolts released from Winthrop NFH.

Chris Taylor participated in a conference call with the Pacific Lamprey Conservation Team.

Chris Taylor submitted a book proposal to the AFS Books section. The book's tentative title is, *The Biologist Friendly Guide to Aquatic Pit Tag Interrogation System Construction*.

Modeling and Management Decision Support

Doug Peterson worked extensively on a modeling project for Avista Corporation's Native Salmonid Restoration Plan for the Lower Clark Fork River. The overall project objective is to build a structured decision model to allow biologists to systematically evaluate alternative management actions to benefit ESA-listed bull trout in the Lower Clark Fork River basin. The intent is that the model will be used for strategic planning and lead to more efficient use of conservation resources

Modeling and Management Decision Support cont....

Doug Peterson participated in two Avista Corp. conference calls with the planning team, which includes biologists from Avista and FWS. He delivered a 3-hour webinar for the project's modeling team which includes biologists from Avista Corp.; ID Fish and Game; MT Fish, Wildlife and Parks; US Forest Service, and FWS Mountain Prairie Region. He analyzed bull trout monitoring data (redd counts, juvenile densities, etc.) and summarized habitat data from the Lower Clark Fork River, used that information to refine the draft decision support model for bull trout, and prepared for an upcoming two-day modeling workshop with project stakeholders.

Doug Peterson represented AFTC at the Quilcene NFH's co-manager meeting in Quilcene, WA. He updated the group on AFTC's efforts to evaluate the potential impact of climate change on the hatchery. After the meeting he took a tour of the NFH with manager Ron Wong, and a hatchery volunteer.

Administration/Facilities

Speros Doulos, Columbia River Gorge NFH Complex Manager, spent his next to last working day before his retirement visiting with the AFTC staff. His insight, commitment, and dedication to aquatic resource conservation were a significant contribution to the Pacific Region's aquatic management activities. Speros will be sorely missed and we wish him all the best in his retirement.

Program Highlights cont....

Administration/Facilities cont....

Judy Gordon hosted a visit from Brian Lawler, Charles Kittay (both from the division of Diversity and Civil Rights) and Deena Pierott, who runs the non-profit iUrban Teen Tech. The focus of iUrban Teen Tech is to hold summits on college campuses in WA, OR and CA to connect youth to careers in science, technology, engineering, and mathematics (STEM). The focus is on students who are in high school, from urban, low-income, and/or single parent homes. Deena Pierott traveled to the White House to participate in the 2013 Champions of Change in Technology and Inclusion national event. Plans are underway to host an iUrban Teen Tech event next summer at AFTC.

AFTC Senior Staff held a retreat in August. Many topics were discussed including managing under the challenging budget climate, improving communication among AFTC's employees, and improving the marketing of the AFTC's capabilities and technical services.

Patty Crandell assisted the Pacific RO staff with interviews for the Lower Snake Compensation Plan Program Manager.

Patty Crandell participated in several discussions with Bill Gale from the Mid-Columbia River FRO about scheduling and organizing the vulnerability assessments for the Olympic Peninsula NFHs starting with Quilcene NFH.

Administration/Facilities cont....

Although Scott Gronbach was out of the office much of July working for the Navy down in San Diego, CA, Facilities continued to churn out routine and corrective maintenance efforts without skipping a beat as expected. One activity was removing the moss and mildew from the main office building roof through the use of Safe Wash and a pressure washer. AFTC hopes that this will add a few more years to our very tired roof.

Facilities was ecstatic to reach the final milestone on the Biofilter Demolition Project after methodically chipping away all-year. Now, in the place of the Biofilter sits a modest but stellar 10x12 electrical distribution building supplying power to the electric weir, the antennae arrays along the bridge, and the spawning building. The final milestone, fill in the emptied concrete bays, has been placed on hold until NEPA (National environmental Policy Act) permitting via Cowlitz County Building & Planning is completed due to the close proximity of the bays to Abernathy Creek.

Jeff Poole completed and utilized a Standard Operating Procedure (SOP) to switch the facilities wells without compromising the integrity of water quality within the hatchery or the domestic reservoir. The annual well water testing required by the WA Department of Health has now become streamlined and increasingly communicated to all stakeholders.

Administration/Facilities cont....

Once the new electrical distribution building was completed, Jim Lowell turned his attention towards repairing the main conference room walls that were found to be heavily damaged last fall by water and insect infestations. Through an allotment of deferred maintenance funds, Jim systematically devised and implemented a bill of materials to restore both the exterior and interior to the much-needed conference room that has AFTC has been limping along without in FY13. At the end of August, all of the damaged materials were removed and most of the exterior east-facing wall was restored to its original state. Jim expects to have the remaining phases of the repair project completed by mid-October.



Conference room rehab in progress.
USFWS: S. Gronbach

When not playing Navy, demolishing the Biofilter or lending a hand in restoring the main conference room, Scott Gronbach finalized the Comprehensive Condition Assessment (CCA) report for the Quilcene NFH on behalf of the Regional Office. Through his efforts, more than a dozen previously undocumented asset repairs were placed onto SAMMS work orders, more than 50 active work orders were updated, and each asset at the NFH was thoroughly inspected and given a current replacement value (CRV). Scott hopes that the Pacific RO asks him to complete another (or two!) CCA in FY14.

Administration/Facilities cont....

Aside from testing the wells, Jeff Poole also led the herculean effort to purge and disinfect the 12,000 gallon concrete reservoir. While ensuring sanitary regulations and safety precautions were met, Jeff and Scott waded in the reservoir and stirred up the silt and other long-standing debris that accumulated over several decades. This soon to be annual affair has reduced the discoloration and taste displeasure of the domestic water dramatically in only a few short weeks.



Domestic water reservoir.
USFWS: S. Gronbach

Sun Exposure Awareness was discussed during July's Safety Meeting and in August, Ron Twibell provided the staff with a robust Chemical Hazard Communications (HAZCOM) discussion. As a result of the HAZCOM training, the need to switch over to the Globally Harmonized System (GHS) of classification and labeling of chemicals in 2014 was identified. For those unfamiliar with this change, through GHS and OSHA (Occupational Safety and Health Administration) regulations, the FWS shall be required to utilize Safety Data Sheets (SDS) as opposed to the traditionally used MSDS's for our chemical handling and storing activities.

Administration/Facilities cont....

The Safety Committee met to discuss the remaining 2013 Self-Audit Safety Checklist deficiencies and to bolster the plan to eliminate each safety violation from the list.

Reports and Publications....

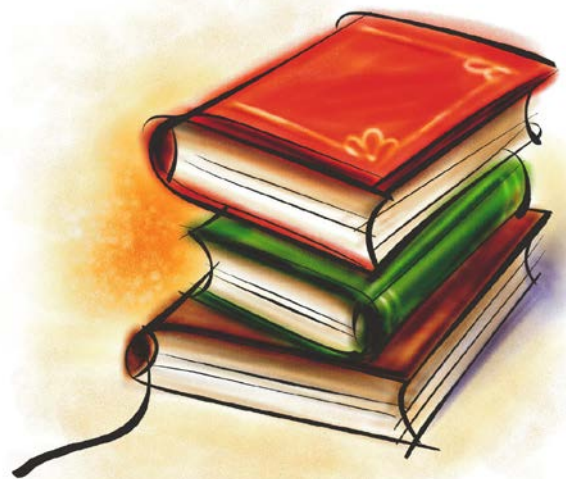
Nutrition:

Thompson, K. R., A. Velasquez, A. Patterson, J. T., Metts, L. S., Webster, C. D., Brady, Y. J., Gannam, A. L., Twibell, R. G., and Ostrand. S. L. 2012. Evaluation of plant and animal protein sources as partial or total replacement of fish meal in diets for Nile tilapia fry and juvenile stages. *North American Journal of Aquaculture* 74: 365-375.

Ecological Physiology:

Simpson, W. G., and C. Taylor. 2013. The monitoring and evaluation of incidental take of Mid-Columbia River Steelhead at Umatilla Project diversion dams and canals 2006-2012. AFTC report to the Bureau of Reclamation, Hermiston, OR.

Miyazono, S. and C.M. Taylor, 2013. Abundance, distribution, and habitat use of the threatened minnows *Compostoma ornatum* and *Notropis Chihuahua* in the Trans-Pecos region of Texas. *The Southwestern Naturalist* 58:163-169.



Nutrition:

- Ann Gannam, Ron Twibell, James Barron and Doug Peterson (Modeling and Management Decision Support Program) attended the National Science Foundation (NSF) Webinar Aquaculture-related research opportunities.
- Ann Gannam attended the Science Support Partnership program (SSP) meeting in the Pacific RO.

Conservation Genetics:

- Matt Smith met with our partners at Seattle City Lights and US Geological Survey` to discuss a collaborative project to understand the ancestry of bull trout in the Skagit River, WA. Seattle City Lights provided funding for the FWS to analyze genetic samples, and now all three partners are analyzing data and preparing a report.
- Pat DeHaan attended a meeting of the Clark Fork Aquatic Implementation Team (AIT) in Noxon, MT.

Administration/Facilities:

- Judy Gordon participated in the Oregon Hatchery Research Center's research coordination meeting held in Alsea, OR. The purpose of the meeting was to provide an opportunity for all stakeholders to voice their concerns and opinions on research to be conducted by the State of Oregon operated facility.
- Judy Gordon participated in Pacific Region Science Coordination Team conference calls to discuss the Team's charter.
- Judy Gordon participated in a meeting of the North Pacific Landscape Conservation Cooperative's Science-Traditional Ecological Knowledge Subcommittee.
- Judy Gordon and Patty Crandell participated in the Pacific Region Fisheries Project Leaders conference calls.
- Judy Gordon attended the Makah NFH Hatchery Evaluation Team meeting.
- Patty Crandell participated in two Regional Climate Board meetings by phone.
- Patty Crandell participated in Fish Technology Center meetings by phone.
- Patty Crandell completed Concur Government Edition Federal Supervisory Travel Approver Training.
- Patty Crandell took part in a meeting organized by the Lower Columbia River Fish Recovery Board to discuss conceptual designs developed for two restoration sites on Abernathy Creek.

Cowlitz County Fair

AFTC had a booth at the Cowlitz County fair in Longview, WA. The fair ran from July 25th-July 28th. The booth had information that explained what kind of research is conducted by AFTC. Pamphlets concerning Pacific salmon, invasive species, pollinators, fish friendly gardening as well as others were made available. Word games, mazes and posters with fish themes were given to the children visiting the booth. About 700 people visited the booth, both children and adults.

Nature Explorers



James Barron and Nathan Hyde represented AFTC during Longview Parks and Recreation Program, Nature Explorers' class for 5-7 year olds. Aspen Clontz was conducting the class. It was held at the Monticello Middle School, Longview, WA. James and Nathan showed 9 kids how to "Smell Your Way Home".