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iUrban Teen participants explaining their results.

USFWS: J. Gordon

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 James Barron, Fish Biologist

**Conservation Genetics:**

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 Brice Adams, Fish Geneticist  
 Matt Smith, Conservation Geneticist  
 Jennifer Von Bargaen, Lab Geneticist  
 Dan Bingham, Fish Geneticist

**Ecological Physiology:**

Kyle Hanson, Acting Regional Eco-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

## iUrban Teen

iUrban Teen brings together underrepresented teens for programs such as tech tours, toastmasters, job shadowing, mentoring and the summit, an all-day, immersive event. Teens learn leadership skills at the programs as well as what's new in the amazing world of technology. The mission of the program is to expose non-traditional STEM (Science, Technology, Engineering, Math) learners to opportunities in STEAM (STEM + Art) careers and to encourage high school graduation and extended learning.

The third iUrban Teen Tech Summit was held on Saturday, October 26th on the Vancouver campus of Washington State University (WSUV). The iUrban Teen program was launched three years ago on the WSUV campus and has been growing ever since. This White House honored program is designed to expose African American and Latino youth ages 13 to 18, to careers in technology. Summit attendees learned about what's new in the world of technology and got first hand exposure to technology careers in Cyber Security, Energy, Environmental Science, and Gaming.

AFTC staff, Judy Gordon and Dan Bingham, presented an activity entitled "DNA: Genetic Tags in Fish" to approximately 90 participants. This activity introduces the audience to genetics by having participants identify parents and location (National Fish Hatchery) of fish (progeny) using sample microsatellite graphs. Pairs of student were given 16 fish to correctly identify followed by discussion of the importance of fish returning to their home location and how such genetic tools are used in other fields (i.e. forensics).

## Program Highlights....

### Nutrition

The Nutrition Program analyzed 28 feed samples for fish feed quality control from September through November as well as two samples for AFTC. As part of the routine analyses, all feeds from the hatcheries were checked for rancidity. Ann Gannam wrote the feed memos and contacted the feed mills when necessary.

The Nutrition Program terminated the lamprey ammocoetes feeding trial that examined density, feeding level and added nutrients. James Barron had the lead on this project. Data collected included length, weight and survival of the fish at the various densities and feeding regimes. Data analysis and write-up are underway. The focus of this research is to develop diets and rearing methods for artificial propagation of lamprey.



2013 lamprey harvest.  
USFWS: J. Barron

Four manuscripts were reviewed, one for the Journal of Aquaculture, one for the Journal of the World Aquaculture Society and two for the North American Journal of Aquaculture. A grant proposal for the Saltonstall-Kennedy Grant Program (NOAA) was also reviewed.

### Nutrition cont....

A low phosphorus feeding trial using coho was started in November. The Program is conducting a 12 week feeding trial to evaluate low phosphorus diets in coho salmon. The primary objective is to determine whether lecithin, a form of lipid that contains phosphorus (P), is a good source of P for salmon. Lecithin is sometimes added to fish feeds, but not as a source of P. In this study, much of the dietary P is provided by lecithin rather than by fish meal. Thus, this study is a unique evaluation of lecithin as a new source of P in low-fish meal and low-P diets for coho salmon. Two additional dietary treatments contain guar gum. Dietary guar gum has been shown to stabilize fecal pellets when fed to some fish which can result in lower P levels in hatchery effluents. Increasing the stability of fecal pellets can help waste removal from hatchery effluents and thereby reduce hatchery effluent pollution levels. Each of the nine diets containing different levels of lecithin, P and/or guar gum are being fed to triplicate groups of 40 juvenile coho salmon.



Ron Twibell and Nathan Hyde cleaning the phosphorus study tanks.  
USFWS: A. Gannam

### **Nutrition cont....**

Three of the 10 ft. diameter tanks have now been converted to include the capability of producing the flow dynamics of recirculating aquaculture systems tanks. Three control tanks are providing standard water flow using a spray bar. These tanks are being used to study the effects of water velocity on body composition, growth, condition and performance of juvenile Pacific salmonids. One thousand fish were stocked into each of the six study tanks. A commercial diet is being used and fed according to standard study protocols. A velocity meter on loan from the Freshwater Institute is providing information for adjusting the flows. The FONS (Fisheries Operational Needs) study was started in November and will continue through April.

A brief altered feeding regime was tested at Carson NFH. The hypothesis is that the regime will allow for reduced growth of the fish in the hatchery and alter the body composition of the fish by reducing the lipid content during a life stage when sexual maturity is determined. The goal is a lower percentage of precocious fish. The feeding trial started in July and continued to November. Four raceways supplied with spring water (5.6-7.2 C) were used for the treatment feeding protocol. The four control raceways in the same bank were fed according to standard hatchery practices. The alternative feeding protocol was followed in the treatment raceways with the fish being fed one week using the standard method and fasted one week. The same feed was used in the control and treatment raceways. This project is in cooperation with the Ecological Physiology Program.

### **Nutrition cont....**

Ann Gannam presented a summary of effluent phosphorus issues and possible nutrition answers titled "Effluent issues at NFHs, possible solutions" at FWS's 2013 Hatchery Management Training (HMT).

### **Conservation Genetics**

Dan Bingham, Matt Smith, Pat DeHaan and Christian Smith worked with the Eco-Physiology Program to sample steelhead from Abernathy Creek. Fifteen hundred steelhead were analyzed by Brice Adams and Dan Bingham using microsatellite markers. The goal of this work is to evaluate relative fitness of the integrated broodstock at AFTC and is funded by Bonneville Power Administration (BPA).

Jennifer VonBargen and Matt Smith analyzed single nucleotide polymorphism (SNP) markers in steelhead from the Deschutes River for a study of the impacts of hatchery strays on the reproductive success of wild fish. This work is part of a collaboration between the Service and OR Department of Fish and Wildlife (ODFW) to understand the impacts of hatcheries on wild populations.

Brice Adams and Pat DeHaan conducted rapid-response analysis of bull trout for our partners at Avista Corporation. The information from that work is being used for bull trout passage management in the Clark Fork River, MT.

Christian Smith and Jennifer VonBargen worked with geneticists at Idaho Department of Fish and Game (IDFG) to develop a database which will allow researchers at several of our partner agencies to share data for Chinook salmon and steelhead.

### Ecological Physiology

Program staff assisted the Nutrition Program collecting and counting juvenile lamprey at the end of a feeding trial. Richard Glenn assisted with collecting adult coho data as fish migrated to spawn in Abernathy Creek. Richard Glenn assisted the Nutrition Program with stocking fish and collecting gill samples for a FONS project that evaluates the biological effects of recirculating aquaculture systems on steelhead.

Program staff removed passive integrated transponder (PIT) tag antennas from Abernathy Creek. These antennas are used to monitor the emigration of juvenile steelhead from the creek annually.

Ben Kennedy served as subject editor for a paper submitted to the Service's Journal of Fish and Wildlife Management.

Kyle Hanson summarized the findings of a literature review on the effects of water flow on fish performance at the HMT. His discussion was titled, "Effects of RAS on fish performance".

Kyle Hanson and Ann Gannam briefed Fisheries Resources staff in the RO on the results of FONS projects that looked at low phosphorous fish feeds, jack salmon percentages as related to climate indices, and gene expression in emigrating steelhead.

Will Simpson worked with the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) to examine river conditions and fish movement coincident with adult steelhead entrainment in water diversions on the Umatilla River, OR.

### Ecological Physiology cont....

Will Simpson and Richard Glenn calculated the saltwater age of Abernathy Creek steelhead based on scale samples as part of a study examining how fish supplementation affects the demographics and reproductive success of steelhead.

Kurt Steinke wrote an SOP (Standard Operating Procedure) for the construction of a DC/DC converter that can be used to power PIT tag readers from a 24V solar panel system. This equipment is primarily used for powering PIT systems in remote areas where no other power sources are available.

Kurt Steinke helped the Washington Department of Fish and Wildlife (WDFW) remove a PIT tag system that is used to monitor bull trout in Rush Creek in the Gifford Pinchot National Forest.

Kurt Steinke, Will Simpson, and Chris Taylor used mobile PIT antennas to scan for fish in Maxwell Canal near Hermiston, OR, and performed maintenance on the PIT tag systems there. This work is part of a Bureau of Reclamation (BOR) funded study to determine the impacts of diversion canals on juvenile salmon migrating through the Umatilla River.

Will Simpson provided ongoing advice to ODFW personnel on the installation and operation of PIT tag equipment used to detect salmon at Three Mile Falls Dam in northeast OR.

### **Modeling and Management Decision Support**

Doug Peterson continued to work on a modeling project for Avista Corp. Native Salmonid Restoration Plan for the Lower Clark Fork River. He gave two webinar updates to research partners at the Avista; IDFG; Montana Fish, Wildlife and Parks; US Forest Service (USFS); and the Mountain Prairie Region of the Service.

Doug Peterson and co-authors at the USFS Rocky Mountain Research Station had a paper accepted for publication in the journal Ecology of Freshwater Fish. The paper evaluated the amount of habitat – referred to as ‘patch size’ – that is needed to sustain cutthroat trout in stream networks isolated for up to 100 years by human-made barriers. The study found that occurrence of cutthroat trout was positively related to patch size, but was not related to how long the patch had been isolated.

Doug Peterson helped to clarify issues with water and climate change at the HMT. His discussion was titled, “Climate change and salmon culture at NFH – a practical modeling approach to identify potential vulnerabilities and help mitigation.”

Doug Peterson participated in a meeting with partners in the Service, USFS, and US Geological Survey (USGS) to discuss progress and application of a range-wide vulnerability assessment for bull trout. The vulnerability project is led by Jason Dunham, USGS, Forest and Rangeland Ecosystem Science Center, Corvallis, OR.

### **Modeling and Management Decision Support cont....**

Doug Peterson consulted with the Colorado Division of Wildlife on their efforts to conduct a status assessment for Rio Grande cutthroat trout. He helped them update a decision support model so that it could incorporate empirical temperature data collected in streams occupied by conservation populations of Rio Grande cutthroat trout.

### **Administration/Facilities**

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

Patty Crandell took part in a public outreach event hosted by the Lower Columbia River Fish Recovery Board in Longview, WA. The purpose of the meeting was to provide information regarding the work that tribal, State, County, Federal, and private non-profit agencies are performing in Abernathy Creek, to engage people in assisting the agencies with salmon recovery, and to be available to answer questions. The meeting was attended by residents of Abernathy Creek Road as well as representatives from the Cowlitz Tribe, WA Department of Fish and Wildlife, WA Department of Ecology, WA Department of Natural Resources among others.

## Program Highlights cont....

### Administration/Facilities cont....

Scott Gronbach and Judy Gordon met with Cowlitz County Department of Planning to discuss permitting to enable annual maintenance of the AFTC's surface water intake to occur.

Judy Gordon spoke with representatives from Washington State University's Vancouver Campus to address questions surrounding the university's academic planning efforts.

Julie Doumbia, the new COTR for the BPA funded Abernathy Creek steelhead project, and Jeff Gislason, the hatchery lead for BPA, visited AFTC. Julie and Jeff got a tour of the facility and many technical and administrative questions were answered about the project.

In November, Chris Taylor resigned from federal service to take a full professorship position in the Department of Biology at the University of Texas – Pan-American campus. Everyone at AFTC wishes him all the best!



Chris Taylor  
USFWS

Benjamin Gilles, acting manager of the Quinault NFH, stopped by with his father and brother to visit AFTC. Jim Lowell showed them the facility and Pat DeHaan gave them a tour of the genetics laboratory.

### Administration/Facilities cont....

Winter steelhead trapping began October 14<sup>th</sup> for the BPA funded project "Natural Reproductive Success and Demographic Effect of Hatchery-Origin Steelhead in Abernathy Creek, WA". Adults captured through November included: one hatchery-origin (retained), 86 coho salmon (released upstream), and 4 cutthroat trout (released upstream).

Personnel from Columbia River FPO adipose fin clipped and inserted CWTs (coded wire tags) in 2400 juvenile steelhead in preparation for release in spring 2014.



Shawn Swartout holding a coho salmon to be released upstream.  
USFWS: J. Holmes

## Program Highlights cont....

### Administration/Facilities cont....

Despite sequestration, furloughs, and federal holidays impacting the schedule and budgets, the Facilities Program was as active as ever. Jim Lowell focused his time on repairing the damaged conference room/Nutrition office. The damage was due to a heavy onslaught of carpenter ants and trapped water within the walls. Jim removed, replaced and rebuilt two sides of the building and elevated the conference room floor to match the rest of the building. Nearly 150 pieces of lumber, 600 linear feet of cedar siding, 2 dozen pieces of OSB, a dozen sheets of drywall, 10 gallons of paint, countless screws and nails later, the walls are reborn and look better than ever. We also have a new external staircase built with Elitewood leading us into our new conference room all for the bargain price of around \$7K thanks in large part to using internal manpower versus external contractors.

Jeff Poole fine-tuned the flows entering the raceways, spawning area, and hatchery building. The intake area, more so than any other, was in need of serious dredging and cleaning in order to maximize the head water pressure into the station. Using an antiquated manually operated dredge situated on the bank, Jeff was able to remove 3 cubic feet of debris in front of the intake structure and break free some longstanding rocks that continuously clog the main pipeline. When not wading in the creek or balancing output power and domestic water usage, Jeff could be found building 3 above-ground circular tanks that mirror (1/3 the size, however) those being discussed for implementation at some Pacific Region NFHs including Leavenworth and Warm Springs.

### Administration/Facilities cont....

Jim Lowell was busy making the necessary asset preparations for the winter and wet seasons. AFTC received its typical 800 gallons of diesel to be used during the winter and spring to heat the main lab building and fuel the emergency generators during seasonal power outages. The annual preventive maintenance on the two emergency generators was conducted so that we can keep the lights on when the storms blow in.



AFTC receiving fuel for use during the coming winter and spring.  
USFWS: S. Gronbach

While monitoring and managing all on-station projects, Scott Gronbach assisted Carlton Morris with AFTC's environmental compliance audit and also began trend analysis on the electricity footprint since FY11 on all station assets. Scott submitted State Environmental Policy Act (SEPA) and Hydraulic Project Approval (HPA) permit documentation, coordinated with the Cowlitz County and WA State regulatory offices, and ultimately received the highly sought after 5-year HPA from WDFW in November to maintain the intake structure area.

## Program Highlights cont....

### Administration/Facilities cont....

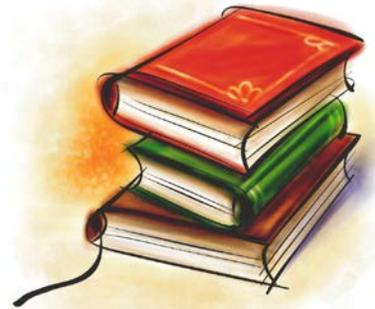
AFTC's most stimulating safety training occurred when all of the employees participated in the Great WA Shakeout. Videos, PowerPoint, handouts, signage, and an earthquake response drill were all part of this year's fun filled training. Many lessons learned were passed on to the station's safety committee and the events made people really think about what they would do when the Big One comes...and it will. Other safety topics discussed these past few months included Workplace Violence & Stressors, Bloodborne Pathogen Awareness, and Winter Fire Safety.

Other noteworthy Facilities activities this fall included: Jeff Poole and Jim Lowell trimming back and falling numerous alders around the fence line and roadways; replacing the residence roof; spraying the renovated Nutrition office/conference room interior walls; replacing the men's bathroom toilet in the main office with a high-efficiency model aimed at reducing water consumption and also assisting in mitigating a long-standing sewage drainage concern; and receiving numerous root wads from the Cowlitz Indian Tribe as part of an Abernathy Creek habitat enhancement project.



Jeff Poole and Jim Lowell doing tree cleanup work.  
USFWS: S. Gronbach

### Reports and Publications....



#### **Nutrition:**

Eya, J. C., R. Yossa, M. F. Ashame, C. F. Pomeroy, A. L. Gannam. 2013. Effects of dietary lipid levels on growth, feed utilization and mitochondrial function in low- and high-feed efficient families of rainbow trout (*Oncorhynchus mykiss*). *Aquaculture* 416-417: 119-128.

#### **Conservation Genetics:**

DeHaan, P. W., and S. R. Bernall. 2013. Spawning success of bull trout transported above mainstem Clark Fork River dams in Idaho and Montana. *North American Journal of Fisheries Management* 33(6):1269-1282.

#### **Modeling and Management Decision Support:**

Peterson, D. P., B. E. Rieman, D. L. Horan, and M. K. Young. 2013. Patch size but not short-term isolation influences occurrence of westslope cutthroat trout above human-made barriers. *Ecology of Freshwater Fish*. DOI: 10.1111/eff.12108

## ***Nutrition:***

- Dr. John Ioannou from Shimadzu came to provide additional High-Performance Liquid Chromatographer training and to trouble shoot the lab equipment.
- Ann Gannam attended a COR refresher class in Albuquerque, NM to stay current and maintain her COR certificate for the fish feed contracts.
- Ann Gannam provided a webinar for the Dworshak NFHC titled, "Overview of nutritional needs and common nutritional diseases". It was sponsored by the Idaho FHC.
- Ann Gannam participated in a webinar titled, "Current Good Manufacturing Practice and Hazard Analysis and Risk-Based Preventive Controls for Food for Animals", hosted by the American Feed Industry Association (AFIA), the National Grain and Feed Association (NGFA) and Feedstuffs.
- Ron Twibell and Ann Gannam called in to the Warm Springs NFH Hatchery HET meeting.

## ***Conservation Genetics:***

- Pat DeHaan and Jennifer VonBargen met with Mike Meeuwig and Shaun Clements from the ODFW Native Fish Investigations Project to discuss the genetic study of redband trout in the northern Great Basin.

## ***Modeling and Management Decision Support:***

- Doug Peterson participated in a webinar, "Predicted Climate Change Effects on Fisheries Habitat and Production in the Great Lakes", presentation by David Bunnell, USGS Great Lakes Science Center.
- Doug Peterson participated in a webinar, "Forecasting bull trout suitable habitat in a changing world" presentation by Seth Wenger, Trout Unlimited which describes a method for accounting different sources of uncertainty in projections for species distribution under climate change. Bull trout are used as a case study.
- Doug Peterson participated in a webinar, "Pacific Region's invasive species report and how the Service partners with invasive species councils in the Pacific Region".

## ***Administration/Facilities:***

- Patty Crandell participated in two Regional Climate Board meetings by phone.
- Patty Crandell participated in a Fish Technology Center meeting by phone.

## **Administration/Facilities cont:**

- Judy Gordon attended the Columbia River Gorge NFHC HET meeting held at Spring Creek NFH.
- As a member of the Pacific Region's Science Coordination Team, Judy Gordon participated in a meeting to select possible nominees for the Rachel Carson Science Award – Individual.
- Judy Gordon participated in the North Pacific Landscape Conservation Cooperative's conference call to identify the next research activity areas for the FY2014 Request for Proposals.
- Judy Gordon and Scott Gronbach participated in conference call with Dave Irving, Complex Manager, of the Leavenworth NFHC to discuss the need for Scott's assistance on infrastructure issues.
- Scott Gronbach attended the quarterly Pacific Region executive safety committee meeting at the RO and chaired the quarterly AFTC Safety Committee meeting.
- Scott Gronbach and Jeff Poole attended pump training in Vancouver, WA in conjunction with their WA Department of Health training responsibilities as certified waterworks operators.
- Jim Lowell and Jeff Poole attended a Lower Columbia PNWS-AWWA Arc-Flash, Electrical and Controls workshop, in Kalama, WA.
- Judy Gordon received training in CGE traveler and supervisor software.
- Judy Gordon and Patty Crandell participated in the Pacific Region's Fishery Resources Program's monthly conference calls.
- Patty Crandell attended Fisheries Resources Project Leader meetings in Richland and Lacey, WA. Topics that were discussed included: the Pathways program for hiring, recent personnel changes in the Fisheries Resources Program, the FY2013 & 14 Budgets, programmatic Updates, Project Leader updates, as well as an overview of Sport Fishing and Boating Partnership Council (SFBPC) Vision Document and Fisheries Program National Strategic Plan and discussion of Regional Step-Down Plan.
- Patty Crandell completed Concur Government Edition Federal Traveler, Veteran Employment Training for Hiring Managers, and Uniformed Services Employment and Re-employment Rights Act (USERRA) training.

## Hatchery Management Training 2013....



USFWS

AFTC put on the FWS's 2013 Hatchery Management Training (HMT) in Richland, WA, and 44 FWS employees attended including 4 from the Pacific Southwest Region. The objective of this annual Training is to provide information for Fisheries Resources staff relating to hatchery and aquatic resource management as well as EEO and Administrative training adapted to the needs of Fisheries managers. Registration for the training was made available through DOI Learn.

The EEO Diversity Training titled, *Improving Communication with Our Closest Partners*, was very well received. The speakers for the ½ day of EEO Diversity Training were all tribal members and professional biologists and included:

- 1) Casey Mitchell (Weye'tenetu'wehykt, Sun-necklace) of the Nez-Perce Tribe (NiiMiiPuu), a Fisheries Biologist at Dworshak NFH,
- 2) Patrick Luke (ytimanishut) a Lamprey Biologist for the Yakama Tribe, and
- 3) Andrew Wildbill, a Fisheries Biologist on the Hood River Lamprey Project for the Confederated Tribes of Warm Springs.

A full day of training on the topic of Water had speakers teaching about Recirculating Aquaculture Systems, Water Rights, Effluent Issues, Climate Change, and other subjects and was made available through a webex connection organized by Doug Peterson. Presentations were made by Doug, Ann Gannam, and Kyle Hanson, and Patty Crandell served as moderator.

## Employee Spotlight....



John A.S. Holmes  
Administration  
Fish Biologist

John has been very fortunate in life. He has a wonderful wife and son, lives in a beautiful part of the world, and really enjoys his work in fish culture. He received his B.S. in Fisheries from the University of Washington in 1979, and worked four years for the University as the hatchery manager for their Seward Park Hatchery program. He then took a temporary position with the Service at AFTC in 1985 only to be enticed away by the private sector to manage an Atlantic smolt facility in CT in 1986. After a year back east (a great experience), the company had financial problems so he headed home. As luck would have it, John was hired back to the position he left at AFTC and when a permanent animal caretaker position became available he jumped at the opportunity for job stability. In March 2014, John will have 27 years here at AFTC and looks forward to the years ahead.

John enjoys gardening, growing vegetables, tending his apple orchard (grafting new varieties, making cider), and raising poultry with plans to try beekeeping. In 1996, John and his wife purchased their first home and have been working on it ever since. Built in 1884 (before statehood), they fell in love with the house and were blind to all the future work and expense. John has come to the conclusion that it will never be “done”. They still think it is a great house.



The Holmes' 1884 mansion.

*J. Holmes*