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**Director's Greeting....**

From the daily management of the AFTC's budget to personnel documentation, newsletter layout to purchasing supplies at the best price, AFTC's administrative professionals make work and life in general here at AFTC much more enjoyable! So in observance of the recent Administrative Professionals' Day, I want to say a special thank you to Toni Scholder, AFTC's Administrative Assistant, and Vince Bocci, AFTC'S Administrative Officer. We certainly couldn't do the work we do without you!

**Staff:**

**Administration & Facilities:**

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

**Conservation Genetics:**

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

**Physiology & Nutrition:**

Kyle Hanson, Acting Regional Physiologist  
Richard Glenn, Microbiologist  
John Holmes, Fish Biologist  
Ann Gannam, Regional Nutritionist  
Ron Twibell, Fish Nutritionist  
James Barron, Fish Biologist

**Quantitative Ecology & Technology:**

Doug Peterson, Senior Scientist  
Ben Kennedy, Fish Ecologist  
Will Simpson, Fish Ecologist  
Kurt Steinke, Electronics Engineer

**Shawn Goes to Idaho!**



Biological Science Aide, Shawn Swartout, has moved on after accepting a position with the National Park Service in ID. Although Shawn primarily worked in fish culture caring for Abernathy Creek steelhead, he was always more than happy to lend a hand in laboratories and during field operations. Shawn came to us through a Veterans' Recruitment Authority (VRA), a great program and we highly recommend it! You are sorely missed, Shawn. We wish you all the best in your new job!

## Program Highlights....

### Physiology & Nutrition

There were four feed samples for Fish Feed Quality Control in March, the last month of the 2<sup>nd</sup> quarter and five feed samples for the month of April. As part of the routine analyses, all feeds from the hatcheries were checked for rancidity. Feed memos were sent to the hatcheries and the feed mills.

James Barron continued to maintain the stock lamprey ammocoetes for proposed nutrition/density studies. In addition, James prepared the wet laboratory to receive Klamath Basin suckers.



James Barron feeding lamprey ammocoetes.  
USFWS: R. Twibell

Ron Twibell completed the safety check list for the laboratory, and Ann Gannam completed those for the extruder room and middle office house. Ron Twibell wrote a Chemical Spill Standard Operating Procedure (SOP) for the station in general and the nutrition laboratory in particular. Ann Gannam wrote an SOP for the lock out of equipment in the extruder room for safe cleaning and maintenance.

### Physiology & Nutrition cont....

A couple of studies were completed in April: the "Evaluation of the Effects of an Alternative Feeding Regime on the Smolt Status and Body Composition of Juvenile Chinook salmon at Carson NFH" project and the Fisheries Operational Needs System (FONS) funded tank velocity study in tanks with recirculating aquaculture system (RAS) flow configuration. Final samples were taken from the spring Chinook in the study at Carson NFH one week before release. Length-weight data was collected as well as whole fish for proximate composition analysis. Gill clips were taken for  $\text{Na}^+ \text{K}^+$  ATPase (NKA), a smolting indicator. Blood samples were taken to check 11-ketotestosterone levels, a sign of maturity in the fish. Kyle Hanson, James Barron, Brice Adams and Ann Gannam were involved in this day of sampling.



James Barron and Brice Adams terminal sampling at Carson NFH.  
USFWS: A. Gannam

### Physiology & Nutrition cont....

Biological data and blood samples were taken from the steelhead at the completion of the RAS study. Blood parameters included lactate, cholesterol, glucose, phosphorus and calcium. Gill samples were taken for NKA. Ron Twibell, Kyle Hanson, James Barron and Ann Gannam collected these samples.



Ron Twibell, Kyle Hanson and James Barron sampling steelhead for RAS study.  
USFWS: D. Peterson

In general, most nutrition based projects require analysis of the whole fish and the feed. Ron Twibell has completed proximate and fatty acid analysis of spring Chinook from the Carson NFH feeding trial (initial and mid-study), the steelhead (initial and mid-study) from the RAS study at AFTC as well as terminal spring Chinook samples from a transfer diet feeding trial at Warm Springs NFH.

Collection of returning adult steelhead for the Bonneville Power Administration (BPA) funded project "Natural Reproductive Success and Demographic Effects of Hatchery-Origin Steelhead in Abernathy Creek, WA" continued. By the end of April, 301 adult steelhead had been trapped (242 hatchery origin, 52 natural origin, 7 out-of-basin strays). Steelhead were released upstream to spawn (35 natural origin, 14 hatchery origin) and retained for broodstock (228 hatchery, 17 natural), out-of-basin stray steelhead were euthanized.

### Physiology & Nutrition cont....



John Holmes and Shawn Swartout spawning steelhead.  
USFWS

### Conservation Genetics

Jennifer VonBargen and Brice Adams analyzed 378 Chinook salmon using 96 SNP markers for Livingston Stone NFH. Fin clips from fish trapped at Keswick Dam were sent via courier to AFTC, and results were returned to the NFH in less than 24 hours, allowing the NFH to retain potential broodstock and release other fish. The same 96 SNPs were also analyzed in two fish trapped by CA Department of Fish and Wildlife as part of a collaborative project with to rescue fish being trapped after moving through the Yolo Bypass.

Brice Adams and Jennifer VonBargen analyzed microsatellite markers in 1,520 adult winter steelhead captured from Abernathy Creek. The data collected this year and next will allow a comparison of reproductive success of hatchery and natural origin fish in Abernathy Creek.

## Conservation Genetics cont....

Brice Adams analyzed microsatellites in 6 bull trout samples from the Clark Fork River as part of a collaborative genetic analysis of native salmonids from the Lake Pend Oreille, ID, in collaboration with our partners at Avista Corporation.

Pat DeHaan, Jennifer Von Bargen, and Brice Adams worked with the Northern Rockies FWCO to use genetic markers to identify barriers to migration for bull trout in the St. Mary River system, MT. The results of that work are available in the report by DeHaan et al.



Bull Trout in the St. Mary's River, MT.

USFWS



Bull Trout from the St. Mary's River, MT.

USFWS

## Conservation Genetics cont....

Christian Smith and Kyle Hanson collaborated with colleagues at University of Victoria, Canada to use 48K gene expression arrays to evaluate differences between migratory to non-migratory steelhead. Differences in immune function discovered between residents and migrants are the topic of an article published this month.



Gene expression array revealing transcription at tens of thousands of genes in a single steelhead. Using these arrays, geneticists are able to identify biological functions underlying life-history differences in steelhead, and thus improve our ability to protect this species.



Divergent morphology between steelhead preparing to migrate and those preparing to stay in freshwater is accompanied by divergent immunity programs in these two types.

### Quantitative Ecology & Technology

Kurt Steinke went to Maggie Creek near Carlin, NV, to help reinstall PIT (Passive Integrated Transponder) tag systems for monitoring endangered Lahontan cutthroat trout. Improved culverts had been installed a year or two earlier under the county road at Little Jack Creek, Coyote Creek, the Maggie Creek irrigation diversion, and Beaver Creek. The project was sponsored by Trout Unlimited in cooperation with the NV Department of Wildlife and the FWS to determine whether or not the culvert improvement enabled movement of fish between the drainages, and to determine the extent to which fish become entrained in the irrigation diversion. It was determined that the DC/DC converters at the two 24-Volt solar sites were generating electrical noise which impeded reading tags. Kurt developed DC/DC converters that do not generate interference and sent the printed circuit board layout to an US-based fabricator. The fabricator will allow anyone to order the boards, if they want to assemble the converters themselves.

Will Simpson and Kurt Steinke traveled to Hermiston, OR, to turn on and service PIT tag systems for the Bureau of Reclamation (BOR) on the Maxwell and Feed Canals. These systems monitor entrainment and bypass success for steelhead. They also replaced antenna cables that were stolen by metal salvagers. The new cables were installed in conduit and buried.

### Quantitative Ecology & Technology cont....

Field activities related to the BPA-funded steelhead reproductive success study started ramping up in Abernathy Creek. Kurt Steinke and Ben Kennedy built three "figure-8" (two loops side by side) pass-over PIT tag antennas for the upstream side of the bridge at the AFTC to replace a set of pass-through antennas. The figure-8 pass-over antennas appear to have a greater read range than the rectangular loop pass-over antennas. Ben Kennedy, Will Simpson, Doug Peterson, Kyle Hanson, and Kurt Steinke installed those antennas at site AB1, under the bridge at AFTC. The crew also re-installed a set of pass-over antennas at site AB3, near the mouth of Abernathy Creek. Last year, the three downstream pass-through antennas at site AB3 were replaced with conventional pass-over rectangular loop antennas. The first release of juvenile steelhead was in April, and the antenna systems will monitor how long it takes them to emigrate from Abernathy Creek and detect whether any remain in the creek and do not smolt.



Kyle Hanson, Ben Kennedy, Will Simpson and Kurt Steinke working on installing the antenna at AB1.

USFWS: D. Peterson

## Quantitative Ecology & Technology cont....



Ben Kennedy, Will Simpson and Kurt Steinke working on the reader for the AB 3 pass over antenna site.

USFWS: D. Peterson

Kurt Steinke helped build PIT tag antennas for the MI State University (MSU) Kellogg Biological Station for a project to follow individual habitat use and foraging decisions in juvenile bluegill. MSU has experimental ponds that can be manipulated in various ways, and received limited funding from National Science Foundation to construct antennas to put into an experimental pond to habitat use by the fish. The antennas were designed as a “figure-8-8-8” (multiple side-by-side loops) in order to read small tags over a wide area with no detection gaps.

## Administration & Facilities

During the month of April, for two days a week, Judy Gordon and Vince Bocci detailed into the Pacific Region, Fisheries Resources Program to assist with current RO workload during the staffing shortage (vacant administrative personnel and ARO positions).

AFTC supervisors completed mid-year reviews for all AFTC employees.

## Administration & Facilities....cont

Judy Gordon began mentoring Derrick Wheeler, a Portland State University (PSU) student in the PSU's 509 Capstone Program. The Capstone Program is an integrative organizational experience requirement of the Master of Public Administration degree. Derrick will be examining the impacts of water rights and water use policy in the Methow River basin in relation to Winthrop NFH's climate change vulnerability assessment. Upon completion, the Pacific Region Fisheries Resources Program will receive a white paper and an oral presentation providing information potentially useful in managing Winthrop NFH's production programs.

### *Vulnerability assessment related activities:*

- Patty Crandell provided information to the Quilcene NFH HET about what assistance she had received and what additional information she still needs for the background and sensitivity sections of the draft report.
- Patty Crandell, Kyle Hanson, Doug Peterson met with Bill Gale from Mid-Columbia River FRO to discuss the status of the Quilcene NFH vulnerability assessment (VA) and the possibility of moving forward with other VAs.

Scott Gronbach continued his service to the Navy with multiple trips to San Diego, CA and also to Bangor, WA. He also informed the staff that he is being mobilized this fall for potentially 1 year in support of overseas contingency operations.

## Administration & Facilities....cont

*Bonneville Power Administration (BPA) funded Abernathy Creek steelhead project related activities:*

- Those who have been working on the BPA funded Abernathy Creek steelhead project met to decide which samples should be processed by Conservation Genetics in 2014. The tentative plan is to process all adults which returned from 2005 - 2014, which would give us 2 full generations of adult-to-adult relative reproductive success.
- Kyle Hanson submitted the Final 2013 Annual Technical Report to BPA.
- Kyle Hanson submitted the Final 2013 ESA BiOp RPA Report to BPA.
- Kyle Hanson, Christian Smith and Patty Crandell visited BPA. Christian presented information from the BPA project of showing that proposed conservation methods and subsequent broodstock integration were not successful at maintaining similarity between HOR and NOR populations. A paper is soon to be published on this topic.
- BPA COTR, Julie Doumbia, visited AFTC to observe steelhead spawning operations.
- Patty Crandell submitted a quarterly report.

Patty Crandell finished the updating the 2014 Hatchery Genetic Management Plan (HGMP).

## Administration & Facilities....cont

The Facilities Program began to make serious strides in correcting several good-weather-only repairs. One such event involved Jeff Poole and the RAS tanks and water efficiency study being conducted at AFTC. Through his tireless efforts, Jeff replicated the flows of a large-scale circular tank and captured varying flow rates while fish were present in the 10' control tanks. Jeff used a loaned velocity meter to obtain readings at mid-depth every 6 inches across the middle of the tank in 5 minute intervals from a series of 10 flow points in each of the modified tanks. The control tanks were re-engineered to deliver water horizontally through 7 holes at about 9 gpm over the surface of the tank via spray bars which are offset at a 45 degree angle to the surface.



Jeff Poole working with the recirculating tanks.  
USFWS: T. Scholder



New water delivery system in the recirculating tanks.  
USFWS: T. Scholder

### Administration & Facilities....cont

Jim Lowell met with several contractors. Felton's Heating and Cooling Inc. provided AFTC with the annual preventive maintenance (PM) and inspection on the numerous HVAC systems. From the inspection, several minor repairs were made and replacement valves were ordered. Jim also consulted with Roto Rooter during the annual septic system inspection. As hoped, the system is working as intended with no immediate concerns in sight.

Scott Gronbach met with Doug Swier of Cowlitz County PUD regarding a potential BPA energy rebate. Because AFTC will be switching out the oversized pumps in the station's wells this spring, an energy savings will be realized immediately. BPA has a rebate program to reward residences and businesses for investing in energy efficiency projects and AFTC is hoping this project will qualify. Scott also met with the Cowlitz County Building & Planning Office to submit the long-awaited package of environmental permits for this summer's riprap replacement project. Overall, AFTC's SEPA, JARPA, BA and other permit documentation received high marks from the county officials and WA Department of Fish and Wildlife (WDFW) biologists alike. It is expected that the project permits will be received in the coming weeks, well ahead of the anticipated project start date of mid-July.

### Administration & Facilities....cont

Safety was front and center this spring at AFTC. The AFTC Safety Committee held its quarterly meeting. Highlights of the session included analyzing the short-term radon gas testing results and discussing the actions expected to be performed in the coming weeks. Long-term radon testing was begun within the 3 original residences based on the initial test results for higher than permissible levels of radon gas. As a result of the testing and to educate the staff, Radon Gas Awareness was April's safety session discussion. Radon mitigation activities will begin this summer with the assistance of the Regional Environmental Compliance Coordinator, Carlton Morris. Additionally, broken asbestos tile was discussed and an abatement firm has been contracted to remove several hundred sq. ft. of tile in the coming weeks. In light of the newly found broken tiles, Asbestos & Lead Awareness was the March safety session discussion led by Kyle Hanson.

Jeff Poole worked on documenting the potential backflow prevention issues on station. Through the assistance of Cross Contamination Specialist (CCS), Steve Coke, Jeff has taken considerable strides in documenting our domestic and untreated well water systems. Additionally, Steve Coke's CCS acumen has greatly enhanced AFTC's ability to author and submit its inaugural Small Water System Management Plan (SWSMP) to the WA Dept of Health. With one chapter of the SWSMP nearly complete, a dozen more are sure to follow soon.

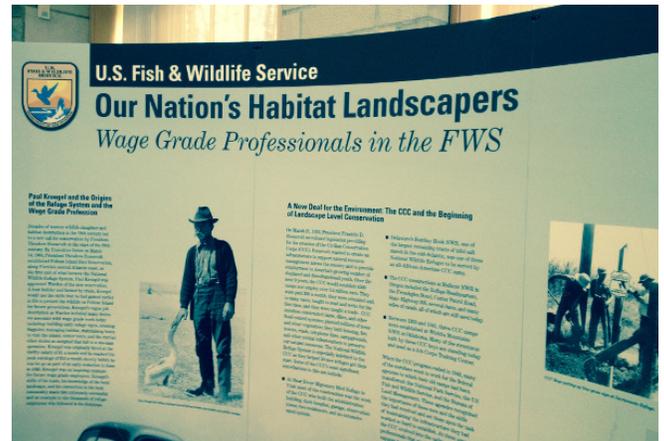
## Administration & Facilities....cont

The Cowlitz County Fire Marshall conducted their annual inspection of the facility. No major fire safety concerns were noted during the visit. However, when combined with the OSHA visit from February, Jim Lowell spent numerous hours installing multiple GFCI devices and gasket-laden switch covers inside the Ecology-Physiology building wet lab which was previously not up to code. Jim also replaced worn or missing guards on our shop saw blades and relocated potential fire hazards from shelving throughout the facility. Scott Gronbach installed 115 4' CFL light bulb covers inside the maintenance shop, selective breeding building and the emergency generator building.

When not being inspected or correcting inspection deficiencies, AFTC made strides in the annual PM on the safety systems onsite. PMs included contracting Viking Sprinkler to perform the annual inspection in the residence on the sole sprinkler system, contracting Captek Technologies to perform the annual inspection on the fire system and subsequent devices, and requesting that City Fire of Longview perform the annual PM on AFTC's 63 fire extinguishers.

Pat DeHaan recently attended Stepping Up to Leadership Training (SUTL) at NCTC. He photographed the new display honoring the wage professionals in the FWS. The display chronicles the history of wage grade work going back to the nation's first NWR, Pelican Island. The display also includes the Wage Grade Honor Roll for wage grade employees with 30 or more years of service. One of those individuals is AFTC's own Jeff Poole. Thank you, Jeff, for your dedicated years of service.

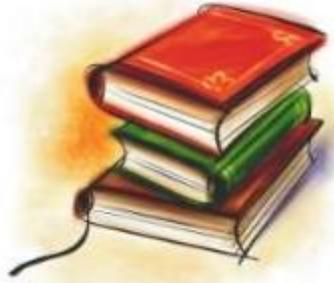
## Administration & Facilities....cont



New wage grade display at the National Conservation Training Center. *USFWS: P. DeHaan*

Wage Grade Honor Roll		
<b>Region 1</b>		
<i>Employee</i>	<i>Years</i>	<i>Station</i>
Robert Adams	33	Leavenworth NFH
Randy Aulbach	31	Doer Flat NWR
Gary Beal	36	Inland NW NWRC
Jeffrey Blaisdell	30	Carson NFH
Ronald Clarine	41	Leavenworth NFH
Christopher Columbus	31	Washington Maritime NWR
John Cooke	31	Makah NFH
Walter Hammond	30	Willamette Valley NWR
David Knox	36	Quilcene NFH
John Lemieux	41	Quinalt NFH
Calvin Mcfall	39	Willapa NWRC
Mitchell Mcgee	32	Makah NFH
Stephen Money	30	Hagerman NFH
Jeffrey Poole	30	Abernathy Salmon Fish Tech Ctr.
Terry Weeks	30	Dworshak NFH
Scott Zirjacks	31	Spring Creek NFH
<b>Region 2</b>		
<i>Employee</i>	<i>Years</i>	<i>Station</i>
Cirilo G. Alonzo	30	Uvalde NFH
Ruben Cavazos	41	Santa Ana NWR
Conrad R. Chavez	36	Northern New Mexico Refuges Complex
Jefferson J. Cody	30	Alichesay-Williams Creek NIFHC
Edwin Drummond	60	Wichita Mountains NWR
Rodolfo Escamilla	31	Laguna Atascosa NWR
David M. Hollingsworth	33	Washita NWR
Dennis Vicente	32	Bosque Del Apache NWR
Arturo M. Villarreal	34	Laguna Atascosa NWR

Jeff Poole shown on the Wage Grade Honor Roll, third from the bottom in Region 1. *USFWS: P. DeHaan*



### **Physiology & Nutrition:**

Sutherland, B, K.C. Hanson, J. Jantzen, B. Koop, and C. Smith. 2014. Migrate or reside: Divergent energetic and immunity programs, ion pumps, and predictive markers of steelhead *Oncorhynchus mykiss*. *Molecular Ecology* 23:1910-1922.

Crandell P., D. Bingham, J. Holmes, B. Kennedy, J. Von Bargen, C. Smith, and K.C. Hanson. 2014. Natural reproductive success and demographic effects of hatchery-origin steelhead in Abernathy Creek, Washington. Annual Report 2013. United States Department of Energy, Bonneville Power Administration, Division of Fish and Wildlife.

Barron, J. M., R. Twibell, H. Hill, M. Newsom and A. Gannam. 2014. The use of egg analogs to increase natural production of steelhead trout *Oncorhynchus mykiss*. *World Aquaculture Magazine* 45: 52-56.

### **Conservation Genetics:**

DeHaan, P., B. Adams, and J. Mogen. 2014. Genetic analysis of bull trout in the St. Mary River system, MT. Additional analyses for FY2013. AFTC Final Report.

Banks, M. A., D. P. Jacobson, I. Meusnier, C. A. Greig, V. K. Rashbrook, W. R. Ardren, C. T. Smith, J. Bernier-Latmani, J. Van Sickle, and K. G. O'Malley. 2014. Testing advances in molecular discrimination among Chinook salmon life histories: evidence from a blind test. *Animal Genetics* 45 (3): 412-420.

Sutherland, B. J. G., K. C. Hanson, J. R. Jantzen, B. F. Koop, and C. T. Smith. 2014. Divergent immunity and energetic programs in the gills of migratory and resident *Oncorhynchus mykiss*. *Molecular Ecology* 23 (8):1952–1964.

## **Physiology & Nutrition:**

- Ron Twibell, Patty Crandell and Ann Gannam attended the annual Klickitat and White Salmon Rivers (Columbia Gorge) Fisheries and Watershed Science meeting.
- Ron Twibell, James Barron and Ann Gannam attended an Agilent Technologies workshop concerning troubleshooting the gas chromatograph and high-performance liquid chromatographer.
- Nutrition staff reviewed three manuscripts, two from Aquaculture and one from Marine Environmental Research. Also, a Department of Commerce NOAA Small Business Aquaculture Proposal was reviewed.
- Kyle Hanson presented a talk titled "Evaluation of transmitter application techniques for use in research of adult eulachon" at the annual meeting of the WA-BC Chapter of the American Fisheries Society (AFS), Vancouver, WA.

## **Conservation Genetics:**

- Matt Smith attended the 2014 Pacific Coast Steelhead Management Meeting to discuss a collaborative effort between BPA, the State of OR and FWS to improve our understanding of the impacts of hatchery-origin strays on wild populations.
- Pat DeHaan attended "Stepping Up To Leadership" training at NCTC.
- Pat DeHaan participated in a monthly teleconference of the FWS Genetics Community of Practice.
- Christian Smith attended the WA-BC AFS meeting to present the results of gene expression work conducted at AFTC titled: Divergent immunity and energetic programs in the gills of migratory and resident *Oncorhynchus mykiss*.
- Christian Smith, Kyle Hanson, and Patty Crandell presented novel findings regarding genetic divergence between hatchery and wild steelhead to our partners at BPA.

## **Quantitative Ecology & Technology:**

- Doug Peterson had a teleconference with Erica Maltz, Fisheries Program Manager with the Burns Paiute Tribe, to discuss help with monitoring bull trout movement among tributaries in the upper Malheur River system.
- Ben Kennedy, Will Simpson, and Doug Peterson gave talks at the Annual General Meeting of the WA-BC chapter of the AFS, in Vancouver, WA. Will talked about his ongoing work with salmon entrainment and the title of his presentation was "Entrainment, bypass, and loss of ESA-listed steelhead smolts and adults at federal irrigation diversions." Ben presented data on the ecology and behavior of wild and hatchery-origin steelhead in Abernathy Creek, and his talk was titled "Ecological differences of juvenile steelhead produced by natural origin and local hatchery origin adult steelhead spawning in the wild." Doug presented final results on a project that investigated the occurrence of cutthroat trout above culvert barriers, and his title was "Patch size and occurrence of westslope cutthroat in isolated stream networks".

## **Administration & Facilities:**

- Judy Gordon participated in conference calls of the Science-TEK (Traditional Ecological Knowledge) Subcommittee of the North Pacific LCC to discuss pre-proposals and full proposals submitted under this year's request for proposals.
- Judy Gordon participated in Hatchery Evaluation Team (HET) meetings for Quinalt and Quilcene NFHs.
- Patty Crandell and Judy Gordon participated in the monthly Fish Technology Centers' conference call.
- AFTC staff participated in a Pacific Region All Employee WebEx hosted by USFWS Regional Director Robyn Thorson.
- The Pacific Region Science Coordination Team held a face-to-face meeting in Portland, OR. Judy Gordon attended the meeting and participated in discussions on the role of the team and how it can be valued added to the Pacific Region.
- Patty participated in a Regional Climate Board meeting by phone.
- Mark Hack and Patty Crandell met with Kyle Hanson about issues with Windows 7 updates and laboratory equipment. "Upgrading" to Windows 7 has been difficult for all of the laboratories because of issues with equipment.
- Patty Crandell and Judy Gordon participated in two Fisheries Resources Project Leader meetings by phone. Topics discussed included: Congressional Relations, Hiring, Fleet Vehicles, Conference Participation, Project Leaders Meeting, Outreach, FIS, Budget Update, ARD vacancy, VSIP (Voluntary Separation Incentive Program), and Update from the Mid-Columbia River FRO on status of fish passage and hydro operations at Wanapum Dam under emergency operations.
- Scott Gronbach attended the Pacific RO executive safety committee meeting representing fisheries field stations. The RO intends to upgrade the emergency communications policy and posturing in the coming months with contributions from each RO Program. More information on emergency communications strategies expected to be released by the RO in 2014.

## MESA DAY

James Barron presided as a judge for oral presentations and academic display boards at MESA (Mathematics Engineering Science Achievement) Day. The event was from 8:00 to 3:00. Teams of students presented their design for a prosthetic arm during an oral presentation and with their display board. The teams also competed in a series of challenges to test their designs and took part in other activities that incorporated principles of math, science and engineering. About 160 students competed at the event.

## KLINELINE KIDS FISHING DERBY

Doug Peterson volunteered at FWS-sponsored kids archery event at the Kline Kids Fishing Derby. The archery event was sponsored by Pacific Region External Affairs and is part of the FWS's "Connecting People with Nature" initiative.

## EARTH DAY

Ann Gannam set up and manned a booth representing the FWS and AFTC at the Longview Earth Day celebration. At least 150 kids plus their parents visited the booth, many with questions and comments. Children were excited to try to the Chinook jigsaw puzzle which consists of an outside view of the fish but also all of its internal organs. The children learned about the fish's internal anatomy as well as the type of camouflage called countershading (fish is dark on the dorsal side and silvery on the ventral side) that the fish uses. It was a tip for how the external portion of the puzzle fit back together.



Young visitors working the fish puzzle.  
USFWS: A. Gannan

## Employee Spotlight....



Pat DeHaan  
Conservation Genetics  
Fish Biologist

Pat grew up in Grand Rapids, MI. He went to MI State University where he received a bachelor's degree in Environmental Science in 2000 and a master's degree in Fisheries and Wildlife in 2003. After finishing graduate school, Pat worked for the U.S. Department of Agriculture in Ft. Collins, CO for 6 months before he started at AFTC in March of 2004. Pat's work at AFTC has involved a number of different fish species including bull trout, pallid sturgeon, redband trout, Warner suckers, Oregon chub, Olympic mudminnow, and Arctic grayling. Somehow he has worked at AFTC for 10 years without doing any work on Pacific salmon! Because of this, his co-workers in the genetics lab have accused him of being *Oncorhynchus* challenged.

Pat lives in Longview, WA with his wife, Jennifer, and son, Evan, and their poorly behaved dog, Cody. In his spare time, he tries to spend as much time as possible outside. Pat likes to hike, bike, ski, camp, kayak, and also enjoy an occasional triathlon. Last summer he rode by bike from Seattle to Portland as part of the annual STP ride and this summer he is planning to climb Mt. Rainier. He also enjoys chasing his son around their house, finding new ways to make him laugh uncontrollably (which usually isn't too difficult), and he and his wife have had lots of fun getting him outside with them to share the things they like to do outdoors. Pat also volunteers with Big Brothers and Big Sisters in Longview.



Pat and Evan enjoying the snow at Mt. Rainier.  
*DeHaan Family Archives*