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AFTC Research Day!



Pat DeHaan giving his presentation to AFTC staff.

USFWS

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 Patty Crandell, Deputy Center Director
 Vince Bocci, Administrative Officer
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 Scott Gronbach, Facilities Op Specialist
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 Jim Lowell, Maintenance Worker

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Christian Smith, 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

AFTC employees are busy and don't always get the time to learn about all ongoing research activities. In order to help bring staff up-to-date on the fine work conducted by their colleagues, Pat DeHaan (currently in SUTL, stepping up to leadership) scheduled a full day of presentations by AFTC staff and called it Research Day. Visitors in attendance were Julie Collins, Acting ARD Fisheries Resources, Andy Goodwin, Fish Health Program Manager, Rich Carlson and Miranda Plumb, Environmental Contaminants, Washington FWO. The presentations included:

What I did at my job today or how I learned to herd cats and love it – Judy Gordon & Patty Crandell; Evaluation of alternative rearing strategies for Chinook salmon (Oncorhynchus tshawytscha)- Ann Gannam & Ron Twibell; Development of diets for the intensive culture of Pacific lamprey – James Barron; AFTC fish culture: the first 50 years - John Holmes; Genetic assessment of the Spalding's catchfly (Silene spaldingii) – Brice Adams; Where did all these mudminnow come from? Genetic investigations of Washington's only endemic fish – Pat DeHaan; The influence of climate, migratory conditions, and hatchery releases on jack Chinook salmon abundance in the Columbia River Basin - Kyle Hanson; Ecological differences of juvenile steelhead produced by natural and local hatchery origin steelhead spawning in the wild - Ben Kennedy; and Entrainment and loss of ESA-listed steelhead smolts and adults at federal irrigation diversions - Will Simpson.

Program Highlights....

Physiology & Nutrition

The last release of yearling steelhead occurred on May 14th. This brings the total release for brood year 2013 to 2464 smolts. The release was part of the Bonneville Power Administration (BPA) funded Abernathy Creek steelhead project.

A total of 314 adult steelhead were captured at AFTC between November 7th and May 6th. The run was comprised of 61 natural origin (NOR), 246 hatchery origin (HOR), and 7 out of basin strays. Forty-two NOR and 15 HOR steelhead were released upstream to spawn naturally. Nineteen NOR and 57 HOR steelhead were used for the integrated broodstock with a goal of producing 15,200 yearlings for release in spring of 2015.

The Program analyzed 12 feed samples for fish feed quality control in May and June. 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.

The Program received 10,000 lamprey ammocoetes from the Yakama Nation's Prosser Hatchery. The fish will be used for development and refinement of lamprey aquaculture techniques.

Researchers from Dalhousie University in Nova Scotia, Canada, visited AFTC to begin planning for a white sturgeon research project that will occur over the next year. The study will look at the impact of capture stress on sturgeon behavior and physiology.

Physiology & Nutrition cont....

The Program obtained Lost River Suckers (LRS) from Ron Stone and Scott Foott at the California/Nevada FHC. A feeding trial that compared the use of practical starter feeds to traditional live *Artemia* for first feeding LRS fry was completed. Ron Twibell analyzed the fish and their feeds for total lipid and fatty acid profile. Other data collected included growth and survival. A second feeding trial designed to assess multiple diets for culture of LRS is set to begin in July.



Lost River Suckers

USFWS: J. Barron

Ron Twibell completed proximate and fatty acid analysis of spring Chinook salmon that was part of a feeding trial at Carson NFH as well as steelhead from the recirculating aquaculture system study conducted at AFTC.



Springtime at AFTC.

USFWS: P. Crandell

Program Highlights cont....

Conservation Genetics

Matt Smith worked with collaborators at University of California, Davis to incorporate historical genetic samples from Klamath Basin suckers into an evaluation of population structure within and among these species.

Jennifer Von Bargaen visited Livingston Stone NFH to discuss the ongoing genetic evaluation of winter run Chinook salmon.



Keswick Dam on the Sacramento River is the capture site for endangered winter-run Chinook salmon for the conservation propagation program at Livingston Stone NFH. Fin clips from each fish are sent to AFTC for genetic analysis to confirm winter-run status.

USFWS: C. Smith

Conservation Genetics cont....

Jennifer Von Bargaen and Brice Adams analyzed 442 Chinook salmon from the Sacramento River with 96 single nucleotide polymorphism markers. Results of this work were used to select broodstock at Livingston Stone NFH, test the viability of genetic samples archived at Red Bluff FWO, and determine the run type for juveniles captured in the American River smolt trap.

Brice Adams performed rapid response analysis of bull trout sampled on the Lewis River and Clark Fork River in collaboration with our partners at Avista Corporation and PacifiCorp Energy.

Christian Smith briefed Pacific Region staff regarding the results of a genetic analysis of Abernathy Creek steelhead. The work was funded by BPA.



Christian Smith taking genetic samples from Abernathy Creek steelhead for the comparison of hatchery and wild fish.

USFWS: T. Scholder

Quantitative Ecology & Technology

Will Simpson submitted a successful proposal to the Pacific Region's "Connecting People With Nature" grant program. The grant money will be used to support "Cascades Pika Watch" which monitors pika habitat in the Columbia Gorge.

Will Simpson adapted a citizen science training for Cascade Pika Watch participants into a web based training. Now prospective citizen scientist unable to attend trainings can be trained from the comfort of their own home and start contributing data. Take the training at <http://www.surveygizmo.com/s3/1499248/PikaWatch-Training>.

Doug Peterson coordinated a two-day workshop on strategic modeling of bull trout conservation in the Lower Clark Fork River, in Noxon, MT, with collaborators in the FWS; Avista Corporation; Idaho Fish & Game; Montana Fish, Wildlife and Parks; and the US Forest Service. He presented preliminary results from a model that evaluated the response of local populations of bull trout to management interventions such as fish transport, habitat restoration, and suppression of non-native trout.

Program staff hosted a visit from Dr. Peter Brown at Montana State University, who discussed his ongoing research using electrical fields for lake trout suppression in Montana. Dr. Brown gave a brown bag seminar on his research, and met with staff to discuss its own research on suppression of non-native common carp by targeting eggs and embryos with different types of electrical fields.

Quantitative Ecology & Technology cont....

AFTC was featured on The Fisheries Blog (<http://thefisheriesblog.com/2014/05/12/playing-the-role-of-a-fish-biologist-for-one-day/>) with an article describing what it is like to be a fish biologist for a day. The article describes how we collect and tag fish in Abernathy Creek as part of the BPA funded Abernathy Creek steelhead project to measure reproductive success of integrated hatchery stocks. We will be repeating this survey in August and September. If you are interested in volunteering please contact Ben Kennedy (benjamin_kennedy@fws.gov) for details.

AFTC and collaborators at Washington Department of Fish and Wildlife (WDFW) monitored the outmigration of steelhead smolts as part of the BPA funded project to measure reproductive success of integrated hatchery stocks. AFTC staff captured, tagged, and took biodata from steelhead captured in the rotary screw trap near the mouth of Abernathy Creek. AFTC staff also operated and finally removed (in early June) the PIT tag (passive integrated transponder) interrogation system (AB3) at the mouth of Abernathy Creek that detected migration of tagged steelhead smolts.

Will Simpson and Kurt Steinke developed a test chamber that will be used to expose eggs of the common carp to electricity in the hopes of creating an effective control for this invasive fish in Malheur Lake at Malheur NWR.

Quantitative Ecology & Technology cont....

Will Simpson and Kurt Steinke used mobile PIT tag antenna arrays to assess entrainment and potential mortality of ESA-listed steelhead smolts entrained into irrigation canals from the Umatilla River, OR. They also serviced the stationary PIT tag interrogation sites at Maxwell Canal near Hermiston, OR. This work is funded by the Bureau of Reclamation.

Doug Peterson reviewed a draft Bayesian network that models persistence of Rio Grande cutthroat trout. The model is being developed by Colorado Division of Wildlife and Colorado State University to inform status evaluation and conservation actions for that subspecies of cutthroat trout.

Ben Kennedy assisted in acquiring photographs of steelhead and cutthroat trout for Sam Rizza, a masters student with the California Cooperative Fish and Wildlife Research Unit at Humboldt State University.

Administration & Facilities

Mara Zimmerman gave a presentation about the WDFW Intensively Monitored Watershed (IMW) program. Abernathy, Germany, and Mill creeks make up an IMW.



Clematis in the spring at AFTC.
USFWS: T. Scholder

Administration & Facilities cont....

Jim Lowell and Jeff Poole have begun making steady strides on the annual warm weather to-do lists. Jim removed more than 20 cubic yards of sediment from the settling pond with an excavator in order to alleviate some of the mounds accruing and to prevent debris from being sucked into the raceway pipeline. Jeff assisted John Holmes with the removal of the V-trap above the falls in preparation for the summer low flow season and has begun cleaning out the creek water piping that gets inundated with debris.

Our good friends from the Willapa NWRC helped us out with a dump truck and driver for several days in order to spruce up our newly acquired property and also relocate 16 loads of fill material throughout AFTC. AFTC is now able to re-purpose more flat land for such things as an isolation building and a carport for boats, heavy equipment, government vehicles and the like. A special thank you to Eva Kristofik, Deputy Project Leader at Willapa NWRC for continuing to work within both of our sometimes maddening schedules to make this project a reality.

Well 4A, our normal operations well, decided to sputter out without warning causing AFTC to shift well water consumption towards the oversized and rarely utilized backup, Well 4. Emergency funds were made available and an emergency replacement of Well 4A's pump was authorized within hours. A construction crew was immediately dispatched and was able to mobilize a crane crew and pump crew in only a few days. Well 4A has fully returned to operations and the effects on the aquatic species on station have been minimal.

Program Highlights cont....

Administration & Facilities cont....

A crane was contracted to safely remove the abandoned metal aeration tower that perched above the once-bio filter bays. Once it was on the ground, Jim quickly began dissecting it into manageable chunks to be hauled away for recycling at Waste Control in Longview. Because of his efforts, AFTC's trash bill is now completely paid through CY14! In order to reduce our footprint and keep usable materials from filling up the local dump, Jim delivered nearly two tons of large diameter PVC to Northwest Polymers in Molalla, OR for proper recycling.



Scott Gronbach and Jim Lowell working with the crane operator to remove the aeration tower.

USFWS: V. Bocci

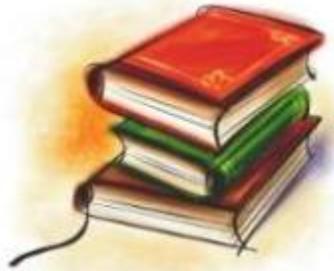
Over 400 sq. ft. of broken asbestos floor tiling was removed by IRS Environmental inside the main laboratory building hallways. This mitigation activity was promulgated by the unexpected finding of several broken tiles.

Administration & Facilities cont....

AFTC held two pre-bid site visits for the riprap replacement project taking place this summer along the bridge abutments. In preparation, Scott Gronbach received many environmental permits to conduct the project within dewatered areas in order to return the bankline footprint to a safe size from multiple agencies include WDFW, Cowlitz County, NOAA Fisheries, and FWS. Scott also initiated a Comprehensive Condition Assessment (CCA) at Eagle Creek NFH on behalf of the Pacific Region. Through Project Leader Caroline Peterschmidt's counsel, he expects to complete the assessment of the real property at the NFH by late July. Scott also worked for the Navy for 17 days preparing for his upcoming contingency operations tour overseas.

A level I soil contamination survey was administered at AFTC by Rich Carlson and Miranda Plumb from the Washington FWO office. Because there is very little documentation on what types of potentially harmful materials might be present at AFTC, Carlton Morris suggested the survey in order to understand what impacts AFTC has had on the environment and what mitigation actions, if any, are needed.

Other honorable mentions for safety include the final notice items from the 2014 OSHA inspection being fully mitigated. Formaldehyde handling and the hearing conservation program were discussed during safety training.



Physiology & Nutrition:

Eya, J. C., R. Yossa, M. F. Ashame, C. F. Pomeroy and Gannam A. L. 2014. Effects of dietary lipid levels on mitochondrial gene expression in low and high-feed efficient families of rainbow trout *Oncorhynchus mykiss*. *Journal of Fish Biology* 84: 1708-1720.

Conservation Genetics:

Bingham, D. M., B. M. Kennedy, K. C. Hanson, and C. T. Smith. 2014. Loss of genetic integrity in hatchery steelhead produced by juvenile-based production and wild integration: conflicts in production and conservation goals. *North American Journal of Fisheries Management* 34(3):609-620.

DeHaan, P., B. Adams, and M. C. Nelson. 2014. Fine-Scale Population Structure Analysis and Genetic Population Assignments of Wenatchee River Sub-Basin Bull Trout. AFTC Final Report.

Physiology & Nutrition:

- Ann Gannam attended the Washington State Fish Health Co-Managers' meeting. She spoke briefly about current feed issues including apparent rejection of certain starter feeds by fish.
- Ron Twibell and Ann Gannam participated in a conference call with Makah NFH staff and Larry Telles, Chief of Fisheries Operations for the Pacific Region, to discuss feed quality.
- Ann Gannam and Kyle Hanson participated in the Hatchery Evaluation Team (HET) conference call for Warm Springs NFH.
- James Barron attended the Columbia River Estuary Workshop (CREW) in Astoria, OR, and the Ecological and Evolutionary Ethology of Fishes conference, in Corvallis, OR, to present the Program's research concerning the testing of Pacific lamprey diets - "Development of diets for the intensive culture of Pacific lamprey (*Entosphenus tridentatus*)".

Conservation Genetics:

- Christian Smith presented results of a genetic analysis of Abernathy Creek steelhead at the Coastwide Salmonid Genetics meeting in Juneau, AK.
- Christian Smith and Brice Adams participated in a meeting of stakeholders regarding the threatened plant, Spalding's Catchfly.

Quantitative Ecology & Technology:

- Doug Peterson and Will Simpson attended the NWR – Fisheries Workshop meeting hosted by the Columbia River FPO.
- Doug Peterson, Ben Kennedy, and Will Simpson attended CREW 2014: Forging Links in the Columbia Estuary, in Astoria, OR.
- Doug Peterson, Kurt Steinke, and Will Simpson had a conference call with FWS New York Field Office and the New York State Department of Environmental Conservation developing a PIT tag interrogation system to monitor lake sturgeon in Oneida Lake.
- Doug Peterson completed a Motorboat Operation Certification Course in Astoria, OR.

Administration & Facilities:

- Patty Crandell participated in a Regional Climate Board meeting by phone.
- Patty Crandell participated in two Fisheries Resources Project Leader meetings by phone. Topics discussed included: Wanapum Dam Fish Passage Update, Surrogate Species, next Steps for Region 1, Marking and Tagging BMP's, Fisheries ARD position, RO secretary position, FT14 R1 Fisheries Program Project Leaders meeting, FY14 Budget and Outreach Update.
- Patty Crandell and Ron Twibell participated in the Columbia River Gorge Complex HET meeting. Ron presented a summary of the study the Physiology & Nutrition Program has been conducting at Carson NFH.
- The AFTC staff tuned in for a discussion of the Willamette Valley surrogate species pilot program.
- Judy Gordon and Patty Crandell attended a presentation by Derrick Wheeler of Portland State University. Judy served as Derrick's mentor while he worked on his Capstone Project – "Winthrop National Fish Hatchery: Methow River Basin Climate Change and Water Rights Assessment".
- Judy Gordon participated in the inaugural meeting of the Pacific Region Surrogate Species Leadership Team. The goals of the team are to: advance the understanding and application of the Service's surrogate species approach among the Region's employees and partners; guide landscape designation and associated surrogate selection; and share information and questions which will help the Region succeed in this effort.
- Jeff Poole attended a cross connections course in Stevenson, WA as part of his continuing education requirements as a Water Works Operator.

iUrban Teen



Judy Gordon working with the participants at the iUrban Teen Summit.
USFWS: B. Lawler

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 our 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 iUrban Teen Tech Summit is designed to expose African American and Latino male youth ages 13 to 18, to careers in technology. However, girls are welcomed to join the Summit events. 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 presented an activity entitled "DNA: Genetic Tags in Fish" to 20-25 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 8 fish to correctly id followed by a discussion of the importance of fish returning to their home location and how such genetic tools are used in other fields (i.e. forensics).