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AFTC's Veterans

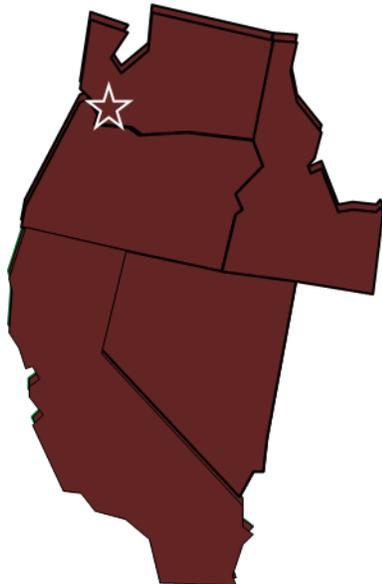


Photo: FWS

AFTC's Veterans

A Veteran's Day luncheon was held in honor of AFTC's veterans to thank them for their service.

AFTC's veterans are (left to right): Biological Technician Kelli Hawke (Sergeant First Class, U.S. Army Retired), Maintenance Worker Jim Lowell (Chief Petty Officer, U.S. Navy, Retired), Electronics Engineer Kurt Steinke (Specialist, U.S. Army), Budget Officer Vince Bocci (Technical Sergeant, U.S. Air Force Reserves), Facilities Operations Specialist Scott Gronbach (Lieutenant, U.S. Navy Reserves), and Administrative Assistant Steven Dyer (Sergeant First Class, U.S. Army, Retired).



AFTC Program Highlights

Physiology and Nutrition

For fish feed quality control 1st quarter sampling, six feeds were received from the hatcheries in November and ten feeds were received in December. As part of the routine analyses, feeds were checked for rancidity. Ann Gannam wrote the feed memos which were sent to the hatchery and the feed mill. Abernathy was contacted about possible feed related issues at the Allegheny NFH in Region 5 and at the Jordan River NFH in Region 3. Abernathy was also contacted regarding mold and *fumonisin* concentrations in sablefish feed by NOAA and by the California/Nevada Fish Health Center about possible benefits of probiotic use in fish feeds for combating enteric redmouth.

Ron Twibell trained Kieslana Wing on analytical techniques for fish tissue proximate composition and fatty acid analysis. She was also shown the fine art of fish grinding which is needed to prepare the samples. She has perfected this task as well as the analytical techniques.



Kieslana Wing in the Lab. Photo: Ann Gannam



Staff:

Administration & Facilities

Judy Gordon, Center Director
Patty Crandell, Deputy Director
Vince Bocci, Administrative Officer
Steve Dyer, Administrative Assistant
Mark Hack, IT Specialist
Scott Gronbach, Facilities Operations Specialist
Jeff Poole, Water Treatment Plant Operator
Jim Lowell, Maintenance Worker

Conservation Genetics

Christian Smith, Regional Geneticist & Program Head
Pat DeHaan, Conservation Geneticist
Matt Smith, Conservation Geneticist
Justin Bohling, Conservation Geneticist
Jennifer Von Bargaen, Lab Geneticist
Brice Adams, Fish Geneticist
Mikki Brinkmeyer, Biological Science Technician

Physiology & Nutrition

Kyle Hanson, Regional Physiologist & Program Head
Richard Glenn, Microbiologist
John Holmes, Fish Biologist
Ann Gannam, Regional Nutritionist
Ron Twibell, Fish Nutritionist
James Barron, Fish Biologist
Kelli Hawke, Biological Science Technician
Kieslana Wing, Contractor

Quantitative Ecology & Technology

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

AFTC Program Highlights– continued

James Barron and Kelli Hawk assisted with bio-sampling at Quinault NFH during spawning in November.



James Barron with Chum salmon at Quinault NFFH. Photo FWS

For the project "Natural Reproductive Success and Demographic Effects of Hatchery-Origin Steelhead in Abernathy Creek, Washington", trapping of returning adult steelhead started on November 3rd. During the month of November, 48 coho salmon were captured, transported, and released upstream. In December, 32 coho salmon and one natural-origin steelhead were captured, transported, and released upstream. The total coho run for the year was comprised of 69 natural-origin and 11 hatchery-origin coho.

Ron Twibell has compiled and analyzed this year's BPA steelhead proximate composition data

and submitted it for the annual report. Ron's project concerning the use of low lipid feeds for the steelhead is an additional portion of the ongoing steelhead project.

In early November, broodyear 2015 juvenile steelhead received coded wire tags and were adipose fin clipped by the Columbia River FRO tagging crew. A total number of 18,279 fish were clipped and tagged in preparation for release in the spring of 2016.



Marking trailer at AFTC. Photo: John Holmes

Richard Glenn finished updating the Safety Data Sheets and Chemical Inventories for both the Physiology and Nutrition laboratories.

James Barron developed the nutrition projects database and provided training to Ann Gannam and Ron Twibell. This database will allow us to centrally compile data and improve accessibility as required by new data management plans.

The Lost River sucker diet evaluation study wrapped up with James Barron analyzing sucker whole bodies for moisture, ash and protein. Kieslana Wing analyzed the fish for lipid and

fatty acid composition and James Barron has started working on the final report for the Ecological Services Office at the Klamath Falls FWO.

Conservation Genetics

Brice Adams and Mikki Brinkmeyer assisted the Western Washington Fisheries Resource Office with biosampling during salmon spawning at Quinault NFH and Makah NFH.

Mikki Brinkmeyer re-optimized our bull trout microsatellite analysis protocols to increase genotyping efficiency across several projects performed at AFTC.

Matt Smith presented an assessment of the genetic information needs of Klamath Basin suckers to USFWS and USGS biologists working on recovery of Klamath Shortnose and Lost River suckers.

Justin Bohling provided genetic information to biologists with NOAA Fisheries and the Winnemem Wintu Tribe on field sampling for a study of the genetic origins of Chinook salmon in New Zealand.

Jennifer VonBargen and Mikki Brinkmeyer analyzed over 2,100 genetic samples, including 800 steelhead from Abernathy Creek, WA, 750 steelhead from the Deschutes River, OR, 220 bull trout from the Lewis River, WA, and 384 Westslope cutthroat trout from the Clark Fork River, MT.

Program Highlights— continued

Administration



Collection of fin clip for genetic analysis



Steelhead smolt at AFTC. Photo: USFWS



Working lunch during the Visioning Meeting, Onalaska, WI, Dec 8 -10, Emy Monroe, eDNA Lab Director; Joel Bader (National FTC/FHC Coordinator), and Bill Archambault, Northeast Region DARD-FAC).

Vince Bocci completed the FY16 funding analysis for AFTC

Mark Hack completed the FY16 IT spending plan for AFTC.

AFTC supervisory staff completed performance appraisals and award documentation for FY15 and established EPAPs for FY16.

Kyle Hanson completed the draft RME Technical report for the 2015 Bonneville Power Administration (BPA) funded Abernathy Creek steelhead project with the help of AFTC staff.

Patty Crandell finalized the statement of work and budget for the 2016 BPA funded Abernathy Creek steelhead project with the help of AFTC staff.

AFTC staff hosted a visit by Maureen Kavanagh, the new COTR for the BPA funded Abernathy Creek steelhead project and Brady Allen, another COTR from BPA. They were given a tour of laboratories as well as fish culture and spawning facilities. It was nice to see Maureen (a former FWS employee) and an overall very pleasant visit.

Patty Crandell served on the committee to help fill the Warm Springs NFH Project Leader position.

Judy Gordon participated in a Science/Traditional Ecological Knowledge Subcommittee conference for the North Pacific Landscape Conservation Cooperative.

Cesar Blanco, Acting Deputy Assistant Regional Director – Fisheries and Aquatic Conservation, visited for a tour and a chance to see the research facilities.

Dean Takko, State Senator, 19th District, and JD Rossetti, State Representative, 19th District, stopped by for a tour and questions. They were both highly interested in the research and voiced support for our programs.

All FY15 Employee Performance and Appraisal Plans were completed and closed out. FY16 EPAPs was initiated.

Judy Gordon and Patty Crandell participated in monthly Project Leader conference calls.

Bohling, J. and C. Smith. 2015. Population structure of coastal cutthroat trout inhabiting urban watersheds in Portland, OR. AFTC Final Report FY2015.

Hanson, K., J. Holmes, B. Kennedy, B. Adams, J. Von Bargen, C. Smith, and P. Crandell. 2015. Natural Reproductive Success and Demographic Effects of Hatchery-Origin Steelhead in Abernathy Creek, Washington. Report to BPA for work conducted in 2015.

DeHaan, P., B. Adams, B. Bangs, and P Scheerer. 2015. Connectivity and Gene Flow among Oregon Chub Populations in the Middle Fork Willamette River. AFTC Final Report FY2015

Koch, J. F., S. D. Rawles, C. D. Webster, V. Cummins, Y. Kobayashi, K. R. Thompson, A. L. Gannam, R. G. Twibell and N. M. Hyde. 2016. Optimizing fish meal-free commercial diets for Nile tilapia, *Oreochromis niloticus*. *Aquaculture* 452: 357-366

Program Highlights — continued

Judy Gordon and Patty Crandell participated in conference calls to discuss the new FAC Strategic Plan and the work activity template assignment.

Roy Elicker (Assistant Regional Director for Fisheries and Aquatic Conservation (FAC), Pacific Region), Judy Gordon, Andy Goodwin (Fish Health Manager, Pacific Region), Guppy Blair (Idaho Fish Health Center), and Susan Gutenberger (Lower Columbia Fish Health Center) attended the FAC Meeting held in La Crosse, WI. Also in attendance were David Hoskins, Assistant Director FAC, HQ staff, FAC ARDs, FHCs, and FTCs from all Regions. The purpose of the meeting was to promote discussion and facilitate visioning for FWS' Fish Health and Fish Technology Centers.

Judy Gordon participated in preliminary discussions concerning the reorganization of the FAC Program in the

Pacific Region.

Facilities

November and December brought about the beginnings of the preventive maintenance activities for the fiscal year. Both Jeff Poole and Jim Lowell spent long hours maintaining vital equipment and installing replacement components ahead of the onslaught of winter. Unfortunately for Jeff, many nights sleep in November were broken by the call of water alarms due to seasonally high levels of intense rainfall clogging up the Abernathy Creek intake system. In addition to their demanding maintenance efforts, the Quarters also received its annual chimney inspection and earned high marks.

Corrective maintenance on

buildings and water systems were also conducted to include gutter clearance, facility-wide high efficiency LED light bulb replacements, minor safety mitigation projects, water alarm diagnostics, and ADA door handle replacements. The Domestic Water Reservoir floats were also tested for component failure and ultimately replaced. Similarly, the main entrance gate operation controls and rail were intermittently failing and required extensive maintenance and troubleshooting.

Over the past several months, Scott Gronbach has continued to assist the Regional Office in a detailed status as the Facilities Maintenance Coordinator (FMC) for the Fisheries and Aquatics Conservation Program. Throughout November and December, Scott continued led project con-

Meetings and Conferences

Jennifer Von Bargen, Mikki Brinkmeyer, Justin Bohling and Brice Adams visited the Washington Department of Fish and Wildlife Molecular Genetics Laboratory, where they received training in building DNA libraries for next-generation DNA sequencing.

Christian Smith participated in the Oregon State Fisheries Geneticist Workshop. This workshop was hosted by the Oregon Department of Fish and Wildlife and Oregon State University to collect information useful for developing a State Geneticist position.

Pat DeHaan attended the Desert Fishes Council Meeting in Death Valley to present the results of research on Warner suckers that he has been working on in collaboration with Oregon Department of Fish and Wildlife.

Richard Glenn & Ben Kennedy attended the 2015 Columbia and Estuary Research Federation (CERF) conference in Portland, OR.

John Holmes attended the Northwest Fish Culture Concepts meeting (NW FCC) in Wilsonville, OR, and presented a poster titled "Potential relationship between juvenile growth rates and adult returns in a winter steelhead conservation hatchery program". Ron Twibell and Ann Gannam also attended the meeting and presented a poster titled "Progress towards sustainable feeds".

Kurt Steinke, Will Simpson, and Doug Peterson had a teleconference with Gabe Brooks, NOAA/NFMS electronics shop, to share information about PIT tag antenna design.

QET hosted a site visit from Scott Bevens, ISCO Pipe, who demonstrated different methods to work with high density polyethylene (HDPE) pipe, which is a material that can be used to make PIT tag antenna housings.

AFTC Program Highlights -continued

sultations with the Nez Perce and the US Forest Service on behalf of the Kooskia National Fish Hatchery. Scott also led the Program in recommending which Deferred Maintenance Work Orders were to be initiated by the Engineering Program Office in FY16. Scott also visited the Warm Springs National Fish Hatchery several times as the onsite project liaison in order to provide the Hatchery Manager and the Engineering Office additional assistance pertaining to multiple ongoing construction projects.

As for Safety over the past two months, Abernathy continued to mitigate most of the remaining deficiencies noted during the 5-year Regional Safety Office inspection. Aside from mitigation efforts, safety training continued in the form of Confined Space Entry, Lockout Tagout Program, and Electrical Safety.

What's more, 8 Station employees received their annual dust mask testing and certifications. Additionally, Scott attended the 40-hour Collateral Duty Safety Officer (CDSO) course in December.



Ann Gannam, John Holmes, Scott Gronbach, Jeff Poole dust mask testing. Photo USFWS

Quantitative Ecology & Technology (QET)

Will Simpson, Doug Peterson, and Kurt Steinke submitted a manuscript to the North American Journal of

Fisheries Management that described results from an experiment on the effects of voltage gradient and electrical waveform on survival of steelhead embryos.

Doug Peterson, Will Simpson and Kurt Steinke began collaborating with NOAA-Fisheries (Seattle) and the US Bureau of Reclamation (Boise) on plans to construct and install PIT tag antennas to detect downstream movement of juvenile Pacific lamprey (*macropthalmia*) through the Umatilla River in relation to irrigation diversions. They did a site visit to the lower Umatilla River to inspect possible installation sites and coordinate with Oregon Department of Fish and Wildlife.



Three Mile falls Dam on the Umatilla River , possible installation site for antenna array. Photo: FWS

Ben Kennedy completed the QET's section of Abernathy's annual report for the BPA-funded hatchery steelhead project; helped host a visit from BPA's COTR, and also submitted a Fisheries Operational Needs (FONS) proposal to investigate hatchery smolt migration behavior of steelhead fed low vs high lipid diets during rearing.

Program Highlights — continued



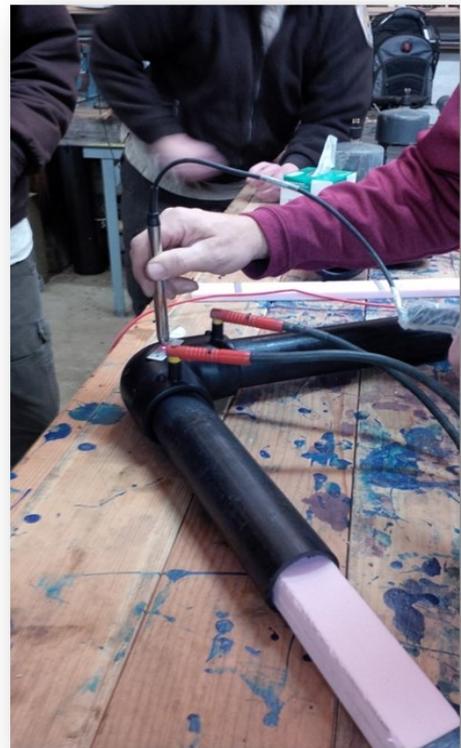
Will Simpson (left), Josh Hanson from Oregon Department of Fish and Wildlife (center), and Kurt Steinke (right) discuss the operation of existing PIT tag antenna arrays at Three Mile Falls Dam on the Umatilla River. Photo: FWS



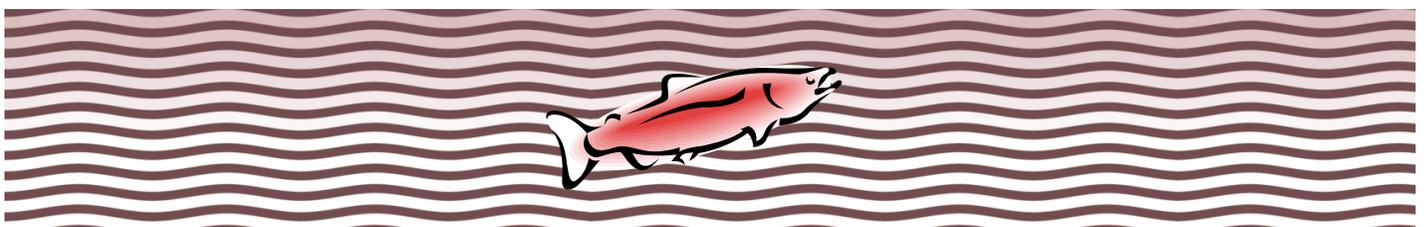
Scott Bevens with ISCO Pipe (red shirt) demonstrates a device to weld straight pieces of HDPE pipe. Photo: FWS



Will Simpson (left) and Kurt Steinke (right) inspect the West end of the Three Mile Falls Dam on the Umatilla River. Photo: FWS



Alternative method to join HDPE pipe involves electrofusion. Photo: FWS



Ongoing Projects

Water Velocity Effects on Salmon as Reared in Recirculating Systems. *Management Need:* Determine the effects of water velocity on composition, growth, condition, and performance of juvenile PNW salmon as applied to recirculating systems in support of hatcheries in the Pacific Region considering the use of recirculating systems. *Partners:* Pacific Region National Fish Hatcheries, Fishery Resources Program via Fisheries Operations and Need System (FONS).

Diet development for Lost River and short nose suckers in the Klamath River Basin. *Management Need:* Determine dietary needs of listed populations to assist in recovery. *Partners:* Klamath Tribes, Klamath Falls FWO, California/Nevada FHC.

Development of diets and rearing techniques for the culture of Pacific lamprey, *Entosphenus tridentatus*. *Management Need:* Assist Tribal partners in developing methods for the artificial propagation of Pacific lamprey, a species of concern. *Partners:* Yakama Nation; Fishery Resources Program via FONS.

Assessing the effects of multiple tagging methods on Pacific lamprey ammocoetes. *Management Need:* Assist Tribal partners in developing methods for the monitoring and evaluation of this species of concern. *Partners:* Yakama Nation; Fishery Resources Program via FONS.

The physiological response of white sturgeon to handling stress in captivity. *Management Need:* Determine if the stress from catch and release angling is detrimental to survival of white sturgeon, a species of concern. *Partners:* Dalhousie University; Carleton University.

Pacific Region's Fish Feed Quality Control (FFQC) Program. *Management Need:* The FFQC Program, the only one of its kind in the FWS, provides quarterly monitoring of the quality of the commercially produced fish feeds used at Pacific and Pacific

Southwest Regions' NFHs. Information is compiled on an annual basis and used in the development of the Pacific Region fish feed contract. *Partners:* Pacific and Pacific Southwest Region's NFHs, Oregon, Washington, Idaho, and Tribal fish hatcheries.

Effects of dietary lipid source and ultraviolet radiation on sunburn and steatitis in Steelhead, *Oncorhynchus mykiss*. *Management Need:* Provide information regarding the potential relationship between fish nutrition and sunburn in steelhead. *Partners:* Pacific Region National Fish Hatcheries

Evaluation of thermal exposure of adult Chinook salmon during the migration to Warm Springs National Fish Hatchery. *Management Need:* Determine if Chinook salmon migrating to Warm Springs National Fish Hatchery experience thermal stress. *Partners:* Warm Springs National Fish Hatchery, Lower Columbia Fish Health Center, Confederated Tribes of Warm Springs.

Natural reproductive success and demographic effects of hatchery-origin steelhead in Abernathy Creek, WA. *Management Need:* Provide information to help managers minimize differences between NOR and HOR fish. *Partners:* Bonneville Power Administration; Washington Department of Fish and Wildlife.

Climate change vulnerability assessments of Pacific Region National Fish Hatcheries. *Management Need:* An understanding of the anticipated habitat changes under different climate change scenarios provides managers with information to proactively respond to these conditions and their impact on NFHs. *Partners:* Pacific Region NFHs; Mid-Columbia River FRO; Fishery Resources Program via FONS.

Development of genetic markers associated with smoltification in steelhead and salmon. *Management Need:* Identify genetic markers associated

Ongoing Projects—continued

with downstream migration to provide managers with information to proactively manage early onset smolting levels. *Partners:* Fishery Resources Program via FONS.

Fish Suppression of common carp in Malheur Lake using electrofishing to target eggs and embryos.

Management Need: Determine the feasibility of using electrofishing to kill eggs and embryos for control of invasive common carp in Malheur Lake. Partner: Malheur NWR.

Antenna design for the Biomark IS1001 PIT tag reader.

Management Need: Provide expert level engineering and technical assistance to partners monitoring species of interest using new technologies while reducing biologist time spent in design and troubleshooting. Partner: NOAA Fisheries, USFWS Green Bay.

Natural reproductive success and demographic effects of hatchery-origin steelhead in Abernathy Creek, WA. Management Need: Provide information to help managers minimize differences between NOR and HOR fish. Partners: Bonneville Power Administration; Washington Department of Fish and Wildlife.

Entrainment and bypass of ESA-listed salmon at irrigation diversions on the Umatilla River. Management need: Determine what environmental factors influence the magnitude of fish entrainment into irrigation canals and if captured fish are successfully screened and returned to the Umatilla River using PIT tag technology. Partner: Bureau of Reclamation

Aquatic organism passage (AOP) at remediated stream road crossings. Management Need: Assess the efficacy of genetic, direct capture, and remote sensing methods to verify fish passage through remediated culverts. Partners: US Forest Service, Trout Unlimited.

Mekong River fish ecology and sustainable development. Management Need: Assess the scientific ca-

capacity and data needs for resource managers in Laos and Cambodia to address hydroelectric development on the mainstem Mekong River. Partners: USGS, US DOI International Technical Assistance Program (ITAP)

Effectiveness of transitioning to a locally-sourced steelhead broodstock at Winthrop National Fish Hatchery. Management Need: Determine if hatchery improvement programs and actions are achieving the expected biological performance objectives. Partners: USFWS Mid-Columbia FRO and NOAA Fisheries.

Stress response of juvenile steelhead salmon to electrofishing and tagging under different thermal regimes. Management need: To understand how fish respond to capture and handling under conditions experienced in late summer. Partners: USFWS Directorate Fellows Program.

Evaluation of the spatial and temporal distribution of juvenile Chinook Salmon in the Entiat River.

Management Need: Use genetic data to improve our understanding of the distribution of spring and summer run Chinook Salmon juveniles and thus improve our ability to prioritize restoration projects targeting spring Chinook Salmon recovery. Partners: USFWS Mid-Columbia FRO

Design and installation of a PIT tag array to monitor outmigration of juvenile Pacific lamprey in the Umatilla River. Management need: Determine entrainment rates of juvenile lamprey as they move downstream through the Umatilla River. Partners: NOAA-Fisheries, US Bureau of Reclamation

