



In this Issue:

Chris Taylor	1
Program Highlights	2
Workshops/Conferences/Meetings	7
Reports and Publications	10
Employee Spotlight	11

Director's Greeting....

Safety, safety, safety! We spent most of February conducting AFTC'S annual safety self-assessment and certification. Often a thankless job, providing safety training, keeping the Safety Manual current and ensuring a safe work environment are all important and vital services. I would like to thank all the members of AFTC's Safety Committee and most importantly our Collateral Duty Safety Officer for all their efforts in making this a safe place to work!

Staff:

Administration:

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

Nutrition:

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

Conservation Genetics:

- Denise Hawkins, Regional Geneticist
- Christian Smith, Conservation Geneticist
- Pat DeHaan, Conservation Geneticist
- Brice Adams, Biological Technician
- Matt Smith, Fish Geneticist
- Jennifer Von Bargaen, Lab Geneticist

Ecological Physiology:

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

Modeling and Management Decision Support:

- Doug Peterson, Senior Scientist

Chris Taylor Joins AFTC Staff



USFWS

Please join us in welcoming Dr. Christopher Taylor as the new Head of the Applied Research Program in Ecological Physiology. Chris is a technical authority and subject matter expert in aquatic ecology with expertise in ichthyology and statistics. With a Ph.D. in Zoology from the University of Oklahoma, Chris joins us from a position as a full Professor in the Department of Natural Resources Management at Texas Tech University. To learn more about Chris check out the Employee Spotlight section of this newsletter.

Program Highlights....

Nutrition

Ann Gannam and Kyle Hanson (Ecological Physiology) submitted a proposal to the Grant Co. PUD, Rocky Reach Fish Forum to study the nutritional requirements of lamprey ammocoetes.

The Nutrition Program analyzed 23 feed samples for fish feed quality control in January and February as well as 6 raw ingredients for the manufacture of open formula Abernathy Diet at Rangen, Inc. As part of the routine analyses, all feeds from NFHs were checked for rancidity. Ann Gannam wrote the feed memos and contacted the feed mills when necessary.

Heidi Hill is working on a project in cooperation with Mark Holey, Project Leader at the FWS Midwest Region Green Bay FWCO. This project involves fatty acid analysis of eggs taken from wild and hatchery origin lake trout broodstock. The objectives of this study are to (1) describe the egg proximate and fatty acid composition of wild-caught humper lake trout from the Klondike reef in Lake Superior and hatchery-reared stocks at Iron River NFH and (2) correlate egg composition to eye-up survival to identify potential nutrient limitations to embryonic development.



Heidi Hill working in the AFTC laboratory.

USFWS

Nutrition cont....

James Barron and Ron Twibell completed fatty acid and proximate composition analysis of the eggs, feed and fish used in the Bureau of Reclamation funded egg analog project. The objective of this study was to evaluate the potential of various extruded diets as a suitable egg analog to increase growth, condition and lipid concentration in juvenile steelhead trout (*Oncorhynchus mykiss*).

Conservation Genetics

Denise Hawkins and Christian Smith visited the Quinault Indian Nation's Lake Quinault Hatchery, on the Olympic Peninsula, WA, in order to collect genetic samples from steelhead broodstock. Spawning is conducted at the Lake Quinault Hatchery and fertilized eggs are transported to Quinault NFH for rearing. Eventually, juvenile steelhead are returned to the Lake Quinault Hatchery to be raised in netpens in the adjacent Lake Quinault. The genetic samples will contribute to a broodstock profile for Quinault NFH.



Netpens as seen from the Lake Quinault Hatchery.

USFWS

Program Highlights cont....

Conservation Genetics....cont

Lytle Denny and Kurt Tardy (Shoshone-Bannock Tribes) visited AFTC to present results from their projects on the Salmon River, ID, designed to reintroduce and rebuild Chinook and steelhead populations in the basin. We also discussed our ongoing genetic analysis of the origin of Chinook salmon in Panther Creek, ID as well as a future project which will evaluate the genetic population structure of Yankee Fork Chinook salmon.

As part of our FONS funded NFH Genetic Profiling project, Brice Adams worked on spring Chinook samples from Warm Springs NFH, comparing contemporary samples with historic samples using a panel of 96 Chinook single nucleotide polymorphism (SNP) markers that are part of a standardized genetic baseline. Also part of this project, Jennifer Von Barga processed steelhead from Winthrop NFH using a panel of 96 steelhead (SNP) markers. The steelhead will be compared to other hatchery and natural-origin collections that are part of standardized baselines.

Pat DeHaan traveled to Wenatchee, WA to provide an update of our Upper Columbia River bull trout genetics project. Attendees included FWS, Douglas Co. PUD, and a member of the local Salmon Recovery Board.

Conservation Genetics....cont

Pat DeHaan, Matt Smith, and Denise Hawkins participated in an environmental DNA (eDNA) conference call facilitated by Paul Heimowitz, FWS AIS Coordinator for the Pacific Region. The goal of the call was to determine the interest and need for coordination of efforts in the assessment and development of eDNA technologies. The call had wide participation from universities, government agencies, private industry, and state partners.

Jennifer Von Barga attended a Gene Expression Applications Course given by Applied Biosystems, Inc. This interactive course is a 3-day comprehensive gene expression-focused training that covers all aspects of experimental design, execution, and interpretation. The course is designed to teach the following: (1) how to properly design a gene expression experiment; (2) how to design assays; (3) how to validate critical experimental parameters; (4) how to properly set up and run reactions; (5) how to obtain and interpret final data; and (6) how to troubleshoot data.

Ecological Physiology

Kyle Hanson and Chris Taylor met with the field crew for the Cowlitz Indian Tribe that will be collecting eulachon for a collaborative study at AFTC. The study will investigate the effects of the deposition of sediment originating from the 1980 eruption of Mt. St. Helens on the development of eulachon eggs.

Ben Kennedy developed a 2012 work schedule for the ecology and physiology portions of the Bonneville Power Administration (BPA) Abernathy Creek steelhead project.

Chris Taylor began service on the advisory board for the development of an Amphibian Conservation Center at Ennis NFH in MT. Planning stages for this Center are ongoing.

Jerone Anderson and Kurt Steinke developed script for the meteor burst modem that will allow it to connect directly to Destron-Fearing FS1001M multiplexers or other readers and transmit their data.

Jerone Anderson and Kurt Steinke demonstrated that they can control Allflex readers with serial commands, allowing them to multiplex the readers and reduce the power budget substantially in multiple antenna installations. They also developed a method to synchronize the Allflex antennas and deliver "pass-through" performance between them.

The three pass-over antennas that were installed in the substrate of Abernathy Creek continue to function indicating that they can be used for extended periods of time without failure from high water events.

Ecological Physiology cont....

Kyle Hanson, Richard Glenn, and Will Simpson examined the reproductive biology and survival of eulachon tagged with acoustic transmitters. Recent ESA listing of eulachon as threatened has prompted scientists to monitor their movements during spawning migrations.

Staff PIT tagged 1,500 juvenile hatchery fish. These fish will be released in the spring and monitored on their way to the ocean via stream width PIT tag antenna arrays and a screwtrap operated by WA Department of Fish and Wildlife (WDFW).

Kyle Hanson and Chris Taylor met with David Burbank at Carson NFH to help him initiate a study testing a new fish food for spring Chinook.

Kurt Steinke, Jerone Anderson, Kyle Hanson, and Chris Taylor participated in a conference call with the Wisconsin ES field office in Green Bay, WI, to set up a fish passage antenna to monitor lake sturgeon.

Kurt Steinke, Jerone Anderson, Kyle Hanson and Chris Taylor participated in a conference call with Helen Neville at Trout Unlimited to set up 4 PIT tag interrogation sites in NV where old road culverts have been redone to enhance movement of Lahontan cutthroat trout.

Modeling and Management Decision Support

Doug Peterson continued collaborating with Kyle Hanson (Ecological Physiology) on a modeling exercise to explore how changes in temperature and stream flow may affect salmon production within the Winthrop NFH.

Doug Peterson provided scientific and technical review for four draft conservation plans developed under a Candidate Conservation Agreement with Assurances (CCAA) for Arctic grayling in the Big Hole River, MT. This is the first of a series of draft conservation plans to be reviewed under an intra-agency collaboration with the Mountain-Prairie Region, Montana ES and MT Partners for Fish and Wildlife.

Doug Peterson worked with colleagues at the US Forest Service (USFS) Rocky Mountain Research Station and Trout Unlimited on a manuscript about the development and application of decision support tools to assist fisheries conservation and management under climate change.

Doug Peterson and Kyle Hanson (Ecological Physiology) compiled draft results of a modeling exercise to explore how changes in temperature and stream flow may affect salmon production within the Winthrop NFH. Following internal review, draft results were circulated to Winthrop's Hatchery Evaluation Team (HET) and agency partners for additional review.

Modeling and Management Decision Support cont....

Doug Peterson provided scientific and technical review for four draft conservation plans developed under a CCAA for Arctic grayling in the Big Hole River, MT. This is the second of a series of draft conservation plans to be reviewed under an intra-agency collaboration with FWS Mountain-Prairie Region, Montana ES and MT Partners for Fish and Wildlife.

Administration/Facilities

Judy Gordon, Patty Crandell, Scott Gronbach, Chris Taylor, Jeff Poole and Jim Lowell attended an awards ceremony at Little White Salmon NFH for FWS employees Larry Leighton, Jeff Poole and Jim Lowell and US Forest Service employee Winston Rall in recognition of their efforts assisting in the rescue of an injured woman on the Pacific Crest Trail. After the award presentations, cake and coffee were enjoyed by all.

Judy Gordon met with Charlie Parrot, FWS Division of Realty, to discuss plans to purchase ~12 acres from a nearby property owner. If successful, this acquisition could provide better security for the AFTC's potable water supply, the opportunity to conduct hillside stabilization across Abernathy Creek Road from the AFTC, and a potential location for future expansion.

Judy Gordon and Scott Gronbach completed the annual Safety Self- Audit Review and inspection for AFTC.

Administration/Facilities cont....

A winter meeting of administrative and facility staff was interrupted by a muddy, hungry, and somewhat hypothermic member of the Longview community. He and two friends had high-centered their vehicle the previous afternoon in the woods north of AFTC. They had spent a wet and cold night huddled in the vehicle; it had taken him almost 6 hours to walk to the warmth of our office. Fortunately, his two friends safely arrived a short time later and after eating all of our emergency food and drink (Mojo bars and Gatorade), all three took a taxi to Longview. Since AFTC staff routinely work in remote areas, this was a reminder to make sure our vehicles are always supplied with appropriate survival gear.

As part of the BPA funded project “Natural Reproductive Success and Demographic Effects of Hatchery-Origin Steelhead in Abernathy Creek”, 116 steelhead were captured in January and February. Five natural-origin steelhead, 54 hatchery-origin steelhead, and 57 out-of-basin steelhead were handled. The capture of returning adult steelhead will continue into June. Twenty-four pairs have been spawned, the first on January 10th with the first fry leaving the incubation tray on February 27th.



Steelhead fry.

USFWS

Administration/Facilities cont....

Facilities staff terminated the Abernathy Creek water line prior to its entering the Hatchery Building in order to remove a long-standing potential for cross contamination. The well line entering the lower bank of raceways was also terminated in order to remove any potential for creek and well water to combine and potentially taint AFTC's potable water.

Rotted trees were cut down on station in order to prevent further fence line damage such as occurred during the recent snow storm. The snow storm also severely damaged 90% of the Hatchery Building gutters requiring extensive repairs.

Facilities staff are preparing for spring by performing maintenance on the lawn mower, spraying moss remover on the building roofs, and designing and completing an extensive flower bed project consisting of more than 600 landscaping stones and 10 cubic yards of bark. The landscaping project has improved the aesthetics of the area significantly.

AFTC completed the annual Cowlitz Co. Fire Department inspection.

Scott Gronbach completed a 2-week multinational exercise overseas in support of the U.S. Navy.

Jim Lowell was selected to attend the FWS Wage Grade Academy in March and Jeffrey Poole was selected for the new Water Treatment Plant Operator position at AFTC.

Workshops, Conferences, and Meetings....

Nutrition:

- Ann Gannam and Kyle Hanson attended a meeting at the Columbia River Research Laboratory (US Geological Survey, USGS) with Matt Mesa (USGS), and Bob Rose (Yakama Nation) to discuss collaborative research efforts to refine methods for artificial propagation of Pacific lamprey.
- Ann Gannam participated in a conference call with Carl Schreck , David Noakes (Oregon Hatchery Research Center, OHRC), Rob Chitwood, Julia Urien associated with Oregon State University and Molly Webb from the Bozeman FTC to discuss diets and rearing strategies to produce a wild-like Chinook salmon.
- Ann Gannam, Ron Twibell and Heidi Hill conducted a Nutrition Workshop at the OHRC. The 21 attendees included State of Oregon hatchery managers, fish health specialists, and hatchery employees of the Nez Perce Tribe.
- The Nutrition Program participated in the conference call with other nutrition and physiology professionals from other FTCs. This coordinated call was to establish the groundwork for developing Community of Practice groups within these disciplines.
- Heidi Hill gave her presentation about 10 years of Fish Feed Quality Control Program at AFTC to the Fisheries Program staff in the RO. She also spent two days in the RO shadowing Jana Grote, AFTC's line supervisor.
- Ann Gannam participated in a lamprey conference call with Bob Rose, Yakama Nation, and Matt Mesa, USGS Columbia River Research Laboratory.
- Ron Twibell and James Barron attended the Aquaculture America meeting in Las Vegas. Both of them gave presentations. Ron's was "Evaluation of phosphorus concentrations and lipid sources in practical diets fed to juvenile steelhead *Oncorhynchus mykiss*",(Ronald G. Twibell, Ann L. Gannam and Nathan M. Hyde) and James' was "Investigating the viability of using egg analogs to increase natural production of steelhead trout *Oncorhynchus mykiss*", (James M. Barron, Ron Twibell, Heidi Lewis, Michael Newsom, and Ann Gannam).

Conservation Genetics:

- Matt Smith met with Ed Connor, Dave Pflug (Seattle City Light), Jeff Chan (FWS) and Tim Romanski (FWS) at the FWS' Lacey, WA office to discuss bull trout entrainment in City Light dams on the Skagit River and finalize a study designed to evaluate the influence of geological history on the genetic population structure of Skagit River bull trout.
- Denise Hawkins and Christian Smith participated in a meeting of the Interagency Ecological Program Salmonid Genetics Project Work Team. Christian gave presentations describing the results of AFTC's work on ESA-listed winter-run and spring-run Chinook salmon in the upper Sacramento River.
- Pat DeHaan attended the annual Oregon Chub Working Group meeting in Adair Village, OR. Pat gave an update on the evaluation of the level of genetic variation within and among sites that contained Oregon chub to provide information important for recovery implementation and a genetic assessment of introduced populations.

Conservation Genetics cont:

- Mike Hudson and Jeff Jolley (Columbia River FPO) met with Pat DeHaan, Matt Smith and Denise Hawkins to discuss the potential uses of environmental DNA (eDNA) in the monitoring of rare or otherwise hard to monitor species.
- Pat DeHaan presented initial results of our genetic analysis of Warner suckers to the Oregon Desert Fishes working group. Specifically the project will focus on determining the amount of variation within the tributary and lake populations, determining the level of variation among the different populations, and determining the genetic relationship between the tributary populations and suckers collected in Hart and Crump Lakes. Information generated from this study will provide important insight into the biology of Warner suckers and will be important for the recovery planning process. Warner suckers are listed as endangered under the ESA.
- Christian Smith and Denise Hawkins participated in a meeting of the Northwest Power and Conservation Council's Fish Tagging Forum. The meeting agenda included a discussion of the use of genetic tagging methods to answer management questions.
- Christian Smith participated in a meeting hosted by The Nature Conservancy in Yreka, CA. The primary purpose of this workshop was to review existing information regarding the genetic diversity of Shasta River wild coho, Iron Gate Hatchery coho brood stock, and nearby populations of coho (including Upper Klamath and Scott River populations) and to reach agreement regarding appropriate brood stock source for any coho supplementation plan that may be implemented in the Shasta River. In addition, various coho salmon supplementation techniques will be reviewed and evaluated for efficacy of application in the Shasta River.
- Denise Hawkins participated in the annual Baker River Basin Fish Connectivity Implementation Plan Native Char Consultation. The agenda included a discussion of the genetic analysis of bull trout captured moving both upstream and downstream, carried out by Mo Small, WDFW.

Ecological Physiology:

- Ben Kennedy and John Holmes designed a study to investigate morphological differences between natural-origin and hatchery-origin adult steelhead across time.
- Ben Kennedy, Doug Peterson, and Jerone Anderson provided technical assistance to the Ashland FWCO in the Midwest Region on their efforts to create a PIT tag database to monitor coaster brook trout behavior and survival.
- Ben Kennedy and Matt Smith (Conservation Genetics) discussed field sampling design for the collection of coastal cutthroat trout and steelhead.
- Ben Kennedy met with Bill Gale and other staff from the Mid-Columbia River FRO to discuss various fisheries projects throughout the region.
- Richard Glenn and Heidi Hill (Nutrition) collaborated on a paper documenting the gut microflora of steelhead.
- Kyle Hanson, and Ben Kennedy, and Chris Taylor were involved in a conference call with other FTC biologists throughout the country to begin the process of creating an Ecological Physiology Community of Practice.

Ecological Physiology cont:

- Will Simpson attended a meeting hosted by the OR Zoo Conservation program in Portland, OR to establish a citizen science project where youth are exposed to nature and science while monitoring changes in the distribution and habitat use of American pikas in the Pacific Northwest (Pika Watch). Collaborators included the OR Zoo, Columbia Gorge Ecology Institute, OR schools, the Mazamas, and ABR Inc.
- Richard Glenn presented a paper at the OR Chapter of the American Fisheries Society (AFS): “Genomic evidence of the enteric redmouth disease (ERM) pathogen during the production cycle of tule fall Chinook salmon at Spring Creek NFH.”
- Ben Kennedy presented a paper at the OR Chapter of the AFS: “Ecological differences of juvenile steelhead produced by natural origin and hatchery-origin adults spawning in the wild.”
- Will Simpson presented a paper at the OR Chapter of the AFS: “Entrainment, bypass, and survival of ESA-listed steelhead smolts at federal irrigation diversions during emigration.”
- Chris Taylor attended the North Coast Cooperative Weed Management Area meeting in Astoria, OR.

Modeling and Management Decision Support:

- Doug Peterson attended in a short webinar offered by BayesiaLab that introduced the construction of Probabilistic Structural Equation Models (PSEM) using Bayesian networks.
- Doug Peterson attended a webinar presentation on climate change by Daniel Isaak, USFS Rocky Mountain Research Station titled: “Climate change effects on coldwater stream ecosystems: how climate concerns are driving development of better models and decision tools for improved resource management”.
- Doug Peterson attended a two-day webinar offered by the USGS Patuxent Wildlife Research Center titled: “unmarked: An R package for fitting hierarchical models of species abundance and occurrence”.
- Doug Peterson attended in a webinar presentation by James Watling, University of FL, titled: “Prediction maps from climate envelope models: what can they tell us”.

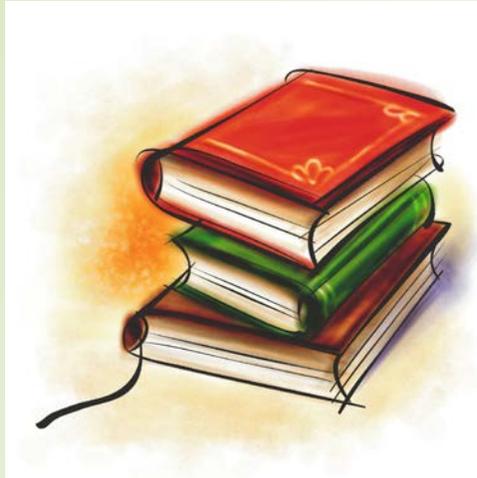
Administration/Facilities:

- The Ecological Physiology and Conservation Genetics Programs and John Holmes and Patty Crandell met with Mara Zimmerman, Bryce Glaser and others from WDFW to discuss and coordinate spring activities Creek.
- Judy Gordon chaired the first meeting of the AFTC’s Institutional Animal Care and Use Committee (IACUC). The IACUC members are Judy Gordon (Chair), Kyle Hanson (Science Representative), Sonia Mumford (Veterinarian), John Blair (Community Member), and Heidi Heywood (Community Member). Introductions were made, a facility tour provided, and work began on the IACUC’s Charter.
- Judy Gordon and Patty Crandell participated in a Pacific Region Fisheries Program Project Leader conference call. They also participated in another (February) Project Leader call while at the RO and later met with Fisheries Program staff to discuss the possibility of purchasing property.
- Judy Gordon attended the Expert Workshop to Inform Climate Change Science Priorities in the North Pacific Landscape Conservation Cooperative.

Workshops, Conferences, and Meetings cont....

Administration/Facilities:

- Patty Crandell attended a Pacific Regional Climate Board meeting in the RO.
- Patty Crandell, Doug Peterson, and Kyle Hanson participated in a Climate Change Planning Team meeting via phone. The meeting was held to discuss status of the vulnerability assessment modeling exercise and an outline for the Winthrop NFH report.



Reports and Publications:

Conservation Genetics

Smith, Matt and Denise Hawkins. 2012. Investigation of the Relative Reproductive Success of Hatchery and Wild Steelhead in the Deschutes River Basin. Abernathy Fish Technology Center Report.

DeHaan, P.W. and J. Von Bargen. 2012. Genetic Analysis of Threatened Warner Suckers. Abernathy Fish Technology Center Report.

DeHaan, P.W. and B. Adams. 2012. Rapid Response Genetic Analysis of Bull Trout Collected in the Lewis River, WA. Abernathy Fish Technology Center Report.

Employee Spotlight....



Chris Taylor
Regional Ecological Physiologist

Chris is originally from OK and attended both OK State University (B.S. and M.S. degrees) and the University of OK (Ph.D. degree) where he was classically trained in ecology and ichthyology. While earning his Ph.D., Chris worked for FWS at Dexter, NM, where he monitored populations of threatened and endangered fishes. After finishing his Ph.D. and a one-year post-doc at the OK Biological Survey, he took a faculty position at MS State University in the Department of Biological Sciences. He remained there for 12 years before moving on to TX Tech University as a professor in the department of Natural Resources Management. Chris has worked extensively on the ecology of fishes in rivers and streams throughout the southeastern and southwestern U.S.

Chris enjoys making wine and beer from scratch (no kits) and cooking. His wife, Kathrin, and he both are water fanatics and love canoeing and kayaking. They are also avid bird watchers and enjoy spending time with their pets (currently two dogs and three cats). When they are not doing any of the above, they enjoy traveling and have traveled extensively through much of Mexico. They are looking forward to exploring the Pacific Northwest, including the cities and the natural landscapes.