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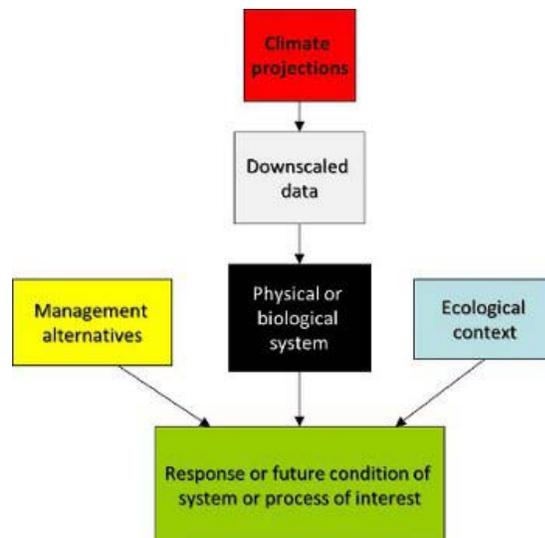
**Director's Greeting...**

Details, details, details! Taking part in a detail is a great way to learn about how other offices work and what they do while meeting new people. Judy is currently on detail in Region 6 as Acting Assistant Regional Director of External Affairs. Another type of detail takes place within your own office. Ken Ostrand and Denise Hawkins are currently splitting Deputy duties at AFTC while I act as Director. So what are we learning? Besides getting the opportunity to do a totally different type of job, doing an internal detail allows you to gain empathy for and understanding of another person's work. Such understanding may help promote teamwork. At least that's what we're hoping!

Patty Crandell

**New Program at AFTC**

Doug Peterson arrived at AFTC and has launched a new applied research program in Modeling and Management Decision Support. The Program is intended to provide technical expertise in ecological and landscape modeling and to develop practical tools that biologists and decision makers can use to evaluate management and policy alternatives. An initial focus will be on climate change impacts. We anticipate this will entail working with partners to conduct risk assessments and develop decision support models to assist conservation and mitigation planning centered on regional priorities (e.g., hatchery operations) and national initiatives (e.g., Landscape Conservation Cooperatives). Climate models driven by greenhouse gas emission scenarios typically generate predictions for climate variables (e.g., air temperature) at regional, continental, or global scales that must then be stepped down or "downscaled" to a factor or variable more directly linked to a process or system of interest. For stream fishes, this often involves generating downscaled data for water temperature or hydrologic regimes. In turn, these data can be used as driving variables to evaluate the potential response or future condition, given the ecological and environmental setting and a suite of management alternatives or scenarios.



Generic conceptual model for how global or regional climate projections can be integrated into risk assessment or decision making for a system or process of interest. Figure by D. Peterson

**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
- Doug Peterson, Landscape Modeler

**Nutrition:**

- Ann Gannam, Regional Nutritionist
- Ron Twibell, Fish Nutritionist
- Jeff Poole, Extruder Operator
- Nathan Hyde, Biological Technician
- Heidi Lewis, Fish Nutritionist
- James Barron, SCEP Employee

**Conservation Genetics:**

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

**Ecological Physiology:**

- Ken Ostrand, 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
- James Samagaio, Biological Technician
- Ashley McNamee, STEP Employee

## Program Highlights....

### Nutrition

The cooperative feeding trial concerning phosphorus levels in Gila trout feed at the Mora NFH and Technology Center is at the halfway mark. We receive water samples to be checked for phosphorus every two weeks. Nathan Hyde is analyzing the samples for orthophosphate and total phosphorus and has analyzed 50 samples thus far.

Heidi Lewis is working on the collaborative gut microflora project with the Ecological Physiology Program extracting DNA and running qPCR (quantitative polymerase chain reaction) to identify and compare the gut microflora composition in hatchery- and natural-origin steelhead.

James Barron, Student Career Employment Program (SCEP) employee started the first week of January. He is a master's student at the University of Idaho. Dr. Ken Cain is his major professor. He will be working on his SCEP hours until June.

Heidi Lewis is the American Fisheries Society Fish Culture Section Newsletter chairperson and has produced the winter newsletter which can be read at <http://www.fishculturesection.org/Newsletters/pdf/Winter2010.pdf>.

As part of Fish Feed Quality Control (FFQC), Nathan Hyde, Ron Twibell, and Heidi Lewis analyzed 17 feed samples for quality. As part of the routine analyses, all feeds from the NFHs were checked for rancidity. Ann Gannam wrote the feed memos and contacted the feed mills when necessary. Six feed ingredients from Rangen, Inc. were also analyzed as part of the FFQC program. These ingredients will be used in the manufacture of the Abernathy Diet for the Region.

### Nutrition cont....

James Barron is working on the collaborative research project with Michael Newsom of the Bureau of Reclamation (BOR) in the area of nutrient enhancement in streams. James has been collecting steelhead eggs for the feeding trial and has developed an SOP for disinfection and storage of the eggs and designed and constructed an underwater feeder.

The Nutrition Program staff made sockeye starter feed for the State of Idaho Eagle Hatchery. IDFG's interest in developing a sockeye starter feed initiated this work.

### Conservation Genetics

Brice Adams completed the data collection for our evaluation of the Livingston Stone NFH winter-run Chinook program. The evaluation will use pedigree reconstruction to examine the production of returning adults by hatchery-origin Chinook spawning naturally in the Sacramento River, CA.

Jennifer Von Bargaen worked with Barney Gill (Perkin-Elmer) to program our Janus liquid handling robot to load samples into the Fluidigm EP1 chips. The EP1 is used to evaluate 96 SNPs (single nucleotide polymorphisms) on 96 samples simultaneously. Using Janus automates the loading and reduces the possibility of error.

Molly McGlaufflin presented an analysis of data using the genetic analysis packages for R, particularly the "discriminant analysis of principal components" which was described in the paper that recently came out by Jombart et al. in BMC Genetics. This component of the package is a clustering analysis that groups individuals based on their genetic similarity.

## Program Highlights cont....

### Conservation Genetics cont....

Matt Smith completed data collection for our first SNP (single nucleotide polymorphism) project using the new Fluidigm EP1. The project is in collaboration with the Shoshone-Bannock Tribes and is examining the origin of spring Chinook spawning in Panther Creek, a tributary to the Salmon River in Idaho.

Matt Smith met with our collaborators from Oregon Department of Fish and Wildlife (ODFW) in the Deschutes Basin to view the adult collection weirs on Bakeoven and Buck Hollow Creeks. The steelhead collected at these weirs will be used in an assessment of differences in reproductive success of natural spawning steelhead in the presence and absence of hatchery-origin steelhead.



Adult collection weir in Buck Hollow Creek  
USFWS: M. Smith

Christian Smith and Denise Hawkins discussed the results and further development of an analysis of coastal cutthroat trout from Mt. Hood, OR with Matt Anderson (USFS).

### Conservation Genetics cont....

Pat DeHaan and Carita Pascal (University of Washington, Seattle) analyzed DNA sequences generated in a *Salvelinus* species SNP discovery project. Several candidate SNPs for distinguishing among six different *Salvelinus* in addition to several SNPs that are variable within bull trout will be included in further testing.

Christian Smith delivered a lecture covering persistent reproductive isolation between sympatric lineages of fall Chinook salmon in White Salmon River, WA as part of a Conservation class taught by Ruth Phillips at Washington State University Vancouver. The class is attended by students at both the Vancouver and Pullman locations using video conferencing.

Denise Hawkins participated in a conference call with partners from FWS Region 6 and Wyoming Game and Fish to discuss the results of an analysis of burbot (*Lota lota maculosa*) from the Wind River, WY.

Denise Hawkins participated in a conference call with partners from ODFW, Oregon State University and Columbia River FPO to discuss plans for analysis of redband trout from the Crooked River, a tributary to the Deschutes River, OR.



Redband trout from Buck Hollow Creek,  
Deschutes River tributary. USFWS: M. Smith

## Ecological Physiology

Will Simpson, Jerone Anderson, Ben Kennedy, and Kurt Steinke installed passive integrated transponder (PIT) tag antenna arrays at La Grande, OR in Catherine Creek to monitor ESA-listed Chinook salmon. They also installed PIT tag antenna arrays at Hermiston, OR in the Umatilla River irrigation canals and at Three Miles Falls Dam. The antenna arrays on the Umatilla River are used to determine entrainment and survival of PIT tagged ESA-listed juvenile mid-Columbia River steelhead diverted into irrigation canals.



Preparing to install antennas in Catherine Creek.  
USFWS

Richard Glenn and Jim Lowell escorted the fire inspector around the facility during a fire inspection by Cowlitz II Fire Department.

Ben Kennedy, Kyle Hanson, Will Simpson, Richard Glenn, James Samagaio, and Ashley McNamee marked 3,000 steelhead with PIT tags and collected physiological data for a project, "Natural Reproductive Success and Demographic Effects of Hatchery-Origin Steelhead in Abernathy Creek, Washington", funded by the Bonneville Power Administration (BPA).

## Ecological Physiology

Kyle Hanson, Ashley McNamee, and Kenneth Ostrand have been working with the Cowlitz Indian Tribe to determine the effect that sedimentation has on ESA-listed eulachon egg survival and development. Eulachon were housed and spawned at AFTC and trials were run to examine fecundity, egg survival, and fertilization rates.



Female eulachon collected from the Cowlitz River, WA prior to spawning at AFTC.  
USFWS



Stripping a female eulachon at AFTC in order to determine fertilization rates and embryo survival.  
USFWS

### Administration/Facilities

The BPA funded project, "Natural Reproductive Success and Demographic Effect of Hatchery-Origin Steelhead in Abernathy Creek, Washington" continues. Since the AFTC's electric barrier weir was activated in October 2010, 182 adult steelhead have been captured including 19 natural-origin, 126 AFTC hatchery-origin, and 37 out-of-basin strays. Twelve natural-origin and five AFTC hatchery-origin steelhead were transported upstream to spawn as part of the project. Capture of returning adult steelhead will continue until June.

Mary Peters from the Lower Columbia Fish Health Center visited to check the health of steelhead to be released in the spring as part of the BPA funded Abernathy Creek steelhead project.

Jannette Brummel from the Regional Office visited to conduct a Personal Property Inventory onsite review.

### Lunch Time Seminars

As part of our monthly lunch time seminar series, new employees presented information from their previous work. Doug Peterson (Modeling and Management Decision Support) gave a seminar entitled "Conservation of Native Inland Salmonids – A Decade at The Intersection of Research and Management", and James Barron gave a seminar entitled "Burbot Conservation Aquaculture". The presentation summarized information from his Master's research.

### Reports and Publications

#### **Conservation Genetics**

D. K. Hawkins, K. S. Williamson, A. P. Matala, D. Hand, D. Olson, and H. Schaller. 2011. Population structure and genetic characteristics of summer steelhead (*Oncorhynchus mykiss*) in the Deschutes River Basin, Oregon. Abernathy Fish Technology Center report.

D. Hawkins and L. Godfrey. 2011. Genetic characterization of coho salmon (*Oncorhynchus kisutch*) in Agency Creek, a tributary to the South Yamhill River (Willamette Basin, OR). Abernathy Fish Technology Center report.

D. Hawkins and B. Adams. 2011. Genetic characterization of Pacific lamprey (*Entosphenus tridentata*) in Agency Creek, a tributary to the South Yamhill River (Willamette Basin, OR). Abernathy Fish Technology Center report.

#### **Ecological Physiology**

K. G. Ostrand, K. C. Hanson, and A. S. McNamee. 2011. Manual for the Intensive Culture of Pacific Lampreys. Abernathy Fish Technology Center Report for the Chelan County Power (PUD) Wenatchee, WA 98807-1231.

# Workshops, Conferences, and Meetings....

## **Nutrition:**

- Heidi Lewis and Ann Gannam participated in a conference call with Jay Davis, Environmental Contaminants, Washington FWO, and Alec Maule, US Geological Survey (USGS), Columbia River Research Laboratory to discuss data and reports for the “Investigation of Contaminants in Feeds and Fish at FWS Pacific Region National Fish Hatcheries and the Ramifications to Human and Ecological Health” project.
- Ann Gannam participated in a conference call with Idaho Department of Fish and Game (IDFG) and the Bozeman FTC (with Dr. Wendy Sealey) to discuss formulation and manufacture of a sockeye starter diet.
- Ann Gannam participated in two conference calls to discuss the planning of “Co-manager workshop on age and size at maturity of Pacific salmon and steelhead” to take place May 17-19<sup>th</sup>. Dr. Don Campton and Doug Olson are the organizers.
- Ann Gannam attended the Pacific Northwest Fish Health Protection Committee meeting to speak about recent nutritional concerns.

## **Conservation Genetics:**

- Pat DeHaan attended a meeting of the Clackamas Bull Trout Reintroduction Work Group. The group discussed the need to collect genetic samples for all bull trout transferred from the Metolius River to the Clackamas River in the reintroduction effort. Collection of fin clips at the time of transfer will provide the group the opportunity to evaluate the outcomes of the different reintroduction strategies in the future.
- Denise Hawkins participated in the Coastal California steelhead Biological Review Team. The team met in Santa Cruz, CA and was co-chaired by Carlos Garza and Eric Anderson and facilitated by Tommy Williams of the NOAA Southwest Fisheries Science Center. The other team members were Ashley Steel US Forest Service (USFS), and Robin Waples, Jeff Hard, and Jim Meyers (all NOAA Northwest Fisheries Science Center). The team was tasked with assessing the current dps (distinct population segment) boundaries in light of new (predominately genetic) data. A report will be provided at the completion of the task.
- Denise Hawkins participated in two bull trout Recovery Monitoring and Evaluation Group conference calls to discuss progress on assignments. The group is working to provide guidance to the FWS bull trout technical team for their current recovery planning tasks.
- Christian Smith and Denise Hawkins participated in a conference call with Don Campton (R1 Science Advisor) and Paul Heimowitz (R1 AIS Coordinator) to discuss the potential uses of eDNA (environmental DNA) in screening for aquatic invasives.
- Denise Hawkins gave a presentation at the Willamette Basin Fisheries Science Review meeting sponsored by the US Army Corps of Engineers and The Confederated Tribes of Grand Ronde held in Grand Ronde, OR. The presentation gave an overview of the AFTC Conservation Genetics Program capabilities and our on-going projects in the Willamette Basin that include projects with bull trout, rainbow trout, Oregon chub, steelhead, coho salmon, and lamprey.
- Pat DeHaan attended two meetings this month in OR to plan continued work with ESA-listed Oregon chub and to work on a manuscript describing the work with collaborators. Information from these studies will help guide Oregon chub recovery planning including future population introduction efforts and address the challenge of managing populations largely in isolation from one another in order to minimize threats from nonnative species.

# Workshops, Conferences, and Meetings....

## **Conservation Genetics cont....**

- Brice Adams and Jennifer Von Bargen attended a forensics evidence handling workshop at the FWS National Fish and Wildlife Forensics Laboratory in Ashland, OR. The workshop covered SOPs for handling evidence samples and generating genetic data.
- Christian Smith, Patty Crandell, and Denise Hawkins participated via video conferencing at the Portland Regional Office in a Washington DC Office briefing to discuss the potential uses of eDNA for detection of aquatic invasive species and rare and endangered species. Denise and Christian assisted Meredith Bartron (Regional Geneticist, Region 5) in the preparation of a presentation designed to outline requirements for further testing of the technique.
- Pat DeHaan, Molly McGlauffin, Christian Smith, and Denise Hawkins participated via web conference in a short course entitled “Understanding and adapting to climate change in aquatic ecosystems at landscape and river basin scales: a decision support workshop for integrating research and management.” The workshop was hosted by the USFS-Rocky Mountain Research Station, with co-sponsorship from the USGS, Trout Unlimited, and the FWS Great Northern Landscape Conservation Cooperative. Presentations on Day 1 focused on how different elements of stream environments (e.g., hydrology, temperature, fish populations) are responding to climate change and highlighted new science tools for measuring and predicting these responses. Presentations on Day 2 focused on decision support tools and prioritization schemes that may be useful for integrating information on climate change to management of aquatic ecosystems.

## **Ecological Physiology:**

- Kenneth Ostrand met with the Aquatic Conservation Team (ACT). The goal of the meeting was to: 1) build team identity, cohesion, and leadership capacity by identifying programmatic opportunities, priorities, and ways to overcome obstacles for the next 3-5 years, 2) integrate and enhance Aquatic Invasive Species Capability within ACT and the Region, and 3) provide inter-agency and intra-agency networking and learning opportunities.
- Kenneth Ostrand met with the Western Lamprey Conservation Team and the Lamprey Steering Committee to address comments received for the Pacific Lamprey (*Entosphenus tridentata*) Draft Assessment and Template for Conservation Measures.
- Kenneth Ostrand, Kyle Hanson, and Ben Kennedy met with the Corps of Engineers and Pacific Northwest National Laboratory in Portland to finalize a report titled, “Evaluation of Life History Diversity, Habitat Connectivity, and Survival Benefits Associated with Habitat Restoration Actions in the Lower Columbia River and Estuary”.

## **Modeling and Management Division Support:**

- Doug Peterson attended a seminar by Dr. Julian Olden (University of Washington) titled, “The unfolding drama of invasive species, climate change and their interactive ecological impacts in the John Day River, Oregon” held at the CRFPO.
- Doug Peterson met with Dan Shively and Don Campton in the Portland Regional office to discuss current and future research activities related to climate change and fish passage.
- Doug Peterson and Judy Gordon attended a meeting with the Region 1 FROs.
- Doug Peterson attended the ACT meeting at the Portland Regional office.

## Workshops, Conferences, and Meetings....

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

- Doug Peterson participated in a climate change workshop entitled "Understanding and adapting to climate change in aquatic ecosystems at landscape and river basin scales: a decision support workshop for integrating research and management" hosted by the USFS Rocky Mountain Research Station. Doug's presentation was titled, "Bayesian belief networks, a potential tool for decision support." The workshop's science presentations were recorded and can be viewed at: [http://www.fs.fed.us/rm/boise/AWAE/workshops/climate\\_aquatics\\_decision\\_support.shtml](http://www.fs.fed.us/rm/boise/AWAE/workshops/climate_aquatics_decision_support.shtml).

### **Administration/Facilities:**

- Patty Crandell participated in two Pacific Region Climate Change Board meetings at the Regional Office. The meetings included summaries of action papers, an overview of the Board Charter, and planning.
- Judy Gordon and Patty Crandell participated in a Fish Technology Center conference call. The call was intended to provide information regarding the upcoming FTC/FHC meeting in May.
- Judy Gordon and Patty Crandell participated in a two day meeting for agencies receiving Mitchell Act (MA) funds. At the meeting the FWS, other agencies, and Tribes presented overviews of the various programs and services funded through the MA. For FWS this included descriptions of: hatchery programs, monitoring/evaluation, fish health, feed QA/QC, etc.
- Patty Crandell, Christian Smith, Ron Twibell, and Kyle Hanson participated in Columbia River Gorge NFH Complex's first Hatchery Evaluation Team meeting at Spring Creek NFH. Also participating was staff from Willard, Spring Creek, Little White Salmon NFHs, Columbia River FPO, and Lower Columbia FHC. Kyle presented preliminary results from a study examining effects of maternal handling on offspring quality.
- Patty Crandell and Benjamin Kennedy took part in a discussion about prioritizing habitat restoration alternatives in Abernathy Creek. Hosted by the Lower Columbia Fish Recovery Board (LCFRB) the meeting included representatives from Washington State Departments of Fish and Wildlife, Ecology, and Natural Resources among others. One popular restoration alternative was on AFTC property. The restoration work is funded by NOAA-Fisheries in support of the Intensively Monitored Watershed program and will be directed by LCFRB.

## New Faces....



James Barron, a new SCEPT student in the Nutrition Program at AFTC, grew up in southeast WI. He received his bachelor's degree in Biology from the University of Wisconsin-Stevens Point. He is currently working on his master's at the University of Idaho. His research is focused on developing and improving culture techniques for the North American burbot (*Lota lota maculosa*), including aspects of pond larviculture, temperature related growth, and larval grading. When he is not designing diets for fish, James enjoys raising various aquatic life forms and plants, cooking, hiking and fishing.



Doug Peterson is the new program head for Modeling and Management Decision Support. He is a native of WA, and was born and raised in Yakima. He attended Occidental College in Los Angeles and received his bachelor's degree in Biology at Whitman College in Walla Walla, WA. After a two-year stint as an elementary science teacher at an international school in Quito, Ecuador, he returned to the US to continue his education, earning a master's in Fisheries from the University of Washington and a PhD in Fisheries from Colorado State University. Prior to joining the staff at AFTC, he worked in the Mountain-Prairie Region at a FWS Ecological Services Field Office in Helena, MT, where he was the lead ESA biologist for Arctic grayling and also engaged in applied research projects related to conservation genetics of native fishes, ecological impacts of nonnative trout, barriers and aquatic organism passage, and climate change. His continuing research interests include invasion biology, population ecology, and development of decision support tools for fishery management. Doug lives in Vancouver with his wife, Sara; three kids, Owen (8), Liv (6), and Lewis (4); and full-figured dog, Pugsly.

## **Future Biologists?**

Richard Glenn taught Cub Scouts from Pack 319 about conservation and about who conservation officers are and what they do. Some of the topics discussed were habitat, animals, invertebrates, soil and water. As part of the activity, the boys identified animal tracks.

## **Stars at AFTC!**



Ann receives direction in the extruder room. From left: Ann Gannam, Stephen Flinn, David Banyan, Tess McBride, and Sean Connolly.

USFWS

AFTC was fortunate enough to be the first Fisheries facility selected for filming as part of the Pacific Region's efforts to reach out to the public using electronic media. Sean Connolly, Fisheries, FWS volunteer, David Banyan and interns Stephen Flinn and Tess McBride arrived at AFTC on a cloudy, cold January morning. There they gave several members of the AFTC staff the opportunity to discuss (on camera!) the exciting research conducted at the facility. The Nutrition Program's extruder, the highly technical equipment used by the Conservation Genetics Program, and Abernathy Creek steelhead were prominent stars in filming that resulted in an almost 8 minute feature. During the shoot, Tess took still photos and later captured her impressions in a short day-in-the-life story. To view this video when it is finalized and other FWS video clips, please go to: <http://www.youtube.com/usfws>



A late February snow surprises the area and interrupts construction of AFTC's new kiosk.

USFWS