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Director's Greeting...

Daily, the FWS and its partners face ongoing and new challenges managing our Nation's natural resources. Many ongoing challenges require re-tooling of existing approaches to work towards more effective solutions. New challenges necessitate the use of innovative ideas, methodologies, and techniques, including good old fashioned elbow grease, to get the heart of the problem. The FWS employees at Fish Technology Centers continue to position themselves to respond to the changing expert technical needs of the FWS and its partners. Remember we're here to help you!

New Observation Channel

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
 Pete Taylor, Fish Biologist
 John Holmes, Fish Biologist
 Jeff McLaren, Biological Technician

Nutrition:

Ann Gannam, Regional Nutritionist
 Ron Twibell, Fish Nutritionist
 Jeff Poole, Extruder Operator
 Nathan Hyde, Biological Technician

Conservation Genetics:

Denise Hawkins, Regional Geneticist
 Christian Smith, Conservation Geneticist
 Pat DeHaan, Fish Geneticist
 Lindsay Godfrey, Biological Technician
 Brice Adams, Biological Technician
 Joe Norvell, STEP Employee

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



USFWS

We are pleased to announce the completion of our observation channel. This structure, located downstream of our effluent pond, will be used in conducting experiments requiring fish behavior observations in a more natural setting. The 193 foot channel allows for the use of specialized equipment to monitor and evaluate fish interactions especially those between hatchery and naturally occurring individuals while providing duplicative screening for the hatchery to prevent the release of non-native fish. We are excited to have this type of structure added to the list of "tools" available for our applied research activities.

Program Highlights....

Nutrition

The spring Chinook trial concerning temperature and feed ration was completed. Kyle Hanson and Ashley M^cNamee from Ecological Physiology assisted with the terminal fish sampling. Joy Evered and Sharon Lutz from the Olympia FHC helped sample the fish after the saltwater challenge.

The field portion of the gut microflora project conducted with Ecological Physiology Program was completed, and gut sampling of the Abernathy Creek fish ended.. Richard Glenn performed laboratory identification of indicator species in the gut.

Preparations are underway for the start of a coho feeding trial testing alternative lipids and proteins. The ingredients have been processed in preparation for feed manufacture.

Nathan Hyde has almost finished the spring Chinook whole body proximate analyses (17 samples) for the temperature /feed ration trial. This data will complete what is needed to finalize this project.



Nathan Hyde working in the Nutrition lab on the Soxtec fat extractor analyzing the fat content in fish whole bodies. *USFWS: R. Twibell*

Nutrition cont....

Ron Twibell, Susan Ostrand and Nathan Hyde analyzed 13 feed samples for NFHs for fish feed quality control. They also analyzed 3 samples for AFTC. In addition, we analyzed 3 samples from the Mora NFH & Technology Center for proximate composition as well as rancidity, vitamin C and phosphorus due to concerns about their feed. As part of the routine analyses, all feeds from all NFHs were checked for rancidity. Ann Gannam wrote the feed memos and contacted the feed mills when necessary.

Feed was made by Jeff Poole, Ron Twibell and Ann Gannam for the coho feeding trial testing alternative lipids and proteins. The trial has started and is planned to run for 15 weeks.

A feeding trail is being done cooperatively with the Bozeman Fish Technology Center with Wendy Sealey and Gibson Gaylord examining the digestibility of alternative ingredients in feeds.

An interim report was submitted for the Environmental Contaminants Program Off-Refuge Investigations titled "Investigation of Contaminants in Feeds and Fish at FWS Pacific Region National Fish Hatcheries and the Ramifications to Human and Ecological Health". This work is being done in cooperation with Jay Davis, Environmental Contaminants, Washington FWO and Alec Maule, U.S. Geological Survey, Columbia River Research Laboratory.

Program Highlights cont....

Conservation Genetics

Joe Norvell joined the Program as a temporary student employee for the summer. Joe is an undergraduate biology student at Washington State University, Vancouver.



Joe Norvell extracting DNA from fish tissue.
USFWS: D. Hawkins

Brice Adams and Lindsay Godfrey began a project to evaluate the winter Chinook salmon supplementation program carried out at Livingston Stone NFH. Parentage analysis will be used to evaluate the reproductive success of hatchery origin winter Chinook spawning naturally in the Sacramento River, CA.



John Rueth sorting Chinook salmon from the Sacramento River, CA for winter broodstock at Livingston Stone NFH.
USFWS: D. Hawkins

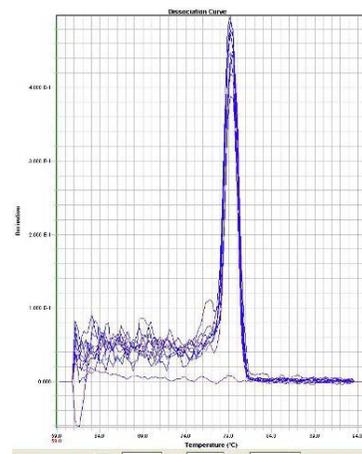
Christian Smith visited sites on White Salmon River which are expected to be available to Chinook salmon for spawning after Condit Dam is removed. The sites have been inaccessible to anadromous fish for nearly a century, and may be available in as little as two years.

Conservation Genetics cont....



Husum Falls is thought to have been a historical barrier to Chinook salmon migrating up White Salmon River in Washington. Access to the spawning area below the falls was eliminated when Condit Dam was built in 1913.
Lillian Smith

Lindsay Godfrey has been optimizing gene expression assays to assess differential expression of 24 genes for which expression has previously been shown to be regulated in association with dietary vegetable oil in Atlantic salmon and rainbow trout. We will be using qPCR to analyze livers of resident (rainbow trout) and anadromous (steelhead) forms of *Oncorhynchus mykiss* to measure up- and down-regulation of several genes of interest in response to 3 diets: a fish meal/fish oil based diet, a fish meal/vegetable oil based diet and a non-marine protein/oil based diet in collaboration with the Nutrition Program.



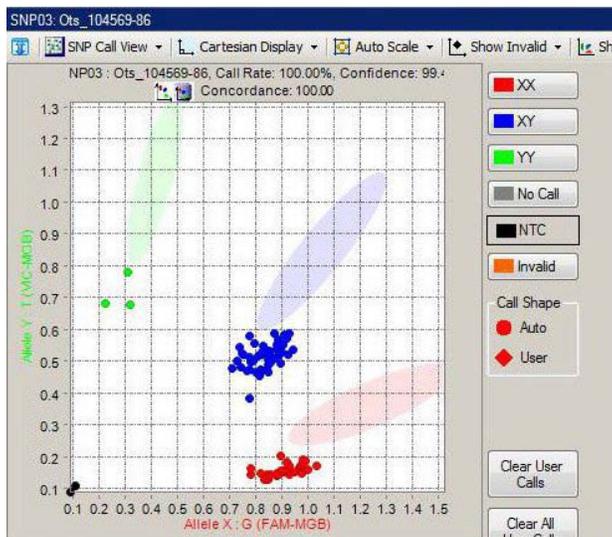
Dissociation curve for a gene expression assay based on extraction of RNA from fish livers. The single peak indicates successful generation of a single product from this assay.

USFWS: Lindsay Godfrey

Program Highlights cont....

Conservation Genetics cont....

Christian Smith worked with Carlos Garza at the NOAA-Fisheries Southwest Fisheries Science Center (SWFSC) in Santa Cruz, CA. AFTC and SWFSC are working together to provide their respective agencies with fine-scale genetic information on cutthroat trout and Chinook salmon.



The single nucleotide polymorphism (SNP) Ots_104569-86, developed at the SFSC, is one of several new genetic markers that are improving the resolution with which NOAA Fisheries and the FWS are able to track Chinook salmon.

Pacific lamprey (*Entosphenus tridentatus*), and potentially three other lamprey species, are present in the Willamette Basin, OR. Lamprey were traditionally harvested commercially and are of cultural importance; however, lamprey numbers have been in decline since the late 1960s, and lamprey are currently listed as an Oregon State sensitive species. Brice Adams optimized microsatellites that will be used to determine species of, and genetically characterize, lamprey samples collected from Agency Creek in the Willamette Basin. This project is in collaboration with the Confederated Tribes of Grand Ronde.

Ecological Physiology

Will Simpson, Ken Ostrand, and Kurt Steinke performed maintenance on PIT tag antenna arrays at irrigation canals on the Umatilla River, OR. The antenna arrays are used to determine entrainment and survival of PIT tagged juvenile steelhead diverted into irrigation canals. PIT packing (mobile PIT tag antenna array) was also used to assess entrainment and potential mortality of ESA listed Mid-Columbia steelhead as they migrate downstream during irrigation canal dates of operation.

Ken Ostrand, Kyle Hanson, Will Simpson, Ben Kennedy, Ashley McNamee, and James Samagaio implanted 10,000 Chinook salmon at Kalama Falls Hatchery with PIT tags. These fish will be released as part of a large study that examines how Columbia River habitat restoration activities are benefiting salmonids.

Kurt Steinke, Jerone Anderson, and Will Simpson rescued 6 PIT tag sites from flooding caused by record spring rainfall events and increased spill from Columbia River hydropower systems. The whole PIT tag system, supporting 36 individual antennas, is being used to examine how Columbia River habitat restoration activities are benefiting salmonids. All sites are now operational since water levels have returned to normal.



Passive integrated transponder sites located on the main stem of the Columbia River. The sites are equipped with electronics equipment that monitors PIT tagged salmonids as they migrate through or utilize estuary habitat. The sites were flooded during the spring when water was as high as the solar panels.
USFWS: W. Simpson

Program Highlights cont....

Ecological Physiology cont....

Ecological Physiology personnel sampled fish around Cottonwood Island in the Columbia River by beach seining with research partners from Pacific Northwest National Laboratory. The sampling was part of an ongoing study designed to determine sampling protocols that incorporate physiological variables to guide future estuary restoration activities in the lower Columbia River.

Ecological Physiology staff completed electro fishing within flooded wetland forests near the mouth of the Columbia River to assess salmonid use after habitat restoration activities.

Richard Glenn passed the Washington State Water Distribution Specialist examination to ensure AFTC meets state drinking water requirements.

Administration/Facilities

In May and June, 12 adult salmonids entered the AFTC holding pond. Biological data and genetic and scale samples were collected on: 12 winter steelhead (10 adipose clipped), 0 summer steelhead, 0 coho, and 0 cutthroat trout. The winter steelhead included 9 that originated from the AFTC hatchery, 2 native, and 1 from outside the Abernathy system. Winter steelhead passed above the weir included 1 native origin and 0 hatchery origin steelhead. Adult collection ended in June.

Adult winter steelhead trapping for the Abernathy Creek steelhead project ended and the v-trap was removed from the ladder.

A total of 21,000 winter steelhead were released as part of the Abernathy Creek steelhead project.

Mary Peters from Lower Columbia River FHC brought a new Veterinarian, Kerry Mikkelsen, out to AFTC for an introductory and fish health visit.

Administration/Facilities cont....

John Holmes, Jeff Poole, and Toni Scholder attended retirement training.

Patty Crandell attended a training session for the Taurus database at the Northwest Power and Conservation Council offices. The Taurus database will contain the new Abernathy Creek steelhead project proposal.

Reports and Publications

Conservation Genetics

Pat DeHaan, Paul Scheerer (Oregon Department of Fish & Wildlife, ODFW), and Ron Rhew (Columbia River FPO). Analyses of Genetic Variation in Natural and Re-introduced Populations of Oregon Chub (*Oregonichthys crameri*). FWS report.

Ecological Physiology

Donaldson, M.R., S.G. Hinch, D.A. Patterson, A.P. Farrell, J.M. Shrimpton, K.M. Miller-Saunders, D. Robichaud, J. Hills, K.A. Hruska, **K.C. Hanson**, K.K. English, G. Van Der Kraak, and S.J. Cooke. 2010. Physiological condition differentially affects the behaviour and survival of two populations of sockeye salmon during their freshwater spawning migration. *Physiological and Biochemical Zoology*. 83:446-458.

Hanson, K.C., C.T. Hasler, M.R. Donaldson, and S.J. Cooke. 2010. Context-dependent shuffling of vertebrate locomotor performance hierarchies across seasons: Implications for studies of individual fitness. *Canadian Journal of Zoology*. 88:324-333.

Donaldson, M.R., C.T. Hasler, **K.C. Hanson**, T.D. Clark, S.G. Hinch, and S.J. Cooke. 2010. Injecting youth into peer-review to increase its sustainability: A case study of ecology journals. *Ideas in Ecology and Evolution*. 3:1-7.

Workshops, Conferences, and Meetings....

Nutrition:

- Ann Gannam attended the one day workshop, "Biosecurity: Preventing the Introduction and Spread of Unwanted Fish Pathogens and Aquatic Nuisance Species", at Spring Creek NFH with Jeff Poole and John Holmes. This course was sponsored by the FWS.
- Ann Gannam coordinated conference calls with Eagle Hatchery (Dan Green, Idaho Fish and Game) and Bozeman Fish Technology Center (Wendy Sealey) to discuss sockeye salmon feed issues.
- Ann Gannam participated in conference calls with cooperators regarding a USDA grant proposal that addresses the use of alternative proteins in aquaculture feeds, evaluating plant-based diets and effects on gene expression.

Conservation Genetics:

- Christian Smith presented the final results of a study of genetic introgression among fall Chinook salmon lineages to the Project Leaders of Little White Salmon NFH and Spring Creek NFH.
- Christian Smith attended Molly McGlaulin's M.Sc. thesis defense at the University of Washington. The title of Molly's thesis is "Influences of spawning habitat and geography: population structure and juvenile migration timing of sockeye salmon (*Oncorhynchus nerka*) in the Wood River Lakes, Alaska." Christian served as a member of Molly's thesis committee.
- Pat DeHaan, Christian Smith, and Denise Hawkins attended the bi-annual Coastwide Salmonid Genetics Meeting in Boise, ID. Pat gave a presentation titled: "Genetic Population Structure of Olympic Peninsula Bull Trout and Implications for Elwha Dam Removal" and Christian gave a presentation titled "Persistent reproductive isolation between sympatric lineages of fall Chinook salmon in White Salmon River, WA".
- Christian Smith attended a meeting between the Hoh Tribe and Quinault NFH. The purpose of the meeting was to discuss the findings of a genetic analysis of Olympic Peninsula steelhead salmon, and how those findings relate to common interests of the FWS and the Hoh Tribe.

Ecological Physiology:

- Kyle Hanson and Ken Ostrand met with Nathan Reynolds, biologist for the Cowlitz Indian Tribe, to discuss an upcoming collaborative research project. The project will focus on the effects of sedimentation originating from the 1980 eruption of Mt. St. Helens on the reproductive success of Pacific smelt in the Cowlitz River. Pacific smelt have been listed as threatened.
- Ken Ostrand, Kurt Steinke, and Jerone Anderson met with ODFW staff to consult and assess the installation of five PIT tag antenna sites in La Grande, OR. The sites would be used to track Chinook salmon restoration and enhancement activities.

Administration/Facilities:

- Patty Crandell and Judith Gordon took part in a Fish Technology Center conference call. The agenda for the upcoming FTC annual meeting was discussed.

The Faces of Abernathy....

New Faces....



Joe Norvell
STEP Employee
Conservation Genetics

Joe's father was in the Air Force so his childhood was spent in many different places. He has lived in Germany, Nebraska, and Colorado and ended up in the Northwest at age 14 when his father retired. Joe graduated from Ridgefield High School in Ridgefield, WA. He will be a senior at Washington State University, Vancouver in the fall. Before he became a student he was in the Navy as a Cryptologist. He served on an aircraft carrier for most of his five year service and did a tour in the Persian Gulf. Before joining the Navy, he worked as a Facilities Plant Operator at a silicon wafer plant and in the grocery business. Joe's wife plays the violin, so most of his weekends during the summer are spent traveling with her while she plays at music festivals. Joe also enjoys exercising, hiking, and camping. His favorite place to go is Eagle Creek in the Gorge.

Departing Faces....

Susan Ostrand, a biologist in the Nutrition Program, has resigned from her position to spend more time with her growing family. She provided a great deal of assistance in the laboratory and with feeding trials. In addition, during FY2009 and FY2010, Susan was instrumental in securing "Connecting People with Nature" grants for AFTC with local area Nature Backpacks. The backpacks, which contain numerous outdoor activities, can be checked out from the Longview, Kelso and Castle Rock Public Libraries. Susan's enthusiasm and cheerfulness will be sorely missed.



Susan prepared and participated in many of the outreach activities for AFTC. She is shown here at Earth Day and presenting the nature backpacks at the Longview Library.

USFWS

Gone Fishing!



After 27 years of federal employment, Dan Gourde, AFTC's electrician and senior maintenance employee, decided to retire. Dan started his career at AFTC in February 1987 as a term maintenance worker assisting a senior employee. Through time, hard work, and attention to detail in the products he produced, he became the senior maintenance employee responsible for AFTC's maintenance activities. On June 29, 2010, we celebrated his career and achievements with a surprise staff barbeque in his honor. Also in attendance were his sons, Gabe and Charbo and his daughter-in-law Kelly with twin granddaughters Harper and Ava. He was presented with a toy version of AFTC's John Deere backhoe as a memento and a gift certificate for a full day of deep sea charter fishing out of Ilwaco, WA. Congratulations Dan!

Outreach....

Career Day at Olympic Elementary

Ann Gannam participated in the Career Day at Olympic Elementary School. The school had invited several individuals representing a variety of career paths, along with area service agencies, to present occupation exhibits to the Olympic Elementary School students. Classes from kindergarten through 5th grade spent approximately 20 minutes touring the exhibits. There were approximately 360 students attending.



Our on-station outreach activities have been curtailed lately due to safety concerns relating to stimulus project construction at AFTC. We apologize for the inconvenience and hope the projects will be completed soon!