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Director's Greeting....

Active participation in professional society meetings and the sharing of peer reviewed information is critical to good science. In September we were lucky enough to have the Annual Meeting of the American Fisheries Society just up the road in Seattle. The AFTC staff is proud to have been part of this record breaking meeting. Check out the staff contributions on page 2.

Our Heroes

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

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
Matt Smith, Fish Geneticist
Jennifer Von Bargaen, Lab Geneticist

Ecological Physiology:

Kyle Hanson, Acting Program Head
Ben Kennedy, Fish Ecologist
Richard Glenn, Microbiologist
Will Simpson, Fish Ecologist
Kurt Steinke, Electronics Engineer
Jerone Anderson, Electronics Technician
James Samagaio, Biological Technician

Modeling and Management Decision:

Doug Peterson, Senior Scientist



USFWS: S. Gronbach

On Friday, October 14, 2011, at about 11:30 am, after completing the final day of chainsaw safety training in the Gifford Pinchot National Forest near Carson, WA, Jim Lowell, Jeff Poole, Larry Leighton (Little White Salmon NFH), and instructor Winston Rall (U.S. Forest Service) were approached by a excited young man. He stated that his wife had slipped on the Pacific Crest Trail and had broken her foot about a mile up the trail. The four went with the husband up and after a 15-20 minute hike came upon the young woman attempting to crawl down the trail. After assessing the situation, the rescuers fashioned a stretcher from a couple of small trees (using their newly acquired chain saw safety training!) and their jackets. Once the stretcher was completed, they carried the young woman back down the trail. Taking frequent rest breaks they were able to safely bring her to the trail head in about an hour. They helped her into her vehicle and her husband took her the nearest medical facility. Who says safety training isn't important?! Great job guys!



NEW FRONTIERS IN FISHERIES MANAGEMENT AND ECOLOGY:
LEADING THE WAY IN A CHANGING WORLD

AMERICAN FISHERIES SOCIETY 141ST ANNUAL MEETING
SEATTLE, WASHINGTON . SEPTEMBER 4-8, 2011 . WWW.FISHERIES.ORG/AFS2011

AFTC at the 141st Annual Meeting of the American Fisheries Society

The 141st Annual Meeting of the American Fisheries Society (AFS) was held in Seattle, WA, September 4-8, 2011. The meeting was the largest ever held with 4,300+ people from 32 countries attending the meeting, which featured over 400 posters and 600 oral presentations organized into 95 symposia that collectively addressed issues related to fisheries, habitats, and fisheries science. The meeting also featured over 120 tradeshow vendors and sponsors, 19 continuing education courses and workshops, and 6 tours of local fisheries projects.

Twelve AFTC staff attended the meeting (this does not include co-authorship on oral presentations or posters):

-Symposia chaired

- *Hatchery Nutrition: Feeding Fish for Tomorrow's Changing World* – Heidi Lewis and Ron Twibell
- *Incorporating Genetic Data into Population Introduction Programs* – Pat DeHaan and Christian Smith

-Oral presentations delivered

- *Genetic Evaluation of Population Introduction Strategies for Threatened Oregon Chub* – Pat DeHaan
- *Analyses of Genetic Variation in Populations of Oregon Chub, a Threatened Floodplain Minnow in a Highly Altered Environment* – Pat DeHaan
- *Does Contaminant Accumulation Occur in Hatchery-Reared Pacific Salmonids?* – Ann Gannam
- *Physiological Correlates of Habitat Utilization by Juvenile Chinook Salmon in the Columbia River Estuary* – Kyle Hanson
- *Migration Dynamics of Released Hatchery Steelhead Smolts Influence Ecological and Genetic Risks* - Ben Kennedy
- *Overview of the U.S. Fish and Wildlife Service Pacific Region's Fish Feed Quality Control Program* – Heidi Lewis
- *Integrating Downscaled Climate Predictions for Native Salmonid Conservation: Lessons from Probabilistic Models* – Doug Peterson
- *Behavioral, Physiological, and Morphological Changes in a Steelhead Hatchery Supplementation Program Associated with Genetic Divergence* - Will Simpson
- *Population Structure of Coastal Cutthroat Trout in Mt. Hood National Forest* – Christian Smith
- *Genetics Provide a Forty-Five Year Retrospective of Sockeye Salmon Harvest Compositions in Bristol Bay, Alaska* - Matt Smith
- *Evaluation of Dietary Lipids for Bull Trout* – Ron Twibell



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American Fisheries Society Annual Meeting continued....

-Posters presented

- *Conservation Hatcheries and Small Populations: Effects on Abernathy Creek Steelhead* – Denise Hawkins
- *Insoluble Canola Protein Concentrate Partially Replaces Fish Meal in Largemouth Bass Diets without Affecting Growth Performance* – Heidi Lewis
- *Plant-Based Lipid Blends Can Completely Replace Menhaden Fish Oil in Female White Bass Broodstock Diets without Impacting Embryonic or Larval Survival* – Heidi Lewis

-Co-organizer of the FWS Booth – Judy Gordon and Brad Thompson (Washington FWO)

-FWS sponsorship participation

As one of the many FWS, Pacific Region sponsors of the meeting, AFTC is proud to have helped in making the FWS the largest sponsor of the meeting!

Program Highlights....

Nutrition

Ann Gannam and Richard Glenn (Ecological Physiology) conducted a two phase palatability trial using rosemary oil. Coho salmon and steelhead were used in each phase. Doses tested were 0, 10, 20, 30, 40, 50 % for the first phase and 0, 0.5, 1.0, 2.5, 5.0, 10.0 % for the second phase. Fish were stocked and sampled with the assistance of Heidi Lewis and Nathan Hyde. Rosemary oil has been shown to have antimicrobial properties and is a potential immunostimulant in fish. The first step in determining the efficacy of the oil is to see if the fish find the rosemary oil palatable as a feed pellet top-coat.

As part of Fish Feed Quality Control, Nathan Hyde, Ron Twibell and Heidi Lewis analyzed 11 feed samples. As part of the routine analyses, all feeds from the hatcheries were checked for rancidity. Ann Gannam wrote the feed memos and then contacted the feed mills when necessary. Feed was also analyzed for the Lower Elwha Klallam Hatchery "House of Salmon" for vitamin E and fatty acid levels, rancidity and proximate composition.

Ron Twibell wrote the Fish Feed Quality Control quarterly report for the 4th quarter and submitted it to the Pacific and Pacific Southwest Region NFHs, FHCs as well as Canadian, tribal and state partners.

Ron Twibell analyzed fatty acids in algae and feed samples sent by the Oceanic Institute, HI.

Ron Twibell and Heidi Lewis, in preparation for establishing an Institutional Animal Care and Use Committee for the Nutrition Program, reviewed the AFS document "Guidelines for the Use of Fishes in Research" (2004).

Nutrition cont....

Ron Twibell, as a member of the Safety Committee, reviewed the Station's Safety Manual for Scott Gronbach.

Ron Twibell received and analyzed fatty acids in winter Chinook salmon eggs from Livingston Stone NFH. This work is a continuation of previous years work to determine if fatty acid content of the eggs is correlated to egg and fry mortality. Dale Honeyfield, US Geological Survey (USGS) is also testing the eggs for thiamin. Low levels of thiamin could cause mortalities as well.

Conservation Genetics

John Baugher, Bonneville Power Administration (BPA), Contracting Officer's Technical Representative for our steelhead reproductive success project, visited AFTC and discussed the project with Kyle Hanson, Patty Crandell, Jennifer Von Bargen, and Denise Hawkins. One of the main objectives of the visit was to go over how the genetic data are generated and used in the analysis of parentage.

Several of the Conservation Genetics staff joined the Ecological Physiology staff in the annual e-fishing of Abernathy Creek. This work targets naturally produced juvenile steelhead that will be used to assess differential reproductive success of natural- and hatchery-origin steelhead that are spawning in Abernathy Creek (BPA funded project).

Denise Hawkins and Kyle Hanson (Ecological Physiology) completed the budget and statement of work for the BPA funded steelhead reproductive success project.

Program Highlights cont....

Conservation Genetics cont....

Our BPA funded genetic assessment of summer and winter run steelhead in the Hood River, OR was completed by Jennifer Von Bargaen. The project, titled "Genetic Distinction of Summer-Run and Winter-Run Steelhead in the Hood River, Oregon: Rapid Response Genotyping for Hatchery Broodstock Selection" was a collaborative project with Confederated Tribes of the Warm Springs of Oregon and Oregon Department of Fish and Wildlife (ODFW). Over the seven years of the project, we provided genetic run type assignments for 687 potential broodstock.

The bull trout rapid response period has ended this year with a record number of 77 bull trout genotyped by Brice Adams. This project provides region of origin for bull trout captured below Cabinet Gorge Dam on the Clark Fork River, ID. Our partners at Avista Corp. then use the information to aid in making decisions concerning passage over the three Clark Fork dams for these bull trout.

Brice Adams and Jennifer Von Bargaen completed genotyping and running QA/QC analysis of the nearly 1900 samples for this year's assessment of relative reproductive success for hatchery and natural origin steelhead spawning in Abernathy Creek. This BPA funded project is a collaborative effort among many AFTC staff and includes an evaluation of many different aspects of why there may be differences in reproductive success between hatchery and natural origin steelhead when they spawn naturally in the creek.

Conservation Genetics cont....

October saw another all hands effort from the staff in the AFTC Conservation Genetics Program to make sample collection kits. The very productive day resulted in a cabinet full of sample kits pre-labeled and ready for use in the collection of genetic samples.

Matt Smith collected genetic samples from hatchery coho salmon broodstock at Eagle Creek NFH. These samples will be used in a comparison of Eagle Creek hatchery coho with nearby natural origin coho salmon.

Christian Smith and Jennifer VonBargaen analyzed genetic data from spring Chinook salmon in Clear Creek, a tributary to the Sacramento River, CA. Spring Chinook salmon are presently Endangered Species Act listed as threatened, and the objective of this work is to determine whether individuals in Clear Creek represent a persistent population. A draft report is presently under review by our partners.

Christian Smith witnessed the demolition of Condit Dam on the Little White Salmon River.



Condit Dam was constructed between 1911 and 1913, eliminating Tule Fall Chinook salmon from historical upstream spawning grounds. The Dam was breached on October 26, 2011 and it is expected that the Tules will once again return starting fall 2013.

Wikipedia

Program Highlights cont....

Ecological Physiology

Ben Kennedy, Richard Glenn, Will Simpson, James Samagaio, Jerone Anderson, Kurt Steinke, and Kyle Hanson completed the annual electrofishing survey of Abernathy Creek, where juvenile steelhead were collected via electrofishing and tagged with passive integrated transponder (PIT) tags. The electrofishing survey is part of a study that monitors migration dynamics and survival of juvenile fish produced by natural-origin adult steelhead in comparison to hatchery-origin adult steelhead. We thank Jennifer Von Bargaen, Pat DeHaan, Denise Hawkins, Jeff McLaren, Doug Peterson and Matt Smith of AFTC and Meghan Kearney and Sydney Melson of the Regional Office for additional help.

Ecological Physiology Program staff installed flat plate PIT-tag antennas in Abernathy Creek next to AFTC. These antennas will monitor the movements of juvenile steelhead in the creek throughout the winter.



A flat plate PIT-tag antenna array was installed in Abernathy Creek to monitor juvenile steelhead movements during the winter. The pass-over antennas are intended to remain in the creek year-round without damage from debris or high flows. *USFWS*

Ecological Physiology cont...

Jerone Anderson and Kurt Steinke tested the feasibility of using the U.S. Department of Agriculture Snowpack Telemetry (SNOTEL) network to transfer fish passage data from remote sites which do not have phone or cell service. The SNOTEL network monitors snow pack and weather conditions at several hundred remote sites across the western U.S. and transfers data by reflecting signals off of ionization trails created when meteors pass through the earth's atmosphere.



Jerone Anderson constructs a directional antenna as part of a meteor burst link to relay data to SNOTEL master stations near Boise, ID (~390 miles from AFTC) and Dugway, UT (~670 miles from AFTC). *USFWS*

Will Simpson, Kyle Hanson, Jerone Anderson, and Kurt Steinke recovered cages and PIT-tag antennas used to monitor growth and movement of juvenile Chinook salmon in off-channel habitats in the Lower Columbia River and Estuary. Fish were monitored in the summer of 2010 in an effort to quantify growth and physiological benefits of habitat restoration activities to fish in the estuary.

Program Highlights cont....

Ecological Physiology cont...

Will Simpson and Jerone Anderson used mobile PIT-tag detection units to survey two irrigation canals on the Umatilla River for PIT-tags from juvenile steelhead. The surveys were conducted for the Bureau of Reclamation (BOR) to determine if these irrigation canals serve as a source of mortality for hatchery steelhead entrained from the Umatilla River.

Jerone Anderson and Will Simpson installed a replacement antenna at an irrigation canal on the Umatilla River for the BOR.

Richard Glenn began processing samples from Columbia spotted frogs for the presence or absence of the fungus *Batrachochytrium dendrobatidis*, which causes chytridiomycosis infection in amphibians. The FWS Nevada FWO collected the samples from Columbia spotted frog populations in NV, and AFTC staff will be analyzing the samples for presence of the fungus using quantitative PCR.

Administration/Facilities

Judy Gordon, Denise Hawkins, Heidi Lewis, and Vince Bocci made a site visit to the Yakama Nation's white sturgeon production facility in Toppenish, WA.

AFTC's Collateral Duty Safety Officer conducted safety training for AFTC staff. "Construction Site Safety" and "Water and Personal Flotation Device Safety".

The electric barrier was activated, starting the adult salmon trapping season in Abernathy Creek. Twenty-two coho have entered the holding pond and were released upstream after data collection.

Administration/Facilities cont....

Trapping of adult salmon will continue through May.

The brood year 2011 steelhead (19,500) were adipose fin clipped and coded wire tagged in preparation for release in spring 2012.



Male Coho Salmon

USFWS

The facilities department completed an expansion of the Main Office building consisting of remodeling the existing garage into three spaces adding more than 300 sq. ft. of much needed elbow room. Ongoing projects to the Main Office include building a backdoor porch and staircase, replacing the front door with an ADA compliant doorway, and installing solatubing for natural lighting enhancements. AFTC is also nearing completion of a raceway walkway modification. Handrails leading down towards each raceway were installed and the walkway surfaces between the raceways were widened to an 18" fiberglass reinforced plastic (FRP) grit strut material. AFTC's 20+ year old parking lot is currently receiving an upgrade in both size but also in eco-friendliness. The paving project will provide AFTC with better drainage, additional parking stalls, and a bioswale for captured rainwater to navigate through.

Modeling and Management Decision

Doug Peterson traveled to the Lolo and Clearwater National Forests in Montana and Idaho to conduct fieldwork on a project to develop different biological effectiveness monitoring methods and protocols for aquatic organism passage. The primary objective of this trip was to survey for and collect tissue samples from young-of-the-year westslope cutthroat trout in reaches adjacent to remediated road crossings where culverts had recently been replaced with structures meeting stream design criteria. Dr. Peterson's research collaborator, Dr. Helen Neville (Trout Unlimited), is coordinating the genetic analyses of these samples. The dataset will subject to pedigree reconstruction and sibship analysis in order to determine if these methods can be used to detect movement of individuals through the culverts. This sibship analysis is being coupled with other genetic (individual assignments, population-level analyses) and non-genetic (mark-recapture with PIT tag technology) techniques to determine the most cost-effective methods to detect fish movement through culverts. We captured more than 750 young-of-the-year cutthroat trout in surveys at four streams. A secondary objective was to conduct final recapture surveys using mobile PIT antennas, and to winterize or remove the stationary PIT antennas and readers that were being operated at four sites; and conclude the 2011 field season.

Modeling and Management Decision cont....

The project amassed a large genetic and mark-recapture database for westslope cutthroat trout and brook trout at four sites in two national forests that will be used to determine best practices for biological effectiveness monitoring at remediated road crossings. Dataset quality control and analysis will this fall, with final reports and manuscripts anticipated Spring 2012.



Electrofishing survey targeting young-of-the-year westslope cutthroat trout in Haskell Creek, Clearwater National Forest, ID. Pictured (L-R) are FWS volunteers Jay Payne (Lilburn, GA) crew leader Christa Torrens (Missoula, MT) and Regina Bilbrey (Durango, CO).
USFWS



Doug Peterson processing young-of-the-year cutthroat trout captured in Haskell Creek, Clearwater National Forest, ID.
USFWS

Workshops, Conferences, and Meetings....

Nutrition:

- Ron Twibell, Ann Gannam, Heidi Lewis, Nathan Hyde and James Barron attended the 33rd Fish Feed and Nutrition Workshop at the University of Arkansas, Pine Bluff, AR.
- Heidi Lewis attended the AFS Fish Culture Section's, Education Section's and Washington/British Columbia Chapter's annual business meetings while at the annual AFS meeting in Seattle, WA.
- Heidi Lewis and Ann Gannam participated in a conference call with the Bill Gale (Mid-Columbia FRO), Michael Tonseth, WA Department of Fish and Wildlife (WDFW) and Todd Pearsons, Grant Co. PUD, to discuss the possibility of developing a low phosphorus feed. The need for low phosphorus feeds is escalating and could be used by more facilities than just the NFHs.
- Ann Gannam, Ron Twibell, Heidi Lewis, Nathan Hyde and James Barron had a conference call with Bill Gale, Grant Co. PUD and WDFW to discuss development of low phosphorus feeds.
- Ann Gannam and Kyle Hanson (Ecological Physiology) had a conference call with the Yakama Nation representative and other partners to discuss possible research ideas concerning the study of lamprey, specifically their status, field work and culture methods.
- Ann Gannam called into the annual FTC meeting and summarized what was discussed by the Nutrition group. Other members of the Nutrition group who participated in the call included: Catherine Sykes, Dexter NFH & TC, Wendy Sealey and Gibson Gaylord, Bozeman FTC, Heidi Lewis, Nathan Hyde and James Barron, AFTC. Other members of the Nutrition group include: Thomas Kehler and Steve Davis, Lamar FTC and Dale Honeyfield, USGS, Northern Appalachian Research Laboratory. The Nutrition group discussed the following actions: AFTC and Bozeman FTC will be working with Catherine Sykes to improve survival of the bonytail by looking at nutritional and physiological aspects of the bonytail before release. Bozeman FTC will be working with Lamar FTC to determine the digestibility of phosphorus in the feed for the screamer fish study.
- Ann Gannam attended the webinar, *Regional Efforts to Monitor & Model Temperature Response of Northwest US Streams to Climate Change*.

Conservation Genetics:

- Denise Hawkins attended a meeting of the Lake Sammamish Kokanee Workgroup held at the Issaquah Creek Hatchery. This group is composed of members representing FWS, King Co. Department of Natural Resources and Parks, and WDFW.
- Pat DeHaan and Matt Smith attended the annual *Salvelinus confluentus* Curiosity Society meeting held this year in Heron, MT. Matt gave a presentation titled "Genetic structure of Skagit River bull trout populations: Contemporary reproductive isolation or distinct evolutionary lineages?"
- Pat DeHaan attended a meeting with partners from Avista Corp. and Idaho Department of Fish and Game to discuss our on-going bull trout project on the Clark Fork River.
- Christian Smith participated in "Reconnecting the White Salmon River", a meeting of the Yakama Nation and the FWS to discuss the removal of Condit Dam from the White Salmon River.

Administration/Facilities:

- Judy Gordon, Federal representative, attended the quarterly meeting of the Oregon Hatchery Research Center's Advisory Committee meeting in Newport, OR.
- Patty Crandell represented AFTC at the biennial Fisheries and Habitat Conservation ARD Science Meeting in Burlington, VT. In attendance were Washington Office staff (including Bryan Arroyo, Assistant Director for Fisheries and Habitat Conservation), ARDs for Fisheries and Ecological Services and FTC and FHC project leaders and deputies.
- Patty Crandell participated in a Pacific Region Climate Change Board (RCB) meeting at the Pacific Region Office.
- Patty Crandell, Doug Peterson, and Kyle Hanson participated in three Fisheries Program Climate Change Planning Team meetings via phone.
- Vince Bocci and Toni Scholder participated in conference calls with Pacific Regional Office staff about the new business system, FBMS.
- Patty Crandell met with Larry Telles about planning the 2012 Hatchery Management Workshop.
- Judy Gordon and Patty Crandell participated in the monthly Fisheries Program Project Leader calls.

Modeling and Management Decision Support:

- Doug Peterson attended the 2nd annual Pacific Northwest Climate Science Conference in Seattle, WA.
- Doug Peterson participated in a conference call with Kyle Hanson (Ecological Physiology) and Chris Pasley, Project Leader, Winthrop NFH to develop temperature and hydrologic models for assessing climate impacts to the Winthrop NFH.
- Doug Peterson attended a training workshop titled "Workforce Development Through Diversity & Inclusion" held in the regional office.

Conservation Genetics

Patrick W. DeHaan, Samuel J. Brenkman, Brice Adams, Patrick Crain. 2011. Genetic Population Structure of Olympic Peninsula Bull Trout Populations and Implications for Elwha Dam Removal. Northwest Science, 85 (3):463-475. 2011.
<http://www.bioone.org/doi/full/10.3955/046.085.0305>

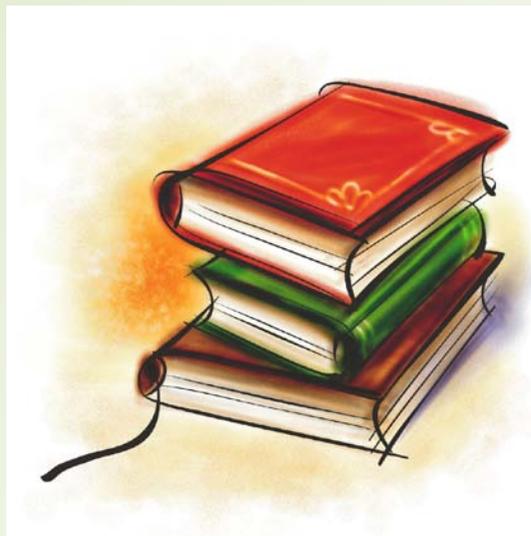
DeHaan, P., M. Diggs, J. VonBargen, L. Kaeding, and J. Mogen. 2011. Genetic analysis of bull trout in the St. Mary River system. Abernathy Fish Technology Center Report.

Smith, C. and J. VonBargen, 2011. Genetic identification of endangered Winter-Run Chinook salmon in the Sacramento River, CA. Abernathy Fish Technology Center Report.

Smith, C. and B. Adams, 2011. Summer Chinook salmon in the Entiat River: Genetic analysis of hatchery and natural origin adults spawning in the wild. Abernathy Fish Technology Center Report.

Modeling and Management Decision Support

Neville, H. and D.P. Peterson. 2011. Genetic evaluation of cutthroat trout movement over remediated culverts: summary of power analysis for pedigree reconstruction from young of year and sample collections from the 2011 field season. Report to USDA Forest Service, USDA Forest Service, Aquatic Organism Passage Effectiveness Monitoring Project for Road-Stream Crossings, San Dimas Technology and Development Center, San Dimas, CA; and US Fish and Wildlife Service, Mountain-Prairie Region (R6), Denver, CO.



Employee Spotlight and more....



Ron Twibell
Fish Nutritionist/Lab Manager

Ron was born and raised in the metropolis of Montpelier, IN. He graduated from Purdue University with degrees in Fisheries (B.S.) and Fish Nutrition (Ph.D.). After graduating from Purdue, Ron did postdoctoral research in fish nutrition at Purdue and Mississippi State Universities. In 2003, he began working for the FWS as an Assistant Project Leader at Uvalde NFH and transferred to AFTC in 2004.

Ron has suffered from a debilitating fishing addiction since his dad got him hooked on fishing when he was about 5 years old. He has a constant and loyal fishing companion, Jack, his German wired haired pointer. Ron also enjoys making fish food and feeding fish.



Sam Adams, 2 weeks old
Karen Adams

Proud Parents

Karen and Brice Adams (Conservation Genetics) welcomed their son Samuel Elliot Adams on September 26th, only five days ahead of schedule. Sam weighed in at 8 lbs. 1 oz and was 21 ¼ inches long. So far he isn't sporting a beard like his dad!

Ashley McNamee, former Biological Aide and Student Temporary Employment Program employee, and her husband, Josh, welcomed their daughter, Pailey, on September 6th, 2011.